SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

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

Members of the public also have the option to join the meeting over Zoom
*(See below for more details)**

2:00 PM **March 1, 2022**

AGENDA

I. APPROVAL OF MINUTES

A. Approval of minutes from the January 4, 2021 and the February 1, 2022 Site Plan Review Technical Advisory Committee Meetings.

II. OLD BUSINESS

A. **REQUEST TO POSTPONE** The application of **Banfield Realty, LLC, (Owner)**, for property located at **375 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District. (LU-20-259) **REQUEST TO POSTPONE**

B. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single family units) and 3 existing accessory structures to be replaced with 6 single family structures and 2 2 family structures to total 10 living units and 22 parking spaces where 15 is required. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. (LU-21-167)

C. The request of **Elizabeth B. Larsen Trust of 2012 (Owner),** for property located at **668 Middle Street** requesting Site Plan Review approval for the construction of two two-unit structures and improvement to the existing structures to create a total of eight units on three lots with associated utilities, connections and site improvements. Said property is shown on Assessor Map 147 Lot 18 and lies within the Historic and General Residence A (GRA) Districts. (LU-21-23)

III. NEW BUSINESS

A. Request of **Mastoran Restaurants Inc. (Owner) and Granite State Convenience (Applicant),** for property located at **2255 Lafayette Road** requesting Site Plan review and Conditional Use Approval for use 19.40 under Section 10.440 to allow a drive-thru facility as an accessory use to a permitted principal use in the Gateway Corridor Zone. Said property is shown on Assessor Map 272 Lot 3 and lies within the Gateway Corridor (G1) District.

B. Request of **ADL 325 Little Harbor Road Trust (Owner),** for property located at **325 Little Harbor Rd** requesting Wetland Conditional Use Permit under Section 10.1017 of the Zoning Ordinance to replace the existing single family structure, carriage house, shed, barn, and paddock; construct a garage, pool, pool cabana playground; and renovate the existing barn and shed with all associated electric, gas, water, and sewer updates as required on private property and within the public right of way. Said property is shown on Assessor Map 205 Lot 2 and is located within the Rural (R) and Single Residence A (SRA) Districts.

**Members of the public also have the option to join the meeting over Zoom, a unique meeting ID and password will be provided once you register. To register, click on the link below or copy and paste this into your web browser:*

https://us06web.zoom.us/webinar/register/WN_ZPK8UM9ESJiD3F_lq1s-pg

SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

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

2:00 PM **February 1, 2022**

MINUTES

MEMBERS PRESENT:
Peter Stith, Chairperson, Principle Planner; David Desfosses, Construction Technician Supervisor; Patrick Howe, Deputy Fire Chief; Nicholas Cracknell, Principal Planner; Zachary Cronin, Assistant City Engineer

MEMBERS ABSENT: Peter Britz, Environmental Planner; Darrin Sargent, Police Captain; Shanti Wolph, Chief Building Inspector; Stefanie Casella, Planner 1

ADDITIONAL STAFF PRESENT:

I. APPROVAL OF MINUTES

A. Approval of minutes from the January 4, 2021 Site Plan Review Technical Advisory Committee Meeting.

Mr. Stith commented that due to technical issues these minutes were delayed and would be voted on at the March Meeting.

II. OLD BUSINESS

A. **REQUEST TO POSTPONE** The application of **Banfield Realty, LLC, (Owner),** for property located at **375 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District. REQUEST TO POSTPONE (LU-20-259)

DISCUSSION AND DECISION OF THE BOARD

Mr. Stith noted that this would be postponed to the March 1, 2022, Technical Advisory Meeting.

B. The request of **The Sagamore Group, LLC, (Owner),** for properties located at **1169 Sagamore Avenue** and 1171 Sagamore Avenue requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single family units) and 3 existing accessory structures to be replaced with 6 single family structures and 2 2 family structures to total 10 living units and 22 parking spaces where 15 is required. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. (LU-21-167)

SPEAKING TO THE APPLICATION

Joe Coranati, Mike Garrepy and Mick Khavari spoke to the application. Mr. Coranati commented that they received the comments and did not have any questions or concerns for most of them. They did want to discuss a couple comments. Since the last meeting they have been going back and forth with Altus Engineering on the drainage comments. They requested additional test pits and those were completed last week. They need to respond to Altus's comments and they have that information now. Mr. Coranati noted that they wanted to discuss the last two comments and the offsite sidewalk. There are 2 utility poles that fall in the sidewalk path. One of the poles is right in the middle of it and it could be problematic to relocate. An underground line comes off of it and feeds to a communications building. It may make sense to consider the sidewalk as a future City project and they can make an offsite donation toward it. If they plan to extend the sidewalk to the Rye line in the future, then the City can relocate the poles as part of a bigger project down the road. Mr. Garappey added that they were happy to do a contribution to the sidewalk network or work with the City to get the poles moved. One of them will be challenging and expensive to move. Getting assistance from the City to move the pole will make it easier. The other option would be to leave the poles and build around them. Mr. Coranati commented that the did investigative work to look at the soils on site. The request to remove the fill material is not feasible. One reason is because part of it is off site. There will not be any grading into that area for the backyards at all. It's a 200-sf area. Mr. Garappey commented that it would be good if they could work out an arrangement with the neighbors and they would be happy to do the restoration. Test pits for infiltration identified a larger area of urban fill. They will remove that material and replace it. They can do the wetland restoration then as well. A small area behind units 1 and 2 was identified as wetland fill. Mr. Coranati noted that it was called out on the demolition plan. They are willing to work with the abutters. The final comments were about the layout of the site. They have been working with the abutters on this layout. They put in a gap between units 5 and 6 to let in light and air. They would not want to switch to a townhouse layout at this time. Mr. Garappey added that it was fairly late in the process to make this request. This request would require revisions to the plan for drainage and they have been working with abutters on the current layout. This layout was the most fitting to the neighborhood.

Mr. Khavari commented they tried to strike a balance between the development to the south and the development to the west. There is heavy screening to the south and planned screening for the west. Many of the homes in Sea Star Cove have the garage forward or flush with the entries set back. They have 2 duplex sets. The intent is to try to provide the light and air between the units. The safety and circulation need to be maintained. They are working within the challenges and doing their best to balance them. This is the right balance.

Mr. Cracknell commented that he put the sketch together and would argue that the applicants haven't met the realm requirements. It is understood that that this is a late critique. But the current design is not well conceived. The garages should be pushed back so they aren't in front of the house. Every house will have a car or two parked in front of the garages. Having 20-25 feet is usually inadequate for functional space. They should create the buffer and screening between this development and the neighbors. They should avoid the illusion of a giant parking lot. These units do not have functional front yard space. Moving the units in 10 feet on all three sides creates more yard. The density and volume aren't diminished. The spaces between the structures cannot be very meaningful for anyone other than the unit owners. There is not a lot of air and light moving through the buildings. 10 units is a lot. It is allowed by zoning but if it was a CUP, then Mr. Cracknell would not support it. There is a lot going into the site and they need to do it well to meet all of the objectives. They can achieve those objectives with a better design, and it would not change the infrastructure. They should look turning the 4's into 2's. Mr. Cracknell commented that the entire interior should not be impervious. It only has a little island in the middle. Mr. Garappey responded that they respectfully disagree and would request to move forward with the current design as it's been amended through the process. The Planning Board can determine that they don't meet the requirements if necessary. Their preference would be to avoid townhouses. There are enough in the City. They are trying to create something that would fit better in this space, and this meets the zoning ordinance. Mr. Cracknell commented that if single family structures were proposed, then they would need less of them. This is imbalanced. This arrangement is not popular in Portsmouth for good reasons.

Mr. Desfosses commented that he still did not think the drainage worked on the site. There is too much going on and it is not modeled right. Mr. Garappey responded that they knew there was drainage work to do with Altus. They are not expecting an approval today. They should be able to make it work after getting a couple threshold items addressed. Mr. Coranati commented that they would rather do a payment for the sidewalk. Mr. Desfosses responded that the sidewalk was required. Mr. Garappey requested assistance from the City to help coordinate the off-site work. Mr. Desfosses responded that they could discuss it.

Mr. Howe commented that there should not be any parking in the fire lane. Mr. Garappey responded that they would put in signage. It will be part of condo docs as well.

TAC Comments:

- The test pits and percolation tests must be used to design the infiltration areas properly. The ground is generally undulating with shallow rock, fill and rock outcrops and is generally unsuited for significant infiltration. For this reason, without benefit of an off-site location to deposit additional volume for stormwater, it is cause for concern what the outcome may be if the infiltration as planned is not as effective as modeled. We also do not believe that the adjacent land north of the parcel has been modeled properly. We feel that in significant storms, this area may fill entirely and cause additional runoff to adjacent lands. This needs to be properly modeled to displace this concern or show that runoff waters can be safely routed away from all the surrounding properties. Off-site water from the roadway must be accounted for in these calculations. To this end, it may be required that the developer install a culvert under Sagamore Avenue at this location.
- The sewer laterals must be 6" pvc SDR35 per City of Portsmouth std. regulations as soon as the lateral leaves the building.
- Please show required sewer lateral sleeve through the foundation wall in sewer lateral detail including the use of rubber boots on the exterior of the sleeve to prevent infiltration of ground water through the sleeve.
- Planting details are not consistent with City standards, all burlap and cages to be removed.
- Hydrant detail is incorrect,
    a. Kennedy Hydrant K81D, with 5 ¼" pumper connection
    b. Therefore no 'Storch' connection on the hydrant,
    c. hydrant and all water valves are to open right
    d. anchor tees hold the valve directly, there is no pipe in between
    e. hydrant piping is always 6"
    f. drainage pit is not necessary as hydrants don't self-drain anymore
    g. place a large stone or block under the hydrant for support
- Remove all notes and details regarding sewer force mains
- The existing pole being proposed for the power supply is in the direct path of the future sidewalk extension. This pole needs to be relocated to the satisfaction of public works before we can recommend it for the power supply. There are multiple other poles that also need to be relocated prior to sidewalk construction. Easements may be required for Eversource as poles remaining in the sidewalk will not be acceptable.
- Irrigation meters are not allowed to be in a pit. It must be above grade either in a dwelling unit or in an above ground meter and backflow enclosure
- The hydrant and hydrant lateral is shown directly next to the water main and under the electricity. This is poor practice and shall be avoided.
- All structures shown in the ROW will meet or exceed DOT standards.
- Both structures along the Sagamore curb line should be catch basins.
- The water main under Sagamore Ave is 12" Cast Iron
- The sidewalk to be constructed in Sagamore is to be no less than 5.5' not including the curb.
- Test pit the proposed sewer crossing in Sagamore Ave to confirm that there are proper clearances and that gravity flow is achievable. This must be completed prior to submitting for the sewer extension permit. If there is not sufficient clearance between the

main and the proposed sewer, SDR 21 pipe may be required between SMH's 2088 and SMH1

- Maintain 18" of clearance between water mains and sewer mains, insulate water as necessary
- Applicant needs to illuminate the driveway island for vehicles entering the site and use of the mail area.
- The City will require a 10'x10' drainage easement on the southeast corner for a future drainage structure
- Provide at least 18" of flat ground between the back of the City sidewalk and bioretention area #1
- There are foundation perimeter drains shown in the details. Where do they outfall and is this flow accounted for in the drainage study?
- Stop signs are generally 30" wide unless on a high speed roadway.
- Provide 1:12 tipped sections (not to exceed 8% grade) for all sidewalks. Sidewalks shall have no more than 2% cross slope. This includes driveway areas. The driveway of 1167 Sagamore exceeds this currently.
- Provide catch basin liners (NHDOT 604.0007) for the two basins in Sagamore Ave
- The mailbox for #1167 Sagamore as shown will not be accessible to the mail deliverer without driving on the sidewalk. As there seems to be sufficient ROW in this area, the driveway should be reconfigured to avoid two cuts, ensure the cross slopes are correct and address the concern with the mail truck.
- Provide information on snow storage.
- Catch basins in DOT bike lane need to be "bike friendly".
- Correct sewer manhole detail. Existing sewer man is PVC, not AC.
- Include plan view of sewer manhole detail and invert.
- Include valves on the water main at the 8" tee to allow for direction flushing, chlorination, filling, and maintenance. A 4" valve right after the reducer would be appropriate.
- DPW requests 2" flushing hydrant be installed to allow for directional flushing, chlorination, etc. on the 4" pipe after the reducer, after the 4" valve.
- Lay the water main with fire hydrant at the high spot to allow for air to be released during filling of the water main.
- Show area of former wetland fill on the plans
- Remove wetland fill or describe why not feasible
- Contact NHDOT and determine if there is a culvert under the road the wetland on the opposite side.
- Proposed Design and Layout: The proposed house design and layout proposes 2/3rds of the façade to be a two-car garage with parking for two additional cars in the front yard. This configuration is not only inconsistent with the surrounding neighborhood context but results in excessively small rear yards.
- Alternative Design - Multi-Family Structures: In order to be more consistent with the surrounding neighborhood character, increase the size of the rear yards and to reduce the impervious surface associated with the proposed development, the applicant should consider redesign of the ten (10) housing units into three multi-family structures. As shown in the following figures, this would allow for the garage to be located further back

from the front façade of the building and remove parking from the front yard setback area.

PUBLIC HEARING

Bill Bowen, President of the Sea Star Cove Condo Association, commented that they have hired John Chagnon to peer review the drainage. Mr. Chagnon designed the drainage for Sea Star Cove. They have provided a letter to the City, the applicants, and Altus Engineering. This property is 10-15 feet above Sea Star in elevation. A lot of it is ledge, so the ability for infiltration is low. This plan put together a network of ponds around the edge and there has been a lot of discussion about the accuracy of the engineered water drainage system. There is skepticism about whether or not it will work. Sea Star owns the property to the north as well. They have not had a discussion about this, and the design is putting more water on our property. A secondary concern is about the water in the southwest corner. There are 2 houses across from the development. It is unclear about whether or not the water collection system will push water down into the two houses across from the development. The original submission did not take into account the fact that water is already coming in from the southern abutter. They want to be confident that the two houses closest to the property are not receiving extra water. The northern wetlands are partly on Sea Star's property and theirs. There is a raised element north of that border. The water that goes in there will be trapped between Sea Star's property and the road. Further north there is a property at a lower elevation. Overflow out of the wetland area will flow to the abutters. Overflow effects multiple abutters. There has not been any discussion about any rights to use Sea Star's property for water. There were a couple soft conversations about buying that property. They have had discussion about the trees along the border. There has not been a conclusion on that. There has not been any discussion about the water.

Michael Simone co-owner of 1167 Sagamore Ave. commented that they have not been contacted by the developers other than being asked if they were interested in selling. The wetland area of Sea Star Condos is overflowing. That's without any blasting or building on this property. When the water overflows it goes into someone else's property. They need to shut it down and go back. Mr. Simone questioned where the accountability would be when it failed. They are not a direct abutter, but they are close. The applicants need to go back to the drawing board and talk to abutters.

Joe Gross president of Westwind Townhomes Association commented that they were located to the south of the proposed development. There is not a lot of room between them and this development. There are multiple engineering groups involved and a lot of problems with the drainage to the north. Mr. Gross questioned if they could guarantee there would not be an increase to the runoff the Westwind units or onto Sagamore Ave. That point of the road is extremely dark and has a curve. An overflow may create icy conditions. If Altus says there will not be an overflow, then it would eliminate their concerns. This project requires significant yearly maintenance to keep the system going. This is only going to be 10 units. Mr. Gross questioned if they would have the funds to maintain this. Mr. Gross questioned what the enforcement mechanism would be if they did not maintain it. Westwind townhomes is only 7 units, and they don't have any maintenance issues. These questions should be addressed before it is approved. The sidewalk should be done; it is a well-traveled stretch of Sagamore Ave. They would like to have a sidewalk there. Mr. Gross hoped that they could save as many mature trees as possible. There has been a lot of talk about working with the abutters, but they have only had one discussion. There should be a solid barrier of a fence or landscaping between this development and the Westwind.

John Chagnon from Ambit Engineering commented that he was retained by the Sea Star Condo Association to look at the plans and drainage. The entire drain system has been designed to outlet to a small wetland area next to Sea Star. The drainage system was designed as a series of retention areas to hold water back, but the volume of water leaving the property is increasing. They should look at peak flow and the amount of water. An easement for the outfall needs to be attained. The current design is predicated on infiltration. Test pits were done, but the results are not on the plan. The analysis is not revised. This will have the biggest impact on the Sea Star Condos, and they are concerned about the drainage.

Rocco Simone of 1167 Sagamore Ave. commented that they should reconfigure the whole layout to townhouses and move them to the southeast. Then water would not be a concern for the abutters. That wetland has filled up before and now there are 10 units proposed. The applicants should go with less and reconfigure the layout. It will look better and function better.

The Chair asked if anyone else was present from the public wishing to speak to, for, or against the application. Seeing no one else rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Mr. Garappey commented that they were happy to continue discussions with abutters. It is understood that the drainage was a big concern for all the neighbors. They do outreach as a practice for all of projects and will continue to meet with abutters until they get it right.

Mr. Desfosses moved to continue the application to the March 1, 2022, Technical Advisory Committee Meeting, seconded by Mr. Cracknell. The motion passed unanimously.

C. **REQUEST TO POSTPONE** The request of **Elizabeth B. Larsen Trust of 2012 (Owner),** for property located at **668 Middle Street** requesting Site Plan Review approval for the construction of two two-unit structures and improvement to the existing structures to create a total of eight units on three lots with associated utilities, connections and site improvements. Said property is shown on Assessor Map 147 Lot 18 and lies within the Historic and General Residence A (GRA) Districts. **REQUEST TO POSTPONE** (LU-21-23)

DISCUSSION AND DECISION OF THE BOARD

Mr. Stith noted that this would be postponed to the March 1, 2022, Technical Advisory Meeting.

D. The request of **Cate Street Development (Owner),** for property located at **428 US Route 1 Bypass** requesting amended Site Plan Review approval to provide 56 additional parking spaces, revised stormwater collection and treatment system, and the reconfiguration of an existing structure for a proposed commercial use. Said property is shown on Assessor Map172 Lot 1 and lies within the Gateway Corridor (G1) District. (LU-22-7**)**

SPEAKING TO THE APPLICATION

Rick Lundborn from Fuss and O'Neil and Attorney John Bosen spoke to the application. Mr. Lundborn commented that they have been to TAC a couple times. There was discussion about creating a better connection to the rest of the development. In addition to the drive off the Bypass, they have added a driveway up to the east. They also added a sidewalk connection and crosswalks to provide better pedestrian connectivity. The lot line revision is for the plan. One of the other discussion points was parking and whether or not it was allowed, or they needed a CUP. It does not require a CUP because it does not exceed required minimum parking plus 20%. That parking breakdown is shown in the plan by color. A lot of the easements were added as well. The comments will be addressed. At the prior TAC Meeting there was concern about the lower left area around the edge of the site. They have added a swale and put in a retention system. That will pick up a lot of the parking lot drainage. There will also have catch basins and jelly fish filters with a swale out to the southwest corner of the property. The other major comments from the prior meeting had to do with creating covered parking along the railroad right of way parking stalls. Mr. Bosen commented that they were early in the discussions with the owner, but they are agreeable to adding covered parking along that corridor. They will work hard to come up with a design and hope to have administrative approval on that. The roof of the covered spots will be designed with solar capability. Mr. Lundborn confirmed that all of the new TAC comments can be addressed.

Mr. Cracknell questioned if they used mulch or a walkway for the pedestrian circulation. Mr. Lundborn responded that they used mulch. They extended the sidewalks to the islands and put in the crosswalks to get people across. Mr. Cracknell commented that they could eliminate the last crosswalk because it doesn't go anywhere. The covered parking roof should be pitched toward the railroad. Mr. Bosen agreed. Mr. Cracknell commented that the wall may need a fence. Mr. Lundborn confirmed that it was proposed. Mr. Cracknell commented that he did not like the tandem parking spaces near the dog park because the park was already encroached enough.

Mr. Cracknell questioned if the retaining wall would have a rough finish. Mr. Lundborn confirmed it would.

TAC Comments:

- The 10' temporary easement should be in favor of the developer.

- It looks like the easement in favor of Millport does not actually touch the boundary where the water enters the property. Please revise. Also, on the planting plan the easement is still listed as to benefit the City of Portsmouth.
- Ensure that the two handicapped spots for Building D are the closest to the entrance and that there is an accessible route into the structure.
- The grease trap reserve area should be closer to the structure.
- Ensure the existing granite culvert is tied into the drainage swale with proper headwall.
- Show on plans location of retaining wall 4" underdrain shown on CD-552.
- Proposed Parking Layout: The proposed parking expansion and layout appears to significantly increase the required off-street parking required under the Zoning Ordinance. Moreover, it also conflicts with the assumptions of the previous projected parking demands of this development. Consisting of a wide variety of land uses and services, the West End is assumed to be a walkable neighborhood. Thus, the proposed parking expansion appears to conflict with the stated objectives of the community vision for this property. Additionally, the area proposed for expansion is currently considered open space (including a dog park) and also acts as an important vegetated buffer to the active railroad corridor.
- Alternative Parking Layout: If the evidence does not support the proposed parking expansion the open space areas should not be reduced or impacted. However, if the evidence does support the proposed parking expansion in order to complete the final phase of the overall redevelopment the applicant should consider the visual buffer and screening aspects of the existing wooded area along the railroad land (which is being proposed to be converted to surface parking). In order to mitigate the visual and environmental impacts on the project, the 76 spaces proposed for this area should be covered with an open shed-like structure and solar arrays should be considered for the roof given the likely solar gain at this location. The image below is an example of such a system. Additional consideration should be given to reduce encroachment on the dog park.

PUBLIC HEARING

The Chair asked if anyone else was present from the public wishing to speak to, for, or against the application. Seeing no one else rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Mr. Cracknell moved to recommend approval to the Planning Board, seconded by Mr. Desfosses. The motion passed unanimously.

E. The request of **Cate Street Development LLC (Owner),** and Boston and Maine Corp (Owner), for properties located at **428 US Route 1 Bypass, 406 US Route 1 Bypass**, and **55 Cate Street** requesting Preliminary and Final Subdivision approval (Lot Line Revision) to convey 31,187 square feet from Map 165 Lot 14 to Map 172 Lot 2, Map 172 Lot 1 and Map 165 Lot 2 which will result in a total of 52,820 square feet lot area for Map 172 Lot 2, 126,500 square feet lot area for Map 172 Lot 1, and 260,789 square feet lot area for Map 165 Lot 2. Said properties are shown on Assessor Map172 Lot 1, Map 172 Lot 2, Map 165 Lot 2, and Map 165 Lot 14 and lie within the Transportation Corridor (TC) and the Gateway Corridor (G1) District. (LU-22-7)

DISCUSSION AND DECISION OF THE BOARD

Mr. Cracknell moved to recommend approval to the Planning Board, seconded by Mr. Desfosses. The motion passed unanimously.

III. NEW BUSINESS

There was no new business.

IV. ADJOURNMENT

Mr. Desfosses moved to adjourn the meeting at 3:20 p.m., seconded by Mr. Howe. The motion passed unanimously.

Respectfully submitted,

Becky Frey
Secretary for the Technical Advisory Committee

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

February 15, 2022

Portsmouth Technical Advisory Committee
Attn: Peter Stith, Chair
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Response Letter – Altus Engineering & TAC Comments
1169 and 1171 Sagamore Ave, Portsmouth, NH
Tax Map 224, Lots 14 & 15
JBE Project No. 21047

Dear Mr. Stith,

We are in receipt of comments from Eric Weinrieb, P.E., Altus Engineering dated January 12, 2022, and from the Portsmouth Technical Advisory Committee, dated January 31, 2022. Review comments are listed below with our responses in bold. The majority of the items in the 1/12/22 Altus letter were addressed ahead of the January 20, 2022 TAC refiling deadline, and materials were resubmitted at that time. However, additional test pits needed to be performed in order to address a handful of these issues. We have performed the necessary field work and revised the plans and drainage analysis accordingly, and hereby provide responses to the remainder of Altus' comments as well as a complete response to the TAC Comments.

GRADING AND DRAINAGE PLAN:

8. *Item #8 New Comments*

vii. *A stone infiltration bed is proposed between Buildings 3 and 4. The Designer needs to provide test pits demonstrating that subsurface conditions support the proposed design. There is a ledge outcrop adjacent to the bed.*
RESPONSE: Additional test pits were performed on 1/25/22. Subsurface conditions were found to support the proposed design, and ledge will be removed to depths as specified on the detail for each stormwater feature.

viii. *A stone infiltration bed is proposed behind Buildings 1 and 2 which is adjacent to the wetland. The bottom of the practice is below the grade of the wetland. The Designer needs to provide test pits determining that subsurface conditions support the proposed design.*
RESPONSE: Additional test pits were performed on 1/25/22. Subsurface conditions were found to support the proposed design.

ix. *At grade stone infiltration beds are proposed under the decks for Buildings 1 through 4. The Designer needs to provide test pits demonstrating that subsurface conditions support the proposed design. There is a ledge outcrop at Building 3 where this practice is proposed.*
RESPONSE: Additional test pits were performed on 1/25/22. The design was modified to account for the newly found subsurface conditions, and ledge will be removed to depths as specified on the detail for each stormwater feature.

EXISTING AND PROPOSED WATERSHED PLANS:

21. *New Comment- Issue partially addressed. The runoff from the southerly property has been added to the model. The flow from the north needs to be added to the model.*
RESPONSE: The small (240 S.F.) area of offsite flow from the northerly property has been added to the drainage model.

22. *New Comment- Issue not addressed. The wetland needs to be modelled as generating runoff.*
RESPONSE: The wetland and the remainder of the associated watershed area based off lidar topo have been added to the drainage model.

23. *Item #23, New Comments*
    i. *The Designer should confirm the subcatchment boundary near the ledge outcrop in the southwest corner of the site. Based on the proposed spot grades, the boundary may require adjustment.*
    RESPONSE: The grading around this subcatchment boundary was changed, and the subcatchment boundary should now be correct.

    ii. *Two pond 13's are depicted on the plans. The Designer needs to correct the plan.*
    RESPONSE: This has been corrected.

    iii. *The Designer needs to confirm the maximum storage elevation in the concrete galleys. By plan, System A has a maximum storage elevation of 36.9. The peak elevation noted in the 50-year storm is elevation 37.23.*
    RESPONSE: This has been corrected so the peak elevation during the 50-Year storm is within the limits of the concrete chambers.

DRAINAGE ANALYSIS:

24. *New Comment- Issue partially addressed. Although the computations support a reduction in the volume of discharge to analysis point 1, the Designer has not provided information to support the infiltration rates in each practice.*
RESPONSE: The infiltration rate is based on "Ksat Values for New Hampshire Soils" sponsored by the Society of Soil Scientists of Northern New England SSSNNE Special Publication No. 5. This document provides tables showing the range of saturated hydraulic conductivities for each soil type. Per the Env-Wq 1500 Rules, we have used half of the lowest value of the rate table for each soil type, therefore, this is a highly conservative approach and an accepted method by NHDES. Altus Engineering confirmed via a phone conversation on January 18, 2022 that they agree with this approach provided that ledge does not interfere with the infiltration.

32. *New Comment. Although additional subsurface information has been provided, the submission needs to include subsurface information for each infiltration practice.*
RESPONSE: Additional test pits have been performed and new test pit logs are provided with this resubmission. Due to the test pit results, we needed to change the bottom elevations of some of the stone infiltration areas. Specifically, the stone underneath the decks for Units 1-4 was made a half foot deeper and the subsurface infiltration bed between Units 3 & 4 was made shallower due to the newly found depths to ledge and SHWT. The subsurface stone infiltration bed behind Units 1 & 2 was kept unchanged from the previous submission. Additionally, we now need to line and underdrain Bioretention #1 rather than allowing it to infiltrate. Because we are now proposing to line and underdrain Bioretention #1, higher flows and volumes of runoff occurred, so we compensated for this by adding two more concrete "Galley" chambers to the system in the northwest corner of the site that is designed for infiltration and modify the outlet conditions of both Galley systems. The remainder of the drainage design was able to remain the same.

34. *Item #34, New Comments*
    i. *The limits of subcatchment 1 and the time of concentration should be confirmed by the Designer.*
    RESPONSE: The limits of Subcatchment #1 and time of concentration have been verified and updated to include the offsite contributing watershed toward the isolated wetland.

TECHNICAL ADVISORY COMMITTEE COMMENTS:

1. *The test pits and percolation tests must be used to design the infiltration areas properly. The ground is generally undulating with shallow rock, fill and rock outcrops and is generally unsuited for significant infiltration. For this reason, without benefit of an off-site location to deposit additional volume for stormwater, it is cause for concern what the outcome may be if the infiltration as planned is not as effective as modeled. We also do not believe that the adjacent land north of the parcel has been modeled properly. We feel that in significant storms, this area may fill entirely and cause additional runoff to adjacent lands. This needs to be properly modeled to displace this concern or show that runoff waters can be safely routed away from all the surrounding properties. Off-site water from the roadway must be accounted for in these calculations. To this end, it may be required that the developer install a culvert under Sagamore Avenue at this location.*
RESPONSE: Additional test pits were performed on January 25, 2022 as suggested by Altus Engineering and witnessed by the City. The infiltration rate is based on "Ksat Values for New Hampshire Soils" sponsored by the Society of Soil Scientists of Northern New England SSSNNE Special Publication No. 5. This document provides tables showing the range of saturated hydraulic conductivities for each soil type. Per the Env-Wq 1500 Rules, we have used half of the lowest value of the rate table for each soil type, therefore, this is a highly conservative approach and an accepted method by NHDES. Altus Engineering confirmed that they agree with this approach via phone call on January 18, 2022 provided that ledge does not interfere with the infiltration. With the stormwater management system implemented as designed, the peak rate of runoff toward the isolated wetland will be reduced in all

analyzed storms and the peak volume of runoff will either stay the same or increase by a very small amount such that this project meets and exceeds NHDES Channel Protection requirements with regards to volume of runoff. NHDES standards state that the volume of runoff may not be increased by more than 0.1 acre-feet during the 2-Year storm, while this project currently proposes an increase of 0.11 acre-feet in the volume of runoff during the 50-Year storm (and far less than that during smaller storms). Additionally, NHDES Groundwater Recharge requirements are met. The entire watershed draining toward the isolated wetland was modelled in both the pre- and post-construction drainage analyses. This development will not result in a deleterious increase in flooding from the isolated wetland beyond what is already the case, whereas the wetland is not known to flood or come close to filling up in the existing condition.

2. *The sewer laterals must be 6" pvc SDR35 per City of Portsmouth std. regulations as soon as the lateral leaves the building.*
   RESPONSE: The "House Sewer Service" detail on Sheet D3 has been revised to show 6" SDR-35 piping.

3. *Please show required sewer lateral sleeve through the foundation wall in sewer lateral detail including the use of rubber boots on the exterior of the sleeve to prevent infiltration of ground water through the sleeve.*
   RESPONSE: The "House Sewer Service" detail on Sheet D3 has been revised to include a sewer lateral sleeve with rubber boots on the exterior of the sleeve.

4. *Planting details are not consistent with City standards, all burlap and cages to be removed.*
   RESPONSE: The planting details on Sheet D4 have been revised to show all burlap and cages to be removed.

5. *Hydrant detail is incorrect,*
   a. *Kennedy Hydrant K81D, with 5 ¼" pumper connection*
   RESPONSE: The hydrant and pumper connection specifications have been revised on the "Hydrant Installation" detail on Sheet D3. We have modified it to match the standard specification for this hydrant including all associated backfill layers.

   b. *Therefore no 'Storch' connection on the hydrant*
   RESPONSE: The note calling for a 'Storch' *(Storz)* connection has been removed from the "Hydrant Installation" detail on Sheet D3.

   c. *hydrant and all water valves are to open right*
   RESPONSE: See new Note #5 on the hydrant installation detail.

   d. *anchor tees hold the valve directly, there is no pipe in between*
   RESPONSE: The hydrant installation detail has been revised to have no pipe in between the anchor tee and valve (and Note #6 has been added to the detail).

   e. *hydrant piping is always 6"*
   RESPONSE: Hydrant piping has been changed to 6" on the plan, profile, and detail.

f. drainage pit is not necessary as hydrants don't self-drain anymore
RESPONSE: The drainage pit has been removed from the hydrant detail.

g. place a large stone or block under the hydrant for support
RESPONSE: A large flat stone has been added underneath the hydrant on the hydrant installation detail.

6. *Remove all notes and details regarding sewer force mains*
RESPONSE: All notes and details regarding sewer force mains have been removed.

7. *The existing pole being proposed for the power supply is in the direct path of the future sidewalk extension. This pole needs to be relocated to the satisfaction of public works before we can recommend it for the power supply. There are multiple other poles that also need to be relocated prior to sidewalk construction. Easements may be required for Eversource as poles remaining in the sidewalk will not be acceptable.*
RESPONSE: The utility pole that is being proposed for power supply as well as the three utility poles in the location of the proposed sidewalk are now proposed to be relocated.

8. *Irrigation meters are not allowed to be in a pit. It must be above grade either in a dwelling unit or in an above ground meter and backflow enclosure*
RESPONSE: The proposed irrigation meter has been moved to Unit 9 and the note has been revised to call for a backflow enclosure.

9. *The hydrant and hydrant lateral is shown directly next to the water main and under the electricity. This is poor practice and shall be avoided.*
RESPONSE: The proposed electric has been rerouted to go around the hydrant.

10. *All structures shown in the ROW will meet or exceed DOT standards.*
RESPONSE: A label to this effect has been added to Sheet C4.

11. *Both structures along the Sagamore curb line should be catch basins.*
RESPONSE: The two structures are now both proposed to be catch basins. At the request of Altus Engineering from a previous comment letter, these catch basins shall be "offline" to improve pre-treatment capacity, so they are both piped into a drain manhole to be installed in the proposed sidewalk rather than being piped catch basin to catch basin.

12. *The water main under Sagamore Ave is 12" Cast Iron*
RESPONSE: This information has been added to Sheets C1 and C5.

13. *The sidewalk to be constructed in Sagamore is to be no less than 5.5' not including the curb.*
RESPONSE: The proposed sidewalk is now designed to be 5.5' not including the curb.

14. *Test pit the proposed sewer crossing in Sagamore Ave to confirm that there are proper clearances and that gravity flow is achievable. This must be completed prior to submitting for the sewer extension permit. If there is not sufficient clearance between the main and the proposed sewer, SDR 21 pipe may be required between SMH's 2088 and SMH1*
    RESPONSE: New Note #39 on Sheet C5 that the contractor shall perform a test pit at the proposed crossing and that if the existing water and proposed sewer are in conflict, the contractor is to replace the corresponding section of the water main after notifying Jones and Beach Engineers, Inc., & Portsmouth DPW, and shall install insulation if 18" vertical separation cannot be achieved.

15. *Maintain 18" of clearance between water mains and sewer mains, insulate water as necessary*
    RESPONSE: To the extent practicable, this will be implemented. However, due to the existing invert out from the sewer manhole that we are proposing to tie into, the depth of the sewer main is limited. Where water mains and services must have at least 5' of cover, there are some crossings at which 18" of vertical separation between sewer and water cannot be achieved, even with the sewer main at its lowest allowable slope of 0.004 ft/ft. It is typical and accepted by NHDES for 2" R-10 foam board insultation to be installed between a sewer and water line where 18" vertical separation cannot be achieved and this is what we are proposing; see Note #28 on Sheet C5 and see water/sewer crossings on Sheet P1.

16. *Applicant needs to illuminate the driveway island for vehicles entering the site and use of the mail area.*
    RESPONSE: A proposed light pole has been added. See revised lighting design on Sheet L2.

17. *The City will require a 10'x10' drainage easement on the southeast corner for a future drainage structure*
    RESPONSE: A proposed drainage easement has been added to Sheet C2.

18. *Provide at least 18" of flat ground between the back of the City sidewalk and bioretention area #1*
    RESPONSE: A label has been added to Sheet C3 to specify this, and this is also reflected in the grading. Additionally, a detail illustrating this has been added to Sheet D6.

19. *There are foundation perimeter drains shown in the details. Where do they outfall and is this flow accounted for in the drainage study?*
    RESPONSE: All buildings have perimeter drains and this is a builder preference on location. They are not normally shown on housing development plans as they may move or basements may turn into crawl spaces or slabs.

20. *Stop signs are generally 30" wide unless on a high speed roadway.*
    RESPONSE: The Stop Sign detail on Sheet D1 has been modified accordingly.

21. *Provide 1:12 tipped sections (not to exceed 8% grade) for all sidewalks. Sidewalks shall have no more than 2% cross slope. This includes driveway areas. The driveway of 1167 Sagamore exceeds this currently.*
    RESPONSE: Tip downs are shown on the plans and details to be 1:12. The cross slope of the sidewalk is to be 1% away from the road, including at the location of the existing driveway at 1167 Sagamore, as reflected in the grading of the sidewalk as shown in plan view as well as corresponding details. We are not proposing any modifications to the existing driveway without the landowner's permission except what is necessary in the right of way in order to install the proposed sidewalk.

22. *Provide catch basin liners (NHDOT 604.0007) for the two basins in Sagamore Ave*
    RESPONSE: Catch basin liners have been specified for the basins in Sagamore Ave. See label on Sheet C3 as well as Note #10 on the Catch Basin detail on Sheet D2.

23. *The mailbox for #1167 Sagamore as shown will not be accessible to the mail deliverer without driving on the sidewalk. As there seems to be sufficient ROW in this area, the driveway should be reconfigured to avoid two cuts, ensure the cross slopes are correct and address the concern with the mail truck.*
    RESPONSE: The proposed mailbox location has been adjusted so that it is accessible by the mail truck, mimicking the situation that exists at 1155 Sagamore. We are not proposing any modifications to the existing driveway without the landowner's permission except what is necessary in the right of way in order to install the proposed sidewalk.

24. *Provide information on snow storage.*
    RESPONSE: Snow storage is shown on Sheet C2.

25. *Catch basins in DOT bike lane need to be "bike friendly".*
    RESPONSE: NHDOT's standard specification, attached, allows for four types of catch basin grates, Type A, B, D, and E. Types A & E are not recommended for bicycle traffic. Type C should only be used in areas inaccessible to vehicle traffic. Therefore, Type B is the optimal specification to use. Neenah Model R-3570 as specified on the Catch Basin detail meets this specification and is bicycle-safe.

26. *Correct sewer manhole detail. Existing sewer main is PVC, not AC.*
    RESPONSE: The label specifying the material of the existing sewer main has been removed from the detail as the proposed sewer manholes will not be tying directly into the existing main.

27. *Include plan view of sewer manhole detail and invert.*
    RESPONSE: Plan views have been added to the Sewer Manhole detail on Sheet D3.

28. *Include valves on the water main at the 8" tee to allow for direction flushing, chlorination, filling, and maintenance. A 4" valve right after the reducer would be appropriate.*
    RESPONSE: 4" valves have been added after each reducer.

29. *DPW requests 2" flushing hydrant be installed to allow for directional flushing, chlorination, etc. on the 4" pipe after the reducer, after the 4" valve.*
    RESPONSE: A 2" flushing hydrant has been added following one of the 4" valves.

30. *Lay the water main with fire hydrant at the high spot to allow for air to be released during filling of the water main.*
RESPONSE: The proposed hydrant has been moved to the high point of the site. Also see Note #38 on Sheet C5.

31. *Show area of former wetland fill on the plans*
RESPONSE: The area of former fill has been added to the plans. It is not "wetland fill", strictly, but rather loamy material and other debris unsuitable for building foundations that should be removed.

32. *Remove wetland fill or describe why not feasible*
RESPONSE: See removal instructions in leadered callout on Sheet DM-1.

33. *Contact NHDOT and determine if there is a culvert under the road the wetland on the opposite side.*
RESPONSE: We have contacted NHDOT, Portsmouth DPW, and the property owner, and looked for a culvert ourselves. No evidence of a culvert was found.

34. Proposed Design and Layout: *The proposed house design and layout proposes 2/3rds of the façade to be a two-car garage with parking for two additional cars in the front yard. This configuration is not only inconsistent with the surrounding neighborhood context but results in excessively small rear yards.*
RESPONSE: Consideration of several different design layouts were considered for this site. Considerable time and effort has been spent working with planning staff, attending a planning board preliminary consultation and meeting with neighbors to provide the zoning compliant plan proposal. The proposed design is actually more consistent and harmonious with the abutting properties to the north and to the west than the suggested town-house design and is compatible with the abutting property to the south. Adequate outdoor private space is provided with the proposed layout, along with separation of units.

35. Alternative Design - Multi-Family Structures: *In order to be more consistent with the surrounding neighborhood character, increase the size of the rear yards and to reduce the impervious surface associated with the proposed development, the applicant should consider redesign of the ten (10) housing units into three multi-family structures. As shown in the following figures, this would allow for the garage to be located further back from the front façade of the building and remove parking from the front yard setback area.*
RESPONSE: Consideration of several different design layouts were considered for this site. Considerable time and effort has been spent working with planning staff, attending a planning board preliminary consultation and meeting with neighbors to provide the zoning compliant plan proposal. The proposed design is actually more consistent and harmonious with the abutting properties to the north and to the west than the suggested town-house design and is compatible with the abutting property to the south. Adequate outdoor private space is provided with the proposed layout, along with separation of units.

Included with this response letter are the following:

1. One (1) Full Size Revised Plan Set.
2. One (1) Half Size Revised Plan Set.
3. One (1) Revised Drainage Analysis
4. One (1) New Test Pit Log.
5. One (1) NHDOT Catch Basin Grate Specification Sheet.

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

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph A. Coronati
Vice President

cc: Michael Garrepy (via email)
Mick Khavari (via email)
Tim Phoenix, Hoefle, Phoenix, Gormley & Roberts (via email)
Eric Weinrieb, P.E., Altus Engineering (via email and hand delivered)

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Owner/Applicant: __The Sagamore Group, LLC________________ Date Submitted: __08/23/2021__________

Phone Number: _603-944-7530__________________________ E-mail: __mgarrepy@gmail.com____________________

Site Address: _1169 & 1171 Sagamore Ave____ Map: _224_ Lot: _14 & 15__

Zoning District: _Mixed Residential / Office_________________________________ Lot area: _79,292________ sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Fully executed and signed Application form. **(2.5.2.3)**		N/A
☒	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF). **(2.5.2.8)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	PENDING	
☒	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	ENCLOSED	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	C1 & C2	N/A
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	APPLICATION	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	C1 & C2	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	COVER SHEET	N/A
☒	List of reference plans. **(2.5.3.1G)**	C1 & C2	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	COVER SHEET	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	C1	N/A
☒	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	ALL SHEETS	N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	C1	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	COVER SHEET	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	ALL SHEETS	N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**	C1	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	C2 NOTE #19	N/A
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	C2 NOTES # 20 & #21	N/A
☒	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	L1 NOTES # 18-20	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
	1. Existing Conditions: (2.5.4.3A)	C1	
☒	a. Surveyed plan of site showing existing natural and built features;	C1	
☒	b. Zoning boundaries;	C1	
☒	c. Dimensional Regulations;	C1	
☒	d. Wetland delineation, wetland function and value assessment;	C1	
☒	e. SFHA, 100-year flood elevation line and BFE data.	C1 NOTE #4	
	2. Buildings and Structures: (2.5.4.3B)		
☒	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;	ARCHITECTURAL PLANS	
☒	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;	ARCHITECTURAL PLANS	
☒	c. Total Floor Area;	ARCHITECTURAL PLANS	
☒	d. Number of Usable Floors;	ARCHITECTURAL PLANS	
☒	e. Gross floor area by floor and use.	ARCHITECTURAL PLANS	
	3. Access and Circulation: (2.5.4.3C)		
☒	a. Location/width of access ways within site;	C2	
☒	b. Location of curbing, right of ways, edge of pavement and sidewalks;	C2	
☒	c. Location, type, size and design of traffic signing (pavement markings);	C2	
☒	d. Names/layout of existing abutting streets;	C1 & C2	
☒	e. Driveway curb cuts for abutting prop. and public roads;	C2	
☐	f. If subdivision; Names of all roads, right of way lines and easements noted;	N/A	
☒	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	T1-T2	
	4. Parking and Loading: (2.5.4.3D)		
☒	a. Location of off street parking/loading areas, landscaped areas/buffers;	C2 & L1	
☒	b. Parking Calculations (# required and the # provided).	C2	
	5. Water Infrastructure: (2.5.4.3E)		
☒	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	C5	
☐	b. Location of wells and monitoring wells (include protective radii).		
	6. Sewer Infrastructure: (2.5.4.3F)		
☒	a. Size, type and location of sanitary sewage facilities & Engineering data.	C5 & P1	
	7. Utilities: (2.5.4.3G)		
☒	a. The size, type and location of all above & below ground utilities;	C5	
☒	b. Size type and location of generator pads, transformers and other fixtures.	C5	

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**8. Solid Waste Facilities: (2.5.4.3H)**		
☒	a. The size, type and location of solid waste facilities.	N/A	
	9. Storm water Management: (2.5.4.3I)		
☒	a. The location, elevation and layout of all storm-water drainage.	C3	
	10. Outdoor Lighting: (2.5.4.3J)		
☒	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	L2	
☒	11. Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	L2	
	12. Landscaping: (2.5.4.3K)		
☒	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	DM-1, C2 & L1	
☒	**b.** Location of any irrigation system and water source.	TBD	
	13. Contours and Elevation: (2.5.4.3L)		
☒	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C1 & C3	
	14. Open Space: (2.5.4.3M)		
☒	a. Type, extent and location of all existing/proposed open space.	C2	
☐	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	N/A	
☒	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	C2	
☐	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	N/A	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	ENCLOSED	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	C3	
☒	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	NOT IN EITHER	
☒	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	C2	
☒	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**	C2	
☒	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**	ENCLOSED	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**		
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**	ENCLOSED	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	PENDING	
☒	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	LISTED ON SHEET C2 NOTE #5, PERMITS PENDING	

Applicant's Signature: ____________ **Date:** 8/22/21

Letter of Authorization

We, John & Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owners of property located in Portsmouth, NH, known as Tax Map 224, Lot 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1169 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

John J Hebert
dotloop verified
05/04/21 2:47 PM EDT
5E1O-MUAR-1SWP-P2NG

Witness	John Hebert	Date

Colleen Hebert
dotloop verified
05/04/21 2:49 PM EDT
QIBG-ZMLM-FUFK-BAEX

Witness	Colleen Hebert	Date

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project – 1169 &1171 Sagamore Ave., Portsmouth, NH – TM 224, Lots 14 & 15.
Client - Jones & Beach Engineers, Inc.
GES Project No. 2021039
MM/DD/YY Staff 1-25-2022 JPG

Test Pit No. X1
ESHWT: n/a
Termination @ 20"
Refusal: 20"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–12"	10YR 3/2	FSL	GR	FR	NONE , Ap
12–20"	10YR 4/4	FSL	GR	FR	NONE, Bw
20"	Bedrock				

Test Pit No. X2
ESHWT: n/a
Termination @ 36"
Refusal: 36"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–6"	10YR 3/2	FSL	GR	FR	NONE , Ap
6–36"	10YR 4/6	FSL	GR	FR	NONE, Bw
36"	Bedrock				

Test Pit No. X3
ESHWT: n/a
Termination @ 57"
Refusal: 57"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–12"	10YR 3/2	FSL	GR	FR	NONE , Ap
12–57"	10YR 4/6	FSL	GR	FR	NONE, Bw
57"	Bedrock				

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www.gesinc.biz

Test Pit No. X4
ESHWT: n/a
Termination @ 75"
Refusal: n/a
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–70"	10YR 3/3	FSL	OM	FR	NONE , Fill
70-75"	10YR 4/6	FSL	GR	FR	NONE, Bw

Test Pit No. X5
ESHWT: 51"
Termination @ 66"
Refusal: 66"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–6"	10YR 3/3	LS	GR	FR	NONE , Fill
6–39"	10YR 5/6	LS	OM	FR	NONE, Fill
39–51"	10YR3/2	FSL	GR	FR	Buried Ap
51-66"	7.5YR4/6	FSL	GR	FR	5%, Bw
66"	Bedrock				

Test Pit No. X6
ESHWT: 51"
Termination @ 65"
Refusal: 65"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–5"	10YR 3/3	LS	GR	FR	NONE , Fill
5–51"	10YR 4/6	LS	OM	FR	NONE, Fill
51–65"	10YR3/2	FSL	GR	FR	5%, Buried Ap
65"	Bedrock				

Test Pit No. X7
ESHWT: 49"
Termination @ 65"
Refusal: 65"
Obs. Water: None

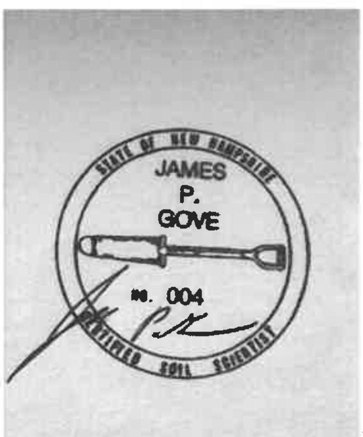
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–10"	10YR 3/2	LS	GR	FR	NONE , Fill
10–49"	10YR 4/4	LS	OM	FR	NONE, Fill
49–65"	10YR3/2	FSL	GR	FR	5%, Buried Ap
65"	Bedrock				

Test Pit No. X8
ESHWT: n/a
Termination @ 58"
Refusal: 58"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 3/3	LS	GR	FR	NONE , Fill
25–37"	10YR 3/2	FSL	GR	FR	NONE, Buried Ap
37–58"	10YR4/6	FSL	GR	FR	NONE, Bw
58"	Bedrock				

Test Pit No. X9
ESHWT: n/a
Termination @ 20"
Refusal: 20"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–16"	10YR 3/2	FSL	GR	FR	NONE , Ap
16–20"	10YR 4/6	FSL	GR	FR	NONE, Bw
20"	Bedrock				



1-26-2022

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project1169 Sagamore Avenue, Portsmouth
Client Garrepy Planning Consultants, LLC
GES Project No. 2021039
MM/DD/YY Staff 11-10-2021 JP Gove

Test Pit No. B1
ESHWT: 54
Termination @ 84
Refusal: 84
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–29"	10YR 4/4	GRS	OM	FR	NONE , Fill
29–33"	10YR 3/2	FSL	GR	FR	NONE, buried A
33–54"	10YR 5/6	FSL	GR	FR	NONE, buried B
54–84"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B2
ESHWT: 50
Termination @ 65
Refusal: 65
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–31"	10YR 4/4	GRS	OM	FR	NONE , Fill
31–35"	10YR 3/2	FSL	GR	FR	NONE, buried A
35–50"	10YR 5/6	FSL	GR	FR	NONE, buried B
50–65"	2.5Y 4/3	FSL	OM	FR	30%, C

Test Pit No. B3
ESHWT: 33
Termination @ 47
Refusal: 47
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–33"	10YR 4/4	GRS	OM	FR	NONE , Fill
33–47"	10YR 4/3	FSL	OM	FR	20%, buried A/B

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Test Pit No. B4
ESHWT: 42
Termination @ 60
Refusal: 60
Obs. Water: 50

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–21"	10YR 4/4	GRS	OM	FR	NONE , Fill
21–29"	10YR 3/2	FSL	GR	FR	NONE, buried A
29–42"	10YR 5/6	FSL	GR	FR	NONE, buried B
42–60"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B5
ESHWT: 47
Termination @ 62
Refusal: 62
Obs. Water: 60

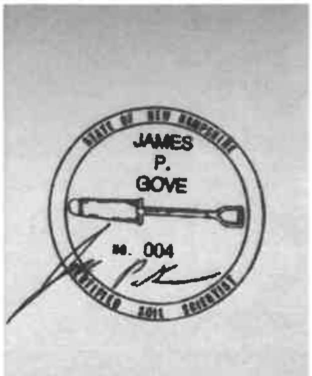
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 4/4	GRS	OM	FR	NONE , Fill
25–36"	10YR 3/2	FSL	GR	FR	NONE, buried A
36–47"	10YR 4/6	FSL	GR	FR	NONE, buried B
47–62"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B6
ESHWT: none
Termination @ 38
Refusal: 38
Obs. Water: none

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–20"	10YR 4/4	FSL	OM	FR	NONE , A/Fill
20–38"	10YR 5/6	FSL	GR	FR	NONE, B

Test Pit No. B7
ESHWT: none
Termination @ 49
Refusal: 49
Obs. Water: none

Depth	Color	Texture	Structure	Consistence
0–36"	10YR 3/3 - Fill	FSL	OM	FR
20–38"	10YR 5/6 – buried B	FSL	GR	FR


STATE OF NEW HAMPSHIRE
JAMES
P.
GOVE
NO. 004
CERTIFIED SOIL SCIENTIST

11-11-2021

Gove Environmental Services, Inc.

TEST PIT DATA

Project	1169 &1171 Sagamore Avenue, Portsmouth, NH
Client	Garrepy Planning Consultants, LLC
GES Project No.	2021039
MM/DD/YY Staff	03-23-2021 JP Gove, CSS # 004

STATE OF NEW HAMPSHIRE JAMES P. GOVE 004 CERTIFIED SOIL SCIENTIST 3/23/21

Test Pit No.	1	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	60"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Fill – 0-12"	10YR3/2	SL	Gr	Fr	None
Fill – 12-35"	10YR3/3	SL	Gr	Fr	None
Apb – 35-45"	10YR3/2	SL	Gr	Fr	None
Bwb – 45-60"	10YR4/3	SL	Om	Fr	None
Bedrock – 60"					

Test Pit No.	2	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	55"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/2	SL	Gr	Fr	None
Bw – 10-55"	7.5YR3/4	SL	Gr	Fr	None
Rippable Bedrock – 55"					

Test Pit No.	3	Lot No.:	
ESHWT:	31"	WSPCD Group:	
Termination @	51"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-11"	10YR3/3	SL	Gr	Fr	None
Bw – 11-31"	10YR4/4	GRLS	Gr	Fr	None
Bw2 – 31-51"	7.5YR5/4	CBSL	Om	Fr	Yes
Rippable Bedrock – 51"					

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Test Pit No.	**4**	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	33"	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
Ap - 0-11"	10YR3/2	SL	Gr	Fr	None
Bw – 11-33"	10YR4/4	CBSL	Gr	Fr	None
Bedrock – 33"					

Test Pit No.	**5**	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	22"	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/3	SL	Gr	Fr	None
Bw – 10-22"	10YR4/4	CBSL	Gr	Fr	None
Bedrock – 22"					

Test Pit No.	**6**	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	2"	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
A – 0-2"	10YR3/2	CBSL	Gr	Fr	None
Bedrock 2"					

Test Pit No.	**7**	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	21"	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
A – 0-21"	10YR3/3	CBSL	Gr	Fr	None
Bedrock – 21"					

Test Pit No.	**8**	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	31"	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/2	SL	Gr	Fr	None
Bw – 10-31"	10YR4/6	CBSL	Gr	Fr	None
Bedrock – 31"					

Legend:
GRLS = gravelly loamy sand
CBSL = cobbly sandy loam
SL= sandy loam
Gr = granular
Fr = friable
Om = massive
Ap = top soil
Bw = subsoil
Apb = buried topsoil
Bwb = buried subsoil

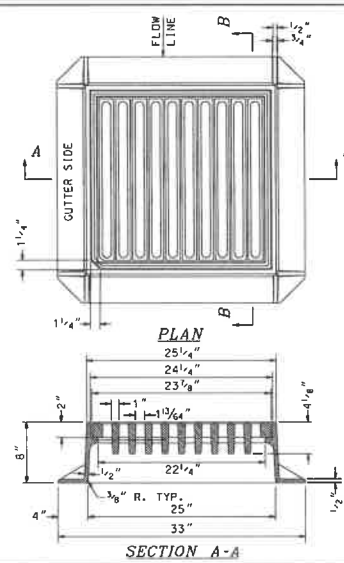
REVISION DATE
07-13-2001
06-16-2010
08-14-2015

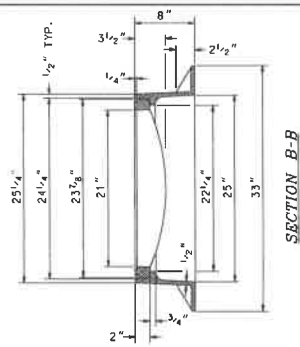
*.DGN FILE NAME: DR-1

STANDARD PLANS

New Hampshire DOT Department of Transportation

TYPE "A" GRATE & FRAME



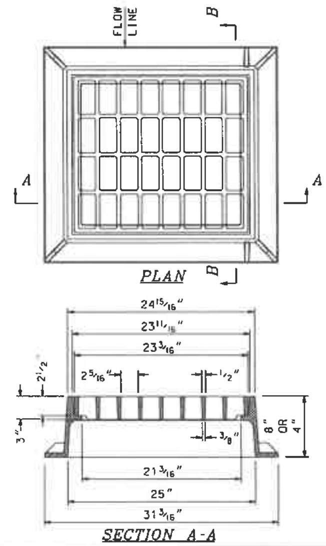


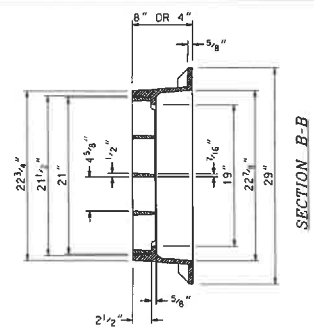
GENERAL NOTES

1. ALL DIMENSIONS ARE NOMINAL.
2. FREE OPEN AREA = 1.73 S.F.
3. NOT TO BE USED WHEN BICYCLE TRAFFIC IS ANTICIPATED.
4. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.

NHDOT STANDARD PLANS — TYPE "A" GRATE & FRAME — REV. DATE 06-16-2010 — PLATE 1 — STANDARD DR-1

TYPE "B" GRATE & FRAME



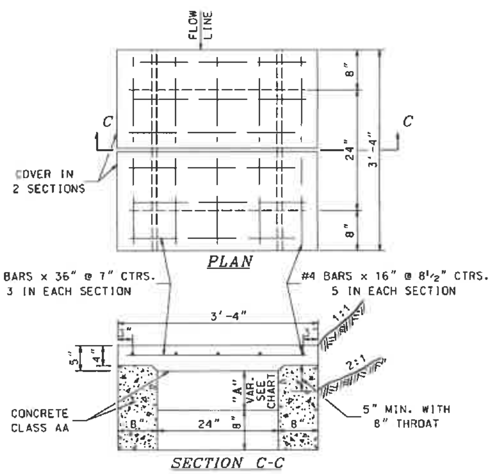


GENERAL NOTES

1. ALL DIMENSIONS ARE NOMINAL.
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. FRAME AVAILABLE IN 4" OR 8" HEIGHTS.
4. FREE OPEN AREA = 2.55 S.F.
5. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.

NHDOT STANDARD PLANS — TYPE "B" GRATE & FRAME — REV. DATE 06-16-2010, 08-14-2015 — PLATE 2 — STANDARD DR-1

TYPE "C" GRATE & FRAME



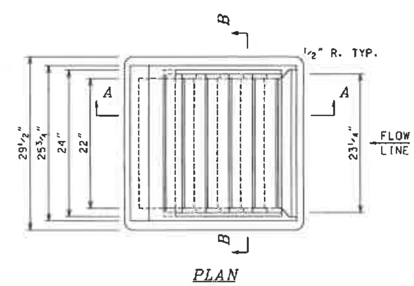
TO BE USED IN BERM DITCHES AND AT LOCATIONS INACCESSIBLE TO VEHICULAR TRAFFIC

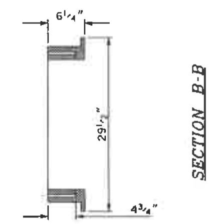
PIPE DIAMETER INCHES	THROAT DEPTH "A" INCHES	
	ONE THROAT	TWO THROAT
12"	8"	8"
15"	8"	8"
18"	16"	8"
24"	18"	16"

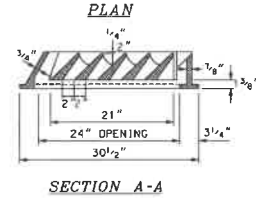
IN A SERIES OF CONNECTING C.B.'S OR D.I.'S, THE OUTLET PIPES MAY INCREASE IN DIAMETER, BUT THE SURFACE THROAT OPENINGS ARE NOT AFFECTED.

NHDOT STANDARD PLANS — TYPE "C" GRATE & FRAME — REV. DATE 06-16-2010 — PLATE 3 — STANDARD DR-1

TYPE "E" GRATE







GENERAL NOTES

1. ALL DIMENSIONS ARE NOMINAL.
2. NOT TO BE USED WHEN BICYCLE TRAFFIC IS ANTICIPATED.
3. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.
4. FREE OPEN AREA = 1.80 S.F.

NHDOT STANDARD PLANS — TYPE "E" GRATE — REV. DATE 06-16-2010 — PLATE 4 — STANDARD DR-1

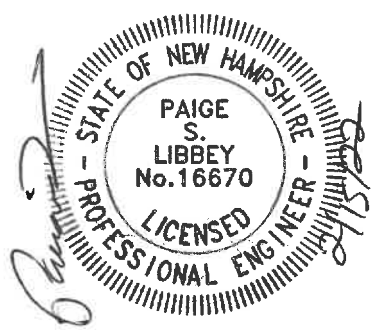
DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

Sagamore Avenue Condominiums
1169 & 1171 Sagamore Ave.
Portsmouth, NH 03801
Tax Map 224, Lots 14 & 15

Prepared for:

The Sagamore Group, LLC
P.O. Box 430
Hampton, NH 03842



Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
August 23, 2021
Revised October 5, 2021
Revised December 28, 2021
Revised February 9, 2022
JBE Project No. 21047

EXECUTIVE SUMMARY

The Sagamore Group, LLC proposes to construct ten (10) residential condominium units on a 1.83-acre parcel of land located at 1169 & 1171 Sagamore Avenue in Portsmouth, NH. In the existing condition, the two lots to be consolidated are home to single-family residences with multiple sheds and paved driveways, a pool, and a gravel driveway running through the lots.

A drainage analysis of the entire site 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 (3.70"), 10 Year – 24 Hour (5.61"), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region. A summary of the existing and proposed conditions peak rates of runoff in units of cubic feet per second (cfs) is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	1.21	1.06	2.64	1.99	3.87	3.52	5.07	4.85
Analysis Point #2	0.86	0.72	1.53	1.25	2.06	1.68	2.56	2.07
Analysis Point #3	1.20	0.22	2.23	0.53	3.14	0.80	3.97	1.07
Analysis Point #4	0.24	0.21	0.50	0.40	0.73	0.56	0.94	0.70

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

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.133	0.172	0.280	0.323	0.409	0.485	0.535	0.645
Analysis Point #2	0.072	0.067	0.127	0.117	0.172	0.158	0.215	0.196
Analysis Point #3	0.086	0.017	0.190	0.039	0.280	0.058	0.370	0.077
Analysis Point #4	0.022	0.019	0.045	0.037	0.064	0.051	0.083	0.065

The subject parcels are located in the Mixed Residential / Office (MRO) Zoning District. The subject parcels currently consist of the aforementioned single-family residences with associated driveways, sheds, and a pool, all of which is proposed to be demolished. The topography and ledge outcrops on the site define five (5) subcatchments, which drain to four (4) analysis points. Subcatchments 1S-4S drain directly toward their respective analysis points while subcatchment 5S drains toward a shallow depression straddling the two properties, modelled as a pond, before cresting over a "berm" and running off toward the northerly abutter's detention pond (Analysis Point 3). The neighboring "Westwind Townhomes of Portsmouth" site to the south stands topographically prominent to this parcel, so some runoff from this development reaches the southeast corner of the subject parcel although most of it drains directly into the Sagamore Avenue right of way. The runoff reaching this corner of the property (Analysis Point 2) then continues south along Sagamore Avenue. The majority of the site drains to the north in the existing condition, reaching either the abutting "Sea Star Cove Condominium" detention pond (Analysis Point 3) or the adjacent isolated wetland (Analysis Point 1).

Also included in Subcatchment 1S, which drains toward Analysis Point 1, is a stretch of Sagamore Ave with a low point at a horseshoe shaped driveway for an abutter to the subject property. Runoff from this stretch of the road sheet flows across the abutter's property in the proposed condition before reaching the isolated wetland represented as AP1.

The proposed site development consists of the aforementioned ten (10) condominium units with associated paved roadway and individual driveways. 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. A stormwater management system was designed in order to mitigate this possibility. The proposed site development divides the site into twenty (20) subcatchments, representing both the periphery of the site that will continue its existing flow pattern toward the aforementioned analysis points as well as the developed portions that will be routed into the site's stormwater management system for treatment and reduction of peak flows. The proposed stormwater management system for the front of the site consists of two (2) bioretention systems to filter runoff and a downstream concrete galley field that will detain runoff and release it slowly, allowing for peak flow rates to be reduced. The proposed stormwater management system for the rear of the site consists of two catch basins as well as several yard drains draining into a concrete galley field designed for infiltration, from which overflow will be routed to the concrete galley field in the center of the site that is designed for detention. Through the use of these practices, the peak rate of runoff is reduced for all analyzed storm events and the peak volume of runoff is reduced except for very slight increases toward Analysis Point 1.

Otherwise, some roof runoff will be infiltrated through subsurface stone beds as needed and runoff from decks will be infiltrated through a strip of stone underlying them. These systems, in combination with the concrete galley field designed for infiltration, will help to reduce volumes of runoff. The City of Portsmouth's only regulation concerning volume is that it shall be reduced to the maximum extent practicable, which this design promulgates by reducing the peak volume of runoff or otherwise keeping it nearly the same toward all analysis points. Furthermore, although this project will not require an Alteration of Terrain Permit, it meets the Alteration of Terrain (AoT) Bureau's Channel Protection requirement, stipulating that volume may not increase toward any analysis point by more than 0.1 acre-foot during the 2-Year 24-Hour storm event. Additionally, the AoT Bureau's Groundwater Recharge requirement is met with this proposed development. A groundwater recharge volume worksheet is attached included within Appendix VIII demonstrating that this is the case.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.

TABLE OF CONTENTS

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 (3.70"), 10 Year – 24 Hour (5.61"), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows resulting from storm events.

2.0 EXISTING CONDITIONS ANALYSIS

The two existing single-family residential properties feature three houses, two sheds, a pool, two paved driveways and a gravel driveway running through the site in addition to a paved island in the center of the site. The site is otherwise covered by both woods and grass, with sporadic ledge outcrops. A small section of the southern part of the site is sloped toward the south, while the majority of it is sloped toward the north.

The area draining toward the north is split into three subcatchments; Subcatchments 1S, 3S, and 5S. Subcatchment 1S drains into an Analysis Point #1 (AP1), representing an isolated wetland near the northeast corner of the site. Subcatchment 1S includes the entire on and off-site contributing watershed area toward the isolated wetland, which includes parts of abutting properties as well as a stretch of Sagamore Avenue. Subcatchment 3S drains into Analysis Point #3 (AP3) representing the abutting condominium property's private detention pond. Subcatchment 5S drains toward a shallow depression straddling the two existing subject parcels, represented as 1P, and once the depression fills it crests over a berm and drains across Subcatchment 3S toward Analysis Point #3.

Two additional subcatchments were defined for the area draining toward the south; Subcatchment 2S and Subcatchment 4S. Subcatchment 2S is directed toward Analysis Point #2 (AP2), representing the shoulder of Sagamore Avenue. Runoff in this direction combines with runoff from the edge of the abutting property and continues south. Subcatchment 4S, which is separated from 3S by a ledge outcrop, a building roof, and otherwise a subtle inflection in the surface topography, is located in the southwestern corner of the property and this small area drains directly into the Sea Star Cove Condiminium property, represented by Analysis Point #4 (AP4).

The closed contours surrounding the existing isolated wetland in the northeast corner of the property denoted as Analysis Point #1 were modelled as Pond 2P, downstream of Analysis Point #1.

Existing soil types were determined through a High Intensity Soil Survey (HISS) conducted by a Certified Soil Scientist. A Site-Specific Soil Map (SSSM) conversion table was provided along with the report that was generated based on the results of the HISS. These soils are categorized into Hydrologic Soil Groups (HSG) B and D. Areas surrounding ledge outcrops are categorized into HSG D while the remainder of the upland area of the site is mostly categorized into HSG B. Specifically, the upland soil types include the Hollis-Rock Outcrop Complex, Made Land – Similar to Canton, Newfields, and Chatfield Variant. According to "Ksat Values for New Hampshire Soils" sponsored by the Society of Soil Scientists of Northern New England SSSNNE Special Publication No. 5, the saturated hydraulic conductivity (Ksat) value for Canton soils ranges from 2 to 6 inches/hour within the B horizon and 6 to 20 inches/hour within the C horizon; the Ksat value for Newfields soils ranges from 0.6 to 2 inches per hour within both the B and C horizons, and the Ksat value for both Chatfield Variant and Hollis soils ranges from 0.6 to 6 inches/hour within both the B and C horizons.

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 result being a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to mitigate this possibility. The proposed development, consisting of the aforementioned ten (10) condominium units with associated paved roadway and driveways as well as stormwater management features divide the subject parcel into twenty (20) subcatchments. Subcatchments 1S-4S drain directly into their respective Analysis Points, AP1-AP4, as previously outlined. Subcatchments 5S-6S will drain into the two bioretention systems in the front of the site, and after receiving treatment in the bioretention systems, runoff will be piped into concrete "Galley" chambers for underground detention. Subcatchments 7S-8S represent the rear of the site and runoff from here is graded toward two catch basins in sequence from which a closed drainage network feeds into another Galley chamber system, except that this one is designed for infiltration. Overflow from this will be piped into the Galley chamber system in the center of the site that is designed for detention only. Subcatchments 9S-12S represent lawn areas that are proposed to drain toward yard drains. Subcatchments 13S-18S represent roof and deck subcatchments from which runoff will be infiltrated through subsurface stone infiltration beds in lawn areas or small stone strips underlying the decks. Subcatchments 19S and 20S represents two stretches of Sagamore Avenue that are to drain toward proposed deep sump catch basins, the purpose of which is to pre-treat roadway runoff directed toward this isolated wetland. The two catch basins are "offline" and both drain toward a proposed drain manhole in the proposed sidewalk. As explained in the executive summary, the proposed stormwater management features help to reduce off-site runoff volumes resultant to this development to the extent practicable.

After passing through the bioretention systems and concrete "Galley" chambers, treated and attenuated runoff will be gradually drained toward AP1, representing the isolated wetland in the northeast corner of the site. The peak rates of runoff, and to the extent practicable, peak volumes of runoff, will be reduced in all analyzed storm events in the proposed condition.

The site will be graded such that runoff from all impervious areas, with the exception of roof, patio, and deck runoff, will be treated, detained, and some of it infiltrated to groundwater, by way of bioretention systems and subsurface infiltration and detention chambers. The two bioretention systems in the front of the site cannot be used for infiltration due to the presence of ledge in the area where they are proposed, therefore they shall be lined and underdrained. The proposed concrete Galley chambers in the center of the site will also lined and underdrained due to the presence of groundwater while the proposed concrete Galley chambers in the northwest corner of the site are designed as a subsurface infiltration basin, with at least 3' between the bottom of the chamber and the SHWT.

The Ksat values stated at the end of the Existing Conditions Analysis were used to determine the design infiltration rates of each stormwater practice. The lower Ksat for each soil type was divided by 2 to develop a design infiltration rate of 0.3 or 1 inches/hour for each stormwater practice depending on what soil type they are located in. When a practice is located within multiple soil types, a weighted average is taken. For example, the underground stone infiltration bed in back of Units 1 and 2 straddles two soil types, one with each aforementioned design infiltration rate, so the two rates were averaged and a design infiltration rate of 0.65 inches/hour was ultimately used.

By reducing the rate of stormwater runoff toward the neighbor's detention pond, the functioning of the overall drainage system between the two properties is improved resultant to this development. The outfall is in an optimal location as the treated and attenuated runoff will be released toward an existing wetland, and a rip rap outlet protection apron is proposed in order to dissipate any concentrated flows that result. Peak rates of runoff are decreased toward all analysis points in all storms and peak volumes of runoff are decreased to the extent practicible. The contours surrounding the isolated wetland represented as Analysis Point #1 are modelled as a pond, 21P, in the proposed condition, where it is modelled as 2P in the existing condition.

According to the NH Stormwater Manual, bioretention systems provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, and infiltration basins (including subsurface ones) provide a removal efficiency of 90% for TSS and 60% for nitrogen provided that there is 3' of soil or stone separating the bottom of the chamber from the seasonal high water table and that the chamber is at least 75' from surface water. Runoff from all impervious surfaces with the exception of roofs is being directed toward one of these two types of treatment systems. The City of Portsmouth Site Plan Review Regulations stipulate that stormwater BMPs should either be designed for 80% TSS removal and 50% nitrogen removal, OR to retain and treat the Water Quality Volume. This plan exceeds the requirements for pollutant removal because appropriate treatment / groundwater recharge systems are used and the Water Quality Volume is retained and treated.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, properties, and wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, catch basins, drain manholes, yard drains, bioretention systems, concrete "Galley" chambers, subsurface stone infiltration beds, and rip rap outlet protection as well as temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. The drainage outfall is in its optimal location and the rate and the volume of runoff reaching the abutter's detention pond from the subject site will be reduced. Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process. Peak rates of runoff from the site will be reduced toward all analysis points during all storms, as will peak volumes of runoff to the extent practicable.

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

Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

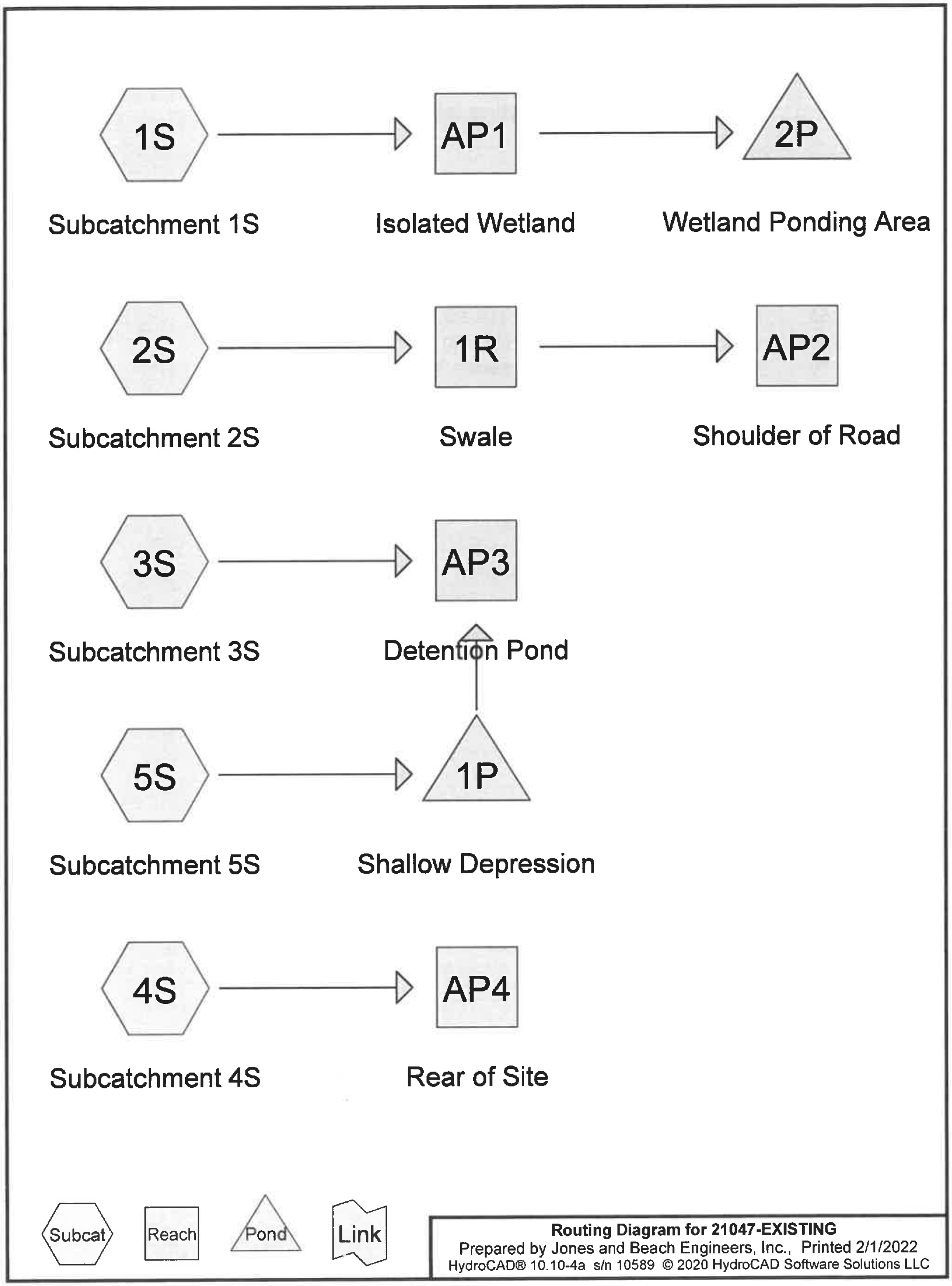
Daniel Meditz

Daniel Meditz, E.I.T
Project Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

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


1S
AP1
2P
Subcatchment 1S
Isolated Wetland
Wetland Ponding Area
2S
1R
AP2
Subcatchment 2S
Swale
Shoulder of Road
3S
AP3
Subcatchment 3S
Detention Pond
5S
1P
Subcatchment 5S
Shallow Depression
4S
AP4
Subcatchment 4S
Rear of Site
Subcat
Reach
Pond
Link
Routing Diagram for 21047-EXISTING
Prepared by Jones and Beach Engineers, Inc., Printed 2/1/2022
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.573	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S)
0.448	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S)
0.135	96	Gravel surface, HSG B (1S, 5S)
0.107	96	Gravel surface, HSG D (1S, 2S, 3S, 4S, 5S)
0.156	98	Ledge Outcrop, HSG D (1S, 2S, 3S, 4S, 5S)
0.095	98	Paved parking, HSG B (1S, 5S)
0.170	98	Paved roads w/curbs & sewers, HSG B (1S)
0.040	98	Paved roads w/curbs & sewers, HSG D (1S, 2S)
0.062	98	Roofs, HSG B (1S, 4S, 5S)
0.103	98	Roofs, HSG D (1S, 2S, 4S, 5S)
0.702	55	Woods, Good, HSG B (1S, 3S, 4S, 5S)
0.079	77	Woods, Good, HSG D (1S, 3S, 4S, 5S)
2.669	**75**	**TOTAL AREA**

Soil Listing (all nodes)

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

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=53,133 sf 26.34% Impervious Runoff Depth>1.31"
Flow Length=112' Tc=20.1 min CN=73 Runoff=1.21 cfs 0.133 af

Subcatchment2S: Subcatchment2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>2.27"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=0.99 cfs 0.072 af

Subcatchment3S: Subcatchment3S Runoff Area=16,350 sf 0.17% Impervious Runoff Depth>0.61"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.13 cfs 0.019 af

Subcatchment4S: Subcatchment4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>1.44"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.24 cfs 0.022 af

Subcatchment5S: Subcatchment5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>1.87"
Flow Length=87' Tc=7.2 min CN=81 Runoff=1.07 cfs 0.080 af

Reach 1R: Swale Avg. Flow Depth=0.43' Max Vel=0.52 fps Inflow=0.99 cfs 0.072 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=0.86 cfs 0.072 af

Reach AP1: Isolated Wetland Inflow=1.21 cfs 0.133 af
Outflow=1.21 cfs 0.133 af

Reach AP2: Shoulder of Road Inflow=0.86 cfs 0.072 af
Outflow=0.86 cfs 0.072 af

Reach AP3: Detention Pond Inflow=1.20 cfs 0.086 af
Outflow=1.20 cfs 0.086 af

Reach AP4: Rear of Site Inflow=0.24 cfs 0.022 af
Outflow=0.24 cfs 0.022 af

Pond 1P: Shallow Depression Peak Elev=37.14' Storage=590 cf Inflow=1.07 cfs 0.080 af
Outflow=1.16 cfs 0.067 af

Pond 2P: Wetland Ponding Area Peak Elev=31.02' Storage=4,973 cf Inflow=1.21 cfs 0.133 af
Outflow=0.05 cfs 0.019 af

Total Runoff Area = 2.669 ac Runoff Volume = 0.326 af Average Runoff Depth = 1.47"
76.58% Pervious = 2.043 ac 23.42% Impervious = 0.625 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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=53,133 sf 26.34% Impervious Runoff Depth>2.76"
Flow Length=112' Tc=20.1 min CN=73 Runoff=2.64 cfs 0.280 af

Subcatchment 2S: Subcatchment 2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>4.04"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=1.72 cfs 0.127 af

Subcatchment 3S: Subcatchment 3S Runoff Area=16,350 sf 0.17% Impervious Runoff Depth>1.66"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.42 cfs 0.052 af

Subcatchment 4S: Subcatchment 4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>2.95"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.50 cfs 0.045 af

Subcatchment 5S: Subcatchment 5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>3.53"
Flow Length=87' Tc=7.2 min CN=81 Runoff=2.00 cfs 0.151 af

Reach 1R: Swale Avg. Flow Depth=0.53' Max Vel=0.60 fps Inflow=1.72 cfs 0.127 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=1.53 cfs 0.127 af

Reach AP1: Isolated Wetland Inflow=2.64 cfs 0.280 af
Outflow=2.64 cfs 0.280 af

Reach AP2: Shoulder of Road Inflow=1.53 cfs 0.127 af
Outflow=1.53 cfs 0.127 af

Reach AP3: Detention Pond Inflow=2.23 cfs 0.190 af
Outflow=2.23 cfs 0.190 af

Reach AP4: Rear of Site Inflow=0.50 cfs 0.045 af
Outflow=0.50 cfs 0.045 af

Pond 1P: Shallow Depression Peak Elev=37.17' Storage=590 cf Inflow=2.00 cfs 0.151 af
Outflow=2.06 cfs 0.138 af

Pond 2P: Wetland Ponding Area Peak Elev=31.22' Storage=4,973 cf Inflow=2.64 cfs 0.280 af
Outflow=3.05 cfs 0.166 af

Total Runoff Area = 2.669 ac Runoff Volume = 0.655 af Average Runoff Depth = 2.95"
76.58% Pervious = 2.043 ac 23.42% Impervious = 0.625 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.64 cfs @ 12.28 hrs, Volume= 0.280 af, Depth> 2.76"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	12,225	55	Woods, Good, HSG B
	2,348	61	>75% Grass cover, Good, HSG B
	3,287	98	Paved parking, HSG B
	9,900	61	>75% Grass cover, Good, HSG B
	4,049	96	Gravel surface, HSG B
	7,392	98	Paved roads w/curbs & sewers, HSG B
	5,450	55	Woods, Good, HSG B
	745	98	Roofs, HSG B
*	1,274	98	Ledge Outcrop, HSG D
	1,500	77	Woods, Good, HSG D
	666	96	Gravel surface, HSG D
	3,000	80	>75% Grass cover, Good, HSG D
	534	98	Paved roads w/curbs & sewers, HSG D
	763	98	Roofs, HSG D
	53,133	73	Weighted Average
	39,138		73.66% Pervious Area
	13,995		26.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	12	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.1	112	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.72 cfs @ 12.09 hrs, Volume= 0.127 af, Depth> 4.04"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	401	98	Ledge Outcrop, HSG D
	1,855	96	Gravel surface, HSG D
	7,620	80	>75% Grass cover, Good, HSG D
	1,200	98	Paved roads w/curbs & sewers, HSG D
	908	98	Roofs, HSG D
	2,786	80	>75% Grass cover, Good, HSG D
	1,725	98	Roofs, HSG D
	16,495	86	Weighted Average
	12,261		74.33% Pervious Area
	4,234		25.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	45	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.6	45	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.42 cfs @ 12.37 hrs, Volume= 0.052 af, Depth> 1.66"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	28	98	Ledge Outcrop, HSG D
	660	96	Gravel surface, HSG D
	1,114	77	Woods, Good, HSG D
	291	80	>75% Grass cover, Good, HSG D
	4,820	61	>75% Grass cover, Good, HSG B
	9,437	55	Woods, Good, HSG B
	16,350	60	Weighted Average
	16,322		99.83% Pervious Area
	28		0.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	11	0.0230	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	18	0.0167	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
3.2	19	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	22	0.0540	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.0	30	0.0180	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
2.0	80	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.1	180	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.50 cfs @ 12.18 hrs, Volume= 0.045 af, Depth> 2.95"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	2,545	98	Ledge Outcrop, HSG D
	27	96	Gravel surface, HSG D
	21	98	Roofs, HSG D
	111	77	Woods, Good, HSG D
	174	80	>75% Grass cover, Good, HSG D
	798	98	Roofs, HSG B
	1,028	61	>75% Grass cover, Good, HSG B
	3,201	55	Woods, Good, HSG B
	7,905	75	Weighted Average
	4,541		57.44% Pervious Area
	3,364		42.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	68	0.0290	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 2.00 cfs @ 12.10 hrs, Volume= 0.151 af, Depth> 3.53"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	2,532	98	Ledge Outcrop, HSG D
	1,442	96	Gravel surface, HSG D
	59	98	Roofs, HSG D
	715	77	Woods, Good, HSG D
	3,730	80	>75% Grass cover, Good, HSG D
	1,158	98	Roofs, HSG B
	852	98	Paved parking, HSG B
	1,842	96	Gravel surface, HSG B
	6,869	61	>75% Grass cover, Good, HSG B
	256	55	Woods, Good, HSG B
	1,896	80	>75% Grass cover, Good, HSG D
	1,007	98	Roofs, HSG D
	22,358	81	Weighted Average
	16,750		74.92% Pervious Area
	5,608		25.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	6	0.0500	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.2	15	0.0200	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
3.8	31	0.0167	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.9	14	0.1400	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	21	0.0676	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
7.2	87	Total			

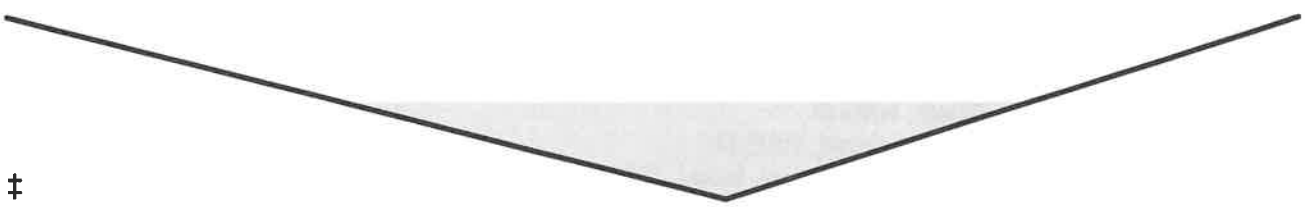
Summary for Reach 1R: Swale

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 4.04" for 10 Yr 24 Hr(+15%) event
Inflow = 1.72 cfs @ 12.09 hrs, Volume= 0.127 af
Outflow = 1.53 cfs @ 12.13 hrs, Volume= 0.127 af, Atten= 11%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.60 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 9.6 min

Peak Storage= 358 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.53' , Surface Width= 9.59'
Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 8.19 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 10.0 8.0 '/' Top Width= 18.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'



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Summary for Reach AP1: Isolated Wetland

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

Inflow Area = 1.220 ac, 26.34% Impervious, Inflow Depth > 2.76" for 10 Yr 24 Hr(+15%) event
Inflow = 2.64 cfs @ 12.28 hrs, Volume= 0.280 af
Outflow = 2.64 cfs @ 12.28 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

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

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 4.03" for 10 Yr 24 Hr(+15%) event
Inflow = 1.53 cfs @ 12.13 hrs, Volume= 0.127 af
Outflow = 1.53 cfs @ 12.13 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

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

Inflow Area = 0.889 ac, 14.56% Impervious, Inflow Depth > 2.56" for 10 Yr 24 Hr(+15%) event
Inflow = 2.23 cfs @ 12.11 hrs, Volume= 0.190 af
Outflow = 2.23 cfs @ 12.11 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

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

Inflow Area = 0.181 ac, 42.56% Impervious, Inflow Depth > 2.95" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.18 hrs, Volume= 0.045 af
Outflow = 0.50 cfs @ 12.18 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Shallow Depression

[93] Warning: Storage range exceeded by 0.09'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=39)

Inflow Area = 0.513 ac, 25.08% Impervious, Inflow Depth > 3.53" for 10 Yr 24 Hr(+15%) event
Inflow = 2.00 cfs @ 12.10 hrs, Volume= 0.151 af
Outflow = 2.06 cfs @ 12.10 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 2.06 cfs @ 12.10 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.17' @ 12.10 hrs Surf.Area= 3,088 sf Storage= 590 cf

Plug-Flow detention time= 64.1 min calculated for 0.138 af (91% of inflow)
Center-of-Mass det. time= 20.8 min (835.5 - 814.7)

Volume	Invert	Avail.Storage	Storage Description
#1	36.75'	590 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.75	417	0	0
36.88	1,613	132	132
37.00	2,380	240	372
37.08	3,088	219	590

Device	Routing	Invert	Outlet Devices
#1	Primary	37.07'	**27.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.04 cfs @ 12.10 hrs HW=37.17' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 2.04 cfs @ 0.77 fps)

Summary for Pond 2P: Wetland Ponding Area

[93] Warning: Storage range exceeded by 0.21'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=112)

Inflow Area = 1.220 ac, 26.34% Impervious, Inflow Depth > 2.76" for 10 Yr 24 Hr(+15%) event
Inflow = 2.64 cfs @ 12.28 hrs, Volume= 0.280 af
Outflow = 3.05 cfs @ 12.55 hrs, Volume= 0.166 af, Atten= 0%, Lag= 15.8 min
Primary = 3.05 cfs @ 12.55 hrs, Volume= 0.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.22' @ 12.55 hrs Surf.Area= 2,891 sf Storage= 4,973 cf

Plug-Flow detention time= 192.8 min calculated for 0.166 af (59% of inflow)
Center-of-Mass det. time= 84.4 min (929.3 - 844.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	4,973 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	619	0	0
29.00	1,245	932	932
30.00	1,949	1,597	2,529
31.01	2,891	2,444	4,973

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.92 cfs @ 12.55 hrs HW=31.22' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.92 cfs @ 1.12 fps)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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=53,133 sf 26.34% Impervious Runoff Depth>4.02"
Flow Length=112' Tc=20.1 min CN=73 Runoff=3.87 cfs 0.409 af

Subcatchment 2S: Subcatchment 2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>5.48"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=2.30 cfs 0.173 af

Subcatchment 3S: Subcatchment 3S Runoff Area=16,350 sf 0.17% Impervious Runoff Depth>2.67"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.71 cfs 0.084 af

Subcatchment 4S: Subcatchment 4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>4.25"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.73 cfs 0.064 af

Subcatchment 5S: Subcatchment 5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>4.91"
Flow Length=87' Tc=7.2 min CN=81 Runoff=2.77 cfs 0.210 af

Reach 1R: Swale Avg. Flow Depth=0.60' Max Vel=0.64 fps Inflow=2.30 cfs 0.173 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=2.06 cfs 0.172 af

Reach AP1: Isolated Wetland Inflow=3.87 cfs 0.409 af
Outflow=3.87 cfs 0.409 af

Reach AP2: Shoulder of Road Inflow=2.06 cfs 0.172 af
Outflow=2.06 cfs 0.172 af

Reach AP3: Detention Pond Inflow=3.14 cfs 0.280 af
Outflow=3.14 cfs 0.280 af

Reach AP4: Rear of Site Inflow=0.73 cfs 0.064 af
Outflow=0.73 cfs 0.064 af

Pond 1P: Shallow Depression Peak Elev=37.19' Storage=590 cf Inflow=2.77 cfs 0.210 af
Outflow=2.81 cfs 0.197 af

Pond 2P: Wetland Ponding Area Peak Elev=31.34' Storage=4,973 cf Inflow=3.87 cfs 0.409 af
Outflow=6.03 cfs 0.295 af

Total Runoff Area = 2.669 ac Runoff Volume = 0.940 af Average Runoff Depth = 4.23"
76.58% Pervious = 2.043 ac 23.42% Impervious = 0.625 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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=53,133 sf 26.34% Impervious Runoff Depth>5.26"
Flow Length=112' Tc=20.1 min CN=73 Runoff=5.07 cfs 0.535 af

Subcatchment 2S: Subcatchment 2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>6.84"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=2.84 cfs 0.216 af

Subcatchment 3S: Subcatchment 3S Runoff Area=16,350 sf 0.17% Impervious Runoff Depth>3.72"
Flow Length=180' Tc=24.1 min CN=60 Runoff=1.01 cfs 0.116 af

Subcatchment 4S: Subcatchment 4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>5.51"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.94 cfs 0.083 af

Subcatchment 5S: Subcatchment 5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>6.24"
Flow Length=87' Tc=7.2 min CN=81 Runoff=3.48 cfs 0.267 af

Reach 1R: Swale Avg. Flow Depth=0.65' Max Vel=0.68 fps Inflow=2.84 cfs 0.216 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=2.56 cfs 0.215 af

Reach AP1: Isolated Wetland Inflow=5.07 cfs 0.535 af
Outflow=5.07 cfs 0.535 af

Reach AP2: Shoulder of Road Inflow=2.56 cfs 0.215 af
Outflow=2.56 cfs 0.215 af

Reach AP3: Detention Pond Inflow=3.97 cfs 0.370 af
Outflow=3.97 cfs 0.370 af

Reach AP4: Rear of Site Inflow=0.94 cfs 0.083 af
Outflow=0.94 cfs 0.083 af

Pond 1P: Shallow Depression Peak Elev=37.21' Storage=590 cf Inflow=3.48 cfs 0.267 af
Outflow=3.48 cfs 0.253 af

Pond 2P: Wetland Ponding Area Peak Elev=31.36' Storage=4,973 cf Inflow=5.07 cfs 0.535 af
Outflow=6.45 cfs 0.421 af

Total Runoff Area = 2.669 ac Runoff Volume = 1.217 af Average Runoff Depth = 5.47"
76.58% Pervious = 2.043 ac 23.42% Impervious = 0.625 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 5.07 cfs @ 12.27 hrs, Volume= 0.535 af, Depth> 5.26"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
	12,225	55	Woods, Good, HSG B
	2,348	61	>75% Grass cover, Good, HSG B
	3,287	98	Paved parking, HSG B
	9,900	61	>75% Grass cover, Good, HSG B
	4,049	96	Gravel surface, HSG B
	7,392	98	Paved roads w/curbs & sewers, HSG B
	5,450	55	Woods, Good, HSG B
	745	98	Roofs, HSG B
*	1,274	98	Ledge Outcrop, HSG D
	1,500	77	Woods, Good, HSG D
	666	96	Gravel surface, HSG D
	3,000	80	>75% Grass cover, Good, HSG D
	534	98	Paved roads w/curbs & sewers, HSG D
	763	98	Roofs, HSG D
	53,133	73	Weighted Average
	39,138		73.66% Pervious Area
	13,995		26.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	12	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.1	112	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 2.84 cfs @ 12.09 hrs, Volume= 0.216 af, Depth> 6.84"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	401	98	Ledge Outcrop, HSG D
	1,855	96	Gravel surface, HSG D
	7,620	80	>75% Grass cover, Good, HSG D
	1,200	98	Paved roads w/curbs & sewers, HSG D
	908	98	Roofs, HSG D
	2,786	80	>75% Grass cover, Good, HSG D
	1,725	98	Roofs, HSG D
	16,495	86	Weighted Average
	12,261		74.33% Pervious Area
	4,234		25.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	45	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.6	45	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.01 cfs @ 12.35 hrs, Volume= 0.116 af, Depth> 3.72"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	28	98	Ledge Outcrop, HSG D
	660	96	Gravel surface, HSG D
	1,114	77	Woods, Good, HSG D
	291	80	>75% Grass cover, Good, HSG D
	4,820	61	>75% Grass cover, Good, HSG B
	9,437	55	Woods, Good, HSG B
	16,350	60	Weighted Average
	16,322		99.83% Pervious Area
	28		0.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	11	0.0230	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	18	0.0167	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
3.2	19	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	22	0.0540	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.0	30	0.0180	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
2.0	80	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.1	180	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af, Depth> 5.51"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	2,545	98	Ledge Outcrop, HSG D
	27	96	Gravel surface, HSG D
	21	98	Roofs, HSG D
	111	77	Woods, Good, HSG D
	174	80	>75% Grass cover, Good, HSG D
	798	98	Roofs, HSG B
	1,028	61	>75% Grass cover, Good, HSG B
	3,201	55	Woods, Good, HSG B
	7,905	75	Weighted Average
	4,541		57.44% Pervious Area
	3,364		42.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	68	0.0290	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 3.48 cfs @ 12.10 hrs, Volume= 0.267 af, Depth> 6.24"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	2,532	98	Ledge Outcrop, HSG D
	1,442	96	Gravel surface, HSG D
	59	98	Roofs, HSG D
	715	77	Woods, Good, HSG D
	3,730	80	>75% Grass cover, Good, HSG D
	1,158	98	Roofs, HSG B
	852	98	Paved parking, HSG B
	1,842	96	Gravel surface, HSG B
	6,869	61	>75% Grass cover, Good, HSG B
	256	55	Woods, Good, HSG B
	1,896	80	>75% Grass cover, Good, HSG D
	1,007	98	Roofs, HSG D
	22,358	81	Weighted Average
	16,750		74.92% Pervious Area
	5,608		25.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	6	0.0500	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.2	15	0.0200	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
3.8	31	0.0167	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.9	14	0.1400	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	21	0.0676	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
7.2	87	Total			

Summary for Reach 1R: Swale

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 6.84" for 50 Yr 24 Hr(+15%) event
Inflow = 2.84 cfs @ 12.09 hrs, Volume= 0.216 af
Outflow = 2.56 cfs @ 12.13 hrs, Volume= 0.215 af, Atten= 10%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.68 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 8.6 min

Peak Storage= 527 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 11.65'
Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 8.19 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 10.0 8.0 '/' Top Width= 18.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'

‡

Summary for Reach AP1: Isolated Wetland

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

Inflow Area = 1.220 ac, 26.34% Impervious, Inflow Depth > 5.26" for 50 Yr 24 Hr(+15%) event
Inflow = 5.07 cfs @ 12.27 hrs, Volume= 0.535 af
Outflow = 5.07 cfs @ 12.27 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

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

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 6.83" for 50 Yr 24 Hr(+15%) event
Inflow = 2.56 cfs @ 12.13 hrs, Volume= 0.215 af
Outflow = 2.56 cfs @ 12.13 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

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

Inflow Area = 0.889 ac, 14.56% Impervious, Inflow Depth > 4.99" for 50 Yr 24 Hr(+15%) event
Inflow = 3.97 cfs @ 12.11 hrs, Volume= 0.370 af
Outflow = 3.97 cfs @ 12.11 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

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

Inflow Area = 0.181 ac, 42.56% Impervious, Inflow Depth > 5.51" for 50 Yr 24 Hr(+15%) event
Inflow = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af
Outflow = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Shallow Depression

[93] Warning: Storage range exceeded by 0.13'

Inflow Area = 0.513 ac, 25.08% Impervious, Inflow Depth > 6.24" for 50 Yr 24 Hr(+15%) event
Inflow = 3.48 cfs @ 12.10 hrs, Volume= 0.267 af
Outflow = 3.48 cfs @ 12.10 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min
Primary = 3.48 cfs @ 12.10 hrs, Volume= 0.253 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.21' @ 12.10 hrs Surf.Area= 3,088 sf Storage= 590 cf

Plug-Flow detention time= 43.0 min calculated for 0.253 af (95% of inflow)
Center-of-Mass det. time= 15.6 min (814.3 - 798.7)

Volume	Invert	Avail.Storage	Storage Description
#1	36.75'	590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.75	417	0	0
36.88	1,613	132	132
37.00	2,380	240	372
37.08	3,088	219	590

Device	Routing	Invert	Outlet Devices
#1	Primary	37.07'	**27.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.45 cfs @ 12.10 hrs HW=37.21' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.45 cfs @ 0.91 fps)

Summary for Pond 2P: Wetland Ponding Area

[93] Warning: Storage range exceeded by 0.35'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=115)

Inflow Area = 1.220 ac, 26.34% Impervious, Inflow Depth > 5.26" for 50 Yr 24 Hr(+15%) event
Inflow = 5.07 cfs @ 12.27 hrs, Volume= 0.535 af
Outflow = 6.45 cfs @ 12.30 hrs, Volume= 0.421 af, Atten= 0%, Lag= 1.4 min
Primary = 6.45 cfs @ 12.30 hrs, Volume= 0.421 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.36' @ 12.30 hrs Surf.Area= 2,891 sf Storage= 4,973 cf

Plug-Flow detention time= 117.9 min calculated for 0.421 af (79% of inflow)
Center-of-Mass det. time= 40.1 min (866.7 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	4,973 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	619	0	0
29.00	1,245	932	932
30.00	1,949	1,597	2,529
31.01	2,891	2,444	4,973

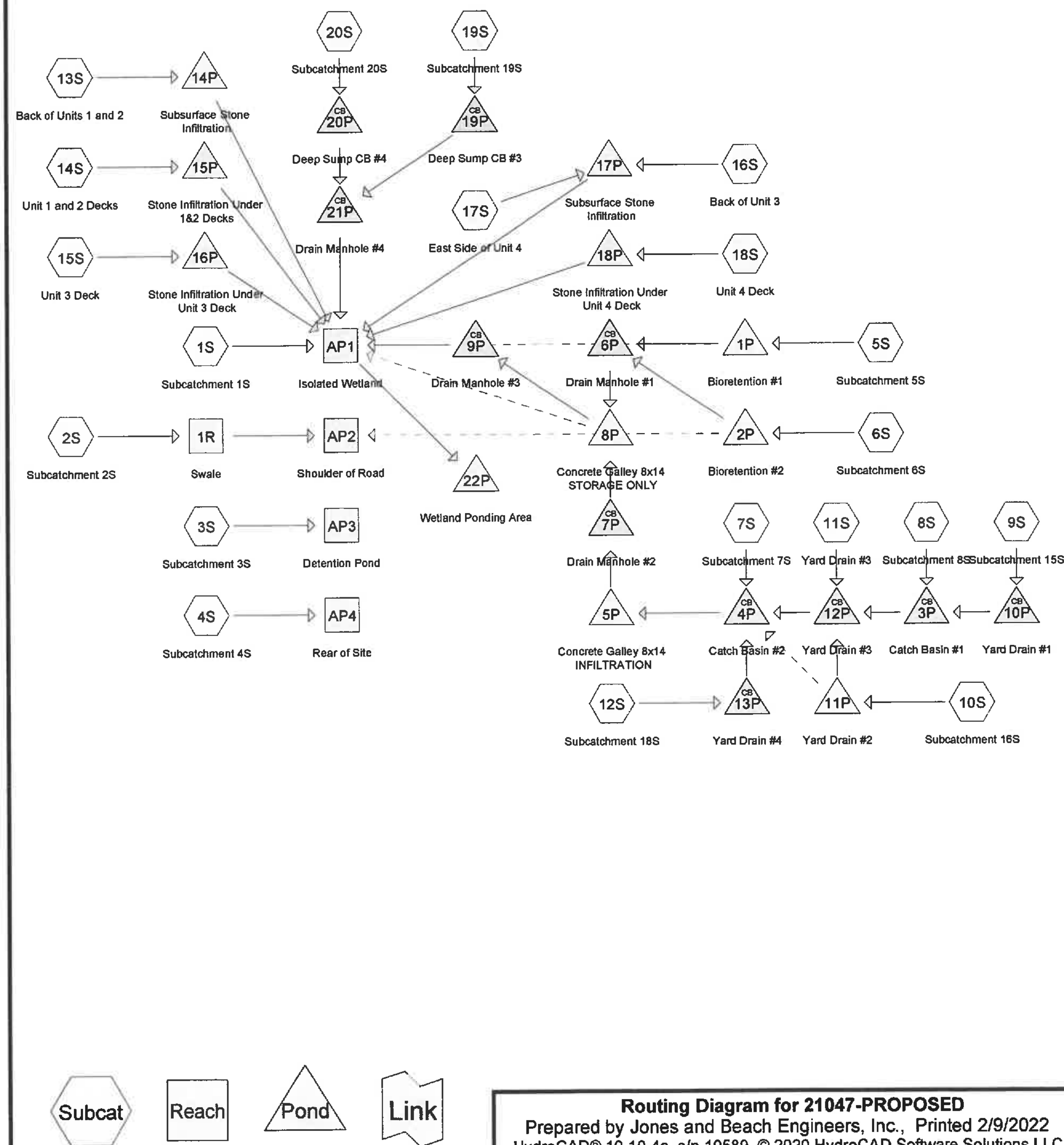
Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=6.38 cfs @ 12.30 hrs HW=31.36' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 6.38 cfs @ 1.49 fps)

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

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



Routing Diagram for 21047-PROPOSED
Prepared by Jones and Beach Engineers, Inc., Printed 2/9/2022
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.575	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S)
0.399	80	>75% Grass cover, Good, HSG D (1S, 2S, 6S, 7S, 8S, 9S, 10S, 12S)
0.095	98	Ledge Outcrop, HSG D (2S, 4S, 8S)
0.454	98	Paved parking, HSG B (1S, 5S, 6S, 7S, 8S, 19S, 20S)
0.136	98	Paved parking, HSG D (5S, 6S, 7S, 8S, 20S)
0.105	98	Paved roads w/curbs & sewers, HSG B (1S)
0.007	98	Paved roads w/curbs & sewers, HSG D (2S)
0.254	98	Roofs, HSG B (1S, 3S, 4S, 5S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 17S, 18S)
0.289	98	Roofs, HSG D (1S, 2S, 6S, 7S, 8S, 9S, 12S, 15S, 16S, 17S)
0.348	55	Woods, Good, HSG B (1S, 3S, 4S)
0.006	77	Woods, Good, HSG D (1S, 4S)
2.669	**82**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.737	HSG B	1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 17S, 18S, 19S, 20S
0.000	HSG C	
0.932	HSG D	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S, 15S, 16S, 17S, 20S
0.000	Other	
2.669		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,185 sf 30.35% Impervious Runoff Depth>1.13"
Flow Length=113' Tc=20.1 min CN=70 Runoff=0.56 cfs 0.063 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>2.36"
Flow Length=126' Tc=12.0 min CN=87 Runoff=0.76 cfs 0.067 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>1.07"
Tc=6.0 min CN=69 Runoff=0.22 cfs 0.017 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>1.87"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.21 cfs 0.019 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 74.89% Impervious Runoff Depth>2.54"
Tc=6.0 min CN=89 Runoff=0.46 cfs 0.034 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 63.47% Impervious Runoff Depth>2.63"
Flow Length=60' Tc=6.0 min CN=90 Runoff=0.71 cfs 0.052 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 84.16% Impervious Runoff Depth>2.93"
Flow Length=135' Tc=6.0 min CN=93 Runoff=0.72 cfs 0.055 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.57% Impervious Runoff Depth>2.63"
Flow Length=86' Tc=11.2 min CN=90 Runoff=0.77 cfs 0.067 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>1.58"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.12 cfs 0.009 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>0.71"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.04 cfs 0.004 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>0.96"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.06 cfs 0.005 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>2.03"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.07 cfs 0.005 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment14S: Unit 1 and 2 Decks Runoff Area=884 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment15S: Unit 3 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment16S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.03 cfs 0.002 af

Subcatchment 17S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment 18S: Unit 4 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment 19S: Subcatchment 19S Runoff Area=1,288 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.009 af

Subcatchment 20S: Subcatchment 20S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.019 af

Reach 1R: Swale Avg. Flow Depth=0.61' Max Vel=0.64 fps Inflow=0.76 cfs 0.067 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=0.72 cfs 0.067 af

Reach AP1: Isolated Wetland Inflow=1.06 cfs 0.172 af
Outflow=1.06 cfs 0.172 af

Reach AP2: Shoulder of Road Inflow=0.72 cfs 0.067 af
Outflow=0.72 cfs 0.067 af

Reach AP3: Detention Pond Inflow=0.22 cfs 0.017 af
Outflow=0.22 cfs 0.017 af

Reach AP4: Rear of Site Inflow=0.21 cfs 0.019 af
Outflow=0.21 cfs 0.019 af

Pond 1P: Bioretention #1 Peak Elev=35.09' Storage=131 cf Inflow=0.46 cfs 0.034 af
Primary=0.47 cfs 0.032 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.032 af

Pond 2P: Bioretention #2 Peak Elev=35.42' Storage=184 cf Inflow=0.71 cfs 0.052 af
Primary=0.61 cfs 0.051 af Secondary=0.00 cfs 0.000 af Outflow=0.61 cfs 0.051 af

Pond 3P: Catch Basin #1 Peak Elev=35.56' Inflow=0.89 cfs 0.076 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=0.89 cfs 0.076 af

Pond 4P: Catch Basin #2 Peak Elev=34.88' Inflow=1.70 cfs 0.145 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.70 cfs 0.145 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=34.18' Storage=0.050 af Inflow=1.70 cfs 0.145 af
Discarded=0.46 cfs 0.144 af Primary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.144 af

Pond 6P: Drain Manhole #1 Peak Elev=34.71' Inflow=1.07 cfs 0.083 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0059 '/' Outflow=1.07 cfs 0.083 af

Pond 7P: Drain Manhole #2 Peak Elev=34.30' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=35.0' S=0.0086 '/' Outflow=0.00 cfs 0.000 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=33.79' Storage=0.021 af Inflow=1.07 cfs 0.083 af
Primary=0.38 cfs 0.082 af Secondary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.082 af

Pond 9P: Drain Manhole #3 Peak Elev=31.95' Inflow=0.38 cfs 0.082 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=0.38 cfs 0.082 af

Pond 10P: Yard Drain #1 Peak Elev=36.03' Inflow=0.12 cfs 0.009 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.12 cfs 0.009 af

Pond 11P: Yard Drain #2 Peak Elev=39.02' Storage=1 cf Inflow=0.04 cfs 0.004 af
Primary=0.04 cfs 0.004 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.004 af

Pond 12P: Yard Drain #3 Peak Elev=35.23' Inflow=0.98 cfs 0.086 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=0.98 cfs 0.086 af

Pond 13P: Yard Drain #4 Peak Elev=36.66' Inflow=0.07 cfs 0.005 af
8.0" Round Culvert n=0.013 L=36.0' S=0.0111 '/' Outflow=0.07 cfs 0.005 af

Pond 14P: Subsurface Stone Infiltration Peak Elev=29.07' Storage=0.002 af Inflow=0.07 cfs 0.006 af
Discarded=0.01 cfs 0.006 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.006 af

Pond 15P: Stone Infiltration Under 1&2 Decks Peak Elev=30.74' Storage=115 cf Inflow=0.07 cfs 0.006 af
Discarded=0.00 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.005 af

Pond 16P: Stone Infiltration Under Unit 3 Deck Peak Elev=33.02' Storage=59 cf Inflow=0.04 cfs 0.003 af
Discarded=0.00 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.003 af

Pond 17P: Subsurface Stone Infiltration Peak Elev=32.44' Storage=0.002 af Inflow=0.07 cfs 0.005 af
Discarded=0.02 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.005 af

Pond 18P: Stone Infiltration Under Unit 4 Deck Peak Elev=33.04' Storage=61 cf Inflow=0.04 cfs 0.003 af
Discarded=0.00 cfs 0.002 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.002 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.00' Inflow=0.10 cfs 0.009 af
12.0" Round Culvert n=0.013 L=66.0' S=0.0045 '/' Outflow=0.10 cfs 0.009 af

Pond 20P: Deep Sump CB #4 Peak Elev=29.84' Inflow=0.23 cfs 0.019 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.23 cfs 0.019 af

Pond 21P: Drain Manhole #4 Peak Elev=29.73' Inflow=0.33 cfs 0.027 af
12.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=0.33 cfs 0.027 af

Pond 22P: Wetland Ponding Area Peak Elev=31.04' Storage=4,907 cf Inflow=1.06 cfs 0.172 af
Outflow=0.29 cfs 0.059 af

Total Runoff Area = 2.669 ac Runoff Volume = 0.448 af Average Runoff Depth = 2.02"
49.78% Pervious = 1.328 ac 50.22% Impervious = 1.340 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,185 sf 30.35% Impervious Runoff Depth>2.49"
Flow Length=113' Tc=20.1 min CN=70 Runoff=1.30 cfs 0.139 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>4.14"
Flow Length=126' Tc=12.0 min CN=87 Runoff=1.32 cfs 0.117 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=69 Runoff=0.53 cfs 0.039 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>3.52"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.40 cfs 0.037 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 74.89% Impervious Runoff Depth>4.36"
Tc=6.0 min CN=89 Runoff=0.77 cfs 0.058 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 63.47% Impervious Runoff Depth>4.46"
Flow Length=60' Tc=6.0 min CN=90 Runoff=1.17 cfs 0.089 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 84.16% Impervious Runoff Depth>4.79"
Flow Length=135' Tc=6.0 min CN=93 Runoff=1.15 cfs 0.089 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.57% Impervious Runoff Depth>4.46"
Flow Length=86' Tc=11.2 min CN=90 Runoff=1.28 cfs 0.113 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>3.14"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.25 cfs 0.018 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>1.82"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.12 cfs 0.011 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>2.24"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.16 cfs 0.012 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>3.73"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.13 cfs 0.010 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

Subcatchment14S: Unit 1 and 2 Decks Runoff Area=884 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

Subcatchment15S: Unit 3 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.005 af

Subcatchment16S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment 17S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

Subcatchment 18S: Unit 4 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.005 af

Subcatchment 19S: Subcatchment 19S Runoff Area=1,288 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af

Subcatchment 20S: Subcatchment 20S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Reach 1R: Swale Avg. Flow Depth=0.76' Max Vel=0.73 fps Inflow=1.32 cfs 0.117 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=1.25 cfs 0.117 af

Reach AP1: Isolated Wetland Inflow=1.99 cfs 0.323 af
Outflow=1.99 cfs 0.323 af

Reach AP2: Shoulder of Road Inflow=1.25 cfs 0.117 af
Outflow=1.25 cfs 0.117 af

Reach AP3: Detention Pond Inflow=0.53 cfs 0.039 af
Outflow=0.53 cfs 0.039 af

Reach AP4: Rear of Site Inflow=0.40 cfs 0.037 af
Outflow=0.40 cfs 0.037 af

Pond 1P: Bioretention #1 Peak Elev=35.53' Storage=151 cf Inflow=0.77 cfs 0.058 af
Primary=0.72 cfs 0.056 af Secondary=0.00 cfs 0.000 af Outflow=0.72 cfs 0.056 af

Pond 2P: Bioretention #2 Peak Elev=36.25' Storage=254 cf Inflow=1.17 cfs 0.089 af
Primary=1.06 cfs 0.087 af Secondary=0.00 cfs 0.000 af Outflow=1.06 cfs 0.087 af

Pond 3P: Catch Basin #1 Peak Elev=35.80' Inflow=1.50 cfs 0.132 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=1.50 cfs 0.132 af

Pond 4P: Catch Basin #2 Peak Elev=35.73' Inflow=2.93 cfs 0.254 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=2.93 cfs 0.254 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=35.72' Storage=0.094 af Inflow=2.93 cfs 0.254 af
Discarded=0.67 cfs 0.251 af Primary=0.00 cfs 0.000 af Outflow=0.68 cfs 0.251 af

Pond 6P: Drain Manhole #1 Peak Elev=34.96' Inflow=1.78 cfs 0.143 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0059 '/' Outflow=1.78 cfs 0.143 af

Pond 7P: Drain Manhole #2 Peak Elev=34.74' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=35.0' S=0.0086 '/' Outflow=0.00 cfs 0.000 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=34.74' Storage=0.041 af Inflow=1.78 cfs 0.143 af
Primary=0.50 cfs 0.142 af Secondary=0.00 cfs 0.000 af Outflow=0.50 cfs 0.142 af

Pond 9P: Drain Manhole #3 Peak Elev=32.01' Inflow=0.50 cfs 0.142 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=0.50 cfs 0.142 af

Pond 10P: Yard Drain #1 Peak Elev=36.14' Inflow=0.25 cfs 0.018 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.25 cfs 0.018 af

Pond 11P: Yard Drain #2 Peak Elev=39.04' Storage=2 cf Inflow=0.12 cfs 0.011 af
Primary=0.12 cfs 0.011 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.011 af

Pond 12P: Yard Drain #3 Peak Elev=35.75' Inflow=1.76 cfs 0.155 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=1.76 cfs 0.155 af

Pond 13P: Yard Drain #4 Peak Elev=36.72' Inflow=0.13 cfs 0.010 af
8.0" Round Culvert n=0.013 L=36.0' S=0.0111 '/' Outflow=0.13 cfs 0.010 af

Pond 14P: Subsurface Stone Infiltration Peak Elev=30.07' Storage=0.004 af Inflow=0.11 cfs 0.009 af
Discarded=0.02 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.009 af

Pond 15P: Stone Infiltration Under 1&2 Decks Peak Elev=31.25' Storage=198 cf Inflow=0.11 cfs 0.009 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond 16P: Stone Infiltration Under Unit 3 Deck Peak Elev=33.55' Storage=104 cf Inflow=0.05 cfs 0.005 af
Discarded=0.00 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.003 af

Pond 17P: Subsurface Stone Infiltration Peak Elev=32.81' Storage=0.003 af Inflow=0.10 cfs 0.008 af
Discarded=0.03 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.008 af

Pond 18P: Stone Infiltration Under Unit 4 Deck Peak Elev=33.60' Storage=108 cf Inflow=0.05 cfs 0.005 af
Discarded=0.00 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.003 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.06' Inflow=0.16 cfs 0.013 af
12.0" Round Culvert n=0.013 L=66.0' S=0.0045 '/' Outflow=0.16 cfs 0.013 af

Pond 20P: Deep Sump CB #4 Peak Elev=29.93' Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.35 cfs 0.029 af

Pond 21P: Drain Manhole #4 Peak Elev=29.82' Inflow=0.50 cfs 0.042 af
12.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=0.50 cfs 0.042 af

Pond 22P: Wetland Ponding Area Peak Elev=31.24' Storage=4,907 cf Inflow=1.99 cfs 0.323 af
Outflow=3.38 cfs 0.211 af

Total Runoff Area = 2.669 ac Runoff Volume = 0.810 af Average Runoff Depth = 3.64"
49.78% Pervious = 1.328 ac 50.22% Impervious = 1.340 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.30 cfs @ 12.29 hrs, Volume= 0.139 af, Depth> 2.49"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	4,586	98	Paved roads w/curbs & sewers, HSG B
	1,864	55	Woods, Good, HSG B
	3,924	61	>75% Grass cover, Good, HSG B
	551	80	>75% Grass cover, Good, HSG D
	200	77	Woods, Good, HSG D
	12,225	55	Woods, Good, HSG B
	1,564	61	>75% Grass cover, Good, HSG B
	4,071	98	Paved parking, HSG B
	150	98	Roofs, HSG B
	50	98	Roofs, HSG D
	29,185	70	Weighted Average
	20,328		69.65% Pervious Area
	8,857		30.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	13	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.1	113	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.32 cfs @ 12.16 hrs, Volume= 0.117 af, Depth> 4.14"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	4,812	80	>75% Grass cover, Good, HSG D
	319	98	Paved roads w/curbs & sewers, HSG D
	2,823	98	Roofs, HSG D
*	186	98	Ledge Outcrop, HSG D
	3,901	80	>75% Grass cover, Good, HSG D
	2,732	98	Roofs, HSG D
	14,773	87	Weighted Average
	8,713		58.98% Pervious Area
	6,060		41.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	38	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	17	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.1	71	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
12.0	126	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.53 cfs @ 12.10 hrs, Volume= 0.039 af, Depth> 2.41"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
6,481	61	>75% Grass cover, Good, HSG B
143	55	Woods, Good, HSG B
1,812	98	Roofs, HSG B
8,436	69	Weighted Average
6,624		78.52% Pervious Area
1,812		21.48% 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 = 0.40 cfs @ 12.18 hrs, Volume= 0.037 af, Depth> 3.52"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	2,343	98	Ledge Outcrop, HSG D
	73	77	Woods, Good, HSG D
	917	55	Woods, Good, HSG B
	1,386	61	>75% Grass cover, Good, HSG B
	710	98	Roofs, HSG B
	5,429	81	Weighted Average
	2,376		43.76% Pervious Area
	3,053		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.2100	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.8	7	0.2860	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
12.2	42	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
13.2	87	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 4.36"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,744	61	>75% Grass cover, Good, HSG B
14	98	Paved parking, HSG D
3,348	98	Paved parking, HSG B
1,840	98	Roofs, HSG B
6,946	89	Weighted Average
1,744		25.11% Pervious Area
5,202		74.89% Impervious Area

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

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 4.46"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
607	61	>75% Grass cover, Good, HSG B
1,414	98	Paved parking, HSG B
2,813	98	Paved parking, HSG D
3,196	80	>75% Grass cover, Good, HSG D
2,382	98	Roofs, HSG D
10,412	90	Weighted Average
3,803		36.53% Pervious Area
6,609		63.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	20	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	40	0.0100	0.93		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
2.4	60	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 4.79"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,935	98	Roofs, HSG B
2,932	98	Paved parking, HSG B
972	61	>75% Grass cover, Good, HSG B
857	98	Roofs, HSG D
2,481	98	Paved parking, HSG D
572	80	>75% Grass cover, Good, HSG D
9,749	93	Weighted Average
1,544		15.84% Pervious Area
8,205		84.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	40	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.0	60	0.0100	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.3	35	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	135	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 1.28 cfs @ 12.15 hrs, Volume= 0.113 af, Depth> 4.46"

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 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	1,713	61	>75% Grass cover, Good, HSG B
	4,487	98	Paved parking, HSG B
	1,219	98	Roofs, HSG B
	2,194	80	>75% Grass cover, Good, HSG D
*	1,608	98	Ledge Outcrop, HSG D
	39	98	Paved parking, HSG D
	2,016	98	Roofs, HSG D
	13,276	90	Weighted Average
	3,907		29.43% Pervious Area
	9,369		70.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	26	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
11.2	86	Total			

Summary for Subcatchment 9S: Subcatchment 15S

Runoff = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af, Depth> 3.14"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,238	61	>75% Grass cover, Good, HSG B
1,015	80	>75% Grass cover, Good, HSG D
72	98	Roofs, HSG B
747	98	Roofs, HSG D
3,072	77	Weighted Average
2,253		73.34% Pervious Area
819		26.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	67	0.0160	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 10S: Subcatchment 16S

Runoff = 0.12 cfs @ 12.19 hrs, Volume= 0.011 af, Depth> 1.82"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
2,918	61	>75% Grass cover, Good, HSG B
237	80	>75% Grass cover, Good, HSG D
3,155	62	Weighted Average
3,155		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	83	0.0060	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 11S: Yard Drain #3

Runoff = 0.16 cfs @ 12.11 hrs, Volume= 0.012 af, Depth> 2.24"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
2,421	61	>75% Grass cover, Good, HSG B
460	98	Roofs, HSG B
2,881	67	Weighted Average
2,421		84.03% Pervious Area
460		15.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	60	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 12S: Subcatchment 18S

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 3.73"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
94	61	>75% Grass cover, Good, HSG B
904	80	>75% Grass cover, Good, HSG D
11	98	Roofs, HSG B
332	98	Roofs, HSG D
1,341	83	Weighted Average
998		74.42% Pervious Area
343		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	37	0.0190	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.2	37	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 13S: Back of Units 1 and 2

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
918	98	Roofs, HSG B
918		100.00% Impervious Area

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

Summary for Subcatchment 14S: Unit 1 and 2 Decks

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
884	98	Roofs, HSG B
884		100.00% Impervious Area

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

Summary for Subcatchment 15S: Unit 3 Deck

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
124	98	Roofs, HSG B
318	98	Roofs, HSG D
442	98	Weighted Average
442		100.00% Impervious Area

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

Summary for Subcatchment 16S: Back of Unit 3

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
310	98	Roofs, HSG D
310		100.00% Impervious Area

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

Summary for Subcatchment 17S: East Side of Unit 4

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
500	98	Roofs, HSG B
2	98	Roofs, HSG D
502	98	Weighted Average
502		100.00% Impervious Area

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

Summary for Subcatchment 18S: Unit 4 Deck

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
442	98	Roofs, HSG B
442		100.00% Impervious Area

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

Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,288	98	Paved parking, HSG B
1,288		100.00% Impervious Area

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

Summary for Subcatchment 20S: Subcatchment 20S

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 5.37"

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 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
2,230	98	Paved parking, HSG B
576	98	Paved parking, HSG D
2,806	98	Weighted Average
2,806		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: Swale

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 4.14" for 10 Yr 24 Hr(+15%) event
Inflow = 1.32 cfs @ 12.16 hrs, Volume= 0.117 af
Outflow = 1.25 cfs @ 12.21 hrs, Volume= 0.117 af, Atten= 5%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.73 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 7.7 min

Peak Storage= 240 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.76' , Surface Width= 4.53'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 2.65 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'

Summary for Reach AP1: Isolated Wetland

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

Inflow Area =	2.011 ac, 54.17% Impervious,	Inflow Depth > 1.93"	for 10 Yr 24 Hr(+15%) event
Inflow =	1.99 cfs @ 12.27 hrs, Volume=	0.323 af	
Outflow =	1.99 cfs @ 12.27 hrs, Volume=	0.323 af, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

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

Inflow Area =	0.339 ac, 41.02% Impervious,	Inflow Depth > 4.13"	for 10 Yr 24 Hr(+15%) event
Inflow =	1.25 cfs @ 12.21 hrs, Volume=	0.117 af	
Outflow =	1.25 cfs @ 12.21 hrs, Volume=	0.117 af, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

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

Inflow Area =	0.194 ac, 21.48% Impervious,	Inflow Depth > 2.41"	for 10 Yr 24 Hr(+15%) event
Inflow =	0.53 cfs @ 12.10 hrs, Volume=	0.039 af	
Outflow =	0.53 cfs @ 12.10 hrs, Volume=	0.039 af, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

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

Inflow Area =	0.125 ac, 56.24% Impervious,	Inflow Depth > 3.52"	for 10 Yr 24 Hr(+15%) event
Inflow =	0.40 cfs @ 12.18 hrs, Volume=	0.037 af	
Outflow =	0.40 cfs @ 12.18 hrs, Volume=	0.037 af, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Bioretention #1

Inflow Area = 0.159 ac, 74.89% Impervious, Inflow Depth > 4.36" for 10 Yr 24 Hr(+15%) event
Inflow = 0.77 cfs @ 12.09 hrs, Volume= 0.058 af
Outflow = 0.72 cfs @ 12.11 hrs, Volume= 0.056 af, Atten= 7%, Lag= 1.4 min
Primary = 0.72 cfs @ 12.11 hrs, Volume= 0.056 af
Secondary = 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 / 3
Peak Elev= 35.53' @ 12.12 hrs Surf.Area= 315 sf Storage= 151 cf

Plug-Flow detention time= 33.1 min calculated for 0.056 af (97% of inflow)
Center-of-Mass det. time= 14.4 min (804.4 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1	33.99'	694 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.99	315	0.0	0	0
34.00	315	40.0	1	1
34.99	315	40.0	125	126
35.00	315	15.0	0	126
36.49	315	15.0	70	197
36.50	315	100.0	3	200
37.00	484	100.0	200	400
37.50	668	100.0	288	688
37.51	668	100.0	7	694

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.25'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.30'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	37.50'	**31.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.71 cfs @ 12.11 hrs HW=35.50' TW=34.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.71 cfs of 0.92 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 3.59 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.99' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

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Inflow Area =     0.239 ac, 63.47% Impervious,  Inflow Depth >  4.46"   for  10 Yr 24 Hr(+15%) event
Inflow      =    1.17 cfs @  12.09 hrs,  Volume=        0.089 af
Outflow     =    1.06 cfs @  12.13 hrs,  Volume=        0.087 af,  Atten= 10%,  Lag= 2.3 min
Primary     =    1.06 cfs @  12.13 hrs,  Volume=        0.087 af
Secondary   =    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 / 3
Peak Elev= 36.25' @ 12.13 hrs Surf.Area= 494 sf Storage= 254 cf

Plug-Flow detention time= 20.3 min calculated for 0.087 af (98% of inflow)
Center-of-Mass det. time= 10.3 min (796.7 - 786.4)

Volume	Invert	Avail.Storage	Storage Description
#1	34.49'	984 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.49	494	0.0	0	0
34.50	494	40.0	2	2
35.49	494	40.0	196	198
35.50	494	15.0	1	198
36.99	494	15.0	110	309
37.00	494	100.0	5	314
38.00	831	100.0	663	976
38.01	831	100.0	8	984

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.75'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.70'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	38.00'	**13.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.04 cfs @ 12.13 hrs HW=36.21' TW=34.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.04 cfs of 1.49 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.04 cfs @ 5.29 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.49' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Catch Basin #1

Inflow Area = 0.375 ac, 62.32% Impervious, Inflow Depth > 4.21" for 10 Yr 24 Hr(+15%) event
Inflow = 1.50 cfs @ 12.15 hrs, Volume= 0.132 af
Outflow = 1.50 cfs @ 12.15 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Primary = 1.50 cfs @ 12.15 hrs, Volume= 0.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.80' @ 12.14 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**15.0" Round Culvert** L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.00' / 34.75' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.49 cfs @ 12.15 hrs HW=35.80' TW=35.49' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.49 cfs @ 2.56 fps)

Summary for Pond 4P: Catch Basin #2

Inflow Area = 0.768 ac, 57.35% Impervious, Inflow Depth > 3.97" for 10 Yr 24 Hr(+15%) event
Inflow = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af
Outflow = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min
Primary = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.73' @ 12.56 hrs
Flood Elev= 38.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.15'	**18.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.15' / 33.95' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.88 cfs @ 12.11 hrs HW=35.14' TW=34.39' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.88 cfs @ 3.30 fps)

Summary for Pond 5P: Concrete Galley 8x14 INFILTRATION

Inflow Area = 0.768 ac, 57.35% Impervious, Inflow Depth > 3.97" for 10 Yr 24 Hr(+15%) event
Inflow = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af
Outflow = 0.68 cfs @ 12.57 hrs, Volume= 0.251 af, Atten= 77%, Lag= 27.6 min
Discarded = 0.67 cfs @ 12.57 hrs, Volume= 0.251 af
Primary = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 35.72' @ 12.57 hrs Surf.Area= 0.071 ac Storage= 0.094 af

Plug-Flow detention time= 79.0 min calculated for 0.251 af (99% of inflow)
Center-of-Mass det. time= 71.3 min (865.5 - 794.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.90'	0.000 af	**24.00'W x 42.00'L x 3.67'H Field A** 0.085 af Overall - 0.085 af Embedded = 0.000 af x 40.0% Voids
#2A	33.90'	0.062 af	**Shea Leaching Chamber 8x14x3.7** x 9 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 9 Chambers in 3 Rows
#3	30.90'	0.035 af	**28.00'W x 46.00'L x 3.00'H Prismatoid** 0.089 af Overall x 40.0% Voids
#4	30.90'	0.007 af	**8.00'W x 32.00'L x 3.00'H Prismatoid** 0.018 af Overall x 40.0% Voids
#5	33.90'	0.010 af	**2.00'W x 148.00'L x 3.67'H Prismatoid** 0.025 af Overall x 40.0% Voids
#6B	33.90'	0.000 af	**8.00'W x 28.00'L x 3.67'H Field B** 0.019 af Overall - 0.019 af Embedded = 0.000 af x 40.0% Voids
#7B	33.90'	0.014 af	**Shea Leaching Chamber 8x14x3.7** x 2 Inside #6 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf
		0.128 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.90'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 30.82' Phase-In= 0.01'
#2	Primary	35.70'	**12.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.70' / 34.40' S= 0.0197 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	37.56'	**160.0' 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=0.67 cfs @ 12.57 hrs HW=35.72' (Free Discharge)
└—**1=Exfiltration** (Controls 0.67 cfs)

Primary OutFlow Max=0.00 cfs @ 12.57 hrs HW=35.72' TW=34.71' (Dynamic Tailwater)
├—**2=Culvert** (Inlet Controls 0.00 cfs @ 0.39 fps)
└—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Drain Manhole #1

Inflow Area = 0.398 ac, 68.04% Impervious, Inflow Depth > 4.32" for 10 Yr 24 Hr(+15%) event
Inflow = 1.78 cfs @ 12.12 hrs, Volume= 0.143 af
Outflow = 1.78 cfs @ 12.12 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.12 hrs, Volume= 0.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 34.96' @ 12.12 hrs
Flood Elev= 38.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.07'	**12.0" Round Culvert** L= 46.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.07' / 33.80' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.74 cfs @ 12.12 hrs HW=34.94' TW=33.97' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.74 cfs @ 3.19 fps)

Summary for Pond 7P: Drain Manhole #2

Inflow Area = 0.768 ac, 57.35% Impervious, Inflow Depth = 0.00" for 10 Yr 24 Hr(+15%) event
Inflow = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 34.74' @ 12.51 hrs
Flood Elev= 39.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.30'	**12.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.30' / 34.00' S= 0.0086 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.57 hrs HW=34.71' TW=34.72' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 8P: Concrete Galley 8x14 STORAGE ONLY

[92] Warning: Device #4 is above defined storage
[80] Warning: Exceeded Pond 7P by 0.09' @ 12.25 hrs (0.06 cfs 0.005 af)

Inflow Area = 1.167 ac, 61.00% Impervious, Inflow Depth > 1.48" for 10 Yr 24 Hr(+15%) event
Inflow = 1.78 cfs @ 12.12 hrs, Volume= 0.143 af
Outflow = 0.50 cfs @ 12.50 hrs, Volume= 0.142 af, Atten= 72%, Lag= 22.6 min
Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.142 af
Secondary = 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 / 3
Peak Elev= 34.74' @ 12.50 hrs Surf.Area= 0.055 ac Storage= 0.041 af

Plug-Flow detention time= 38.0 min calculated for 0.142 af (99% of inflow)
Center-of-Mass det. time= 32.7 min (832.4 - 799.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.30'	0.000 af	**16.00'W x 56.00'L x 3.67'H Field A** 0.075 af Overall - 0.075 af Embedded = 0.000 af x 40.0% Voids
#2A	33.30'	0.055 af	**Shea Leaching Chamber 8x14x3.7** x 8 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 8 Chambers in 2 Rows
#3	32.30'	0.011 af	**20.00'W x 60.00'L x 1.00'H Prismatoid** 0.028 af Overall x 40.0% Voids
#4	33.30'	0.010 af	**2.00'W x 144.00'L x 3.67'H Prismatoid** 0.024 af Overall x 40.0% Voids
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	**4.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.27' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	32.30'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	34.70'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.70' / 34.67' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#4	Secondary	39.80'	**160.0' 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=0.50 cfs @ 12.50 hrs HW=34.74' TW=32.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.50 cfs @ 5.73 fps)
2=Orifice/Grate (Passes 0.50 cfs of 0.63 cfs potential flow)
3=Culvert (Barrel Controls 0.00 cfs @ 0.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 9P: Drain Manhole #3

Inflow Area =	1.167 ac, 61.00% Impervious, Inflow Depth > 1.46"	for 10 Yr 24 Hr(+15%) event	
Inflow =	0.50 cfs @ 12.50 hrs, Volume=	0.142 af	
Outflow =	0.50 cfs @ 12.50 hrs, Volume=	0.142 af, Atten= 0%, Lag= 0.0 min	
Primary =	0.50 cfs @ 12.50 hrs, Volume=	0.142 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.01' @ 12.50 hrs
Flood Elev= 39.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**12.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.60' / 31.10' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.50 cfs @ 12.50 hrs HW=32.01' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.50 cfs @ 2.49 fps)

Summary for Pond 10P: Yard Drain #1

Inflow Area = 0.071 ac, 26.66% Impervious, Inflow Depth > 3.14" for 10 Yr 24 Hr(+15%) event
Inflow = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af
Outflow = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.14' @ 12.11 hrs
Flood Elev= 39.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.80'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.80' / 35.58' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.24 cfs @ 12.11 hrs HW=36.13' TW=35.78' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.24 cfs @ 2.03 fps)

Summary for Pond 11P: Yard Drain #2

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth > 1.82" for 10 Yr 24 Hr(+15%) event
Inflow = 0.12 cfs @ 12.19 hrs, Volume= 0.011 af
Outflow = 0.12 cfs @ 12.20 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.4 min
Primary = 0.12 cfs @ 12.20 hrs, Volume= 0.011 af
Secondary = 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 / 3
Peak Elev= 39.04' @ 12.20 hrs Surf.Area= 107 sf Storage= 2 cf

Plug-Flow detention time= 0.2 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (866.4 - 866.2)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	1,358 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	5	0	0
40.01	2,685	1,358	1,358

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**8.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.00' / 35.33' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	39.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	40.00'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.12 cfs @ 12.20 hrs HW=39.04' TW=35.50' (Dynamic Tailwater)
└—**1=Culvert** (Passes 0.12 cfs of 2.18 cfs potential flow)
 └—**2=Orifice/Grate** (Weir Controls 0.12 cfs @ 0.64 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=34.15' (Dynamic Tailwater)
└—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 12P: Yard Drain #3

Inflow Area =	0.514 ac, 47.57% Impervious, Inflow Depth > 3.62"		for 10 Yr 24 Hr(+15%) event
Inflow =	1.76 cfs @ 12.14 hrs, Volume=	0.155 af	
Outflow =	1.76 cfs @ 12.14 hrs, Volume=	0.155 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.76 cfs @ 12.14 hrs, Volume=	0.155 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.75' @ 12.55 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.65'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.65' / 34.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.74 cfs @ 12.14 hrs HW=35.49' TW=35.12' (Dynamic Tailwater)
└—**1=Culvert** (Outlet Controls 1.74 cfs @ 2.81 fps)

Summary for Pond 13P: Yard Drain #4

Inflow Area =	0.031 ac, 25.58% Impervious, Inflow Depth > 3.73"		for 10 Yr 24 Hr(+15%) event
Inflow =	0.13 cfs @ 12.09 hrs, Volume=	0.010 af	
Outflow =	0.13 cfs @ 12.09 hrs, Volume=	0.010 af, Atten= 0%, Lag= 0.0 min	
Primary =	0.13 cfs @ 12.09 hrs, Volume=	0.010 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.72' @ 12.09 hrs
Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**8.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.50' / 36.10' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=36.72' TW=35.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.13 cfs @ 1.26 fps)

Summary for Pond 14P: Subsurface Stone Infiltration

Inflow Area =	0.021 ac,100.00% Impervious,	Inflow Depth > 5.37"	for 10 Yr 24 Hr(+15%) event	
Inflow =	0.11 cfs @	12.09 hrs, Volume=	0.009 af	
Outflow =	0.02 cfs @	12.58 hrs, Volume=	0.009 af,	Atten= 85%, Lag= 29.4 min
Discarded =	0.02 cfs @	12.58 hrs, Volume=	0.009 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 / 3
Peak Elev= 30.07' @ 12.58 hrs Surf.Area= 0.004 ac Storage= 0.004 af

Plug-Flow detention time= 111.7 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 111.0 min (856.8 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	0.007 af	**4.00'W x 40.00'L x 4.51'H Prismatoid** 0.017 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.50'	**0.650 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 27.08' Phase-In= 0.01'
#2	Primary	32.00'	**88.0' 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=0.02 cfs @ 12.58 hrs HW=30.07' (Free Discharge)
1=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.50' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 15P: Stone Infiltration Under 1&2 Decks

[92] Warning: Device #2 is above defined storage

```
Inflow Area =      0.020 ac,100.00% Impervious,  Inflow Depth >  5.37"   for  10 Yr 24 Hr(+15%) event
Inflow     =      0.11 cfs @  12.09 hrs,  Volume=          0.009 af
Outflow    =      0.01 cfs @  13.90 hrs,  Volume=          0.007 af,  Atten= 94%,  Lag= 108.7 min
Discarded  =      0.01 cfs @  13.90 hrs,  Volume=          0.007 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 / 3
Peak Elev= 31.25' @ 13.90 hrs Surf.Area= 414 sf Storage= 198 cf

Plug-Flow detention time= 257.3 min calculated for 0.007 af (78% of inflow)
Center-of-Mass det. time= 177.4 min (923.1 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	30.05'	416 cf	**9.00'W x 46.00'L x 2.51'H Prismatoid** 1,039 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.05'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 29.00' Phase-In= 0.01'
#2	Primary	34.80'	**23.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.01 cfs @ 13.90 hrs HW=31.25' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.05' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16P: Stone Infiltration Under Unit 3 Deck

```
Inflow Area =      0.010 ac,100.00% Impervious,  Inflow Depth >  5.37"   for  10 Yr 24 Hr(+15%) event
Inflow     =      0.05 cfs @  12.09 hrs,  Volume=          0.005 af
Outflow    =      0.00 cfs @  14.50 hrs,  Volume=          0.003 af,  Atten= 95%,  Lag= 144.6 min
Discarded  =      0.00 cfs @  14.50 hrs,  Volume=          0.003 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 / 3
Peak Elev= 33.55' @ 14.50 hrs Surf.Area= 207 sf Storage= 104 cf

Plug-Flow detention time= 265.4 min calculated for 0.003 af (70% of inflow)
Center-of-Mass det. time= 170.8 min (916.5 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	32.30'	208 cf	**9.00'W x 23.00'L x 2.51'H Prismatoid** 520 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.30'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 30.67' Phase-In= 0.01'
#2	Primary	34.80'	**23.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 14.50 hrs HW=33.55' (Free Discharge)
└**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 17P: Subsurface Stone Infiltration

Inflow Area = 0.019 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.03 cfs @ 12.44 hrs, Volume= 0.008 af, Atten= 73%, Lag= 21.3 min
Discarded = 0.03 cfs @ 12.44 hrs, Volume= 0.008 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 / 3
Peak Elev= 32.81' @ 12.44 hrs Surf.Area= 0.006 ac Storage= 0.003 af

Plug-Flow detention time= 51.1 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 50.1 min (795.8 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	0.004 af	**8.00'W x 35.00'L x 1.71'H Prismatoid** 0.011 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.80'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 31.72' Phase-In= 0.01'
#2	Primary	33.50'	**86.0' 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 @ 12.44 hrs HW=32.81' (Free Discharge)
└**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.80' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 18P: Stone Infiltration Under Unit 4 Deck

Inflow Area = 0.010 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.005 af
Outflow = 0.00 cfs @ 15.06 hrs, Volume= 0.003 af, Atten= 96%, Lag= 178.4 min
Discarded = 0.00 cfs @ 15.06 hrs, Volume= 0.003 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 / 3
Peak Elev= 33.60' @ 15.06 hrs Surf.Area= 207 sf Storage= 108 cf

Plug-Flow detention time= 264.4 min calculated for 0.003 af (64% of inflow)
Center-of-Mass det. time= 160.7 min (906.4 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	32.30'	208 cf	**9.00'W x 23.00'L x 2.51'H Prismatoid** 520 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.30'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 29.75' Phase-In= 0.01'
#2	Primary	34.80'	**23.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 15.06 hrs HW=33.60' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 19P: Deep Sump CB #3

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.06' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.50' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.15 cfs @ 12.09 hrs HW=30.06' TW=29.81' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.15 cfs @ 1.45 fps)

Summary for Pond 20P: Deep Sump CB #4

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.93' @ 12.09 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.55'	**12.0" Round Culvert** L= 2.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.55' / 29.50' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=29.92' TW=29.81' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.34 cfs @ 1.26 fps)

Summary for Pond 21P: Drain Manhole #4

Inflow Area = 0.094 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.50 cfs @ 12.09 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.82' @ 12.09 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.40'	**12.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.40' / 29.30' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.49 cfs @ 12.09 hrs HW=29.81' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.49 cfs @ 2.38 fps)

Summary for Pond 22P: Wetland Ponding Area

[93] Warning: Storage range exceeded by 0.23'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=113)

Inflow Area = 2.011 ac, 54.17% Impervious, Inflow Depth > 1.93" for 10 Yr 24 Hr(+15%) event
Inflow = 1.99 cfs @ 12.27 hrs, Volume= 0.323 af
Outflow = 3.38 cfs @ 12.45 hrs, Volume= 0.211 af, Atten= 0%, Lag= 10.5 min
Primary = 3.38 cfs @ 12.45 hrs, Volume= 0.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.24' @ 12.45 hrs Surf.Area= 2,787 sf Storage= 4,907 cf

Plug-Flow detention time= 173.9 min calculated for 0.210 af (65% of inflow)
Center-of-Mass det. time= 75.3 min (904.9 - 829.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	4,907 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	619	0	0
29.00	1,245	932	932
30.00	1,935	1,590	2,522
31.01	2,787	2,385	4,907

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.38 cfs @ 12.45 hrs HW=31.24' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.38 cfs @ 1.20 fps)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,185 sf 30.35% Impervious Runoff Depth>3.70"
Flow Length=113' Tc=20.1 min CN=70 Runoff=1.95 cfs 0.207 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>5.59"
Flow Length=126' Tc=12.0 min CN=87 Runoff=1.75 cfs 0.158 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>3.61"
Tc=6.0 min CN=69 Runoff=0.80 cfs 0.058 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>4.91"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.56 cfs 0.051 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 74.89% Impervious Runoff Depth>5.82"
Tc=6.0 min CN=89 Runoff=1.01 cfs 0.077 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 63.47% Impervious Runoff Depth>5.94"
Flow Length=60' Tc=6.0 min CN=90 Runoff=1.53 cfs 0.118 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 84.16% Impervious Runoff Depth>6.29"
Flow Length=135' Tc=6.0 min CN=93 Runoff=1.48 cfs 0.117 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.57% Impervious Runoff Depth>5.93"
Flow Length=86' Tc=11.2 min CN=90 Runoff=1.68 cfs 0.151 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>4.47"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.35 cfs 0.026 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>2.88"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.19 cfs 0.017 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>3.40"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.25 cfs 0.019 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>5.14"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.18 cfs 0.013 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment14S: Unit 1 and 2 Decks Runoff Area=884 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment15S: Unit 3 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment16S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment 17S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment 18S: Unit 4 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment 19S: Subcatchment 19S Runoff Area=1,288 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

Subcatchment 20S: Subcatchment 20S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.037 af

Reach 1R: Swale Avg. Flow Depth=0.84' Max Vel=0.79 fps Inflow=1.75 cfs 0.158 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=1.68 cfs 0.158 af

Reach AP1: Isolated Wetland Inflow=3.52 cfs 0.485 af
Outflow=3.52 cfs 0.485 af

Reach AP2: Shoulder of Road Inflow=1.68 cfs 0.158 af
Outflow=1.68 cfs 0.158 af

Reach AP3: Detention Pond Inflow=0.80 cfs 0.058 af
Outflow=0.80 cfs 0.058 af

Reach AP4: Rear of Site Inflow=0.56 cfs 0.051 af
Outflow=0.56 cfs 0.051 af

Pond 1P: Bioretention #1 Peak Elev=36.13' Storage=180 cf Inflow=1.01 cfs 0.077 af
Primary=0.94 cfs 0.075 af Secondary=0.00 cfs 0.000 af Outflow=0.94 cfs 0.075 af

Pond 2P: Bioretention #2 Peak Elev=37.04' Storage=332 cf Inflow=1.53 cfs 0.118 af
Primary=1.32 cfs 0.117 af Secondary=0.00 cfs 0.000 af Outflow=1.32 cfs 0.117 af

Pond 3P: Catch Basin #1 Peak Elev=36.50' Inflow=1.99 cfs 0.177 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=1.99 cfs 0.177 af

Pond 4P: Catch Basin #2 Peak Elev=36.40' Inflow=3.93 cfs 0.343 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=3.93 cfs 0.343 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=36.33' Storage=0.110 af Inflow=3.93 cfs 0.343 af
Discarded=0.76 cfs 0.306 af Primary=1.10 cfs 0.033 af Outflow=1.86 cfs 0.339 af

Pond 6P: Drain Manhole #1 Peak Elev=35.67' Inflow=2.26 cfs 0.192 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0059 '/' Outflow=2.26 cfs 0.192 af

Pond 7P: Drain Manhole #2 Peak Elev=35.71' Inflow=1.10 cfs 0.033 af
12.0" Round Culvert n=0.013 L=35.0' S=0.0086 '/' Outflow=1.10 cfs 0.033 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=35.61' Storage=0.060 af Inflow=2.26 cfs 0.225 af
Primary=1.59 cfs 0.224 af Secondary=0.00 cfs 0.000 af Outflow=1.59 cfs 0.224 af

Pond 9P: Drain Manhole #3 Peak Elev=32.40' Inflow=1.59 cfs 0.224 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=1.59 cfs 0.224 af

Pond 10P: Yard Drain #1 Peak Elev=36.54' Inflow=0.35 cfs 0.026 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.35 cfs 0.026 af

Pond 11P: Yard Drain #2 Peak Elev=39.05' Storage=4 cf Inflow=0.19 cfs 0.017 af
Primary=0.19 cfs 0.017 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.017 af

Pond 12P: Yard Drain #3 Peak Elev=36.50' Inflow=2.39 cfs 0.213 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=2.39 cfs 0.213 af

Pond 13P: Yard Drain #4 Peak Elev=36.76' Inflow=0.18 cfs 0.013 af
8.0" Round Culvert n=0.013 L=36.0' S=0.0111 '/' Outflow=0.18 cfs 0.013 af

Pond 14P: Subsurface Stone Infiltration Peak Elev=30.87' Storage=0.005 af Inflow=0.14 cfs 0.012 af
Discarded=0.02 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.012 af

Pond 15P: Stone Infiltration Under 1&2 Decks Peak Elev=31.66' Storage=267 cf Inflow=0.14 cfs 0.012 af
Discarded=0.01 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.008 af

Pond 16P: Stone Infiltration Under Unit 3 Deck Peak Elev=34.00' Storage=141 cf Inflow=0.07 cfs 0.006 af
Discarded=0.00 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.004 af

Pond 17P: Subsurface Stone Infiltration Peak Elev=33.11' Storage=0.003 af Inflow=0.13 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 18P: Stone Infiltration Under Unit 4 Deck Peak Elev=34.07' Storage=147 cf Inflow=0.07 cfs 0.006 af
Discarded=0.00 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.003 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.11' Inflow=0.20 cfs 0.017 af
12.0" Round Culvert n=0.013 L=66.0' S=0.0045 '/' Outflow=0.20 cfs 0.017 af

Pond 20P: Deep Sump CB #4 Peak Elev=30.00' Inflow=0.44 cfs 0.037 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.44 cfs 0.037 af

Pond 21P: Drain Manhole #4 Peak Elev=29.88' Inflow=0.64 cfs 0.054 af
12.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=0.64 cfs 0.054 af

Pond 22P: Wetland Ponding Area Peak Elev=31.27' Storage=4,907 cf Inflow=3.52 cfs 0.485 af
Outflow=4.30 cfs 0.372 af

Total Runoff Area = 2.669 ac Runoff Volume = 1.113 af Average Runoff Depth = 5.00"
49.78% Pervious = 1.328 ac 50.22% Impervious = 1.340 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=29,185 sf 30.35% Impervious Runoff Depth>4.90"
Flow Length=113' Tc=20.1 min CN=70 Runoff=2.59 cfs 0.274 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>6.95"
Flow Length=126' Tc=12.0 min CN=87 Runoff=2.16 cfs 0.197 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>4.80"
Tc=6.0 min CN=69 Runoff=1.07 cfs 0.077 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>6.23"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.70 cfs 0.065 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 74.89% Impervious Runoff Depth>7.20"
Tc=6.0 min CN=89 Runoff=1.23 cfs 0.096 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 63.47% Impervious Runoff Depth>7.32"
Flow Length=60' Tc=6.0 min CN=90 Runoff=1.87 cfs 0.146 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 84.16% Impervious Runoff Depth>7.68"
Flow Length=135' Tc=6.0 min CN=93 Runoff=1.79 cfs 0.143 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.57% Impervious Runoff Depth>7.32"
Flow Length=86' Tc=11.2 min CN=90 Runoff=2.05 cfs 0.186 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>5.76"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.45 cfs 0.034 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>3.96"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.27 cfs 0.024 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>4.56"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.34 cfs 0.025 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>6.48"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.22 cfs 0.017 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.015 af

Subcatchment14S: Unit 1 and 2 Decks Runoff Area=884 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment15S: Unit 3 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment16S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

Subcatchment 17S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.008 af

Subcatchment 18S: Unit 4 Deck Runoff Area=442 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment 19S: Subcatchment 19S Runoff Area=1,288 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 20S: Subcatchment 20S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.53 cfs 0.044 af

Reach 1R: Swale Avg. Flow Depth=0.91' Max Vel=0.83 fps Inflow=2.16 cfs 0.197 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=2.07 cfs 0.196 af

Reach AP1: Isolated Wetland Inflow=4.85 cfs 0.645 af
Outflow=4.85 cfs 0.645 af

Reach AP2: Shoulder of Road Inflow=2.07 cfs 0.196 af
Outflow=2.07 cfs 0.196 af

Reach AP3: Detention Pond Inflow=1.07 cfs 0.077 af
Outflow=1.07 cfs 0.077 af

Reach AP4: Rear of Site Inflow=0.70 cfs 0.065 af
Outflow=0.70 cfs 0.065 af

Pond 1P: Bioretention #1 Peak Elev=36.78' Storage=301 cf Inflow=1.23 cfs 0.096 af
Primary=1.05 cfs 0.094 af Secondary=0.00 cfs 0.000 af Outflow=1.05 cfs 0.094 af

Pond 2P: Bioretention #2 Peak Elev=37.34' Storage=499 cf Inflow=1.87 cfs 0.146 af
Primary=1.29 cfs 0.144 af Secondary=0.00 cfs 0.000 af Outflow=1.29 cfs 0.144 af

Pond 3P: Catch Basin #1 Peak Elev=37.19' Inflow=2.44 cfs 0.220 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=2.44 cfs 0.220 af

Pond 4P: Catch Basin #2 Peak Elev=36.95' Inflow=4.86 cfs 0.429 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=4.86 cfs 0.429 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=36.88' Storage=0.126 af Inflow=4.86 cfs 0.429 af
Discarded=0.83 cfs 0.353 af Primary=1.89 cfs 0.070 af Outflow=2.69 cfs 0.423 af

Pond 6P: Drain Manhole #1 Peak Elev=36.82' Inflow=2.34 cfs 0.238 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0059 '/' Outflow=2.34 cfs 0.238 af

Pond 7P: Drain Manhole #2 Peak Elev=36.75' Inflow=1.89 cfs 0.070 af
12.0" Round Culvert n=0.013 L=35.0' S=0.0086 '/' Outflow=1.89 cfs 0.070 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=36.24' Storage=0.073 af Inflow=3.63 cfs 0.308 af
Primary=2.09 cfs 0.306 af Secondary=0.00 cfs 0.000 af Outflow=2.09 cfs 0.306 af

Pond 9P: Drain Manhole #3 Peak Elev=32.59' Inflow=2.09 cfs 0.306 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=2.09 cfs 0.306 af

Pond 10P: Yard Drain #1 Peak Elev=37.38' Inflow=0.45 cfs 0.034 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.45 cfs 0.034 af

Pond 11P: Yard Drain #2 Peak Elev=39.07' Storage=6 cf Inflow=0.27 cfs 0.024 af
Primary=0.27 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.024 af

Pond 12P: Yard Drain #3 Peak Elev=37.24' Inflow=3.00 cfs 0.269 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=3.00 cfs 0.269 af

Pond 13P: Yard Drain #4 Peak Elev=36.95' Inflow=0.22 cfs 0.017 af
8.0" Round Culvert n=0.013 L=36.0' S=0.0111 '/' Outflow=0.22 cfs 0.017 af

Pond 14P: Subsurface Stone Infiltration Peak Elev=31.61' Storage=0.006 af Inflow=0.17 cfs 0.015 af
Discarded=0.03 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.014 af

Pond 15P: Stone Infiltration Under 1&2 Decks Peak Elev=32.06' Storage=333 cf Inflow=0.17 cfs 0.014 af
Discarded=0.01 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.010 af

Pond 16P: Stone Infiltration Under Unit 3 Deck Peak Elev=34.42' Storage=176 cf Inflow=0.08 cfs 0.007 af
Discarded=0.00 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.004 af

Pond 17P: Subsurface Stone Infiltration Peak Elev=33.39' Storage=0.004 af Inflow=0.15 cfs 0.013 af
Discarded=0.04 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.013 af

Pond 18P: Stone Infiltration Under Unit 4 Deck Peak Elev=34.53' Storage=184 cf Inflow=0.08 cfs 0.007 af
Discarded=0.00 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.004 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.14' Inflow=0.24 cfs 0.020 af
12.0" Round Culvert n=0.013 L=66.0' S=0.0045 '/' Outflow=0.24 cfs 0.020 af

Pond 20P: Deep Sump CB #4 Peak Elev=30.06' Inflow=0.53 cfs 0.044 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.53 cfs 0.044 af

Pond 21P: Drain Manhole #4 Peak Elev=29.94' Inflow=0.77 cfs 0.065 af
12.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=0.77 cfs 0.065 af

Pond 22P: Wetland Ponding Area Peak Elev=31.34' Storage=4,907 cf Inflow=4.85 cfs 0.645 af
Outflow=5.90 cfs 0.532 af

Total Runoff Area = 2.669 ac Runoff Volume = 1.403 af Average Runoff Depth = 6.31"
49.78% Pervious = 1.328 ac 50.22% Impervious = 1.340 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.59 cfs @ 12.28 hrs, Volume= 0.274 af, Depth> 4.90"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
4,586	98	Paved roads w/curbs & sewers, HSG B
1,864	55	Woods, Good, HSG B
3,924	61	>75% Grass cover, Good, HSG B
551	80	>75% Grass cover, Good, HSG D
200	77	Woods, Good, HSG D
12,225	55	Woods, Good, HSG B
1,564	61	>75% Grass cover, Good, HSG B
4,071	98	Paved parking, HSG B
150	98	Roofs, HSG B
50	98	Roofs, HSG D
29,185	70	Weighted Average
20,328		69.65% Pervious Area
8,857		30.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	13	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.1	113	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 2.16 cfs @ 12.16 hrs, Volume= 0.197 af, Depth> 6.95"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
	4,812	80	>75% Grass cover, Good, HSG D
	319	98	Paved roads w/curbs & sewers, HSG D
	2,823	98	Roofs, HSG D
*	186	98	Ledge Outcrop, HSG D
	3,901	80	>75% Grass cover, Good, HSG D
	2,732	98	Roofs, HSG D
	14,773	87	Weighted Average
	8,713		58.98% Pervious Area
	6,060		41.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	38	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	17	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.1	71	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
12.0	126	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Depth> 4.80"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
6,481	61	>75% Grass cover, Good, HSG B
143	55	Woods, Good, HSG B
1,812	98	Roofs, HSG B
8,436	69	Weighted Average
6,624		78.52% Pervious Area
1,812		21.48% 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 = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af, Depth> 6.23"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	2,343	98	Ledge Outcrop, HSG D
	73	77	Woods, Good, HSG D
	917	55	Woods, Good, HSG B
	1,386	61	>75% Grass cover, Good, HSG B
	710	98	Roofs, HSG B
	5,429	81	Weighted Average
	2,376		43.76% Pervious Area
	3,053		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.2100	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.8	7	0.2860	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
12.2	42	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
13.2	87	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.096 af, Depth> 7.20"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,744	61	>75% Grass cover, Good, HSG B
14	98	Paved parking, HSG D
3,348	98	Paved parking, HSG B
1,840	98	Roofs, HSG B
6,946	89	Weighted Average
1,744		25.11% Pervious Area
5,202		74.89% Impervious Area

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

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.87 cfs @ 12.09 hrs, Volume= 0.146 af, Depth> 7.32"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
607	61	>75% Grass cover, Good, HSG B
1,414	98	Paved parking, HSG B
2,813	98	Paved parking, HSG D
3,196	80	>75% Grass cover, Good, HSG D
2,382	98	Roofs, HSG D
10,412	90	Weighted Average
3,803		36.53% Pervious Area
6,609		63.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	20	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	40	0.0100	0.93		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
2.4	60	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.143 af, Depth> 7.68"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,935	98	Roofs, HSG B
2,932	98	Paved parking, HSG B
972	61	>75% Grass cover, Good, HSG B
857	98	Roofs, HSG D
2,481	98	Paved parking, HSG D
572	80	>75% Grass cover, Good, HSG D
9,749	93	Weighted Average
1,544		15.84% Pervious Area
8,205		84.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	40	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.0	60	0.0100	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.3	35	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	135	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 2.05 cfs @ 12.15 hrs, Volume= 0.186 af, Depth> 7.32"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
	1,713	61	>75% Grass cover, Good, HSG B
	4,487	98	Paved parking, HSG B
	1,219	98	Roofs, HSG B
	2,194	80	>75% Grass cover, Good, HSG D
*	1,608	98	Ledge Outcrop, HSG D
	39	98	Paved parking, HSG D
	2,016	98	Roofs, HSG D
	13,276	90	Weighted Average
	3,907		29.43% Pervious Area
	9,369		70.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	26	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
11.2	86	Total			

Summary for Subcatchment 9S: Subcatchment 15S

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af, Depth> 5.76"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,238	61	>75% Grass cover, Good, HSG B
1,015	80	>75% Grass cover, Good, HSG D
72	98	Roofs, HSG B
747	98	Roofs, HSG D
3,072	77	Weighted Average
2,253		73.34% Pervious Area
819		26.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	67	0.0160	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 10S: Subcatchment 16S

Runoff = 0.27 cfs @ 12.18 hrs, Volume= 0.024 af, Depth> 3.96"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
2,918	61	>75% Grass cover, Good, HSG B
237	80	>75% Grass cover, Good, HSG D
3,155	62	Weighted Average
3,155		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	83	0.0060	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 11S: Yard Drain #3

Runoff = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af, Depth> 4.56"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
2,421	61	>75% Grass cover, Good, HSG B
460	98	Roofs, HSG B
2,881	67	Weighted Average
2,421		84.03% Pervious Area
460		15.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	60	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 12S: Subcatchment 18S

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 6.48"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
94	61	>75% Grass cover, Good, HSG B
904	80	>75% Grass cover, Good, HSG D
11	98	Roofs, HSG B
332	98	Roofs, HSG D
1,341	83	Weighted Average
998		74.42% Pervious Area
343		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	37	0.0190	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.2	37	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 13S: Back of Units 1 and 2

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
918	98	Roofs, HSG B
918		100.00% Impervious Area

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

Summary for Subcatchment 14S: Unit 1 and 2 Decks

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.014 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
884	98	Roofs, HSG B
884		100.00% Impervious Area

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

Summary for Subcatchment 15S: Unit 3 Deck

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
124	98	Roofs, HSG B
318	98	Roofs, HSG D
442	98	Weighted Average
442		100.00% Impervious Area

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

Summary for Subcatchment 16S: Back of Unit 3

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
310	98	Roofs, HSG D
310		100.00% Impervious Area

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

Summary for Subcatchment 17S: East Side of Unit 4

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
500	98	Roofs, HSG B
2	98	Roofs, HSG D
502	98	Weighted Average
502		100.00% Impervious Area

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

Summary for Subcatchment 18S: Unit 4 Deck

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
442	98	Roofs, HSG B
442		100.00% Impervious Area

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

Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,288	98	Paved parking, HSG B
1,288		100.00% Impervious Area

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

Summary for Subcatchment 20S: Subcatchment 20S

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 8.28"

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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
2,230	98	Paved parking, HSG B
576	98	Paved parking, HSG D
2,806	98	Weighted Average
2,806		100.00% Impervious Area

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

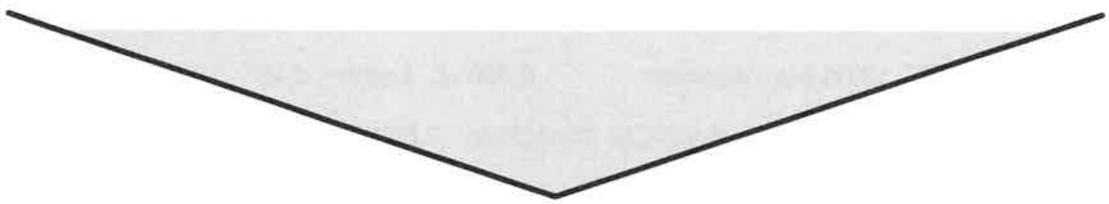
Summary for Reach 1R: Swale

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 6.95" for 50 Yr 24 Hr(+15%) event
Inflow = 2.16 cfs @ 12.16 hrs, Volume= 0.197 af
Outflow = 2.07 cfs @ 12.20 hrs, Volume= 0.196 af, Atten= 4%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.83 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 6.9 min

Peak Storage= 349 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.91' , Surface Width= 5.47'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 2.65 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'



Summary for Reach AP1: Isolated Wetland

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

Inflow Area = 2.011 ac, 54.17% Impervious, Inflow Depth > 3.85" for 50 Yr 24 Hr(+15%) event
Inflow = 4.85 cfs @ 12.31 hrs, Volume= 0.645 af
Outflow = 4.85 cfs @ 12.31 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

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

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 6.94" for 50 Yr 24 Hr(+15%) event
Inflow = 2.07 cfs @ 12.20 hrs, Volume= 0.196 af
Outflow = 2.07 cfs @ 12.20 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

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

Inflow Area = 0.194 ac, 21.48% Impervious, Inflow Depth > 4.80" for 50 Yr 24 Hr(+15%) event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

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

Inflow Area = 0.125 ac, 56.24% Impervious, Inflow Depth > 6.23" for 50 Yr 24 Hr(+15%) event
Inflow = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af
Outflow = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Bioretention #1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area =	0.159 ac, 74.89% Impervious, Inflow Depth > 7.20"	for 50 Yr 24 Hr(+15%) event	
Inflow =	1.23 cfs @ 12.09 hrs, Volume=	0.096 af	
Outflow =	1.05 cfs @ 12.10 hrs, Volume=	0.094 af, Atten= 15%, Lag= 0.5 min	
Primary =	1.05 cfs @ 12.10 hrs, Volume=	0.094 af	
Secondary =	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 / 3
Peak Elev= 36.78' @ 12.49 hrs Surf.Area= 409 sf Storage= 301 cf

Plug-Flow detention time= 24.7 min calculated for 0.094 af (98% of inflow)
Center-of-Mass det. time= 12.6 min (789.3 - 776.7)

Volume	Invert	Avail.Storage	Storage Description
#1	33.99'	694 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.99	315	0.0	0	0
34.00	315	40.0	1	1
34.99	315	40.0	125	126
35.00	315	15.0	0	126
36.49	315	15.0	70	197
36.50	315	100.0	3	200
37.00	484	100.0	200	400
37.50	668	100.0	288	688
37.51	668	100.0	7	694

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.25'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.30'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	37.50'	**31.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.05 cfs @ 12.10 hrs HW=36.50' TW=35.26' (Dynamic Tailwater)
1=Culvert (Passes 1.05 cfs of 1.48 cfs potential flow)
2=Orifice/Grate (Orifice Controls 1.05 cfs @ 5.35 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.99' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 0.239 ac, 63.47% Impervious, Inflow Depth > 7.32" for 50 Yr 24 Hr(+15%) event
Inflow = 1.87 cfs @ 12.09 hrs, Volume= 0.146 af
Outflow = 1.29 cfs @ 12.08 hrs, Volume= 0.144 af, Atten= 31%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.08 hrs, Volume= 0.144 af
Secondary = 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 / 3
Peak Elev= 37.34' @ 12.22 hrs Surf.Area= 607 sf Storage= 499 cf

Plug-Flow detention time= 16.3 min calculated for 0.144 af (99% of inflow)
Center-of-Mass det. time= 9.7 min (783.3 - 773.6)

Volume	Invert	Avail.Storage	Storage Description
#1	34.49'	984 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.49	494	0.0	0	0
34.50	494	40.0	2	2
35.49	494	40.0	196	198
35.50	494	15.0	1	198
36.99	494	15.0	110	309
37.00	494	100.0	5	314
38.00	831	100.0	663	976
38.01	831	100.0	8	984

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.75'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.70'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	38.00'	**13.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.28 cfs @ 12.08 hrs HW=37.06' TW=35.22' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.28 cfs of 1.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.28 cfs @ 6.54 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.49' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Catch Basin #1

[80] Warning: Exceeded Pond 10P by 0.09' @ 12.55 hrs (0.41 cfs 0.004 af)

Inflow Area = 0.375 ac, 62.32% Impervious, Inflow Depth > 7.02" for 50 Yr 24 Hr(+15%) event
Inflow = 2.44 cfs @ 12.14 hrs, Volume= 0.220 af
Outflow = 2.44 cfs @ 12.14 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min
Primary = 2.44 cfs @ 12.14 hrs, Volume= 0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.19' @ 12.25 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**15.0" Round Culvert** L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.00' / 34.75' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.14 hrs HW=36.84' TW=37.09' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin #2

Inflow Area = 0.768 ac, 57.35% Impervious, Inflow Depth > 6.69" for 50 Yr 24 Hr(+15%) event
Inflow = 4.86 cfs @ 12.11 hrs, Volume= 0.429 af
Outflow = 4.86 cfs @ 12.11 hrs, Volume= 0.429 af, Atten= 0%, Lag= 0.0 min
Primary = 4.86 cfs @ 12.11 hrs, Volume= 0.429 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.95' @ 12.31 hrs
Flood Elev= 38.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.15'	**18.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.15' / 33.95' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.77 cfs @ 12.11 hrs HW=36.40' TW=35.90' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.77 cfs @ 2.70 fps)

Summary for Pond 5P: Concrete Galley 8x14 INFILTRATION

[80] Warning: Exceeded Pond 4P by 0.07' @ 12.50 hrs (1.74 cfs 0.009 af)

Inflow Area = 0.768 ac, 57.35% Impervious, Inflow Depth > 6.69" for 50 Yr 24 Hr(+15%) event
Inflow = 4.86 cfs @ 12.11 hrs, Volume= 0.429 af
Outflow = 2.69 cfs @ 12.21 hrs, Volume= 0.423 af, Atten= 45%, Lag= 6.1 min
Discarded = 0.83 cfs @ 12.41 hrs, Volume= 0.353 af
Primary = 1.89 cfs @ 12.21 hrs, Volume= 0.070 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.88' @ 12.41 hrs Surf.Area= 0.071 ac Storage= 0.126 af

Plug-Flow detention time= 69.5 min calculated for 0.422 af (98% of inflow)
Center-of-Mass det. time= 61.2 min (843.8 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.90'	0.000 af	**24.00'W x 42.00'L x 3.67'H Field A** 0.085 af Overall - 0.085 af Embedded = 0.000 af x 40.0% Voids
#2A	33.90'	0.062 af	**Shea Leaching Chamber 8x14x3.7** x 9 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 9 Chambers in 3 Rows
#3	30.90'	0.035 af	**28.00'W x 46.00'L x 3.00'H Prismatoid** 0.089 af Overall x 40.0% Voids
#4	30.90'	0.007 af	**8.00'W x 32.00'L x 3.00'H Prismatoid** 0.018 af Overall x 40.0% Voids
#5	33.90'	0.010 af	**2.00'W x 148.00'L x 3.67'H Prismatoid** 0.025 af Overall x 40.0% Voids
#6B	33.90'	0.000 af	**8.00'W x 28.00'L x 3.67'H Field B** 0.019 af Overall - 0.019 af Embedded = 0.000 af x 40.0% Voids
#7B	33.90'	0.014 af	**Shea Leaching Chamber 8x14x3.7** x 2 Inside #6 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf
		0.128 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.90'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 30.82' Phase-In= 0.01'
#2	Primary	35.70'	**12.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.70' / 34.40' S= 0.0197 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	37.56'	**160.0' 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=0.83 cfs @ 12.41 hrs HW=36.88' (Free Discharge)
└─**1=Exfiltration** (Controls 0.83 cfs)

Primary OutFlow Max=1.95 cfs @ 12.21 hrs HW=36.62' TW=35.99' (Dynamic Tailwater)
├─**2=Culvert** (Inlet Controls 1.95 cfs @ 2.58 fps)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Drain Manhole #1

[80] Warning: Exceeded Pond 1P by 0.04' @ 12.50 hrs (0.19 cfs 0.001 af)

Inflow Area = 0.398 ac, 68.04% Impervious, Inflow Depth > 7.17" for 50 Yr 24 Hr(+15%) event
Inflow = 2.34 cfs @ 12.09 hrs, Volume= 0.238 af
Outflow = 2.34 cfs @ 12.09 hrs, Volume= 0.238 af, Atten= 0%, Lag= 0.0 min
Primary = 2.34 cfs @ 12.09 hrs, Volume= 0.238 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.82' @ 12.50 hrs
Flood Elev= 38.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.07'	**12.0" Round Culvert** L= 46.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.07' / 33.80' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.39 cfs @ 12.09 hrs HW=35.25' TW=34.61' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.39 cfs @ 3.05 fps)

Summary for Pond 7P: Drain Manhole #2

Inflow Area = 0.768 ac, 57.35% Impervious, Inflow Depth = 1.09" for 50 Yr 24 Hr(+15%) event
Inflow = 1.89 cfs @ 12.21 hrs, Volume= 0.070 af
Outflow = 1.89 cfs @ 12.21 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.21 hrs, Volume= 0.070 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.75' @ 12.50 hrs
Flood Elev= 39.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.30'	**12.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.30' / 34.00' S= 0.0086 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.90 cfs @ 12.21 hrs HW=35.99' TW=35.58' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.90 cfs @ 2.42 fps)

Summary for Pond 8P: Concrete Galley 8x14 STORAGE ONLY

[92] Warning: Device #4 is above defined storage
[80] Warning: Exceeded Pond 6P by 0.01' @ 12.70 hrs (0.31 cfs 0.004 af)
[80] Warning: Exceeded Pond 7P by 0.45' @ 13.35 hrs (0.61 cfs 0.015 af)

Inflow Area = 1.167 ac, 61.00% Impervious, Inflow Depth > 3.16" for 50 Yr 24 Hr(+15%) event
Inflow = 3.63 cfs @ 12.20 hrs, Volume= 0.308 af
Outflow = 2.09 cfs @ 12.44 hrs, Volume= 0.306 af, Atten= 42%, Lag= 14.5 min
Primary = 2.09 cfs @ 12.44 hrs, Volume= 0.306 af
Secondary = 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 / 3
Peak Elev= 36.24' @ 12.44 hrs Surf.Area= 0.055 ac Storage= 0.073 af

Plug-Flow detention time= 31.6 min calculated for 0.306 af (99% of inflow)
Center-of-Mass det. time= 28.3 min (805.4 - 777.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.30'	0.000 af	**16.00'W x 56.00'L x 3.67'H Field A** 0.075 af Overall - 0.075 af Embedded = 0.000 af x 40.0% Voids
#2A	33.30'	0.055 af	**Shea Leaching Chamber 8x14x3.7** x 8 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 8 Chambers in 2 Rows
#3	32.30'	0.011 af	**20.00'W x 60.00'L x 1.00'H Prismatoid** 0.028 af Overall x 40.0% Voids
#4	33.30'	0.010 af	**2.00'W x 144.00'L x 3.67'H Prismatoid** 0.024 af Overall x 40.0% Voids
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	**4.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.27' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	32.30'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	34.70'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.70' / 34.67' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#4	Secondary	39.80'	**160.0' 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=2.09 cfs @ 12.44 hrs HW=36.24' TW=32.58' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.63 cfs @ 7.26 fps)
2=Orifice/Grate (Passes 0.63 cfs of 0.80 cfs potential flow)
3=Culvert (Inlet Controls 1.46 cfs @ 4.17 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=0.00' (Dynamic Tailwater)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 9P: Drain Manhole #3

Inflow Area = 1.167 ac, 61.00% Impervious, Inflow Depth > 3.15" for 50 Yr 24 Hr(+15%) event
Inflow = 2.09 cfs @ 12.44 hrs, Volume= 0.306 af
Outflow = 2.09 cfs @ 12.44 hrs, Volume= 0.306 af, Atten= 0%, Lag= 0.0 min
Primary = 2.09 cfs @ 12.44 hrs, Volume= 0.306 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.59' @ 12.44 hrs
Flood Elev= 39.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**12.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.60' / 31.10' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.44 hrs HW=32.58' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.09 cfs @ 2.67 fps)

Summary for Pond 10P: Yard Drain #1

Inflow Area = 0.071 ac, 26.66% Impervious, Inflow Depth > 5.76" for 50 Yr 24 Hr(+15%) event
Inflow = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af
Outflow = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.38' @ 12.22 hrs
Flood Elev= 39.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.80'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.80' / 35.58' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=36.45' TW=36.39' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.28 cfs @ 1.02 fps)

Summary for Pond 11P: Yard Drain #2

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth > 3.96" for 50 Yr 24 Hr(+15%) event
Inflow = 0.27 cfs @ 12.18 hrs, Volume= 0.024 af
Outflow = 0.27 cfs @ 12.19 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.6 min
Primary = 0.27 cfs @ 12.19 hrs, Volume= 0.024 af
Secondary = 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 / 3
Peak Elev= 39.07' @ 12.19 hrs Surf.Area= 183 sf Storage= 6 cf

Plug-Flow detention time= 0.3 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (843.5 - 843.2)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	1,358 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	5	0	0
40.01	2,685	1,358	1,358

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**8.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.00' / 35.33' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	39.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	40.00'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.26 cfs @ 12.19 hrs HW=39.07' TW=37.23' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.26 cfs of 1.77 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 0.26 cfs @ 0.84 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=34.15' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 12P: Yard Drain #3

[80] Warning: Exceeded Pond 3P by 0.32' @ 12.10 hrs (2.64 cfs 0.026 af)

Inflow Area = 0.514 ac, 47.57% Impervious, Inflow Depth > 6.28" for 50 Yr 24 Hr(+15%) event
Inflow = 3.00 cfs @ 12.14 hrs, Volume= 0.269 af
Outflow = 3.00 cfs @ 12.14 hrs, Volume= 0.269 af, Atten= 0%, Lag= 0.0 min
Primary = 3.00 cfs @ 12.14 hrs, Volume= 0.269 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 37.24' @ 12.20 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.65'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.65' / 34.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.96 cfs @ 12.14 hrs HW=37.07' TW=36.67' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.96 cfs @ 2.41 fps)

Summary for Pond 13P: Yard Drain #4

Inflow Area =	0.031 ac, 25.58% Impervious,	Inflow Depth > 6.48"	for 50 Yr 24 Hr(+15%) event
Inflow =	0.22 cfs @ 12.09 hrs,	Volume=	0.017 af
Outflow =	0.22 cfs @ 12.09 hrs,	Volume=	0.017 af, Atten= 0%, Lag= 0.0 min
Primary =	0.22 cfs @ 12.09 hrs,	Volume=	0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.95' @ 12.30 hrs
Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**8.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.50' / 36.10' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.22 cfs @ 12.09 hrs HW=36.79' TW=36.14' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.22 cfs @ 1.46 fps)

Summary for Pond 14P: Subsurface Stone Infiltration

Inflow Area =	0.021 ac,100.00% Impervious,	Inflow Depth > 8.28"	for 50 Yr 24 Hr(+15%) event
Inflow =	0.17 cfs @ 12.09 hrs,	Volume=	0.015 af
Outflow =	0.03 cfs @ 12.58 hrs,	Volume=	0.014 af, Atten= 85%, Lag= 29.4 min
Discarded =	0.03 cfs @ 12.58 hrs,	Volume=	0.014 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 / 3
Peak Elev= 31.61' @ 12.58 hrs Surf.Area= 0.004 ac Storage= 0.006 af

Plug-Flow detention time= 130.4 min calculated for 0.014 af (99% of inflow)
Center-of-Mass det. time= 122.9 min (862.9 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	0.007 af	**4.00'W x 40.00'L x 4.51'H Prismatoid** 0.017 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.50'	**0.650 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 27.08' Phase-In= 0.01'
#2	Primary	32.00'	**88.0' 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 @ 12.58 hrs HW=31.61' (Free Discharge)
└─**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.50' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: Stone Infiltration Under 1&2 Decks

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.020 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.01 cfs @ 14.18 hrs, Volume= 0.010 af, Atten= 95%, Lag= 125.7 min
Discarded = 0.01 cfs @ 14.18 hrs, Volume= 0.010 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 / 3
Peak Elev= 32.06' @ 14.18 hrs Surf.Area= 414 sf Storage= 333 cf

Plug-Flow detention time= 278.4 min calculated for 0.010 af (69% of inflow)
Center-of-Mass det. time= 181.2 min (921.3 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	30.05'	416 cf	**9.00'W x 46.00'L x 2.51'H Prismatoid** 1,039 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.05'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 29.00' Phase-In= 0.01'
#2	Primary	34.80'	**23.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.01 cfs @ 14.18 hrs HW=32.06' (Free Discharge)
└─**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.05' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16P: Stone Infiltration Under Unit 3 Deck

Inflow Area =	0.010 ac,100.00% Impervious,	Inflow Depth > 8.28"		for 50 Yr 24 Hr(+15%) event
Inflow =	0.08 cfs @	12.09 hrs, Volume=	0.007 af	
Outflow =	0.00 cfs @	15.05 hrs, Volume=	0.004 af,	Atten= 96%, Lag= 177.9 min
Discarded =	0.00 cfs @	15.05 hrs, Volume=	0.004 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 / 3
Peak Elev= 34.42' @ 15.05 hrs Surf.Area= 207 sf Storage= 176 cf

Plug-Flow detention time= 283.6 min calculated for 0.004 af (60% of inflow)
Center-of-Mass det. time= 169.8 min (909.8 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	32.30'	208 cf	**9.00'W x 23.00'L x 2.51'H Prismatoid** 520 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.30'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 30.67' Phase-In= 0.01'
#2	Primary	34.80'	**23.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 15.05 hrs HW=34.42' (Free Discharge)
└─**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 17P: Subsurface Stone Infiltration

Inflow Area =	0.019 ac,100.00% Impervious,	Inflow Depth > 8.28"		for 50 Yr 24 Hr(+15%) event
Inflow =	0.15 cfs @	12.09 hrs, Volume=	0.013 af	
Outflow =	0.04 cfs @	12.44 hrs, Volume=	0.013 af,	Atten= 73%, Lag= 21.3 min
Discarded =	0.04 cfs @	12.44 hrs, Volume=	0.013 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 / 3
Peak Elev= 33.39' @ 12.44 hrs Surf.Area= 0.006 ac Storage= 0.004 af

Plug-Flow detention time= 56.9 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 55.9 min (796.0 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	0.004 af	**8.00'W x 35.00'L x 1.71'H Prismatoid** 0.011 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.80'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 31.72' Phase-In= 0.01'
#2	Primary	33.50'	**86.0' 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 @ 12.44 hrs HW=33.39' (Free Discharge)
1=Exfiltration (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.80' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 18P: Stone Infiltration Under Unit 4 Deck

Inflow Area = 0.010 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.00 cfs @ 15.67 hrs, Volume= 0.004 af, Atten= 97%, Lag= 215.0 min
Discarded = 0.00 cfs @ 15.67 hrs, Volume= 0.004 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 / 3
Peak Elev= 34.53' @ 15.67 hrs Surf.Area= 207 sf Storage= 184 cf

Plug-Flow detention time= 281.1 min calculated for 0.004 af (52% of inflow)
Center-of-Mass det. time= 152.9 min (892.9 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	32.30'	208 cf	**9.00'W x 23.00'L x 2.51'H Prismatoid** 520 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	32.30'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 29.75' Phase-In= 0.01'
#2	Primary	34.80'	**23.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 15.67 hrs HW=34.53' (Free Discharge)
1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 19P: Deep Sump CB #3

Inflow Area = 0.030 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.14' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.50' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.24 cfs @ 12.09 hrs HW=30.14' TW=29.93' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.24 cfs @ 1.50 fps)

Summary for Pond 20P: Deep Sump CB #4

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 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 / 3
Peak Elev= 30.06' @ 12.09 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.55'	**12.0" Round Culvert** L= 2.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.55' / 29.50' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=30.05' TW=29.93' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.51 cfs @ 1.32 fps)

Summary for Pond 21P: Drain Manhole #4

Inflow Area = 0.094 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.77 cfs @ 12.09 hrs, Volume= 0.065 af
Outflow = 0.77 cfs @ 12.09 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min
Primary = 0.77 cfs @ 12.09 hrs, Volume= 0.065 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.94' @ 12.09 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.40'	**12.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.40' / 29.30' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.75 cfs @ 12.09 hrs HW=29.93' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.75 cfs @ 2.60 fps)

Summary for Pond 22P: Wetland Ponding Area

[93] Warning: Storage range exceeded by 0.33'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=117)

Inflow Area = 2.011 ac, 54.17% Impervious, Inflow Depth > 3.85" for 50 Yr 24 Hr(+15%) event
Inflow = 4.85 cfs @ 12.31 hrs, Volume= 0.645 af
Outflow = 5.90 cfs @ 12.35 hrs, Volume= 0.532 af, Atten= 0%, Lag= 2.6 min
Primary = 5.90 cfs @ 12.35 hrs, Volume= 0.532 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.34' @ 12.35 hrs Surf.Area= 2,787 sf Storage= 4,907 cf

Plug-Flow detention time= 102.5 min calculated for 0.532 af (83% of inflow)
Center-of-Mass det. time= 38.6 min (849.0 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	4,907 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	619	0	0
29.00	1,245	932	932
30.00	1,935	1,590	2,522
31.01	2,787	2,385	4,907

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=5.81 cfs @ 12.35 hrs HW=31.33' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 5.81 cfs @ 1.46 fps)

APPENDIX III

Test Pit Logs

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project	1169 &1171 Sagamore Avenue, Portsmouth, NH
Client	Garrepy Planning Consultants, LLC
GES Project No.	2021039
MM/DD/YY Staff	03-23-2021 JP Gove, CSS # 004

STATE OF NEW HAMPSHIRE JAMES P. GOVE No. 004 CERTIFIED SOIL SCIENTIST 3/23/21

Test Pit No.	1	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	60"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Fill – 0-12"	10YR3/2	SL	Gr	Fr	None
Fill – 12-35"	10YR3/3	SL	Gr	Fr	None
Apb – 35-45"	10YR3/2	SL	Gr	Fr	None
Bwb – 45-60"	10YR4/3	SL	Om	Fr	None
Bedrock – 60"					

Test Pit No.	2	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	55"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/2	SL	Gr	Fr	None
Bw – 10-55"	7.5YR3/4	SL	Gr	Fr	None
Rippable Bedrock – 55"					

Test Pit No.	3	Lot No.:	
ESHWT:	31"	WSPCD Group:	
Termination @	51"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-11"	10YR3/3	SL	Gr	Fr	None
Bw – 11-31"	10YR4/4	GRLS	Gr	Fr	None
Bw2 – 31-51"	7.5YR5/4	CBSL	Om	Fr	Yes
Rippable Bedrock – 51"					

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www.gesinc.biz

Test Pit No.	4	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	33”	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
Ap - 0-11”	10YR3/2	SL	Gr	Fr	None
Bw – 11-33”	10YR4/4	CBSL	Gr	Fr	None
Bedrock – 33”					

Test Pit No.	5	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	22”	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10”	10YR3/3	SL	Gr	Fr	None
Bw – 10-22”	10YR4/4	CBSL	Gr	Fr	None
Bedrock – 22”					

Test Pit No.	6	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	2”	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
A – 0-2”	10YR3/2	CBSL	Gr	Fr	None
Bedrock 2”					

Test Pit No.	7	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	21”	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
A – 0-21”	10YR3/3	CBSL	Gr	Fr	None
Bedrock – 21”					

Test Pit No.	**8**	Lot No.:
ESHWT:	None Observed	WSPCD Group:
Termination @	31"	Roots to:
Refusal:	Yes	SCS Soil:
Obs. Water:	none	HIS Type:

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/2	SL	Gr	Fr	None
Bw – 10-31"	10YR4/6	CBSL	Gr	Fr	None
Bedrock – 31"					

Legend:
GRLS = gravelly loamy sand
CBSL = cobbly sandy loam
SL= sandy loam
Gr = granular
Fr = friable
Om = massive
Ap = top soil
Bw = subsoil
Apb = buried topsoil
Bwb = buried subsoil

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project1169 Sagamore Avenue, Portsmouth
Client Garrepy Planning Consultants, LLC
GES Project No. 2021039
MM/DD/YY Staff 11-10-2021 JP Gove

Test Pit No. B1
ESHWT: 54
Termination @ 84
Refusal: 84
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–29"	10YR 4/4	GRS	OM	FR	NONE , Fill
29–33"	10YR 3/2	FSL	GR	FR	NONE, buried A
33–54"	10YR 5/6	FSL	GR	FR	NONE, buried B
54–84"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B2
ESHWT: 50
Termination @ 65
Refusal: 65
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–31"	10YR 4/4	GRS	OM	FR	NONE , Fill
31–35"	10YR 3/2	FSL	GR	FR	NONE, buried A
35–50"	10YR 5/6	FSL	GR	FR	NONE, buried B
50–65"	2.5Y 4/3	FSL	OM	FR	30%, C

Test Pit No. B3
ESHWT: 33
Termination @ 47
Refusal: 47
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–33"	10YR 4/4	GRS	OM	FR	NONE , Fill
33–47"	10YR 4/3	FSL	OM	FR	20%, buried A/B

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Test Pit No. B4
ESHWT: 42
Termination @ 60
Refusal: 60
Obs. Water: 50

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–21"	10YR 4/4	GRS	OM	FR	NONE , Fill
21–29"	10YR 3/2	FSL	GR	FR	NONE, buried A
29–42"	10YR 5/6	FSL	GR	FR	NONE, buried B
42–60"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B5
ESHWT: 47
Termination @ 62
Refusal: 62
Obs. Water: 60

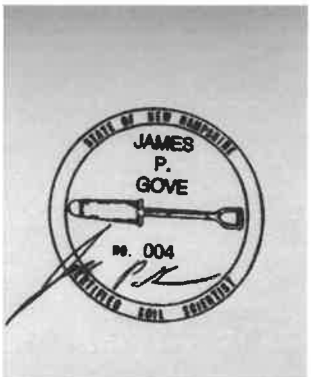
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 4/4	GRS	OM	FR	NONE , Fill
25–36"	10YR 3/2	FSL	GR	FR	NONE, buried A
36–47"	10YR 4/6	FSL	GR	FR	NONE, buried B
47–62"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B6
ESHWT: none
Termination @ 38
Refusal: 38
Obs. Water: none

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–20"	10YR 4/4	FSL	OM	FR	NONE , A/Fill
20–38"	10YR 5/6	FSL	GR	FR	NONE, B

Test Pit No. B7
ESHWT: none
Termination @ 49
Refusal: 49
Obs. Water: none

Depth	Color	Texture	Structure	Consistence
0–36"	10YR 3/3 - Fill	FSL	OM	FR
20–38"	10YR 5/6 – buried B	FSL	GR	FR



11-11-2021

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project – 1169 &1171 Sagamore Ave., Portsmouth, NH – TM 224, Lots 14 & 15.
Client - Jones & Beach Engineers, Inc.
GES Project No. 2021039
MM/DD/YY Staff 1-25-2022 JPG

Test Pit No. X1
ESHWT: n/a
Termination @ 20”
Refusal: 20”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–12”	10YR 3/2	FSL	GR	FR	NONE , Ap
12–20”	10YR 4/4	FSL	GR	FR	NONE, Bw
20”	Bedrock				

Test Pit No. X2
ESHWT: n/a
Termination @ 36”
Refusal: 36”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–6”	10YR 3/2	FSL	GR	FR	NONE , Ap
6–36”	10YR 4/6	FSL	GR	FR	NONE, Bw
36”	Bedrock				

Test Pit No. X3
ESHWT: n/a
Termination @ 57”
Refusal: 57”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–12”	10YR 3/2	FSL	GR	FR	NONE , Ap
12–57”	10YR 4/6	FSL	GR	FR	NONE, Bw
57”	Bedrock				

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Test Pit No. X4
ESHWT: n/a
Termination @ 75”
Refusal: n/a
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–70”	10YR 3/3	FSL	OM	FR	NONE , Fill
70-75”	10YR 4/6	FSL	GR	FR	NONE, Bw

Test Pit No. X5
ESHWT: 51”
Termination @ 66”
Refusal: 66”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–6”	10YR 3/3	LS	GR	FR	NONE , Fill
6–39”	10YR 5/6	LS	OM	FR	NONE, Fill
39–51”	10YR3/2	FSL	GR	FR	Buried Ap
51-66”	7.5YR4/6	FSL	GR	FR	5%, Bw
66”	Bedrock				

Test Pit No. X6
ESHWT: 51”
Termination @ 65”
Refusal: 65”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–5”	10YR 3/3	LS	GR	FR	NONE , Fill
5–51”	10YR 4/6	LS	OM	FR	NONE, Fill
51–65”	10YR3/2	FSL	GR	FR	5%, Buried Ap
65”	Bedrock				

Test Pit No. X7
ESHWT: 49”
Termination @ 65”
Refusal: 65”
Obs. Water: None

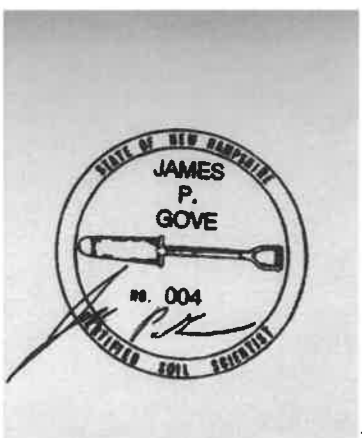
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–10”	10YR 3/2	LS	GR	FR	NONE , Fill
10–49”	10YR 4/4	LS	OM	FR	NONE, Fill
49–65”	10YR3/2	FSL	GR	FR	5%, Buried Ap
65”	Bedrock				

Test Pit No. X8
ESHWT: n/a
Termination @ 58"
Refusal: 58"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 3/3	LS	GR	FR	NONE , Fill
25–37"	10YR 3/2	FSL	GR	FR	NONE, Buried Ap
37–58"	10YR4/6	FSL	GR	FR	NONE, Bw
58"	Bedrock				

Test Pit No. X9
ESHWT: n/a
Termination @ 20"
Refusal: 20"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–16"	10YR 3/2	FSL	GR	FR	NONE , Ap
16–20"	10YR 4/6	FSL	GR	FR	NONE, Bw
20"	Bedrock				



1-26-2022

APPENDIX IV

HISS Soil Note and Map

This soil map was prepared by a professional soil scientist and meets the technical standards of the SSSNNE Publication No. 1, High Intensity Soil Maps for NH, December 2017. Soil map was prepared on 4 April 2021. Soil map site was 1169 &1171 Sagamore Avenue, Portsmouth, NH.

Soil Map Units were identified using the Key to Soil Types. The conversion of High Intensity Soil Map Unit to NRCS Soil Map Unit Name was based upon the observed soil profiles, as was hydrologic soil group, as taken from SSSNNE Special Publication No. 5.

Soil mapping was performed by James Gove, CSS # 004.

HISS Soil Map Unit	Soil Map Unit Name	Hydrologic Soil Group
224 (slope) H	Hollis-Rock Outcrop Complex	D
261 (slope) H	Made land – similar to Canton	B
321 (slope) H	Newfields	B
327 (slope) H	Chatfield Variant	B
561 (slope) H	Made land- similar to Walpole	C

B slope = 0-8%, C slope = 8-15%, D slope = 15-25%

2021039

PLAN REFERENCES:

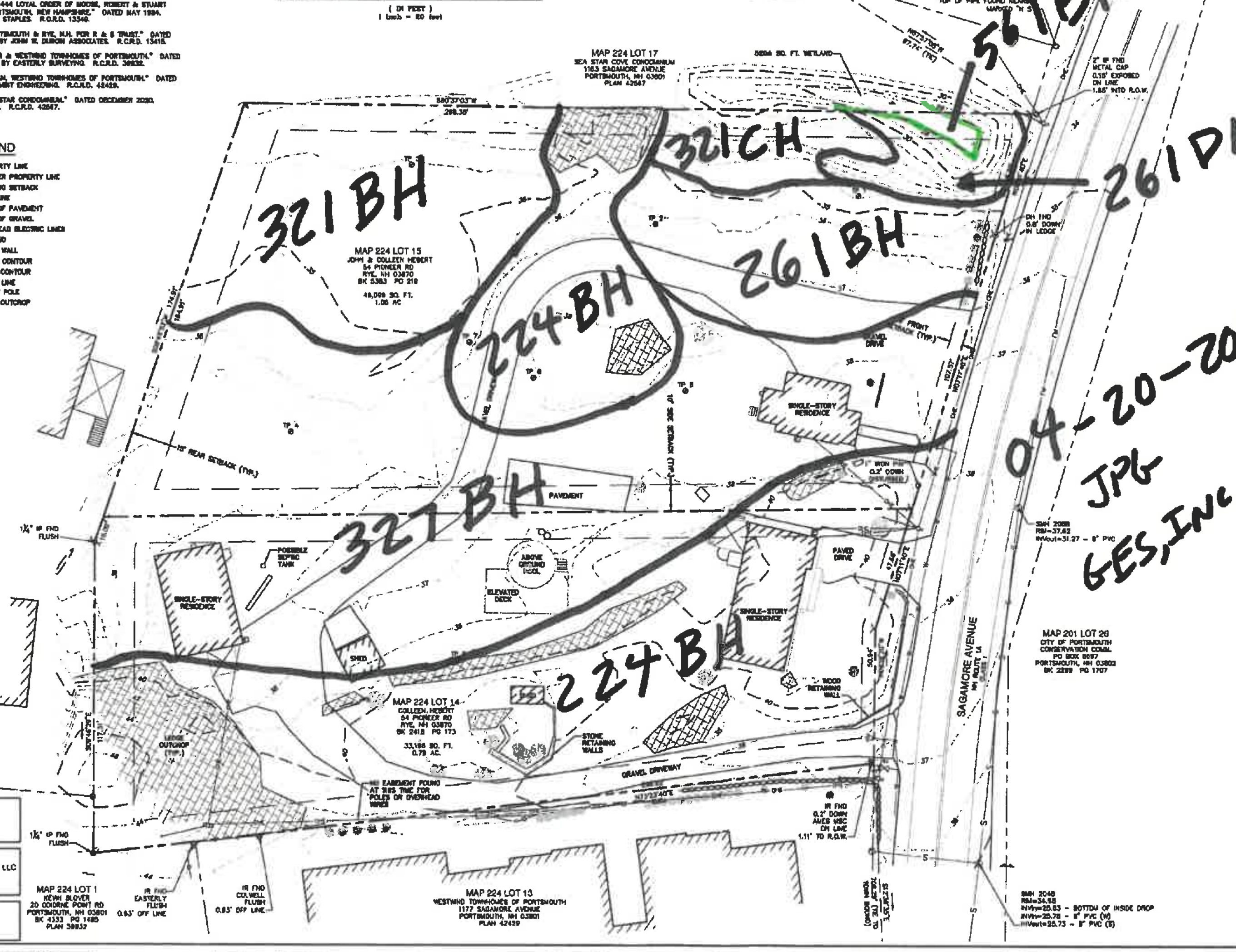
1. "PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS." DATED MARCH 1908. PREPARED BY E. M. HUNT. R.C.R.D. 00254
2. "BOUNDARY LINE CHANGE, LODGE 444 LOYAL ORDER OF MOOSE, ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE." DATED MAY 1984. PREPARED BY K.E. MOORE & B.G. STAPLES. R.C.R.D. 13340.
3. "SUBDIVISION PLAN OF LAND, PORTSMOUTH & RYE, N.H. FOR R & S TRUST." DATED DECEMBER 13, 1984. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 13415.
4. "LOT LINE REVISION, KEVIN GLOVER & WESTWIND TOWNHOMES OF PORTSMOUTH." DATED SEPTEMBER 16, 2011. PREPARED BY EASTERLY SURVEYING. R.C.R.D. 36932.
5. "AS-BUILT CONDOMINIUM SITE PLAN, WESTWIND TOWNHOMES OF PORTSMOUTH." DATED JANUARY 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42429.
6. "AMENDED EASEMENT PLAN, SEA STAR CONDOMINIUM." DATED DECEMBER 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42567.

GENERAL LEGEND

PROPERTY LINE
ABUTTER PROPERTY LINE
BUILDING SETBACK
TREE LINE
EDGE OF PAVEMENT
EDGE OF GRAVEL
OVERHEAD ELECTRIC LINES
WETLAND
STONE WALL
MAJOR CONTOUR
MINOR CONTOUR
SEWER LINE
UTILITY POLE
LEDGE OUTCROP

GRAPHIC SCALE

(IN FEET)
1 inch = 20 feet



LOCUS
SCALE: 1"=1000'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF LOTS 14 AND 15 AS SHOWN ON PORTSMOUTH TAX MAP 224.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   MAX. BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 20%
3. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0289F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
5. BASIS OF BEARING: HORIZONTAL – NAD83 NH STATE PLAN. VERTICAL – NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. 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.
11. 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.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2021 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.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 10,000.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

CERTIFICATION:

PURSUANT TO RSA 676:18-III AND RSA 672:14
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

No. 1030 MATTHEW J. SALVUCCI

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.

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
GARREPY PLANNING CONSULTANTS, LLC
ADDRESS
TOWN, STATE XXXXX

TOTAL LOT AREA
79,572 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/29/21			
Checked: JAC	Scale: 1" = 20'	Project No.: 21047			
Drawing Name: 21047-PLAN.dwg					

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

REV.	DATE	REVISION	BY
0	4/8/21	ISSUED FOR REVIEW	DJM

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

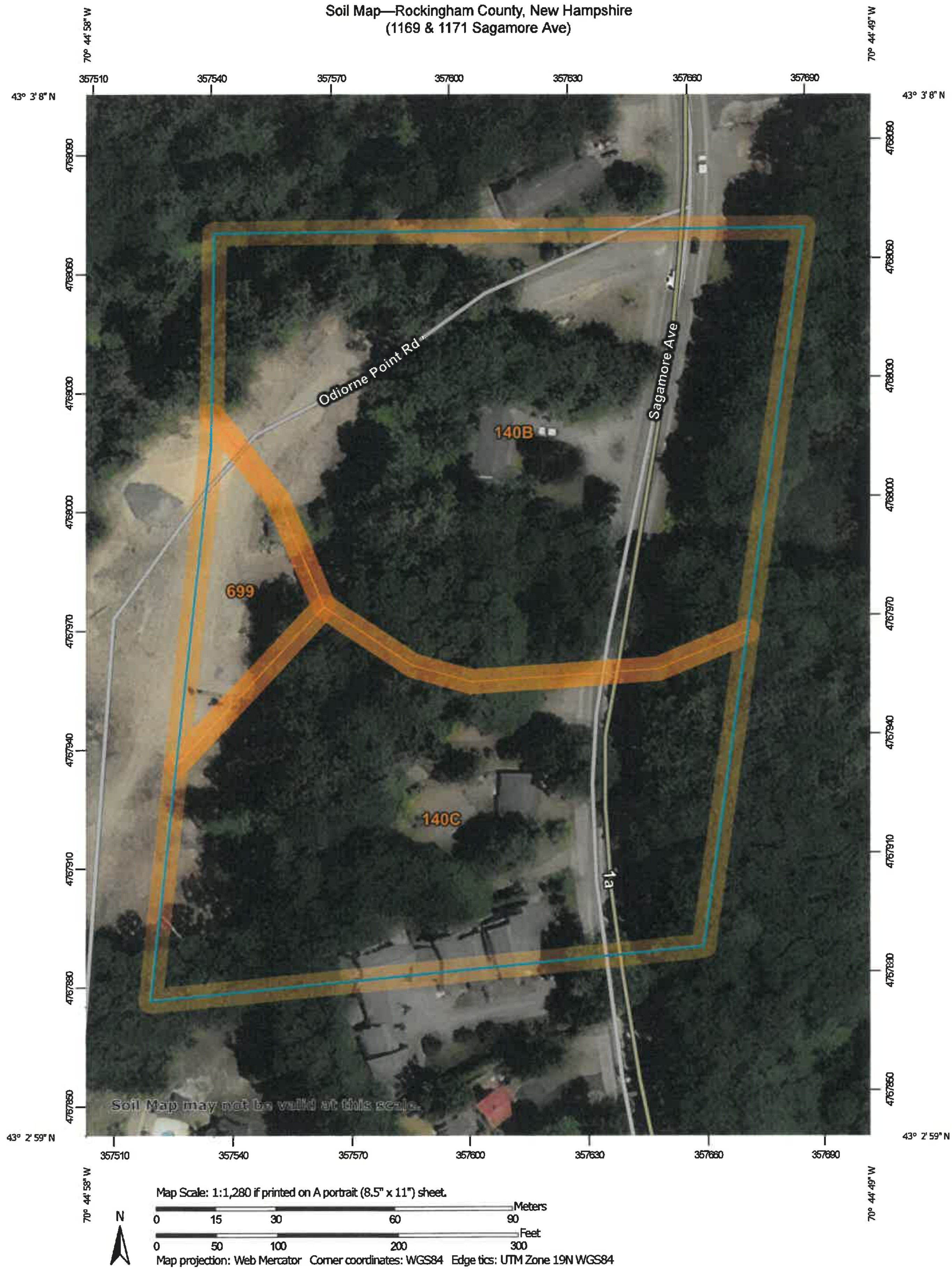
Plan Name:	EXISTING CONDITIONS PLAN
Project:	1169 & 1171 SAGAMORE AVENUE PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C1
SHEET 2 OF 18
JBE PROJECT NO. 21047

APPENDIX V

NRCS Soil Map

Soil Map—Rockingham County, New Hampshire
(1169 & 1171 Sagamore Ave)



MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

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
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	3.5	53.7%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	2.7	40.6%
699	Urban land	0.4	5.7%
Totals for Area of Interest		**6.6**	**100.0%**

APPENDIX VI

Extreme Precipitation Estimates

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

Select Product ?

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

Select Location ?

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

Locate by Address ?	Locate by Lat/Lon ?	Locate by State/County ?
1169 sagamore ave., po	°N °W	

Select Options ?

Smoothing ?	Delivery ?
Yes	Popup

Submit ?

Version 1.12 Copyright 2010-2021.
This project is a joint collaboration between:

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

Powered by ACIS Northeast Regional Climate Center NCDC Cornell University USDA 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	
Location	
Longitude	70.748 degrees West
Latitude	43.051 degrees North
Elevation	0 feet
Date/Time	Wed, 16 Jun 2021 12:03:11 -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	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.67	2.94	**1yr**	2.36	2.82	3.24	3.96	4.57	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.30	**2yr**	0.89	1.18	1.52	1.94	2.49	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.35	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.08	4.60	**5yr**	3.61	4.42	5.07	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.90	**10yr**	1.26	1.73	2.24	2.91	3.76	4.88	5.55	**10yr**	4.32	5.34	6.12	7.14	8.01	**10yr**
25yr	0.48	0.77	0.97	1.34	1.78	2.35	**25yr**	1.54	2.15	2.79	3.65	4.76	6.19	7.13	**25yr**	5.48	6.85	7.85	9.07	10.09	**25yr**
50yr	0.54	0.87	1.11	1.55	2.09	2.78	**50yr**	1.80	2.54	3.31	4.35	5.69	7.42	8.62	**50yr**	6.56	8.29	9.48	10.87	12.02	**50yr**
100yr	0.60	0.97	1.26	1.79	2.44	3.28	**100yr**	2.10	3.00	3.93	5.19	6.80	8.88	10.42	**100yr**	7.86	10.02	11.46	13.03	14.33	**100yr**
200yr	0.68	1.11	1.44	2.07	2.85	3.87	**200yr**	2.46	3.54	4.65	6.17	8.12	10.65	12.60	**200yr**	9.42	12.11	13.85	15.63	17.08	**200yr**
500yr	0.81	1.33	1.73	2.51	3.52	4.81	**500yr**	3.03	4.42	5.82	7.76	10.28	13.53	16.20	**500yr**	11.97	15.58	17.81	19.89	21.57	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.86	0.93	1.34	1.69	2.26	2.50	**1yr**	2.00	2.41	2.88	3.21	3.94	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.81	2.33	3.07	3.47	**2yr**	2.72	3.33	3.84	4.56	5.11	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.11	2.72	3.80	4.20	**5yr**	3.36	4.04	4.74	5.56	6.26	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.80	2.38	3.05	4.38	4.88	**10yr**	3.88	4.69	5.47	6.44	7.22	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.74	3.52	4.78	5.91	**25yr**	4.23	5.68	6.69	7.83	8.72	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.53	2.12	2.35	3.05	3.91	5.41	6.82	**50yr**	4.79	6.56	7.77	9.10	10.06	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.41	2.63	3.39	4.31	6.10	7.87	**100yr**	5.40	7.57	9.04	10.58	11.63	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.81	**200yr**	1.97	2.75	2.94	3.74	4.74	6.86	9.09	**200yr**	6.07	8.74	10.50	12.32	13.45	**200yr**
500yr	0.69	1.02	1.31	1.91	2.72	3.36	**500yr**	2.34	3.29	3.42	4.26	5.39	8.01	10.98	**500yr**	7.09	10.56	12.80	15.09	16.30	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.98	3.18	**1yr**	2.64	3.06	3.59	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.43	3.72	**2yr**	3.03	3.58	4.11	4.86	5.64	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.89	2.54	3.26	4.36	4.98	**5yr**	3.85	4.79	5.40	6.40	7.18	**5yr**
10yr	0.47	0.72	0.89	1.25	1.62	1.99	**10yr**	1.39	1.94	2.29	3.11	3.97	5.36	6.23	**10yr**	4.74	5.99	6.85	7.87	8.79	**10yr**
25yr	0.58	0.88	1.10	1.57	2.06	2.59	**25yr**	1.78	2.53	2.97	4.08	5.18	7.75	8.38	**25yr**	6.86	8.05	9.20	10.38	11.45	**25yr**
50yr	0.68	1.03	1.28	1.84	2.48	3.15	**50yr**	2.14	3.08	3.61	5.02	6.36	9.69	10.50	**50yr**	8.57	10.10	11.51	12.78	14.01	**50yr**
100yr	0.80	1.20	1.51	2.18	2.99	3.84	**100yr**	2.58	3.76	4.40	6.19	7.83	12.11	13.16	**100yr**	10.71	12.65	14.40	15.76	17.15	**100yr**
200yr	0.93	1.41	1.78	2.58	3.60	4.70	**200yr**	3.10	4.59	5.37	7.63	9.63	15.17	16.51	**200yr**	13.43	15.87	18.04	19.43	20.98	**200yr**
500yr	1.16	1.73	2.22	3.23	4.59	6.11	**500yr**	3.96	5.97	6.97	10.10	12.71	20.46	22.28	**500yr**	18.11	21.43	24.31	25.62	27.41	**500yr**

Powered by ACIS
Northeast Regional Climate Center

APPENDIX VII

Rip Rap Calculations

RIP RAP CALCULATIONS
Sagamore Avenue Condominiums
1169 & 1171 Sagamore Avenue
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
8/11/2021, Revised 9/20/2021, Revised 12/22/2021, Revised 1/28/2022

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

TAILWATER < HALF THE D_o

$L_a = (1.8 \times Q) / D_0^{3/2} + (7 \times D_o)$

$W = L_a + (3 \times D_o)$ or defined channel width

$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
12" HDPE (Pond 19P)	0.32	0.64	1	8.2	11	0.03

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)
12" HDPE (Pond 9P)	0.55	1.58	1	11.7	8	0.07

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

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

APPENDIX VIII

BMP Worksheets

NEW HAMPSHIRE DEPARTMENT OF **Environmental Services**

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Concrete Galley 8x14 (Subsurface infiltration basin, 5P)**

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

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
0.77	ac	A = Area draining to the practice	
0.44	ac	A_I = Impervious area draining to the practice	
0.57	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.57	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.43	ac-in	WQV= 1" x Rv x A	
1,577	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
394	cf	25% x WQV (check calc for sediment forebay volume)	
		Method of pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
2,178	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
1,232	sf	A_{SA} = Surface area of the bottom of the pond	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
51.2	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
33.90	feet	E_{BTM} = Elevation of the bottom of the basin	
30.82	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
29.57	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.08	feet	D_{SHWT} = Separation from SHWT	**≥ *[3]**
4.3	feet	D_{ROCK} = Separation from bedrock	**≥ *[3]**
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
Yes	Yes/No	If a trench or underground system is proposed, has observation well been provided?	**←yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	**← yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	**← yes**
	:1	If a basin is proposed, pond side slopes.	**≥3:1**
35.72	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
36.87	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
36.90	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	**← yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	**← yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.

5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Stage-Area-Storage for Pond 5P: Concrete Galley 8x14 INFILTRATION

Elevation (feet)	Surface (acres)	Storage (acre-feet)
30.90	0.035	0.000
31.00	0.035	0.001
31.10	0.035	0.003
31.20	0.035	0.004
31.30	0.035	0.006
31.40	0.035	0.007
31.50	0.035	0.009
31.60	0.035	0.010
31.70	0.035	0.011
31.80	0.035	0.013
31.90	0.035	0.014
32.00	0.035	0.016
32.10	0.035	0.017
32.20	0.035	0.018
32.30	0.035	0.020
32.40	0.035	0.021
32.50	0.035	0.023
32.60	0.035	0.024
32.70	0.035	0.026
32.80	0.035	0.027
32.90	0.035	0.028
33.00	0.035	0.030
33.10	0.035	0.031
33.20	0.035	0.033
33.30	0.035	0.034
33.40	0.035	0.035
33.50	0.035	0.037
33.60	0.035	0.038
33.70	0.035	0.040
33.80	0.035	0.041
33.90	**0.071**	0.043
34.00	0.071	0.045
34.10	0.071	0.048
34.20	0.071	0.051
34.30	0.071	0.054
34.40	0.071	0.057
34.50	0.071	0.059
34.60	0.071	0.062
34.70	0.071	0.065
34.80	0.071	0.068
34.90	0.071	0.071
35.00	0.071	0.073
35.10	0.071	0.076
35.20	0.071	0.079
35.30	0.071	0.082
35.40	0.071	0.084
35.50	0.071	0.087
35.60	0.071	0.090
35.70	0.071	0.093
35.80	0.071	0.096
35.90	0.071	0.098
36.00	0.071	0.101
36.10	0.071	0.104
36.20	0.071	0.107
36.30	0.071	0.110
36.40	0.071	0.112
36.50	0.071	0.115
36.60	0.071	0.118
36.70	0.071	0.121
36.80	0.071	0.124
36.90	0.071	0.126
37.00	0.071	0.127
37.10	0.071	0.127
37.20	0.071	0.127
37.30	0.071	0.128
37.40	0.071	0.128
37.50	0.071	**0.128**

$0.093 - 0.043 = 0.05$ acre-feet

$0.05 \times 43560 \frac{ft^3}{ac\text{-}ft} = \boxed{2178\,cf} > 1577$ ✓

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Bioretention #1 (1P)**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.16	ac	A = Area draining to the practice	
0.12	ac	A_I = Impervious area draining to the practice	
0.77	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.74	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.12	ac-in	WQV= 1" x Rv x A	
427	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
107	cf	25% x WQV (check calc for sediment forebay volume)	
320	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
430	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	D5	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see spec)**

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

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

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

Designer's Notes:

Stage-Area-Storage for Pond 1P: Bioretention #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
33.99	315	0
34.04	315	6
34.09	315	13
34.14	315	19
34.19	315	25
34.24	315	32
34.29	315	38
34.34	315	44
34.39	315	50
34.44	315	57
34.49	315	63
34.54	315	69
34.59	315	76
34.64	315	82
34.69	315	88
34.74	315	95
34.79	315	101
34.84	315	107
34.89	315	113
34.94	315	120
34.99	315	126
35.04	315	128
35.09	315	131
35.14	315	133
35.19	315	135
35.24	315	138
35.29	315	140
35.34	315	143
35.39	315	145
35.44	315	147
35.49	315	150
35.54	315	152
35.59	315	154
35.64	315	157
35.69	315	159
35.74	315	161
35.79	315	164
35.84	315	166
35.89	315	169
35.94	315	171
35.99	315	173
36.04	315	176
36.09	315	178
36.14	315	180
36.19	315	183
36.24	315	185
36.29	315	187
36.34	315	190
36.39	315	192
36.44	315	195
36.49	315	197
36.54	329	213
36.59	345	230
36.64	362	247
36.69	379	266
36.74	396	285
36.79	413	306
36.84	430	327
36.89	447	349
36.94	464	371
36.99	481	395
37.04	499	419
37.09	517	445
37.14	536	471
37.19	554	498
37.24	572	527
37.29	591	556
37.34	609	586
37.39	628	617
37.44	646	648
37.49	**664**	**681**

556-126 = $\boxed{430\text{ cf}}$ >427 ✓

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Bioretention #2 (2P)**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.24	ac	A = Area draining to the practice	
0.15	ac	A_I = Impervious area draining to the practice	
0.63	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.62	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.15	ac-in	WQV= 1" x Rv x A	
533	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
133	cf	25% x WQV (check calc for sediment forebay volume)	
400	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES ac		Drainage Area no larger than 5 ac?	← yes
537 cf		V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
18.0 inches		D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	D5	Note what sheet in the plan set contains the filter course specification	
3.0 :1		Pond side slopes	≥ 3:1
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
acres		A_{SA} = Surface area of the pervious pavement	
:1		Ratio of the contributing area to the pervious surface area	≤ 5:1
inches		D_{FC} = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

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

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

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

Designer's Notes: ______________________________

Stage-Area-Storage for Pond 2P: Bioretention #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.49	494	0	37.14	541	386
34.54	494	10	37.19	558	414
34.59	494	20	37.24	575	442
34.64	494	30	37.29	592	471
34.69	494	40	37.34	609	501
34.74	494	49	37.39	625	532
34.79	494	59	37.44	642	564
34.84	494	69	37.49	659	596
34.89	494	79	37.54	676	630
34.94	494	89	37.59	693	664
34.99	494	99	37.64	710	699
35.04	494	109	37.69	727	735
35.09	494	119	37.74	743	772
35.14	494	128	37.79	760	809
35.19	494	138	37.84	777	848
35.24	494	148	37.89	794	887
35.29	494	158	37.94	811	927
35.34	494	168	37.99	**828**	**968**
35.39	494	178			
35.44	494	188			
35.49	494	198			
35.54	494	201			
35.59	494	205			
35.64	494	209			
35.69	494	212			
35.74	494	216			
35.79	494	220			
35.84	494	224			
35.89	494	227			
35.94	494	231			
35.99	494	235			
36.04	494	238			
36.09	494	242			
36.14	494	246			
36.19	494	249			
36.24	494	253			
36.29	494	257			
36.34	494	261			
36.39	494	264			
36.44	494	268			
36.49	494	272			
36.54	494	275			
36.59	494	279			
36.64	494	283			
36.69	494	287			
36.74	494	290			
36.79	494	294			
36.84	494	298			
36.89	494	301			
36.94	494	305			
36.99	494	309			
37.04	507	334			
37.09	524	360			

$735 - 198 = \boxed{537\text{ cf}} > 533$ ✓

APPENDIX IX

Pre- and Post-Construction Watershed Plans

Design: DJM	Draft: DJM	Date: 3/25/21
Checked: PSL	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-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
PAIGE S. LIBBEY No.16670
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
3	2/9/22	REVISED PER TAC AND REVIEW ENGINEER COMMENTS	DJM
2	12/27/21	REVISED PER REVIEW ENGINEER COMMENTS	DJM
1	10/5/21	REVISED PER CITY COMMENTS	DJM
0	8/23/21	ISSUED FOR REVIEW	DJM

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: **EXISTING WATERSHED PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

Owner of Record:
LOT 14: COLLEEN HEBERT
54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173
LOT 15: JOHN J. & COLLEEN HEBERT
54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 21047

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: DJM	Draft: DJM	Date: 3/25/21
Checked: PSL	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-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
PAIGE S. LIBBEY
No.16670
LICENSED
PROFESSIONAL ENGINEER
2/15/22

REV.	DATE	REVISION	BY
3	2/9/22	REVISED PER TAC AND REVIEW ENGINEER COMMENTS	DJM
2	12/27/21	REVISED PER REVIEW ENGINEER COMMENTS	DJM
1	10/5/21	REVISED PER CITY COMMENTS	DJM
0	8/23/21	ISSUED FOR REVIEW	DJM

Designed and Produced in NH

J/B 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: PROPOSED WATERSHED PLAN

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

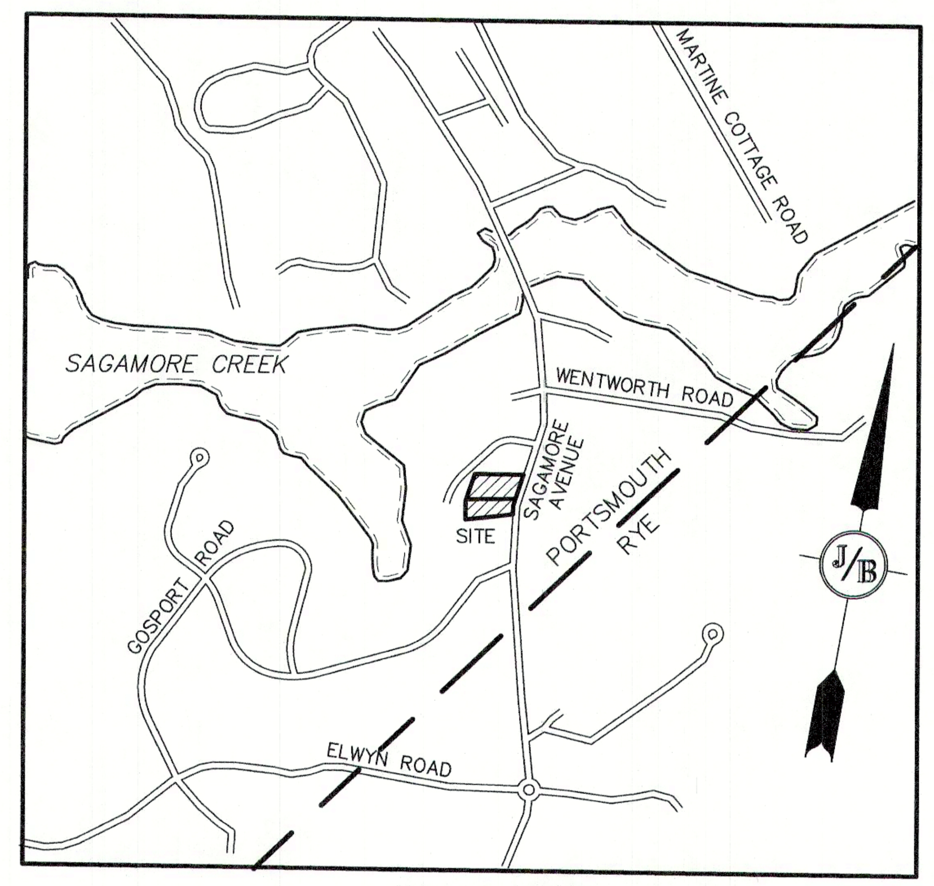
Owner of Record: LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173
LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 21047

CONDOMINIUM SITE PLAN
"SAGAMORE AVENUE CONDOMINIUMS"
TAX MAP 224, LOTS 14 & 15
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
		EDGE OF PAVEMENT
VGC	VGC	VERTICAL GRANITE CURB
SGC	SGC	SLOPE GRANITE CURB
CCB	CCB	CAPE COD BERM
PCC	PCC	POURED CONCRETE CURB
X	X	SILT FENCE
D	D	DRAINAGE LINE
S	S	SEWER LINE
G	G	GAS LINE
W	W	WATER LINE
WS	WS	WATER SERVICE
OHE	OHE	OVERHEAD ELECTRIC
UGE	UGE	UNDERGROUND ELECTRIC
		GUARDRAIL
UD	UD	UNDERDRAIN
F	F	FIRE PROTECTION LINE
	W	THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	SPOT GRADE
100.00	100.00	PAVEMENT SPOT GRADE
100.00 99.50	100.00 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
		WELL
TP1		TEST PIT
		FAILED TEST PIT
M	M	MONITORING WELL
PT		PERC TEST
1		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		DRAIN MANHOLE
S	S	SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
D		CULVERT W/WINGWALLS
D		CULVERT W/FLARED END SECTION
D		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		4K SEPTIC AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 1000'

SHEET INDEX

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EPPING, NH 03042-2325
(603) 679-5695

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER
2/15/22

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
8	1/20/22	REVISED PER ENGINEER REVIEW COMMENTS	DJM
7	12/28/21	REVISED PER ENGINEER REVIEW COMMENTS	DJM
6	10/5/21	REVISED PER CITY COMMENTS	DJM
5	8/23/21	ISSUED FOR REVIEW	DJM

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: COVER SHEET
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
CS
SHEET 1 OF 19
JBE PROJECT NO. 21047

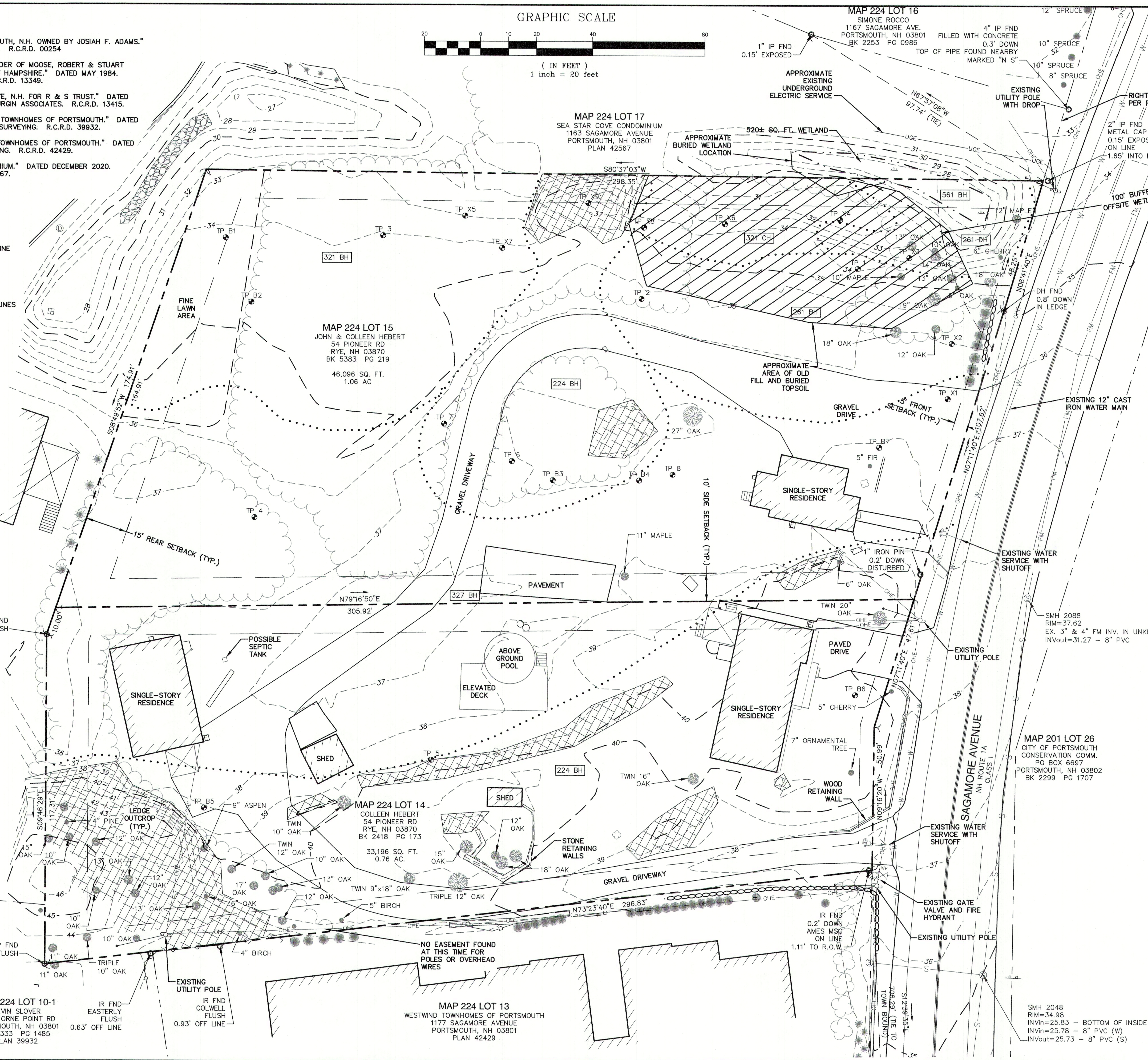
"SAGAMORE AVENUE CONDOMINIUMS", PORTSMOUTH, NH
JBE # 21047 REVISION 9, 2/15/22

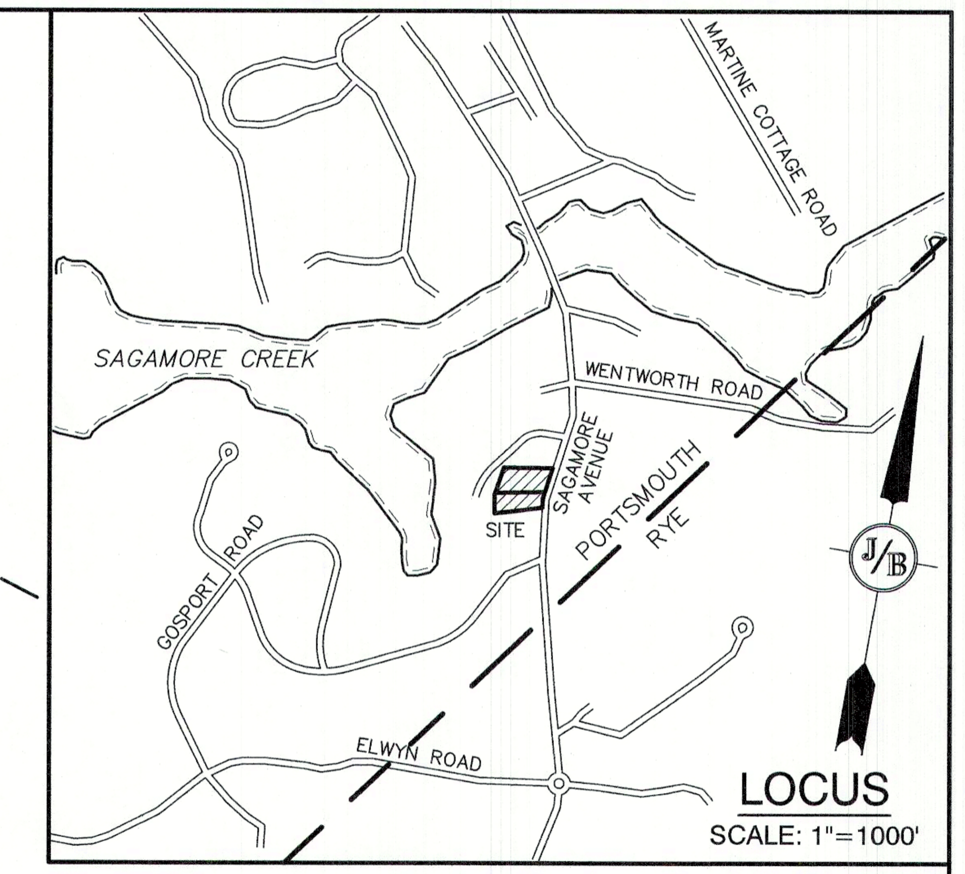
PLAN REFERENCES:

1. "PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS." DATED MARCH 1908. PREPARED BY E. M. HUNT. R.C.R.D. 00254
2. "BOUNDARY LINE CHANGE, LODGE 444 LOYAL ORDER OF MOOSE, ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE." DATED MAY 1984. PREPARED BY K.E. MOORE & B.G. STAPLES. R.C.R.D. 13349.
3. "SUBDIVISION PLAN OF LAND, PORTSMOUTH & RYE, N.H. FOR R & S TRUST." DATED DECEMBER 13, 1984. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 13415.
4. "LOT LINE REVISION, KEVIN SLOVER & WESTWIND TOWNHOMES OF PORTSMOUTH." DATED SEPTEMBER 16, 2011. PREPARED BY EASTERLY SURVEYING. R.C.R.D. 39932.
5. "AS-BUILT CONDOMINIUM SITE PLAN, WESTWIND TOWNHOMES OF PORTSMOUTH." DATED JANUARY 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42429.
6. "AMENDED EASEMENT PLAN, SEA STAR CONDOMINIUM." DATED DECEMBER 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42567.

GENERAL LEGEND

- PROPERTY LINE
- ABUTTER PROPERTY LINE
- BUILDING SETBACK
- TREE LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- OHE — OVERHEAD ELECTRIC LINES
- WETLAND
- STONE WALL
- MAJOR CONTOUR
- MINOR CONTOUR
- S — SEWER LINE
- UTILITY POLE





NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF LOTS 14 AND 15 AS SHOWN ON PORTSMOUTH TAX MAP 224.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND BUFFER = 100' FROM WETLANDS > 10,000 S.F. IN AREA
   MAX. BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 25%
3. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
5. BASIS OF BEARING:
   HORIZONTAL – NAD83 NH STATE PLANE.
   VERTICAL – NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. 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.
11. 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.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2021 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.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. 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.

HISS SOIL NOTE

THIS SOIL MAP WAS PREPARED BY A PROFESSIONAL SOIL SCIENTIST AND MEETS THE TECHNICAL STANDARDS OF THE SSSNNE PUBLICATION NO. 1, HIGH INTENSITY SOIL MAPS FOR NH, DECEMBER 2017. SOIL MAP WAS PREPARED ON 4 APRIL 2021. SOIL MAP SITE WAS 1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NH.

SOIL MAP UNITS WERE IDENTIFIED USING THE KEY TO SOIL TYPES. THE CONVERSION OF HIGH INTENSITY SOIL MAP UNIT TO NRCS SOIL MAP UNIT NAME WAS BASED UPON THE OBSERVED SOIL PROFILES, AS WAS HYDROLOGIC SOIL GROUP, AS TAKEN FROM SSSNNE SPECIAL PUBLICATION NO. 5.

SOIL MAPPING WAS PERFORMED BY JAMES GOVE, CSS # 004.

HISS SOIL MAP UNIT	SOIL MAP UNIT NAME	HYDROLOGIC SOIL GROUP
224 (SLOPE) H	HOLLIS-ROCK OUTCROP COMPLEX	D
261 (SLOPE) H	MADE LAND – SIMILAR TO CANTON	B
321 (SLOPE) H	NEWFIELDS	B
327 (SLOPE) H	CHATFIELD VARIANT	B
561 (SLOPE) H	MADE LAND– SIMILAR TO WALPOLE	C

B SLOPE = 0–8%, C SLOPE = 8–15%, D SLOPE = 15–25%

CERTIFICATION:

PURSUANT TO RSA 676:18-III AND RSA 672:14
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 1030 MATTHEW J. SALVUCCI
SIGNATURE

2/15/22

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
8	1/20/22	REVISED PER ENGINEER REVIEW COMMENTS	DJM
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5	8/23/21	ISSUED FOR REVIEW	DJM

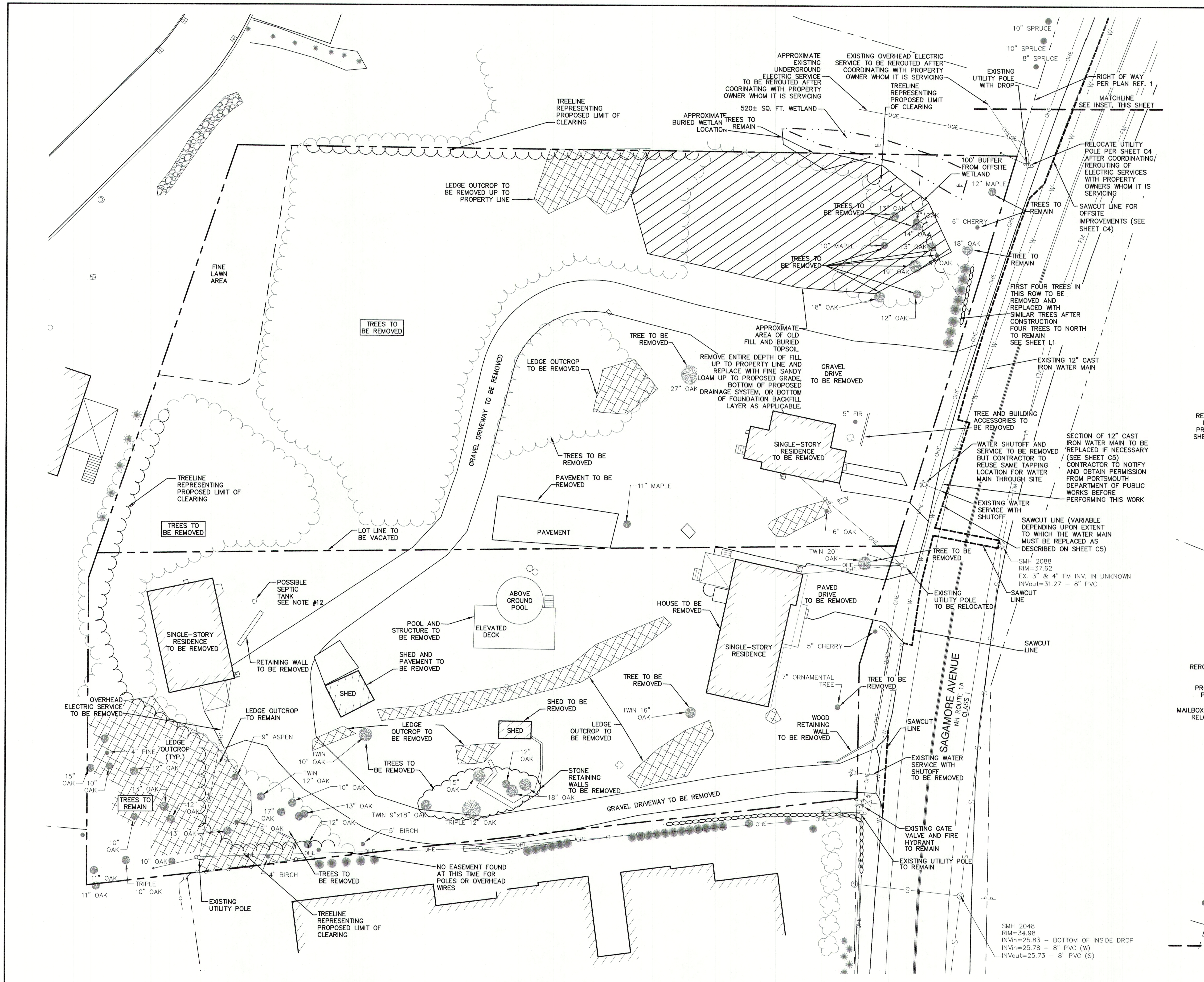
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **EXISTING CONDITIONS PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

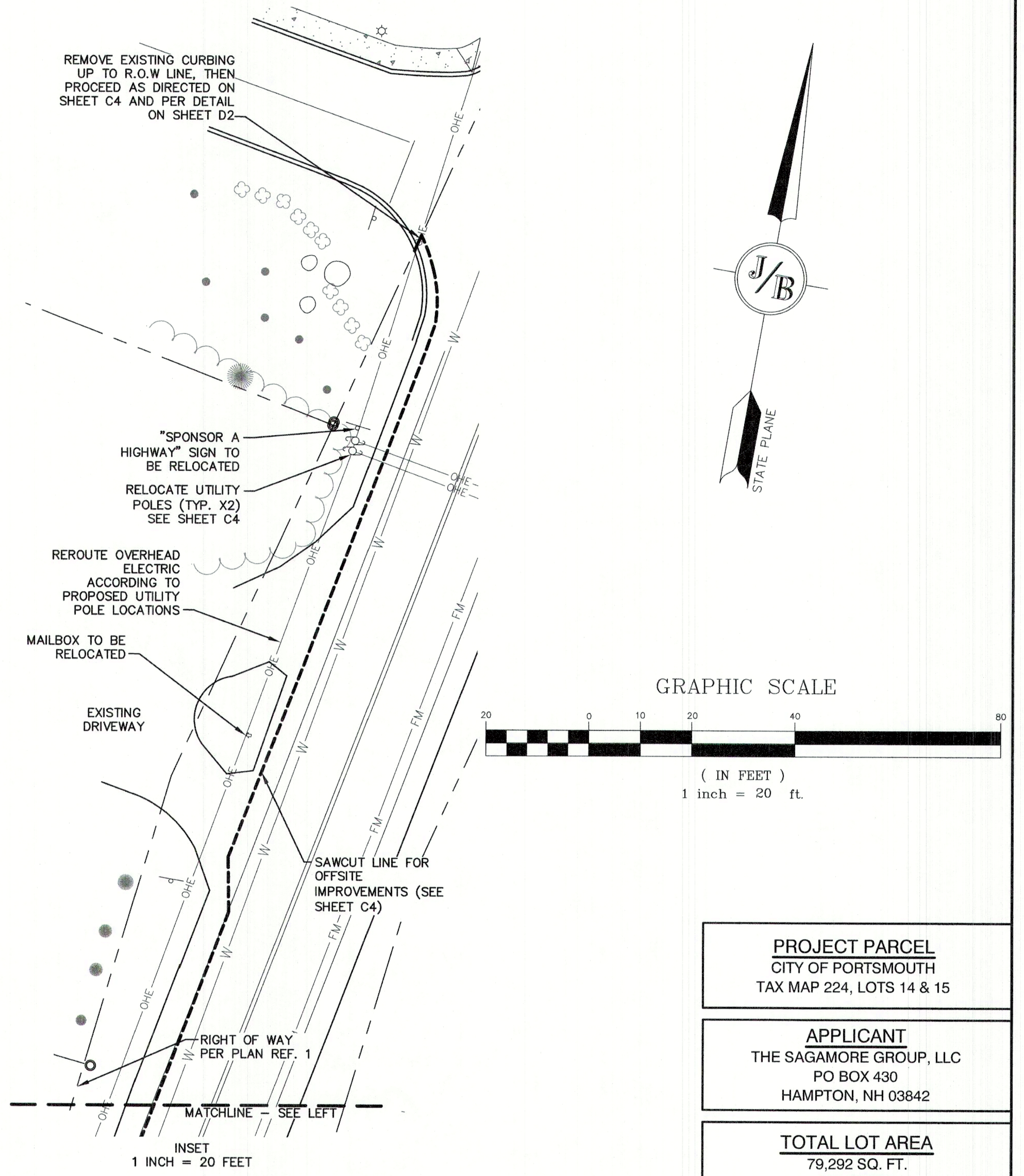
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C1
SHEET 2 OF 19
JBE PROJECT NO. 21047



DEMOLITION NOTES:

1. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR SITE DEMOLITION. IT SHOULD BE NOTED THAT ALL MANMADE FEATURES, PAVEMENT, SIGNS, POLES, CURBING, CONCRETE WALKS, UTILITIES, ETC., SHALL BE REMOVED AS NECESSARY TO CONSTRUCT WORK, UNLESS OTHERWISE NOTED TO REMAIN. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCIES FROM DATA AS SHOWN ON 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.
2. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED. CLEARING LIMITS ARE THE EDGE OF THE PROPERTY AND THE LIMITS OF WORK.
3. ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED TO REMAIN, SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES. ANY BURNING ON-SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
4. ALL EXISTING UTILITIES SHALL BE TERMINATED AT THE PROPERTY LINE, UNLESS OTHERWISE NOTED ON THE PLANS, IN CONFORMANCE WITH LOCAL, STATE AND UTILITY COMPANY STANDARDS, SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES PRIOR TO THE START OF WORK.
5. EXISTING WATERLINES TO BE REMOVED SHALL BE CAPPED AT EXISTING WATERMAIN.
6. ALL CURBING, CONCRETE, PAVEMENT, BUILDINGS AND SUBBASE MATERIALS LOCATED WITHIN PROPOSED LANDSCAPED AREAS SHALL BE REMOVED AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPING IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS. (SEE ALSO LANDSCAPE PLAN).
7. SEE LANDSCAPE PLAN FOR "TREES TO BE SAVED" AND DETAILS ASSOCIATED WITH LANDSCAPED AREAS.
8. THE CONTRACTOR SHALL OBTAIN TREE CLEARING PERMIT FROM LOCAL AND STATE AUTHORITIES PRIOR TO START OF CONSTRUCTION (IF REQUIRED).
9. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
10. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. SILT FENCE SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
11. EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.
12. SEPTIC LINES ARE TO BE CLEANED OUT AND REMOVED. SEPTIC TANK IS TO BE PUMPED, PUNCTURED, AND FILLED WITH SAND. CONTRACTOR TO LOCATE EXISTING LEACH FIELD AND ABANDON IN PLACE IN ACCORDANCE WITH NHDES STANDARDS. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONTAMINATED MATERIAL LOCATED IN THE AREA OF EXISTING LEACHFIELDS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS



INSET
1 INCH = 20 FEET

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

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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: DEMOLITION PLAN
Project: SAGAMORE AVENUE CONDOMINIUMS, 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
DM-1
SHEET 3 OF 19
JBE PROJECT NO. 21047

PLAN REFERENCES:

1. "PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS." DATED MARCH 1908. PREPARED BY E. M. HUNT. R.C.R.D. 00254
2. "BOUNDARY LINE CHANGE, LODGE 444 LOYAL ORDER OF MOOSE, ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE." DATED MAY 1984. PREPARED BY K.E. MOORE & B.G. STAPLES. R.C.R.D. 13349.
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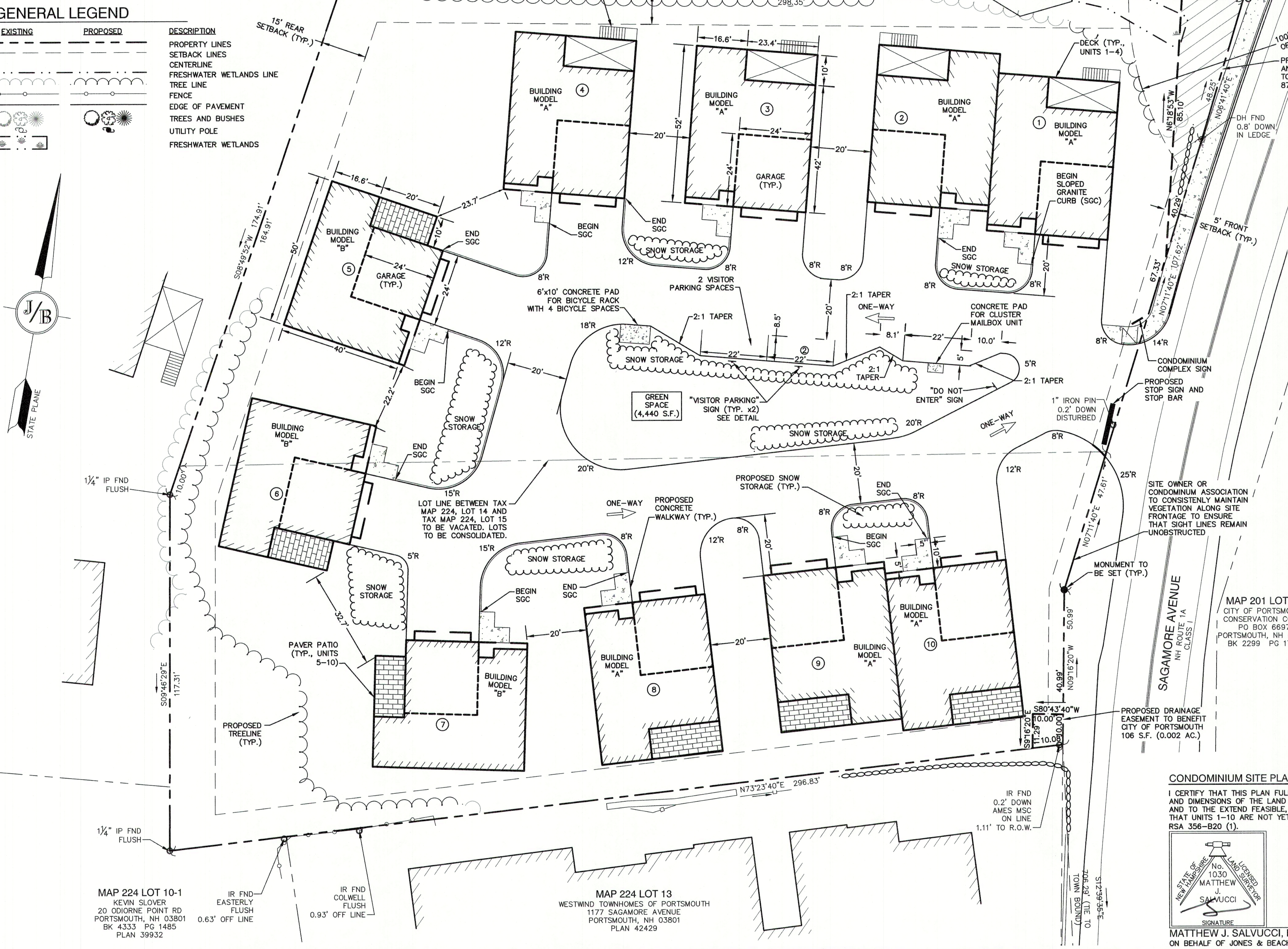
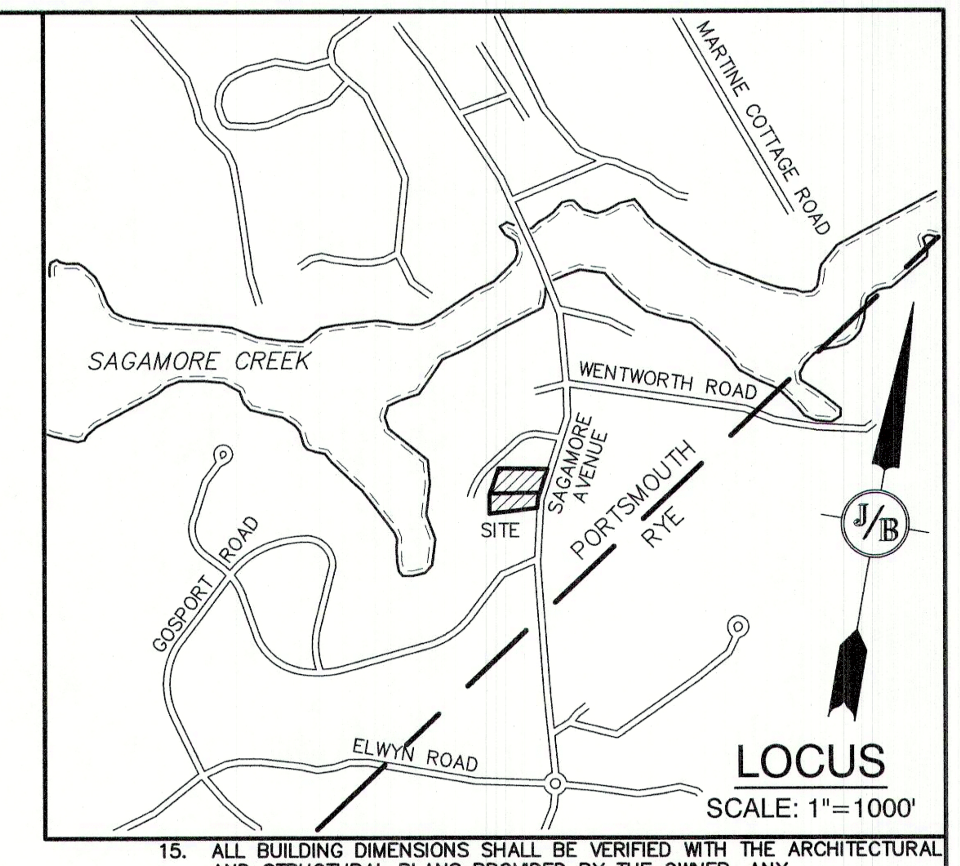
6. "AMENDED EASEMENT PLAN, SEA STAR CONDOMINIUM." DATED DECEMBER 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42567.

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TREE LINE
		FENCE
		EDGE OF PAVEMENT
		TREES AND BUSHES
		UTILITY POLE
		FRESHWATER WETLANDS





LOCUS
SCALE: 1"=1000'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO REMOVE EXISTING STRUCTURES AS SHOWN ON SHT. C1 AND CONSTRUCT AN 10-UNIT CONDOMINIUM COMPLEX. PROJECT TO BE SERVED BY ELECTRIC, MUNICIPAL SEWER & PUBLIC WATER.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND BUFFER = 100' FROM WETLANDS > 10,000 S.F. IN AREA
   MAX. BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 25%
   MIN. LOT AREA PER DWELLING UNIT = 7,500 S.F.
   OPEN SPACE PROVIDED = 40,800 S.F. = 51.4%
3. DENSITY CALCULATION:
   LOT AREA = 79,292 S.F., 10 UNITS PROPOSED
   7,929 S.F. PER DWELLING UNIT PROVIDED > 7,500 S.F. PER DWELLING UNIT REQUIRED
4. PARKING CALCULATIONS:
   1.3 SPACES PER UNIT AND 1 VISITOR SPACE PER 5 UNITS REQUIRED
   1.3 SPACES * 10 UNITS + 1 SPACES * (10 UNITS / 5) =
   15 SPACES REQUIRED
   2 SPACES PROVIDED IN EACH GARAGE
   22 SPACES PROVIDED INCLUDING 2 VISITOR SPACES
5. NHDES SEWER CONNECTION PERMIT NO. , DATED .
   NHDOT DRIVEWAY PERMIT NO. , DATED .
6. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
7. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
8. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
9. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
10. 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.
11. 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.
12. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
13. 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.
14. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
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 ARCHITECTURAL BLOCK RETAINING WALLS ARE TO BE DESIGNED AND STAMPED BY THE MANUFACTURER'S STRUCTURAL ENGINEER. CONTRACTOR TO COORDINATE WITH APPROVED MANUFACTURER PRIOR TO INSTALLATION.
18. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
19. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
20. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
21. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
22. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
23. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
24. BASIS OF BEARING:
    HORIZONTAL – NH STATE PLANE. VERTICAL – NAVD88.
25. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
26. 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.
27. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2021 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.
32. 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.
33. AN ACCESS EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR ACCESS AND LEAK DETECTION OF THE WATER MAIN, SHUTOFFS, AND METERS ON THE PROPERTY. EASEMENT DESCRIPTION MUST BE APPROVED BY THE CITY'S LEGAL DEPARTMENT AND ACCEPTED BY THE CITY COUNCIL.
34. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
35. ON-SITE SALT STORAGE IS PROHIBITIED WITHIN 250' OF AN INLAND WETLAND UNLESS COMPLETELY COVERED AND CONTAINED IN A STRUCTURE.

CONDOMINIUM SITE PLAN CERTIFICATION:

I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMROVEMENTS SHOWN THEREON AND TO THE EXTEND FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, THAT UNITS 1-10 ARE NOT YET BEGUN, AND THIS PLAN COMPLIES WITH NH RSA 356-B20 (1).

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR
SIGNATURE

MATTHEW J. SALVUCCI, LLS 1030 DATE: 2/15/22
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
8	1/20/22	REVISED PER ENGINEER REVIEW COMMENTS	DJM
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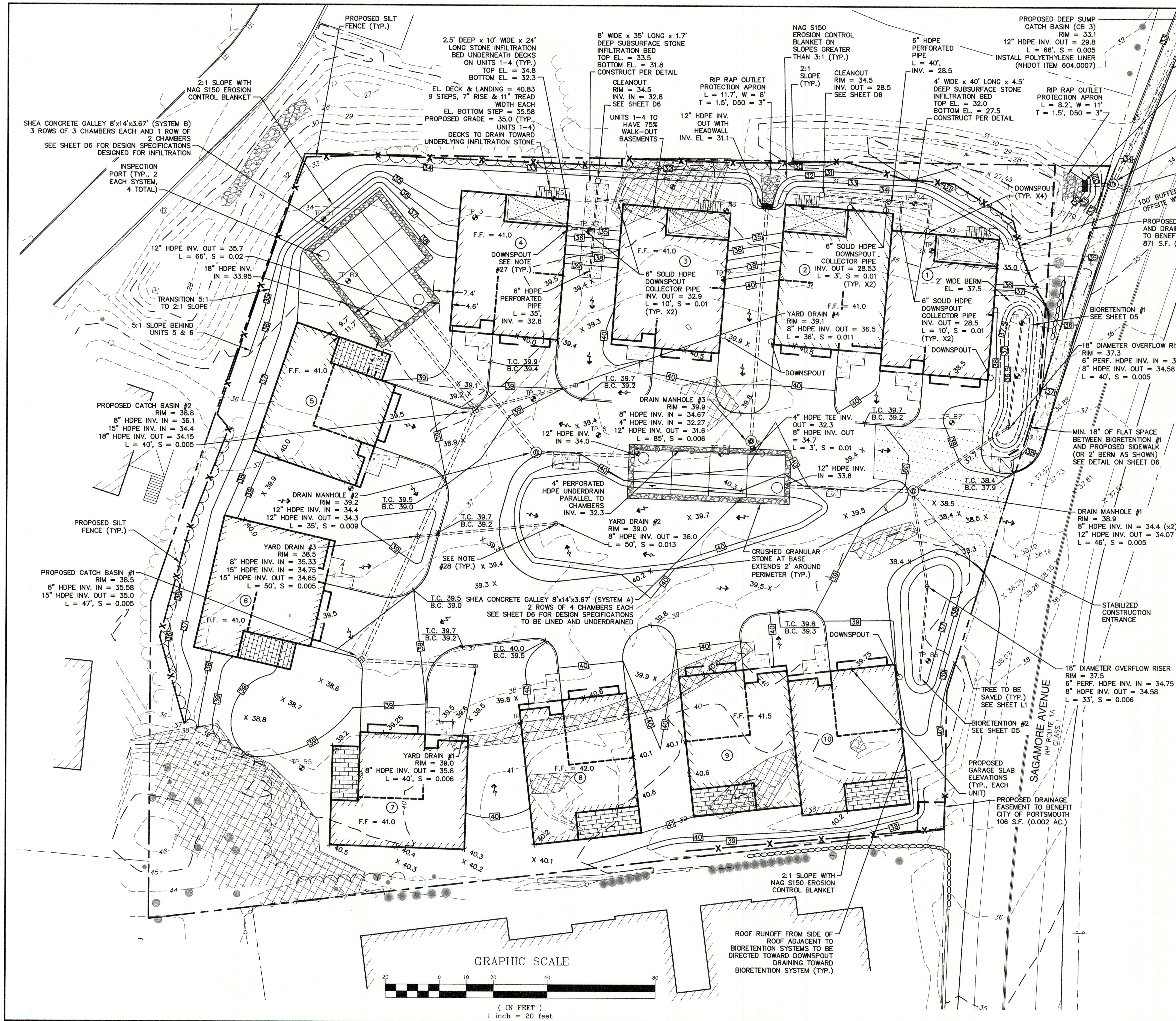
5	8/23/21	ISSUED FOR REVIEW	DJM

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: **CONDOMINIUM SITE PLAN**
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C2
SHEET 4 OF 19
JBE PROJECT NO. 21047



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 SWALES AND BIORETENTION SYSTEMS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
6. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
7. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
8. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
9. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE SHEETS D4-D6 FOR DRAINAGE DETAILS.
10. ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
11. IMMEDIATELY APPLY AND COMPACT STONE BASE FOR BUILDING PADS TO +/-½" PRIOR TO EXCAVATING INTERIOR AND PERIMETER FOOTINGS.
12. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
13. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.
14. 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.
15. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
16. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
17. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
18. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
19. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
20. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
21. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
22. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
23. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
24. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
25. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
26. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
27. ALL DOWNSPOUTS THAT ARE TO BE CONNECTED TO A COLLECTOR PIPE MUST BE BUILT WITH OVERFLOWS PER TYPICAL DETAIL. LOCATIONS ARE SUBJECT TO CHANGE AS CONTRACTOR MAY ADJUST DOWNSPOUT LOCATIONS AS NECESSARY IN ORDER TO COLLECT ROOF RUNOFF THAT IS DIRECTED TOWARD THEM.
28. ALL PROPOSED YARD DRAINS AND BIORETENTION OVERFLOW RISERS SHALL BE 18" NYLOPLAST DRAIN BASIN WITH DOME GRATE, AS SPECIFIED ON SHEET D5.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED
PROFESSIONAL ENGINEER

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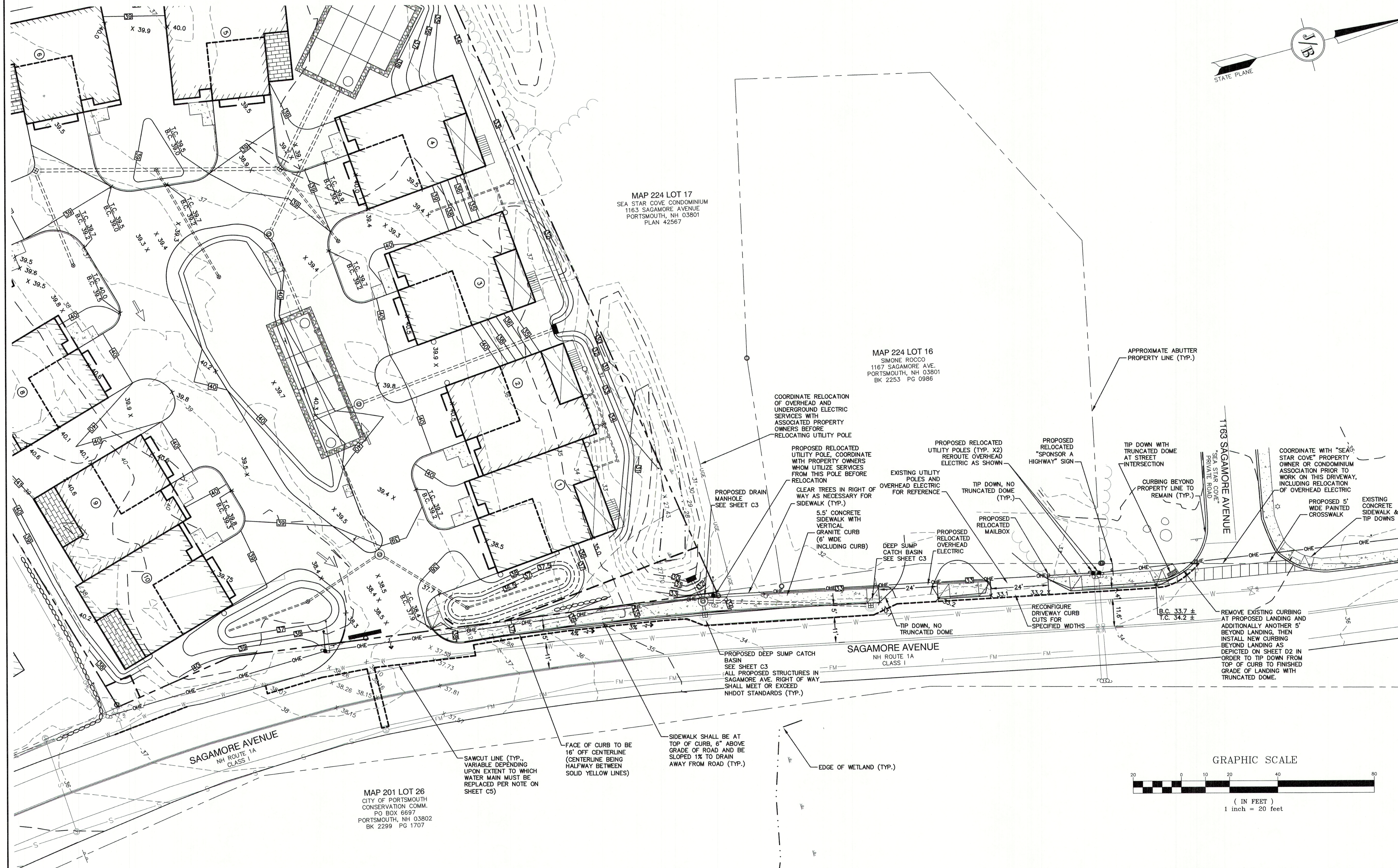
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **GRADING AND DRAINAGE PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C3
SHEET 5 OF 19
JBE PROJECT NO. 21047



PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED
PROFESSIONAL ENGINEER

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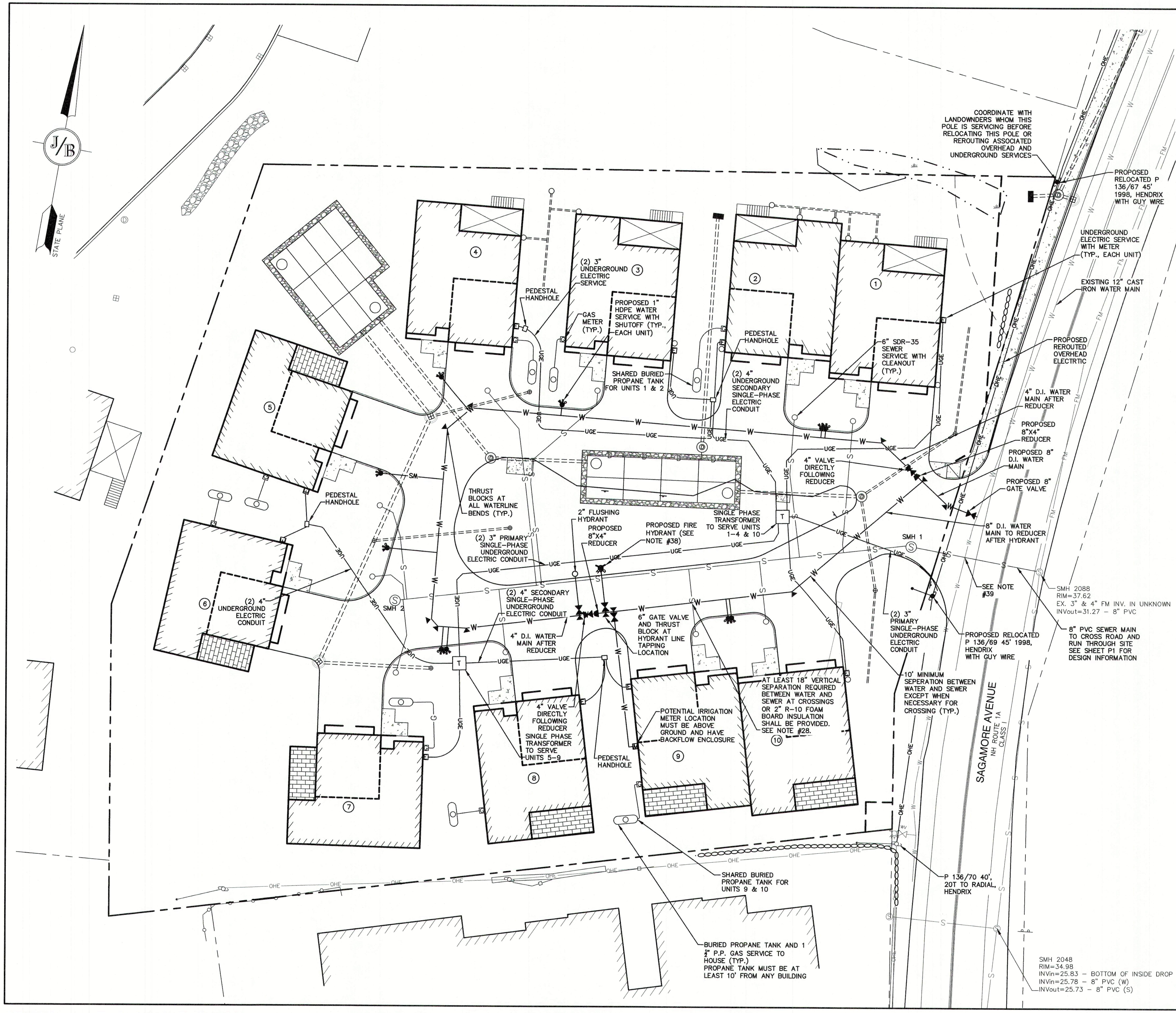
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	OFFSITE IMPROVEMENTS PLAN
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C4
SHEET 6 OF 19
JBE PROJECT NO. 21047



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. BUILDINGS 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 AND SERVICES.
14. SANITARY SEWER FLOW CALCULATIONS:
    10 – THREE BEDROOM UNITS @ 150 GPD/BEDROOM = 4,500 GPD
    IRRIGATION USE = 1,000 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. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND HYDRANTS.
21. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
22. 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.
23. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. 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.
26. ENV–WQ 704.06 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.
27. 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.
28. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES FROM AN EXISTING OR PROPOSED WATER LINE, EXCEPT THAT WHERE 18" VERTICAL SEPARATION CANNOT BE ACHIEVED (AS DEPICTED ON SHEET P1), PROVIDE TWO INCHES R–10 FOAM BOARD INSULATION ABOVE THE SEWER AND BELOW THE WATER LINE.
29. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS–COUNTRY LOCATIONS. PROVIDE TWO–INCHES OF R–10 FOAM BOARD INSULATION 2–FOOT WIDE TO BE INSTALLED 6–INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
30. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE CITY SEWER DEPARTMENT.
31. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
32. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
33. AN AS–BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH WATER DEPARTMENT.
34. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
35. SHOP DRAWINGS TO BE SUBMITTED TO CITY OF PORTSMOUTH FOR REVIEW AND APPROVAL.
36. NEW DUCTILE IRON WATER LINE SHALL BE WRAPPED WITH A WATER TIGHT POLYETHYLENE WRAPPING FOR THE FULL LENGTH. ALL WATER LINE JOINTS SHALL HAVE THREE (3) BRASS WEDGES PER JOINT. CONTRACTOR SHALL CONTACT CITY OF PORTSMOUTH WATER DEPARTMENT (JIM TOW AT 603–766–1439) PRIOR TO WATER LINE INSTALLATION.
37. IF IRRIGATION IS TO BE USED, THE PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY THE PORTSMOUTH CITY PLANNER, CITY ENGINEER, AND THE WATER DEPARTMENT PRIOR TO INSTALLATION.
38. LAY WATER MAIN WITH FIRE HYDRANT AT HIGH SPOT TO ALLOW FOR AIR TO BE RELEASED DURING FILLING OF THE WATER MAIN.
39. CONTRACTOR TO DIG TEST PIT AT CROSSING OF PROPOSED SEWER AND EXISTING WATER MAIN. IF THE EXISTING WATER MAIN IS IN CONFLICT WITH THE PROPOSED SEWER, NOTIFY PROJECT ENGINEER AND PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AND OBTAIN PERMISSION FROM PORTSMOUTH DPW AND REPLACE SECTION OF 12" CAST IRON WATER MAIN AS NECESSARY TO PROVIDE SEPARATION. PROVIDE 2" RIGID FOAM BOARD INSULATION ABOVE SEWER MAIN AND BELOW WATER MAIN IF 18" VERTICAL SEPARATION CANNOT BE ACHIEVED.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

Design: JAC	Draft: DJM	Date: 3/25/21
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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY No.16670
LICENSED PROFESSIONAL ENGINEER

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E-MAIL: JBE@JONESANDBEACH.COM

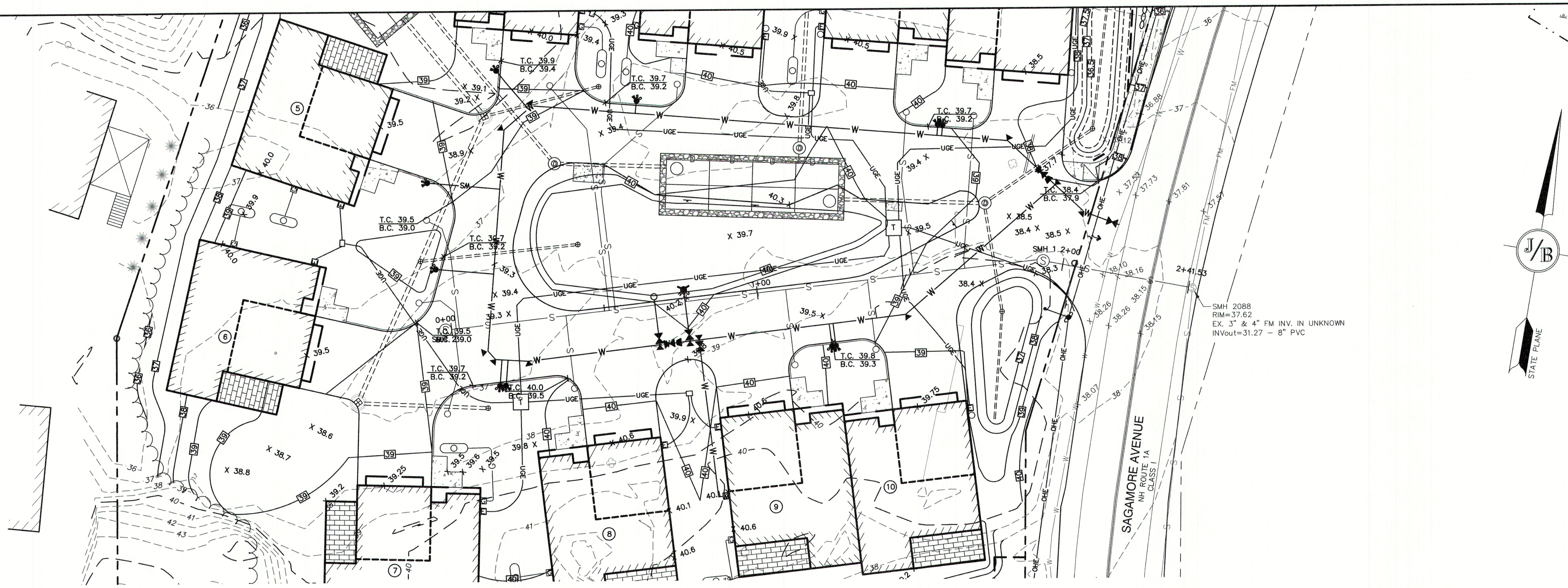
Plan Name: UTILITY PLAN

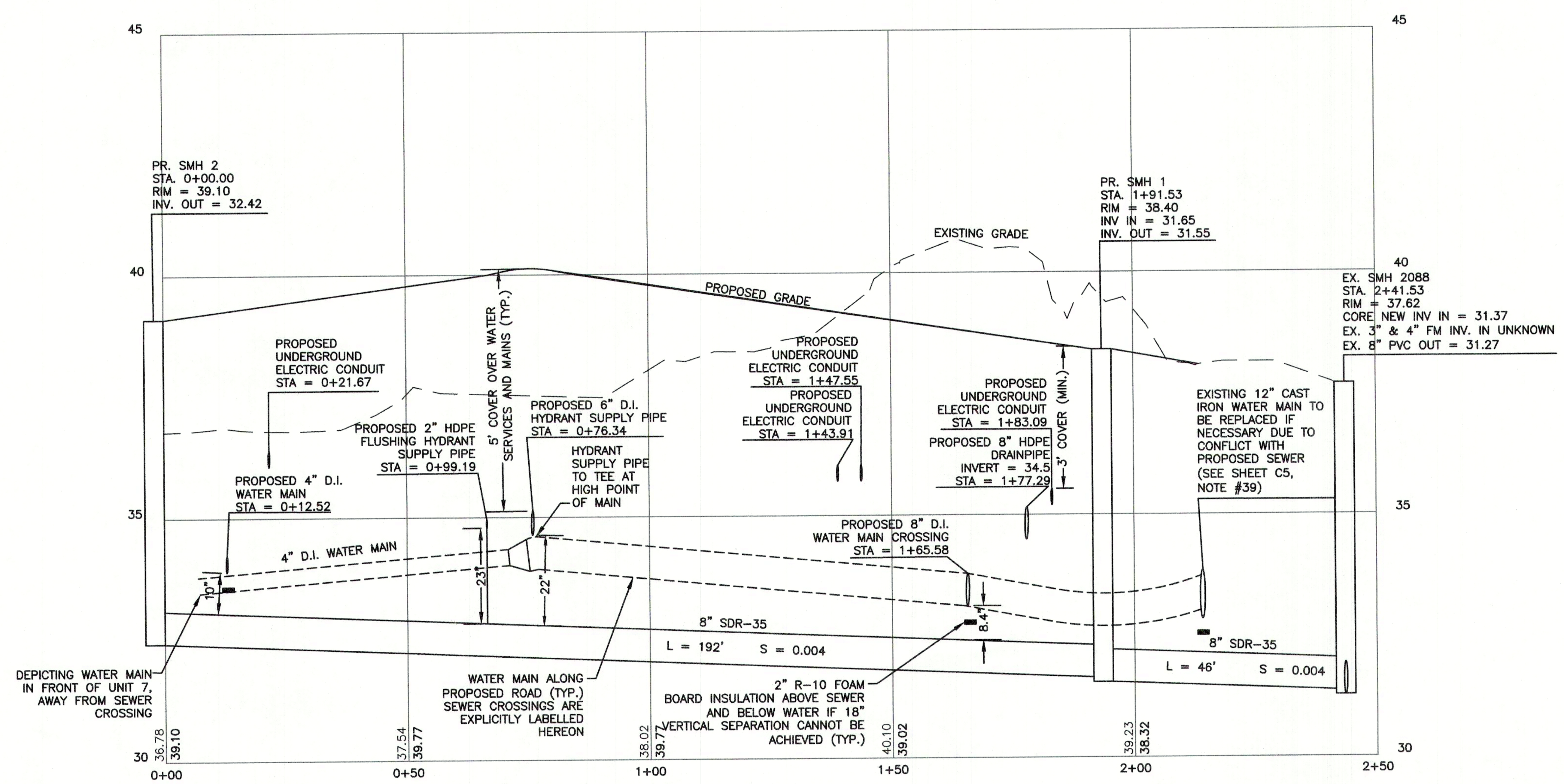
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

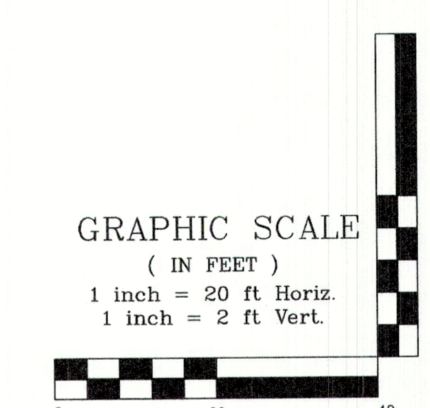
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C5

JBE PROJECT NO. 21047







Design: JAC	Draft: DJM	Date: 3/25/21	
Checked: JAC	Scale: 1" = 20'	Project No.: 21047	
Drawing Name: 21047-PLAN.dwg			

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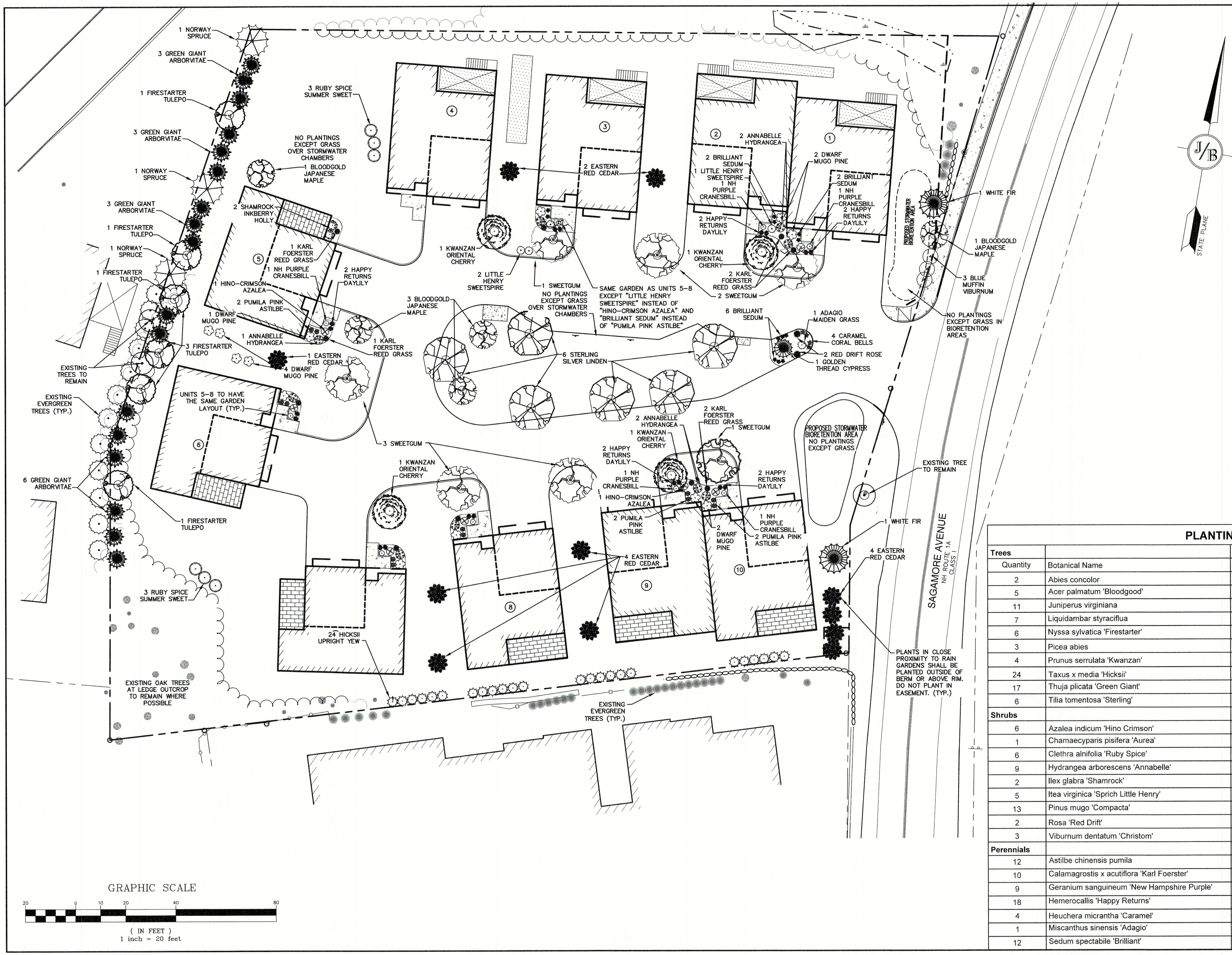
STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
8	1/20/22	REVISED PER ENGINEER REVIEW COMMENTS	DJM
7	12/28/21	REVISED PER ENGINEER REVIEW COMMENTS	DJM
6	10/5/21	REVISED PER CITY COMMENTS	DJM
5	8/23/21	ISSUED FOR REVIEW	DJM

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:	PLAN AND SEWER PROFILE
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
P1
SHEET 8 OF 19
JBE PROJECT NO. 21047



LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. 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.
5. 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.
6. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
7. 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.
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. FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
12. ALL LANDSCAPING SHALL MEET THE CITY OF PORTSMOUTH STANDARDS AND REGULATIONS.
13. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
14. 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.
15. 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.
16. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
17. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
18. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
19. ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
20. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE, AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED, AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.
21. SEE TYPICAL PLANTING DETAILS ON SHEET D4.

PLANTING LIST

Quantity	Botanical Name	Common Name	Size
Trees			
2	Abies concolor	WHITE FIR	7-8 ft. ht.
5	Acer palmatum 'Bloodgood'	BLOODGOOD JAPANESE MAPLE	15 Gallon
11	Juniperus virginiana	EASTERN RED CEDAR	7-8 ft. ht.
7	Liquidambar styraciflua	SWEETGUM	2.5" Caliper
6	Nyssa sylvatica 'Firestarter'	FIRESTARTER TUPELO	4.5" Caliper
3	Picea abies	NORWAY SPRUCE	10-12 ft. ht.
4	Prunus serrulata 'Kwanzan'	KWANZAN ORIENTAL CHERRY	2" Caliper
24	Taxus x media 'Hicksii'	HICKSII UPRIGHT YEW	6-7 ft. ht.
17	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	10-12 ft. ht.
6	Tilia tomentosa 'Sterling'	STERLING SILVER LINDEN	3" Caliper
Shrubs			
6	Azalea indicum 'Hino Crimson'	HINO CRIMSON AZALEA	3 Gallon
1	Chamaecyparis pisifera 'Aurea'	GOLDEN THREAD CYPRESS	7 Gallon
6	Clethra alnifolia 'Ruby Spice'	RUBY SPICE SUMMER SWEET	5 Gallon
9	Hydrangea arborescens 'Annabelle'	ANNABELLE HYDRANGEA	5 Gallon
2	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 Gallon
5	Itea virginica 'Sprich Little Henry'	LITTLE HENRY SWEETSPIRE	3 Gallon
13	Pinus mugo 'Compacta'	DWARF MUGO PINE	5 Gallon
2	Rosa 'Red Drift'	RED DRIFT ROSE	3 Gallon
3	Viburnum dentatum 'Christom'	BLUE MUFFIN VIBURNUM	5 Gallon
Perennials			
12	Astilbe chinensis pumila	PUMILA PINK ASTILBE	1 Gallon
10	Calamagrostis x acutiflora 'Karl Foerster'	KARL FOERSTER REED GRASS	2 Gallon
9	Geranium sanguineum 'New Hampshire Purple'	NH PURPLE CRANESBILL	1 Gallon
18	Hemerocallis 'Happy Returns'	HAPPY RETURNS DAYLILY	1 Gallon
4	Heuchera micrantha 'Caramel'	CARAMEL CORALBELLS	1 Gallon
1	Miscanthus sinensis 'Adagio'	ADAGIO MAIDEN GRASS	2 Gallon
12	Sedum spectabile 'Brilliant'	BRILLIANT SEDUM	1 Gallon

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
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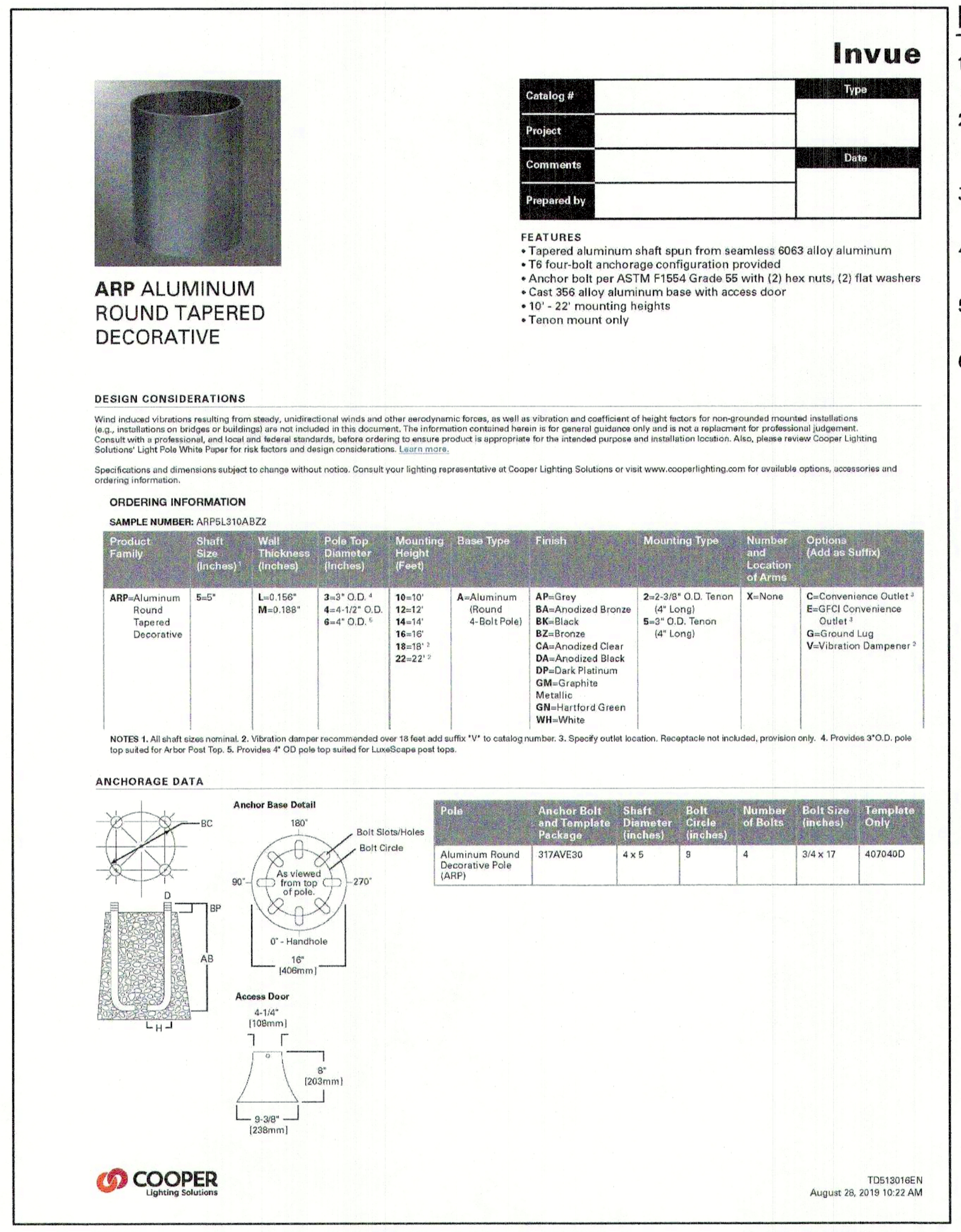
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

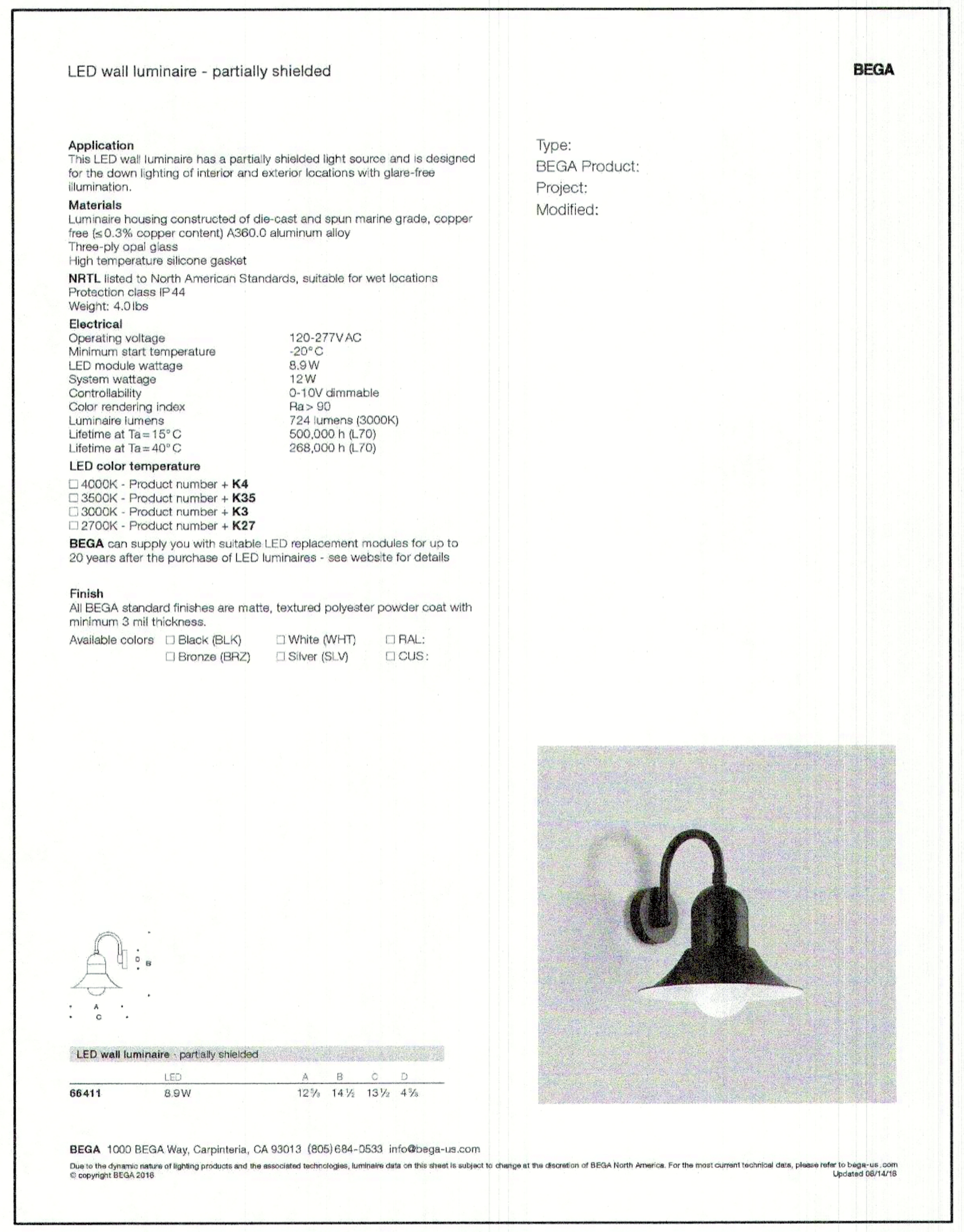
Plan Name: **LANDSCAPE PLAN**
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

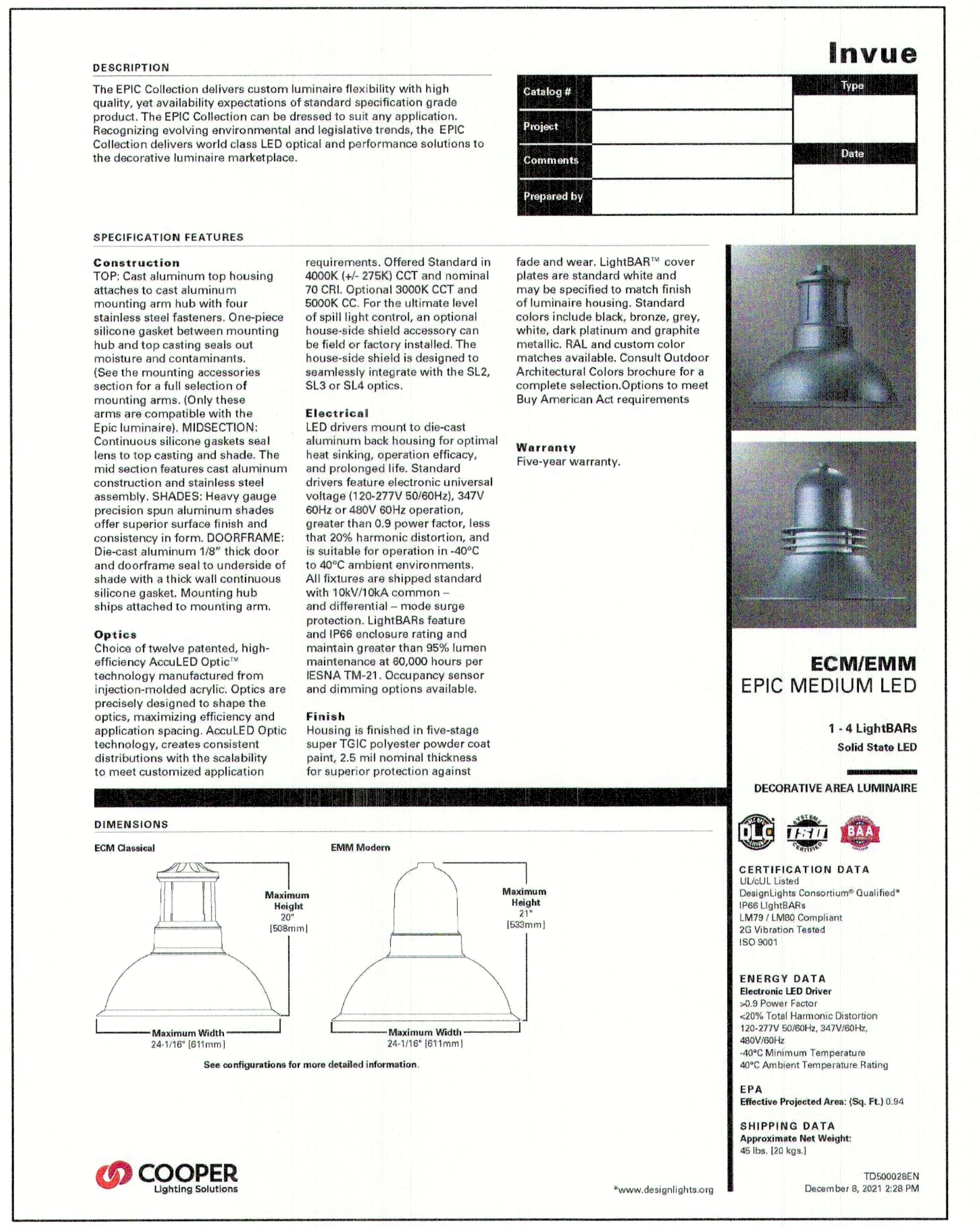
DRAWING No.
L1
SHEET 9 OF 19
JBE PROJECT NO. 21047



LIGHTING AND ELECTRICAL NOTES:

1. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN REGULATIONS.
2. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
3. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
4. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
5. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
6. 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

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description
	1	P5	Single	EMM-E02-LED-E1-5WQ-SO-FL-BK-7030 / VA6105 / ARP5L416ABK
	10	W	SINGLE	66411/ WALL MTD 9' AFG

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
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Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

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Civil Engineering Services

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PO Box 219
Stratham, NH 03885

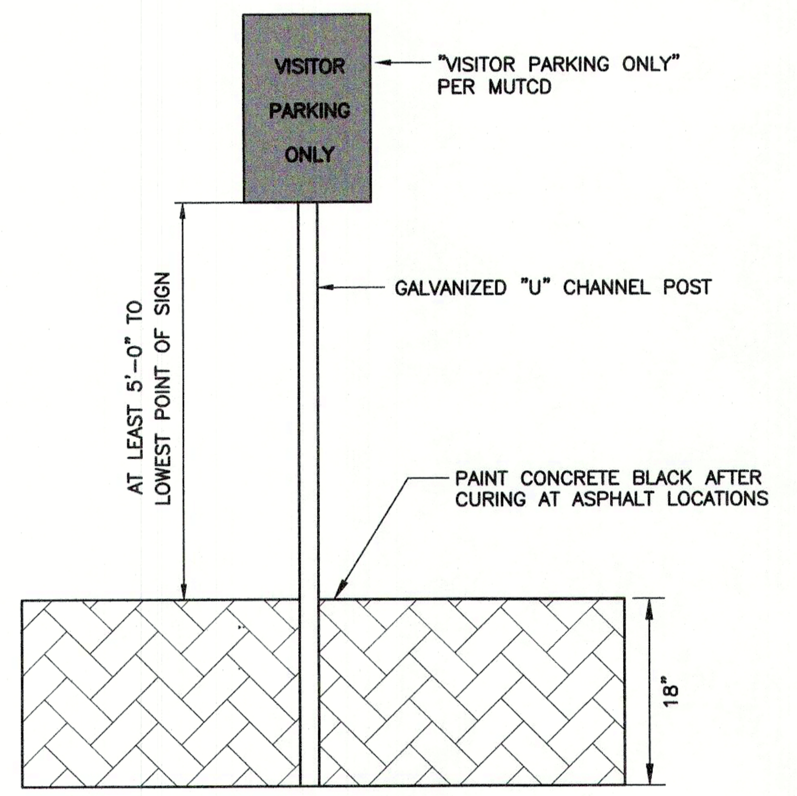
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LIGHTING PLAN

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

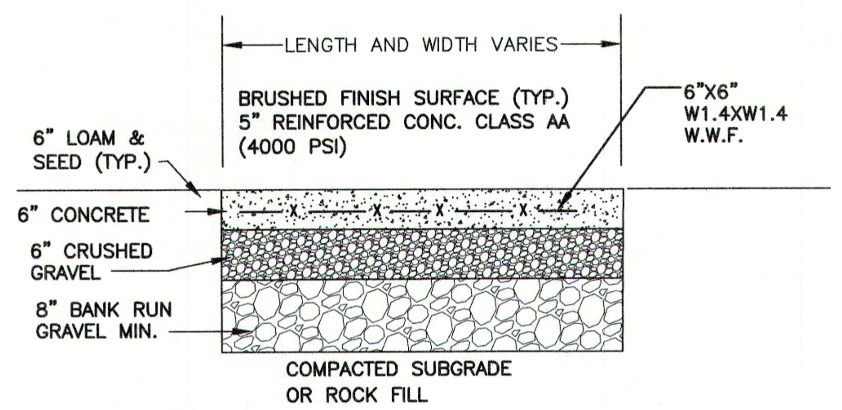
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
L2
SHEET 10 OF 19
JBE PROJECT NO. 21047



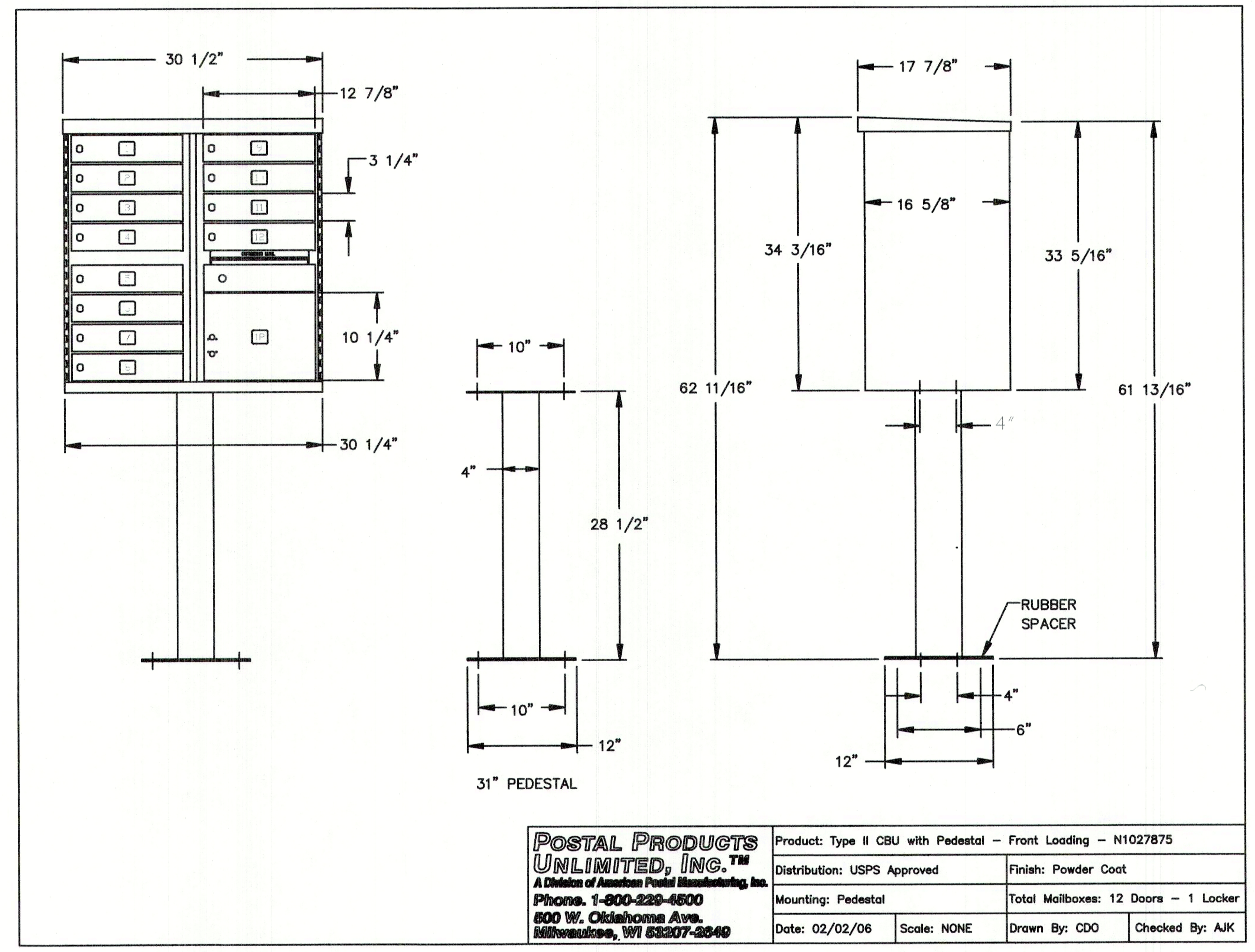
VISITOR PARKING SIGN

NOT TO SCALE



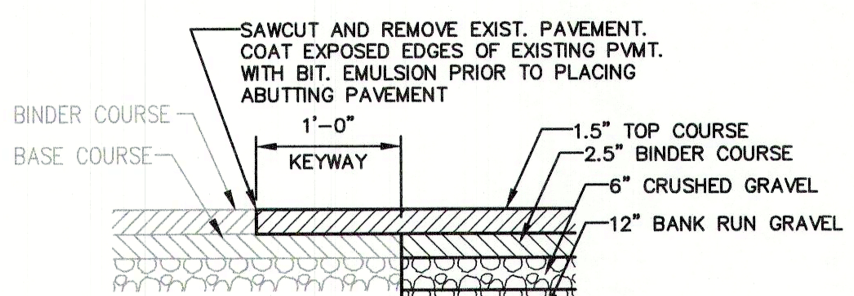
CONCRETE PAD DETAIL

NOT TO SCALE



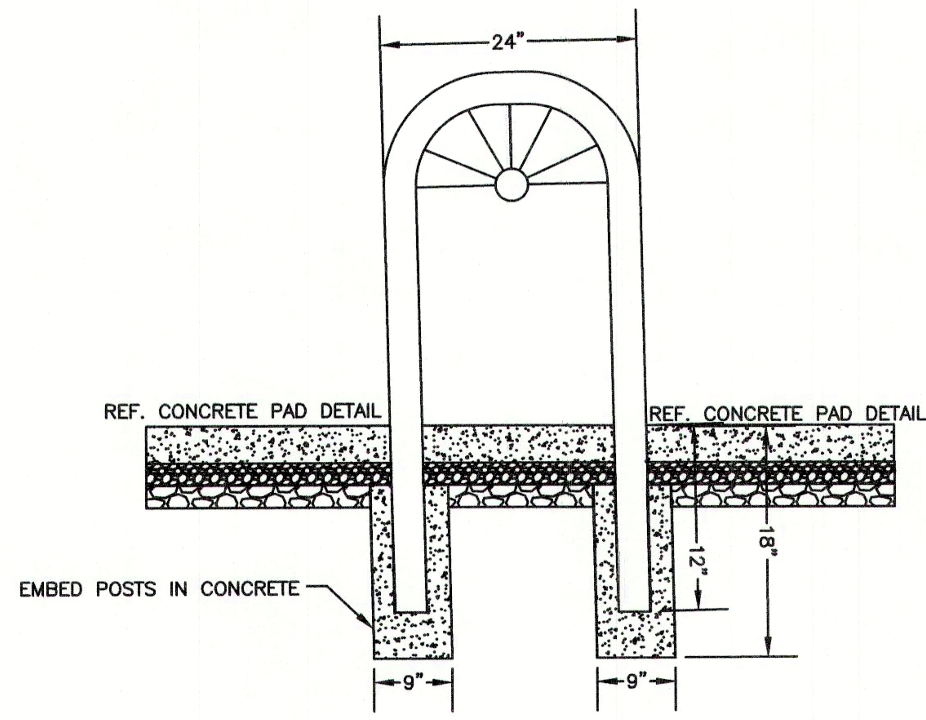
CLUSTER MAILBOX UNIT DETAIL

NOT TO SCALE



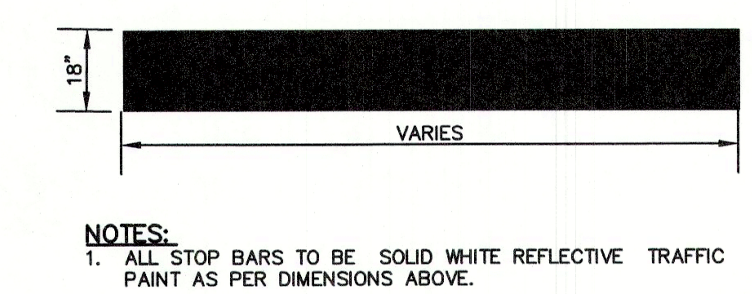
KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

NOT TO SCALE



BICYCLE RACK

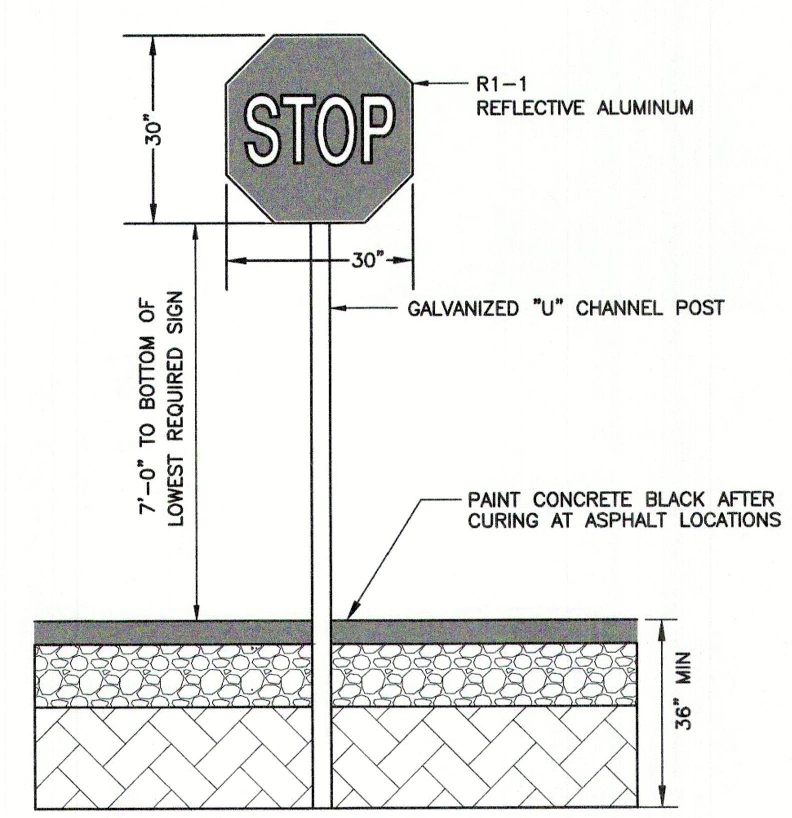
NOT TO SCALE

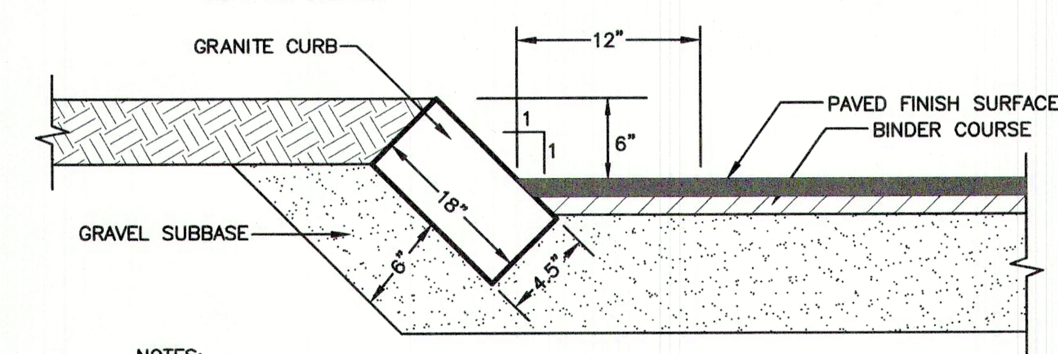


NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

STOP BAR

NOT TO SCALE

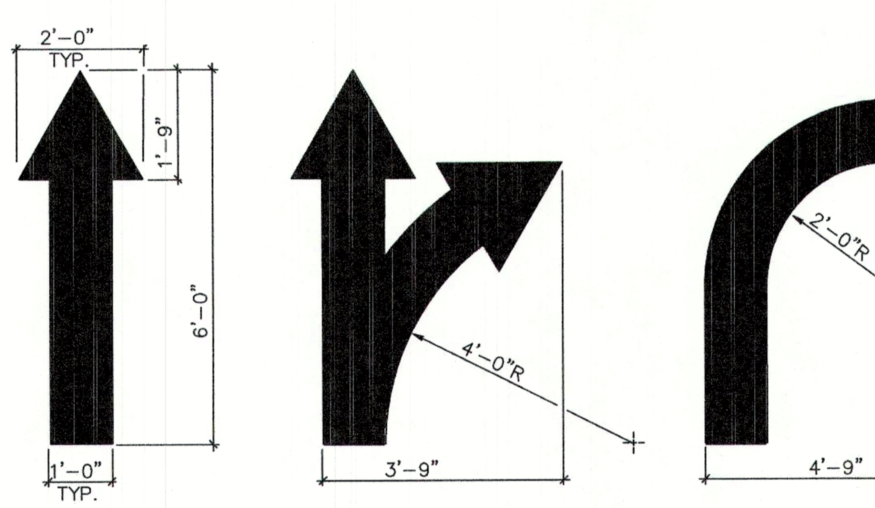




NOTES:
1. CURB TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

SLOPED GRANITE CURB

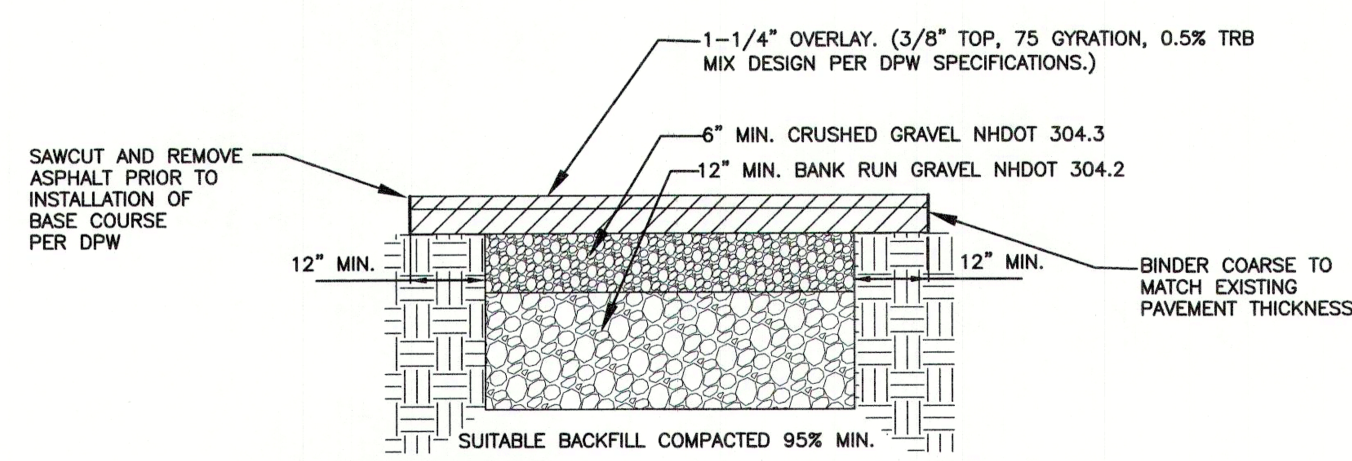
NOT TO SCALE



NOTES:
1. ALL FLOW ARROWS TO BE SOLID YELLOW REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.
2. REVERSE ARROWS FOR OPPOSITE DIRECTION OF FLOW.

PAINTED TRAFFIC ARROWS

NOT TO SCALE



1. AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
2. INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
3. INSTALL SURFACE COURSE OF ASPHALT PAVING.
4. APPLY EMULSION SEALANT AT PERIMETER OF JOINT OVERLAPPING BASE COURSE. INSTALL WEARING COURSE OF ASPHALT TO GRADE. APPLY LIGHT SAND TO ABSORB EXCESS JOINT SEALANT.
5. GRAVEL COMPACTIONS TO MEET 95% MINIMUM.

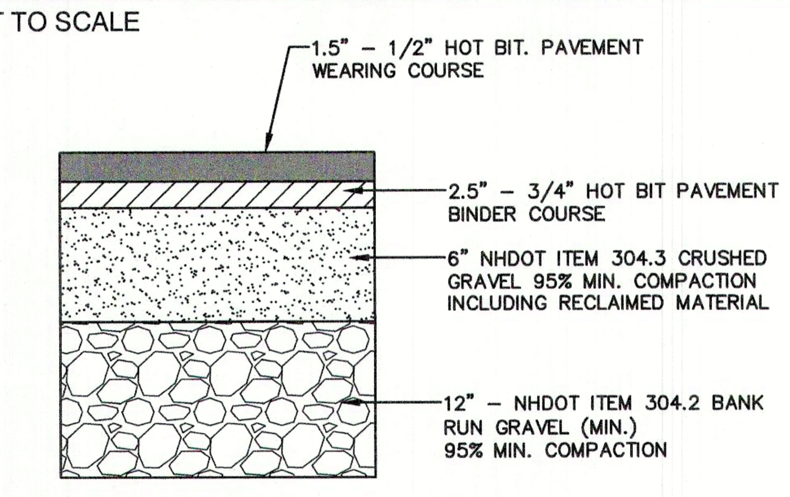
TYPICAL PAVEMENT REPAIR DETAIL

NOT TO SCALE

STOP SIGN (R1-1)

NOT TO SCALE

NOTES:
1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. SIGN, HARDWARE, AND INSTALLATION TO CONFORM TO 2016 NHDOT STANDARD SPECIFICATION, SECTION 615 – TRAFFIC SIGNS.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
4. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.



TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

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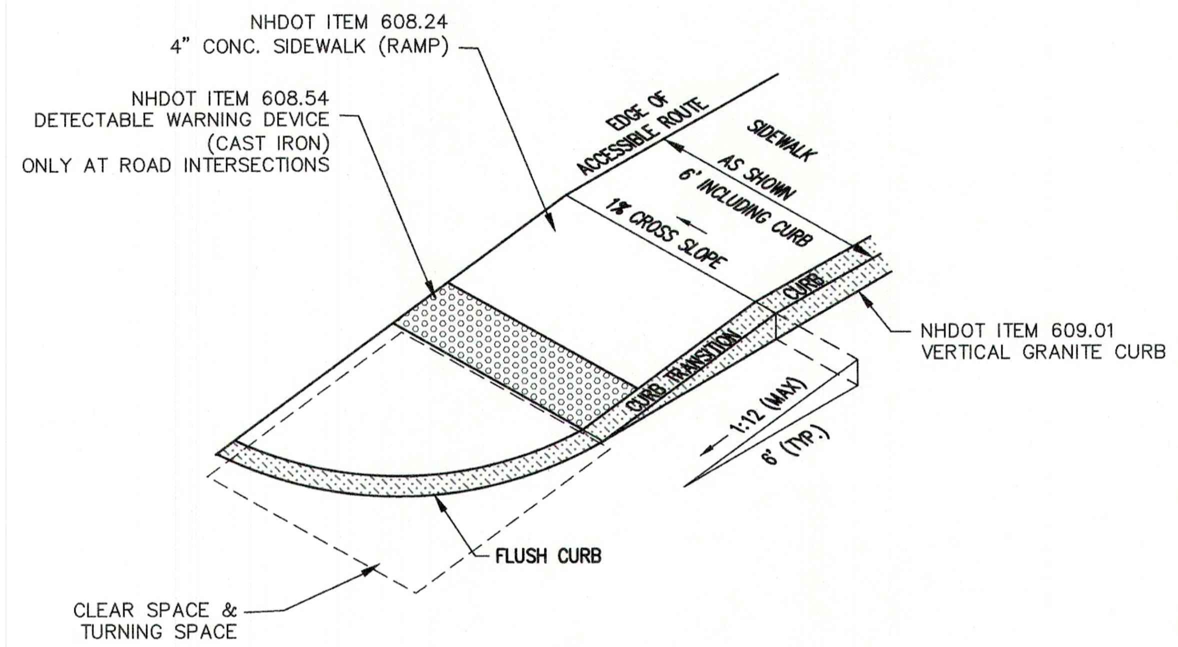
Plan Name:	DETAIL SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.

D1

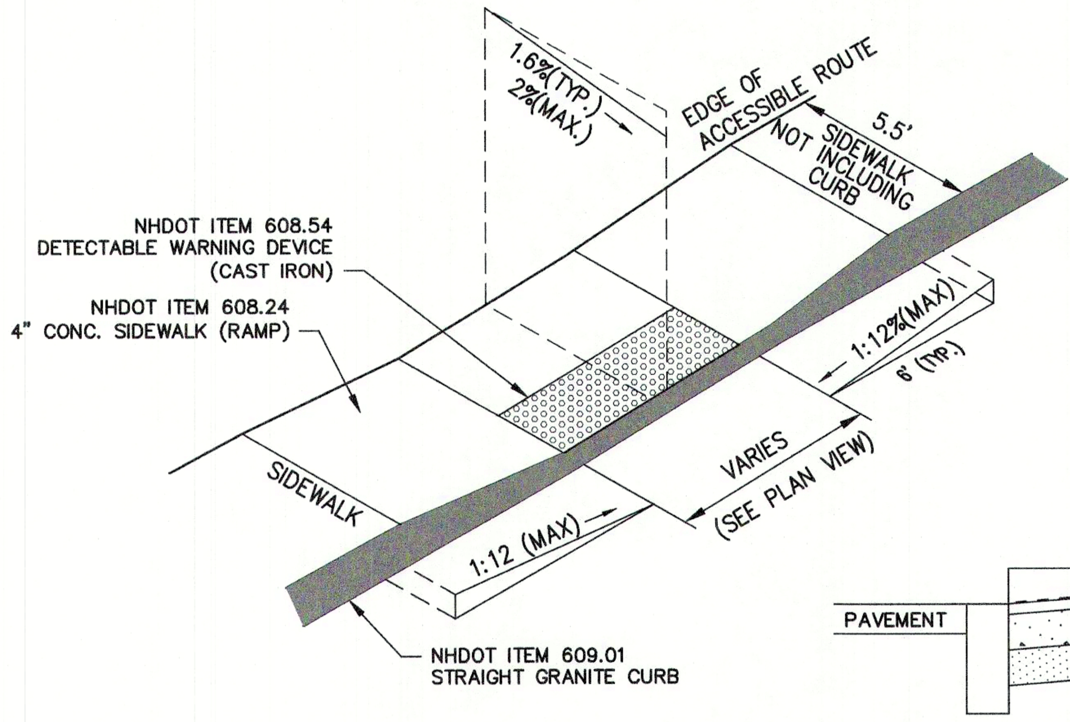
SHEET 11 OF 19
JBE PROJECT NO. 21047



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 8.3%.
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.
8. WHERE A CHANGE IN DIRECTION IS REQUIRED TO UTILIZE A CURB RAMP, A TURNING SPACE SHALL BE PROVIDED AT THE BASE AND/OR THE TOP OF THE CURB RAMP. TURNING SPACES SHALL BE PERMITTED TO OVERLAP CLEAR SPACES.
9. TURNING SPACE MAXIMUM CROSS SLOPE IS 2% IN ANY DIRECTION.
10. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4'X4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN CROSSWALK, AND OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE. THE CLEAR SPACE MAY OVERLAP TURNING SPACES, DETECTABLE WARNING SURFACES AND DROP CURBS.

ACCESSIBLE CURB RAMP (NHDOT TYPE 1)

NOT TO SCALE



NOTES:
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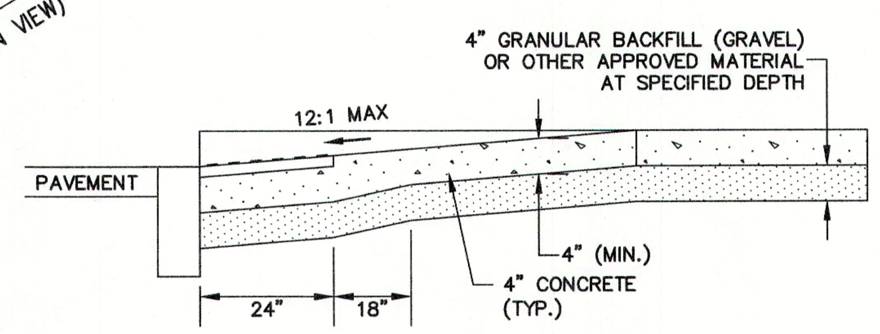
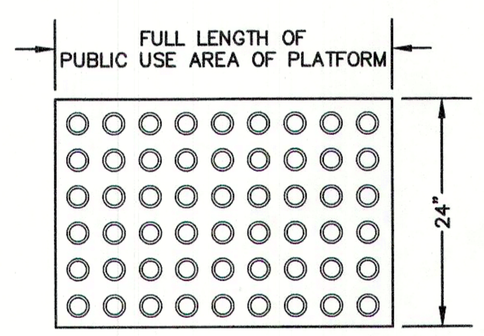
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%,
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8%,
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTLITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.



ACCESSIBLE CURB RAMP (TYPE `A')

NOT TO SCALE

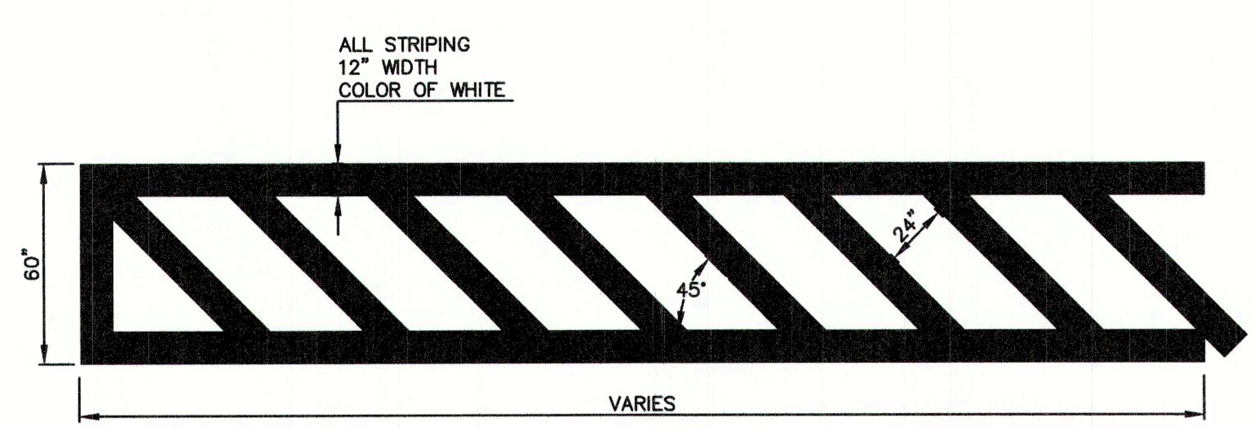


DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH THE FOLLOWING:
A. TRUNCATED DOMES SHALL HAVE A BASE DIAMETER OF 0.9" (MIN.) AND 1.4" (MAX.), A TOP DIAMETER OF 50% OF THE BASE DIAMETER MINIMUM TO 65% OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2".
B. TRUNCATED DOMES SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6" MINIMUM AND 2.4" MAXIMUM, AND A BASE-TO-BASE SPACING OF .65" MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.
C. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.

TRUNCATED DOMES TO BE PLACED IN SIDEWALK BASE IN PUBLIC TRAFFIC AREAS.

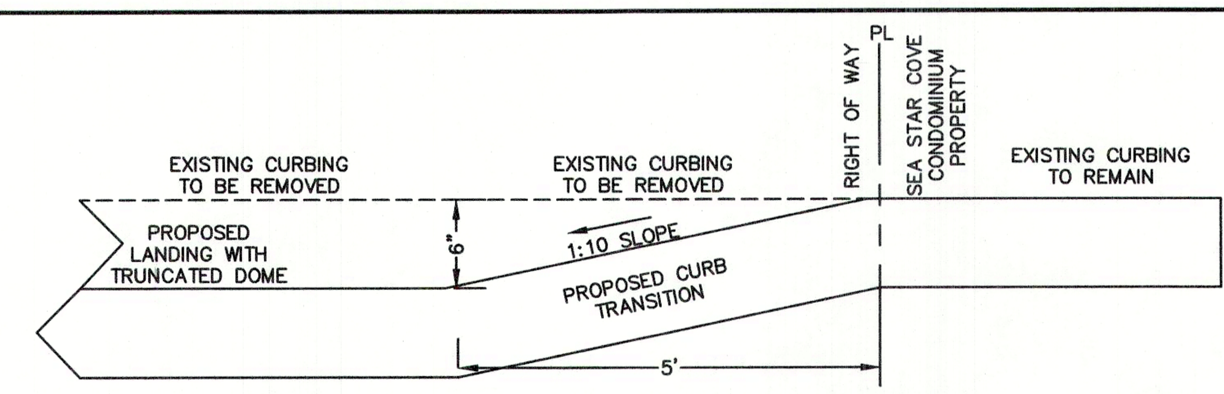
ACCESSIBLE CURB RAMP TRUNCATED DOMES

NOT TO SCALE



PAINTED CROSSWALK DETAIL

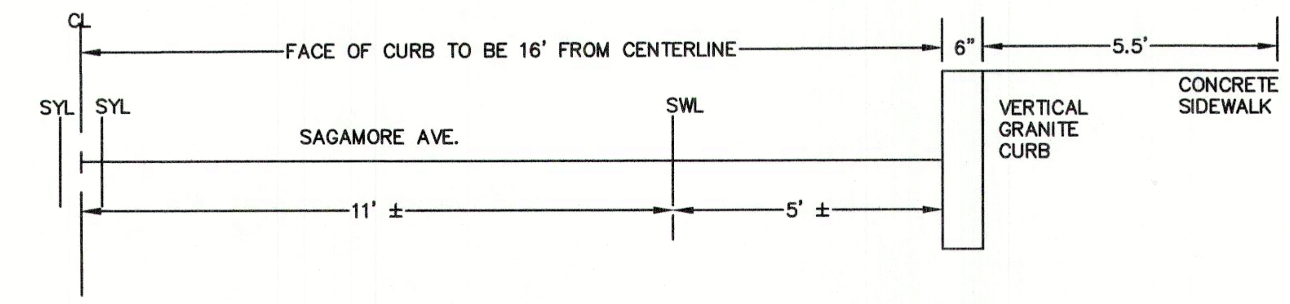
NOT TO SCALE



CONTRACTOR SHALL NOT REMOVE ANY CURBING BEYOND SEA STAR COVE CONDOMINIUM PROPERTY LINE. THE CURBING AT THE PROPOSED TIP DOWN LANDING AND 5' BEYOND IT IN THE DIRECTION OF THE SEA STAR COVE PROPERTY LINE SHALL BE REMOVED. THEN 5' OF NEW CURBING SHALL BE SET IMMEDIATELY FOLLOWING THE TIP DOWN LANDING AT A 1:10 SLOPE IN ORDER TO TRANSITION FROM THE GRADE OF THE EXISTING CURBING TO THE GRADE OF THE PROPOSED TIP DOWN LANDING.

CURB TRANSITION AT SEA STAR COVE R.O.W LINE

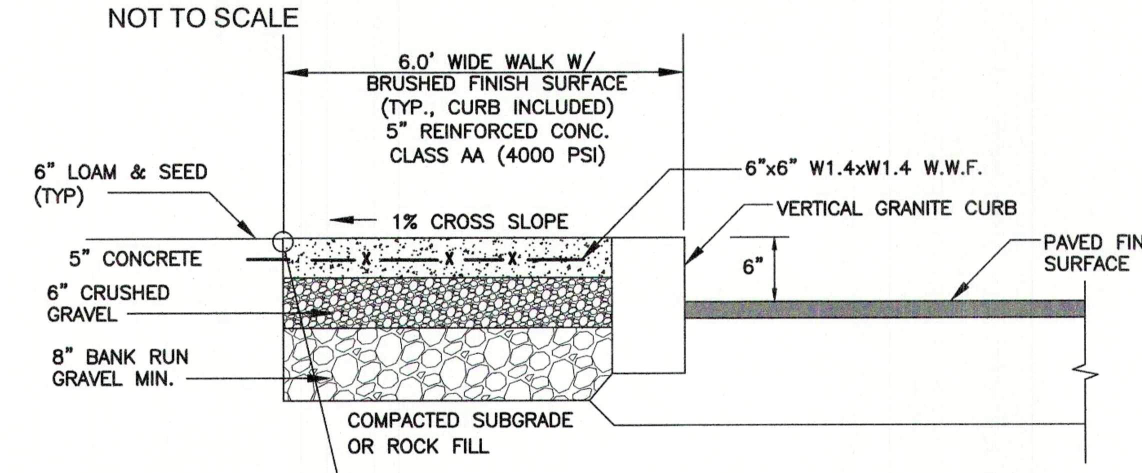
NOT TO SCALE

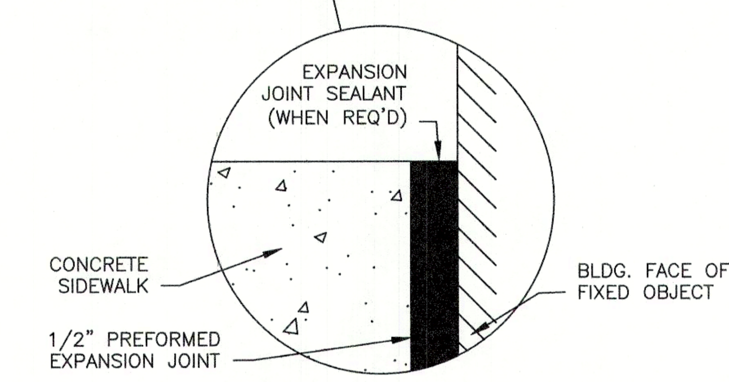


THE INTENT OF THIS DETAIL IS TO ILLUSTRATE THE LOCATION OF THE PROPOSED SIDEWALK IN RELATION TO THE CROSS SECTION OF SAGAMORE AVE. SEE BELOW CONCRETE SIDEWALK WITH VERTICAL GRANITE CURB DETAIL AS WELL

SAGAMORE AVE AND CONCRETE SIDEWALK CROSS SECTION

NOT TO SCALE

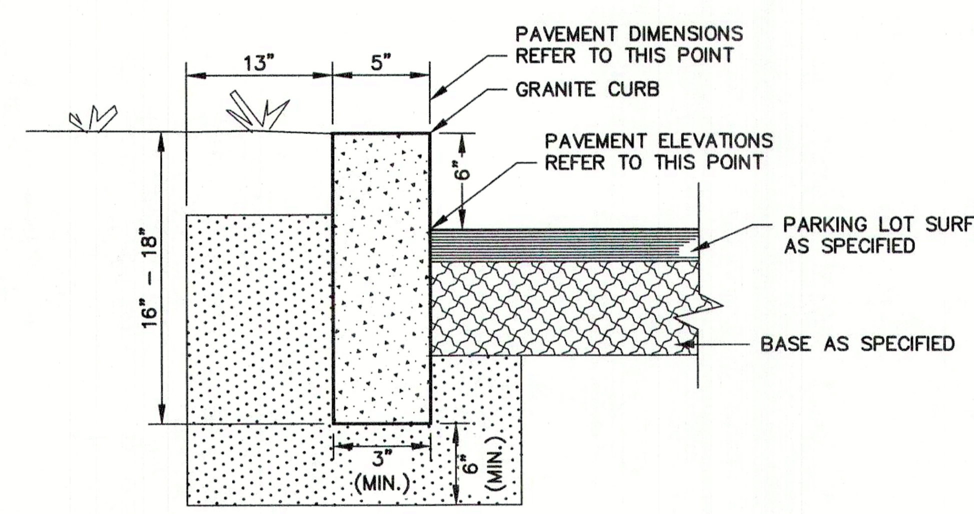




NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

CONCRETE SIDEWALK W/ VERTICAL GRANITE CURB

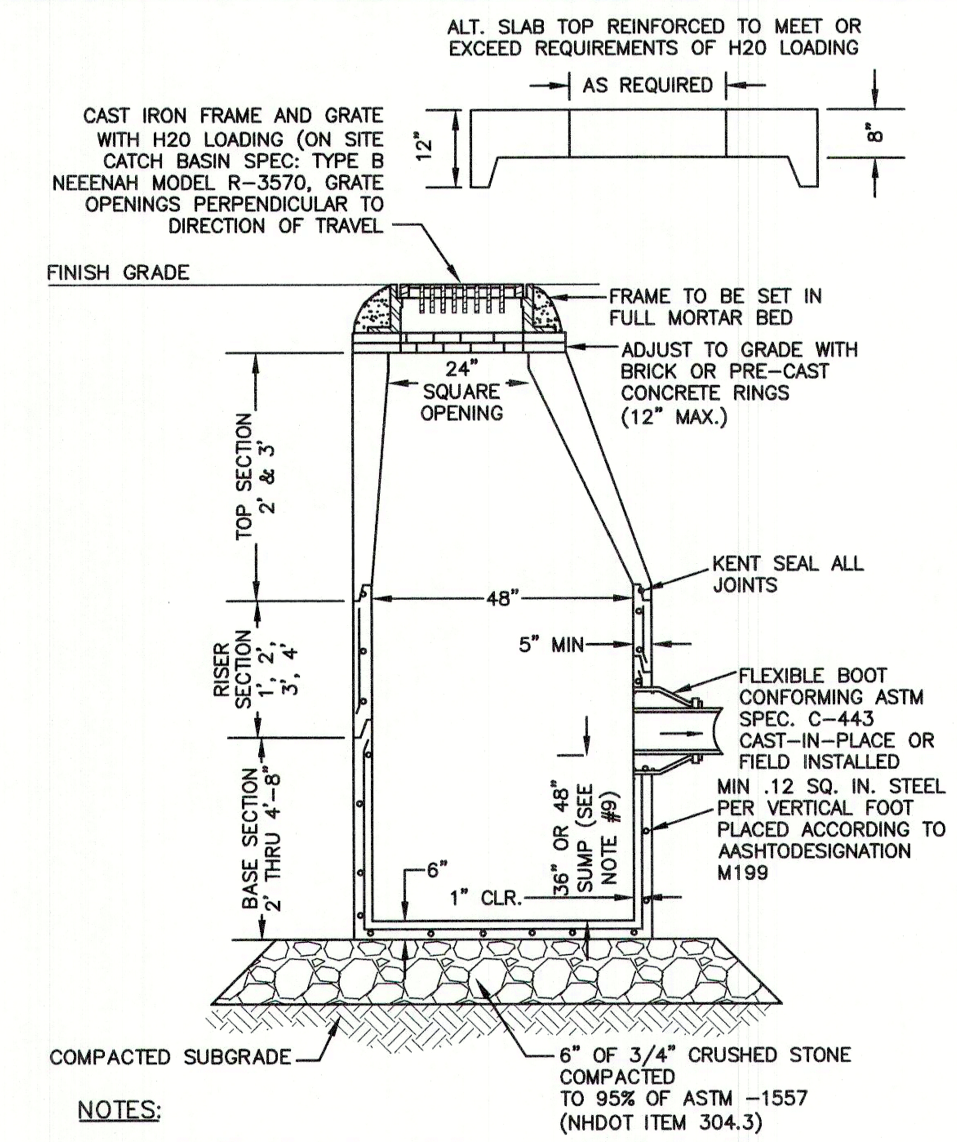
NOT TO SCALE



NOTES:
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

VERTICAL GRANITE CURB

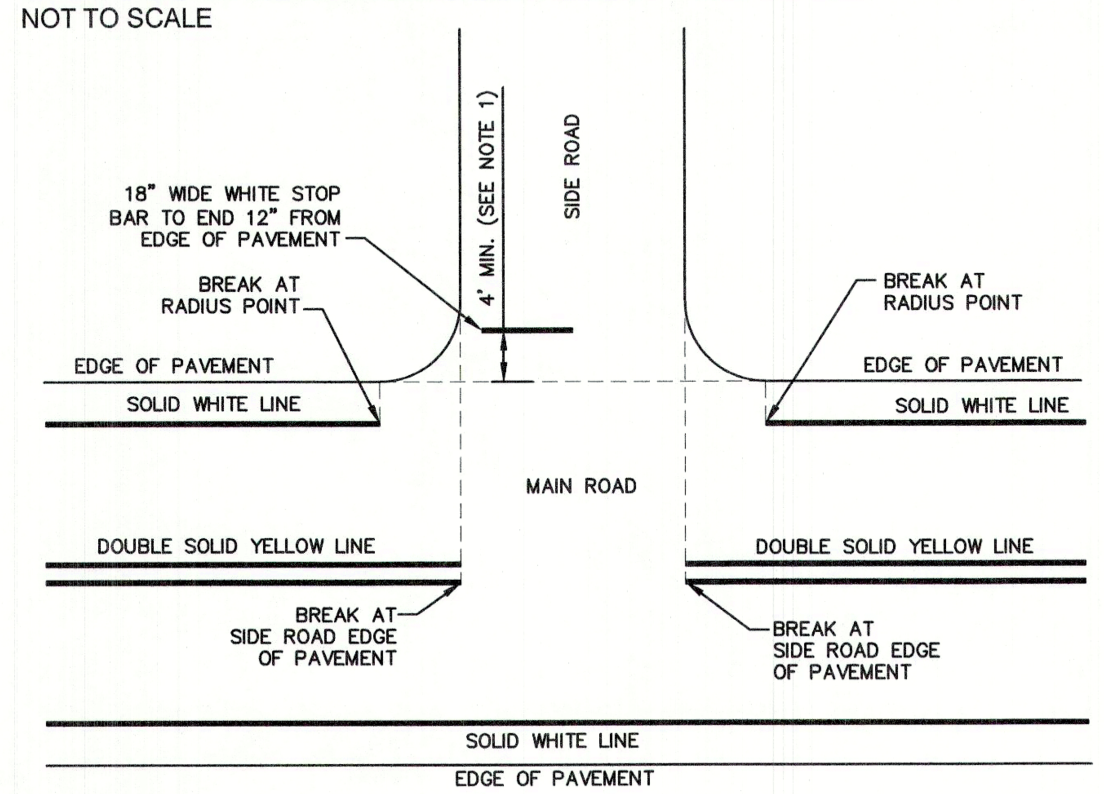
NOT TO SCALE



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. CATCH BASINS CALLED OUT AS A "DEEP SUMP CATCH BASIN" SHALL HAVE A 48" SUMP; ALL OTHER CATCH BASINS SHALL HAVE A 36" SUMP.
10. INSTALL POLYETHYLENE LINER (NHDOT ITEM 604.0007) IN PROPOSED CATCH BASINS IN SAGAMORE AVE. RIGHT OF WAY.

CATCH BASIN

NOT TO SCALE



NOTES:
1. LOCATION OF STOP BAR MAY VARY DUE TO INTERSECTION SIGHT DISTANCE AND VEHICLE TURNING RADIUS AND MAY NOT ALWAYS COINCIDE WITH THE LOCATION OF THE STOP SIGN.
2. END STOP BAR 12" FROM EDGE OF PAVEMENT.
3. STOP BARS, WORDS, LANE LINES, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC.

NHDOT PAVEMENT MARKINGS STANDARD

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
8	1/20/22	REVISED PER ENGINEER REVIEW COMMENTS	DJM
7	12/28/21	REVISED PER ENGINEER REVIEW COMMENTS	DJM
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5	8/23/21	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
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PO Box 219
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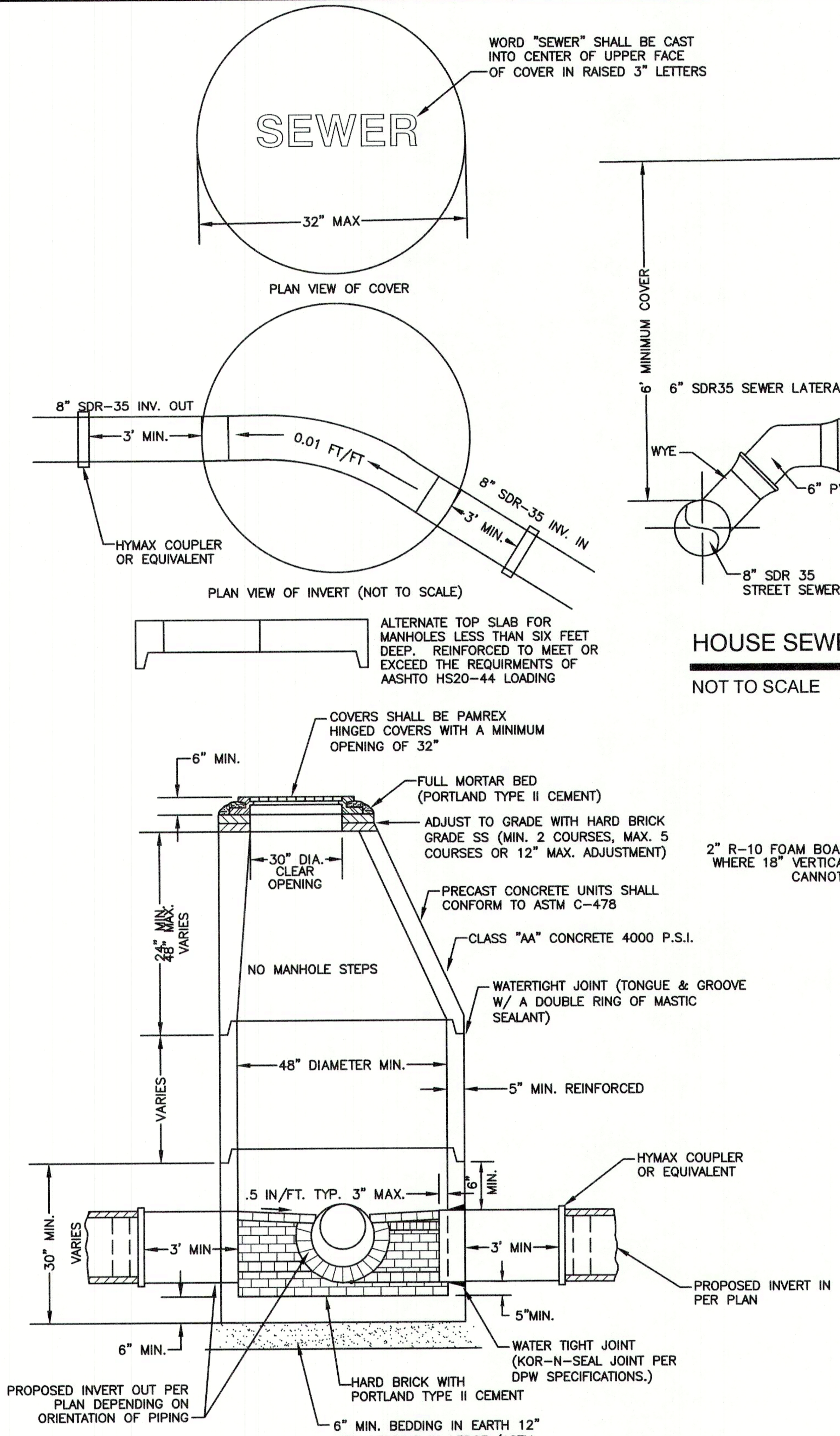
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT
54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173
LOT 15: JOHN J. & COLLEEN HEBERT
54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
D2
SHEET 12 OF 19
JBE PROJECT NO. 21047

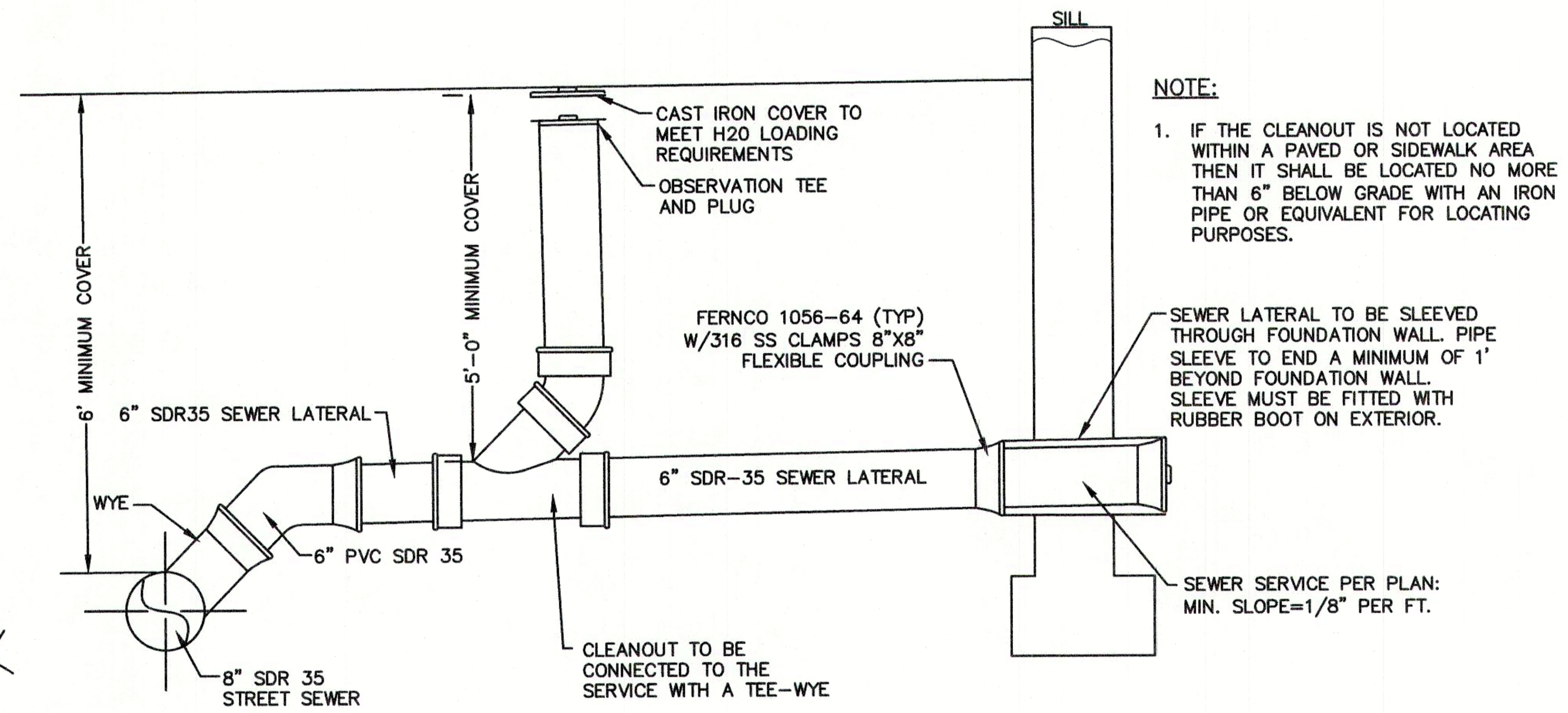


NOTES:

1. PER NHDES ENV-WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      A. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      B. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 'STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES';
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES';
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271-2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV-WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV-WQ 704.13 (a) (8).

PORTSMOUTH SEWER MANHOLE

NOT TO SCALE

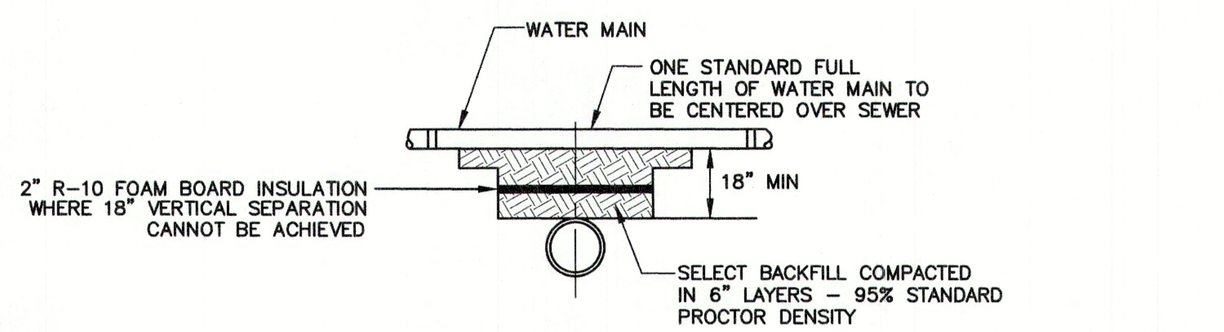


NOTE:

1. IF THE CLEANOUT IS NOT LOCATED WITHIN A PAVED OR SIDEWALK AREA THEN IT SHALL BE LOCATED NO MORE THAN 6" BELOW GRADE WITH AN IRON PIPE OR EQUIVALENT FOR LOCATING PURPOSES.

HOUSE SEWER SERVICE

NOT TO SCALE

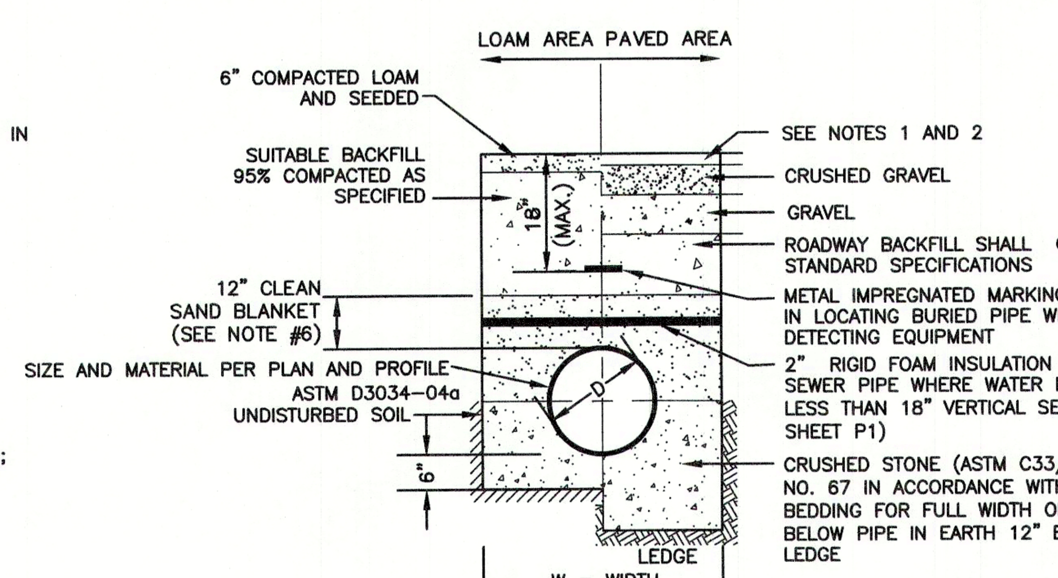


SEPARATION NOTES:

1. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
2. WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN PIPES. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

TYPICAL WATER / SEWER SEPARATION

NOT TO SCALE

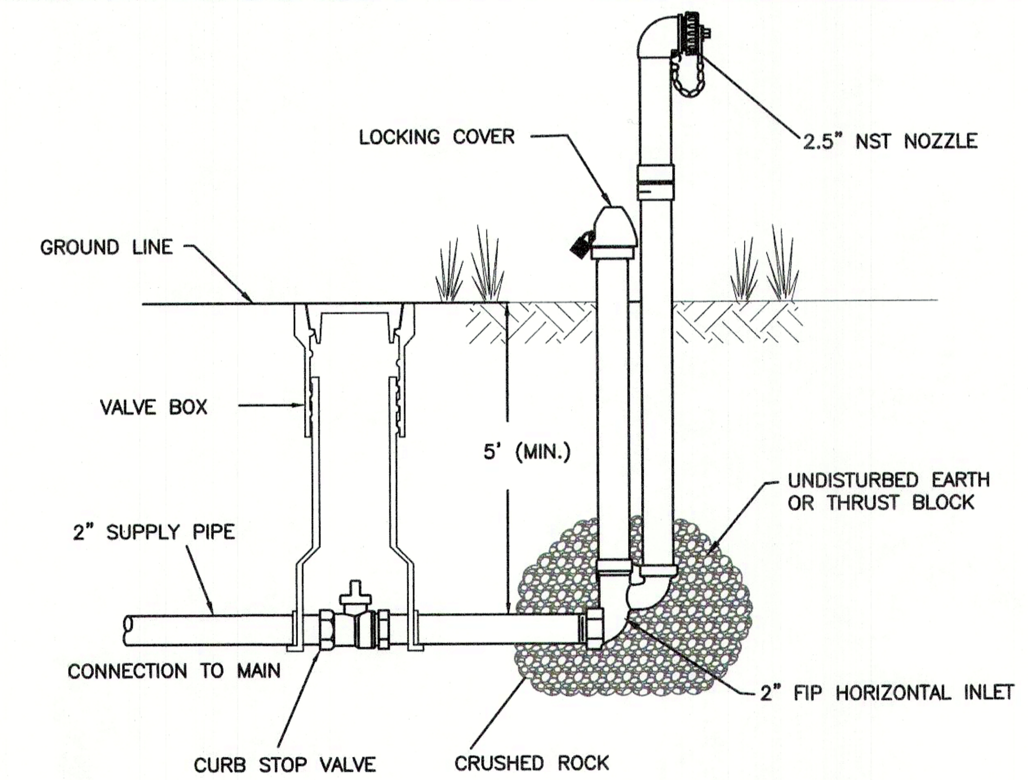


NOTES:

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

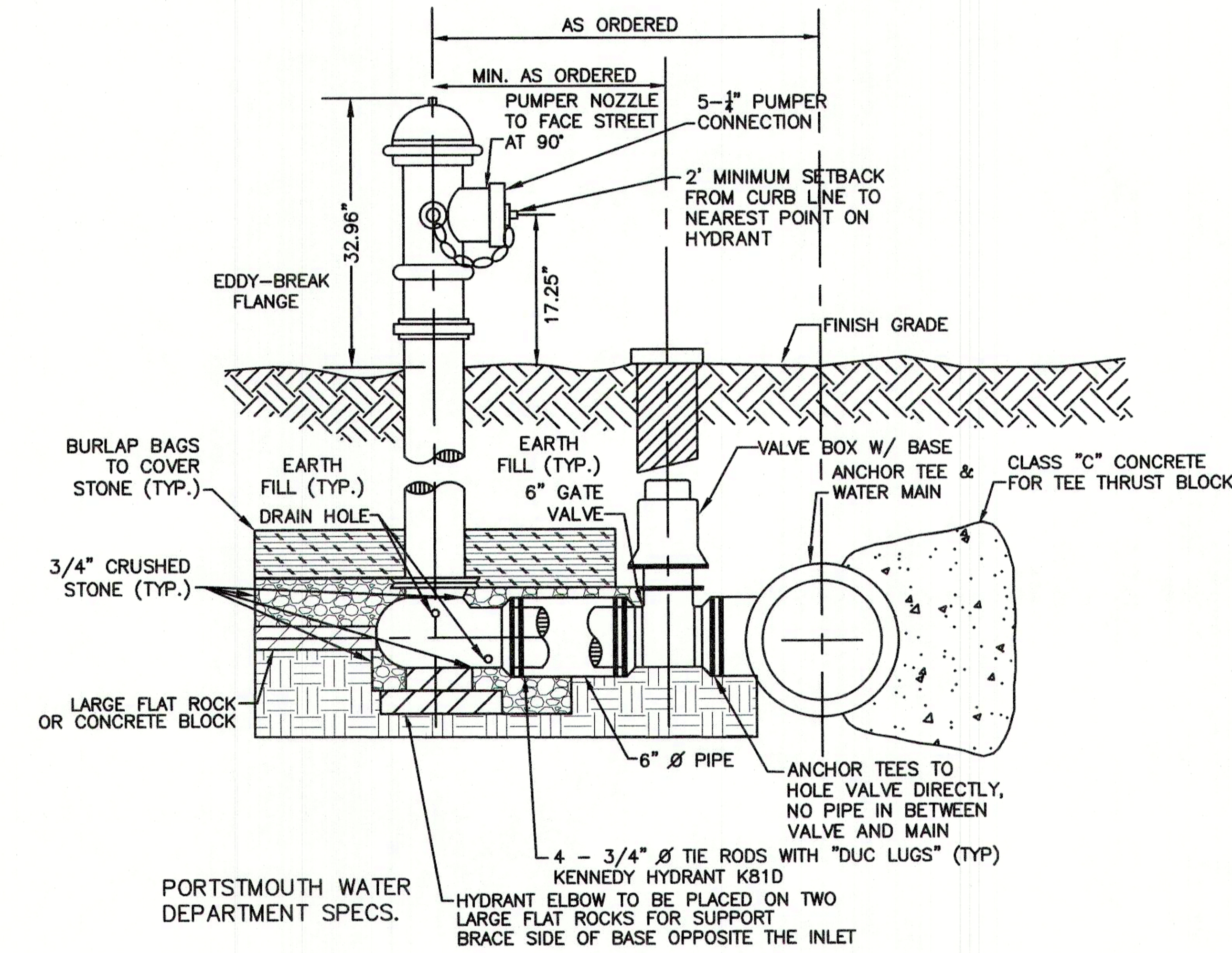


POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A 5' BURY. THESE HYDRANTS WILL BE FURNISHED WITH A 2" FIP HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN LEFT. BRONZE OPERATING MECHANISM AND ALUMINUM PLUNGER. DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET SHALL ALSO BE BRONZE AND BE 2-1/2" NST. HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE AS MANUFACTURED BY KUPFERLE FOUNDRY CO., ST. LOUIS, MO, OR APPROVED EQUAL.

INLET PRESSURE (PSI)	FLOW RATE (GPM)
75	675
100	742
125	800
150	856

FLUSHING HYDRANT DETAIL

NOT TO SCALE

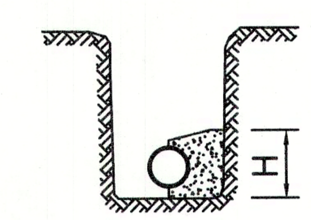


NOTES

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. NATIONAL STANDARD THREAD.
5. HYDRANT AND ALL VALVES SHALL OPEN RIGHT
6. ANCHOR TEES SHALL HOLD VALVE DIRECTLY WITH NO PIPE IN BETWEEN VALVE AND MAIN.

HYDRANT INSTALLATION

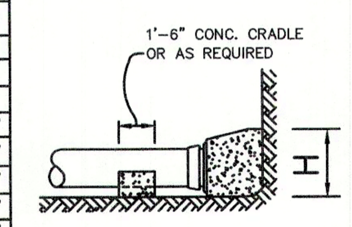
NOT TO SCALE



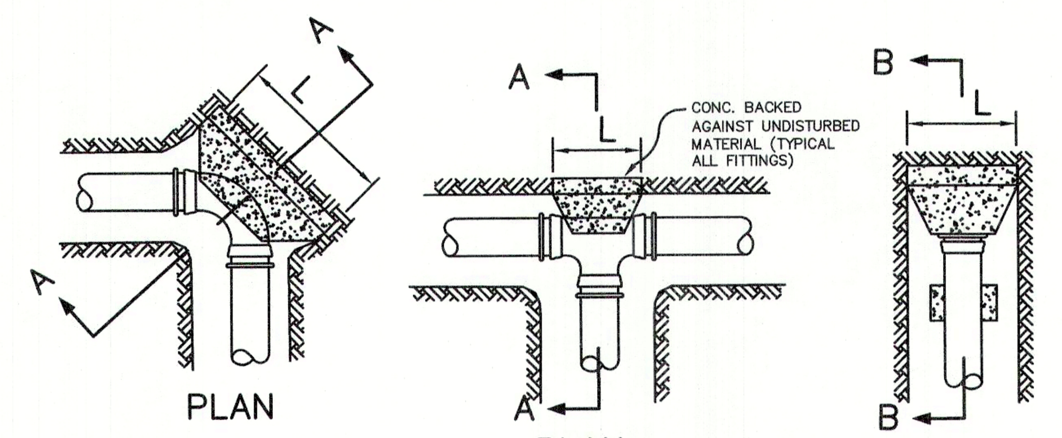
SECTION A–A

CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA. (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"/6"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	6'-0"	3'-0"	4'-6"

PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS

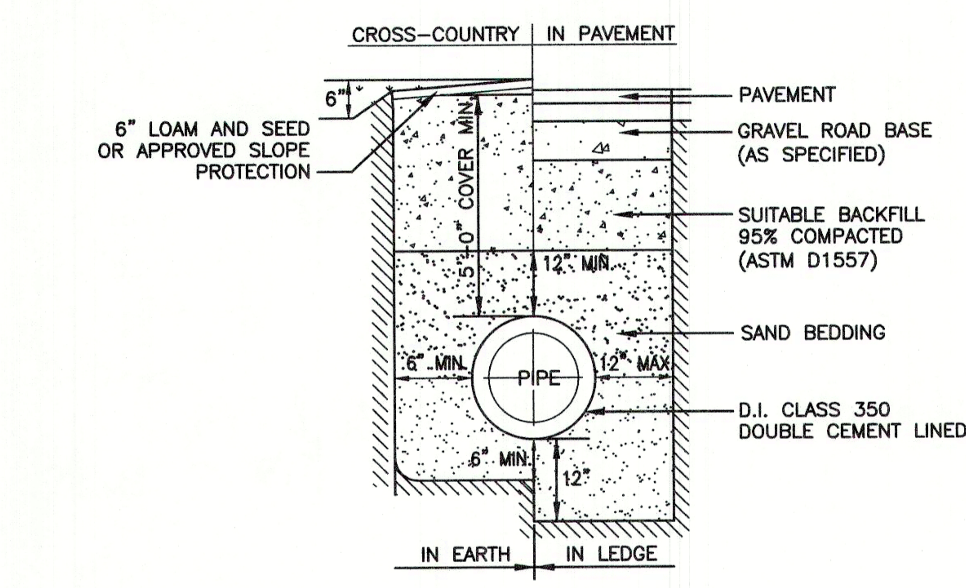


SECTION B–B



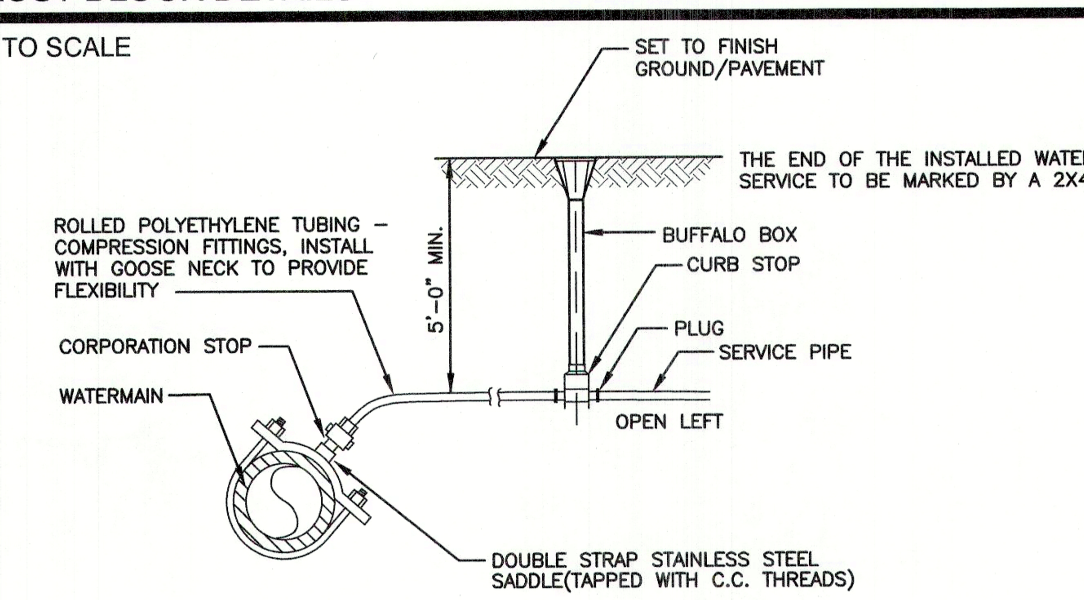
THRUST BLOCK DETAILS

NOT TO SCALE



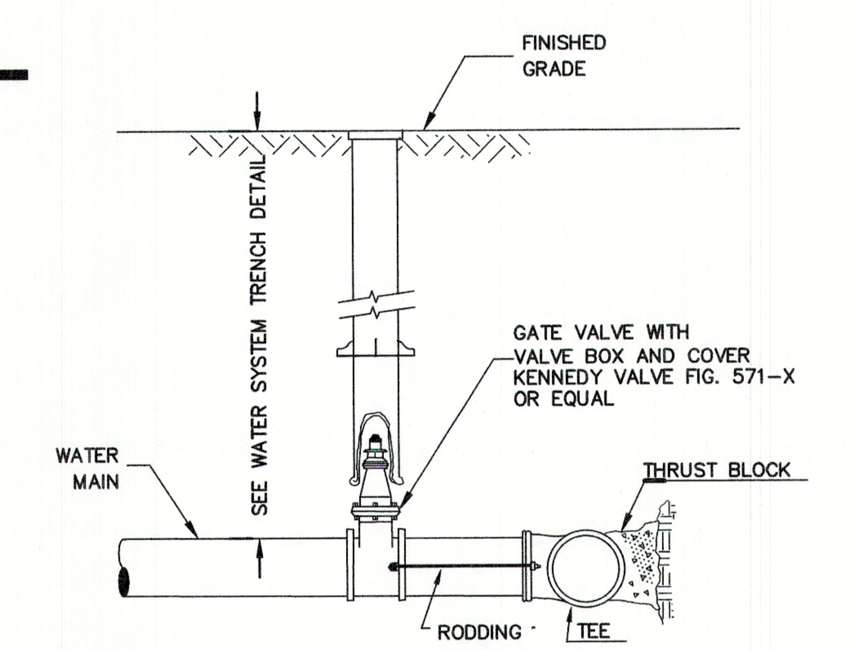
WATER SYSTEM TRENCH

NOT TO SCALE



WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



BURIED GATE VALVE DETAIL

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY No.15670
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
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Designed and Produced in NH
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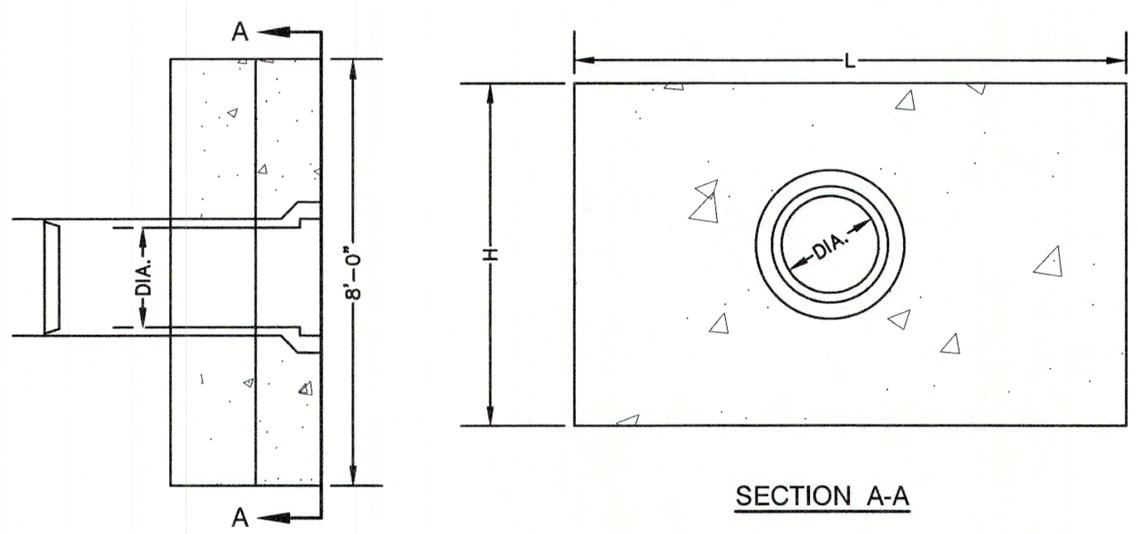
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

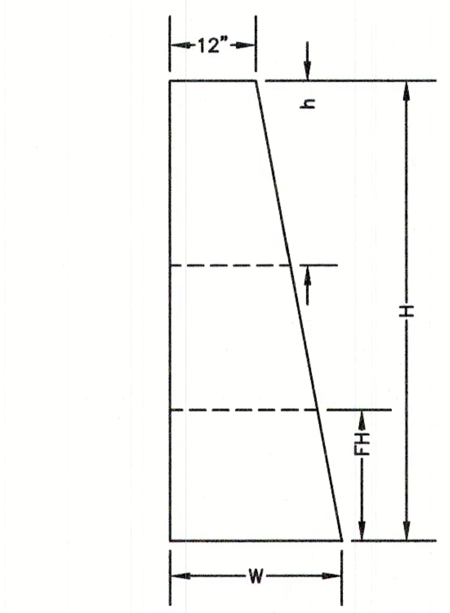
Plan Name:	DETAIL SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.

D3

JBE PROJECT NO. 21047





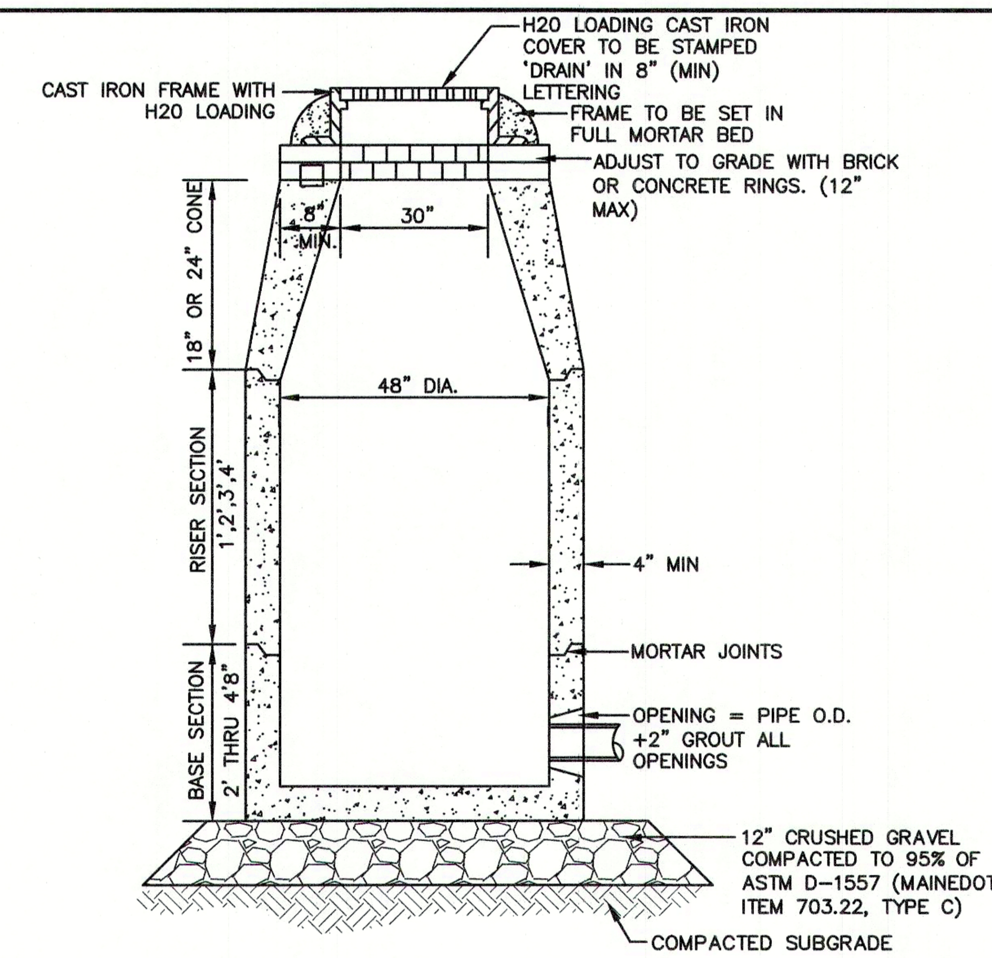
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

PRECAST CONCRETE HEADWALL

NOT TO SCALE

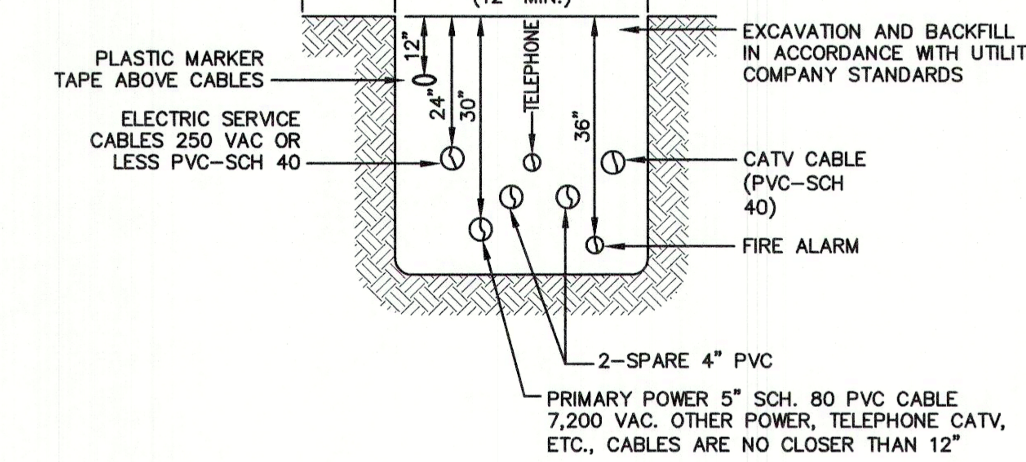


NOTES:

1. 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.)

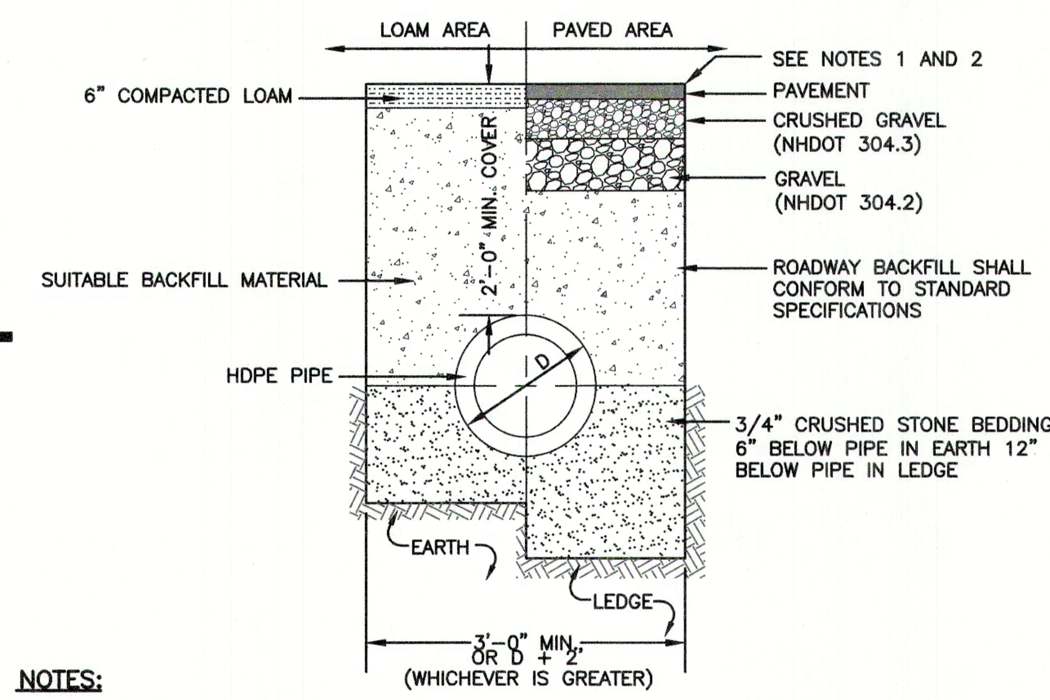
NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

UTILITY TRENCH

NOT TO SCALE

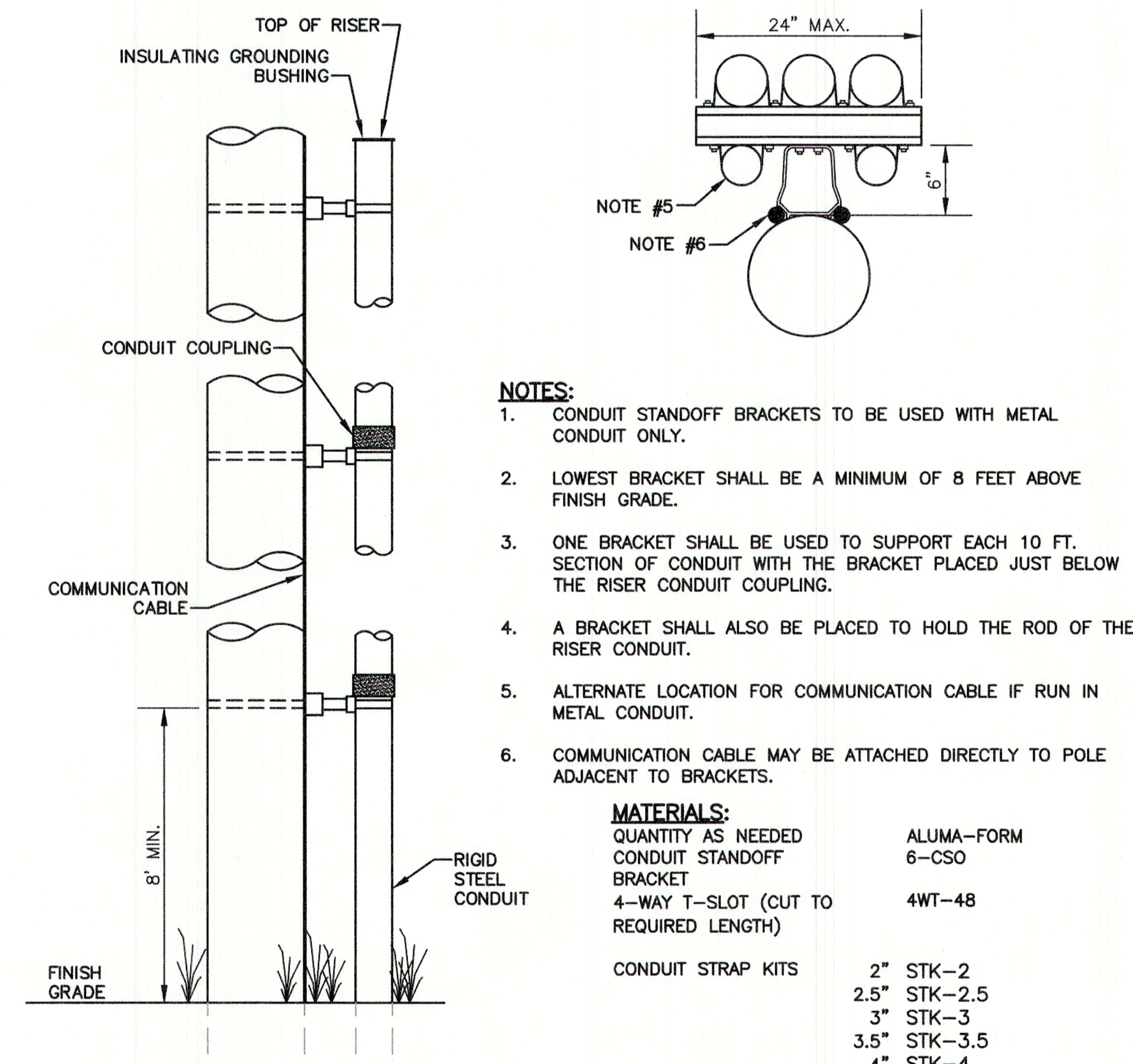


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

DRAINAGE TRENCH

NOT TO SCALE



NOTES:

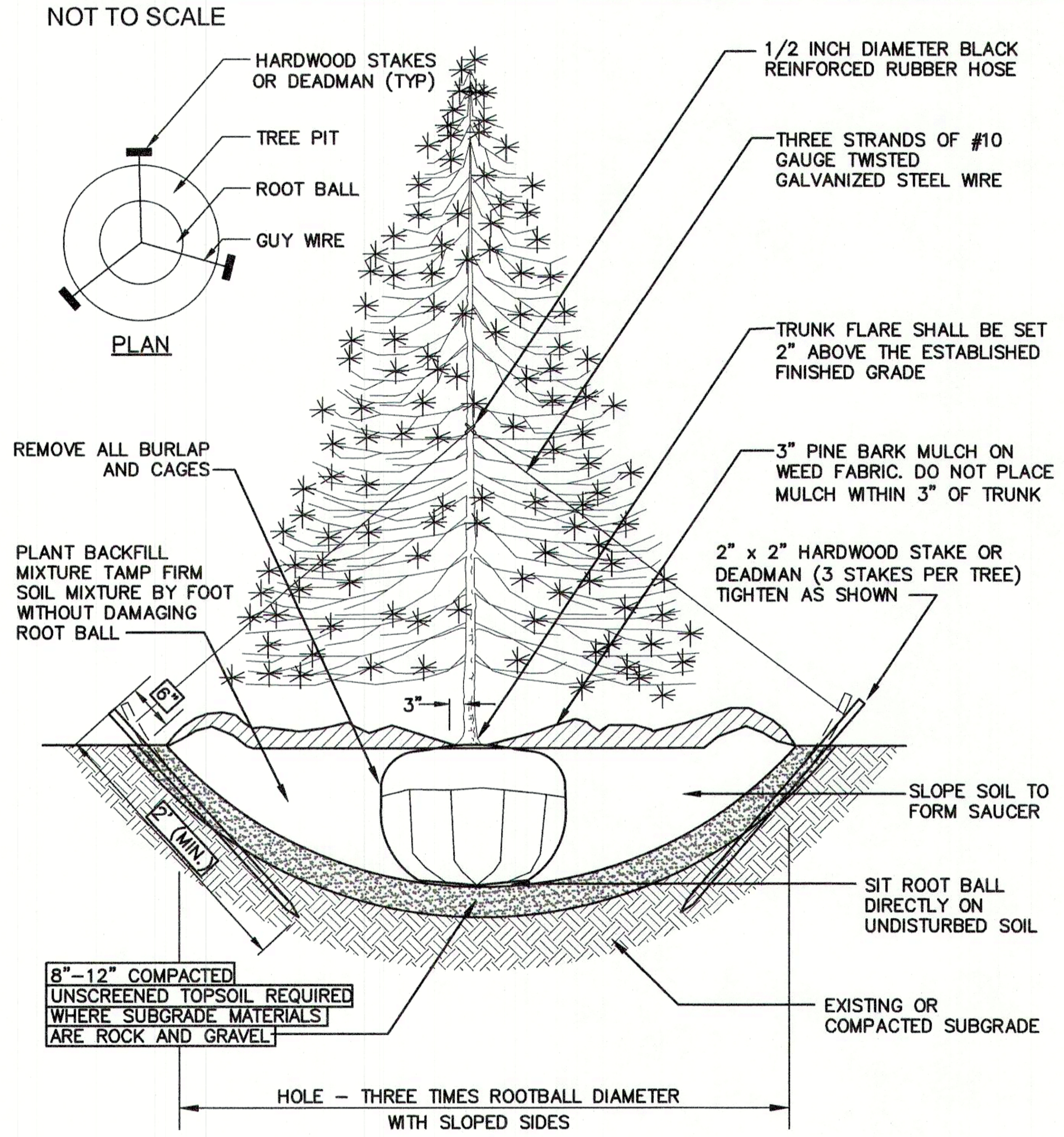
1. CONDUIT STANDOFF BRACKETS TO BE USED WITH METAL CONDUIT ONLY.
2. LOWEST BRACKET SHALL BE A MINIMUM OF 8 FEET ABOVE FINISH GRADE.
3. ONE BRACKET SHALL BE USED TO SUPPORT EACH 10 FT. SECTION OF CONDUIT WITH THE BRACKET PLACED JUST BELOW THE RISER CONDUIT COUPLING.
4. A BRACKET SHALL ALSO BE PLACED TO HOLD THE ROD OF THE RISER CONDUIT.
5. ALTERNATE LOCATION FOR COMMUNICATION CABLE IF RUN IN METAL CONDUIT.
6. COMMUNICATION CABLE MAY BE ATTACHED DIRECTLY TO POLE ADJACENT TO BRACKETS.

MATERIALS:

QUANTITY AS NEEDED	ALUMA-FORM
CONDUIT STANDOFF BRACKET	6-CSO
4-WAY T-SLOT (CUT TO REQUIRED LENGTH)	4WT-48
CONDUIT STRAP KITS	2" STK-2
	2.5" STK-2.5
	3" STK-3
	3.5" STK-3.5
	4" STK-4
	5" STL-5
	6" STK-6

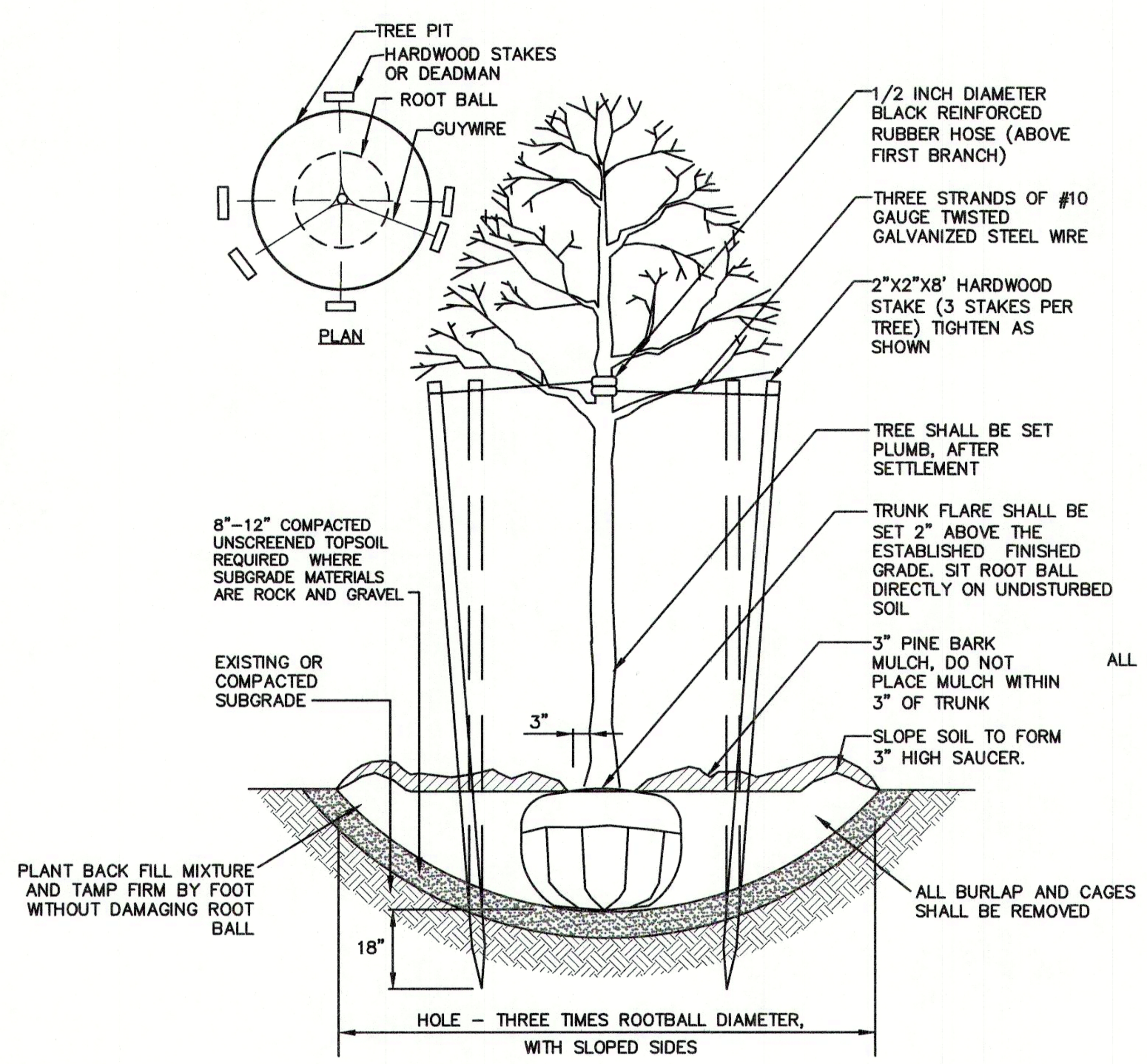
UTILITY POLE RISER DETAIL

NOT TO SCALE



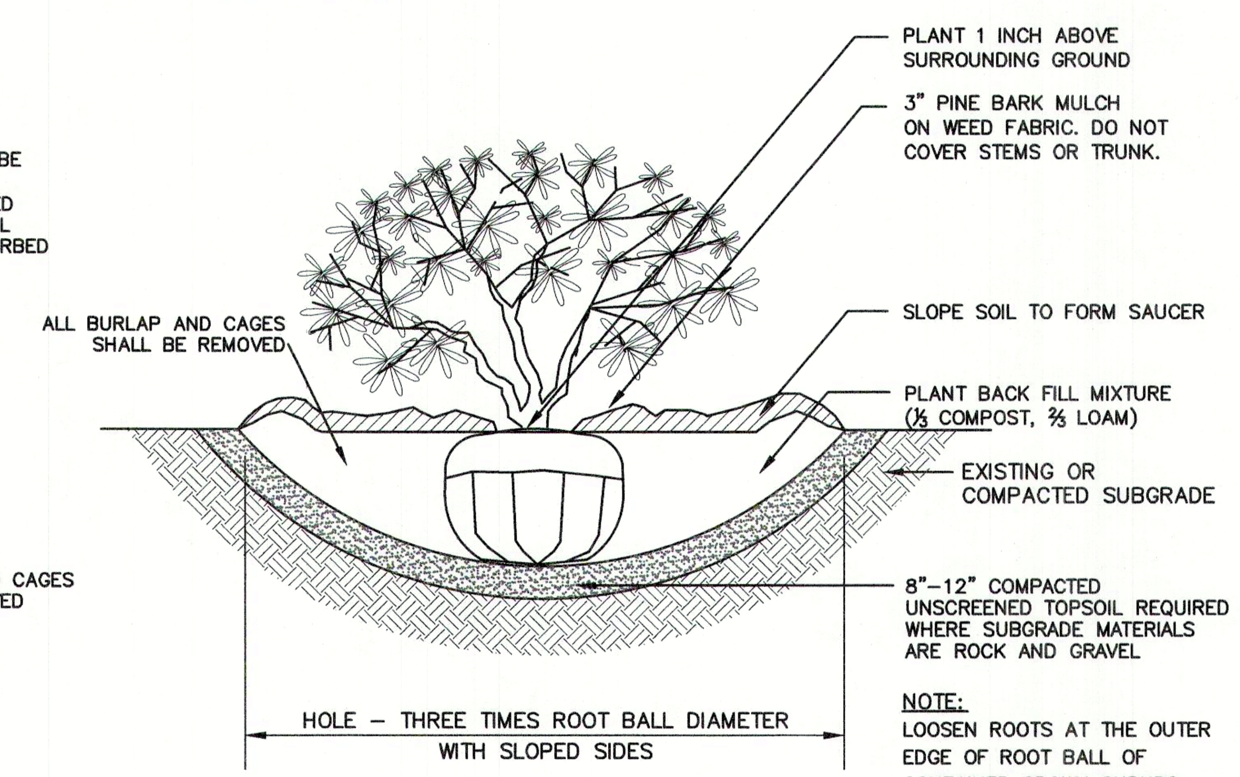
EVERGREEN PLANTING

NOT TO SCALE



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE



NOTE:
LOOSEN ROOTS AT THE OUTER EDGE OF ROOT BALL OF CONTAINER GROWN SHRUBS.

SHRUB PLANTING

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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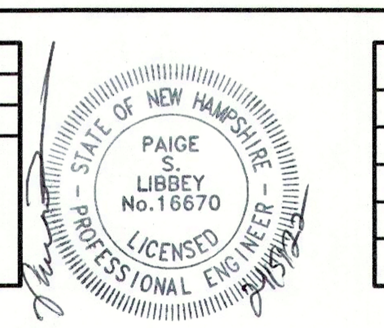

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Plan Name: DETAIL SHEET

Project: SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

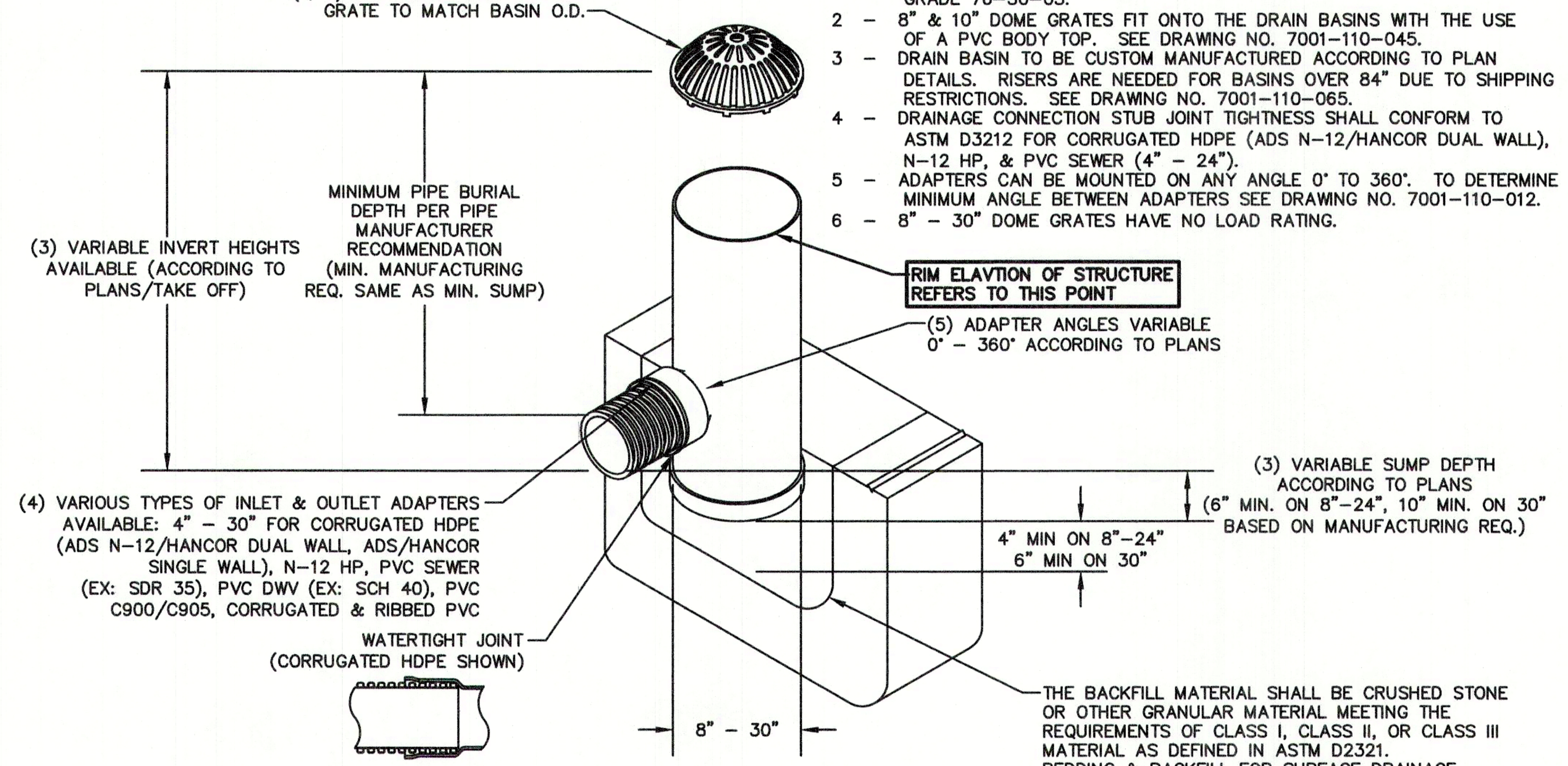
Owner of Record: LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 | LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.

D4

JBE PROJECT NO. 21047

NOTES:
1 – 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 – 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 – DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 – DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" – 24").
5 – ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 – 8" – 30" DOME GRATES HAVE NO LOAD RATING.



NYLOPLAST DRAIN BASIN (W/ DOME GRATE) (YARD DRAIN SPECIFICATION)

NOT TO SCALE

BIORETENTION SYSTEM ELEVATIONS

BIORETENTION	SIZE OF BOTTOM (S.F.)	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	ELEV. G	SHWT	LEDGE
1	322	37.50	37.30	36.50	35.00	34.75	34.25	34.00	NONE	35.7 *
2	520	38.00	37.70	37.00	35.50	35.25	34.75	34.50	NONE	36.8 *

* SEE NOTES #4&5 UNDER DESIGN CONSIDERATIONS

SAND SPECIFICATION

SIEVE SIZE	% BY WEIGHT
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#60	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.

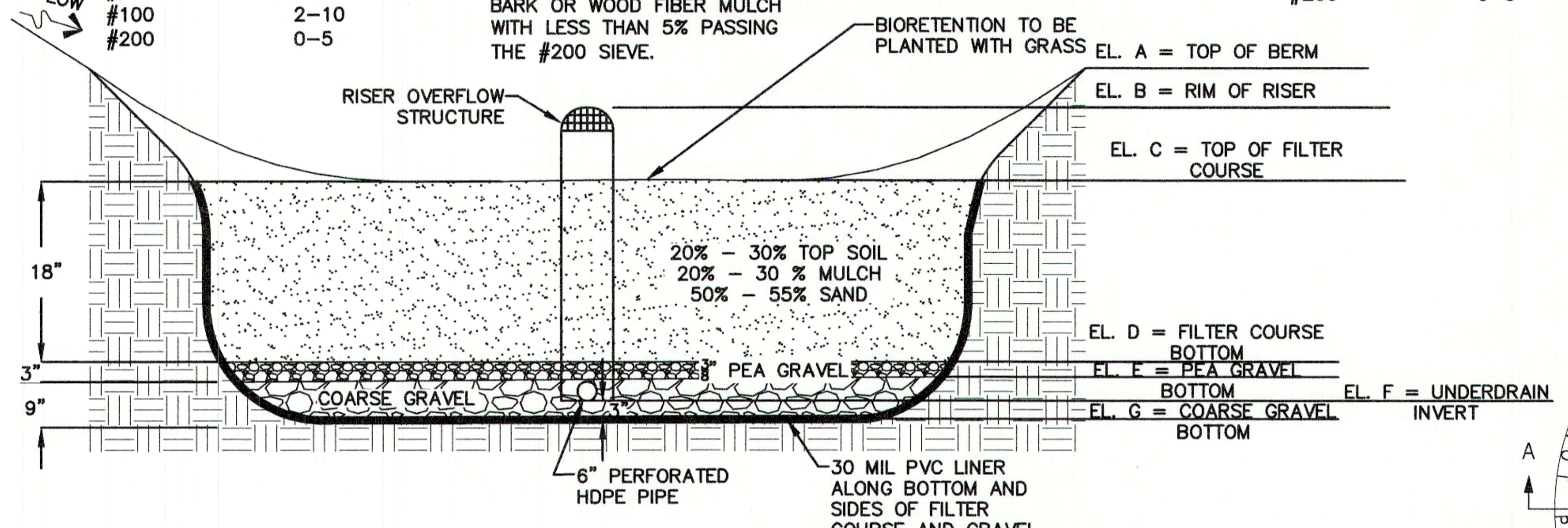
MULCH SPECIFICATION
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

PEA GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1/2"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-15

COARSE GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	90-100
3/4"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5



DESIGN CONSIDERATIONS

1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN SEEDED 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.
4. REMOVE LEDGE TO AT LEAST 6" BELOW BOTTOM OF COARSE GRAVEL LAYER IF ENCOUNTERED.

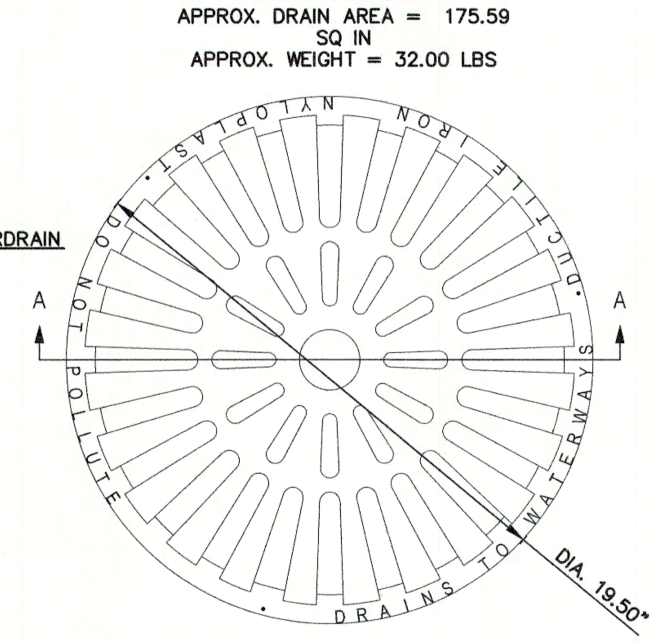
MAINTENANCE REQUIREMENTS:

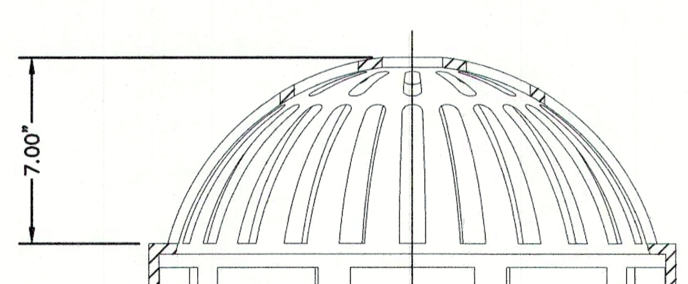
1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED 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. COMPACTION AND MATERIALS TESTING SERVICES SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.

BIORETENTION SYSTEM WITH UNDERDRAIN

NOT TO SCALE

1899CGD
APPROX. DRAIN AREA = 175.59 SQ IN
APPROX. WEIGHT = 32.00 LBS





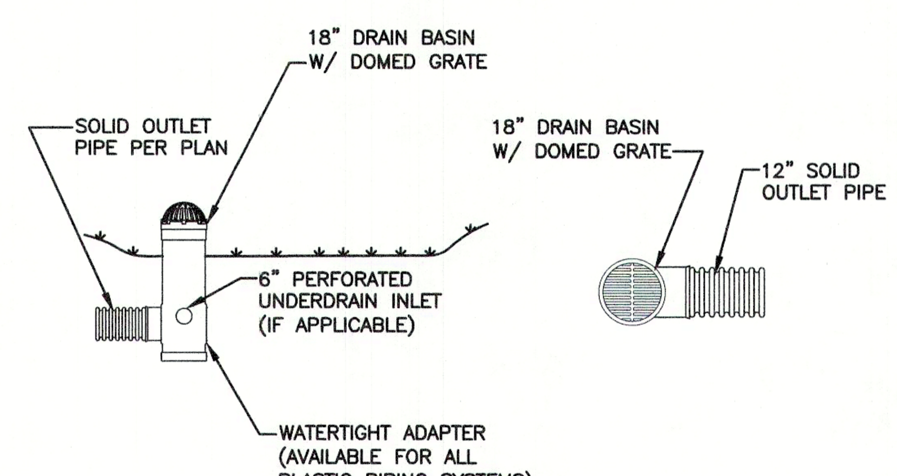
SECTION A-A

NOTES:
1. DIMENSIONS ARE FOR REFERENCE ONLY
2. ACTUAL DIMENSIONS MAY VARY
3. DIMENSIONS ARE IN INCHES
4. QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
5. PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
6. LOCKING DEVICE AVAILABLE UPON REQUEST

18" NYLOPLAST DOME GRATE

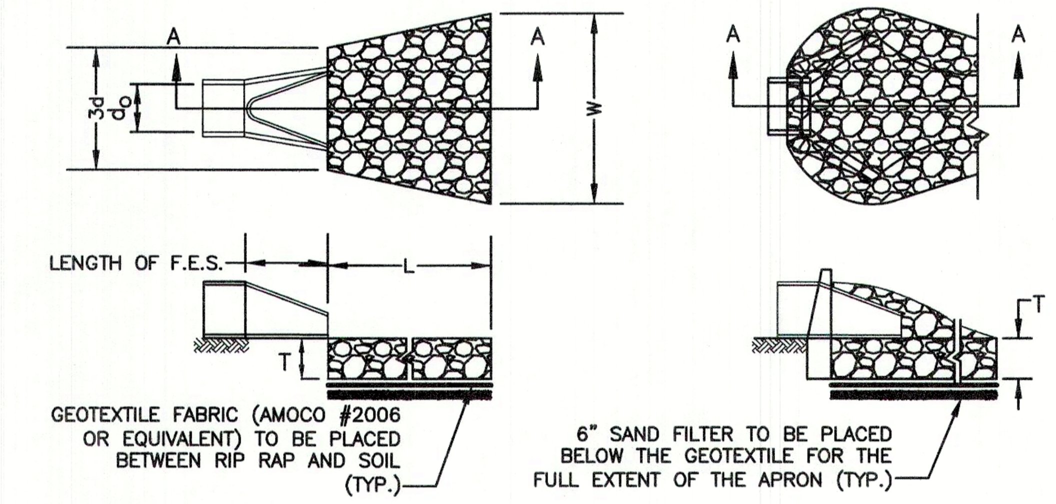
Nyloplast

NOT TO SCALE



NYOPLAST DRAIN BASIN AND INLINE DRAIN (BIORETENTION RISER SPECIFICATION)

NOT TO SCALE



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=	0.25	FEET	3	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO	
100%	5		6	
85%	4		5	
50%	3		5	
15%	1		2	

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

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

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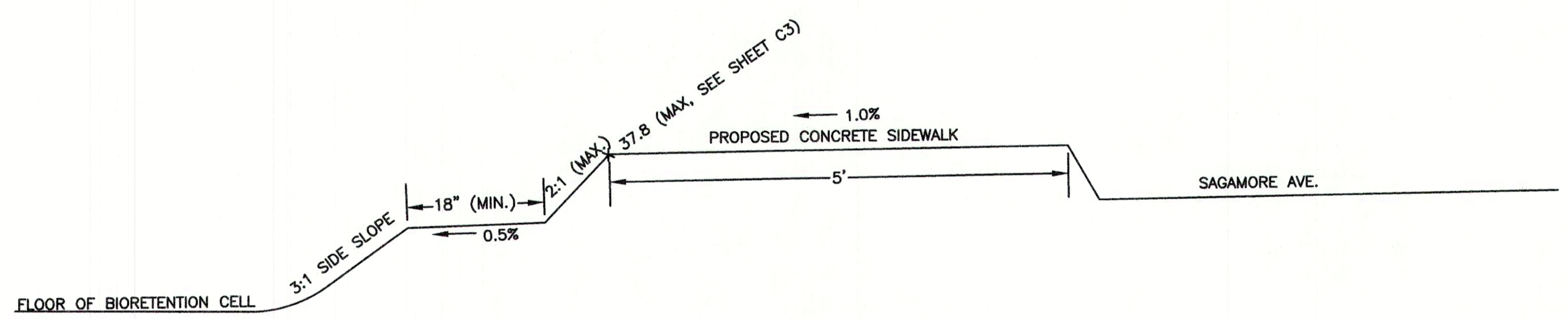
DRAWING No.
D5

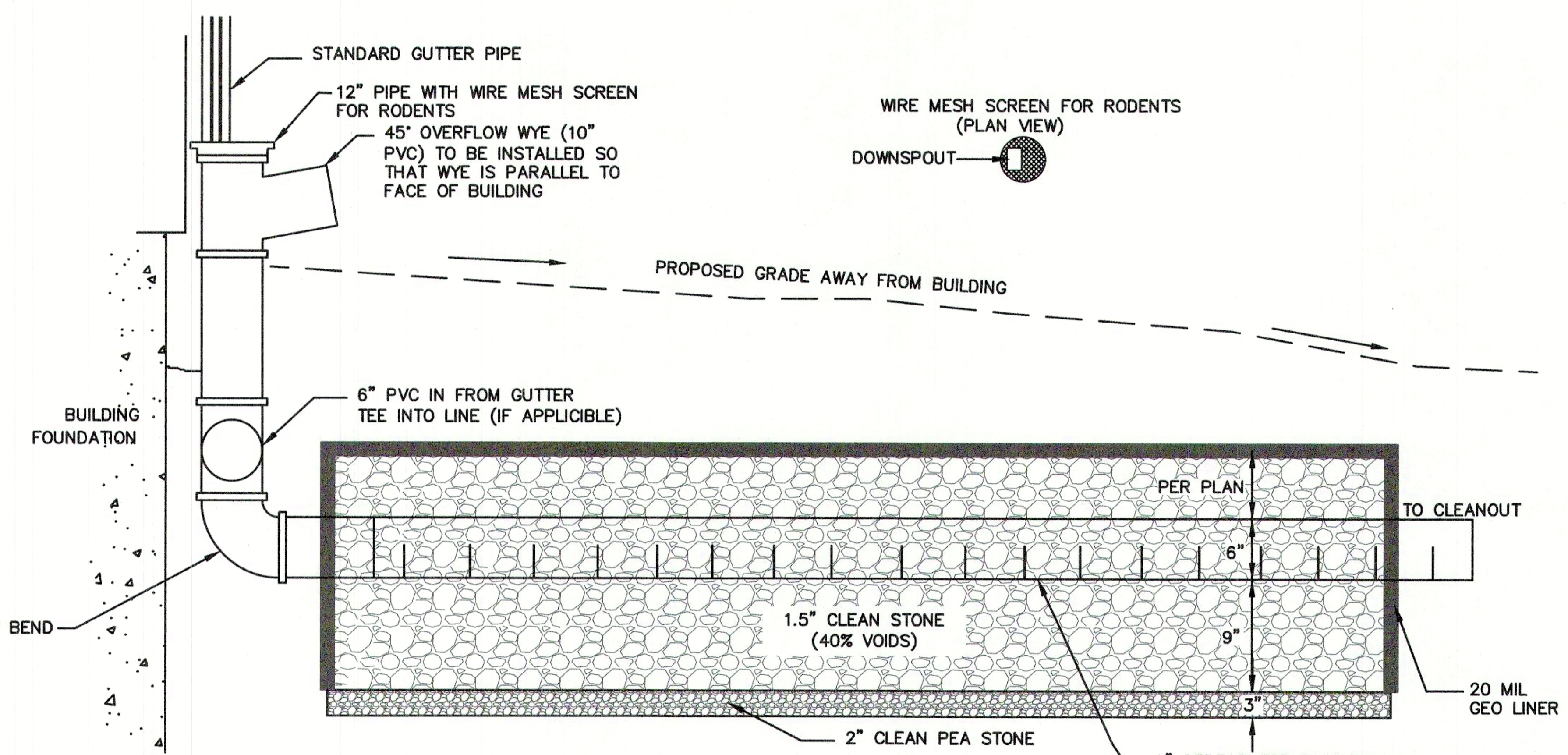
JBE PROJECT NO. 21047



1. AT LEAST 18" OF "FLAT" SPACE (0.5% SLOPED TOWARD THE BIORETENTION CELL) SHALL BE PROVIDED BETWEEN THE RIM OF THE BIORETENTION CELL AND THE SIDE SLOPE OF THE SIDEWALK.
2. THIS DETAIL IS INTENDED TO DEPICT SITUATIONS IN WHICH THE PROPOSED GRADE OF THE SIDEWALK IS HIGHER THAN THE TOP OF THE BIORETENTION CELL. WHERE THE PROPOSED GRADE OF THE SIDEWALK IS LOWER THAN THE TOP OF THE BIORETENTION CELL, A STANDARD 2' BERM SHALL BE PROVIDED.

BIORETENTION #1 / SIDEWALK INTERFACE

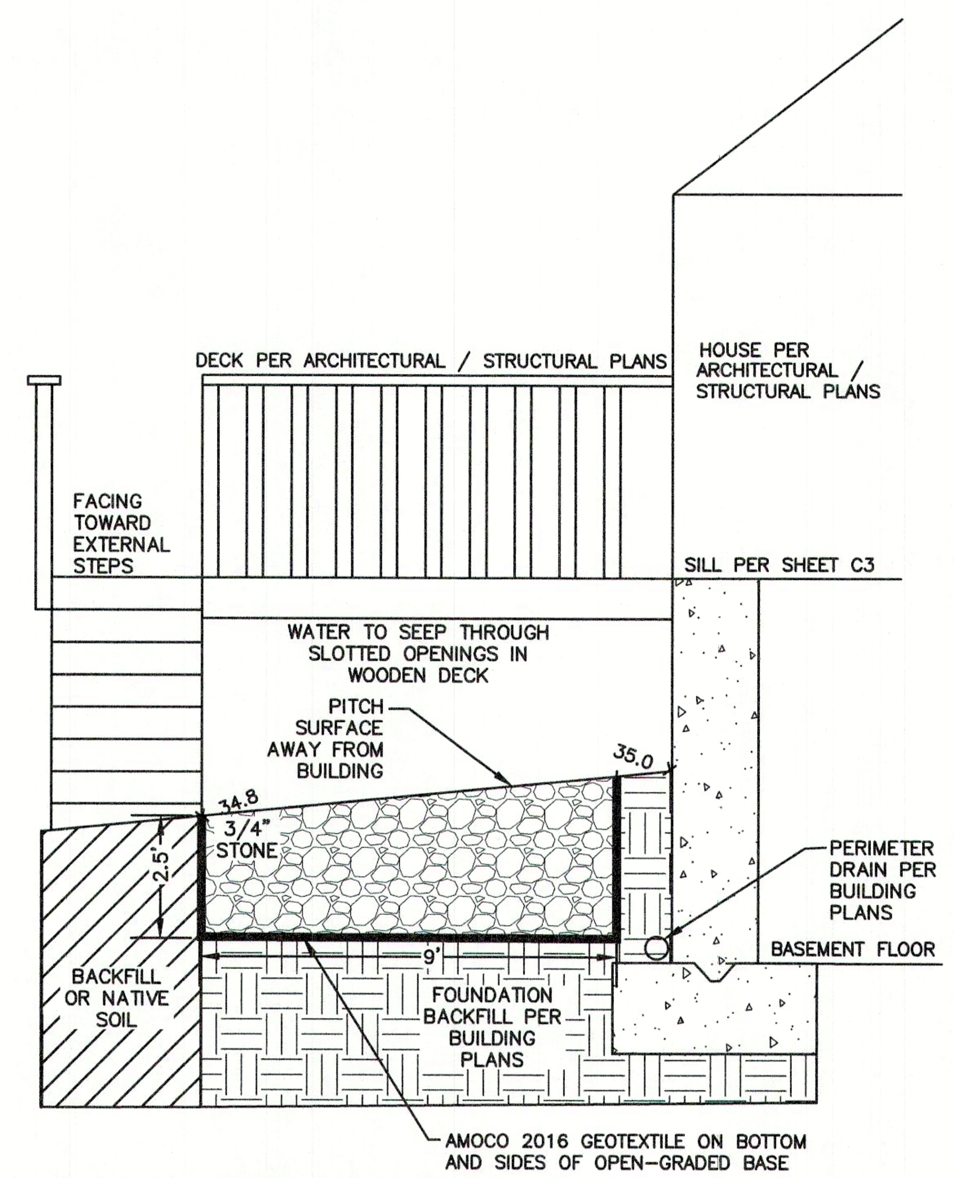
NOT TO SCALE



NOTES:
1. ONCE THE SYSTEM HAS BEEN CONSTRUCTED, IT SHOULD BE TESTED BY INSERTING A GARDEN HOSE INTO THE INLET AND ALLOWING THE WATER TO RUN FOR A MINIMUM OF ONE (1) HOUR. THE WATER SHOULD STAY UNDERGROUND WITHIN THE GRAVEL. IF WATER COMES OUT OF THE OVERFLOW, THE SYSTEM SHOULD BE FURTHER INSPECTED AND POSSIBLY REPLACED. THIS PROCEDURE SHOULD BE PERFORMED EVERY YEAR DURING THE FALL INSPECTION.
2. IN THE SPRING AND FALL, VISUALLY INSPECT THE AREA AROUND THE SYSTEM AND REPAIR ANY EROSION. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. RE-MULCH ANY VOID AREAS BY HAND AS NEEDED. ALSO INSPECT THE ROOF COLLECTION AND PIPING AND CLEAN AND REPAIR AS NECESSARY.
3. DO NOT PLANT DEEP ROOTED TREES AND SHRUBS WITHIN 5' OF THE SYSTEM.
4. KEEP HEAVY VEHICLES FROM DRIVING OR PARKING OVER THE SYSTEM.
5. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
6. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.
7. THE DOWNSPOUT DRAIN LEADING INTO THE INFILTRATION PRACTICE AS WELL AS THE PERFORATED PVC UNDERDRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDINGS. SITEWORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.
8. OVERFLOWS ARE TO BE INSTALLED ON EXTERIOR DOWNSPOUT LEADERS ONLY.
9. LEDGE SHALL BE REMOVED TO AT LEAST 6" BELOW BOTTOM OF INFILTRATION PRACTICE.

HOUSE ROOF INFILTRATION DETAIL

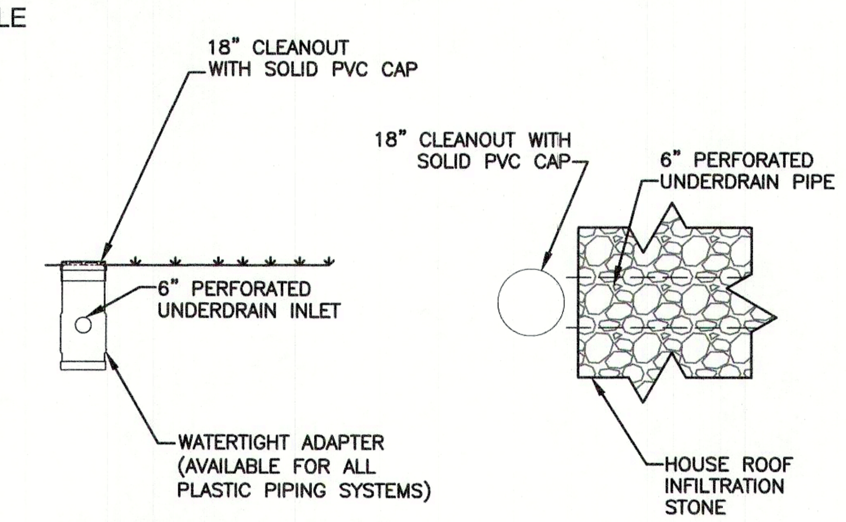
NOT TO SCALE



- INFILTRATION STONE SHALL BE PLACED UNDER DECKS OF UNITS 1-4 AS SHOWN ON SHEET C3
- LEDGE SHALL BE REMOVED TO AT LEAST 6" BELOW THE BOTTOM OF THE INFILTRATION PRACTICE.

DECK STONE INFILTRATION DETAIL

NOT TO SCALE



PERFORATED UNDERDRAIN CLEANOUT DETAIL

NOT TO SCALE

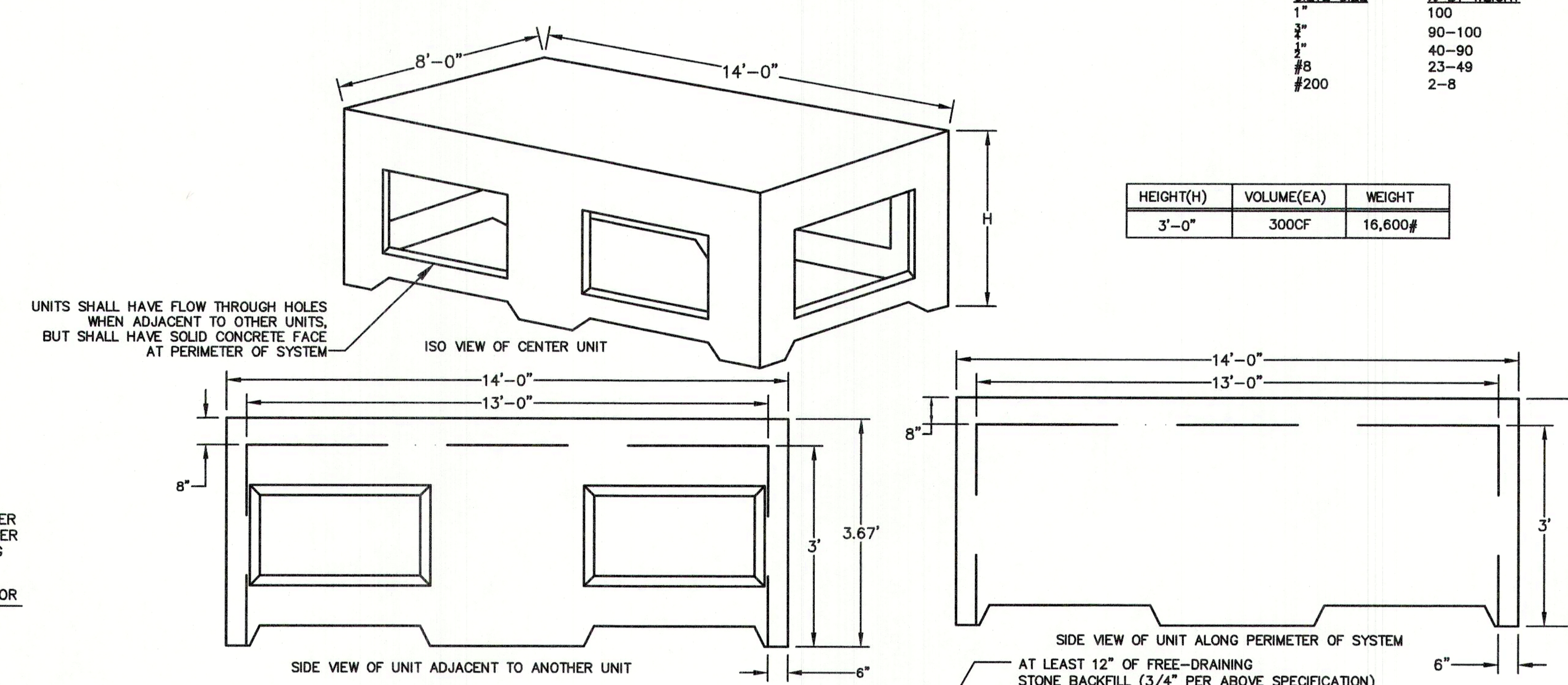
CONTRACTOR ORDER SCHEDULE				
	FLOW-THROUGH HOLES ON ALL SIDES	NO FLOW-THROUGH HOLES ON ONE 8' SIDE	NO FLOW-THROUGH HOLES ON ONE 14' SIDE	NO FLOW-THROUGH HOLES ON ONE 8' AND ONE 14' SIDE
SYSTEM A	0	0	4	4
SYSTEM B	2	3	1	5

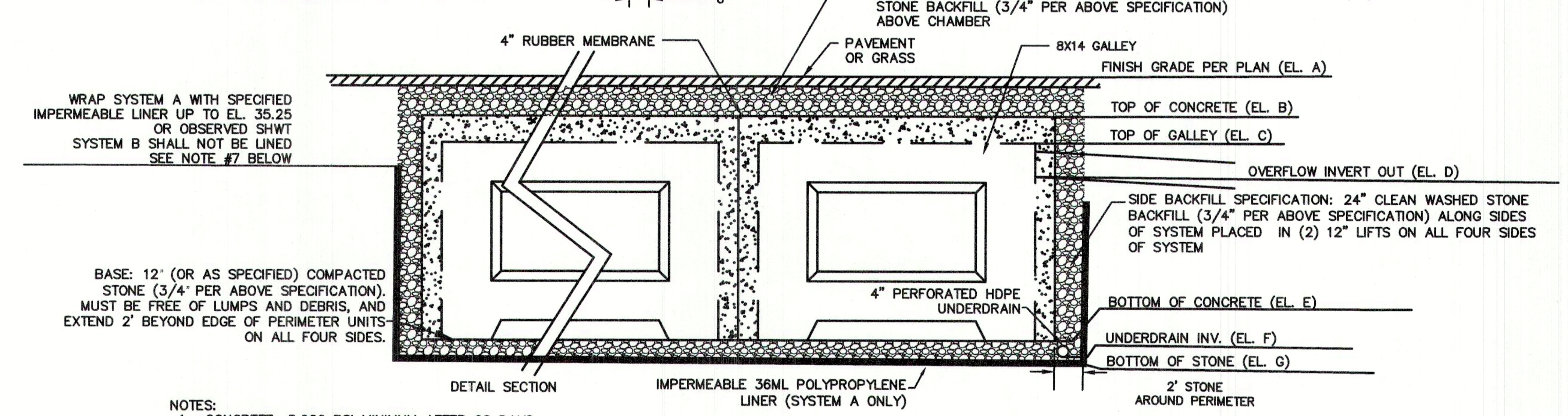
ELEVATION SCHEDULE							
	EL. A	EL. B	EL. C	EL. D	EL. E	EL.F	EL.G
SYSTEM A	> 39.0	36.97	36.3	34.7	33.3	32.3	32.3
SYSTEM B	> 38.0	37.57	36.9	35.8	33.9	N/A	30.9

STONE BACKFILL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	100
3/4"	90-100
1/2"	40-90
#8	23-49
#200	2-8

HEIGHT(H)	VOLUME(EA)	WEIGHT
3'-0"	300CF	16,600#





NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR AASHTO HS-20 LOAD, 0 TO 5FT COVER. CAN BE DESIGNED FOR ADDITIONAL COVER IF REQUIRED.
3. STANDARD SLAB DESIGN WITHSTANDS 40KIP OUTRIGGER LOAD ON A 24" SQUARE PAD WITH 24" COVER OVER SLAB.
4. CORE HOLE FOR MORTAR JOINT AT INVERT IN LOCATION(S). PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT
5. COMPACT SUBGRADE TO A BEARING CAPACITY OF AT LEAST 2000 PSF PRIOR TO PLACEMENT OF SYSTEM.
6. SYSTEM "A" IS PROPOSED IN THE MIDDLE OF THE SITE AND DESIGNED FOR DETENTION ONLY. SYSTEM "B" IS PROPOSED IN THE NORTHWEST CORNER OF THE SITE AND DESIGNED FOR DETENTION AND INFILTRATION. SEE SHEET C3 FOR OUTLINE. USE 3' MODEL FOR BOTH SYSTEMS.
7. CONTRACTOR TO PLACE SYSTEM "A" AND EXTEND ABOVE-SPECIFIED IMPERMEABLE LINER ON SYSTEM "A" UP TO SEASONAL HIGH WATER TABLE AT ELEVATION NOTED ABOVE. CITY STAFF OR REVIEW ENGINEER SHALL WITNESS INSTALLATION OF LINER.
8. GALLEY 8X14 UNITS THAT ARE ADJACENT TO OTHER GALLEY 8X14 UNITS ON ALL SIDES SHALL HAVE FLOW THROUGH HOLES ON ALL SIDES. UNITS THAT ARE NOT ADJACENT TO OTHER UNITS ON AT LEAST ONE SIDE SHALL HAVE A SOLID CONCRETE FACE ON THE SIDES ON THE UNIT THAT ARE NOT ADJACENT TO OTHER UNITS (ALONG PERIMETER OF SYSTEM).
9. LEDGE SHALL BE REMOVED TO AN ELEVATION AT LEAST 2-FEET BELOW BOTTOM OF STONE BASE AND REPLACED WITH GRANULAR MATERIAL.

SHEA CONCRETE PRODUCTS "GALLEY 8x14"

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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

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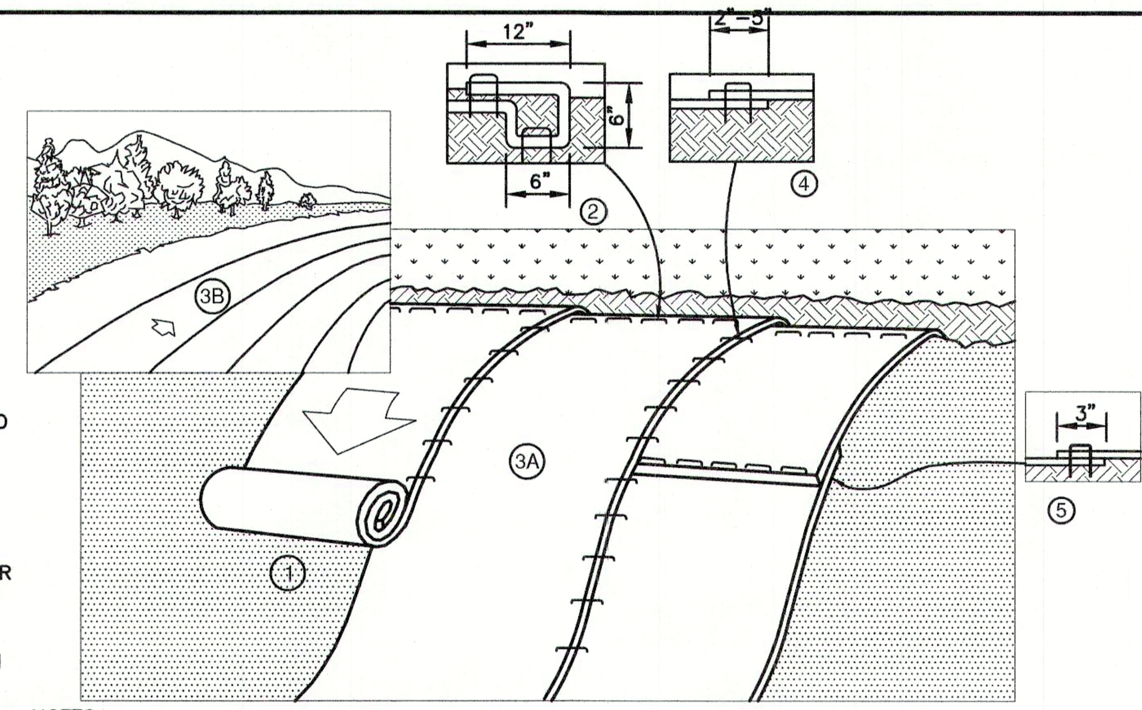
DRAWING No.
D6

TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
    d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.



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

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
   B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
      NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
      PHOSPHATE(P205), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      POTASH(K20), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A B C D	FAIR POOR POOR FAIR	GOOD GOOD GOOD EXCELLENT	GOOD FAIR EXCELLENT EXCELLENT	FAIR FAIR GOOD POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A C	GOOD GOOD	GOOD EXCELLENT	GOOD EXCELLENT	FAIR FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A B C	GOOD GOOD GOOD	GOOD GOOD EXCELLENT	GOOD FAIR EXCELLENT	FAIR POOR FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E F	FAIR FAIR	EXCELLENT EXCELLENT	EXCELLENT EXCELLENT	2/ 2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

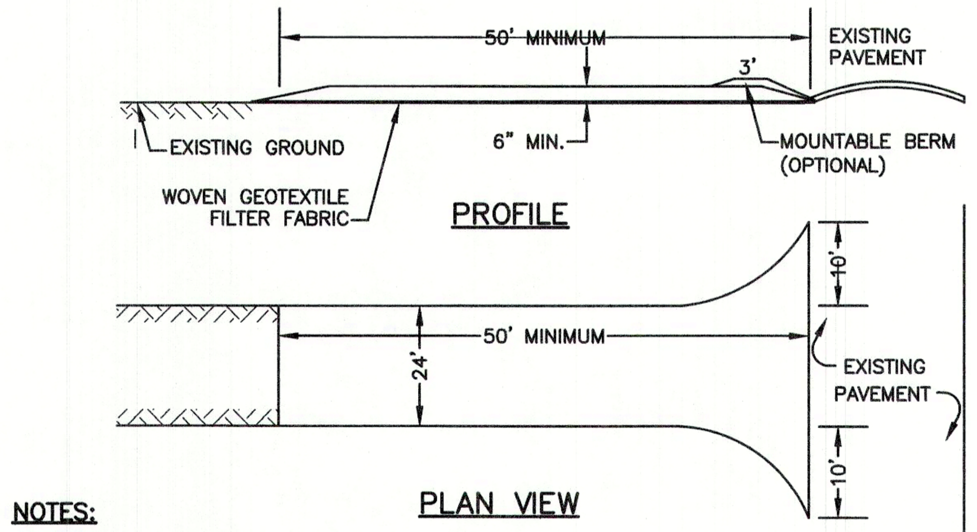
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

	MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
	A. TALL FESCUE	20	0.45
	CREEPING RED FESCUE	20	0.45
	RED TOP	2	0.05
	TOTAL	42	0.95
	B. TALL FESCUE	15	0.35
	CREEPING RED FESCUE	10	0.25
	CROWN VETCH	15	0.35
	OR		
	FLAT PEA	30	0.75
	TOTAL	40 OR 55	0.95 OR 1.35
*	C. TALL FESCUE	20	0.45
	CREEPING RED FESCUE	20	0.45
	BIRDS FOOT TREFOIL	8	0.20
	TOTAL	48	1.10
	D. TALL FESCUE	20	0.45
	FLAT PEA	30	0.75
	TOTAL	50	1.20
	E. CREEPING RED FESCUE 1/	50	1.15
	KENTUCKY BLUEGRASS 1/	50	1.15
	TOTAL	100	2.30
	F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



NOTES:

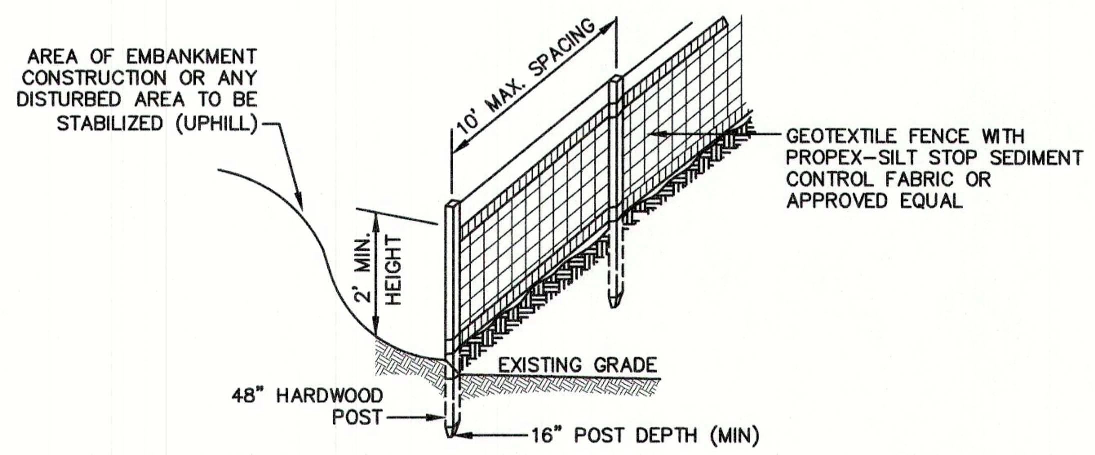
1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

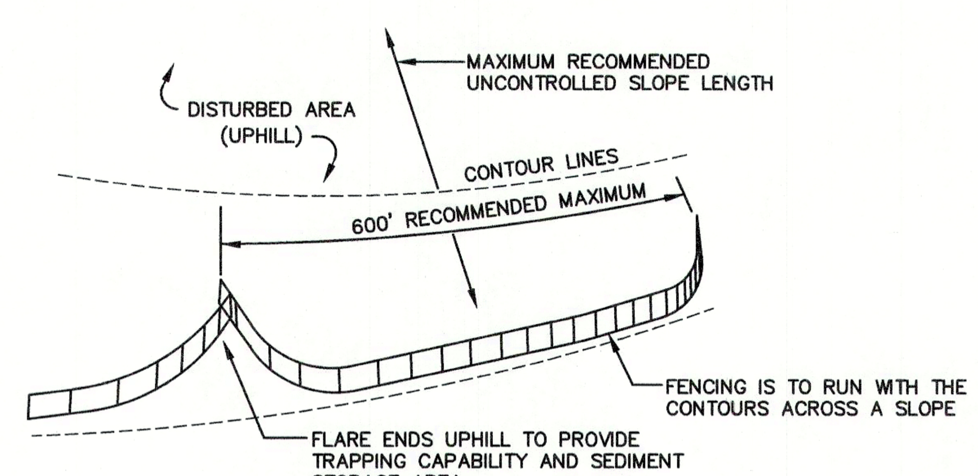
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.
3. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
4. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
5. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
6. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) (INCLUDING RAIN GARDENS AND UNDERGROUND DETENTION SYSTEM) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
7. STRIP LOAM AND PAVEMENT PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
8. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS.
9. PREPARE BUILDING PADS TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
11. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
13. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
14. PAVE DRIVEWAYS AND ROADWAY WITH INITIAL 'BASE COURSE'.
15. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
16. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
17. FINISH PAVING ALL DRIVEWAYS AND ROADWAY WITH 'FINISH' COURSE.
18. DRIVEWAYS AND ROADWAY SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
21. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
22. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
23. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
24. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
25. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.





CONSTRUCTION SPECIFICATIONS:

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.
7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
8	1/20/22	REVISED PER ENGINEER REVIEW COMMENTS	DJM
7	12/28/21	REVISED PER ENGINEER REVIEW COMMENTS	DJM
6	10/5/21	REVISED PER CITY COMMENTS	DJM
5	8/23/21	ISSUED FOR REVIEW	DJM

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: EROSION AND SEDIMENT CONTROL DETAILS

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 — LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
E1
SHEET 17 OF 19
JBE PROJECT NO. 21047

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **TRUCK TURNING PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
T1
SHEET 18 OF 19
JBE PROJECT NO. 21047

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED
PROFESSIONAL ENGINEER

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LOT 15: JOHN J. & COLLEEN HEBERT
54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
T2
SHEET 19 OF 19
JBE PROJECT NO. 21047

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

February 15, 2022

Portsmouth Technical Advisory Committee
Attn: Peter Stith
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Response Letter 2
668 Middle Street, Portsmouth, NH
Tax Map 147, Lot 18
JBE Project No. 20686

Dear Mr. Stith,

We are in receipt of TAC comments, dated January 3, 2022. Review comments are listed below with our responses in bold.

TAC COMMENTS:

1. *Site Plan Application Required Information:*
   - *Green Building Statement not provided*

   RESPONSE: A green building statement will be provided by Architect.

   - *Note 4 on C1 does not reference GIS data and coordinate system*

   RESPONSE: Note 4 on Sheet C1 has been revised to reflect the updated datum and coordinate system.

2. *Site Plan Specifications*
   - *Architectural Plans are referenced in checklist but not included in submission.*

   RESPONSE: Architectural plans were previously submitted.

3. *Site Plan Specifications – Required Exhibits and Data*
   - *Architectural Plans are reference but not included*

   RESPONSE: Architectural plans were previously submitted.

   - *No truck turning template as provided*

   RESPONSE: Fire Chief said that no truck turning plan was required, due to the proximity of the units to Chevrolet Avenue.

- *Note 3 on C1 does not seem to speak to Special Flood Hazard Areas*

RESPONSE: Note 3 on C1 states that the subject parcel is located within in the FEMA designated Zone X, therefore it is located outside of the Special Flood Hazard Areas.

4. *The City requests $5,000 per new dwelling for development of sidewalks on Albany Street/Malt House Drive.*
   RESPONSE: Note #16 has been add on Sheet C2.

5. *New proposed condo units should have Chevrolet Ave addresses.*
   RESPONSE: Note #12 on CS1 has been added to address this.

6. *Condo Units A and B should have Middle Street addresses.*
   RESPONSE: Note #12 on CS1 has been added to address this.

7. *Water service proposed for Condominium A should not be brought into the garage, bring into a warm space instead.*
   RESPONSE: The proposed water service has been revised and new proposed service location can be seen on sheet C4.

8. *State how many individual condominium units will be in Condominium Units A and B.*
   RESPONSE: A note has been added to CS1 stating the number of units in Condominium Units A and B.

9. *State existing and proposed utility service sizes to the existing 3 unit dwelling and existing single dwelling.*
   RESPONSE: Proposed and existing utility services have been labeled.

10. *Conversion of Existing 3 Unit Dwelling to Condominium A may require upgrade in water service.*
    RESPONSE: We are not proposing a conversion of the 3 family at this time.

11. *Provide confirmation that fire protection is not necessary for existing and proposed units.*
    RESPONSE: Fire Chief confirmed fire protection is not required at the previous TAC meeting.

12. *2" ductile iron does not exist. Use 2" copper or 4" ductile depending on flow needs.*
    RESPONSE: Note has been revised to call out water main as 2" copper pipe.

13. *Move flushing hydrant to side of shared driveway.*
    RESPONSE: Hydrant location has been revised and shown on sheet C4.

14. *Proposed Right of Way for common drive grantee not to be City of Portsmouth, should be to private lots.*
    RESPONSE: Proposed common drive right of way shall benefit proposed lots. A note was added to sheet A1.

15. *City will need blanket easement over both new lots for valves, leak detection, and metering.*
    RESPONSE: Note #15 on sheet CS1 has been added stating this.

16. *Move proposed private sewer manhole farther into shared driveway and have proposed unit 4 connect into the common main, not into the sewer manhole.*
    RESPONSE: Proposed sewer manhole location has been revised as well as Unit 4 service connection.

17. *Reconfigure sewer connection in street to have the private sewer main come into the proposed right of way sewer manhole at no less than a 90 degree angle.*
    RESPONSE: Private sewer main has been added to the proposed development.

18. *Include insulation between the proposed sewer and the 36" PE drainage pipe.*
    RESPONSE: Insulation has been shown as part of the sewer profile on Sheet P1

19. *Provide easement for sewer from Station 0+00 to station 0+50.*
    RESPONSE: An easement has been added and can been found on sheet A1.

20. *Provide easement showing flowage rights for storm water across Map 147 Lot 19-1.*
    RESPONSE: An easement has been added and can been found on sheet A1.

21. *Show outlet for rain garden with outlet control structure.*
    RESPONSE: An outlet control structure has been added.

22. *Steps for back deck on Unit 3 overlap with rain garden.*
    RESPONSE: Rain garden design has been revised.

23. *Plans need to be in State Plane Coordinates and NAVD 88 Datum.*
    RESPONSE: Plans have been revised to be on State Plane coordinates and NAVD88 datum, Note 4 on sheet C1.

24. *Drawings are incomplete and DPW does not recommend this project moves forward to the Planning Board. Project must return to Technical Advisory Committee.*
    RESPONSE: Project plans has been revised.

25. *Move garages back on Unit 3 & 4 to allow for parking in front of garages.*
    RESPONSE: Garages have been moved to allow for parking in front.

26. *Add additional landscaping between units and Chevrolet Avenue.*
    RESPONSE: Additional Landscaping has been provided.

27. *Show landscaping & architectural plans looking from Chevrolet Ave.*
    RESPONSE: Landscaping and architectural plans looking from Chevrolet Avenue will be provided.

28. *Show mailboxes, solid waste storage and mechanicals (if any).*
    RESPONSE: Mailboxes and mechanicals have been shown and Note #17 on C2 has been added.

29. *Provide shared driveway easement off of Middle Street and proposed driveway off of Chevrolet.*
    RESPONSE: Driveway easements have been provided.

30. *Proposed Limited Common Areas create illegal subdivision.*
    RESPONSE: We have removed the LCA's from the Condominium Site Plan.

31. *Blowoff hydrant in the way of snow storage area.*
    RESPONSE: Hydrant and Snow storage locations have been revised.

32. *Add 4' sidewalk in front of Unit 3 & 4 connecting to Chevrolet Avenue; move units back to accommodate sidewalk. Use Vertical Granite Curbing.*
    RESPONSE: Sidewalk has been added to the plans.

Included with this response letter are the following:

1. One (1) Full Size Plan Set.
2. One (1) Drainage Report.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Andrew Butler

Andrew Butler, EIT
Project Engineer

cc: Michael Garrepy, Tuck Realty Corporation (via email)
Tim Phoenix, Attorney (via email)
Wendy Welton, Art From Architecture (via email)

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: Tuck Realty Corp. Date Submitted: 12/20/21

Application # (in City's online permitting): ____________

Site Address: 668 Middle Street, Portsmouth, NH Map: 147 Lot: 18

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**		N/A
☒	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**	Drainage Report & C3	
☒	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	Architectural Plans	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	C2, Note 2	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	LOA or Title Block	N/A
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	C1	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Sheet	N/A
☒	List of reference plans. **(2.5.3.1H)**	C1 Plan Reference Note	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Cover Sheet	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	C1 Note 4	N/A
☒	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	N/A	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Cover Sheet & C2	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Revision Block, All Sheets	N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**	Plan Reference C1, A1 & C2	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Architectural Plans & C1	
☒	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Architectural Plans & C1	
☒	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	C2	
☒	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	C2	
☒	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	C1 & C4	
☒	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	C1 & C4	

☒	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	C4	
☒	**8. Solid Waste Facilities: (2.5.4.3H)**	N/A	
	• The size, type and location of solid waste facilities.		
☒	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	C3 & Drainage report	
☒	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	L1	
☒	11. Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	L1	
☒	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	L2	
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C3	
☒	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	C1 Note 2/	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	A1	
☒	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	C2	
☒	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	C1 Note 3	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	N/A	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	C3 & Drainage Report	
☒	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☒	Stormwater Management and Erosion Control Plan. **(7.4)**	Attached	
☒	Inspection and Maintenance Plan **(7.6.5)**	N/A	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**		
☐	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**		
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**		

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**		
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**		N/A
☐	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**		
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**		N/A

Applicant's Signature: Joseph Coronati **Date:** 12/20/21

AUTHORIZATION

The undersigned, Elizabeth B. Larsen, Trustee of the Elizabeth B. Larsen Trust of 2012("Trust"), owner of the property located at 668Middle Street, Portsmouth, New Hampshire and further identified as Portsmouth Tax Map 147, Lot 18 (the "Property"), hereby authorize Tuck Realty Corporation ("Tuck") and its advisors Jones & Beach Engineers, Inc. and Hoefle, Phoenix, Gormley and Roberts, P.A., to file documents and appear before the Portsmouth Zoning Board of Adjustment, Planning Board, Technical Advisory Committee and/or Conservation Commission in all matters relating to applications by Tuck to the City of Portsmouth to permit the subdivision of and up to eight townhouses or similar structureson the Property.

Dated: January27 , 2021 By: Elizabeth B. Larsen

dotloop verified
01/27/21 2:40 PM EST
TGOV-SMJF-LFZY-ERRP

Elizabeth B. Larsen, Trustee
Elizabeth B. Larsen Trust of 2012

Letter of Authorization

I, W. Turner Porter, Tuck Realty Corporation, PO Box 190, Exeter, NH 03833, developer of property located in Portsmouth, NH, known as Tax Map 147, Lot 18, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 668 Middle Street in Portsmouth, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

Witness	W. Turner Porter Tuck Realty Corporation	8/23/21 Date

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS that I, **Elizabeth B. Larsen**, unmarried, of 668 Middle Street, Portsmouth, Rockingham County, New Hampshire, 03801,

for consideration paid, grant to **Elizabeth B. Larsen, Trustee of The Elizabeth B. Larsen Trust of 2012** u/d/t dated December 11, 2012, of 668 Middle Street, Portsmouth, Rockingham County, New Hampshire, 03801,

with ***WARRANTY COVENANTS*** the following described real estate:

PARCEL I. A certain parcel of land with the buildings thereon, situate on Middle Street, in said Portsmouth, bounded and described as follows:

BEGINNING on Middle Street at land now or formerly of Blanche B. Lovell and running northwesterly by said Lovell's land seven (7) feet to an angle in the division line; thence turning and running North Eighty (80) degrees West by said Lovell's land, land now or formerly of William Conlon and Annie F. Pierce, land now or formerly of the Heirs of Ellen G. Walsh, land now or formerly of the Heirs of Victor Goss, and land now or formerly of Maurice J. and Elizabeth T. Ham, four hundred sixty-two (462) feet to the center of a stone post; thence turning and running North twenty-six (26) degrees West by land of the City of Portsmouth, formerly of the Frank Jones Brewing Company, one hundred six feet and six inches (106.6") to the center of a stone post; thence turning and running North fifty-nine (59) degrees East by land now or formerly of Coleman and Taccetta, formerly of the Frank Jones Brewing Company, two hundred twenty-seven and one half (227 ½) feet to land now or formerly of Florence Laighton; thence turning and running Southeasterly in a direct line by said Laighton's land four hundred forty-two and one half (442 ½) feet, more or less, to Middle Street; thence turning and running Southwesterly by said Street sixty-nine feet and ten inches (69 ft. 10 in.) more or less, to the place of beginning.

Together with a right of way thirty (30) feet wide across the northwesterly side of land now or formerly of said Laighton, adjoining the land now or formerly of said Coleman and Taccetta, formerly of said Brewing Company, and subject to similar right of way in said Laighton, her heirs and assigns, thirty (30) feet wide across the northwesterly side of the land herein conveyed, adjoining land now or formerly of said Coleman and Taccetta. Said rights of way are more fully limited and defined in deed of William J. Moat to G. Ralph Laighton, dated 10 May, 1980, recorded in Rockingham Registry of Deeds, Book 512, Page 429, and an agreement of G. Ralph Laighton and Harry E. Boynton, dated May 31, 1913 and recorded in said Rockingham Registry of Deeds, Book 674, Page 341, to which reference is hereby made for a more complete description.

Also, those certain parcels of land located on Forest, Central and Elm Streets, Portsmouth, County of Rockingham, State of New Hampshire, bounded and described as follows:

PARCEL 1. BEGINNING at a point in the northeasterly sideline of Forest Street at the northwesterly corner of land now or formerly of DeCoff, being Lot No. 263 on Plan of Jackson Farm and Buckminster Field drawn by John W. Durgin, CE dated February 1955, recorded in Rockingham County Registry of Deeds and running northwesterly by the northeasterly sideline of Forest Street about 256 feet to the southerly corner of Lot No. 267 on said plan; thence turning and running southwesterly about one hundred feet to the point where the southeasterly sideline of Lot 216 on said plan is intersected by the easterly sideline of the property now or formerly of the State of New Hampshire and being the approach to the high level Piscataqua River Bridge; thence turning and running northerly along the easterly sideline of the said bridge approach land now or formerly of the State of New Hampshire to land now or formerly of the Boston & Maine Railroad; thence turning and running easterly by the right of way of the Boston & Maine Railroad to the northwesterly corner of Lot No. 263; thence turning and running southerly by the westerly line of Lot 263 to the point of beginning, said parcel comprising those portions of Lots 216 and 267 not taken by the State of New Hampshire for the approach to the Piscataqua Bridge, together with Lots 264, 265 and 266, and the stub of land on Forest Street westerly of the westerly sideline of Central Street and the stub of Central Street northerly of the northerly sideline of forest.

PARCEL 2. BEGINNING at a point in the northwesterly sideline of Elm Street at the southwesterly corner of Lot No. 237, the property now or formerly of Zamarchi, being the northeasterly corner of the parcel herein described and running southwesterly by said Elm Street 130 feet to a corner at Lot 234, the property now or formerly of the City of Portsmouth; thence turning and running northwesterly by said Lot 234 and Lot 221, the property now or formerly of the City of Portsmouth, 160 feet to the southeasterly side of Central Street; thence turning and running northeasterly by Central Street 101 feet to a corner at Lot No. 218, the property now or formerly of the City of Portsmouth, thence turning and running southeasterly by Lot 218 and Lot 237 to Elm Street and the point of beginning. Comprising Lots 219, 220, 235 and 236 on said Plan of Jackson Farm and Buckminster Field.

PARCEL 3. All my right, title and interest in and to the following streets or portions of streets, namely:

Central Street from the easterly sideline of the Piscataqua River Bridge approach to the southerly sideline of Forest Street.

That portion of Elm Street bounded northerly by Forest Street, southwesterly by land now or formerly of Zamarchi 200 feet, westerly by Elm Street, and northwesterly by Parcel 2 and land of Zamarchi 190 feet.

Forest Street from the westerly side of Cutts Street westerly to a line between the easterly corner of Lot 216 and the southeasterly corner of Lot 217.

These parcels are subject to such rights as the abutting owners and others may have the use thereof for access to their respective properties.

These parcels are also subject to an Easement to Northern Utilities, Inc. dated March 4, 2004, and recorded at Rockingham County Registry of Deeds in Book 4470, Page 2003.

Included in this conveyance is any and all personal property contents of the real estate.

Being the same premises conveyed to the Grantor by deed of The Wyman P. Boynton Revocable Trust of 1994 u/d/t dated September 1, 1994, recorded at Rockingham County Superior Court at Book 3980, Page 0209.

Dated this 11th day of December, 2012.

Witness

Elizabeth B. Larsen

State of New Hampshire
Rockingham, SS.

December 11, 2012

Personally appeared, before me, the above-named Elizabeth B. Larsen, known to me, or satisfactorily proven, to be the person whose name is subscribed to the foregoing instrument and acknowledged that she executed the same for the purposes therein contained.

~~Notary Public~~/Justice of the Peace

RALPH R. WOODMAN, JR.
JUSTICE
MY COMMISSION EXPIRES JUNE 9, 2015
OF THE PEACE
NEW HAMPSHIRE

DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

"Chevrolet Avenue Duplexes"
686 Middle Street
Portsmouth, NH 03801
Tax Map 147, Lots 18

Prepared for:

Tuck Realty Corporation
P.O. Box 190
Exeter, NH 03833

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9846
LICENSED
PROFESSIONAL ENGINEER
2/15/2022

Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
December 20, 2021
REVISED February 15, 2022
JBE Project No. 20686

EXECUTIVE SUMMARY

Tuck Realty Corporation is proposing to subdivide the existing Map 147 Lot 18 at 668 Middle Street Portsmouth, creating two new lots with frontage on Chevrolet Avenue on which they propose to construct a total of 2 residential duplexes on the proposed parcels. The existing Map 147 Lot 18 has a 3-unit residential dwelling, a carriage house with a garage, and a barn. Much of the rear of the lot is wooded with some lawn area as well.

A drainage analysis of the entire site 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 (3.69"), 10 Year – 24 Hour (5.60"), 25 Year – 24 Hour (7.10"), and 50 Year – 24 Hour (8.50")storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region. A summary of the existing and proposed conditions peak rates of runoff in units of cubic feet per second (cfs) is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.02	0.44	0.46	1.72	1.24	3.08	2.31	4.50

After implementing the proposed stormwater management, the peak runoff rates become as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.02	0.28	0.46	1.57	1.24	2.93	2.31	4.33

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

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.015	0.069	0.091	0.210	0.185	0.352	0.292	0.50

The subject parcel is located in the General Residence A District. The subject parcels currently consist of the aforementioned 3-unit residential dwelling, a carriage house with a garage, and a barn, all of which is proposed to remain, with the expectation of the existing barn which will be demolished. The topography on the site define one (1) subcatchment, which drain to one (1) analysis point at the north eastern corner of the site.

The proposed site development consists of the aforementioned two new lots with frontage on Chevrolet Avenue with the 2 residential duplexes with associated paved common driveway. 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. A stormwater management system was designed in order to treat additional site run-off and mitigate peak flow rates. The proposed site development divides the site into two (2) subcatchments. The proposed stormwater management system for the front of the site consists of the rain garden system and multi stage discharge outlet structure to filter runoff.

The City of Portsmouth's only regulation concerning volume is that it shall be reduced to the maximum extent practicable, which this design achieves by reducing the peak volume of runoff toward all analysis point except for a slight increase in volume toward one analysis point during the 50-Year 24-Hour storm. Furthermore, although this project will not require an Alteration of Terrain Permit, it meets the Alteration of Terrain (AoT) Bureau's Channel Protection requirement, stipulating that volume may not increase toward any analysis point by more than 0.1 acre-foot during the 2-Year 24-Hour storm event.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.

TABLE OF CONTENTS

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 (3.69"), 10 Year – 24 Hour (5.60"), 25 Year – 24 Hour (7.10"), and 50 Year – 24 Hour (8.50") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows resulting from storm events.

2.0 EXISTING CONDITIONS ANALYSIS

Based on NRCS Web Soil Survey, the soil type for the entire studied area was found to consist of "Urban land – Canton complex" (Map unit symbol 799). This classifies the soils as Hydrologic Soil Groups (HSG) A.

The existing property feature a main house and a carriage house with porches, a garage, a barn, and two gravel driveways. The site is otherwise covered by both woods and grass. The majority of the site is sloped toward the northeastern corner of the lot. This point where the lot drains to have been designated Analysis Point #1 (AP1). The area draining toward the north to this point can be described as one subcatchment; Subcatchments 1S. Subcatchment 1S drains into an Analysis Point #1 (AP1). This subcatchment experiences noticeable grade change, with the highest elevations being roughly 12' higher than the lowest elevation at AP1.

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious driveway and the buildings causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the result being a potential increase in peak rates of runoff from the site. The proposed development, consisting of the aforementioned two residential duplex units with associated paved driveways as well as stormwater management features divide the subject parcel into two (2) subcatchments. Subcatchment 10S is comprised of the unchanged section of the lot, existing houses, gravel driveway, garage, etc. Subcatchments 20S is comprised of proposed roof areas as well as the proposed driveway and sidewalk. The runoff from subcatchment 20S is directed into the proposed rain garden (10P). After receiving treatment in the rain garden system, runoff will be directed into the existing City of Portsmouth drainage network via proposed drain manhole in Chevrolet Avenue.

The site will be graded such that runoff from all the proposed impervious areas, will be treated, by way of the rain garden system.

According to the NH Stormwater Manual, bioretention systems (rain gardens) provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, and infiltration basins (including subsurface ones) provide a removal efficiency of 90% for TSS and 60% for nitrogen. Runoff from all impervious surfaces with the exception of roofs is being directed toward one of these two types of treatment systems.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures and properties by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, multi-stage discharge outlet structure, and rain garden system as well as temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process. Peak rates of runoff from the site will be reduced from the unmanaged post development condition to the analysis point during all storms.

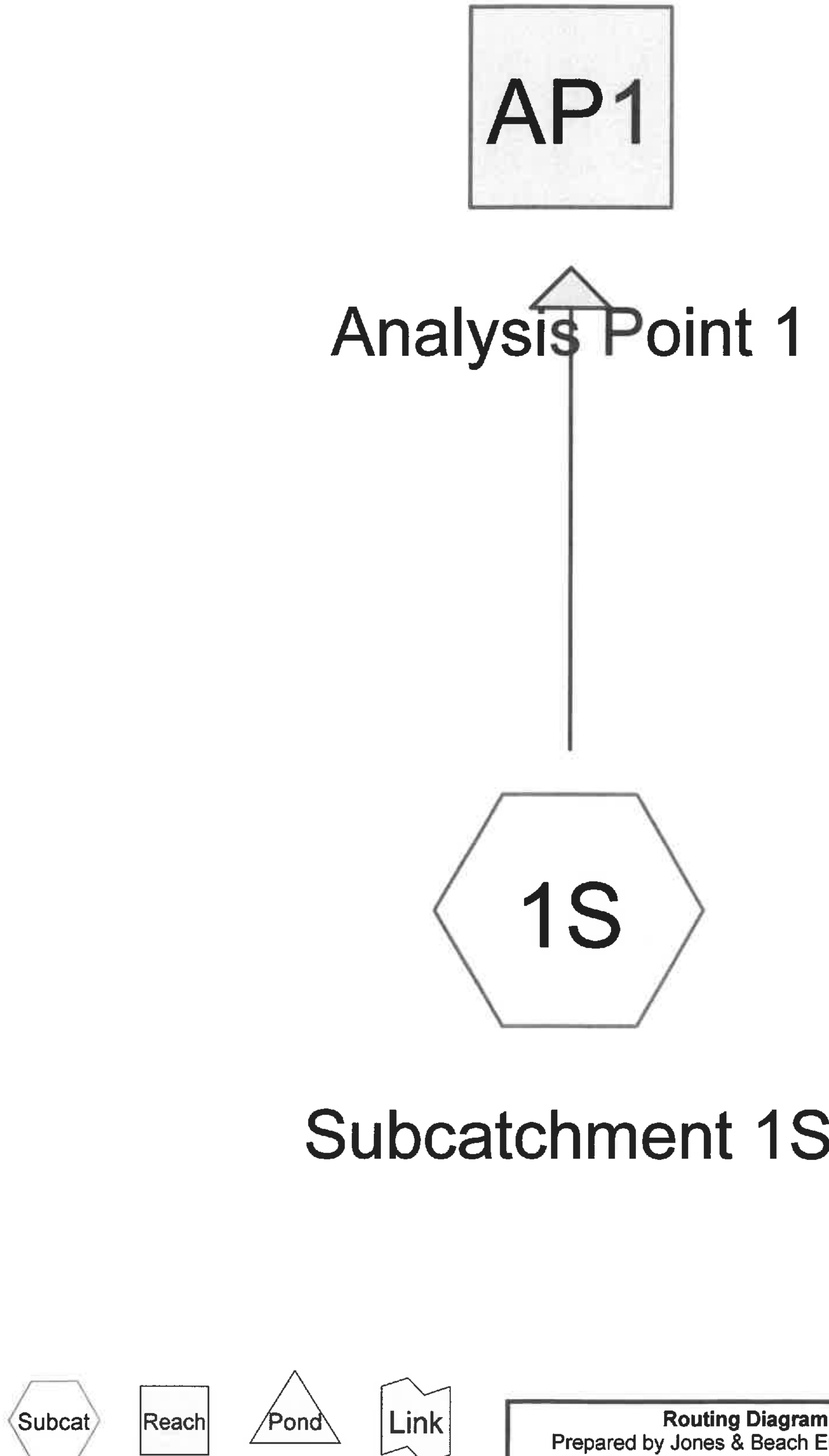
This project disturbs less than 100,000 S.F. and does <u>not</u> require a NHDES Alteration of Terrain Permit.
Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

Andrew Butler, E.I.T
Project Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

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



Routing Diagram for 20686-EXISTING
Prepared by Jones & Beach Engineers Inc., Printed 2/15/2022
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.616	39	>75% Grass cover, Good, HSG A (1S)
0.197	96	Gravel surface, HSG A (1S)
0.116	98	Roofs, HSG A (1S)
0.931	30	Woods, Good, HSG A (1S)
1.861	**44**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=81,046 sf 6.26% Impervious Runoff Depth>0.09"
Flow Length=305' Tc=22.8 min CN=44 Runoff=0.02 cfs 0.015 af

Reach AP1: Analysis Point 1 Inflow=0.02 cfs 0.015 af
Outflow=0.02 cfs 0.015 af

Total Runoff Area = 1.861 ac Runoff Volume = 0.015 af Average Runoff Depth = 0.09"
93.74% Pervious = 1.744 ac 6.26% Impervious = 0.116 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 0.02 cfs @ 14.90 hrs, Volume= 0.015 af, Depth> 0.09"

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 2 Yr 24 Hr (+15%) Rainfall=3.70"

Area (sf)	CN	Description
5,073	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
26,819	39	>75% Grass cover, Good, HSG A
40,559	30	Woods, Good, HSG A
81,046	44	Weighted Average
75,973		93.74% Pervious Area
5,073		6.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Reach AP1: Analysis Point 1

Inflow Area = 1.861 ac, 6.26% Impervious, Inflow Depth > 0.09" for 2 Yr 24 Hr (+15%) event
Inflow = 0.02 cfs @ 14.90 hrs, Volume= 0.015 af
Outflow = 0.02 cfs @ 14.90 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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=81,046 sf 6.26% Impervious Runoff Depth>0.59"
Flow Length=305' Tc=22.8 min CN=44 Runoff=0.46 cfs 0.091 af

Reach AP1: Analysis Point 1 Inflow=0.46 cfs 0.091 af
Outflow=0.46 cfs 0.091 af

Total Runoff Area = 1.861 ac Runoff Volume = 0.091 af Average Runoff Depth = 0.59"
93.74% Pervious = 1.744 ac 6.26% Impervious = 0.116 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 0.46 cfs @ 12.52 hrs, Volume= 0.091 af, Depth> 0.59"

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 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
5,073	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
26,819	39	>75% Grass cover, Good, HSG A
40,559	30	Woods, Good, HSG A
81,046	44	Weighted Average
75,973		93.74% Pervious Area
5,073		6.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Reach AP1: Analysis Point 1

Inflow Area = 1.861 ac, 6.26% Impervious, Inflow Depth > 0.59" for 10 Yr 24 Hr(+15%) event
Inflow = 0.46 cfs @ 12.52 hrs, Volume= 0.091 af
Outflow = 0.46 cfs @ 12.52 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=81,046 sf 6.26% Impervious Runoff Depth>1.19"
Flow Length=305' Tc=22.8 min CN=44 Runoff=1.24 cfs 0.185 af

Reach AP1: Analysis Point 1 Inflow=1.24 cfs 0.185 af
Outflow=1.24 cfs 0.185 af

Total Runoff Area = 1.861 ac Runoff Volume = 0.185 af Average Runoff Depth = 1.19"
93.74% Pervious = 1.744 ac 6.26% Impervious = 0.116 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.24 cfs @ 12.41 hrs, Volume= 0.185 af, Depth> 1.19"

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 25 Yr 24 Hr(+15%) Rainfall=7.10"

Area (sf)	CN	Description
5,073	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
26,819	39	>75% Grass cover, Good, HSG A
40,559	30	Woods, Good, HSG A
81,046	44	Weighted Average
75,973		93.74% Pervious Area
5,073		6.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Reach AP1: Analysis Point 1

Inflow Area = 1.861 ac, 6.26% Impervious, Inflow Depth > 1.19" for 25 Yr 24 Hr(+15%) event
Inflow = 1.24 cfs @ 12.41 hrs, Volume= 0.185 af
Outflow = 1.24 cfs @ 12.41 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
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=81,046 sf 6.26% Impervious Runoff Depth>1.88"
Flow Length=305' Tc=22.8 min CN=44 Runoff=2.23 cfs 0.292 af

Reach AP1: Analysis Point 1 Inflow=2.23 cfs 0.292 af
Outflow=2.23 cfs 0.292 af

Total Runoff Area = 1.861 ac Runoff Volume = 0.292 af Average Runoff Depth = 1.88"
93.74% Pervious = 1.744 ac 6.26% Impervious = 0.116 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.23 cfs @ 12.37 hrs, Volume= 0.292 af, Depth> 1.88"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
5,073	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
26,819	39	>75% Grass cover, Good, HSG A
40,559	30	Woods, Good, HSG A
81,046	44	Weighted Average
75,973		93.74% Pervious Area
5,073		6.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Reach AP1: Analysis Point 1

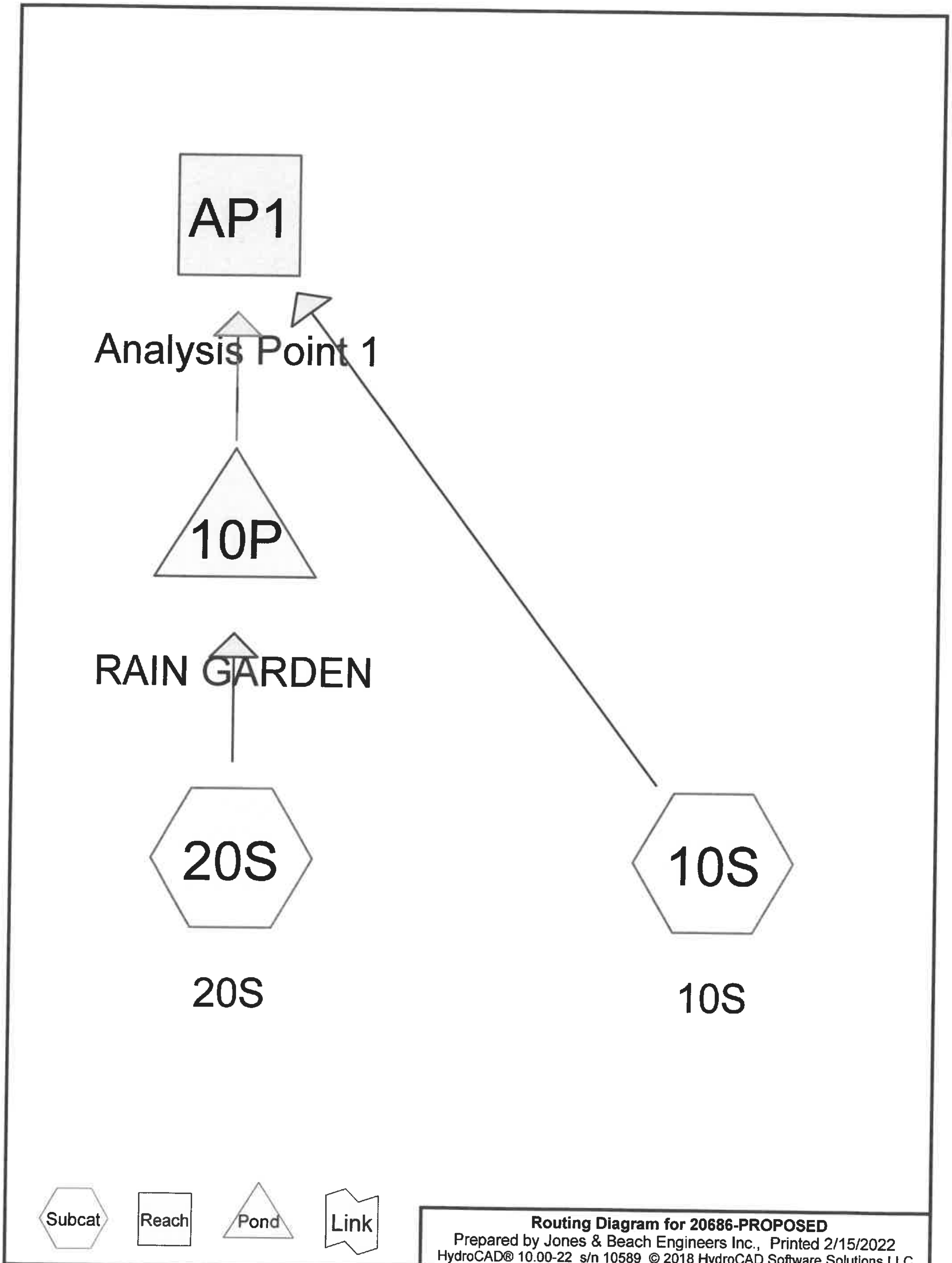
Inflow Area = 1.861 ac, 6.26% Impervious, Inflow Depth > 1.88" for 50 Yr 24 Hr(+15%) event
Inflow = 2.23 cfs @ 12.37 hrs, Volume= 0.292 af
Outflow = 2.23 cfs @ 12.37 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

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



Routing Diagram for 20686-PROPOSED
Prepared by Jones & Beach Engineers Inc., Printed 2/15/2022
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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.745	0.000	0.000	0.000	0.000	0.745	>75% Grass cover, Good	10S, 20S
0.197	0.000	0.000	0.000	0.000	0.197	Gravel surface	10S
0.105	0.000	0.000	0.000	0.000	0.105	Paved parking	20S
0.320	0.000	0.000	0.000	0.000	0.320	Roofs	10S, 20S
0.494	0.000	0.000	0.000	0.000	0.494	Woods, Good	10S, 20S
1.861	**0.000**	**0.000**	**0.000**	**0.000**	**1.861**	**TOTAL AREA**	

Summary for Subcatchment 10S: 10S

Runoff = 0.13 cfs @ 12.55 hrs, Volume= 0.029 af, Depth> 0.34"

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 2 Yr 24 Hr (+15%) Rainfall=3.69"

Area (sf)	CN	Description
4,628	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
14,977	39	>75% Grass cover, Good, HSG A
16,420	30	Woods, Good, HSG A
44,620	53	Weighted Average
39,992		89.63% Pervious Area
4,628		10.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Subcatchment 20S: 20S

Runoff = 0.43 cfs @ 12.12 hrs, Volume= 0.043 af, Depth> 0.61"

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 2 Yr 24 Hr (+15%) Rainfall=3.69"

Area (sf)	CN	Description
998	98	Roofs, HSG A
764	98	Roofs, HSG A
713	98	Roofs, HSG A
679	98	Roofs, HSG A
2,883	98	Roofs, HSG A
2,288	98	Paved parking, HSG A
8,729	39	>75% Grass cover, Good, HSG A
4,173	30	Woods, Good, HSG A
3,258	98	Roofs, HSG A
2,273	98	Paved parking, HSG A
8,744	39	>75% Grass cover, Good, HSG A
924	30	Woods, Good, HSG A
36,426	60	Weighted Average
22,570		61.96% Pervious Area
13,856		38.04% 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

Inflow Area = 1.861 ac, 22.81% Impervious, Inflow Depth > 0.44" for 2 Yr 24 Hr (+15%) event
Inflow = 0.28 cfs @ 12.55 hrs, Volume= 0.069 af
Outflow = 0.28 cfs @ 12.55 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 10P: RAIN GARDEN

Inflow Area = 0.836 ac, 38.04% Impervious, Inflow Depth > 0.61" for 2 Yr 24 Hr (+15%) event
Inflow = 0.43 cfs @ 12.12 hrs, Volume= 0.043 af
Outflow = 0.14 cfs @ 12.55 hrs, Volume= 0.040 af, Atten= 67%, Lag= 26.2 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.14 cfs @ 12.55 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 17.88' @ 12.55 hrs Surf.Area= 642 sf Storage= 433 cf

Plug-Flow detention time= 73.8 min calculated for 0.040 af (93% of inflow)
Center-of-Mass det. time= 39.3 min (941.2 - 901.9)

Volume	Invert	Avail.Storage	Storage Description
#1	14.24'	2,858 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.24	176	0.0	0	0
14.25	176	40.0	1	1
15.24	176	40.0	70	70
15.25	176	5.0	0	70
15.49	176	5.0	2	73
15.50	176	15.0	0	73
16.99	176	15.0	39	112
17.00	82	100.0	1	113
18.00	716	100.0	399	512
19.00	1,325	100.0	1,021	1,533
20.00	1,325	100.0	1,325	2,858

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**95.0' 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
#2	Secondary	14.75'	**12.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.75' / 14.50' S= 0.0100 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf
#3	Device 2	17.05'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	17.75'	**6.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	18.25'	**10.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.24' TW=0.00' (Dynamic Tailwater)
└1=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.14 cfs @ 12.55 hrs HW=17.88' TW=0.00' (Dynamic Tailwater)
└2=**Culvert** (Passes 0.14 cfs of 4.84 cfs potential flow)
  ├3=**Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.17 fps)
  ├4=**Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.24 fps)
  └5=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Subcatchment 10S: 10S

Runoff = 0.72 cfs @ 12.38 hrs, Volume= 0.098 af, Depth> 1.15"

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 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
4,628	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
14,977	39	>75% Grass cover, Good, HSG A
16,420	30	Woods, Good, HSG A
44,620	53	Weighted Average
39,992		89.63% Pervious Area
4,628		10.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Subcatchment 20S: 20S

Runoff = 1.49 cfs @ 12.10 hrs, Volume= 0.116 af, Depth> 1.66"

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 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
998	98	Roofs, HSG A
764	98	Roofs, HSG A
713	98	Roofs, HSG A
679	98	Roofs, HSG A
2,883	98	Roofs, HSG A
2,288	98	Paved parking, HSG A
8,729	39	>75% Grass cover, Good, HSG A
4,173	30	Woods, Good, HSG A
3,258	98	Roofs, HSG A
2,273	98	Paved parking, HSG A
8,744	39	>75% Grass cover, Good, HSG A
924	30	Woods, Good, HSG A
36,426	60	Weighted Average
22,570		61.96% Pervious Area
13,856		38.04% 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

Inflow Area = 1.861 ac, 22.81% Impervious, Inflow Depth > 1.36" for 10 Yr 24 Hr(+15%) event
Inflow = 1.57 cfs @ 12.31 hrs, Volume= 0.210 af
Outflow = 1.57 cfs @ 12.31 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 10P: RAIN GARDEN

Inflow Area = 0.836 ac, 38.04% Impervious, Inflow Depth > 1.66" for 10 Yr 24 Hr(+15%) event
Inflow = 1.49 cfs @ 12.10 hrs, Volume= 0.116 af
Outflow = 0.95 cfs @ 12.22 hrs, Volume= 0.113 af, Atten= 36%, Lag= 7.4 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.95 cfs @ 12.22 hrs, Volume= 0.113 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 18.43' @ 12.22 hrs Surf.Area= 980 sf Storage= 880 cf

Plug-Flow detention time= 43.1 min calculated for 0.112 af (97% of inflow)
Center-of-Mass det. time= 27.9 min (894.5 - 866.6)

Volume	Invert	Avail.Storage	Storage Description
#1	14.24'	2,858 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.24	176	0.0	0	0
14.25	176	40.0	1	1
15.24	176	40.0	70	70
15.25	176	5.0	0	70
15.49	176	5.0	2	73
15.50	176	15.0	0	73
16.99	176	15.0	39	112
17.00	82	100.0	1	113
18.00	716	100.0	399	512
19.00	1,325	100.0	1,021	1,533
20.00	1,325	100.0	1,325	2,858

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**95.0' 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
#2	Secondary	14.75'	**12.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.75' / 14.50' S= 0.0100 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf
#3	Device 2	17.05'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	17.75'	**6.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	18.25'	**10.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.24' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.94 cfs @ 12.22 hrs HW=18.43' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.94 cfs of 5.32 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.12 cfs @ 5.48 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.62 cfs @ 3.15 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.35 fps)

Summary for Subcatchment 10S: 10S

Runoff = 1.39 cfs @ 12.36 hrs, Volume= 0.170 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 25 Yr 24 Hr(+15%) Rainfall=7.10"

Area (sf)	CN	Description
4,628	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
14,977	39	>75% Grass cover, Good, HSG A
16,420	30	Woods, Good, HSG A
44,620	53	Weighted Average
39,992		89.63% Pervious Area
4,628		10.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Subcatchment 20S: 20S

Runoff = 2.51 cfs @ 12.10 hrs, Volume= 0.186 af, Depth> 2.67"

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 25 Yr 24 Hr(+15%) Rainfall=7.10"

Area (sf)	CN	Description
998	98	Roofs, HSG A
764	98	Roofs, HSG A
713	98	Roofs, HSG A
679	98	Roofs, HSG A
2,883	98	Roofs, HSG A
2,288	98	Paved parking, HSG A
8,729	39	>75% Grass cover, Good, HSG A
4,173	30	Woods, Good, HSG A
3,258	98	Roofs, HSG A
2,273	98	Paved parking, HSG A
8,744	39	>75% Grass cover, Good, HSG A
924	30	Woods, Good, HSG A
36,426	60	Weighted Average
22,570		61.96% Pervious Area
13,856		38.04% 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

Inflow Area = 1.861 ac, 22.81% Impervious, Inflow Depth > 2.27" for 25 Yr 24 Hr(+15%) event
Inflow = 2.93 cfs @ 12.25 hrs, Volume= 0.352 af
Outflow = 2.93 cfs @ 12.25 hrs, Volume= 0.352 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 10P: RAIN GARDEN

Inflow Area = 0.836 ac, 38.04% Impervious, Inflow Depth > 2.67" for 25 Yr 24 Hr(+15%) event
Inflow = 2.51 cfs @ 12.10 hrs, Volume= 0.186 af
Outflow = 1.86 cfs @ 12.18 hrs, Volume= 0.183 af, Atten= 26%, Lag= 4.8 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 1.86 cfs @ 12.18 hrs, Volume= 0.183 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 18.74' @ 12.18 hrs Surf.Area= 1,167 sf Storage= 1,209 cf

Plug-Flow detention time= 34.4 min calculated for 0.182 af (98% of inflow)
Center-of-Mass det. time= 23.4 min (875.4 - 852.1)

Volume	Invert	Avail.Storage	Storage Description
#1	14.24'	2,858 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.24	176	0.0	0	0
14.25	176	40.0	1	1
15.24	176	40.0	70	70
15.25	176	5.0	0	70
15.49	176	5.0	2	73
15.50	176	15.0	0	73
16.99	176	15.0	39	112
17.00	82	100.0	1	113
18.00	716	100.0	399	512
19.00	1,325	100.0	1,021	1,533
20.00	1,325	100.0	1,325	2,858

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**95.0' 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
#2	Secondary	14.75'	**12.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.75' / 14.50' S= 0.0100 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf
#3	Device 2	17.05'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	17.75'	**6.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	18.25'	**10.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.24' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=1.85 cfs @ 12.18 hrs HW=18.73' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 1.85 cfs of 5.57 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 6.09 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.81 cfs @ 4.13 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.90 cfs @ 2.23 fps)

Summary for Subcatchment 10S: 10S

Runoff = 2.11 cfs @ 12.34 hrs, Volume= 0.246 af, Depth> 2.88"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
4,628	98	Roofs, HSG A
8,595	96	Gravel surface, HSG A
14,977	39	>75% Grass cover, Good, HSG A
16,420	30	Woods, Good, HSG A
44,620	53	Weighted Average
39,992		89.63% Pervious Area
4,628		10.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
22.8	305	Total			

Summary for Subcatchment 20S: 20S

Runoff = 3.54 cfs @ 12.10 hrs, Volume= 0.258 af, Depth> 3.71"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
998	98	Roofs, HSG A
764	98	Roofs, HSG A
713	98	Roofs, HSG A
679	98	Roofs, HSG A
2,883	98	Roofs, HSG A
2,288	98	Paved parking, HSG A
8,729	39	>75% Grass cover, Good, HSG A
4,173	30	Woods, Good, HSG A
3,258	98	Roofs, HSG A
2,273	98	Paved parking, HSG A
8,744	39	>75% Grass cover, Good, HSG A
924	30	Woods, Good, HSG A
36,426	60	Weighted Average
22,570		61.96% Pervious Area
13,856		38.04% 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

Inflow Area = 1.861 ac, 22.81% Impervious, Inflow Depth > 3.23" for 50 Yr 24 Hr(+15%) event
Inflow = 4.33 cfs @ 12.23 hrs, Volume= 0.500 af
Outflow = 4.33 cfs @ 12.23 hrs, Volume= 0.500 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 10P: RAIN GARDEN

Inflow Area = 0.836 ac, 38.04% Impervious, Inflow Depth > 3.71" for 50 Yr 24 Hr(+15%) event
Inflow = 3.54 cfs @ 12.10 hrs, Volume= 0.258 af
Outflow = 2.76 cfs @ 12.17 hrs, Volume= 0.254 af, Atten= 22%, Lag= 4.3 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 2.76 cfs @ 12.17 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 18.98' @ 12.17 hrs Surf.Area= 1,316 sf Storage= 1,512 cf

Plug-Flow detention time= 30.0 min calculated for 0.254 af (98% of inflow)
Center-of-Mass det. time= 19.9 min (862.3 - 842.4)

Volume	Invert	Avail.Storage	Storage Description
#1	14.24'	2,858 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.24	176	0.0	0	0
14.25	176	40.0	1	1
15.24	176	40.0	70	70
15.25	176	5.0	0	70
15.49	176	5.0	2	73
15.50	176	15.0	0	73
16.99	176	15.0	39	112
17.00	82	100.0	1	113
18.00	716	100.0	399	512
19.00	1,325	100.0	1,021	1,533
20.00	1,325	100.0	1,325	2,858

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**95.0' 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
#2	Secondary	14.75'	**12.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.75' / 14.50' S= 0.0100 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf
#3	Device 2	17.05'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	17.75'	**6.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	18.25'	**10.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.24' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=2.72 cfs @ 12.17 hrs HW=18.97' TW=0.00' (Dynamic Tailwater)
2=Culvert (Passes 2.72 cfs of 5.76 cfs potential flow)
3=Orifice/Grate (Orifice Controls 0.14 cfs @ 6.53 fps)
4=Orifice/Grate (Orifice Controls 0.93 cfs @ 4.75 fps)
5=Orifice/Grate (Orifice Controls 1.64 cfs @ 2.73 fps)

APPENDIX III

Test Pit Logs

CSA
ENVIRONMENTAL CONSULTANTS, LLC
CLEAN WATER FOR THE PRESENT AND FUTURE
36 Stage Rd, Nottingham NH 03290
603.679.1866 C: 603.706.2521
calbert.env@gmail.com

TEST PITS
668 MIDDLE ROAD
PORTSMOUTH, NEW HAMPSHIRE
JANUARY 14, 2021

Performed by: Christopher Albert, SSD #1085

TEST PIT #1 – GRASS MAT

0" - 9"	10YR 3/4	dark yellowish brown fine sandy loam common roots
9" - 20"	10YR 5/6	yellowish brown fine sandy loam common roots
20" - 38"	2.5Y 6/4	Light yellowish brown fine sandy loam Few stones

New Hampshire
Designer of Subsurface Disposal Systems
Christopher S Albert
No. 1085
Department of Environmental Services

No H2O observed
SHWT: 28"
Roots: 28"
Refusal: 38"
Perc Rate = 8 min/inch

TEST PIT #2 – GRASS MAT

0" - 7"	10YR 3/4	dark yellowish brown fine sandy loam to loamy sand many roots
7" - 20"	10YR 5/6	yellowish brown fine sandy loam few roots
20" - 46"	2.5Y 5/3	Light yellowish brown fine sandy loam, few stones

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No H2O observed
SHWT: 32"
Roots: 32"
Refusal: 46"
Perc Rate = 8 min/inch

TEST PIT #3 – GRASS MAT

Refusal: 12"

TEST PIT #4 – GRASS MAT

0" - 9"	10YR 3/4	dark yellowish brown fine sandy loam to loamy sand many roots
9" - 28"	10YR 5/6	yellowish brown fine sandy loam few roots
28" - 48"	2.5Y 5/3	Light yellowish brown fine sandy loam, few stones

No H2O observed
SHWT: 28"
Roots: 28"
Refusal: 48"
Perc Rate = 8 min/inch

TEST PIT #5 – GRASS MAT

Refusal: 18"

NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
★ ★ ★
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TEST PIT #6 – FOREST MAT

0" – 12"	10YR 3/3	dark brown fine sandy loam few roots
12" - 36"	10YR 4/6	yellowish brown fine sandy loam common roots
36" - 50"	2.5Y 6/4	Light yellowish brown fine sandy loam Few stones

No H2O observed
SHWT: 40"
Roots: 36"
Refusal: 50"
Perc Rate = 8 min/inch

Test Pit #7 – GRASS MAT

0" – 12"	10YR 3/3	dark brown fine sandy loam few roots
12" - 36"	10YR 4/6	yellowish brown fine sandy loam common roots
36" - 72"	2.5Y 5/4	Light Olive brown fine sandy loam Firm, Few stones

No H2O observed
SHWT: 36"
Roots: 36"
Refusal: 72"
Perc Rate = 8 min/inch

NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
★ ★ ★
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TEST PIT #8 – GRASS MAT

Refusal: 12"

TEST PIT #9 – GRASS MAT

Refusal: 24"

TEST PIT #10 – GRASS MAT

0" - 10" Crushed Gravel (fill material)

Stabilization Fabric

10" - 24" 2.5Y 5/3 Light olive brown
Silty clay loam
Subangular blocky

Encountered 2" electrical conduit

No H2O observed
SHWT: 10"
Roots: none
Refusal: none
Perc Rate = 20 min/inch

Designer
of
Subsurface Disposa
Systems
Christophe Albert
Department of Environmental Services

TEST PIT #11 – EDGE TREE LINE

0" – 20" 10YR 2/2 Very dark brown, FSL
Few roots

20" - 84" 2.5Y 3/4 Light olive brown
Silty clay loam
Subangular blocky

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No H2O observed
SHWT: 20"
Roots: 20"
Refusal: none
Perc Rate = 20 min/inch

NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
Christopher S Albert
No. 10[illegible]
Department of Environmental Services

APPENDIX IV

NRCS Soil Map

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

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

Custom Soil Resource Report for Rockingham County, New Hampshire

December 10, 2021

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Soil Map

Map Scale: 1:1,130 if printed on A landscape (11" x 8.5") sheet.

0 15 30 60 90 Meters

0 50 100 200 300 Feet

N

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, 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: Dec 31, 2009—Sep 9, 2017

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
799	Urban land-Canton complex, 3 to 15 percent slopes	2.9	100.0%
Totals for Area of Interest		**2.9**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Rockingham County, New Hampshire

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces

Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

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APPENDIX V

Extreme Precipitation Estimates

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	70.767 degrees West
Latitude	43.068 degrees North
Elevation	0 feet
Date/Time	Mon, 13 Dec 2021 08:39:25 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min
1yr	0.26	0.40	0.50	0.65	0.81	1.04
2yr	0.32	0.50	0.62	0.81	1.02	1.30
5yr	0.37	0.58	0.73	0.97	1.25	1.61
10yr	0.41	0.65	0.82	1.11	1.45	1.89
25yr	0.48	0.76	0.97	1.33	1.77	2.33
50yr	0.53	0.86	1.10	1.53	2.07	2.75
100yr	0.59	0.96	1.24	1.77	2.41	3.25
200yr	0.67	1.10	1.42	2.04	2.82	3.83
500yr	0.80	1.31	1.71	2.48	3.47	4.75

	1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.70	0.98	1.21	1.56	2.03	2.66	2.92
2yr	0.88	1.18	1.52	1.94	2.49	3.21	3.57
5yr	1.08	1.47	1.89	2.43	3.14	4.07	4.58
10yr	1.25	1.72	2.23	2.89	3.75	4.87	5.53
25yr	1.53	2.14	2.77	3.63	4.74	6.17	7.10
50yr	1.78	2.52	3.28	4.32	5.66	7.39	8.58
100yr	2.08	2.97	3.90	5.15	6.77	8.85	10.38
200yr	2.43	3.51	4.61	6.12	8.08	10.61	12.55
500yr	2.99	4.37	5.75	7.69	10.21	13.49	16.15

	1day	2day	4day	7day	10day	
1yr	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	4.31	5.32	6.08	7.11	7.98	**10yr**
25yr	5.46	6.83	7.80	9.02	10.05	**25yr**
50yr	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	7.84	9.98	11.38	12.96	14.28	**100yr**
200yr	9.39	12.07	13.75	15.55	17.03	**200yr**
500yr	11.93	15.53	17.67	19.78	21.50	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min
1yr	0.23	0.36	0.44	0.59	0.73	0.88
2yr	0.31	0.49	0.60	0.81	1.00	1.19
5yr	0.35	0.54	0.67	0.92	1.17	1.40
10yr	0.39	0.59	0.73	1.03	1.32	1.60
25yr	0.44	0.67	0.83	1.19	1.56	1.90
50yr	0.48	0.73	0.91	1.31	1.77	2.17
100yr	0.54	0.81	1.01	1.47	2.01	2.47
200yr	0.59	0.89	1.13	1.63	2.28	2.82
500yr	0.69	1.02	1.31	1.91	2.71	3.37

	1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.63	0.86	0.92	1.33	1.68	2.23	2.50
2yr	0.86	1.16	1.37	1.82	2.34	3.06	3.45
5yr	1.01	1.37	1.61	2.12	2.73	3.79	4.19
10yr	1.14	1.56	1.81	2.39	3.06	4.37	4.87
25yr	1.35	1.86	2.10	2.76	3.54	4.71	5.90
50yr	1.52	2.12	2.35	3.08	3.94	5.32	6.82
100yr	1.74	2.41	2.63	3.42	4.36	5.98	7.87
200yr	1.97	2.75	2.93	3.79	4.80	6.70	9.09
500yr	2.34	3.29	3.41	4.33	5.47	7.79	10.98

	1day	2day	4day	7day	10day	
1yr	1.98	2.40	2.86	3.17	3.89	**1yr**
2yr	2.71	3.32	3.82	4.55	5.08	**2yr**
5yr	3.35	4.03	4.72	5.54	6.24	**5yr**
10yr	3.87	4.68	5.45	6.42	7.20	**10yr**
25yr	4.17	5.68	6.66	7.80	8.69	**25yr**
50yr	4.71	6.56	7.74	9.06	10.03	**50yr**
100yr	5.29	7.57	9.00	10.53	11.58	**100yr**
200yr	5.93	8.74	10.46	12.25	13.39	**200yr**
500yr	6.89	10.56	12.75	14.99	16.21	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min
1yr	0.28	0.44	0.54	0.72	0.89	1.08
2yr	0.34	0.52	0.64	0.86	1.07	1.27
5yr	0.40	0.62	0.76	1.05	1.34	1.62
10yr	0.47	0.72	0.89	1.24	1.61	1.97
25yr	0.57	0.87	1.09	1.55	2.04	2.56
50yr	0.67	1.02	1.27	1.82	2.45	3.12
100yr	0.79	1.19	1.49	2.15	2.95	3.80
200yr	0.92	1.39	1.76	2.54	3.55	4.64
500yr	1.14	1.70	2.19	3.18	4.52	6.02

	1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.77	1.06	1.26	1.74	2.21	2.99	3.16
2yr	0.92	1.24	1.48	1.96	2.51	3.43	3.70
5yr	1.15	1.58	1.88	2.53	3.25	4.34	4.96
10yr	1.39	1.93	2.28	3.10	3.95	5.34	6.19
25yr	1.76	2.51	2.95	4.07	5.14	7.79	8.33
50yr	2.12	3.05	3.59	4.99	6.30	9.76	10.44
100yr	2.55	3.72	4.37	6.15	7.74	12.22	13.07
200yr	3.06	4.54	5.33	7.57	9.50	15.33	16.40
500yr	3.90	5.88	6.91	10.00	12.50	20.72	22.13

	1day	2day	4day	7day	10day	
1yr	2.64	3.04	3.58	4.38	5.05	**1yr**
2yr	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	3.84	4.77	5.38	6.37	7.15	**5yr**
10yr	4.72	5.96	6.81	7.83	8.74	**10yr**
25yr	6.90	8.01	9.13	10.33	11.40	**25yr**
50yr	8.64	10.03	11.41	12.71	13.95	**50yr**
100yr	10.81	12.57	14.25	15.67	17.07	**100yr**
200yr	13.57	15.77	17.84	19.31	20.90	**200yr**
500yr	18.34	21.28	24.00	25.46	27.31	**500yr**

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Northeast Regional Climate Center

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

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Design: JAC	Draft: AJB	Date: 11/11/20	
Checked: JAC	Scale: AS NOTED	Project No.: 20686	
Drawing Name: 20686-PLAN.dwg			

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STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
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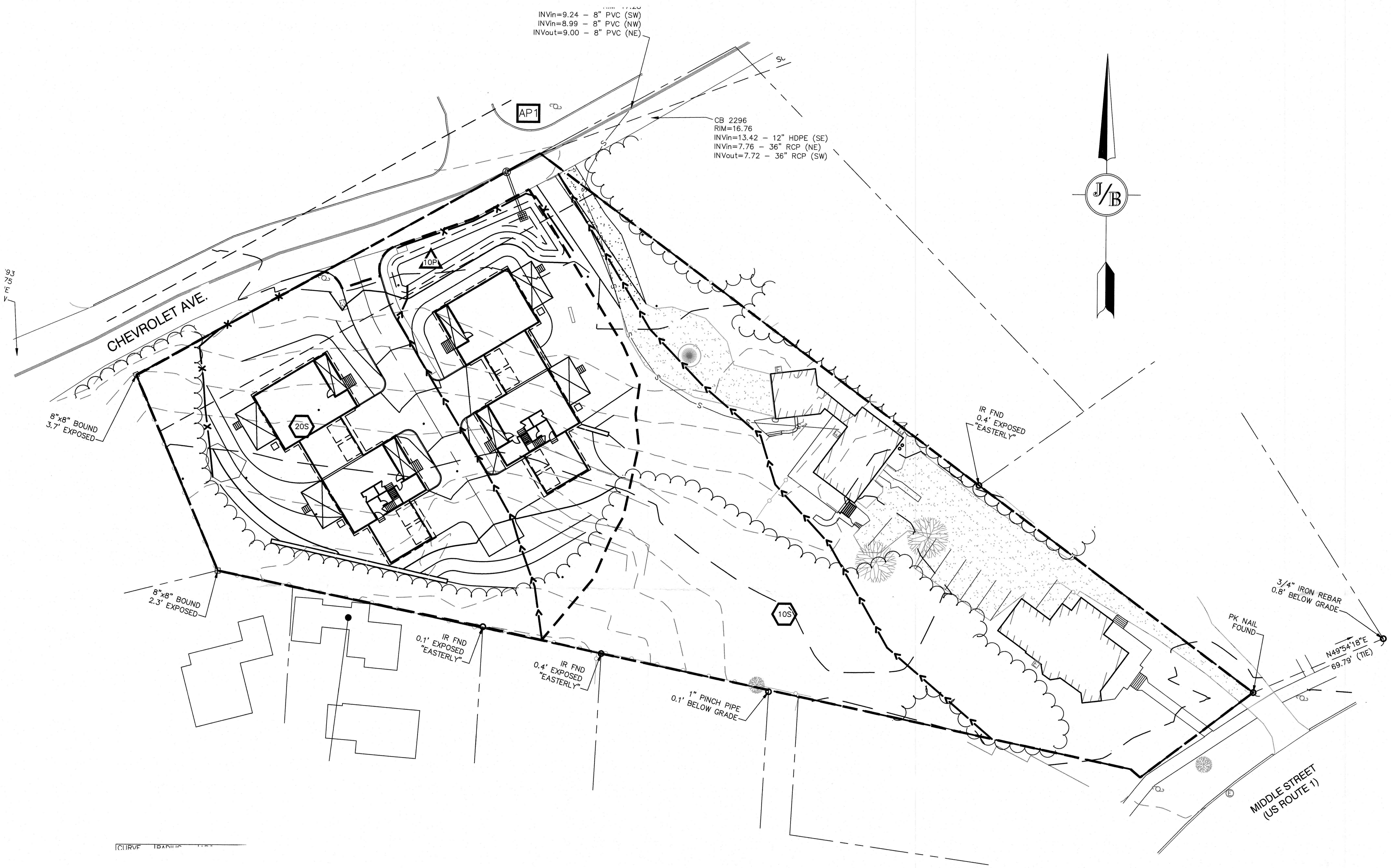
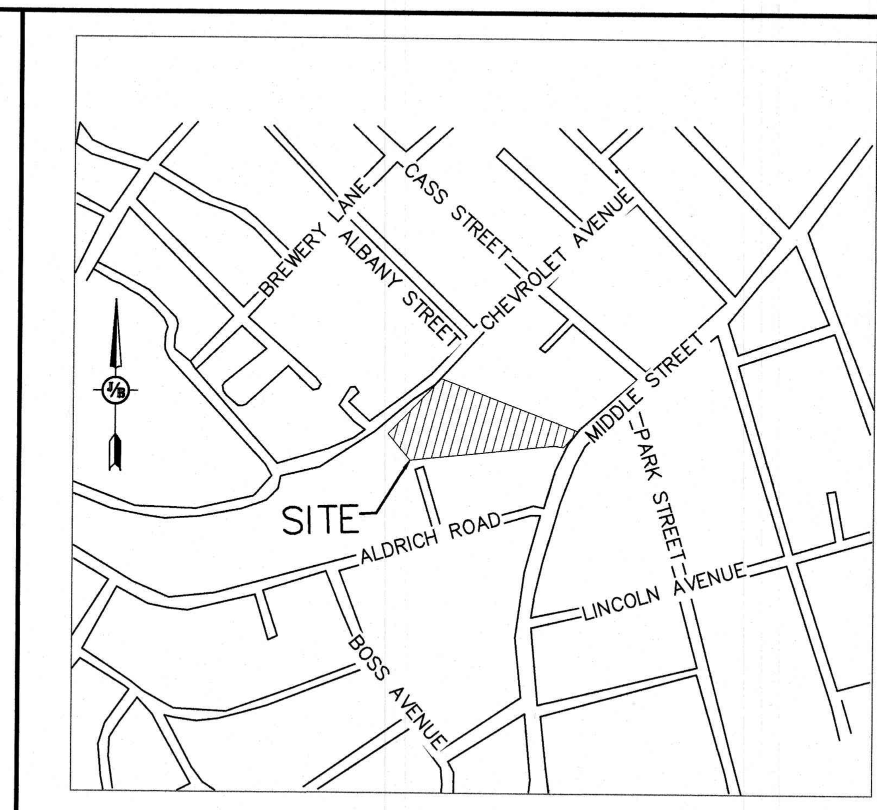
Plan Name: **EXISTING WATERSHED PLAN**
Project: 668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 20686





LOCUS SCALE: 1"=500'

LEGEND

SUBCATCHMENT BOUNDARY

SUBCATCHMENT

REACH

POND

TC PATH

WETLANDS

HISS SOILS

FLOW ARROW

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9846
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

Designed and Produced in NH
J/B 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:	PROPOSED WATERSHED PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

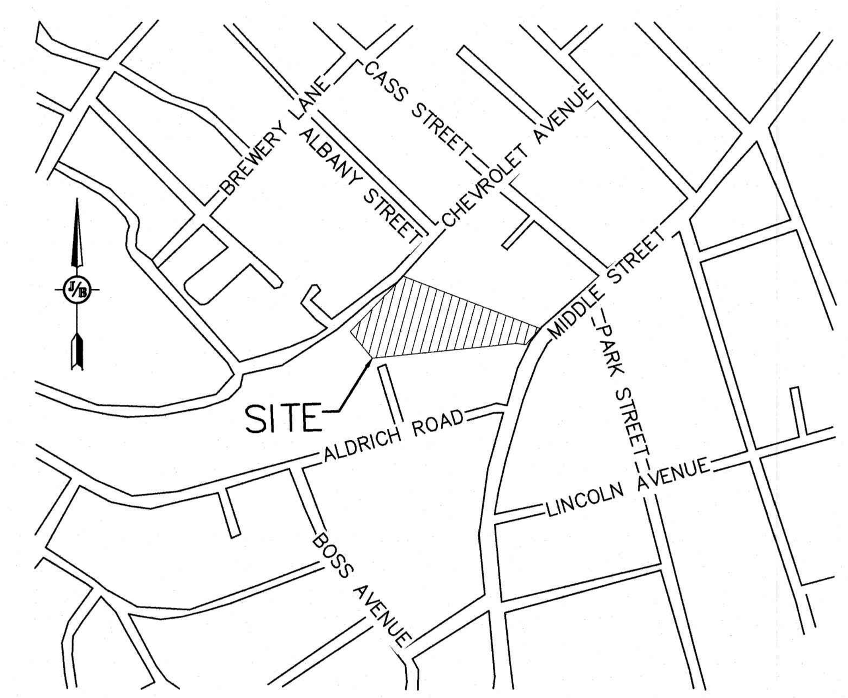
DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 20686

SITE & SUBDIVISION PLAN
"CHEVROLET AVENUE DUPLEXES"
TAX MAP 147 LOT 18
668 MIDDLE STREET, PORTSMOUTH NEW HAMPSHIRE

GENERAL LEGEND

EXISTING | PROPOSED | DESCRIPTION

- PROPERTY LINES
- SETBACK LINES
- CENTERLINE
- FRESHWATER WETLANDS LINE
- TIDAL WETLANDS LINE
- STREAM CHANNEL
- TREE LINE
- STONEWALL
- BARBED WIRE
- FENCE
- STOCKADE FENCE
- SOIL BOUNDARY
- AQUIFER PROTECTION LINE
- FLOOD PLAIN LINE
- ZONELINE
- EASEMENT
- MAJOR CONTOUR (100)
- MINOR CONTOUR (98)
- EDGE OF PAVEMENT
- VERTICAL GRANITE CURB (VGC)
- SLOPE GRANITE CURB (SGC)
- CAPE COD BERM (CCB)
- POURED CONCRETE CURB (PCC)
- SILT FENCE (X)
- DRAINAGE LINE (D)
- SEWER LINE (S)
- SEWER FORCE MAIN (FM)
- GAS LINE (G)
- WATER LINE (W)
- WATER SERVICE (WS)
- OVERHEAD ELECTRIC (OHE)
- UNDERGROUND ELECTRIC (UGE)
- GUARDRAIL
- UNDERDRAIN (UD)
- FIRE PROTECTION LINE (F)
- THRUST BLOCK
- IRON PIPE/IRON ROD
- DRILL HOLE
- IRON ROD/DRILL HOLE
- STONE/GRANITE BOUND
- SPOT GRADE (100x0)
- PAVEMENT SPOT GRADE (100.00)
- CURB SPOT GRADE (100.00 / 99.50)
- BENCHMARK (TBM)
- DOUBLE POST SIGN
- SINGLE POST SIGN
- TEST PIT
- 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/STRAIGHT HEADWALL
- STONE CHECK DAM
- DRAINAGE FLOW DIRECTION
- RIPRAP
- STABILIZED CONSTRUCTION ENTRANCE
- CONCRETE
- GRAVEL
- SNOW STORAGE
- RETAINING WALL



LOCUS MAP
SCALE 1" = 500'

SHEET INDEX

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: JOSEPH CORONATI
EMAIL: JCORONATI@JONESANDBEACH.COM

LIGHTING CONSULTANT
CHARRON, INC.
P.O BOX 4550
MANCHESTER, NH 03108
(603) 945-3500
CONTACT: KEN SWEENEY
EMAIL: KSWEENEY@CHARRONINC.COM

LANDSCAPE DESIGNER
LM LAND DESIGN, LLC
11 SOUTH ROAD
BRENTWOOD, NH 03833
(603) 770-7728
CONTACT: LISE MCNAUGHTON

SOILS CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DRIVE, UNIT H
PO BOX 219
EXETER, NH 03833
(603) 778-0644
CONTACT: JIM GOVE, CWS, CSS
JGOVE@GESINC.BIZ

ARCHITECT
ART FORM ARCHITECURE INC.
44 LAFAYETTE ROAD
NORTH HAMPTON, NH 03862
CONTACT: WENDY WELTON
(603) 431-9559

WATER
CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: RAYMOND PEZZULLO
(603) 427-1530

SEWER
CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: TERRY DESMARAIS, P.E.
(603) 766-1421

NATURAL GAS
UNITIL SERVICE CORP.
114 DRINKWATER ROAD
KENSINGTON, NH 03833-5602
(603) 777-5512

ELECTRIC
EVERSOURCE
74 OLD DOVER ROAD
ROCHESTER, NH 03867
(800) 555-5334

TELEPHONE
FAIRPOINT 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

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9646
LICENSED
PROFESSIONAL ENGINEER
12/21/21

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
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1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

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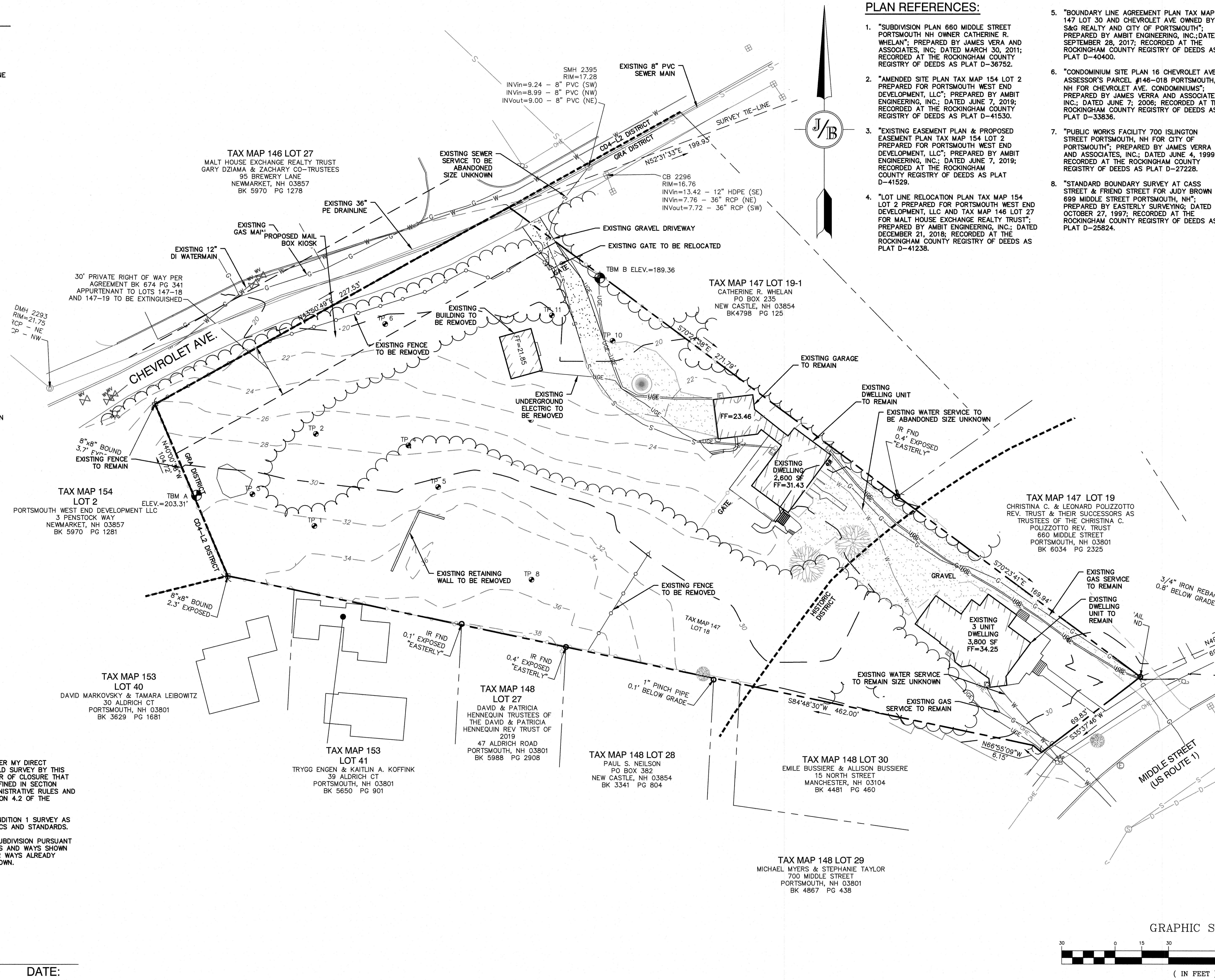
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
CS
SHEET 1 OF 14
JBE PROJECT NO. 20686

GENERAL LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINES
	SETBACK LINES
	CENTERLINE
	FRESHWATER WETLANDS LINE
	TREE LINE
	STONEWALL
	BARBED WIRE
	FENCE
	STOCKADE FENCE
	FLOOD PLAIN LINE
	ZONELINE
	EASEMENT
100	MAJOR CONTOUR
98	MINOR CONTOUR
	EDGE OF PAVEMENT
D	DRAINAGE LINE
S	SEWER LINE
G	GAS LINE
W	WATER LINE
OHE	OVERHEAD ELECTRIC
UGE	UNDERGROUND ELECTRIC
	GUARDRAIL
	IRON PIPE/IRON ROD
	DRILL HOLE
	IRON ROD/DRILL HOLE
	STONE/GRANITE BOUND
	BENCHMARK (TBM)
	DOUBLE POST SIGN
	SINGLE POST SIGN
	WELL
	TREES AND BUSHES
	UTILITY POLE
	LIGHT POLES
	DRAIN MANHOLE
	SEWER MANHOLE
	HYDRANT
	WATER GATE
	WATER SHUT OFF
	REDUCER
	SINGLE GRATE CATCH BASIN
	CONCRETE
	GRAVEL



PLAN REFERENCES:

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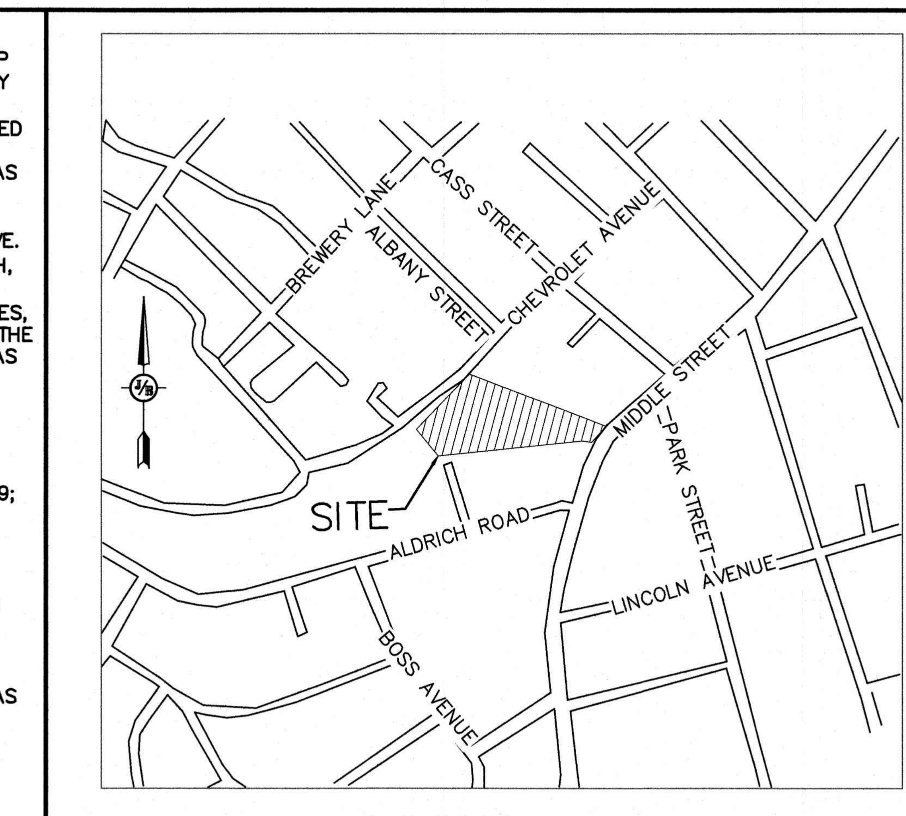
3. "EXISTING EASEMENT PLAN & PROPOSED EASEMENT PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC"; PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41529.
4. "LOT LINE RELOCATION PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC AND TAX MAP 146 LOT 27 FOR MALT HOUSE EXCHANGE REALTY TRUST"; PREPARED BY AMBIT ENGINEERING, INC.; DATED DECEMBER 21, 2018; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41238.
5. "BOUNDARY LINE AGREEMENT PLAN TAX MAP 147 LOT 30 AND CHEVROLET AVE OWNED BY S&G REALTY AND CITY OF PORTSMOUTH"; PREPARED BY AMBIT ENGINEERING, INC.;DATED SEPTEMBER 28, 2017; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-40400.
6. "CONDOMINIUM SITE PLAN 16 CHEVROLET AVE. ASSESSOR'S PARCEL #146-018 PORTSMOUTH, NH FOR CHEVROLET AVE. CONDOMINIUMS"; PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 7, 2006; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-33836.
7. "PUBLIC WORKS FACILITY 700 ISLINGTON STREET PORTSMOUTH, NH FOR CITY OF PORTSMOUTH"; PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 4, 1999; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-27228.
8. "STANDARD BOUNDARY SURVEY AT CASS STREET & FRIEND STREET FOR JUDY BROWN 699 MIDDLE STREET PORTSMOUTH, NH"; PREPARED BY EASTERLY SURVEYING; DATED OCTOBER 27, 1997; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-25824.



LOCUS SCALE: 1"=500'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF LOT 18 DEPICTED HEREON TAX MAP 147.
2. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
3. THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE X DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 33015C0259F, DATED JANUARY 29, 2021, FOR COMMUNITY PANEL NO. 259 OF 681, IN ROCKINGHAM COUNTY, STATE OF NEW HAMPSHIRE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR COMMUNITY IN WHICH SAID PREMISES IS SITUATED.
4. BASIS OF BEARING: HORIZONTAL: STATE PLAN VERTICAL: NAVD88
5. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
6. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
8. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSOR'S OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
9. 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.
10. 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.
11. NO WETLANDS WERE OBSERVED ON THE SUBJECT PREMISES.
12. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 150,000.
13. 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.
14. HOUSE LOCATIONS OF ABUTTING PROPERTIES ARE FROM AERIAL PHOTOGRAPHY AND DIGITIZED ON PLAT. BUILDINGS WERE LOCATED ON SUBJECT PARCEL BY CONVENTIONAL SURVEYING METHODS.
15. RIGHT OF WAY WENT FROM A 50' IN WIDTH (SEE DEED BK. 512 PG. 429) TO 30' RIGHT OF WAY (SEE DEED BK. 674, PG. 341).
16. EXISTING 20' WIDE GAS EASEMENT ON SUBJECT PARCEL SEE DEED BK 4470 PG 2003. LOCATION OF EASEMENT UNDETERMINED AT THIS TIME. EASEMENT SHALL FOLLOW THE ROUTE OF PIPELINES 10 FEET ON EACH SIDE EXTENDED TO PROPERTY LINE.

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.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

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.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

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STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER 2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
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2	8/23/21	REVISED FOR PRELIMINARY SUBDIVISION	AJB
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Designed and Produced in NH
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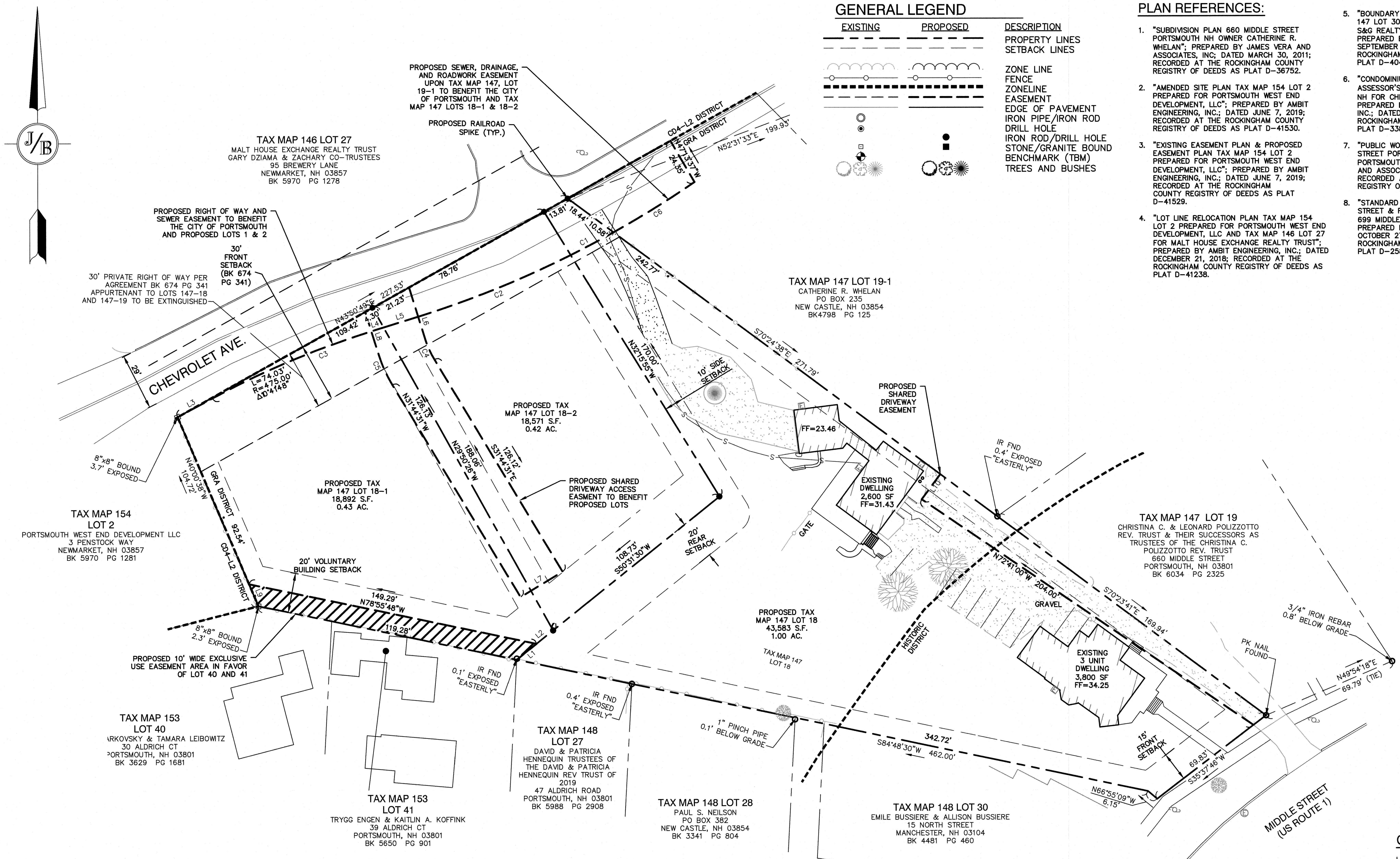
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
C1
SHEET 2 OF 14
JBE PROJECT NO. 20686



GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		ZONE LINE
		FENCE
		ZONELINE
		EASEMENT
		EDGE OF PAVEMENT
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
		BENCHMARK (TBM)
		TREES AND BUSHES

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4. "LOT LINE RELOCATION PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC AND TAX MAP 146 LOT 27 FOR MALT HOUSE EXCHANGE REALTY TRUST"; PREPARED BY AMBIT ENGINEERING, INC.; DATED DECEMBER 21, 2018; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41238.
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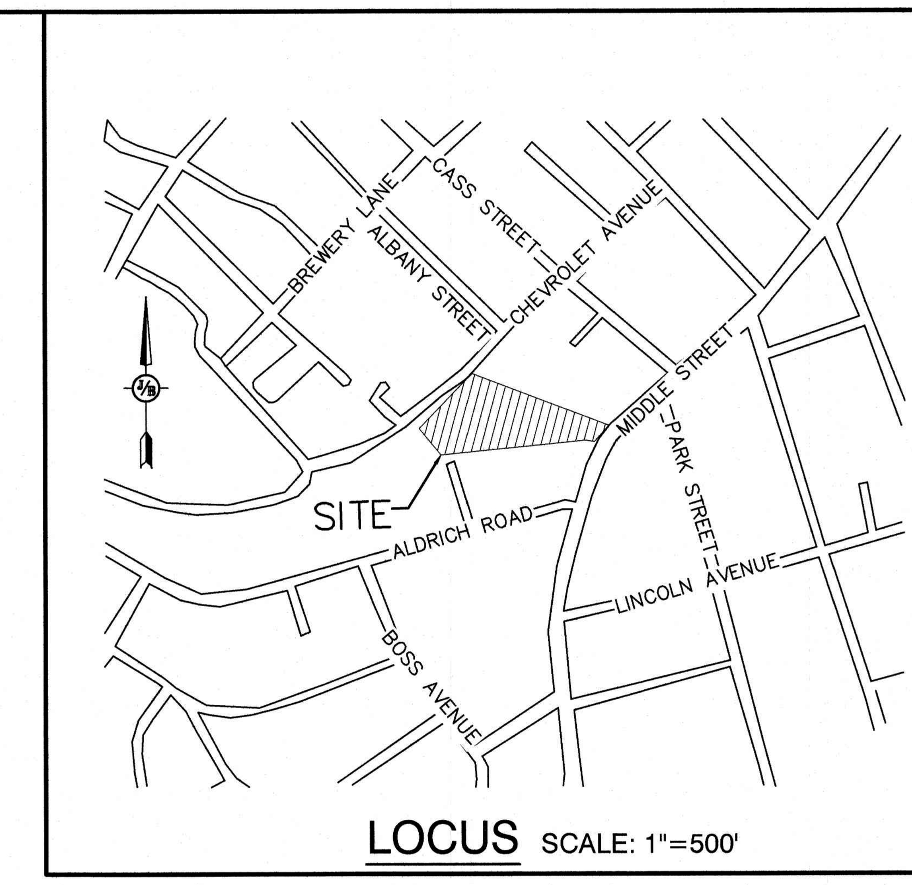
8. "STANDARD BOUNDARY SURVEY AT CASS STREET & FRIEND STREET FOR JUDY BROWN 699 MIDDLE STREET PORTSMOUTH, NH"; PREPARED BY EASTERLY SURVEYING; DATED OCTOBER 27, 1997; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-25824.



LOCUS SCALE: 1"=500'

SUBDIVISION NOTES:

1. THE INTENT OF THIS PLAN IS TO SUBDIVIDE MAP 147, LOT 18 INTO 3 RESIDENTIAL LOTS AND CONVERT THE EXISTING BUILDINGS INTO CONDOMINIUMS WITH CITY WATER AND SEWER.
2. ZONING DISTRICT: GENERAL RESIDENCE A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINIMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   - FRONT SETBACK = 15'
   - SIDE SETBACK = 10'
   - REAR SETBACK = 20'

   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   MIN. OPEN SPACE = 30%
2. GRANTED VARIANCES:
   - SECTION 10.521 – FRONTAGE
   - SECTION 10.512 – ACCESS VIA PRIVATE R.O.W.
3. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
4. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE (ELEVATION 9 NGVD 1929). REFERENCE FEMA COMMUNITY PANEL NO. 33015C0259F, DATED JANUARY 29, 2021.
5. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
6. IRON RODS WITH SURVEY CAPS TO BE SET AT ALL PROPERTY CORNERS AND ANGLE POINTS, UNLESS OTHERWISE INDICATED. ALL MONUMENTS SET ARE 5/8" IRON RODS WITH ALUMINUM CAPS MARKED "JONES & BEACH ENGINEERS BOUNDARY, DO NOT DISTURB, STRATHAM, N.H." AS SHOWN.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS AND ABUTTING OWNERS ARE BASED ON THE TOWN OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSORS OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. 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.
11. 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.
12. PROPOSED LOTS NEED TO OBTAIN DRIVEWAY PERMITS FOR CHEVROLET AVE.

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	525.00'	24.67'	24.67'	N61°29'49"E	2°41'33"
C2	525.00'	82.90'	82.82'	N67°22'05"E	9°02'51"
C3	475.00'	88.68'	88.55'	N66°32'36"E	10°41'48"
C4	47.50'	11.34'	11.31'	S24°54'13"E	13°40'38"
C5	72.50'	17.31'	17.27'	N24°54'13"W	13°40'38"
C6	525.00'	48.48'	48.46'	N41°14'37"E	5°17'25"

LINE	BEARING	DISTANCE
L1	S50°31'30"W	12.95'
L2	S59°09'32"W	34.70'
L3	N61°11'42"E	21.38'
L4	S71°53'30"W	5.73'
L5	N71°53'30"E	19.32'
L6	S18°03'54"E	23.29'
L7	S58°13'52"W	25.00'
L8	N18°03'54"W	23.29'
L9	N23°44'56"W	12.18'
L10	S19°35'22"W	15.93'

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

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.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE No. 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 PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-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.

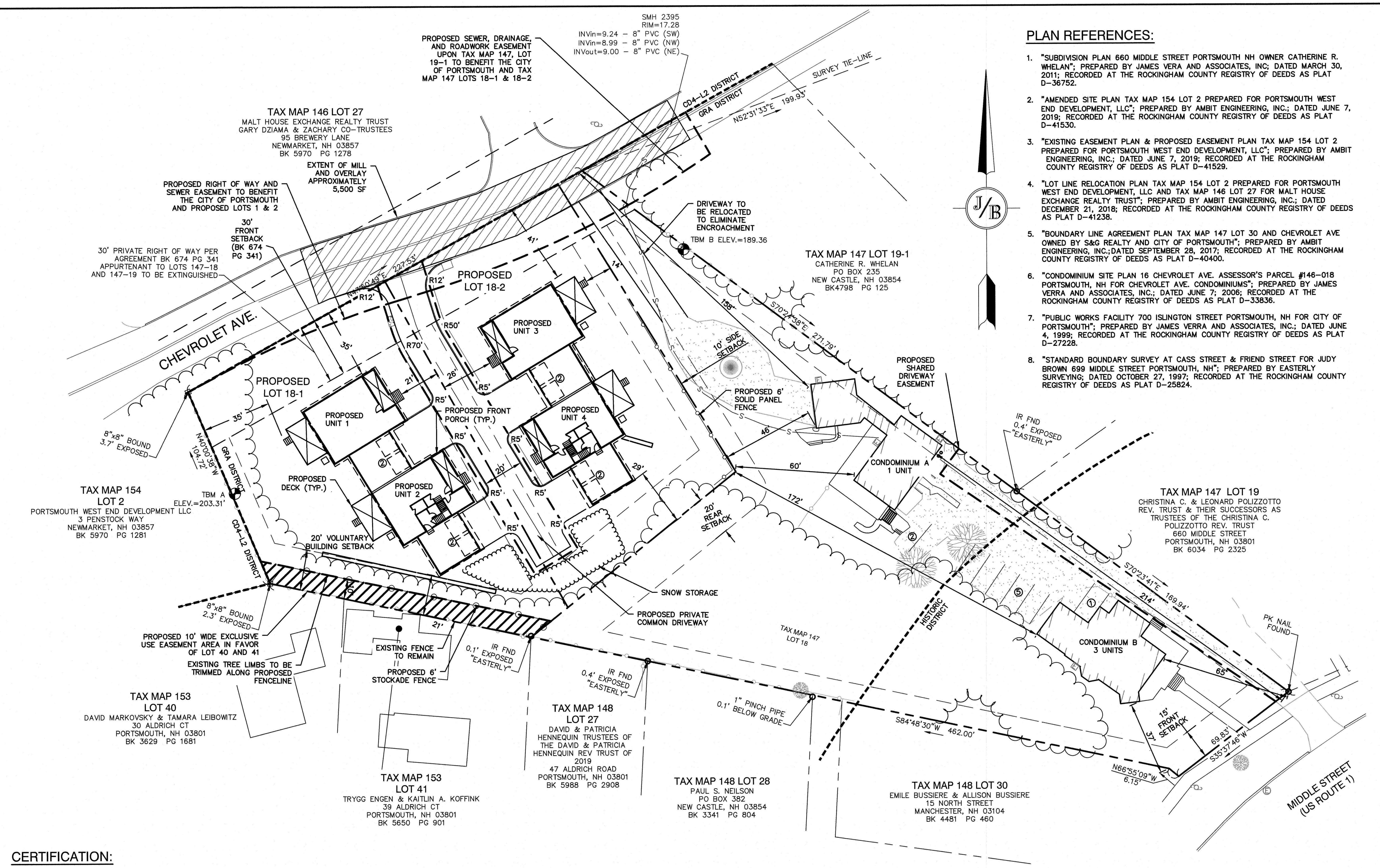
STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	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

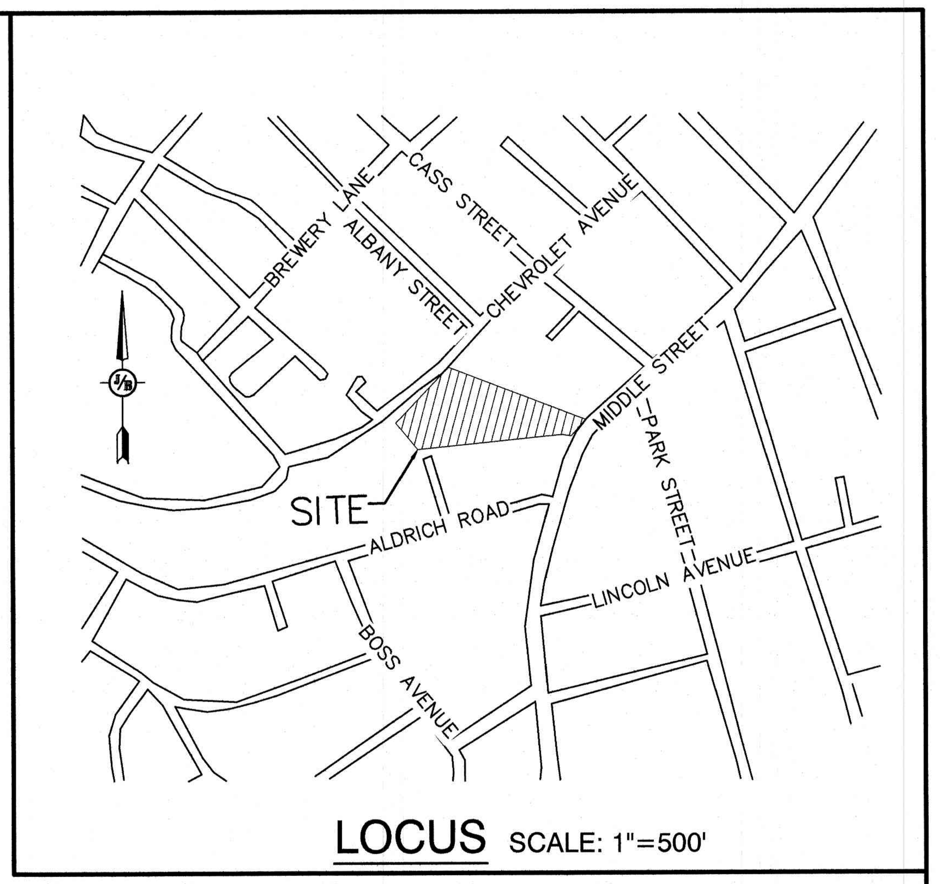
Plan Name: SUBDIVISION & LOT LINE ADJUSTMENT PLAN
Project: 668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
A1
SHEET 3 OF 14
JBE PROJECT NO. 20686



PLAN REFERENCES:

1. "SUBDIVISION PLAN 660 MIDDLE STREET PORTSMOUTH NH OWNER CATHERINE R. WHELAN"; PREPARED BY JAMES VERA AND ASSOCIATES, INC; DATED MARCH 30, 2011; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-36752.
2. "AMENDED SITE PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC"; PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41530.
3. "EXISTING EASEMENT PLAN & PROPOSED EASEMENT PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC"; PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41529.
4. "LOT LINE RELOCATION PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC AND TAX MAP 146 LOT 27 FOR MALT HOUSE EXCHANGE REALTY TRUST"; PREPARED BY AMBIT ENGINEERING, INC.; DATED DECEMBER 21, 2018; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41238.
5. "BOUNDARY LINE AGREEMENT PLAN TAX MAP 147 LOT 30 AND CHEVROLET AVE OWNED BY S&G REALTY AND CITY OF PORTSMOUTH"; PREPARED BY AMBIT ENGINEERING, INC.;DATED SEPTEMBER 28, 2017; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-40400.
6. "CONDOMINIUM SITE PLAN 16 CHEVROLET AVE. ASSESSOR'S PARCEL #146-018 PORTSMOUTH, NH FOR CHEVROLET AVE. CONDOMINIUMS"; PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 7; 2006; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-33836.
7. "PUBLIC WORKS FACILITY 700 ISLINGTON STREET PORTSMOUTH, NH FOR CITY OF PORTSMOUTH"; PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 4, 1999; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-27228.
8. "STANDARD BOUNDARY SURVEY AT CASS STREET & FRIEND STREET FOR JUDY BROWN 699 MIDDLE STREET PORTSMOUTH, NH"; PREPARED BY EASTERLY SURVEYING; DATED OCTOBER 27, 1997; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-25824.



LOCUS SCALE: 1"=500'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED 2 LOT RESIDENTIAL SUBDIVSION WITH FRONTAGE ALONG CHEVROLET AVENUE AND THE PROPOSED DUPLEXES ON THOSE LOTS WITH ASSOCIATED UTILITIES.
2. ZONING DISTRICT: GENERAL RESIDENCE A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   DUPLEX LOTS REQUIRE 15,000 SF,
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINIMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 15'
   SIDE SETBACK = 10'
   REAR SETBACK = 20'
   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   PROPOSED LOT 18-1 = 23.9%
   PROPOSED LOT 18-2 = 24.4%
   PROPOSED MAP 147 LOT 18 = 10.6%
   MIN. OPEN SPACE = 30%
   PROPOSED LOT 18-1 = 50%
   PROPOSED LOT 18-2 = 45%
   PROPOSED MAP 147 LOT 18 = 35%
   SEALED SURFACE: LOT 18-1=7,250 SF
   LOT 18-2=7,250 SF
   DISTRUBANCE: LOT 18-1=15,000 SF
   LOT 18-2=17,750 SF
   REQUIRED PARKING=1.3 SPACES PER UNIT OVER 750 SF
   REQUIRED LOT 18-1 = 3 SPACES, 4 PROVIDED
   REQUIRED LOT 18-2 = 3 SPACES, 4 PROVIDED
   REQUIRED CONDO A = 2 SPACES, 2 PROVIDED
   REQUIRED CONDO B = 4 SPACES, 6 PROVIDED
3. THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE X DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 33015C0259F, WITH EFFECTIVE DATE OF JANUARY 29, 2021, FOR COMMUNITY PANEL NO. 259 OF 681, IN ROCKINGHAM COUNTY, STATE OF NEW HAMPSHIRE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR COMMUNITY IN WHICH SAID PREMISES IS SITUATED.
4. BASIS OF BEARING: HORIZONTAL: STATE PLANE VERTICAL: NAVD88.
5. EACH UNIT SHALL OBTAIN A SEPARATE OCCUPANCY PERMIT FROM THE BUILDING INSPECTOR PRIOR TO BEING SOLD.
6. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
7. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
8. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
9. ALL 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.
10. ALL ARCHITECTURAL BLOCK RETAINING WALLS ARE TO BE DESIGNED AND STAMPED BY THE MANUFACTURER'S STRUCTURAL ENGINEER. CONTRACTOR TO COORDINATE WITH APPROVED MANUFACTURER PRIOR TO INSTALLATION.
11. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
12. DISTURBANCE OF EXISTING ROADWAY SHALL REQURE MILLING AND OVERLAY OF THE FULL ROAD WIDTH TO PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS. DISTURBED SIDEWALK SHALL BE REPAIRED OR REPLACED AS DETERMINED BY PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.
13. SUBJECT TO PORTSMOUTH DEPARTMENT OF PUBLIC WORKS REVIEW AND APPROVAL, TEMPORARY PAVEMENT SHALL BE REQUIRED AT THE TIME OF CONSTRUCTION. SUCH PAVING SHALL BE TO THE EXISTING PAVEMENT DEPTH AND, AFTER A WINTER SEASON THE STREET SHALL RECIEVE A FULL MILL AND OVERLAY.
14. PROPOSED LOTS NEED TO OBTAIN DRIVEWAY PERMITS FOR CHEVROLET AVE.
15. A BLANKET EASEMENT SHALL BE CONVEYED TO THE CITY OF PORTSMOUTH UPON TAX MAP 147, LOTS 18-1 & 18-2 FOR VALVES, LEAK DETECTION, AND METERING.
16. $5,000 PER NEW DWELLING SHALL BE PAID TO THE CITY OF PORTSMOUTH FOR DEVELOPMENT OF SIDEWALKS ON ALBANY STREET/MALT HOUSE DRIVE
17. TRASH SHALL BE KEPT INSIDE OF EACH UNIT'S GARAGE.

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.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 892 DAVID M. COLLIER

SIGNATURE

DAVID M. COLLIER, LLS 892 DATE:

ON BEHALF OF JONES & BEACH ENGINEERS, INC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		PRIVACY FENCE
		PICKET FENCE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
		EDGE OF PAVEMENT
D		DRAINAGE LINE
S	S	SEWER LINE
G		GAS LINE
W		WATER LINE
WS		WATER SERVICE
OHE		OVERHEAD ELECTRIC
UGE		UNDERGROUND ELECTRIC

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

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STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

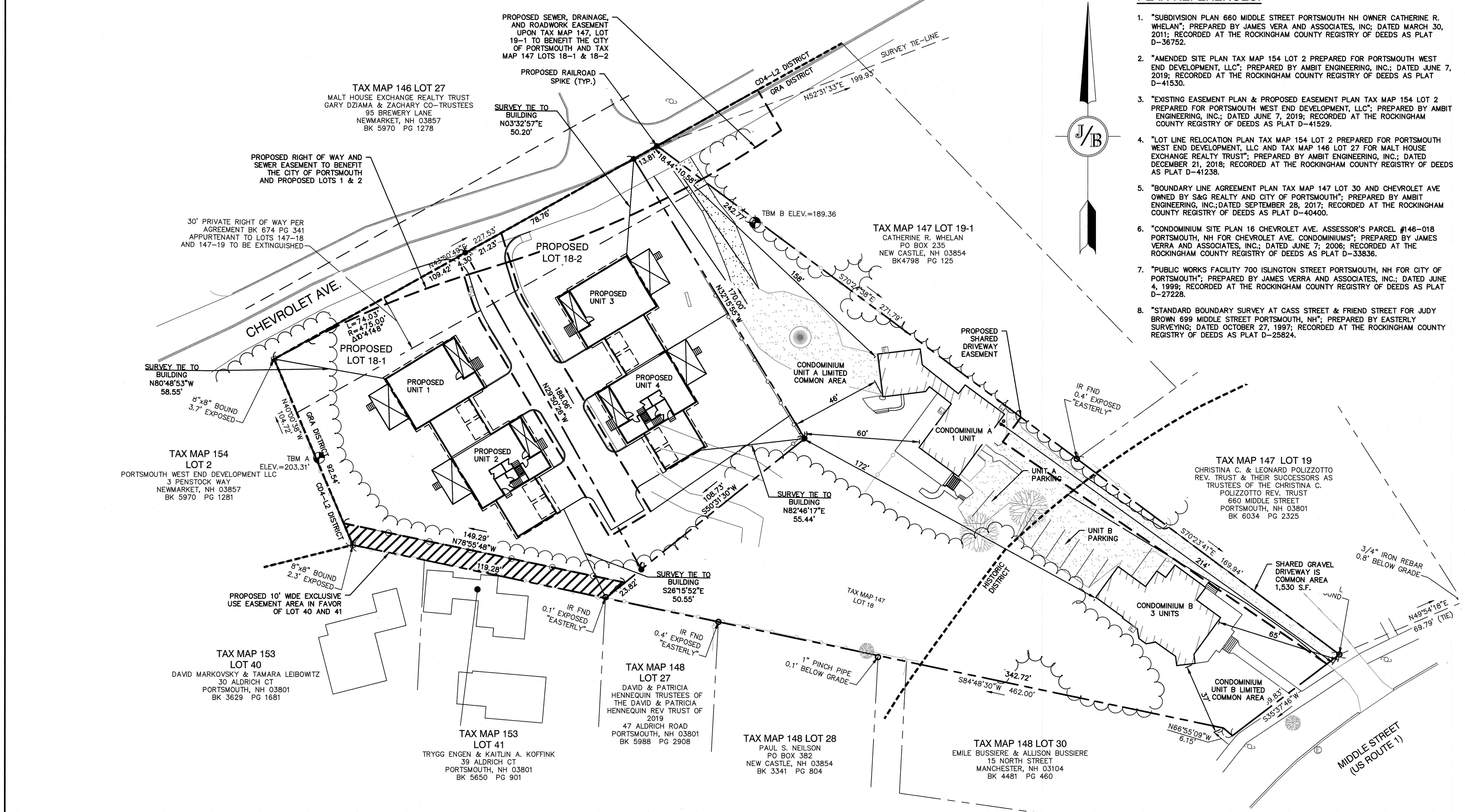
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: SITE PLAN

Project: 668 MIDDLE STREET PORTSMOUTH, NH

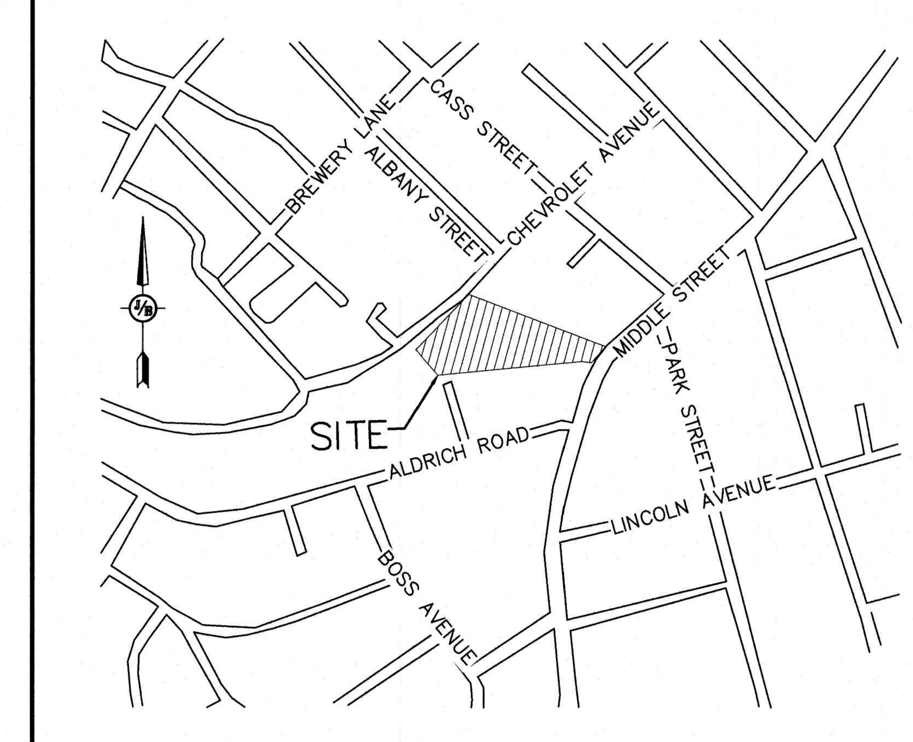
Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
C2
SHEET 4 OF 14
JBE PROJECT NO. 20686



PLAN REFERENCES:

1. "SUBDIVISION PLAN 660 MIDDLE STREET PORTSMOUTH NH OWNER CATHERINE R. WHELAN"; PREPARED BY JAMES VERA AND ASSOCIATES, INC; DATED MARCH 30, 2011; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-36752.
2. "AMENDED SITE PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC"; PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41530.
3. "EXISTING EASEMENT PLAN & PROPOSED EASEMENT PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC"; PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41529.
4. "LOT LINE RELOCATION PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC AND TAX MAP 146 LOT 27 FOR MALT HOUSE EXCHANGE REALTY TRUST"; PREPARED BY AMBIT ENGINEERING, INC.; DATED DECEMBER 21, 2018; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41238.
5. "BOUNDARY LINE AGREEMENT PLAN TAX MAP 147 LOT 30 AND CHEVROLET AVE OWNED BY S&G REALTY AND CITY OF PORTSMOUTH"; PREPARED BY AMBIT ENGINEERING, INC.;DATED SEPTEMBER 28, 2017; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-40400.
6. "CONDOMINIUM SITE PLAN 16 CHEVROLET AVE. ASSESSOR'S PARCEL #146-018 PORTSMOUTH, NH FOR CHEVROLET AVE. CONDOMINIUMS"; PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 7; 2006; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-33836.
7. "PUBLIC WORKS FACILITY 700 ISLINGTON STREET PORTSMOUTH, NH FOR CITY OF PORTSMOUTH"; PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 4, 1999; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-27228.
8. "STANDARD BOUNDARY SURVEY AT CASS STREET & FRIEND STREET FOR JUDY BROWN 699 MIDDLE STREET PORTSMOUTH, NH"; PREPARED BY EASTERLY SURVEYING; DATED OCTOBER 27, 1997; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-25824.



LOCUS SCALE: 1"=500'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDOMINIUM CONVERISON OF THE EXISTING RESIDENCES AT 668 MIDDLE STREET.
2. ZONING DISTRICT: GENERAL RESIDENCE A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINIMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 15'
   SIDE SETBACK = 10'
   REAR SETBACK = 20'
   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   MIN. OPEN SPACE = 30%
3. APPROVED VARIANCES:
   1) SECTION 10.521 REQUIRING 100' FRONTAGE ON A FORMALLY ACCEPTED STREET (PROPOSED TAX MAP 147 LOTS 18-1 & 18-2)
   2) SECTION 10.521 REQUIRING 100' FRONTAGE ON A FORMALLY ACCEPTED STREET (TAX MAP 147 LOT 18)
   3) SECTION 10.512 ALLOW CONSTRUCTION A LOT WITH ACCESS TO A PRIVATE WAY (PROPOSED TAX MAP 147 LOTS 18-1 & 18-2)
4. THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE X DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 33015C0259F, WITH EFFECTIVE DATE OF JANUARY 29, 2021, FOR COMMUNITY PANEL NO. 259 OF 681, IN ROCKINGHAM COUNTY, STATE OF NEW HAMPSHIRE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR COMMUNITY IN WHICH SAID PREMISES IS SITUATED.
5. BASIS OF BEARING: HORIZONTAL: ASSUMED. VERTICAL: ASSUMED AT 200.00'.
6. EACH UNIT SHALL OBTAIN A SEPARATE OCCUPANCY PERMIT FROM THE BUILDING INSPECTOR PRIOR TO BEING SOLD.
7. ALL BOOK AND PAGE NUMBERS REFER TO ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE, NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY.
10. 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.
11. CONDOMINIUM UNIT A IS A SINGLE DWELLING AND CONDOMINIUM UNIT B IS AN EXISTING 3 UNIT DWELLING THAT WILL BE CONVERTED TO 3 CONDOMINIUM UNITS.
12. NEW PROPOSED CONDOMINIUM UNITS 1-4 SHALL HAVE CHEVROLET AVE. STREET ADDRESSES; EXISTING BUILDINGS TO BE CONVERTED INTO CONDOMINIUM UNITS A & B SHALL HAVE MIDDLE STREET ADDRESSES.
13. EACH OF CONDOMINIUM UNITS 1-4 SHALL BE A SINGLE 4-BEDROOM UNIT.
14. PROPOSED COMMON DRIVE RIGHT OF WAY SHALL REMAIN A PRIVATE RIGHT OF WAY.

TAX MAP 148 LOT 29
MICHAEL MYERS & STEPHANIE TAYLOR
700 MIDDLE STREET
PORTSMOUTH, NH 03801
BK 4867 PG 438

CONDOMINIUM SITE PLAN CERTIFICATION:

I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMPROVEMENTS SHOWN THEREON AND TO THE EXTENT FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, AND THAT THE UNITS 1-4 DEPICTED HEREON ARE HAVE NOT YET BEGUN. THE UNITS A AND B DEPICTED HEREON ARE HAVE BEEN SUBSTANTIALLY COMPLETE. THIS PLAN COMPLIES WITH NH RSA 356-B20 (I).

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.

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.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20	
Checked: JAC	Scale: AS NOTED	Project No.: 20686	
Drawing Name: 20686-PLAN.dwg			

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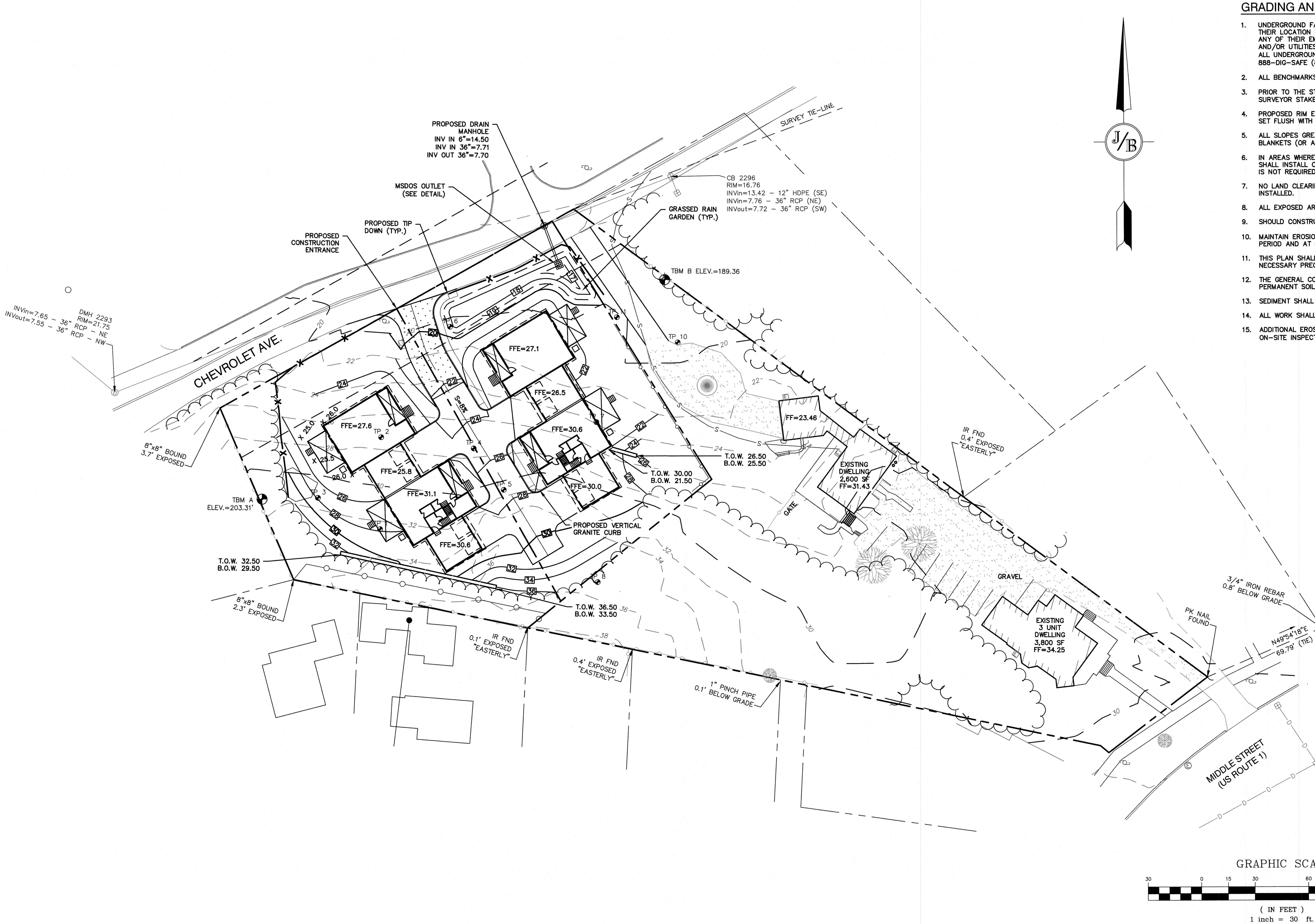
STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER 12/21/22

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	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:	CONDOMINIUM SITE PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
CS1
SHEET 5 OF 14
JBE PROJECT NO. 20686



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. 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.
4. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
5. ALL SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
6. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
7. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
8. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
9. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
10. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.25" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
11. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
12. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
13. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
14. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
15. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9848
LICENSED
PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

Designed and Produced in NH
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Civil Engineering Services
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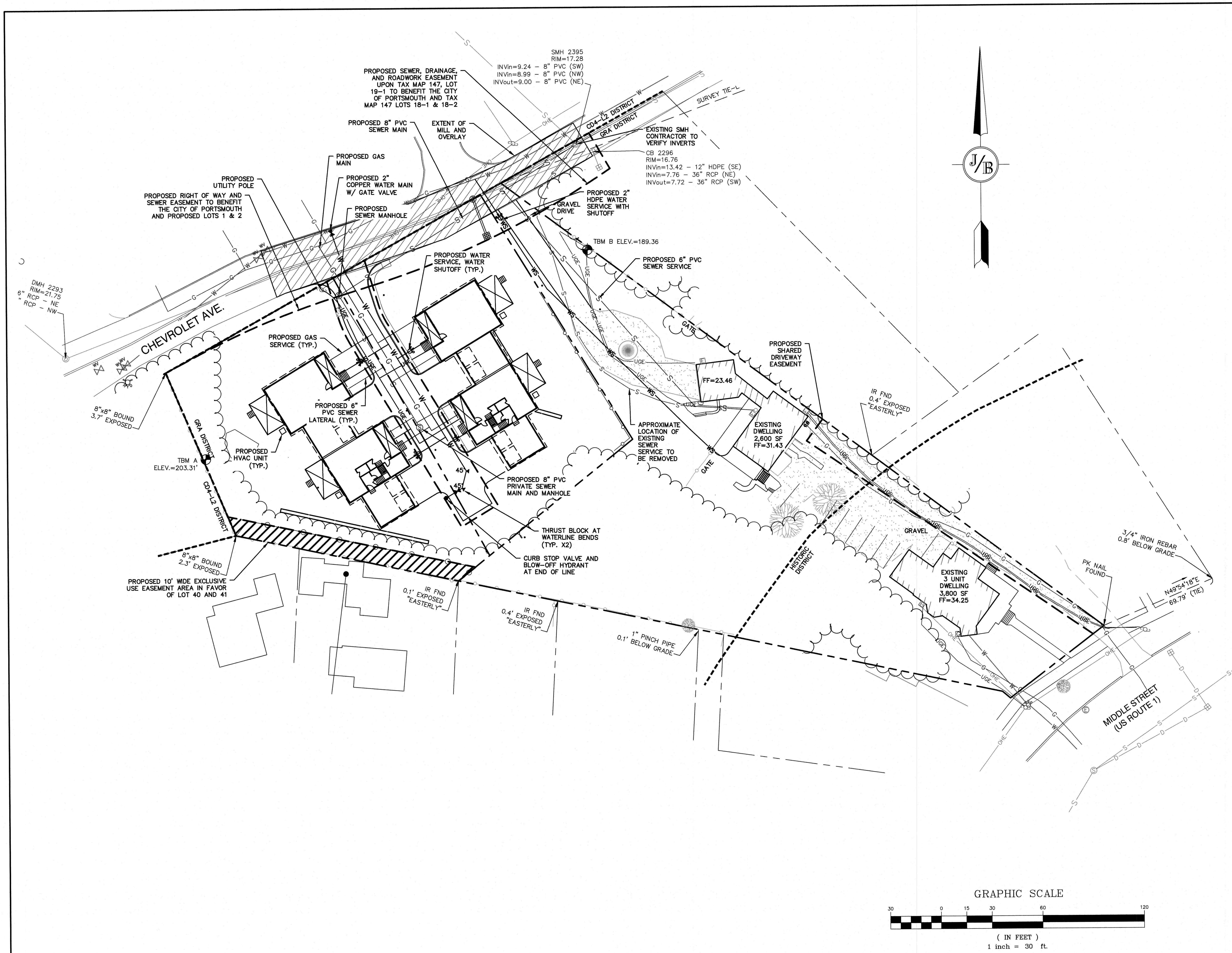
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
C3
SHEET 6 OF 14
JBE PROJECT NO. 20686



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 TOWN 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. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
13. SANITARY SEWER FLOW CALCULATIONS:
    4 - FOUR BEDROOM UNITS @ 150 GPD/BEDROOM
    TOTAL FLOW = 2,400 GPD
14. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
15. 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.
16. ALL WATER SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
17. 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.
18. 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.
19. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
20. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
21. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
22. 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.
23. ENV-WQ 704.06 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.
24. 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.
25. 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.
26. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. PROVIDE TWO-INCHES OF R-10 FOAM BOARD INSULATION 2-FOOT WIDE TO BE INSTALLED 6-INCHES OVER SEWER PIPE IN AREAS WHERE 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.
27. 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.
28. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
29. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9846
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

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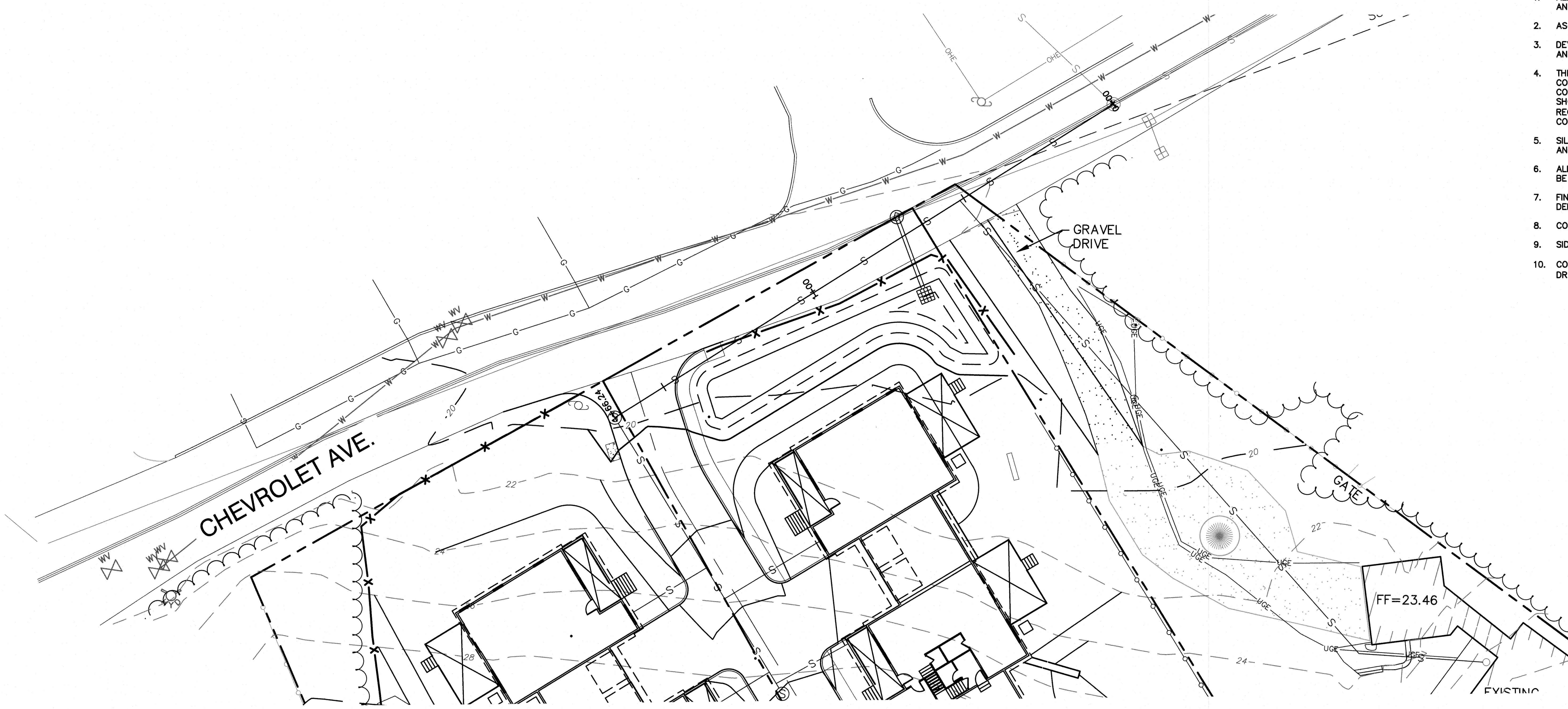
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

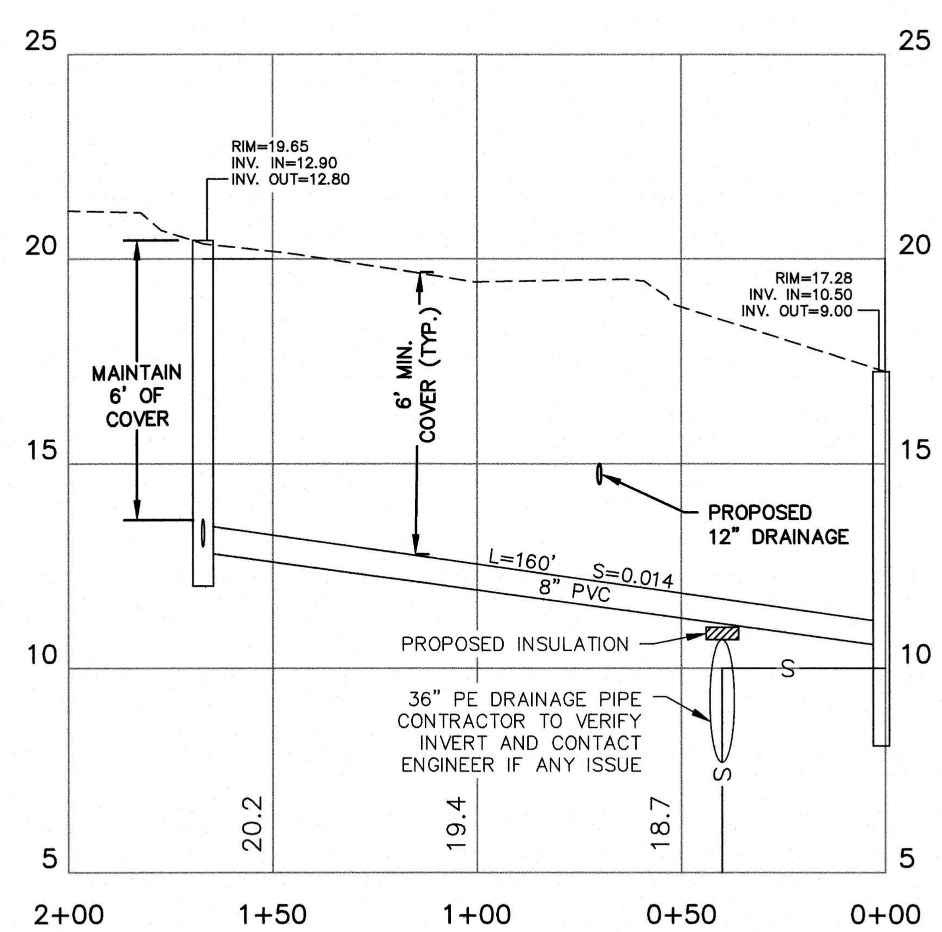
DRAWING No.
C4
SHEET 7 OF 14
JBE PROJECT NO. 20686

NOTES:

1. ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE TOWN, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
2. AS-BUILT PLANS TO BE SUBMITTED TO THE TOWN PRIOR TO ACCEPTANCE OF THE ROADWAY.
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. 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.
5. 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.
6. ALL DISTURBED AREAS NOT STABILIZED BY NOVEMBER 1st SHALL BE COVERED WITH AN EROSION CONTROL BLANKET. PRODUCT TO BE SPECIFIED BY THE ENGINEER.
7. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
8. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
9. SIDEWALK TO BE INSTALLED AT TIME OF TOP COURSE PAVING ALONG WITH DRIVEWAY APRONS.
10. CONTRACTOR MUST HAVE A VALID PIPE INSTALLER'S LICENSE FROM THE PUBLIC WORKS DEPARTMENT BEFORE WORKING ON ANY DRAINAGE AND/OR UTILITY CONSTRUCTION.



GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft Horiz.
1 inch = 5 ft Vert.

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
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0	1/26/21	ISSUED FOR REVIEW	LAZ

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Civil Engineering Services
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E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: SEWER PLAN AND PROFILE

Project: 668 MIDDLE STREET PORTSMOUTH, NH

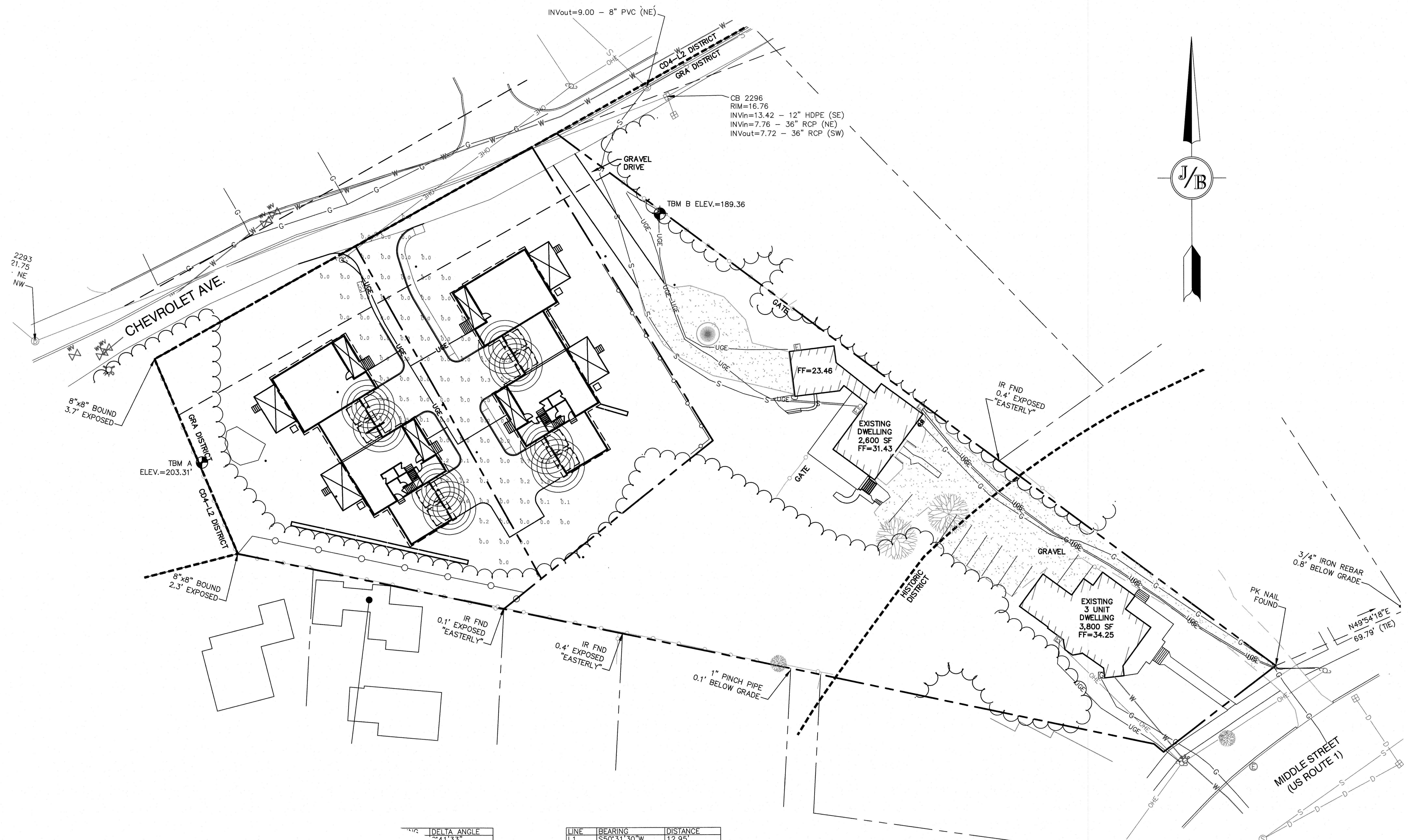
Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No. P1

SHEET 8 OF 14
JBE PROJECT NO. 20686

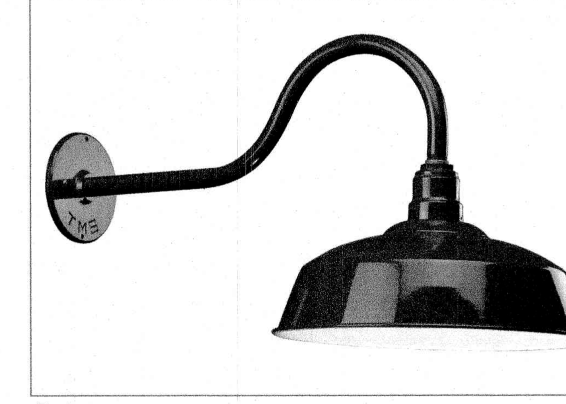
LIGHTING AND ELECTRICAL NOTES:

1. SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
2. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
3. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
4. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
5. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
6. 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).
7. 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.



Calvin Wall

TMSLIGHTING
ESTABLISHED 1923



Features

- Provides excellent coverage and uniformity with cut-off
- Practical and aesthetic options for application and design flexibility
- Weatherproof construction to withstand the elements
- Quality components combined with the most current technology for high efficiency and reduced lighting costs

Applications

The Calvin wall-mount luminaire is ideal for illuminating areas where localized distribution is necessary, such as doorways and entrances, laneways, patios and could provide adequate night time security lighting. It lends itself to commercial, and industrial applications that could benefit from materials and maintenance cost reductions. Calvin could either augment the existing lighting, or illuminate a small to medium-sized area.

Calvin is also available as a pendant-style model.

Construction

High grade spun aluminum, brushed solid copper, or brushed 316L stainless steel reflector, with stainless steel mounting hardware, for indoor and outdoor applications.

Lamp

Operates with Cree™ LED (19W max.), compact fluorescent (42W max.), metal halide (100W max.), or incandescent (150W max.). Specify 3000K, 3500K or 4000K CCT for LED systems. A dimmable, screw-type, 17W LED lamp is also available (PAR 38, E26 base, 120V, 4000K CCT).

Note: LED systems are available with 120-277V supply voltage only.

LED modules do not require a socket, and are wired directly to the integral driver.

Incandescent and metal halide systems, and those using the 17W LED PAR 38 lamp, use a medium base socket (E26).

Diffuser

Globe: clear and prismatic, elongated, glass globes are available.

Lens: the clear, flat lens provides slight diffusion, and protects any components located in the reflector.

Note: G3 is used with 100IN, 32CF, and 15LED max.

Only prismatic globes are compatible with LED systems.

Globes are not available with the 17W LED PAR 38 lamps.

Option

Wire Guard: a steel, chrome-plated wire guard is available for lamp protection against light projectiles, wildlife, and serves as a vandal deterrent.

Ballast/LED Driver

Ballasts are efficient with a high power factor greater than 90%, and quiet with an "A" sound rating.

The LED source is controlled by an advanced electronic driver that delivers consistent power.

Ballast and LED drivers are electronic, and available for integral and remote mounting, indoor or outdoor.

CE IP23

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-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. KEENAN
No. 9846
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
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1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

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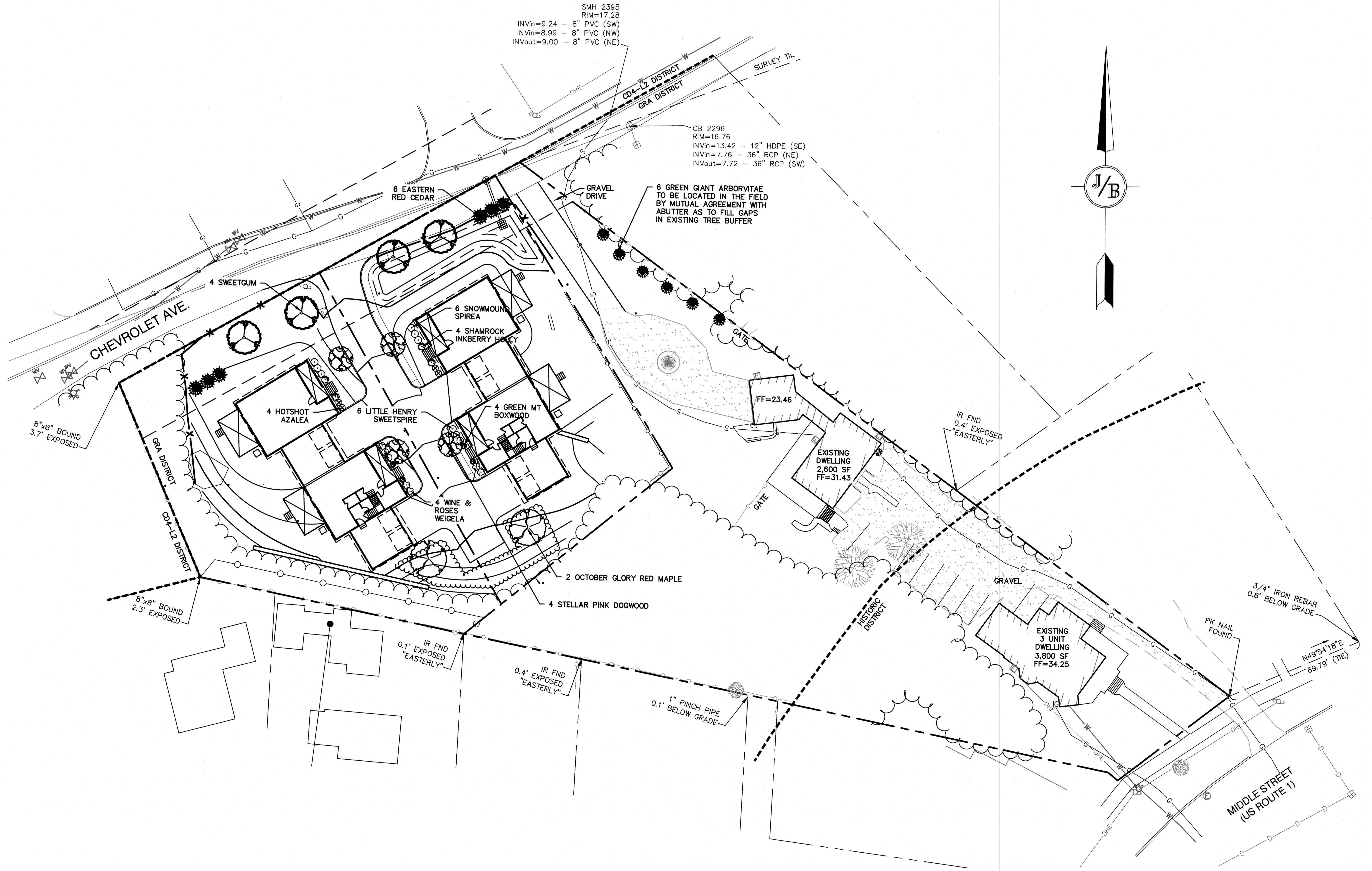
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LIGHTING PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
L1
SHEET 9 OF 14
JBE PROJECT NO. 20686



LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. 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.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
15. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
16. 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.
17. ALL LANDSCAPING SHALL MEET THE TOWN STANDARDS AND REGULATIONS.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. 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.
20. 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.
21. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.

Plants			
Quantity	Botanical Name	Common Name	Size
2	Acer rubrum 'October Glory'	OCTOBER GLORY RED MAPLE	3" Caliper
4	Azalea 'Girards Hotshot'	HOTSHOT AZALEA	3 Gallon
4	Buxus 'Green Mountain'	GREEN MT BOXWOOD	5 Gallon
4	Cornus kousa X C. florida 'Stellar Pink'	STELLAR PINK DOGWOOD	2.5" Caliper
4	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 Gallon
6	Itea virginica 'Sprich Little Henry'	LITTLE HENRY SWEETSPIRE	3 Gallon
6	Juniperus virginiana	EASTER RED CEDAR	6-7 Ft. Ht.
6	Thuja plicata 'Green Gaint'	GREEN GIANT ARBORVITAE	10-12 Ft. Ht.
6	Spiraea nipponica 'Snowmound'	SNOWMOUND SPIREA	3 Gallon
4	Liquidambar styraciflua	SWEETGUM	3" Caliper
4	Weigela florida 'Alexandra'	WINE & ROSES WEIGELA	3 Gallon

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 147, LOT 18

APPLICANT
TUCK REALTY CORPORATION
PO BOX 190
EXETER, NH 03833

TOTAL LOT AREA
81,046 SQ. FT.
1.86 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-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. 9846
LICENSED
PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

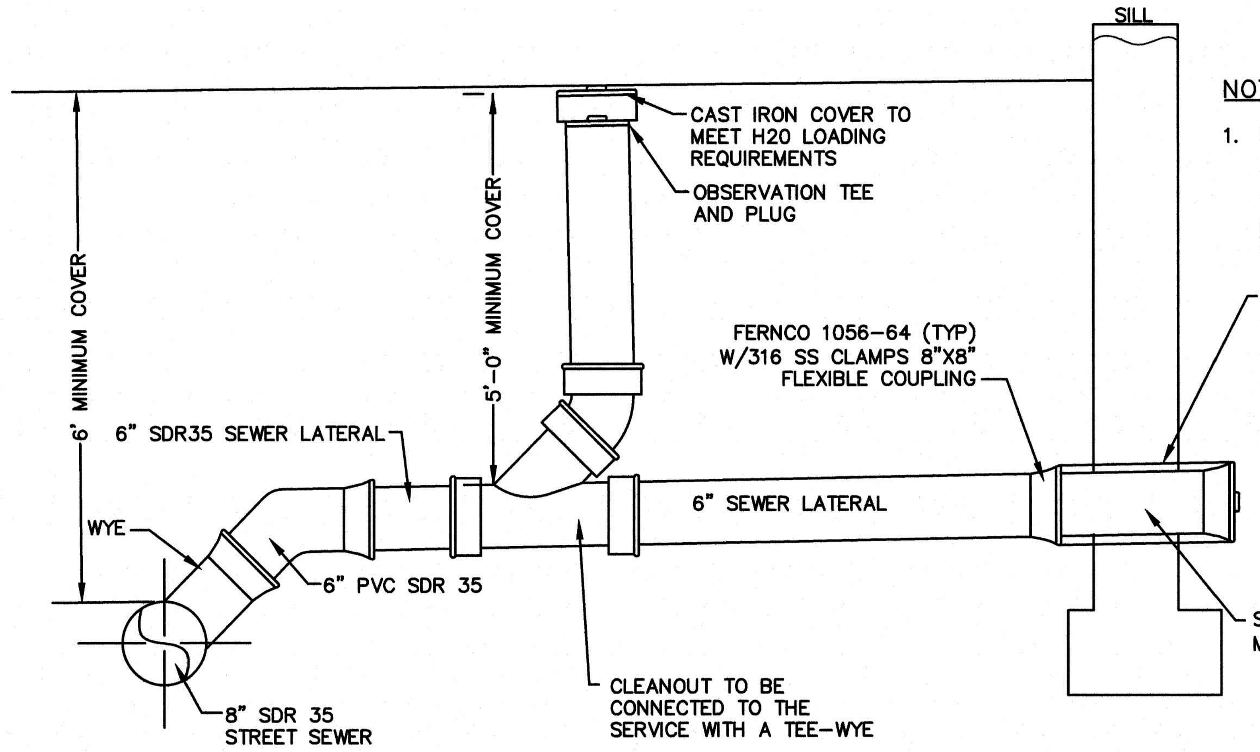
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LANDSCAPE PLAN

Project: 668 MIDDLE STREET PORTSMOUTH, NH

Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
L2
SHEET 10 OF 14
JBE PROJECT NO. 20686



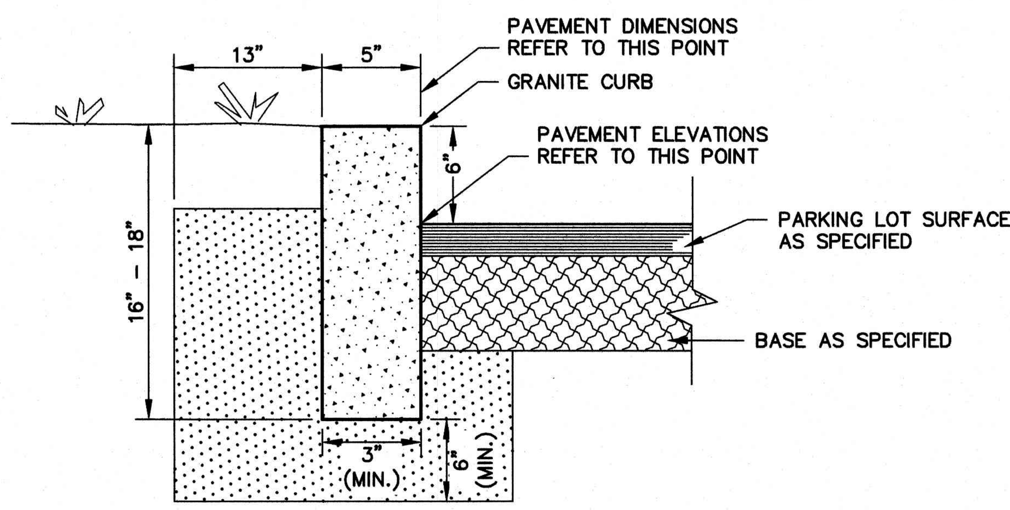
NOTE:

1. IF THE CLEANOUT IS NOT LOCATED WITHIN A PAVED OR SIDEWALK AREA THEN IT SHALL BE LOCATED NO MORE THAN 6" BELOW GRADE WITH AN IRON PIPE OR EQUIVALENT FOR LOCATING PURPOSES.

SEWER LATERAL TO BE SLEEVED THROUGH FOUNDATION WALL. PIPE SLEEVE TO END A MINIMUM OF 1' BEYOND FOUNDATION WALL. SLEEVE MUST BE FITTED WITH RUBBER BOOT ON EXTERIOR.

HOUSE SEWER SERVICE

NOT TO SCALE

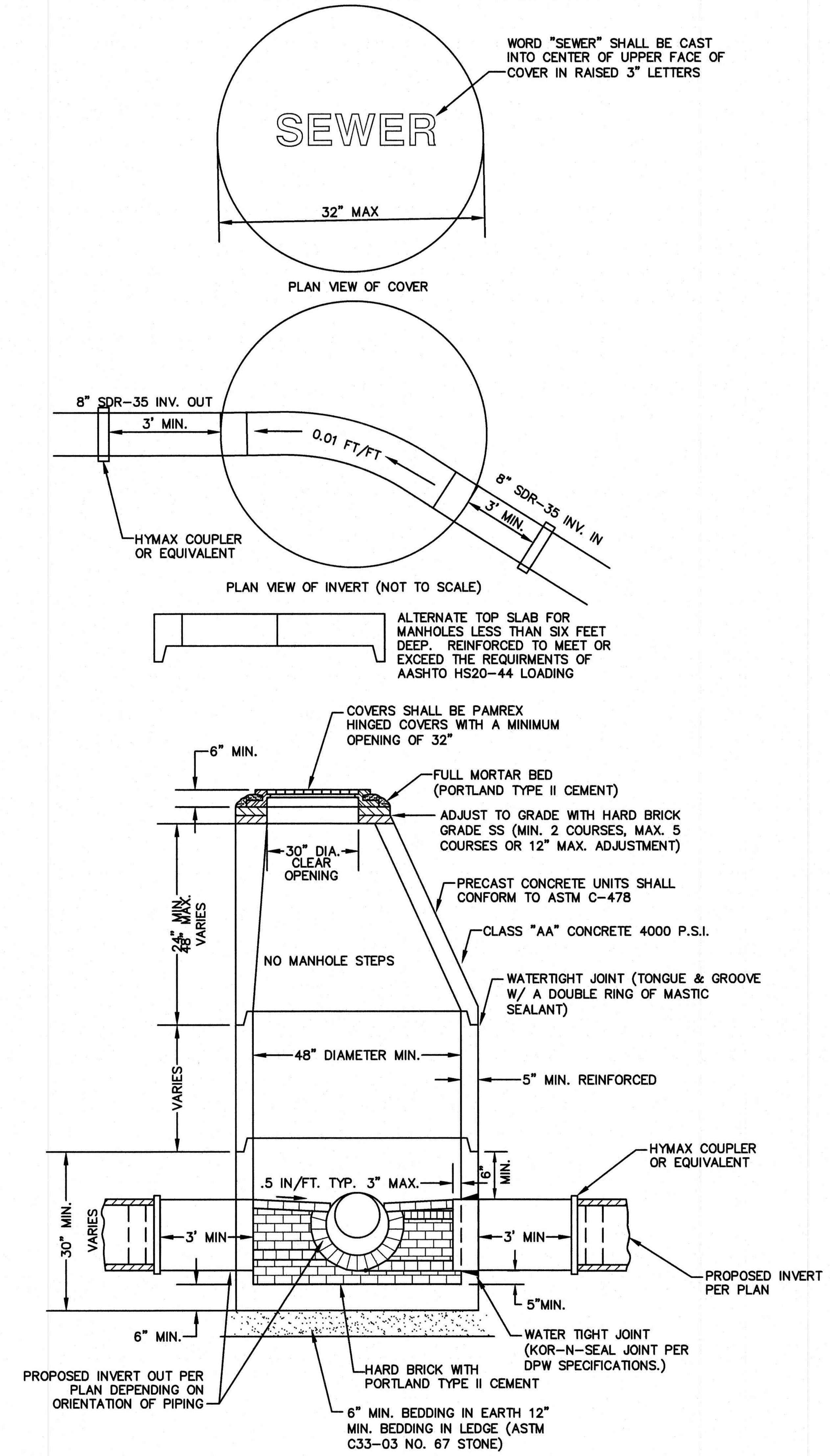


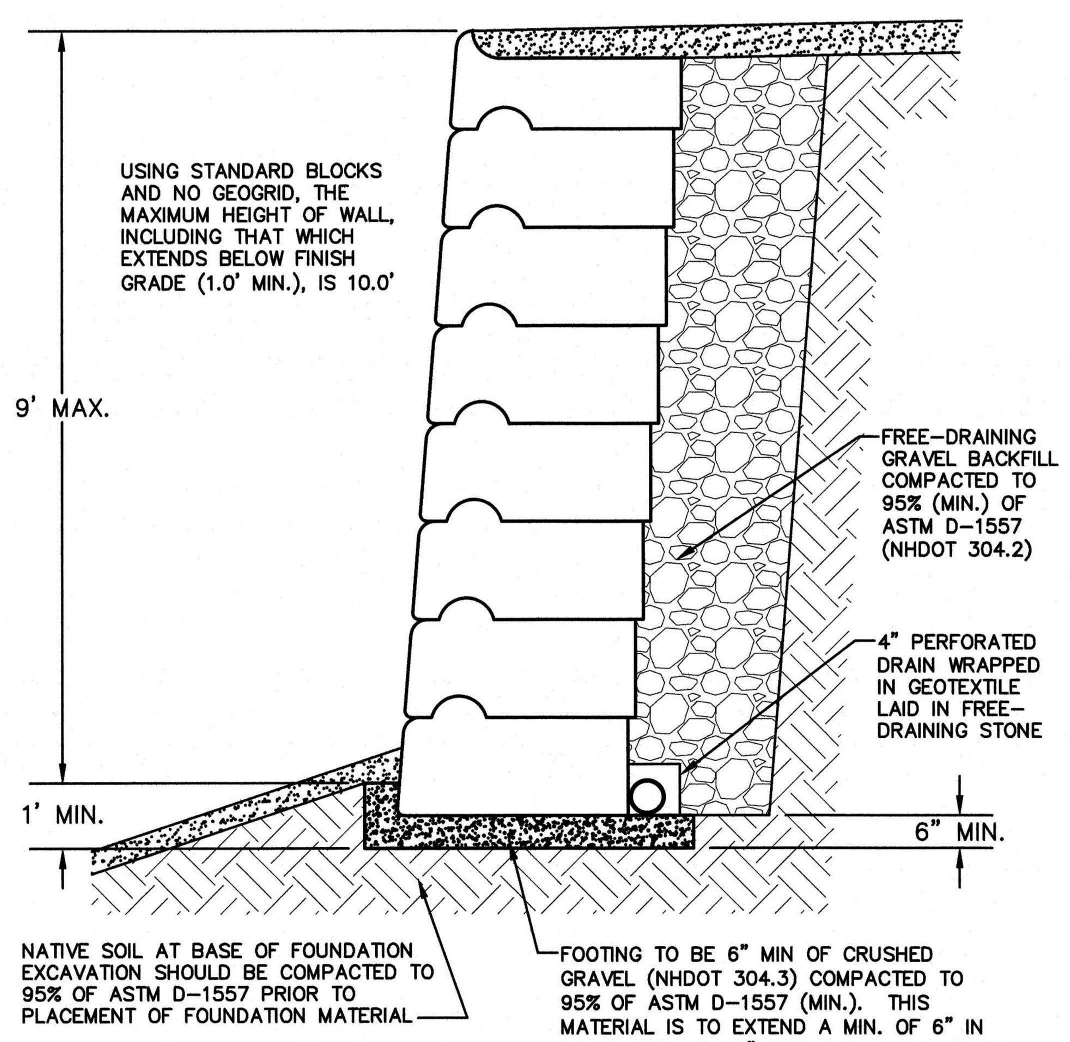
NOTES:

1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

VERTICAL GRANITE CURB

NOT TO SCALE





NATIVE SOIL AT BASE OF FOUNDATION EXCAVATION SHOULD BE COMPACTED TO 95% OF ASTM D-1557 PRIOR TO PLACEMENT OF FOUNDATION MATERIAL

FOOTING TO BE 6" MIN OF CRUSHED GRAVEL (NHDOT 304.3) COMPACTED TO 95% OF ASTM D-1557 (MIN.). THIS MATERIAL IS TO EXTEND A MIN. OF 6" IN FRONT OF AND 12" BEHIND WALL AS SHOWN.

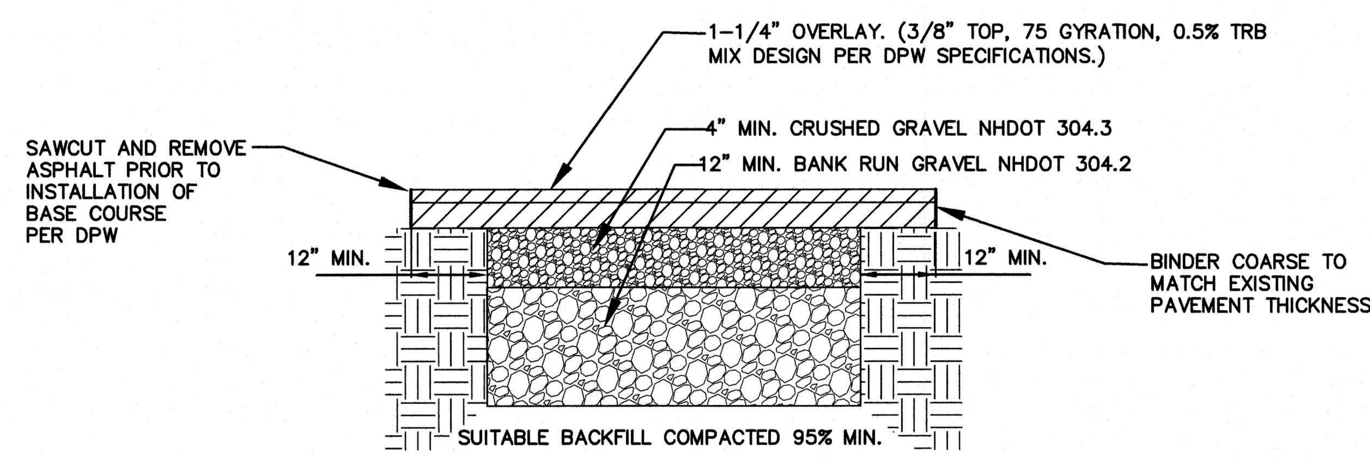
1. PRE-FABRICATED WALL UNITS SHALL BE REDI-ROCK INTERNATIONAL AS PRODUCED BY A LICENSED MANUFACTURER, OR AN EQUIVALENT APPROVED IN WRITING BY THE CIVIL ENGINEER OF RECORD (JONES & BEACH ENGINEERS, INC.).
2. THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE SERVICES OF A LICENSED STRUCTURAL ENGINEER TO DESIGN ANY WALL THAT HAS A HEIGHT OVER 4.0'. JONES & BEACH ENGINEERS, INC. DOES NOT ACCEPT ANY LIABILITY FOR THE STRUCTURAL DESIGN AND/OR INSTALLATION OF ANY RETAINING WALL OF ANY TYPE ABOVE THIS HEIGHT. THIS DETAIL IS INTENDED TO PROVIDE AN EXAMPLE OF THE RETAINING WALL FOR PLANNING PURPOSES ONLY AND IS SPECIFICALLY NOT INTENDED FOR USE BY THE CONTRACTOR IN ANY CONSTRUCTION-RELATED ACTIVITY.
3. CONSTRUCTION OF THE RETAINING WALL(S) SHOULD FOLLOW THE SPECIFICATIONS OF REDI-ROCK INTERNATIONAL AND THE STRUCTURAL ENGINEER OF RECORD.
4. RETAINING WALL-RELATED CORRESPONDENCE SHOULD BE DIRECTED TO:

REDI-ROCK INTERNATIONAL
05481 SOUTH U.S. 31
CHARLEVOIX, MICHIGAN 49720

T#: (231) 237-9500
F#: (231) 237-9521
www.redi-rock.com

REDI-ROCK INTERNATIONAL RETAINING WALL DETAIL (STANDARD BLOCKS W/ NO GEOGRID)

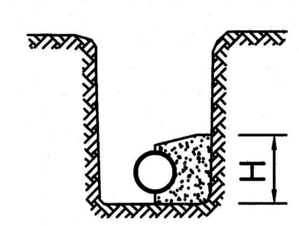
NOT TO SCALE



1. AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
2. INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
3. INSTALL SURFACE COURSE OF ASPHALT PAVING.
4. APPLY EMULSION SEALANT AT PERIMETER OF JOINT OVERLAPPING BASE COURSE. INSTALL WEARING COURSE OF ASPHALT TO GRADE. APPLY LIGHT SAND TO ABSORB EXCESS JOINT SEALANT.
5. GRAVEL COMPACTIONS TO MEET 95% MINIMUM.

TYPICAL PAVEMENT REPAIR DETAIL

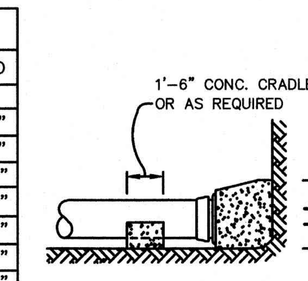
NOT TO SCALE



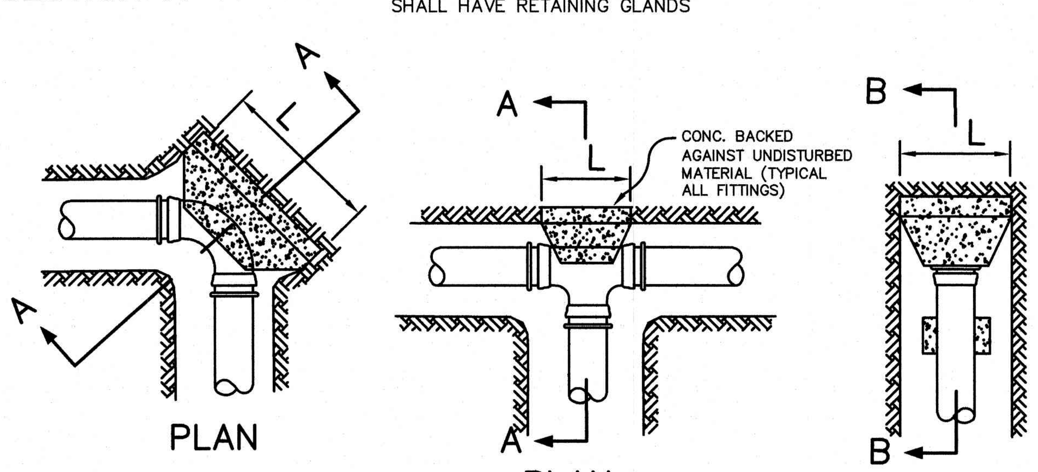
SECTION A–A

CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA. (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"/6"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	6'-0"	3'-0"	4'-6"

PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS



SECTION B–B



PLAN PLAN PLAN

THRUST BLOCK DETAILS

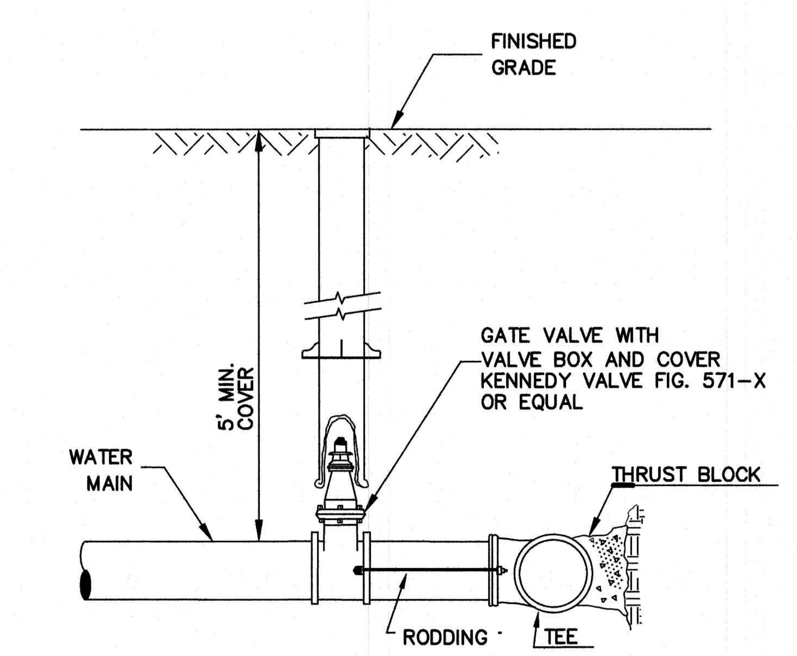
NOT TO SCALE

NOTES:

1. PER NHDES ENV-WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      A. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      B. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 'STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES';
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES';
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271-2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV-WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV-WQ 704.13 (a) (8).

PORTSMOUTH SEWER MANHOLE

NOT TO SCALE



BURIED GATE VALVE DETAIL

NOT TO SCALE

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.

Civil Engineering Services

85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

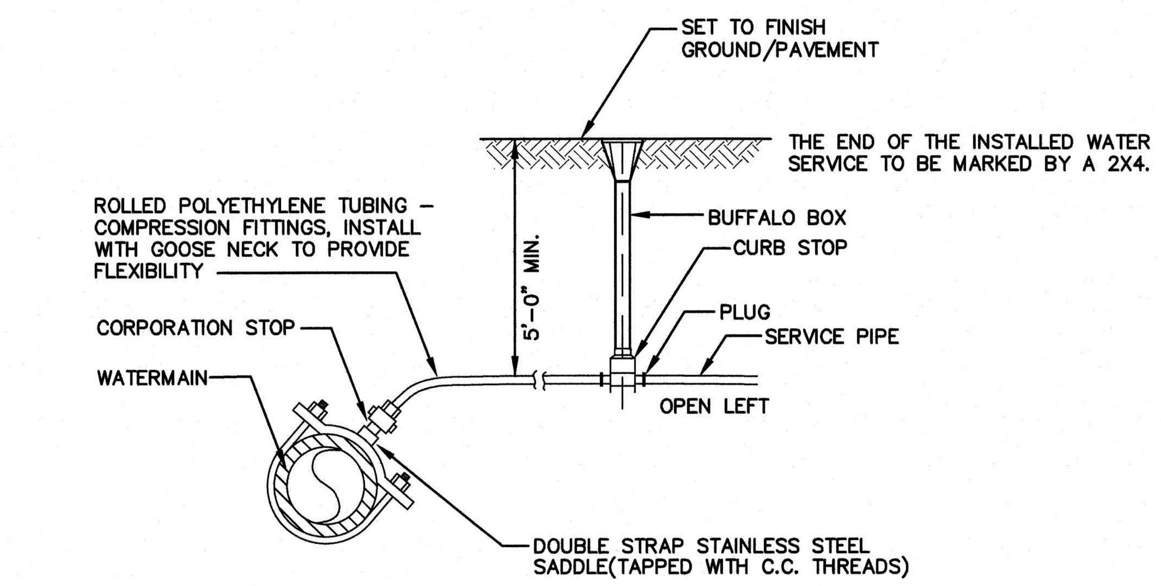
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.

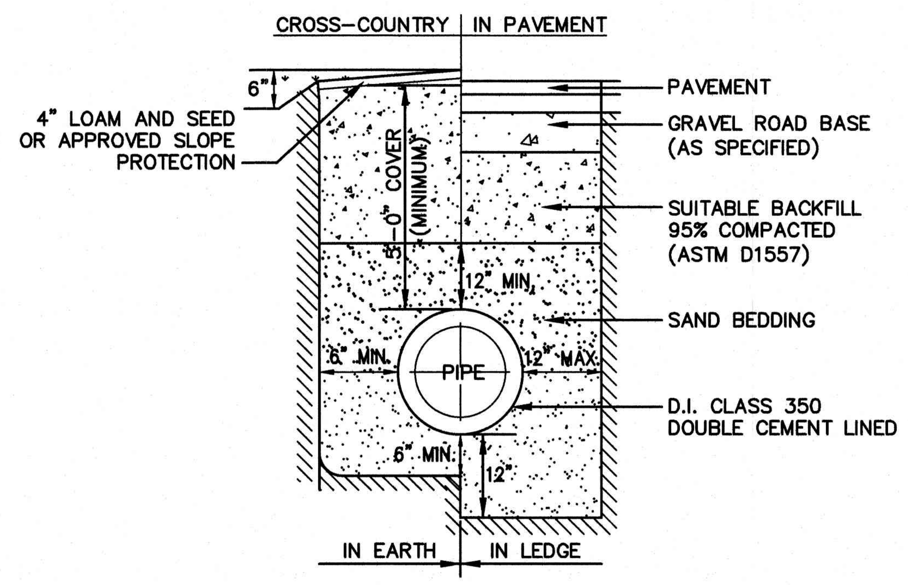
D1

SHEET 11 OF14
JBE PROJECT NO. 20686



WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



WATER SYSTEM TRENCH

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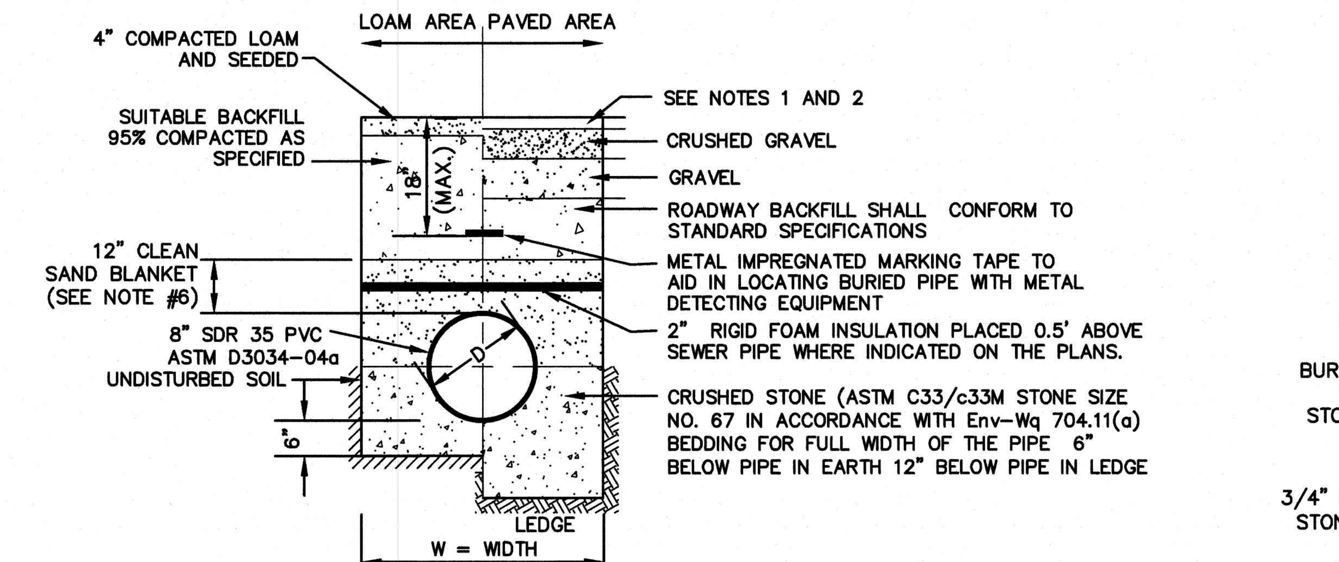
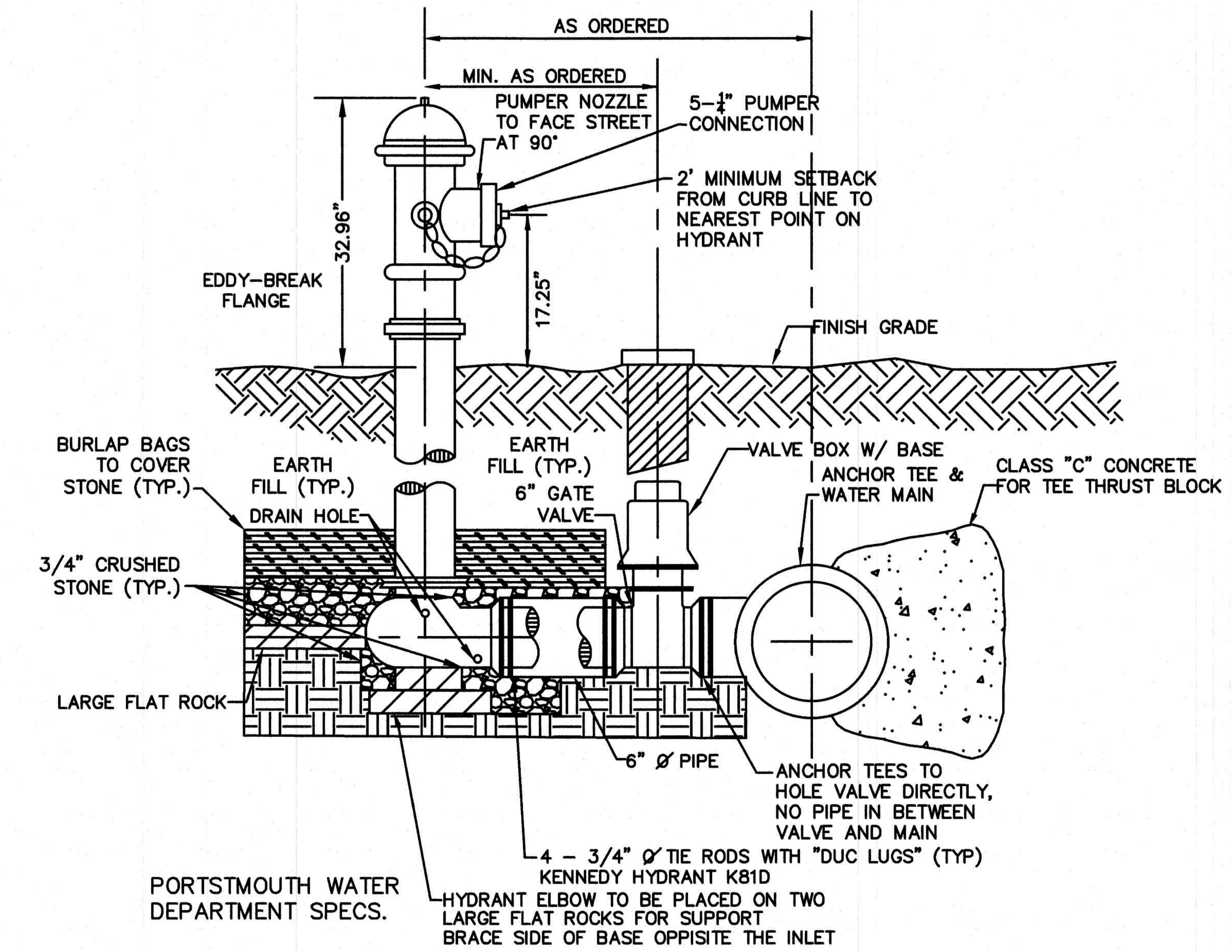


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4', PURSUANT TO DES WAIVER BEING ISSUED.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2 " SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

SEWER TRENCH

NOT TO SCALE

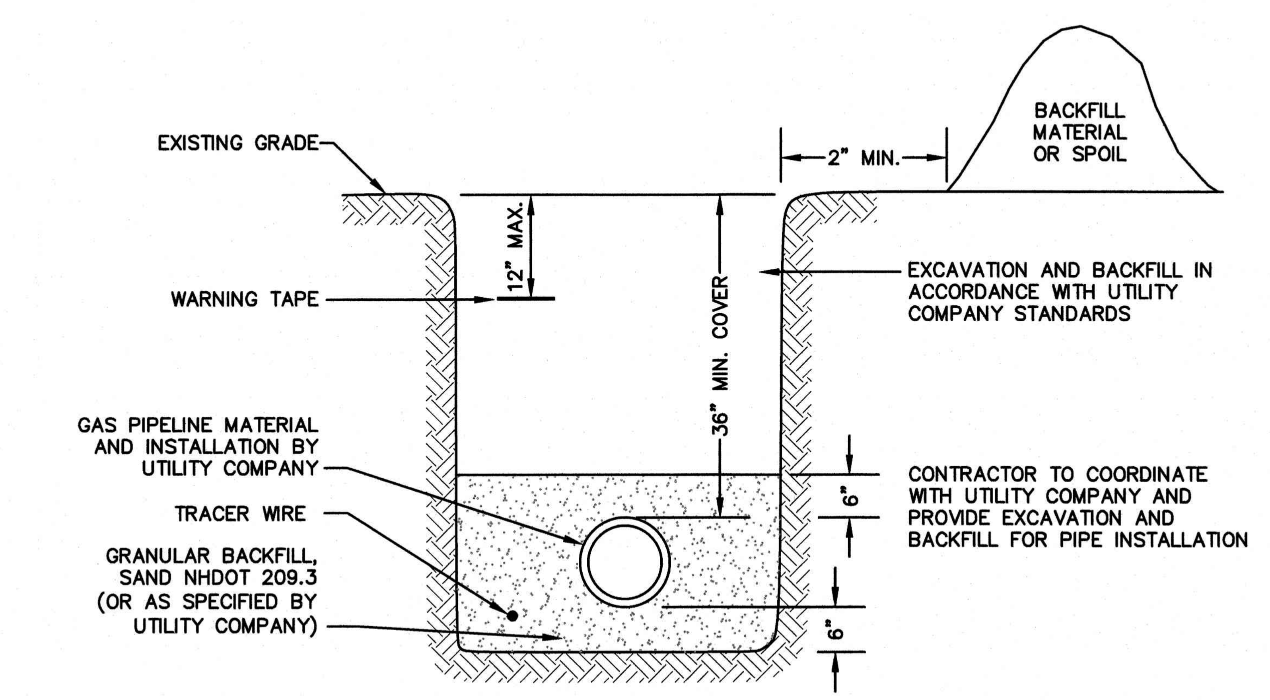


NOTES

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. NATIONAL STANDARD THREAD.
5. HYDRANT AND ALL VALVES SHALL OPEN RIGHT
6. ANCHOR TEES SHALL HOLD VALVE DIRECTLY WITH NO PIPE IN BETWEEN VALVE AND MAIN.

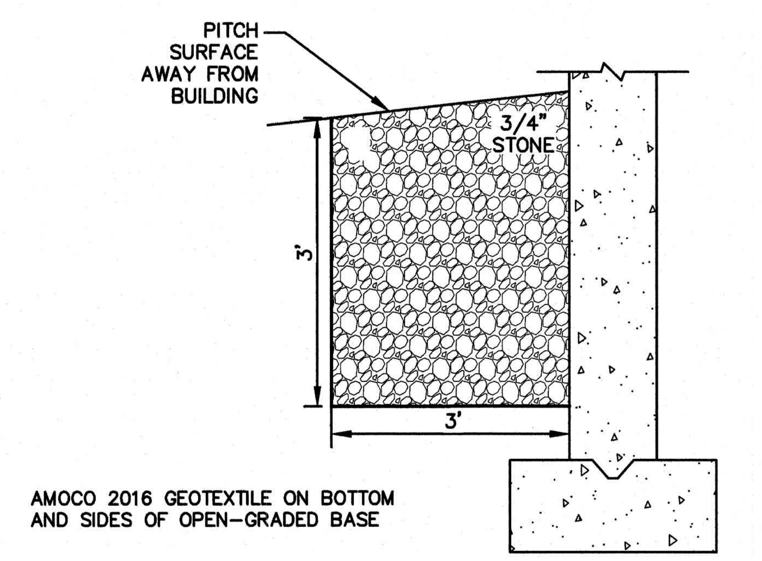
HYDRANT INSTALLATION

NOT TO SCALE



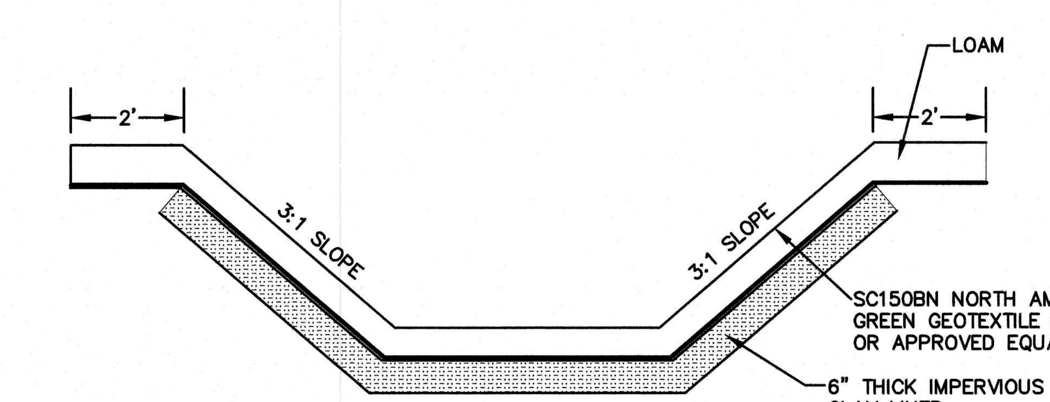
GAS TRENCH

NOT TO SCALE

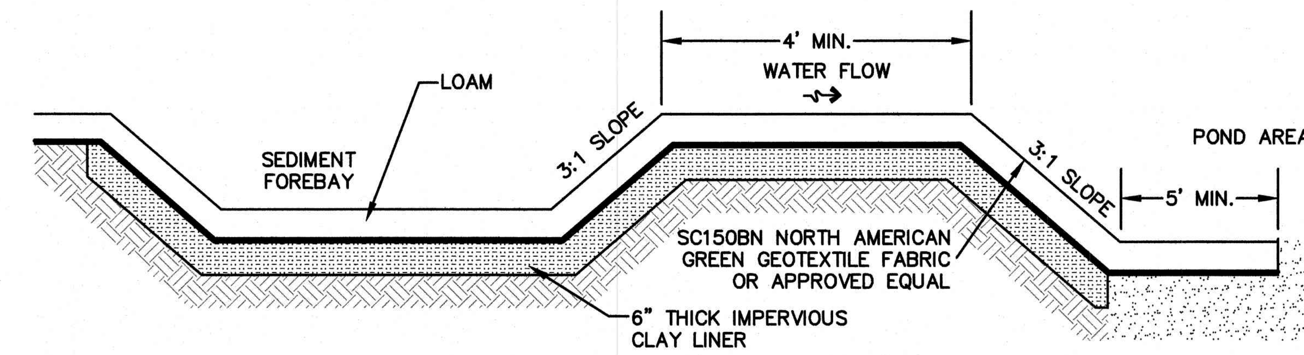


DRIP EDGE INFILTRATION DETAIL

NOT TO SCALE



SPILLWAY SECTION



SPILLWAY PROFILE

NOTES:

1. A 6" THICK IMPERVIOUS CLAY LINER IS TO BE PLACED UNDER ENTIRE SEDIMENT FOREBAY AND SPILLWAY AND ONLY AROUND THE SIDES OF THE ENTIRE BIORETENTION AREA.
2. SEDIMENT FOREBAYS TO BE LINED WITH GEOTEXTILE FABRIC.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURE WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
4. EMBANKMENT MATERIAL SHALL BE CLEAN MINERAL SOIL FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES. IT SHALL CONTAIN NO ROCKS OR LUMPS OVER FOUR INCHES (4") 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 40-90%, #40 SIEVE 50-80%, #100 SIEVE 25-40%, #200 SIEVE 15-30% (OF THE TOTAL SAMPLE).
5. 6" THICK IMPERVIOUS 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.

SEDIMENT FOREBAY SPILLWAY

NOT TO SCALE

SAND SPECIFICATION

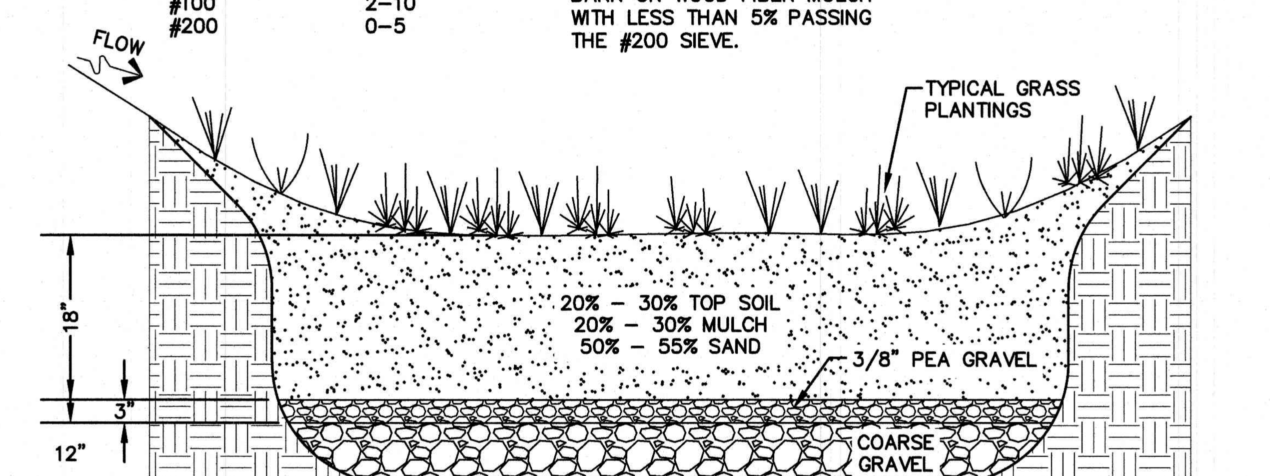
SIEVE SIZE	% BY WEIGHT
1"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#60	10-30
#100	2-10
#200	0-5

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

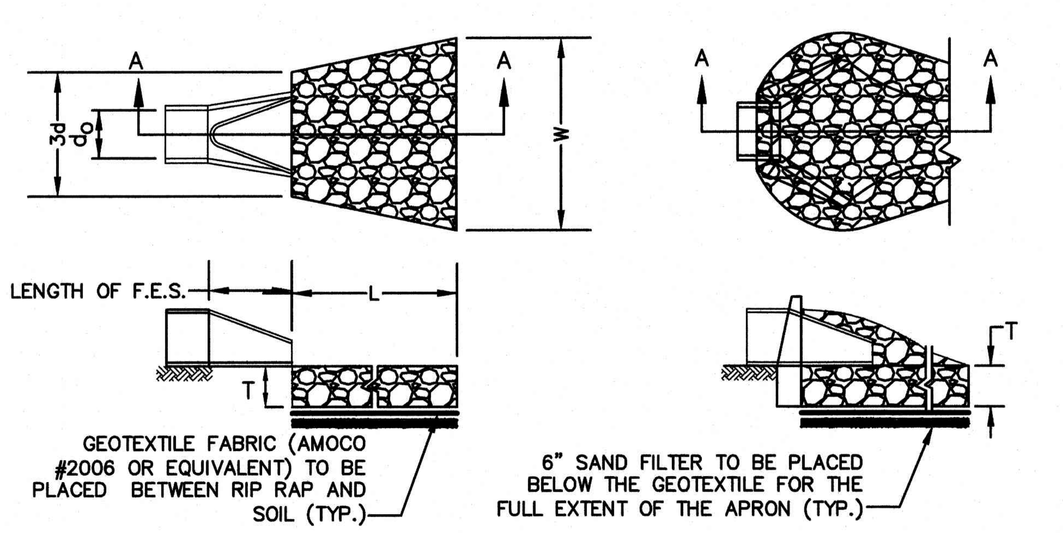
1. DO NOT DIRECT RUNOFF TO THE BIORETENTION SYSTEMS UNTIL IT HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN-OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO 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.

RAIN GARDEN (GRASSED)

NOT TO SCALE



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

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STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

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Plan Name:	DETAIL SHEET
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

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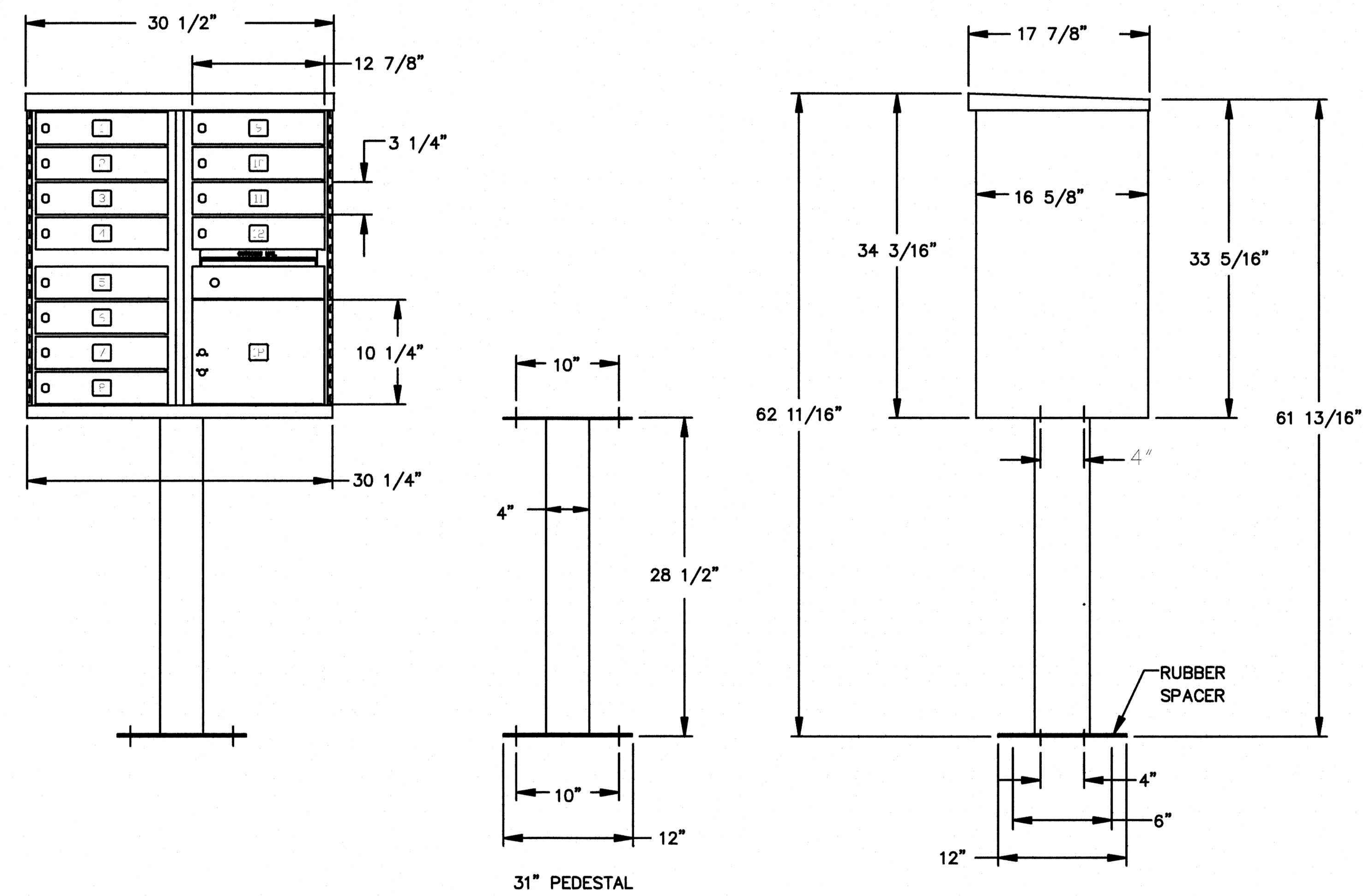
D2

SHEET 12 OF14
JBE PROJECT NO. 20686



POSTAL PRODUCTS UNLIMITED, INC.™ A Division of American Postal Manufacturing, Inc. Phone. 1-800-229-4500 800 W. Oklahoma Ave. Milwaukee, WI 53207-2649	Product: Type II CBU with Pedestal – Front Loading – N1027875			
	Distribution: USPS Approved		Finish: Powder Coat	
	Mounting: Pedestal		Total Mailboxes: 12 Doors – 1 Locker	
	Date: 02/02/06	Scale: NONE	Drawn By: CDO	Checked By: AJK

CLUSTER MAILBOX UNIT DETAIL

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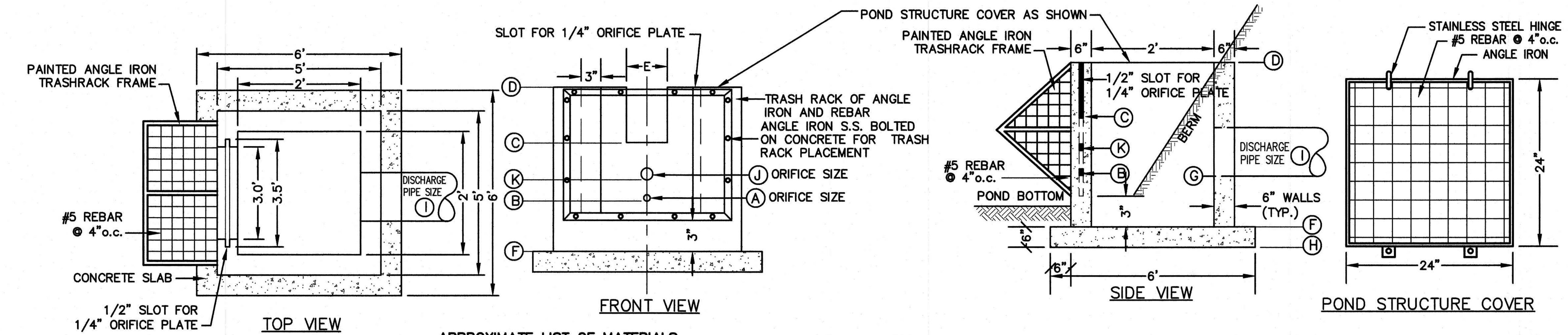


	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓙ	Ⓚ
MSDOS 1	2"	17.05	18.25	18.9	10"	14.25	14.75	13.75	12"	6"	17.75

APPROXIMATE LIST OF MATERIALS

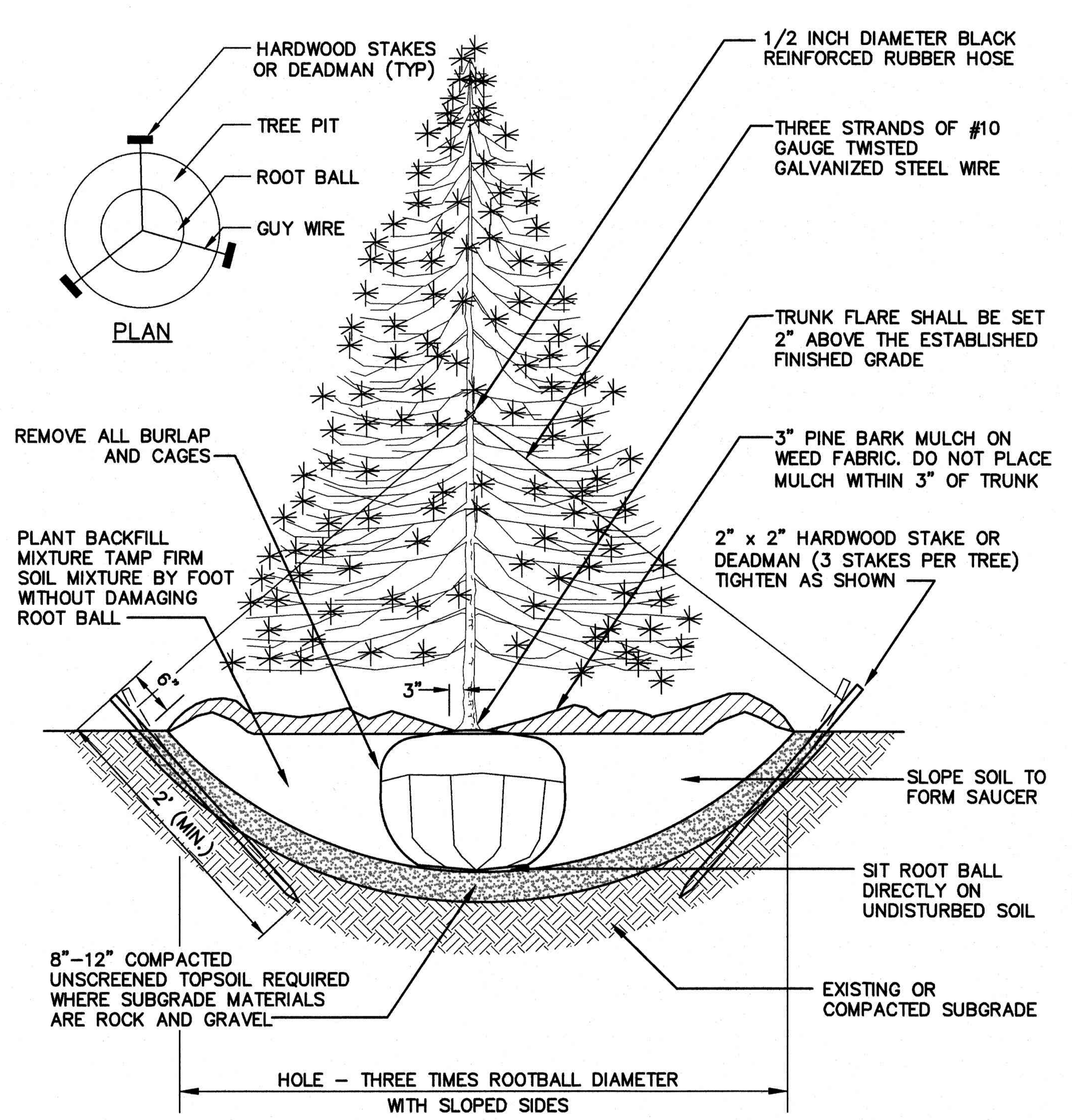
1. 3 C.Y. – 5000 PSI CONCRETE
2. 15 ANGLE IRONS @ 4' LENGTH
3. REQUIRED S.S. BOLTS AND FASTENERS
4. 1/4" STEEL PLATE WITH DRILLED ORIFICES
5. 1 C.Y. – CRUSHED STONE FOR BASE
6. 48 #5 REBARS @ 1', 2' AND 3' LENGTHS
7. 32 #4 REBARS @ 4.5' LENGTH

NOTES:

1. REINFORCING STEEL SHALL CONSIST OF A SINGLE LAYER OF HORIZONTAL AND VERTICAL PLACED #4 REBAR @ 12" O.C.
2. CONCRETE BOX TO BE CONSTRUCTED OR PRECAST OF EQUAL DIMENSIONS AND REINFORCING.
3. CONCRETE SLAB TO BE CONSTRUCTED ALONG WITH BASE. FOR PRECAST BOX, A SLOTTED CONCRETE SLAB TO BE USED.
4. SECTION JOINTS AND PIPE OPENING SHALL BE SEALED WATERTIGHT WITH MORTAR BY CONTRACTOR.
5. ALL EXPOSED REBAR TO BE PAINTED WITH RUST-RESISTANT PAINT, COLOR AT CONTRACTOR'S DISCRETION.
6. TO BE SUPPLIED BY CAPITAL CONCRETE PRODUCTS OF HENNIKER, N.H., (1-603-428-3218) OR EQUAL.
7. STRUCTURE TO HAVE TEMPORARY PLYWOOD INSTALLED IN THE ORIFICE PLATE SLOT UNTIL THE SITE IS STABLIZED.
8. STRUCTURE IS TO BE DESIGNED FOR H20 LOADING.
9. SOIL UNDERLYING THE STRUCTURE IS TO BE COMPACTED TO 95% MODIFIED PROCTOR.
10. TRASH RACK TO PROTECT ALL ORIFICES 6" OR LESS IN DIAMETER.

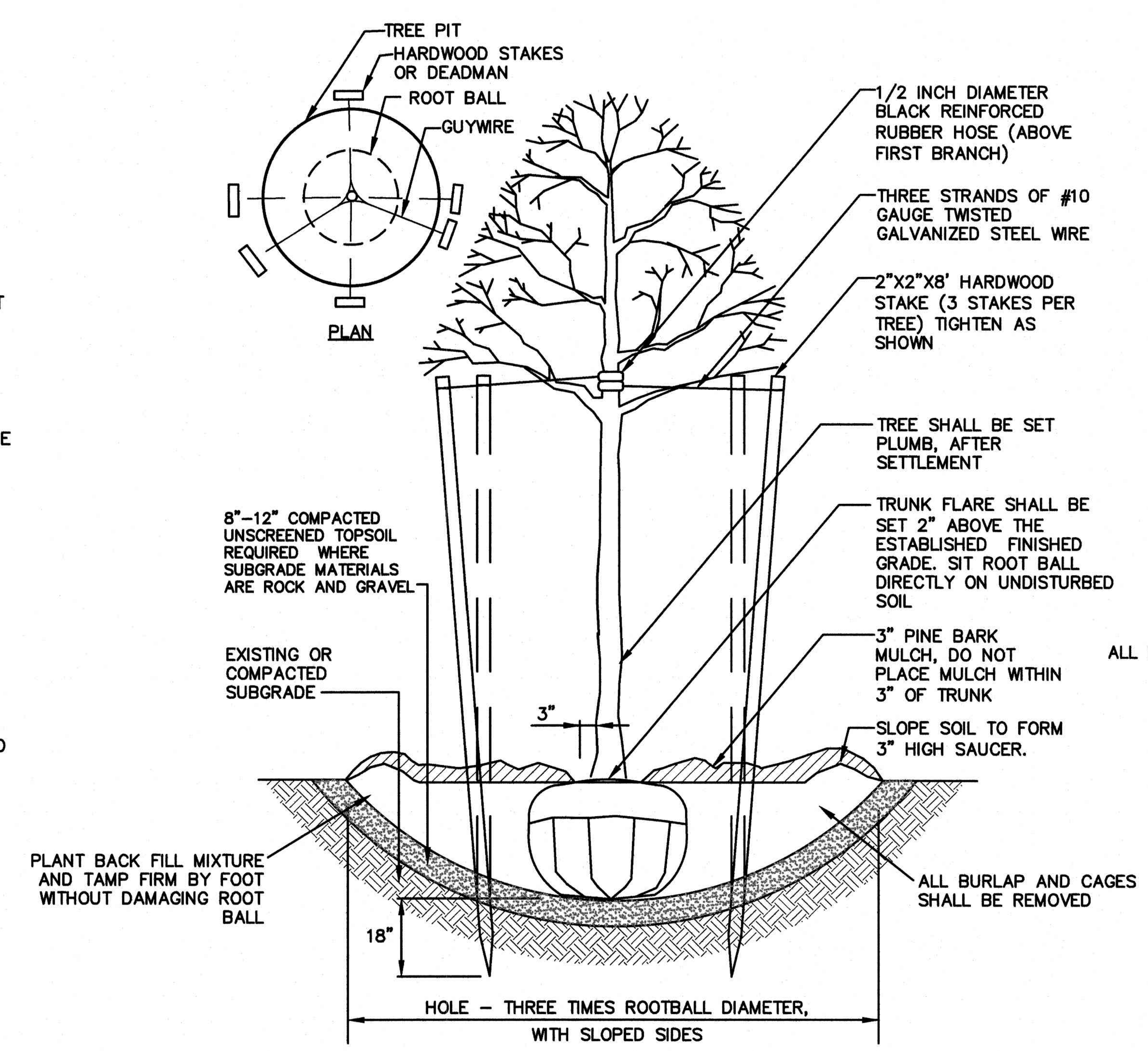
MULTI-STAGE DISCHARGE OUTLET STRUCTURE (MSDOS)

NOT TO SCALE



EVERGREEN PLANTING

NOT TO SCALE



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

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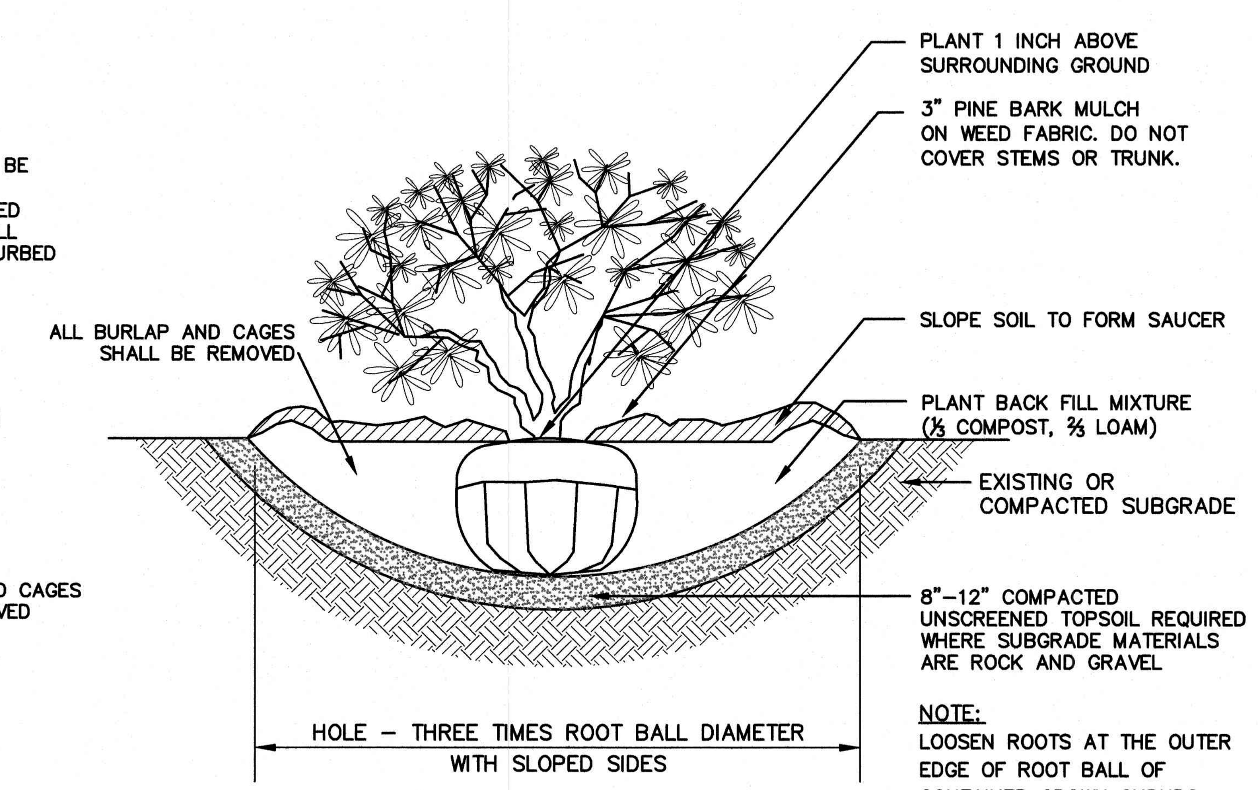

NOTE:
LOOSEN ROOTS AT THE OUTER EDGE OF ROOT BALL OF CONTAINER GROWN SHRUBS.

SHRUB PLANTING

NOT TO SCALE

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STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER 2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
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Project:	668 MIDDLE STREET PORTSMOUTH, NH
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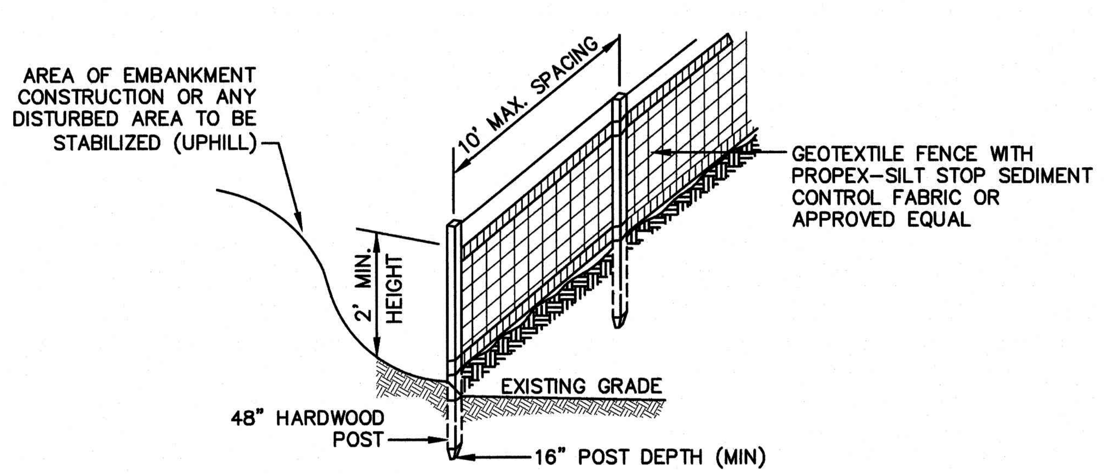
DRAWING No.

D2

JBE PROJECT NO. 20686

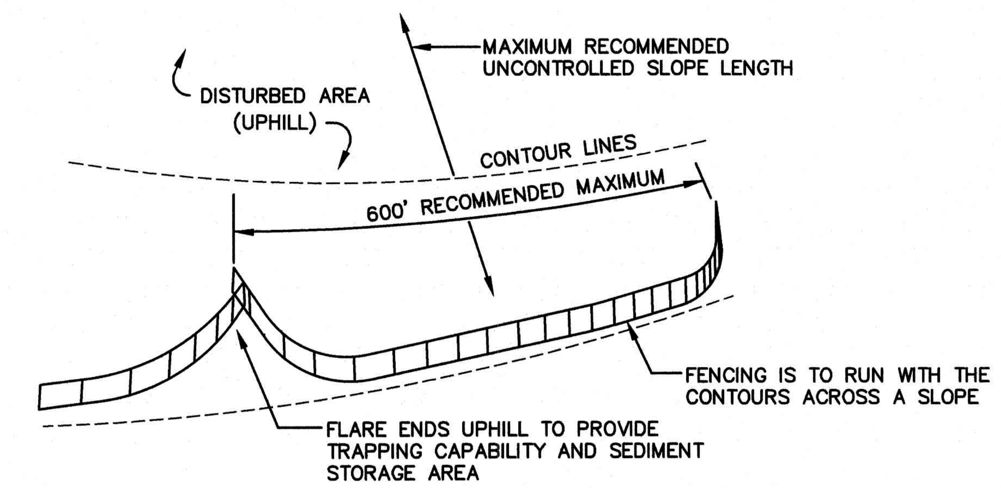
TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
    d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
12. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER SHALL BE SUBMITTED TO DES VIA EMAIL (SEE BELOW).
13. PRIOR TO CONSTRUCTION, A PHASING PLAN THAT DELINEATES EACH PHASE OF THE PROJECT SHALL BE SUBMITTED. ALL TEMPORARY SEDIMENT BASINS THAT WILL BE NEEDED FOR DEWATERING WORK AREAS SHALL BE LOCATED AND IDENTIFIED ON THIS PLAN.



CONSTRUCTION SPECIFICATIONS:

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.



7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE

NOT TO SCALE

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
   B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
   AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
   NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
   PHOSPHATE(P205), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
   POTASH(K20), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
   (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

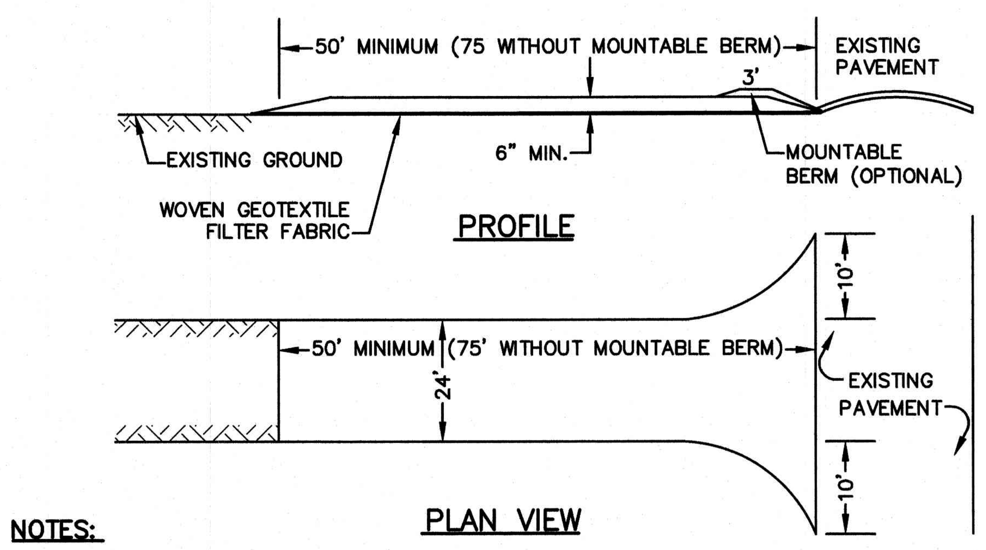
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

	MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
	A. TALL FESCUE	20	0.45
	CREEPING RED FESCUE	20	0.45
	RED TOP	2	0.05
	TOTAL	42	0.95
	B. TALL FESCUE	15	0.35
	CREEPING RED FESCUE	10	0.25
	CROWN VETCH	15	0.35
	OR		
	FLAT PEA	30	0.75
	TOTAL	40 OR 55	0.95 OR 1.35
*	C. TALL FESCUE	20	0.45
	CREEPING RED FESCUE	20	0.45
	BIRDS FOOT TREFOIL	8	0.20
	TOTAL	48	1.10
	D. TALL FESCUE	20	0.45
	FLAT PEA	30	0.75
	TOTAL	50	1.20
	E. CREEPING RED FESCUE 1/	50	1.15
	KENTUCKY BLUEGRASS 1/	50	1.15
	TOTAL	100	2.30
	F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
2. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
3. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
4. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
5. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
6. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS, INCLUDING THE CONSTRUCTION OF ANY RETAINING WALLS AND SOUND WALLS.
7. PREPARE BUILDING PAD(S) TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
8. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
9. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
10. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
11. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
12. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
13. PAVE DRIVEWAYS WITH INITIAL 'BASE COURSE'.
14. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
15. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
16. FINISH PAVING ALL DRIVEWAY WAYS WITH 'FINISH' COURSE.
17. ALL DRIVEWAYS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
18. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
20. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
21. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
22. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9846
LICENSED
PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	REVISION	BY
4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVSION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

Designed and Produced in NH
J/B 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: EROSION AND SEDIMENT CONTROL DETAILS

Project: 668 MIDDLE STREET
PORTSMOUTH, NH

Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
E1
SHEET 14 OF 14
JBE PROJECT NO. 20686

February 14, 2022

Portsmouth Planning Board
1 Junkins Ave
Portsmouth, NH 03801

SUBJECT: Drive-Thru Conditional Use Request
Granite State Convenience
Proposed Retail Motor Fuel Outlet
2255 Lafayette Road
Map 272 Lot 3

Dear Members of the Portsmouth Planning Board:

On behalf of Granite State Convenience **Greenman-Pedersen, Inc. (GPI)** is hereby requesting a Conditional Use Permit from the Portsmouth Planning Board for the following:

- **Section 10.440** to allow a drive-thru in the Gateway Corridor (G1) Zone

The project site consists of one parcel identified as Map 272 Lot 3 which totals approximately 2.571 acres. The site is bordered by Lafayette Road (Route 1) to the northwest, commercial properties to the northeast and southwest and wooded areas containing wetlands to the south and southeast. The site is previously developed and contains a Burger King restaurant with drive-thru, which is currently not in use, and associated paved parking lot and driveways to Lafayette Road. The majority of the lot is paved and on-site drainage structures are limited to a single catch basin in the landscaped area northwest of the existing building which had no visible pipe outlet at the time of survey. Granite State Convenience is proposing to raze the existing restaurant and construct a retail motor fuel outlet consisting of a 5,555 sf convenience store/sandwich shop with drive-through service and a fueling canopy with 5 retail fuel dispenser islands (10 fueling locations), and associated paved driveways and parking.

This request is made in accordance with the provisions contained in Article 10.243.20 of the City of Portsmouth Zoning Ordinance. GPI is providing the following information in support of the criteria listed in that Section:

Conditional uses designated in Section 10.440 – Table of Uses, as well as other conditional uses for which no specific criteria are set forth in the Ordinance, shall comply with all of the following criteria:

(1) The design of proposed structures, their height and scale in relation to the site's surroundings, the nature and intensity of the proposed use or activity, and the layout and design of the site will be compatible with adjacent and nearby properties, buildings and uses, will complement or enhance the character of surrounding development, and will encourage the appropriate and orderly development and use of land and buildings in the surrounding area.

The site was previously permitted and used as a restaurant with drive-thru. The proposed development is appropriate in character to the site. The neighboring businesses along Lafayette Road are similar commercial uses and the proposed development will match the spirit of the neighborhood. Increased landscaping will enhance the character of the development, as well as an enhanced building façade.

(2) All necessary public and private utility infrastructure and services will be available and adequate to serve the proposed use.

Eversource, electric service, has confirmed they have enough capacity to serve the proposed development. Municipal water and sewer are available to the site. Until/Northern Utilities Natural Gas Division has confirmed natural gas is available to supply the proposed development at 2255 Lafayette Road.

(3) The site and surrounding streets will have adequate vehicular and pedestrian infrastructure to serve the proposed use consistent with the City's Master Plan.

Due to the site's location along Lafayette Road, Route One, there is no pedestrian access to the site or any of the adjacent properties at this time. A 12 ft NHDOT reserve strip and a 8 ft wide Portsmouth Multiuse Path are proposed along the frontage for future DOT and Municipal use.

The site has adequate maneuvering space for the drive thru with sufficient room for 13 stacked vehicles within the drive thru lanes, and adequate space for delivery trucks and emergency vehicles around the site.

(4) The proposed structures, uses, or activities will not have significant adverse impacts on abutting and surrounding properties on account of traffic, noise, odors, vibrations, dust, fumes, hours of operation, and exterior lighting and glare.

There will be no significant adverse impacts to the surrounding properties as the site is surrounded by similar commercial uses and is consistent with the existing use.

(5) The proposed structures and uses will not have significant adverse impacts on natural or scenic resources surrounding the site, including wetlands, floodplains, and significant wildlife habitat.

The proposed development is consistent with the existing use and adjacent properties, and will not have a negative scenic impact on the neighborhood. The proposed site work has been designed to have the least adverse impact to the wetland buffer. The development will result in a decrease of over 9,000 sf of impervious cover within the wetland buffer zone and will increase wetland buffer widths.

(6) The proposed use will not cause or contribute to a significant decline in property values of adjacent properties.

The proposed use will not cause any decrease to property values as the proposed use is consistent with the existing use and the uses of abutting commercial properties.

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

Sincerely,

Nicole Duquette

Nicole Duquette, LEED AP
Project Manager

enclosure(s)

cc: Brad Pernaw, Granite State Convenience

ABUTTERS & NOTIFICATION LIST
For
GRANITE STATE CONVENIENCE
2255 LAYFAYETTE ROAD
PARCEL ID: 0272-0003
PORTSMOUTH, NH
GPI # NEX-2021163
AS OF 2/10/22

PARCEL ID #	NAME & ADDRESS
0272-0003 (SUBJECT PARCEL)	MASTORAN RESTAURANTS, INC. 822 LEXINGTON STREET 2ND FLOOR WALTHAM, MA 02154
0272-0002	2225 LAFAYETTE LLC 125 AVIATION AVENUE # 202 PORTSMOUTH, NH 03801
0272-0001	2219 LAFAYETTE ROAD, LLC 549 US HIGHWAY 1 BYPASS PORTSMOUTH, NH 03801
0272-0004	RYE PORT PROPERTIES, LLC P.O. BOX 345 STRATHAM, NH 03885
0272-0006	SPRINGBROOK CIRCLE CONDOMINIUMS
OFFICERS:	DAVID WAJDA, PRESIDENT SPRINGBROOK CIRCLE CONDO ASSOCIATION 2000 SPRINGBROOK CIRCLE PORTSMOUTH, NH 03801
	DEAN SAVRAMIS, VICE PRESIDENT SPRINGBROOK CIRCLE CONDO ASSOCIATION 2000 SPRINGBROOK CIRCLE PORTSMOUTH, NH 03801
	JAMES MATTHEWS, TREASURER SPRINGBROOK CIRCLE CONDO ASSOCIATION 2000 SPRINGBROOK CIRCLE PORTSMOUTH, NH 03801
	TOM PUIIA, TRUSTEE SPRINGBROOK CIRCLE CONDO ASSOCIATION 2000 SPRINGBROOK CIRCLE PORTSMOUTH, NH 03801

ABUTTERS & NOTIFICATION LIST
For
GRANITE STATE CONVENIENCE
2255 LAYFAYETTE ROAD
PARCEL ID: 0272-0003
PORTSMOUTH, NH
GPI # NEX-2021163
AS OF 2/10/22

	SABINE DESHAZO, TRUSTEE SPRINGBROOK CIRCLE CONDO ASSOCIATION 2000 SPRINGBROOK CIRCLE PORTSMOUTH, NH 03801
0273-0007-0001	FESTIVAL FUN PARKS, LLC C/O PROPERTY TAX SERVICE CO. P.O. BOX 543185 DALLAS, TX 75354
ENGINEER/SURVEYOR	GREENMAN-PEDERSEN, INC. 44 STILES ROAD, SUITE ONE SALEM, NH 03079
WETLAND/SOIL SCIENTIST	MARK WEST WEST ENVIRONMENTAL, INC. 48 STEVENS HILL ROAD NOTTINGHAM, NH 03290
APPLICANT	GRANITE STATE CONVENIENCE 25 SPRINGER ROAD HOOKSETT, NH 03106
ATTORNEY	JOHN K. BOSEN, ESQ BOSEN & ASSOCIATES, P.L.L.C 266 MIDDLE STREET PORTSMOUTH, NH 03801

Northern Utilities, Inc.

January 28th, 2022

Diane M. Pantermoller
Technician
GPI

Natural Gas to 2255 Lafayette Rd Portsmouth, NH

Hi Diane,

Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service:

Unitil hereby confirms that natural gas is available to supply the proposed development at 2255 Lafayette Rd in Portsmouth, NH.

If you have any questions, please contact me at 603-534-2379.

Sincerely,

Dave MacLean
Senior Business Development Rep

T 603.294.5261 **M** 603.534.2379 **F** 603.294.5264
Email macleand@unitil.com

Diane Pantermoller

From: Diane Pantermoller
Sent: Friday, February 11, 2022 2:02 PM
To: Nicole Duquette
Subject: GSC 2255 Lafayette Road, Portsmouth, NH

Nicole,

I talked to Michael Busby, Engineer Manager for Eversource (603-436-7708 Ext. 555-5678) and he told me that there is plenty of capacity to serve the proposed Retail Motor Fuel Outlet. They cannot provide a "Will Serve" letter as they have to review the site to determine which pole the electric service can be served from. He indicated that we will most likely need to set a new pole on site as the poles are most likely are too full to add capacity. He indicated that they are limited on the number of 90 they can use for primary service. He recommends moving the transformer closer to the rear to provide a location for a second transformer for the proposed charging station. He indicated that this will save the client some money. Eversource will review the site and mark up our utility plan on what they think will be the best location for the proposed utility pole, transformer, and the pole we will obtain service from.

Diane M. Pantermoller
Technician

44 Stiles Road, Salem, NH 03079
d 603.499.7319
dpantermoller@gpinet.com | www.gpinet.com

REF: NEX-2021163

DATE: February 14, 2022

TO: City of Portsmouth Planning Board

FROM: Nicole Duquette, Greenman-Pedersen, Inc.

RE: 2255 Lafayette Road – Land Use Application
Green Building Initiatives

The applicant is proposing to demolish the existing Burger King restaurant and construct a retail motor fuel outlet consisting of a 5,555 square foot convenience store/sandwich shop and drive-thru and a fueling area with 5 retail fueling islands (10 fueling locations). The proposed site work includes many “green” building components and systems, making the project toxic free, allergy & asthma friendly, and will lower the environmental impact during construction and operation. “Green” components are listed and described below.

Structure
- Wood studs are 100% recyclable
- Plywood sheathing is 100% recyclable

Doors and Windows
- Aluminum entrance doors with recycled materials
- Wood windows with Low-E insulating glass, Energy Star

Flooring
- Vinyl Composition tile with recycled content

Walls and Ceilings
- Salvaged barnboard walls and ceilings
- Salvaged timber beams and rafters
- Salvaged corrugated roof panels used as ceilings
- Suspended acoustic ceiling tiles with 100% recyclable materials
- Aluminum ceiling grids with recycled content

Paints, Coatings & Sealants, non-toxic
- Zero VOC paints & sealants

Stone
- Stone veneer on exterior walls

Wood Products
- Cabinets – recycled wood, formaldehyde-free
- Adhesives with low or zero VOC

Building Insulation
- Cellulose insulation with recycled content

Plumbing

- Low flow toilets
- Automatic shutoff faucets

Electrical

- L.E.D. light fixtures
- Electrical switches with automatic shut on-off (motion sensors)
- Future EV charging stations

HVAC

- Duct wrap with recycled materials
- Ground based heat pump system
- Exhaust fans with automatic shut off

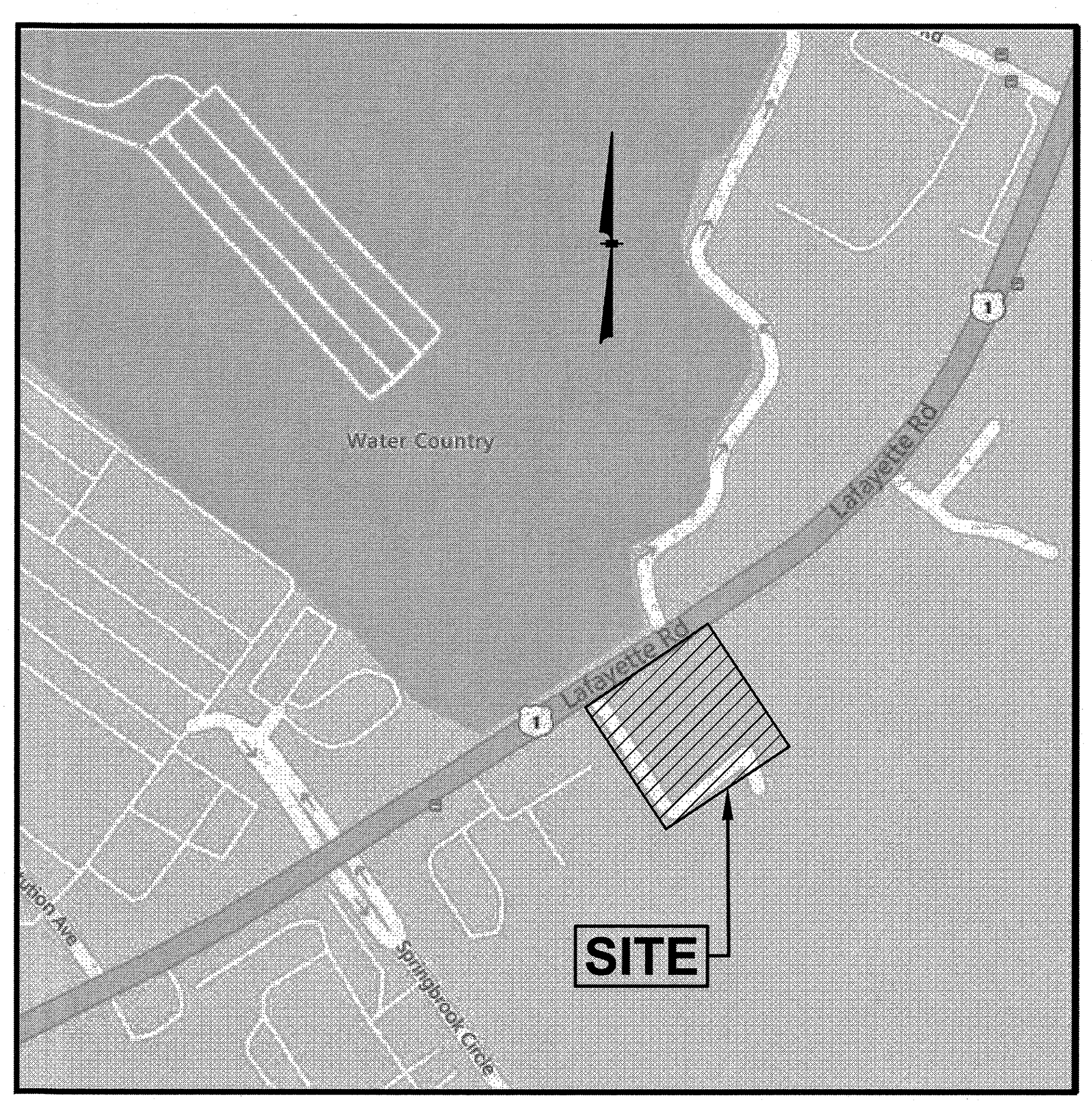
Roofing

- Asphalt shingles are 100% recyclable

Site Work and Landscaping

- Indigenous/native planting for less lawn coverage & irrigation

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE REDEVELOPMENT PLANS
for
ASSESSORS MAP 272 LOT 3
2255 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE
Prepared for:
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH 03106



LOCATION MAP
(NOT TO SCALE)

INDEX TO DRAWINGS

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

PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE
CORY N. MASON No.17099
LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS

NO.	REVISION	DATE
1	REV. SHEET 4	2/9/22

JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

TITLE SHEET

SCALE: NOT TO SCALE

PROJECT NO. NEX-2021163

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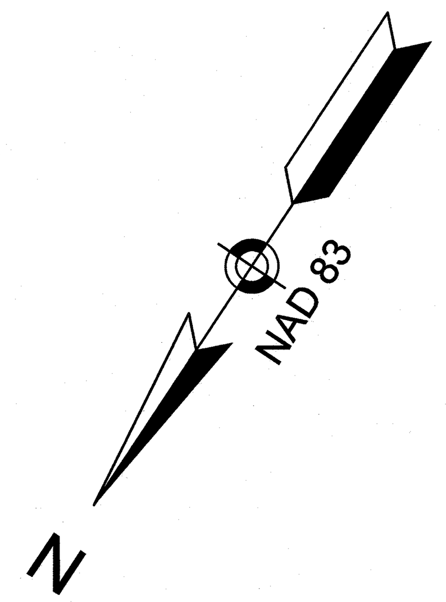
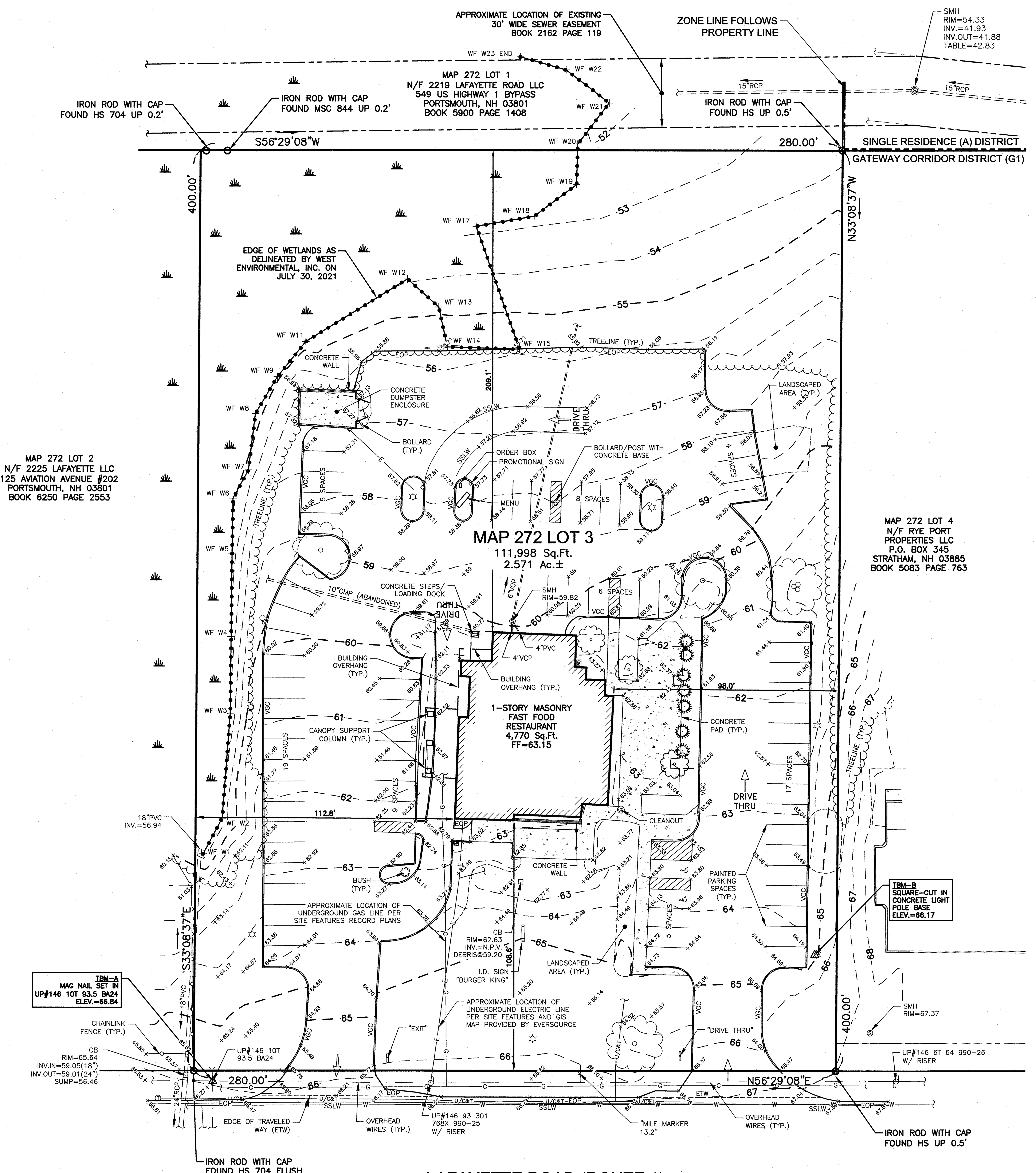




LAFAYETTE ROAD (ROUTE 1)
(PUBLIC – 66'± WIDE R.O.W.)

LEGEND

VGC	VERTICAL GRANITE CURB
SSLW	SINGLE SOLID LINE WHITE
G	GAS LINE
U/CAT	UNDERGROUND COMM
W	WATER LINE
E	UNDERGROUND ELECTRIC
	CHAIN LINK FENCE
90	CONTOUR ELEVATION
	TREE
	UTILITY POLE
	GUY WIRE
	OVERHEAD WIRE
	TREELINE
	SIGN
+99.99	SPOT ELEVATION
	CATCH BASIN
	CLEANOUT
	SEWER MANHOLE
	TELEPHONE MANHOLE
	WATER SHUT OFF
	BOLLARD
GM	GAS METER
	LIGHT POLE
	WETLAND LINE
	EASEMENT LINE
	PROPERTY LINE
	ABUTTER PROPERTY LINE
	ZONE LINE

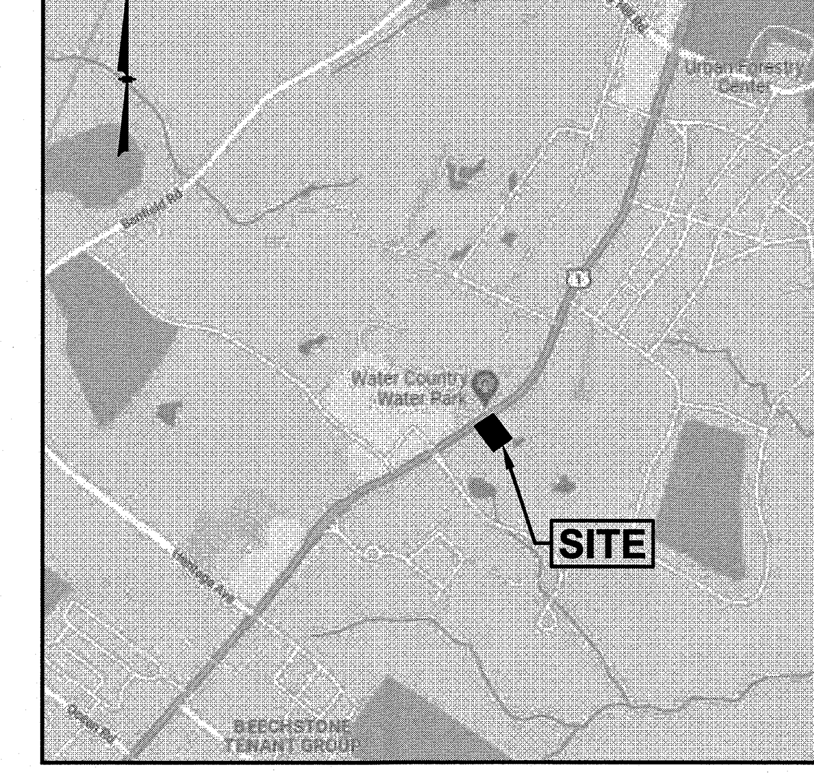
PLAN REFERENCES:

ROCKINGHAM COUNTY REGISTRY OF DEEDS

1) R.C.R.D. PLAN D-33166
2) R.C.R.D. PLAN D-37134
3) R.C.R.D. PLAN D-20705
4) R.C.R.D. PLAN D-15321
5) R.C.R.D. PLAN C-3702
6) R.C.R.D. PLAN C-7649
7) R.C.R.D. PLAN D-41895

0 30 60 100

SCALE: 1" = 30'



LOCATION MAP

(NOT TO SCALE)

NOTES:

1) ZONE: GATEWAY CORRIDOR DISTRICT (G1)
MIN. LOT SIZE: 1 ACRE
SETBACKS:
FRONT 70' TO 90' FROM CENTER OF LAFAYETTE RD
SIDE 10 Ft.
REAR 15 Ft.
REFER TO THE CITY OF PORTSMOUTH ZONING ORDINANCE FOR VERIFICATION, ADDITIONAL RESTRICTIONS AND PERMITTED USES. THE ZONING INFORMATION SHOWN HEREON IS BASED ON A REVIEW OF THE PORTSMOUTH ZONING ORDINANCE.

2) THIS PLAN IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY PERFORMED BY THIS OFFICE BETWEEN AUGUST 10 AND NOVEMBER 3, 2021.

3) WETLAND FLAGS WERE DELINEATED BY WEST ENVIRONMENTAL, INC. ON JULY 30, 2021 AND LOCATED BY THIS OFFICE.

4) BEARINGS SHOWN HEREON ARE BASED ON NAD83 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON AUGUST 16, 2021.

5) ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON AUGUST 16, 2021.

6) LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE ONLY. ADDITIONAL UNDERGROUND UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED. INVERTS ARE LISTED IN A CLOCKWISE DIRECTION ENDING WITH THE INVERT OUT (UNLESS OTHERWISE NOTED).

7) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 33015C0270F, WITH AN EFFECTIVE DATE OF JANUARY 29, 2021.

8) A TOTAL OF 73 (71 REGULAR, 2 ACCESSIBLE) CLEARLY IDENTIFIABLE PARKING SPACES WERE OBSERVED IN CONDUCTING THIS SURVEY.

WETLAND NOTES

WETLANDS WERE DELINEATED BY WEST ENVIRONMENTAL, INC. ON JULY 30, 2021 UTILIZING THE FOLLOWING STANDARDS:

1) US ARMY CORPS OF ENGINEERS INTERIM REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, TECHNICAL REPORT ERDC/EL TR-09-19 (OCT 2009).

2) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 7.0. UNITED STATES DEPARTMENT OF AGRICULTURE (2010).

3) NORTH AMERICAN DIGITAL FLORA: NATIONAL WETLAND PLANT LIST, VERSION 2.2.1 (2009).

4) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS-79/31 (1979).

STATE OF NEW HAMPSHIRE MARK WEST 1-25-22 No. 010 CERTIFIED WETLAND SCIENTIST

OWNER OF RECORD:

MAP 272 LOT 3
MASTORAN RESTAURANTS, INC.
822 LEXINGTON STREET
WALTHAM, MA 02154
BOOK 3572 PAGE 199

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

PREPARED FOR
GRANITE STATE CONVENIENCE
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE No. 838 DAVID R. JORDAN LICENSED LAND SURVEYOR SIGNATURE 1/26/22

REVISIONS

NO.	REVISION	DATE

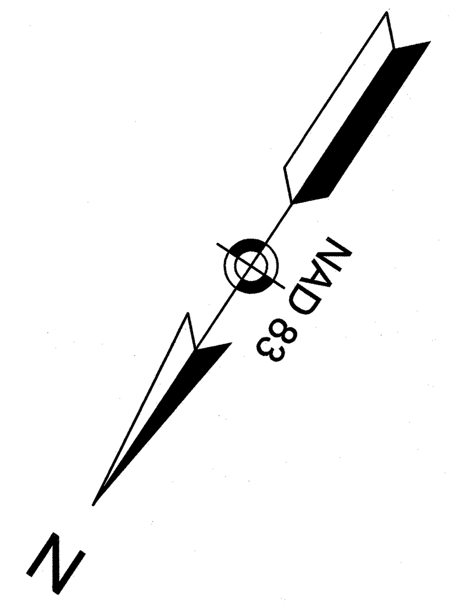
JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
AKC	DRJ

EXISTING CONDITIONS PLAN

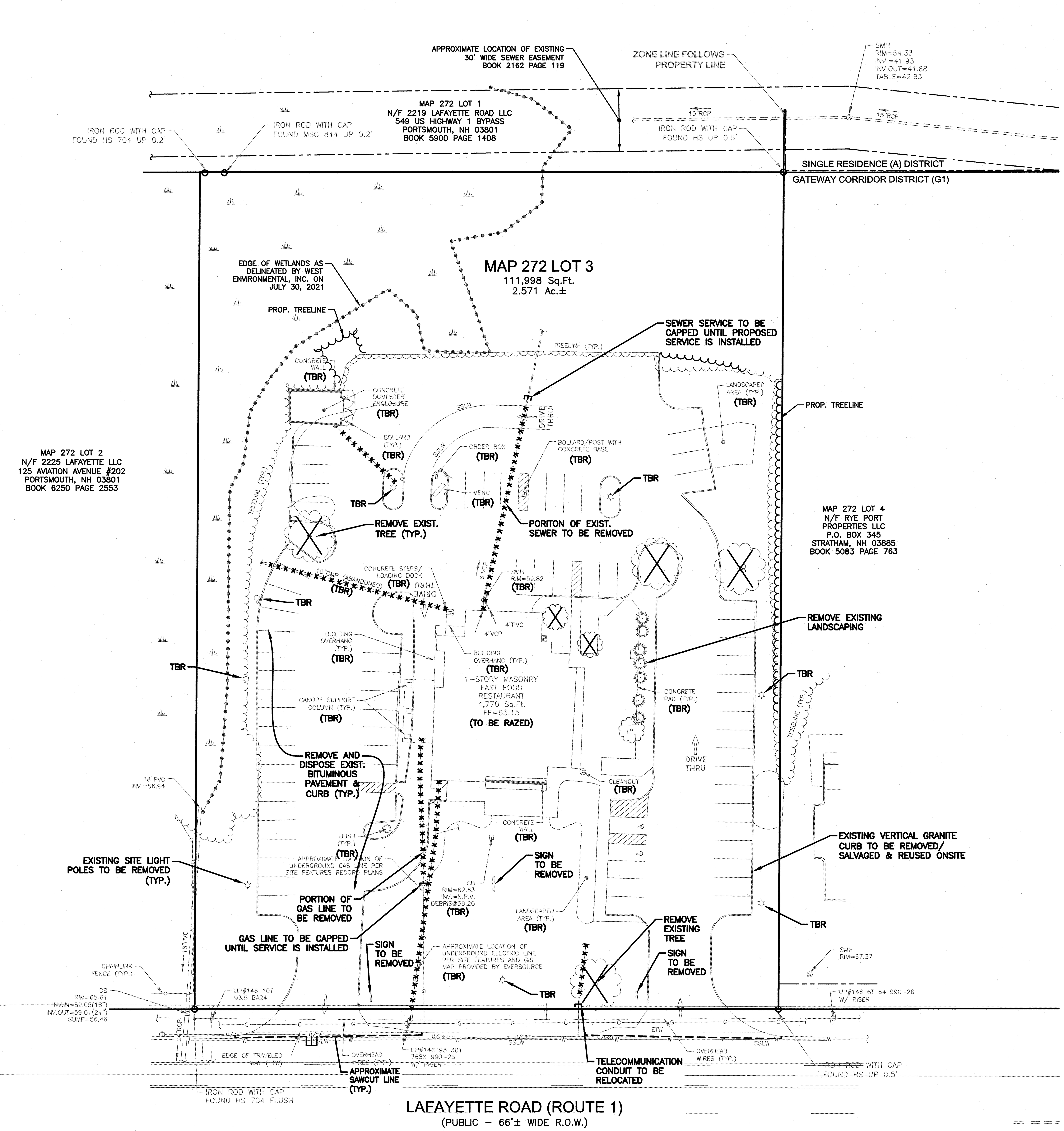
SCALE: 1"=30'

PROJECT NO. NEX-2021163



LEGEND

- VERTICAL GRANITE CURB
- SINGLE SOLID LINE WHITE
- GAS LINE
- UNDERGROUND COMM
- WATER LINE
- UNDERGROUND ELECTRIC
- CHAIN LINK FENCE
- CONTOUR ELEVATION
- TREE
- UTILITY POLE
- GUY WIRE
- OVERHEAD WIRE
- TREELINE
- SIGN
- SPOT ELEVATION
- CATCH BASIN
- CLEANOUT
- SEWER MANHOLE
- TELEPHONE MANHOLE
- WATER SHUT OFF
- BOLLARD
- GAS METER
- LIGHT POLE
- WETLAND LINE
- EASEMENT LINE
- PROPERTY LINE
- ABUTTER PROPERTY LINE
- ZONE LINE
- TBR TO BE REMOVED
- TO BE REMOVED



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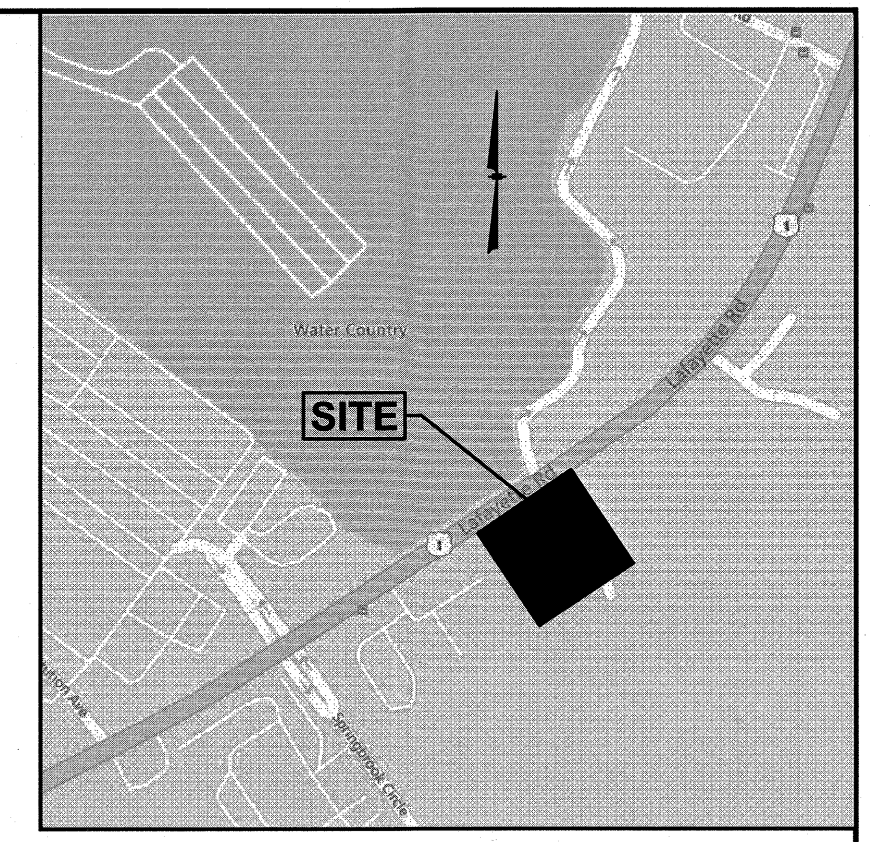
SCALE: 1" = 30'



LOCATION MAP
(NOT TO SCALE)

NOTES:

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

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

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

4) DEMOLISH CONCRETE IN ALL SECTIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SEE EROSION & SEDIMENT CONTROL PLAN FOR CONSTRUCTION SEQUENCE, TEMPORARY EROSION CONTROL MEASURES, AND LOCATION OF EROSION CONTROL DEVICES. SEE LANDSCAPE PLAN FOR LIMITS OF CLEARING.

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PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE
CORY N. MASON No.17099
LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS

NO.	REVISION	DATE

JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DEMOLITION PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163

SIGN KEY

SIGN I.D. NUMBER	TEXT/COLOR	SIZE/REMARKS
R1-1	STOP R/W	30" x 30" NEW SIGN WITH POST
R5-1	DO NOT ENTER R/W	30" x 30" NEW SIGN WITH POST
R7-8	RESERVED PARKING G/B/W	12" x 18" NEW SIGN WITH POST
R7-8A	VAN ACCESSIBLE G/W	6" X 12"

SITE COMPARISON TABLE

DESCRIPTION	EXISTING	PROPOSED
SURFACE PARKING & DRIVEWAY	59,940 SF	57,064 SF
OTHER IMPERVIOUS SURFACES	5,358 SF	5,750 SF
NUMBER OF PARKING SPACES	73	35
IMPERVIOUS AREA WITHIN WETLAND BUFFER	29,452 SF	20,328 SF

TABLE OF ZONING REGULATIONS - PORTSMOUTH, NH

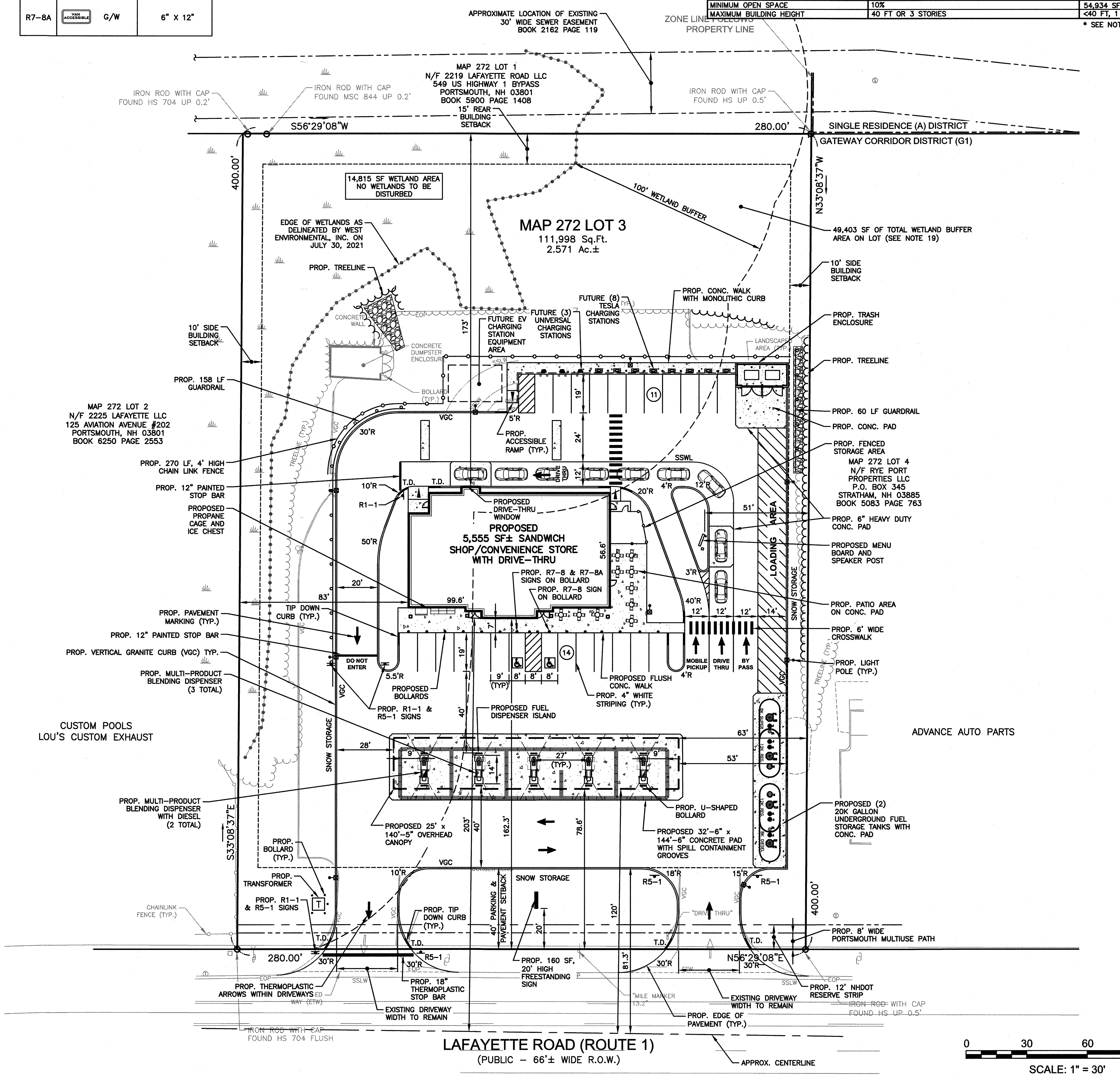
ZONE: GATEWAY CORRIDOR (G1)

DESCRIPTION	REQUIRED	PROVIDED
MINIMUM LOT AREA	1 ACRE	2.57 ACRES
MINIMUM FRONT YARD BUILDING SETBACK	70' TO 90' FROM CENTER OF LAFAYETTE RD	120' (CANOPY), 203' (C-STORE) *
MINIMUM SIDE YARD BUILDING SETBACK	10'	63' (CANOPY), 83' (C-STORE)
MINIMUM REAR YARD BUILDING SETBACK	15'	173' (C-STORE)
PARKING DIMENSIONS	8.5'x19', 24' DRIVE AISLE	9'x19', 24' DRIVE AISLE
MINIMUM NUMBER PARKING SPACES	RETAIL = 4,555 SF x 1 SPACE/300 SF GFA = 15.18 SPACES RESTAURANT = 1,000 SF x 1 SPACE/100 SF = 10 SPACES RETAIL FUEL = 2 SPACES + 0 SF x 1 SPACE/400 SF GFA = 2 SPACES TOTAL SPACES REQUIRED = 28 SPACES	35 SPACES (14 PARKING SPACES + 11 PARKING SPACES/CHARGING STATION SPACES + 10 PARKING SPACES AT THE PUMPS) *
MAXIMUM COVERAGE	70%	57,064 SF/111,998 SF = 51.0%
MINIMUM OPEN SPACE	10%	54,934 SF/111,998 SF = 49.0%
MAXIMUM BUILDING HEIGHT	40 FT OR 3 STORIES	<40 FT, 1 STORY

* SEE NOTE 17

LEGEND

- VERTICAL GRANITE CURB
- SINGLE SOLID LINE WHITE
- GAS LINE
- UNDERGROUND COMM
- WATER LINE
- UNDERGROUND ELECTRIC
- CHAIN LINK FENCE
- CONTOUR ELEVATION
- TREE
- UTILITY POLE
- GUY WIRE
- OVERHEAD WIRE
- TREELINE
- SIGN
- SPOT ELEVATION
- CATCH BASIN
- CLEANOUT
- SEWER MANHOLE
- TELEPHONE MANHOLE
- WATER SHUT OFF
- BOLLARD
- GAS METER
- LIGHT POLE
- WETLAND LINE
- EASEMENT LINE
- PROPERTY LINE
- ABUTTER PROPERTY LINE
- ZONE LINE
- NUMBER OF PARKING SPACES



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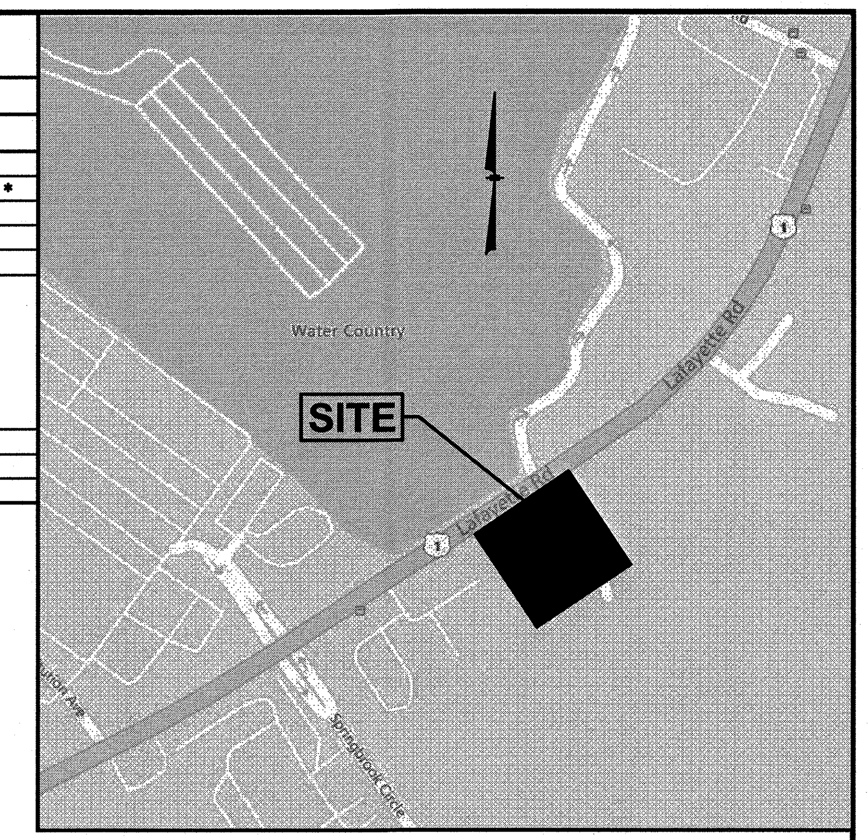
SCALE: 1" = 30'



LOCATION MAP

(NOT TO SCALE)

NOTES:

1) TAX MAP 272 LOT 3
2) ZONING DISTRICT: GATEWAY CORRIDOR (G1)
3) LOT AREA = 111,988 Sq.Ft.
   = 2.571 Ac.±
4) EXISTING USE: FAST FOOD RESTAURANT WITH DRIVE-THRU

   PROPOSED USE: RETAIL MOTOR FUEL OUTLET WITH 5,555 SF CONVENIENCE STORE/SANDWICH SHOP WITH 6 SEATS INTERIOR & UP TO 40 EXTERIOR SEATS AND DRIVE-THRU AND 5 FUEL DISPENSER ISLANDS WITH OVERHEAD CANOPY.
5) ALL BUILDINGS AND SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AS REVISED IN 2010.
6) THE LOCATIONS OF EXISTING SUBSURFACE UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM AVAILABLE RECORD DRAWINGS AND ARE NOT WARRANTED TO BE CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SUBSURFACE UTILITIES PRIOR TO PERFORMING ANY WORK.
7) WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.
8) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.
9) ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF PORTSMOUTH AND THE STATE OF NEW HAMPSHIRE.
10) THE SITE IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 33015C0270F, WITH AN EFFECTIVE DATE OF JANUARY 29, 2021.
11) ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE STANDARD CONSTRUCTION DRAWINGS AS SUPPLIED BY THE DEVELOPER.
12) A SIGN PERMIT SHALL BE OBTAINED PRIOR TO INSTALLATION.
13) PROPOSED SNOW STORAGE AREAS AS SHOWN. ANY EXCESS SNOW TO BE TRUCKED OFF-SITE.
14) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY GREENMAN-PEDERSEN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
15) ALL UNDERGROUND STORAGE TANKS, PRODUCT PIPING AND VENT LINES SHALL COMPLY WITH CURRENT STATE AND E.P.A. REGULATIONS.
16) SELF-SERVICE APPROVAL IS REQUIRED FROM THE OFFICE OF THE STATE FIRE MARSHAL. SEE APPROVED FIRE SUPPRESSION PLAN FOR LAYOUT OF SPILL CONTAINMENT GROOVES (POSITIVE LIMING BARRIER).
17) RELIEF IS REQUESTED FROM THE ZONING BOARD OF ADJUSTMENT TO ALLOW THE FOLLOWING:
    - PARKING SPACES BETWEEN PRINCIPAL BUILDING AND ROAD (ZONING 10.1113.20)
    - GREATER THAN 90' BUILDING SETBACK FROM LAFAYETTE ROAD (ZONING 10.5.B.22.40)
    - LESS THAN 75% FRONT LOT LINE BUILDOUT (SECTION 10.5.B.33.20)
    - MORE THAN ONE DRIVEWAY PER LOT (SECTION 10.1114.31)
    - TO ALLOW A 160 SF FREESTANDING SIGN (SECTION 10.1251.20)
18) RELIEF IS REQUESTED FROM THE PLANNING BOARD TO ALLOW THE FOLLOWING:
    - GREATER THAN ONE DRIVEWAY PER LOT. (SITE PLAN 3.3.2). EXISTING SITE HAS TWO DRIVEWAYS
19) A CONDITIONAL USE PERMIT IS REQUIRED FROM THE PLANNING BOARD TO ALLOW THE FOLLOWING:
    - A WETLAND BUFFER DISTURBANCE OF 33,555 SF PER SECTION 10.241.23. THIS TOTAL INCLUDES DISTURBANCE REQUIRED TO REMOVE EXISTING DISTURBANCES AND RETURN THEM TO A MORE NATURAL STATE.
    - A DRIVE-THRU FACILITY PER SECTION 10.440
20) APPROPRIATE EROSION CONTROL MEASURES (HAY BALES, SILT FENCE) SHALL BE INSTALLED PRIOR TO INITIATION OF ANY SITE WORK & SHALL BE MAINTAINED BY THE DEVELOPER UNTIL ADEQUATE VEGETATIVE COVER IS ESTABLISHED ON ALL GRADED AREAS. SEE EROSION & SEDIMENT CONTROL PLAN.
21) ELECTRIC CONDUIT TO BE INSTALLED FOR FUTURE CHARGING STATIONS.
22) ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
23) PERMITS REQUIRED:
    - NHDOT DRIVEWAY PERMIT
    - USEPA NPDES CONSTRUCTION GENERAL PERMIT

OWNER OF RECORD:

MAP 272 LOT 3
MASTORAN RESTAURANTS, INC.
822 LEXINGTON STREET
WALTHAM, MA 02154
BOOK 3572 PAGE 199

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PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE CORY N. MASON No.17099 LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS

NO.	REVISION	DATE
1	REV. FOR SITE PLAN APPROVAL	2/9/22

JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

SITE PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163

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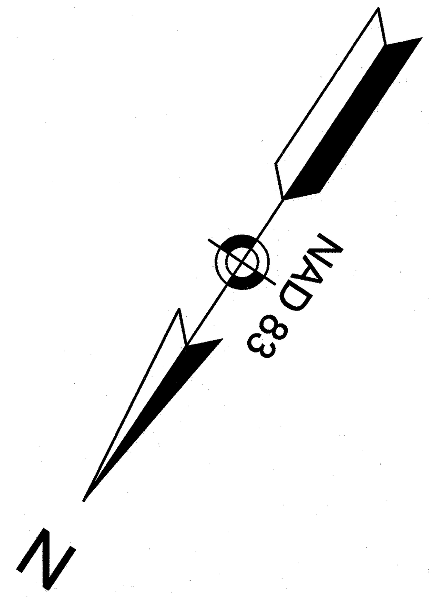

DRAINAGE PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (INCHES)	TYPE OF PIPE	APPROX. PIPE LENGTH (FEET)	SLOPE OF PIPE (FT./FT.)	TO: STRUCTURE NUMBER
CB–1	12	HDPE	51	0.011	DMH–1
CB–2	12	HDPE	139	0.005	CB–6
CB–3(FD)	12	HDPE	29	0.063	DET IN–1
CB–4(FD)	18	HDPE	81	0.005	DMH–2
CB–5	18	HDPE	70	0.005	CB–4(FD)
CB–6	15	HDPE	94	0.005	CB–5
DET OUT	24	HDPE	7	0.000	OCS–1
DMH–1	12	HDPE	66	0.014	CB–6
DMH–2	6	HDPE	10	0.010	OWS–IN
DMH–2	18	HDPE	29	0.032	DET IN–2
DMH–3	12	HDPE	30	0.010	CB–3(FD)
OCS–1	18	HDPE	26	0.019	FES–1
OWS–OUT	6	HDPE	7	0.013	DET IN–3

DRAINAGE STRUCTURES

CB–1
RIM=64.55
INV.OUT=61.05

CB–2
RIM=63.70
INV.OUT=60.10

CB–3(FD)
RIM=62.80
INV.IN=58.90(DMH–3)
INV.OUT=58.80

CB–4(FD)(DG)
RIM=61.70
INV.IN=58.05(CB–5)
INV.OUT=57.95

CB–5
RIM=63.05
INV.IN=58.65(CB–6)
INV.OUT=58.40

CB–6
RIM=63.90
INV.IN=59.40(CB–2)
INV.IN=59.50(DMH–1)
INV.OUT=59.15

DMH–1
RIM=65.30
INV.IN=60.50(CB–1)
INV.OUT=60.40

DMH–2
RIM=63.30
INV.IN=57.55(CB–4(FD))
INV.OUT=57.95 (18" BYPASS)
INV.OUT=57.45 (6" LOW FLOW)

DMH–3
RIM=64.00
INV.IN=59.25(RD)
INV.OUT=59.20

FES–1
INV.=56.50

4,000 GAL OIL/WATER SEPARATOR–1
(OWS–1)
RIM=63.75±
INV.IN=57.35
INV.OUT=57.10

UNDERGROUND DETENTION SYSTEM
(UG DET)
36"ø SOLID (WT) PIPES
4 ROWS + 2 HEADERS
67.00'L x 19.25'W
S=0.000 FT/FT
INV.PIPE=57.00
INV'S.IN=57.00
INV.OUT=57.00
(SEE DETAIL)

OUTLET CONTROL STRUCTURE (OCS–1)
RIM=63.70
INV.IN=57.00
INV.OUT=57.00
(SEE DETAIL)

(FD) DENOTES FIRST DEFENSE FD–4HC HYRODYNAMIC PARTICLE SEPARATOR OR APPROVED EQUAL.

(WT) DENOTES WATERTIGHT PIPE JOINTS

(DG) DENOTES DOUBLE CATCH BASIN FRAME AND GRATE

LEGEND

- VGC — VERTICAL GRANITE CURB
- SSLW — SINGLE SOLID LINE WHITE
- G — GAS LINE
- U/GAT — UNDERGROUND COMM
- W — WATER LINE
- E — UNDERGROUND ELECTRIC
- CHAIN LINK FENCE
- 90 — CONTOUR ELEVATION
- TREE
- UTILITY POLE
- GUY WIRE
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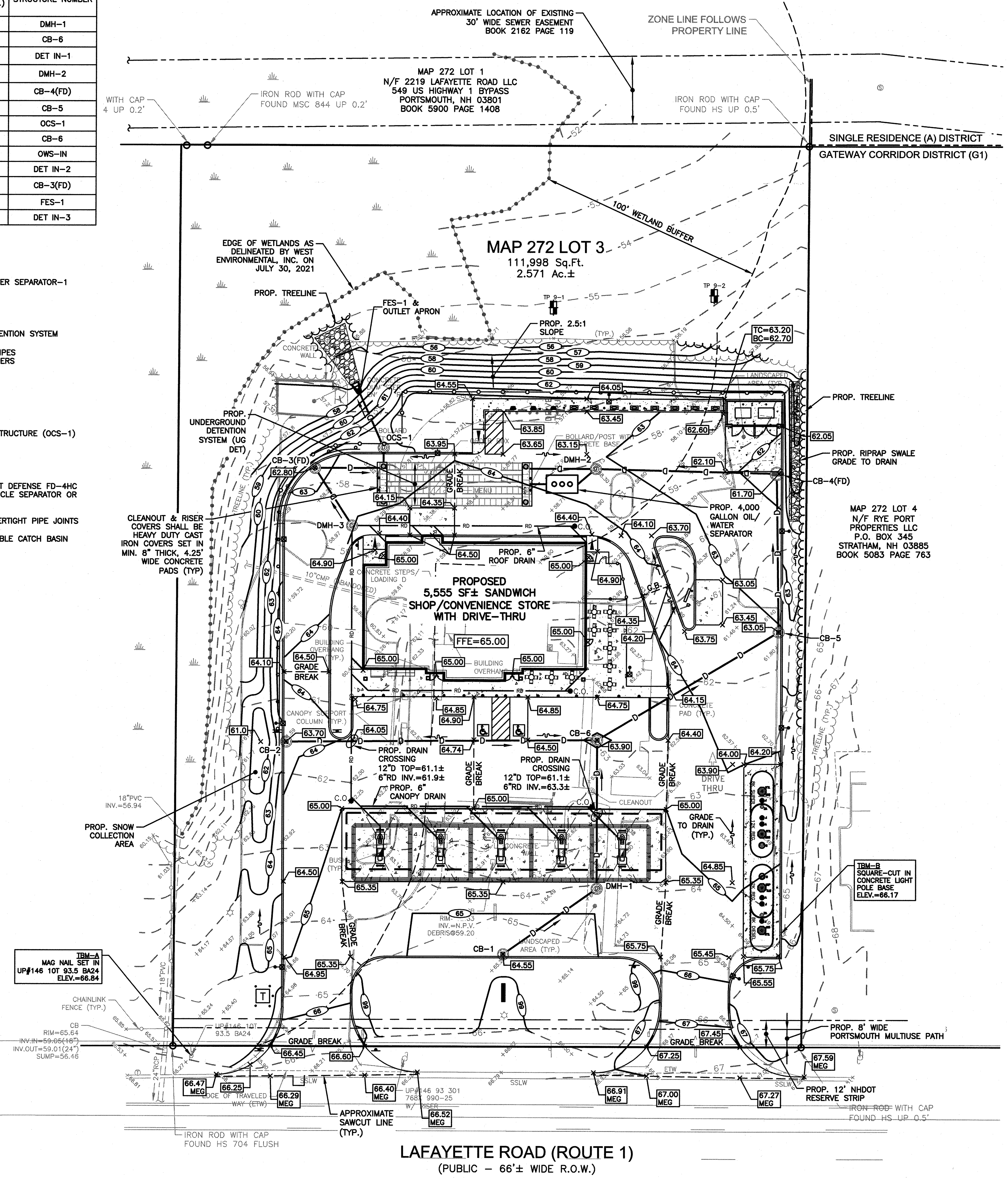
- PROPERTY LINE
- ABUTTER PROPERTY LINE
- ZONE LINE
- C.O. — PROP. CLEANOUT
- CB–1 — PROP. CATCH BASIN
- DMH–1 — PROP. DRAIN MANHOLE
- MEG — MEET EXISTING GRADE
- 331.25 — PROP. SPOT ELEVATION
- 330 — PROP. CONTOUR ELEVATION
- TW= — TOP OF WALL ELEV.
- BW= — BOTTOM OF WALL ELEV.
- G.B. — GRADE BREAK
- TP — TEST PIT



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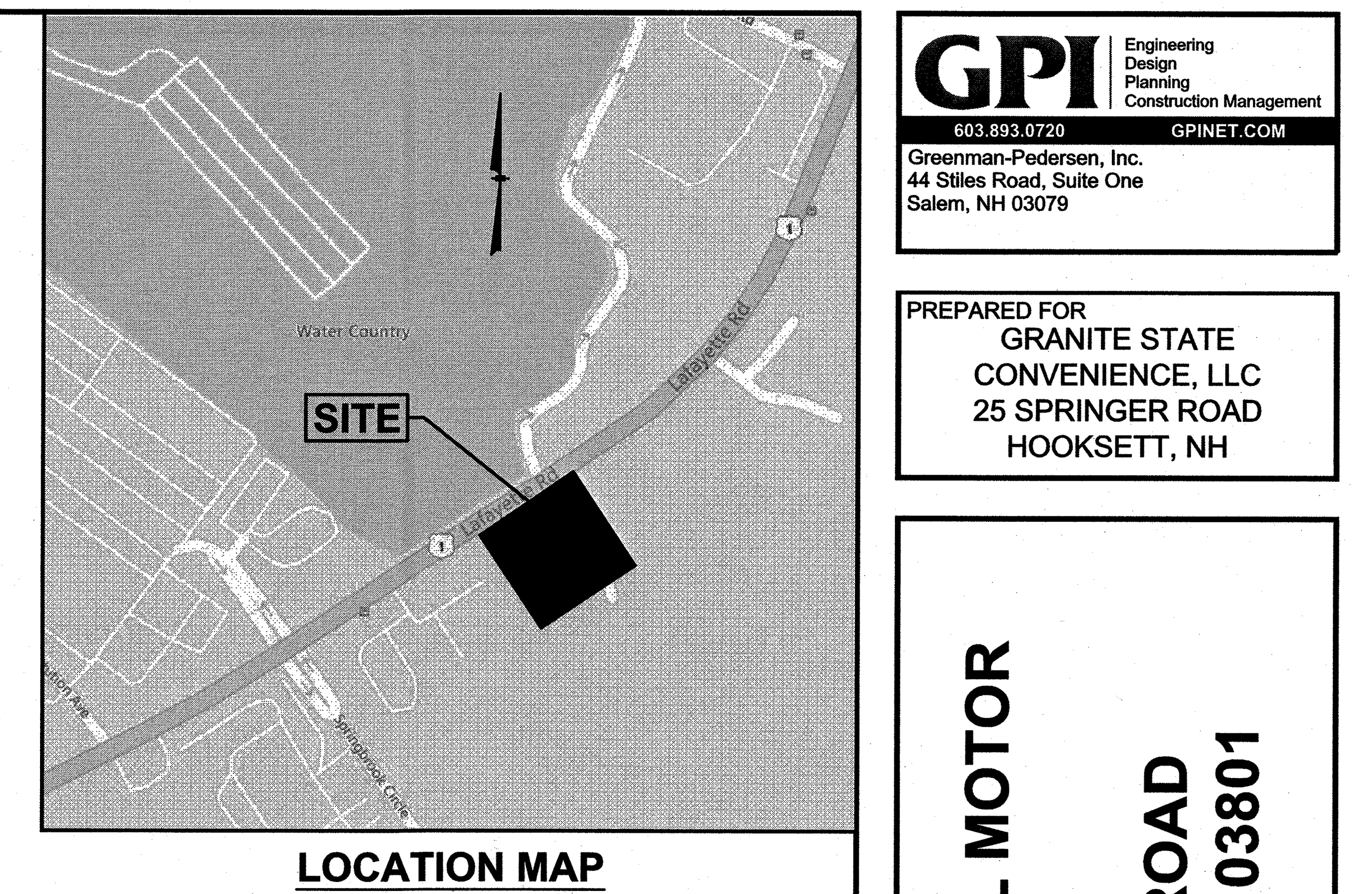

LOCATION MAP
(NOT TO SCALE)

NOTES:

1) ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH–DENSITY POLYETHYLENE PIPE WITH STANDARD JOINTS, DUAL–WALL, SMOOTH INTERIOR, AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLAN. THE UNDERGROUND DETENTION SYSTEM SHALL HAVE WATER TIGHT JOINTS MEETING ASTM D3212 SPECIFICATIONS.
2) ALL ROOF AND CANOPY DRAIN PIPE SHALL BE 6" PVC (SDR–35).
3) ELEVATIONS ARE BASED ON NAVD88 DATUM.
4) ALL PROPOSED ELEVATIONS AS SHOWN ARE BOTTOM OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.
5) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.
6) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
8) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIG–SAFE (DIAL 811) PRIOR TO COMMENCING ANY EXCAVATION.
9) THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE SITE CONSTRUCTION SINCE THE DISTURBANCE EXCEEDS ONE ACRE (ACTUAL DISTURBANCE = 75,000 SF±). THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO NHDOT AND THE CITY DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT–OF–WAY.
12) ALL ADA ACCESSIBLE WALKWAYS CANNOT EXCEED 5% RUNNING SLOPE AND 2% CROSS SLOPE, RAMPS CANNOT EXCEED 8.33% RUNNING SLOPE AND 2% CROSS SLOPE, AND ACCESSIBLE PARKING STALLS AND ACCESS AISLES CANNOT EXCEED 2% SLOPE IN ANY DIRECTION. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.
13) SEE UTILITY PLAN FOR DETAILED UTILITY LAYOUT.
14) ALL PROPOSED CATCH BASINS SHALL HAVE 4' SUMPS AND OUTLETS EQUIPPED WITH "ELIMINATOR" OIL HOODS OR APPROVED EQUAL.
15) ALL PIPE DATA IS CALCULATED TO CENTER OF STRUCTURE, TYP.
16) CONTRACTOR TO REFER TO THE INSPECTION & MAINTENANCE (I&M) MANUAL FOR STORMWATER MANAGEMENT SYSTEMS & SITE MAINTENANCE DURING AND AFTER CONSTRUCTION.
17) CONTRACTOR TO INSTALL RISER STRUCTURES AT EACH CORNER OF UNDERGROUND DETENTION SYSTEMS AND CLEANOUTS AT EACH END OF EACH ROW TO PROVIDE ACCESS POINTS FOR CLEANING AND MAINTENANCE.
   - TOTAL RISERS PROPOSED = 4
   - TOTAL CLEANOUTS PROPOSED = 4

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STATE OF NEW HAMPSHIRE
CORY N. MASON
No.17099
LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS

NO.	REVISION	DATE

JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

GRADING & DRAINAGE PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163

5 OF 14

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LEGEND

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- SMH-1 — PROP. SEWER MANHOLE
- PROP. GATE VALVE

NAD 83

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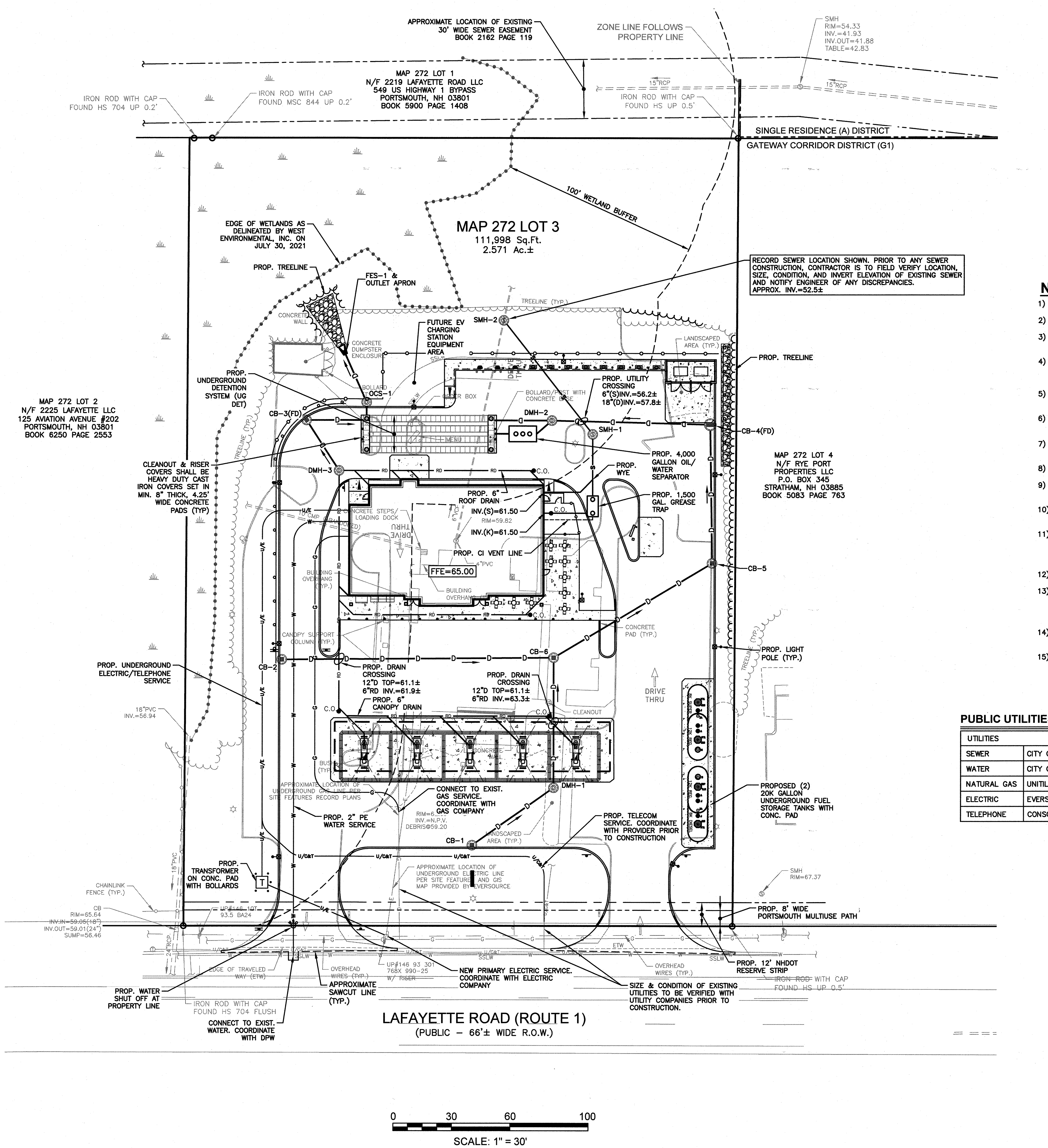

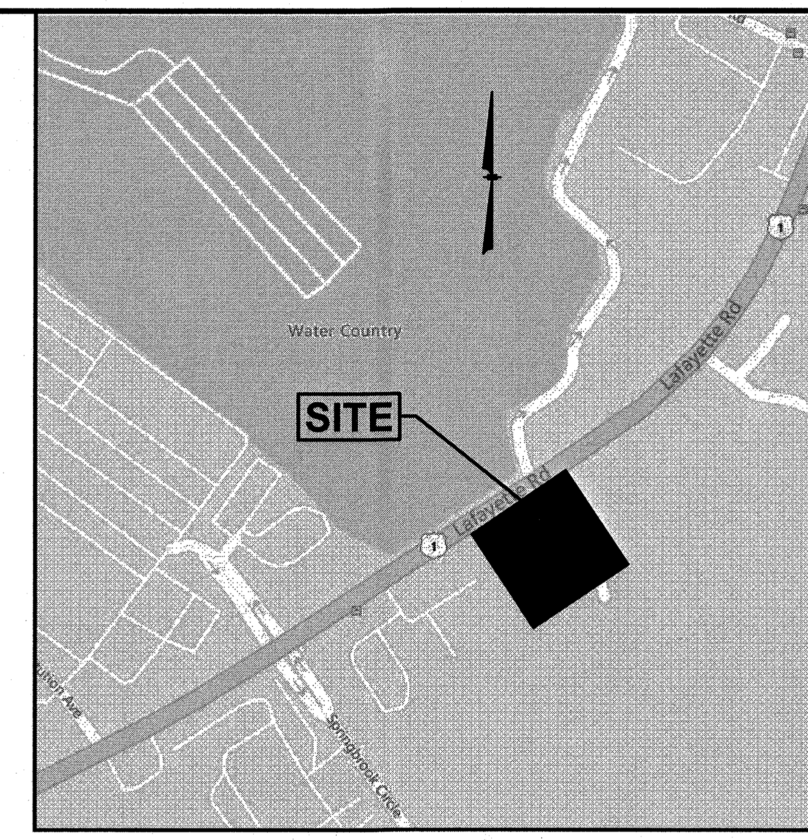

LOCATION MAP

(NOT TO SCALE)

NOTES:

1) ALL SANITARY SEWER PIPE SHALL BE PVC (SDR–35), UNLESS OTHERWISE NOTED.
2) ALL WATER PIPE SHALL BE POLYETHYLENE, UNLESS OTHERWISE NOTED.
3) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.
4) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.
5) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
6) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIG–SAFE (1–888–344–7233) PRIOR TO COMMENCING ANY EXCAVATION.
7) ALL WATER AND SEWER CONSTRUCTION SHALL CONFORM TO DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS.
8) THIS SITE IS SERVED BY MUNICIPAL SEWER AND WATER.
9) ALL ELECTRIC, TELEPHONE AND CABLE TV LINES ARE TO BE UNDERGROUND AND INSTALLED IN CONFORMANCE WITH APPLICABLE UTILITY CO. SPECIFICATIONS.
10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO NHDOT AND CITY DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT–OF–WAY.
12) SEE GRADING & DRAINAGE PLAN FOR DETAILED DRAINAGE INFORMATION.
13) ELECTRICAL CONDUIT WITHIN 20' OF TANKS OR DISPENSERS MAY NEED TO BE RIGID METAL CONDUIT WITH CONCRETE ENCASEMENT. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AND/OR TOWN ELECTRICAL INSPECTOR AS REQUIRED.
14) REFER TO DETAIL SHEETS FOR ALL UTILITY AND DRAINAGE STRUCTURE DETAILS AND ADDITIONAL INFORMATION.
15) ELECTRIC CONDUIT TO BE PROVIDED FOR FUTURE EV CHARGING STATIONS.

PUBLIC UTILITIES

UTILITIES		AVAILABLE
SEWER	CITY OF PORTSMOUTH PUBLIC WORKS DEPT., PETER RICE 603–427–1530	YES
WATER	CITY OF PORTSMOUTH PUBLIC WORKS DEPT., PETER RICE 603–427–1530	YES
NATURAL GAS	UNITIL, DAVE MACLEAN 603–294–5261	YES
ELECTRIC	EVERSOURCE, CASEY MCDONALD 603–519–0924	YES
TELEPHONE	CONSOLIDATED COMMUNICATIONS	YES

SEWER PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (inches)	TYPE OF PIPE	APPROX. PIPE LENGTH (feet)	SLOPE OF PIPE (ft./ft.)	TO: STRUCTURE NUMBER
BLDG.	6	CI	22	0.064	GR. TRAP
GR. TRAP	6	PVC	31	0.052	SMH–1
BLDG.	6	PVC	30	0.073	WYE
SMH–1	6	PVC	73	0.049	SMH–2

SEWER STRUCTURES

1,500 GAL. GREASE TRAP
RIM=64.10
INV.IN=60.10
INV.OUT=59.85

SMH–1 (DROP)
RIM=63.20
INV.IN=58.70
INV.OUT=56.55

SMH–2
RIM=57.00
INV.IN=53.00
INV.OUT=52.5±
(CONTRACTOR TO VERIFY)

PROP. WYE
INV.=59.3±

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PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE
CORY N. MASON No.17099
LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS

NO.	REVISION	DATE

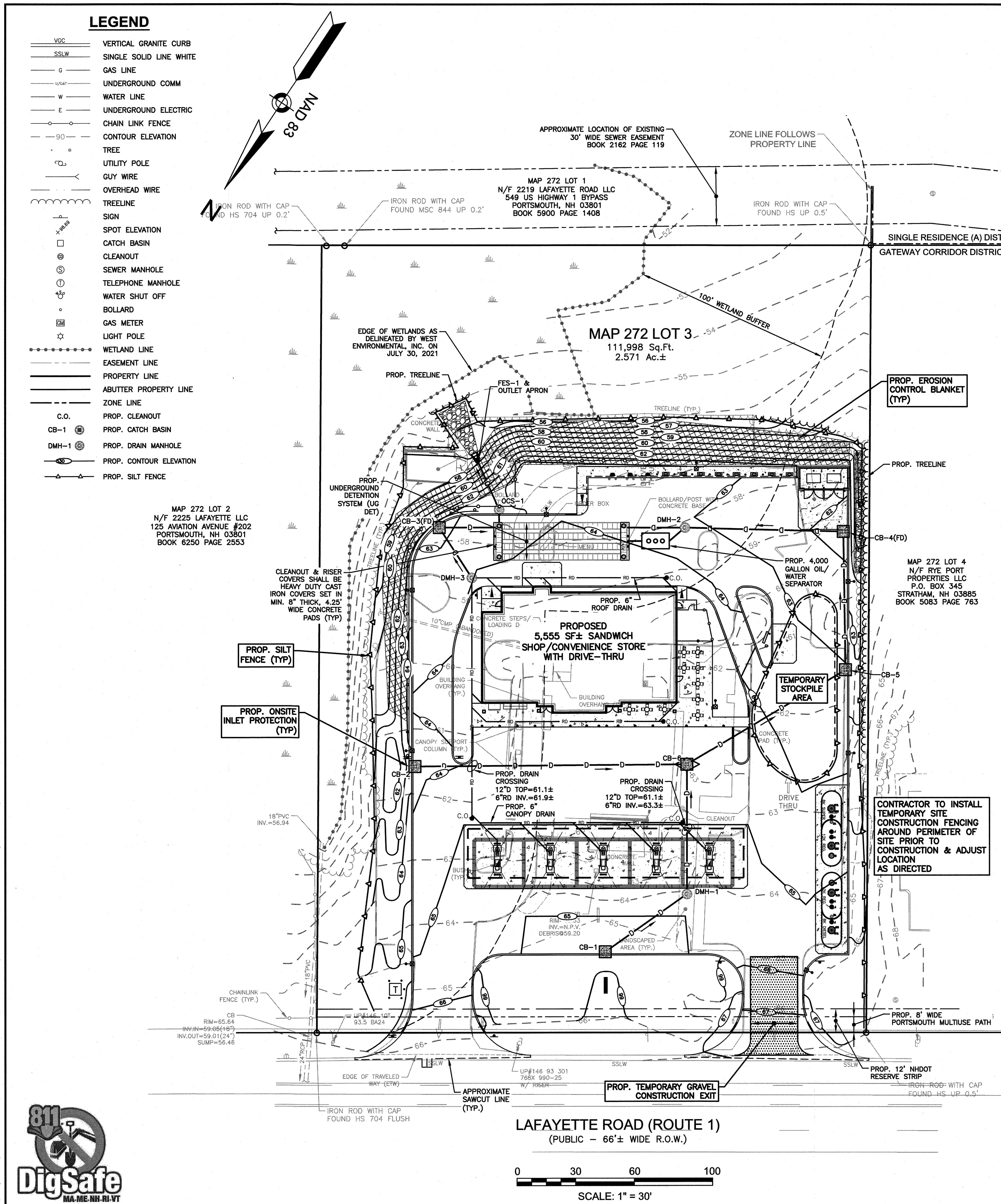
JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

UTILITY PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163



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CONSTRUCTION SEQUENCE:

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

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

3) CONSTRUCT DRIVEWAYS AND PERFORM SITE GRADING.

4) INSTALL UNDERGROUND UTILITIES & DRAINAGE.

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

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

7) BEGIN EXCAVATION FOR AND CONSTRUCTION OF BUILDINGS.

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

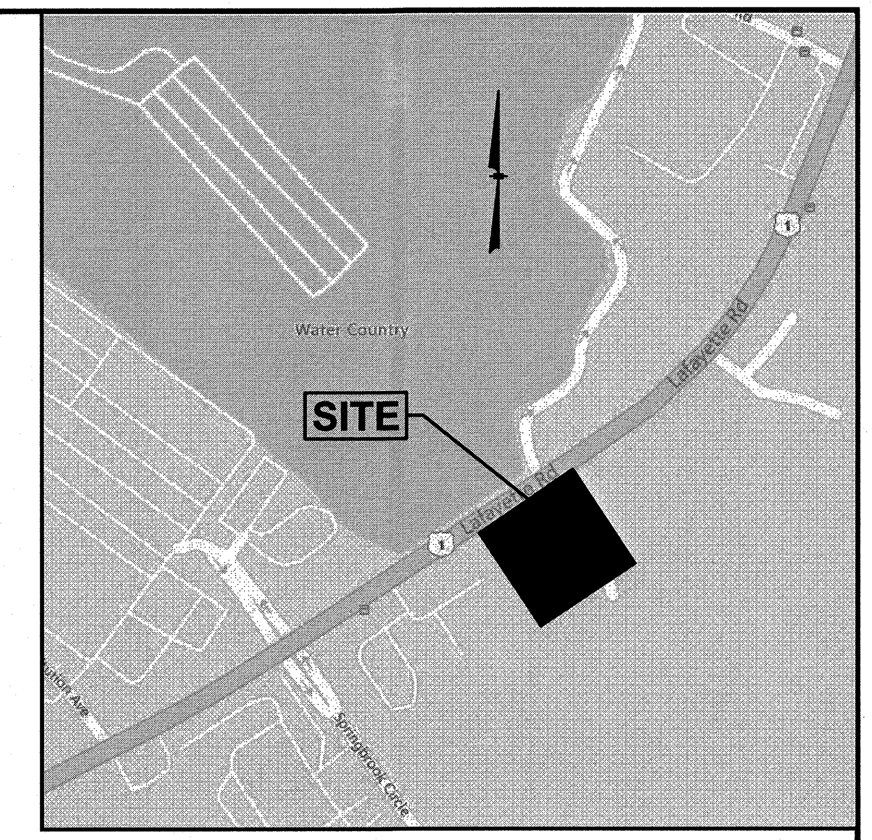
9) COMPLETE PERMANENT SEEDING AND LANDSCAPING.

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

WINTER STABILIZATION NOTES:

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

1) THE AREA OF EXPOSED, UNSTABILIZED SOIL SHOULD BE LIMITED TO ONE ACRE AND SHOULD BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. SUBJECT TO APPLICABLE REGULATIONS, THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF ACTIVITIES ARE CONDUCTED ACCORDING TO A WINTER CONSTRUCTION PLAN, DEVELOPED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF NEW HAMPSHIRE OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CSPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC.
2) STABILIZATION AS FOLLOWS SHOULD BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS:
   A. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING, OR 2 INCHES OF EROSION CONTROL MIX (SEE DESCRIPTION OF EROSION CONTROL MIX BERMS FOR MATERIAL SPECIFICATION).
   B. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER OOTHAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX, UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER. NOTE THAT COMPOST BLANKETS SHOULD NOT EXCEED 2 INCHES IN THICKNESS OR THEY MAY OVERHEAT.
3) ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.
4) INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX SHOULD NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH.
5) ALL MULCH APPLIED DURING WINTER SHOULD BE ANCHORED (E.G., BY NETTING, TRACKING, WOOD CELLULOSE FIBER).
6) STOCKPILES OF SOIL MATERIALS SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. MULCHING SHOULD BE DONE WITHIN 24 HOURS OF STOCKING, AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. NO SOIL STOCKPILE SHOULD BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100 FEET FROM ANY WETLAND OR OTHER WATER RESOURCE AREA.
7) FROZEN MATERIALS, (E.G., FROST LAYER THAT IS REMOVED DURING WINTER CONSTRUCTION), SHOULD BE STOCKPILED SEPARATELY AND IN A LOCATION THAT IS AWAY FROM ANY AREA NEEDING TO BE PROTECTED. STOCKPILES OF FROZEN MATERIAL CAN MELT IN THE SPRING AND BECOME UNWORKABLE AND DIFFICULT TO TRANSPORT DUE TO THE HIGH MOISTURE CONTENT IN THE SOIL.
8) INSTALLATION OF EROSION CONTROL BLANKETS SHOULD NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.
9) ALL GRASS-LINED DITCHES AND CHANNELS SHOULD BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS, AS DETERMINED BY A QUALIFIED PROFESSIONAL ENGINEER OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CSPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC. IF A STONE LINING IS NECESSARY, THE CONTRACTOR MAY NEED TO RE-GRADE THE DITCH AS REQUIRED TO PROVIDE ADEQUATE CROSS-SECTION AFTER ALLOWING FOR PLACEMENT OF THE STONE.
10) ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.
11) AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
12) SEDIMENT BARRIERS THAT ARE INSTALLED DURING FROZEN CONDITIONS SHOULD CONSIST OF EROSION CONTROL MIX BERMS, OR CONTINUOUS CONTAINED BERMS. SILT FENCES AND HAY BALES SHOULD NOT BE INSTALLED WHEN FROZEN CONDITIONS PREVENT PROPER EMBEDMENT OF THESE BARRIERS.



LOCATION MAP

(NOT TO SCALE)

EROSION CONTROL NOTES:

1) THE EROSION CONTROL PROCEDURES SHALL CONFORM TO THE NH STORMWATER MANUAL, VOLUME 3, EROSION & SEDIMENT CONTROLS DURING CONSTRUCTION, DECEMBER 2008, OR LATEST EDITION.

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

3) LIMIT OF MAXIMUM AREA OF EXPOSED SOIL AT ANY ONE TIME TO LESS THAN 5 ACRES. THE EXPOSED AREA THAT IS BEING ACTIVELY WORKED DURING WINTER IS TO BE LESS THAN 3 ACRES DURING THE WINTER SEASON.

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

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

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

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

8) DURING GRADING OPERATIONS INSTALL HAY BALE BARRIERS ALONG TOE OF SLOPE OF FILL AREAS WHERE SHOWN. BARRIERS ARE TO BE MAINTAINED UNTIL DISTURBED AREAS ARE PAVED OR GRASSED.

9) THE FILL MATERIAL SHALL BE OF APPROVED SOIL TYPE FREE FROM STUMPS, ROOTS, WOOD, ETC. TO BE PLACED IN 12" LIFTS OR AS SPECIFIED. BULLDOZERS, TRUCKS, TRACTORS, OR ROLLERS MAY BE USED FOR COMPACTION BY ROUTING THE EQUIPMENT TO ALL AREAS OR EACH LAYER.

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

TEMPORARY EROSION CONTROL MEASURES:

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

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

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

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

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

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

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

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

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

10) ALL CATCH BASIN INLETS WILL BE PROTECTED WITH INLET PROTECTION.

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

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

13) TO PREVENT TRACKING OF SEDIMENT ONTO THE EXISTING ROADS, ALL CONSTRUCTION TRAFFIC CAN ONLY EXIT THE SITE OVER THE CONSTRUCTION ENTRANCES SHOWN ON THIS PLAN.

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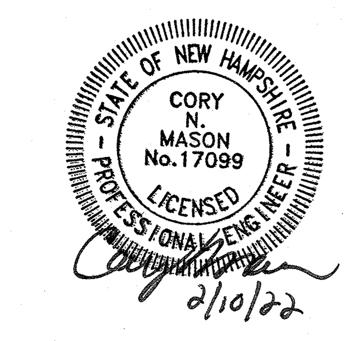

REVISIONS		
NO.	REVISION	DATE

JANUARY 26, 2022

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CCC/NID	DRJ

EROSION & SEDIMENT CONTROL PLAN

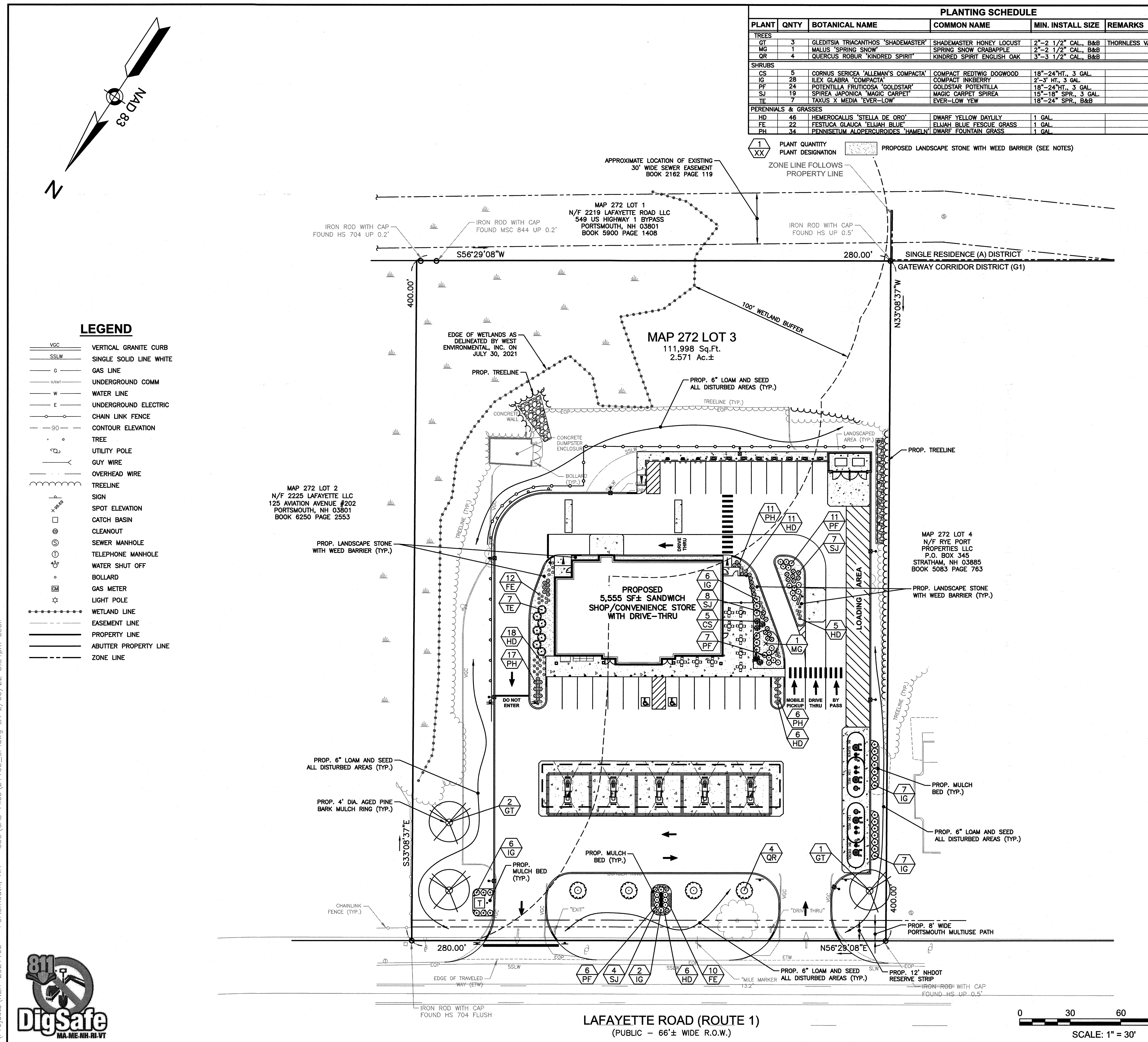
SCALE: 1"=30'

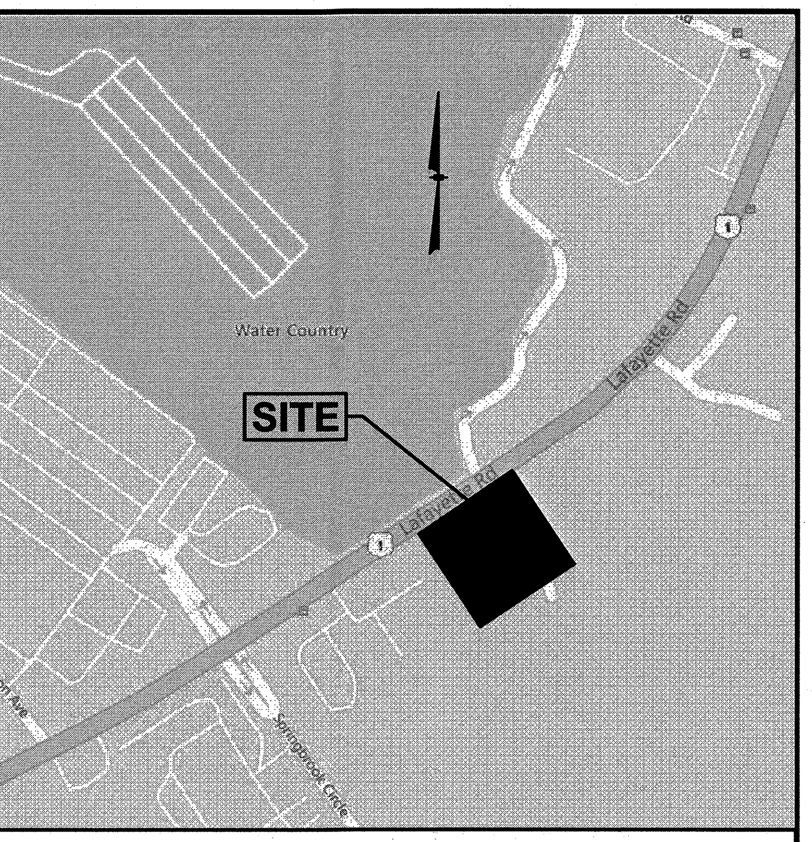
PROJECT NO. NEX-2021163

PLANTING SCHEDULE					
PLANT	QNTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALL SIZE	REMARKS
TREES					
GT	3	GLEDITSIA TRIACANTHOS 'SHADEMASTER'	SHADEMASTER HONEY LOCUST	2"–2 1/2" CAL., B&B	THORNLESS VARIETY
MG	1	MALUS 'SPRING SNOW'	SPRING SNOW CRABAPPLE	2"–2 1/2" CAL., B&B	
QR	4	QUERCUS ROBUR 'KINDRED SPIRIT'	KINDRED SPIRIT ENGLISH OAK	3"–3 1/2" CAL., B&B	
SHRUBS					
CS	5	CORNUS SERICEA 'ALLEMAN'S COMPACTA'	COMPACT REDTWIG DOGWOOD	18"–24"HT., 3 GAL.	
IG	28	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY	2'–3' HT., 3 GAL.	
PF	24	POTENTILLA FRUTICOSA 'GOLDSTAR'	GOLDSTAR POTENTILLA	18"–24"HT., 3 GAL.	
SJ	19	SPIREA JAPONICA 'MAGIC CARPET'	MAGIC CARPET SPIREA	15"–18" SPR., 3 GAL.	
TE	7	TAXUS X MEDIA 'EVER-LOW'	EVER-LOW YEW	18"–24" SPR., B&B	
PERENNIALS & GRASSES					
HD	46	HEMEROCALLIS 'STELLA DE ORO'	DWARF YELLOW DAYLILY	1 GAL.	
FE	22	FESTUCA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE GRASS	1 GAL.	
PH	34	PENNISETUM ALOPERCUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	1 GAL.	

1 / XX — PLANT QUANTITY / PLANT DESIGNATION

PROPOSED LANDSCAPE STONE WITH WEED BARRIER (SEE NOTES)





LOCATION MAP

(NOT TO SCALE)

NOTES:

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

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

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

4) LANDSCAPE STONE SHALL BE TAN RIVERBED STONE. STONE SHALL BE (1½) INCHES IN DIAMETER AND APPLIED AT A THICKNESS OF (4) INCHES DEEP. ALL FINES SHALL BE SCREENED FROM THE AGGREGATE. THE MATERIAL SHALL BE FREE OF ORGANIC AND INORGANIC DEBRIS AND TRASH. SUBMIT SAMPLE IN A 5-GALLON BUCKET TO THE DEVELOPER FOR APPROVAL.

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

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

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

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

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

LIMESTONE: 100 LBS./1,000 SQUARE FEET.
FERTILIZER: 500 LBS/ACRE OF 10-20-20 OR 1000 LBS/ACRE OF 5-10-10.
STRAW MULCH: APPROXIMATELY 3 TONS/ACRE

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

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

10) FOR TEMPORARY EROSION CONTROL NOTES, SEE DETAIL SHEET.

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

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

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

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

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

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

17) ALL WORK SHALL BE COORDINATED WITH APPLICABLE EPA NPDES/SWPPP PERMIT WORK AS REQUIRED.

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

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LANDSCAPE PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163

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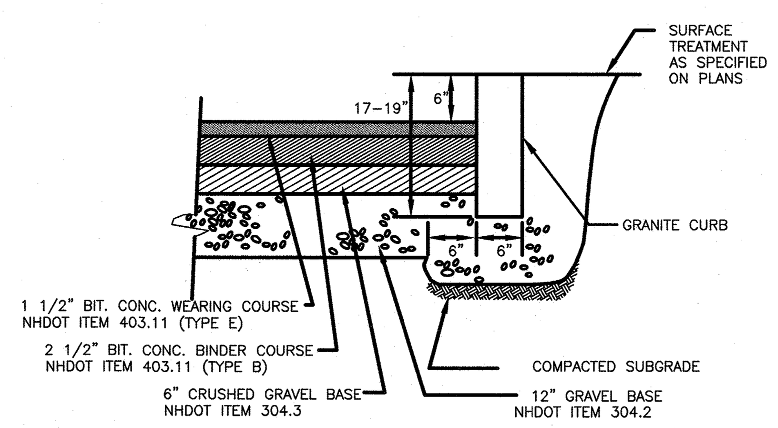
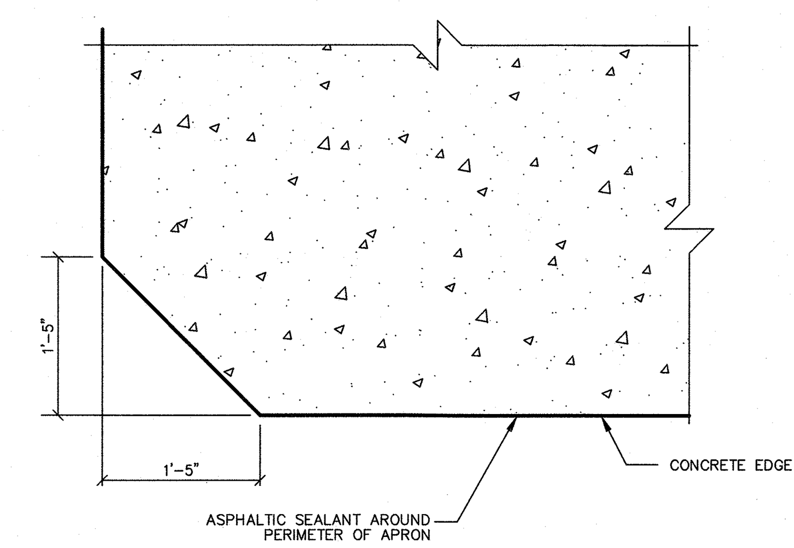


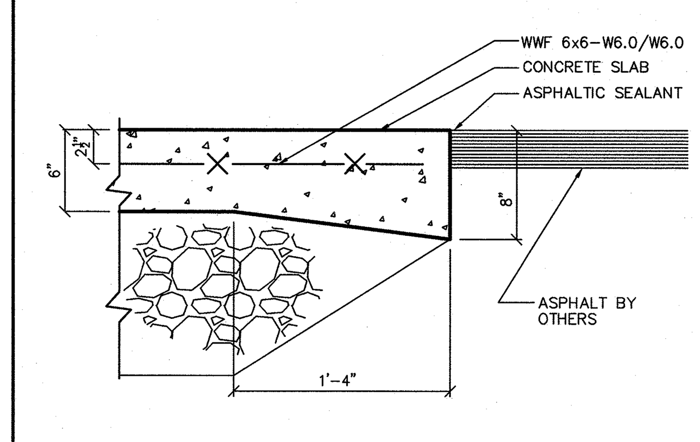
PAVEMENT AND VERTICAL GRANITE CURB SECTION ON-SITE

NOT TO SCALE



DISPENSER APRON CHAMFER DETAIL

NOT TO SCALE



DISPENSER APRON EDGE DETAIL

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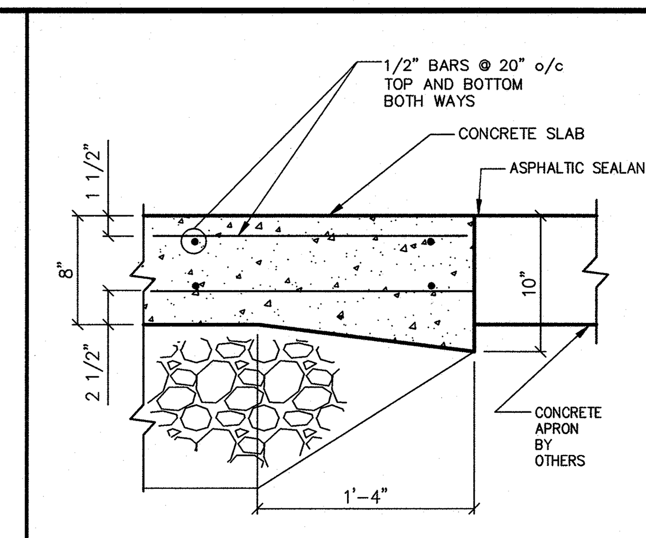
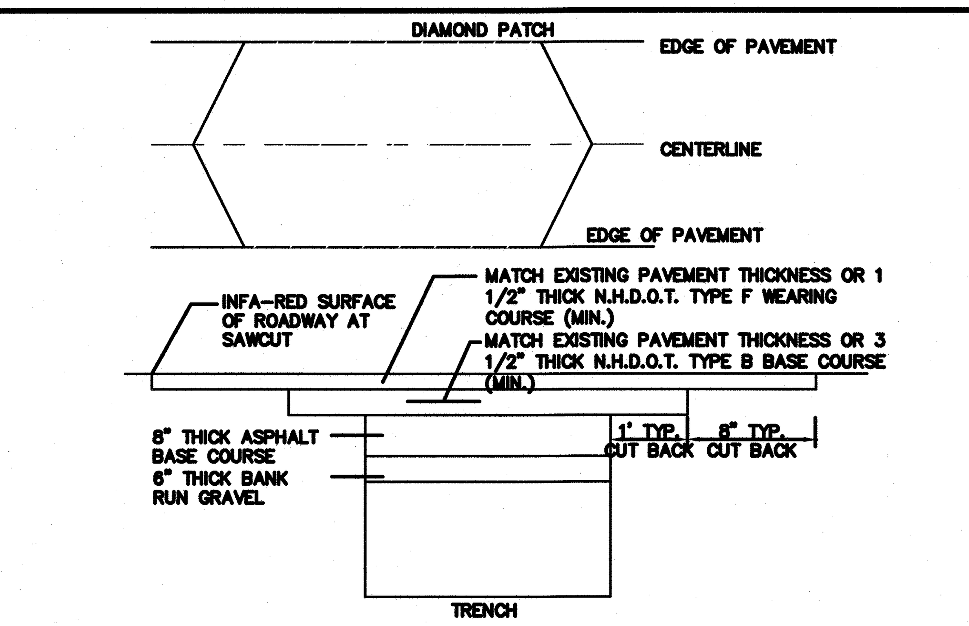


TANK APRON EDGE DETAIL

NOT TO SCALE



TYPICAL PAVEMENT REPAIR DETAIL

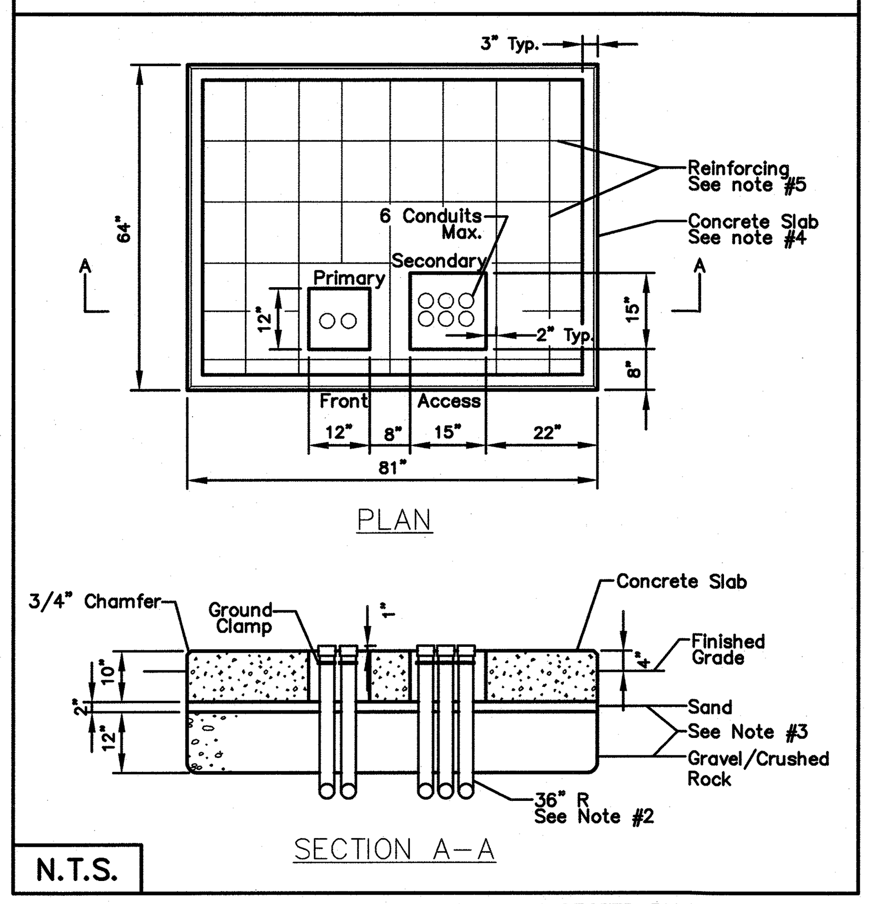
NOT TO SCALE

TRANSFORMER PAD NOTES

NOTES:

1) THIS STANDARD COVERS SPECIFICATIONS FOR THE CONSTRUCTION OF A CONCRETE FOUNDATION FOR PAD-MOUNTED TRANSFORMER.
2) INSTALL CONDUIT AS SHOWN BEFORE SLAB IS POURED. USE 36" RADIUS BENDS, WITH COUPLINGS, NIPPLES AND BUSHINGINGS AS REQUIRED. BENDS FOR PRIMARY CABLES SHALL BE GALVANIZED STEEL. TERMINATIONS OF CONDUITS SHALL BE LOCATED AS SHOWN IN SECTION A-A. THE NIPPLE AND BUSHING SHALL BE INSTALLED AFTER THE TRANSFORMER IS PLACED AND BEFORE THE CABLES ARE PULLED.
3) GRAVEL AND SAND SHALL BE PLACED AS SHOWN IN SECTION A-A; THE GRAVEL BEING COMPACTED AND THE SAND THOROUGHLY WETTED JUST BEFORE PLACING THE CONCRETE.
4) CONCRETE TO CONFORM TO GS 0211 OF LATEST DATE, (MIX M-4) FOR READY MIX CONCRETE. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
5) REINFORCING TO BE #4 GRADE 60 BARS AND SHALL CONFORM TO ASTM STANDARD A-615 OF LATEST DATE. REINFORCING ROD TO BE LOCATED IN CENTER OF THE SLAB, WITH A MINIMUM OF 2" CLEARANCE FROM FACE OF CONCRETE.
6) GROUND GRID TO BE INSTALLED AS PER GS 2586.

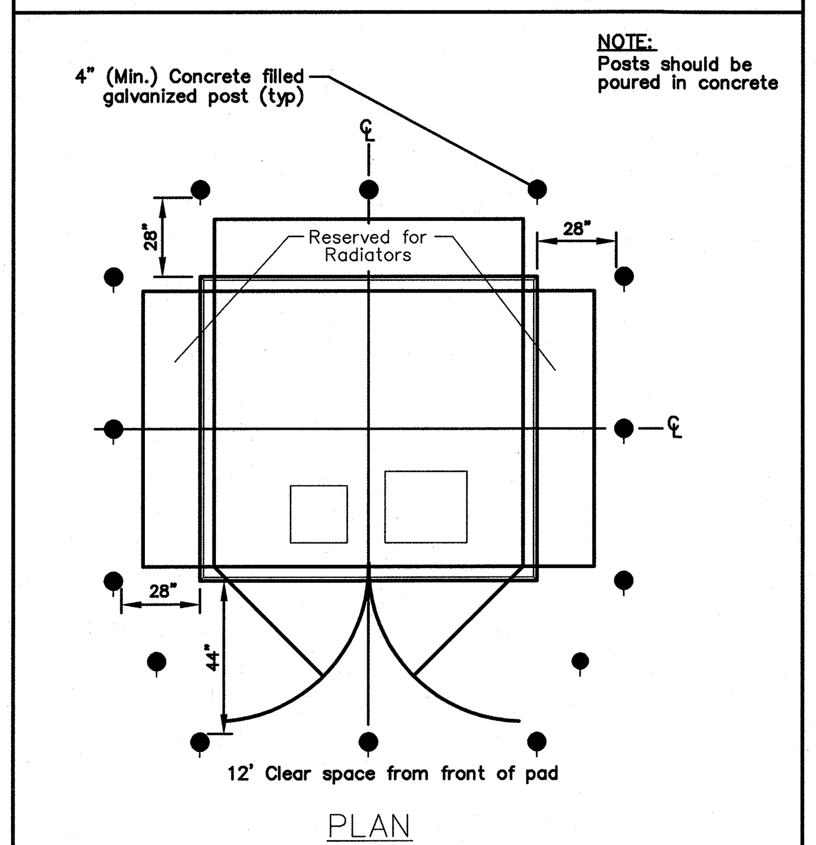
TRANSFORMER PAD DETAIL



N.T.S.

NOTE: REVISE TRANSFORMER PAD DETAILS AS DIRECTED BY LOCAL ELECTRIC COMPANY

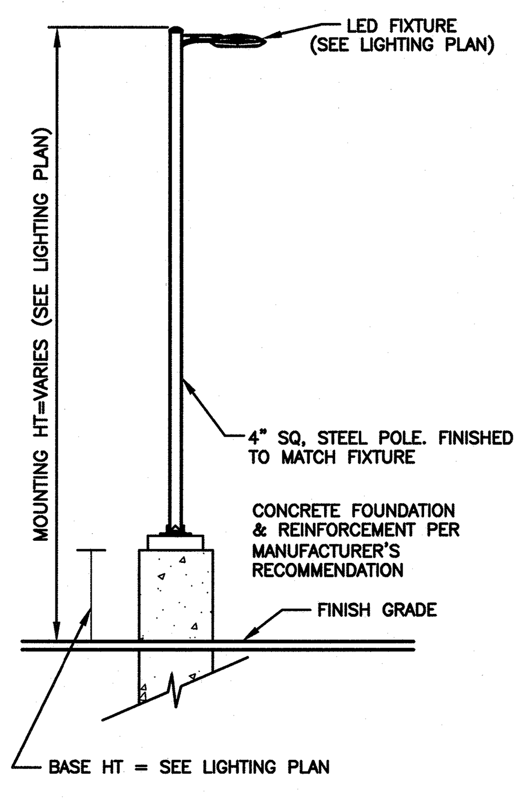
TRANSFORMER PROTECTION DETAIL



N.T.S.

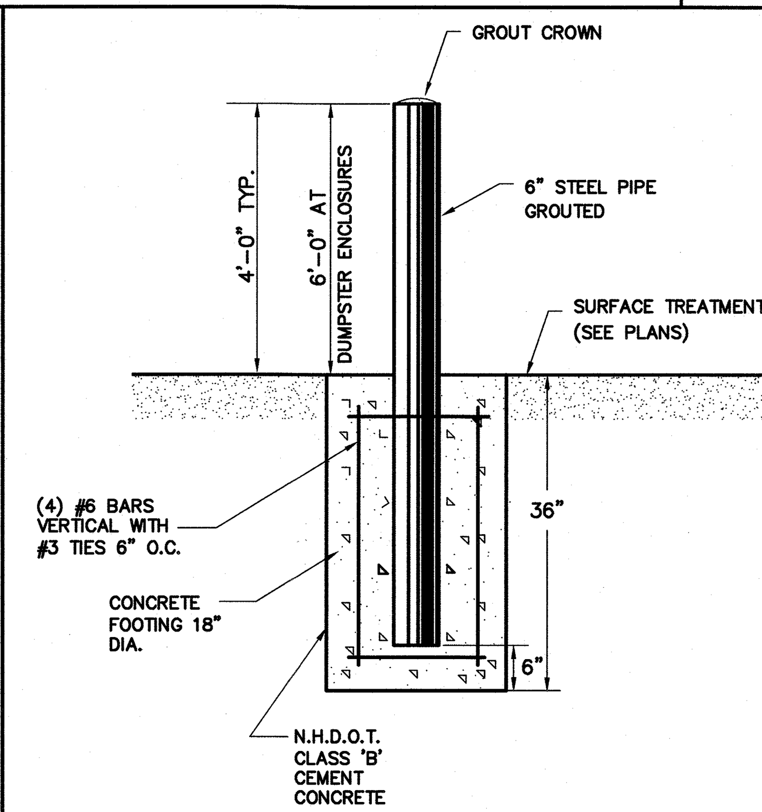
TRANSFORMER PAD DETAILS

NOT TO SCALE



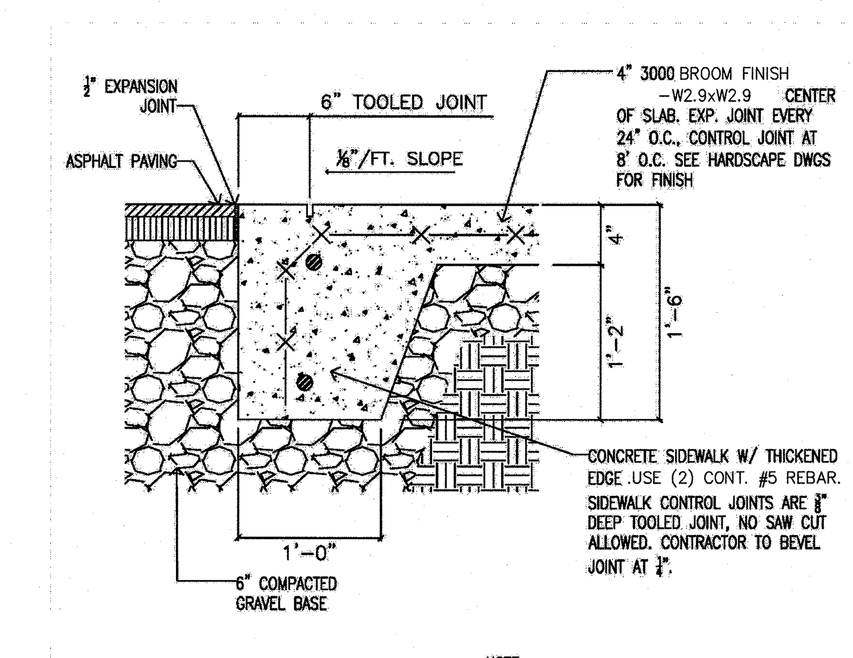
LIGHT FIXTURE DETAIL

NOT TO SCALE



BOLLARD DETAIL

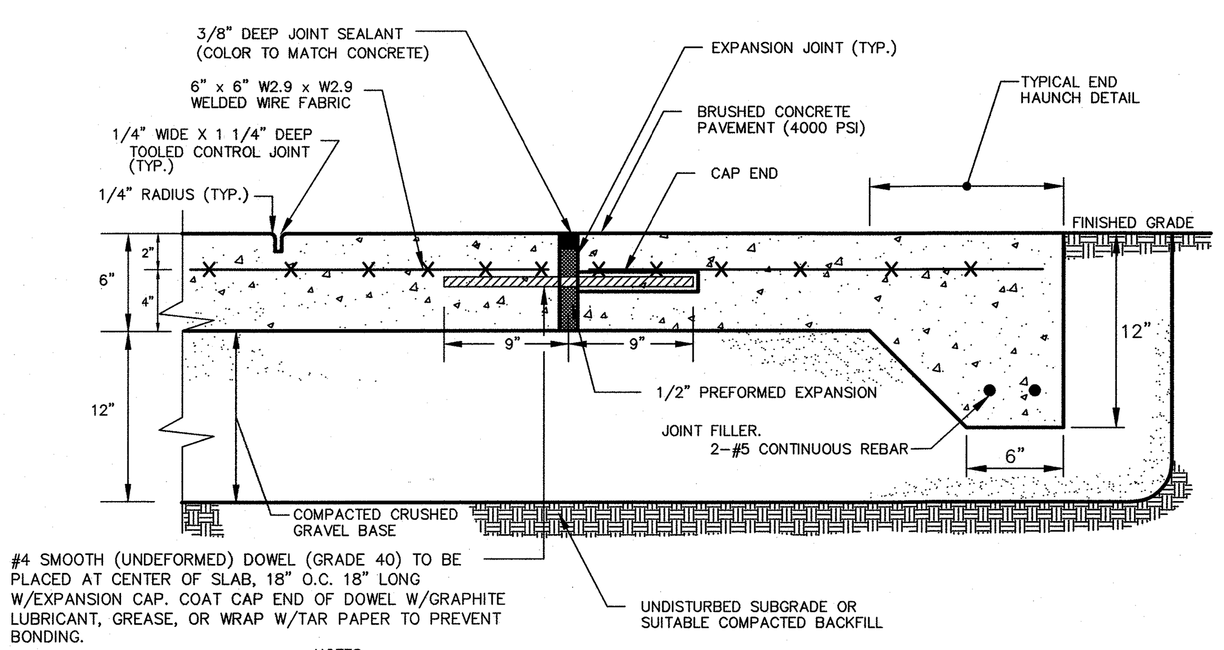
NOT TO SCALE



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

FLUSH CONCRETE SIDEWALK/PARKING DETAIL

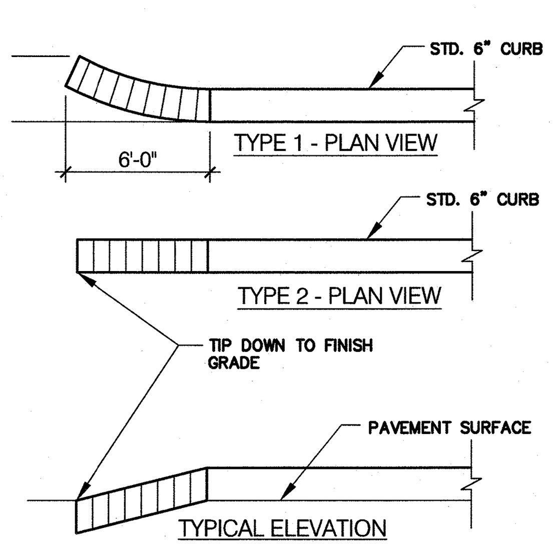
NOT TO SCALE



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

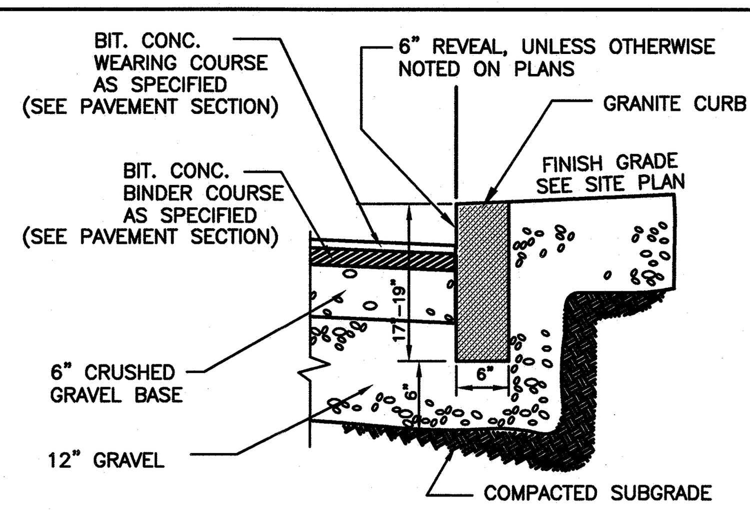
6" HEAVY DUTY CONCRETE PAD DETAILS

NOT TO SCALE



TYPICAL TIP DOWN CURB DETAIL

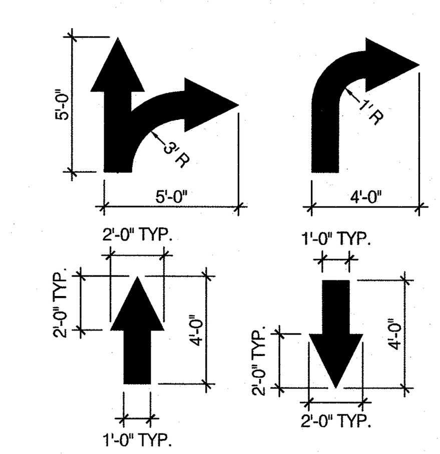
NOT TO SCALE



VERTICAL GRANITE CURB

NOT TO SCALE

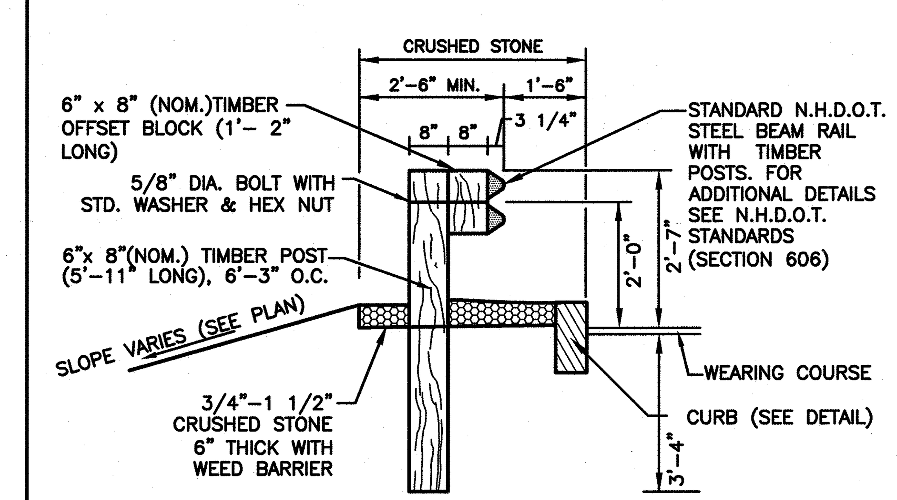
NOTE: SAWCUT 1' OFF FACE OF CURB WHERE INSTALLED IN EXISTING PAVEMENT. PATCH PAVEMENT TO MATCH EXISTING THICKNESS.



ALL PAVEMENT MARKINGS TO BE WHITE PAVEMENT PAINT, UNLESS STATED OTHERWISE.

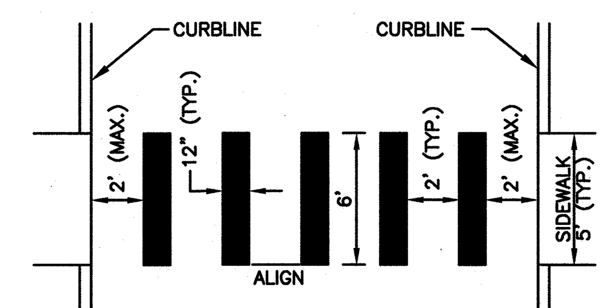
ON-SITE PAVEMENT MARKING DETAILS

NOT TO SCALE



GUARD RAIL DETAIL

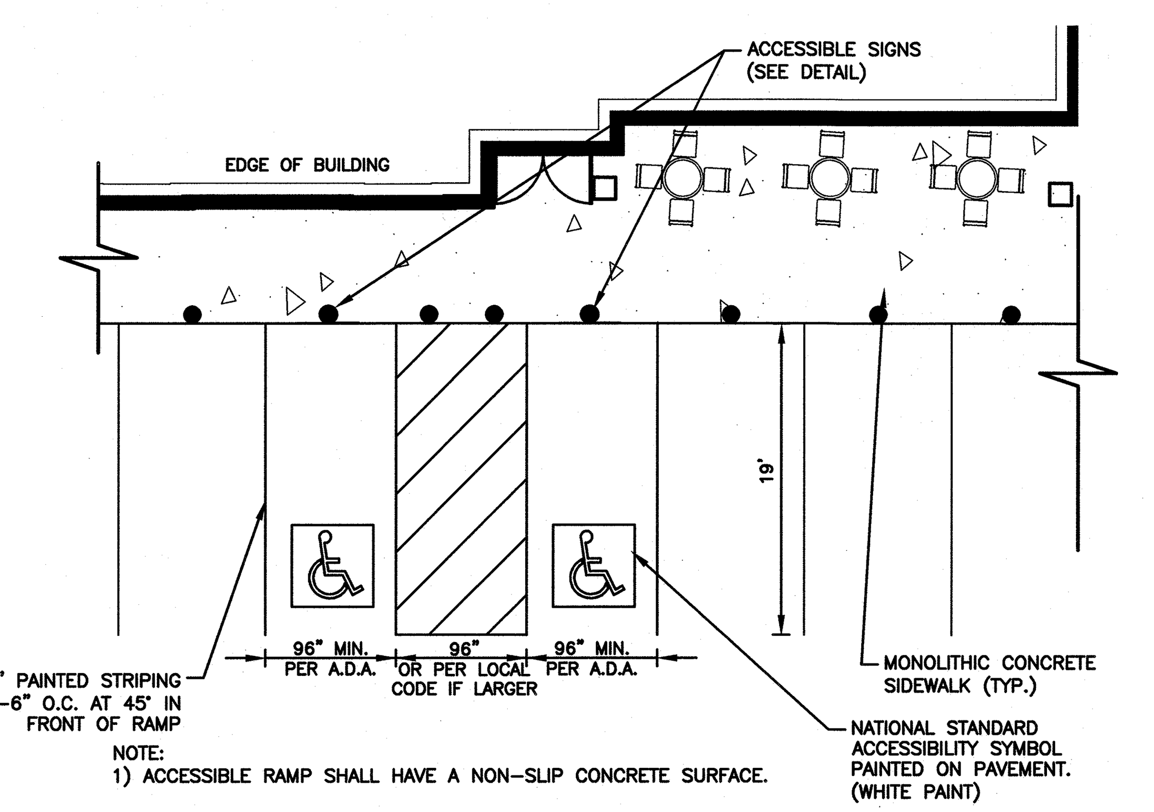
NOT TO SCALE



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

CROSSWALK

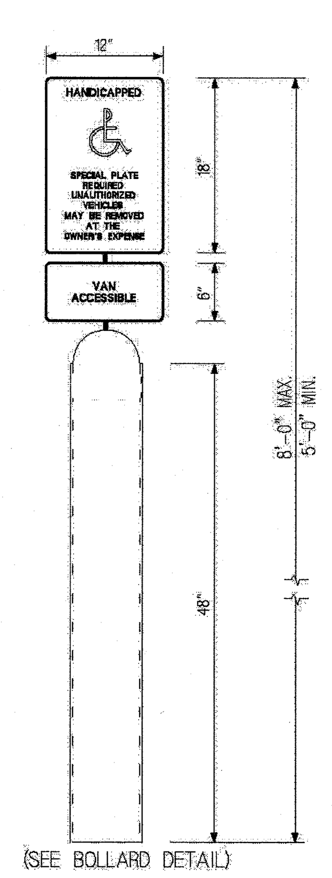
NOT TO SCALE



NOTE:
1) ACCESSIBLE RAMP SHALL HAVE A NON-SLIP CONCRETE SURFACE.

ACCESSIBLE PARKING STALLS

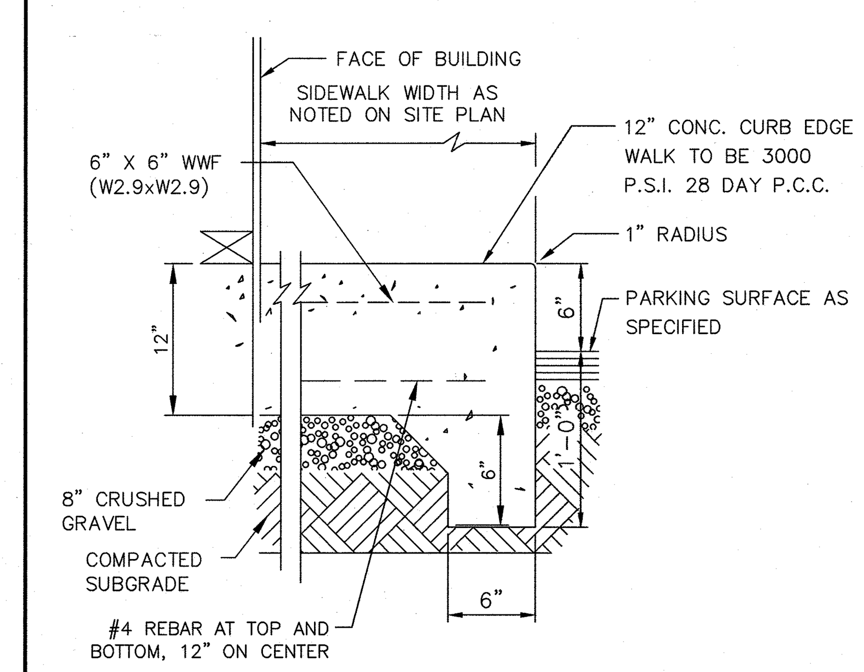
NOT TO SCALE



NOTES:
1. REFLECTIVE BLUE BACKGROUND WHITE LETTERING AND SYMBOL LETTERING MINIMUM 1" HEIGHT
2. SIGN TO BE MOUNTED ON 2" METAL POST CENTERED ON 4" CONCRETE BOLLARD. USE CAULKING @ THE CONNECTION POINT
3. ONE SIGN PER HANDICAPPED SPACE.

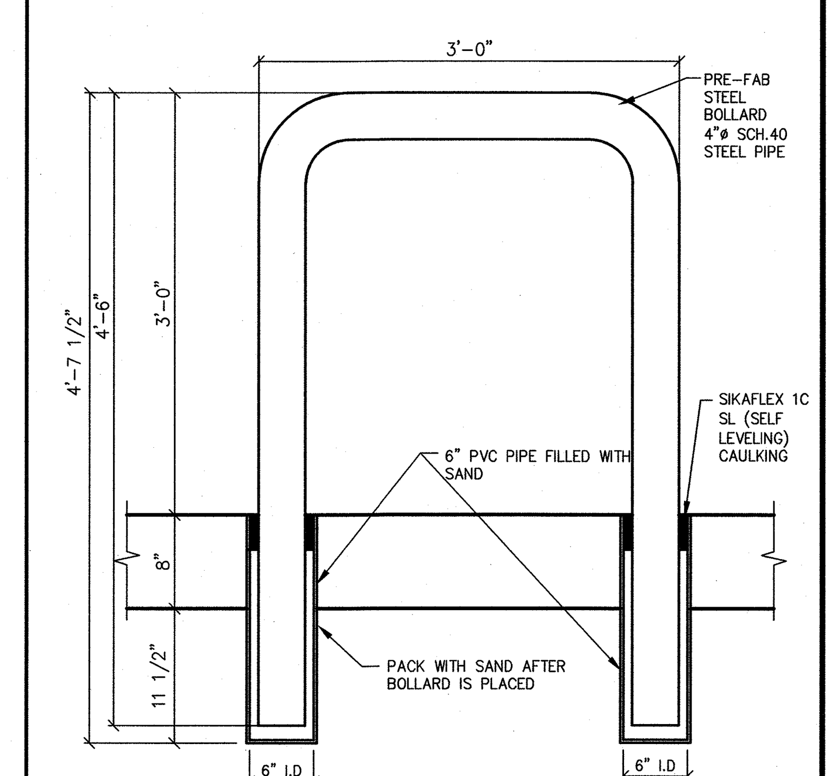
ACCESSIBLE SIGN DETAIL

NOT TO SCALE



CHARGING STATION SIDEWALK DETAIL

NOT TO SCALE



TYPICAL U-SHAPED BOLLARD

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25 SPRINGER ROAD
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PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE CORY N. MASON No.17099 LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS		
NO.	REVISION	DATE

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DETAIL SHEET

SCALE: NOT TO SCALE

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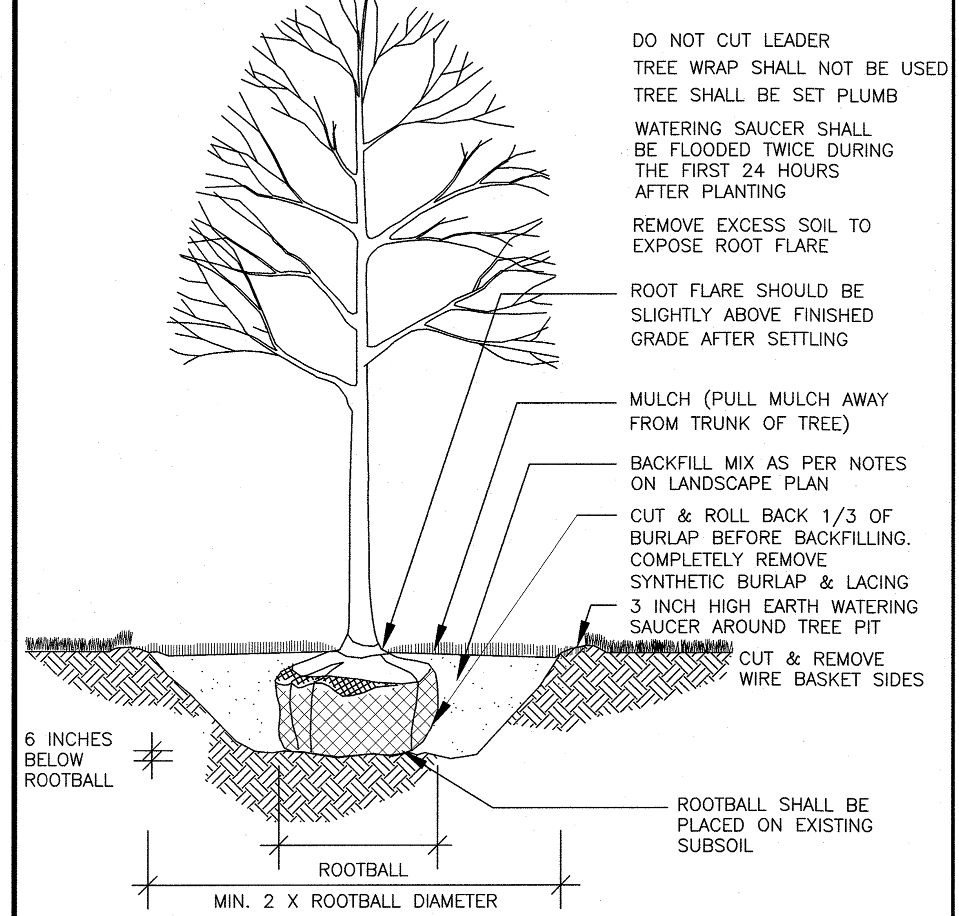
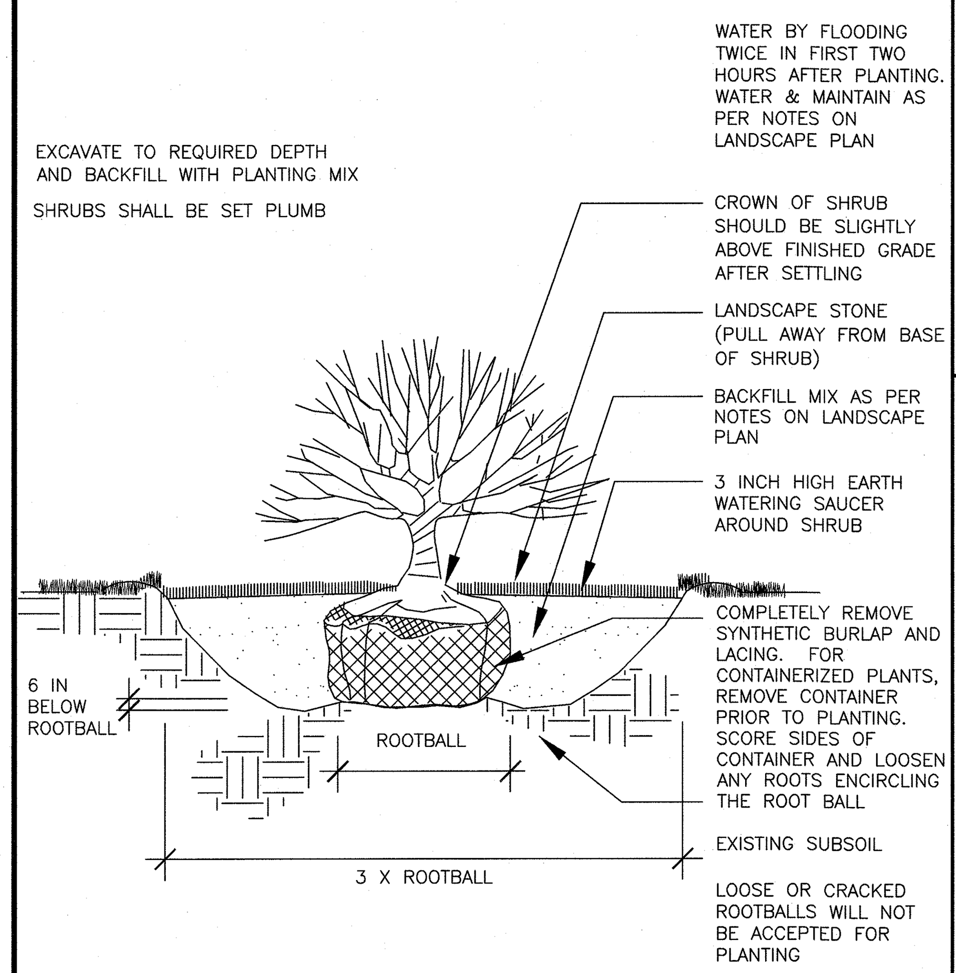


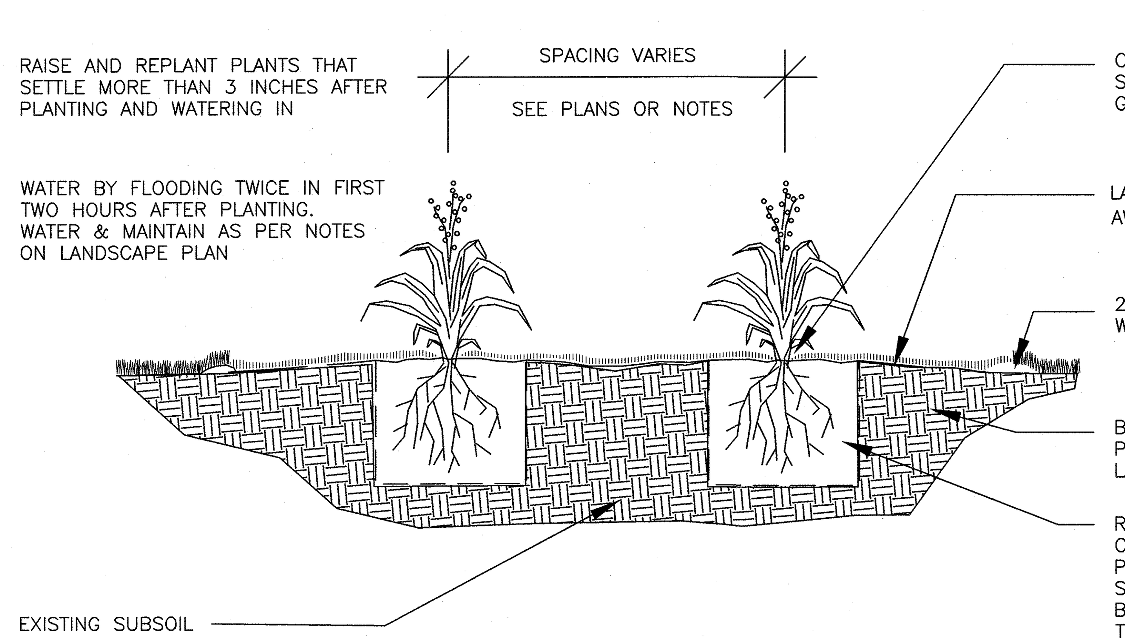
TYPICAL TREE PLANTING

NOT TO SCALE



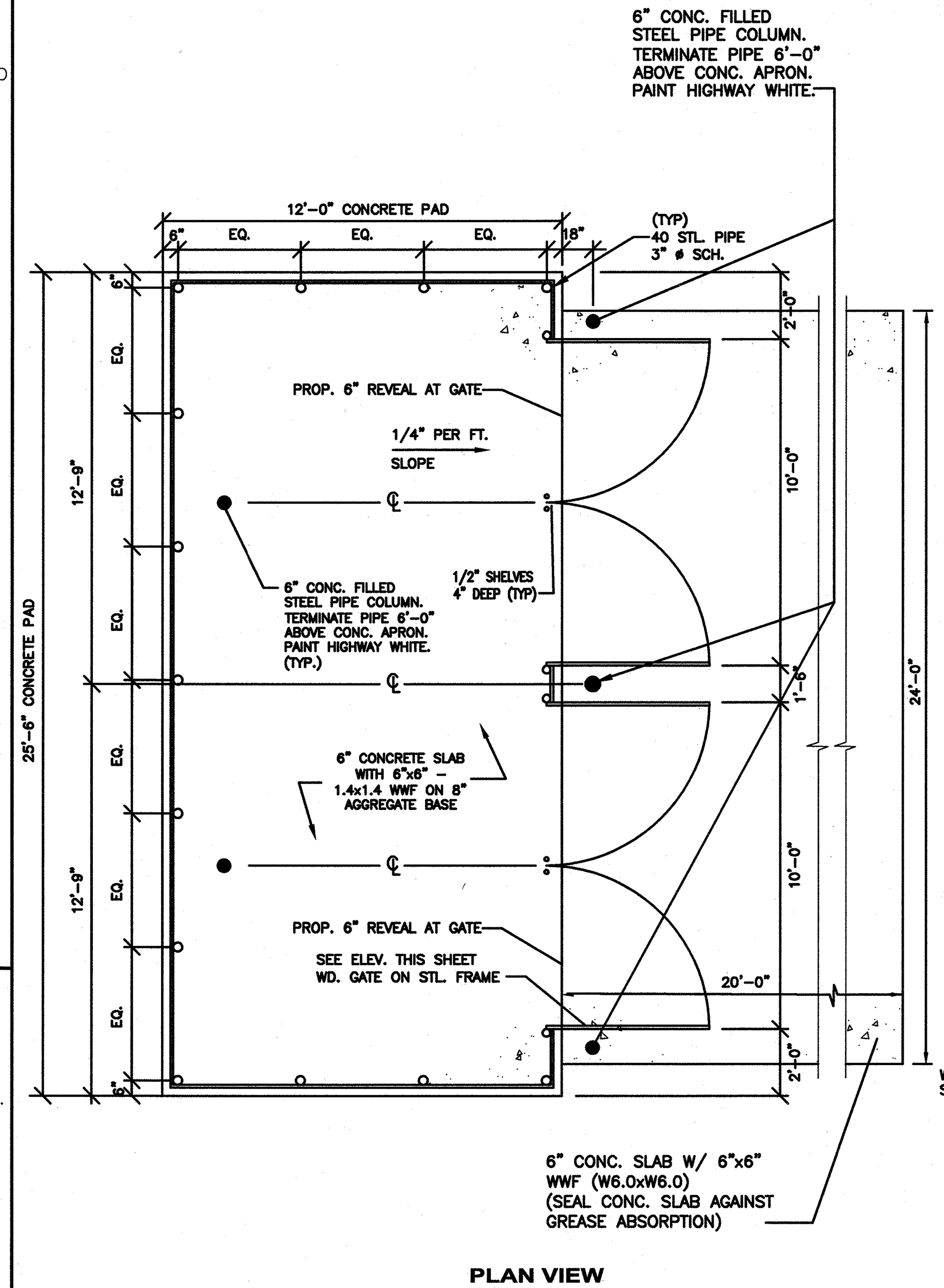
TYPICAL SHRUB PLANTING

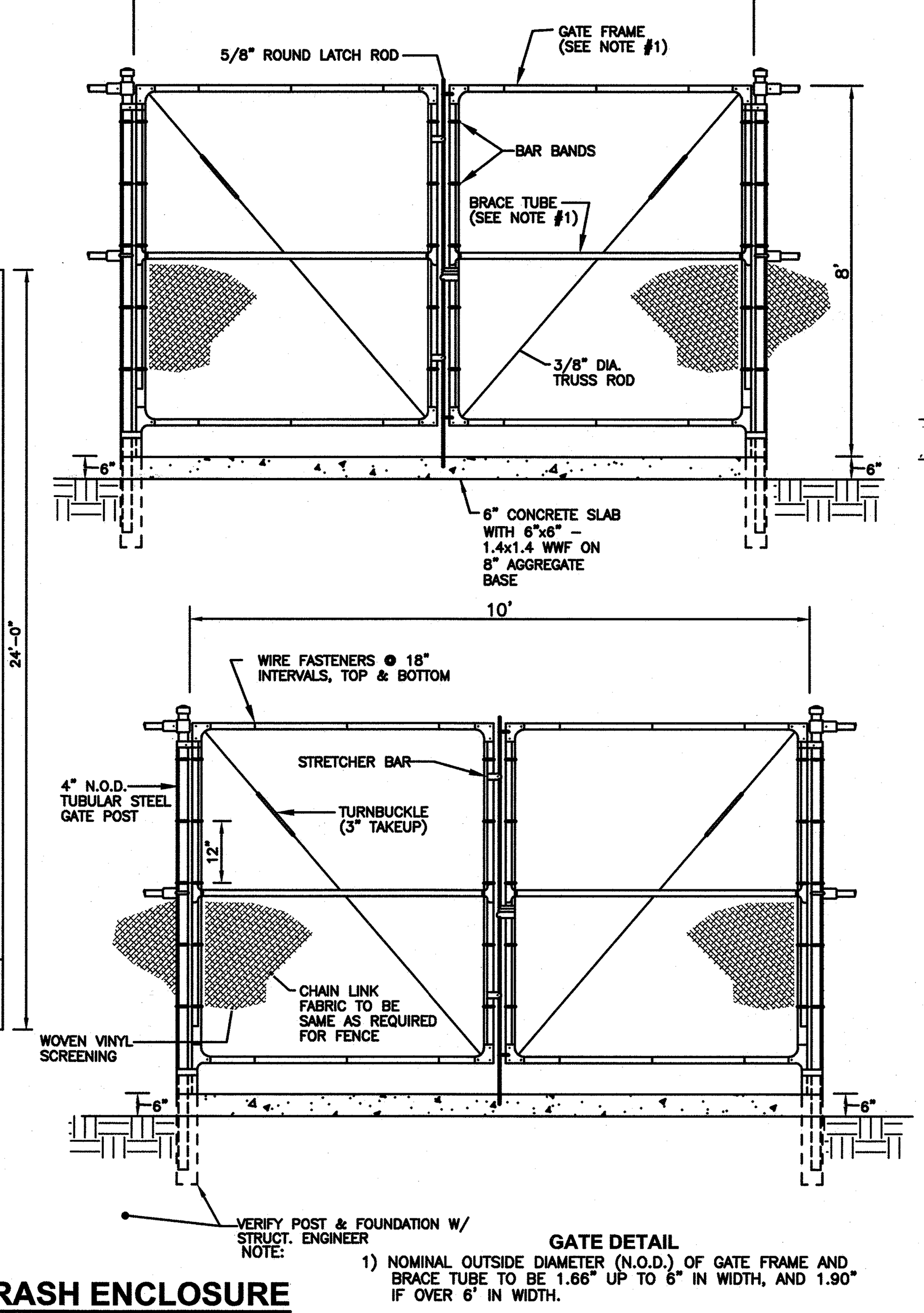
NOT TO SCALE



TYPICAL PERENNIAL PLANTING

NOT TO SCALE

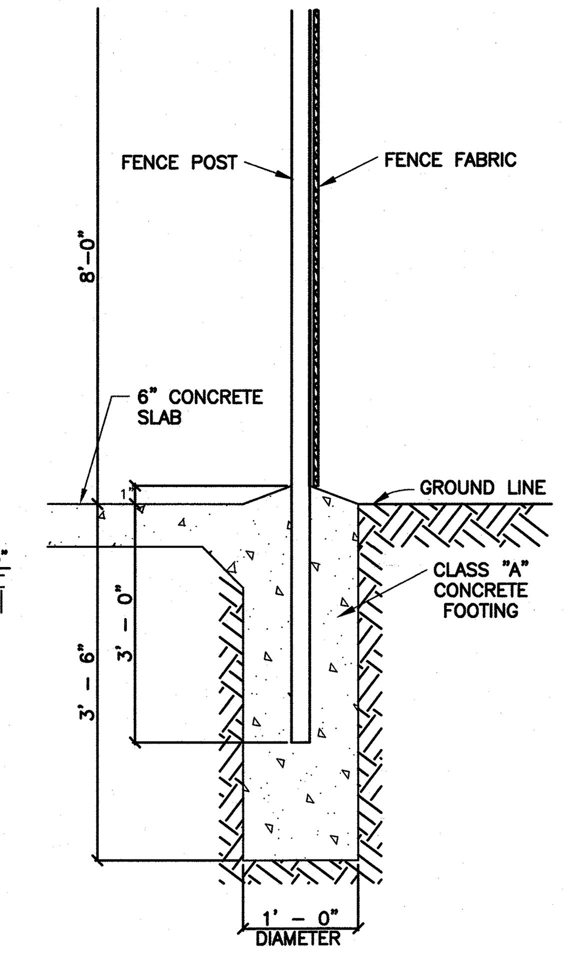




CHAINLINK TRASH ENCLOSURE

NOTE: 1) NOMINAL OUTSIDE DIAMETER (N.O.D.) OF GATE FRAME AND BRACE TUBE TO BE 1.66" UP TO 6" IN WIDTH, AND 1.90" IF OVER 6" IN WIDTH.

NOT TO SCALE



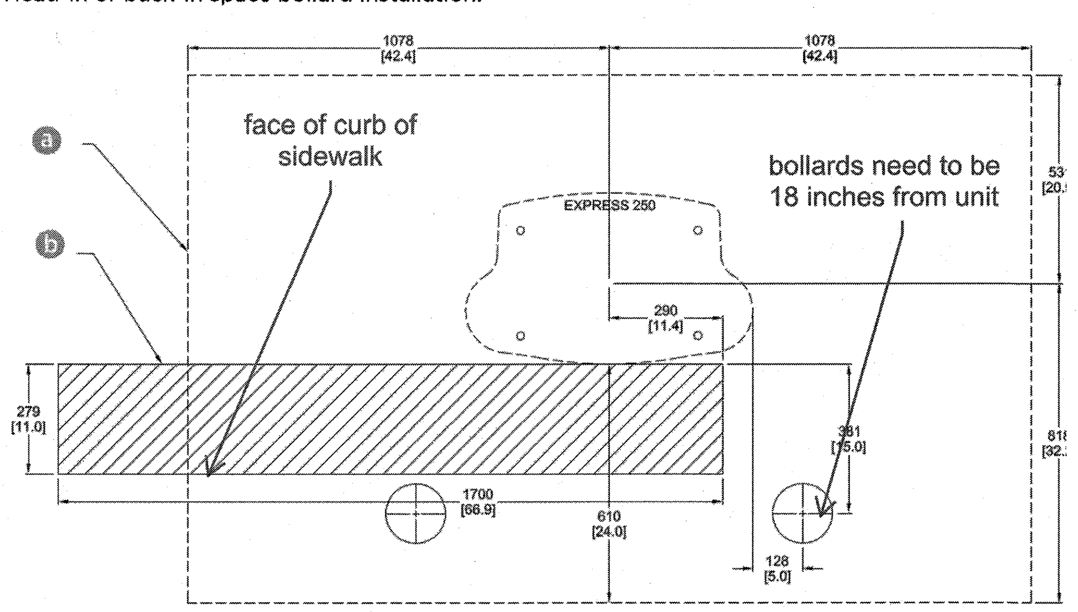
TRASH ENCLOSURE FENCE DETAIL

NOT TO SCALE

FENCE NOTES:

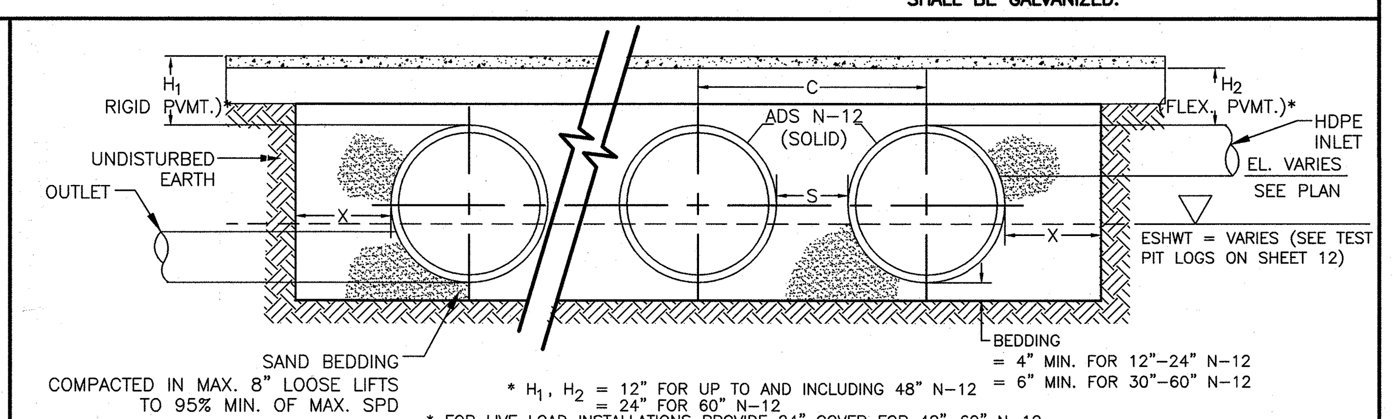
1) FENCE FABRIC SHALL BE STANDARD 2" CHAIN LINK GALVANIZED MESH WITH PRIVACY SLATS (FOREST GREEN).
2) ALL POSTS SHALL BE GALVANIZED SCHEDULE 40 STEEL PIPE
3) ALL LINE POSTS TO BE 2.375" O.D. PIPE. MAXIMUM SPACING TO BE 10' ON CENTER.
4) ALL END AND CORNER POSTS TO BE 2.875" O.D. PIPE.
5) ALL TOP AND MIDDLE RAILS TO BE 1.66" O.D. PIPE.
6) ALL FITTINGS AND ACCESSORIES SHALL BE GALVANIZED.

Head-in or back-in space bollard installation:



EV CHARGING STATION DETAIL

NOT TO SCALE



* H_1, H_2 = 12" FOR UP TO AND INCLUDING 48" N–12 = 24" FOR 60" N–12
* FOR LIVE LOAD INSTALLATIONS PROVIDE 24" COVER FOR 42"–60" N–12

	NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "S"	TYPICAL SPACING "C"	TYPICAL SIDE WALL "X"
	12"	14.5"	11"	25.4"	8"
	15"	18"	12"	28.9"	8"
	18"	21"	13"	33.9"	9"
	24"	28"	13"	40.7"	10"
	30"	36"	17.1"	53.1"	18"
U.G. DET.	36"	42"	22"	63"	18"
	42"	48"	24"	71.9"	18"

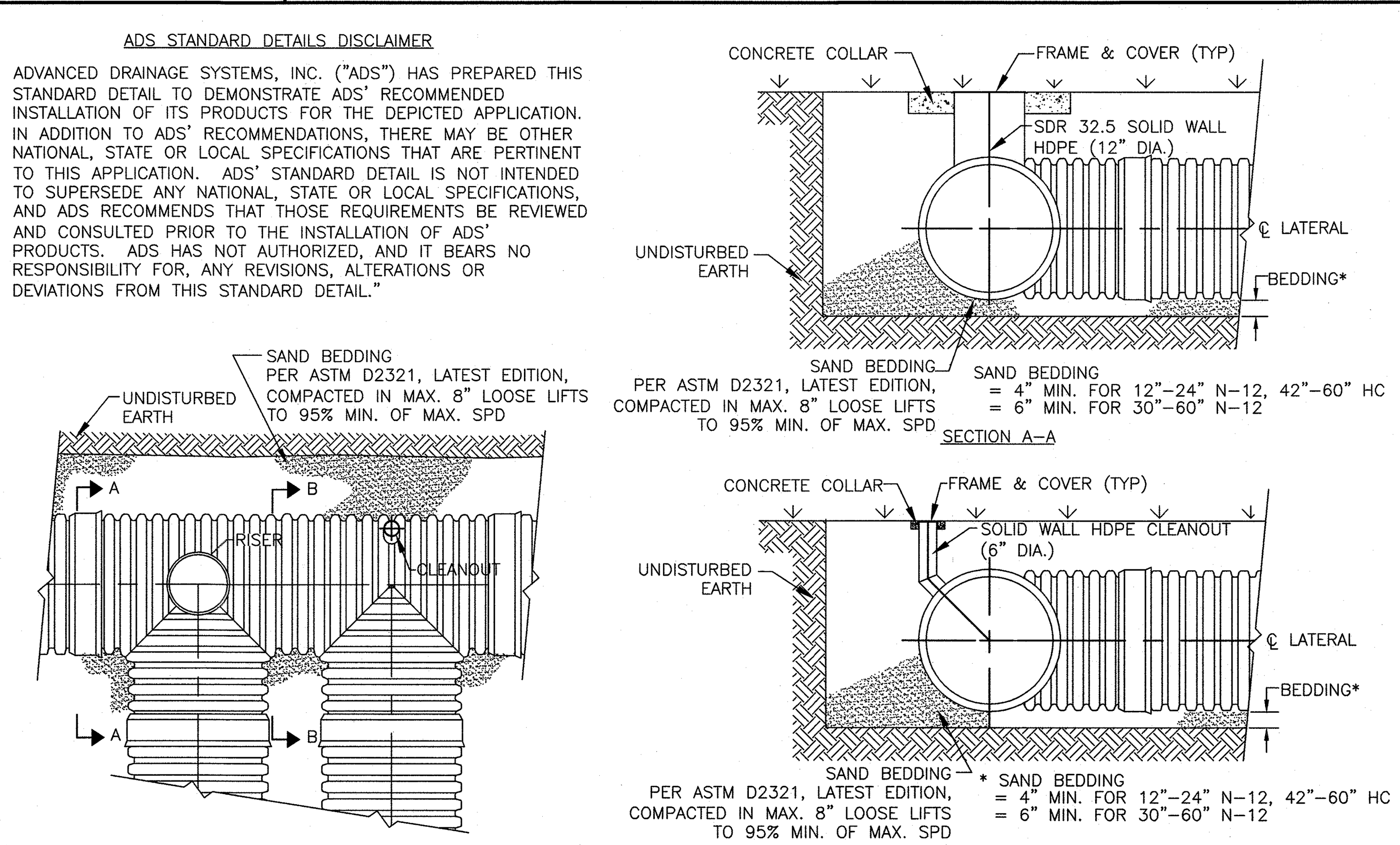
NOTES
1. ALL DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. SEE GRADING & DRAINAGE PLAN FOR INVERT DATA.
4. EXISTING TOPSOIL, BRUSH, TREES, BOULDERS, FILL AND DEBRIS TO BE REMOVED FOR 5' ALL AROUND UNDERGROUND DETENTION SYSTEM DOWN TO NATIVE MATERIAL. BACKFILL WITH STONE BEDDING MATERIAL (CLASS 1A OR 1B).

TYPICAL UNDERGROUND DETENTION SYSTEM CROSS SECTION

NOT TO SCALE

ADS STANDARD DETAILS DISCLAIMER

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS STANDARD DETAIL TO DEMONSTRATE ADS' RECOMMENDED INSTALLATION OF ITS PRODUCTS FOR THE DEPICTED APPLICATION. IN ADDITION TO ADS' RECOMMENDATIONS, THERE MAY BE OTHER NATIONAL, STATE OR LOCAL SPECIFICATIONS THAT ARE PERTINENT TO THIS APPLICATION. ADS' STANDARD DETAIL IS NOT INTENDED TO SUPERSEDE ANY NATIONAL, STATE OR LOCAL SPECIFICATIONS, AND ADS RECOMMENDS THAT THOSE REQUIREMENTS BE REVIEWED AND CONSULTED PRIOR TO THE INSTALLATION OF ADS' PRODUCTS. ADS HAS NOT AUTHORIZED, AND IT BEARS NO RESPONSIBILITY FOR, ANY REVISIONS, ALTERATIONS OR DEVIATIONS FROM THIS STANDARD DETAIL."

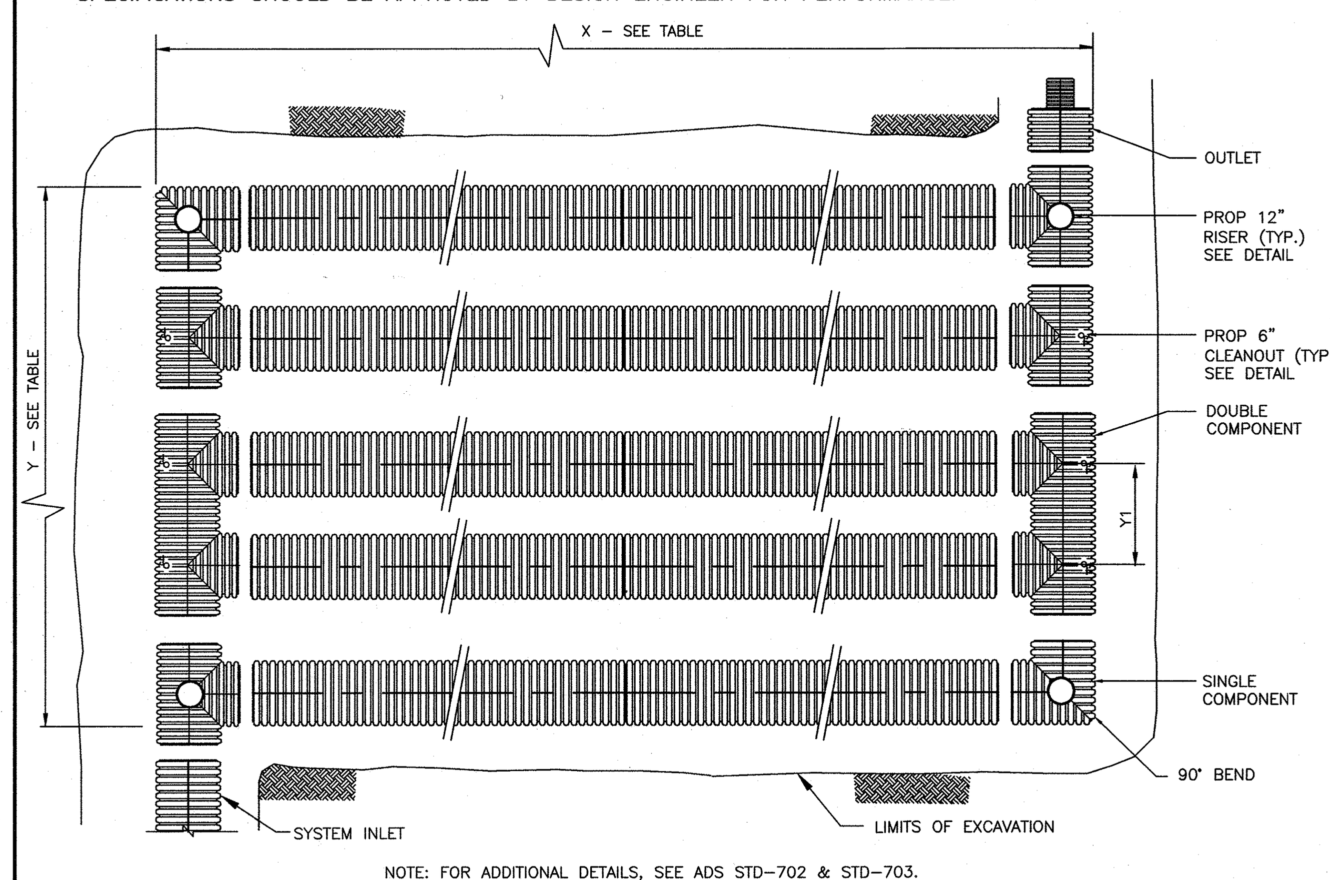


TYPICAL RISER AND CLEANOUT DETAILS

NOT TO SCALE

DETENTION SYSTEM NOTES:

1) ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH-DENSITY POLYETHYLENE PIPE, DUAL WALL, SMOOTH INTERIOR AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLAN.
2) CONTRACTOR SHOULD CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER. SUBSTITUTIONS AND SHOP DRAWINGS SHOULD BE APPROVED BY THE ENGINEER.
3) PARTS SPECIFICATIONS SHOWN ARE AS PROVIDED BY ADS, INC., OR APPROVED EQUAL. ANY CHANGES TO THESE SPECIFICATIONS SHOULD BE APPROVED BY DESIGN ENGINEER FOR PERFORMANCE.



NOTE: FOR ADDITIONAL DETAILS, SEE ADS STD-702 & STD-703.

UNDERGROUND STORMWATER DETENTION SYSTEM TABLE						
UG DETENTION SYSTEM	LENGTH (X)	WIDTH (Y)	SPACING (Y1) (O.C. TYP.)	PIPE SIZE (INCHES) SOLID	INV. PIPE ELEV. (A)	# PIPE ROWS
UG–DET	67'	19.25'	63"	36"SOLID(WT)	57.00	4

* SEE TYPICAL CROSS SECTIONS BELOW
WT = WATERTIGHT JOINTS

TYPICAL UNDERGROUND DETENTION SYSTEM LAYOUT

NOT TO SCALE

Table 5-2
Classes of Embedment and Backfill Materials

ASTM D2321[1] Class	ASTM D2321[1] Description	Notation	ASTM D2487 Description	AASHTO M43 Notation	Min. Compaction Required (Std Proctor Density %)[3]	ASTM D2321[1] Percentage Passing Sieve Sizes 1 ½ in. (40mm)	No. 4 (4.75mm)	No. 200 (0.075mm)	Atterberg Limits LL	PI	Coefficients Uniformity Cu	Curvature Cc
IA[4]	Open-graded, clean manufactured aggregates	N/A	Angular crushed stone or rock, crushed gravel, crushed slag; large voids with little or no fines	5 56	Dumped to Slight	100%	≤10%	<5%	Non Plastic		N/A	
IB	Dense-graded, clean manufactured, processed aggregates	N/A	Angular crushed stone or other Class IA material and stone/sand mixtures with gradations selected to minimize migration of adjacent soils; little or no fines			100%	≤50%	<5%	Non Plastic			
II	Clean, coarse-grained soils	GW	Well-graded gravel, gravel-sand mixtures; little or no fines	57 6 67	Moderate (85%)	100%	<50% of "Coarse Fraction"	<5%	Non Plastic		>4	1 to 3
		GP	Poorly-graded gravels, gravel-sand mixtures; little or no fines								<4	<1 or >3
		SW	Well-graded sands, gravelly sands; little or no fines				>50% of "Coarse Fraction"				>6	1 to 3
		SP	Poorly-graded sands, gravelly sands; little or no fines								<6	<1 or >3
	Coarse-Grained Soils, borderline clean to w/fines	GW-GC, SP SM	Sands and gravels which are borderline between clean and with fines	N/A		100%	Varies	5% to 12%	Non Plastic		Same as for GW, GP, SW and SP	
III	Coarse-grained soils with fines	GM	Silty gravels, gravel-sand-silt mixtures	Gravel & sand with <10% fines	Moderate to High (90%)	100%	<50% of "Coarse Fraction"	12% to 50%	N/A	<4 or <"A" Line	N/A	
		GC	Clayey gravels, gravel-sand-clay mixtures							<7 & >"A" Line		
		SM	Silty sands, sand-silt mixtures				>50% of "Coarse Fraction"			>4 or <"A" Line		
		SC	Clayey sands, sand-clay mixtures							>7 & >"A" Line		
IVA[2]	Inorganic fine-grained soils	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, silts with slight plasticity	N/A	N/R	100%	100%	>50%	<50	<4 or <"A" Line	N/A	
		CL	Inorganic clays of low to medium plasticity; gravelly, sandy, or silty clays; lean clays	N/A						>7 & >"A" Line		
IVB	Inorganic fine-grained soils	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	N/A	N/R	100%	100%	>50%	>50	<"A" Line	N/A	
		CH	Inorganic clays of high plasticity, fat clays	N/A						>"A" Line		
V	Organic soils or Highly organic soils	OL	Organic silts and organic silty clays of low plasticity	N/A	N/R	100%	100%	>50%	<50	<4 or <"A" Line	N/A	
		OH	Organic clays of medium to high plasticity, organic silts	N/A					>50	<"A" Line		
		PT	Peat and other high organic soils	N/A								

Notes:
1) Refer to ASTM D2321 for more complete soil descriptions.
2) Class IVA material has limited applications and can be difficult to place and compact; use ONLY with the approval of a soil expert. Contact ADS for additional information regarding suitability of this backfill material.
3) N/R indicates that use of this material and/or compaction level is not recommended by ASTM D2321 for the backfill envelope.
4) When using open-graded material, additional precaution must be taken to reduce or eliminate the risk of migration of fines from adjacent material. Refer to ASTM D2321 for more complete information.

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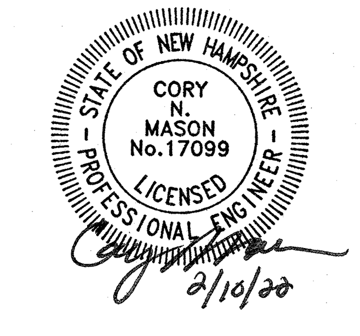
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801



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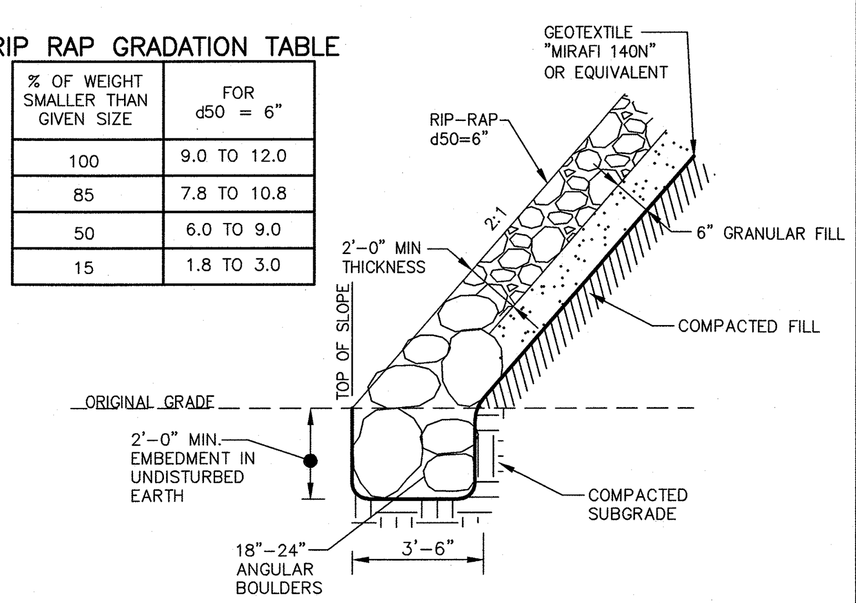
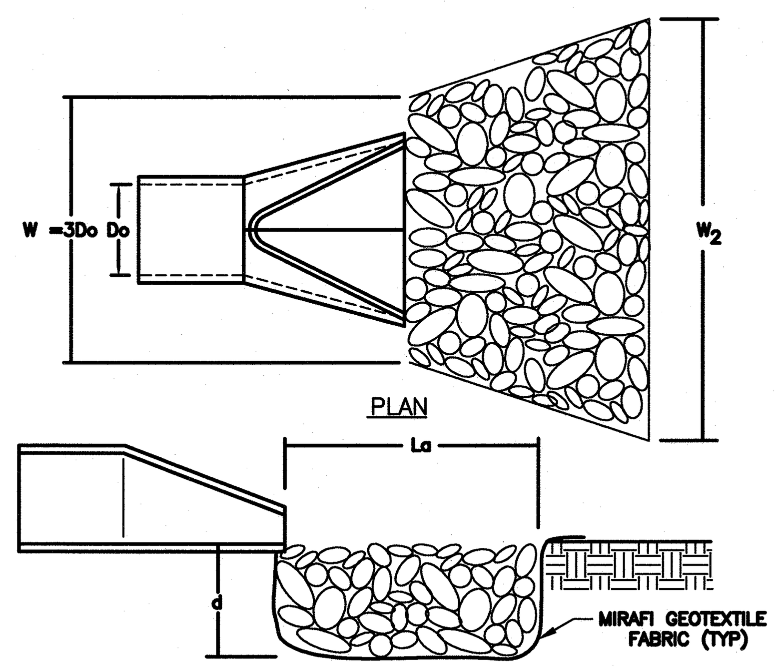
RIP RAP GRADATION TABLE

% OF WEIGHT SMALLER THAN GIVEN SIZE	FOR d50 = 6"
100	9.0 TO 12.0
85	7.8 TO 10.8
50	6.0 TO 9.0
15	1.8 TO 3.0



RIP RAP SLOPE DETAIL

NOT TO SCALE



OUTLET	Do	La	W_1	W_2	d_{50}	d
FES-1	18"	26'	4.5'	15'	4"	10"

*PLACE OUTLET APRON STONE ON ENTIRE SEDIMENT FOREBAY BOTTOM. SEE GRADING & DRAINAGE PLAN.

ROCK RIP-RAP GRADATION

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE IN INCHES
100	4.5 TO 6.0
85	3.9 TO 5.4
50	3.0 TO 4.5
15	0.9 TO 1.5

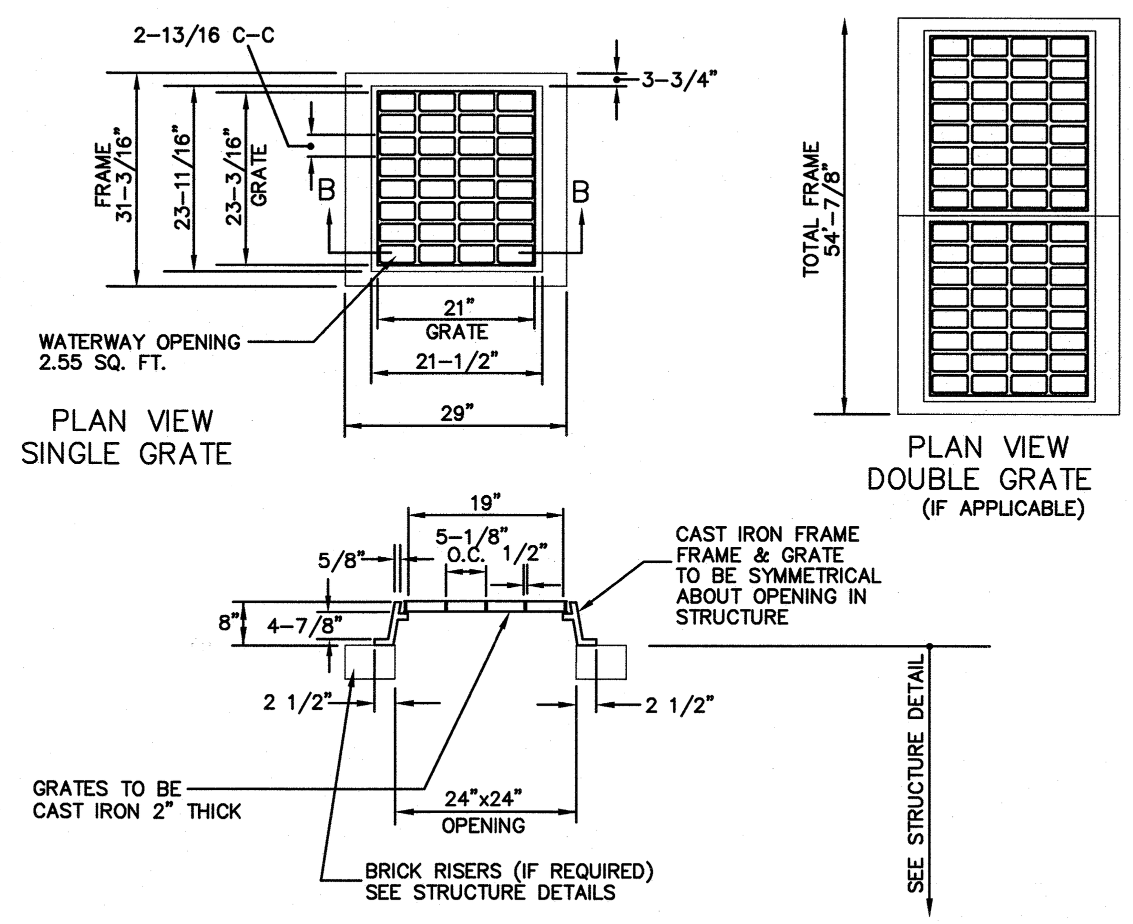
FORMULAS USED (REFERENCE NHDES STORMWATER MANUAL, VOL. 2, PAGE 174)

CONSTRUCTION NOTES:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP-RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR 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-RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACE,\MENT 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. THE MEDIAN STONE DIAMEMETER FOR THE RIP-RAP APRON IS d50. FIFTY PERCENT BY WEIGHT OF THE RIP-RAP MIXTURE SHALL BE SMALLER THAN THE MEDIAN STONE SIZE. THE LARGEST STONE SIZE IN THE MIXTURE SHALL BE 1.5 d50.

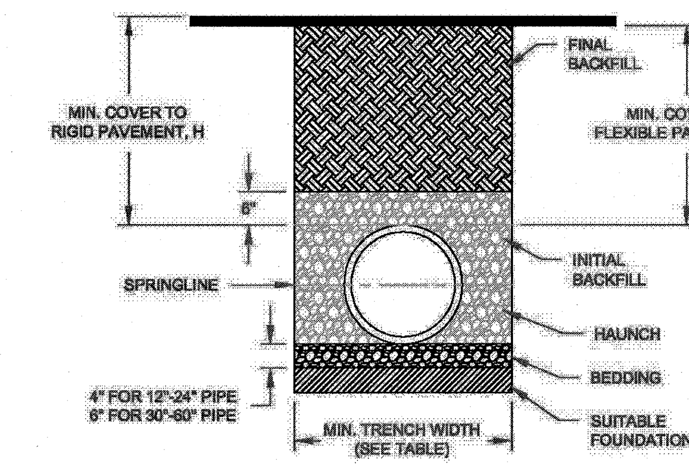
OUTLET PROTECTION-FLAT DETAIL

NOT TO SCALE



FRAME AND GRATE - TYPE B

NOT TO SCALE



NOTES:

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

RECOMMENDED MINIMUM TRENCH WIDTHS

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

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

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

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

MINIMUM RECOMMENDED COVER BASED ON RAILWAY LOADING CONDITIONS

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

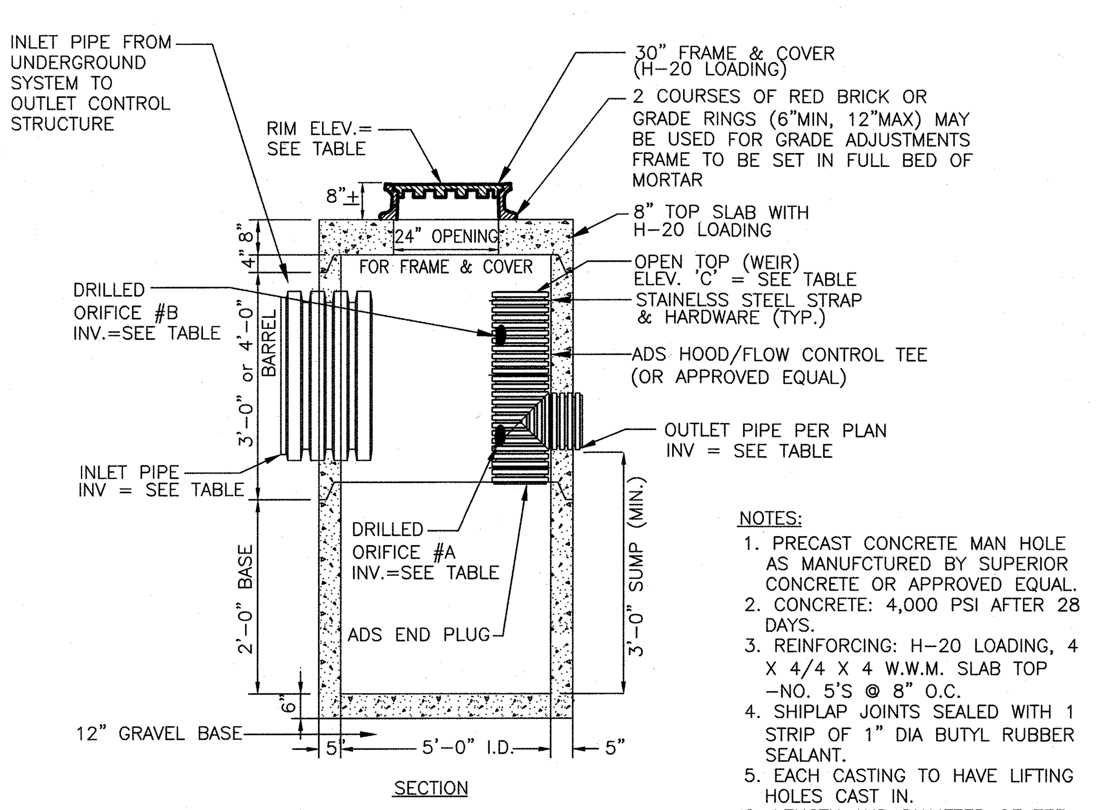
** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE.
*** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

REV.	DESCRIPTION	BY	MM/DD/YY	CHKD
2	ADDED E-80 INFORMATION	TJR	08/20/07	

TYPICAL TRENCH DETAIL
DRAWING NUMBER: STD-101
ADS ADVANCED DRAINAGE SYSTEMS, INC. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026
CKS 10/18/06 NTS 1 OF 1

HDPE PIPE TRENCH

NOT TO SCALE



NOTES:

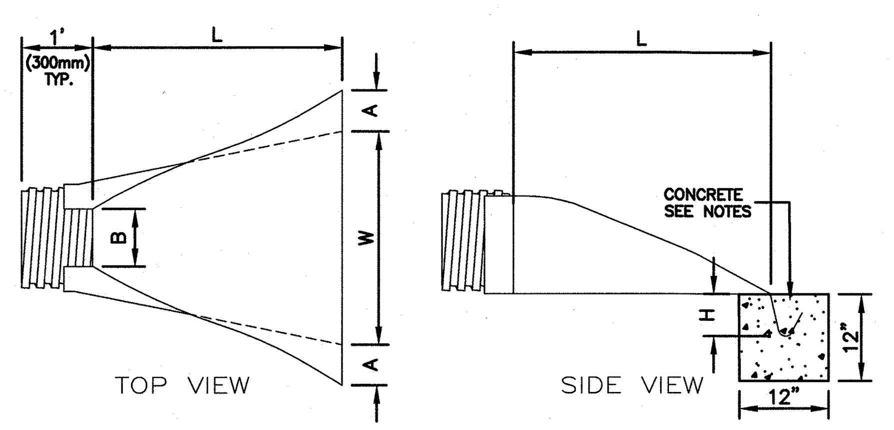
1. PRECAST CONCRETE MAN HOLE AS MANUFCTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H-20 LOADING, 4 X 4/4 X 4 W.W.M. SLAB TOP -NO. 5'S @ 8" O.C.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING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

OUTLET CONTROL STRUCTURE TABLE

OCS	RIM	ORIFICE	SIZE (IN.)	ELEV.	INV.IN (SIZE)	INV.IN (ELEV)	INV.OUT (SIZE)	INV.OUT (ELEV)
#1	63.70	A	5" DIA. x3	57.00	24"	57.00	18"	57.00
		B	5" DIA. x2	57.50				
		C	18" DIA.	59.00				

PRECAST CONCRETE OUTLET CONTROL STRUCTURE (OCS) FOR UNDERGROUND SYSTEMS

NOT TO SCALE



PIPE DIAMETER	DIMENSIONS, INCHES (mm): PART NO.	A, ±1 (25)	B MAX	H, ±1 (25)	L, ±1/2 (13)	W, ±2 (50)
12", 15" (300,375)	1210 NP	6.5 (165)	10 (254)	6.5 (165)	25 (635)	29 (736)
18" (450)	1810 NP	7.5 (190)	15 (380)	6.5 (168)	32 (812)	35 (890)
24" (600)	2410 NP	7.5 (190)	18 (450)	6.5 (165)	36 (900)	45 (1140)
30" (750)	3010 NP	10.5 (266)	NA	7.0 (178)	53 (1346)	68 (1725)
36" (900)	3610 NP	10.5 (266)	NA	7.0 (178)	53 (1346)	68 (1725)

CONSTRUCTION SPECIFICATIONS:

PREPARE BEDDING:

BACKFILL MATERIAL AROUND THE END SECTION MAY BE THE SAME AS THE MATERIAL AROUND THE PIPE, PLACE A FEW INCHES OF BACKFILL MATERIAL IN THE TRENCH OR DITCH WHERE THE END SECTION WILL BE PLACED. COMPACT AND CONTOUR THIS BEDDING MATERIAL TO GENERALLY MATCH THE END SECTION, EXCAVATE AN AREA IN THE BEDDING WHERE TOE TROUGH WILL SEAT SO THAT THE END SECTION WILL BE LEVEL WITH THE BOTTOM OF THE TRENCH OR DITCH IN THE FINISHED INSTALLATION.

PLACE END SECTION OF PIPE:

OPEN THE END SECTION COLLAR AND SEAT IT OVER THE TWO PIPE CONNECTIONS. ONCE THE END SECTION IS POSITIONED, CHECK TO MAKE SURE THAT THE INVERT OF THE END SECTION MATCHES THE INVERT OF THE PIPE AND THAT THE END SECTION IS LEVEL WITH THE TRENCH OR DITCH BOTTOM.

SECURE THE END SECTION:

SLIP THE STAINLESS STEEL ROD THROUGH THE PRE-DRILLED HOLES AT THE TOP OF THE COLLAR. THE ROD SHOULD BE BETWEEN THE CROWNS OF THE TWO PIPE CONNECTIONS. PLACE A WASHER ON EITHER END OF THE ROD. PLACE A NUT ON EITHER END OF THE ROD AND TIGHTEN WITH A WRENCH.

SECURE THE TOE TROUGH:

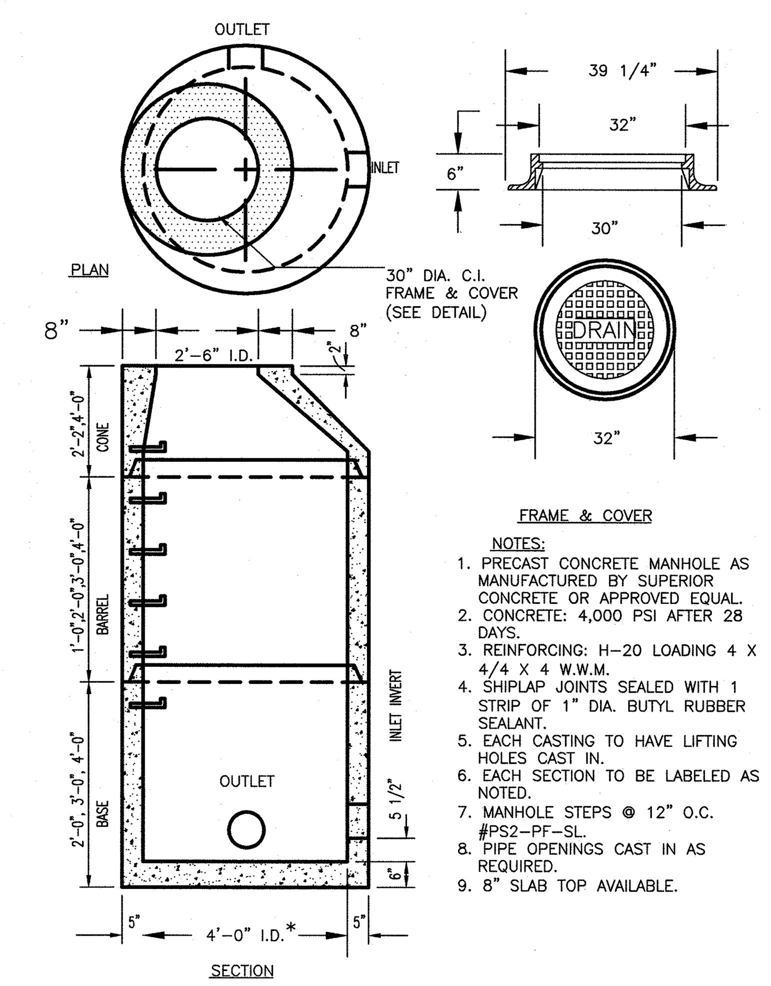
TO PREVENT WASHOUTS FROM HIGH VELOCITY FLOW, IT IS RECOMMENDED THAT THE TROUGH BE SECURED WITH CONCRETE. POUR CONCRETE IN THE TROUGH UP TO THE LEVEL OF THE TRENCH OR DITCH BOTTOM AND ALONG THE ENTIRE LENGTH OF THE TROUGH.

FINISH BACKFILL:

SHOVEL BACKFILL AROUND THE END SECTION IN 6 TO 9 INCH LAYERS EQUALLY ON BOTH SIDES, KNIFING IT TO ELIMINATE VOIDS. TAMP WITH A SMALL-FACED COMPACTOR OR OTHER EQUIPMENT SUITABLE FOR SMALL AREAS. CONTINUE PLACING, KNIFING, AND COMPACTING BACKFILL LAYERS TO THE TOP OF THE END SECTION TO SEAT IT WELL INTO THE BACKFILL.

FLARED END SECTION HIGH DENSITY POLYETHYLENE (HDPE)

NOT TO SCALE



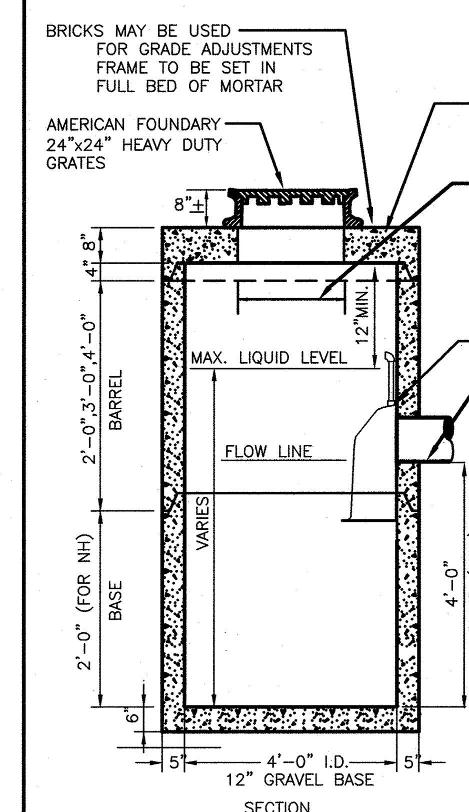
FRAME & COVER

NOTES:

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

PRECAST CONCRETE DRAIN MANHOLE

MAXIMUM PIPE DIAMETER 30"
NOT TO SCALE

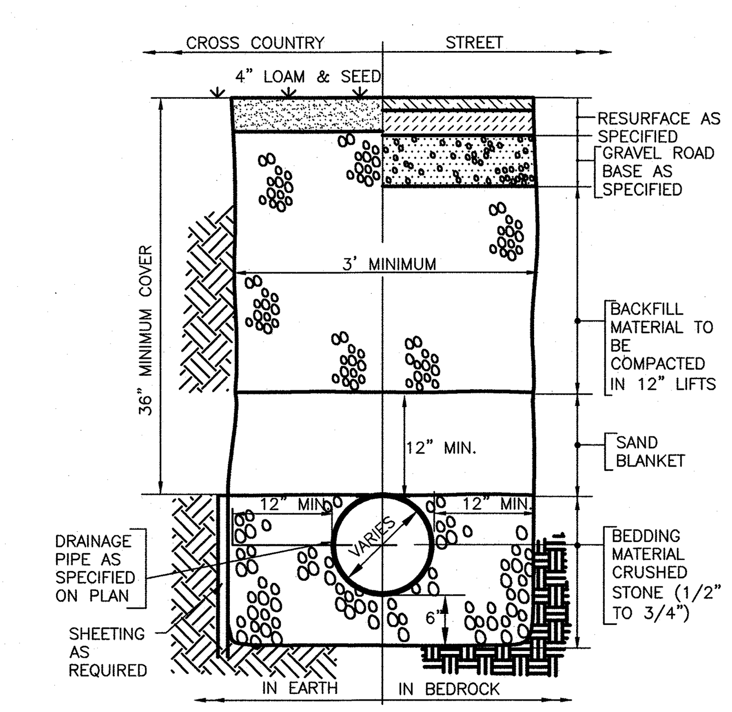


NOTES:

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

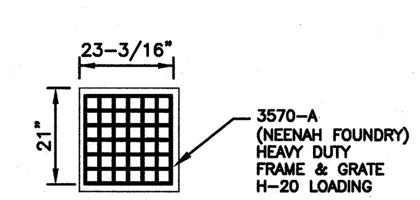
PRECAST CONCRETE CATCH BASIN WITH HOOD

NOT TO SCALE



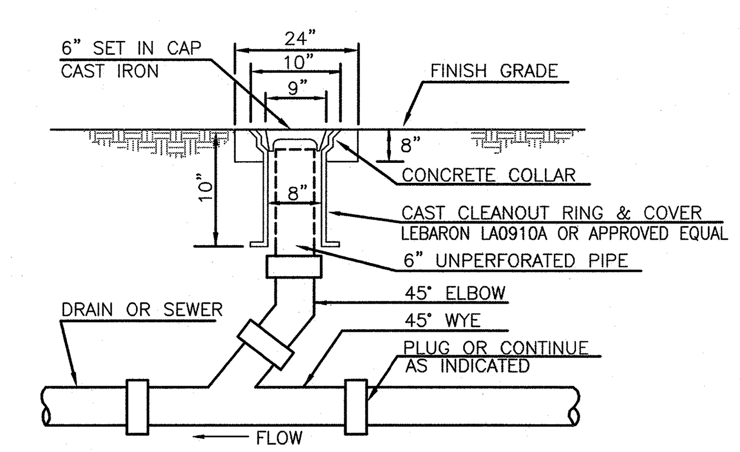
TYPICAL TRENCH SECTION FOR STORM DRAIN

NOT TO SCALE



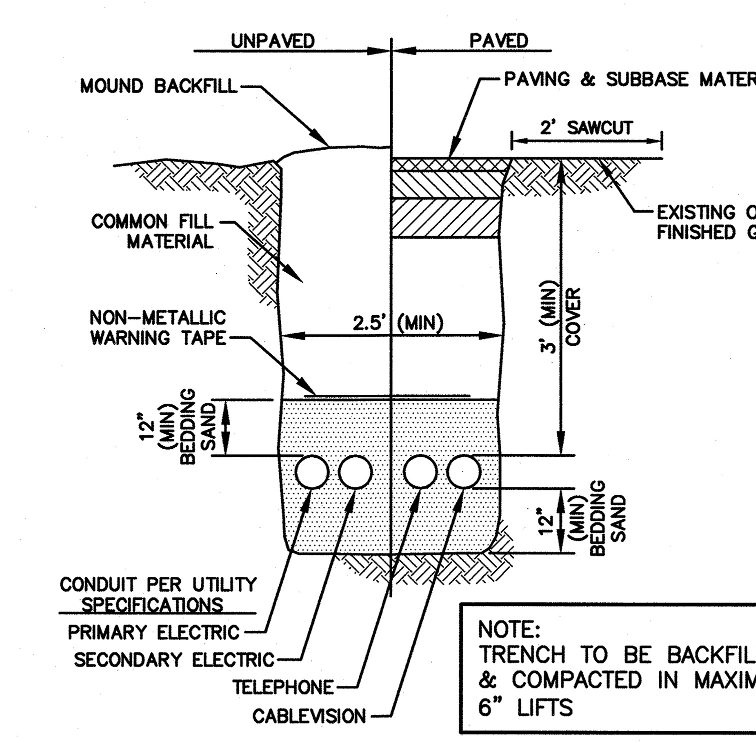
LOW PROFILE GRATE PLAN VIEW

NOT TO SCALE



TYPICAL CLEANOUT

NOT TO SCALE



NOTE:
TRENCH TO BE BACKFILLED & COMPACTED IN MAXIMUM 6" LIFTS

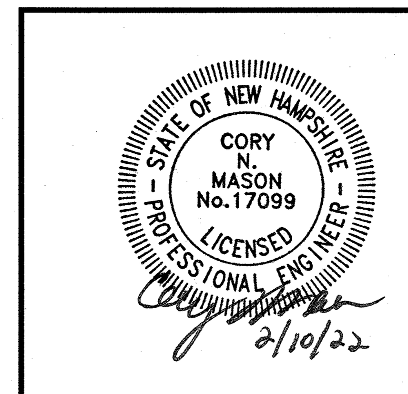
UTILITY TRENCH

NOT TO SCALE

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

PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801



REVISIONS

NO.	REVISION	DATE

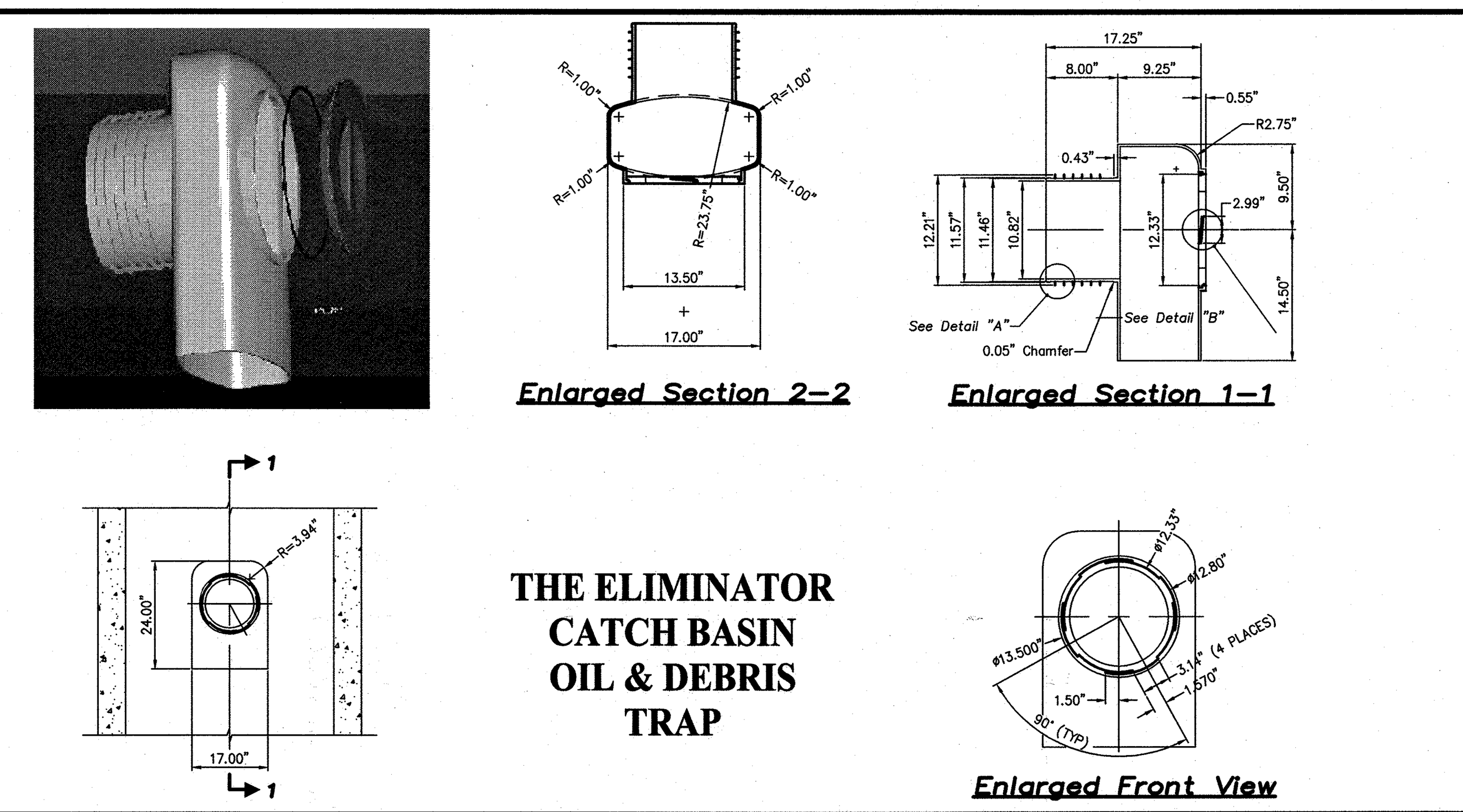
JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

SCALE: NOT TO SCALE

PROJECT NO. NEX-2021163

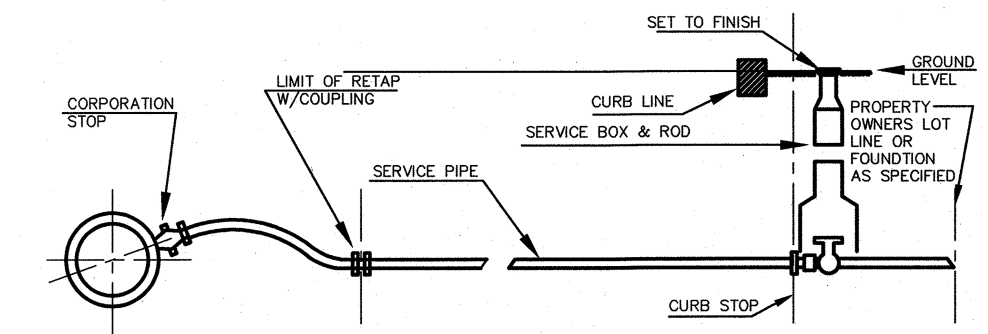


THE ELIMINATOR CATCH BASIN OIL & DEBRIS TRAP

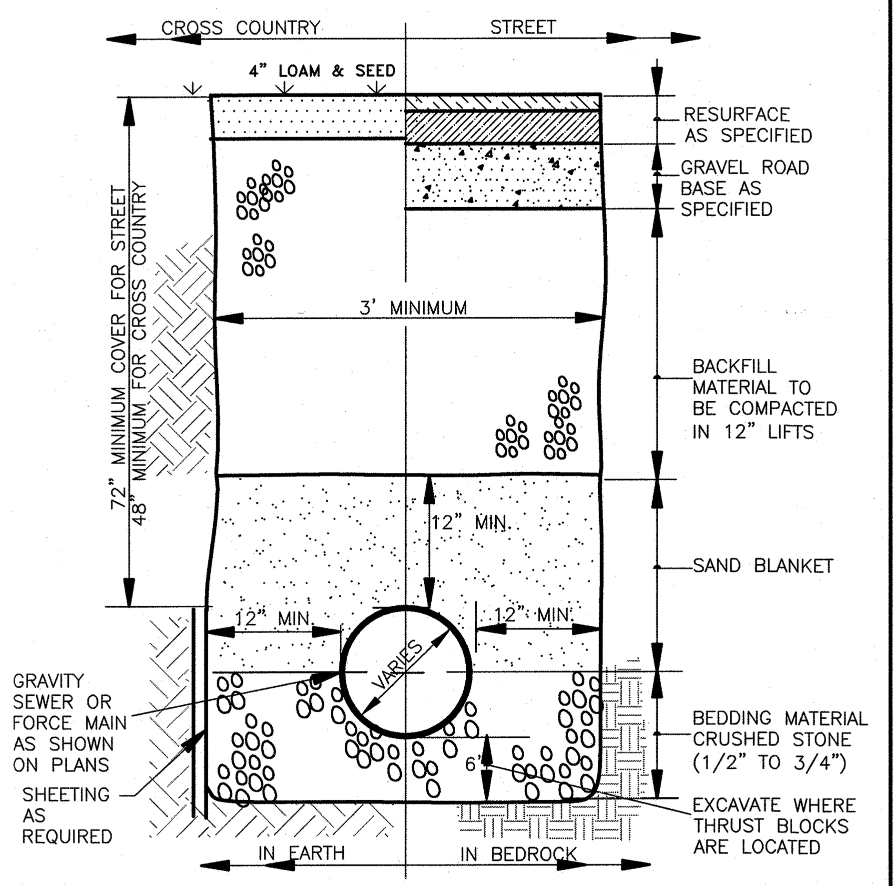
Enlarged Section 2-2

Enlarged Section 1-1

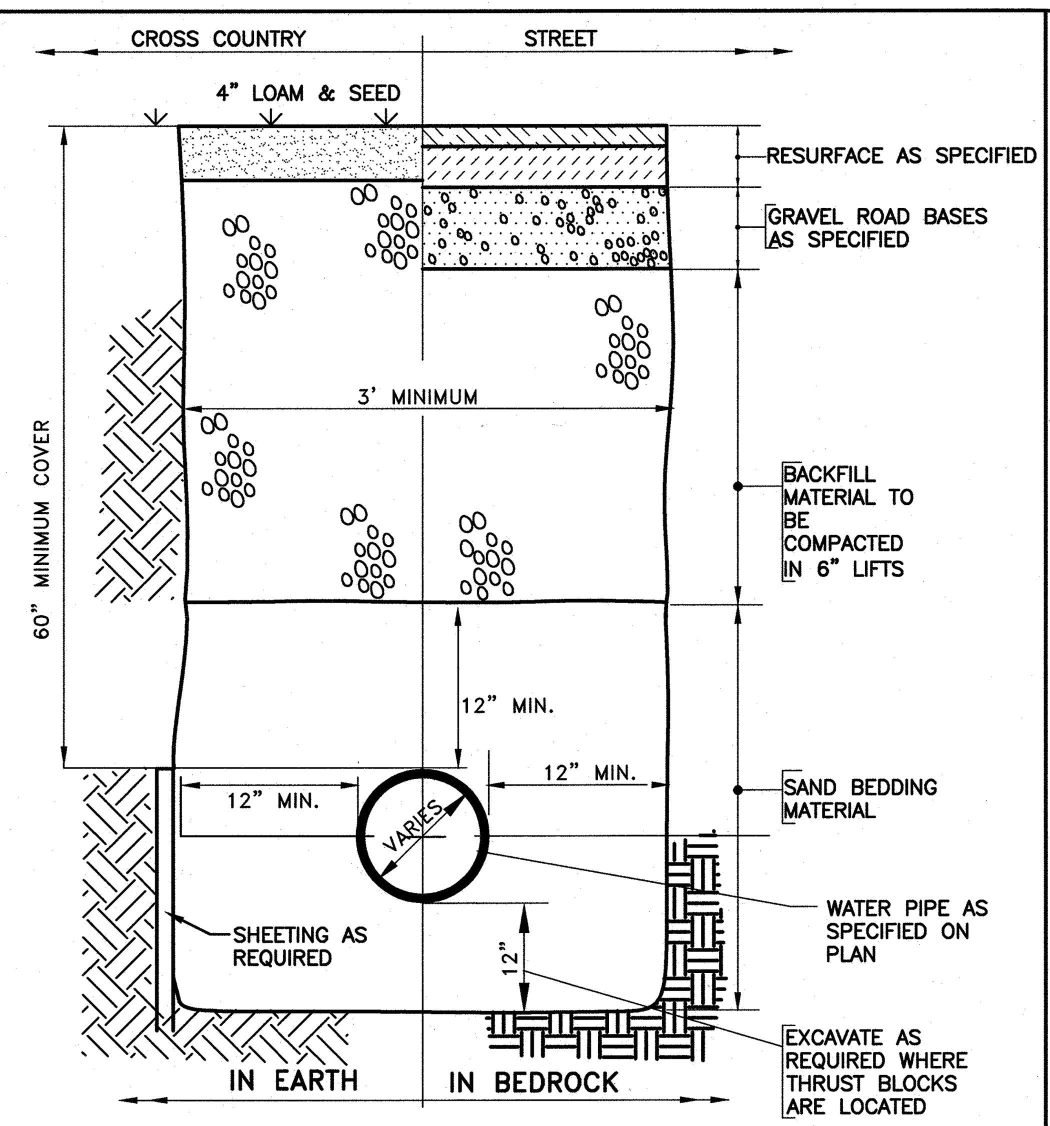
Enlarged Front View



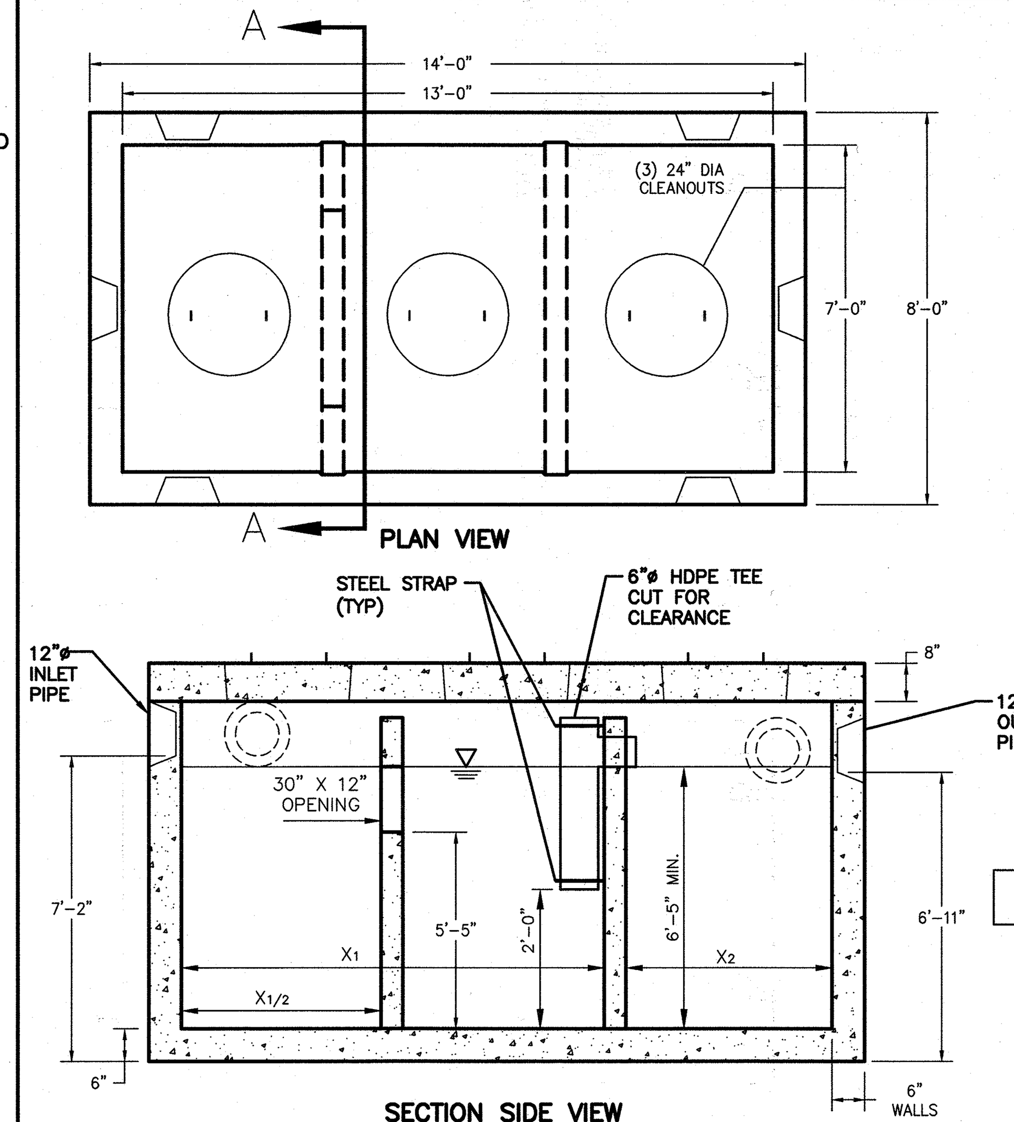
TYPICAL WATER SERVICE CONNECTION
NOT TO SCALE



TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE
NOT TO SCALE

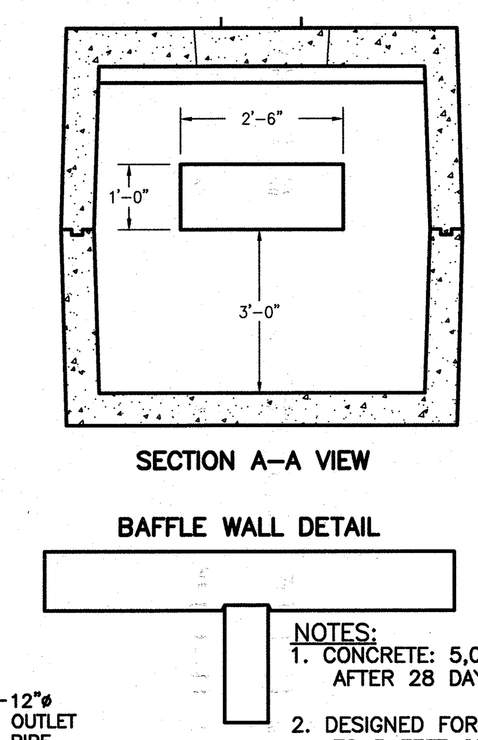


TYPICAL TRENCH SECTION FOR WATER SERVICE
NOT TO SCALE



PLAN VIEW

SECTION SIDE VIEW

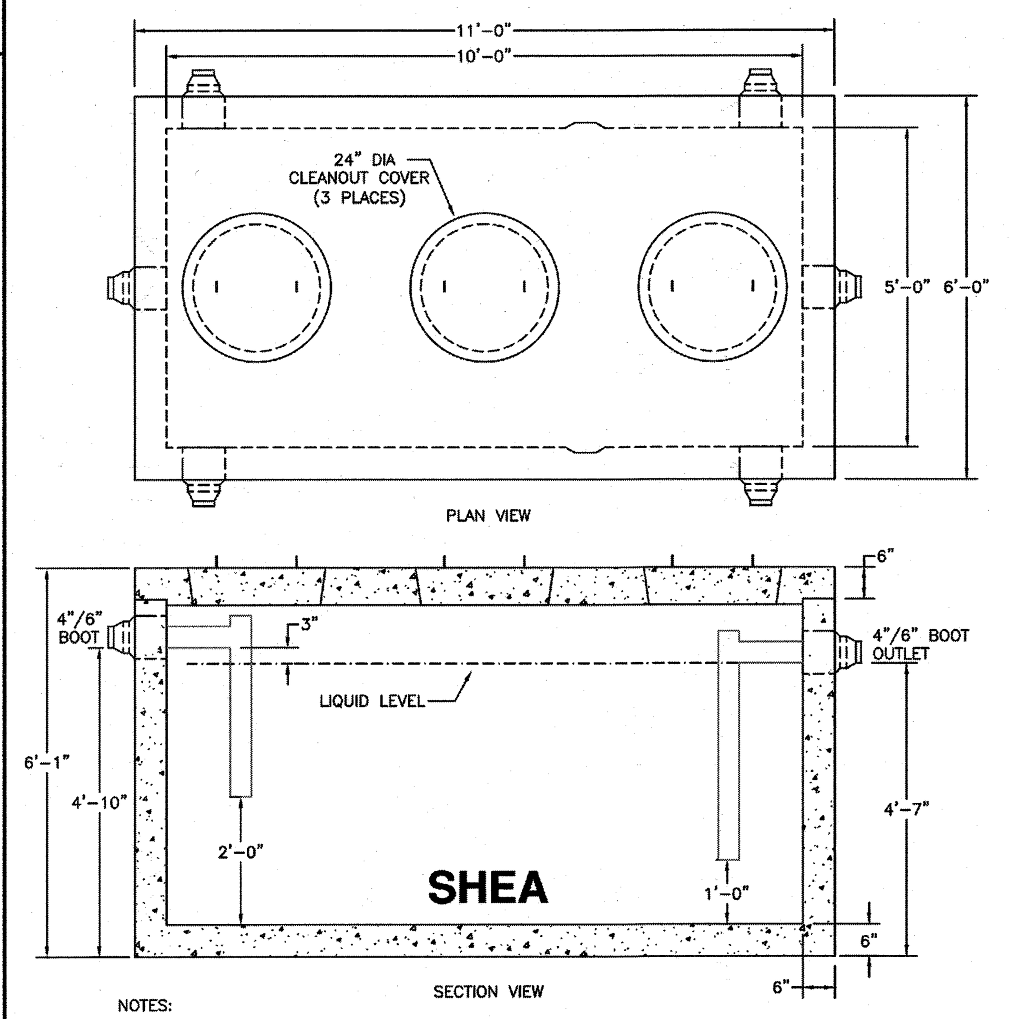


SECTION A-A VIEW

BAFFLE WALL DETAIL

NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR H-20 LOADING. 1 TO 5 FEET OF COVER.
3. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
4. FIRST & SECOND CHAMBER SIZING BASED ON NHDES CRITERIA OF 400 CF/ACRE OF IMPERVIOUS AREA:
O/W SEP #1: IMP. AREA = 1.03 Ac.
400 CF/Ac. x 1.03 Ac.= 412 CF
X1 = 412 CF/(6'-5" x 7') = 9'-2"
X2 = 3'-6"
5. CONTRACTOR TO SUBMIT SHOP DRAWING FOR APPROVAL.

4,000 GAL. OIL/WATER SEPARATOR DETAIL (OWS-1)
NOT TO SCALE



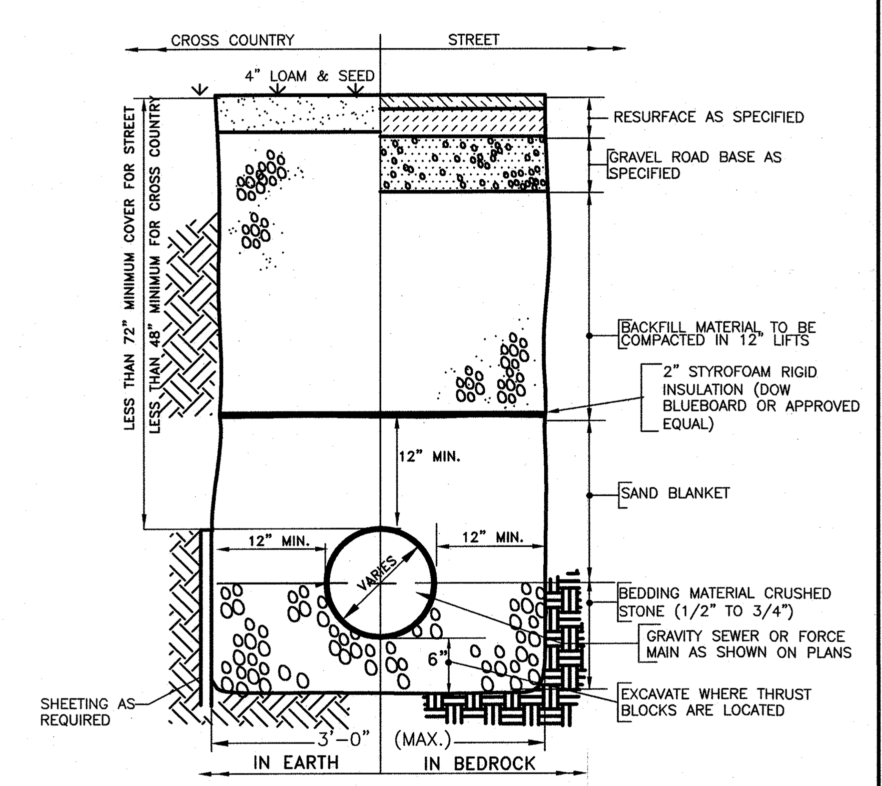
PLAN VIEW

SECTION VIEW

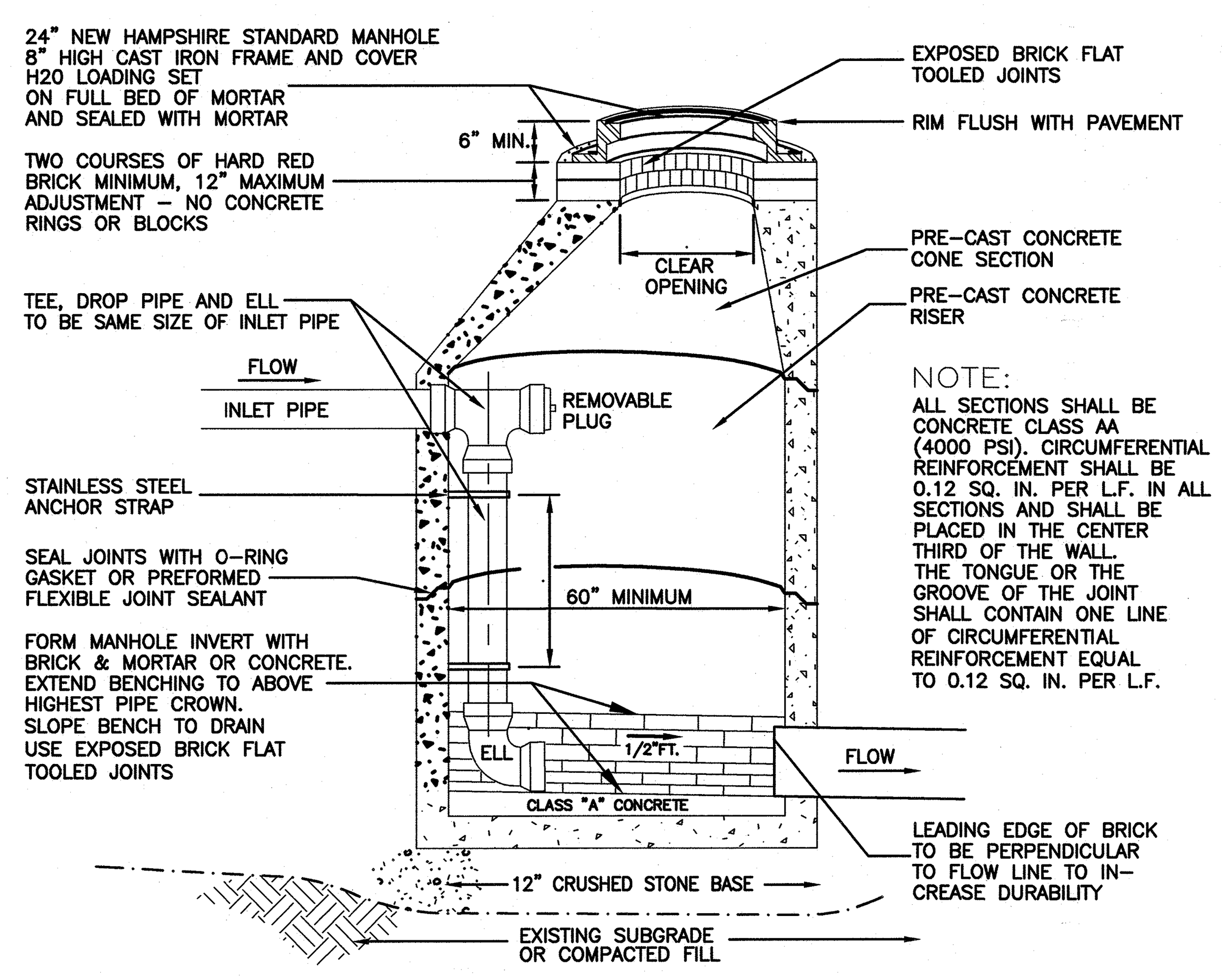
NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH 310 CMR 15.00, DEP TITLE 5 REGS, FOR GREASE TRAPS.
3. ALL REINFORCEMENT PER ASTM C1227.
4. DESIGNED FOR AASHTO HS-20 LOADING, 1 TO 5 FT COVER.
5. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN
6. TEES AND BAFFLES SOLD SEPARATELY

	WEIGHT	TOP	BOTTOM
ITEM NO. TK-M1500C	22,600#	5,400#	17,200#
TK-M1500C2C	24,400#	5,400#	19,000#

1,500 GALLON GREASE TRAP DETAIL (H-20 LOADING)
NOT TO SCALE



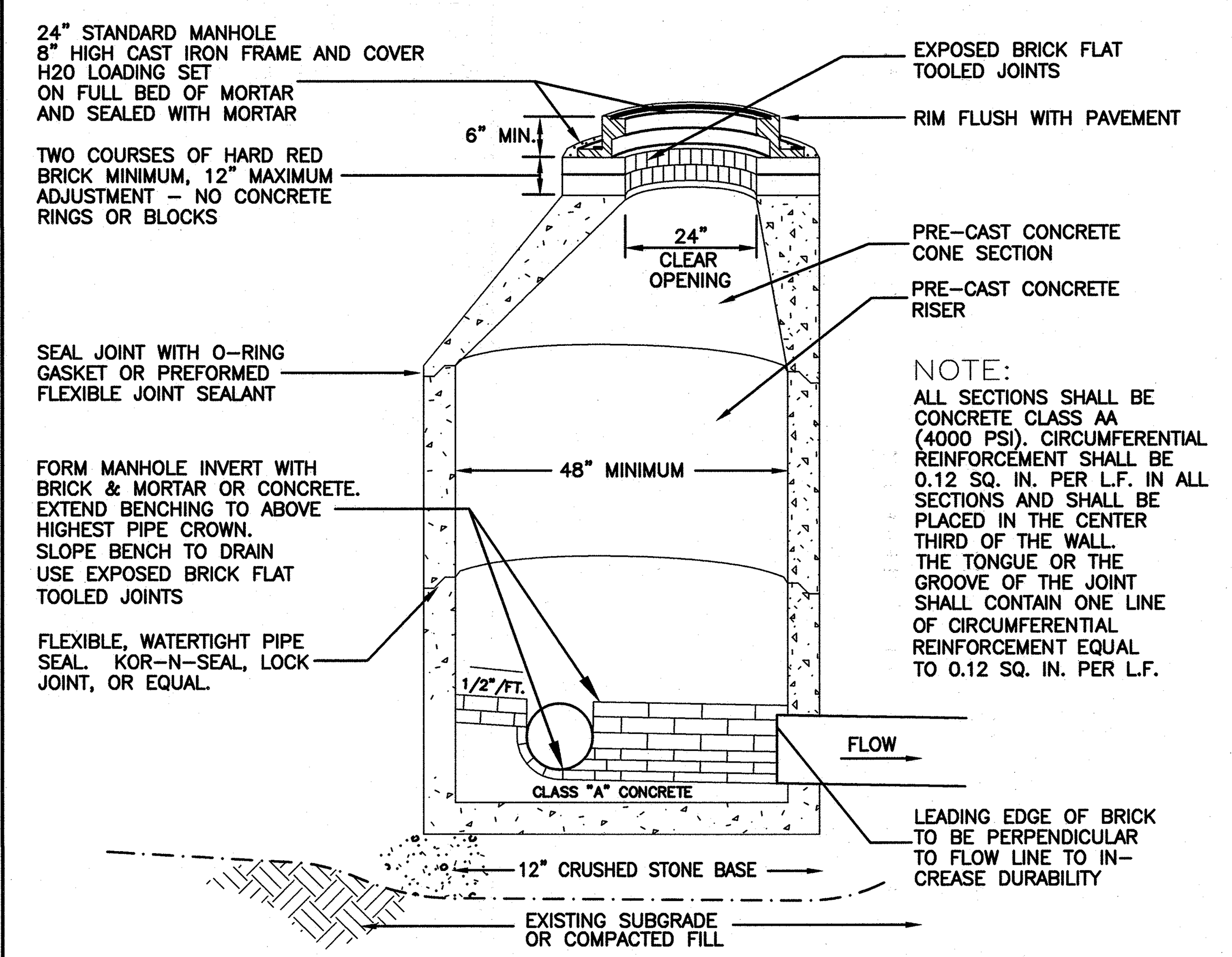
TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE WITH LESS THAN 6' OF COVER
NOT TO SCALE



NOTE:
ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.

MORTAR SHALL CONSIST OF:
1 PART BY VOLUME PORTLAND CEMENT, 2 PARTS BY VOLUME, DAMP WASHED COARSE SAND AND POTABLE WATER TO PRODUCE A CONSISTENCY OF STIFF PASTE. SEAL ALL PRECAST JOINTS WITH MORTAR.

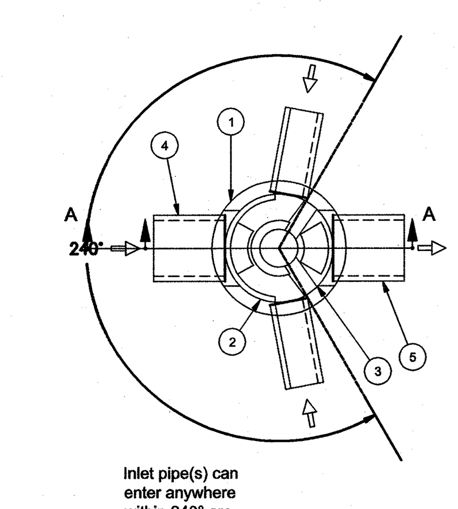
DROP SEWER MANHOLE
NOT TO SCALE



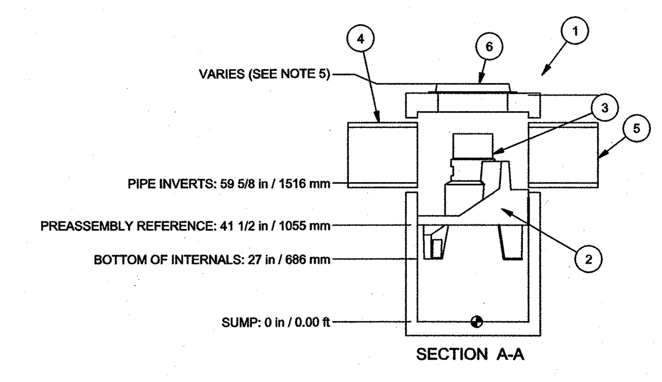
NOTE:
ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.

MORTAR SHALL CONSIST OF:
1 PART BY VOLUME PORTLAND CEMENT, 2 PARTS BY VOLUME, DAMP WASHED COARSE SAND AND POTABLE WATER TO PRODUCE A CONSISTENCY OF STIFF PASTE. SEAL ALL PRECAST JOINTS WITH MORTAR.

SEWER MANHOLE
NOT TO SCALE



Inlet pipe(s) can enter anywhere within 240° arc.



SECTION A-A

Parts List		
ITEM	SIZE (in)	DESCRIPTION
1	48	I.D. PRECAST MANHOLE
2		LEDGER SUPPORT
3		SEPARATION MODULE
4	12	INLET PIPE (BY OTHERS)
5	15	OUTLET PIPE (BY OTHERS)
6	30	FRAME AND COVER (OR GRATE) (ROUND)

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

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

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

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

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
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PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

STATE OF NEW HAMPSHIRE
CORY N. MASON
No.17099
LICENSED PROFESSIONAL ENGINEER
2/10/22

REVISIONS		
NO.	REVISION	DATE

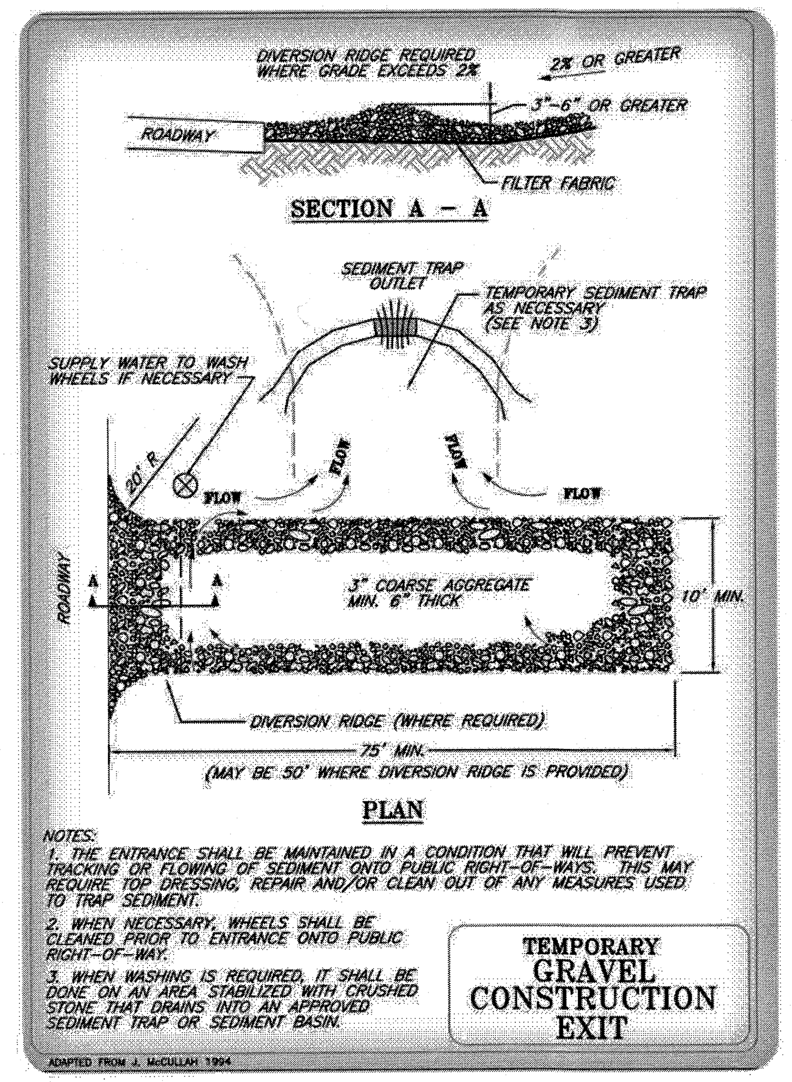
JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

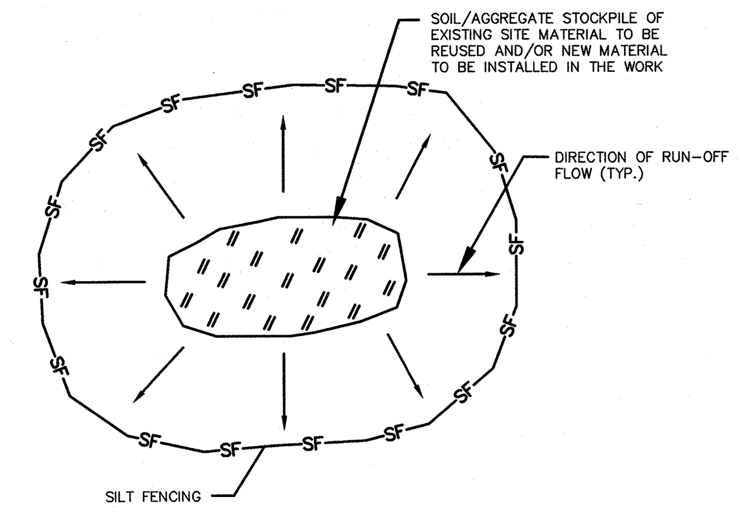
SCALE: NOT TO SCALE

PROJECT NO. NEX-2021163



GRAVEL CONSTRUCTION EXIT

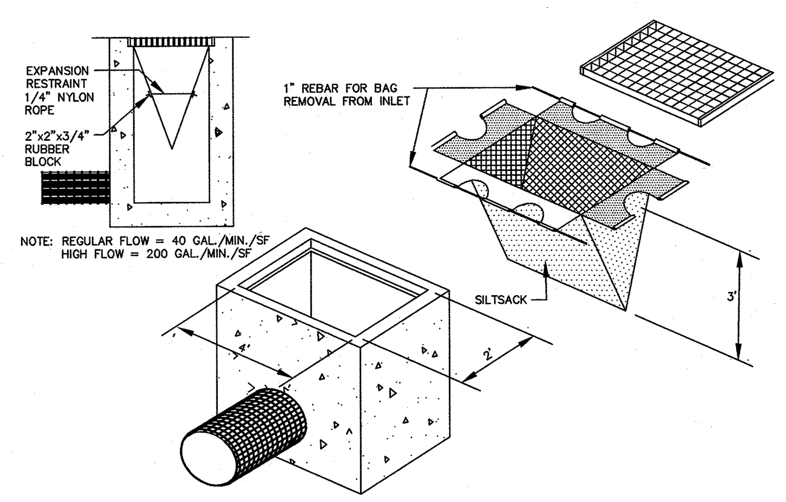
NOT TO SCALE



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

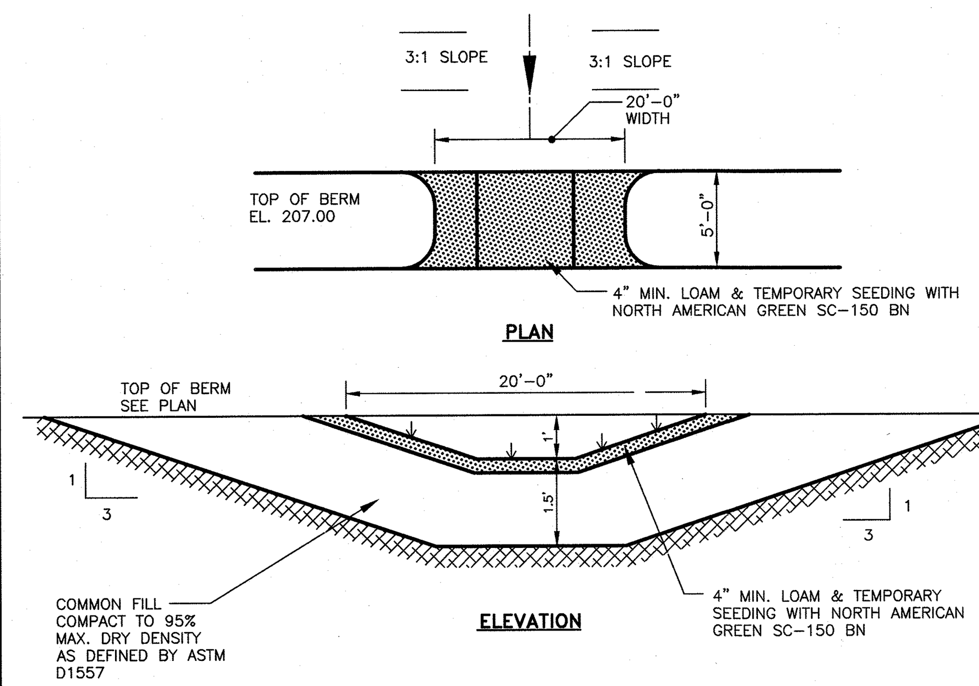
MATERIALS STOCKPILE DETAIL

NOT TO SCALE



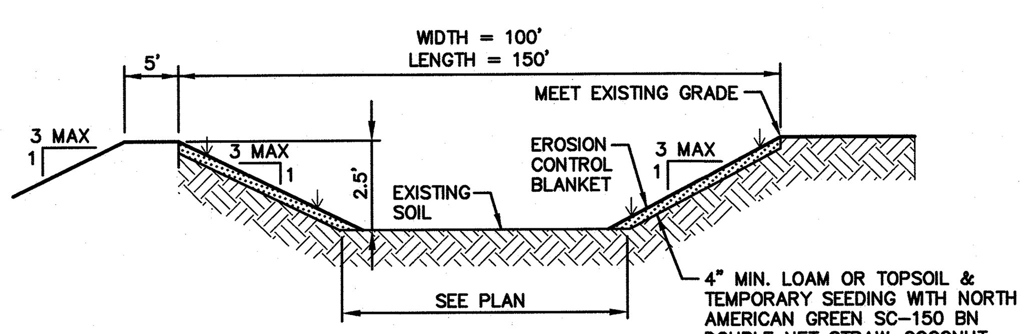
SILTSACK DETAIL-ON OR OFF SITE

NOT TO SCALE



SEDIMENT TRAP SPILLWAY DETAIL

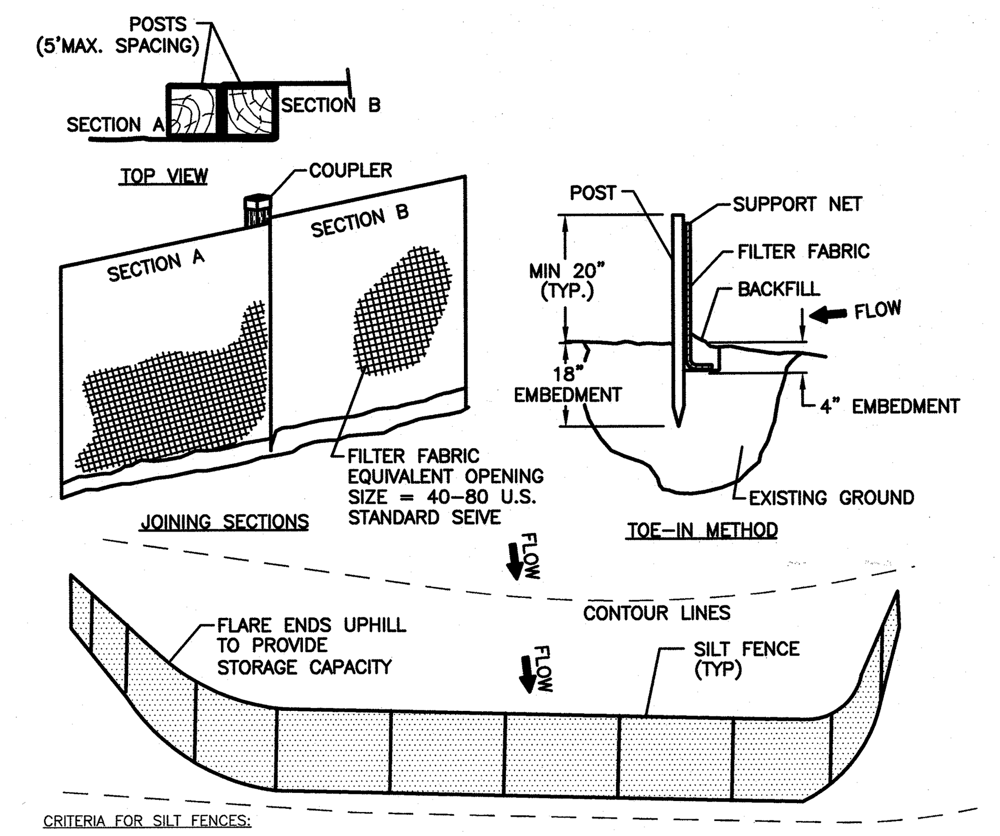
NOT TO SCALE



NOTES:
1. SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER, AND SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION.
2. THE SPILLWAY ON THE TRAP SHOULD BE A MINIMUM OF 1 FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA.
3. THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

TEMPORARY SEDIMENT TRAP TYPICAL CROSS SECTION

NOT TO SCALE



CRITERIA FOR SILT FENCES:

1) SILT FENCE FILTER CLOTH: THE FABRIC FOR THE SILT FENCE SHALL MEET THE FOLLOWING SPECIFICATIONS:

FABRIC PROPERTIES:	MINIMUM ACCEPTABLE VALUES	TEST METHOD
GRAB TENSILE STRENGTH (lbs)	90	ASTM D1682
ELONGATION AT FAILURE (%)	50	ASTM D1682
MULLEN BURST STRENGTH (PSI)	190	ASTM D3786
PUNCTURE STRENGTH (lbs)	40	ASTM D751
EQUIVALENT OPENING SIZE	40–80	US STD SIEVE

2) FENCE POSTS (FOR FABRICATED UNITS) – THE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG. WOOD POSTS WILL BE OF SOUND QUALITY HARDWOOD WITH A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES. STEEL POSTS WILL BE STANDARD T OR U SECTIONS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT. MAXIMUM SPACING SHALL BE 6 LINEAR FEET.

3) WIRE FENCE (FOR FABRICATED UNITS) – WIRE FENCING SHALL BE A MINIMUM 14.5 GUAGE WITH A MAXIMUM 6 INCH MESH OPENING.

4) PREFABRICATED UNITS – PREFABRICATED UNITS MAY BE USED IN LIEU OF THE ABOVE METHOD PROVIDING: (1) THE FILTER CLOTH AND FENCE POSTS MEET THE ABOVE CRITERIA; AND (2) THE UNIT IS INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE:

1) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.

2) IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.

3) SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

4) SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

CONSTRUCTION SPECIFICATIONS:

1) THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.

2) THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND (4" DEEP & 4" WIDE) AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.

3) WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.

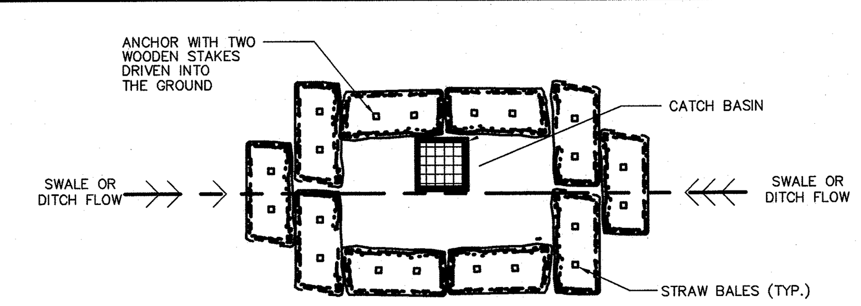
4) FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.

5) WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EAC OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES (24" IS PREFERRED), FOLDED, AND STAPLED.

6) POSTS TO BE SPACED AT A MAXIMUM OF 6' ON CENTER.

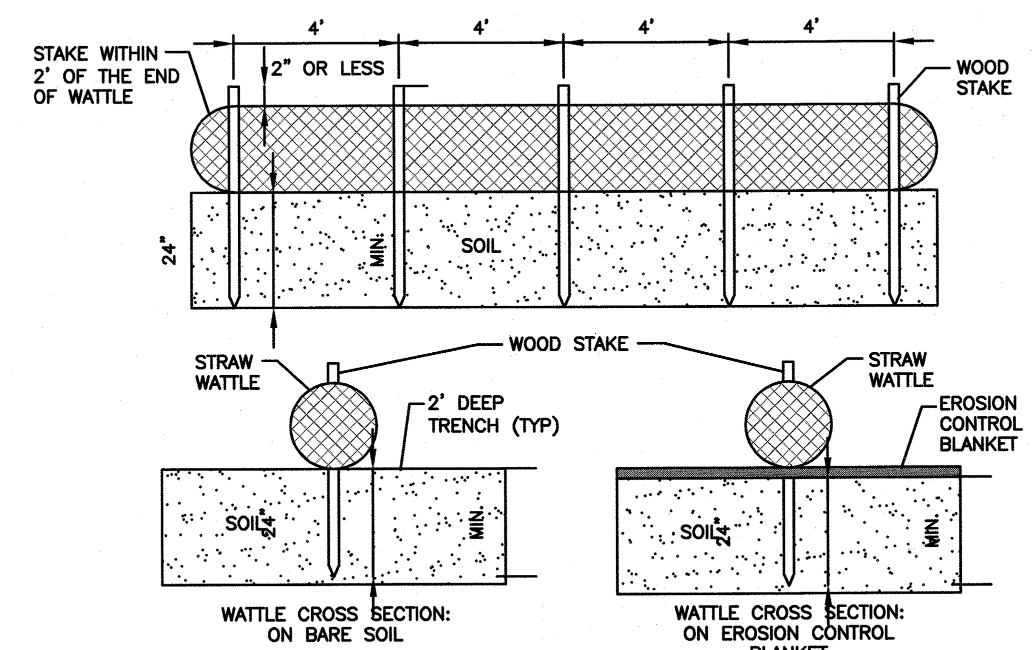
SEDIMENT CONTROL FENCE

NOT TO SCALE



LOW POINT SEDIMENTATION CONTROL BARRIER

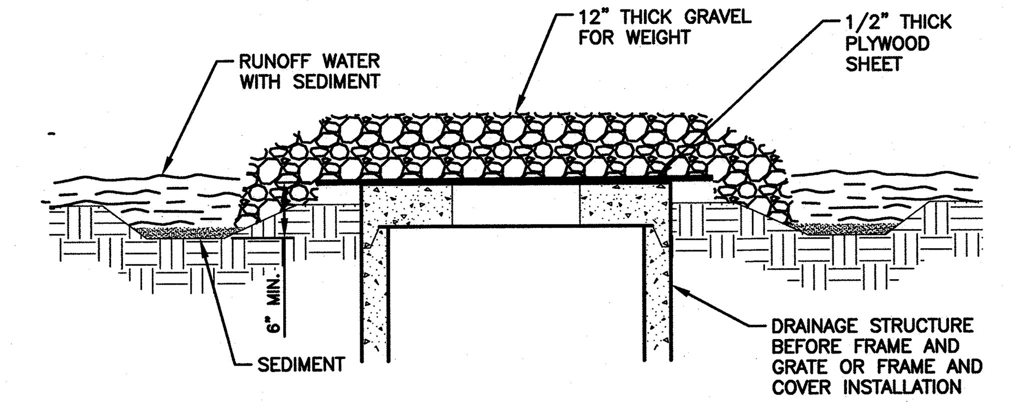
NOT TO SCALE



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

STRAW WATTLE DETAIL

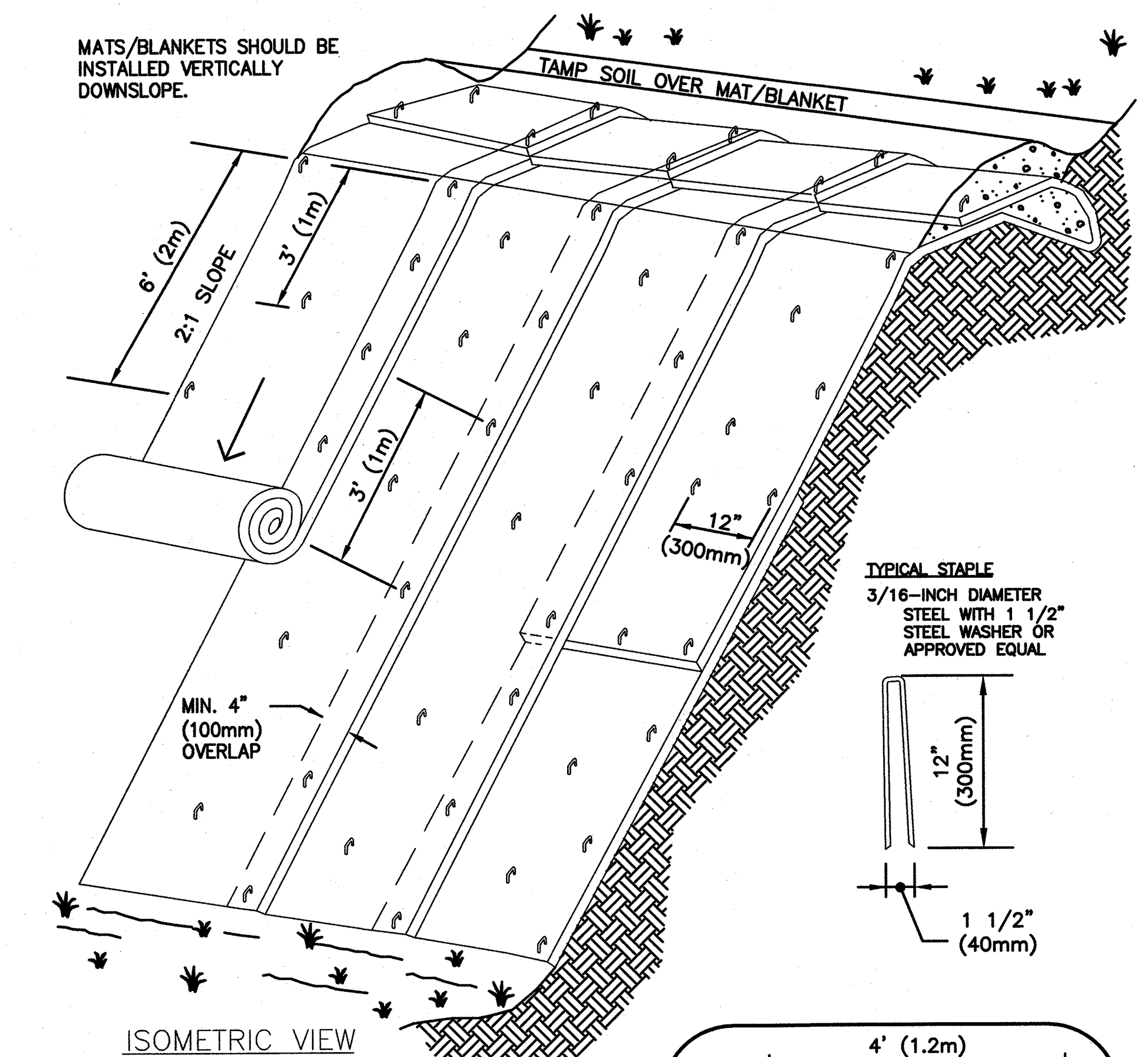
NOT TO SCALE



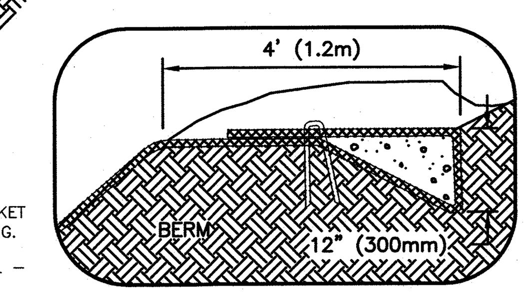
MAINTENANCE
1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY.
2. SEDIMENT SHOULD BE REMOVED FROM THE TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF OF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED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

INLET PROTECTION DETAIL

NOT TO SCALE



TYPICAL SLOPE SOIL STABILIZATION



TYPICAL INSTALLATION OF EROSION CONTROL BLANKETS FOR SLOPES

NOT TO SCALE

NOTES:
1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH. BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW. LAY BLANKETS LOOSELY & MAINTAIN DIRECT CONTACT WITH SOIL – DO NOT STRETCH.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE BLANKET END OVER END WITH 6 INCH (MIN.) OVERLAP AND ANCHOR DOWN SLOPE BLANKET IN A 6 INCH DEEP TRENCH.
5. BLANKETS SHALL BE STAPLED ENOUGH TO ANCHOR BLANKET WHILE MAINTAINING CONTACT WITH SOIL. STAPLES SHALL BE PLACED DOWN THE CENTER & STAGGERED WITH THE STAPLES PLACED ALONG EDGES. PATTERN & AMOUNT OF STAPLES VARIES BY MANUFACTURER, SO FOLLOW MANUFACTURERS RECOMMENDATIONS.
6. BLANKET SHALL BE NORTH AMERICAN GREEN SC-150 OR APPROVED EQUAL.

MAINTENANCE & MATS
1. BLANKETS SHALL BE INSPECTED WEEKLY DURING CONSTRUCTION & AFTER A RAINFALL IN EXCESS OF 1/2" IN A 24-HOUR PERIOD.
2. FAILURES SHALL BE REPAIRED IMMEDIATELY. IF ANY OF THE FOLLOWING OCCUR; SLOPE WASHOUT, MAT DISPLACEMENT, DAMAGE TO MAT, THE AFFECTED AREA SHALL BE REPAIRED & RESEEDED & MAT SHALL BE REPLACED OR RE-INSTALLED.

NOTE: DO NOT USE PRODUCTS THAT CONTAIN WELDED PLASTIC OR THAT ARE "PHOTODEGRADABLE". USE PRODUCTS WITH BIODEGRADABLE NETTING AND NATURAL FIBER MATERIAL (I.E. STRAW OR COCONUT FIBER).

BLANKET SLOPE PROTECTION FOR EROSION CONTROL

NOT TO SCALE

TEST PIT DATA

Test Pit No.	9-1		SCS Soil:	Pipestone
ESHWT:	>48"		Standing Water:	None
Refusal:	48"		Roots:	None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-30"	A	Loamy Sand	10yr 2/2	FR	
30-48"	B	Loamy Sand	10yr 4/4	FR	
48"	R				

Test Pit No.	9-2		SCS Soil:	Pipestone
ESHWT:	36"		Standing Water:	None
Refusal:	38"		Roots:	None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-24"	A	Loamy Sand	10yr 3/2	FR	
24-33"	B	Loamy Sand	10yr 5/8	FR	
33-38"	C	Loamy Sand	2.5y 7/4	FR	@ 36" Distinct
38"	R				

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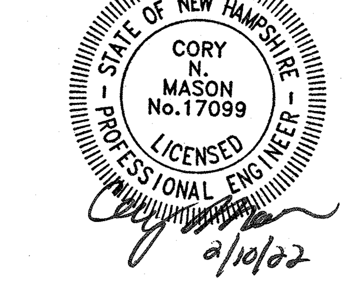
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD
PORTSMOUTH, NH 03801



REVISIONS		
NO.	REVISION	DATE

JANUARY 26, 2022

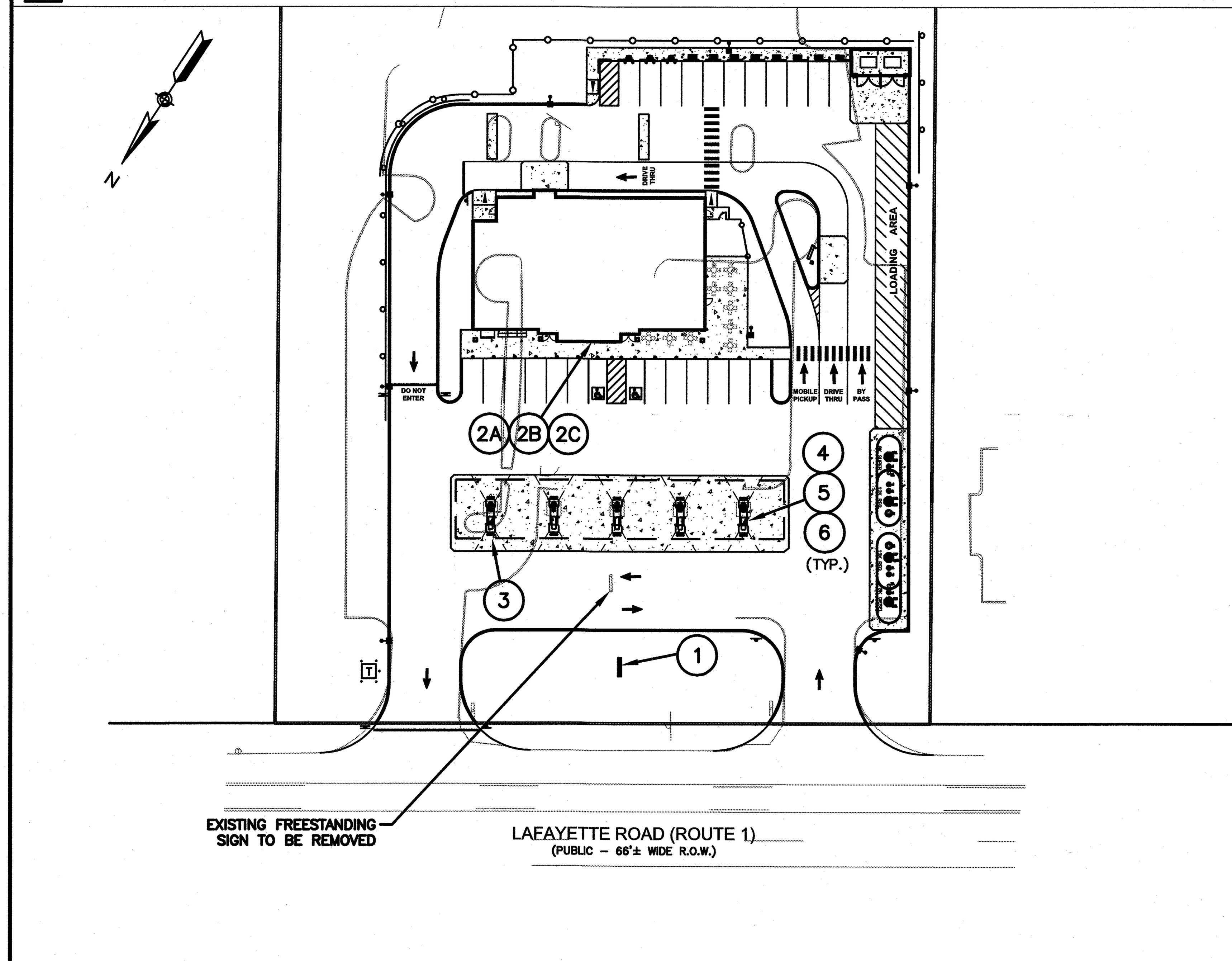
DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

DETAIL SHEET

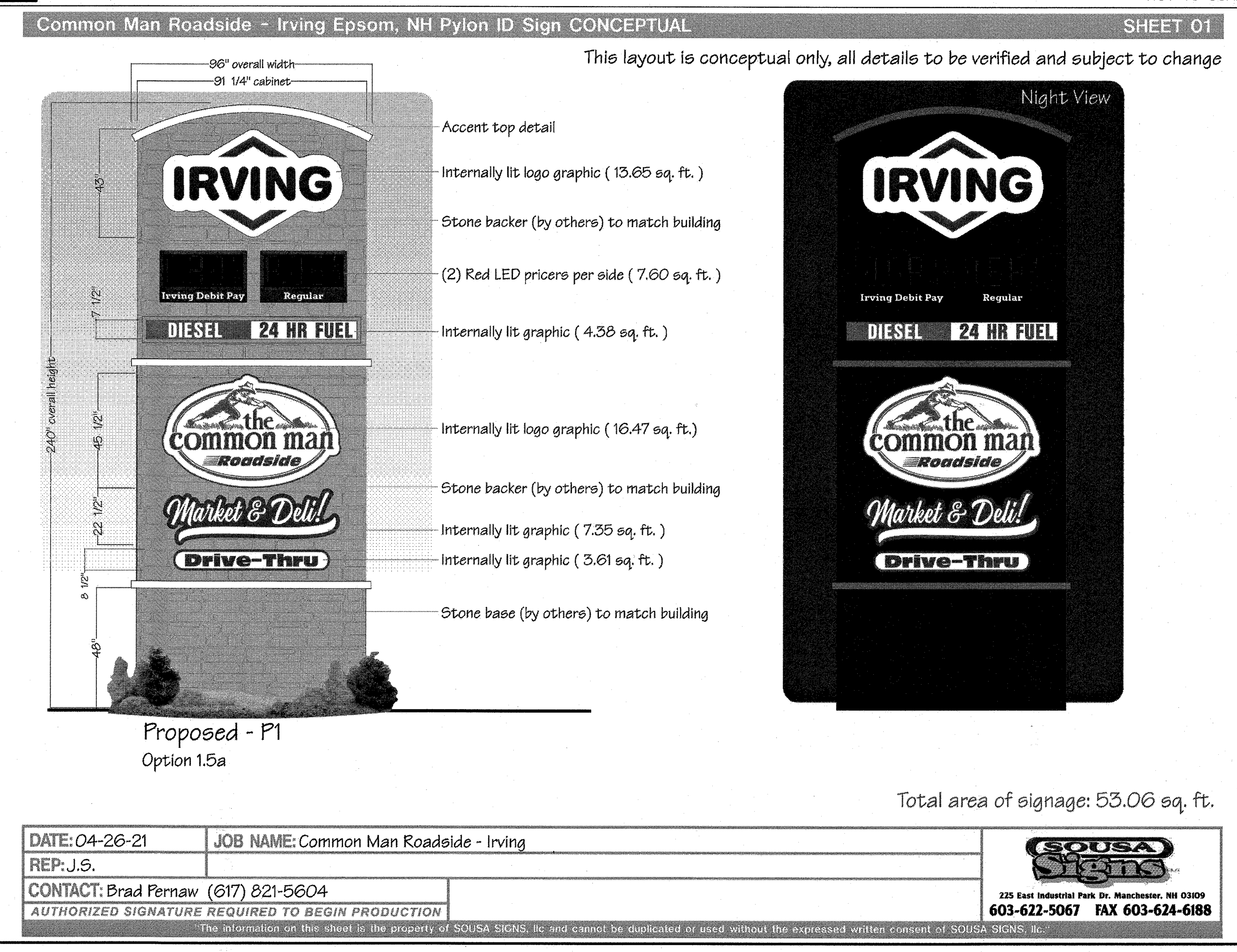
SCALE: NOT TO SCALE

PROJECT NO. NEX-2021163

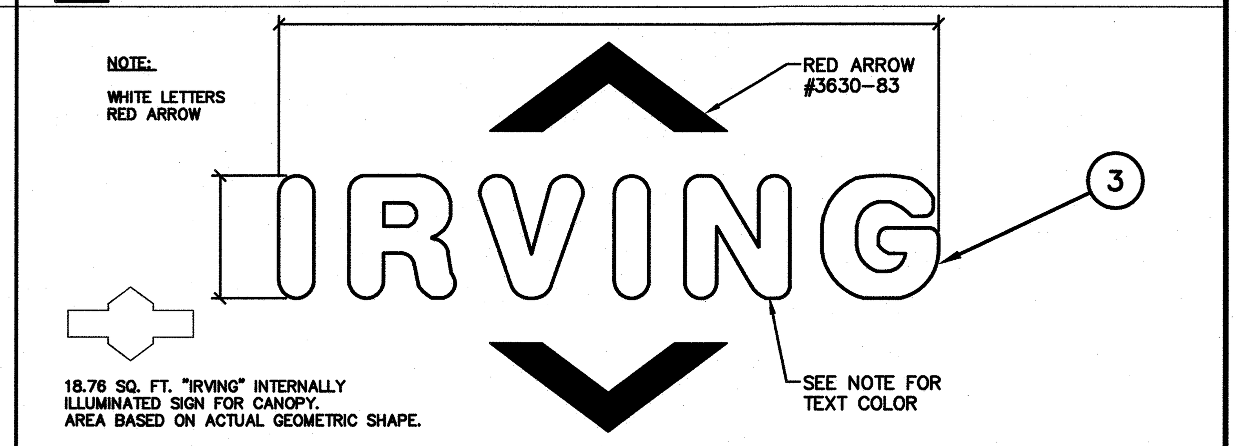
01 SITE LAYOUT — SCALE: 1" = 50'



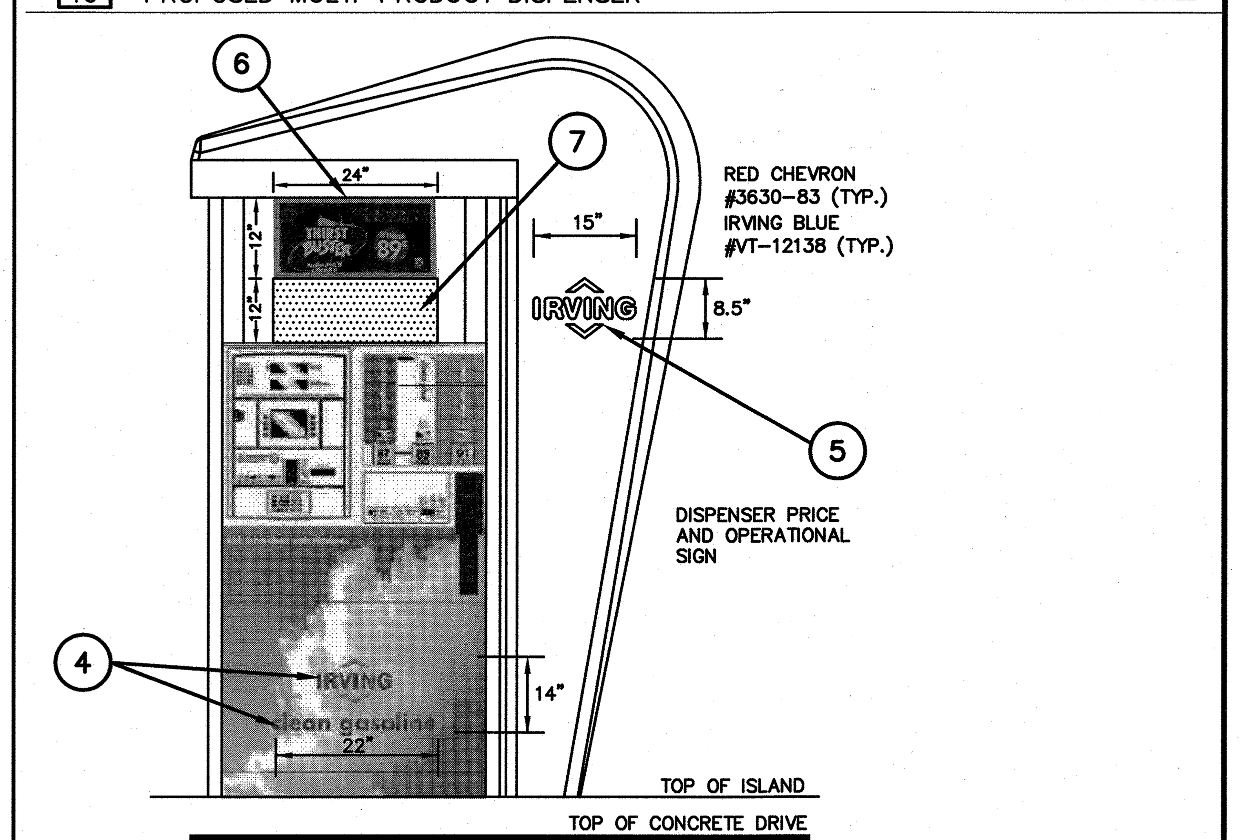
02 PROPOSED FREESTANDING SIGN ELEVATION — NOT TO SCALE



09 PROPOSED "IRVING" CANOPY LOGO — NOT TO SCALE



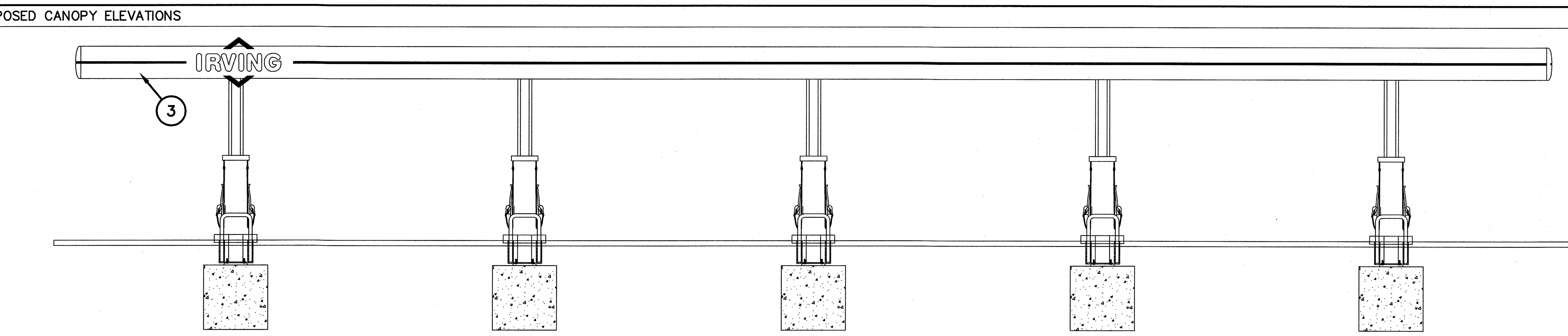
10 PROPOSED MULTI–PRODUCT DISPENSER — NOT TO SCALE



05 PROPOSED STORE ELEVATIONS — NOT TO SCALE

FRONT ELEVATION
N.T.S.

08 PROPOSED CANOPY ELEVATIONS — SCALE: 1/8"=1'–0"



AUTO FUELING CANOPY- NORTH ELEVATION
1/8" = 1'-0"

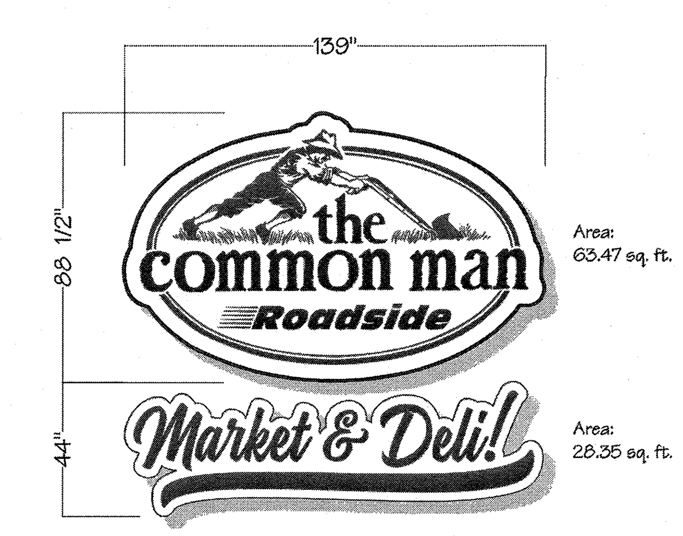
06 PROPOSED SIGN SCHEDULE — NOT TO SCALE

PROPOSED SIGN SCHEDULE

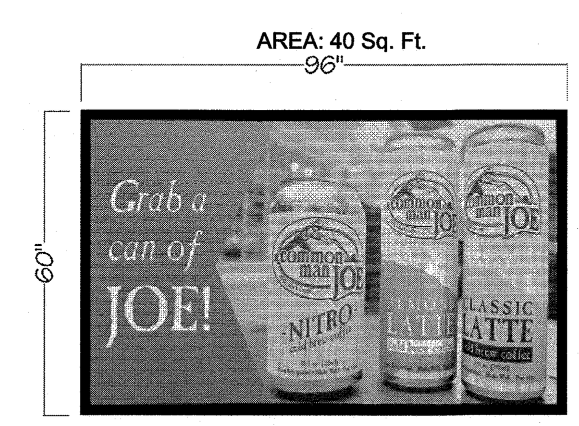
MARK	DESCRIPTION	SIZE	AREA	QTY.	TOTAL SF	ILLUM'D.
1	FREESTANDING SIGN	SEE DETAIL 2	100.0*	1	100.0	YES (INTERNAL)
2A	C–STORE WALL SIGN	SEE LOGO DETAIL 4	63.5	3	190.5	YES (INTERNAL)
2B	C–STORE WALL SIGN	SEE LOGO DETAIL 4	28.4	3	85.2	YES (INTERNAL)
2C	C–STORE WALL SIGN	SEE LOGO DETAIL 5	40.0	3	120.0	YES (INTERNAL)
3	"IRVING" CANOPY – LOGO SIGN	SEE LOGO DETAIL 9	18.76	3	56.28	YES (INTERNAL)
4	"IRVING" MPD DOOR GRAPHIC	SEE DISPENSER DETAIL 10	2.14	10	21.4	NO
5	"IRVING" DISPENSER SHROUD LOGO	SEE DISPENSER DETAIL 10	0.89	10	8.9	NO
6	"IRVING" DISPENSER ADVERTISING SIGN	SEE DISPENSER DETAIL 10	2.0	10	20.0	NO
7	DISPENSER PRICE SIGN	SEE DISPENSER DETAIL 10	2.0	10	20.0	NO

* INCLUDES BASE & STRUCTURE PER PORTSMOUTH REGULATIONS

04 C–STORE BUILDING WALL SIGN — NOT TO SCALE



05 C–STORE BUILDING WALL SIGN — NOT TO SCALE



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Salem, NH 03079

PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

REVISIONS

NO.	REVISION	DATE

JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

SIGN & GRAPHICS PLAN

SCALE: AS SHOWN

PROJECT NO. NEX-2021163

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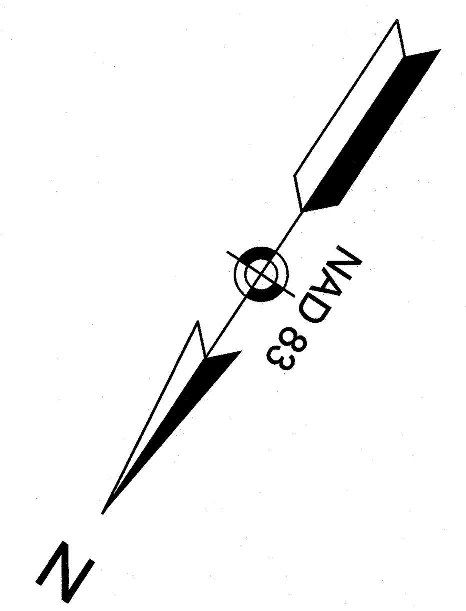

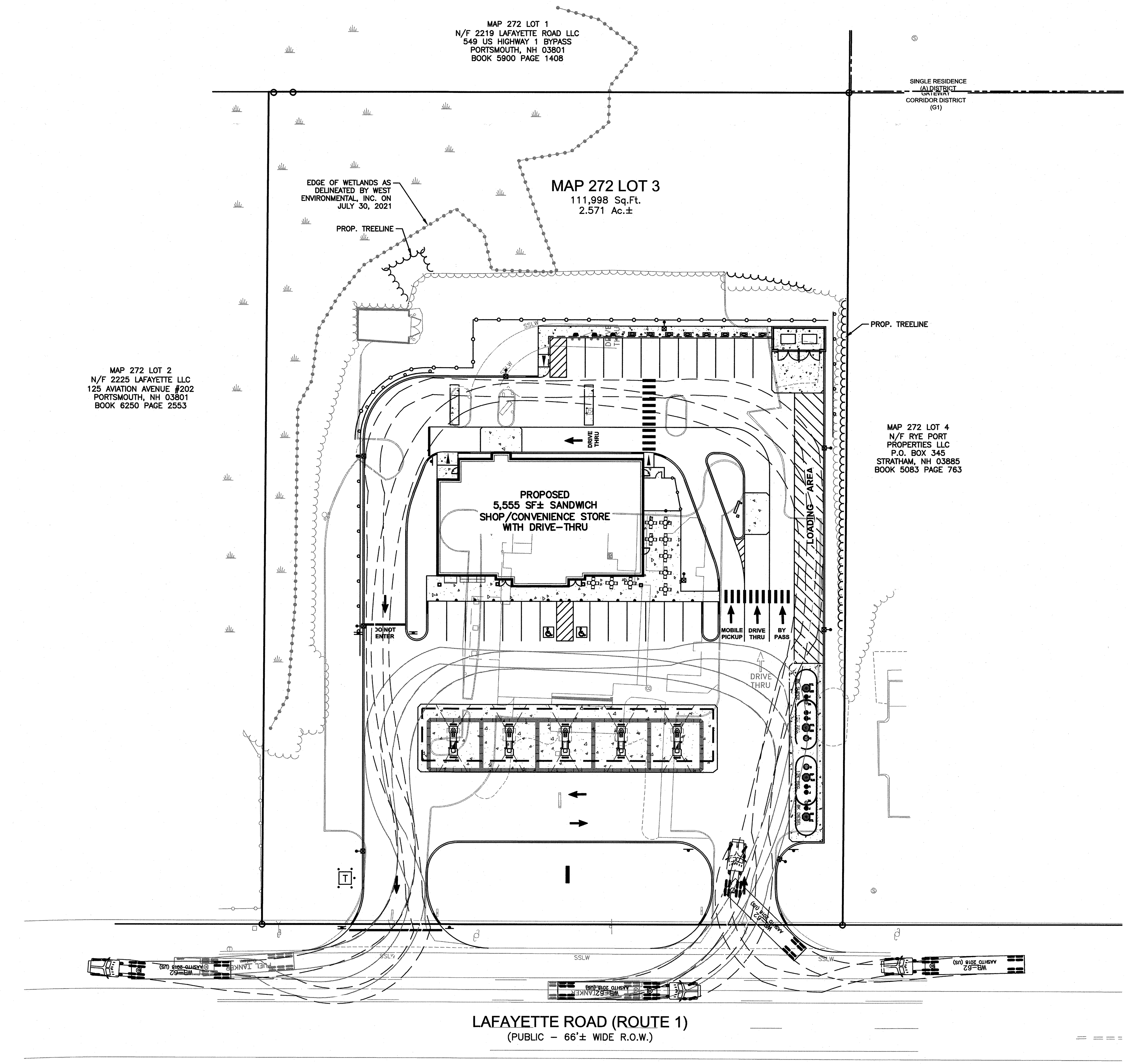

0 30 60 100

SCALE: 1" = 30'

LEGEND

- VGC — VERTICAL GRANITE CURB
- SSLW — SINGLE SOLID LINE WHITE
- GAS LINE
- UNDERGROUND COMM
- WATER LINE
- UNDERGROUND ELECTRIC
- CHAIN LINK FENCE
- CONTOUR ELEVATION
- TREE
- UTILITY POLE
- GUY WIRE
- OVERHEAD WIRE
- TREELINE
- SIGN
- SPOT ELEVATION
- CATCH BASIN
- CLEANOUT
- SEWER MANHOLE
- TELEPHONE MANHOLE
- WATER SHUT OFF
- BOLLARD
- GAS METER
- LIGHT POLE
- WETLAND LINE
- EASEMENT LINE
- PROPERTY LINE
- ABUTTER PROPERTY LINE
- ZONE LINE

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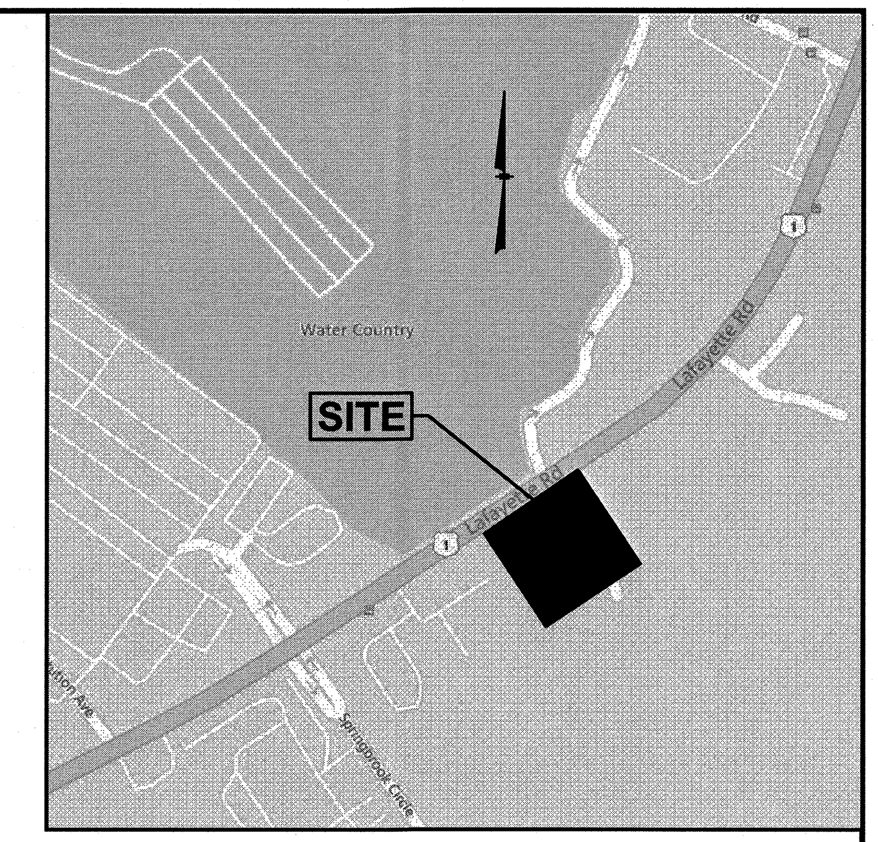
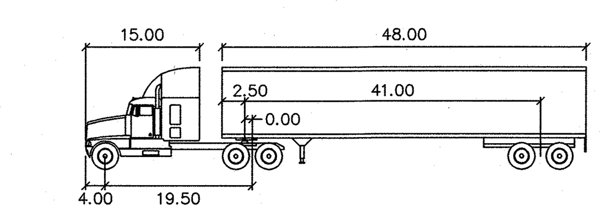
811 DigSafe MA-ME-NH-RI-VT

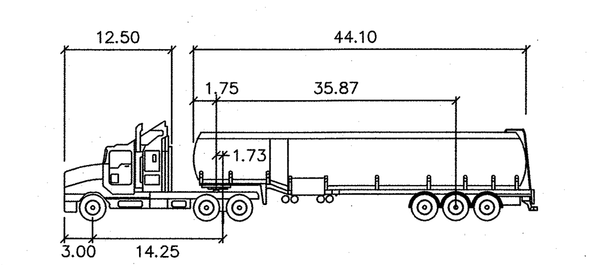


LOCATION MAP
(NOT TO SCALE)



WB-62

feet			
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		



FUEL TANKER

feet			
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 40.0
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

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JANUARY 26, 2022

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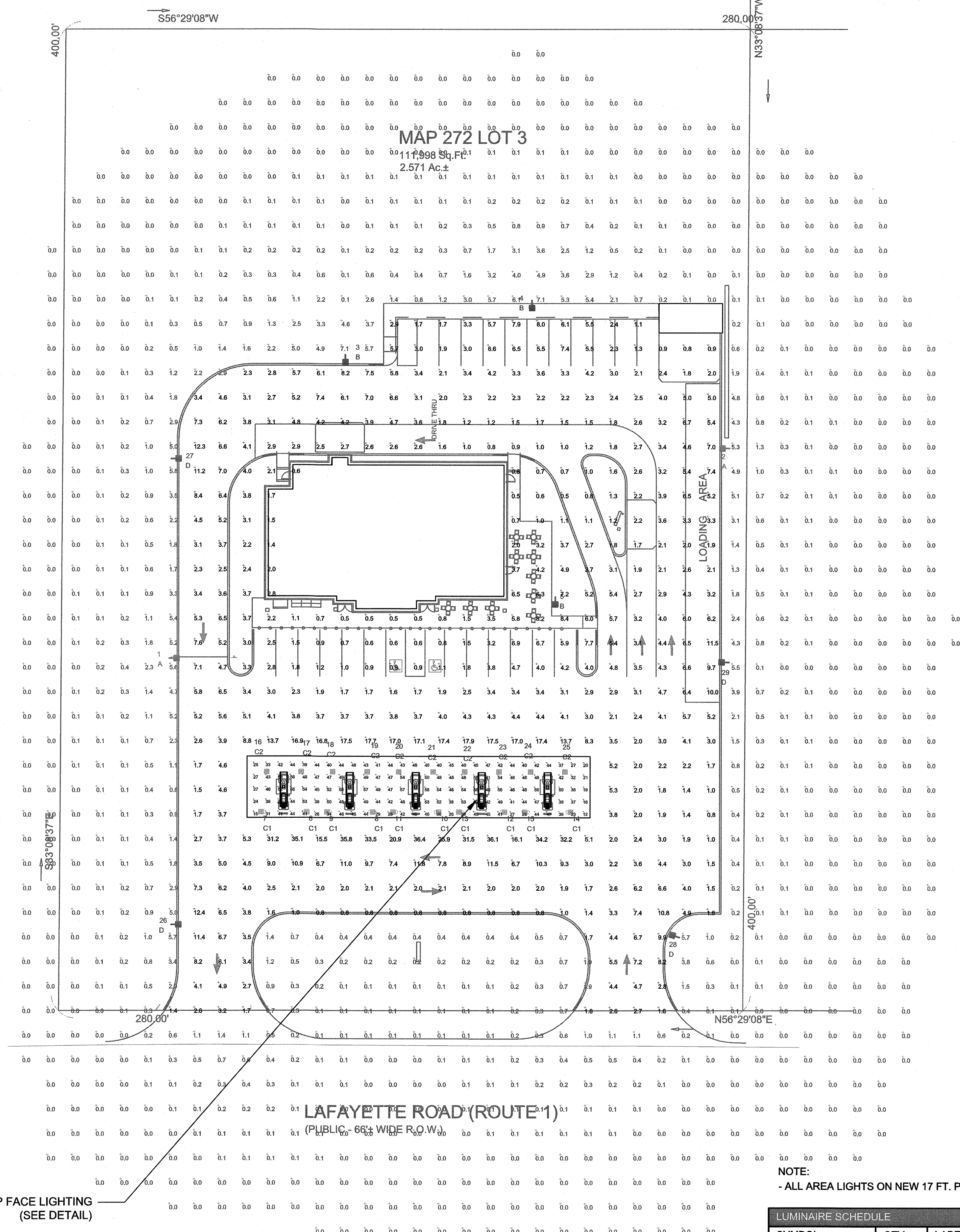
CCC/NID	DRJ

TRUCK TURN PLAN

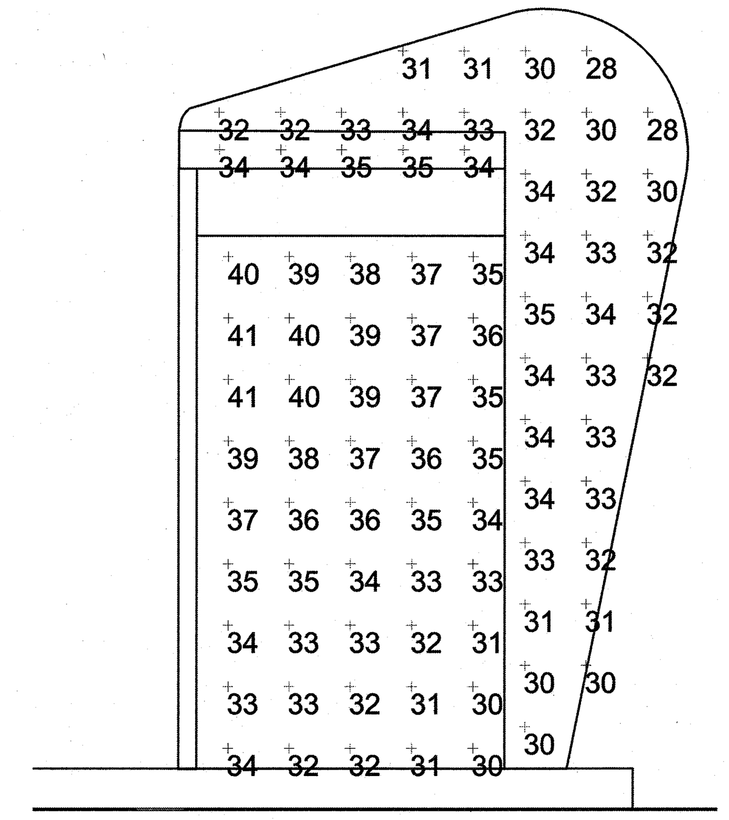
SCALE: 1"=30'

PROJECT NO. NEX-2021163

1 OF 1



HARP FACE LIGHTING
(SEE DETAIL)



HARP FACE
VERTICAL LIGHTING DETAIL
SCALE: $\frac{1}{2}$" = 1'

THIS SITE IS LOCATED IN A REGION WHERE
LIGHTING IS REGULATED BY LOCAL ORDINANCES

LUMINAIRE LOCATION SUMMARY

LUM NO.	LABEL	MTG. HT.
1	A	19.5
2	A	19.5
3	B	19.5
4	B	19.5
5	B	19.5
6	C1	14.5
7	C1	14.5
8	C1	14.5
9	C1	14.5
10	C1	14.5
11	C1	14.5
12	C1	14.5
13	C1	14.5
14	C1	14.5
15	C1	14.5
16	C2	14.5
17	C2	14.5
18	C2	14.5
19	C2	14.5
20	C2	14.5
21	C2	14.5
22	C2	14.5
23	C2	14.5
24	C2	14.5
25	C2	14.5
26	D	19.5
27	D	19.5
28	D	19.5
29	D	19.5

FOOTCANDLE LEVELS CALCULATED AT GRADE USING INITIAL LUMEN VALUES

LABEL	AVG	MAX	MIN	AVG/MIN	MAX/MIN
IRVING HARP FACE (VERTICAL)	33.88	41	28	1.21	1.46
PAVED AREA	4.78	36.4	0.5	9.56	72.80
UNDEFINED	0.35	7.1	0.0	N.A.	N.A.
UNDER CANOPY	42.73	58	12	3.56	4.83

NOTE:
- ALL AREA LIGHTS ON NEW 17 FT. POLE MOUNTED ON 2-1/2 FT. CONCRETE BASE

LUMINAIRE SCHEDULE

SYMBOL	QTY	LABEL	ARRANGEMENT	LUMENS	LLF	BUG RATING	WATTS/LUMINAIRE	TOTAL WATTS	MANUFACTURER	CATALOG LOGIC
	2	A	SINGLE	16998	1.030	B2-U0-G3	132	264	Cree Inc	OSQ-ML-B-DA-XX + OSQL-B-22L-57K7-4M-UL-NM--XX + OSQ-BLSLF
	3	B	SINGLE	22098	1.030	B3-U0-G3	132	396	Cree Inc	OSQ-ML-B-DA-XX + OSQL-B-22L-57K7-4M-UL-NM-XX
	10	C1	SINGLE	12862	1.030	B2-U1-G1	141	1410	RUUD LIGHTING, INC., A CREE COMPANY	CAN-304-AF-RS-06-E-UL-WH-700-57K
	10	C2	SINGLE	13251	1.030	B3-U0-G1	134	1340	CREE, INC.	CAN-304-SL-RS-06-E-UL-XX-700-57K
	4	D	Single	17499	1.030	B2-U0-G3	132	528	Cree Inc	OSQ-ML-B-DA-XX + OSQL-B-22L-57K7-3M-UL-NM-XX + OSQ-BLSLF

REDLEONARD
ASSOCIATES
1340 Kemper Meadow Dr, Forest Park, OH 45240
513-574-9500 | redleonard.com

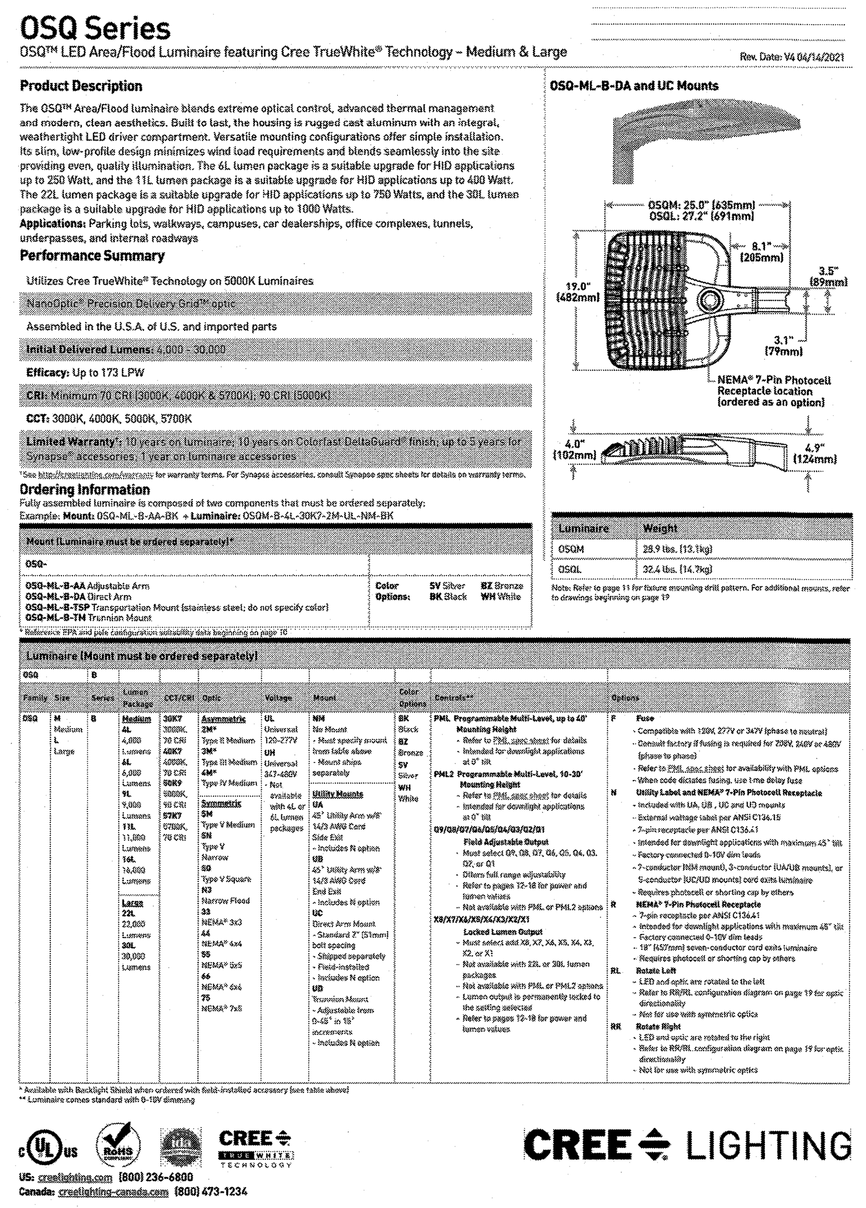
SCALE: 1" = 30'
LAYOUT BY: JSG
DWG SIZE: D
DATE: 1/10/22

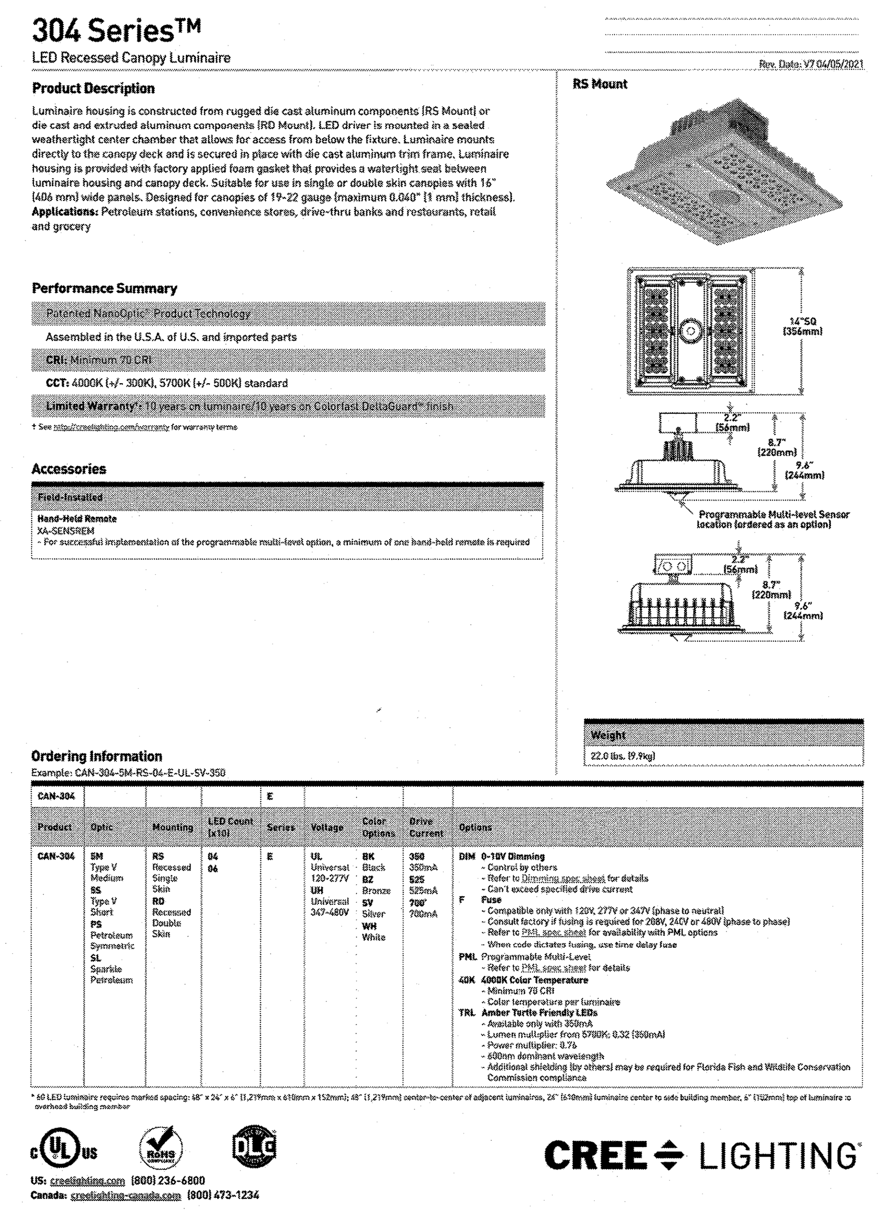
PROJECT NAME:
IRVING OIL
GRANITE STATE C-STORE
DRAWING NUMBER:
RL-7838-S1

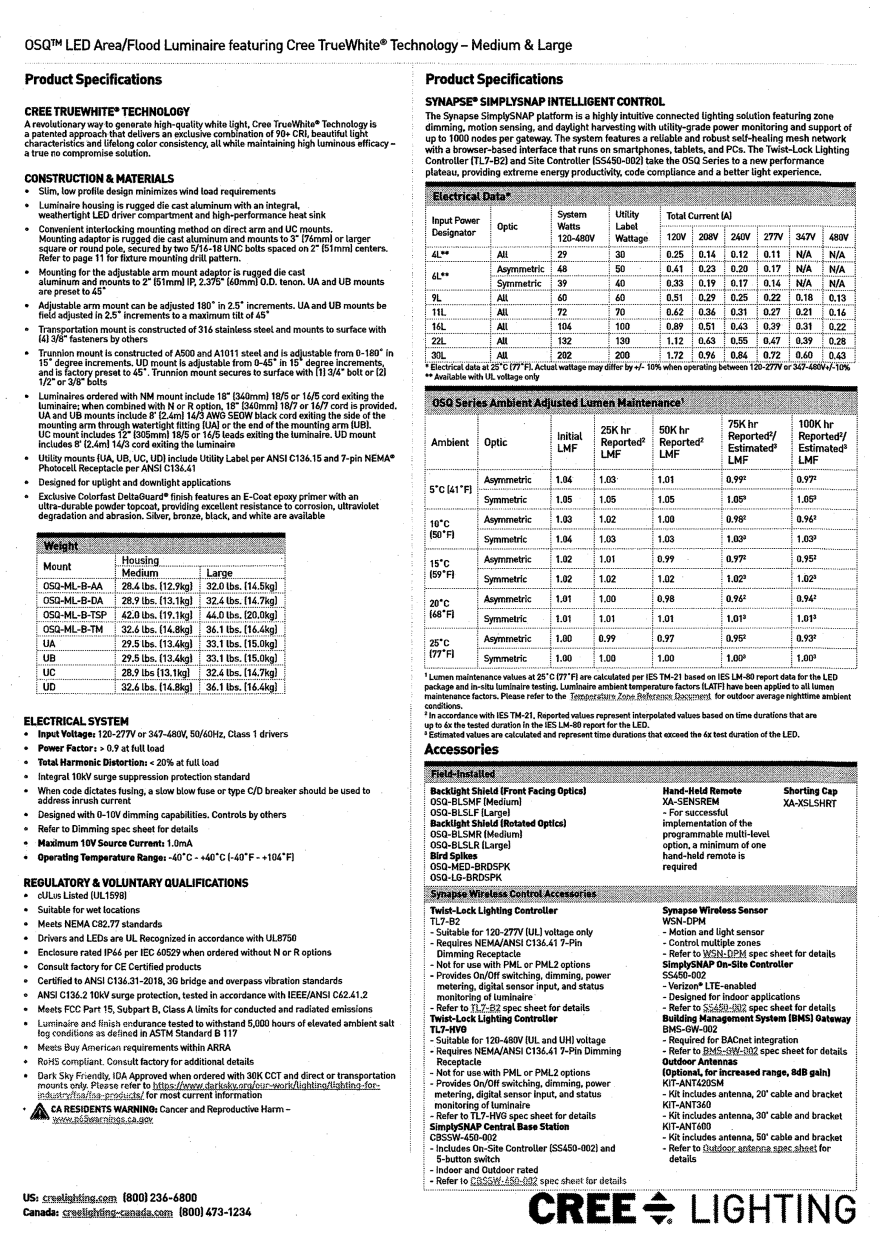
IRVING

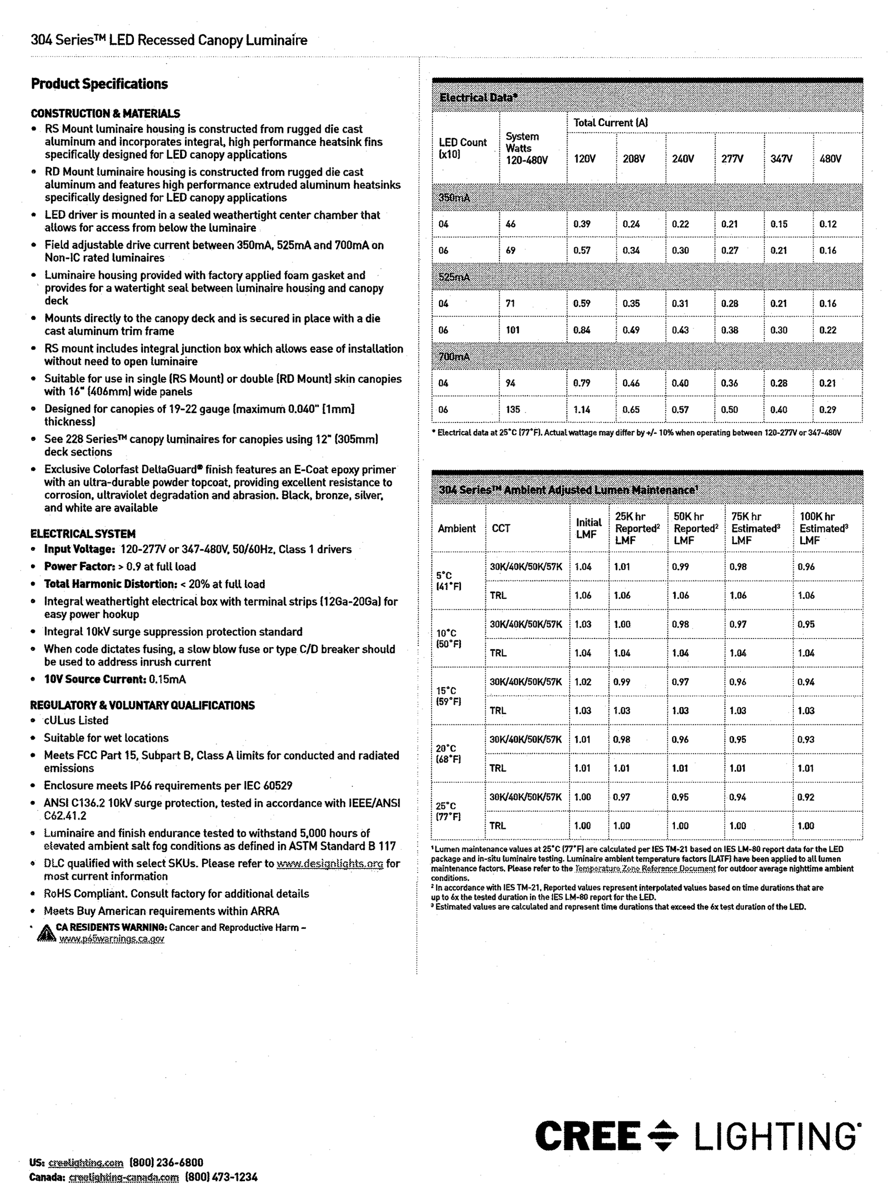
		QTY	LABEL	DESCRIPTION
AREA		2	A	OSQ-ML-B-DA-XX + OSQL-B-22L-57K7-4M-UL-NM--XX + OSQ-BLSLF
		3	B	OSQ-ML-B-DA-XX + OSQL-B-22L-57K7-4M-UL-NM-XX
		4	D	OSQ-ML-B-DA-XX + OSQL-B-22L-57K7-3M-UL-NM-XX + OSQ-BLSLF

		QTY	LABEL	DESCRIPTION
CANOPY		10	C1	CAN-304-AF-RS-06-E-UL-WH-700-57K
		10	C2	CAN-304-SL-RS-06-E-UL-XX-700-57K





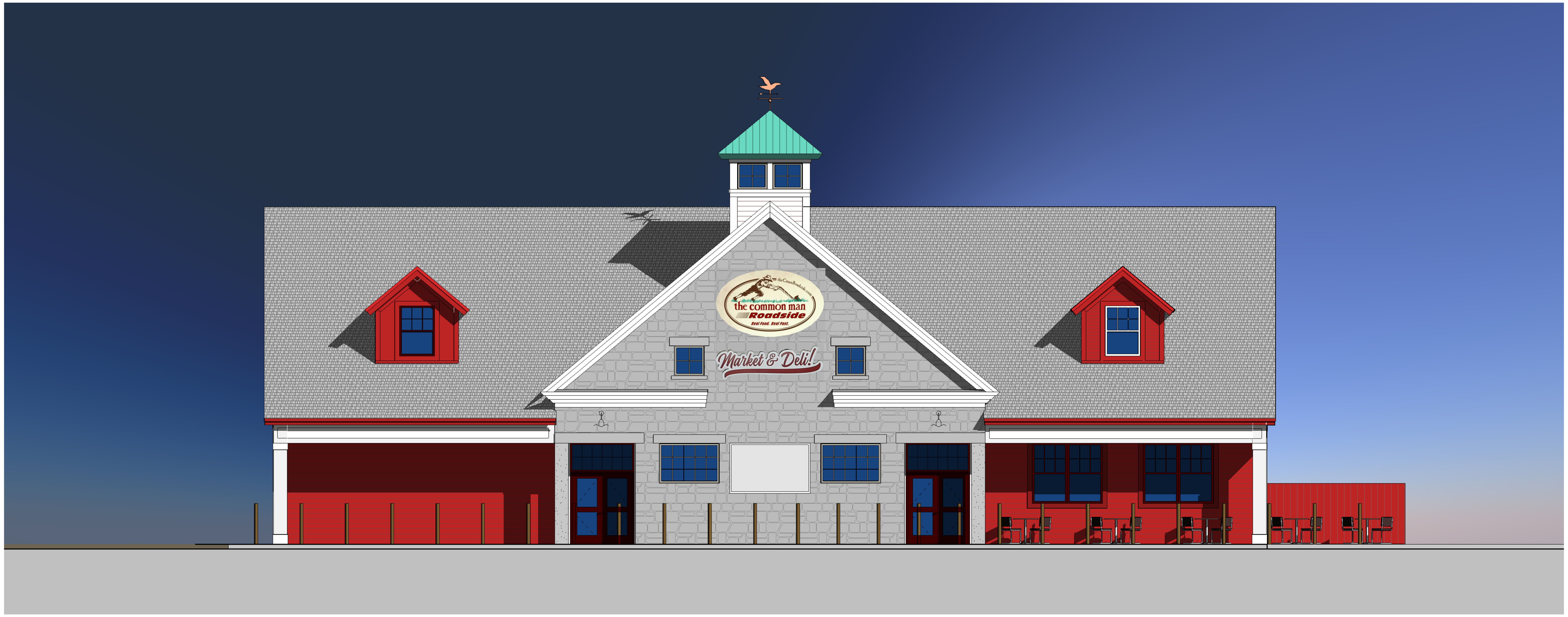




REDLEONARD ASSOCIATES
1340 Kemper Meadow Dr, Forest Park, OH 45240
513-574-9500 | redleonard.com

PROJECT NAME:
IRVING OIL
GRANITE STATE C-STORE
DRAWING NUMBER:
RL-7838-S1

IRVING



1 NORTH ELEVATION - PRESENTATION
Scale: 3/16" = 1'-0"

2 EAST ELEVATION - PRESENTATION
Scale: 3/16" = 1'-0"

SAMYN – D'ELIA
ARCHITECTS, P.A.

CONSULTANTS / DESIGN TEAM:

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SCHEMATIC DESIGN
1/26/2022

KEY PLAN & NORTH ARROW:

DRAWN BY: MR
CHECKED BY: WD

PROJECT:
PORTSMOUTH ROADSIDE

PORTSMOUTH, NEW HAMPSHIRE

DRAWING TITLE:
EXTERIOR ELEVATIONS - PRESENTATION

ISSUED:
Schematic Design

PROJECT NO: 2130
DATE: Jan. 26, 2022

REVISION	DATE	COMMENTS

SHEET NUMBER:
P201

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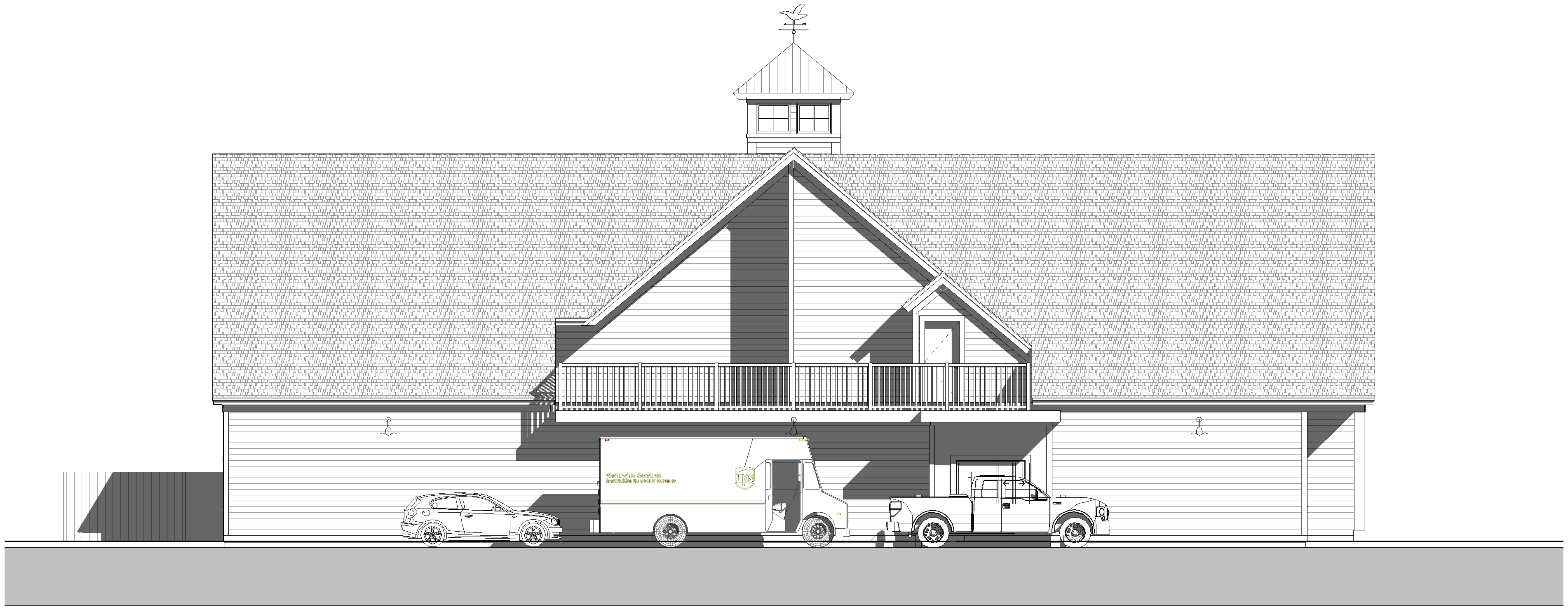

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2 WEST ELEVATION - PRESENTATION
Scale: 3/16" = 1'-0"

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SCHEMATIC DESIGN
1/26/2022

KEY PLAN & NORTH ARROW:

DRAWN BY: MR

CHECKED BY: WD

PROJECT:
PORTSMOUTH ROADSIDE

PORTSMOUTH, NEW HAMPSHIRE

DRAWING TITLE:
EXTERIOR ELEVATIONS - PRESENTATION

ISSUED:
Schematic Design

PROJECT NO: 2130 | DATE: Jan. 26, 2022

REVISION	DATE	COMMENTS

SHEET NUMBER:
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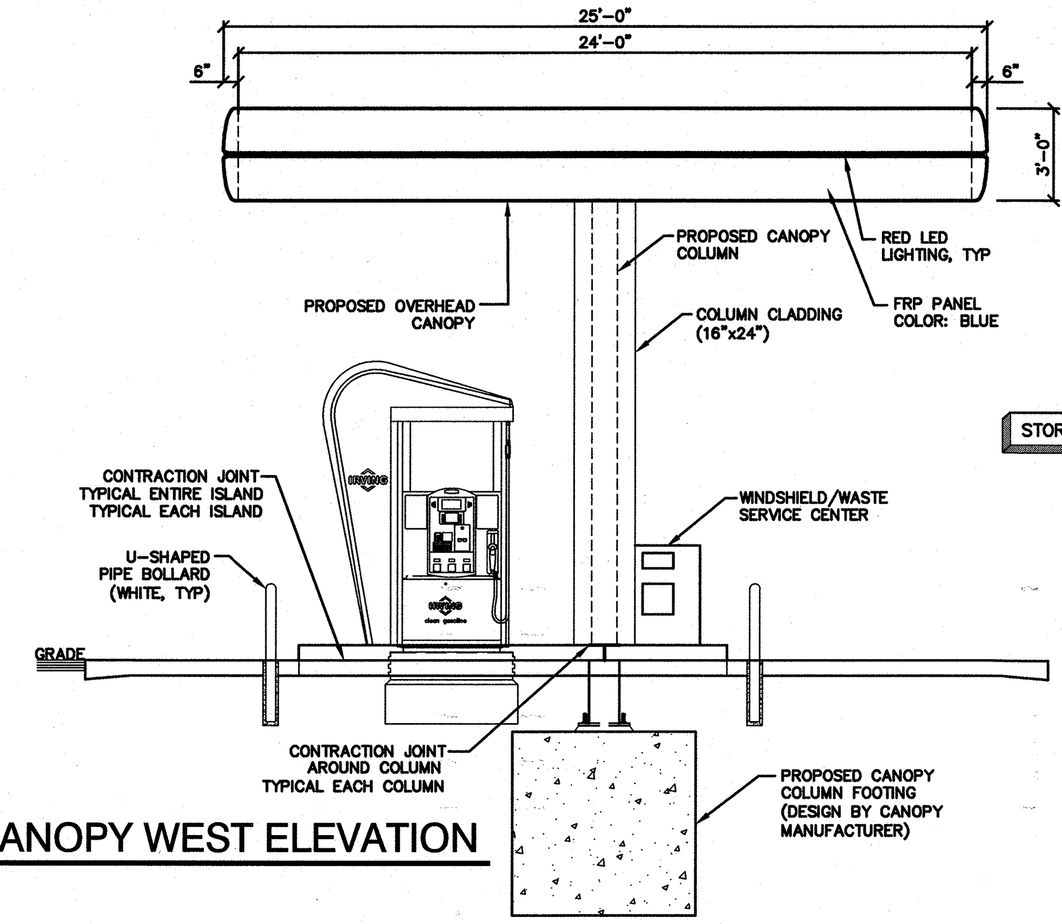

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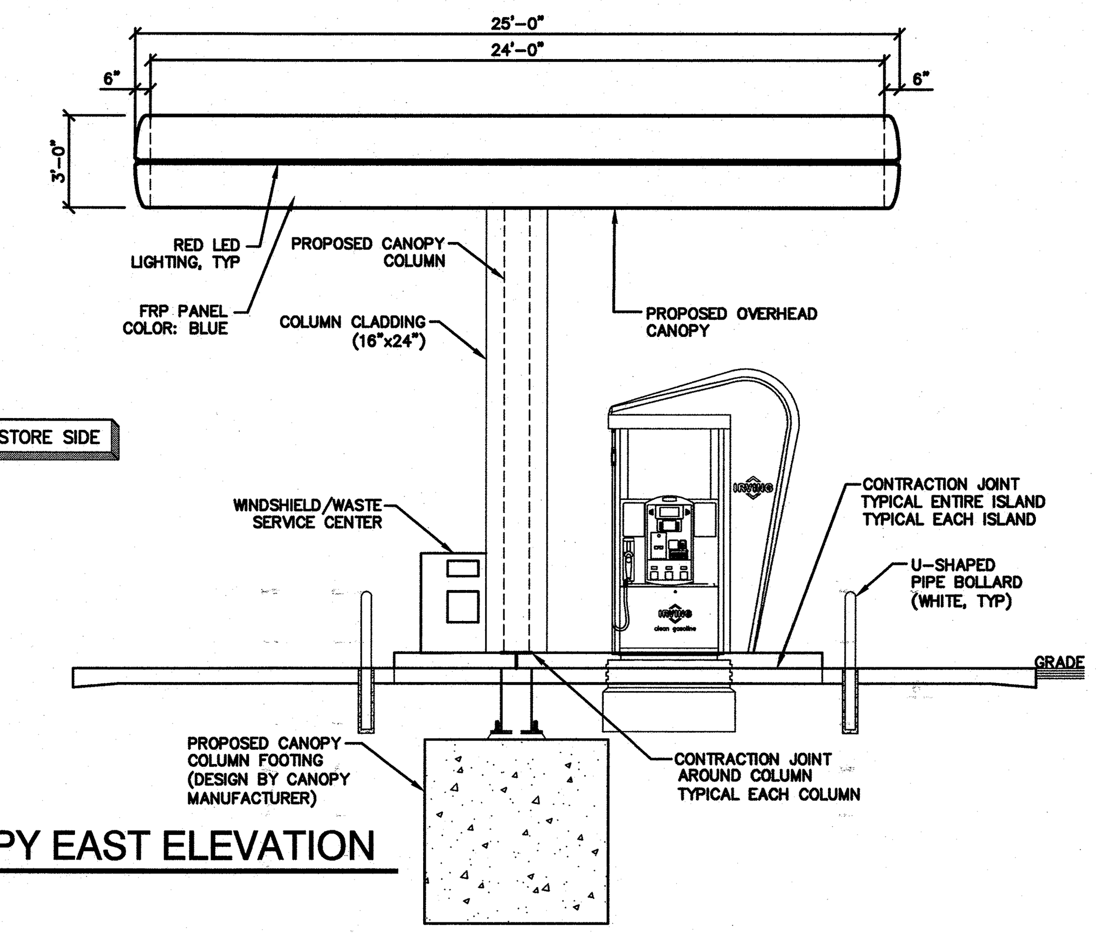

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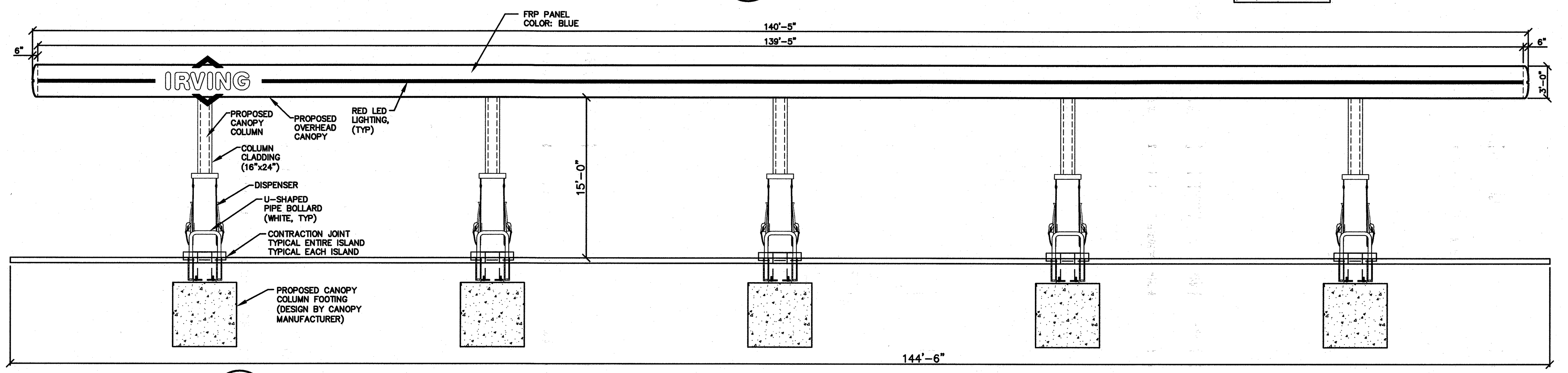

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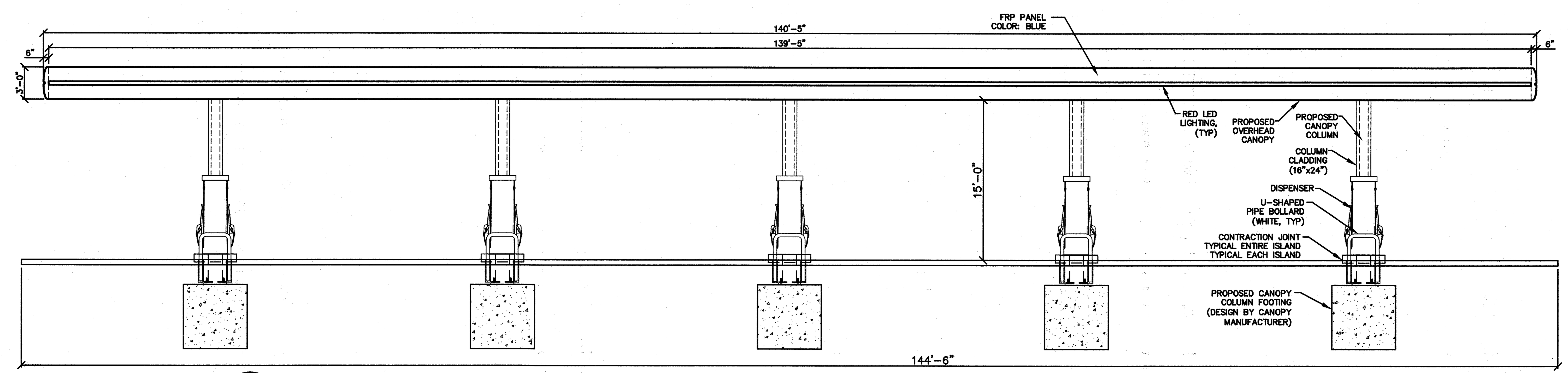

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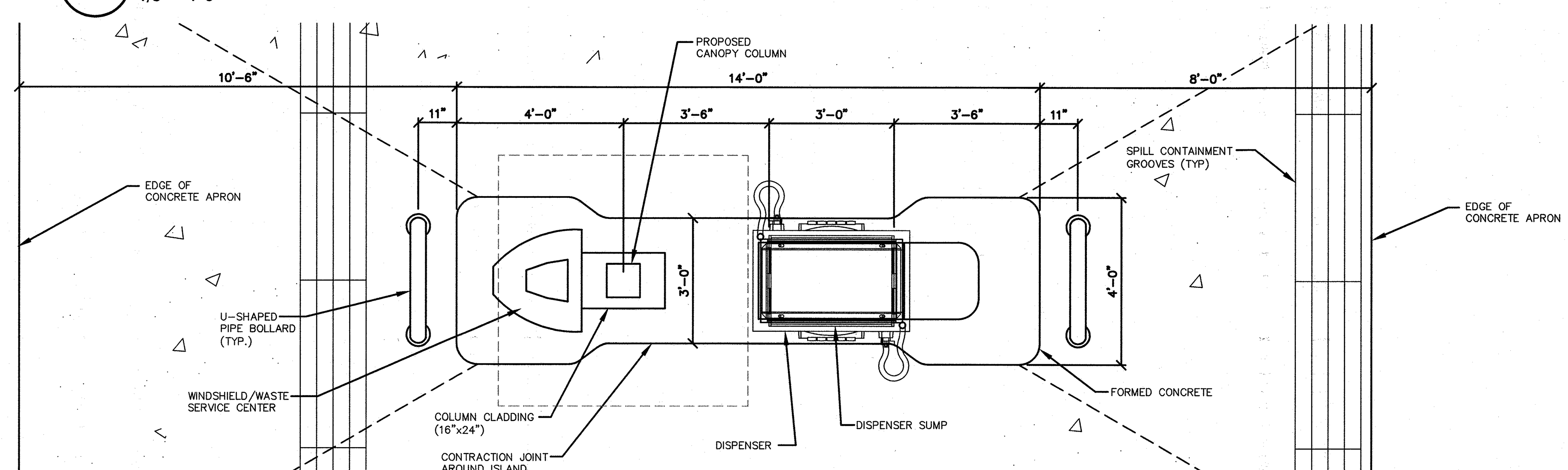

TYPICAL DISPENSER ISLAND LAYOUT PLAN
3/8" = 1'-0"

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

PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

REVISIONS

NO.	REVISION	DATE

JANUARY 26, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

PROPOSED CANOPY ELEVATIONS

SCALE: AS SHOWN

PROJECT NO. NEX-2021163

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STORMWATER MANAGEMENT REPORT

PROPOSED RETAIL MOTOR FUEL OUTLET
TAX MAP 272 LOT 3
2255 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE

GPI

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

Prepared For:

Granite State Convenience, LLC
25 Springer Road
Hooksett, NH 03106

STATE OF NEW HAMPSHIRE
CORY N. MASON
No.17099
LICENSED PROFESSIONAL ENGINEER

2/3/22

February 3, 2022

(GPI Project No.: NEX-2021163)

Granite State Convenience, LLC
Proposed Retail Motor Fuel Outlet
Stormwater Management Report

Table of Contents

SECTION 1 EXECUTIVE SUMMARY

This report contains a stormwater management analysis for the proposed retail fuel development located at 2255 Lafayette Road (Route 1) in Portsmouth, New Hampshire. The analysis includes both pre- and post-development calculations of stormwater runoff rates at specific locations on the project site.

This analysis has been prepared in accordance with both City of Portsmouth requirements and the guidelines contained in the New Hampshire Department of Environmental Services (NHDES) New Hampshire Stormwater Manual.

The project site consists of one parcel identified as Map 272 Lot 3 which totals approximately 2.571 acres. The site is bordered by Lafayette Road (Route 1) to the northwest, commercial properties to the northeast and southwest and wooded areas containing wetlands to the south and southeast.

The applicant is proposing to construct a 5,555 square foot convenience store with food service and drive-thru, a fueling canopy with 5 retail fuel islands and 10 fueling locations, and associated paved driveways and parking. Access to the proposed developed site will be provided by two separate one-way ingress and one-way egress from Lafayette Road. Two underground storage tanks (USTs) will be located along the western site driveway to Lafayette Road. Water and sewer for the proposed building will be provided by municipal services. Electric service will be provided via an existing utility pole on Lafayette Road and a new on-site transformer.

In order to mitigate increases in peak discharge rates of stormwater runoff as a result of the new impervious surfaces, a comprehensive stormwater management system has been designed that includes deep-sump, hooded catch basins, First Defense Hydrodynamic Separators, an oil/water separator, and an underground detention system with outlet control structure.

Based on site topography and discharge points, one analysis point is identified for the purposes of this analysis. Design Point #1 represents overland flow which flows southeast eventually to an on-site wetland which is part of a larger off-site wetland system.

The table below summarizes the comparative pre- and post-development peak rates of stormwater runoff at the design point.

TABLE 1: PEAK RATE ANALYSIS SUMMARY

Design Storm	Pre-Development (cfs)	Post-Development (cfs)	Change (cfs)
DESIGN POINT #1 – Wetland			
2-year	3.5	3.4	-0.1
10-year	8.1	6.8	-1.3
25-year	12.0	9.8	-2.2
50-year	15.8	12.6	-3.2

(All values shown are peak rates in CFS)

In conclusion, by incorporating a new on-site drainage system that includes provisions for stormwater treatment and detention, there will be a decrease in the peak rates of stormwater runoff leaving the property at the design point as a result of this project.

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

SECTION 2 EXISTING CONDITIONS

The project site consists of one parcel identified as Map 272 Lot 3 which totals approximately 2.571 acres. The site is bordered by Lafayette Road (Route 1) to the northwest, commercial properties to the northeast and southwest and wooded areas containing wetlands to the south and southeast.

The site is previously developed and contains a Burger King restaurant with drive-thru, which is currently vacant, and associated paved parking lot and driveways to Lafayette Road. The majority of the lot is paved and on-site drainage structures are limited to a single catch basin in the landscaped area northwest of the existing building which had no visible pipe outlet at the time of survey. The majority of stormwater runoff currently sheet flows uncontrolled and untreated over the pavement to the southeast eventually off the edge of pavement to the wetland.

Site topography is variable, with slopes ranging from mild (2% on the maintained front lawn) to severe (25% or greater) near the wetland areas. Elevations range from 53 at the southern edge of the property to 67 at the northwest property corner along Lafayette Road.

The NRCS Web Soil Survey identifies on-site soils as Urban Land with no Hydrologic Soil Group (HSG) classification. Areas directly south of the site are identified as Pipestone sand with an HSG-A classification which is used in the analysis.

Test pits were performed by Greenman-Pedersen, Inc. (GPI) on September 30, 2021. Test Pits encountered Loamy Sand with estimated seasonal high groundwater table (ESHWT) encountered at 36 inches below ground in Test Pit 9-1 and not encountered in Test Pit 9-2. Refusal was encountered at 38 inches and 48 inches below ground respectively. Test pit logs are included in Appendix C.

On-site wetlands were delineated by West Environmental, Inc. on July 30, 2021 along the northeast and southeast property lines and are shown on the Existing Conditions Plan with the associated 100-foot wetland buffer.

The site is not located in a special flood hazard area (100-year flood) per Flood Insurance Rate Map Number 33015C0270F, with an effective date of January 29, 2021.

SECTION 3 PROPOSED CONDITIONS

The applicant is proposing to construct a 5,555 square foot convenience store with food service and drive-thru, a fueling canopy with 5 retail fuel islands and 10 fueling locations, and associated paved driveways and parking. Access to the proposed developed site will be provided by two separate one-way ingress and one-way egress from Lafayette Road. Two underground storage tanks (USTs) will be located along the western site driveway to Lafayette Road. Water and sewer for the proposed building will be provided by municipal services. Electric service will be provided via an existing utility pole on Lafayette Road and a new on-site transformer.

In order to mitigate increases in peak discharge rates of stormwater runoff as a result of the new impervious surfaces, a comprehensive stormwater management system has been designed that includes deep-sump, hooded catch basins, First Defense Hydrodynamic Separators, an oil/water separator, and an underground detention system with outlet control structure.

To safeguard against oil or gas introduction into the drainage system, stormwater runoff from areas in which fuel is dispensed will be collected in hooded catch basins with deep sumps and routed through an oil/water separator unit. Such pretreatment of stormwater reduces both suspended solids and oils in the drainage system and is recommended by NHDES. Runoff will then enter an underground detention system consisting of four (4) rows of 36-inch HDPE pipe with watertight joints. This system, together with the outlet control structure, will attenuate peak rates of runoff discharging to the design point during all design storms.

Recharge of runoff from non-high load areas (where petroleum products are not dispensed) was explored but was not possible due to the presence of high groundwater and the nature of the existing topography.

The total area of disturbance related to the proposed redevelopment and stormwater management system construction is approximately 75,000 square feet therefore the project will require an EPA Construction General Permit under the NPDES program. The area of disturbance is less than 100,000 square feet, therefore, the project is not subject to an NHDES Alteration of Terrain (AoT) permit.

SECTION 4 STORMWATER MODELING METHODOLOGY

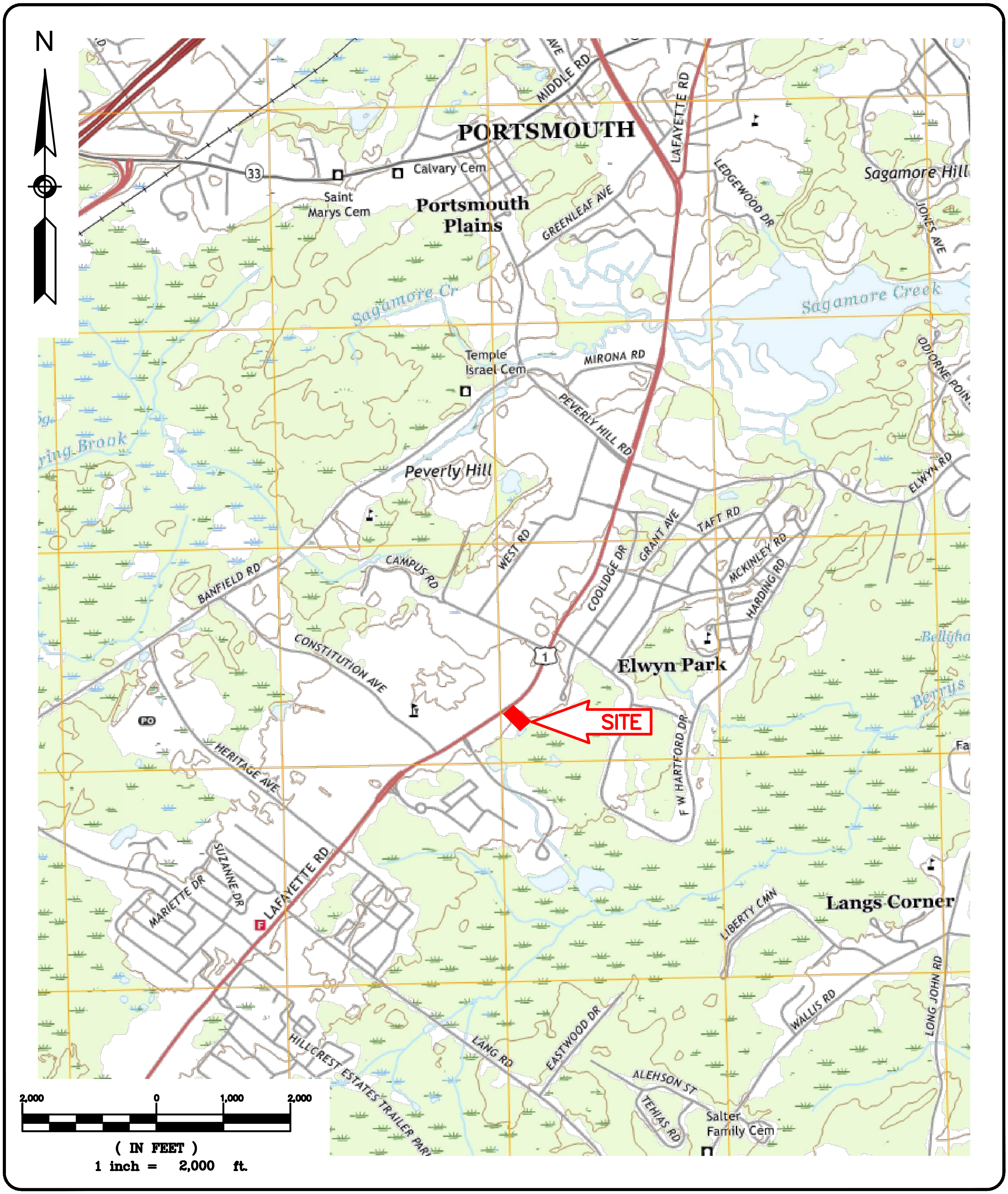
The drainage system for this project was modeled using HydroCAD, a stormwater modeling computer program that analyzes the hydrology, and hydraulics of stormwater runoff. HydroCAD is based largely on the hydrology techniques developed by the Soil Conservation Service (SCS/NRCS), combined with other hydrology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

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

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

APPENDIX A

Figures



USGS MAP

ASSESSORS MAP 272 LOT 3
2255 LAFAYETTE ROAD
PORTSMOUTH, NH

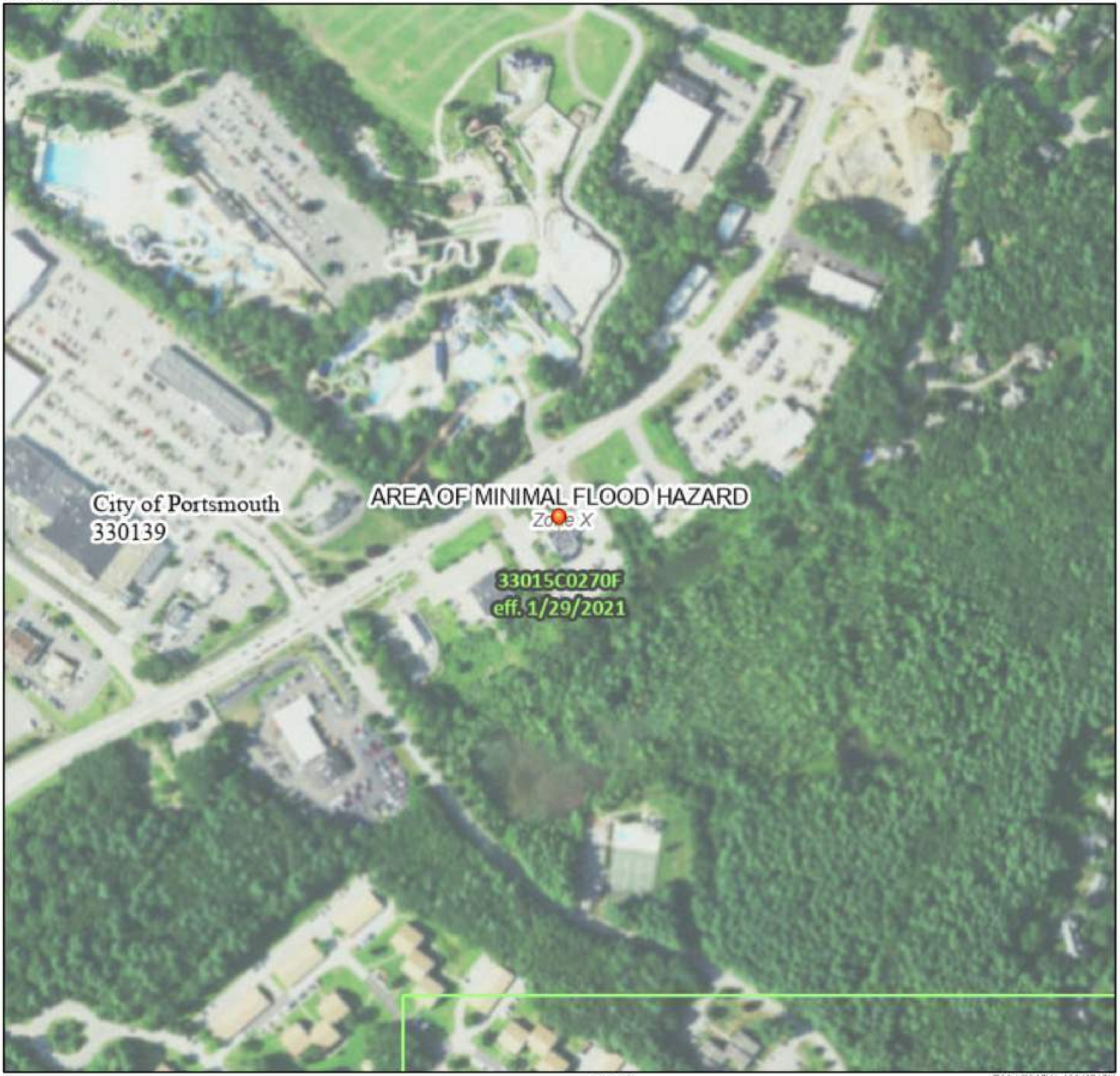
GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

DRAWN BY: SMS
PROJECT #: NEX-2021163
DATE: 1/7/2022
FIGURE 1

National Flood Hazard Layer FIRMette

FEMA

70°47'6"W 43°2'17"N



70°46'29"W 43°1'51"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Effective LOMRs
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/3/2021 at 3:56 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B

Soils Information

United States Department of Agriculture

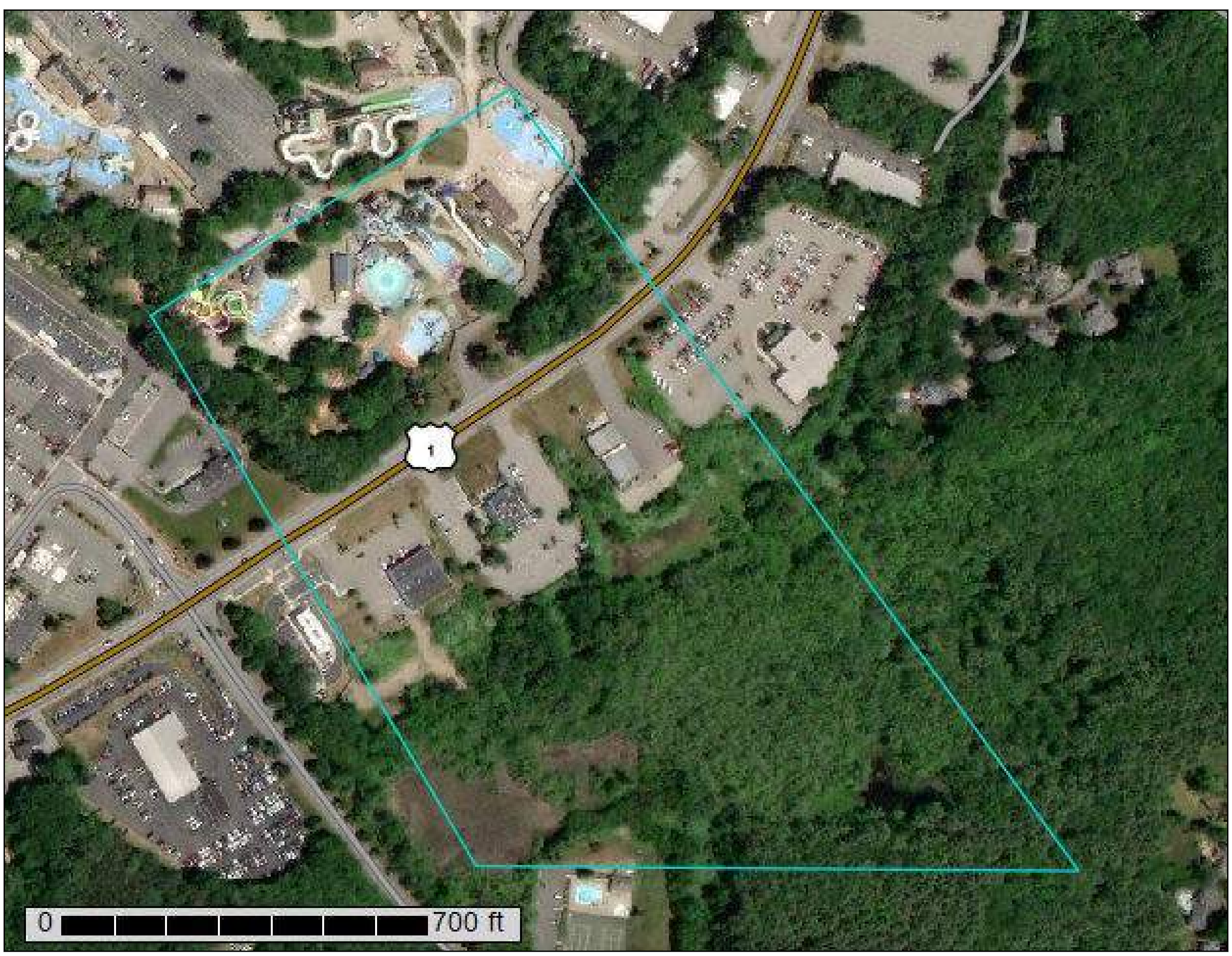
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for

Rockingham County, New Hampshire



September 20, 2021

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

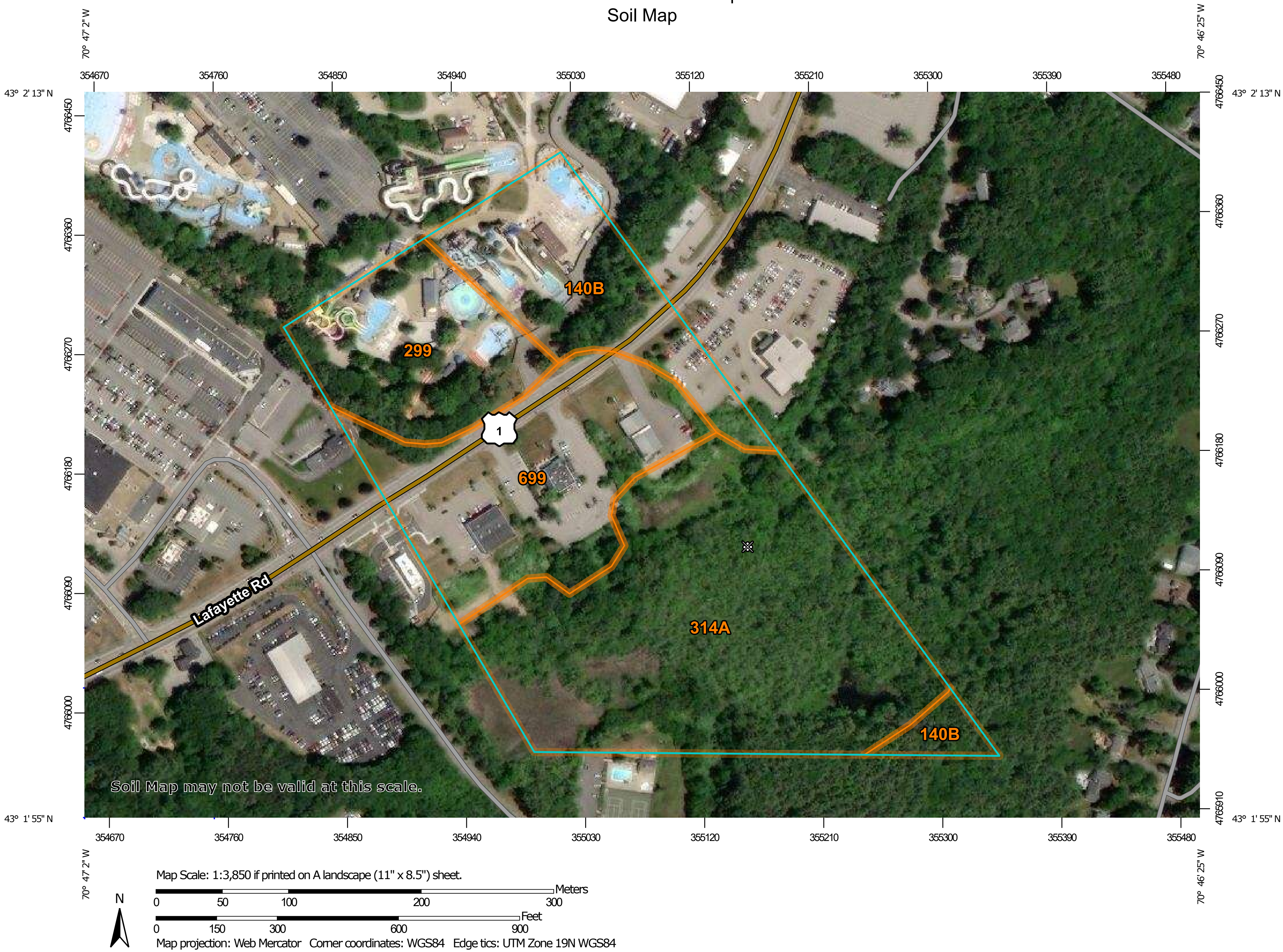
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Soil Map


70° 47' 2" W
70° 46' 25" W
43° 2' 13" N
43° 1' 55" N
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355210
355300
355390
355480
4766450
4766360
4766270
4766180
4766090
4766000
4765910
140B
299
699
314A
140B
1
Lafayette Rd
Soil Map may not be valid at this scale.
Map Scale: 1:3,850 if printed on A landscape (11" x 8.5") sheet.
Meters
0 50 100 200 300
Feet
0 150 300 600 900
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

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
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	5.4	17.5%
299	Udorthents, smoothed	4.6	14.8%
314A	Pipestone sand, 0 to 5 percent slopes	13.9	44.6%
699	Urban land	7.2	23.1%
Totals for Area of Interest		**31.1**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Rockingham County, New Hampshire

140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82m
Elevation: 380 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam

2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Bogs, marshes, depressions, kettles, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Walpole, very stony

Percent of map unit: 3 percent
Landform: Outwash plains, depressions, depressions, deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

299—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9cmt
Elevation: 0 to 840 feet
Mean annual precipitation: 44 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

314A—Pipestone sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9cn2
Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 55 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Pipestone and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pipestone

Setting

Landform: Outwash terraces

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 33 inches: sand
H3 - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 5 percent
Landform: Outwash terraces
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Chocorua

Percent of map unit: 5 percent
Landform: Bogs
Hydric soil rating: Yes

Deerfield

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

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

Soil Qualities and Features

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

Hydrologic Soil Group

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

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

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

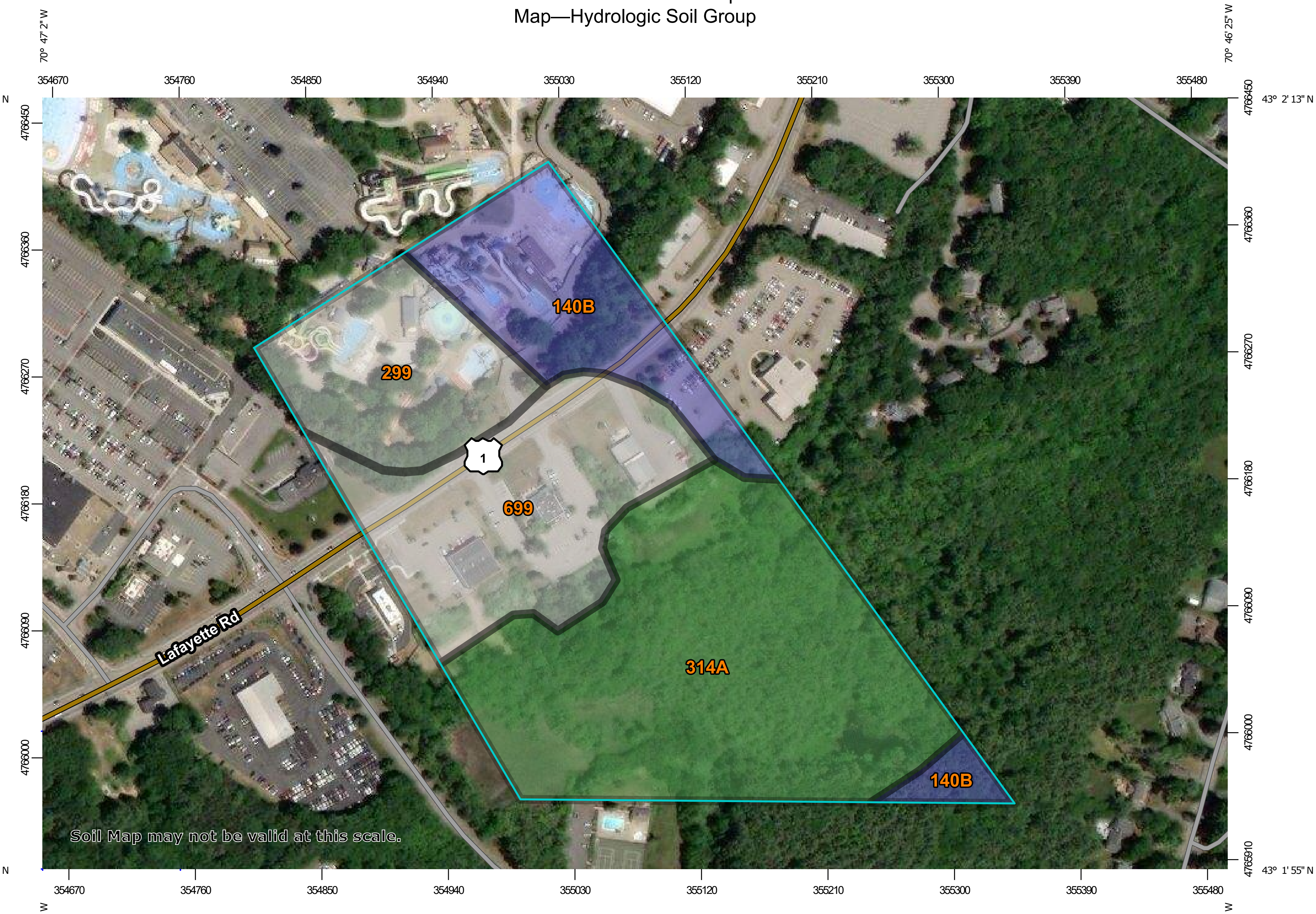
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

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

Map—Hydrologic Soil Group



Map Scale: 1:3,850 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 150, 300, 600, 900

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	B	5.4	17.5%
299	Udorthents, smoothed		4.6	14.8%
314A	Pipestone sand, 0 to 5 percent slopes	A/D	13.9	44.6%
699	Urban land		7.2	23.1%
Totals for Area of Interest			**31.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

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APPENDIX C

Test Pit Logs

GPI

Engineering | Design | Planning | Construction Management

TEST PIT DATA

Client: Granite State Convenience
Project Address: 2255 Lafayette Road
Town, State: Portsmouth, NH
Job Number: NEX-2021163
Date: September 30, 2021
Performed by: Diane Pantermoller

Test Pit No.	**9-1**	SCS Soil:	Pipestone
ESHWT:	>48”	Standing Water:	None
Refusal:	48”	Roots:	None

Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-30”	A	Loamy Sand	10yr 2/2	FR	
30-48”	B	Loamy Sand	10yr 4/4	FR	
48”	R				

Test Pit No.	**9-2**	SCS Soil:	Pipestone
ESHWT:	36”	Standing Water:	None
Refusal:	38”	Roots:	None

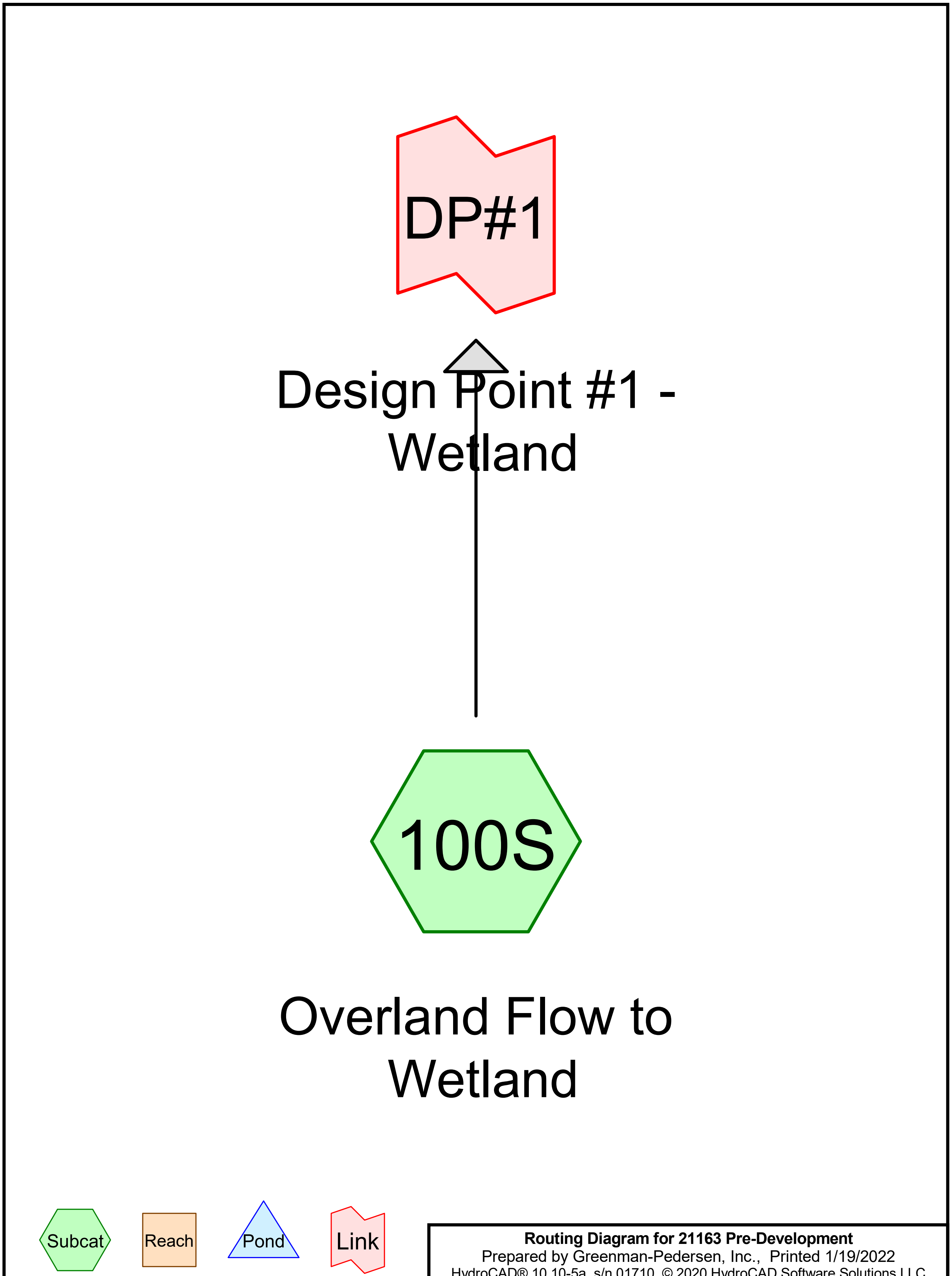
Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-24”	A	Loamy Sand	10yr 3/2	FR	
24-33”	B	Loamy Sand	10yr 5/8	FR	
33-38”	C	Loamy Sand	2.5y 7/4	FR	@ 36” Distinct
38”	R				

NOTES

NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
★ ★ ★
Diane M. Pantermoller
No. 1665
Department of Environmental Services

APPENDIX D

Pre-Development HydroCAD Computations



Routing Diagram for 21163 Pre-Development
Prepared by Greenman-Pedersen, Inc., Printed 1/19/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.683	39	>75% Grass cover, Good, HSG A (100S)
1.376	98	Paved parking, HSG A (100S)
0.123	98	Roofs, HSG A (100S)
0.461	30	Woods, Good, HSG A (100S)
2.643	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.643	HSG A	100S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.643		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.683	0.000	0.000	0.000	0.000	0.683	>75% Grass cover, Good	100S
1.376	0.000	0.000	0.000	0.000	1.376	Paved parking	100S
0.123	0.000	0.000	0.000	0.000	0.123	Roofs	100S
0.461	0.000	0.000	0.000	0.000	0.461	Woods, Good	100S
2.643	**0.000**	**0.000**	**0.000**	**0.000**	**2.643**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 100S: Overland Flow to Runoff Area=2.643 ac 56.72% Impervious Runoff Depth=1.20"
Flow Length=179' Tc=6.0 min CN=71 Runoff=3.52 cfs 0.264 af

Link DP#1: Design Point #1 - Wetland Inflow=3.52 cfs 0.264 af
Primary=3.52 cfs 0.264 af

Total Runoff Area = 2.643 ac Runoff Volume = 0.264 af Average Runoff Depth = 1.20"
43.28% Pervious = 1.144 ac 56.72% Impervious = 1.499 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 100S: Overland Flow to Runoff Area=2.643 ac 56.72% Impervious Runoff Depth=2.62"
Flow Length=179' Tc=6.0 min CN=71 Runoff=8.07 cfs 0.577 af

Link DP#1: Design Point #1 - Wetland Inflow=8.07 cfs 0.577 af
Primary=8.07 cfs 0.577 af

Total Runoff Area = 2.643 ac Runoff Volume = 0.577 af Average Runoff Depth = 2.62"
43.28% Pervious = 1.144 ac 56.72% Impervious = 1.499 ac

Summary for Subcatchment 100S: Overland Flow to Wetland

Runoff = 8.07 cfs @ 12.09 hrs, Volume= 0.577 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.683	39	>75% Grass cover, Good, HSG A
1.376	98	Paved parking, HSG A
0.123	98	Roofs, HSG A
0.461	30	Woods, Good, HSG A
2.643	71	Weighted Average
1.144		43.28% Pervious Area
1.499		56.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	12	0.0900	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.71"
1.2	13	0.0540	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
0.5	51	0.0590	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	103	0.0510	1.13		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.2	179	Total, Increased to minimum Tc = 6.0 min			

Summary for Link DP#1: Design Point #1 - Wetland

Inflow Area = 2.643 ac, 56.72% Impervious, Inflow Depth = 2.62" for 10-Year event
Inflow = 8.07 cfs @ 12.09 hrs, Volume= 0.577 af
Primary = 8.07 cfs @ 12.09 hrs, Volume= 0.577 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 100S: Overland Flow to Runoff Area=2.643 ac 56.72% Impervious Runoff Depth=3.86"
Flow Length=179' Tc=6.0 min CN=71 Runoff=11.96 cfs 0.850 af

Link DP#1: Design Point #1 - Wetland Inflow=11.96 cfs 0.850 af
Primary=11.96 cfs 0.850 af

Total Runoff Area = 2.643 ac Runoff Volume = 0.850 af Average Runoff Depth = 3.86"
43.28% Pervious = 1.144 ac 56.72% Impervious = 1.499 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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

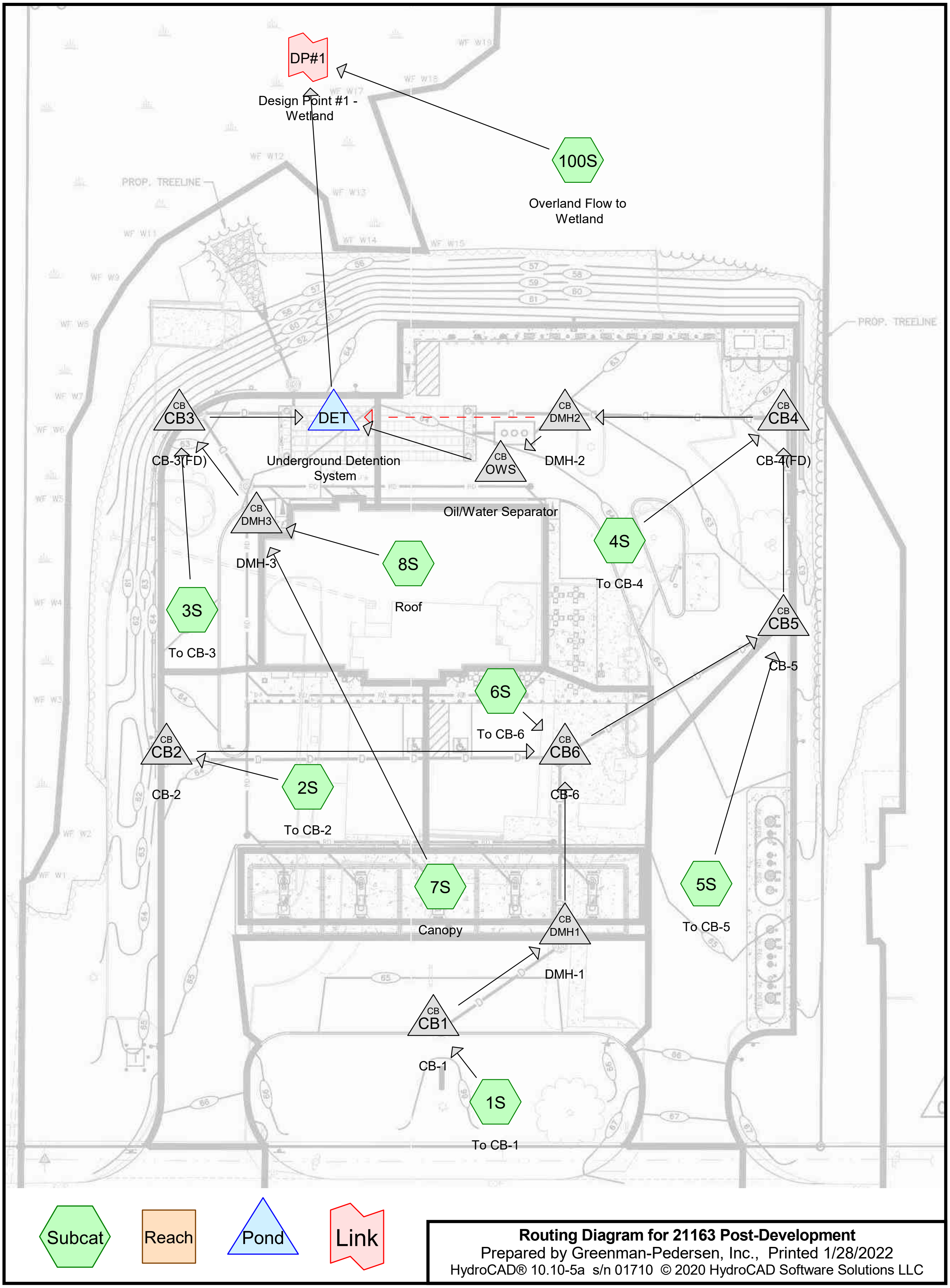
Subcatchment 100S: Overland Flow to Runoff Area=2.643 ac 56.72% Impervious Runoff Depth=5.09"
Flow Length=179' Tc=6.0 min CN=71 Runoff=15.75 cfs 1.120 af

Link DP#1: Design Point #1 - Wetland Inflow=15.75 cfs 1.120 af
Primary=15.75 cfs 1.120 af

Total Runoff Area = 2.643 ac Runoff Volume = 1.120 af Average Runoff Depth = 5.09"
43.28% Pervious = 1.144 ac 56.72% Impervious = 1.499 ac

APPENDIX E

Post-Development HydroCAD Computations



Routing Diagram for 21163 Post-Development
Prepared by Greenman-Pedersen, Inc., Printed 1/28/2022
HydroCAD® 10.10-5a s/n 01710 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.745	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 6S, 100S)
1.310	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 7S, 100S)
0.132	98	Roofs, HSG A (8S)
0.456	30	Woods, Good, HSG A (100S)
2.643	**70**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.643	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 100S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.643		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.745	0.000	0.000	0.000	0.000	0.745	>75% Grass cover, Good	1S, 2S, 3S, 4S, 6S, 100S
1.310	0.000	0.000	0.000	0.000	1.310	Paved parking	1S, 2S, 3S, 4S, 5S, 6S, 7S, 100S
0.132	0.000	0.000	0.000	0.000	0.132	Roofs	8S
0.456	0.000	0.000	0.000	0.000	0.456	Woods, Good	100S
2.643	**0.000**	**0.000**	**0.000**	**0.000**	**2.643**	**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	CB1	61.05	60.50	50.9	0.0108	0.012	0.0	12.0	0.0
2	CB2	60.20	59.50	138.6	0.0051	0.012	0.0	12.0	0.0
3	CB3	58.80	57.00	28.8	0.0625	0.012	0.0	12.0	0.0
4	CB4	57.95	57.55	80.7	0.0050	0.012	0.0	18.0	0.0
5	CB5	58.40	58.05	70.4	0.0050	0.012	0.0	18.0	0.0
6	CB6	59.25	58.65	93.9	0.0064	0.012	0.0	15.0	0.0
7	DET	57.00	56.50	26.0	0.0192	0.012	0.0	18.0	0.0
8	DMH1	60.40	59.50	65.9	0.0137	0.012	0.0	12.0	0.0
9	DMH2	57.45	57.35	10.4	0.0096	0.012	0.0	6.0	0.0
10	DMH2	57.95	57.00	29.4	0.0323	0.012	0.0	18.0	0.0
11	DMH3	59.20	58.90	30.5	0.0098	0.012	0.0	12.0	0.0
12	OWS	57.10	57.00	7.5	0.0133	0.012	0.0	6.0	0.0

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

Subcatchment 1S: To CB-1 Runoff Area=0.390 ac 61.82% Impervious Runoff Depth=1.45"
Tc=6.0 min CN=75 Runoff=0.65 cfs 0.047 af

Subcatchment 2S: To CB-2 Runoff Area=0.212 ac 97.06% Impervious Runoff Depth=3.25"
Tc=6.0 min CN=96 Runoff=0.75 cfs 0.057 af

Subcatchment 3S: To CB-3 Runoff Area=0.111 ac 81.60% Impervious Runoff Depth=2.37"
Tc=6.0 min CN=87 Runoff=0.31 cfs 0.022 af

Subcatchment 4S: To CB-4 Runoff Area=0.333 ac 87.64% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=91 Runoff=1.04 cfs 0.076 af

Subcatchment 5S: To CB-5 Runoff Area=0.172 ac 100.00% Impervious Runoff Depth=3.48"
Tc=6.0 min CN=98 Runoff=0.62 cfs 0.050 af

Subcatchment 6S: To CB-6 Runoff Area=0.119 ac 97.53% Impervious Runoff Depth=3.36"
Tc=6.0 min CN=97 Runoff=0.43 cfs 0.033 af

Subcatchment 7S: Canopy Runoff Area=0.081 ac 100.00% Impervious Runoff Depth=3.48"
Tc=0.0 min CN=98 Runoff=0.36 cfs 0.023 af

Subcatchment 8S: Roof Runoff Area=0.132 ac 100.00% Impervious Runoff Depth=3.48"
Tc=0.0 min CN=98 Runoff=0.58 cfs 0.038 af

Subcatchment 100S: Overland Flow to Runoff Area=1.093 ac 10.25% Impervious Runoff Depth=0.05"
Flow Length=416' Tc=8.1 min CN=41 Runoff=0.01 cfs 0.004 af

Pond CB1: CB-1 Peak Elev=61.46' Inflow=0.65 cfs 0.047 af
12.0" Round Culvert n=0.012 L=50.9' S=0.0108 '/' Outflow=0.65 cfs 0.047 af

Pond CB2: CB-2 Peak Elev=60.71' Inflow=0.75 cfs 0.057 af
12.0" Round Culvert n=0.012 L=138.6' S=0.0051 '/' Outflow=0.75 cfs 0.057 af

Pond CB3: CB-3(FD) Peak Elev=59.35' Inflow=1.12 cfs 0.083 af
12.0" Round Culvert n=0.012 L=28.8' S=0.0625 '/' Outflow=1.12 cfs 0.083 af

Pond CB4: CB-4(FD) Peak Elev=59.19' Inflow=3.48 cfs 0.264 af
18.0" Round Culvert n=0.012 L=80.7' S=0.0050 '/' Outflow=3.48 cfs 0.264 af

Pond CB5: CB-5 Peak Elev=59.45' Inflow=2.44 cfs 0.188 af
18.0" Round Culvert n=0.012 L=70.4' S=0.0050 '/' Outflow=2.44 cfs 0.188 af

Pond CB6: CB-6 Peak Elev=60.02' Inflow=1.82 cfs 0.138 af
15.0" Round Culvert n=0.012 L=93.9' S=0.0064 '/' Outflow=1.82 cfs 0.138 af

Pond DET: Underground Detention System Peak Elev=58.52' Storage=797 cf Inflow=4.27 cfs 0.347 af
Outflow=3.44 cfs 0.347 af

Pond DMH1: DMH-1
Peak Elev=60.81' Inflow=0.65 cfs 0.047 af
12.0" Round Culvert n=0.012 L=65.9' S=0.0137 '/' Outflow=0.65 cfs 0.047 af

Pond DMH2: DMH-2
Peak Elev=58.86' Inflow=3.48 cfs 0.264 af
Primary=0.57 cfs 0.186 af Secondary=3.00 cfs 0.078 af Outflow=3.48 cfs 0.264 af

Pond DMH3: DMH-3
Peak Elev=59.73' Inflow=0.94 cfs 0.061 af
12.0" Round Culvert n=0.012 L=30.5' S=0.0098 '/' Outflow=0.94 cfs 0.061 af

Pond OWS: Oil/Water Separator
Peak Elev=58.68' Inflow=0.57 cfs 0.186 af
6.0" Round Culvert n=0.012 L=7.5' S=0.0133 '/' Outflow=0.57 cfs 0.186 af

Link DP#1: Design Point #1 - Wetland
Inflow=3.44 cfs 0.351 af
Primary=3.44 cfs 0.351 af

Total Runoff Area = 2.643 ac Runoff Volume = 0.351 af Average Runoff Depth = 1.60"
45.45% Pervious = 1.201 ac 54.55% Impervious = 1.442 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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: To CB-1 Runoff Area=0.390 ac 61.82% Impervious Runoff Depth=2.99"
Tc=6.0 min CN=75 Runoff=1.37 cfs 0.097 af

Subcatchment 2S: To CB-2 Runoff Area=0.212 ac 97.06% Impervious Runoff Depth=5.18"
Tc=6.0 min CN=96 Runoff=1.16 cfs 0.091 af

Subcatchment 3S: To CB-3 Runoff Area=0.111 ac 81.60% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=87 Runoff=0.53 cfs 0.039 af

Subcatchment 4S: To CB-4 Runoff Area=0.333 ac 87.64% Impervious Runoff Depth=4.62"
Tc=6.0 min CN=91 Runoff=1.71 cfs 0.128 af

Subcatchment 5S: To CB-5 Runoff Area=0.172 ac 100.00% Impervious Runoff Depth=5.41"
Tc=6.0 min CN=98 Runoff=0.95 cfs 0.077 af

Subcatchment 6S: To CB-6 Runoff Area=0.119 ac 97.53% Impervious Runoff Depth=5.30"
Tc=6.0 min CN=97 Runoff=0.66 cfs 0.053 af

Subcatchment 7S: Canopy Runoff Area=0.081 ac 100.00% Impervious Runoff Depth=5.41"
Tc=0.0 min CN=98 Runoff=0.54 cfs 0.036 af

Subcatchment 8S: Roof Runoff Area=0.132 ac 100.00% Impervious Runoff Depth=5.41"
Tc=0.0 min CN=98 Runoff=0.89 cfs 0.059 af

Subcatchment 100S: Overland Flow to Runoff Area=1.093 ac 10.25% Impervious Runoff Depth=0.45"
Flow Length=416' Tc=8.1 min CN=41 Runoff=0.20 cfs 0.041 af

Pond CB1: CB-1 Peak Elev=61.69' Inflow=1.37 cfs 0.097 af
12.0" Round Culvert n=0.012 L=50.9' S=0.0108 '/' Outflow=1.37 cfs 0.097 af

Pond CB2: CB-2 Peak Elev=60.99' Inflow=1.16 cfs 0.091 af
12.0" Round Culvert n=0.012 L=138.6' S=0.0051 '/' Outflow=1.16 cfs 0.091 af

Pond CB3: CB-3(FD) Peak Elev=59.52' Inflow=1.76 cfs 0.135 af
12.0" Round Culvert n=0.012 L=28.8' S=0.0625 '/' Outflow=1.76 cfs 0.135 af

Pond CB4: CB-4(FD) Peak Elev=60.10' Inflow=5.84 cfs 0.447 af
18.0" Round Culvert n=0.012 L=80.7' S=0.0050 '/' Outflow=5.84 cfs 0.447 af

Pond CB5: CB-5 Peak Elev=60.31' Inflow=4.13 cfs 0.319 af
18.0" Round Culvert n=0.012 L=70.4' S=0.0050 '/' Outflow=4.13 cfs 0.319 af

Pond CB6: CB-6 Peak Elev=60.64' Inflow=3.18 cfs 0.241 af
15.0" Round Culvert n=0.012 L=93.9' S=0.0064 '/' Outflow=3.18 cfs 0.241 af

Pond DET: Underground Detention System Peak Elev=59.28' Storage=1,423 cf Inflow=7.11 cfs 0.581 af
Outflow=6.77 cfs 0.581 af

Pond DMH1: DMH-1 Peak Elev=61.10' Inflow=1.37 cfs 0.097 af
12.0" Round Culvert n=0.012 L=65.9' S=0.0137 '/' Outflow=1.37 cfs 0.097 af

Pond DMH2: DMH-2 Peak Elev=59.66' Inflow=5.84 cfs 0.447 af
Primary=0.58 cfs 0.279 af Secondary=5.39 cfs 0.168 af Outflow=5.84 cfs 0.447 af

Pond DMH3: DMH-3 Peak Elev=59.91' Inflow=1.43 cfs 0.096 af
12.0" Round Culvert n=0.012 L=30.5' S=0.0098 '/' Outflow=1.43 cfs 0.096 af

Pond OWS: Oil/Water Separator Peak Elev=59.47' Inflow=0.58 cfs 0.279 af
6.0" Round Culvert n=0.012 L=7.5' S=0.0133 '/' Outflow=0.58 cfs 0.279 af

Link DP#1: Design Point #1 - Wetland Inflow=6.80 cfs 0.622 af
Primary=6.80 cfs 0.622 af

Total Runoff Area = 2.643 ac Runoff Volume = 0.622 af Average Runoff Depth = 2.82"
45.45% Pervious = 1.201 ac 54.55% Impervious = 1.442 ac

Summary for Subcatchment 1S: To CB-1

Runoff = 1.37 cfs @ 12.09 hrs, Volume= 0.097 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.149	39	>75% Grass cover, Good, HSG A
0.241	98	Paved parking, HSG A
0.390	75	Weighted Average
0.149		38.18% Pervious Area
0.241		61.82% Impervious Area

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

Summary for Subcatchment 2S: To CB-2

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 0.091 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.006	39	>75% Grass cover, Good, HSG A
0.206	98	Paved parking, HSG A
0.212	96	Weighted Average
0.006		2.94% Pervious Area
0.206		97.06% Impervious Area

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

Summary for Subcatchment 3S: To CB-3

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.020	39	>75% Grass cover, Good, HSG A
0.091	98	Paved parking, HSG A
0.111	87	Weighted Average
0.020		18.40% Pervious Area
0.091		81.60% Impervious Area

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

Summary for Subcatchment 4S: To CB-4

Runoff = 1.71 cfs @ 12.08 hrs, Volume= 0.128 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.041	39	>75% Grass cover, Good, HSG A
0.292	98	Paved parking, HSG A
0.333	91	Weighted Average
0.041		12.36% Pervious Area
0.292		87.64% Impervious Area

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

Summary for Subcatchment 5S: To CB-5

Runoff = 0.95 cfs @ 12.08 hrs, Volume= 0.077 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.172	98	Paved parking, HSG A
0.172		100.00% Impervious Area

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

Summary for Subcatchment 6S: To CB-6

Runoff = 0.66 cfs @ 12.08 hrs, Volume= 0.053 af, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.003	39	>75% Grass cover, Good, HSG A
0.116	98	Paved parking, HSG A
0.119	97	Weighted Average
0.003		2.47% Pervious Area
0.116		97.53% Impervious Area

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

Summary for Subcatchment 7S: Canopy

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.54 cfs @ 12.00 hrs, Volume= 0.036 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.081	98	Paved parking, HSG A
0.081		100.00% Impervious Area

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

Summary for Subcatchment 8S: Roof

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.89 cfs @ 12.00 hrs, Volume= 0.059 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.132	98	Roofs, HSG A
0.132		100.00% Impervious Area

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

Summary for Subcatchment 100S: Overland Flow to Wetland

Runoff = 0.20 cfs @ 12.36 hrs, Volume= 0.041 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.65"

Area (ac)	CN	Description
0.526	39	>75% Grass cover, Good, HSG A
0.112	98	Paved parking, HSG A
0.456	30	Woods, Good, HSG A
1.093	41	Weighted Average
0.981		89.75% Pervious Area
0.112		10.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	25	0.0320	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.71"
4.1	286	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	105	0.0510	1.13		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.1	416	Total			

Summary for Pond CB1: CB-1

Inflow Area = 0.390 ac, 61.82% Impervious, Inflow Depth = 2.99" for 10-Year event
Inflow = 1.37 cfs @ 12.09 hrs, Volume= 0.097 af
Outflow = 1.37 cfs @ 12.09 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Primary = 1.37 cfs @ 12.09 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 61.69' @ 12.10 hrs
Flood Elev= 64.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.05'	**12.0" Round Culvert** L= 50.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 61.05' / 60.50' S= 0.0108 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.35 cfs @ 12.09 hrs HW=61.68' TW=61.07' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.35 cfs @ 3.67 fps)

Summary for Pond CB2: CB-2

Inflow Area = 0.212 ac, 97.06% Impervious, Inflow Depth = 5.18" for 10-Year event
Inflow = 1.16 cfs @ 12.08 hrs, Volume= 0.091 af
Outflow = 1.16 cfs @ 12.08 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.08 hrs, Volume= 0.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 60.99' @ 12.12 hrs
Flood Elev= 63.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.20'	**12.0" Round Culvert** L= 138.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.20' / 59.50' S= 0.0051 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.09 cfs @ 12.08 hrs HW=60.95' TW=60.50' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.09 cfs @ 2.42 fps)

Summary for Pond CB3: CB-3(FD)

Inflow Area = 0.324 ac, 93.66% Impervious, Inflow Depth = 4.99" for 10-Year event
Inflow = 1.76 cfs @ 12.00 hrs, Volume= 0.135 af
Outflow = 1.76 cfs @ 12.00 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min
Primary = 1.76 cfs @ 12.00 hrs, Volume= 0.135 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 59.52' @ 12.00 hrs
Flood Elev= 62.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.80'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.80' / 57.00' S= 0.0625 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.75 cfs @ 12.00 hrs HW=59.52' TW=58.51' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.75 cfs @ 2.89 fps)

Summary for Pond CB4: CB-4(FD)

Inflow Area = 1.226 ac, 83.75% Impervious, Inflow Depth = 4.37" for 10-Year event
Inflow = 5.84 cfs @ 12.09 hrs, Volume= 0.447 af
Outflow = 5.84 cfs @ 12.09 hrs, Volume= 0.447 af, Atten= 0%, Lag= 0.0 min
Primary = 5.84 cfs @ 12.09 hrs, Volume= 0.447 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 60.10' @ 12.10 hrs
Flood Elev= 61.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.95'	**18.0" Round Culvert** L= 80.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 57.95' / 57.55' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.32 cfs @ 12.09 hrs HW=60.00' TW=59.61' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.32 cfs @ 3.01 fps)

Summary for Pond CB5: CB-5

Inflow Area =	0.893 ac,	82.30% Impervious,	Inflow Depth = 4.28"	for 10-Year event
Inflow =	4.13 cfs @	12.09 hrs, Volume=	0.319 af	
Outflow =	4.13 cfs @	12.09 hrs, Volume=	0.319 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.13 cfs @	12.09 hrs, Volume=	0.319 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 60.31' @ 12.11 hrs
Flood Elev= 63.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.40'	**18.0" Round Culvert** L= 70.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.40' / 58.05' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.16 cfs @ 12.09 hrs HW=60.14' TW=60.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.16 cfs @ 1.79 fps)

Summary for Pond CB6: CB-6

Inflow Area =	0.721 ac,	78.08% Impervious,	Inflow Depth = 4.01"	for 10-Year event
Inflow =	3.18 cfs @	12.09 hrs, Volume=	0.241 af	
Outflow =	3.18 cfs @	12.09 hrs, Volume=	0.241 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.18 cfs @	12.09 hrs, Volume=	0.241 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 60.64' @ 12.12 hrs
Flood Elev= 63.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	59.25'	**15.0" Round Culvert** L= 93.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.25' / 58.65' S= 0.0064 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.82 cfs @ 12.09 hrs HW=60.51' TW=60.15' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.82 cfs @ 2.83 fps)

Summary for Pond DET: Underground Detention System

Inflow Area = 1.549 ac, 85.82% Impervious, Inflow Depth = 4.50" for 10-Year event
Inflow = 7.11 cfs @ 12.08 hrs, Volume= 0.581 af
Outflow = 6.77 cfs @ 12.10 hrs, Volume= 0.581 af, Atten= 5%, Lag= 1.7 min
Primary = 6.77 cfs @ 12.10 hrs, Volume= 0.581 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 59.28' @ 12.10 hrs Surf.Area= 1,290 sf Storage= 1,423 cf
Flood Elev= 60.50' Surf.Area= 1,290 sf Storage= 1,977 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.6 min (774.9 - 773.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	57.00'	0 cf	**19.25'W x 67.00'L x 3.50'H Field A** 4,514 cf Overall - 2,468 cf Embedded = 2,046 cf x 0.0% Voids
#2A	57.00'	1,977 cf	**ADS N-12 36"** x 4 Inside #1 Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf Row Length Adjustment= +40.00' x 7.10 sf x 4 rows 19.25' Header x 7.10 sf x 2 = 273.3 cf Inside
		1,977 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	57.00'	**18.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 57.00' / 56.50' S= 0.0192 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Device 1	57.00'	**5.0" Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	57.50'	**5.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	59.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.75 cfs @ 12.10 hrs HW=59.28' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.75 cfs of 10.52 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 2.83 cfs @ 6.93 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.65 cfs @ 6.03 fps)
  └─**4=Orifice/Grate** (Weir Controls 2.27 cfs @ 1.73 fps)

Summary for Pond DMH1: DMH-1

Inflow Area =	0.390 ac,	61.82% Impervious,	Inflow Depth = 2.99"	for 10-Year event
Inflow =	1.37 cfs @	12.09 hrs, Volume=	0.097 af	
Outflow =	1.37 cfs @	12.09 hrs, Volume=	0.097 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.37 cfs @	12.09 hrs, Volume=	0.097 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 61.10' @ 12.12 hrs
Flood Elev= 65.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.40'	**12.0" Round Culvert** L= 65.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.40' / 59.50' S= 0.0137 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.30 cfs @ 12.09 hrs HW=61.07' TW=60.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.30 cfs @ 3.27 fps)

Summary for Pond DMH2: DMH-2

Inflow Area =	1.226 ac,	83.75% Impervious,	Inflow Depth = 4.37"	for 10-Year event
Inflow =	5.84 cfs @	12.09 hrs, Volume=	0.447 af	
Outflow =	5.84 cfs @	12.09 hrs, Volume=	0.447 af, Atten= 0%, Lag= 0.0 min	
Primary =	0.58 cfs @	11.65 hrs, Volume=	0.279 af	
Secondary =	5.39 cfs @	12.09 hrs, Volume=	0.168 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 59.66' @ 12.10 hrs
Flood Elev= 63.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.45'	**6.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 57.45' / 57.35' S= 0.0096 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Secondary	57.95'	**18.0" Round Culvert** L= 29.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 57.95' / 57.00' S= 0.0323 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.56 cfs @ 11.65 hrs HW=58.21' TW=57.86' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.56 cfs @ 2.85 fps)

Secondary OutFlow Max=5.14 cfs @ 12.09 hrs HW=59.63' TW=59.26' (Dynamic Tailwater)
2=Culvert (Inlet Controls 5.14 cfs @ 2.91 fps)

Summary for Pond DMH3: DMH-3

Inflow Area = 0.212 ac,100.00% Impervious, Inflow Depth = 5.41" for 10-Year event
Inflow = 1.43 cfs @ 12.00 hrs, Volume= 0.096 af
Outflow = 1.43 cfs @ 12.00 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 12.00 hrs, Volume= 0.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 59.91' @ 12.00 hrs
Flood Elev= 64.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	59.20'	**12.0" Round Culvert** L= 30.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.20' / 58.90' S= 0.0098 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.39 cfs @ 12.00 hrs HW=59.91' TW=59.52' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.39 cfs @ 3.29 fps)

Summary for Pond OWS: Oil/Water Separator

Inflow Area = 1.226 ac, 83.75% Impervious, Inflow Depth = 2.73" for 10-Year event
Inflow = 0.58 cfs @ 11.65 hrs, Volume= 0.279 af
Outflow = 0.58 cfs @ 11.65 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 11.65 hrs, Volume= 0.279 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 59.47' @ 12.10 hrs
Flood Elev= 63.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.10'	**6.0" Round Culvert** L= 7.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 57.10' / 57.00' S= 0.0133 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.56 cfs @ 11.65 hrs HW=57.86' TW=57.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.56 cfs @ 2.86 fps)

Summary for Link DP#1: Design Point #1 - Wetland

Inflow Area = 2.643 ac, 54.55% Impervious, Inflow Depth = 2.82" for 10-Year event
Inflow = 6.80 cfs @ 12.11 hrs, Volume= 0.622 af
Primary = 6.80 cfs @ 12.11 hrs, Volume= 0.622 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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: To CB-1 Runoff Area=0.390 ac 61.82% Impervious Runoff Depth=4.29"
Tc=6.0 min CN=75 Runoff=1.96 cfs 0.139 af

Subcatchment 2S: To CB-2 Runoff Area=0.212 ac 97.06% Impervious Runoff Depth=6.68"
Tc=6.0 min CN=96 Runoff=1.48 cfs 0.118 af

Subcatchment 3S: To CB-3 Runoff Area=0.111 ac 81.60% Impervious Runoff Depth=5.63"
Tc=6.0 min CN=87 Runoff=0.71 cfs 0.052 af

Subcatchment 4S: To CB-4 Runoff Area=0.333 ac 87.64% Impervious Runoff Depth=6.10"
Tc=6.0 min CN=91 Runoff=2.22 cfs 0.169 af

Subcatchment 5S: To CB-5 Runoff Area=0.172 ac 100.00% Impervious Runoff Depth=6.92"
Tc=6.0 min CN=98 Runoff=1.21 cfs 0.099 af

Subcatchment 6S: To CB-6 Runoff Area=0.119 ac 97.53% Impervious Runoff Depth=6.80"
Tc=6.0 min CN=97 Runoff=0.83 cfs 0.068 af

Subcatchment 7S: Canopy Runoff Area=0.081 ac 100.00% Impervious Runoff Depth=6.92"
Tc=0.0 min CN=98 Runoff=0.69 cfs 0.046 af

Subcatchment 8S: Roof Runoff Area=0.132 ac 100.00% Impervious Runoff Depth=6.92"
Tc=0.0 min CN=98 Runoff=1.13 cfs 0.076 af

Subcatchment 100S: Overland Flow to Runoff Area=1.093 ac 10.25% Impervious Runoff Depth=0.98"
Flow Length=416' Tc=8.1 min CN=41 Runoff=0.72 cfs 0.089 af

Pond CB1: CB-1 Peak Elev=62.46' Inflow=1.96 cfs 0.139 af
12.0" Round Culvert n=0.012 L=50.9' S=0.0108 '/' Outflow=1.96 cfs 0.139 af

Pond CB2: CB-2 Peak Elev=62.19' Inflow=1.48 cfs 0.118 af
12.0" Round Culvert n=0.012 L=138.6' S=0.0051 '/' Outflow=1.48 cfs 0.118 af

Pond CB3: CB-3(FD) Peak Elev=59.72' Inflow=2.26 cfs 0.175 af
12.0" Round Culvert n=0.012 L=28.8' S=0.0625 '/' Outflow=2.26 cfs 0.175 af

Pond CB4: CB-4(FD) Peak Elev=60.95' Inflow=7.70 cfs 0.593 af
18.0" Round Culvert n=0.012 L=80.7' S=0.0050 '/' Outflow=7.70 cfs 0.593 af

Pond CB5: CB-5 Peak Elev=61.35' Inflow=5.48 cfs 0.424 af
18.0" Round Culvert n=0.012 L=70.4' S=0.0050 '/' Outflow=5.48 cfs 0.424 af

Pond CB6: CB-6 Peak Elev=61.94' Inflow=4.27 cfs 0.325 af
15.0" Round Culvert n=0.012 L=93.9' S=0.0064 '/' Outflow=4.27 cfs 0.325 af

Pond DET: Underground Detention System Peak Elev=59.44' Storage=1,549 cf Inflow=9.35 cfs 0.768 af
Outflow=9.24 cfs 0.768 af

Pond DMH1: DMH-1 Peak Elev=62.22' Inflow=1.96 cfs 0.139 af
12.0" Round Culvert n=0.012 L=65.9' S=0.0137 '/' Outflow=1.96 cfs 0.139 af

Pond DMH2: DMH-2 Peak Elev=60.14' Inflow=7.70 cfs 0.593 af
Primary=0.57 cfs 0.347 af Secondary=7.14 cfs 0.246 af Outflow=7.70 cfs 0.593 af

Pond DMH3: DMH-3 Peak Elev=60.04' Inflow=1.82 cfs 0.122 af
12.0" Round Culvert n=0.012 L=30.5' S=0.0098 '/' Outflow=1.82 cfs 0.122 af

Pond OWS: Oil/Water Separator Peak Elev=59.80' Inflow=0.57 cfs 0.347 af
6.0" Round Culvert n=0.012 L=7.5' S=0.0133 '/' Outflow=0.57 cfs 0.347 af

Link DP#1: Design Point #1 - Wetland Inflow=9.77 cfs 0.857 af
Primary=9.77 cfs 0.857 af

Total Runoff Area = 2.643 ac Runoff Volume = 0.857 af Average Runoff Depth = 3.89"
45.45% Pervious = 1.201 ac 54.55% Impervious = 1.442 ac

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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: To CB-1 Runoff Area=0.390 ac 61.82% Impervious Runoff Depth=5.57"
Tc=6.0 min CN=75 Runoff=2.53 cfs 0.181 af

Subcatchment 2S: To CB-2 Runoff Area=0.212 ac 97.06% Impervious Runoff Depth=8.10"
Tc=6.0 min CN=96 Runoff=1.77 cfs 0.143 af

Subcatchment 3S: To CB-3 Runoff Area=0.111 ac 81.60% Impervious Runoff Depth=7.02"
Tc=6.0 min CN=87 Runoff=0.87 cfs 0.065 af

Subcatchment 4S: To CB-4 Runoff Area=0.333 ac 87.64% Impervious Runoff Depth=7.50"
Tc=6.0 min CN=91 Runoff=2.70 cfs 0.208 af

Subcatchment 5S: To CB-5 Runoff Area=0.172 ac 100.00% Impervious Runoff Depth=8.34"
Tc=6.0 min CN=98 Runoff=1.45 cfs 0.119 af

Subcatchment 6S: To CB-6 Runoff Area=0.119 ac 97.53% Impervious Runoff Depth=8.22"
Tc=6.0 min CN=97 Runoff=1.00 cfs 0.082 af

Subcatchment 7S: Canopy Runoff Area=0.081 ac 100.00% Impervious Runoff Depth=8.34"
Tc=0.0 min CN=98 Runoff=0.83 cfs 0.056 af

Subcatchment 8S: Roof Runoff Area=0.132 ac 100.00% Impervious Runoff Depth=8.34"
Tc=0.0 min CN=98 Runoff=1.35 cfs 0.091 af

Subcatchment 100S: Overland Flow to Runoff Area=1.093 ac 10.25% Impervious Runoff Depth=1.62"
Flow Length=416' Tc=8.1 min CN=41 Runoff=1.50 cfs 0.147 af

Pond CB1: CB-1 Peak Elev=64.25' Inflow=2.53 cfs 0.181 af
12.0" Round Culvert n=0.012 L=50.9' S=0.0108 '/' Outflow=2.53 cfs 0.181 af

Pond CB2: CB-2 Peak Elev=63.74' Inflow=1.77 cfs 0.143 af
12.0" Round Culvert n=0.012 L=138.6' S=0.0051 '/' Outflow=1.77 cfs 0.143 af

Pond CB3: CB-3(FD) Peak Elev=59.87' Inflow=2.72 cfs 0.213 af
12.0" Round Culvert n=0.012 L=28.8' S=0.0625 '/' Outflow=2.72 cfs 0.213 af

Pond CB4: CB-4(FD) Peak Elev=61.84' Inflow=9.46 cfs 0.733 af
18.0" Round Culvert n=0.012 L=80.7' S=0.0050 '/' Outflow=9.46 cfs 0.733 af

Pond CB5: CB-5 Peak Elev=62.45' Inflow=6.75 cfs 0.525 af
18.0" Round Culvert n=0.012 L=70.4' S=0.0050 '/' Outflow=6.75 cfs 0.525 af

Pond CB6: CB-6 Peak Elev=63.37' Inflow=5.31 cfs 0.406 af
15.0" Round Culvert n=0.012 L=93.9' S=0.0064 '/' Outflow=5.31 cfs 0.406 af

Pond DET: Underground Detention System Peak Elev=59.57' Storage=1,642 cf Inflow=11.46 cfs 0.946 af
Outflow=11.27 cfs 0.946 af

Pond DMH1: DMH-1 Peak Elev=63.85' Inflow=2.53 cfs 0.181 af
12.0" Round Culvert n=0.012 L=65.9' S=0.0137 '/' Outflow=2.53 cfs 0.181 af

Pond DMH2: DMH-2 Peak Elev=60.62' Inflow=9.46 cfs 0.733 af
Primary=0.69 cfs 0.406 af Secondary=8.76 cfs 0.327 af Outflow=9.46 cfs 0.733 af

Pond DMH3: DMH-3 Peak Elev=60.20' Inflow=2.18 cfs 0.147 af
12.0" Round Culvert n=0.012 L=30.5' S=0.0098 '/' Outflow=2.18 cfs 0.147 af

Pond OWS: Oil/Water Separator Peak Elev=60.10' Inflow=0.69 cfs 0.406 af
6.0" Round Culvert n=0.012 L=7.5' S=0.0133 '/' Outflow=0.69 cfs 0.406 af

Link DP#1: Design Point #1 - Wetland Inflow=12.60 cfs 1.093 af
Primary=12.60 cfs 1.093 af

Total Runoff Area = 2.643 ac Runoff Volume = 1.093 af Average Runoff Depth = 4.96"
45.45% Pervious = 1.201 ac 54.55% Impervious = 1.442 ac

APPENDIX F

Supplemental Calculations and Backup Data

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	70.780 degrees West
Latitude	43.034 degrees North
Elevation	0 feet
Date/Time	Wed, 22 Sep 2021 13:51:31 -0400

Per Env-Wq 1503.08(l) these values are increased by 15% for the analysis

2yr 3.71
10yr 5.65
25yr 7.16
50yr 8.58

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.71	0.98	1.22	1.57	2.04	2.68	2.95	**1yr**	2.37	2.83	3.25	3.97	4.59	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.30	**2yr**	0.89	1.18	1.52	1.95	2.50	3.23	3.60	**2yr**	2.86	3.46	3.97	4.72	5.37	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.16	4.10	4.62	**5yr**	3.63	4.44	5.09	5.99	6.76	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.90	**10yr**	1.26	1.73	2.24	2.91	3.78	4.91	5.58	**10yr**	4.34	5.37	6.15	7.17	8.05	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.35	**25yr**	1.54	2.15	2.79	3.65	4.78	6.23	7.16	**25yr**	5.51	6.89	7.89	9.12	10.14	**25yr**
50yr	0.54	0.86	1.11	1.55	2.08	2.77	**50yr**	1.80	2.54	3.31	4.36	5.71	7.46	8.66	**50yr**	6.60	8.33	9.54	10.93	12.09	**50yr**
100yr	0.60	0.97	1.25	1.78	2.43	3.28	**100yr**	2.10	2.99	3.93	5.20	6.83	8.94	10.48	**100yr**	7.91	10.08	11.53	13.11	14.41	**100yr**
200yr	0.68	1.11	1.44	2.06	2.85	3.86	**200yr**	2.46	3.54	4.65	6.18	8.16	10.71	12.67	**200yr**	9.48	12.19	13.95	15.74	17.19	**200yr**
500yr	0.81	1.33	1.73	2.51	3.51	4.81	**500yr**	3.03	4.41	5.82	7.78	10.32	13.62	16.31	**500yr**	12.06	15.68	17.95	20.04	21.72	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.87	0.92	1.33	1.68	2.26	2.56	**1yr**	2.00	2.46	2.89	3.18	3.94	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.87	1.16	1.37	1.82	2.33	3.08	3.49	**2yr**	2.73	3.36	3.86	4.59	5.12	**2yr**
5yr	0.35	0.54	0.67	0.92	1.18	1.41	**5yr**	1.01	1.38	1.61	2.12	2.73	3.83	4.25	**5yr**	3.39	4.09	4.77	5.60	6.32	**5yr**
10yr	0.39	0.60	0.74	1.03	1.33	1.61	**10yr**	1.15	1.57	1.81	2.38	3.05	4.42	4.94	**10yr**	3.91	4.75	5.54	6.51	7.29	**10yr**
25yr	0.44	0.67	0.84	1.20	1.58	1.91	**25yr**	1.36	1.87	2.10	2.75	3.53	4.78	6.01	**25yr**	4.23	5.78	6.80	7.95	8.82	**25yr**
50yr	0.49	0.74	0.92	1.33	1.78	2.18	**50yr**	1.54	2.13	2.35	3.06	3.93	5.41	6.96	**50yr**	4.79	6.69	7.94	9.25	10.20	**50yr**
100yr	0.54	0.82	1.03	1.48	2.04	2.48	**100yr**	1.76	2.43	2.63	3.40	4.34	6.09	8.06	**100yr**	5.39	7.75	9.28	10.78	11.79	**100yr**
200yr	0.60	0.90	1.15	1.66	2.31	2.83	**200yr**	2.00	2.77	2.94	3.77	4.79	6.84	9.33	**200yr**	6.06	8.97	10.84	12.57	13.65	**200yr**
500yr	0.70	1.04	1.34	1.94	2.76	3.39	**500yr**	2.39	3.31	3.42	4.29	5.45	7.99	11.32	**500yr**	7.07	10.89	13.33	15.44	16.55	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	3.01	3.17	**1yr**	2.66	3.05	3.61	4.40	5.09	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.45	3.72	**2yr**	3.05	3.58	4.11	4.87	5.67	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.88	2.53	3.25	4.37	4.98	**5yr**	3.87	4.79	5.42	6.40	7.18	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.94	2.28	3.10	3.95	5.38	6.21	**10yr**	4.76	5.97	6.82	7.87	8.78	**10yr**
25yr	0.58	0.88	1.09	1.56	2.06	2.58	**25yr**	1.77	2.52	2.96	4.07	5.14	7.82	8.33	**25yr**	6.92	8.01	9.12	10.36	11.43	**25yr**
50yr	0.67	1.03	1.28	1.84	2.47	3.14	**50yr**	2.13	3.07	3.60	5.00	6.31	9.79	10.42	**50yr**	8.66	10.02	11.38	12.74	13.98	**50yr**
100yr	0.79	1.20	1.50	2.17	2.98	3.83	**100yr**	2.57	3.74	4.37	6.15	7.74	12.24	13.04	**100yr**	10.83	12.53	14.18	15.70	17.09	**100yr**
200yr	0.93	1.40	1.77	2.56	3.57	4.67	**200yr**	3.08	4.57	5.34	7.58	9.51	15.35	16.32	**200yr**	13.58	15.70	17.71	19.33	20.91	**200yr**
500yr	1.15	1.71	2.21	3.20	4.56	6.07	**500yr**	3.93	5.94	6.93	10.02	12.51	20.72	21.97	**500yr**	18.34	21.13	23.74	25.46	27.30	**500yr**

Powered by ACIS
Northeast Regional Climate Center

OUTLET APRON DESIGN

Project: Lafayette Rd, Portsmouth, NH   Job # 2021163
Date: 26-Jan-22

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

FES-1 (from HydroCAD POND DET)

Q25 = 9 cfs

D_o = 18 inches

Tw = 0.8 feet

Design Criteria

Apron Dimensions

The dimensions of the apron at the outlet of the pipe shall be determined as follows:

1.) The width of the apron at the outlet of the pipe or channel shall be 3 times the diameter of the pipe, or the width of the channel.

USE THIS W= **4.5** feet

2.) The length of the apron shall be determined from the following formula when the tailwater depth at the outlet of the pipe or channel is less than one-half the diameter of the pipe or one-half the width of the channel:

La=1.8*Q/ Do^3/2+ 7Do

La= **19.32** feet

Where:

La is the length of the apron

Q is the discharge from the pipe or channel

D_o is the diameter of pipe of width of channel

3.) When the depth of the tailwater at the outlet of the pipe or channel is equal to or greater than one-half the diameter of the pipe or the width of the channel. Then the following formula applies:

La=3.0*Qo/ Do^1.5 +7D_o

USE THIS La= **25.197** feet

4.) Where there is no well defined channel downstream of the outlet, the width of the downstream end of the apron shall be determined as follows:

a. For minimum tailwater conditions where the tailwater depth is less than the elevation of the center of the pipe:

W=3*Do+La

W= **23.82** feet

b. For maximum tailwater conditions where the tailwater depth is greater than the elevation of the center of the pipe:

W=3*Do+0.4*La

USE THIS W= **14.58** feet

5.) Where there is a stable well-defined channel downstream of the apron, the bottom of the apron shall be equal to the width of the channel.

6.) The side of the apron in a well-defined channel shall be 2:1 (horizontal to vertical) or flatter. The height of the structural lining along the channel sides shall begin at the elevation equal to the top of conduit and taper down to the channel bottom through the length of the apron.

7.) The bottom grade of the apron shall be level (0% grade). No overfall is allowable at the end of the apron.

8.) The apron shall be located so that there are no bends in the horizontal alignment of the apron.

Rock Riprap

The following criteria shall be used to determine the dimensions of the rock riprap used for the apron:

1.) The median stone diameter shall be determined using the formula:

d_{50}=0.02*Q^4/3/(Tw*D_o)

d_{50}= **3.72** inches **USE** **4** inches

d_{50} minimum 3 inches

Where:

d_{50} is the median stone diameter in feet

Tw is the tailwater depth above the invert of the pipe channel in feet

Q is the discharge from the pipe or channel in cubic feet per second

D_o is the diameter of the pipe or width of the channel in feet

2.) Fifty percent by weight of the riprap mixture shall be smaller the than median size stone designated as d_{50}. The largest stone size in the mixture shall be 1.5 times the d_{50} size.

3.) The quality and gradation of the rock, the thickness of the riprap lining, filter material and the quality of the stone shall meet the requirements in the Rock Riprap BMP. The minimum depth shall be 6 inches or 1.5 times the largest stone size in the mixture whichever is larger (d).

Thickness of the riprap

d = 1.5*(d100 avg.(largest stone size))

d= **10** inches*

* must use a minimum of 6"

Rock Rip Rap Gradation

% of weight smaller than the given size	size of stone in inches		
100	**5.6**	to	**7.4**
85	**4.8**	to	**6.7**
50	**3.7**	to	**5.6**
15	**1.1**	to	**1.9**

Hydro International

First Defense® High Capacity

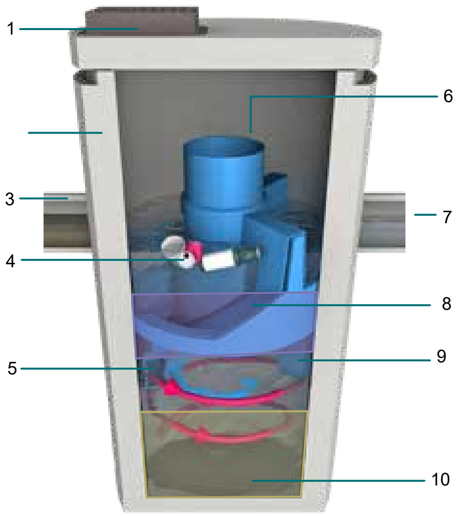
Advanced Hydrodynamic Separator

Product Summary

A Simple Solution for your Trickiest Sites

First Defense® High Capacity is a versatile stormwater separator with some of the highest approved flow rates in the United States, enabling engineers and contractors to save site space and projects costs by using the smallest possible footprint. It also works with single and multiple inlet pipes and inlet grates has an internal bypass to convey infrequent peak flows directly to the outlet.

Fig.1 The First Defense® High Capacity has internal components designed to efficiently capture pollutants and prevent washout at



Product Profile

1. Inlet Grate (optional)
2. Precast chamber
3. Inlet Pipe (optional)
4. Floatables Draw Off Slot (not pictured)
5. Inlet Chute
6. Internal Bypass
7. Outlet pipe
8. Oil and Floatables Storage
9. Outlet chute
10. Sediment Storage Sump

Applications

» Areas requiring a minimum of 50% TSS removal

» Stormwater treatment at the point of entry into the drainage line

» Sites constrained by space, topography or drainage profiles with limited slope and depth of cover

» Highways, car parks, industrial areas and urban developments

» Pre-treatment to ponds, storage systems, green infrastructure

How it Works

Highest Flow through the Smallest Footprint

Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An internal bypass conveys infrequent peak flows directly to the outlet eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

Benefits

Small & Simple

» Cut footprint size, cut costs: First Defense® provides space-saving, easy-to-install surface water treatment in standard sized chambers/ manholes.

» Adapt to site limitations: Variable configuratoins will help you effectively slip First Defense® into a tight spot. It also works well with large pipes, multiple inlet pipes and inlet grates.

» Save installation time: Every First Defense® unit is delivered to site pre-assembled and ready for installation – so installation is as easy as fitting any chamber/manhole.

Stormwater Solutions

→ hydro-int.com/firstdefense

Sizing & Design

This adaptable online treatment system works easily with large pipes, multiple inlet pipes, inlet grates and now, contains a high capacity bypass for the conveyance of large peak flows. Designed with site flexibility in mind, the First Defense® High Capacity allows engineers to maximize available site space without compromising treatment level.

Free Sizing Tool

This simple online tool will recommend the best separator, model size and online/offline arrangement based on site-specific data entered by the user.

Go to hydro-int.com/sizing to access the tool.

First Defense® High Capacity Model Number	Diameter	Typical TSS Treatment Flow Rates		Peak Online Flow Rate	Maximum Pipe Diameter[1]	Oil Storage Capacity	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
		NJDEP Certified	110µm						
	(ft / m)	(cfs / L/s)	(cfs / L/s)	(cfs / L/s)	(in / mm)	(gal / L)	(yd^3 / m^3)	(ft / m)	(ft / m)
FD-3HC	3 / 0.9	0.84 / 23.7	1.06 / 30.0	15 / 424	18 / 450	125 / 473	0.4 / 0.3	2.0 - 3.5 / 0.6 - 1.0	3.71 / 1.13
FD-4HC	4 / 1.2	1.50 / 42.4	1.88 / 53.2	18 / 510	24 / 600	191 / 723	0.7 / 0.5	2.3 - 3.9 / 0.7 - 1.2	4.97 / 1.5
FD-5HC	5 / 1.5	2.35 / 66.2	2.94 / 83.2	20 / 566	24 / 600	300 / 1135	1.1 / .84	2.5 - 4.5 / 0.7 - 1.3	5.19 / 1.5
FD-6HC	6 / 1.8	3.38 / 95.7	4.23 / 119.8	32 / 906	30 / 750	496 / 1,878	1.6 / 1.2	3.0 - 5.1 / 0.9 - 1.6	5.97 / 1.8
FD-8HC	8 / 2.4	6.00 / 169.9	7.52 / 212.9	50 / 1415	48 / 1200	1120 / 4239	2.8 / 2.1	3.0 - 6.0 / 0.9 -1.8	7.40 / 2.2
FD-10HC	10 / 3.0	9.38 / 265.6	11.75 / 332.7	50 / 1415	48 / 1200	1742 / 6594	4.4 / 3.3	6.5 -8.0 / 2.0 - 2.4	10.25 / 3.12

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]Minimum distance for models depends on pipe diameter.

Maintenance

Easy vactor hose access through the center shaft of the system makes for quick, simple sump cleanout while trash and floatables can be fished out from the surface with a net.

Nobody maintains our systems better than we do. To ensure optimal, ongoing device performance, be sure to recommend Hydro International as a preferred service and maintenance provider to your clients.

Hydro International

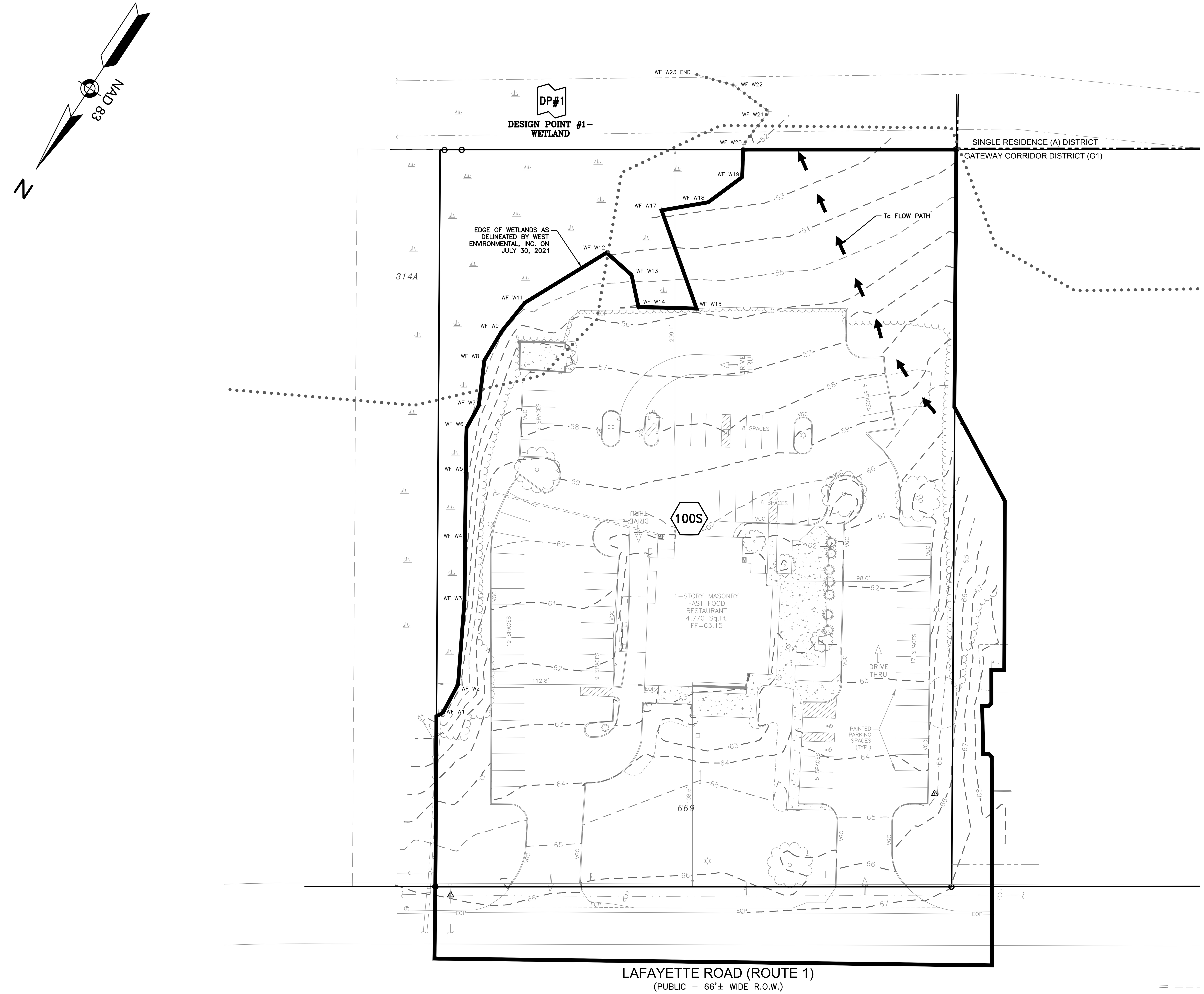
Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200
Email: stormwaterinquiry@hydro-int.com
Web: www.hydro-int.com/firstdefense

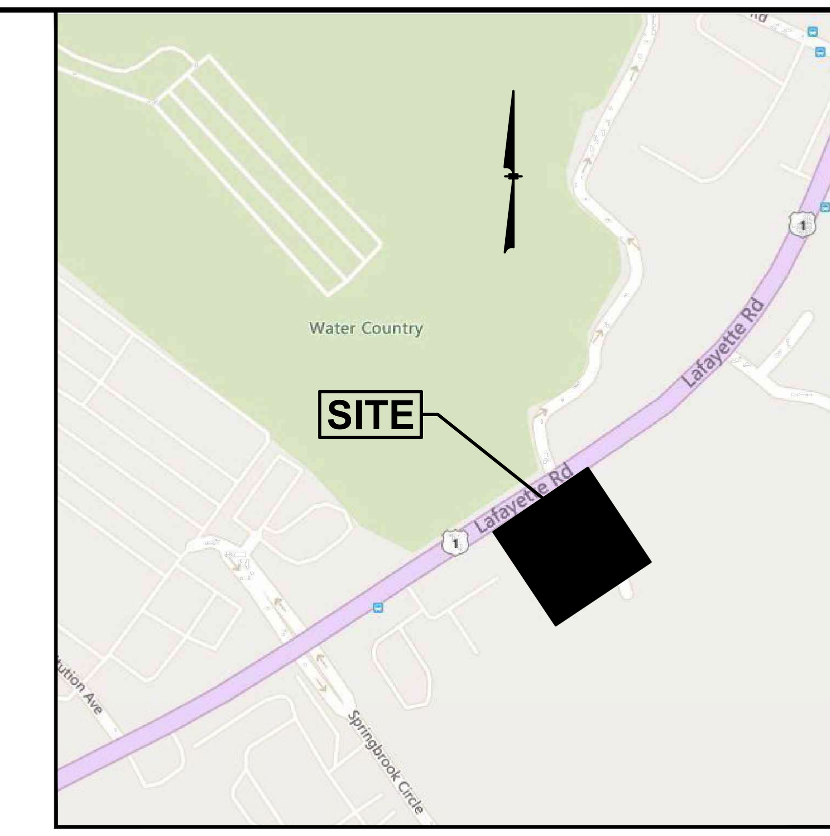
Download Drawings!

→ hydro-int.com/fddrawings

Access the Operation & Maintenance Manual

→ hydro-int.com/fd-om





LOCATION MAP
(NOT TO SCALE)

WATERSHED LEGEND:

SUB — SUBCATCHMENT: A relatively homogeneous area of land that drains into a single reach or pond. Each subcatchment generates a runoff hydrograph. (A subcatchment may also be used to account for the rain falling directly on the surface of a pond.)

REACH — REACH: A uniform stream, channel, or pipe that conveys water from one point to another reach or pond. The outflow of each reach is determined by a hydrograph routing calculation.

POND — POND: A pond, swamp, dam, or other impoundment that fills with water from one or more sources and empties in a manner determined by a weir, culvert, or other device(s) at its outlet. The outflow(s) of each pond is determined by a hydrograph routing calculation. The primary and/or secondary outflow may drain into a reach or into another pond.

DP#1 — DESIGN POINT

Time of Concentration Path (Tc)

Watershed Divide Line

SOIL LEGEND

314A — SOIL TYPE DESIGNATION

SOIL BOUNDARY

0 30 60 100
SCALE: 1" = 30'

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

PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD PORTSMOUTH, NH 03801

REVISIONS

NO.	REVISION	DATE

FEBRUARY 3, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

PRE-DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163

1 OF 2

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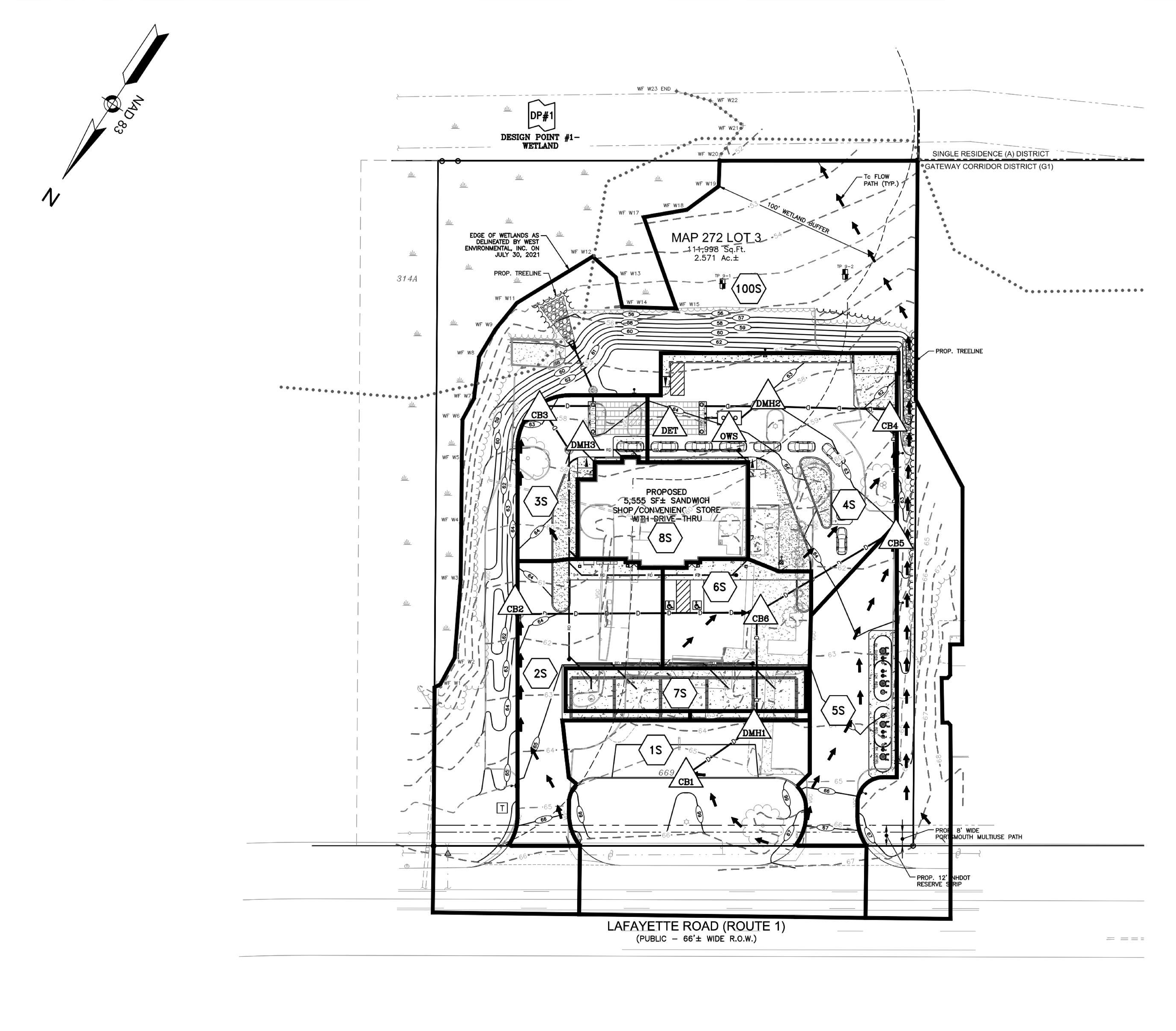

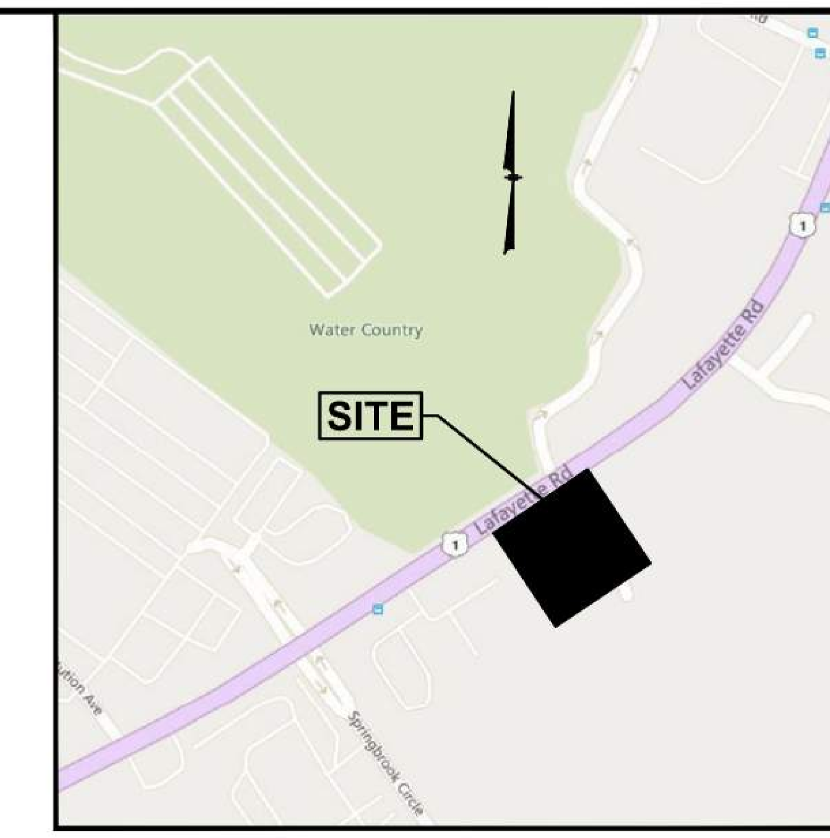

LOCATION MAP
(NOT TO SCALE)

WATERSHED LEGEND:

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DP#1 — DESIGN POINT

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Watershed Divide Line

SOIL LEGEND

314A — SOIL TYPE DESIGNATION

SOIL BOUNDARY

0 30 60 100
SCALE: 1" = 30'

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

PREPARED FOR
GRANITE STATE CONVENIENCE, LLC
25 SPRINGER ROAD
HOOKSETT, NH

PROPOSED RETAIL MOTOR FUEL OUTLET
2255 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

REVISIONS

NO.	REVISION	DATE

FEBRUARY 3, 2022

DRAWN/DESIGN BY	CHECKED BY
CCC/NID	DRJ

POST-DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021163

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INSPECTION & MAINTENANCE MANUAL FOR STORMWATER MANAGEMENT SYSTEMS

PROPOSED RETAIL MOTOR FUEL OUTLET
TAX MAP 272 LOT 3
2255 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE

GPI

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

Prepared For:

Granite State Convenience, LLC
25 Springer Road
Hooksett, NH 03106

February 3, 2022

(GPI Project No.: NEX-2021163)

Granite State Convenience, LLC
Proposed Retail Motor Fuel Outlet
Inspection & Maintenance Manual

TABLE OF CONTENTS

SECTION 1 I & M DOCUMENTATION REQUIREMENTS

The Owner of Record shall be responsible for the continued operation, and maintenance of all stormwater management systems in accordance with this manual and Section 7.6.5 of the City of Portsmouth Site Plan Review Regulations. Logs of inspections and maintenance shall be maintained and filed with the City of Portsmouth as needed. Copies will need to be kept for the most recent three years and made available to the Planning Board and City Engineer upon request.

Logs shall include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the cleanout of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

All stormwater facilities associated with this development are identified on Figure 1 contained within Section 3 of this manual and listed individually on the log form included herein, and shall be inspected and maintained in accordance with the procedures outlined in Section 4.

SECTION 2 BMP SPECIFIC I & M PROCEDURES

Driveway/Parking Lot Sweeping
Sweeping shall be done once in the early fall and then immediately following spring snowmelt to remove sand and other debris and when visual buildup of debris is apparent. Pavement surfaces shall be swept at other times such as in the fall after leaves have dropped to remove accumulated debris. Since contaminants typically accumulate within 12 inches of the curbline, street cleaning operations should concentrate in cleaning curb and gutter lines for maximum pollutant removal efficiency. Other areas shall also be swept periodically when visual buildup of debris is apparent. Once removed from paved surfaces, the sweeping must be handled and disposed of properly. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

Deep Sump Hooded Catch Basins
Inspect and clean as required all catch basins at least two times per year including at the end of the foliage and snow removal seasons. Sediment must be removed whenever the depth of deposits is greater than or equal to one half the depth from the bottom of sump to the invert of the lowest pipe in the basin. If the basin outlet is designed with a hood to trap floatable materials check to ensure watertight seal is working. Damaged hoods should be replaced when noted by inspection. At a minimum, remove floating debris and hydrocarbons at the time of the inspection. Sediment and debris can be removed by a clamshell bucket; however, a vacuum truck is preferred. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

Outlet Aprons/Weirs
Inspect at least once annually for damage and deterioration. Repair damages immediately.

Oil/Water Separator
The system should initially be inspected within the first three months after completion of the site's construction and after any rainfall greater than 1-inch. The units should be inspected after every major storm but at least on a monthly basis. Cleaning of the units should be done at least twice a year and should include the following:

1. Removal of accumulated oil and grease and sediment by using a vacuum truck or similar catch basin cleaning device.
2. Visually inspect, and clean as needed, inlet and outlets including tees during each inspection.
3. At a minimum, remove any floating debris at the time of the inspection.

Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

Hydrodynamic Separators (First Defense Units)
Initial maintenance to be performed twice a year for the first year after the unit is online and operational. A vacuum truck must be used at a minimum of once per year for sediment removal. Refer to the attached First Defense Owner's manual for operation and maintenance procedures and schedules thereafter.

Underground Detention System

All subsurface systems should initially be inspected within the first three months after completion of the site's construction.

Preventive maintenance should be performed at least every six months and sediment shall be removed from pretreatment BMP's after every major storm event. The Detention System shall be inspected on regular bi-annual scheduled dates. Sediment and debris removal should be through the use of truck mounted vacuum equipment. Outlet pipes should be flushed to point of discharge on the same frequency as mentioned above. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations.

The following is the recommended procedure to inspect the underground system in service:

1. Locate the riser or cleanout section of the system. The riser/cleanout will typically be 6 or 12" in diameter or larger.
2. Remove the lid from the riser/cleanout.
3. Measure the sediment buildup at each riser and cleanout location. Only certified confined space entry personnel having appropriate equipment should be permitted to enter the system.
4. Inspect each manifold, all laterals, and outlet pipes for sediment build up, obstructions, or other problems. Obstructions should be removed at this time.
5. If measured sediment build up is between 2" to 8", cleaning should be considered; if sediment build up exceeds 8", cleaning should be performed at the earliest opportunity. A thorough cleaning of the system (manifolds and laterals) shall be performed by water jets and/or truck mounted vacuum equipment.

Pretreatment BMP's shall be inspected and cleaned during the regular bi-annual inspections.

The inlet and outlet of the subsurface systems should be checked periodically to ensure that flow structures are not blocked by debris. All pipes connecting the structures to the system should be checked for debris that may obstruct flow. Inspections should be conducted monthly during wet weather conditions from March to November.

Vegetated Areas

Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. During the summer months, all landscape features are to be maintained with the minimum possible amount of fertilizers, pesticides or herbicides.

Winter Maintenance

Proposed snow storage is located along the edge of the roadways. Any excess snow is to be trucked offsite. During the winter months all snow is to be stored such that snowmelt is controlled. Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. The minimum amount of deicing chemicals needed is to be used. It is recommended that winter maintenance contractors be current UNHT2 Green SnowPro

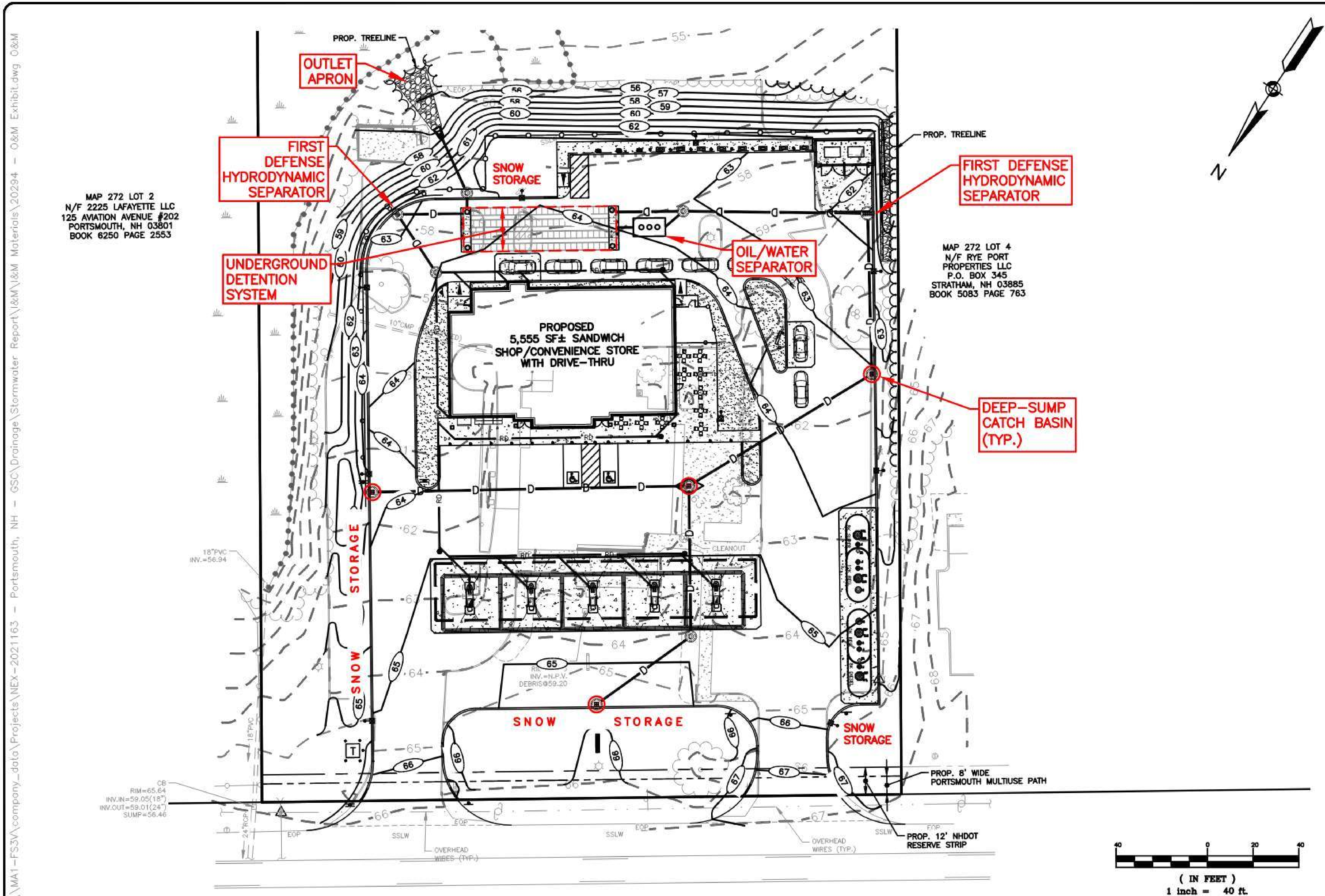
Certified applicators or equivalent. In addition, a NHDES Salt Applicator Certification is recommended, but not required. Information on these certifications can be found in the links provided below:

- http://t2.unh.edu/green-snopro-training-and-nhdes-certification
- http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/salt-applicator-certification.htm

Control of Invasive Species

During maintenance activities, check for the presence of invasive species. Invasive species must be managed/removed in accordance with RSA 430:530 and AGR 3800. See Section 4 of this manual for information from the University of New Hampshire Cooperative Extension and the New Hampshire Guide to Upland Invasive Species from the New Hampshire Department of Agriculture Markets and Food, Plant Industry Division or the information provided on their website (http://www.agriculture.nh.gov/divisions/plant-industry/invasive-plants.htm).

SECTION 3 LONG TERM MAINTENANCE PLAN EXHIBIT



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DRAWN BY: SMS
PROJECT #: 2021163
DATE: 2/3/22
REV.: -

FIGURE 1

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

LONG TERM MAINTENANCE EXHIBIT
2255 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE

SECTION 4 CONTROL OF INVASIVE SPECIES

CONTACT INFORMATION

TERRESTRIAL PLANTS

Douglas Cygan, Invasive Species Coordinator, NH Department of Agriculture, Markets & Food, Division of Plant Industry, 29 Hazen Drive, Concord, NH 03301
(603) 271-3488, douglas.cygan@agr.nh.gov
Website: www.agriculture.nh.gov

AQUATIC PLANTS

Amy Smagula, Clean Lakes and Exotic Species Coordinator, NH Department of Environmental Services, 29 Hazen Drive, PO Box 95, Concord, NH 03302
(603) 271-2248, asmagula@des.state.nh.us.

RESOURCES

NH Coastal Watershed Invasive Plant Partnership (CWIPP)
www.des.nh.gov/organization/divisions/water/wmb/coastal/cwipp/index.htm
Invasive Plant Atlas of New England (IPANE)
http://invasives.eeb.uconn.edu/ipane
Natural Resource Conservation Service (NRCS)
http://plants.usda.gov
New England Wildflower Society (NEWS)
www.newfs.org
New Hampshire Department of Agriculture, Markets & Food (DAMF)
www.agriculture.nh.gov
New Hampshire Department of Resources & Economic Development, Natural Heritage Bureau (DRED)
http://www.naturalheritage.org
New Hampshire Department of Resources & Economic Development, Division of Forests and Lands (DRED)
http://www.nhdfl.org/organization/div_nhnhi.htm
New Hampshire Department of Environmental Services (DES)
www.des.state.nh.us/wmb/exoticspecies
New Hampshire Fish & Game Department
www.wildlife.state.nh.us
The Nature Conservancy (TNC)
www.nature.org
U.S. Department of Agriculture's Animal Plant Health Inspection Service (USDA APHIS)
www.aphis.usda.gov
University of New Hampshire Cooperative Extension (UNHCE)
www.ceinfo.unh.edu

Funding for the printing of this booklet provided by:
U.S. Department of Agriculture's Animal Plant Health Inspection Service

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New Hampshire Guide to Upland Invasive Species

New Hampshire
Department of Agriculture
Markets and Food, Plant Industry Division

5th Edition
2018

Douglas Cygan

Introduction

Throughout the world, non-native invasive species have become an overwhelming problem resulting in impacts to the natural environment and managed landscapes. Invasive species typically possess certain traits that give them an advantage over most native species. The most common traits include the production of many offspring, early and rapid development, and adaptability and high tolerance to many environmental conditions. These traits allow invasive species to be highly competitive and, in many cases, suppress native species. Studies show that invasives can reduce natural diversity, impact endangered or threatened species, reduce wildlife habitat, create water quality impacts, stress and reduce forest and agricultural crop production, damage personal property, and cause health problems.

Invasive species began arriving in North America in the mid-to-late 1700s by various means. Many were brought here for ornamental uses, erosion control, or to provide for wildlife habitat. Others arrived inadvertently through international travel and commerce.

Impacts and Actions

Biologists have found that invasive species cover more than 100 million acres of land in the U.S. and their population numbers continue to spread. The repeated process of spread has become so extreme that invasive species cost the United States billions of dollars per year. This is a result of lost agricultural and forest crops, impacts to natural resources and the environment, and the control efforts required to eradicate them.

On February 3, 1999, President Clinton signed Executive Order 13112, which established the National Invasive Species Council. The Council is responsible for assessing the impacts of invasive species, providing the nation with guidance and leadership on invasive species issues, and seeing that federal programs are coordinated and compatible with state and local initiatives.

Each state is also required to participate by evaluating and responding to their invasive species concerns. In the summer of 2000, the State of New Hampshire passed House Bill 1258-FN, which created the Invasive Species Act (ISA) and the New Hampshire Invasive Species Committee.

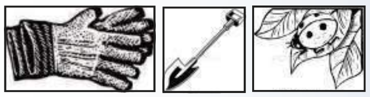
GLOSSARY OF PLANT TERMS

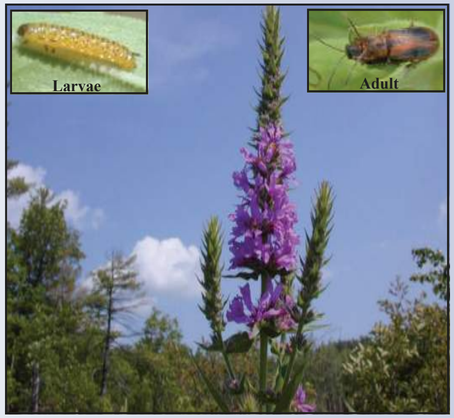
Alternate: Arranged singly at each node, as leaves or buds on different sides of a stem.
Annual: Living or growing for only one year or season.
Aril: A fleshy, usually brightly colored cover of a seed that develops from the ovule stalk and partially or entirely envelops the seed.
Axis: The point at which the leaf is attached to the main stem or branch.
Berry: A small, juicy, fleshy fruit.
Biennial: Having a life cycle that normally takes two growing seasons to complete.
Capsule: A dry dehiscent fruit that develops from two or more united capsules.
Compound: Composed of more than one part.
Deciduous: Shedding or losing foliage at the end of the growing season.
Dehiscent: The spontaneous opening of a fruit at maturity.
Drupe: A fleshy fruit usually having a single hard stone enclosing a seed.
Entire: Referring to a leaf not having an indented margin.
Filiform: Having the form resembling a thread or filament.
Furrowed: A rut groove or narrow depression.
Glabrous: Having no hairs or projections; smooth.
Imbricate: To be arranged with regular overlapping edges.
Inflorescence: A cluster of small flowers arranged on a flower stalk.
Lanceolate: A leaf tapering from a rounded base toward an apex, lance-shaped
Lenticels: The small, corky pores or narrow lines on the surface of the stems of woody plants that allow the interchange of gases between the interior tissue and the surrounding air.
Lustrous: Having a sheen or glow.
Native: A species that originated in a certain place or region; indigenous.
Naturalized: Adapted or acclimated to a new environment without cultivation.
Opposite: Growing in pairs on either side of a stem.
Ovate: Broad or rounded at the base and tapering toward the end.
Panicle: A branched cluster of flowers in which the branches are racemes
Peduncle: The stalk of a solitary flower of an inflorescence.
Peltate: Leaf being round with the stem attached near its center.
Perennial: Living three or more years.
Perfect: Having both stamens and pistals in the same flower.
Pod: A dry, several-sealed, dehiscent fruit.
Pubescent: Covered in fine short hairs.
Raceme: Elongated cluster of flowers along the main stem in which the flowers at the base open first.
Rhizome: A horizontal, usually underground stem that often sends out roots and shoots from its nodes.
Samara: A winged, often one-seed indehiscent fruit as of the ash, elm or maple.
Simple: Having no divisions or branches; not compound.
Umbel: A flat-topped or rounded inflorescence.

Lythrum salicaria - Purple Loosestrife

Family: Lythraceae
Native to: Eurasia

Description: Perennial growing 30-80" tall by $^2/_3$'s as wide. **Stems:** 4-6 sided, turning woody in summer. **Leaves:** Opposite to whorled, lanceolate, 2-4" long. **Flowers:** Spiked raceme, purple to magenta, June to October. **Fruit:** Capsule. **Habitat:** Mostly found in wetlands and aquatic systems, full to partial sun. **Spread:** Each plant can produce approximately 2.5-4.5 million seeds. Seeds dispersed by water, wildlife and humans. **Comments:** Invades wetlands suppressing native species and destroying wildlife habitat. **Controls:** Hand pull, use a spade to dig larger plants or use biocontrols (*Galerucella Spp*., top left is a larvae & top right is an adult).



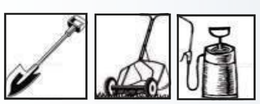


Photos by Douglas Cygan

Phragmites australis - Common Reed

Family: Poaceae
Native to: Eurasia

Description: Perennial rhizomatous grass growing 14' tall. **Stems:** Called 'culms' are large, hollow and grow up to 1" dia. **Leaves:** Lanceolate, up to 24" long, bluish-green in color. **Flowers:** Panicles with many spikelets having seven small reddish flowers. **Habitat:** Mostly found in marshlands, but also grows in freshwater wetlands and aquatic systems, full to partial sun. **Spread:** Spreads primarily by rhizomes. **Comments:** Forms dense colonies that suppress native species and alter wildlife habitat. **Controls:** Hand pull small plants. Use a spade to dig larger plants or apply herbicides.



Photos by Douglas Cygan

New Hampshire Invasive Species Committee

The New Hampshire Invasive Species Committee (ISC) is an advisory group for the Commissioner of the NH Department of Agriculture, Markets & Food (DAMF) on matters concerning invasive species in the state. The ISC consists of 11 appointed members representing the following: the NH Department of Agriculture, the NH Department of Environmental Services, the NH Department of Resources & Economic Development, the NH Department of Transportation, the NH Department of Fish & Game, The College of Life Science & Agriculture of the University of NH, the UNH Cooperative Extension, environmental interests, horticultural interests, general public interests, and livestock owners & feed growers interests. The ISC meets regularly to conduct the following efforts:

- Review information;
- Evaluate and discuss potentially invasive plant, insect and fungi species of concern;
- Host guest presentations on related topics;
- Develop outreach and educational materials;
- Formulate management practices as guidance for the control of invasive species; and
- Prepare lists of proposed prohibited and restricted species.

(*Note: This committee is not charged with the evaluation or listing of aquatic plant species, which is conducted by the Department of Environmental Services under RSA-487:16-a. However, a brief description of the program and four of the aquatic species are described on pages 29 & 30 of this book*).

New Hampshire Rules

In accordance with the Invasive Species Act (ISA), HB 1258-FN, the DAMF is the lead state agency for terrestrial invasive plants, insects and fungi species. The DAMF has the responsibility for the evaluation, publication and development of rules on invasive plant species. This is for the purpose of protecting the health of native species, the environment, commercial agriculture, forest crop production, and human health. Therefore, the rule, Agr 3800, states "**No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living or viable portion of any listed prohibited invasive plant species, which includes all of their cultivars and varieties, listed"** (see the New Hampshire Department of Agriculture's website at www.agriculture.nh.gov to review the complete set of rules).

Invasive Upland Plant Species (Agr 3800)

Invasive Insect Species

(To see the complete list of all 16 invasive insects refer to rules Agr 3800)

Invasive Aquatic Plant Species

To see the complete list of invasive aquatic plants refer to DES’s Env-Wq 1300 rules

New Hampshire Department of Environmental Services Aquatic Invasive Plant Species

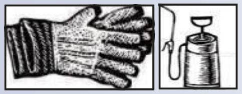
“Exotic aquatic species” are plants or animals that are not part of New Hampshire’s native aquatic flora and fauna. Since the first exotic aquatic plant infestation in New Hampshire was discovered in 1965 in Lake Winnipesaukee, exotic aquatic plant infestations have increased to a total of 83 infestations in 72 waterbodies in 2008. Species present include variable milfoil (63 waterbodies), Eurasian milfoil (3 waterbodies), fanwort (9 waterbodies), water chestnut (1 waterbody) and Brazilian elodea (1 waterbody), Curly Leaf Pondweed (3 waterbodies), and European Naiad (3 waterbodies), and Didymo (1 waterbody). Most of these exotic plants can propagate by fragmentation as well as by seed.

Exotic aquatic plant fragments can easily become attached to aquatic recreational equipment, such as boats, motors, and trailers, and can spread from waterbody to waterbody through transient boating activities. Infestations can have detrimental effects on the ecological, recreational, aesthetic, and economic values of the state’s precious surface waters, limiting use of the waterbodies and decreasing shorefront property values by as much as 1020 percent according to a UNH study (Halstead, et al., 2001).

Myriophyllum heterophyllum - Variable Milfoil

Family: Haloragaceae
Native to: Eurasia

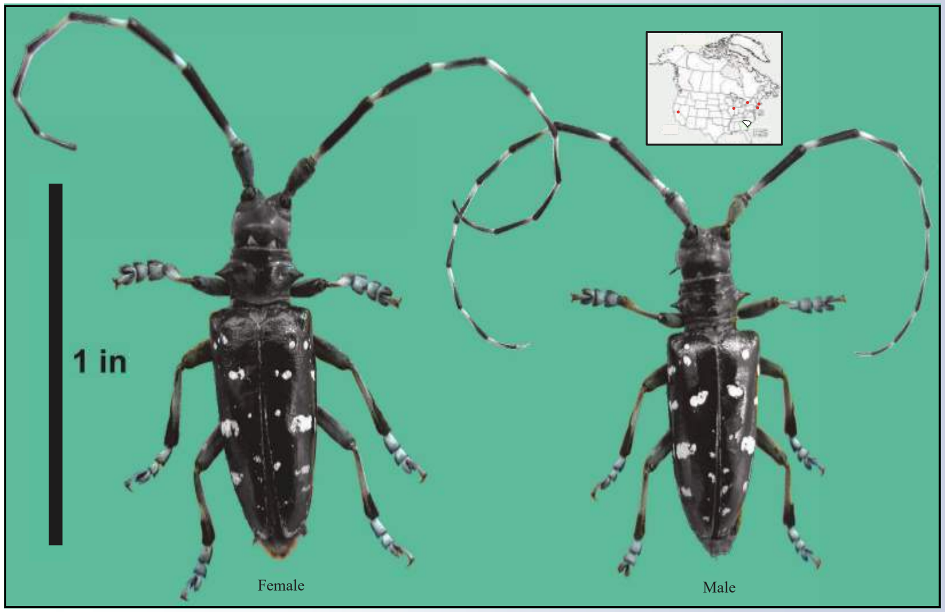
Description: Submerged aquatic perennial growing 20' tall. **Stems:** Round, thick and reddish. **Leaves:** Feathery leaflets surrounding the stem. **Flowers:** Stalks that emerge above the water with green leaves, June to August. **Habitat:** Lakes, ponds, calm streams, and other similar aquatic systems with full to partial sun. **Spread:** It reproduces primarily by vegetative propagules when individual plant segments break off, and dispersed by water movement, humans, and boats. **Comments:**Invades water bodies, suppresses native species and destroys fish habitat. **Controls:** Prevention, hand pulling, bottom screening, and aquatic herbicide use.



Photos by Amy Smagula

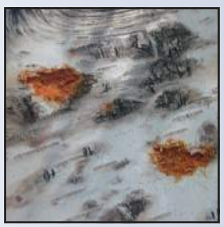
Anoplophora glabripennis - Asian Longhorned Beetle

Family: Cerambycidae
Native to: Europe



Asian Longhorned Beetle—*Anoplophora glabripennis* (Photo by Chris Rallis)

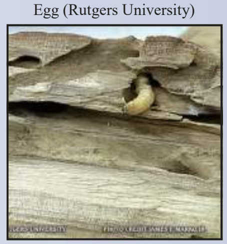
The Asian longhorned beetle (ALB) is a serious threat to a large variety of deciduous hardwoods in North America. ALB is a large glossy black insect with white spots dotting its elytra. Adults grow to 1-1.5" long and have whitish bandings on their antennae. Females are typically bigger than males. Tree injury occurs when larvae tunnel through the xylem (heartwood) of the host, thus weakening the tree. Hosts trees include, but aren't limited to: Maple, Chestnut, Poplar, Willow, Birch, Elm, and Mountain ash. Adult females chew a crater in the bark and lay 1-egg per site. Upon hatching the larvae feed on the wood and emerge as adults in 1-2 years through perfect $^{3}/_{8}$" diameter exit holes. Other signs include coarse wood shavings called frass, oozing sap, oviposition sites, leaf-feeding damage, and mature beetles. **If found, please call the NH Dept. of Agriculture at (603) 271-2561**.



Oviposition Site

Egg (Rutgers University)

Sap flow from injury



Larval damage (Rutgers Univ.)

Adult feeding damage on leaf

3/8" diameter exit hole

Photos by Douglas Cygan, Chris Rallis & Rutgers University

DO NOT MOVE FIREWOOD

WHAT YOU CAN DO

There are many things that you, as an individual, can do to help control the spread of invasive species and preserve native flora and fauna:

- Minimize impacts to natural vegetation, soils, and drainage.
- Learn how to identify invasive plants and know how to tell them apart from native species.
- Control invasives on your property by following recommended practices.
- When landscaping, ask your local garden center or contact your County Extension Service about alternative plantings.
- Become active in local or regional initiatives to control invasives.
- After working in an area with invasive species remove any soil, or propagules that may have adhered to clothing, shoes, vehicle tires, etc.

CONTROL METHODS

Mechanical: Mechanical control involves hand pulling, digging, cultivation, mowing, cutting or utilizing some type of physical barrier such as a tarpaulin, mulch, wood chips, etc. This method is most effective when populations of unwanted species are low.

Cultural: Cultural control is the manipulation of a plant community to prevent the introduction or spread of an unwanted species. This can be accomplished by modifying the growing environment such as the soil, available light or moisture, or planting trees or shrubs that can outcompete the invasive species.

Chemical: Chemical control involves the use of an approved herbicide to manage a targeted species. The application method must be chosen to avoid damage to beneficial or native species. The applicator must adhere to all State and Federal pesticide regulations and in many cases be licensed by the state. For more information, contact the NH Department of Agriculture's Pesticide Control Division at 603-271-3550 or www.agriculture.nh.gov.

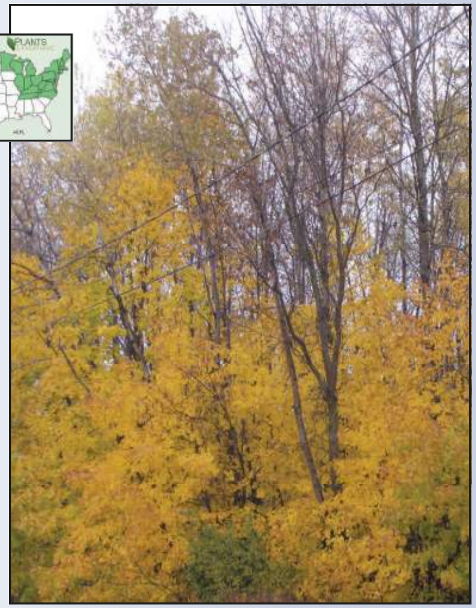
Biological: Biological control is the use of native or introduced beneficial organisms to naturally reduce populations of unwanted species. Most biological controls are found to be self-sustaining and host specific.

Pulling Digging Cutting-Hand tools Herbiciding Mowing Cutting-Saws Biocontrols

Acer platanoides - Norway Maple

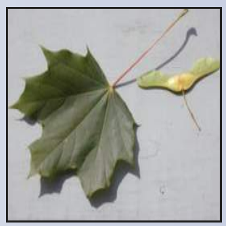
Family: Aceraceae
Native to: Europe


Norway Maple—*Acer platanoides*


Norway Maple (in yellow) Invasion in Franklin, NH

Description: Large deciduous tree 60' high by 40' wide. **Bark:** Grayish and somewhat furrowed. **Twigs:** Smooth, olive-brown. **Buds:** Terminal, imbricate, rounded, smooth, greenish-red. **Leaves:** Opposite, 4-7" wide, 5-lobed, dark green to dark red above, lustrous below. **Flowers:** Greenish-yellow, April. **Fruit:** Horizontal samara. **Zone:** 3-7. **Habitat:** Moist, well drained soils, full sun to partial shade. **Spread:** Seeds spread by wind and water. **Comments:** Leaf stalks exude milky white sap. Fast growing, buds break earlier than most native species. Naturalizes in woodlands where it can outcompete native species. **Controls:** Pull or dig seedlings/saplings. Cut large trees and prune suckers when they sprout. Herbicide: foliar spray, cut-stem, bark banding, or slash bark with ax and apply to wounds.


Milky white sap-leaf petiole


Leaf with winged seed


Terminal buds rounded


Flowers greenish-yellow


Bark is grayish & furrowed


Leaves turn yellow in Fall

Photos by Douglas Cygan

Agrilus planipennis - Emerald Ash Borer

Family: Buprestidae
Native to: Asia

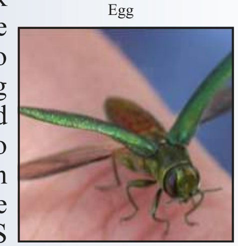
Emerald Ash Borer—*Agrilus planipennis*

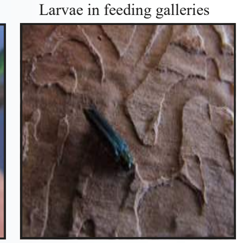

Dead standing Ash trees (Canadian Forest Service)

Emerald Ash Borers (EAB) are small invasive wood boring beetles that attack all species of ash trees (*Fraxinus spp.*). Native to East Asia, it is suspected that they were accidentally introduced to North America in infested wood packing material. The adults are 3/8" to ½" in length by 1/16" in width. Their bodies have a dark metallic green appearance. Adults emerge from a D-shaped exit hole from late May to mid-July and live for 3-6 weeks, during which time they feed on ash foliage, and fly 1-mile or so in search of a mate and to lay eggs. Females will lay 60-90 eggs in the crevices of ash tree bark. Larvae emerging from the eggs create distinctive S-shaped feeding galleries within the cambium which is directly beneath the bark. These feeding galleries can girdle the tree and result in tree death. <u>Movement of EAB into new uninfested areas is principally through transportation of firewood.</u> **If found, please contact the NH Dept. of Agriculture at (603) 271-2561.**


Egg


Larvae in feeding galleries


Adult with wings spread


Feeding galleries in cambium


D-shaped exit hole


EAB Purple prism trap

Photos by Douglas Cygan & Chris Rallis

Adelges tsugae - Hemlock Wooly Adelgid

Family: Adelgidae
Native to: Asia

Hemlock Wooly Adelgid—*Adelges tsugae* Nests

Hemlock trees dead from Adelgid (www.earthportal.org)

Hemlock Wooly Adelgid (*Adelges tsugae*) (HWA) is a serious pest to all North American hemlock trees (*Tsuga spp.*). It is native to Japan & China and was first found in the Pacific Northwest in the 1920's. By the 1950's it had reached the east coast and now infects hemlock trees from Georgia to Maine. It spreads by movement of nursery stock, wind and animals. These insects are extremely small averaging about $^1/_8$" in length with piercing-sucking mouth parts similar in appearance to aphids. All adults are females with each producing 50-300 eggs. To protect themselves & their eggs they produce a white-waxy covering. Adults insert their piercing mouth parts into the stem at the base of the needles. Trees die from needle loss & lack of nutrition. **If found, please call the NH Dept. of Agriculture at (603) 271-2561**.

Adult female laying eggs

Egg mass in protective nest

Eggs & crawlers (Chris Rallis)

Heavily infested branch

Crawlers (Chris Rallis)

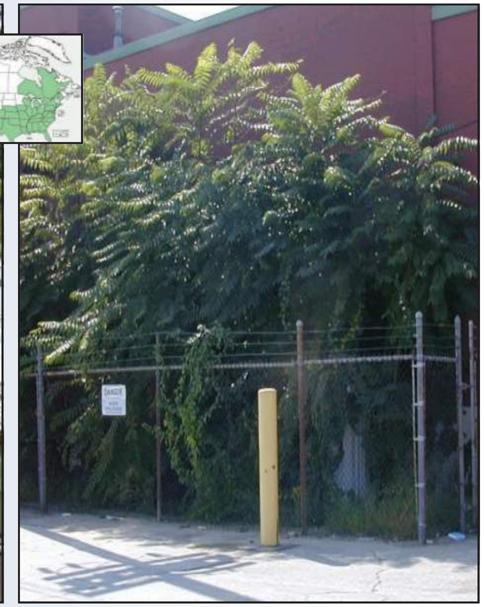
Crawler leaving nest (Chris Rallis)

Photos by Douglas Cygan & Chris Rallis

Ailanthus altissima - Tree of Heaven

Family: Simaroubaceae
Native to: China

Tree of Heaven—*Ailanthus altissima*



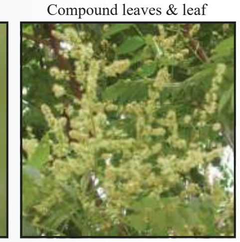
Tree of Heaven invasion

Description: Deciduous tree up to 60' tall by 40' wide. **Bark:** Grayish, slightly furrowed. **Twigs:**Reddish-brown. **Leaves:** Compound, 18-24" long with 13 -25 leaflets arranged alternately on stem, lanceolate, 3-5" long with 2-4 teeth near base. **Flowers:** Panicles, 8-16" long, yellowish-green, mid-June. **Fruit:** Samara. **Zone:** 4-8. **Habitat:** Highly adaptable and pollution tolerant, full sun to partial shade. **Spread:** Seeds are wind dispersed. **Comments:** Very fast growing, dense canopy shades out native species. **Controls:** Remove seedlings and saplings by hand. Larger trees can be mechanically removed or cut. To prevent suckering, if trees are cut, apply herbicide to cut portion of stump.

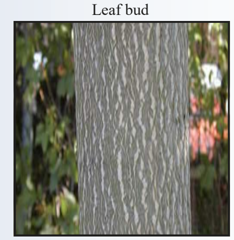
Leaf scar on stem

Compound leaves & leaf

Leaf bud



Flowers yellowish-green



Bark grayish & furrowed

Winged seed cluster

Photos by Douglas Cygan

Alliaria petiolata - Garlic Mustard

Family: Cruciferae
Native to: Europe

Garlic Mustard—*Alliaria petiolata*

Woodland invasion (photo by Cornell University)

Description: Cool season biennial, 2nd year plants flower and reach 2-$3^{1}/_{2}$' tall. **Leaves:** Triangular, coarsely toothed, heart-shaped. **Flowers:** Umbel, small, 4-petals, white, April-May. **Fruit:** Pods, seeds turn black when mature. **Zone:** 4-8. **Habitat:** Prefers moist shaded flood-plains, forests and roadsides, adaptable to most soil and light conditions. **Spread:** Seeds spread by water and wildlife. **Comments:** Plants spread quickly into natural areas leading to competition and displacement of native species. **Controls:** Small populations can be hand pulled while large populations can be continuously cut back to prevent flowering and seed production. Herbicide treatments are also effective.

Basal rosette

Leaf

Flower buds

Flowers 4-petaled, white

Stems

Seed pods

Photos by Douglas Cygan

Rosa multiflora - Multiflora Rose

Family: Rosaceae
Native to: Japan & Korea

Multiflora Rose-*Rosa multiflora*

Multiflora Rose invasion, Canterbury, NH

Description: Hardy shrub / climber reaching up to 15' or more in height and 10' in width. **Stems:** Long and arching, forming dense clumps, thorns may or may not be present. **Leaves:** Alternately arranged, compound with 7-9 leaflets and having feather margins at base. **Flowers:** Clusters of white or pink, June to July. **Fruit:** Rose hips turn red in fall. **Zone:** 3-8. **Habitat:** Prefers moist, well drained soils, full sun. **Spread**: Fruits with seeds are dispersed by birds. **Comments:** Very aggressive, leading to competition and displacement of native species. **Controls:** Hand or mechanical removal, cutting, or herbicide application.

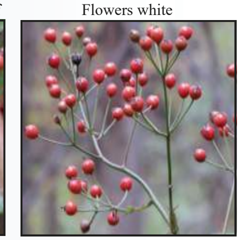
Twig/stem bark

Leaves

Feathery margin at base of leaf

Flowers white

Fall color



Fruit is called a hip

Photos by Douglas Cygan

Rhamnus cathartica - Common Buckthorn

Family: Rhamnaceae
Native to: Eurasia

Description: Deciduous shrub or small tree measuring 20' by 15'. **Bark:** Grayish to brown with raised lenticels. **Stems:** Cinnamon colored with terminal spine. **Leaves:** Alternate, simple and broadly ovate with toothed margins. **Flowers:** Inconspicuous, 4-petaled, greenish-yellow, mid-June. **Fruit:** Fleshy, 1/4" diameter turning black in the fall. **Zone:** 3-7. **Habitat:** Adapts to most conditions including pH, heavy shade to full sun. **Spread:** Seeds are bird dispersed. **Comments: Highly:** Aggressive, fast growing, outcompetes native species. **Controls:** Remove seedlings and saplings by hand. Larger trees can be cut or plants can be treated with an herbicide.

Photos courtesy of John M. Randall/The Nature Conservancy

Rhamnus frangula - Glossy Buckthorn

Family: Rhamnaceae
Native to: Japan

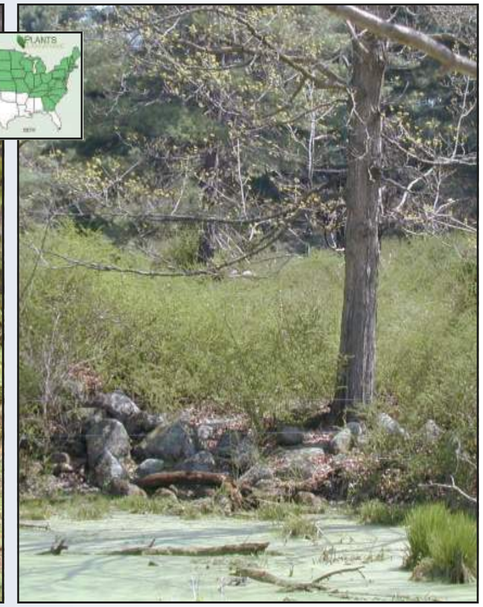
Description: Tall deciduous shrub up to 20' in height by 15' wide, **Bark:** Grayish with whitish lenticels. **Twigs:** Reddish-brown. **Leaves:** Ovate, 4-5" long by 3-4" wide, arranged alternate or whorled on stem. **Flowers:** Small, greenish-white, mid-June. **Fruit:** Fleshy, turning black in the fall. **Zone:** 2-7. **Habitat:** Highly adaptable and pollution tolerant, full sun to partial shade. **Spread:** Seeds are bird dispersed. **Comments:** Very fast growing, dense canopy shades out native species. **Controls:** Remove seedlings and saplings by hand. Larger trees can be cut or herbicide may be used.

Photos by Douglas Cygan

Berberis thunbergii - Japanese Barberry

Family: Berberidaceae
Native to: Japan

Japanese Barberry-*Berberis thunbergii*

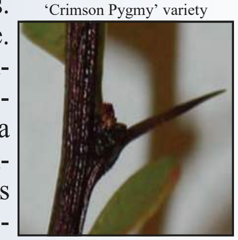


Japanese Barberry invasion, Antrim, NH

Description: Deciduous shrub, 2-4$^1/_2$' tall. **Leaves:** Ovate, simple, entire. Color varies depending on variety. **Flowers:** Small yellowish, bloom in May in clusters of 2-4. **Fruit:** Drupe, turning red in summer. **Zone:** 4-8. **Habitat:** Prefers well drained soils in semi shade and often occurring in forests, roadsides, and open fields. **Spread:** Seeds are dispersed by wildlife. **Comments:** Forms dense thickets in natural environments where it becomes established, resulting in impacts to native flora and fauna. **Controls:** Remove small immature plants by hand. Dig larger plants with a garden spade or remove mechanically. Cut stems at base or control with herbicide treatment.

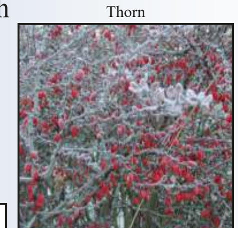
'Crimson Pygmy' variety

Leaves



Thorn

Flowers yellowish



Frost covered Barberry

Fruit is a fleshy drupe

Photos by Douglas Cygan

Berberis vulgaris - European Barberry

Family: Berberidaceae
Native to: China


European Barberry-*Berberis vulgaris*

Woodland invasion, Claremont, NH

Description: Shrub 3-8' in height by 3-6' in width. **Stems:** Tan bark with 3 long spines at each leaf axis. **Leaves:** Alternate, simple, $^1/_2$"-$1^1/_2$" long, bright green above, dull below. **Flowers:** Perfect, yellow, $^1/_2$" long, mid-April to May. **Fruit:** Oblong drupe turning pale red in fall. **Zone:** 4-8. **Habitat:** Prefers full sun to partial shade and open spaces to wooded areas. **Spread:** Seeds are dispersed by birds and wildlife. **Comments:** Highly adaptable to most environments and is pollution tolerant. **Controls:** Hand pull young plants. Cut or mechanically remove older larger plants or apply approved herbicides for large populations.

Thorns

Leaves

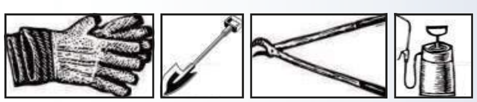
Flowers

Flowers whitish-yellow

Stems

Seed pods

Photos by Douglas Cygan

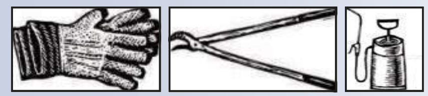


Polygonum cuspidatum - Japanese Knotweed

Family: Polygonaceae
Native to: Japan

Description: Perennial reaching 10' in height and width. Bohemian Knotweed (*Reynoutria x bohemica*) is similar. **Stems:** Greenish, hollow and jointed, similar to bamboo. **Leaves:** Alternate, broadly ovate, 3-7" long. **Flowers:** Small, whitish, forming panicles, August-September. **Seeds:** Calyx, brown, triangular. **Habitat:** Found in woodland sites, open spaces, ditches, roadsides, riverbanks. Prefers moist, well-drained soils. **Spread:** Stem & root fragments, and by seed. **Comments:** Aggressive, spreads quickly along surface waters and in right-of-ways. **Controls: Do <u>not</u> mow**, cut stems at base then smother by covering area with heavy-duty fabric/plastic, herbicides also recommended.

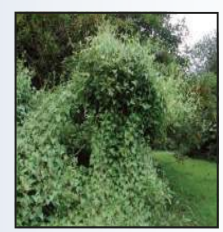

Photos by Douglas Cygan



Polygonum perfoliatum - Mile-a-Minute Vine

Family: Polygonaceae
Native to: Asia

Description: Very fast growing herbaceous perennial vine growing to 25' in height. **Stems:** Greenish with stiff barbs used for support. **Leaves:** Alternate, triangular in shape with clasping bract at the base, 1-3" long. **Flowers:** Racemes, inconspicuous and white forming at the bract, August - October. **Seeds:** An achene within a greenish, berry-like fruit. **Habitat:** Grows in partial shade to full sun, fields, roadsides & forests. Prefers moist, well-drained soils. **Spread:** Seed spread by birds & wildlife. **Comments:** Fast growing, aggressive. **Controls:** Mowing, hand cutting or herbicide use is recommended.




Photos by Leslie J. Mehrhoff

Microstegium vimineum - Japanese Stilt Grass

Family: Poaceae
Native to: Asia

Japanese Stilt Grass—*Microstegium vimineum*

Japanese Stilt Grass woodland invasion

Description: Weak-stemmed annual grass, reaching 2-4' tall. **Leaves:** Lanceolate, tapered at both ends, 2-3" long with silvery stripe of reflective hairs down the midrib. **Flowers:** Racemes occur at the ends of the stalk itself, late August. **Fruit:** Achenes develop in late fall. **Zone:** 5-11. **Habitat:** Occurs along riverbanks, floodplains, forests and roadsides, adaptable to most soil and light conditions. **Spread:** Seeds spread by water, wildlife & humans. **Comments:** Plants spread quickly into natural areas leading to competition and displacement of native species. **Controls:** Small populations can be hand pulled while large populations can be continuously cut back to prevent flowering and seed production. Herbicide treatments are also effective.

Early development

Root (UMASS Extension)

Leaf with silvery reflective hairs along midrib

Fall-leaves turn purplish

Seed-Achene

Photos courtesy of Leslie J. Mehrhoff/UCONN-IPANE and UMASS Extension

Celastrus orbiculatus - Oriental Bittersweet

Family: Celastraceae
Native to: Japan, China

Oriental Bittersweet-*Celastrus orbiculatus*

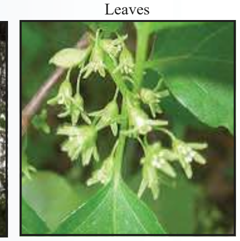
Oriental Bittersweet invasion, Concord, NH

Description: Deciduous vine reaching heights of 40-60'. **Bark:** Tannish, furrowed. **Leaves:** Alternate, ovate, bluntly toothed, 3-4" long by 2/3's as wide, tapered at the base. **Flowers:** Small, greenish, blooming in spring. **Fruit:** Yellow dehiscent capsule surrounding an orange-red aril. *Fruits occur in the axils of the stems whereas native bittersweet (Celastrus scandens) fruits at the ends.* **Zone:** 4-8. **Habitat:** Disturbed edges, roadsides, fields, forests and along rivers and streams. **Spread:** Birds and humans. **Comments:** Very aggressive, climbs up and over trees and smothers them. Do not buy wreaths made of these vines. **Controls:** Difficult to manage. Cutting, pulling, or recommended herbicide use applied to foliage, bark, or cut-stump.

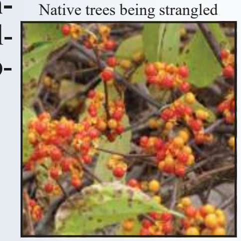
Looking up into canopy

Leaves

Native trees being strangled



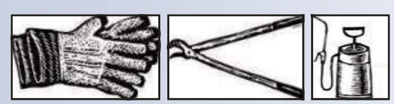
Flowers yellowish-white



Mature Orange-yellow fruit

Fruit is a fleshy capsule

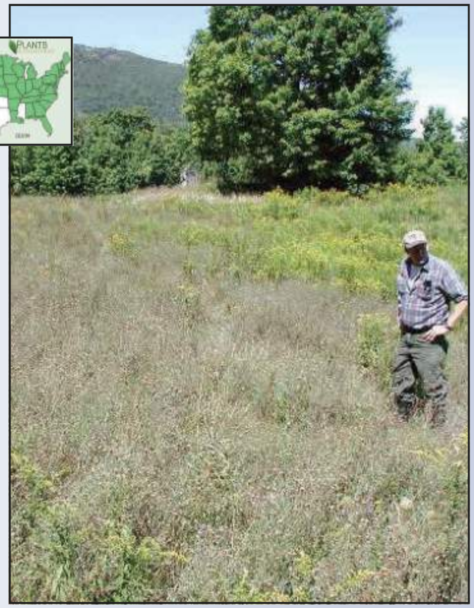
Photos by Douglas Cygan



Centaurea maculosa - Spotted Knapweed

Family: Compositae
Native to: Eurasia

Spotted Knapweed—*Centaurea maculosa*



Invasion (photo by Leslie Mehrhoff)

Description: Tall erect herbaceous perennial living 3-5 years. **Leaves:** Alternate, divided, Pale green, 1-3" long. **Flowers:** Aster-like, terminal, purple, July-August. **Fruit:** Each plant produces thousands of brownish seeds per year. **Zone:** 3-10. **Habitat:** Invades dry sunny roadsides, fields and waste places. Its large taproot allows it to survive harsh winters and draught **Spread:** Seeds spread by wind and wildlife. **Comments:** Plants spread quickly into natural meadows and fields leading to competition and displacement of native species. Roots excrete a toxin killing off other plants. **Controls:** Small populations can be hand pulled while large populations can be continuously cut back to prevent flowering and seed production. Herbicide treatments are also effective.

Basal rosette

Leaf

Seed head

Flowers—Aster like

Stems

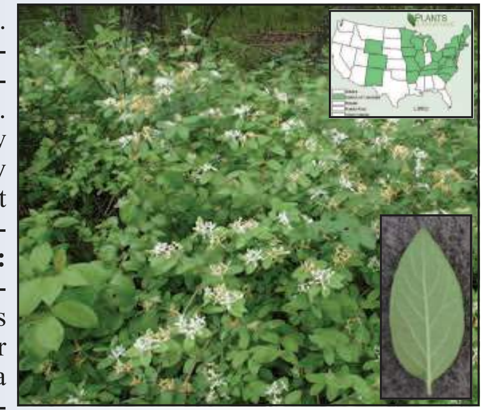
Seeds

Photos by Leslie Mehrhoff & Douglas Cygan

Lonicera morrowii - Morrow's Honeysuckle

Family: Caprifoliaceae
Native to: Japan

Description: Shrub reaching 6-8' tall. **Stems:** Smooth, glabrous, Tannish, hollow. **Leaves:** Ovate, simple, entire, opposite, pubescent beneath, 1-2$^{1}/_{2}$" long. **Flowers:** Tubular, white, turning yellow with age, May to June. **Fruits:** Berry turning red. **Zone:** 3 . **Habitat:** Moist to wet shaded floodplains, forests, roadsides, fields, waste places. **Spread:** Seeds are dispersed by wildlife and humans. **Comments:** Rapidly invades sites, forming a dense vegetative layer that outcompetes native flora and fauna species. **Controls:** Hand control is effective for small plants, while mechanical removal and repetitive cutting also work well. Herbicide treatment is better for areas with greater infestations.



Photos by Douglas Cygan & Leaf Photo by Leslie J. Mehrhoff

Lonicera tatarica - Tatarian Honeysuckle

Family: Caprifoliaceae
Native to: Eurasia

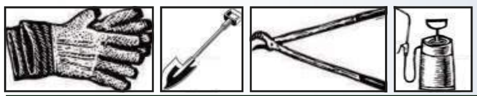
Description: Upright deciduous shrub reaching 6-15' tall. **Stems:** Smooth, glabrous, tan, hollow. **Leaves:** Ovate, smooth, bluish-green, opposite, 1-2$^{1}/_{2}$" long. **Flowers:** Tubular, pink or white, April to May. **Fruit:** Berry with two seeds, turning red in fall. **Zone:** 3. **Habitat:** Under story species in woodland sites, also invades open spaces. Thrives in moist soils. **Spread:** Seeds dispersed by wildlife and humans. **Comments:** Rapidly invades forests, fields, roadsides and floodplains. Outcompetes native species. **Controls:** Hand control is effective for small plants while mechanical removal, cutting and chemical applications are better for larger stands.

Photos by Leslie J. Mehrhoff & Berry Photo by Douglas Cygan

Lonicera x bella - Showy Bush Honeysuckle

Family: Caprifoliaceae
Native to: Eurasia

Description: Shrub reaching 20' in height and width. **Stems:** Greenish to tan with corky wings. **Leaves:** Oppositely arranged, simple and elliptic, 1-3" long by half as wide, light green. **Flowers:** Yellow, white or pink, May to early June. **Fruit:** Fleshy red, forming in pairs in leaf axis. **Zone:** 4. **Habitat:** Prefers dry upland soils, full sun to heavy shade, pH adaptable. **Spread:** Seeds are dispersed by birds. **Comments:** *L. x bella* is a cross between *L. tatarica* & *L. morrowii*. Spreads into natural areas forming dense stands, which displace native species. **Controls**: Hand or mechanical removal, continuous cutting, girdling, and herbicide treatment.

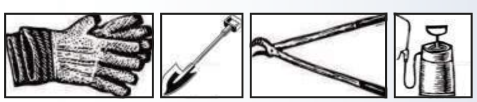


Photos courtesy of Leslie J. Mehrhoff/UCONN-IPANE

Lonicera japonica - Japanese Honeysuckle

Family: Caprifoliaceae
Native to: Eurasia

Description: Climbing vine. **Stems:** Reddish-brown, pubescent. **Leaves:** Opposite and not clasping the stem as opposed to the three native honeysuckle vines that do clasp the stem, oblong, $1^1/_2$ -2" long, rounded at base. **Flowers:** Tubular, white or yellow, fragrant, May to mid-July. **Fruit:** Berry, smooth, blackish to slightly purplish. **Zone:** 4-8. **Habitat:** Prefers moist soils and full sun to partial shade. **Spread:** Seeds spread by wildlife. **Comments:** Vines grow quickly, covering native vegetation, resulting in loss of habitat. **Controls:** hand or mechanical removal, cutting, girdling, chemical.



Photos courtesy of John M. Randall/The Nature Conservancy
& Leaf Photo by Leslie J. Mehrhoff

Cynanchum nigrum - Black Swallow-Wort

Family: Asclepiadaceae
Native to: Eurasia

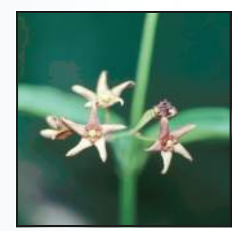
Description: Perennial herbaceous vine that grows to 6'. **Leaves:** Opposite, lanceolate, dark glossy green, simple with a smooth edge, 2-4" long. **Flowers:** Small $^1/_4$", 5-petaled, purplish, from June to September. **Seed:** Seeds are similar to those of milkweed. **Zone:** 4 to 8. **Habitat:** It prefers full to partial sun. **Spread:** Seeds dispersed by wind. **Comments:** Invades roadsides, fields, disturbed sites, meadows, and woodlands, outcompeting native species. **Controls:** Hand pull young plants. Remove and destroy seed pods before they open. Apply herbicides as a foliar spray during the growing season. If plants are to be dug, use a spade and make sure that all root fragments are removed.

Photos by Douglas Cygan

Cynanchum rossicum - Pale Swallow-Wort

Family: Asclepiadaceae
Native to: China

Description: Perennial vine growing to 3-6'. Very similar to black swallow-wort with the exception of the flowers. **Leaves:** Opposite, lanceolate, 2-4" long. **Flowers:** Magenta, $^3/_8$", flowering from June to September. **Seed:** Seeds are similar to milkweed. **Zone:** 4 to 8. **Habitat:** It prefers full to partial sun. **Spread:** Seeds dispersed by wind. **Comments:** Invades roadsides, fields, disturbed sites, meadows and woodlands. **Controls:** Hand pull young plants. Remove and destroy seed pods before they open. Apply herbicides as a foliar spray. Dig using a spade to ensure all root fragments are removed.



Photos courtesy of John M. Randall/The Nature Conservancy

*Elaeagnus umbellata - A*utumn Olive

Family: Elaeagnaceae
Native to: Asia

Autumn Olive—Elaeagnus umbellata

Autumn Olive invasion in Concord, NH

Description: Weedy deciduous shrub measuring 20' by 20'. **Bark:** Silvery-gray and smooth with whitish lenticels. **Stems:** Cinnamon-brown. **Leaves:** Elliptical, 2-3" long, glossy, green above and silverish below. **Flowers:** Solitary, whitish, 4-petaled, mid-June. **Fruit:** Drupe. **Zone:** 3-8. **Habitat:** Naturalizes in open spaces exposed to full sun. **Spread:** Seeds dispersed by birds and wildlife. **Comments:** Very aggressive. Outcompetes and displaces native species. **Controls:** Remove seedlings and saplings by hand. Larger shrubs can be mechanically removed, or cut and apply herbicide to stump.

Silvery-gray Bark

Leaves

Terminal bud

Flowers whitish

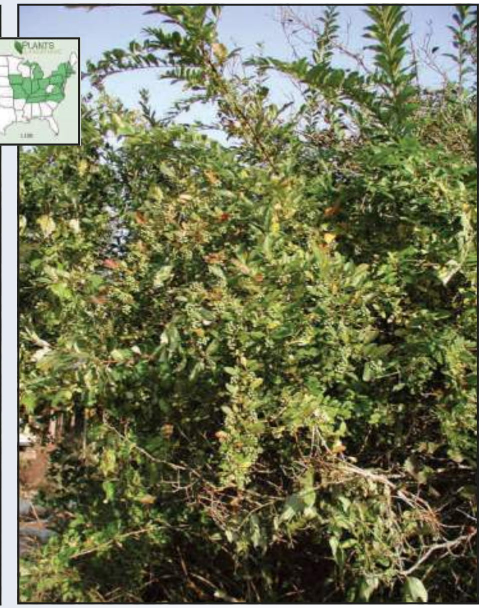
Fall Color

Fruit is a fleshy drupe

Photos by Douglas Cygan

Ligustrum obtusifolium - Blunt-leaved Privet

Family: Oleaceae
Native to: Europe



Blunt-leaved Privet-*Ligustrum obtusifolium*

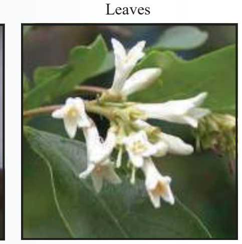
Blunt-leaved Privet (Photo: Leslie J. Mehrhoff)

Description: Shrub reaching 12' tall by 10-12' wide. **Stems:** Greenish, smooth. **Leaves:** Opposite, simple and elliptic, 1-3" long by half as wide, blunt tipped, light green. **Flowers:** Small white panicles, May to early June. **Fruit:** Small blackish drupe. **Zone:** 4-7. **Habitat:** Prefers dry upland soils, full sun to heavy shade, pH adaptable. **Spread:** Seeds dispersed by birds. **Comments**: Becomes established in natural areas leading to competition and displacement of native species. **Controls:** Hand or mechanical removal, cutting, herbicide applications such as foliar or cut-stem.

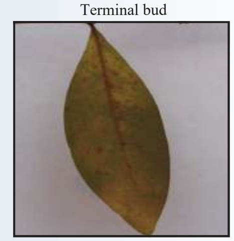
Twig/stem bark

Leaves

Terminal bud



Flowers white



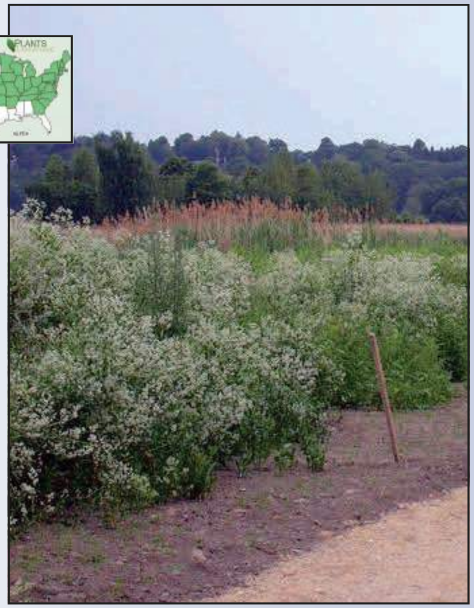
Fall color

Fruit is a dark drupe

Photos by Douglas Cygan & Leslie Mehrhoff

Lepidium latifolium - Perennial Pepperweed

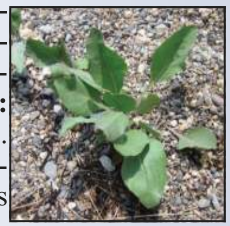
Family: Cruciferae
Native to: Eurasia



Perennial Pepperweed—*Lepidium latifolium*

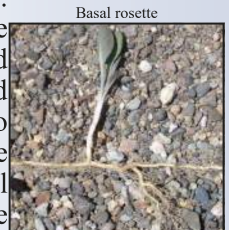
Perennial Pepperweed invasion Seacoast area, NH

Description: Long lived perennial growing 2-4' tall. **Leaves:** Alternate, lanceolate with serrated edge. **Flowers:** Terminal, tightly clustered, white, July. **Fruit:** Silicle, rounded, flattish, hairy $^{1}/_{16}$" long. **Zone:** 4-8. **Habitat:** Prefers wet, brackish soils such as coastal tidal marshes and ditches, wetlands, and floodplains. **Spread:** Seeds and creeping rhizome fragments spread by water, wildlife and humans. **Comments:** Plants spread quickly into natural areas leading to competition and displacement of native coastal wetland species. **Controls:** Small populations can be hand pulled while large populations can be continuously cut back to prevent flowering and seed production. Herbicide treatments are also effective.



Basal rosette

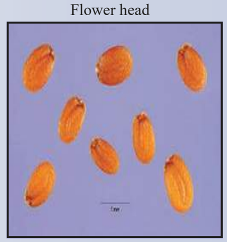
Leaf



Rhizome root with shoot

Flower head

Persistent stems

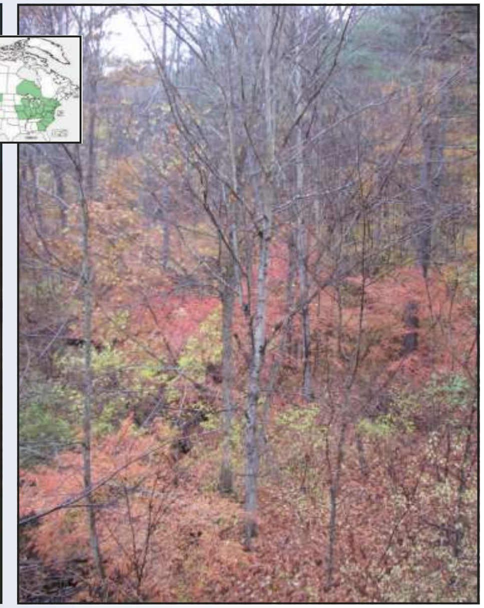


Seeds (photo—USDA)

Photos by Kevin Lucey & Jennifer Forman

Euonymus alatus - Burning Bush

Family: Celastraceae
Native to: Asia



Burning Bush-*Euonymus alatus*

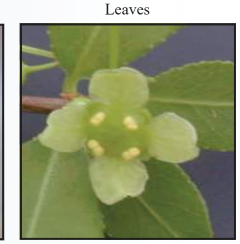
Burning Bush invasion, Boscawen, NH

Description: Deciduous shrub reaching 20' in height and width. **Stems:** Greenish with corky wings. **Leaves:** Oppositely arranged, simple and elliptic, 1-3" long by half as wide, light green. **Flowers:** Inconspicuous greenish-yellow, May to June. **Fruit:** Fleshy green capsule turning red in fall. **Zone:** 3 to 8. **Habitat:** Prefers dry upland soils, full sun to heavy shade, pH adaptable. **Spread**: Seeds are dispersed by birds and wildlife. **Comments:** Outcompetes and displaces native species. **Controls:** Hand remove seedlings and saplings. Use a spade or shovel to dig out larger plants. Large populations may be controlled with herbicide use.

Corky-winged bark

Leaves

Terminal buds



Flowers yellowish-white

Fall color

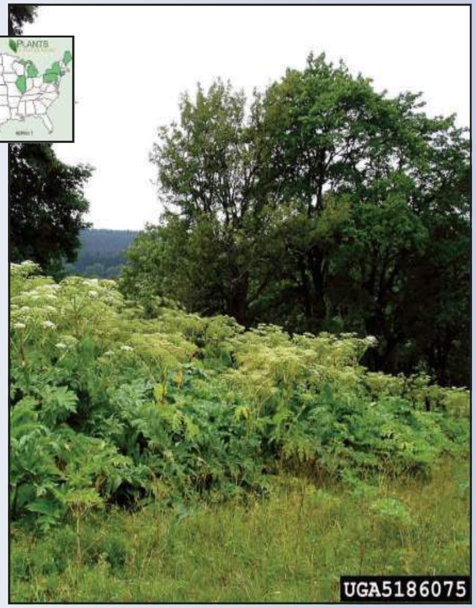
Fruit is a fleshy capsule

Photos by Douglas Cygan

Heracleum mantegazzianum - Giant Hogweed

Family: Apiaceae
Native to: China

Giant Hogweed-*Heracleum mantegazzianum*



Open field invasion (Photo-Bugwood.org)

Description: Biennial growing to 15' tall. **Stems:** Greenish with purple splotches, 2-4" diameter with coarse hairs, hollow. **Leaves:** Large, compound, deeply incised, 3-5' wide, hairy on underside. **Flowers:** White inflorescence, 1-2' in diameter, May-June. **Seeds:** Flattened, $^{3}/_{8}$" long, ovate with 4 brown resin canals. **Zone:** 3-8. **Habitat:** Found in wet areas, roadsides, gardens, open spaces, full sun to partial shade. **Spread:** Seeds dispersed by water, wildlife and humans. **Comments:** The clear, watery sap is phototoxic to human skin, causing severe blistering and burns. Spreads readily and displaces native species. **Controls:** Remove plants by digging up tap root. Herbicide can also be used as a foliar treatment.

Purple spotted, hairy stem

Leaf

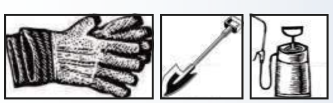
130-150 Floral rays

Flowers whitish umbel

Persistent dead stalks

Seeds with resinous veins

Photos by Douglas Cygan



Hesperis matronalis - Dame's Rocket

Family: Brassicaceae
Native to: Eurasia

Dame's Rocket—*Hesperis matronalis*

Dame's Rocket invasion

Description: Cool season biennial, 2nd year plants flower and reach 30" tall. **Leaves:** Alternately arranged and lanceolate in shape with toothed margins. **Flowers:** Terminal racemes, 4-petals, purplish, early to mid spring. **Fruit:** Pods, seeds turn brown when mature. **Zone:** 4-8. **Habitat:** Prefers partial sun, moist to mesic conditions such as floodplains, forests and roadsides, adaptable to full sun with adequate moisture. **Spread:** Seeds spread by water and wildlife. **Comments:** Plants spread quickly into natural areas leading to competition and displacement of native species. **Controls:** Small populations can be hand pulled while large populations can be continuously cut back to prevent flowering and seed production. Herbicide treatments are also effective.

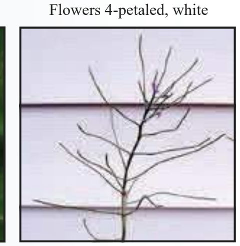
Basal rosette

Leaf

Flower buds

Flowers 4-petaled, white

Stems



Seed pods

Photos by Leslie Mehroff

SECTION 5 STORMWATER INSPECTION & MAINTENANCE LOG

STORMWATER INSPECTION MAINTENANCE LOG

2255 Lafayette Road- Portsmouth, NH

General Information			
Project Name	Retail Motor Fuel Outlet	**Location**	Portsmouth, NH
Date of Inspection		**Start/ End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			

	Site Specific BMP's	Maintenance Interval
1	Street Sweeping	1 year
2	Deep Sump Catch Basins	6 months
3	Outlet Apron/Weirs	1 Year
4	Oil/Water Separator	6 months
5	Hydrodynamic Separators (First Defense Unit)	1 Year (See separate maintenance log for First Defense Unit)
6	Underground Detention System	6 months

STORMWATER INSPECTION MAINTENANCE LOG

2255 Lafayette Road - Portsmouth, NH

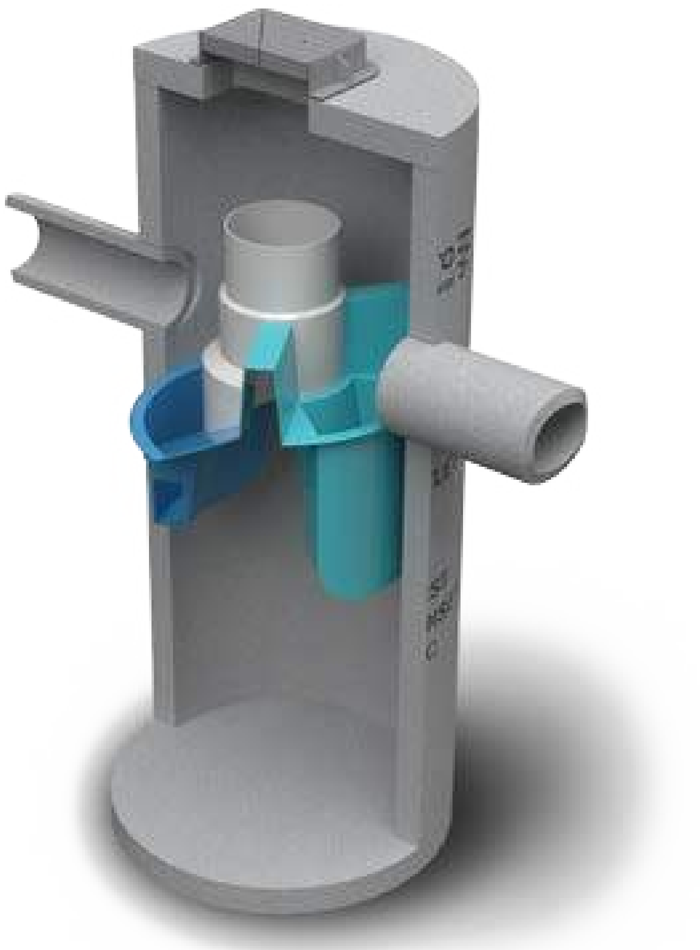
BMP Description	Corrective Action Required?	Notes
Street Sweeping		
Evidence of debris accumulation	☐ Yes ☐ No	
Evidence of oil grease	☐ Yes ☐ No	
Other (specify)	☐ Yes ☐ No	
Deep Sump Catch Basins		
Grates clear of debris	☐ Yes ☐ No	
Inlet and outlet clear of debris	☐ Yes ☐ No	
Evidence of oil grease	☐ Yes ☐ No	
Observance of accumulated sediment	☐ Yes ☐ No	Sediment Depth =
Evidence of structural deterioration	☐ Yes ☐ No	
Evidence of flow bypassing facility	☐ Yes ☐ No	
Other (specify)	☐ Yes ☐ No	
Outlet Aprons/Weirs		
Inlet/ inflow pipe clear of debris	☐ Yes ☐ No	
Overflow spillway clear of debris	☐ Yes ☐ No	
Evidence of rilling or gullying	☐ Yes ☐ No	
Tree growth	☐ Yes ☐ No	
Other (specify)	☐ Yes ☐ No	
Oil / Water Seperator		
Grates clear of debris	☐ Yes ☐ No	
Inlet and outlet clear of debris	☐ Yes ☐ No	
Observance of accumulated sediment	☐ Yes ☐ No	Sediment Depth =
Evidense of oil grease	☐ Yes ☐ No	
Evidence of flow bypassing facility	☐ Yes ☐ No	
Hydrodynamic Separator (First Defense Unit)		
See separate maintenance log for First Defense Unit		
Underground Detention System		
Inlet and outlet clear of debris	☐ Yes ☐ No	
Pipe bottom clear of debris	☐ Yes ☐ No	
Observance of accumulated sediment	☐ Yes ☐ No	Sediment Depth =
Bottom dewaters within 72 hrs. of a storm event	☐ Yes ☐ No	
Outlet control structure clear of debris	☐ Yes ☐ No	
Other (specify)		

NOTE: Photos shall be provided with each inspection log and shall be sufficiently labeled to identify photo location.

SECTION 6 DE-ICING LOG

Deicing Log

Date Applied	Type of Deicing Material	Amount Applied



Operation and Maintenance Manual

First Defense® and First Defense® High Capacity

Vortex Separator for Stormwater Treatment

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro Maintenance Services

Hydro International has been engineering stormwater treatment systems for over 30 years. We understand the mechanics of removing pollutants from stormwater and how to keep systems running at an optimal level.

Nobody Knows our Systems Better than we do

Avoid Service Negligence

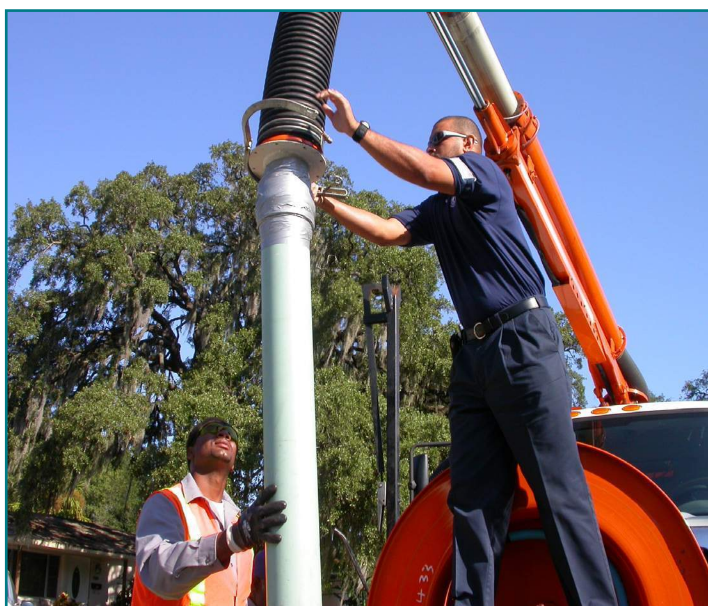
Sanitation services providers not intimately familiar with stormwater treatment systems are at risk of the following:

- Inadvertently breaking parts or failing to clean/replace system components appropriately.
- Charging you for more frequent maintenance because they lacked the tools to service your system properly in the first place.
- Billing you for replacement parts that might have been covered under your Hydro warranty plan
- Charging for maintenance that may not yet have been required.

Leave the Dirty Work to us

Trash, sediment and polluted water is stored inside treatment systems until they are removed by our team with a vactor truck. Sometimes teams must physically enter the system chambers in order to prepare the system for maintenance and install any replacement parts. Services include but are not limited to:

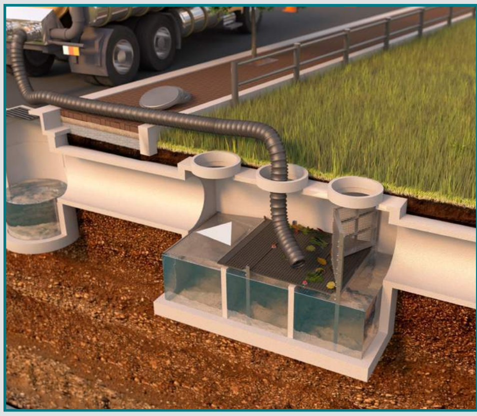
- Solids removal
- Removal of liquid pollutants
- Replacement media installation (when applicable)



Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Better Tools, Better Results

Not all vactor trucks are created equal. Appropriate tools and suction power are needed to service stormwater systems appropriately. Companies who don't specialize in stormwater treatment won't have the tools to properly clean systems or install new parts.

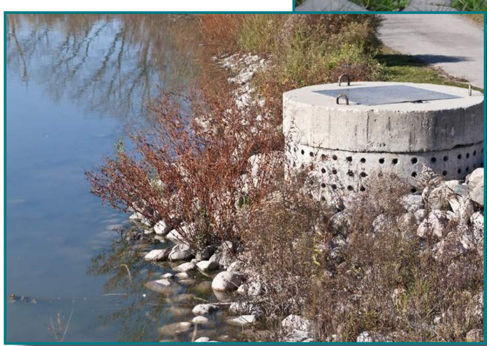


Service Warranty

Make sure you're not paying for service that is covered under your warranty plan. Only Hydro International's service teams can identify tune-ups that should be on us, not you.

Treatment Systems Serviced by Hydro:

- Stormwwater filters
- Stormwater separators
- Baffle boxes
- Biofilters/biorention systems
- Storage structures
- Catch basins
- Stormwater ponds
- Permeable pavement



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I. First Defense® by Hydro International

Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations (refer to *Section II. Model Sizes & Configurations*, page 4) to accommodate a wide range of pipe sizes, peak flows and depth constraints.

Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Proven to prevent pollutant washout at up to 500% of its treatment flow
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

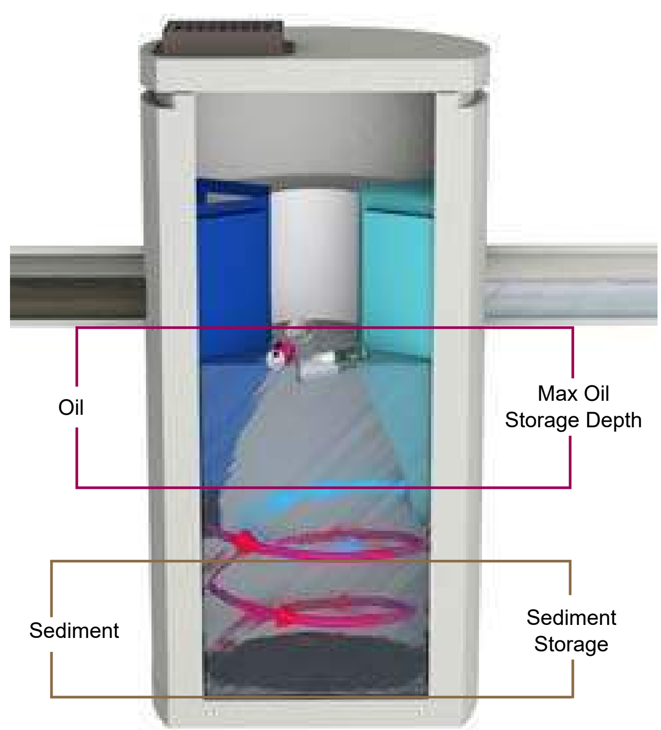


Fig.1 Pollutant storage volumes in the First Defense®.

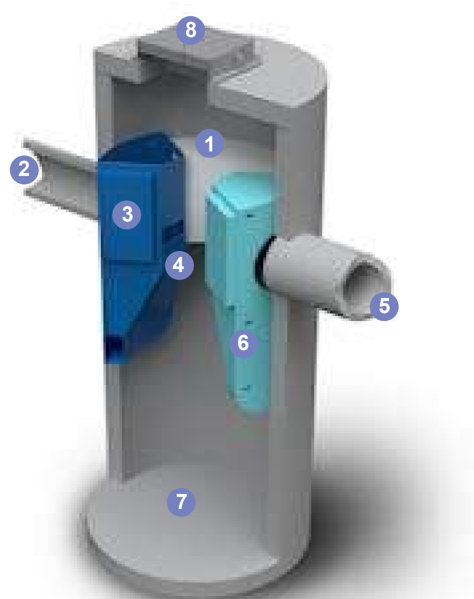
II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components of the First Defense®-4HC and First Defense®-6HC have modified geometries as to allow greater design flexibility needed to accommodate various site constraints.

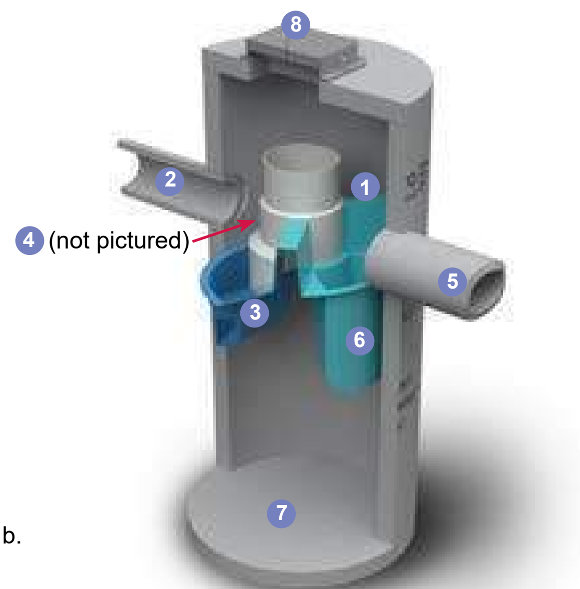
All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2a - 2b). First Defense® model parameters and design criteria are shown in Table 1.

First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**



a.



b.

Fig.2a) First Defense®-4 and First Defense®-6; b) First Defense®-4HC and First Defense®-6HC, with higher capacity dual internal bypass and larger maximum pipe diameter.

First Defense® High Capacity Model Number	Diameter	Typical TSS Treatment Flow Rates		Peak Online Flow Rate	Maximum Pipe Diameter[1]	Oil Storage Capacity	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
		NJDEP Certified	106µm						
	(ft / m)	(cfs / L/s)	(cfs / L/s)	(cfs / L/s)	(in / mm)	(gal / L)	(yd³ / m³)	(ft / m)	(ft / m)
FD-3HC	3 / 0.9	0.84 / 23.7	1.60 / 45.3	15 / 424	18 / 457	125 / 473	0.4 / 0.3	2.0 - 3.5 / 0.6 - 1.0	3.71 / 1.13
FD-4HC	4 / 1.2	1.50 / 42.4	1.88 / 50.9	18 / 510	24 / 600	191 / 723	0.7 / 0.5	2.3 - 3.9 / 0.7 - 1.2	4.97 / 1.5
FD-5HC	5 / 1.5	2.34 / 66.2	2.94 / 82.1	20 / 566	24 / 609	300 / 1135	1.1 / .84	2.5 - 4.5 / 0.7 - 1.3	5.19 / 1.5
FD-6HC	6 / 1.8	3.38 / 95.7	4.73 / 133.9	32 / 906	30 / 750	496 / 1,878	1.6 / 1.2	3.0 - 5.1 / 0.9 - 1.6	5.97 / 1.8
FD-8HC	8 / 2.4	6.00 / 169.9	7.52 / 212.9	50 / 1,415	48 / 1219	1120 / 4239	2.8 / 2.1	3.0 - 6.0 / 0.9 -1.8	7.40 / 2.2

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]Minimum distance for models depends on pipe diameter.

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
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III. Maintenance

Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil. Maximum pollutant storage capacities are provided in Table 1.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Maintenance Equipment Considerations

The internal components of the First Defense®-HC have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

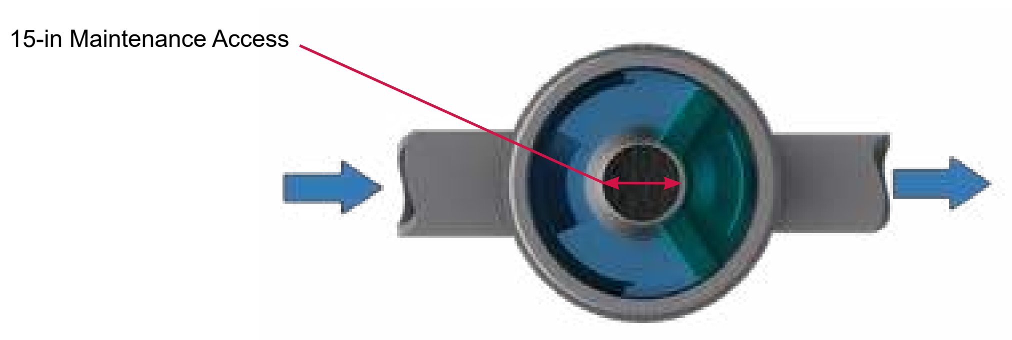

Fig.3 The central opening to the sump of the First Defense®-HC is 15 inches in diameter.

Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for a 6-ft First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.5).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose and skimmer pole to be lowered to the base of the sump.

Scheduling

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

Fig.4 Floatables are removed with a vactor hose (First Defense model FD-4, shown).

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (flexible hose recommended)
- First Defense® Maintenance Log

Floatables and sediment Clean Out Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.

4. Remove oil and floatables stored on the surface of the water with the vactor hose (Fig.5) or with the skimmer or net (not pictured).

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).

6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor (Fig.5).

7. Retract the vactor hose from the vessel.

8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.

9. Securely replace the grate or lid.

Fig.5 Sediment is removed with a vactor hose (First Defense model FD-4, shown).

Maintenance at a Glance

Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.	

First Defense® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL SIZE (CIRCLE ONE): FD-4 FD-4HC FD-6 FD-6HC

INLET (CIRCLE ALL THAT APPLY): GRATED INLET (CATCH BASIN) INLET PIPE (FLOW THROUGH)

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

First Defense® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth Measured	Volume of Sediment Removed	Site Activity and Comments

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Stormwater Solutions

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Portland, ME 04102

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Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

Turning Water Around...®

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: Granite State Convenience Date Submitted: February 14, 2022

Application # (in City's online permitting): LU-22-13

Site Address: 2255 Lafayette Road Map: 272 Lot: 3

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**		N/A
☒	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**		
☒	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	Sheet 2 & 4	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	Sheet 2 & 4	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Sheet 2 & 4	N/A
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	Sheet 2	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Title Sheet	N/A
☒	List of reference plans. **(2.5.3.1H)**	Sheet 2	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Sheet 4	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Sheet 2	N/A
☒	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	Sheet 2	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**		N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**		N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**		N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Sheet 2	
☒	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Sheet 4, Arch Elevations	
☒	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Sheet 4	
☒	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Sheet 4	
☒	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	Sheet 6	
☒	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	Sheet 6	

☒	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Sheet 6	
☒	**8. Solid Waste Facilities: (2.5.4.3H)**	Sheet 4	
	• The size, type and location of solid waste facilities.		
☒	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Sheet 5	
☒	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	Lighting Plan	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	Lighting Plan	
☒	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	Sheet 8	
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Sheet 5	
☒	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	Sheet 4	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	Sheet 2 & 4	
☐ N/A	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).		
☐ N/A	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐ N/A	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**		
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Sheet 5	
☐ N/A	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**		
☒	Stormwater Management and Erosion Control Plan. **(7.4)**	Sheet 7	
☒	Inspection and Maintenance Plan **(7.6.5)**	Stormwater Management Report	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Sheet 4 notes 17, 18, 23	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Stormwater Management Report	
☒	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**		

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	Sheet 4 note 23	
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**		N/A
☐ N/A	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**		
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**		N/A

Applicant's Signature: Nicole Dunn **Date:** 2/14/22

February 15, 2022

Peter Britz, Environmental Planner/ Sustainability Coordinator
Portsmouth Planning Department
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

RE: TAC Submission for Utility Design Review
325 Little Harbor Road, Portsmouth, NH – Tax Map 205 Lot 2

Dear Peter:

On behalf of our client, ADL 325 Little Harbor Road Trust, please find the recently updated utility design as part of the Wetland Conditional Use Permit (CUP) submission relative to the above-referenced project. The following materials have been submitted online and hard copies are also included in this submission:

- **Site Development Plans entitled "Site Development Plans, Tax Map 205 Lot 2, Lady Isle Site Renovations, 325 Little Harbor Road, Portsmouth New Hampshire", prepared by TFMoran, Inc., dated September 29, 2021, revised February 15, 2022 (1 copy at 22"x34"and 1 copy at 11"x17").**

Although TAC review is not required for Single Family Residential Homes, we agreed to submit to TAC, at your request, to provide further details of the proposed utilities. These revised plans detail the utility runs to and from the island and their connection with utilities in Little Harbor Road and Sagamore Avenue.

<u>Project Description</u>

The project includes the replacement of a single-family residence on 325 Little Harbor Road. The existing property is approximately 12.3 acres and currently contains a 2-story house, guest cottage, carriage house, barn, horse barn, horse paddock, and shed. The site is an island within the Rural Zoning District and surrounded by the Piscataqua River.

Renovations are proposed within a previously disturbed area and will replace existing structures. The remaining half of the island, which is wooded, will be maintained or enhanced with natural vegetation. No adverse impact on the wetland functional values of the site or surrounding properties are proposed. A Land Management Plan has been developed for the entire island to remove existing invasive species and restore the area, including the Buffer, with native species that will benefit the ecosystem around the Piscataqua River and enhance the existing ecology.

The project does not propose any permanent wetland impacts, only Tidal Wetland Buffer Impacts on the previously developed uplands of the island. Temporary impacts are proposed within the Tidal

Piscataqua River to remove existing utilities, install utilities suspended beneath the bridge, and for temporary bridge reinforcement to allow construction vehicles to access the site.

The purpose of this proposal is to demolish the existing house, carriage house, and paddock and to construct a 2-story single-family home, garage, pool, pool cabana, playground, and utility connections via Little Harbor Road; renovate an existing barn and guest cottage; and replace an existing shed and barn with a new shed and barn. Associated improvements include and are not limited to access, grading, stormwater management systems, utilities, and landscaping. The project proposes a 6,227 SF, main, housing footprint and total 34,740 SF of impervious area (6.8%) within the entire upland island area. There is approximately 178,813 SF (53%) of impact area proposed within the Tidal Wetland Buffer Zone of the island. Below is a table comparing existing and proposed coverages within both the Tidal Wetland Buffer Zone and Total Upland Area, within the lot area upon the island only:

TABLE 1 COVERAGE AREA (SF)				
	Existing		Proposed	
	Tidal Wetland Buffer Zone	Total Upland Area	Tidal Wetland Buffer Zone	Total Upland Area
Impervious Area	26,496 (7.9%)	44,096 (8.7%)	25,217 (7.5%)	34,740 (6.8%)
Permeable Area	1,381 (0.4%)	8,029 (1.6%)	8,144 (2.4%)	13,807 (2.7%)
Grass/Landscape Area	176,413 (52.3%)	245,920 (48.4%)	160,439 (47.6%)	236,401 (46.6%)
Natural Woodland Area	132,911 (39.4%)	209,400 (41.3%)	143,401 (42.5%)	222,497 (43.9%)
Total Area	337,201	507,445	337,201	507,445
Impact Area			178,813 (53.0%)	289,531 (57.1%)

Half of the development is proposed within the 100’ Tidal Wetland Buffer. The remaining half of the island is proposed to be left in its natural woodland state. Most of the disturbed area is in order to convert areas from pavement and grass, using mechanized equipment, to open space, such as landscape areas or drought-tolerant lawn, with the goal of establishing more vegetation. Alterations of woodland will occur only to the extent necessary to achieve construction goals.

The existing wetland buffer contains 132,911 SF (40%) of natural woodland area and will be enhanced to provide a total of 143,401 SF, accounting for 43% of the Buffer Zone. There will also be maintained landscaping added within the Buffer Zone, contributing 42,528 SF of landscape area that may have previously been grass or impervious surface, accounting for 13% of the Buffer Zone. All proposed landscape areas propose native vegetation within the Buffer. The combined woodland, lawn, landscaped, and permeable area accounts for 92% of the Buffer Area, permitting approximately 8% of the Buffer as impervious, primarily from roofs and the sea wall. The project includes a net removal of 1,279 SF of impervious surfaces, resulting in a net loss of impervious surface within a jurisdictional wetland buffer.

<u>Utility Design</u>

The existing utilities serving the residential island include water from Little Harbor Road via the Belle Isle Road, septic system, and overhead electric from Pleasant Point to the island. The intent is to remove the existing water, which is undersized for the proposed improvements and freezes likely due to improper insulation and burial depth. The septic system will be decommissioned and removed. Pending coordination with Eversource, the overhead electric utilities may be removed via Pleasant Point and replaced with underground.

All proposed utilities will be located along the existing driveway easement of Belle Isle Road, including 4" C900 PVC water service, 1.25" SDR 11 HDPE force main, 2" gas service, and underground electric/communication in 3" SCH40 PVC conduits. The utilities will conform to Portsmouth DPW and state standards. Proposed gas and sewer main utilities are available in Sagamore Avenue, and these services will be installed in either side of the grassed shoulder of Little Harbor Road. All impacts within the right of ways will be restored to original conditions.

Review and Approval

The project has been reviewed by the Conservation Commission, however, will be returning to Conservation Commission for review since recent utility-related revisions to the original submission in September 2021 and subsequent approval in November 2021. The project will also be reviewed by Planning Board, NHDES Wetlands Bureau, NHDES Shoreland Program, NHDES Alteration of Terrain (AoT) Bureau, NH Fish & Game, NHDES Wastewater Bureau, and EPA's NOI for Construction General Permit.

We appreciate your consideration of these matters and look forward to presenting this project to at the March 1st TAC Meeting.

Respectfully,
TFMoran, Inc.

Cory Colwell

Corey Colwell, LLC
Division Manager | Vice President

Hannah Giovannucci

Hannah Giovannucci, PE
Civil Project Manager

JCC/heg

cc: Anthony Dilorenzo, ADL 325 Little Harbor Road Trust (via e-mail)
Jim Youngblood, Youngblood Builders (via jim@youngbloodbuilders.com)
Bernie Lee, Severino Construction (via blee@severinotrucking.com)
Mickey Benson, GPSchafer (via mbenson@gpschafer.com)
Matthew Cunningham, MCLD (via matthew@matthew-cunningham.com)
Stephen Roberts, Hoefle, Phoenix, Gormley & Roberts (via sroberts@hpgrlaw.com)

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD
PORTSMOUTH, NEW HAMPSHIRE

SEPTEMBER 29, 2021
REVISED FEBRUARY 15, 2022

GENERAL INFORMATION

OWNER/APPLICANT
MAP 205 LOT 2
ADL 325 LITTLE HARBOR ROAD TRUST
C/O STEPHEN H ROBERTS, ESQ
TRUSTEE
127 PARROT AVENUE
PORTSMOUTH, NH 03801

RESOURCE LIST

PLANNING/ZONING DEPARTMENT
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
603-610-7296
BEVERLY ZENDT,
PLANNING DIRECTOR

BUILDING DEPARTMENT
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
603-610-7261
ROBERT MARSILIA,
CHIEF BUILDING INSPECTOR

PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
603-427-1530
PETER RICE,
DIRECTOR OF PUBLIC WORKS

POLICE DEPARTMENT
3 JUNKINS AVENUE
PORTSMOUTH, NH 03801
603-427-1500
MARK NEWPORT, INTERIM CHIEF

FIRE DEPARTMENT
170 COURT STREET
PORTSMOUTH, NH 03801
603-427-1515
TODD GERMAIN, CHIEF

ASSOCIATED PROFESSIONALS

ARCHITECT
G.P. SCHAFER ARCHITECT, PLLC
19 UNION SQUARE WEST, 4TH FLOOR
NEW YORK CITY, NY 10003
212-965-1355
MICKEY BENSON, PRINCIPAL

ECOLOGICAL SERVICES
PARTERRE ECOLOGICAL
67 SMITH PLACE, UNIT 12A
CAMBRIDGE, MA 02138
617-482-2230
RYAN CORRIGAN, MSED, MCH

LANDSCAPE ARCHITECT
MATTHEW CUNNINGHAM LANDSCAPE
ARCHITECTURE DESIGN LLC
411 MAIN STREET
STONEHAM, MA 02180
617-905-2246
MATTHEW CUNNINGHAM, PRINCIPAL

WETLAND SCIENTIST
MARC JACOBS,
CERTIFIED WETLAND SCIENTIST
PO BOX 417
GREENLAND, NH
603-686-5097

WILDLIFE ASSESSOR
GZA GEOENVIRONMENTAL, INC.
5 COMMERCE PARK NORTH
BEDFORD, NH 03110
603-232-8739
TRACY TARR, ASSOCIATE PRINCIPAL

INDEX OF SHEETS

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
PORTSMOUTH PLANNING BOARD & CONSERVATION COMMISSION WETLAND CUP	-	-	-
PORTSMOUTH PLANNING BOARD CUP FOR DADU	LU-21-220	1/27/2022	1/27/2023
NH FISH & GAME	-	-	-
NHDES WETLANDS & PERMIT AMENDMENT	2014-02662	2/15/2018 -	2/15/2023
NHDES SHORELAND & PERMIT AMENDMENT	2017-02665	2/26/2018 -	2/26/2023
NHDES ALTERATION OF TERRAIN	-	-	-
NHDES SEWER	-	-	-
EPA NPDES ENOI CGP & SWPPP	-	-	-

HORIZONTAL SCALE 1"=500'
500 250 0 500

NEW HAMPSHIRE FISH AND GAME AOT PERMIT CONDITIONS RELATED TO THREATENED AND ENDANGERED SPECIES

1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: NHB21-3751, LADY ISLE SITE RENOVATIONS, WILDLIFE SPECIES OBSERVATION. PHOTOGRAPHS SHALL BE PROVIDED FOR VERIFICATION AS FEASIBLE; AND
2. THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.
3. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, UTILIZED FOR, BUT NOT LIMITED TO SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, AND INLET PROTECTION, CHECK DAMS, SEDIMENT TRAPS, AND SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH.
4. PRIOR TO CONSTRUCTION, MARSH ELDER SHOULD BE FLAGGED AND SURROUNDED WITH ORANGE CONSTRUCTION FENCING WITH YELLOW CAUTION TAPE FOR PROTECTION OF THE SPECIES. DO NOT REMOVE, MOW, TRAMPLE, COVER, OR OTHERWISE HARM THE PLANT. REMOVE FLAGS AND CONSTRUCTION FENCING AND CAUTION TAPE AFTER CONSTRUCTION IS COMPLETED.

MARSH ELDER

NOTES

1. SHRUBBY PERENNIAL HERB 2 TO 4 FT TALL, WITH THICKISH, OPPOSITE LEAVES AND SMALL GREENISH-WHITE CAPITULA, EACH WITH 5-6 MINUTE TUBULAR-SHAPED FLOWERS
2. EACH CLUMP CONSISTS OF FROM 10 TO 100 OR MORE STEMS FROM A SINGLE WOODY BASE
3. OCCURS NEAR THE HIGH TIDE LINE IN A FEW SMALL, SCATTERED POPULATIONS.

APPROVED BY THE CITY OF PORTSMOUTH PLANNING BOARD

ON ______________________
BOARD MEMBER ______________________ *AND*
BOARD MEMBER ______________________

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2
COVER
LADY ISLE SITE RENOVATIONS
325 LITTLE HARBOR ROAD, PORTSMOUTH, NH
OWNED BY & PREPARED FOR
ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE HANNAH E. GIOVANNUCCI No.15699 LICENSED PROFESSIONAL ENGINEER 2/15/2022

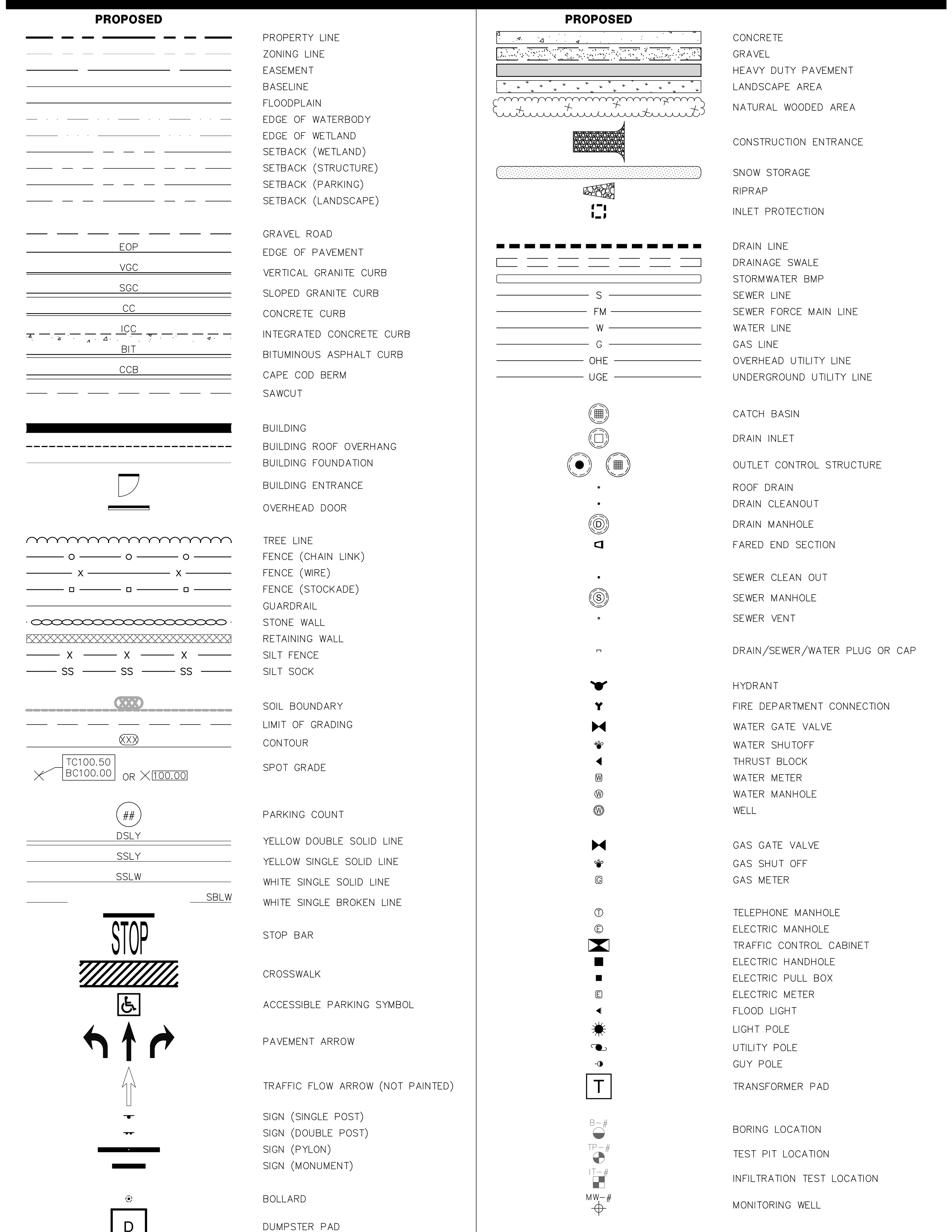
REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	HEG	FB	-	SHEET
47099.01	CK	JCC	CADFILE	47099-01_COVER_MAIN	C-00

THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.

LEGEND



ABBREVIATIONS

GENERAL

ABAN	ABANDON	DIA	DIAMETER	NHFG	NH FISH & GAME
AC	ACRES	ELEV	ELEVATION	NTS	NOT TO SCALE
ADJ	ADJUST	EP	EDGE OF PAVEMENT	NWA	NATURAL WOODLAND AREA
APPROX	APPROXIMATE	EXIST	EXISTING	OC	ON CENTER
BC	BOTTOM OF CURB	FFE	FINISHED FLOOR ELEVATION	PAVE	PAVEMENT
BIT	BITUMINOUS	FND	FOUNDATION	PERF	PERFORATED
BK/PG	BOOK & PAGE	HP	HIGH POINT	PROP	PROPOSED
BLDG	BUILDING	INV	INVERT ELEVATION	R	RADIUS
BMP	BEST MANAGEMENT PRACTICE	IT	INFILTRATION TEST	R&D	REMOVE AND DISPOSE
BS	BOTTOM OF SLOPE	L	LENGTH	R&R	REMOVE AND RESET
BW	BOTTOM OF WALL	LF	LINEAR FEET	REM	REMOVE
CONC	CONCRETE	LSA	LANDSCAPE AREA	RET	RETAIN
COORD	COORDINATE	MAX	MAXIMUM	RIM	RIM ELEVATION
CUP	CONDITIONAL USE PERMIT	MIN	MINIMUM	ROW	RIGHT OF WAY
DADU	DETACHED ACCESSORY DWELLING UNIT	N/F	NOW OR FORMERLY	S	SLOPE
				SF	SQUARE FEET
				SW	SIDEWALK
				TBM	TEMPORARY BENCHMARK
				TC	TOP OF CURB
				TP	TEST PIT
				TW	TOP OF WALL
				TYP	TYPICAL
				UG	UNDERGROUND
				W/	WITH

UTILITIES

CA/TV	CABLE/TELEVISION
CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DI	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
FM	FORCE MAIN
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
MJ	MECHANICAL JOINT
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

GENERAL NOTES

1. THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
2. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
3. THE SITE LAYOUT PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
4. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
5. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF PORTSMOUTH, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE CITY AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE CITY, COUNTY, AND/OR STATE AGENCY.
6. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
7. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
8. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
9. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
10. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
11. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
12. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
13. TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
14. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
15. ALL DEMOLITION AND RENOVATION OF STRUCTURES SHALL COMPLY WITH ENV-A 1800 FOR ASBESTOS MANAGEMENT AND CONTROL.
16. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
17. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
18. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
19. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
    B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
    C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
    E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT BETWEEN THE HOURS IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE CITY OF PORTSMOUTH.
    F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    L. VERIFY LAYOUT OF PROPOSED BUILDING FOUNDATIONS WITH ARCHITECT AND THAT PROPOSED FOUNDATION MEETS PROPERTY LINE AND WETLAND SETBACKS PRIOR TO COMMENCING ANY FOUNDATION CONSTRUCTION.
    M. PROVIDE AN AS-BUILT PLAN AT THE COMPLETION OF THE PROJECT TO THE PLANNING DIRECTOR AND PER CITY REGULATIONS.
    N. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.

GENERAL NOTES (CONTINUED)

19. CONTRACTOR'S GENERAL RESPONSIBILITIES (CONTINUED):
    O. THIS PROJECT IS SUBJECT TO THE AOT PERMIT LISTED ON THE COVER SHEET. THE CONTRACTOR SHALL CONFORM TO ALL CONDITIONS OF THE PERMIT AND PROVIDE THE FOLLOWING DOCUMENTATION TO OWNER AND ENGINEER:
       1) ADVANCE WRITTEN NOTICE AT LEAST ONE WEEK PRIOR TO COMMENCING ANY WORK UNDER THE PERMIT.
       2) IF ANY UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS WERE INSTALLED, FOR EACH SUCH SYSTEM:
          A) REPRESENTATIVE PHOTOGRAPHS OF THE SYSTEM AFTER COMPLETION BUT PRIOR TO BACKFILLING; AND
          B) A LETTER SIGNED BY A QUALIFIED ENGINEER WHO OBSERVED THE SYSTEM PRIOR TO BACKFILLING, THAT THE SYSTEM CONFORMS TO THE APPROVED PLANS AND SPECIFICATIONS.
       3) UPON COMPLETION OF CONSTRUCTION, WRITTEN CERTIFICATION THAT:
          A) ALL WORK UNDER THE PERMIT HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
          B) IF ANY DEVIATIONS FROM THE APPROVED PLANS WERE MADE, WRITTEN DESCRIPTIONS AND AS-BUILT DRAWINGS OF ALL SUCH DEVIATIONS, STAMPED BY A QUALIFIED ENGINEER, SHALL BE PROVIDED.
20. PURSUANT TO PORTSMOUTH PLANNING BOARD DADU CUP APPROVAL ON 1/27/2022, THE APPROVED DADU SHALL BE THE ONLY ACCESSORY DWELLING UNIT ON THE PROPERTY. AN AFFIDAVIT STATING THIS HAS BEEN RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

GRADING & DRAINAGE NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. THE CONTRACTOR SHALL PREPARE, MAINTAIN, AND EXECUTE A S.W.P.P.P. IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT.
3. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
5. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR INFORMATION ABOUT SOIL AND GROUNDWATER CONDITIONS. THE CONTRACTOR SHALL FOLLOW THE GEOTECHNICAL ENGINEER'S RECOMMENDED METHODS TO ADDRESS ANY SOIL AND GROUNDWATER ISSUES THAT ARE FOUND ON SITE, INCLUDING AND NOT LIMITED TO DEWATERING METHODS, PERIMETER DRAINS AND TIE INTO STORMWATER MANAGEMENT SYSTEM, ETC.
6. COORDINATE WITH GEOTECHNICAL/STRUCTURAL PLANS FOR SITE PREPARATION AND OTHER BUILDING INFORMATION.
7. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
8. COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
9. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
10. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
11. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
12. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
13. ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
14. THE FINISHED GRADE AT BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH PAVEMENT WITH A TOLERANCE OF PLUS OR MINUS 1/4".
15. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
16. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
17. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
18. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
19. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
20. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
21. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). FORCE MAINS AND FITTINGS SHALL CONFORM TO NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
10. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF PORTSMOUTH STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, SEWER LINE MUST BE CONSTRUCTED OF FORCE MAIN MATERIALS (PER ENV-WQ 704.08) FROM BUILDING OR MANHOLE TO MANHOLE, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 6' HORIZONTALLY TO THE WATER LINE.
11. THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
12. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
13. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
14. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
15. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
16. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
17. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	PRIVATE
SEWER	MUNICIPAL
WATER	MUNICIPAL
GAS	UNITIL
ELECTRIC	EVERSOURCE
TELEPHONE	COMCAST, CONSOLIDATED COMMUNICATIONS, ETC.
CABLE	COMCAST

DIG SAFE
MA ME NH RI VT
CALL 811 TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED
PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

NOTES & LEGEND

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	HEG	FB	-	
47099.01	CK	JCC	CADFILE	47099-01_NOTES-LEGEND_MAIN	C-01

Feb 15, 2022 - 2:48pm
F:\MSC Projects\47099 - Little Harbor Rd & Gosport Rd - Portsmouth\47099-01 - DiLorenzo - 325 Little Harbor Rd\Design\PRODUCTION DRAWINGS\47099-01_Notes-Legend_Main.dwg

LEGEND:

BK.PG.	BOOK/PAGE
ELEV.	ELEVATION
EP	EDGE OF PAVEMENT
FF	FINISHED FLOOR
NET	NEW ENGLAND TELEPHONE
PSNH	PUBLIC SERVICE COMPANY OF NEW ENGLAND
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
S.F.	SQUARE FEET
SL	SEPTIC LINE
UGU	UNDERGROUND UTILITIES
TBM	TEMPORARY BENCH MARK
TL	TIE LINE
444C	SOILS TYPE
	TREE LINE
OHU	OVERHEAD UTILITIES
18	EXISTING CONTOUR
	LIMIT OF SALT MARSH
UGU	UNDERGROUND UTILITIES
W	WATER LINE
	WOOD FENCE
	HIGHEST OBSERVABLE TIDE LINE
	HIGH WATER
	FLOOD ZONE LINE
	TIDAL BUFFER
	SOILS LINE
	UTILITY POLE
	DECIDUOUS TREE
	CONIFEROUS TREE
T	TRANSFORMER
	TELEPHONE PEDESTAL
E	ELECTRIC METER
EB	ELECTRIC BOX
	GUY POLE/WIRE
WSO	WATER SHUT OFF
TP-1	TEST PIT
IT-8	INFILTRATION TEST
	BRICK WALK
	PAVEMENT
	EASEMENT
	SALT MARSH

NOTES:

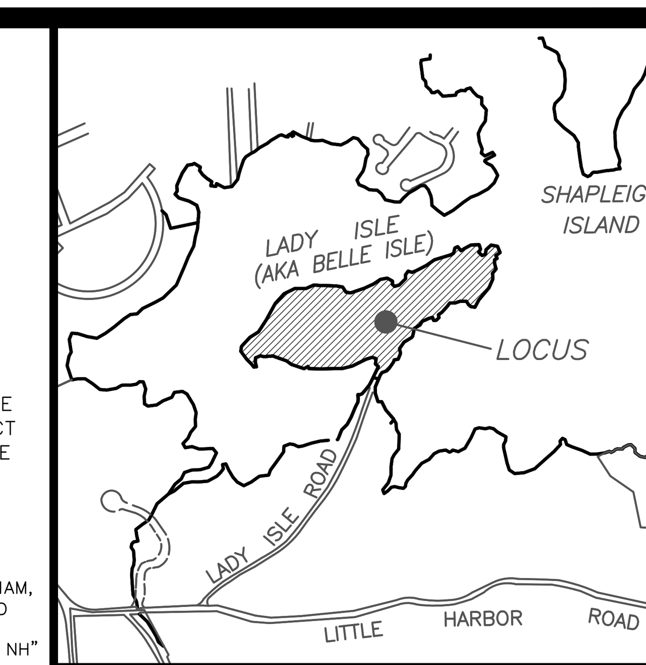
1. THE PARCEL IS LOCATED IN THE RURAL (R) ZONING DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 205 AS LOT 2.
3. THE PARCEL IS LOCATED IN FLOOD HAZARD ZONE AE (EL.8) AND ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP) FLOOD INSURANCE RATE MAP (FIRM), ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 278, VERSION NUMBER 2.3.2.1 MAP NUMBER 33015C0278F, MAP REVISED: JANUARY 29, 2021.
FLOOD ZONES DEPICTED ON THIS PLAN ESTABLISHED BY ELEVATION. THE DATUM IS NAVD88 BASED ON STATIC GPS OBSERVATIONS.
4. OWNER OF RECORD:
THE ADL 325 LITTLE HARBOR ROAD TRUST
STEPHEN H. ROBERTS ESQ., TRUSTEE
127 PARROTT AVENUE
PORTSMOUTH, NH 03801
RCRD BK.5959 PG.1244
5. ZONING REQUIREMENTS:

MINIMUM LOT AREA:	5 ACRES (PER DWELLING UNIT)
MINIMUM STREET FRONTAGE:	N/A
DEPTH:	N/A
MINIMUM YARD SETBACKS:	
FRONT:	50 FEET
SIDE:	20 FEET
REAR:	40 FEET
MAXIMUM STRUCTURE HEIGHT:	35 FEET
MAXIMUM BUILDING COVERAGE:	5%
MINIMUM OPEN SPACE:	75%

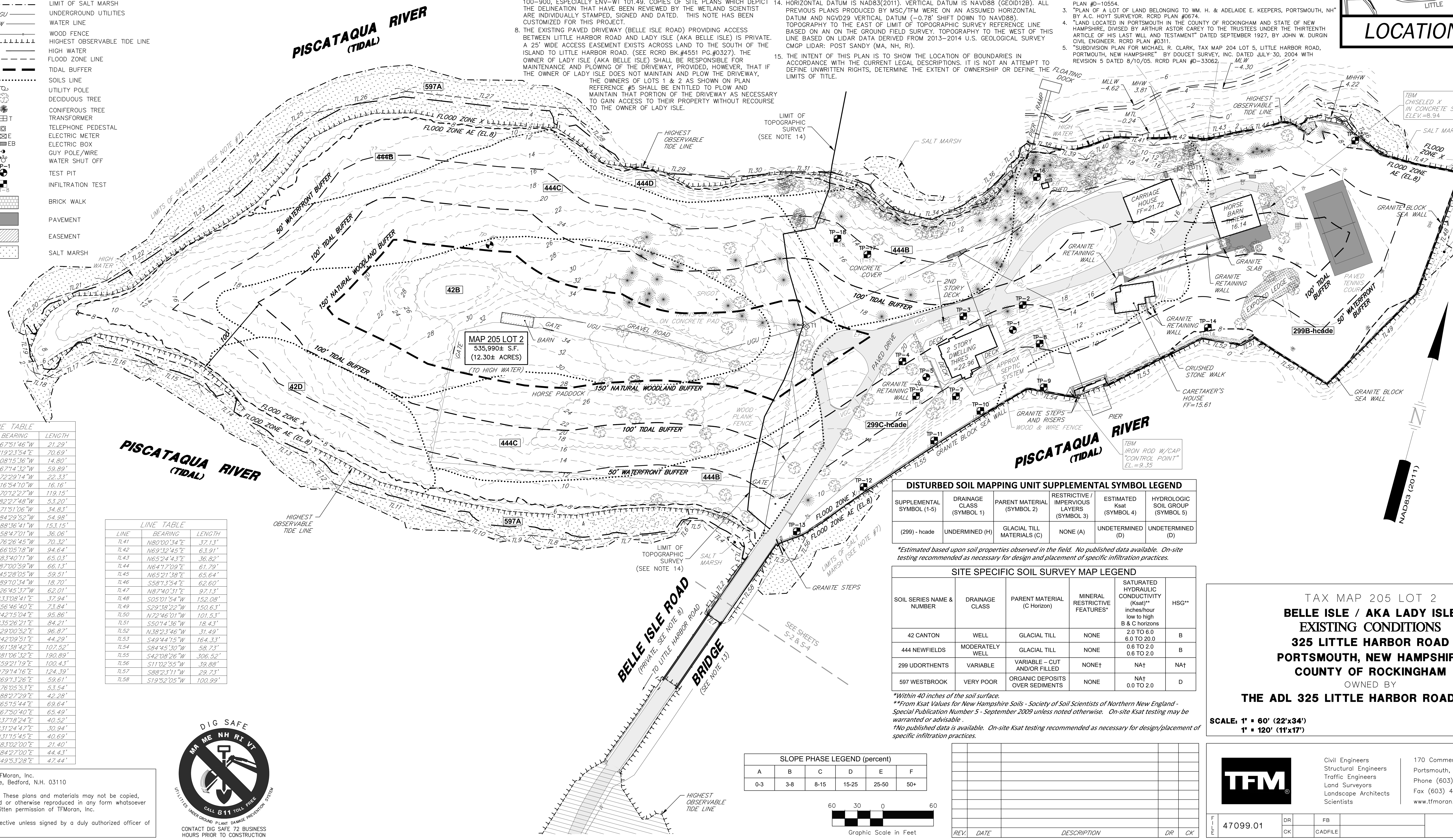
6. TOTAL PARCEL AREA:
538,229± S.F.
(12.36± ACRES)
7. HIGHEST OBSERVABLE TIDE LINE (HOTL) AND SALT MARSH NORTHERLY OF THE BRIDGE SHOWN HEREON WERE DELINEATED BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST 090, ON MAY 24, 2019, THE HIGHEST OBSERVABLE TIDE LINE (HOTL), SALT MARSH AND FRESHWATER WETLANDS SOUTHERLY OF THE BRIDGE SHOWN HEREON WERE DELINEATED BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST 090, ON NOVEMBER 9, 2021. SALT MARSH WAS DELINEATED BASED UPON THE EXTENT OF ROOTED EMERGENT SALT-TOLERANT VEGETATION OBSERVED DURING LOW TIDE. HOTL WAS DELINEATED BASED UPON THE CODE OF ADMINISTRATIVE RULES, NH DEPARTMENT OF ENVIRONMENTAL SERVICES – WETLANDS BUREAU – ENV WT 100-900, ESPECIALLY ENV-WT 101.49. COPIES OF SITE PLANS WHICH DEPICT THE DELINEATION THAT HAVE BEEN REVIEWED BY THE WETLAND SCIENTIST ARE INDIVIDUALLY STAMPED, SIGNED AND DATED. THIS NOTE HAS BEEN CUSTOMIZED FOR THIS PROJECT.
8. THE EXISTING PAVED DRIVEWAY (BELLE ISLE ROAD) PROVIDING ACCESS BETWEEN LITTLE HARBOR ROAD AND LADY ISLE (AKA BELLE ISLE) IS PRIVATE. A 25' WIDE ACCESS EASEMENT EXISTS ACROSS LAND TO THE SOUTH OF THE ISLAND TO LITTLE HARBOR ROAD. (SEE RCRD BK.#4551 PG.#0327). THE OWNER OF LADY ISLE (AKA BELLE ISLE) SHALL BE RESPONSIBLE FOR MAINTENANCE AND PLOWING OF THE DRIVEWAY, PROVIDED, HOWEVER, THAT IF THE OWNER OF LADY ISLE DOES NOT MAINTAIN AND PLOW THE DRIVEWAY, THE OWNERS OF LOTS 1 & 2 AS SHOWN ON PLAN REFERENCE #5 SHALL BE ENTITLED TO PLOW AND MAINTAIN THAT PORTION OF THE DRIVEWAY AS NECESSARY TO GAIN ACCESS TO THEIR PROPERTY WITHOUT RECOURSE TO THE OWNER OF LADY ISLE.
9. THE CONTRACTOR SHALL CONTACT "DIG SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. CALL 1-888-344-7233.
THE BEST AVAILABLE INFORMATION WAS USED TO DETERMINE THE LOCATION, SIZE AND ELEVATION OF EXISTING UTILITIES. THE EXACT SIZE AND LOCATION OF UTILITIES SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO COMMENCING CONSTRUCTION. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL COORDINATE TERMINATION OF ALL UTILITIES WITH THE APPROPRIATE UTILITY COMPANY.
10. ALL USES AND CONSTRUCTION SHALL COMPLY WITH RSA 483-B, THE SHORELAND WATER QUALITY PROTECTION ACT (SWQPA). REFERENCE IS ALSO MADE TO ARTICLE 10 SECTION 10.1016 OF THE PORTSMOUTH ZONING ORDINANCE WHICH SPECIFIES THE PERMITTED USES IN THE 100' TIDAL BUFFER SHOWN HEREON.
11. THE CURRENT AND FUTURE OWNERS OF LADY ISLE HAVE THE BENEFIT OF A 54,600 S.F. "EASEMENT AREA" AS SHOWN ON PLAN REFERENCE #5 AND DESCRIBED IN RCRD BK.#4551 PG.#0327. THE EASEMENT AREA IS LOCATED TO THE SOUTH OF THE EXISTING BRIDGE.
12. PARCEL IS ON TOWN WATER. THE CURRENT AND FUTURE OWNERS OF LADY ISLE HAVE THE BENEFIT OF A PERMANENT EASEMENT FOR THE INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT OF THE EXISTING WATER LINE RUNNING FROM LITTLE HARBOR ROAD TO AND ALONG THE 25' WIDE ACCESS EASEMENT SHOWN ON PLAN REFERENCE #5. SEE RCRD BK.#4551 PG.#0327.
13. SEE PRIVATE ROADWAY & BRIDGE MAINTENANCE AGREEMENT ON FILE WITH THE CITY OF PORTSMOUTH.
14. HORIZONTAL DATUM IS NAD83(2011). VERTICAL DATUM IS NAVD88 (GEOID12B). ALL PREVIOUS PLANS PRODUCED BY MSC/TFM WERE ON AN ASSUMED HORIZONTAL DATUM AND NGVD29 VERTICAL DATUM (-0.78' SHIFT DOWN TO NAVD88). TOPOGRAPHY TO THE EAST OF LIMIT OF TOPOGRAPHIC SURVEY REFERENCE LINE BASED ON AN ON THE GROUND FIELD SURVEY. TOPOGRAPHY TO THE WEST OF THIS LINE BASED ON LIDAR DATA DERIVED FROM 2013-2014 U.S. GEOLOGICAL SURVEY CMGP LIDAR: POST SANDY (MA, NH, RI).
15. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
16. THE PURPOSE OF THIS PLAN IS TO SHOW THE BOUNDARY LINES, TOPOGRAPHY AND CURRENT SITE FEATURES OF MAP 205 LOT 2.
17. EXISTING USE OF THE PROPERTY IS RESIDENTIAL.
18. FIELD SURVEY COMPLETED BY TCE IN APRIL 2019 USING A TOPCON DS103 AND TOPCON FC5000 DATA COLLECTOR AND UPDATED IN DECEMBER 2020, MARCH 2021 AND DECEMBER-JANUARY 2022 USING A LEICA TS-16 AND CARLSON RT-4 DATA COLLECTOR.
19. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
20. TIDE LINES SHOWN BASED ON TIDAL DATUM FOR NOAA STATION #8419870, SEAVEY ISLAND, ME. DATUM IS NAVD88.
21. IN ACCORDANCE WITH THE SCREENING REQUIRED BY THE NH NATURAL HERITAGE BUREAU (NHB), MORE PARTICULARLY, NHB REPORT NHB21-3759, TWO NEW DISTINCT POPULATIONS OF MARSH ELDER (IVA FRUTESCENS) WAS DETERMINED TO BE ON THE PROPERTY.

PLAN REFERENCES:

1. "BOUNDARY PLAN FOR BELLE ISLE PARTNERS TRUST, LITTLE HARBOR ROAD/BELLE ISLE, COUNTY OF ROCKINGHAM, PORTSMOUTH, NH." DATED MARCH 30, 1995, BY RICHARD P. MILLETTE & ASSOCIATES.
2. "SUBDIVISION OF LAND FOR J.P. GRIFFIN, OFF LITTLE HARBOR ROAD COUNTY OF ROCKINGHAM, PORTSMOUTH, NH" DATED NOVEMBER 1980, BY RICHARD P. MILLETTE & ASSOCIATES. RCRD PLAN #D-10554.
3. "PLAN OF A LOT OF LAND BELONGING TO WM. H. & ADELAIDE E. KEEPERS, PORTSMOUTH, NH" BY A.C. HOYT SURVEYOR. RCRD PLAN #0674.
4. "LAND LOCATED IN PORTSMOUTH IN THE COUNTY OF ROCKINGHAM AND STATE OF NEW HAMPSHIRE, DIVISED BY ARTHUR ASTOR CAREY TO THE TRUSTEES UNDER THE THIRTEENTH ARTICLE OF HIS LAST WILL AND TESTAMENT" DATED SEPTEMBER 1927, BY JOHN W. DURGIN CIVIL ENGINEER. RCRD PLAN #0311.
5. "SUBDIVISION PLAN FOR MICHAEL R. CLARK, TAX MAP 204 LOT 5, LITTLE HARBOR ROAD, PORTMOUTH, NEW HAMPSHIRE" BY DOUCET SURVEY, INC. DATED JULY 30, 2004 WITH REVISION 5 DATED 8/10/05. RCRD PLAN #D-33062.



LOCATION PLAN



LINE TABLE		
LINE	BEARING	LENGTH
TL1	N67°51'46"W	21.29'
TL2	N19°23'54"E	70.69'
TL3	N08°15'36"W	14.80'
TL4	N67°14'32"W	59.89'
TL5	S72°29'14"W	22.33'
TL6	S16°54'10"W	16.16'
TL7	S70°12'27"W	119.15'
TL8	S82°27'48"W	53.20'
TL9	S71°51'06"W	34.83'
TL10	N84°29'52"W	54.98'
TL11	N88°36'41"W	153.15'
TL12	N58°47'01"W	36.06'
TL13	N76°26'45"W	70.32'
TL14	N66°05'18"W	94.64'
TL15	N83°40'11"W	65.03'
TL16	S87°00'59"W	66.13'
TL17	S45°28'05"W	59.51'
TL18	S89°10'34"W	18.70'
TL19	N26°45'37"W	62.01'
TL20	N33°08'41"E	37.94'
TL21	N56°46'40"E	73.84'
TL22	N42°15'04"E	95.86'
TL23	N35°26'21"E	84.21'
TL24	N29°00'52"E	96.87'
TL25	N42°09'51"E	44.29'
TL26	N61°38'42"E	107.52'
TL27	N81°06'32"E	190.89'
TL28	S59°21'19"E	100.43'
TL29	N79°14'16"E	124.39'
TL30	N69°13'26"E	59.61'
TL31	N76°05'53"E	53.54'
TL32	S88°27'29"E	42.28'
TL33	S65°15'44"E	69.64'
TL34	N67°50'40"E	65.49'
TL35	N37°18'24"E	40.52'
TL36	N31°24'47"E	30.94'
TL37	N31°15'45"E	40.69'
TL38	N83°02'00"E	21.40'
TL39	N84°27'00"E	44.43'
TL40	N49°53'28"E	47.44'

LINE TABLE		
LINE	BEARING	LENGTH
TL41	N80°00'34"E	37.13'
TL42	N69°32'45"E	63.91'
TL43	N65°24'43"E	36.82'
TL44	N64°17'09"E	61.79'
TL45	N65°21'38"E	65.64'
TL46	S58°13'54"E	62.60'
TL47	N87°40'31"E	97.13'
TL48	S05°01'54"W	152.08'
TL49	S29°38'22"W	150.63'
TL50	N72°46'01"W	101.53'
TL51	S50°14'36"W	18.43'
TL52	N38°23'46"W	31.49'
TL53	S49°44'15"W	164.33'
TL54	S84°45'30"W	58.73'
TL55	S42°08'26"W	306.52'
TL56	S11°02'55"W	39.88'
TL57	S88°23'11"W	29.73'
TL58	S19°52'05"W	100.99'

DISTURBED SOIL MAPPING UNIT SUPPLEMENTAL SYMBOL LEGEND

SUPPLEMENTAL SYMBOL (1-5)	DRAINAGE CLASS (SYMBOL 1)	PARENT MATERIAL (SYMBOL 2)	RESTRICTIVE / IMPERVIOUS LAYERS (SYMBOL 3)	ESTIMATED Ksat (SYMBOL 4)	HYDROLOGIC SOIL GROUP (SYMBOL 5)
(299) - hcade	UNDERMINED (H)	GLACIAL TILL MATERIALS (C)	NONE (A)	UNDETERMINED (D)	UNDETERMINED (D)

**Estimated based upon soil properties observed in the field. No published data available. On-site testing recommended as necessary for design and placement of specific infiltration practices.*

SITE SPECIFIC SOIL SURVEY MAP LEGEND

SOIL SERIES NAME & NUMBER	DRAINAGE CLASS	PARENT MATERIAL (C Horizon)	MINERAL RESTRICTIVE FEATURES*	SATURATED HYDRAULIC CONDUCTIVITY (Ksat)** inches/hour low to high B & C horizons	HSG**
42 CANTON	WELL	GLACIAL TILL	NONE	2.0 TO 6.0 6.0 TO 20.0	B
444 NEWFIELDS	MODERATELY WELL	GLACIAL TILL	NONE	0.6 TO 2.0 0.6 TO 2.0	B
299 UDORTHENTS	VARIABLE	VARIABLE – CUT AND/OR FILLED	NONE†	NA†	NA†
597 WESTBROOK	VERY POOR	ORGANIC DEPOSITS OVER SEDIMENTS	NONE	NA† 0.0 TO 2.0	D

**Within 40 inches of the soil surface.*
***From Ksat Values for New Hampshire Soils - Society of Soil Scientists of Northern New England - Special Publication Number 5 - September 2009 unless noted otherwise. On-site Ksat testing may be warranted or advisable .*
†No published data is available. On-site Ksat testing recommended as necessary for design/placement of specific infiltration practices.

SLOPE PHASE LEGEND (percent)					
A	B	C	D	E	F
0-3	3-8	8-15	15-25	25-50	50+

60 30 0 60
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP 205 LOT 2
BELLE ISLE / AKA LADY ISLE
EXISTING CONDITIONS
325 LITTLE HARBOR ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
THE ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: 1" = 60' (22"x34")
1" = 120' (11"x17")

FEBRUARY 1, 2022

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
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Fax (603) 431-0910
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FILE	47099.01	DR		FB		S-01
		CK		CADFILE		

DIG SAFE
MA ME NH RI VT
CALL 811 TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Feb 01, 2022 - 4:28pm
F:\MSC Projects\47099 - Little Harbor Rd & Gosport Rd - Portsmouth\47099.01 - DiLorenzo - 325 Little Harbor Rd\Carlson Survey\Dwgs\47099-01 Existing Conditions_2022.dwg

Feb 01, 2022 - 4:10pm
F:\MSC Projects\47099 - Little Harbor Rd & Gosport Rd - Portsmouth\47099.01 - DiLorenzo - 325 Little Harbor Rd\Carlson Survey\Dwgs\47099-01wk.dwg

TAX MAP 205 LOT 2

EXISTING CONDITIONS PLAN

BRIDGE DETAIL

325 LITTLE HARBOR ROAD

PORTSMOUTH, NEW HAMPSHIRE

COUNTY OF ROCKINGHAM

OWNED BY

THE ADL PORTSMOUTH RESIDENCE TRUST

SCALE: 1" = 20' (22x34)
1" = 40' (11x17)

FEBRUARY 1, 2022

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CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

20 10 0 20
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR	CK

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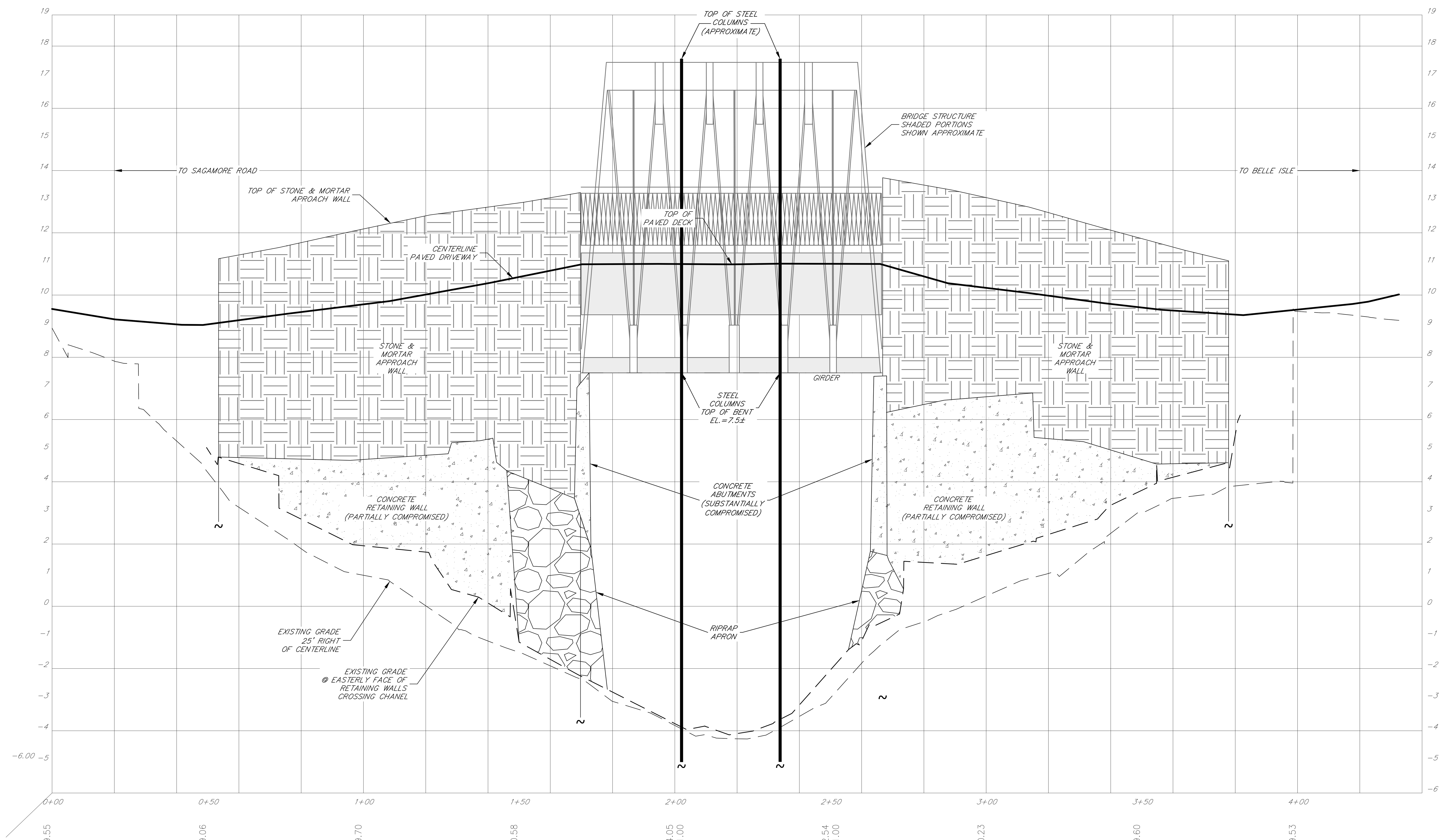
FILE	DR	MVP	FB	583	
47099-01	CK	BMK	CADFILE	SEE MARGIN	S-2



BRIDGE PROFILE:

1" = 20' HORIZONTAL
1" = 2' VERTICAL

FOR REVIEW

NOTE:
SEE SHEET S-1 FOR GENERAL NOTES, EASEMENT NOTES, PLAN REFERENCES, WETLANDS NOTES AND LEGEND.

TAX MAP 205 LOT 2
EXISTING CONDITIONS PLAN
BRIDGE PROFILE
325 LITTLE HARBOR ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
THE ADL PORTSMOUTH RESIDENCE TRUST

SCALE: AS NOTED

FEBRUARY 1, 2022

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47099-01	DR MVP	FB	583	S-3
	CK BMK	CADFILE	SEE MARGIN	

REV.	DATE	DESCRIPTION	DR	CK

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SEWER INVERT TABLE

TFM #	RIM EL.	INVERT ID:	INVERT EL.	SIZE/TYPE
4574	50.37	A	43.7'	8" PVC
		B	44.0'	8" PVC
4568	55.07	A	44.7'	8" PVC
		B	44.8'	8" PVC

NOTE:
SEE SHEET S-1 FOR GENERAL, EASEMENT, PLAN AND WETLANDS NOTES, LEGEND AND SEWER INVERT TABLE.

DIG SAFE
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CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

TAX MAP 205 LOT 2

EXISTING CONDITIONS PLAN

DRIVEWAY & ROADWAY DETAIL

325 LITTLE HARBOR ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
THE ADL PORTSMOUTH RESIDENCE TRUST

SCALE: 1" = 60' (22x34)
1" = 120' (11x17)

FEBRUARY 1, 2022

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FILE	47099-01	DR	MVP	FB	583	S-4
		CK	BMK	CADFILE	SEE MARGIN	

REV.	DATE	DESCRIPTION	DR	CK

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NOTES

1. SEE NOTES ON SHEET C-01.

LEGEND

- HIGHEST OBSERVABLE TIDE LINE (HOTL)
- 100' TIDAL WETLAND BUFFER BOUNDARY
- TIDAL BUFFER ZONE
- IMPACT AREA
- TEMPORARY IMPACT AREA
- LIMIT OF IMPACTS
- IMPERVIOUS SURFACE
- PERVIOUS PAVERS
- GRAVEL SURFACE

PROPOSED IMPERVIOUS AREA (LADY ISLE ONLY)	TIDAL WETLAND BUFFER ZONE	TOTAL UPLAND AREA*
TOTAL IMPERVIOUS AREA	26,496 SF (7.9%)	44,096 SF (8.7%)
TOTAL PERMEABLE AREA	1,381 SF (0.4%)	8,029 SF (1.6%)
PROPOSED VEGETATED AREA (LADY ISLE ONLY)		
TOTAL GRASS/LANDSCAPE AREA	176,413 SF (52.3%)	245,920 SF (48.4%)
TOTAL NATURAL WOODLAND AREA	132,911 SF (39.4%)	209,400 SF (41.3%)
TOTAL AREA (LADY ISLE ONLY)		
TOTAL	337,201 SF	507,445 SF

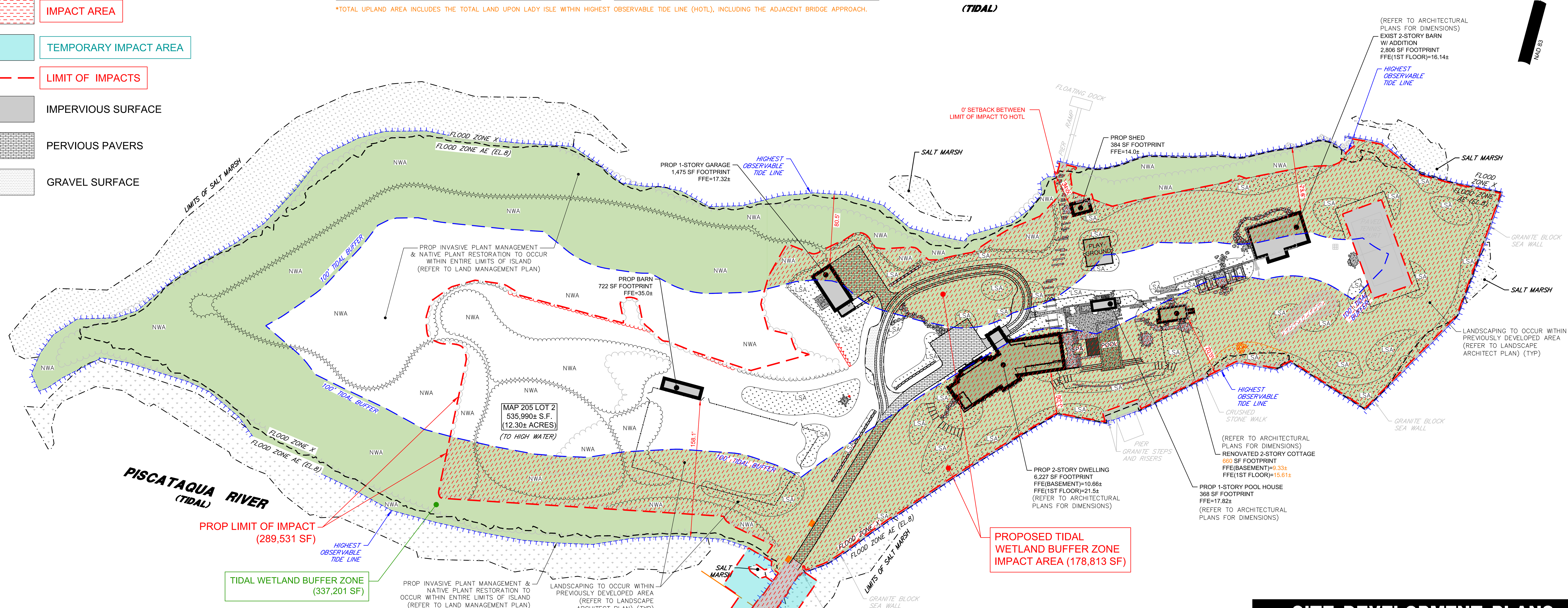
PROPOSED IMPERVIOUS AREA (LADY ISLE ONLY)	TIDAL WETLAND BUFFER ZONE	TOTAL UPLAND AREA*
TOTAL IMPERVIOUS AREA	25,217 SF (7.5%)	34,740 SF (6.8%)
TOTAL PERMEABLE AREA	8,144 SF (2.4%)	13,807 SF (2.7%)
PROPOSED VEGETATED AREA (LADY ISLE ONLY)		
TOTAL GRASS AREA	117,911 SF (35.0%)	179,829 SF (35.4%)
TOTAL LANDSCAPE AREA	42,528 SF (12.6%)	56,572 SF (11.2%)
TOTAL NATURAL WOODLAND AREA	143,401 SF (42.5%)	222,497 SF (43.9%)
TOTAL AREA (LADY ISLE ONLY)		
TOTAL	337,201 SF	507,445 SF

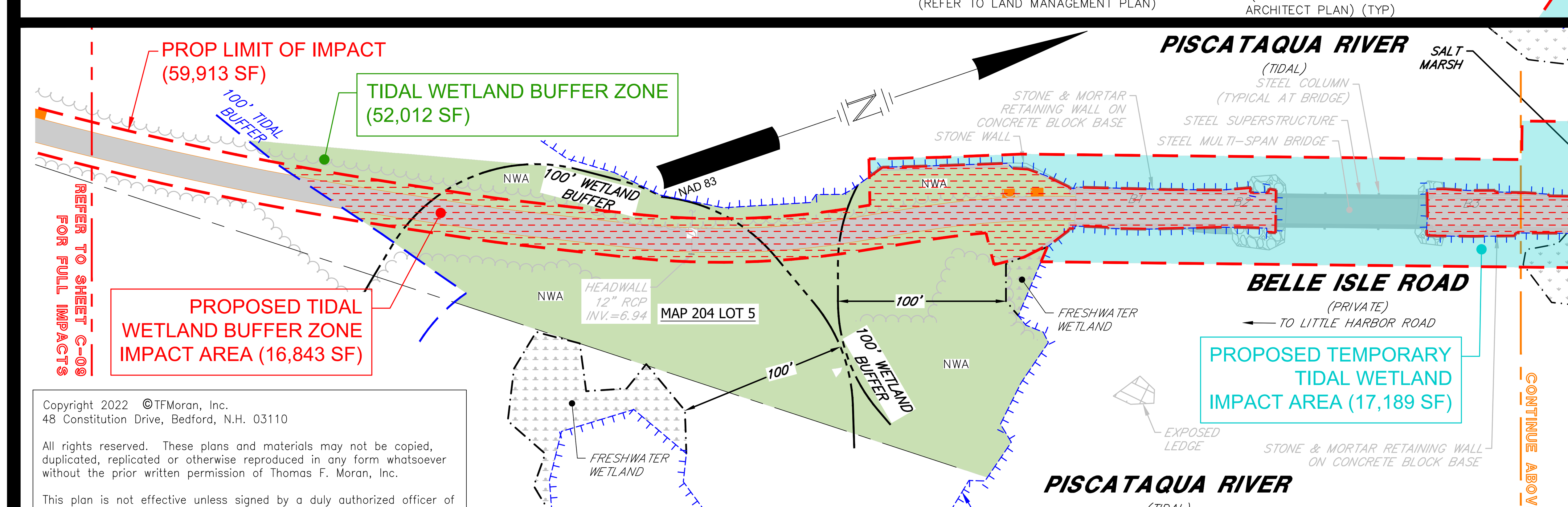
*TOTAL UPLAND AREA INCLUDES THE TOTAL LAND UPON LADY ISLE WITHIN HIGHEST OBSERVABLE TIDE LINE (HOTL), INCLUDING THE ADJACENT BRIDGE APPROACH.

PROPOSED IMPACT AREA (ALL IMPROVEMENTS)	TIDAL WETLAND BUFFER ZONE	TOTAL LAND AREA	TIDAL WETLAND AREA
TOTAL LAND IMPACT AREA	195,656 SF	349,944 SF	
TOTAL WETLAND TEMPORARY IMPACT AREA			17,189 SF

WETLAND SCIENTIST NOTE

HIGHEST OBSERVABLE TIDE LINE (HOTL) AND SALT MARSH WERE DELINEATED BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST 090, ON MAY 24, 2019. SALT MARSH WAS DELINEATED BASED UPON THE EXTENT OF ROOTED EMERGENT SALT-TOLERANT VEGETATION OBSERVED DURING LOW TIDE. HOTL WAS DELINEATED BASED UPON THE CODE OF ADMINISTRATIVE RULES, NH DEPARTMENT OF ENVIRONMENTAL SERVICES – WETLANDS BUREAU – ENV WT 100–900, ESPECIALLY ENV-WT 101.49. COPIES OF SITE PLANS WHICH DEPICT THE DELINEATION THAT HAVE BEEN REVIEWED BY THE WETLAND SCIENTIST ARE INDIVIDUALLY STAMPED, SIGNED AND DATED. THIS NOTE HAS BEEN CUSTOMIZED FOR THIS PROJECT.





HORIZONTAL SCALE 1"=60'

60 30 0 60

DIG SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — HANNAH E. GIOVANNUCCI No.15699 LICENSED PROFESSIONAL ENGINEER — 2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

WETLAND CONDITIONAL USE PERMIT PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=120' (11"x17")

SCALE: 1"=60' (22"x34")

SEPTEMBER 29, 2021

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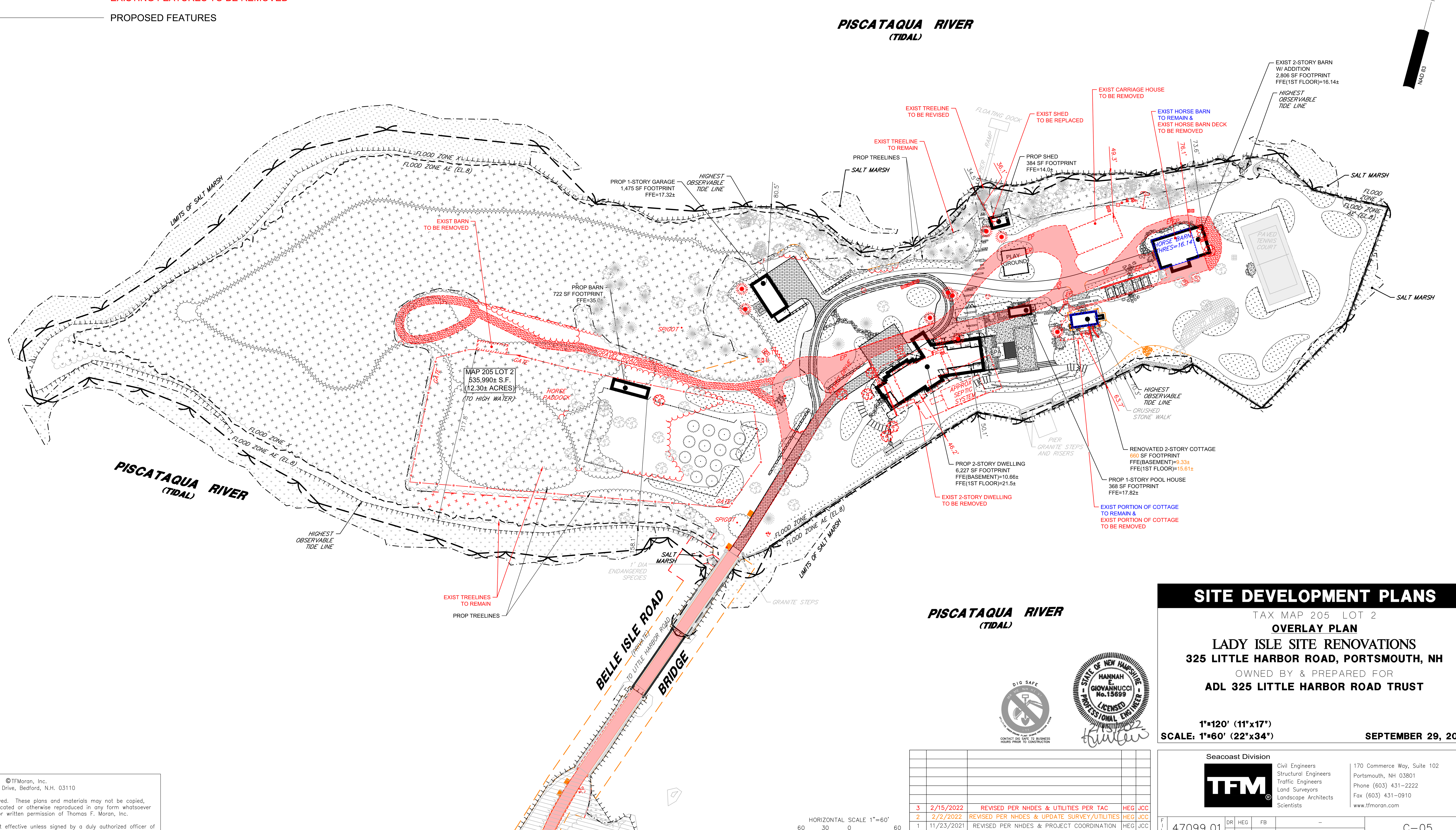
FILE	DR	HEG	FB	–	
47099.01	CK	JCC	CADFILE	47099-01_WETLAND CUP	C-04

NOTES

1. SEE NOTES ON SHEET C–01.

LEGEND

(grey line)	EXISTING FEATURES TO REMAIN
(blue line)	EXISTING BUILDING TO REMAIN
(red line)	EXISTING FEATURES TO BE REMOVED
(black line)	PROPOSED FEATURES



SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

OVERLAY PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=120' (11"x17")
SCALE: 1"=60' (22"x34") **SEPTEMBER 29, 2021**

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
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1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

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47099.01	CK	JCC	CADFILE	47099–01_OVERLAY_MAIN	C–05

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CONSTRUCTION SEQUENCE NOTES

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.

MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.

THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARG 3800 RELATIVE TO INVASIVE SPECIES.

DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO STORMWATER BMP'S. STORMWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.

CONSTRUCTION SEQUENCE NOTES (CONTINUED)

DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

AFTER THE INFILTRATION SYSTEM IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE THE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

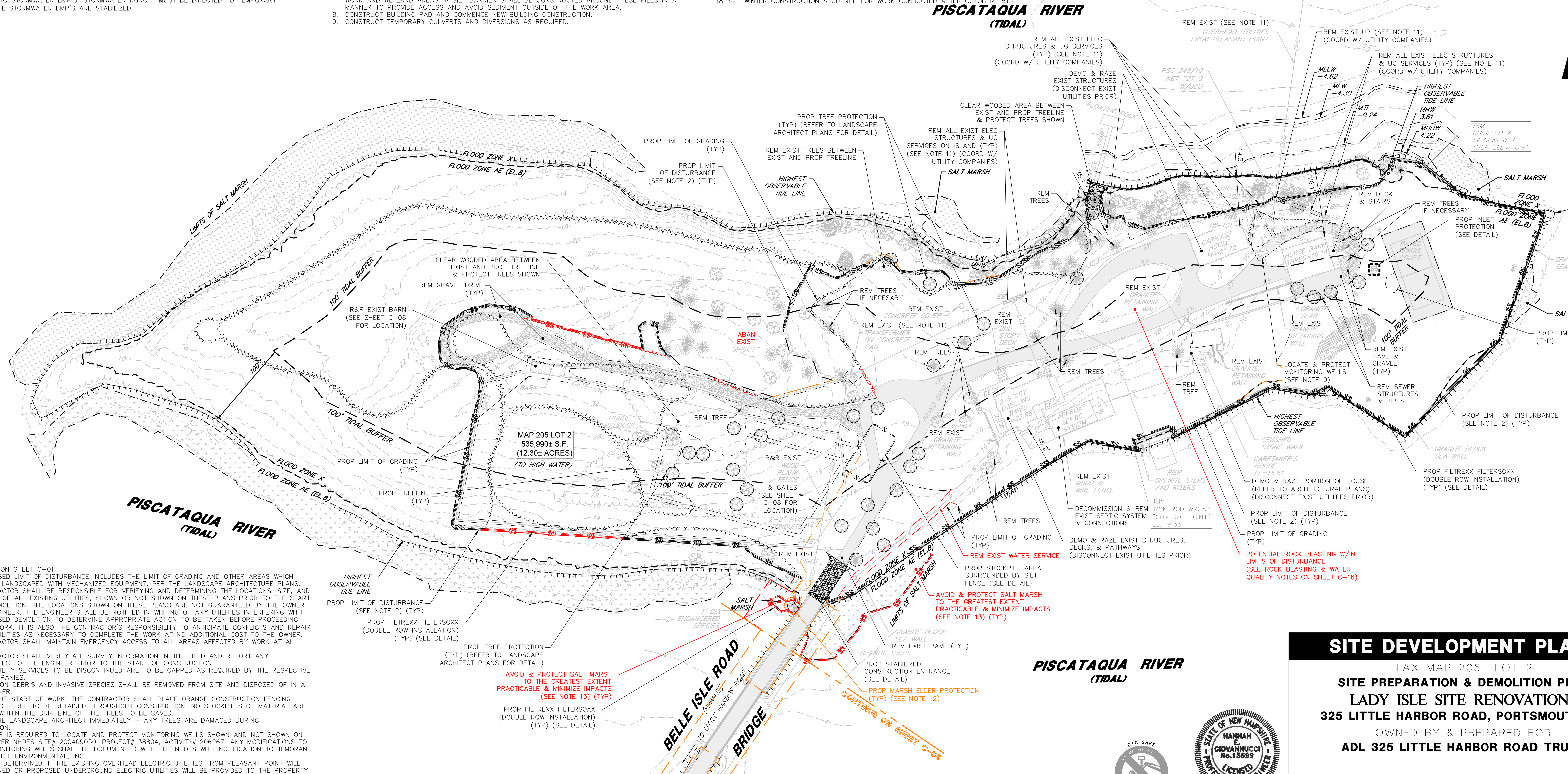
1. NOTIFY EASEMENT OWNERS PRIOR TO COMMENCEMENT OF WORK.
2. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. STORMWATER TREATMENT PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
4. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
5. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS/1000 SF SHALL BE USED).
6. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
7. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND WETLAND AREAS. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
8. CONSTRUCT BUILDING PAD AND COMMENCE NEW BUILDING CONSTRUCTION.
9. CONSTRUCT TEMPORARY CULVERTS AND DIVERSIONS AS REQUIRED.

CONSTRUCTION SEQUENCE NOTES (CONTINUED)

10. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
11. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND PARKING FIELDS AND ACCESS DRIVES. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS INTO WETLANDS. PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
13. CONSTRUCT PROPOSED ROADWAY, RAIN GARDENS, GRAVEL WETLANDS AND DRAINAGE SWALES. ALL DITCHES, SWALES, AND GRAVEL WETLANDS SHALL BE FULLY STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
14. COMPLETE BUILDING AND ALL OFF–SITE IMPROVEMENTS.
15. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO–SEEDING, THEN ROLLED, RAKED, OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
17. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
18. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.

CONSTRUCTION SEQUENCE NOTES (FOR ALTERATION OF TERRAIN)

1. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO BMP'S DURING ANY STAGE OF CONSTRUCTION.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
3. AFTER INFILTRATION SYSTEMS ARE EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED, IF NECESSARY, AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.



NOTES

1. SEE NOTES ON SHEET C–01.
2. THE PROPOSED LIMIT OF DISTURBANCE INCLUDES THE LIMIT OF GRADING AND OTHER AREAS WHICH WILL BE BE LANDSCAPED WITH MECHANIZED EQUIPMENT, PER THE LANDSCAPE ARCHITECTURE PLANS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
4. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
5. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
6. EXISTING UTILITY SERVICES TO BE DISCONTINUED ARE TO BE CAPPED AS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES.
7. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
8. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
9. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.
10. CONTRACTOR IS REQUIRED TO LOCATE AND PROTECT MONITORING WELLS SHOWN AND NOT SHOWN ON THE PLAN PER NHDES SITE# 200409050, PROJECT# 38804, ACTIVITY# 206267. ANY MODIFICATIONS TO EXISTING MONITORING WELLS SHALL BE DOCUMENTED WITH THE NHDES WITH NOTIFICATION TO TFMORAN AND STONEHILL ENVIRONMENTAL, INC.
11. IT IS TO BE DETERMINED IF THE EXISTING OVERHEAD ELECTRIC UTILITIES FROM PLEASANT POINT WILL BE MAINTAINED OR PROPOSED UNDERGROUND ELECTRIC UTILITIES WILL BE PROVIDED TO THE PROPERTY VIA LITTLE HARBOR ROAD.
12. PRIOR TO CONSTRUCTION, MARSH ELDER SHOULD BE FLAGGED AND SURROUNDED WITH ORANGE CONSTRUCTION FENCING WITH YELLOW CAUTION TAPE FOR PROTECTION OF THE SPECIES. DO NOT REMOVE, MOW, TRAMPLE, COVER, OR OTHERWISE HARM THE PLANT. REMOVE FLAGS AND CONSTRUCTION FENCING AND CAUTION TAPE AFTER CONSTRUCTION IS COMPLETED.
13. TO THE GREATEST EXTENT PRACTICABLE, IMPACTS TO THE SALT MARSH SHALL BE MINIMIZED. EROSION CONTROLS SHALL BE INSTALLED, MONITORED, AND ADJUSTED AS REQUIRED THROUGHOUT THE DURATION OF THE PROJECT. UPON COMPLETION, DISTURBED AREAS SHALL BE REPLANTED WITH PLUGS OF SALTMARSH CORDGRASS (SPARTINA ALTERNIFLORA).

Feb 15, 2022 - 2:50pm
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HORIZONTAL SCALE 1"=60'
60 30 0 60

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED
PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
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1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

SITE PREPARATION & DEMOLITION PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=120' (11"x17")
SCALE: 1"=60' (22"x34")

SEPTEMBER 29, 2021

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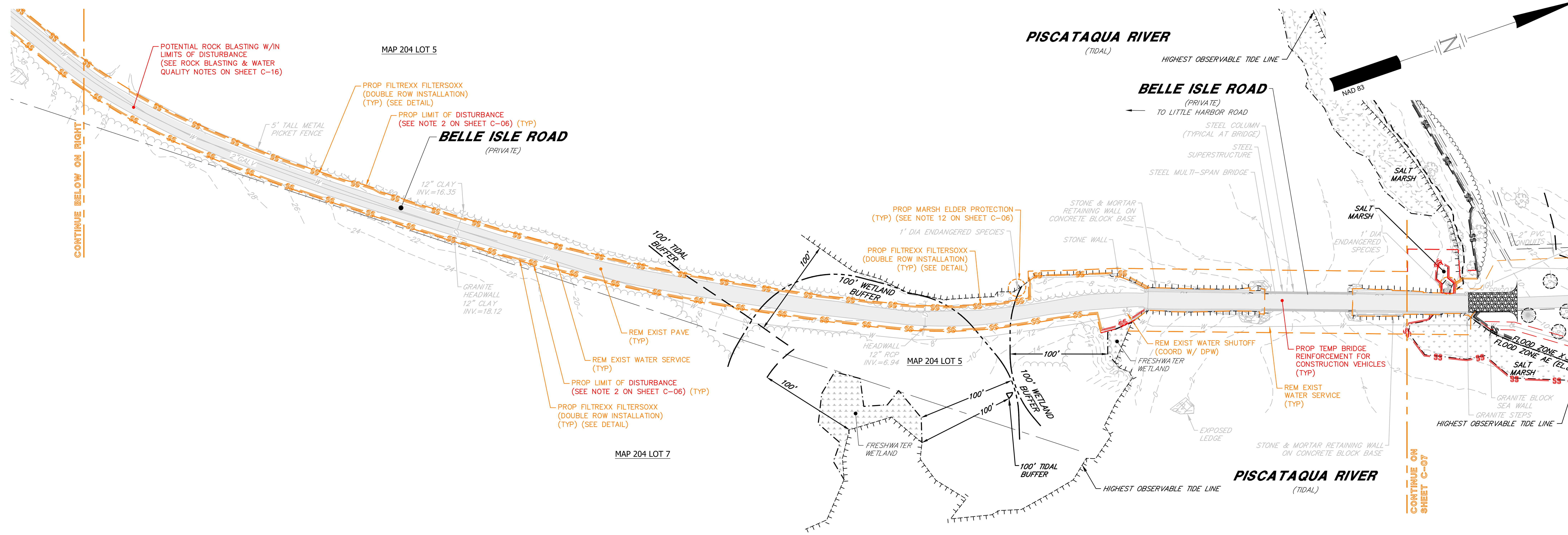
FILE	DR	HEG	FB	–	
47099.01	CK	JCC	CADFILE	47099–01_SITE PREP_MAIN	C–06

NOTES

1. SEE NOTES ON SHEET C-01 & C-06.



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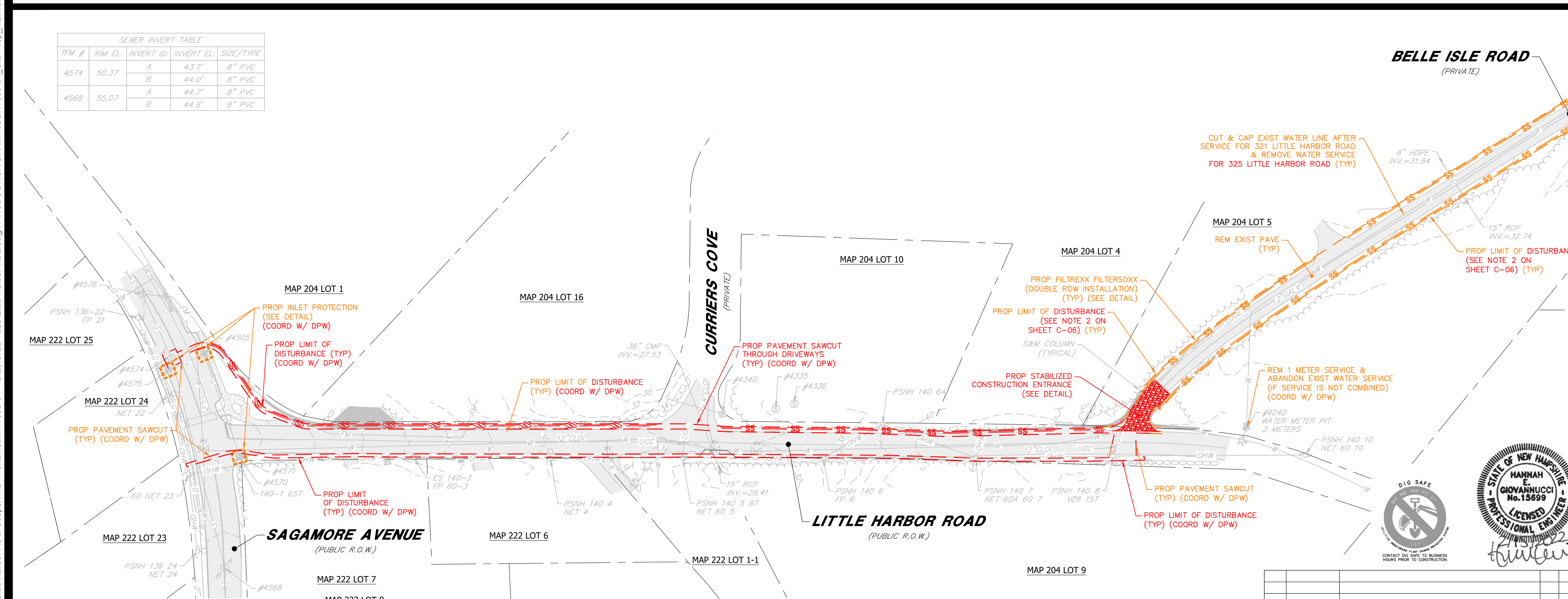

HORIZONTAL SCALE 1"=60'

60 30 0 60

DIG SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — HANNAH E. GIOVANNUCCI No.15699 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	DR	CK
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2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

SITE PREPARATION & DEMOLITION PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: 1"=120' (11"x17") 1"=60' (22"x34")

SEPTEMBER 29, 2021

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47099.01	DR HEG	FB –	CK JCC	CADFILE 47099-01_SITE PREP_MAIN	C-07

Feb 15, 2022 - 2:50pm
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SITE DATA

OWNER OF RECORD OF MAP 205 LOT 2: THE ADL 325 LITTLE HARBOR ROAD TRUST
STEPHEN H. ROBERTS ESQ., TRUSTEE
127 PARROTT AVENUE
PORTSMOUTH, NH 03801

DEED REFERENCE TO PARCEL IS BK 5959 PG 1244
AREA OF PARCEL = 535,990± SF OR 12.30± ACRES

ZONED: RURAL (R)
EXISTING USE: SINGLE–FAMILY DWELLING / ACCESSORY USE
PROPOSED USE: SINGLE–FAMILY DWELLING / ACCESSORY USE

THE PURPOSE OF THIS PLAN IS TO DEMOLISH THE EXISTING HOUSE, CARRIAGE HOUSE, AND PADDOCK TO CONSTRUCT A 2–STORY SINGLE–FAMILY HOME, GARAGE, POOL, POOL CABANA, PLAYGROUND, AND UTILITY CONNECTIONS VIA LITTLE HARBOR ROAD; RENOVATE AN EXISTING BARN AND GUEST COTTAGE; AND REPLACE AN EXISTING SHED AND BARN WITH A NEW SHED AND BARN. ASSOCIATED IMPROVEMENTS INCLUDE AND ARE NOT LIMITED TO ACCESS, GRADING, STORMWATER MANAGEMENT SYSTEMS, UTILITIES, AND LANDSCAPING.

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	5 AC (PER DWELLING UNIT)	12.30± AC (TOTAL)
MINIMUM YARD DIMENSIONS:		
FRONT	50 FT	>50 FT
SIDE	20 FT	>20 FT
REAR	40 FT	>40 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	35 FT	<35 FT
BUILDING COVERAGE	5%	2.6%
MINIMUM OPEN SPACE	75%	94%±

NOTES

1. SEE NOTES ON SHEET C–01.
2. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
3. NATURAL WOODED AREA (NWA) MUST REMAIN IN UNALTERED STATE AS DEFINED PER RSA 483–B–4, XXIV–b.
4. LIGHTING SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH ZONING ORDINANCE AND SITE PLAN REGULATIONS.
5. SNOW SHALL NOT BE STOCKPILED IN WETLANDS AND WETLAND BUFFERS. SEE SNOW STORAGE LOCATIONS. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH NHDES REGULATION. IF SNOW IS STORED WITHIN PARKING OR DRIVEWAY AREA, KEEP DRAINAGE SWALES CLEAR.
6. THE PROPOSED LIMIT OF DISTURBANCE INCLUDES THE LIMIT OF GRADING AND OTHER AREAS WHICH WILL BE BE LANDSCAPED WITH MECHANIZED EQUIPMENT, PER THE LANDSCAPE ARCHITECTURE PLANS.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

SITE LAYOUT PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=80' (11"X17")
SCALE: 1"=40' (22"X34")

SEPTEMBER 29, 2021

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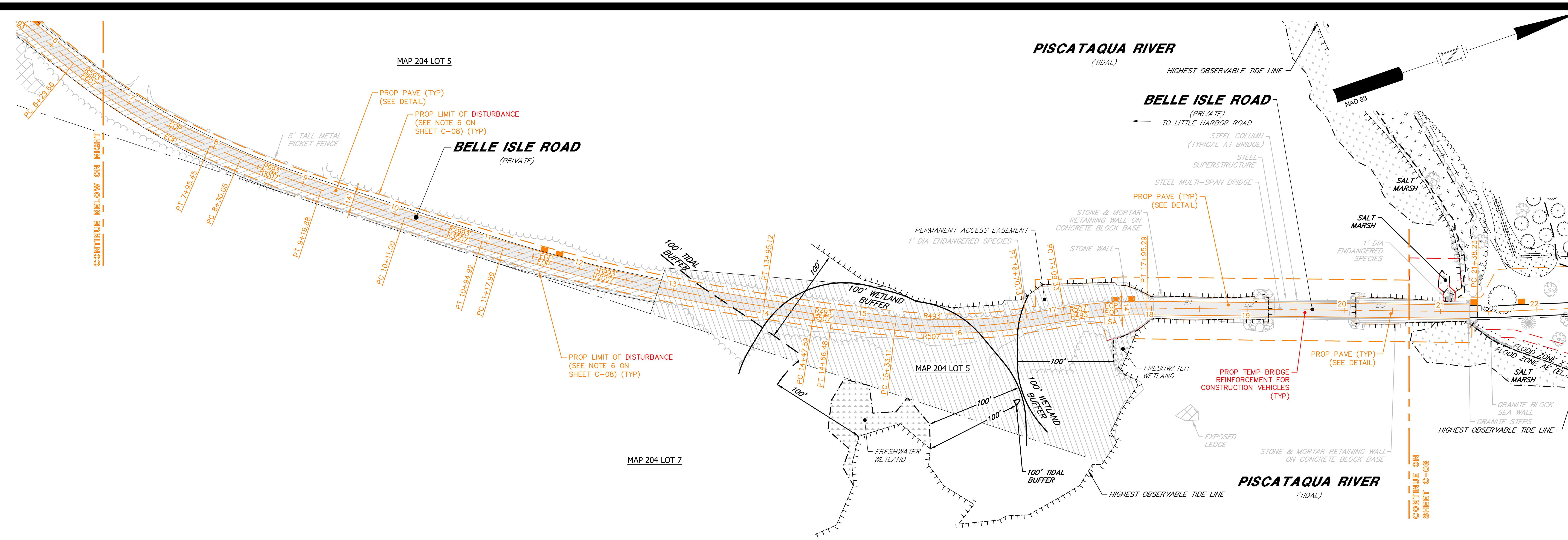
FILE	47099.01	DR	HEG	FB	–	C–08
		CK	JCC	CADFILE	47099–01_SITE_MAIN	

NOTES

1. SEE NOTES ON SHEET C-01 AND C-08.



HORIZONTAL SCALE 1"=60'

60 30 0 60

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

SITE LAYOUT PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

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1"=120' (11"x17")

SCALE: 1"=60' (22"x34")

SEPTEMBER 29, 2021

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		CK JCC	CADFILE 47099-01_SITE_MAIN	

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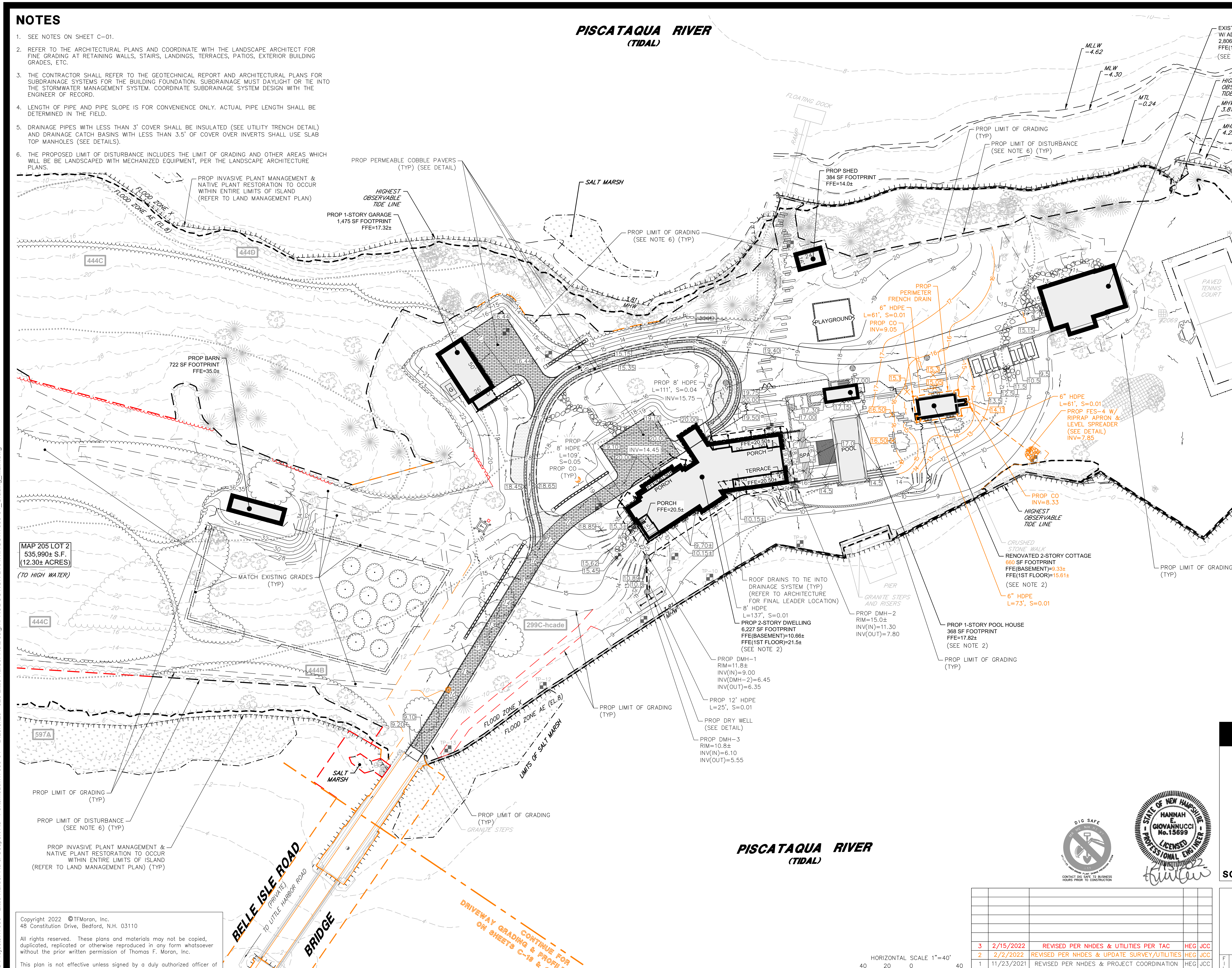
NOTES

1. SEE NOTES ON SHEET C–01.
2. REFER TO THE ARCHITECTURAL PLANS AND COORDINATE WITH THE LANDSCAPE ARCHITECT FOR FINE GRADING AT RETAINING WALLS, STAIRS, LANDINGS, TERRACES, PATIOS, EXTERIOR BUILDING GRADES, ETC.
3. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND ARCHITECTURAL PLANS FOR SUBDRAINAGE SYSTEMS FOR THE BUILDING FOUNDATION. SUBDRAINAGE MUST DAYLIGHT OR TIE INTO THE STORMWATER MANAGEMENT SYSTEM. COORDINATE SUBDRAINAGE SYSTEM DESIGN WITH THE ENGINEER OF RECORD.
4. LENGTH OF PIPE AND PIPE SLOPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
5. DRAINAGE PIPES WITH LESS THAN 3' COVER SHALL BE INSULATED (SEE UTILITY TRENCH DETAIL) AND DRAINAGE CATCH BASINS WITH LESS THAN 3.5' OF COVER OVER INVERTS SHALL USE SLAB TOP MANHOLES (SEE DETAILS).
6. THE PROPOSED LIMIT OF DISTURBANCE INCLUDES THE LIMIT OF GRADING AND OTHER AREAS WHICH WILL BE BE LANDSCAPED WITH MECHANIZED EQUIPMENT, PER THE LANDSCAPE ARCHITECTURE PLANS.



SOIL NOTES

1. THE SITE SPECIFIC SOIL MAP WAS PREPARED IN DECEMBER 2020 BY MARK JACOBS, CSS, CWS, PWS, CPESC.

DISTURBED SOIL MAPPING UNIT SUPPLEMENTAL SYMBOL LEGEND

SUPPLEMENTAL SYMBOL (1-5)	DRAINAGE CLASS (SYMBOL 1)	PARENT MATERIAL (SYMBOL 2)	RESTRICTIVE / IMPERVIOUS LAYERS (SYMBOL 3)	ESTIMATED Ksat (SYMBOL 4)	HYDROLOGIC SOIL GROUP (SYMBOL 5)
(299) - hcade	UNDERMINED (H)	GLACIAL TILL MATERIALS (C)	NONE (A)	UNDETERMINED (D)	UNDETERMINED (D)

*ESTIMATED BASED UPON SOIL PROPERTIES OBSERVED IN THE FIELD. NO PUBLISHED DATA AVAILABLE. ON–SITE TESTING RECOMMENDED AS NECESSARY FOR DESIGN AND PLACEMENT OF SPECIFIC INFILTRATION PRACTICES.

SITE SPECIFIC SOIL SURVEY MAP LEGEND

SOIL SERIES NAME & NUMBER	DRAINAGE CLASS	PARENT MATERIAL (C Horizon)	MINERAL RESTRICTIVE FEATURES*	SATURATED HYDRAULIC CONDUCTIVITY (Ksat)** inches/hour low to high B & C horizons	HSG**
42 CANTON	WELL	GLACIAL TILL	NONE	2.0 TO 6.0 6.0 TO 20.0	B
444 NEWFIELDS	MODERATELY WELL	GLACIAL TILL	NONE	0.6 TO 2.0 0.6 TO 2.0	B
299 UDORTHENTS	VARIABLE	VARIABLE – CUT AND/OR FILLED	NONE†	NA†	NA†
597 WESTBROOK	VERY POOR	ORGANIC DEPOSITS OVER SEDIMENTS	NONE	NA† 0.0 TO 2.0	D

*WITHIN 40 INCHES OF THE SOIL SURFACE.
**FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS – SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND – SPECIAL PUBLICATION NUMBER 5 – SEPTEMBER 2009 UNLESS NOTED OTHERWISE. ON–SITE KSAT TESTING MAY BE WARRANTED OR ADVISABLE.
†NO PUBLISHED DATA IS AVAILABLE. ON–SITE KSAT TESTING RECOMMENDED AS NECESSARY FOR DESIGN/PLACEMENT OF SPECIFIC INFILTRATION PRACTICES.

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

GRADING & DRAINAGE PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=80' (11"X17")
SCALE: 1"=40' (22"X34") **SEPTEMBER 29, 2021**

DIG SAFE — MA ME NH RI VT — 811 — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — HANNAH E. GIOVANNUCCI No.15699 — LICENSED — PROFESSIONAL ENGINEER — 2/15/2022

HORIZONTAL SCALE 1"=40'
40 20 0 40

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
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1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

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FILE						
47099.01	DR	HEG	FB	–	C–10
	CK	JCC	CADFILE	47099–01_GRADING_MAIN	

Feb 15, 2022 - 2:52pm
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NOTES

1. SEE NOTES ON SHEET C-01.
2. ALL PROPOSED UTILITIES SHALL CONFORM TO THE CITY OF PORTSMOUTH'S STANDARDS OF INFRASTRUCTURE DESIGN.
3. WATER AND DRAIN LINE CROSSINGS REQUIRE INSTALLATION OF RIGID INSULATION WHEN SEPARATION BETWEEN LINES IS LESS THAN 18". SEE UTILITY TRENCH DETAIL.
4. CONTRACTOR IS REQUIRED TO LOCATE AND PROTECT MONITORING WELLS SHOWN AND NOT SHOWN ON THE PLAN PER NHDES SITE# 200409050, PROJECT# 38804, ACTIVITY# 206267 AND PERFORM WORK IN COMPLIANCE WITH THE NHDES GROUNDWATER MANAGEMENT PERMIT #GPW-200109050-P-001. ANY MODIFICATIONS TO EXISTING MONITORING WELLS SHALL BE DOCUMENTED WITH THE NHDES, WITH NOTIFICATION TO TFMORAN AND STONEHILL ENVIRONMENTAL, INC.
5. IT IS TO BE DETERMINED IF THE EXISTING OVERHEAD ELECTRIC UTILITIES FROM PLEASANT POINT WILL BE MAINTAINED OR PROPOSED UNDERGROUND ELECTRIC UTILITIES WILL BE PROVIDED TO THE PROPERTY VIA LITTLE HARBOR ROAD. ACTUAL UNDERGROUND SERVICE, TRANSFORMER, METER, AND TIE IN LOCATION TO POLE IS SUBJECT TO UTILITY COMPANY REQUIREMENTS.
6. THE ISDS (SEPTIC SYSTEM) SHALL RECEIVE ISDS APPROVAL FROM NHDES SUBSURFACE SYSTEMS BUREAU. PRIOR TO CONSTRUCTION AND PRIOR TO OPERATION OF THE ISDS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CONSTRUCTION APPROVAL AND APPROVAL TO OPERATE FROM NHDES SUBSYSTEMS BUREAU, AND ANY OTHER STATE AND LOCAL PERMITS AND APPROVALS.

HORIZONTAL SCALE 1"=40'
40 20 0 40

Feb 15, 2022 - 2:52pm
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DIG SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — HANNAH E. GIOVANNUCCI No.15699 — LICENSED PROFESSIONAL ENGINEER

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SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

UTILITY PLAN

LADY ISLE SITE RENOVATIONS

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SEPTEMBER 29, 2021

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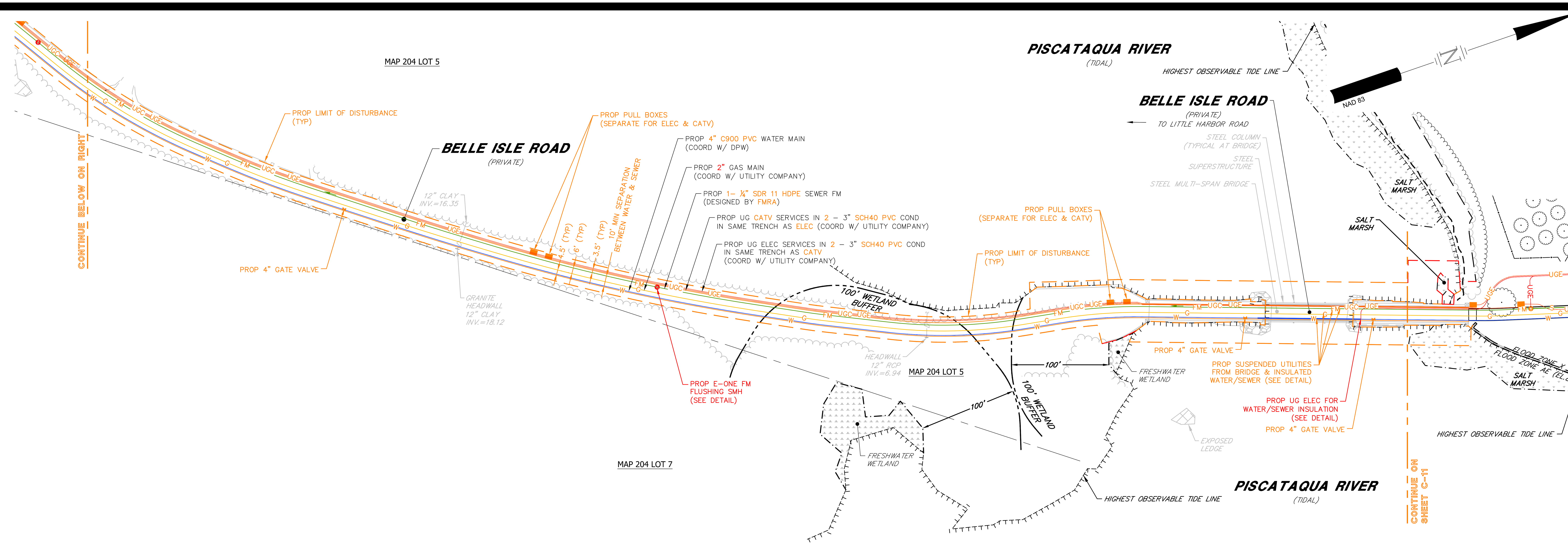
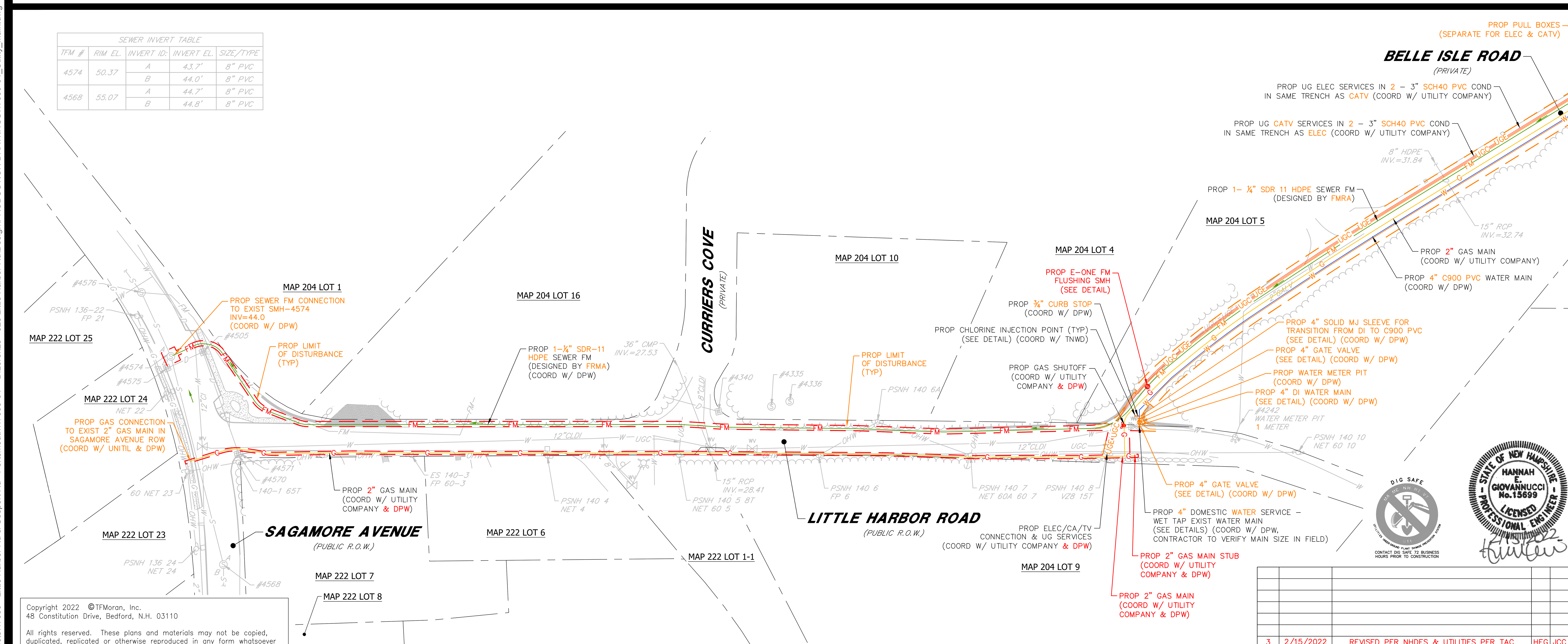
FILE	DR	HEG	FB	–	
47099.01	CK	JCC	CADFILE	47099-01_UTILITY_MAIN	C-11

NOTES

1. SEE NOTES ON SHEET C-01 & C-12.





SEWER INVERT TABLE				
TFM #	RIM EL.	INVERT ID:	INVERT EL.	SIZE/TYPE
4574	50.37	A	43.7'	8" PVC
		B	44.0'	8" PVC
4568	55.07	A	44.7'	8" PVC
		B	44.8'	8" PVC

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED PROFESSIONAL ENGINEER
2/15/2022

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

UTILITY PLAN

LADY ISLE SITE RENOVATIONS

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FILE	DR	HEG	FB	–	
47099.01	CK	JCC	CADFILE	47099-01_UTILITY_MAIN	C-12

NOTES

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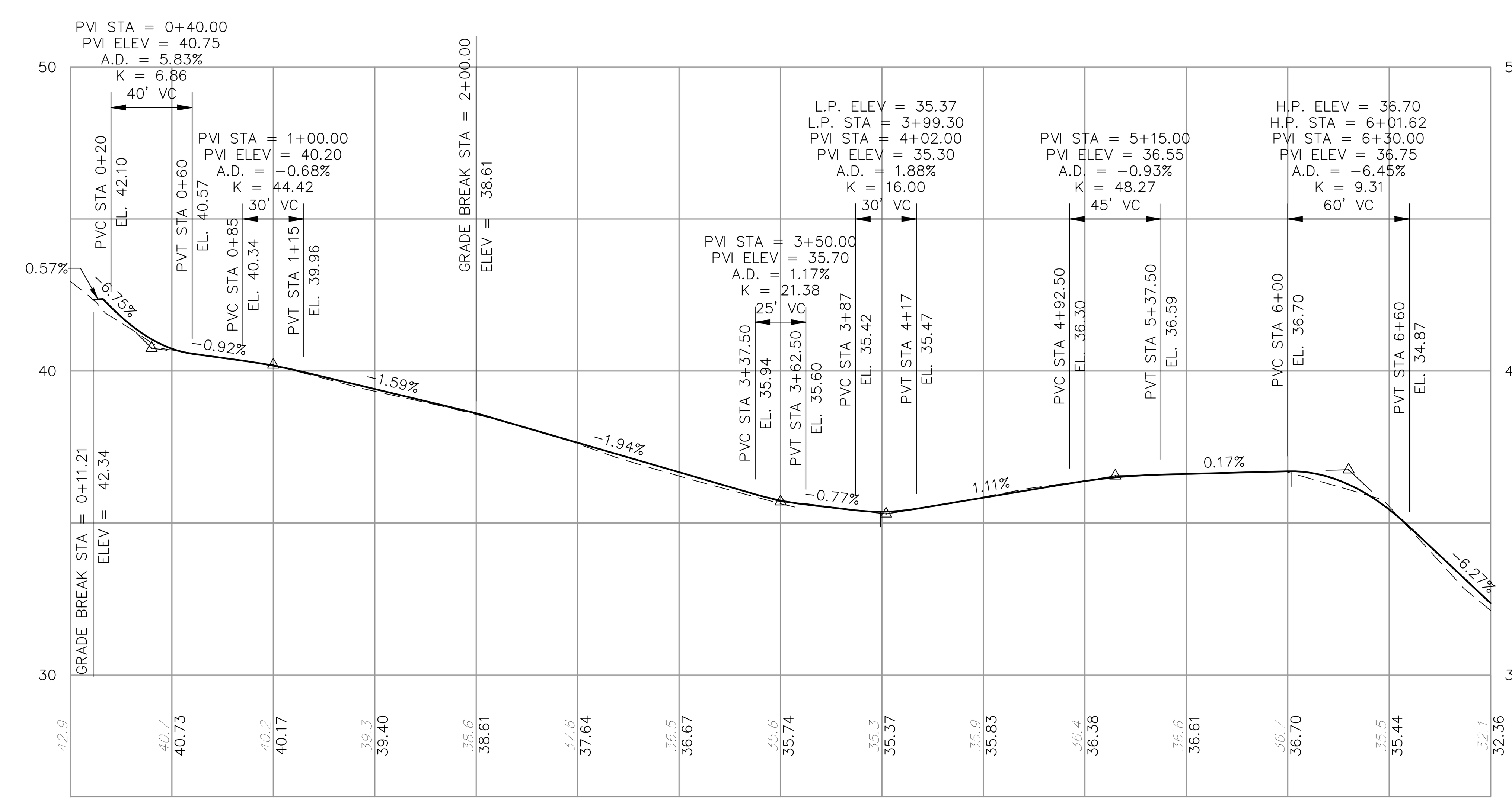
PLAN



BELLE ISLE ROAD PROFILE

HORIZONTAL SCALE 1"=60'
VERTICAL SCALE 1"=4'

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED PROFESSIONAL ENGINEER
2/15/2022

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SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DRIVEWAY GRADING & PROFILE

LADY ISLE SITE RENOVATIONS

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FILE	47099.01	DR	HEG	FB	-	C-13
		CK	JCC	CADFILE	47099-01_PROFILE_DRIVEWAY	

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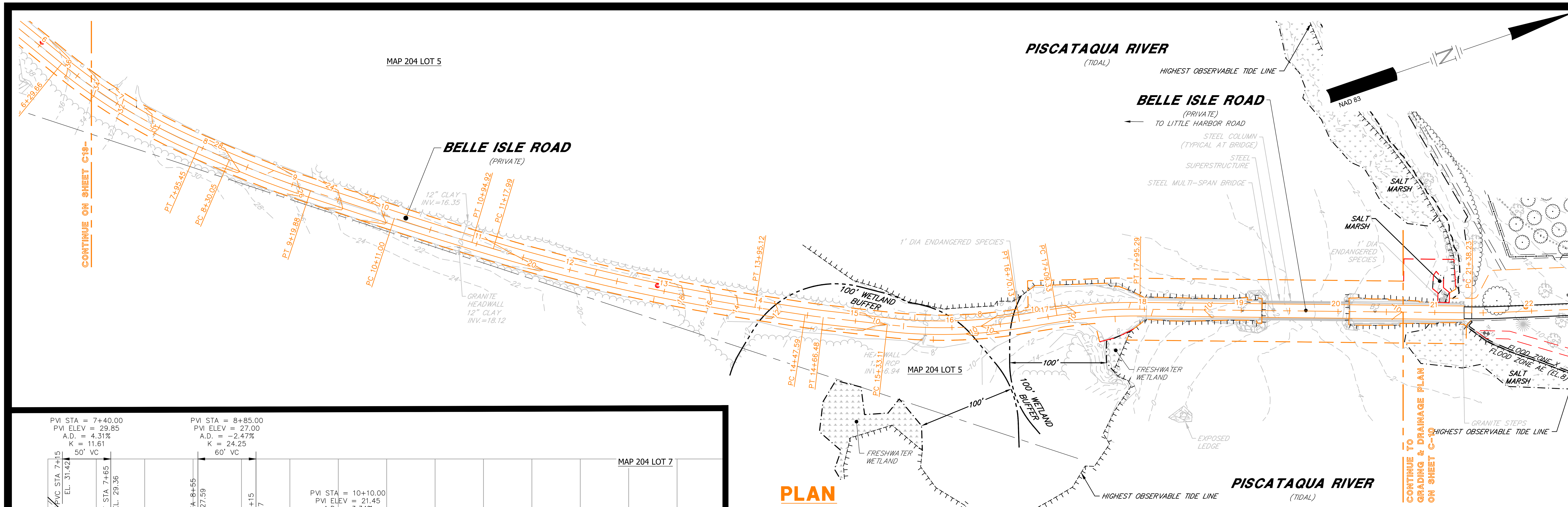

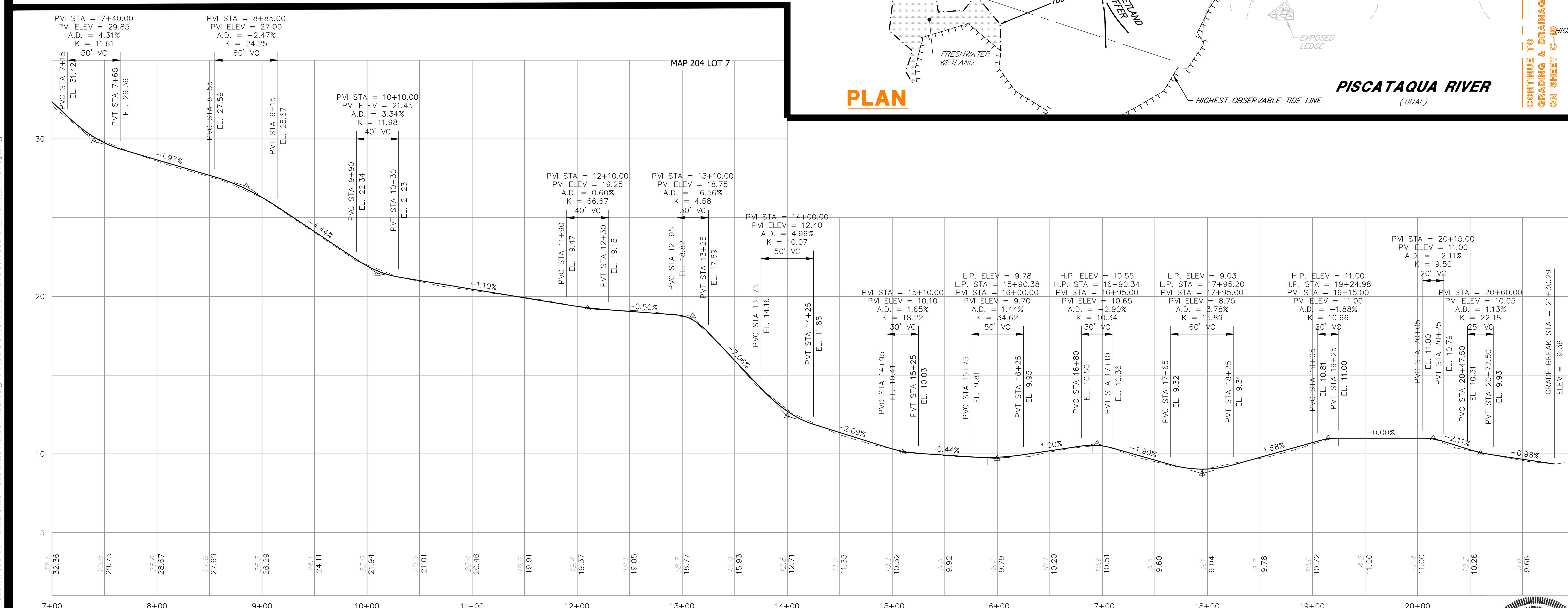

BELLE ISLE ROAD PROFILE

NOTES

1. SEE NOTES ON SHEET C-01.
2. LENGTH OF PIPE AND PIPE SLOPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
3. DRAINAGE PIPES WITH LESS THAN 3' COVER SHALL BE INSULATED (SEE UTILITY TRENCH DETAIL) AND DRAINAGE CATCH BASINS WITH LESS THAN 3.5' OF COVER OVER INVERTS SHALL USE SLAB TOP MANHOLES (SEE DETAILS).

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DRIVEWAY GRADING & PROFILE

LADY ISLE SITE RENOVATIONS

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SEPTEMBER 29, 2021

HORIZONTAL SCALE 1"=60'
60 30 0 60
4 0 4
VERTICAL SCALE 1"=4'

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	CK JCC	CADFILE 47099-01_PROFILE_DRIVEWAY	

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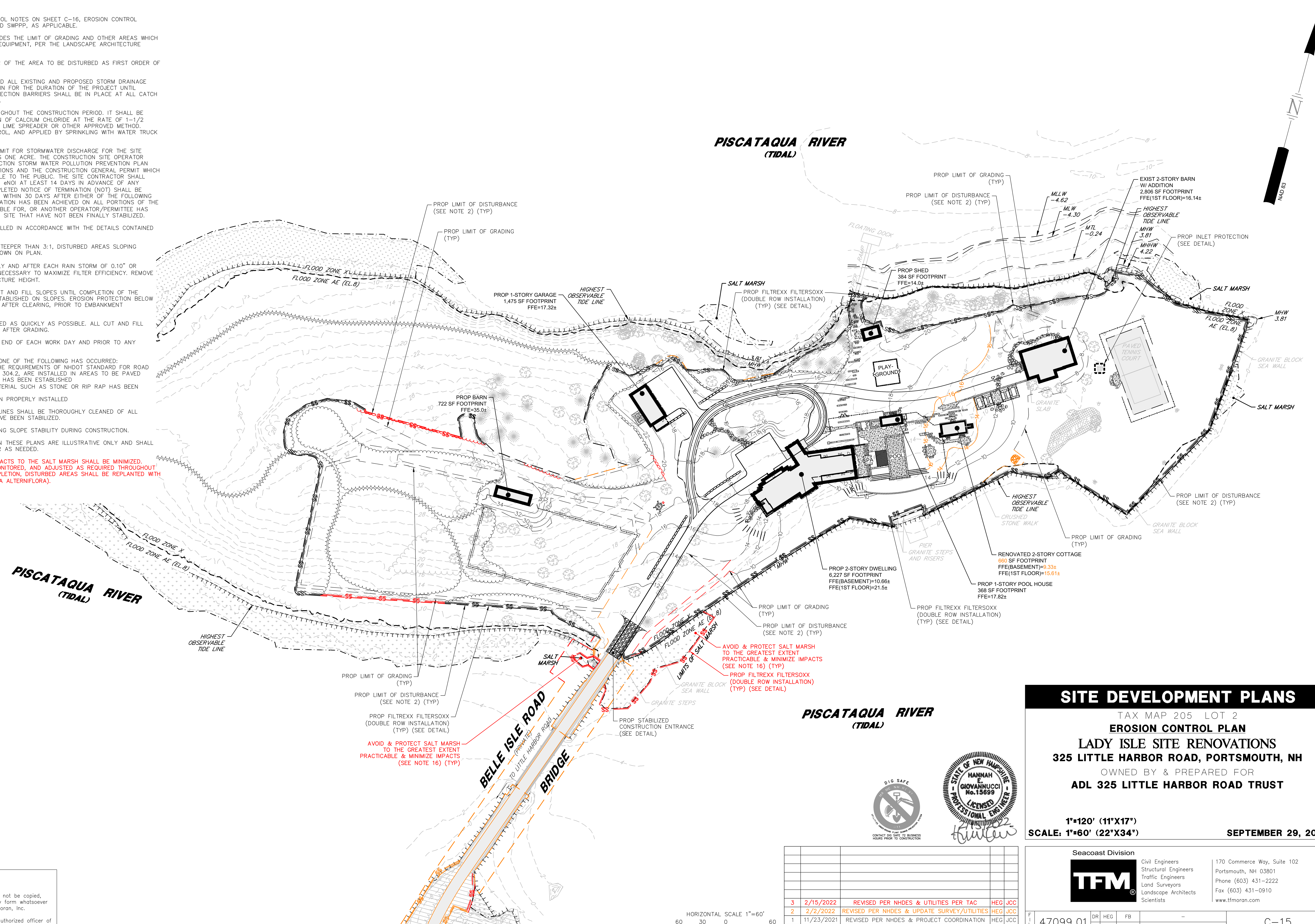
NOTES

1. SEE NOTES ON SHEET C–01, EROSION CONTROL NOTES ON SHEET C–16, EROSION CONTROL DETAILS ON SHEET C–17, AND THE APPROVED SWPPP, AS APPLICABLE.
2. THE PROPOSED LIMIT OF DISTURBANCE INCLUDES THE LIMIT OF GRADING AND OTHER AREAS WHICH WILL BE BE LANDSCAPED WITH MECHANIZED EQUIPMENT, PER THE LANDSCAPE ARCHITECTURE PLANS.
3. INSTALL SILT BARRIER ALONG THE PERIMETER OF THE AREA TO BE DISTURBED AS FIRST ORDER OF WORK.
4. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED. INLET PROTECTION BARRIERS SHALL BE IN PLACE AT ALL CATCH BASINS PRIOR TO THE DISTURBANCE OF SOIL.
5. DUST CONTROL SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. IT SHALL BE ACCOMPLISHED BY THE UNIFORM APPLICATION OF CALCIUM CHLORIDE AT THE RATE OF 1–1/2 POUNDS PER SQUARE YARD BY MEANS OF A LIME SPREADER OR OTHER APPROVED METHOD. WATER MAY ALSO BE USED FOR DUST CONTROL, AND APPLIED BY SPRINKLING WITH WATER TRUCK DISTRIBUTORS, AS REQUIRED.
6. THE SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE SITE CONSTRUCTION IF THE DISTURBANCE EXCEEDS ONE ACRE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. THE SITE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE FOR, OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
7. SILT PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS CONTAINED IN THIS PLAN SET.
8. CONSTRUCT JUTE MATTING ON ALL SLOPES STEEPER THAN 3:1, DISTURBED AREAS SLOPING TOWARDS WETLANDS AND ALL LOCATIONS SHOWN ON PLAN.
9. INSPECT EROSION CONTROL MEASURES WEEKLY AND AFTER EACH RAIN STORM OF 0.10" OR GREATER. REPAIR/MODIFY SILT BARRIER AS NECESSARY TO MAXIMIZE FILTER EFFICIENCY. REMOVE SEDIMENT WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
10. PROVIDE SILT BARRIERS AT THE BASE OF CUT AND FILL SLOPES UNTIL COMPLETION OF THE PROJECT OR UNTIL VEGETATION BECOMES ESTABLISHED ON SLOPES. EROSION PROTECTION BELOW FILL SLOPES SHALL BE PLACED IMMEDIATELY AFTER CLEARING, PRIOR TO EMBANKMENT CONSTRUCTION.
11. ALL DISTURBED AREAS SHALL BE REVEGETATED AS QUICKLY AS POSSIBLE. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
12. ALL WORK AREAS TO BE STABILIZED AT THE END OF EACH WORK DAY AND PRIOR TO ANY PREDICTED SIGNIFICANT RAIN EVENT.
13. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS, WHICH MEET THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2, ARE INSTALLED IN AREAS TO BE PAVED
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED
13. ALL CATCH BASINS, MANHOLES, AND DRAIN LINES SHALL BE THOROUGHLY CLEANED OF ALL SEDIMENT AND DEBRIS AFTER ALL AREAS HAVE BEEN STABILIZED.
14. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SLOPE STABILITY DURING CONSTRUCTION.
15. THE EROSION CONTROL PRACTICES SHOWN ON THESE PLANS ARE ILLUSTRATIVE ONLY AND SHALL BE SUPPLEMENTED BY THE SITE CONTRACTOR AS NEEDED.
16. TO THE GREATEST EXTENT PRACTICABLE, IMPACTS TO THE SALT MARSH SHALL BE MINIMIZED. EROSION CONTROLS SHALL BE INSTALLED, MONITORED, AND ADJUSTED AS REQUIRED THROUGHOUT THE DURATION OF THE PROJECT. UPON COMPLETION, DISTURBED AREAS SHALL BE REPLANTED WITH PLUGS OF SALTMARSH CORDGRASS (SPARTINA ALTERNIFLORA).



DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED
PROFESSIONAL ENGINEER

2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

EROSION CONTROL PLAN

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=120' (11"X17")
SCALE: 1"=60' (22"X34")

SEPTEMBER 29, 2021

Seacoast Division
TFM®
Civil Engineers
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Traffic Engineers
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Portsmouth, NH 03801
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FILE	47099.01	DR	HEG	FB	–	C–15
		CK	JCC	CADFILE	47099–01_EROSION_MAIN	

Feb 15, 2022 - 2:55pm
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SOIL CHARACTERISTICS

THE SOIL IN THE VICINITY OF THE SITE CONSIST OF UDORTHENTS (UNKNOWN, BUT ASSUMED TO BE HSG D), NEWFIELDS (HSG B), AND CANTON (HSG B). THESE SOILS ARE CLASSIFIED AS VARIABLE, MODERATELY DRAINED, AND WELL-DRAINED, RESPECTIVELY.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 367,133 SQUARE FEET (8.4± ACRES). CONSTRUCTION SHALL BE PHASED TO LIMIT DISTURBED AREAS TO LESS THAN 5 ACRES.

CRITICAL NOTE: THIS DRAWING IS PROVIDED FOR GENERAL GUIDANCE. ALL SPECIAL EROSION CONTROL MEASURES MUST BE EXECUTED IN ACCORDANCE WITH APPLICABLE CURRENT STATE AND LOCAL REGULATIONS, APPROVED SWPPP, AND PERMIT REQUIREMENTS.

SEQUENCE OF MAJOR ACTIVITIES

1. INSTALL PERIMETER CONTROLS, STABILIZED CONSTRUCTION ENTRANCE, AND TEMPORARY EROSION CONTROL MEASURES PER APPROVED SITE DEVELOPMENT PLANS, PERMITS, OR SWPPP IF REQUIRED, PRIOR TO EARTH MOVING OPERATIONS.
2. DEMOLISH EXISTING SITE WORK DESIGNATED FOR REMOVAL.
3. INSTALL STORMWATER TREATMENT PONDS AND SWALES BEFORE ROUGH GRADING THE SITE.
4. COMPLETE MAJOR GRADING OF SITE.
5. CONSTRUCT BUILDING PAD, STORMWATER SYSTEM, AND SITE UTILITIES.
6. CONSTRUCT PARKING AREAS.
7. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND SITE IS STABILIZED, REMOVE ALL INLET PROTECTION, SILT BARRIERS, AND SEDIMENT THAT HAS BEEN TRAPPED BY THESE DEVICES.
8. CONSULT APPLICABLE REGULATIONS, PERMITS, CONDITIONS, AND APPROVED SWPPP FOR CONDITIONS RELATED TO NOTICE OF TERMINATION, IF REQUIRED.

EROSION AND SEDIMENT CONTROLS AND STABILIZATION PRACTICES

STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES AND DISTURBED AREAS WHERE CONSTRUCTION ACTIVITY WILL NOT OCCUR FOR MORE THAN TWENTY ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:

1. BASE COURSE GRAVELS, WHICH MEET THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2, HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT BARRIERS. ALL STORM DRAIN INLETS SHALL BE PROVIDED WITH BARRIER FILTERS. STONE RIPRAP SHALL BE PROVIDED AT THE OUTLETS OF DRAINAGE PIPES WHERE EROSIVE VELOCITIES ARE ENCOUNTERED.

OFF SITE VEHICLE TRACKING

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED.

INSTALLATION, MAINTENANCE, AND INSPECTION OF EROSION AND SEDIMENT CONTROLS

A. GENERAL

THESE ARE THE GENERAL INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO IMPLEMENT THE PLAN.

1. STABILIZATION OF ALL SWALES, DITCHES, AND PONDS IS REQUIRED PRIOR TO DIRECTING FLOW TO THEM.
2. THE SMALLEST PRACTICAL PORTION OF THE SITE WILL BE DENUDED AT ONE TIME. (5 AC MAX)
3. ALL CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH APPLICABLE REGULATIONS, PERMITS, AND CONDITIONS AND FOR PROJECTS REQUIRING A NHDES AOT PERMIT AND NHPDES EPA GCP, DISCHARGING TO A NON-SENSITIVE WATERBODY, AT LEAST EVERY 7 DAYS AND AFTER A 0.5 INCH RAIN EVENT OR GREATER, AND INSPECTIONS SHALL BE CONDUCTED BY THE ENVIRONMENTAL MONITOR IF ONE IS REQUIRED, PURSUANT TO ENV-WQ 1505.03(B) OR FOR PROJECTS REQUIRING A NHDES AOT PERMIT AND NHPDES EPA GCP, DISCHARGING TO A SENSITIVE WATERBODY, AT LEAST EVERY 7 DAYS AND AFTER A 0.25 INCH RAIN EVENT OR GREATER, AND INSPECTIONS SHALL BE CONDUCTED BY THE ENVIRONMENTAL MONITOR IF ONE IS REQUIRED, PURSUANT TO ENV-WQ 1505.03(B).
4. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
5. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT BARRIER WHEN IT HAS REACHED ONE THIRD THE HEIGHT OF THE BARRIER.
6. ALL DIVERSION DIKES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.
7. TEMPORARY SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND UNHEALTHY GROWTH.
8. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION.
9. THE CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING AN ENVIRONMENTAL MONITOR, IF ONE IS REQUIRED, PURSUANT TO ENV-WQ 1505.03(B), IS CONTRACTED.

B. FILTERS / BARRIERS

1. SILT SOCKS

A. KNOTTED MESH NETTING MATERIAL SHALL BE DELIVERED TO SITE IN A 5 MIL CONTINUOUS, TUBULAR, HDPE 3/8" MATERIAL, FILLED WITH COMPOST CONFORMING TO THE FOLLOWING REQUIREMENTS:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
PH	TMECC 04.11-A	5.0 TO 8.0
PARTICLE SIZE	TMECC 02.02-B	2" SIEVE AND MIN. 60% GREATER THAN THE 3/8" SIEVE
MOISTURE CONTENT		STND TESTING < 60%

MATERIAL SHALL BE RELATIVELY FREE OF INERT OR FOREIGN MAN-MADE MATERIALS

MATERIAL SHALL BE WEED FREE AND DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER, FREE FROM ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH.

B. SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK SHALL BE REMOVED ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE SILT SOCK.

C. SILT BARRIER SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

2. SEQUENCE OF INSTALLATION

SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.

3. MAINTENANCE

A. SILT BARRIERS SHALL BE INSPECTED WEEKLY AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.

B. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

C. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE THIRD (1/3) THE HEIGHT OF THE BARRIER.

D. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFIRM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

C. MULCHING

1. TIMING

IN ORDER FOR MULCH TO BE EFFECTIVE, IT MUST BE IN PLACE PRIOR TO MAJOR STORM EVENTS. THERE ARE TWO (2) TYPES OF STANDARDS WHICH SHALL BE USED TO ASSURE THIS:

A. APPLY MULCH PRIOR TO ANY STORM EVENT.

THIS IS APPLICABLE WHEN WORKING WITHIN 100' OF WETLANDS. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS, USUALLY BY CONTACTING THE NATIONAL WEATHER SERVICE, TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.

B. REQUIRED MULCHING WITHIN A SPECIFIED TIME PERIOD.

THE TIME PERIOD CAN RANGE FROM 14 TO 21 DAYS OF INACTIVITY ON AN AREA, WHERE THE LENGTH OF TIME VARIES WITH SITE CONDITIONS. PROFESSIONAL JUDGMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.

2. GUIDELINES FOR WINTER MULCH APPLICATION.

WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 6,000 POUNDS OF HAY OR STRAW PER ACRE. A TACKIFIER MAY BE ADDED TO THE MULCH.

3. MAINTENANCE

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.

D. VEGETATIVE PRACTICE

1. AFTER ROUGH GRADING OF THE SUBGRADE HAS BEEN COMPLETED AND APPROVED, THE SUB GRADE SURFACE SHALL BE SCARIFIED TO A DEPTH OF 4". THEN, FURNISH AND INSTALL A LAYER OF LOAM PROVIDING A ROLLED THICKNESS AS SPECIFIED IN THESE PLANS. ANY DEPRESSIONS WHICH MAY OCCUR DURING ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM, REGRADED AND REROLLED UNTIL THE SURFACE IS TRUE TO THE FINISHED LINES AND GRADES. ALL LOAM NECESSARY TO COMPLETE THE WORK UNDER THIS SECTION SHALL BE SUPPLIED BY THE SITE SUBCONTRACTOR.
2. ALL LARGE STIFF CLODS, LUMPS, BRUSH, ROOTS, DEBRIS, GLASS, STUMPS, LITTER, AND OTHER FOREIGN MATERIAL, AS WELL AS STONES OVER 1" IN DIAMETER, SHALL BE REMOVED FROM THE LOAM AND DISPOSED OF OFF SITE. THE LOAM SHALL BE RAKED SMOOTH AND EVEN.
3. THE LOAM SHALL BE PREPARED TO RECEIVE SEED BY REMOVING STONES, FOREIGN OBJECTS AND GRADING TO ELIMINATE WATER POCKETS AND IRREGULARITIES PRIOR TO PLACING SEED. FINISH GRADING SHALL RESULT IN STRAIGHT UNIFORM GRADES AND SMOOTH, EVEN SURFACES WITHOUT IRREGULARITIES TO LOW POINTS.
4. SHAPE THE AREAS TO THE LINES AND GRADES REQUIRED. THE SITE SUBCONTRACTOR'S ATTENTION IS DIRECTED TO THE SCHEDULING OF LOAMING AND SEEDING OF GRADED AREAS TO PERMIT SUFFICIENT TIME FOR THE STABILIZATION OF THESE AREAS. IT SHALL BE THE SITE SUBCONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE AREAS DURING THE CONSTRUCTION PERIOD AND REGRADE, LOAM AND RESEED ANY DAMAGED AREAS.
5. ALL AREAS DISTURBED BY CONSTRUCTION WITHIN THE PROPERTY LINES AND NOT COVERED BY STRUCTURES, PAVEMENT, OR MULCH SHALL BE LOAMED AND SEEDED.
6. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5.
7. IF PERMITTED PER LOCAL AND STATE REGULATIONS, FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10-20-20 FERTILIZER.
8. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4 1/2 POUNDS AND 5 1/2 POUNDS PER INCH OF WIDTH.
9. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4" AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH.
10. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE. MULCH THAT BLOWS OR WASHES AWAY SHALL BE REPLACED IMMEDIATELY AND ANCHORED USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.
11. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.
12. THE SITE SUBCONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED, INCLUDING CUTTING, AS SPECIFIED HEREIN AFTER UNDER MAINTENANCE AND PROTECTION.
13. UNLESS OTHERWISE APPROVED, SEEDING SHALL BE DONE DURING THE APPROXIMATE PERIODS OF EARLY SPRING TO SEPTEMBER 30, WHEN SOIL CONDITIONS AND WEATHER ARE SUITABLE FOR SUCH WORK. IN NO CASE SHALL THE WEED CONTENT EXCEED 1 PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. FOR TEMPORARY PLANTINGS AFTER SEPTEMBER 30, TO EARLY SPRING AND FOR TEMPORARY PROTECTION OF DISTURBED AREAS:

A. FOLLOW ABOVE SLOPE, LOAM DEPTH AND GRADING REQUIREMENTS.
B. FERTILIZER SHALL BE SPREAD AND WORKED INTO THE SURFACE AT A RATE OF 500 POUNDS PER ACRE.

MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:

WINTER RYE (FALL SEEDING)	2.5 LBS/1,000 SF
OATS (SPRING SEEDING)	2.0 LBS/1,000 SF
MULCH	1.5 TONS/ACRE

E. CATCH BASIN INLET PROTECTION

1. INLET BASKET STRUCTURE

A. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY PRIOR TO DISTURBING PAVEMENT AND SHALL REMAIN IN PLACE AND MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

B. MOLD 6X6, 42 LB. WIRE SUPPORT AROUND INLET FRAME AND GRATE AND EXTEND 6" BEYOND SIDES. SECURE FILTER FABRIC TO WIRE SUPPORT.

C. THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE OR POLYVINYLCHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:

GRAB STRENGTH: 45 LB. MINIMUM IN ANY PRINCIPAL DIRECTION (ASTM D1682)
MULLEN BURST STRENGTH: MIN. 60PSI (ASTM D774)

D. THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 GPM.

E. THE INLET PROTECTION SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.

F. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

F. WINTER CONSTRUCTION SEQUENCE

1. ALL PROPOSED POST-DEVELOPMENT LANDSCAPED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1 AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENT.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE PARKING AREAS WHERE ACTIVE CONSTRUCTION HAS STOPPED FOR THE WINTER, ALL TRAVEL SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOWFALL AFTER EACH STORM EVENT.

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT BARRIERS AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.

WASTE DISPOSAL

1. WASTE MATERIALS
ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE
ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE
ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION

1. MATERIAL MANAGEMENT PRACTICES
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:

GOOD HOUSEKEEPING:
THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT:

A. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.

B. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.

C. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.

D. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.

E. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

F. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.

HAZARDOUS PRODUCTS:
THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:

A. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.

B. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.

C. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

2. PRODUCT SPECIFICATION PRACTICES
THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:

PETROLEUM PRODUCTS:
ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

FERTILIZERS:
FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

PAINTS:
ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

CONCRETE TRUCKS:
CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA DESIGNATED ON SITE.

SPILL CONTROL PRACTICES

IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

A. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.

B. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.

C. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.

D. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

E. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.

F. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT RECURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.

G. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

DUST CONTROL

THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL METHODS SHALL INCLUDE, BUT NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

ROCK BLASTING & WATER QUALITY NOTES

1. IDENTIFY DRINKING WATER WELLS LOCATED WITHIN 2000 FEET OF THE PROPOSED BLASTING ACTIVITIES. DEVELOP A GROUNDWATER QUALITY SAMPLING PROGRAM TO MONITOR FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA. THE PLAN MUST INCLUDE PRE AND POST BLAST WATER QUALITY MONITORING AND BE APPROVED BY NHDES PRIOR TO INITIATING BLASTING. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY NHDES.

2. ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING, AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.
   A. LOADING PRACTICES. THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
      (1) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
      (2) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL.
      (3) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF SITE DISPOSAL.
      (4) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
      (5) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
      (6) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING, AND COLUMN RISE NEED TO BE ATTENDED TO.
   B. EXPLOSIVE SELECTION. THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
      (1) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
      (2) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.
   C. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
   D. MUCK PILE MANAGEMENT. MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
      (1) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
      (2) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
   E. SPILL PREVENTION MEASURES AND SPILL MITIGATION. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
      (1) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE:
         - STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
         - SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
         - LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
         - INSPECT STORAGE AREAS WEEKLY.
         - COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
         - WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
         - SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
      (2) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
         - EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
         - PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
         - HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
         - USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
         - PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
      (3) THE TRAINING OF ONSITE EMPLOYEES AND THE ON SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
      (4) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING, AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF NHDES (NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD DWGB 22 6: "BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT" OR ITS SUCCESSOR DOCUMENT).

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

EROSION CONTROL NOTES

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

1"=80' (11"X17")
SCALE: 1"=40' (22"X34")

SEPTEMBER 29, 2021

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	HEG	FB	–	
47099.01	CK	JCC	CADFILE	47099-01_EROSION_MAIN	C-16

Feb 15, 2022 - 2:55pm
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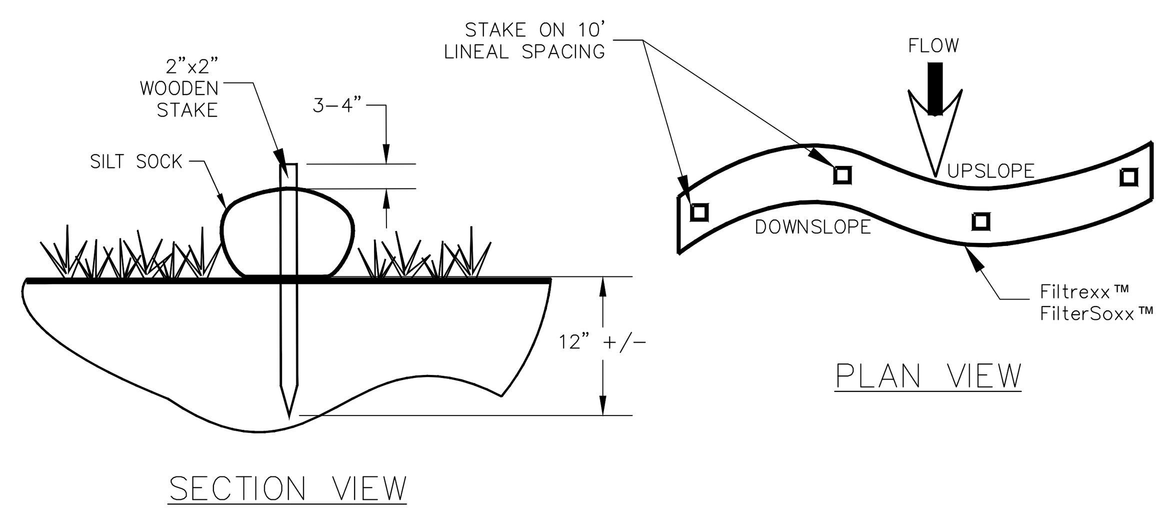
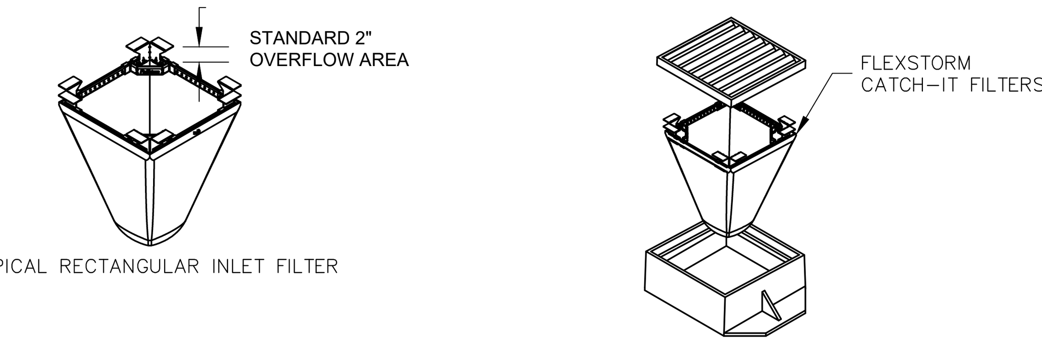


NOTES:

1. SILT SOCK SHALL BE FILTREXX™ SILTSOXX™ NATURAL ORIGINAL OR APPROVED EQUIVALENT.
2. ALL MATERIAL AND SIZES TO MEET FILTREXX SPECIFICATIONS.
3. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
4. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.

FILTREXX™ FILTERSOXX™ STAKING

NOT TO SCALE



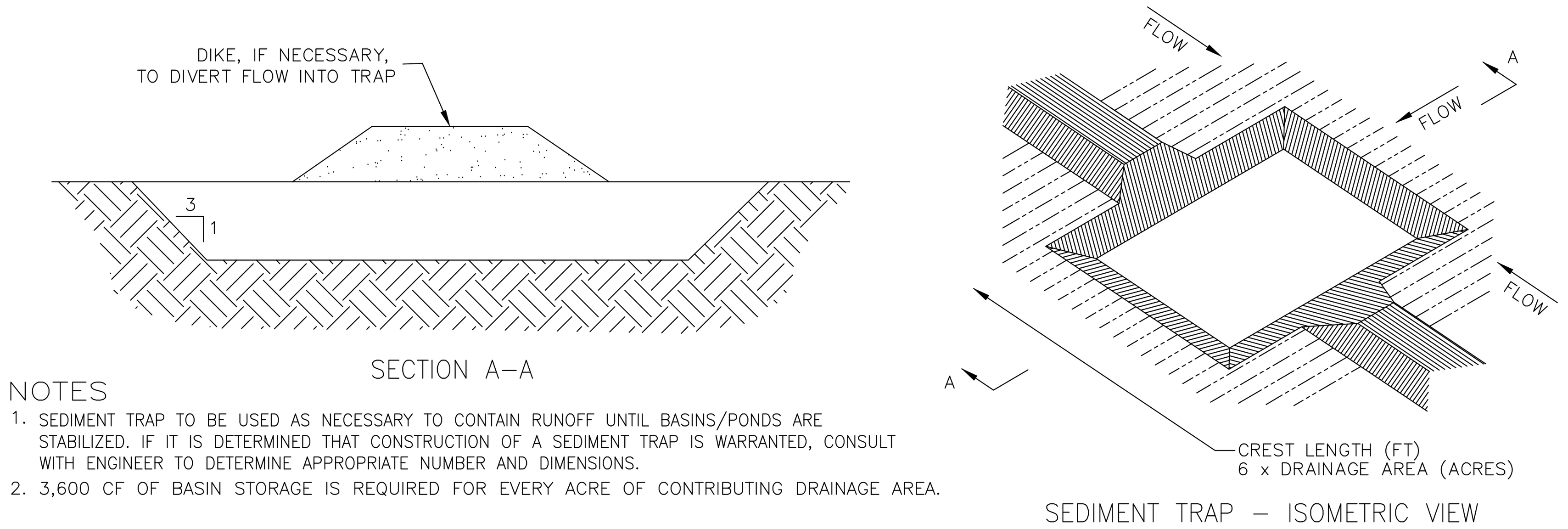
NOTES:

1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. INSPECTION SHOULD OCCUR FOLLOWING ANY RAIN EVENT > ½".
3. EMPTY THE SEDIMENT BAG PER MANUFACTURER'S SPECIFICATIONS.
4. REMOVED CAKED ON SILT FROM SEDIMENT BAG AND FLUSH WITH MEDIUM SPRAY WITH OPTIMAL FILTRATION.
5. REPLACE BAG IF TORN OR PUNCTURED TO > ½" DIAMETER ON LOWER HALF OF BAG.

ALL PRODUCTS MANUFACTURED BY INLET & PIPE PROTECTION, INC.
A DIVISION OF ADS, INC.
WWW.INLETFILTERS.COM
(866) 287-8655 INFO@INLETFILTERS.COM

INLET PROTECTION

NOT TO SCALE

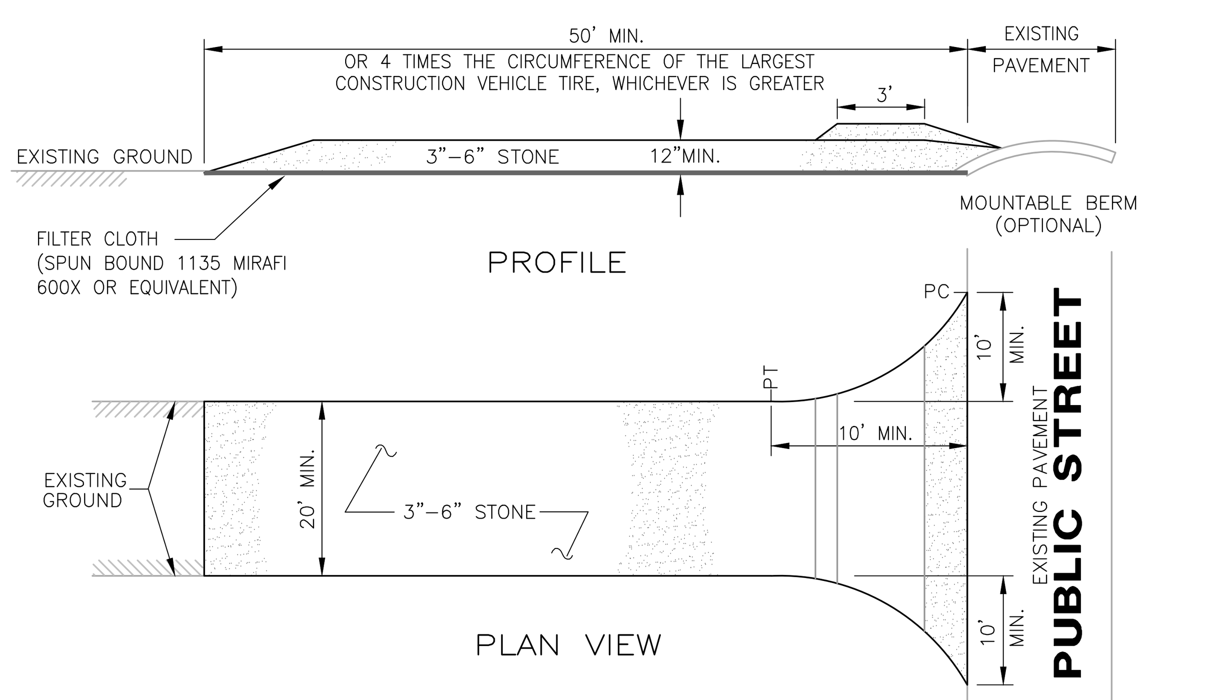


NOTES

1. SEDIMENT TRAP TO BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL BASINS/PONDS ARE STABILIZED. IF IT IS DETERMINED THAT CONSTRUCTION OF A SEDIMENT TRAP IS WARRANTED, CONSULT WITH ENGINEER TO DETERMINE APPROPRIATE NUMBER AND DIMENSIONS.
2. 3,600 CF OF BASIN STORAGE IS REQUIRED FOR EVERY ACRE OF CONTRIBUTING DRAINAGE AREA.

SEDIMENT TRAP

NOT TO SCALE

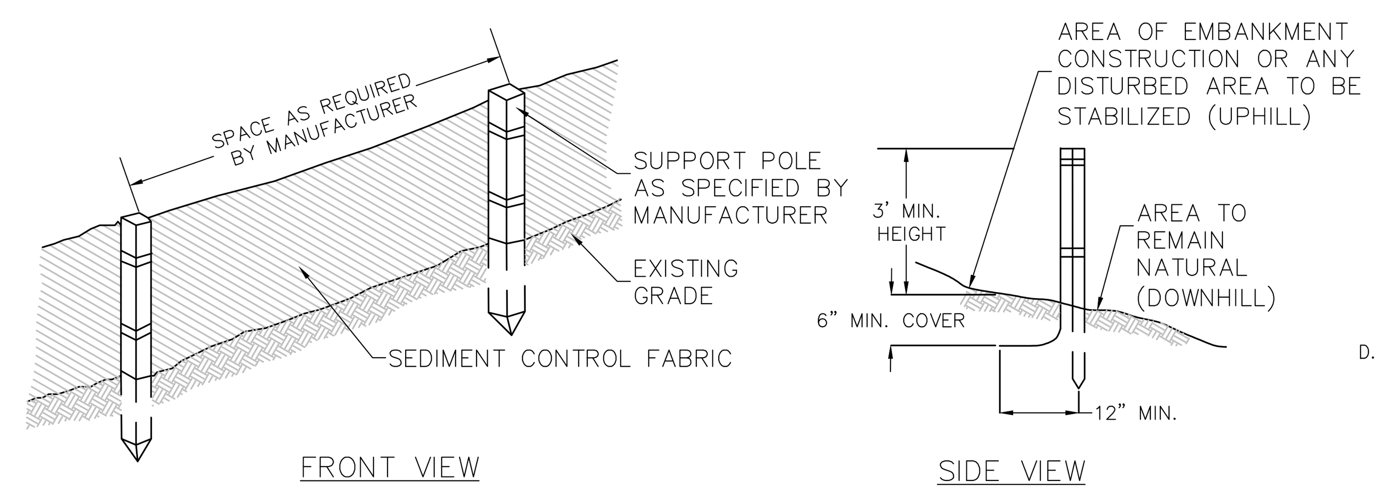


NOTES

1. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
2. WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
3. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR BEST MANAGEMENT PRACTICE FOR SILT FENCES, OF THE NEW HAMPSHIRE STORMWATER MANUAL, DECEMBER 2008.
2. THE HEIGHT OF THE BARRIER SHALL NOT EXCEED 36 INCHES.
3. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY SEALED. SEE MANUFACTURER'S RECOMMENDATIONS.
4. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 16 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL BE AS MANUFACTURER RECOMMENDS.
5. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER IN ACCORDANCE WITH RECOMMENDATIONS.
6. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE, AND WILL EXTEND TO A MINIMUM OF 8 INCHES INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED INTO EXISTING TREES.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
8. FILTER BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
9. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL, AND AT LEAST DAILY DURING PROLONGED RAINFALL, ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
10. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
11. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-THIRD THE HEIGHT OF THE BARRIER.
12. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED, SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

SILT FENCE

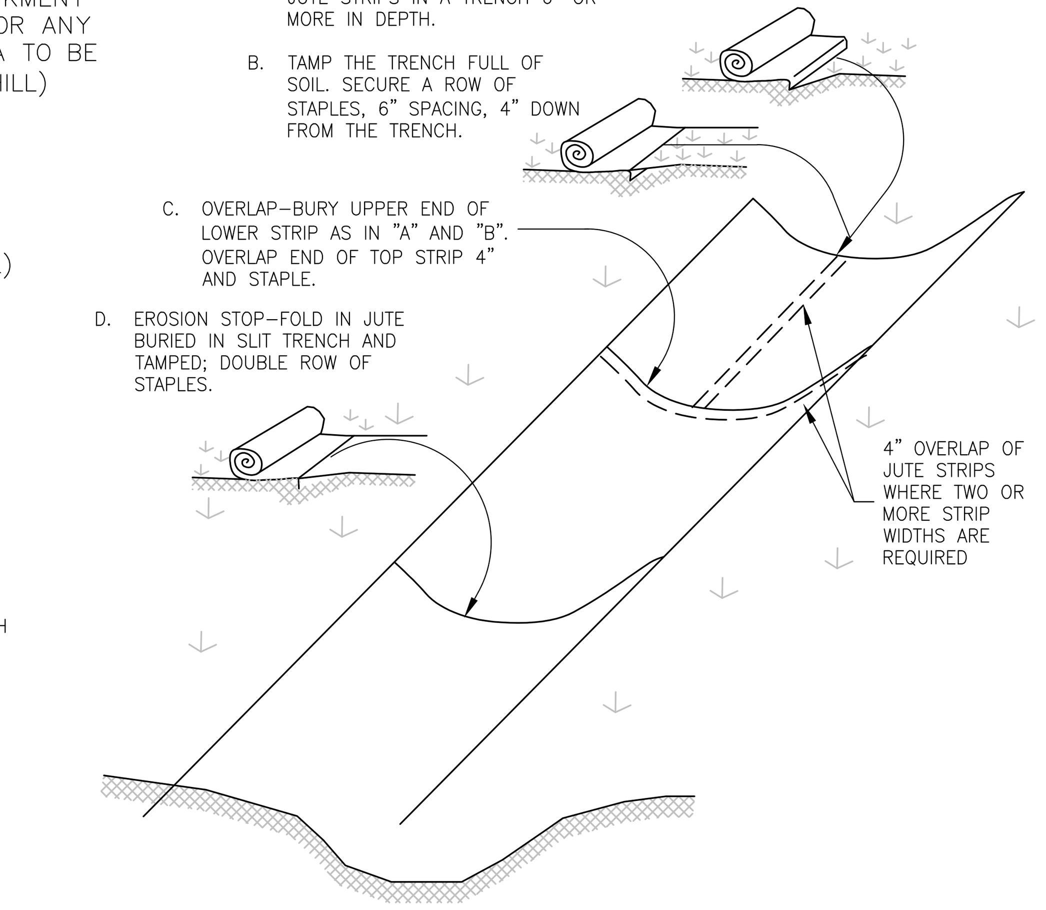
NOT TO SCALE

A. BURY THE TOP END OF THE JUTE STRIPS IN A TRENCH 6" OR MORE IN DEPTH.

B. TAMP THE TRENCH FULL OF SOIL. SECURE A ROW OF STAPLES, 6" SPACING, 4" DOWN FROM THE TRENCH.

C. OVERLAP-BURY UPPER END OF LOWER STRIP AS IN "A" AND "B". OVERLAP END OF TOP STRIP 4" AND STAPLE.

D. EROSION STOP-FOLD IN JUTE BURIED IN SLIT TRENCH AND TAMPED; DOUBLE ROW OF STAPLES.



NOTES

1. MATTING SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS, INCLUDING STAPLE PATTERNS.
2. STAPLES SHALL BE BIODEGRADABLE.

JUTE MATTING

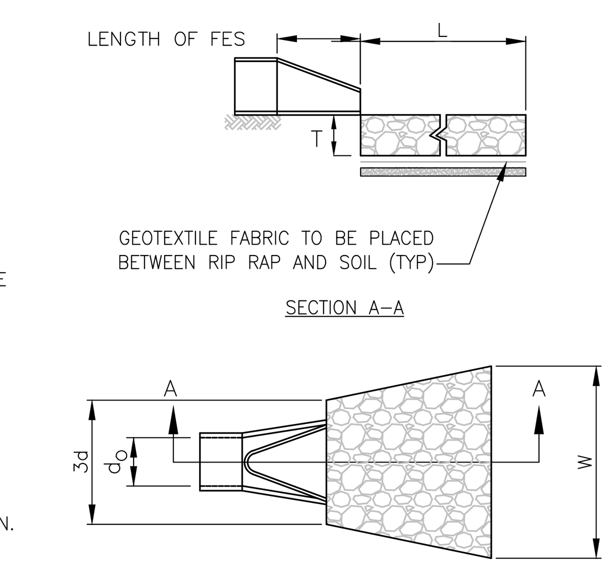
NOT TO SCALE

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 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 THE OUTLET PROTECTION APRON.

CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR 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 RAP. 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".
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. ADD ANIMAL SCREEN TO FLARED END SECTION OUTLET.



RIP RAP DIMENSIONS

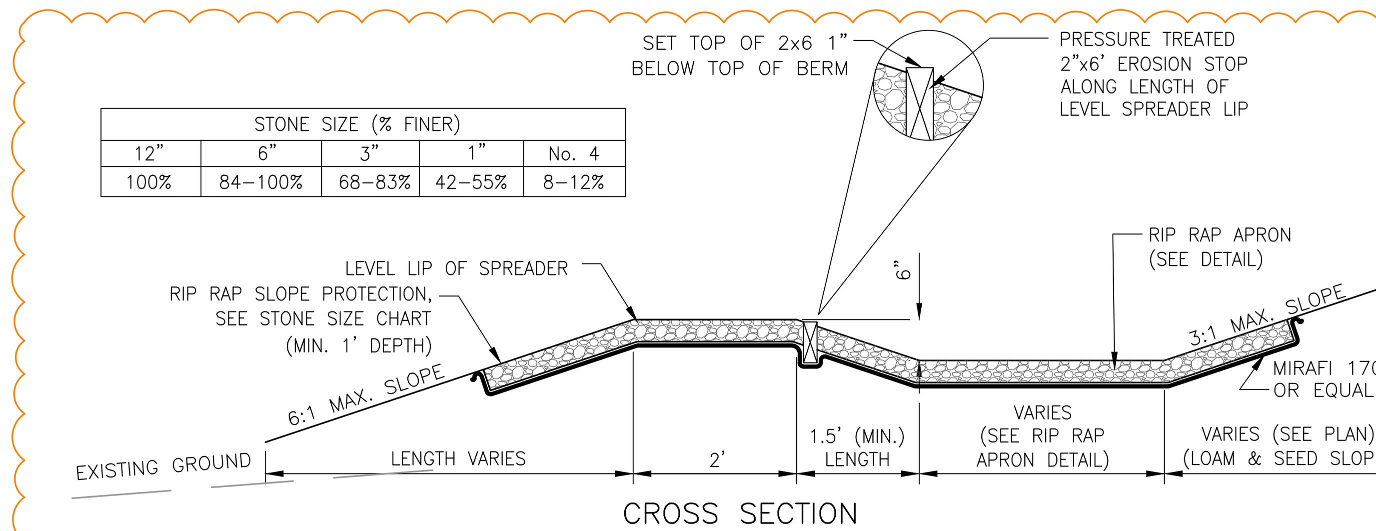
LOCATION	FES-4
d50 STONE SIZE:	3"
LENGTH OF APRON (L):	4'
WIDTH OF APRON (W):	3'
DEPTH OF RIP RAP (T):	6"

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE (INCHES)
100	4.50 TO 6.00
85	3.90 TO 5.40
50	3.00 TO 4.50
15	0.90 TO 1.50

RIP RAP AND FLARED END SECTION WITH OUTLET PROTECTION

NOT TO SCALE

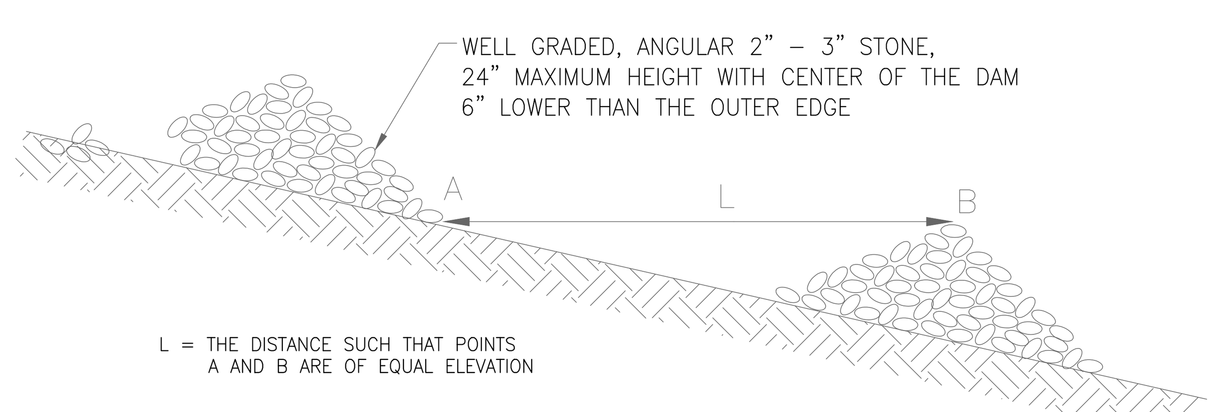
STONE SIZE (% FINER)				
12"	6"	3"	1"	No. 4
100%	84–100%	68–83%	42–55%	8–12%



CROSS SECTION

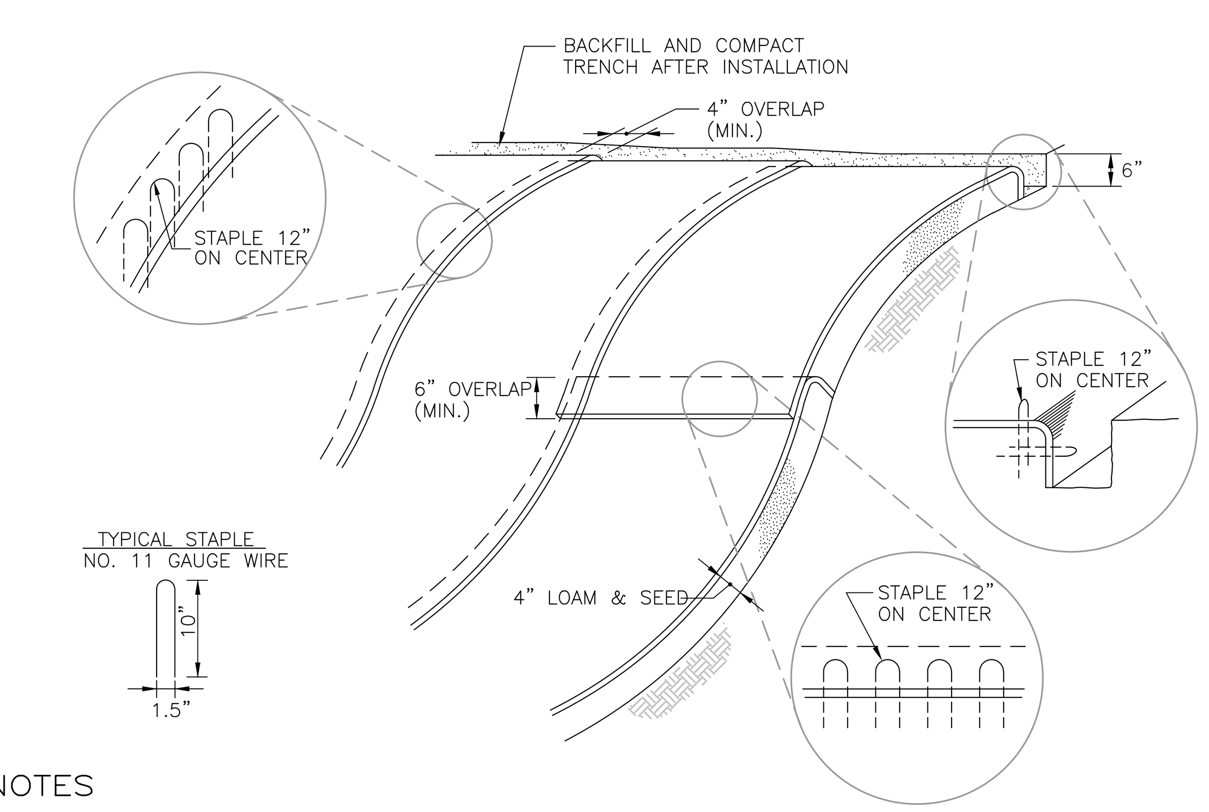
LEVEL SPREADER

NOT TO SCALE



STONE CHECK DAM

NOT TO SCALE



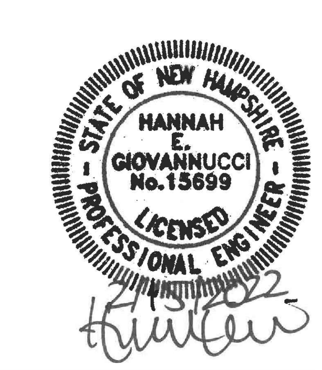
NOTES

1. INSTALL AT DISTURBED LOCATIONS WITH 2:1 SLOPES OR GREATER AND AS INDICATED PER PLANS.
2. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH. BACKFILL AND COMPACT TRENCH AFTER STAPLING.
3. ROLL THE BLANKET DOWN THE SLOPE OR SWALE IN THE DIRECTION OF THE WATER FLOW.
4. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE BLANKET END OVER END WITH 6 INCH (MIN.) OVERLAP AND ANCHOR DOWN SLOPE BLANKET IN A 6 INCH DEEP TRENCH.
6. BLANKET SHALL BE NORTH AMERICAN GREEN C125BN, EAST COAST EROSION CONTROL ECC-2B, AMERICAN EXCELSIOR COMPANY CURLEX III FIBRENET, ROLANKA GEONATURAL EROSION & SEDIMENT CONTROL MATT JUTEMAT OR BIOD-OCF 30, OR APPROVED EQUAL.
7. BLANKET SHALL BE PLACED WITHIN 24-HRS AFTER SOWING SEE IN THE AREA BEING COVERED

EROSION CONTROL BLANKET

NOT TO SCALE

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION



SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DETAILS

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

Seacoast Division
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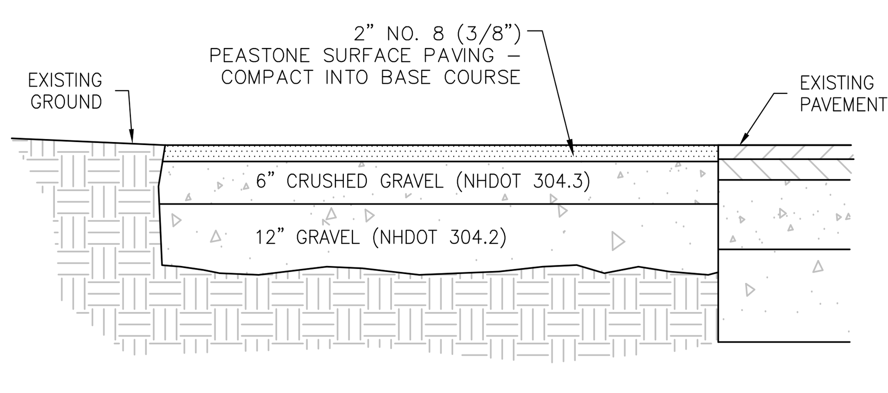
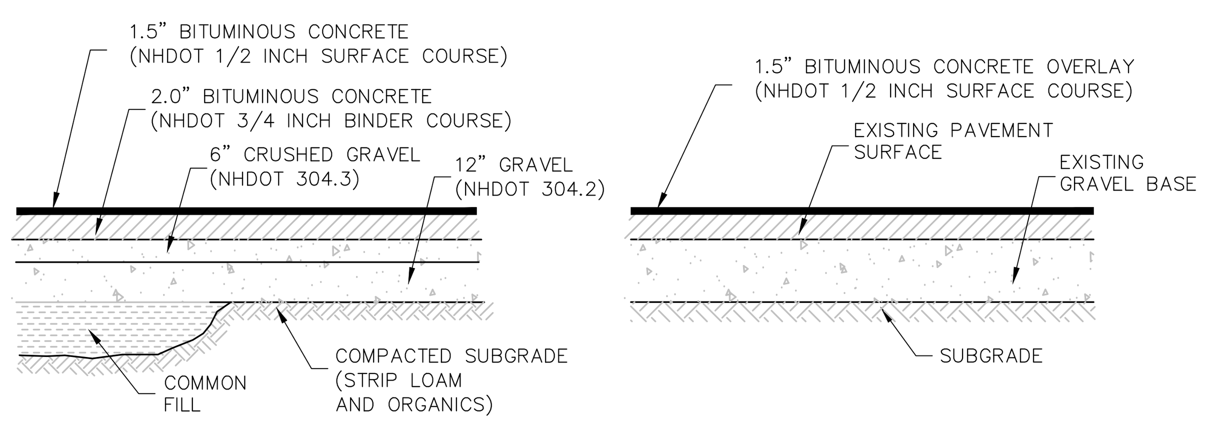


PEASTONE GRAVEL DRIVEWAY

NOT TO SCALE



STANDARD DUTY PAVEMENT

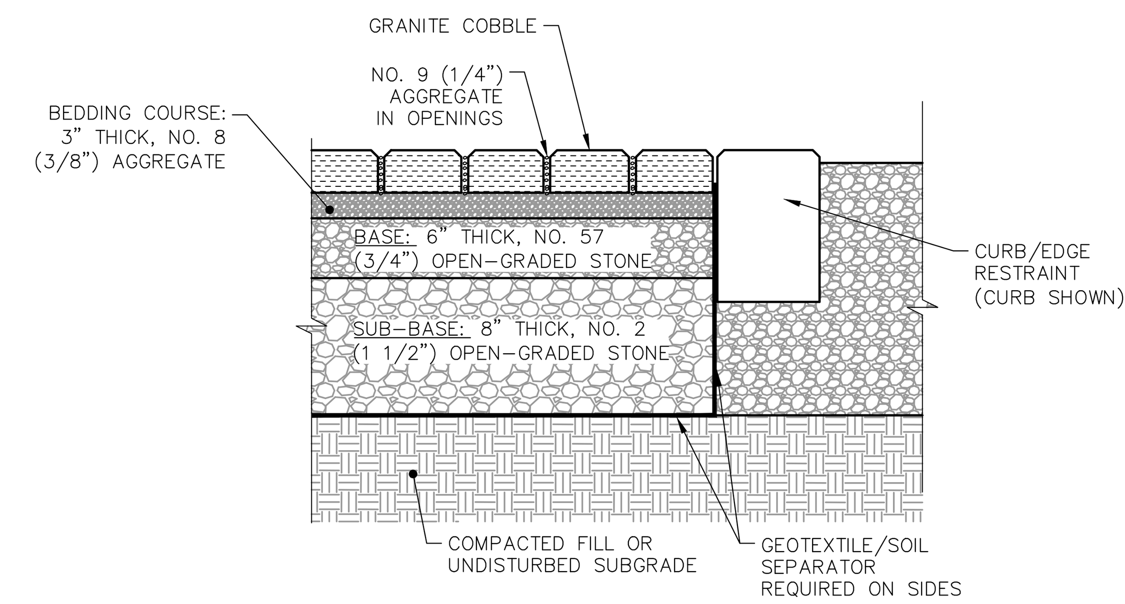
OVERLAY

NOTES

1. SEE GRADING & EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS–SLOPE.
2. PROVIDE CLEAN BUTT TO EXISTING PAVEMENT– USE TACK COAT. A TACK COAT SHALL ALSO BE PLACED BETWEEN GRAVEL COURSE AND SUCCESSIVE LAYERS OF BITUMINOUS CONCRETE. SPECIFICALLY, A TACK COAT SHALL BE PLACED ATOP THE BINDER COURSE PAVEMENT PRIOR TO PLACING THE WEARING COURSE.
3. REMOVE ALL LOAM AND/OR YIELDING MATERIAL BELOW PAVEMENT.
4. BITUMINOUS MATERIALS SHALL CONFORM TO NHDOT SPECIFICATION SECTION 401.
5. BITUMINOUS CONCRETE SHALL BE COMPACTED TO AT LEAST 92.5% OF THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D2041 OR AASHTO T209. PLACEMENT TEMPERATURES OF BITUMINOUS CONCRETE MIXES, IN GENERAL, RANGE BETWEEN 270 AND 310 DEGREES FAHRENHEIT.
6. PAVEMENT BASE COURSE AGGREGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.3 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.
7. PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOF ROLLED AND COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY.
8. THE EXPOSED SOIL SUBGRADE SHOULD BE PROOF ROLLED PRIOR TO THE PLACEMENT OF SUBBASE GRAVEL, AND SOFT AREAS SHOULD BE REPAIRED AND REPLACED.
9. ALL PARKING SPACES SHALL BE STANDARD DUTY. ALL OTHER LOCATIONS SHALL BE HEAVY DUTY.

PAVEMENT SECTIONS

NOT TO SCALE



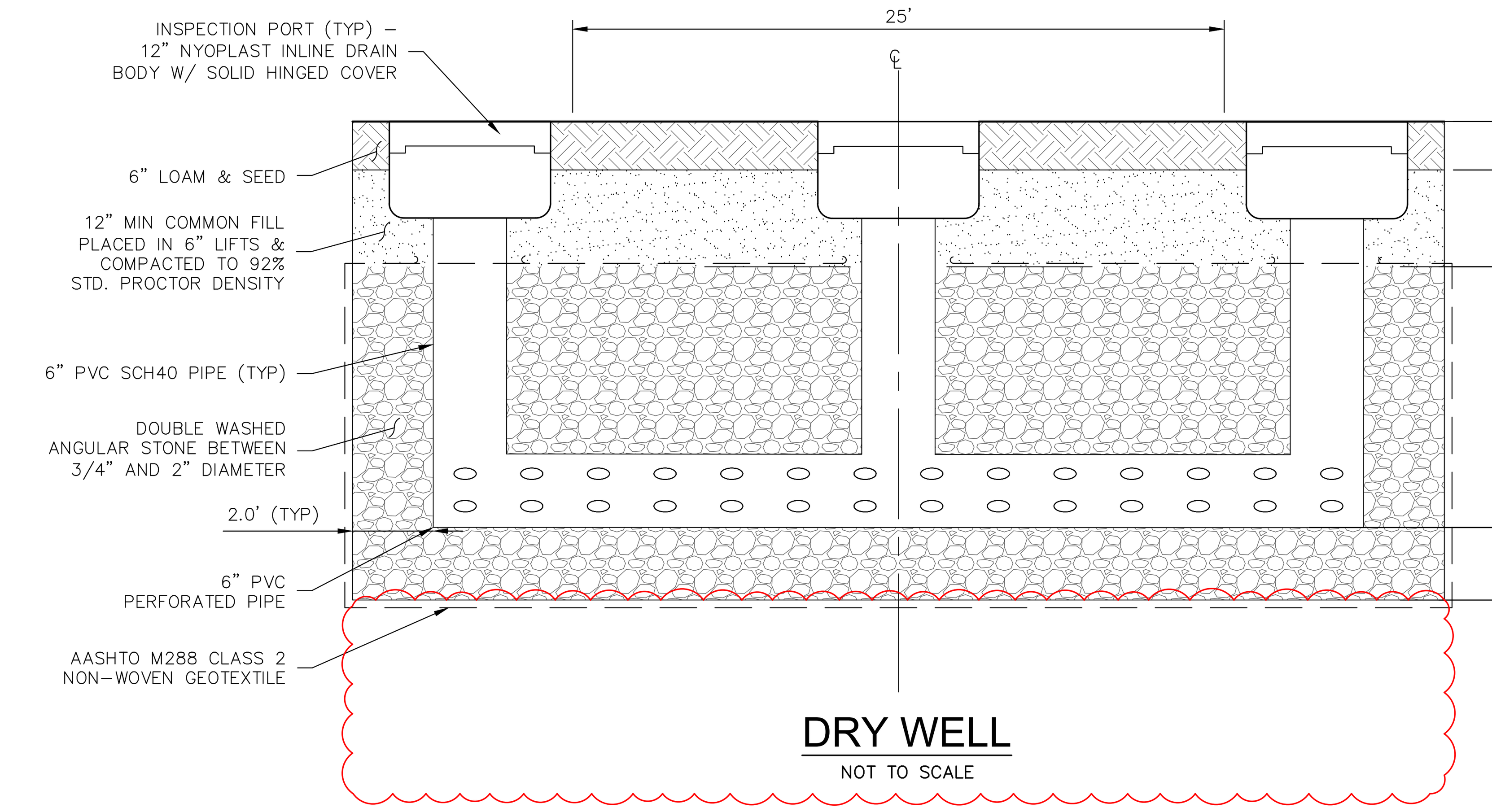
PROFILE VIEW

NOTES:
1. REFER TO LANDSCAPE ARCHITECTURE FOR ADDITIONAL DETAIL AND SPECIFIC SURFACE TREATMENT.
2. PERMEABLE PAVERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. INSTALLATION OF PERMEABLE PAVER SECTION SHALL BEGIN AT LOWEST GRADE AND END AT HIGHEST GRADE.

MAINTENANCE:
1. PERMEABLE PAVERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. PERMEABLE PAVERS FUNCTION AS AN EFFECTIVE STORMWATER TREATMENT SYSTEM AND REMAIN CLOG–FREE FOR YEARS WITH REASONABLE GOOD HOUSEKEEPING PRACTICES.
2. KEEP THE PAVEMENT FREE OF LEAVES, WEEDS, AND SEDIMENT.
3. AVOID THE USE OF SAND IN THE WINTER; IF USED, SPREAD SPARINGLY.
4. PERIODICALLY SWEEP THE OPENINGS TO REMOVE CRUST THAT FORMS ON THE SURFACE. A STIFF BRISTLE BROOM WORKS WELL FOR RESIDENTIAL WALKS AND DRIVEWAYS.
5. IF PUDDLES RESULT FROM CLOGGING, INFILTRATION RATES CAN BE RESTORED TO 100% CAPACITY BY REMOVING THE AGGREGATE FROM THE OPENINGS AND REPLACING IT WITH CLEAN MATERIAL.
6. DO NOT PRESSURE WASH.
7. MINIMIZE APPLICATION OF SALT FOR ICE CONTROL.
8. INSPECT ANNUALLY FOR PAVER DETERIORATION.
9. MONITOR PERIODICALLY TO ENSURE THAT THE PAVERS DRAIN EFFECTIVELY AFTER STORMS.
10. PERIODICALLY ADD JOINT MATERIAL TO REPLACE LOST MATERIAL.
11. MAJOR CLOGGING MAY NECESSITATE REPLACEMENT OF PAVERS AND POSSIBLY FILTER COURSE AND SUB–BASE COURSE.

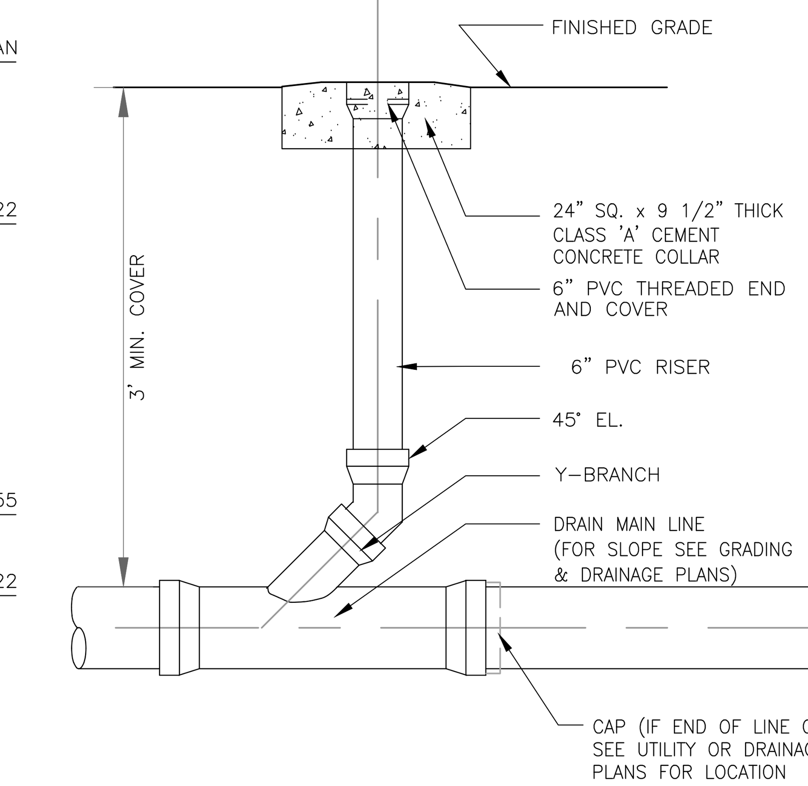
PERMEABLE PAVER

NOT TO SCALE



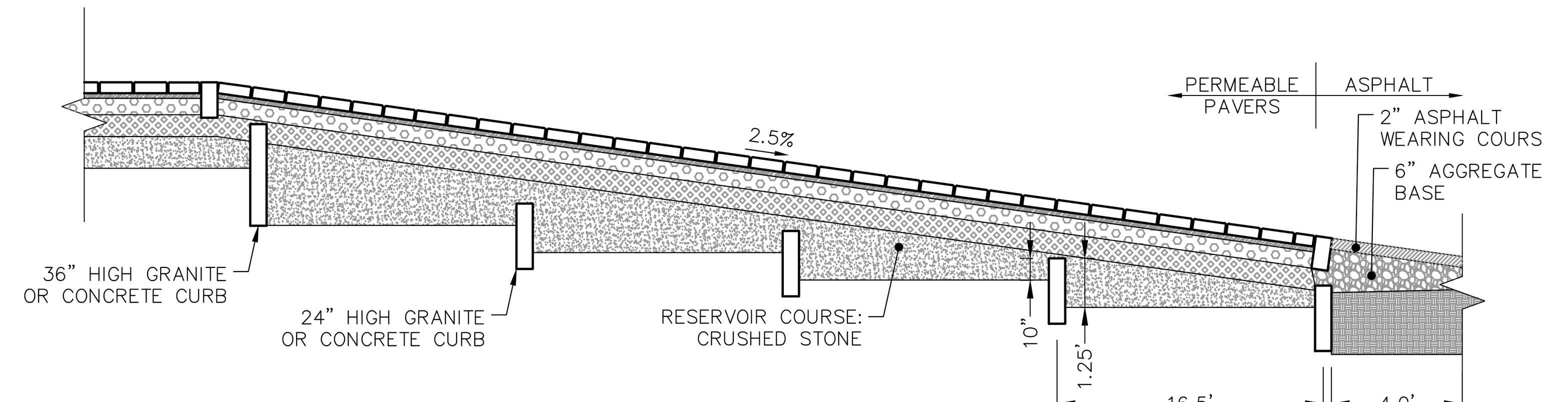
DRY WELL

NOT TO SCALE



DRAINAGE CLEAN OUT

NOT TO SCALE

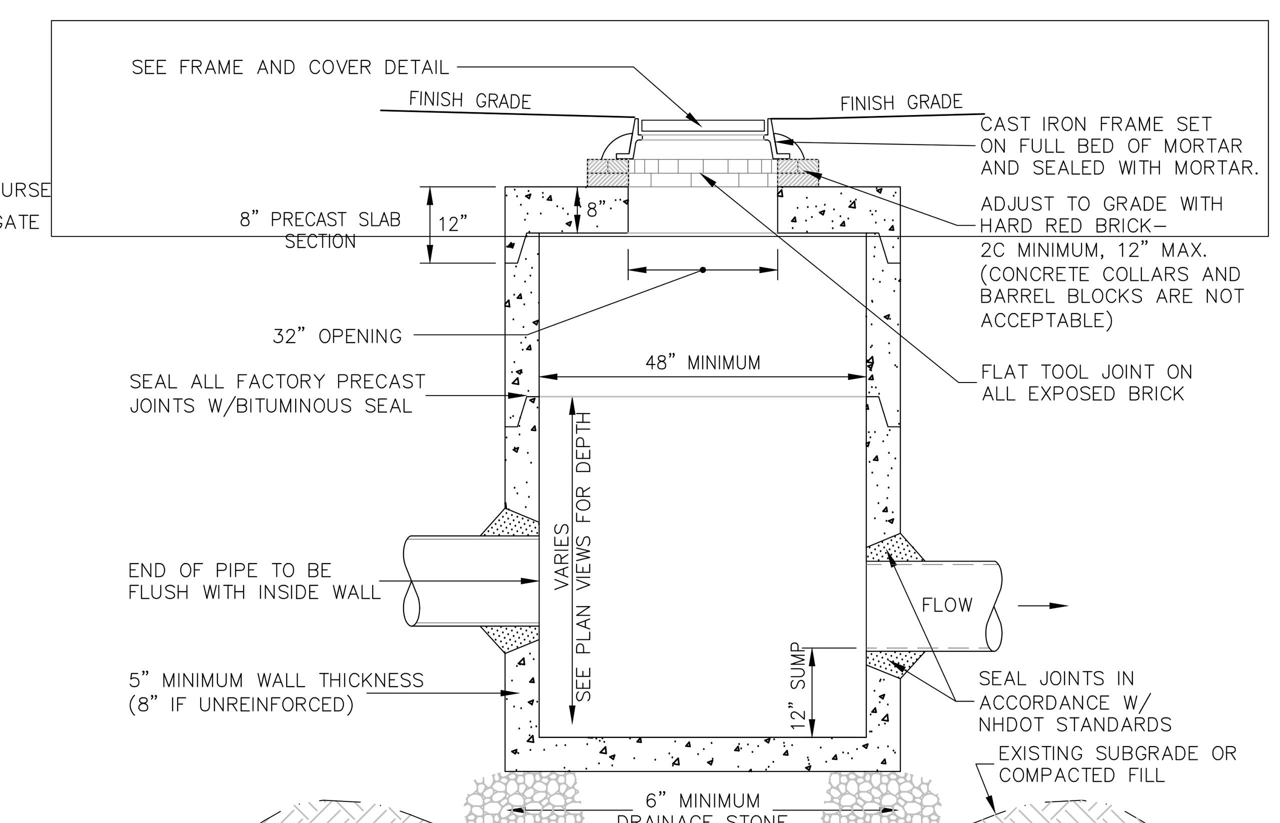


PROFILE VIEW

MAINTENANCE:
- PERMEABLE PAVERS FUNCTION AS AN EFFECTIVE STORMWATER TREATMENT SYSTEM AND REMAIN CLOG–FREE FOR YEARS WITH REASONABLE GOOD HOUSEKEEPING PRACTICES.
- KEEP THE PAVEMENT FREE OF LEAVES, WEEDS, AND SEDIMENT.
- AVOID THE USE OF SAND IN THE WINTER; IF USED, SPREAD SPARINGLY.
- PERIODICALLY SWEEP THE OPENINGS TO REMOVE CRUST THAT FORMS ON THE SURFACE. A STIFF BRISTLE BROOM WORKS WELL FOR RESIDENTIAL WALKS AND DRIVEWAYS.
- IF PUDDLES RESULT FROM CLOGGING, INFILTRATION RATES CAN BE RESTORED TO 100% CAPACITY BY REMOVING THE AGGREGATE FROM THE OPENINGS AND REPLACING IT WITH CLEAN MATERIAL.
- DO NOT PRESSURE WASH.
- MINIMIZE APPLICATION OF SALT FOR ICE CONTROL.
- INSPECT ANNUALLY FOR PAVER DETERIORATION.
- MONITOR PERIODICALLY TO ENSURE THAT THE PAVERS DRAIN EFFECTIVELY AFTER STORMS.
- PERIODICALLY ADD JOINT MATERIAL TO REPLACE LOST MATERIAL.
- MAJOR CLOGGING MAY NECESSITATE REPLACEMENT OF PAVERS AND POSSIBLY FILTER COURSE AND SUB–BASE COURSE.

PERMEABLE PAVER DRIVEWAY

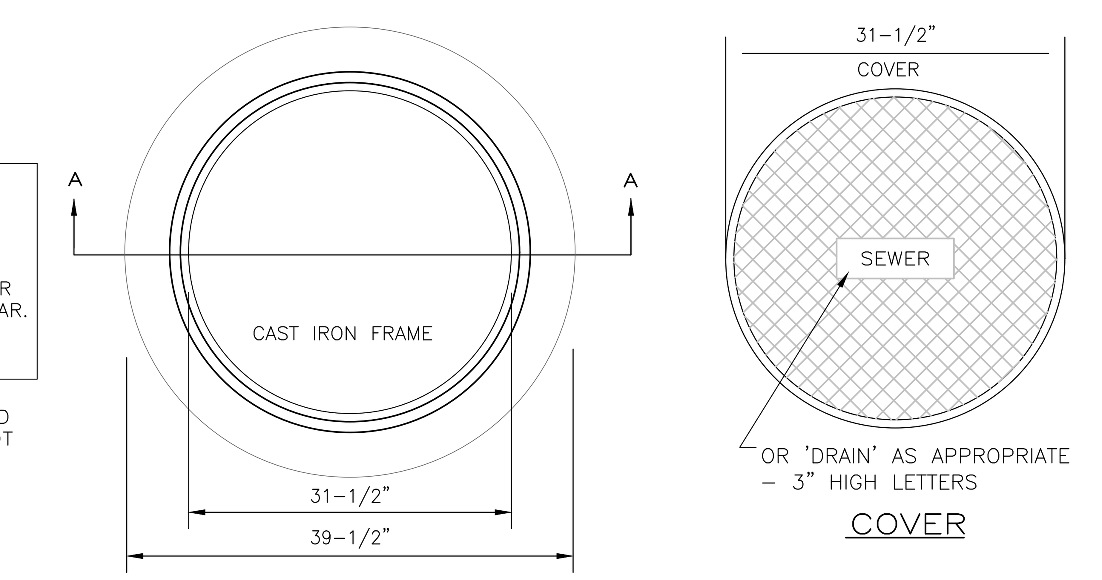
NOT TO SCALE



NOTES
1. ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C–478
2. MANHOLES SHALL MEET NHDOT SPECIFICATIONS.
3. ALL COMPONENTS SHALL BE DESIGNED FOR HS–20 LOADING
4. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
5. ALL CONCRETE SHALL BE NHDOT CLASS A.

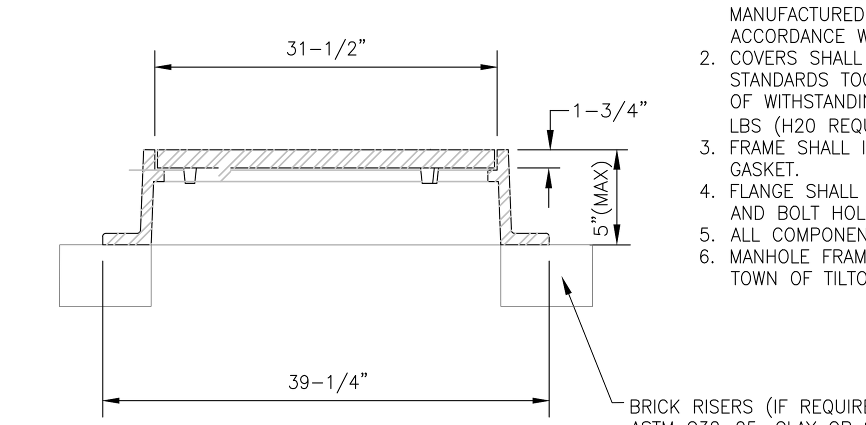
SLAB TOP MANHOLE

NOT TO SCALE



PLAN VIEW

COVER

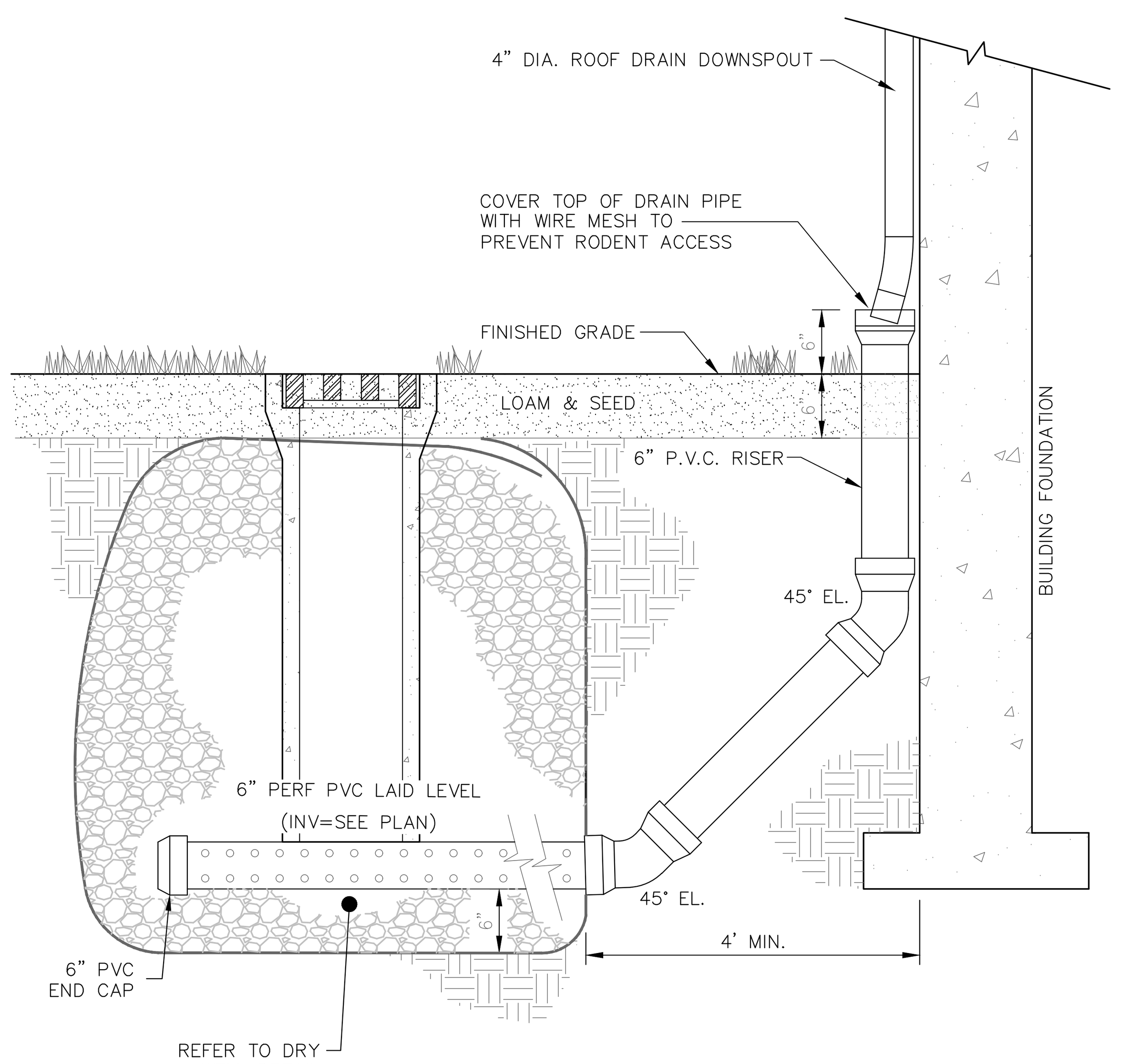


SECTION A–A

NOTES
1. FRAMES AND COVERS SHALL BE MANUFACTURED FROM DUCTILE IRON IN ACCORDANCE WITH ISO 1083.
2. COVERS SHALL BE ON MAN OPERABLE USING STANDARDS TOOLS AND SHALL BE CAPABLE OF WITHSTANDING A TEST LOAD OF 120,000 LBS (H20 REQUIREMENT).
3. FRAME SHALL INCORPORATE A SEATING GASKET.
4. FLANGE SHALL INCORPORATE BEDDING SLOTS AND BOLT HOLES.
5. ALL COMPONENTS SHALL BE BLACK COATED.
6. MANHOLE FRAME AND COVER SHALL BE PER TOWN OF TILTON STANDARDS.

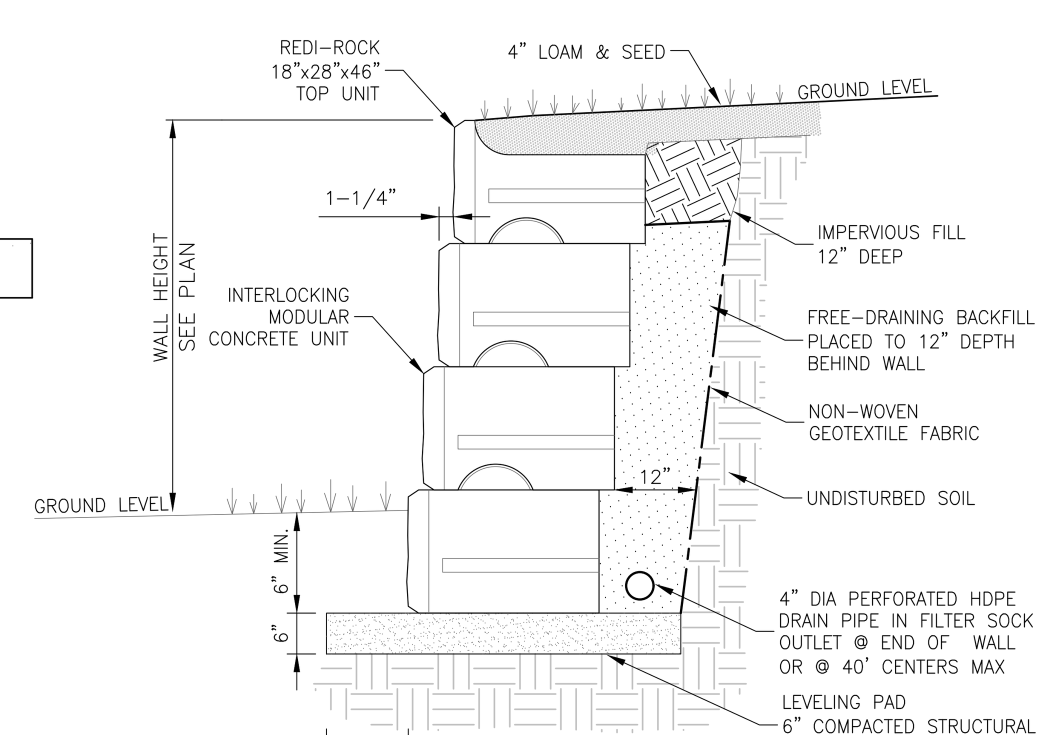
MANHOLE FRAME AND COVER

NOT TO SCALE



DOWNSPOUT INFILTRATION

NOT TO SCALE



GENERAL NOTES

1. THIS DETAIL IS ONLY FOR WALLS LESS THAN 4 FEET IN HEIGHT.
2. WALL DESIGNS SHALL CONSIDER EFFECTS OF SLOPE, TRAFFIC LOADS, AND/OR BUILDING LOADS AS REQUIRED.
3. BLOCK COLOR SHALL BE DETERMINED BY OWNERS REPRESENTATIVE.
4. FINAL WALL DESIGN SHALL BE SUBJECT TO THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.
5. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.

MANUFACTURER'S DESIGN

1. DESIGN SHALL BE FROM THE WALL MANUFACTURER.
2. DESIGN CALCULATIONS AND PLANS SHALL BE SUBMITTED TO THE OWNER AND ENGINEER OF RECORD FOR APPROVAL.
3. DESIGN CALCULATIONS TO INCLUDE SAFETY FACTORS AGAINST OVERTURNING, SLIDING, BEARING CAPACITY, GEOGRID PULLOUT AND GLOBAL STABILITY. MINIMUM FACTORS OF SAFETY ARE INDICATED BELOW.
4. THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETE IN ACCORDANCE WITH DESIGN.

DRAINAGE NOTES

1. CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
2. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL CONCURRENTLY WITH WALL CONSTRUCTION

UNREINFORCED RETAINING WALL (MODULAR CONCRETE UNIT)

NOT TO SCALE

DIG SAFE – CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE – HANNAH E. GIOVANNUCCI No.15699 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DETAILS

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

Seacoast Division
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Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
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	CK JCC	CADFILE	47099–01_DETAILS_MAIN		

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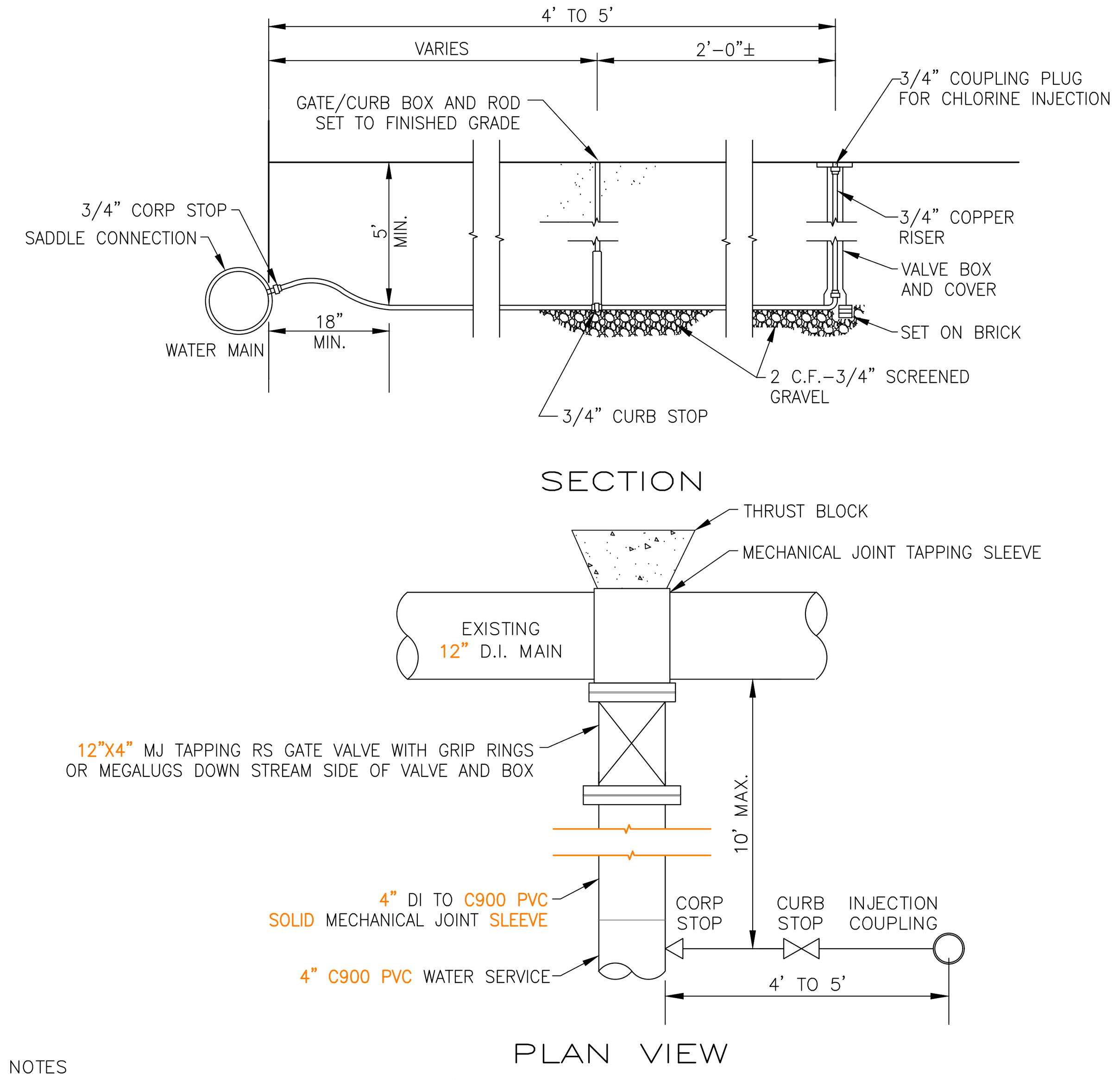
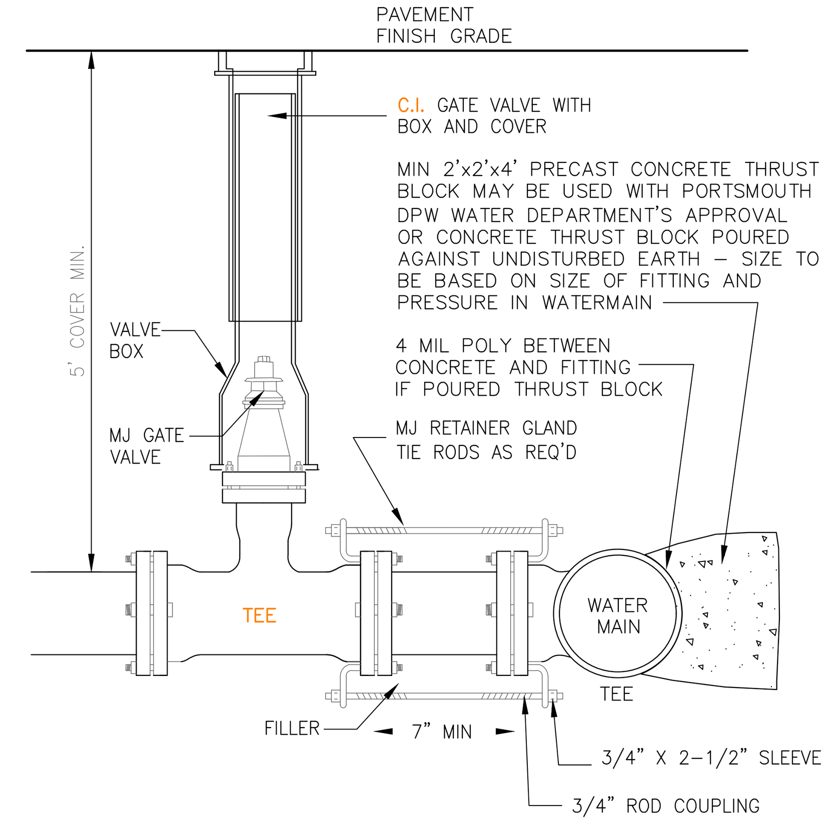


NOTES
1. ALL MATERIAL, INSTALLATION PROCEDURES, MANUFACTURERS, AND DIMENSIONAL REQUIREMENTS SHALL CONFORM TO PORTSMOUTH'S INFRASTRUCTURE DESIGN STANDARDS AND PORTSMOUTH DPW'S ESTABLISHED RULES AND PROCEDURES.
2. CHLORINATION AND TESTING SHALL CONFORM TO AWWA C651.
3. DOMESTIC LINE MUST BE FLUSHED AND DISINFECTED BEFORE THE LINES ENTER THE BUILDING.

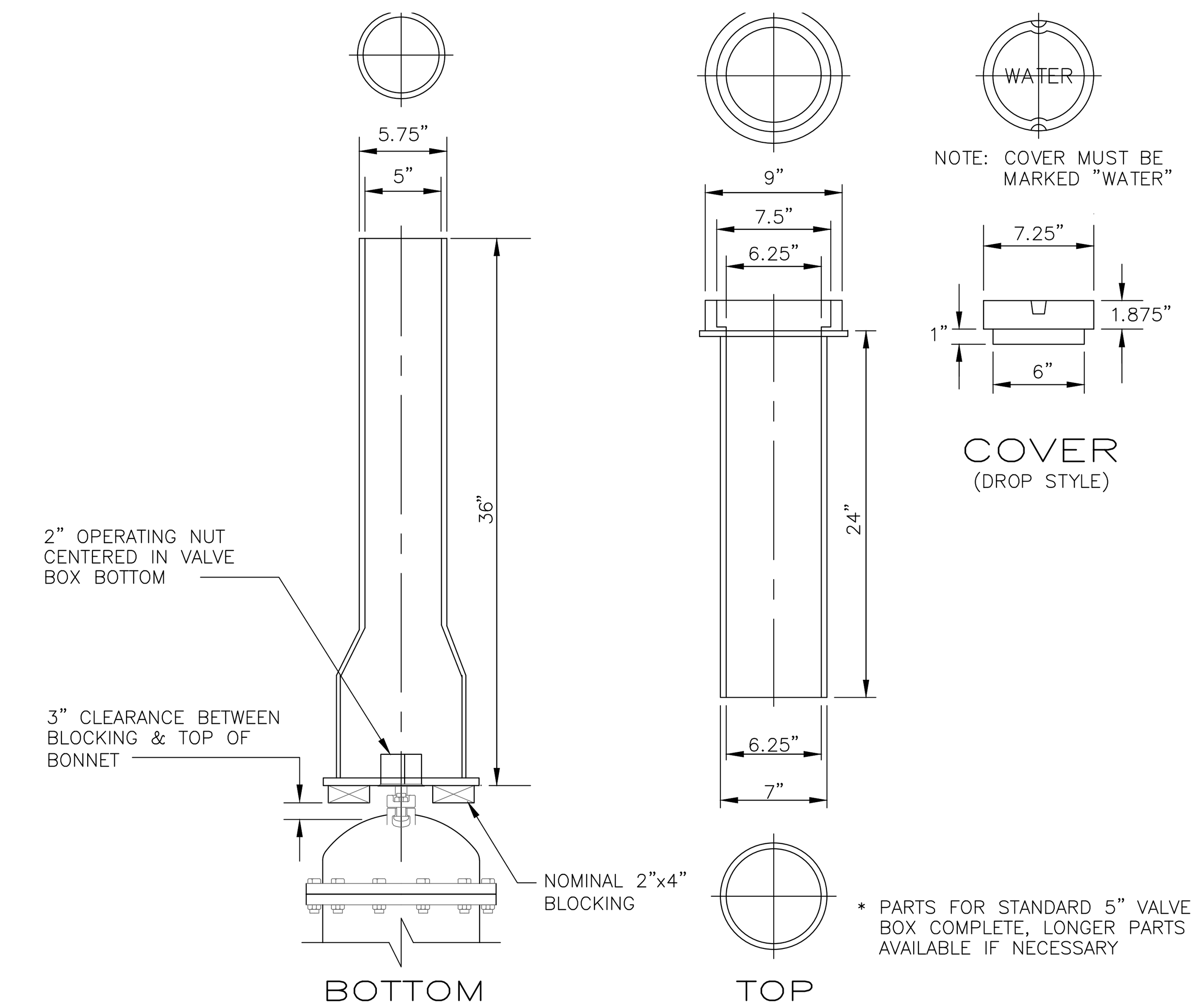
CHLORINE INJECTION CONNECTION

NOT TO SCALE



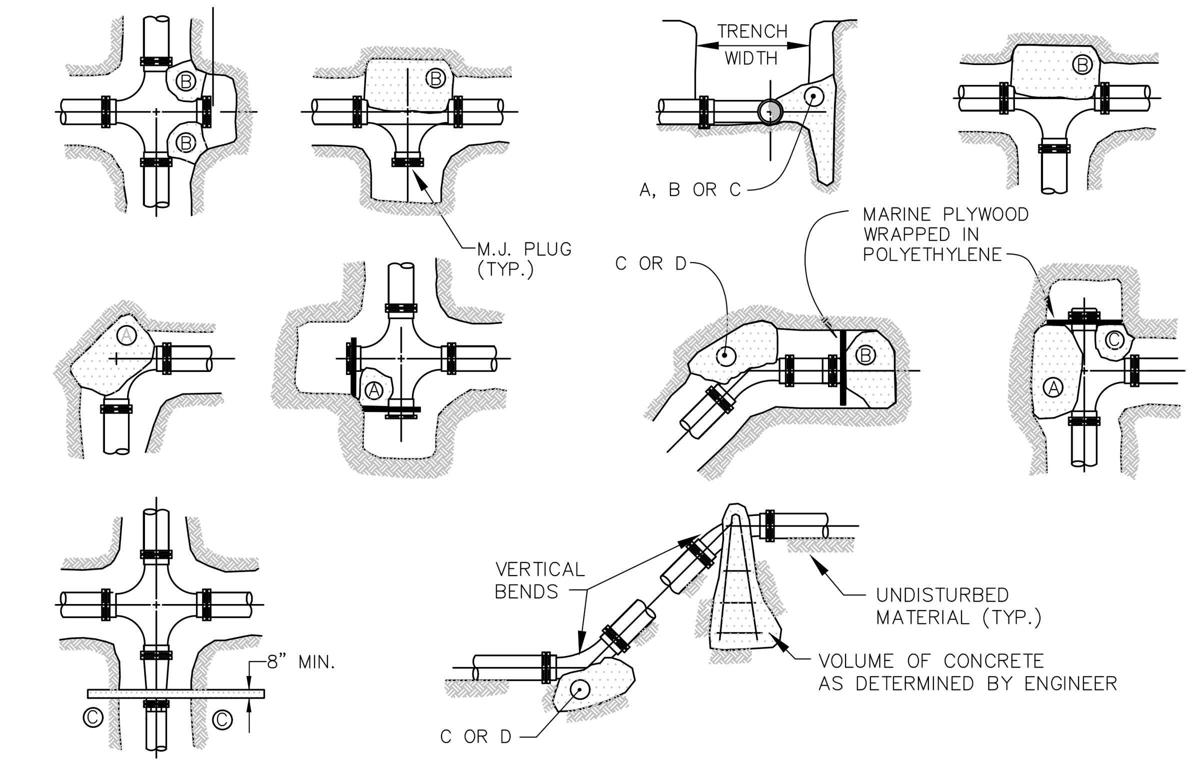
BURIED GATE VALVE

NOT TO SCALE



VALVE BOX

NOT TO SCALE



BEARING AREA REQUIRED, SQUARE FEET

TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS, pfs	4" AND LESS DEGREE BEND				6" AND 8" DEGREE BEND				10" AND 12" DEGREE BEND			
	$11\frac{1}{4}$	$22\frac{1}{2}$	45	90	$11\frac{1}{4}$	$22\frac{1}{2}$	45	90	$11\frac{1}{4}$	$22\frac{1}{2}$	45	90
LOOSE SAND OR MEDIUM CLAY – 2,000	1.0	2.0	2.7	4.0	1.5	3.0	6.0	10.0	3.0	6.2	12.0	22.0
PACKED GRAVEL AND SAND – 4,000	1.0	1.0	1.5	2.0	1.0	1.5	3.0	5.0	1.5	3.1	6.0	11.0
ROCK – 10,000	1.0	1.0	1.0	1.0	1.0	1.0	1.2	2.0	1.0	1.3	2.4	4.4

BEARING AREA REQUIRED, SQUARE FEET

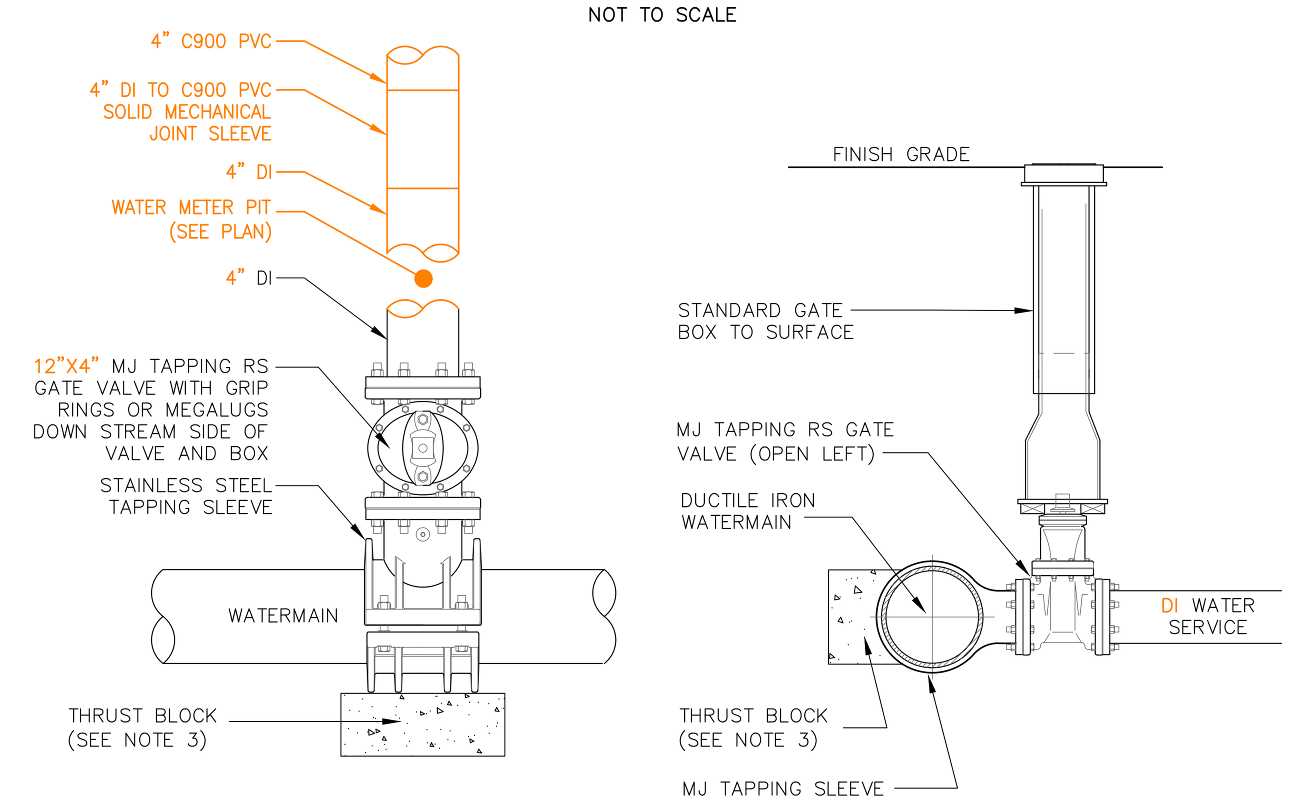
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS, pfs	14" AND 16" DEGREE BEND OR DEFLECTION				18" AND 20" DEGREE BEND OR DEFLECTION			
	$11\frac{1}{4}$	$22\frac{1}{2}$	45	90	$11\frac{1}{4}$	$22\frac{1}{2}$	45	90
LOOSE SAND OR MEDIUM CLAY – 2,000	6.0	12.0	22.5	40.0	9.5	19.0	37.0	67.0
PACKED GRAVEL AND SAND – 4,000	3.0	6.0	11.3	20.0	4.8	9.5	18.5	33.5
ROCK – 10,000	1.2	2.4	4.5	8.0	2.0	3.8	7.4	13.5

NOTES

1. ALL MATERIAL, INSTALLATION PROCEDURES, MANUFACTURERS, AND DIMENSIONAL REQUIREMENTS SHALL CONFORM TO PORTSMOUTH'S INFRASTRUCTURE DESIGN STANDARDS AND PORTSMOUTH DPW'S ESTABLISHED RULES AND PROCEDURES.
2. A PRECAST CONCRETE THRUST BLOCK IS PREFERRED BY PORTSMOUTH DPW AND MUST CONFORM TO PORTSMOUTH DPW'S INFRASTRUCTURE DESIGN STANDARDS.
3. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED. EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO PIPE JOINTS SHALL BE COVERED WITH CONCRETE.
4. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
5. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS. PLACE ROOFING FELT AROUND HYDRANT ELBOW BEFORE POURING THRUST BLOCKS AND ENSURE CONCRETE DOES NOT PLUG HYDRANT DRAIN PORTS.

THRUST BLOCKS

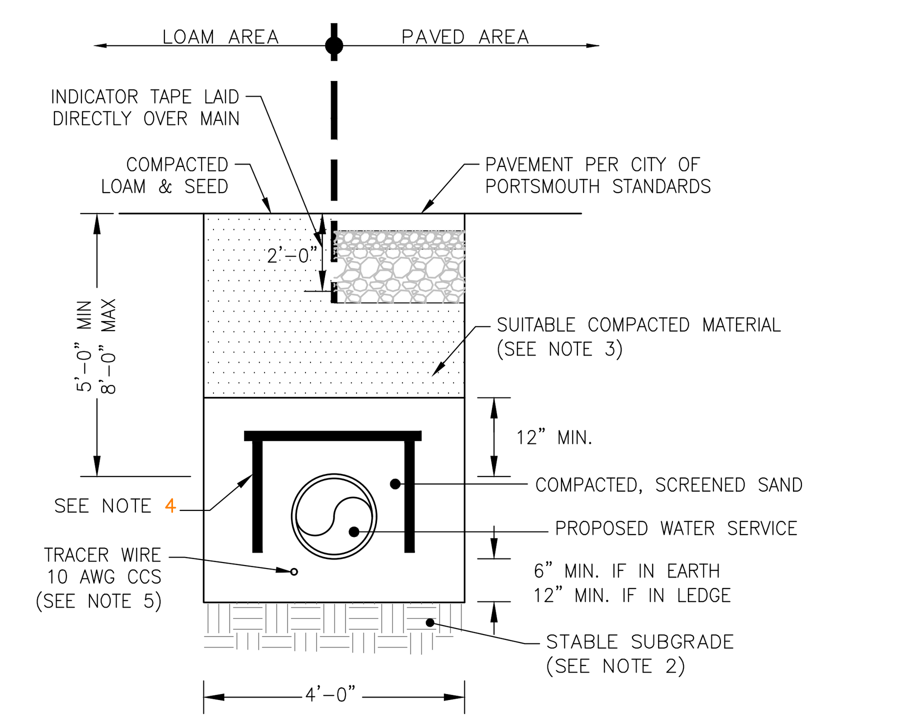
NOT TO SCALE



NOTES
1. TAPPING SLEEVES SHALL BE STAINLESS STEEL (SS) WITH SS HARDWARE.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTHS OF 6' FROM TOP OF PIPE TO FINISH GRADE PER NHDOT REQUIREMENTS WITHIN THE RIGHT OF WAY.
3. PRECAST CONCRETE THRUST BLOCK TO BE USED, SIZE TO BE BASED ON SIZE OF FITTING AND PRESSURE IN WATERMAIN.

WATER SERVICE WET TAP INSTALLATION

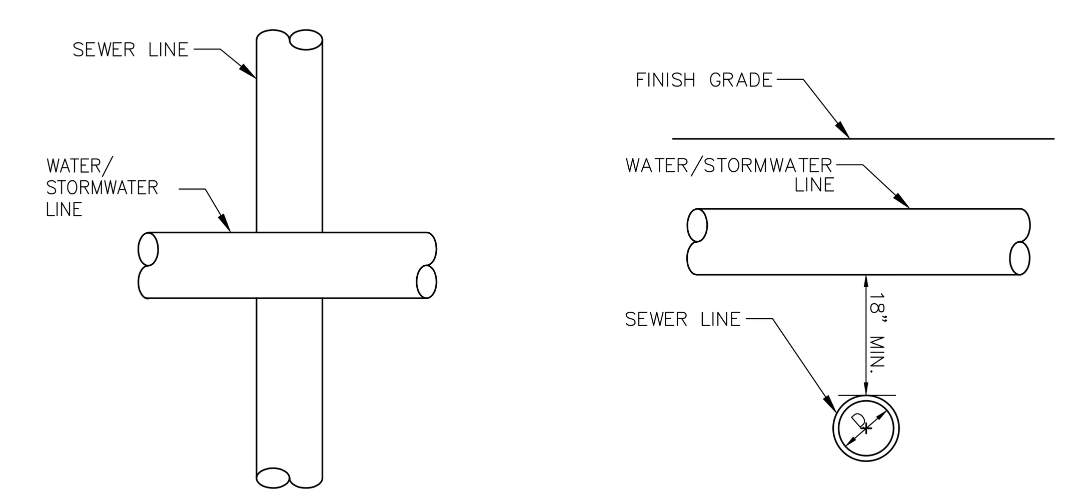
NOT TO SCALE



NOTES
1. ALL MATERIAL, INSTALLATION PROCEDURES, MANUFACTURERS, AND DIMENSIONAL REQUIREMENTS SHALL CONFORM TO PORTSMOUTH'S INFRASTRUCTURE DESIGN STANDARDS AND PORTSMOUTH DPW'S ESTABLISHED RULES AND PROCEDURES.
2. IN LOCATIONS WITH EXISTING FILL SOILS, CONSULT WITH THE GEOTECHNICAL ENGINEER FOR METHODS TO PREPARE STABLE SUBGRADE AND REMOVAL OF MATERIAL IF NECESSARY.
3. SUITABLE MATERIAL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER 6" IN THE LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. SUITABLE MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
4. RIGID STYROFOAM INSULATION (DOW HI-40 OR EQUAL) WITH 6" CLEAN SAND BLANKET AROUND WATER PIPE WHERE WATER AND DRAIN PIPE SEPARATION IS LESS THAN 18".
5. TRACER WIRE SPECIFIED FOR NON-METALLIC WATER LINES SHALL BE INSTALLED BELOW AND TO THE SIDE OF THE PIPE AND PER THE MANUFACTURER REQUIREMENTS. TRACER WIRE PRODUCT SHALL BE SELECTED FOR OPEN CUT INSTALLATION TECHNIQUE.

WATER TRENCH

NOT TO SCALE



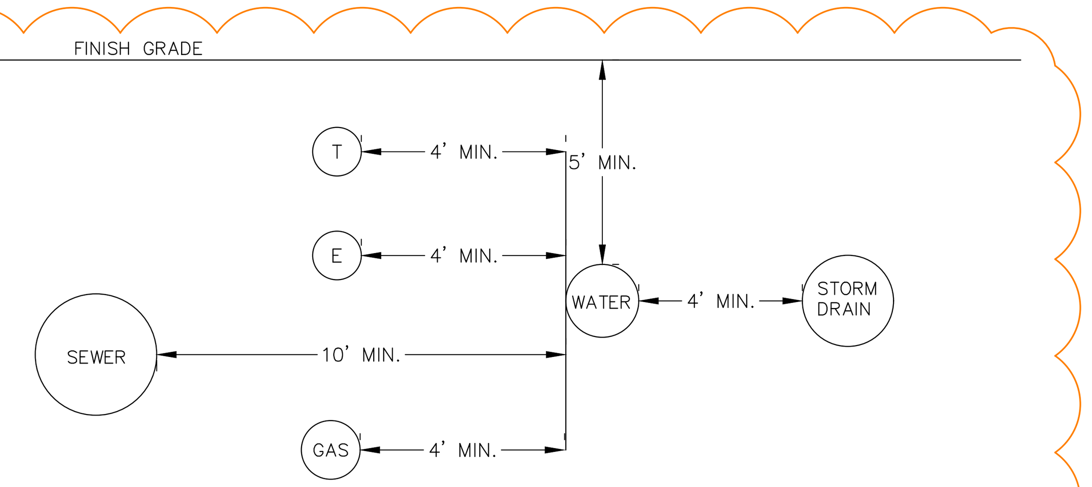
NOTES:

1. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPERATION SHALL BE PROVIDED BETWEEN ALL WATER/STORMWATER AND SANITARY SEWER LINES. AN 18" MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/STORMWATER AND SANITARY SEWER CROSSINGS.

2. PROTECTION OF WATER SUPPLIES
   1. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN A PUBLIC OR PRIVATE POTABLE WATER SUPPLY SYSTEM AND A SEWER OR SEWER APPURTENANCE WHICH WOULD PERMIT THE PASSAGE OF SEWAGE OR POLLUTED WATER INTO THE POTABLE SUPPLY. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE.
   2. NO SEWER SHALL BE LOCATED WITHIN THE WELL PROTECTED RADII ESTABLISHED IN ENV-WS 300 FOR ANY PUBLIC WATER SUPPLY WELLS OR WITHIN 100 FEET OF ANY PRIVATE WATER SUPPLY WELL.
   3. SEWERS SHALL BE LOCATED AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
   4. A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (2) OR (3) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS, PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENTS SPECIFIED IN ENV-WQ 704.06.
   5. WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
      1. VERTICAL SEPARATION OF THE SEWER AND WATER MAIN SHALL BE NOT LESS THAN 18 INCHES, WITH WATER ABOVE SEWER; AND
      2. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

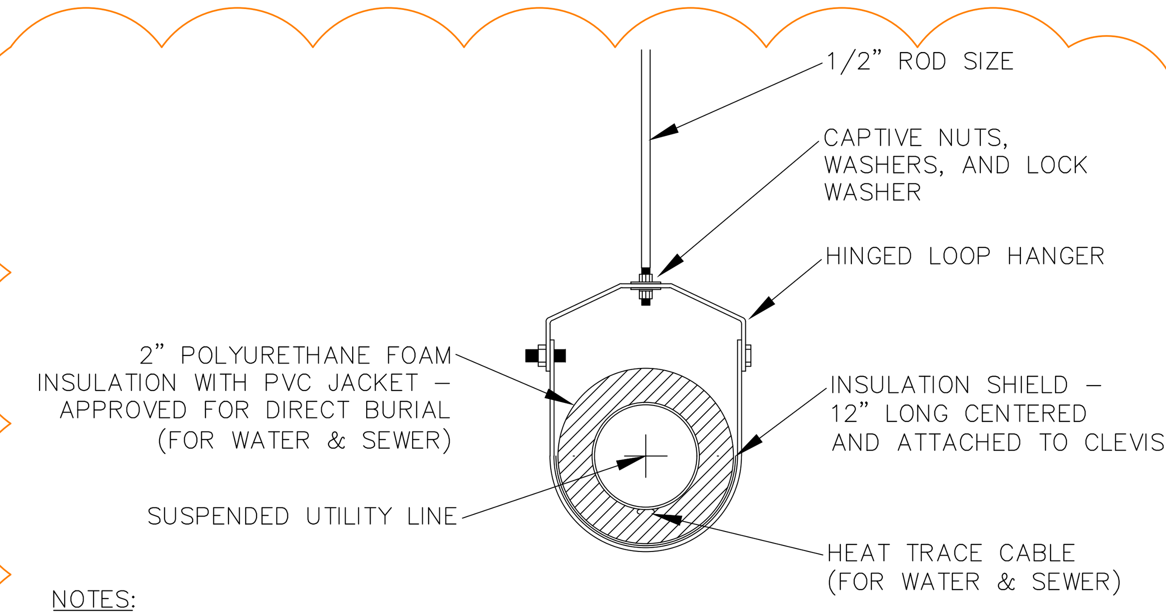
WATER/STORMWATER & SEWER CROSSING

NOT TO SCALE



TYPICAL UTILITY SEPARATION

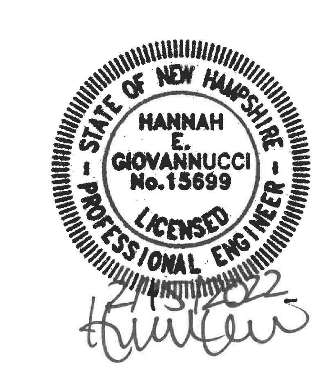
NOT TO SCALE



NOTES:
1. HEAT TRACE CABLE SHALL BE RATED 5 WATTS/FT, TEMPERATURE CONTROLLED WITH GROUND FAULT CIRCUIT INTERRUPTER PROTECTION.
2. HEAT TRACE CABLE SHALL RUN ALONG BOTTOM OF PIPE AND ATTACHED WITH ADHESIVE ALUMINUM TAPE.

SUSPENDED UTILITIES

NOT TO SCALE



REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DETAILS

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

Seacoast Division
TFM®
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
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GENERAL NOTES

1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
2. BARRELS, CONE SECTIONS AND CONCRETE GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE AND SHALL CONFORM ENV-WQ 704.12 & 704.13.
3. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478-06.
4. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
5. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
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.
7. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
8. 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 H-20 LOADS.
9. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT. APPROVED ELASTOMERIC SEALANTS ARE:

   SIKAFLEX-12-SL

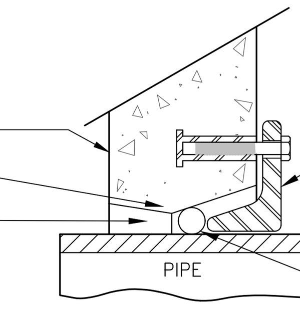
   SONNEBORN BUILING PRODUCTS-SONOLASTIC SL-1
10. THE MINIMUM INTERNAL DIAMETER OF MANHOLES SHALL BE 48 INCHES. FOR SEWERS LARGER THAN 24-INCH DIAMETER. MANHOLE DIAMETERS SHALL BE INCREASED SO AS TO PROVIDE AT LEAST 12-INCHES OF SHELF ON EACH SIDE OF THE SEWER.
11. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE TO ENV-WQ 704.17.
    (a) ALL MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STANDARD IN EFFECT WHEN THE TESTING IS PERFORMED.
    (b) THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
        1. THE INITIAL VACUUM GUAGE TEST PRESSURE SHALL BE 10 INCHES Hg.
        2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR 1-INCH Hg PRESSURE DROP TO 9 INCHES SHALL BE:
            A. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP.
            B. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP.
            C. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
    (c) THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (b) ABOVE.
    (d) INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETE.
    (e) FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT
12. ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS, UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENT TO GRADE.
13. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK.

    MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
    (a) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
    (b) 4.5 PARTS SAND, 1 PART CEMENT AND 0.5 PART HYDRATED LIME

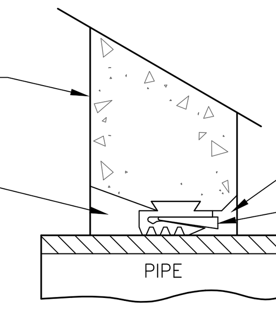
    CEMENT SHALL BE TYPE II PORTLAND CEMENT CONSISTING TO ASTM C150-05. HYDRATED LIME SHALL BE TYPE S CONFORMING TO ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES". SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES".
14. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED OR PRECAST CONCRETE SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, 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 HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
15. FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN, CLASS 30, CONFORMING TO ASTM A48/48M AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH WORD (MINIMUM HEIGHT) LETTERS "SEWER" SHALL BE PLAINLY CAST INTO THE TOP SURFACE. THE CASTING SHALL BE OF EVEN GRAINED CAST IRON, SMOOTH, AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION.
16. BEDDING: PRECAST BASES SHALL BE PLACED ON A 6-INCH LAYER OF COMPACTED BEDDING MATERIAL THAT CONFORMS TO ASTM C33-03 NO. 67 STONE AND FREE FROM CLAY, LOAM AND ORGANNIC MATTER. THE EXCAVATION SHALL BE PROPERLY DEWATERED WHILE PLACING BEDDING MATERIAL AND SETTING OF THE BASE OR POURING CONCRETE. WATER-STOPS SHALL BE USED AT THE HORIZONTAL JOINT OF THE CAST-IN-PLACE MANHOLES.

100% PASSING	1" SCREEN
90-100% PASSING	3/4" SCREEN
20-55% PASSING	3/8" SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

17. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WIbHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION: (a) WITHIN 48 INCHES FOR REINFORCED CONCRETE PIPE (RCP). (b) WITHIN 60 INCHES FOR PVC PIPE LARGER THAN 15" DIAMETER.
18. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DUCTILE IRON PIPE OR PVC PIPE UP THROUGH 15-INCH DIAMETER.
19. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS FOLLOWS:
    A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES.
    B. CAST INTO WALL OR SECUREED WITH STAINLESS STEEL CLAMPS.
    C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH THE SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING.
    D. ON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
20. THE INVERT OF THE INCOMING PIPE SHALL BE NO MORE THAN 6 INCHES ABOVE THE OUTGOING PIPE UNLESS A DROP ENTRY IS USED.



RES-SEAL
(OR ACCEPTABLE SUBSTITUTE)



PRESS-WEDGE II
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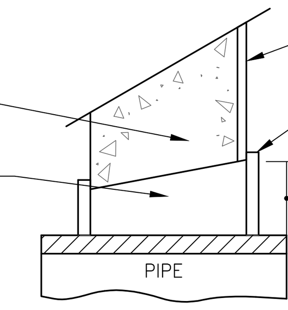

NON-SHRINKING MORTAR
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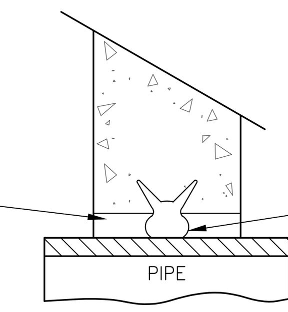
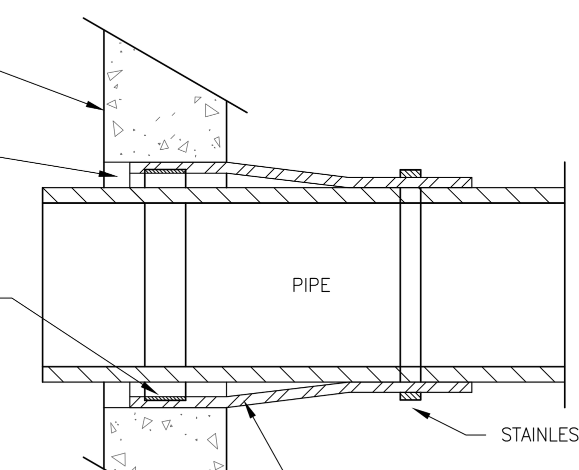
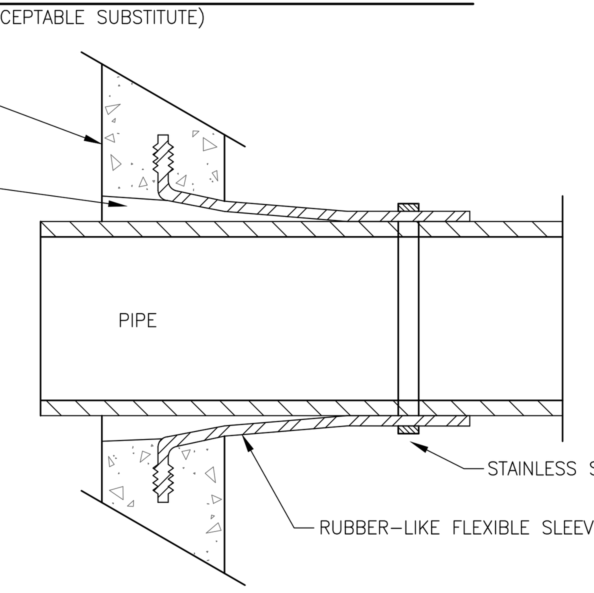


A-LOK
(OR ACCEPTABLE SUBSTITUTE)



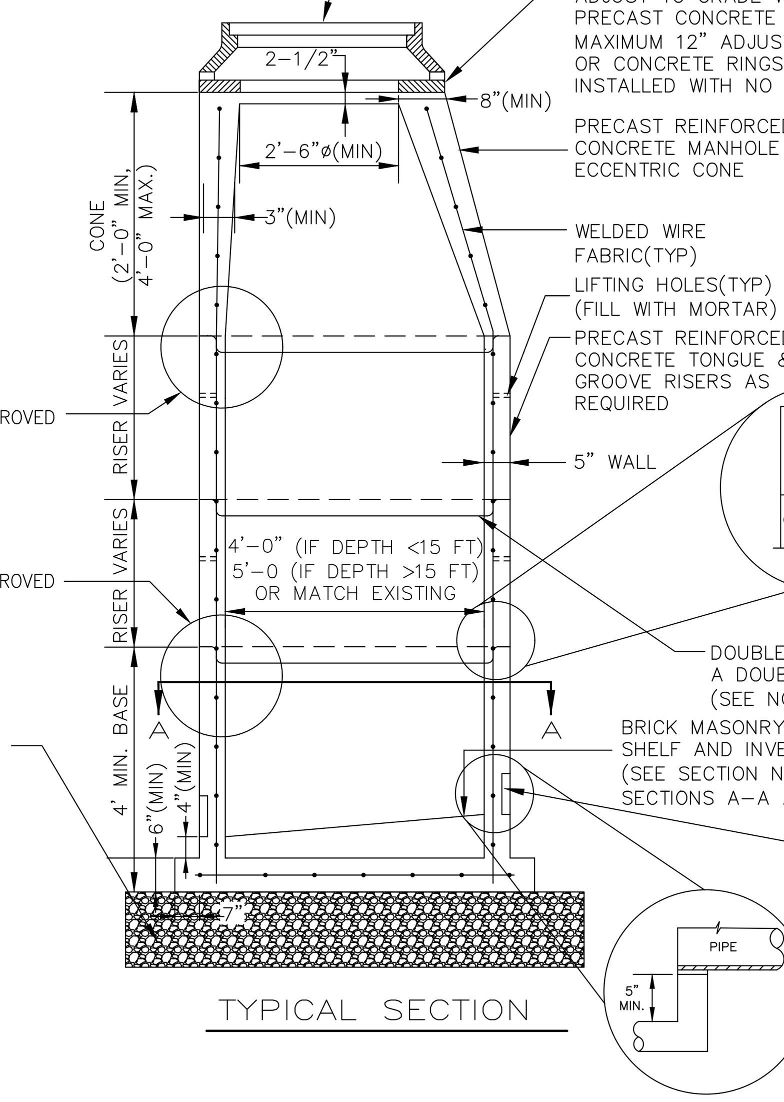
KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)



NOTE:
ALL GASKETS, SEALANTS, MORTAR, ETC... SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

DETAIL "A" - PIPE TO MANHOLE JOINTS



6" BEDDING (SEE NOTE) PRECAST BASES SHALL BE PLACED ON A 6-INCH LAYER OF COMPACTED BEDDING MATERIAL THAT CONFORMS TO ASTM C33-03 NO. 67 STONE AND FREE FROM CLAY, LOAM AND ORGANNIC MATTER. THE EXCAVATION SHALL BE PROPERLY DEWATERED WHILE PLACING BEDDING MATERIAL AND SETTING OF THE BASE OR POURING CONCRETE.

TYPICAL SECTION

NOTES

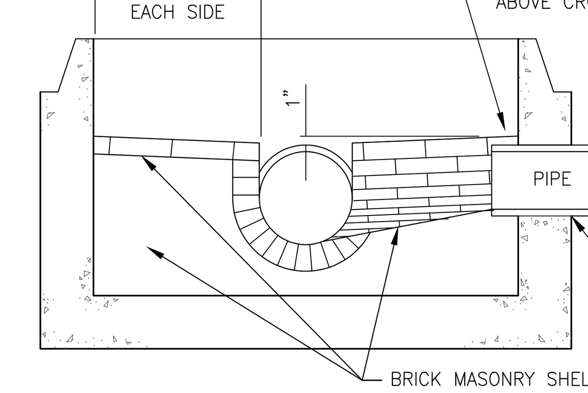
1. UNDERLAYMENT OF MANHOLE INVERT AND SHELF SHALL BE BRICK MASONRY PER ENV-WQ 704.12(K).
2. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
3. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
4. INVERT BRICKS SHALL BE LAID ON EDGE.
5. PRECAST CONCRETE MANHOLES SHALL MEET AASHTO M199-93/ ASTM C478-90B, RATED FOR HS-20 LOADING WITH CONCRETE STRENGTH OF 4000 PSI OR GREATER.
6. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
7. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.

   ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

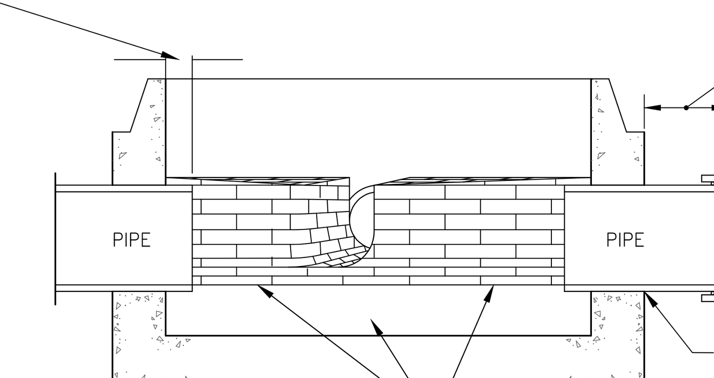
   STATE OF NEW HAMPSHIRE APPROVED PRODUCTS
   A) SIKAFLEX-12-SL
   B) SONNEBORN BUILDING PRODUCTS SONOLASTIC SL-1
8. MANHOLE STEPS ARE PROHIBITED BY TILTON SEWER COMMISSION.

NOTES:

1. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
3. BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6" ABOVE THE PIPE CROWN.



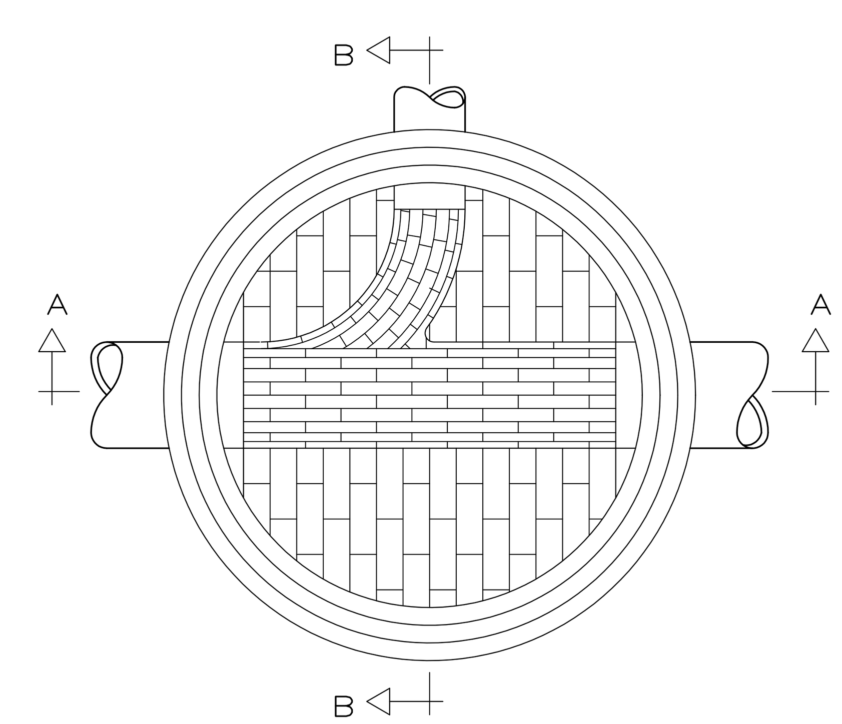
SECTION "B-B"



FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION: (a) WITHIN 48 INCHES FOR REINFORCED CONCRETE PIPE (RCP). (b) WITHIN 60 INCHES FOR PVC PIPE LARGER THAN 15" DIAMETER.

NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DUCTILE IRON PIPE OR PVC PIPE UP THROUGH 15-INCH DIAMETER.

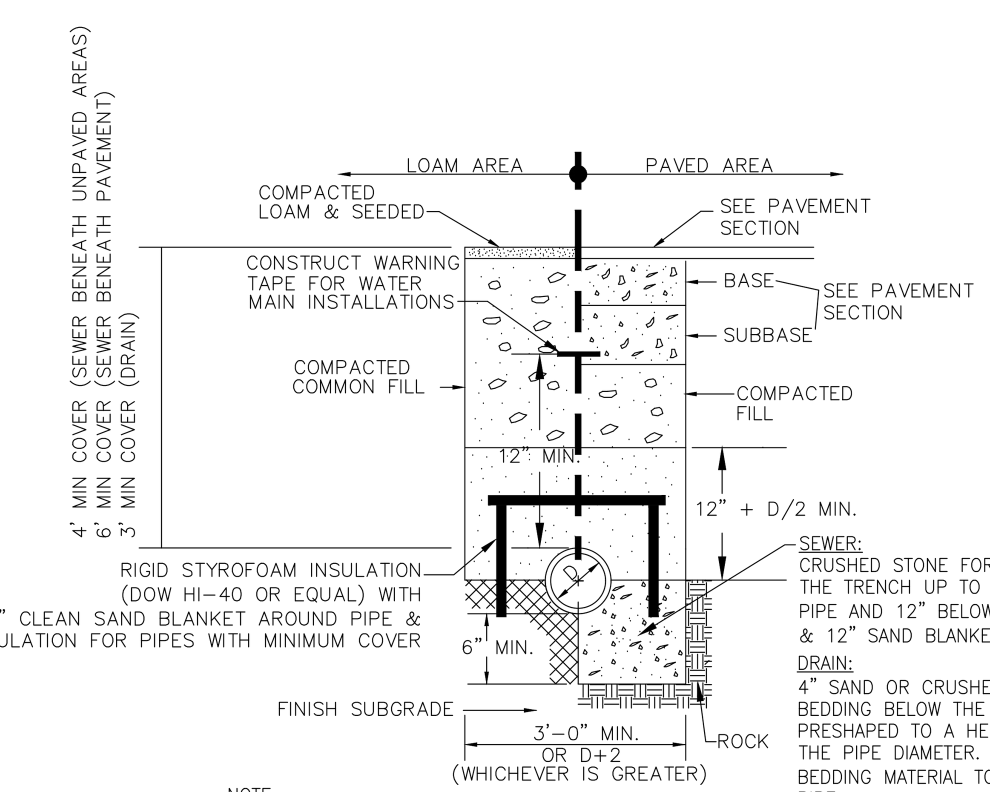
SECTION "A-A"



TYPICAL MANHOLE - PLAN VIEW

STANDARD MANHOLE

NOT TO SCALE



NOTE
1. CONSTRUCT SECTION FOR ALL SANITARY SEWERS AND SOLID DRAINAGE PIPES.

UTILITY TRENCH

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DETAILS

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

DIG SAFE
MA ME NH RI VT
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
811
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI No.15699
LICENSED PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

Seacoast Division

TFM

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	47099.01	DR	HEG	FB	-	C-20
		CK	JCC	CADFILE	47099-01_DETAILS_MAIN	

Feb 15, 2022 - 2:56pm
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SEWER SERVICE NOTES

1) MINIMUM SIZE PIPE FOR SEWER SERVICE SHALL BE FOUR INCHES.

2) PIPE AND JOINT MATERIALS:
   A. PLASTIC SEWER PIPE
      1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 TO T-3)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
D2680	*ABS (COMPOSITES WALL)	8" THROUGH 15"

*PVC: POLY VINYL CHLORIDE
*ABS: ACRYLONITRILE-BUTADIENE-STYRENE

      2. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

      ABS TRUSS PIPE AND FITTINGS SHALL CONFORM TO ASTM D-2680, POLYMER COMPOUNDING SHALL BE TO ASTM D-1788 (CLASS 322).

      JOINTS FOR ABS TRUSS PIPE SHALL BE CHEMICAL WELDED COUPLINGS TYPE SC IN ACCORDANCE WITH ASTM D-2680, FORMING A CHEMICAL WELDED JOINT.

   B. DUCTILE-IRON PIPE, FITTINGS AND JOINTS.

      1. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:
         A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS.
         A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.
      2. JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:
         A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS

3) DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4) JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5) TEES AND WYES: WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE, FOLLOWING MANUFACTURERS' INSTRUCTIONS USING A BOLTED, CLAMPED OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, STUFFING CLOTH OR OTHER SUCH MATERIAL AROUND THE JOINT, OR APPLYING MORTAR TO HOLD THE CONNECTION, AND ANY OTHER SIMILAR CRUDE PRACTICES OR INEPT OR HASTY IMPROVISATIONS WILL NOT BE PERMITTED. THE CONNECTION SHALL BE CONCRETE ENCASED AS SHOWN IN THE DETAIL UP TO AND INCLUDING 15" DIAMETER.

6) SEWER SERVICE INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 6 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND RE-FILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

   THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8" INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7) TESTING: THE COMPLETED SEWER SERVICE SHALL BE SUBJECTED TO A THIRD PARTY LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)

   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.

   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER, TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEANOUT WITH A FLASHLIGHT.

   C. DRY FLUORESCENE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWN-STREAM MANHOLE.

   LEAKAGE OBSERVED IN ANY ONE OF THE ABOVE ALTERNATE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP IF NECESSARY AND RE-LAID SO AS TO ASSURE WATER TIGHTNESS.

8) ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9) WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE.

10) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33-67.

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
20%-55% PASSING	3/8 INCH SCREEN
0%-10% PASSING	#4 SIEVE
0%-5% PASSING	#8 SIEVE

   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1 1/2 INCH SHALL BE USED.

11) LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER.

12) CHIMNEYS: IF VERTICAL DROP INTO SEWER IS GREATER THAN 4 FEET, A CHIMNEY SHALL BE CONSTRUCTED FOR THE SEWER CONNECTION. CHIMNEY INSTALLATION AS RECOMMENDED BY THE PIPE MANUFACTURER MAY BE USED IF APPROVED BY THE ENGINEER.

GRAVITY SEWER NOTES

1. MINIMUM SIZE PIPE FOR GRAVITY SEWER SHALL BE 8-INCHES.

2. PIPE AND JOINT MATERIALS FOR PLASTIC SEWER PIPE SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034-04a	* PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679-03	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F794-03	PVC (RIBBED WALL)	8" THROUGH 36"
F1760-01(2005)e1	PVC, RECYCLED	ALL DIAMETERS

*PVC: POLY VINYL CHLORIDE

3. PLASTIC SEWER PIPE SHALL HAVE A PIPE STIFFNESS RATING OF AT LEAST 46 POUNDS PER SQUARE INCH AT 5 PERCENT PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2412-02 DURING MANUFACTURE.

4. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212-96(a)(2003)e1 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

5. DUCTILE-IRON PIPE, FITTINGS AND JOINTS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA).

   AWWA C151/A21.51-02 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536-84 (2004) DUCTILE IRON CASTINGS.

   AWWA C151/A21.51-02 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.

   JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO AWWA C151/A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS.

6. CONCRETE PIPE SHALL CONFORM TO AWWA C302-04.

7. PRESTRESSED CONCRETE CYLINDER PIPE AND FITTINGS SHALL CONFORM TO AWWA C301-99.

   JOINTS SEALS FOR CONCRETE CYLINDER PIPE SHALL BE OIL RESISTANT ELASTOMERIC MATERIAL CONFORMING TO ASWWA C301-99 SPECIFICATIONS.

8. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

9. GRAVITY SEWER PIPE TESTING SHALL BE AS FOLLOWS:

   ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.

   LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:

      ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR".

      UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE".

10. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.

11. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.

12. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5.0 PERCENT OF THE AVERAGE INSIDE DIAMETER.

13. TRENCH CONSTUCTION SHALL CONFORM TO THE FOLLOWING:

   SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6' BELOW GRADE IN ALL ROADWAY LOCATIONS AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS COUNTRY LOCATIONS.

   WHERE SEWER LINES CROSS WATER PIPES, A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. AT SEWER/WATER INTERSECTIONS, A MINIMUM OF 6 FEET SHALL BE PROVIDED FROM THE WATER LINE TO THE SEWER PIPE JOINT. 12" SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE REQUIRED BETWEEN SEWER LINES AND ALL OTHER PIPES.

   TRENCH DIMENSIONS FOR SEWER PIPE LESS THAN 15 INCHES IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36 INCHES AND FOR PIPE 15 INCHES AND LARGER, THE ALLOWABLE WIDTH SHALL BE EQUAL TO THE PIPES OUTSIDE DIAMETER PLUS 24 INCHES.

   PIPE TRENCH BEDDING MATERIAL AND FILL MATERIIAL FOR EXCAVATION BELOW GRADE SHALL BE SCREENED GRAVEL OR CRUSHED STONE TO ASTM C33-03 STONE SIZE NO. 67. THE PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND FREE FROM ANY ORGANIC MATERIALS, GRADED SUCH THAT 100 PERCENT PASSED THE 1/2-INCH SIEVE AND A MAXIMUM OF 15 PERCENT PASSES A #200 SIEVE. IN LIEU OF A SAND BLANKET, A STONE ENVELOPE 6 INCHES THICK COMPLETELY AROUND THE PIPE USING 3/4-INCH STONE MAY BE USED.

   PIPE BEDDING MATERIAL SHALL EXTEND FROM A HORIZONTAL PLANE THROUGH THE PIPE AXIS TO 6-INCHES BELOW THE BOTTOM OF THE OUTSIDE SURFACE OF THE PIPE.

   PIPE SAND BLANKET MATERIAL SHALL COVER THE PIPE A MINIMUM OF 12 INCHES ABOVE THE CROWN OF THE OUTSIDE SURFACE.

   COMPACTION SHALL BE IN 12-INCH LAYERS FOR BEDDING AND BLANKET MATERIALS.

   BACKFILL MATERIAL SHALL BE IN 3-FOOT LAYERS TO THE GROUND SURFACE EXCEPT FOR ROAD CONSTRUCTION WHERE THE FINAL 3-FEET SHALL BE COMPACTED IN 12-INCH LAYERS TO THE ROAD BASE SURFACE.

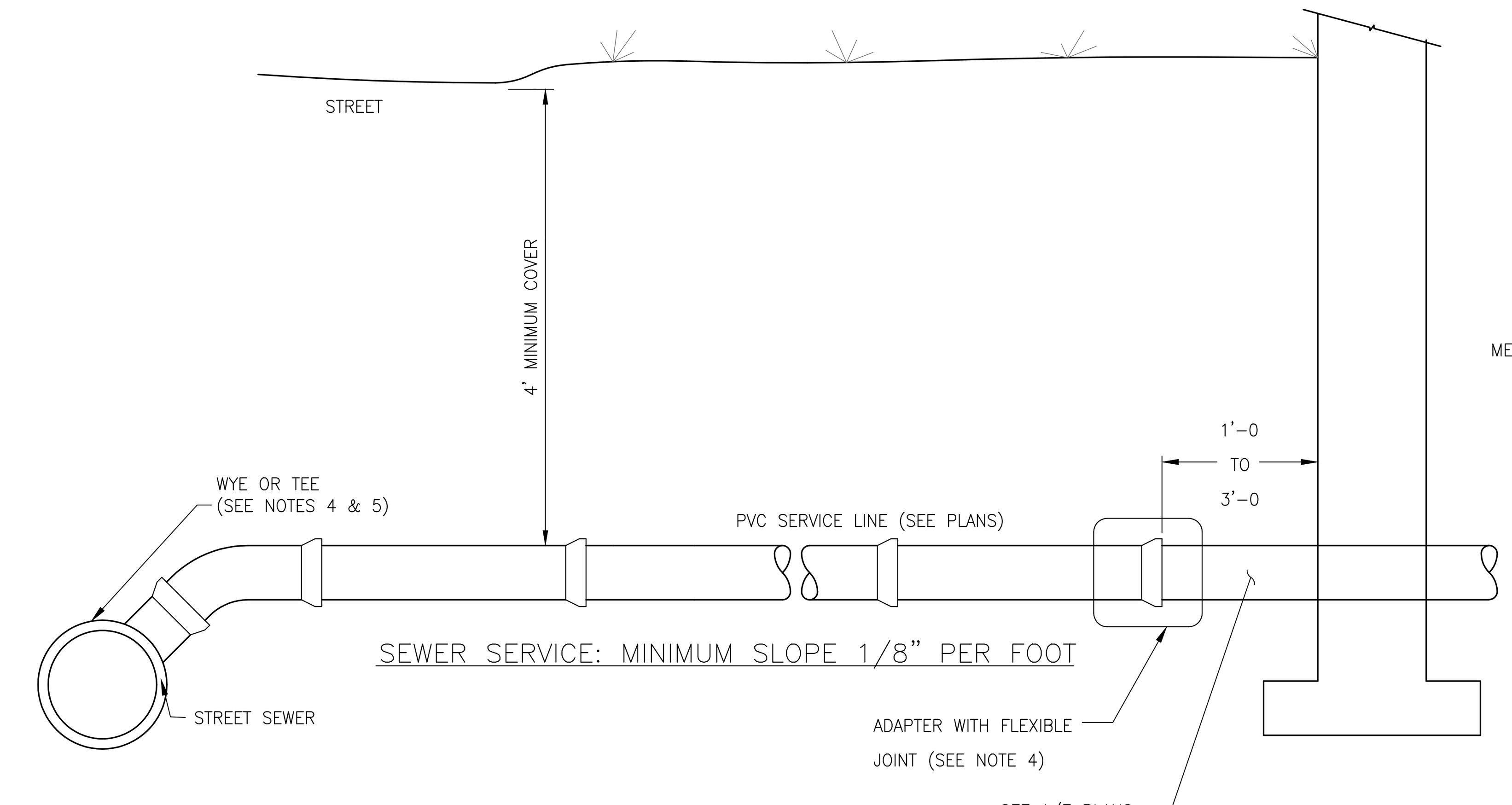
   TRENCH BACKFILL MATERIAL IN ROADWAY LOCATIONS SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION, EXCLUDING DEBRIS, PAVEMENT PIECES, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT, CLAY, EXCAVATED LEDGE, ROCKS OVER 6 INCHES IN THE LARGEST DIMENSION, OR ANY OTHER UNSUITABLE MATERIAL NOT APPROVED BY THE ENGINEER.

   TRENCH BACKFILL AT CROSS-COUNTRY LOCATIONS SHALL BE AS DESCRIBED ABOVE EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION, WHEN NECESSARY WILL BE PRESERVED. BACKFILL SHALL BE MOUNDED 6-INCHES ABOVE ORIGINAL GROUND.

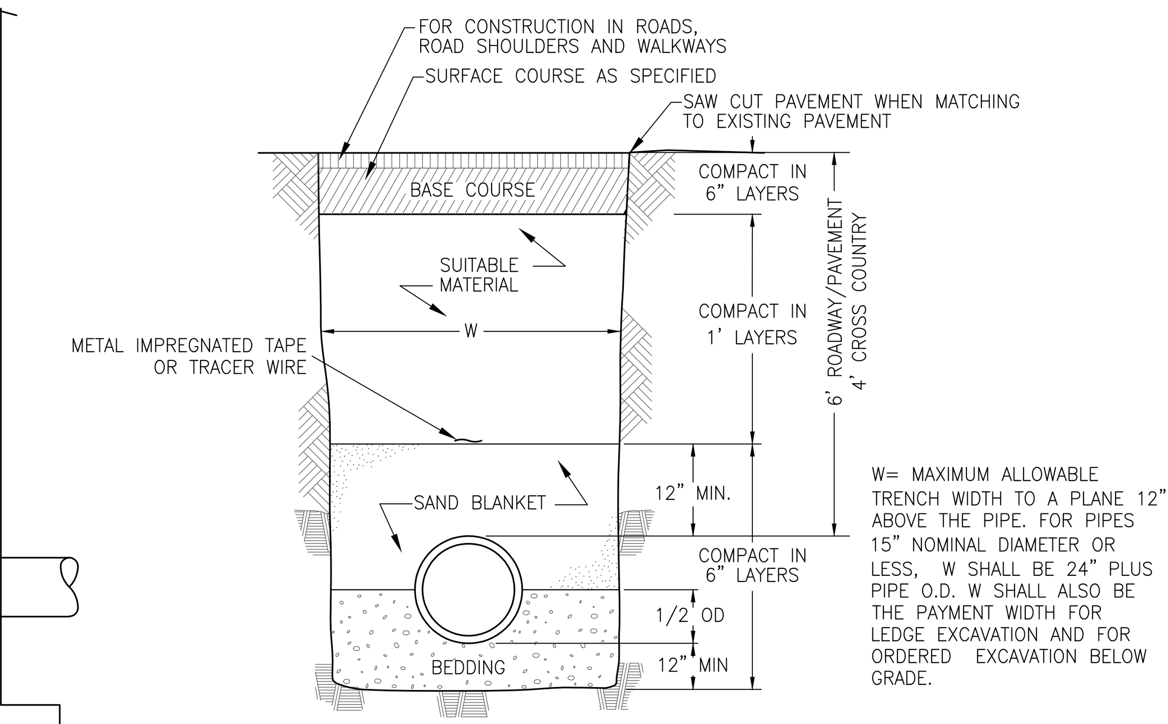
   BASE COURSE MATERIALS FOR TRENCH REPAIRS SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

   WHERE SHEETING IS PLACED ALONG SIDE OF THE PIPE AND EXTENDS BELOW MID-DIAMETER, THE SHEETING SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE AND AT LEAST 3 FEET BELOW FINISH GRADE.

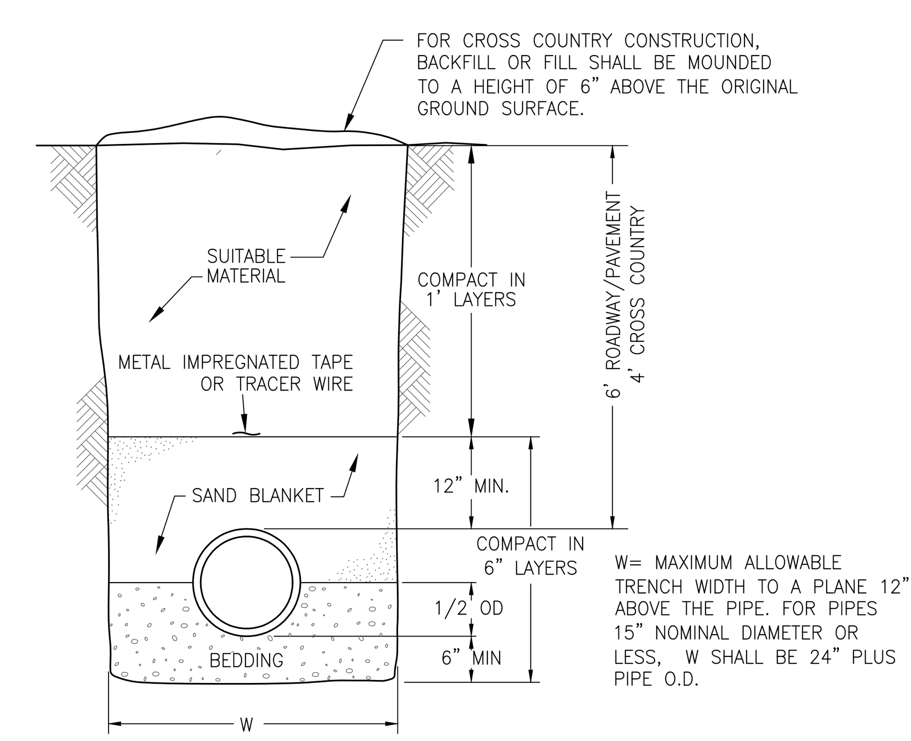
   TRENCHES FOR SEWER PIPES WITH SLOPES OVER 0.08 FEET PER FOOT AND TRENCHES FOR SEWER PIPES BELOW THE SEASONAL HIGH GROUND WATER LEVEL SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET TO PREVENT POTENTIAL DISTURBANCE TO PIPE BEDDING AND BLANKET MATERIALS.



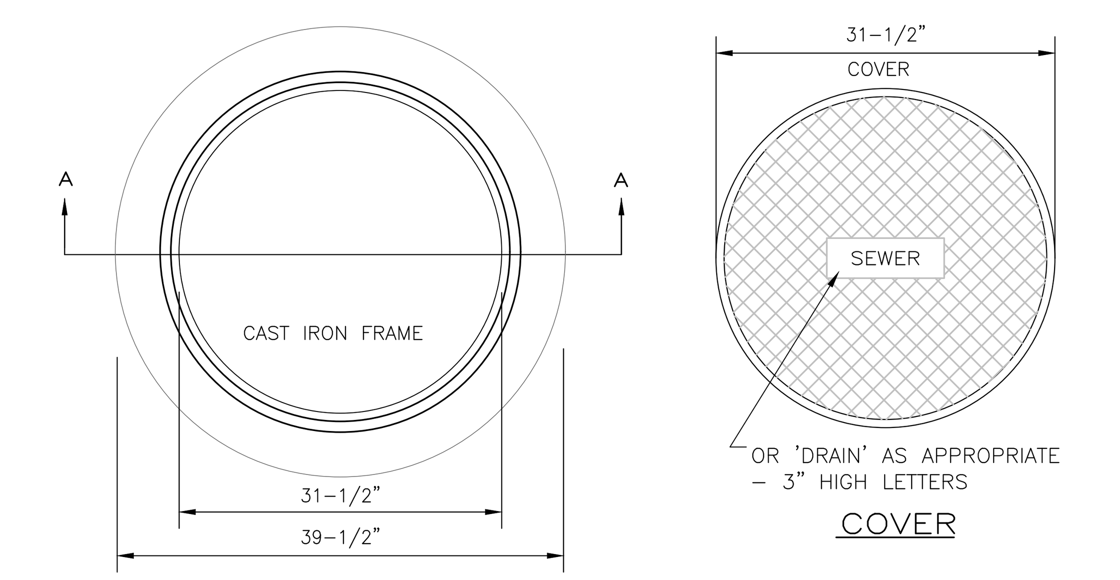
SEWER SERVICE
NOT TO SCALE



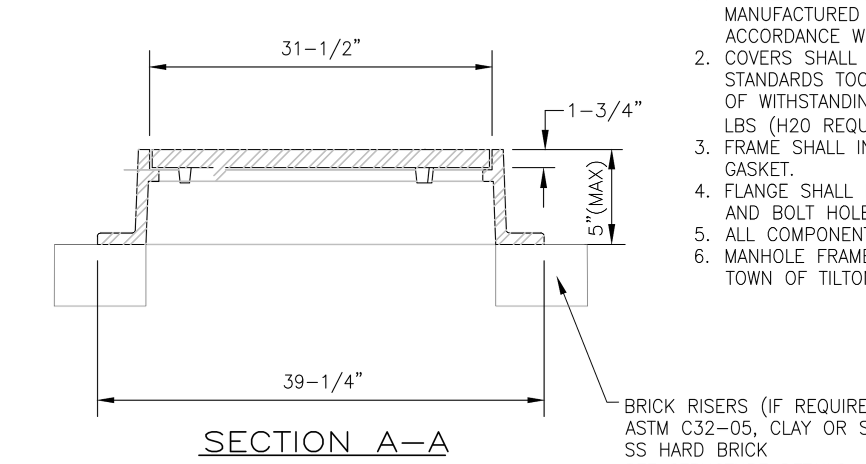
LEDGE CONSTRUCTION
NOT TO SCALE



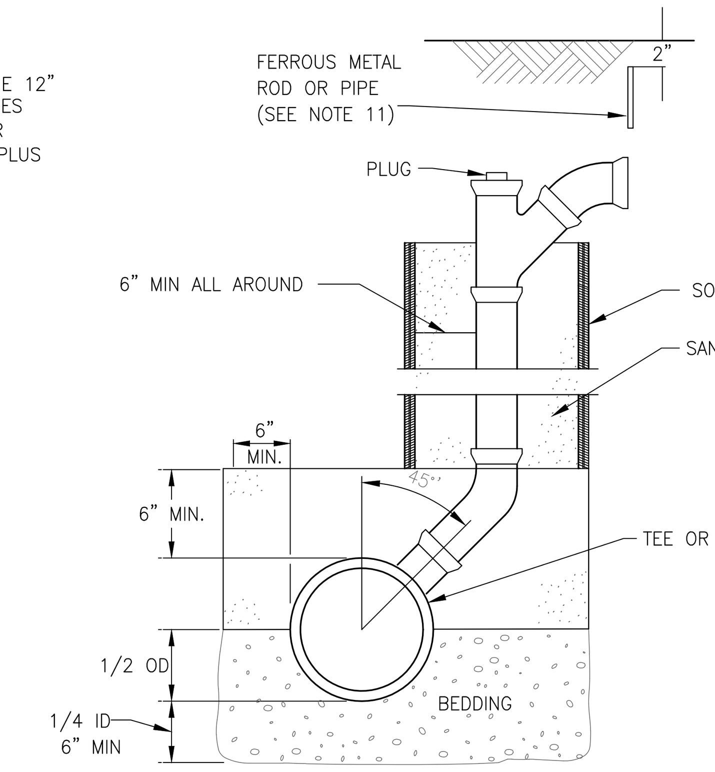
EARTH CONSTRUCTION
NOT TO SCALE



NOTES
1. FRAMES AND COVERS SHALL BE MANUFACTURED FROM DUCTILE IRON IN ACCORDANCE WITH ISO 1083.
2. COVERS SHALL BE ON MAN OPERABLE USING STANDARDS TOOLS AND SHALL BE CAPABLE OF WITHSTANDING A TEST LOAD OF 120,000 LBS (H20 REQUIREMENT).
3. FRAME SHALL INCORPORATE A SEATING GASKET.
4. FLANGE SHALL INCORPORATE BEDDING SLOTS AND BOLT HOLES.
5. ALL COMPONENTS SHALL BE BLACK COATED.
6. MANHOLE FRAME AND COVER SHALL BE PER TOWN OF TILTON STANDARDS.

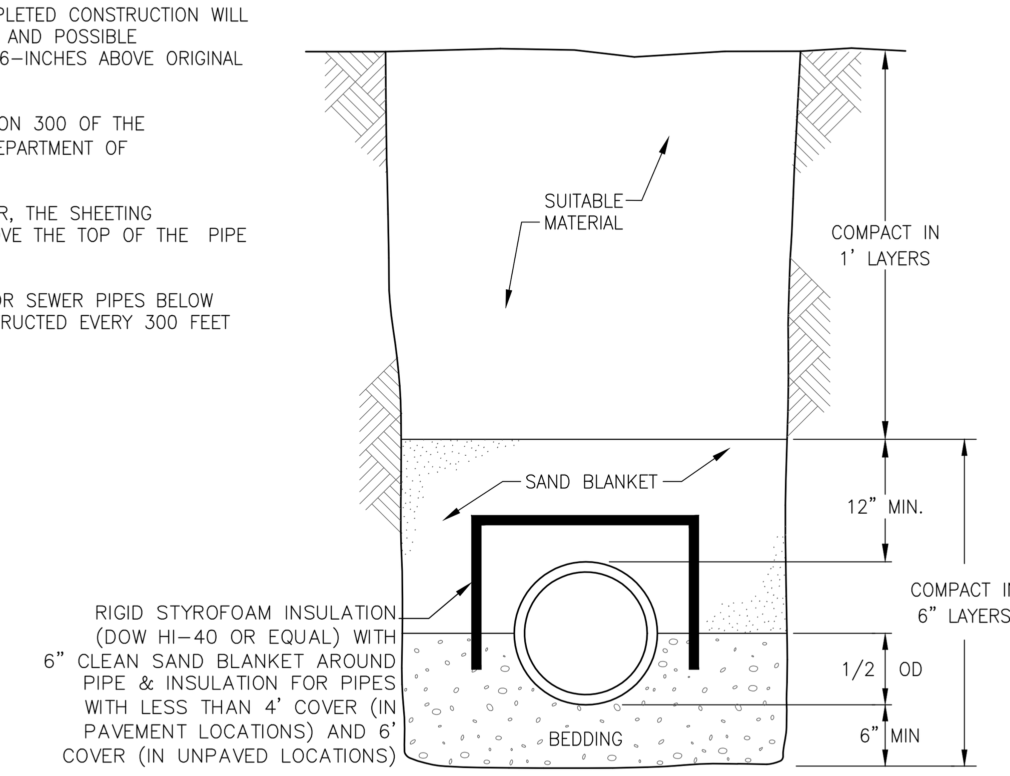


MANHOLE FRAME AND COVER
NOT TO SCALE



BACKFILLING TO BE BROUGHT UP EVENLY ON ALL SIDES.
(SEE NOTE 12)

CHIMNEY
NOT TO SCALE



TRENCH CROSS-SECTION
NOT TO SCALE

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
HANNAH E. GIOVANNUCCI
No.15699
LICENSED PROFESSIONAL ENGINEER
2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
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2	2/2/2022	REVISED PER NHDES & UPDATE SURVEY/UTILITIES	HEG	JCC
1	11/23/2021	REVISED PER NHDES & PROJECT COORDINATION	HEG	JCC

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DETAILS

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
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170 Commerce Way, Suite 102
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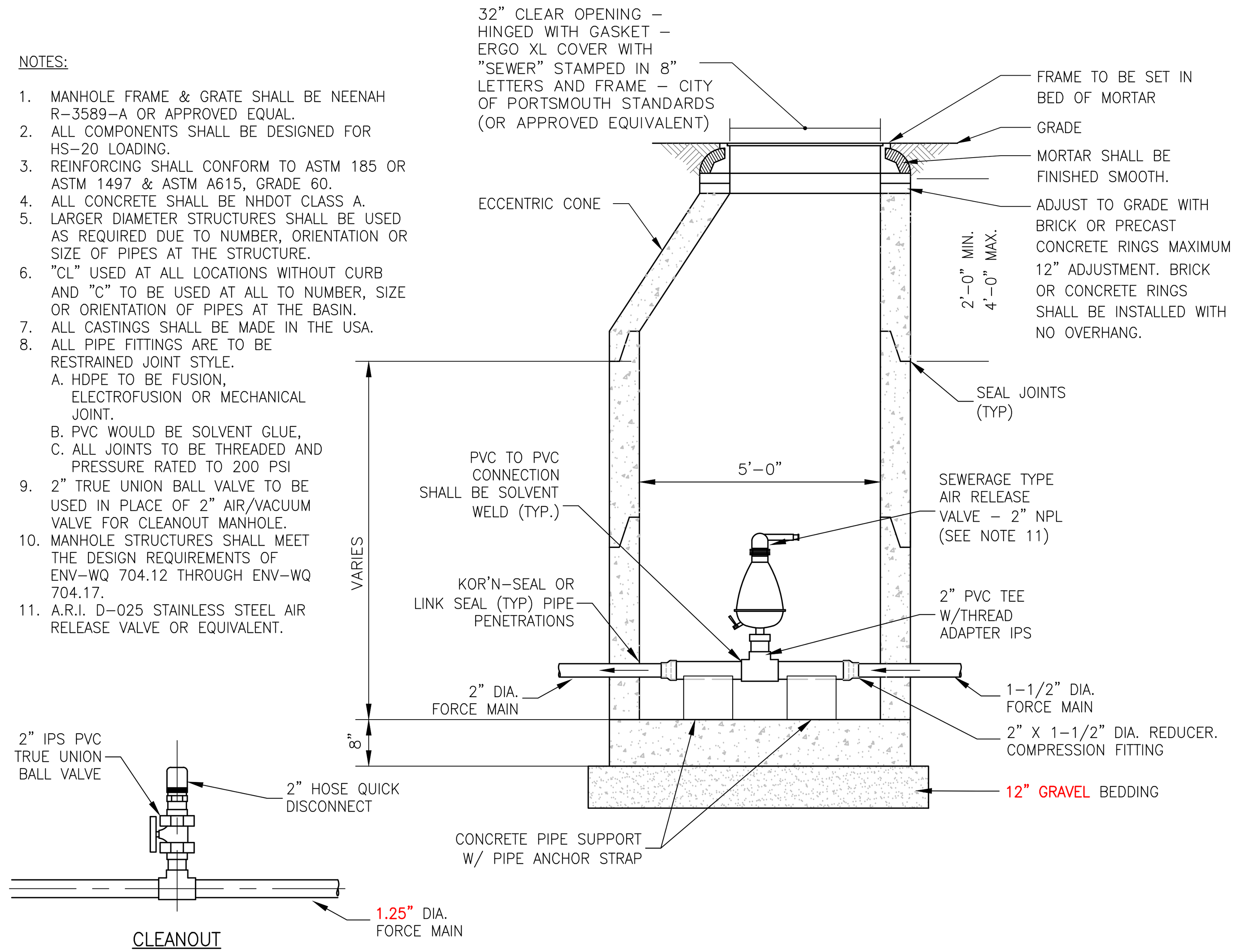
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	HEG	FB	–	
47099.01	CK	JCC	CADFILE	47099-01_DETAILS_MAIN	C-21

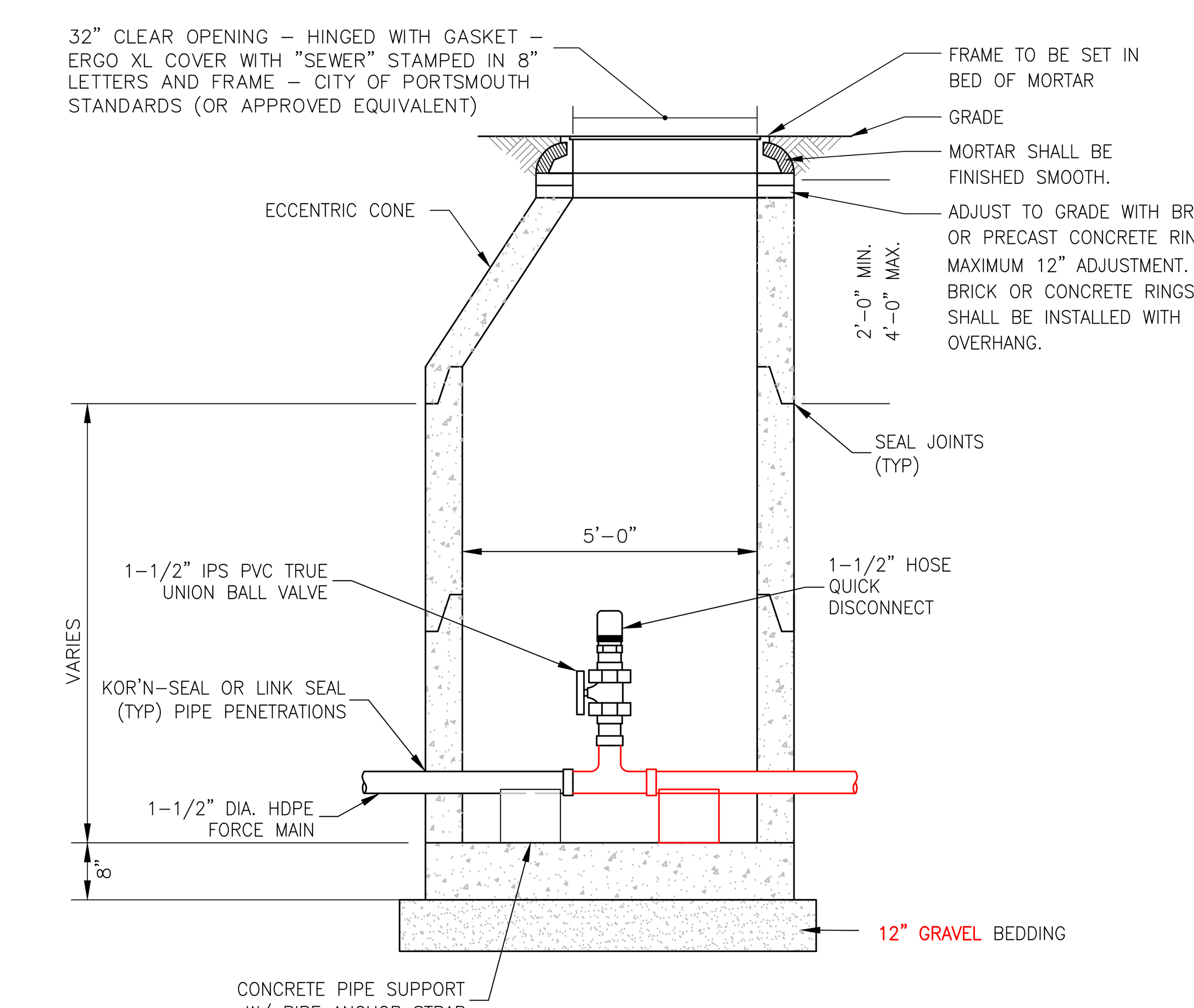
NOTES:

1. MANHOLE FRAME & GRATE SHALL BE NEENAH R-3589-A OR APPROVED EQUAL.
2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
3. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
4. ALL CONCRETE SHALL BE NHDOT CLASS A.
5. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ORIENTATION OR SIZE OF PIPES AT THE STRUCTURE.
6. "CL" USED AT ALL LOCATIONS WITHOUT CURB AND "C" TO BE USED AT ALL TO NUMBER, SIZE OR ORIENTATION OF PIPES AT THE BASIN.
7. ALL CASTINGS SHALL BE MADE IN THE USA.
8. ALL PIPE FITTINGS ARE TO BE RESTRAINED JOINT STYLE.
   A. HDPE TO BE FUSION, ELECTROFUSION OR MECHANICAL JOINT.
   B. PVC WOULD BE SOLVENT GLUE,
   C. ALL JOINTS TO BE THREADED AND PRESSURE RATED TO 200 PSI
9. 2" TRUE UNION BALL VALVE TO BE USED IN PLACE OF 2" AIR/VACUUM VALVE FOR CLEANOUT MANHOLE.
10. MANHOLE STRUCTURES SHALL MEET THE DESIGN REQUIREMENTS OF ENV-WQ 704.12 THROUGH ENV-WQ 704.17.
11. A.R.I. D-025 STAINLESS STEEL AIR RELEASE VALVE OR EQUIVALENT.



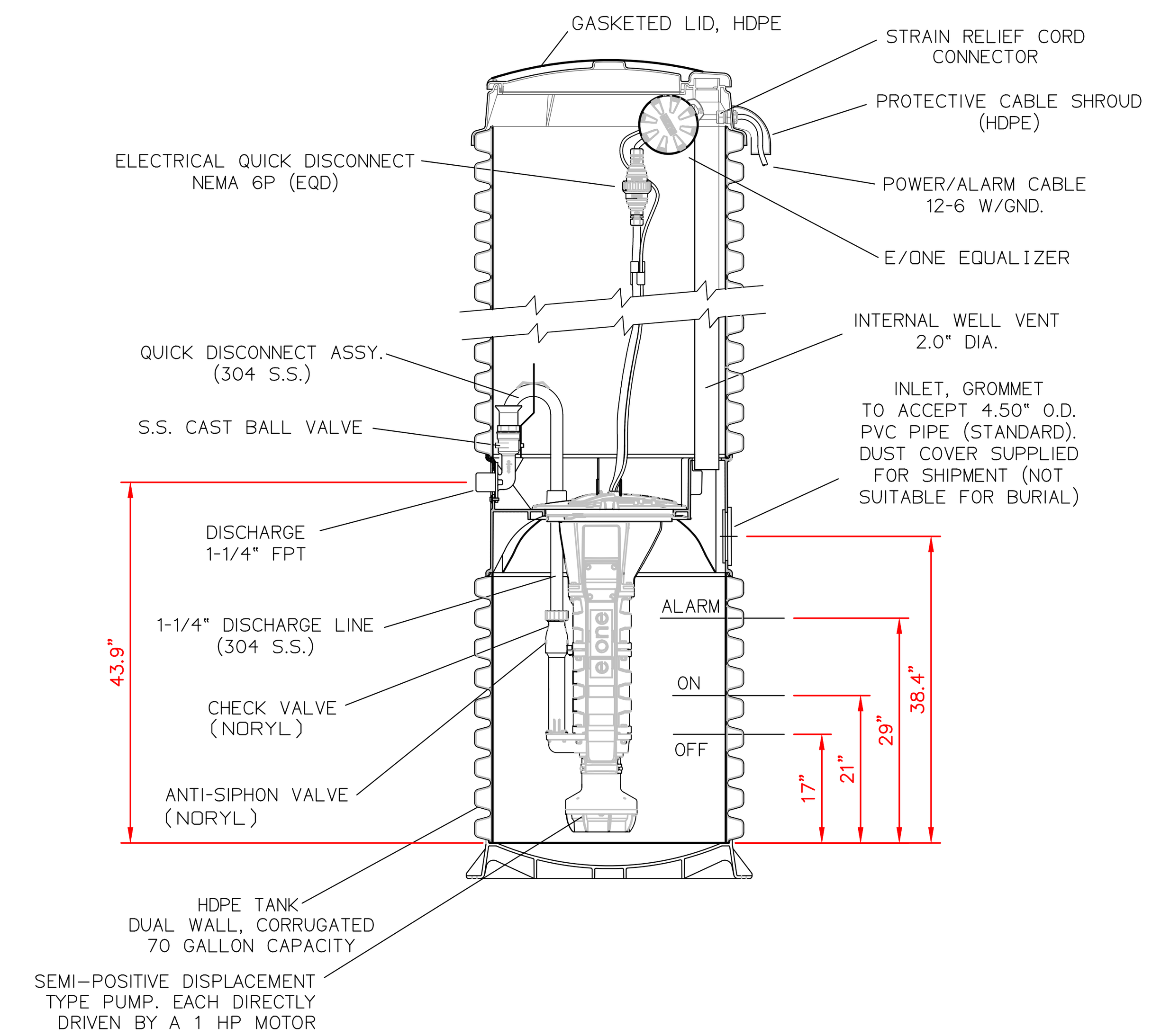
E-ONE CLEANOUT AND AIR VACUUM DETAIL

NOT TO SCALE



E-ONE FLUSHING MANHOLE

NOT TO SCALE



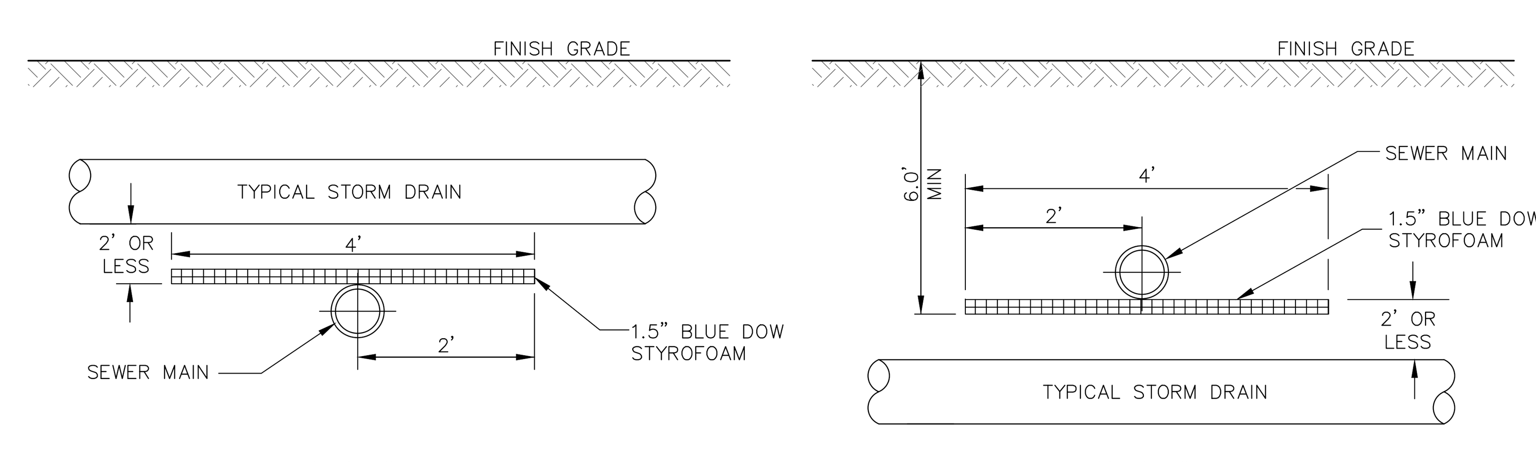
CONCRETE BALLAST MAY BE REQUIRED
SEE INSTALLATION INSTRUCTION
FOR DETAILS

NOTES:

1. ACTUAL E-ONE PUMP AND SPECIFICATION MUST BE DESIGNED AND PROVIDED BY EONE DESIGNER OR EQUAL.
2. THE PUMP CORE CONTAINS BUILT IN CHECK AND ANTI-SIPHON VALVES. IN ADDITION, THERE IS A REDUNDANT UNILATERAL CHECK AND ISOLATION VALVE AT THE LOT LINE WITH THE STAINLESS STEEL ASSEMBLY.
3. THE STATION MONITOR CONTAINS A HIGH LEVEL ALARM. THE HIGH LEVEL ALARM IS RUN OFF A REDUNDANT RUN SWITCH THAT OVERRIDES THE RUN SWITCH IF IT SHOULD SEE A POWER FAILURE.
4. THE ALARM PANEL HAS THE OPTION TO CONNECT A PORTABLE GENERATOR WITH A 20 AMP, 240 VOLT SUPPLY. POWER TRANSFERS AUTOMATICALLY IF THE PUMP IS CALLING TO RUN.
5. THE PUMP RATED TO 700 GPD.
6. THE TANK HAS A 150-GAL VOLUME.
7. IN CASE OF A POWER FAILURE, A BATTERY BACKUP REMOTE SENTRY ALARM PANEL SHALL BE USED IN CONJUNCTION WITH THE E-ONE PUMP SYSTEM.
8. A BACKUP GENERATOR WILL BE PROVIDED THAT SHALL BE AMPLE ENOUGH TO SUPPLY POWER TO RUN THE GRINDER PUMP AND ALARM SYSTEM. THERE SHALL BE ENOUGH FUEL ON SITE TO RUN THE GENERATOR FOR A MINIMUM OF 6 HRS.

E-ONE DH151 PUMP

NOT TO SCALE

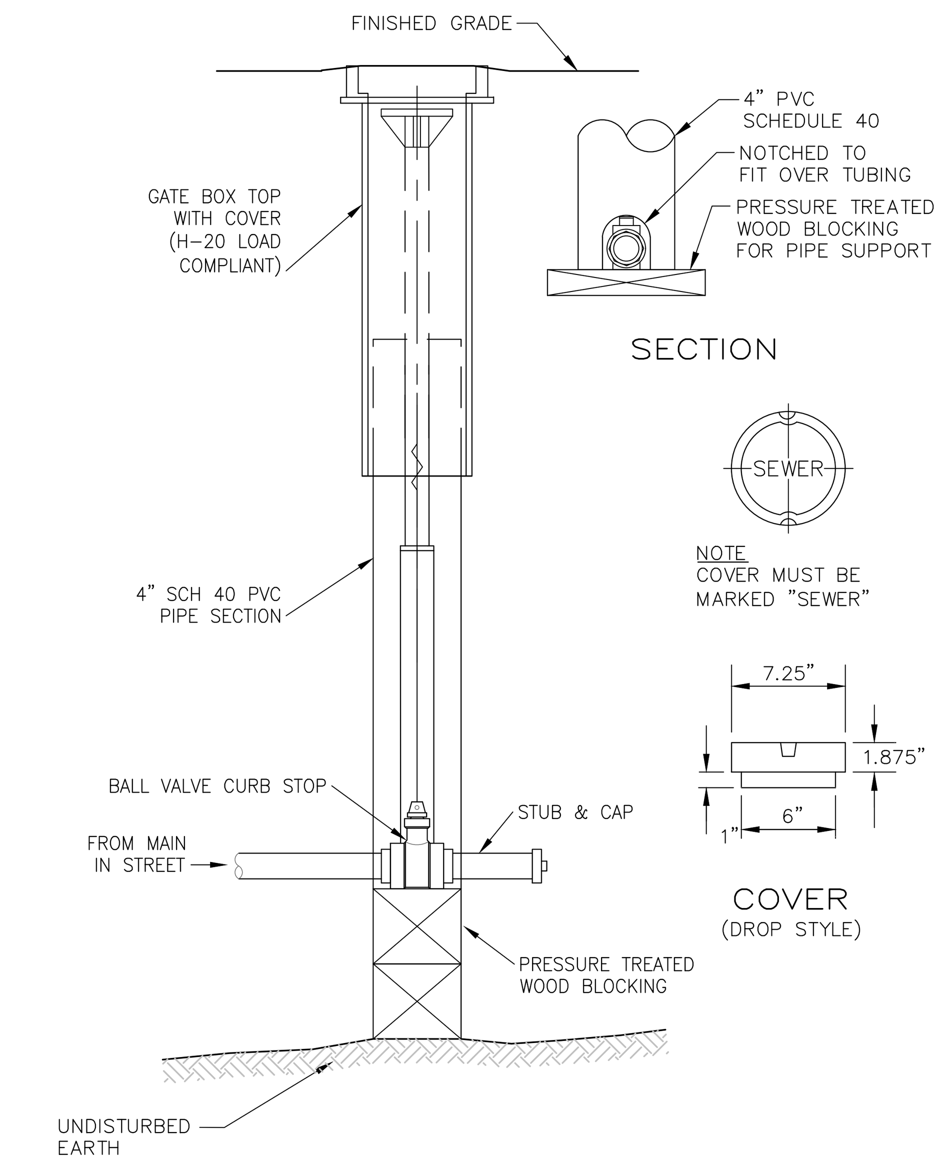


NOTES:

1. THE LENGTH OR WIDTH OF INSULATION SHALL EXTEND 1 STORM DRAIN PIPE DIAMETER BEYOND THE EDGE OF STORM DRAIN PIPE IN EACH DIRECTION OR A MINIMUM OF 2' BEYOND THE CENTERLINE OF THE STORM DRAIN PIPE, WHICHEVER IS GREATER.
2. ALL BUTT JOINT SEAMS TO BE OVERLAPPED WITH A 1' PIECE OF INSULATION CENTERED OVER SEAM.

INSULATION AT STORM DRAIN AND SEWER MAIN INTERSECTING RUNS

NOT TO SCALE



NOTES:

1. MANHOLE FRAME & GRATE SHALL BE NEENAH R-3589-A OR APPROVED EQUAL.
2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
3. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
4. ALL CONCRETE SHALL BE NHDOT CLASS A.
5. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ORIENTATION OR SIZE OF PIPES AT THE STRUCTURE.
6. "CL" USED AT ALL LOCATIONS WITHOUT CURB AND "C" TO BE USED AT ALL TO NUMBER, SIZE OR ORIENTATION OF PIPES AT THE BASIN.
7. ALL CASTINGS SHALL BE MADE IN THE USA.
8. INSTALL PIPE SUPPORTS ON THE SWEEP ELBOW.
9. ALL PIPE FITTINGS ARE TO BE RESTRAINED JOINT STYLE.
   A. HDPE TO BE FUSION, ELECTROFUSION OR MECHANICAL JOINT.
   B. PVC WOULD BE SOLVENT GLUE,
   C. ALL JOINTS TO BE THREADED AND PRESSURE RATED TO 200 PSI
10. MANHOLE STRUCTURES SHALL MEET THE DESIGN REQUIREMENTS OF ENV-WQ 704.12 THROUGH ENV-WQ 704.17.
11. A.R.I. D-025 STAINLESS STEEL AIR RELEASE VALVE OR EQUIVALENT.

FORCE MAIN CURB STOP

NOT TO SCALE

e|one SEWER SYSTEMS

PRESSURE SEWER TESTING NOTES

1. PIPE AND JOINT MATERIALS:
   A. PRESSURE SEWERS SHALL BE CONSTRUCTED OF DUCTILE IRON (DI), HIGH DENSITY POLYETHYLENE (HDPE), OR PVC MATERIAL.
   B. PRESSURE SEWERS SHALL BE TREATED AS GRAVITY SEWERS FOR PURPOSES OF FOUNDATION BEDDING AND BACKFILL REQUIREMENTS.
   C. PVC PIPE USED PRESSURE SEWERS SHALL BE CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO THE ASTM D2241 OR ASTM D1785 STANDARDS IN EFFECT WHEN THE PIPE IS MANUFACTURED.
   D. HDPE PIPE USED FOR PRESSURE SEWERS SHALL BE CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO THE ASTM D3035 STANDARD IN EFFECT WHEN THE PIPE IS MANUFACTURED.
   E. IF DI PIPE IS USED IN AN ENVIRONMENT THAT COULD CAUSE CORROSION OR OTHER DETERIORATION OF OR DAMAGE TO AN IRON PIPE, OR OTHERWISE REDUCE THE TYPICAL LIFE EXPECTANCY OF THE PIPE, SUCH AS MAY OCCUR WITH CERTAIN SOIL TYPES, LOW PH LEVELS, OR WATER CONDITIONS, THE PIPE SHALL BE PROTECTED AGAINST CORROSION, SUCH AS WITH CATHODIC PROTECTION.
2. TESTING: THE COMPLETED SEWER SERVICE SHALL BE SUBJECTED TO A THIRD PARTY LEAKAGE TEST ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING) PRESSURE SEWERS SHALL BE TESTED IN ACCORDANCE WITH SECTION 5 OF THE AWWA C600, "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES" STANDARD IN EFFECT WHEN THE TEST IS CONDUCTED AT A PRESSURE EQUAL TO THE GREATER OF 150 PERCENT OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.
3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
4. JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
5. SEWER SERVICE INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 6 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 11. BEDDING AND RE-FILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.
6. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
7. THE CENTERLINE OF ALL BUILDING CONNECTIONS SHALL ENTER THE TOP HALF OF THE SEWER.
8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.
9. PRESSURE SEWERAGE SHALL HAVE AN ISOLATION VALVE OR CURB STOP VALVE INSTALLED AT THE PROPERTY LINE / LIMITED COMMON AREA. IF A CHECK VALVE IS USED AT THE PROPERTY LINE, THE VALVE SHALL BE INSTALLED WITHIN A VAULT TO FACILITATE MAINTENANCE.
10. WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE.
11. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33/C33M STONE SIZE 67 AND FREE FROM CLAY, LOAM AND ORGANNIC MATTER. THE EXCAVATION SHALL BE PROPERLY DEWATERED WHILE PLACING BEDDING MATERIAL AND SETTING OF THE BASE OR POURING CONCRETE.

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
20%-55% PASSING	3/8 INCH SCREEN
0%-10% PASSING	#4 SIEVE
0%-5% PASSING	#8 SIEVE

WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1 1/2 INCH SHALL BE USED.

12. LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS.
13. INTERNAL STEPS IN MANHOLES ARE PROHIBITED PER PORTSMOUTH DPW STANDARDS.

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

DETAILS

LADY ISLE SITE RENOVATIONS

325 LITTLE HARBOR ROAD, PORTSMOUTH, NH

OWNED BY & PREPARED FOR

ADL 325 LITTLE HARBOR ROAD TRUST

SCALE: NTS **SEPTEMBER 29, 2021**

DIG SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — HANNAH E. GIOVANNUCCI No.15699 LICENSED PROFESSIONAL ENGINEER — 2/15/2022

REV.	DATE	DESCRIPTION	DR	CK
3	2/15/2022	REVISED PER NHDES & UTILITIES PER TAC	HEG	JCC
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FILE	47099.01	DR	HEG	FB	–	C-22
		CK	JCC	CADFILE	47099-01_DETAILS_MAIN	

Feb 15, 2022 - 2:56pm
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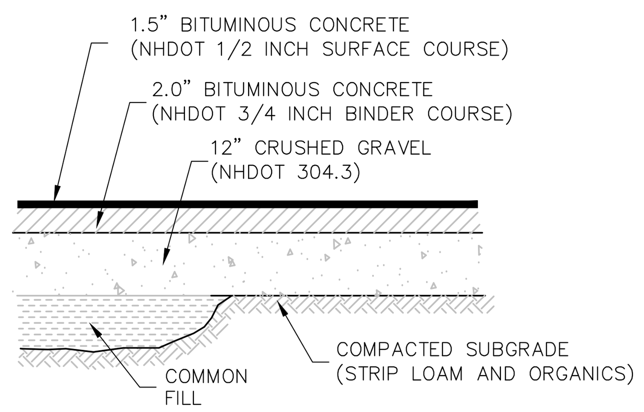
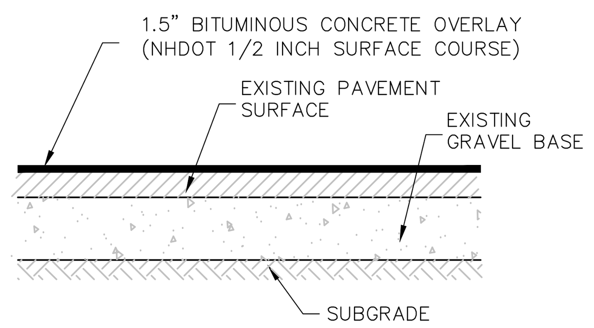


STANDARD DUTY PAVEMENT



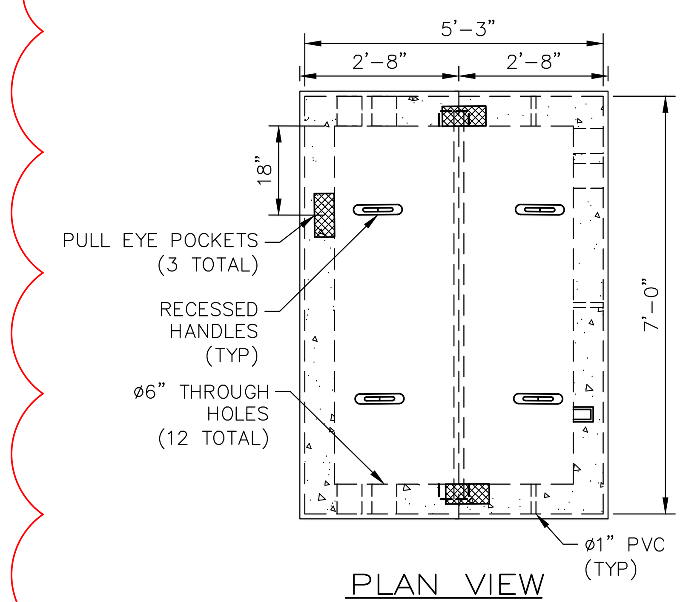
OVERLAY

NOTES

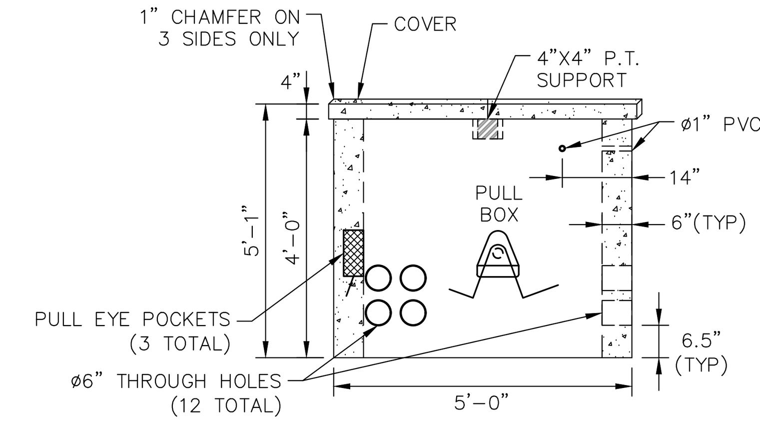
1. SEE GRADING & DRAINAGE PLAN & DRIVEWAY GRADING & PROFILE FOR PAVEMENT SLOPE AND CROSS–SLOPE.
2. PROVIDE CLEAN BUTT TO EXISTING PAVEMENT – USE TACK COAT. A TACK COAT SHALL ALSO BE PLACED BETWEEN GRAVEL COURSE AND SUCCESSIVE LAYERS OF BITUMINOUS CONCRETE. SPECIFICALLY, A TACK COAT SHALL BE PLACED ATOP THE BINDER COURSE PAVEMENT PRIOR TO PLACING THE WEARING COURSE.
3. REMOVE ALL LOAM AND/OR YIELDING MATERIAL BELOW PAVEMENT.
4. BITUMINOUS MATERIALS SHALL CONFORM TO NHDOT SPECIFICATION SECTION 401.
5. BITUMINOUS CONCRETE SHALL BE COMPACTED TO AT LEAST 92.5% OF THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D2041 OR AASHTO T209. PLACEMENT TEMPERATURES OF BITUMINOUS CONCRETE MIXES, IN GENERAL, RANGE BETWEEN 270 AND 310 DEGREES FAHRENHEIT.
6. PAVEMENT BASE COURSE AGGREGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.3 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.
7. PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOF ROLLED AND COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY.
8. THE EXPOSED SOIL SUBGRADE SHOULD BE PROOF ROLLED PRIOR TO THE PLACEMENT OF SUBBASE GRAVEL, AND SOFT AREAS SHOULD BE REPAIRED AND REPLACED.

PAVEMENT SECTIONS

NOT TO SCALE



PLAN VIEW



SECTION VIEW

ESTIMATED VAULT WEIGHTS:

COVER (EACH)	=	675 LBS
BASE	=	6,500 LBS
TOTAL:	=	7,850 LBS

NOTES:
1. ELECTRIC PULLBOX SHALL BE PER THE STANDARDS OF EVERSOURCE.
2. REINFORCEMENT STEEL CONFORMS TO: ASTM A615 GRADE 60
3. CONCRETE: FC = 5,000 PSI @ 28 DAYS MINIMUM
4. DESIGN LOADING: AASHTO–HS20–44
5. BUTYL RUBBER JOINT SEALANT PROVIDED

ELECTRIC PULL BOX

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 205 LOT 2

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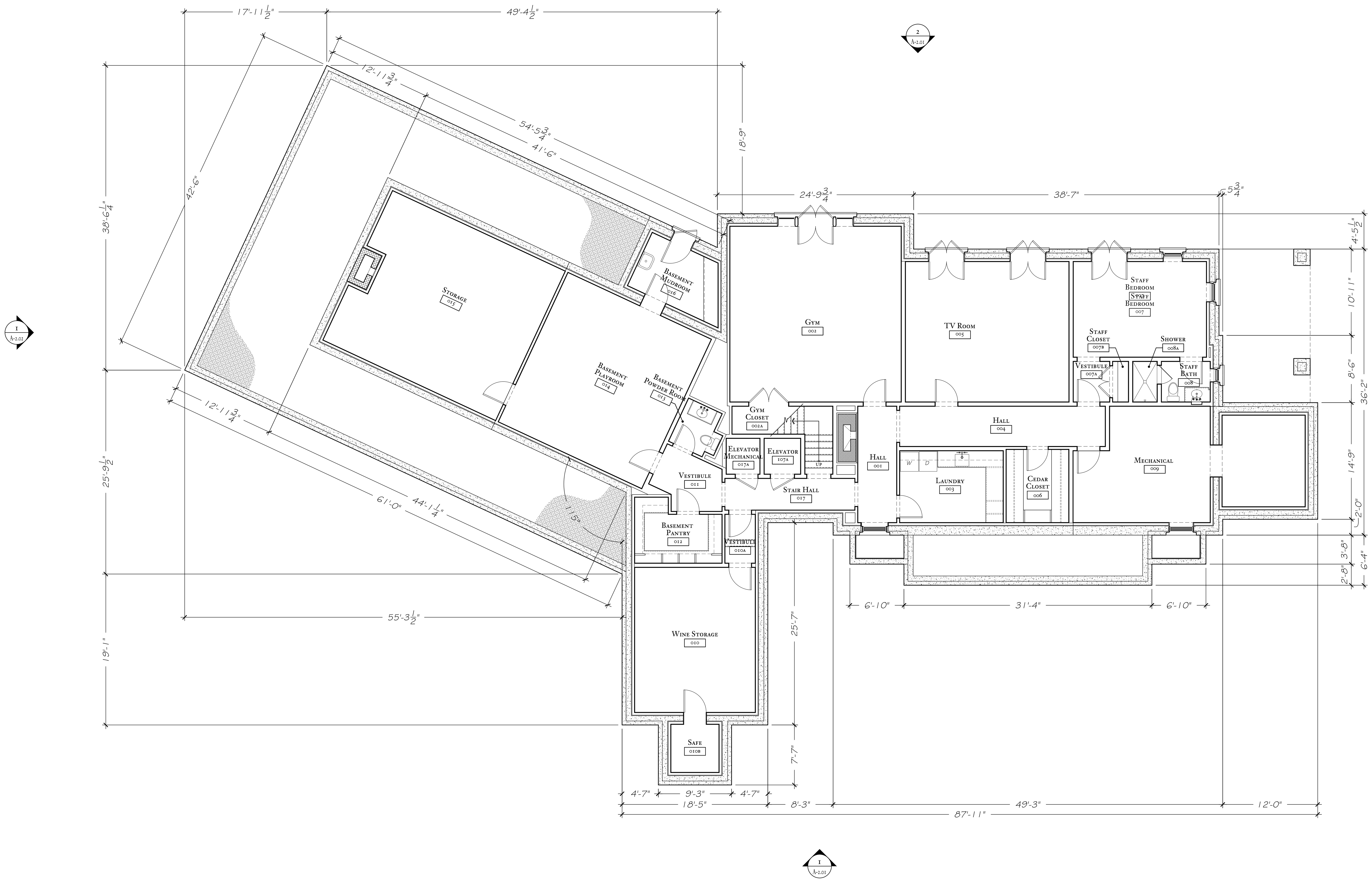
FILE 47099.01	DR HEG	FB	–		C-23
	CK JCC	CADFILE	47099-01_DETAILS_MAIN		

Gross Floor Area at Main House		
	Conditioned sq.ft.	Unconditioned sq.ft.
Basement	3,382 sq.ft.	1,050 sq.ft.
First Floor	3,897 sq.ft.	1,496 sq.ft.
Second Floor	3,487 sq.ft.	--
Total	10,766 sq.ft.	2,546 sq.ft.
	13,312 sq.ft.	



1 A-1.00 Basement Floor Plan - Overall

Scale: 1/8" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

Issued for Permit 6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title:
Basement
Overall Plan

Date: June 24, 2021

Scale: 1/8" = 1'-0"

Drawn By: PM / AB

Sheet Number: MH A-1.00

G. P. Schafer Architect, DPC

19 Union Square West
4th Floor
New York, New York 10003
Telephone: 212-965-1355
Telefax: 212-965-1356

Gross Floor Area at Main House

	Conditioned sq.ft.	Unconditioned sq.ft.
Basement	3,382 sq.ft.	1,050 sq.ft.
First Floor	3,897 sq.ft.	1,496 sq.ft.
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FOR PERMIT ONLY:
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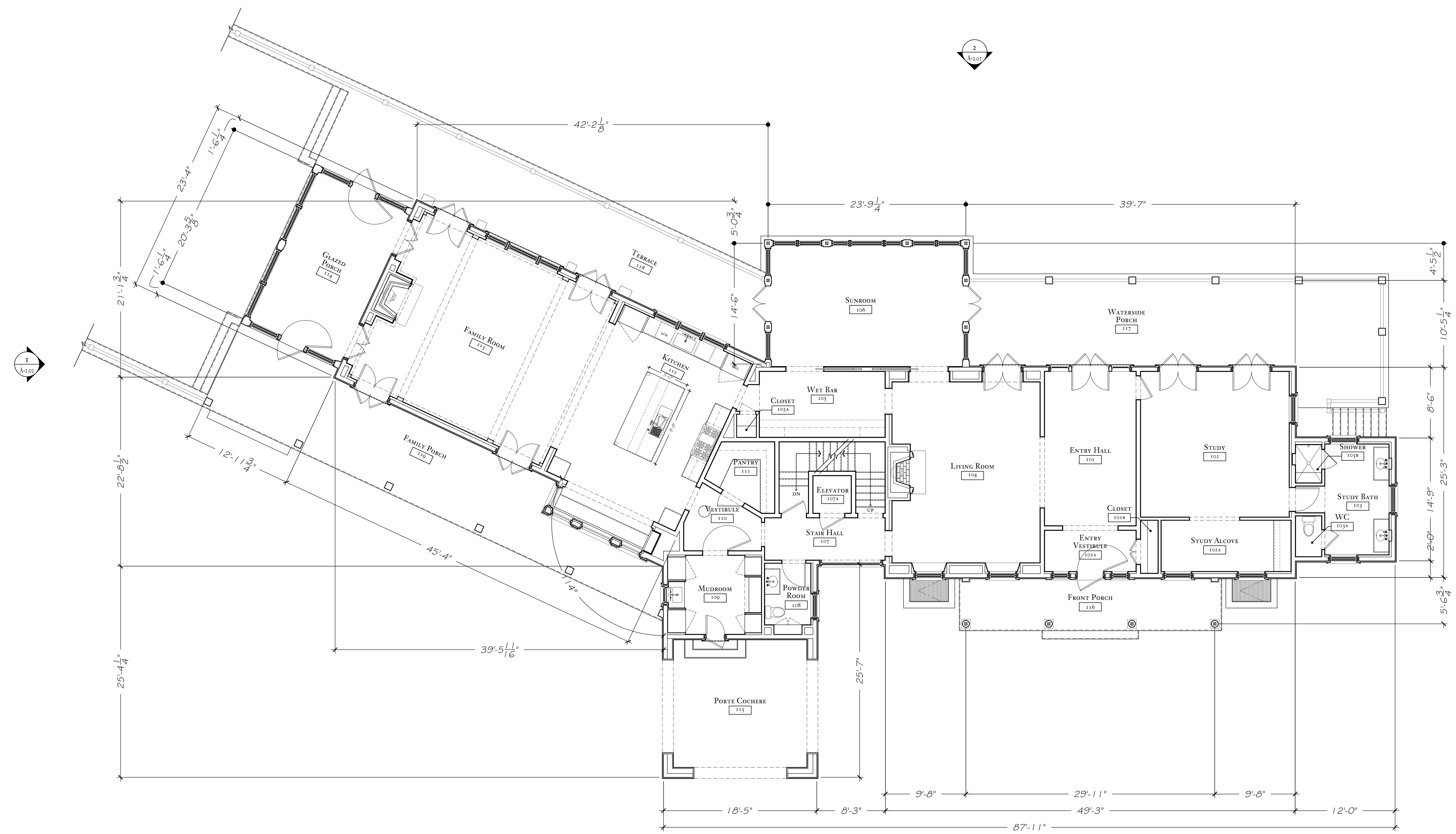

1 A-1.01 First Floor Plan - Overall
Scale: 1/8" = 1'-0"

ISSUED FOR PERMIT 6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title:
First Floor Overall Plan

Date: *June 24, 2021*

Sheet Number: MH A-1.01

Scale: *1/8" = 1'-0"*

Drawn By: *PM / AB*

G. P. Schafer Architect, DPC

19 Union Square West
4th Floor
New York, New York 10003
Telephone: 212-965-1355
Telefax: 212-965-1356

Gross Floor Area at Main House		
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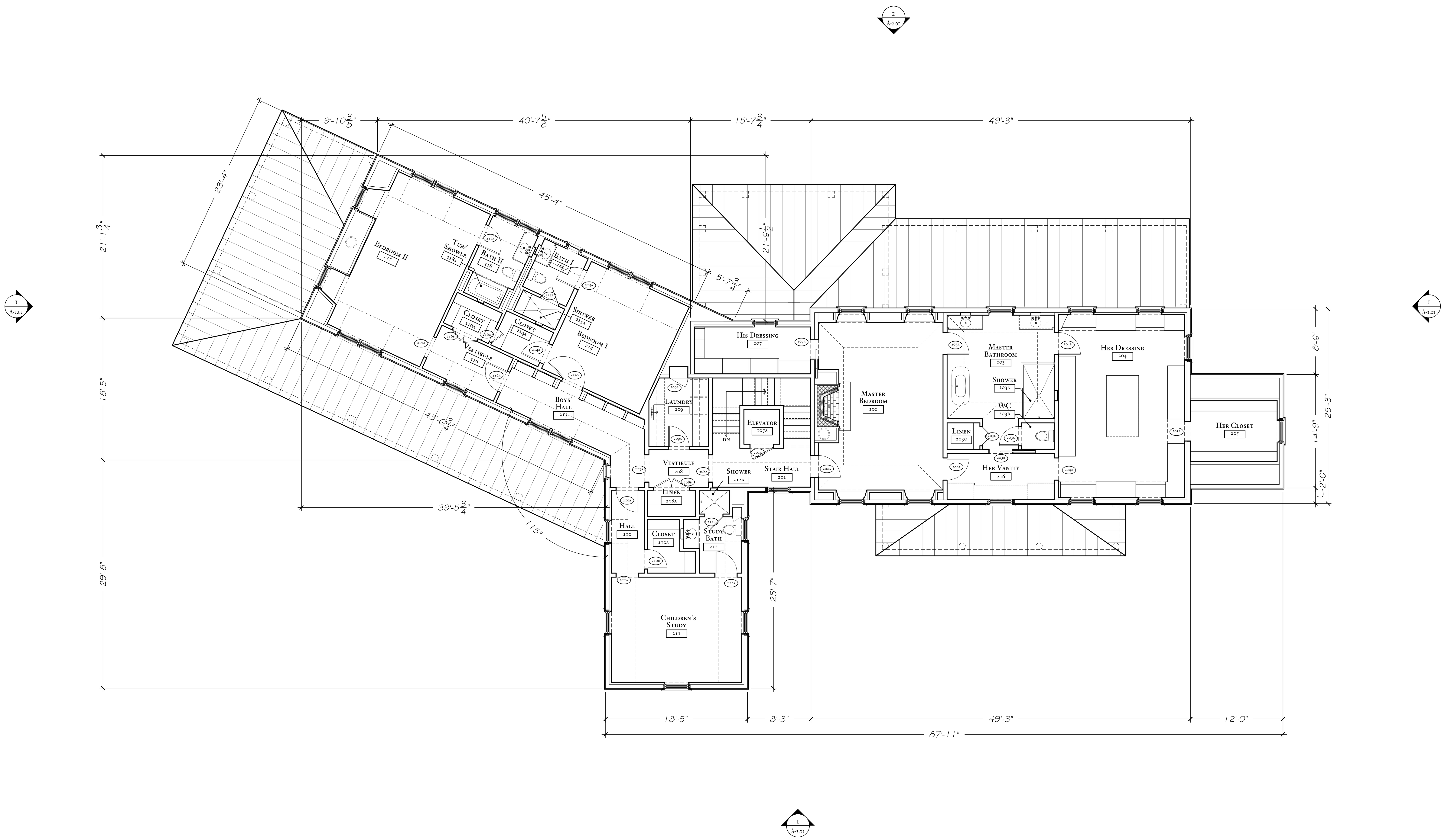
Total	10,766 sq.ft.	2,546 sq.ft.
	13,312 sq.ft.	



1 A-1.02 Second Floor Plan - Overall

Scale: 1/8" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

ISSUED FOR PERMIT 6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
Second Floor
Overall Plan

Date : June 24, 2021

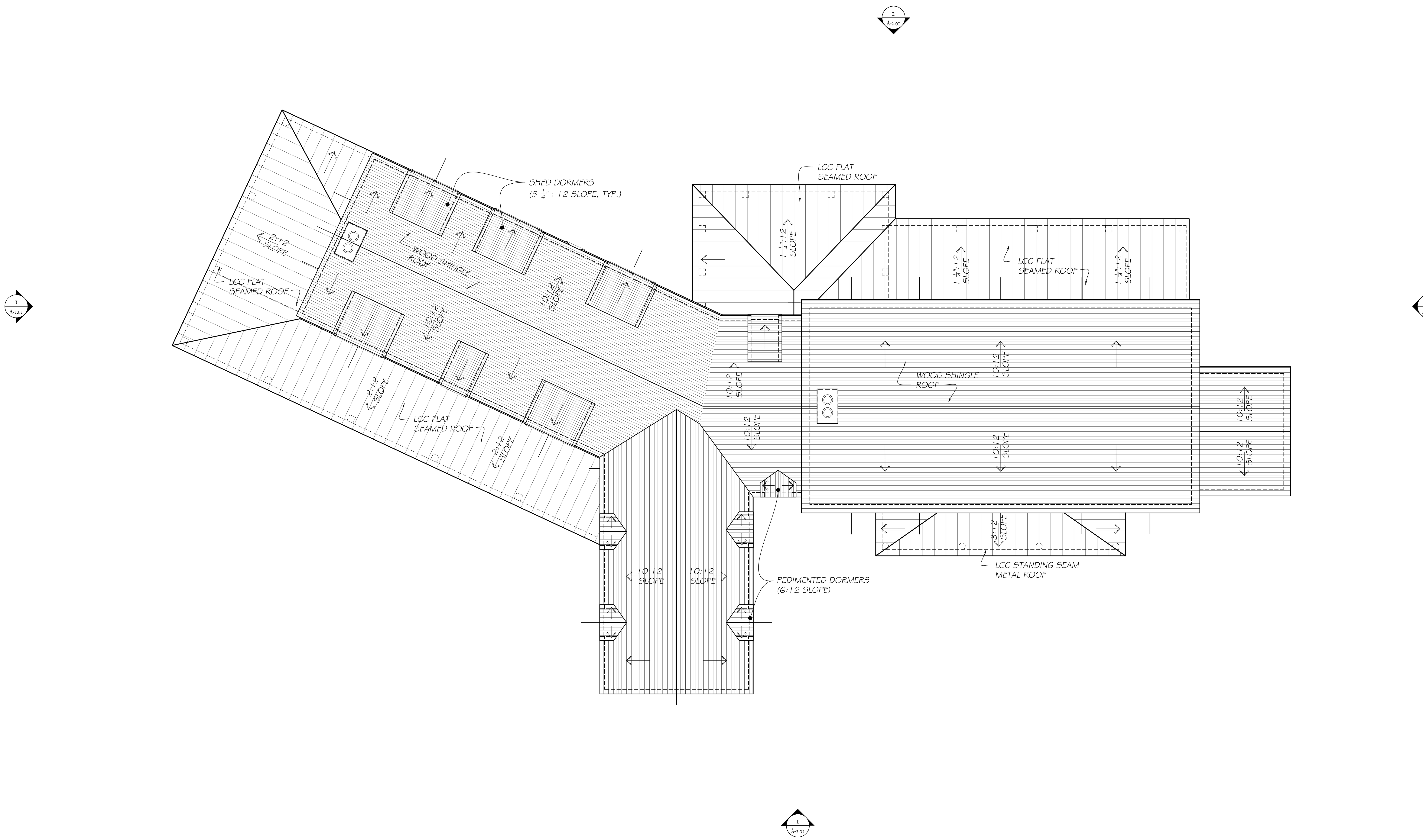
Scale : 1/8" = 1'-0"

Drawn By : PM / AB

Sheet Number :
MH
A-1.02

G. P. Schafer Architect, DPC

19 Union Square West
4th Floor
New York, New York 10003
Telephone: 212-965-1355
Telefax: 212-965-1356



1 A-1.03 Roof Plan - Overall

Scale: 1/8" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

ISSUED FOR PERMIT	6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
Roof
Overall Plan

Date : June 24, 2021

Scale : 1/8" = 1'-0"

Drawn By : PM / AB

Sheet Number : MH A-1.03

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Telefax: 212-965-1356

2 / A-2.01 **Overall East Elevation**
Scale: 1/8" = 1'-0"

1 / A-2.01 **Overall West Elevation**
Scale: 1/8" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

ISSUED FOR PERMIT	6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title:
Exterior Elevations
Overall

Date: *June 24, 2021*
Scale: 1/8" = 1'-0"
Drawn By: PM / AB
Sheet Number: MH A-2.01

G. P. Schafer Architect, DPC
19 Union Square West
4th Floor
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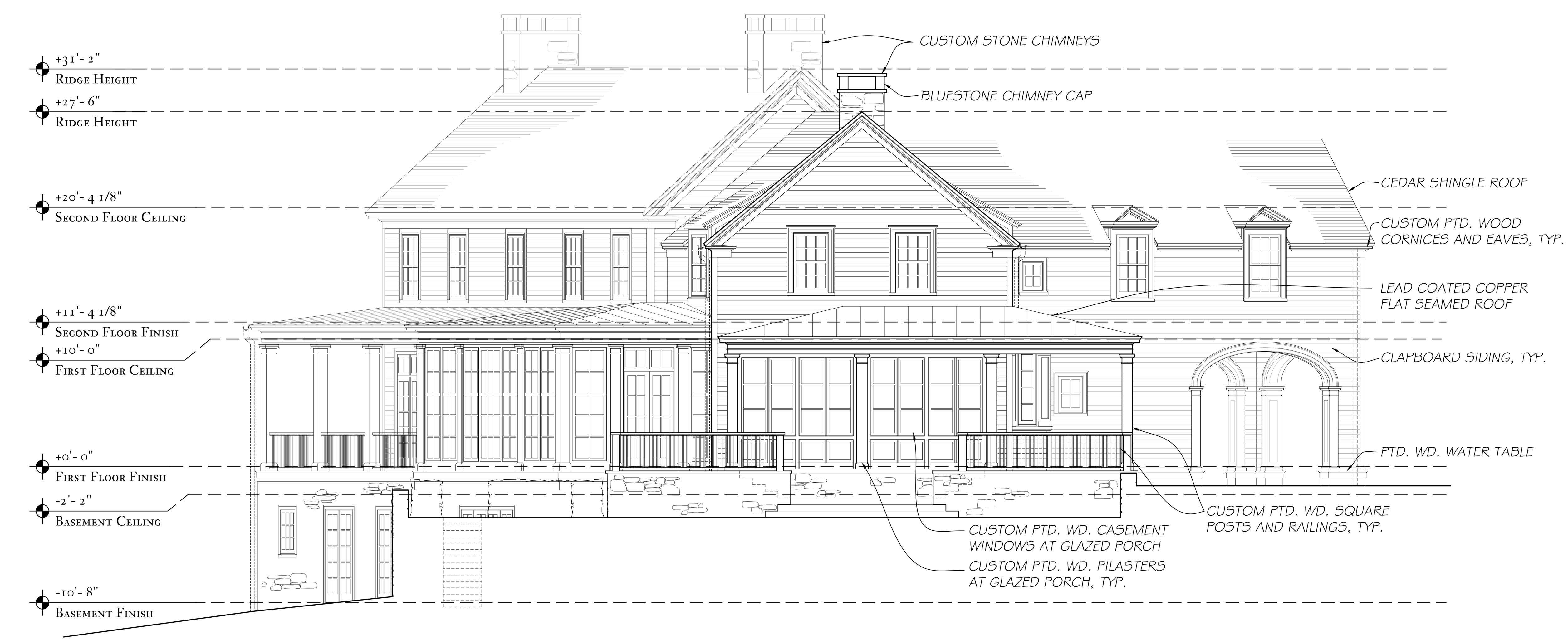

2 A-2.02 **Overall North Elevation**

Scale: 1/8" = 1'-0"

1 A-2.02 **Overall South Elevation**

Scale: 1/8" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

ISSUED FOR PERMIT	6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title:
Exterior Elevations Overall

Date: *June 24, 2021*

Scale: *1/8" = 1'-0"*

Drawn By: *PM / AB*

Sheet Number: MH A-2.02

G. P. Schafer Architect, DPC

19 Union Square West
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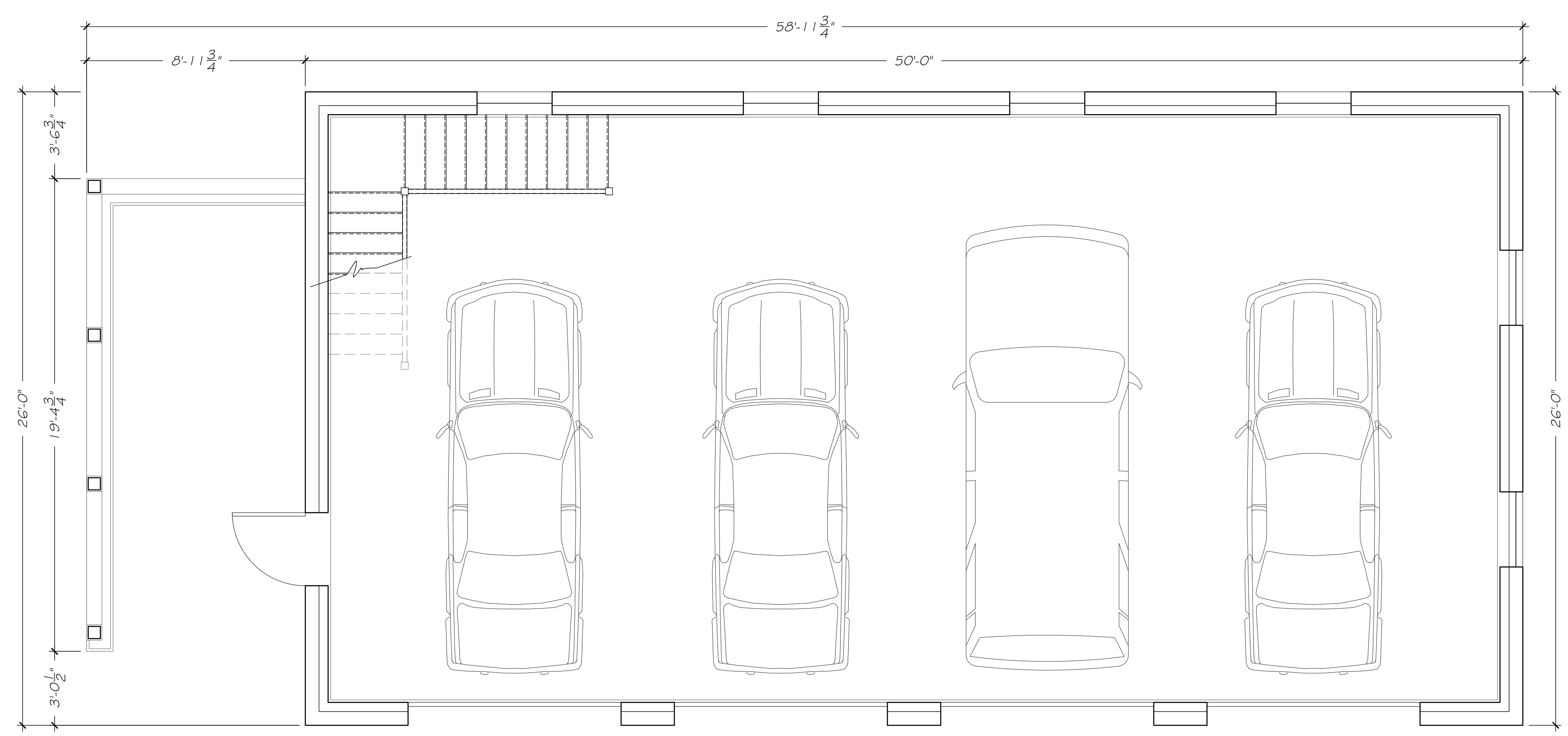

1
A-1.01
First Floor Plan
Scale: 1/4" = 1'-0"

ISSUED FOR PERMIT 6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
First Floor Plan

Date :
June 24, 2021

Scale :
1/4" = 1'-0"

Drawn By :
PM

Sheet Number :
GAR
A-1.01

G. P. Schafer Architect, DPC

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4th Floor
New York, New York 10003
Telephone: 212-965-1355
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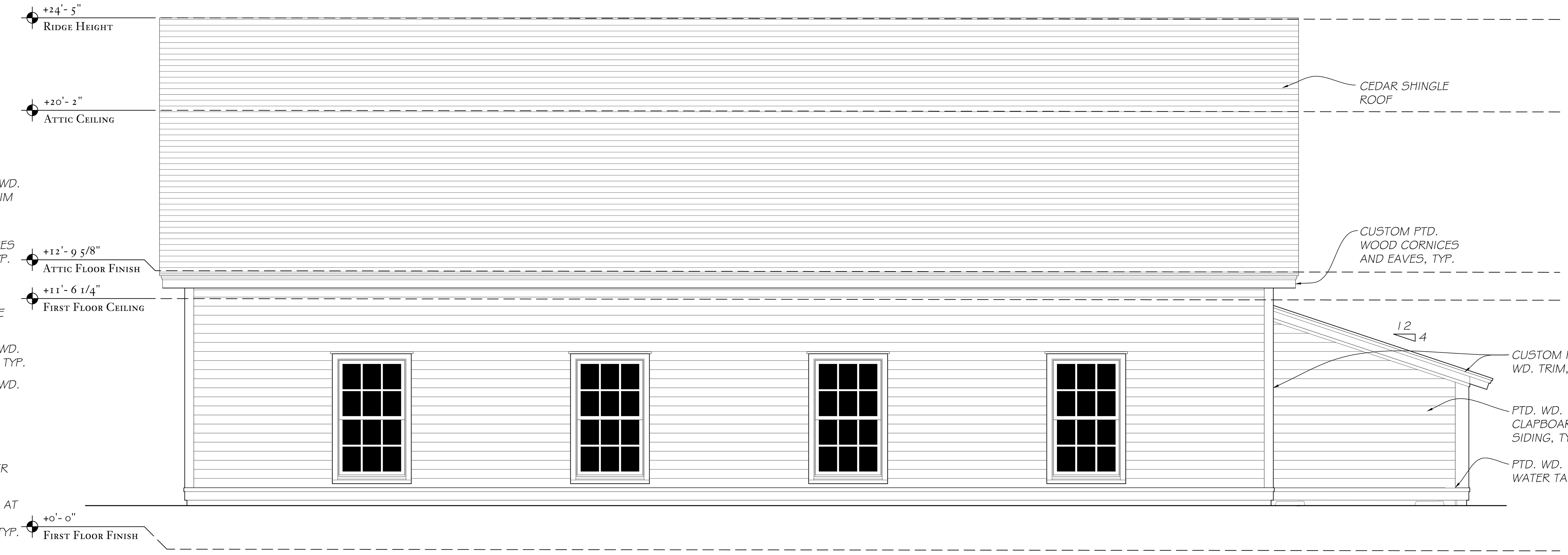
4 A-2.01 **East Elevation**
Scale: 1/4" = 1'-0"



3 A-2.01 **South Elevation**
Scale: 1/4" = 1'-0"

2 A-2.01 **West Elevation**
Scale: 1/4" = 1'-0"

1 A-2.01 **North Elevation**
Scale: 1/4" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

ISSUED FOR PERMIT	6/24/21

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
Exterior Elevations

Date : *June 24, 2021*
Scale : *1/4" = 1'-0"*
Drawn By : *PM*
Sheet Number : GAR **A-2.01**

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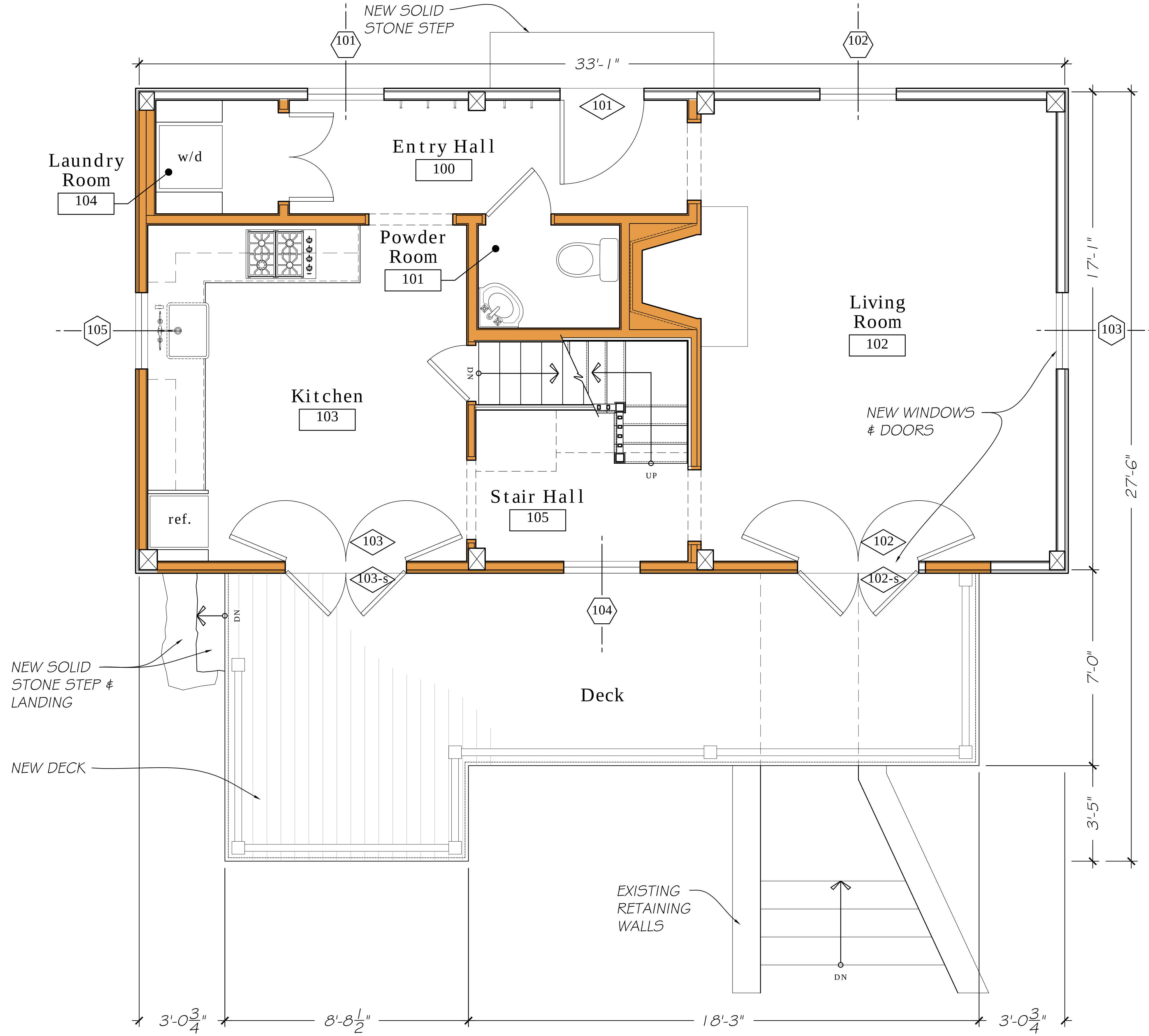

1
A-1.01
First Floor Plan - Proposed
Scale: 1/4" = 1'-0"

PROPOSED PLAN GRAPHIC LEGEND:

NEW CONSTRUCTION

GENERAL NOTE FOR REVISION 1:

WINDOW AND DOOR NUMBER TAGS HAVE BEEN ADDED TO REFERENCE WITH SCHEDULES IN A-6 SERIES AND A-7 SERIES

1

FOR PERMIT ONLY

002	REVISION 1	1	06/12/2020
001	ISSUED FOR BUILDING PERMIT		05/14/2020

A RENOVATED GUEST COTTAGE
for
LADY ISLE
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE:
Proposed
First Floor Plan

DATE:
June 12, 2020

SCALE:
1/4" = 1'-0"

DRAWN BY:
PM

SHEET NUMBER:
A-1.01

G. P. SCHAFER ARCHITECT, DPC

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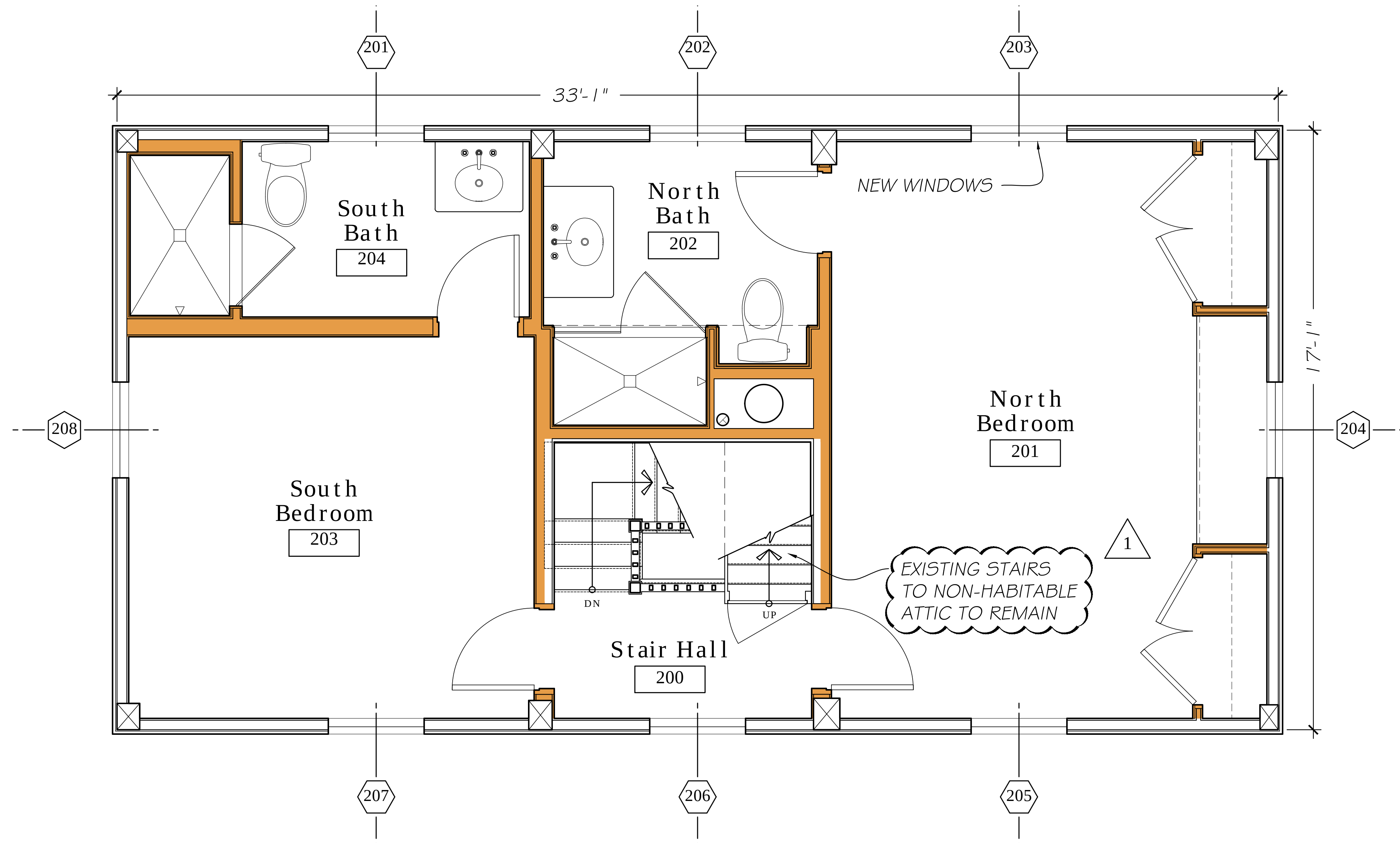

1
A-1.02
Second Floor Plan - Proposed
Scale: 1/4" = 1'-0"

PROPOSED PLAN GRAPHIC LEGEND:

NEW CONSTRUCTION

GENERAL NOTE FOR REVISION 1 :

WINDOW AND DOOR NUMBER TAGS HAVE BEEN ADDED TO REFERENCE WITH SCHEDULES IN A-6 SERIES AND A-7 SERIES

1

FOR PERMIT ONLY

002	REVISION 1	1	06/12/2020
001	ISSUED FOR BUILDING PERMIT		05/14/2020

A Renovated Guest Cottage
for
Lady Isle
Portsmouth, New Hampshire

Sheet Title :

Proposed
Second Floor Plan

Date : June 12, 2020

Scale : 1/4" = 1'-0"

Drawn By : PM

Sheet Number : A-1.02

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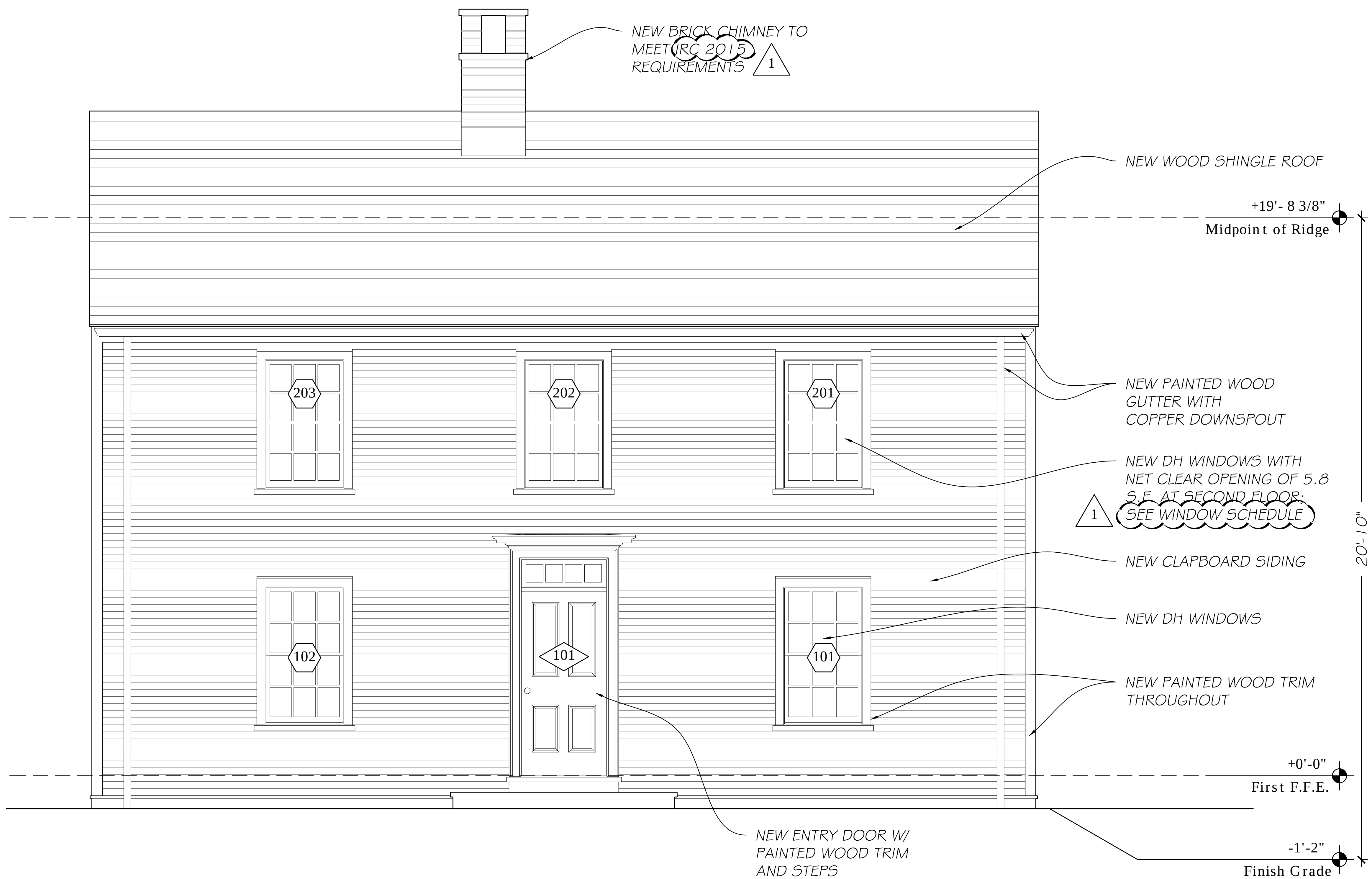

1
D-2.01
West Elevation (Proposed)
Scale: 1/4" = 1'-0"

GENERAL NOTE FOR REVISION 1:

WINDOW AND DOOR NUMBER TAGS HAVE BEEN ADDED TO REFERENCE WITH SCHEDULES IN A-6 SERIES AND A-7 SERIES

1

FOR PERMIT ONLY

002	REVISION 1	1	06/12/2020
001	ISSUED FOR BUILDING PERMIT		05/14/2020

A Renovated Guest Cottage
for
Lady Isle
Portsmouth, New Hampshire

Sheet Title:
Exterior
Elevations

Date: June 12, 2020
Scale: 1/4" = 1'-0"
Drawn By: TG
Sheet Number: A-2.01

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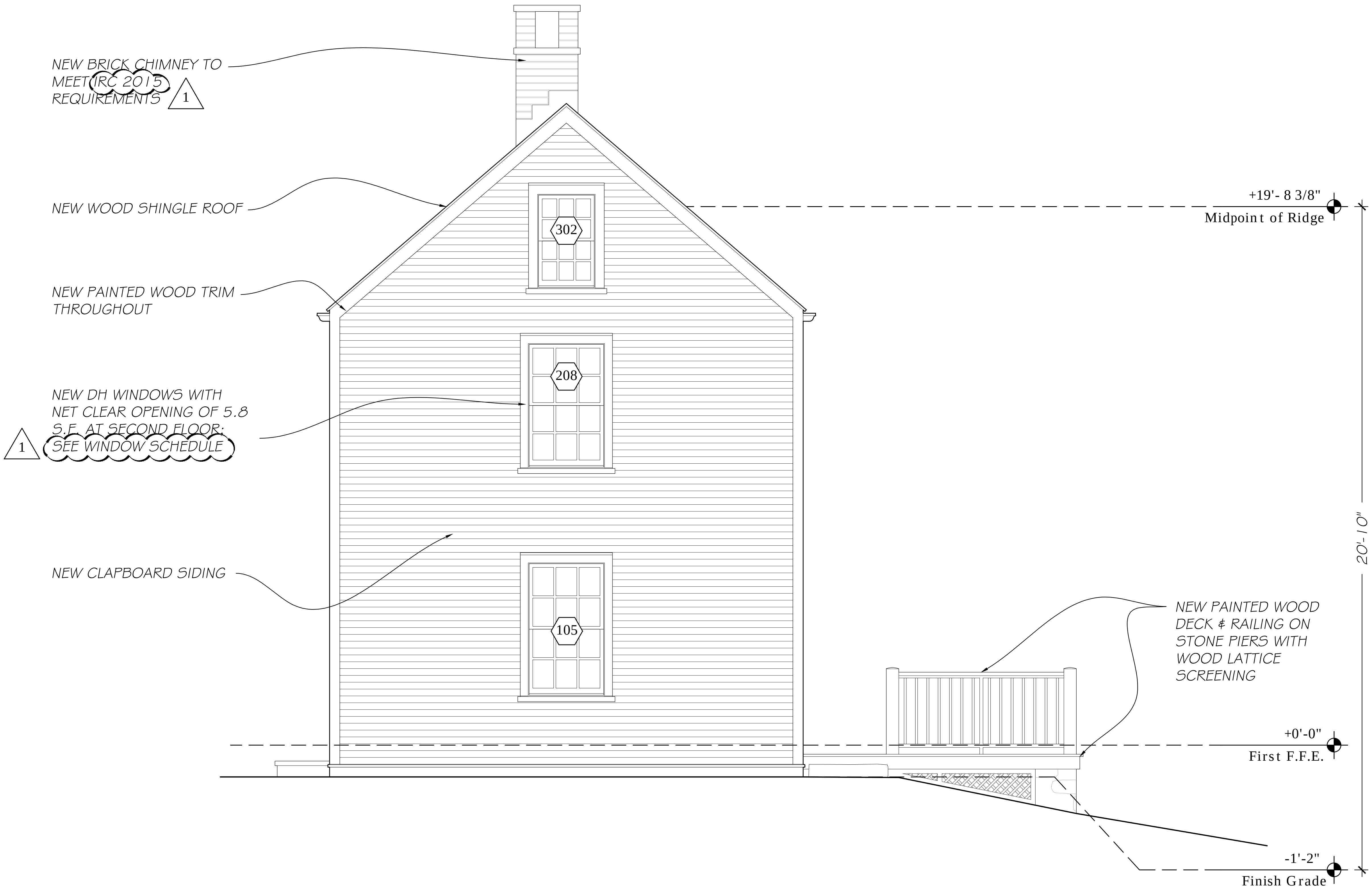

1
A-2.02
South Elevation (Proposed)
Scale: 1/4" = 1'-0"

GENERAL NOTE FOR REVISION 1 :

WINDOW AND DOOR NUMBER TAGS HAVE BEEN ADDED TO REFERENCE WITH SCHEDULES IN A-6 SERIES AND A-7 SERIES

1

FOR PERMIT ONLY

002	REVISION 1	1	06/12/2020
001	ISSUED FOR BUILDING PERMIT		05/14/2020

A RENOVATED GUEST COTTAGE
for
LADY ISLE
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE :
Exterior Elevations

DATE : *June 12, 2020*
SCALE : *1/4" = 1'-0"*
DRAWN BY : *TG*
SHEET NUMBER : A-2.02

G. P. SCHAFER ARCHITECT, DPC

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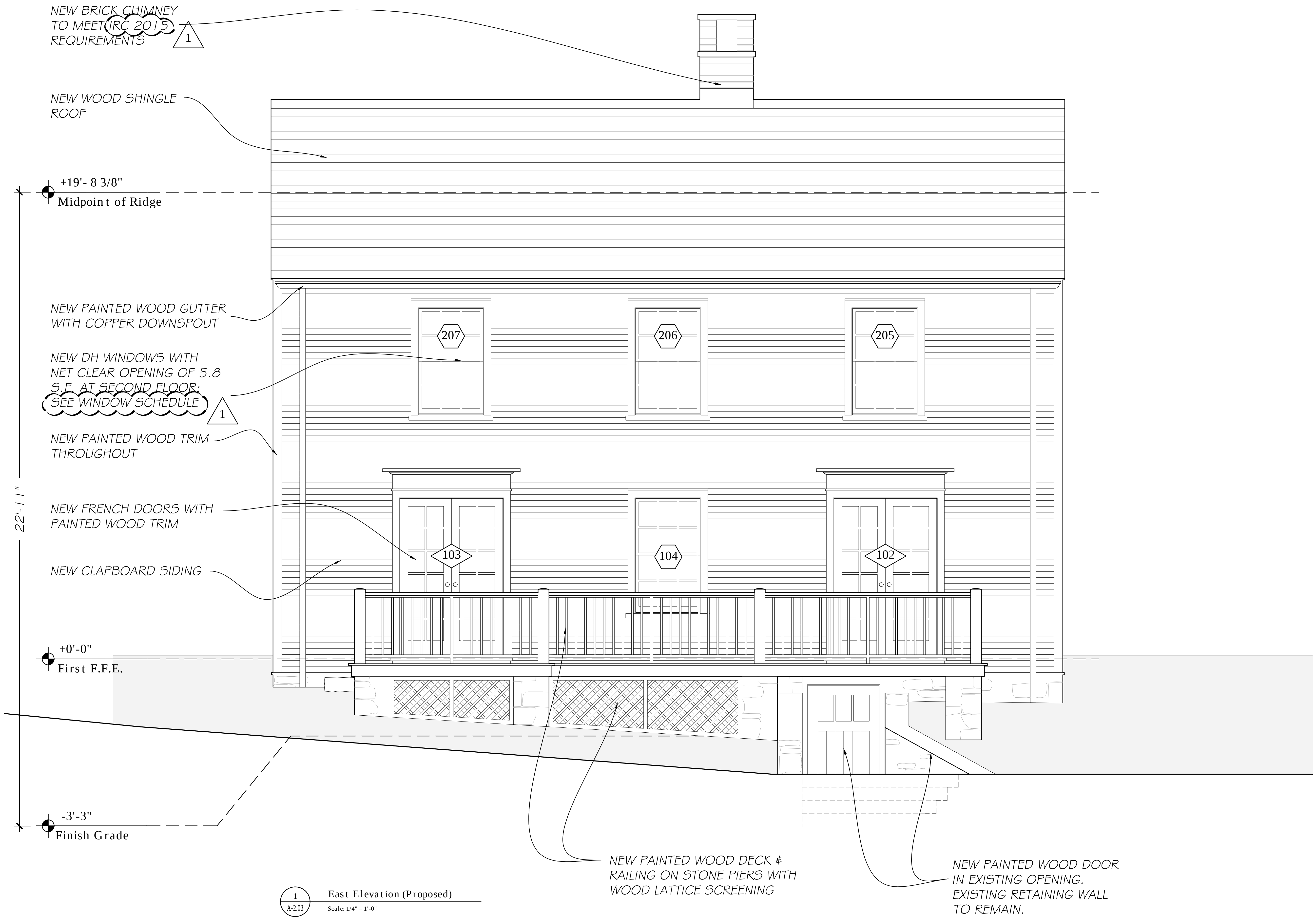

1 A-2.03 East Elevation (Proposed)

Scale: 1/4" = 1'-0"

GENERAL NOTE FOR REVISION 1:

WINDOW AND DOOR NUMBER TAGS HAVE BEEN ADDED TO REFERENCE WITH SCHEDULES IN A-6 SERIES AND A-7 SERIES

1

FOR PERMIT ONLY

002	REVISION 1	1	06/12/2020
001	ISSUED FOR BUILDING PERMIT		05/14/2020

A RENOVATED GUEST COTTAGE *for* LADY ISLE
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE: *Exterior Elevations*

DATE: *June 12, 2020*

SHEET NUMBER: A-2.03

SCALE: *1/4" = 1'-0"*

DRAWN BY: *TG*

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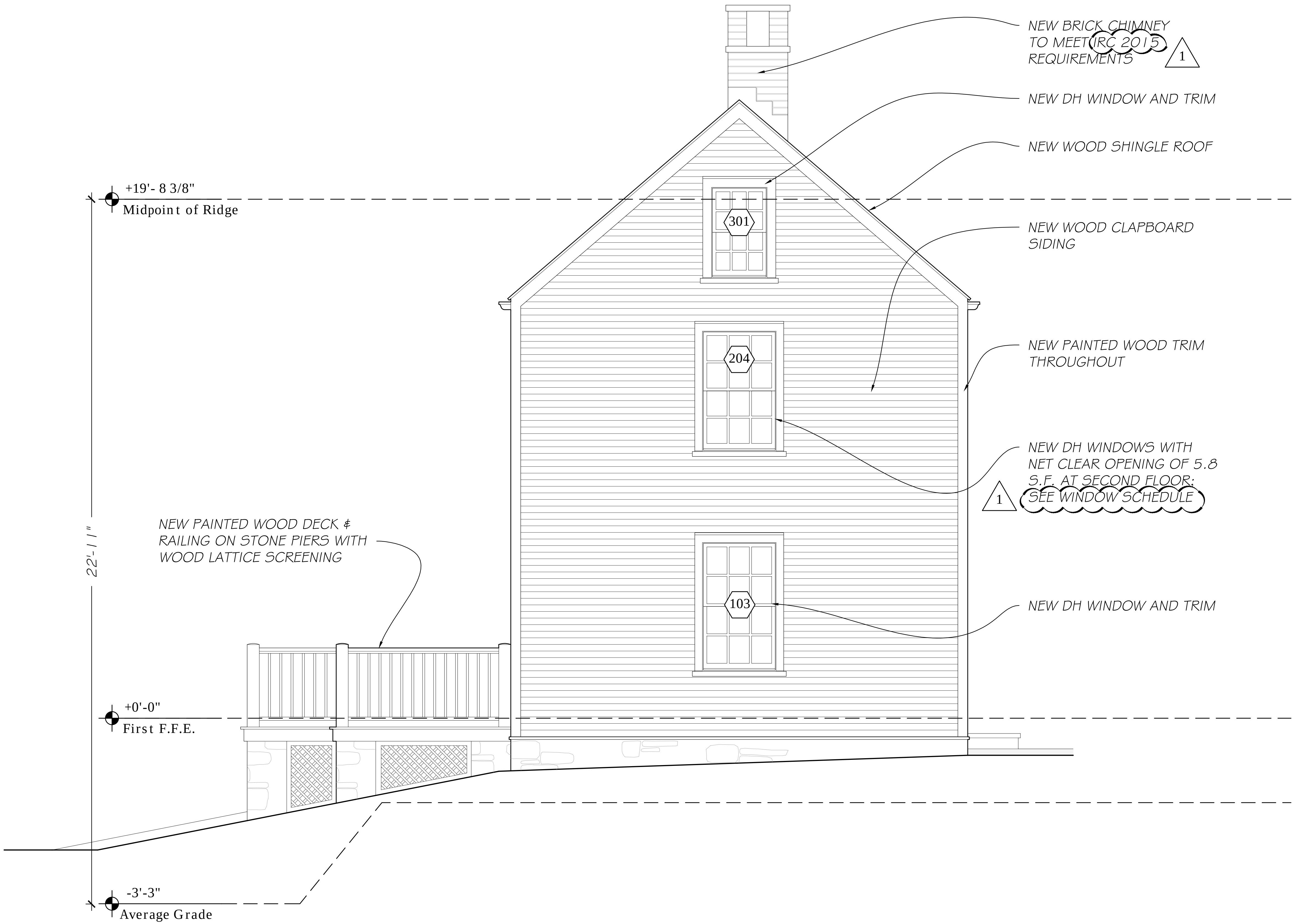

1
A-2.04
North Elevation (Proposed)
Scale: 1/4" = 1'-0"

GENERAL NOTE FOR REVISION 1 :

WINDOW AND DOOR NUMBER TAGS HAVE BEEN ADDED TO REFERENCE WITH SCHEDULES IN A-6 SERIES AND A-7 SERIES

1

FOR PERMIT ONLY

002	REVISION 1	1	06/12/2020
001	ISSUED FOR BUILDING PERMIT		05/14/2020

A Renovated Guest Cottage
for
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
Exterior Elevations

Date : June 12, 2020
Scale : 1/4" = 1'-0"
Drawn By : TG
Sheet Number : A-2.04

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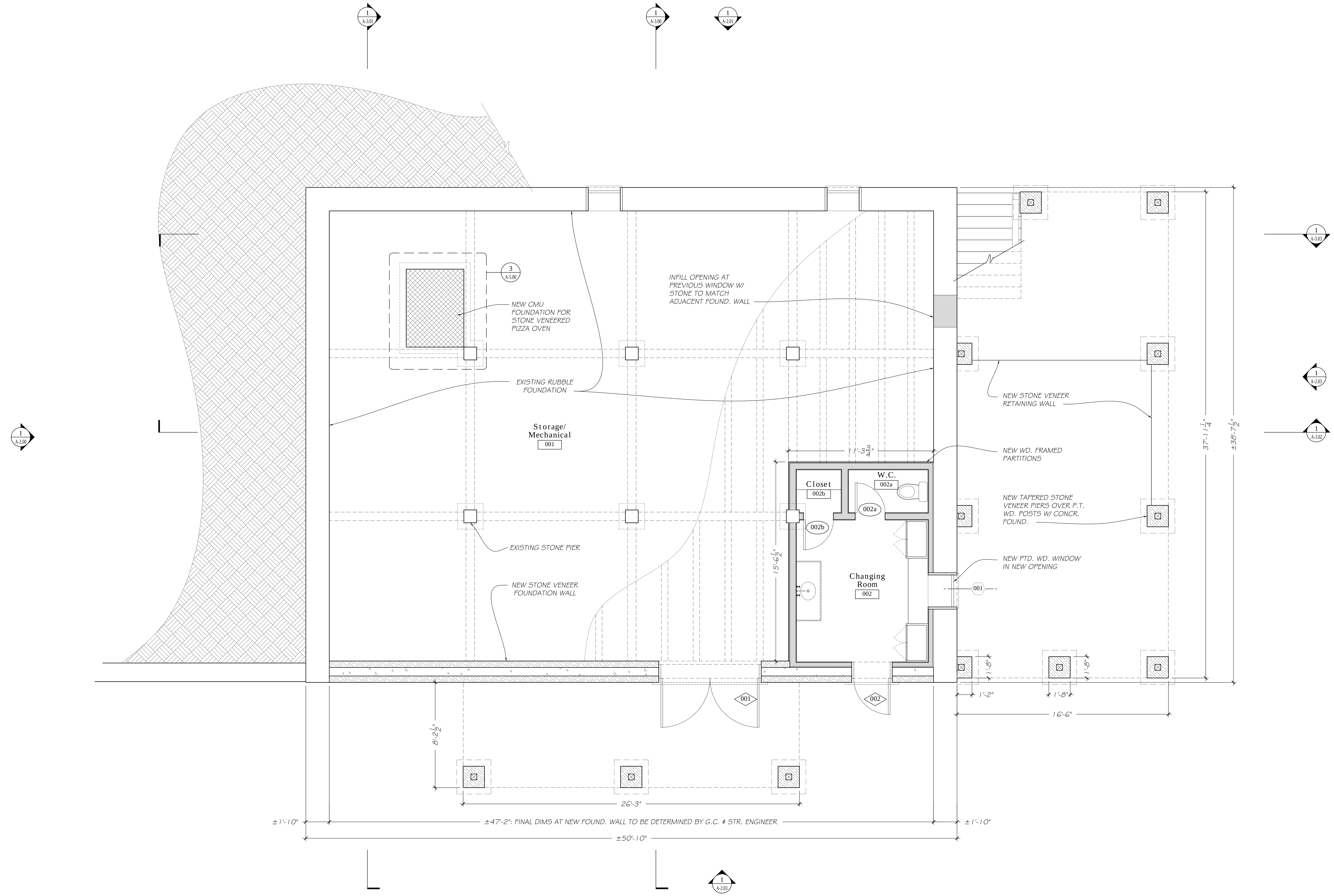

1 A-1.00 Basement Plan
Scale: 1/4" = 1'-0"

Actual North
Project North

LEGEND

- EXISTING FOUNDATION WALL
- NEW CONCR. STEM WALL
- NEW STONE VENEER
- NEW CMU FOUNDATION
- NEW FRAMING
- NEW WOOD POST

-	ISSUED FOR PRICING (NOT FOR CONSTRUCTION)	9/8/20

A Renovated Barn
for
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
Basement Plan
Barn

Date : September 8, 2020
Scale : 1/4" = 1'-0"
Drawn By : -
Sheet Number : A-1.00

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New York, New York 10003
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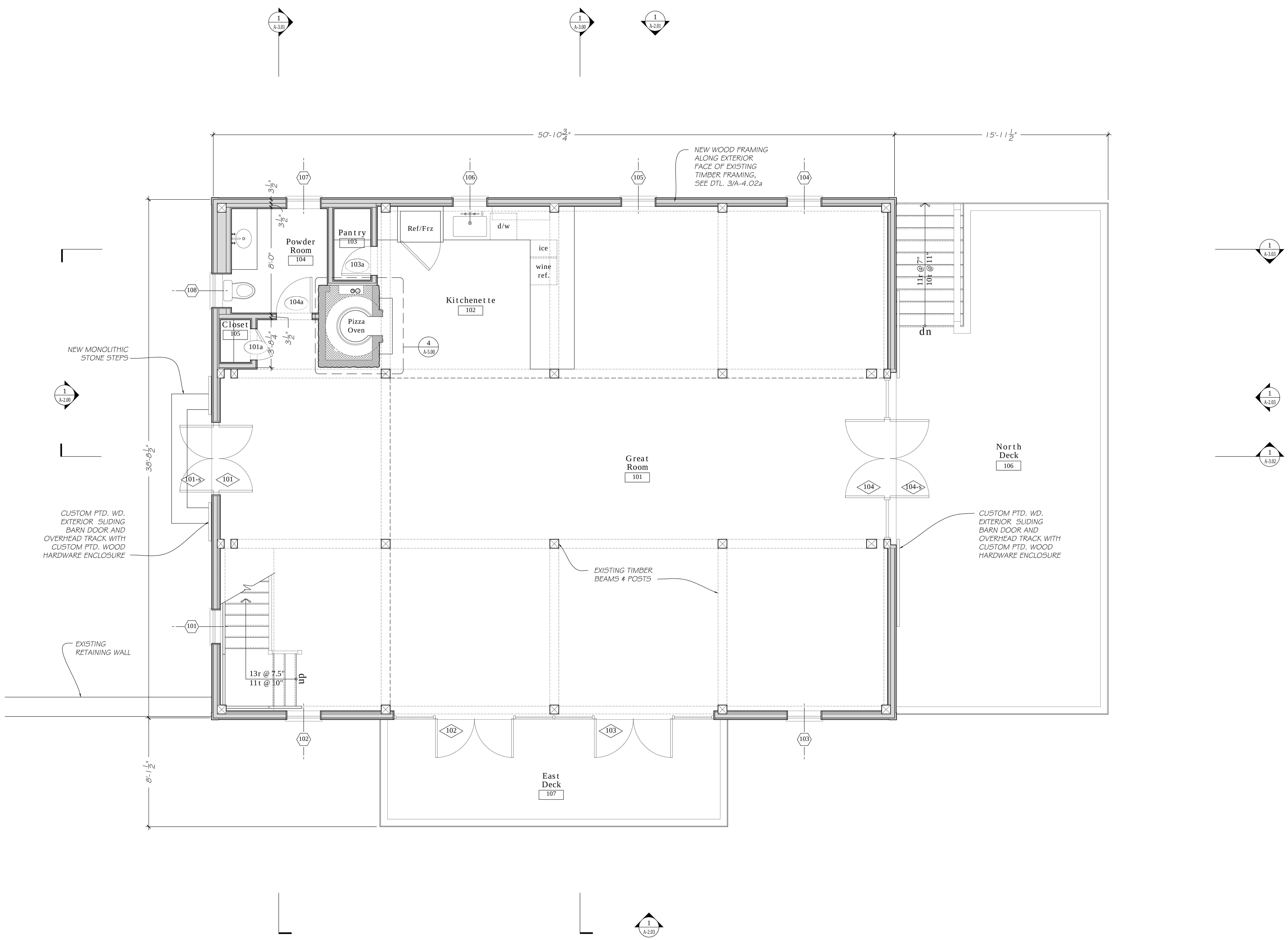

1 A-1.01 First Floor Plan
Scale: 1/4" = 1'-0"

LEGEND

- EXISTING FOUNDATION WALL
- NEW CONCR. STEM WALL
- NEW STONE VENEER
- NEW CMU FOUNDATION
- NEW FRAMING
- EXISTING TIMBER POST

FOR COORDINATION ONLY. NOT FOR CONSTRUCTION

-	ISSUED FOR PRICING (NOT FOR CONSTRUCTION)	9/8/20

A RENOVATED BARN
for
LADY ISLE
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE:
First Floor Plan
Barn

DATE: September 8, 2020
SCALE: 1/4" = 1'-0"
DRAWN BY: -
SHEET NUMBER: A-1.01

G. P. SCHAFER ARCHITECT, DPC
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NEW YORK, NEW YORK 10003
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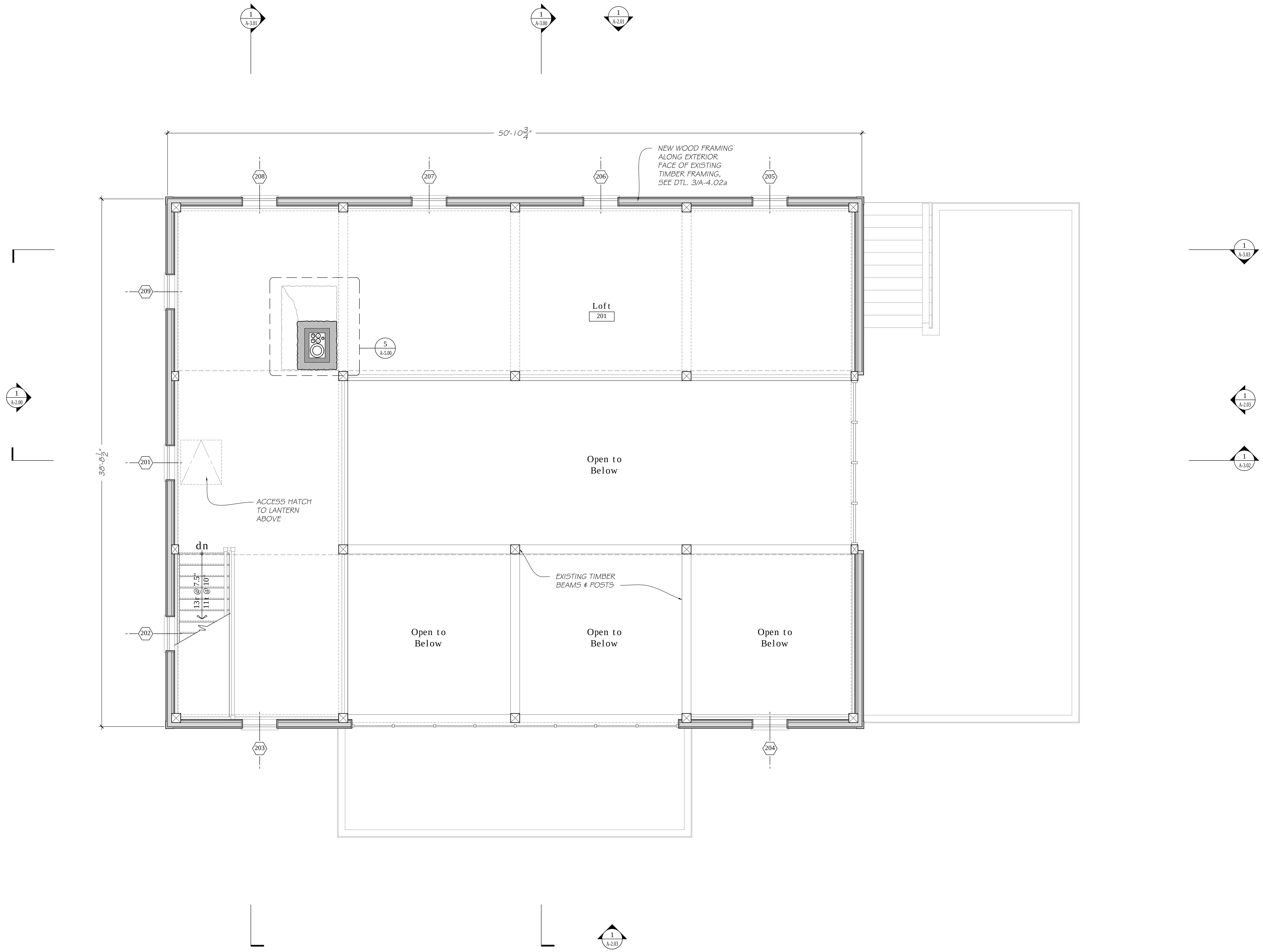
TELEFAX: 212-965-1356

ACTUAL NORTH
PROJECT NORTH

LEGEND

- EXISTING FOUNDATION WALL
- NEW CONCR. STEM WALL
- NEW STONE VENEER
- NEW CMU FOUNDATION
- NEW FRAMING
- EXISTING TIMBER POST

FOR COORDINATION ONLY.
NOT FOR CONSTRUCTION



1 A-1.02 Second Floor Plan
Scale: 1/4" = 1'-0"

ACTUAL NORTH
PROJECT NORTH

-	ISSUED FOR PRICING (NOT FOR CONSTRUCTION)	9/8/20

A RENOVATED BARN
for
LADY ISLE
PORTSMOUTH, NEW HAMPSHIRE

SHEET TITLE :
Second Floor Plan
Barn

DATE : *September 8, 2020*
SCALE : *1/4" = 1'-0"*
DRAWN BY : -
SHEET NUMBER : A-1.02

G. P. SCHAFER ARCHITECT, DPC
19 UNION SQUARE WEST
4TH FLOOR
NEW YORK, NEW YORK 10003
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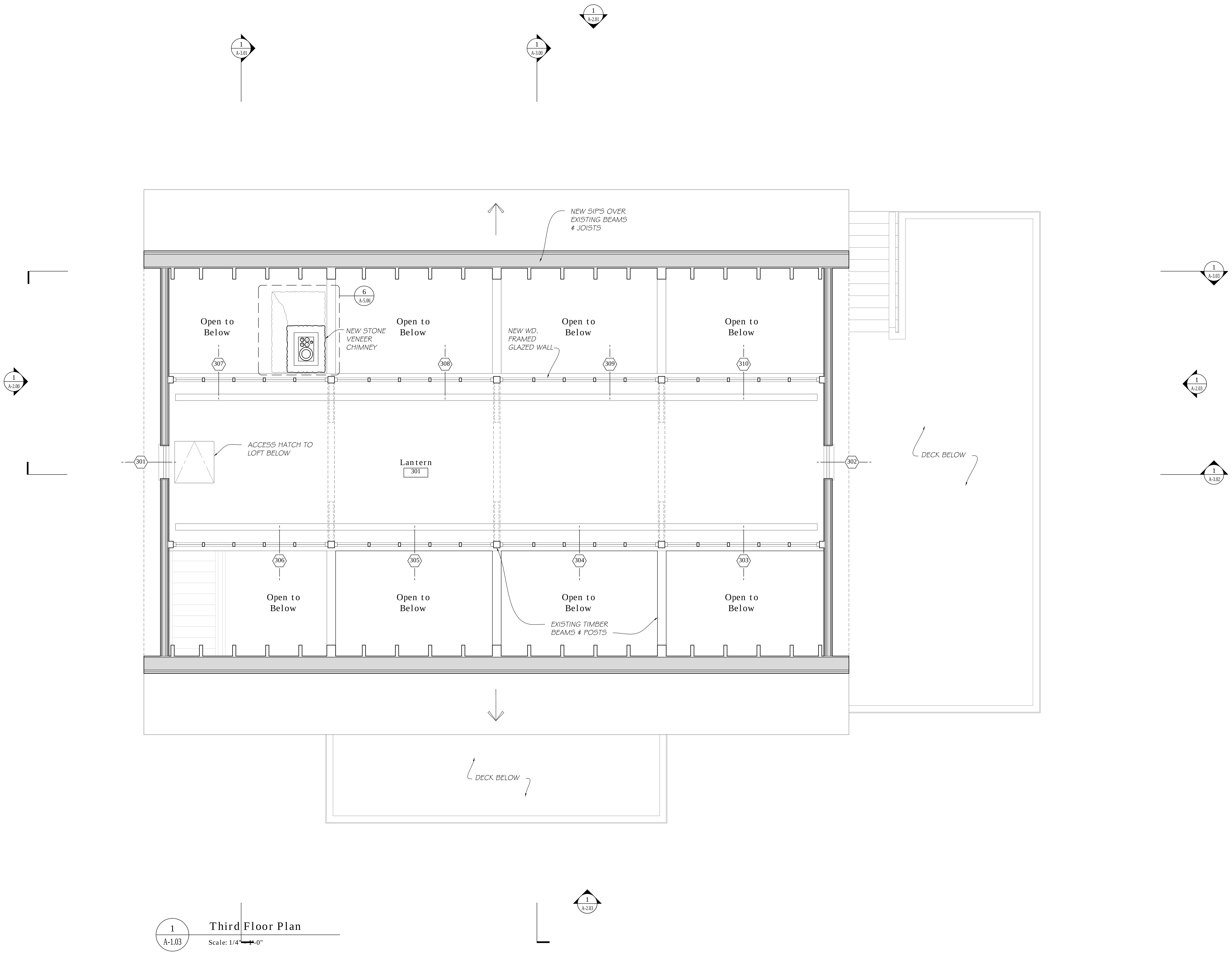

1
A-1.03
Third Floor Plan
Scale: 1/4" = 1'-0"

LEGEND

- EXISTING FOUNDATION WALL
- NEW CONCR. STEM WALL
- NEW STONE VENEER
- NEW CMU FOUNDATION
- NEW FRAMING
- EXISTING TIMBER POST

-	ISSUED FOR PRICING (NOT FOR CONSTRUCTION)	9/8/20

A Renovated Barn
for
Lady Isle
Portsmouth, New Hampshire

Sheet Title:
Third Floor Plan
Barn

Date: September 8, 2020
Scale: 1/4" = 1'-0"
Drawn By: -
Sheet Number: A-1.03

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New York, New York 10003
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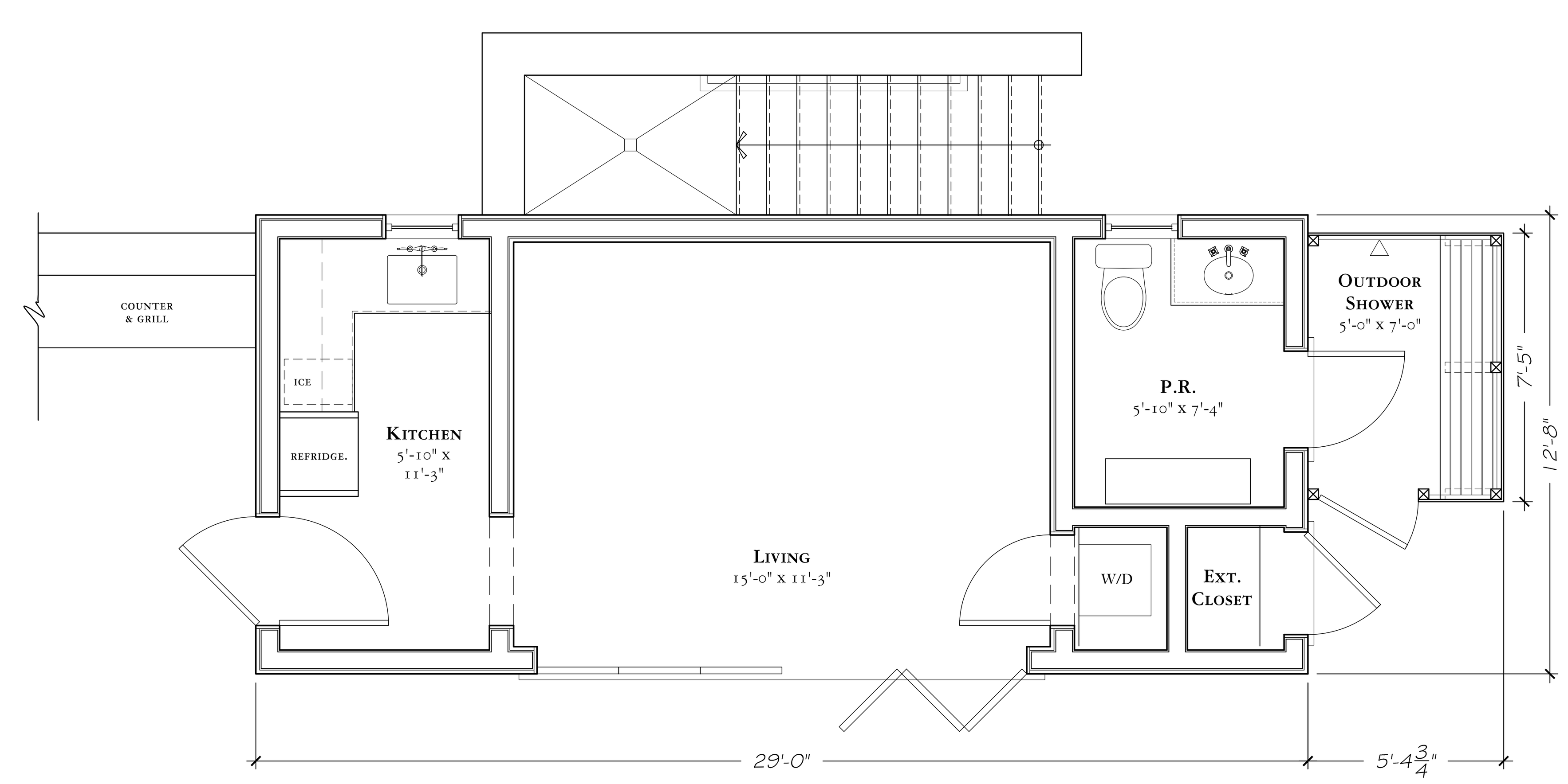
Telefax: 212-965-1356

Actual North
Project North

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION



1
A-1.01
First Floor Plan
Scale: 1/4" = 1'-0"

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title :
First Floor Plan

Date :
June 24, 2021

Scale :
1/4" = 1'-0"

Drawn By :
PM

Sheet Number :
PC
A-1.01

G. P. Schafer Architect, DPC

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4th Floor
New York, New York 10003
Telephone: 212-965-1355
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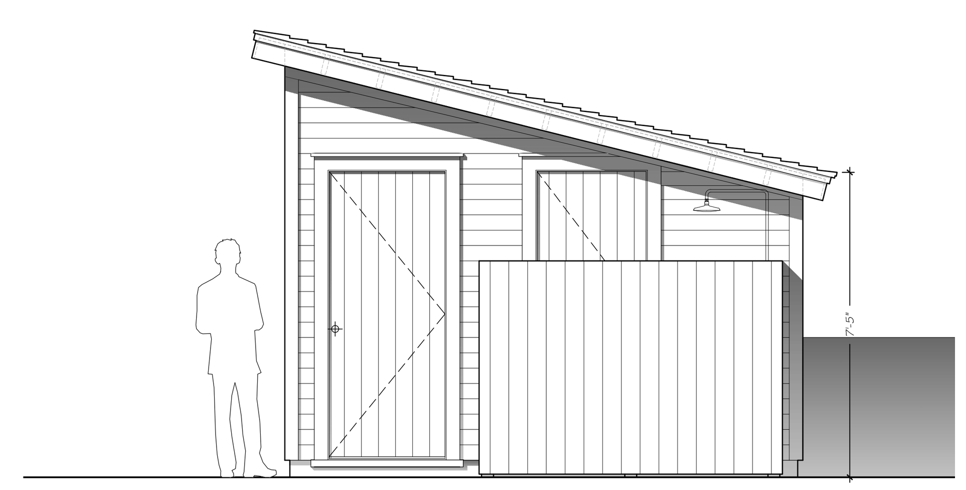
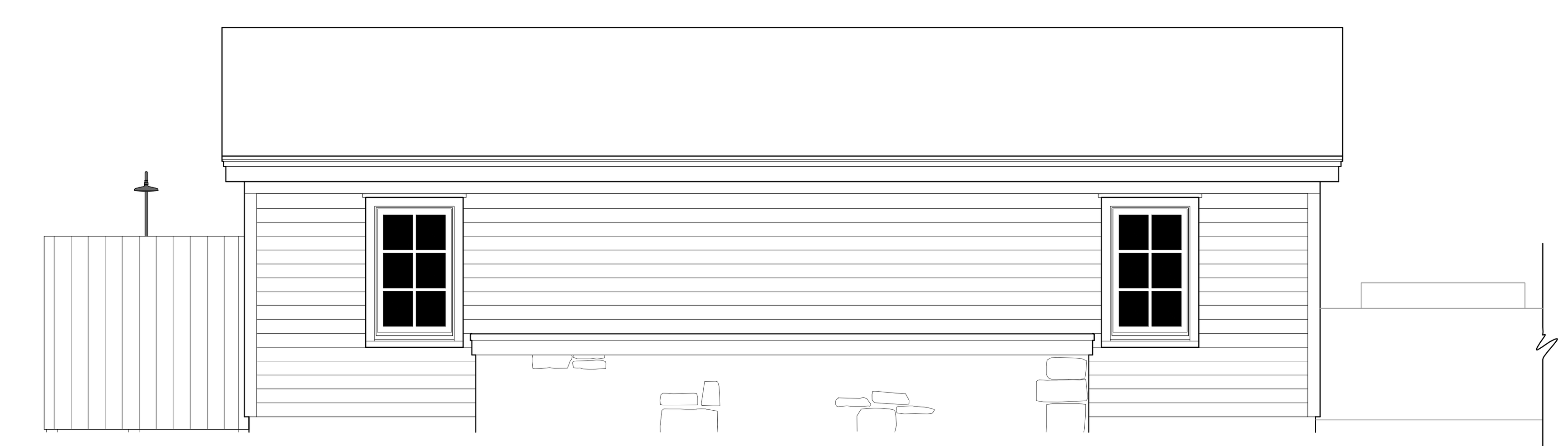
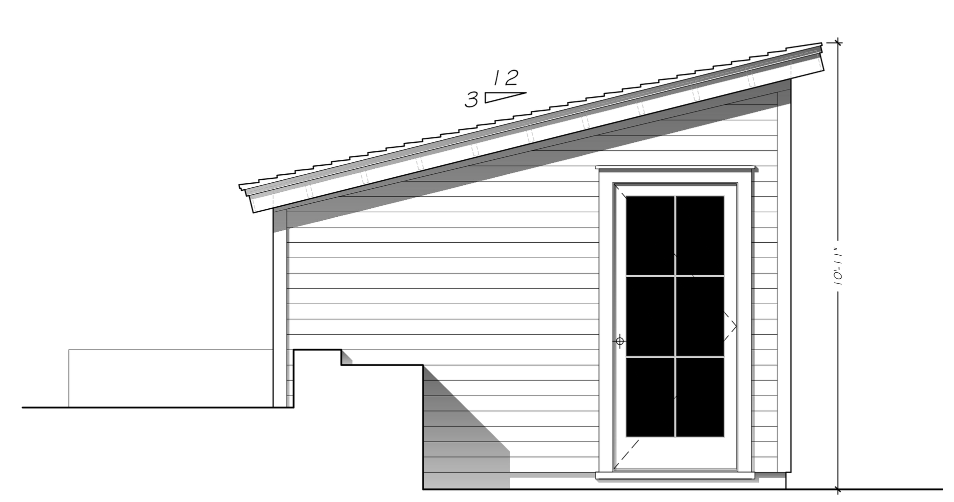


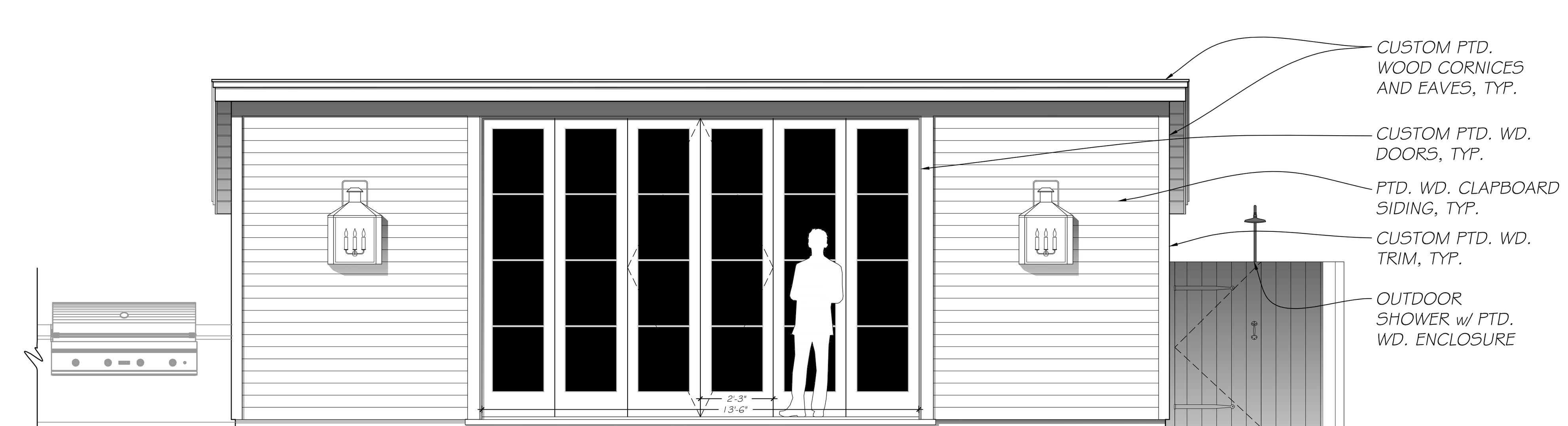
4 A-2.01 West Elevation
Scale: 1/4" = 1'-0"



3 A-2.01 North Elevation
Scale: 1/4" = 1'-0"



2 A-2.01 South Elevation
Scale: 1/4" = 1'-0"



1 A-2.01 East Elevation
Scale: 1/4" = 1'-0"

FOR PERMIT ONLY:
NOT FOR CONSTRUCTION

A New Residence & Garage
at
Lady Isle
Portsmouth, New Hampshire

Sheet Title: *Exterior Elevations*

Date: *June 24, 2021*

Scale: 1/4" = 1'-0"

Drawn By: *PM*

Sheet Number: PC A-2.01

G. P. Schafer Architect, DPC

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4th Floor
New York, New York 10003
Telephone: 212-965-1355
Telefax: 212-965-1356

Lady Isle

325 Little Harbor Road,
Portsmouth NH

General Notes:

1. Existing conditions and topographic data are from a site plan of land dated March 2, 2021; prepared by: Thomas F. Moran Inc., 170 Commerce Way, Suite 102, Portsmouth, NH, 03801 - Tel: (603) 431.2222

2. Existing conditions supplemented from data collected by: Matthew Cunningham Landscape Design LLC, 411 Main Street, Stoneham, MA 02180 - Tel: (617) 905.2246

3. Do not scale drawings

MATTHEW
J.
CUNNINGHAM
00161

MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC

matthew-cunningham.com

SCALE: 1" = 50'-0" DATE: 24 NOVEMBER 2021

0' 25' 50' 100'

SHEET TITLE:

LANDSCAPE PLAN

SHEET NUMBER:

L1.0

FOR PERMIT SUBMISSION

Lady Isle

325 Little Harbor Road,
Portsmouth NH

General Notes:

1. Existing conditions and topographic data are from a site plan of land dated March 2, 2021; prepared by: Thomas F. Moran Inc., 170 Commerce Way, Suite 102, Portsmouth, NH, 03801 - Tel: (603) 431.2222

2. Existing conditions supplemented from data collected by: Matthew Cunningham Landscape Design LLC, 411 Main Street, Stoneham, MA 02180 - Tel: (617) 905.2246

3. Do not scale drawings

LICENSED LANDSCAPE ARCHITECT
MATTHEW J. CUNNINGHAM
00161
STATE OF NEW HAMPSHIRE

MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC

matthew-cunningham.com

SCALE: 1" = 30'-0" DATE: 24 NOVEMBER 2021

0' 15' 30' 60'

SHEET TITLE:

LANDSCAPE PLAN

SHEET NUMBER:

L1.1

FOR PERMIT SUBMISSION

TOTAL PROPOSED PLANT BED WITHIN LIMIT OF WORK: ~42,750SF

EXISTING LAWN AREA TO BE CONVERTED TO PLANT BED: ~34,770SF

PROPOSED PLANT PALETTE

Key	Qty.	Latin Name	Common Name	Scheduled Size
TREES				
ARR	6	Acer rubrum 'Red Sunset'	Red Sunset Red Maple	4-4.5" cal. B&B
ASG	5	Acer saccharum 'Green Mountain'	Green Mountain Sugar Maple	4-4.5" B&B
AC	30	Amelanchier canadensis	Shadblow Serviceberry	10-12' B&B
BPW	12	Betula platyphylla 'Whitespire'	Japanese Whitespire Birch	8-10' B&B
CF	2	Cornus florida 'Cherokee Princess'	Cherokee Princess Dogwood	4-4.5" cal. B&B
JV	4	Juniperus virginiana	Eastern Red Cedar	8-10' B&B
LL	5	Larix laricina	Tamarack	10-12' B&B
MJ	1	Magnolia liliflora 'Jane'	Jane Magnolia	7-8' ht. B&B
MV	5	Magnolia virginiana	Sweetbay Magnolia	8-10' ht. B&B
MG	13	Malus x domestica 'Gala'	Gala Apple	4-4.5" cal. B&B
NS	2	Nyssa sylvatica	Tupelo	4-4.5" cal. B&B
PA	3	Picea abies	Norway Spruce	10-12' ht. B&B
QA	3	Quercus 'Alba'	White Oak	4-4.5" B&B
SA	6	Salix babylonica	Weeping Willow	3-3.5" cal. B&B
SP	1	Stewartia pseudocamellia	Japanese Stewartia	3.5-4" cal. B&B
TP	3	Thuja plicata 'Green Giant'	Green Giant Arborvitae	10-12' ht. B&B

NOTES:

1. PLANT LOCATIONS ON PLAN ARE FOR DIAGRAMMATIC PURPOSES AND DO NOT NECESSARILY REFLECT ACTUAL PROPOSED LOCATIONS OF PLANTING
2. PLANT SIZES OR QUANTITIES SHOWN ARE SUBJECT TO CHANGE BASED ON AVAILABILITY
3. THE USE OF ANY FERTILIZER IS PROHIBITED WITHIN A WETLAND, VEGETATED BUFFER AREA, OR LIMITED CUT AREA
4. THE USE OF FERTILIZERS OTHER THAN LOW PHOSPHATE OR SLOW RELEASE NITROGEN FERTILIZER IS PROHIBITED IN ALL COASTAL RESOURCE AREAS

Latin Name	Common Name
SHRUBS	
Aesculus parviflora	Bottlebrush Buckeye
Aronia arbutifolia	Red Chokeberry
Callicarpa dichotoma	Beautyberry
Cephalanthus occidentalis	Buttonbush
Clethra alnifolia	Summersweet
Comptonia peregrina	Sweetfern
Cornus sericea	Red-Twig Dogwood
Daphne × burkwoodii	Burkwood Daphne
Fothergilla x intermedia	Fothergilla
Hamamelis x intermedia	Witchhazel
Hydrangea arborescens	Smooth Hydrangea
Hydrangea paniculata	Lacecap Hydrangea
Hydrangea quercifolia	Oakleaf Hydrangea
Ilex glabra	Inkberry
Ilex verticillata	Winterberry
Itea virginica	Sweetspire
Myrica gale	Sweetgale
Myrica pensylvanica	Northern Bayberry
Prunus maritima	Beach Plum
Rhododendron 'Cunningham's White'	Cunningham's White Rhododendron
Rhododendron maximum	Rosebay Rhododendron
Rhus aromatica 'Gro-Lo'	Fragrant Sumac
Rhus typhina	Staghorn Sumac
Rosa virginiana	Virginia Rose
Sambucus canadensis	American Elderberry
Syringa meyeri	Dwarf Korean Lilac
Syringa vulgaris	Common Purple Lilac
Vaccinium corymbosum	Highbush Blueberry
Viburnum dentatum	Arrowwood Viburnum
Viburnum plicatum f. tomentosum	Doublefile Viburnum
Viburnum trilobum	American Cranberry Virbumum

Latin Name	Common Name
PERENNIALS	
Actaea racemosa	Snakeroot
Agastache x hybrida	Anise Hyssop
Alchemilla mollis	Lady's Mantle
Allium senescens	Circle Chives
Amsonia hubrichtii	Bluestar
Andropogon gerardii	Big Bluestem
Anemone tomentosa	Grapeleaf Anemone
Anemone x hybrida	Japanese Anemone
Anemonella thalictroides	Rue Anemone
Aruncus dioicus	Goat's Beard
Asclepias incarnata	Swamp Milkweed
Asclepias syriaca	Common Milkweed
Astilbe x hybrida	Astilbe
Astrantia rubra	Red Masterwort
Athyrium niponicum pictum	Japanese Painted Fern
Baptisia australis	False Indigo
Calamagrostis x acutiflora 'Karl Foerster'	Foerster's Feather Reed Grass
Carex pensylvanica	Oak Sedge
Centaurea montana	Cornflower
Clematis x jackmanii	Jackman Clematis
Corydalis lutea	Yellow Corydalis
Dennstaedia punctilobula	Hay-Scented Fern
Deschampsia cespitosa	Tufted Hairgrass
Dicentra spectabilis	Bleeding Heart
Digitalis purpurea	Foxglove
Echinacea purpurea	Purple Coneflower
Epimedium x rubrum	Red Barrenwort
Eragrostis spectabilis	Purple Love Grass
Eupatorium dubium	Dwarf Joe Pye Weed
Eupatorium maculatum	Spotted Joe Pye Weed
Eurybia divaricata	White Wood Aster
Galium odoratum	Sweet Woodruff
Geranium 'Rozanne'	Rozanne Cranesbill
Geranium macrorrhizum	Cranesbill
Gillenia trifoliata	Bowman's Root

Latin Name	Common Name
PERENNIALS (Cont.)	
Hakonechloa macra	Hakone Grass
Helleborus x hybridus	Lenten Rose
Heuchera micrantha	Coral Bells
Hydrangea anomala petiolaris	Climbing Hydrangea
Iris cristata	Crested Iris
Iris sibirica	Siberian Iris
Kirengeshoma palmata	Yellow Waxbells
Lavandula intermedia	Lavender
Leucanthemum superbum	Shasta Daisy
Lupinus polyphyllus	Lupine
Matteuccia struthiopteris	Ostrich Fern
Miscanthus sinensis	Maiden Grass
Nepeta x faassenii	Catmint
Osmunda cinnamomea	Cinnamon Fern
Paeonia lactiflora	Peony
Panicum virgatum	Switchgrass
Pennisetum alopecuroides	Dwarf Fountain Grass
Perovskia atriplicifolia	Russian Sage
Podophyllum peltatum	May Apple
Polygonatum odoratum	Solomon's Seal
Pulmonaria officinalis	Lungwort
Rosa x 'New Dawn'	New Dawn Rose
Rudbeckia fulgida	Black-Eyed-Susan
Salvia x sylvestris	Wood Sage
Salvia nemorosa	Woodland Sage
Schizachyrium scoparium	Little Bluestem
Solidago ssp.	Goldenrod
Sorghastrum nutans	Indian Grass
Sporobolus heterolepsis	Prairie Dropseed
Stachys byzantina	Lamb's Ear
Symphyotrichum novae-angliae	New England Aster
Symphyotrichum novi-belgii	New York Aster
Symphyotrichum oblongifolium	Aromatic Aster
Thalictrum rochebrunianum	Lavender Mist Meadow-rue
Thymus vulgaris	Common Thyme

Lady Isle

325 Little Harbor Road, Portsmouth NH

General Notes:

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2. Existing conditions supplemented from data collected by: Matthew Cunningham Landscape Design LLC, 411 Main Street, Stoneham, MA 02180 - Tel: (617) 905.2246

3. Do not scale drawings

MATTHEW J. CUNNINGHAM
LICENSED LANDSCAPE ARCHITECT
STATE OF NEW HAMPSHIRE
00161

MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC
matthew-cunningham.com

SCALE: 1" = 30'-0" DATE: 24 NOVEMBER 2021

0' 15' 30' 60'

SHEET TITLE:

PLANTING PLAN

SHEET NUMBER:

L1.2

FOR PERMIT SUBMISSION

Lady Isle

325 Little Harbor Road,
Portsmouth NH

General Notes:

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MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC

matthew-cunningham.com

SCALE: 1" = 30'-0" DATE: 24 NOVEMBER 2021

0' 15' 30' 60'

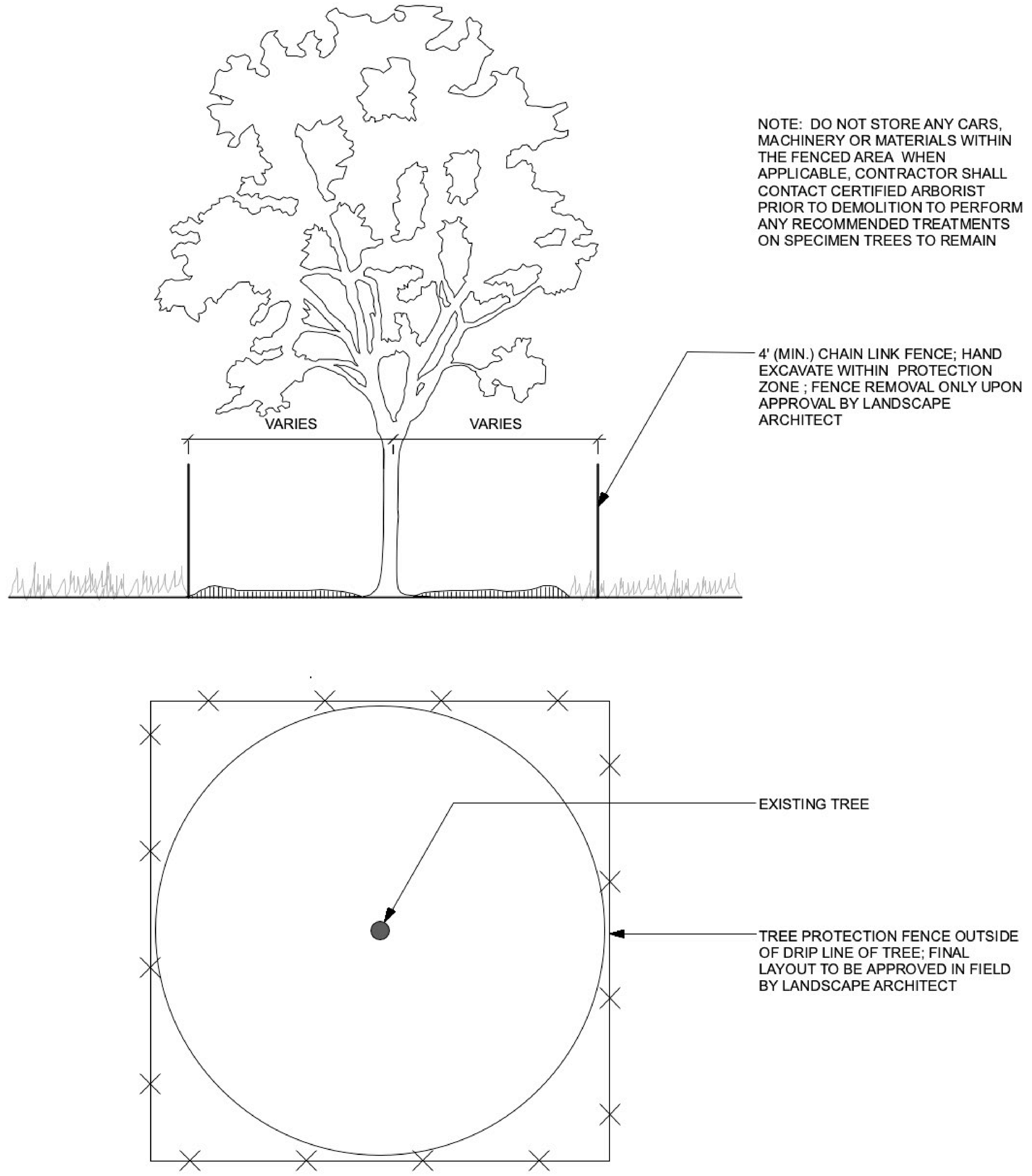
SHEET TITLE:

PLANTING PLAN

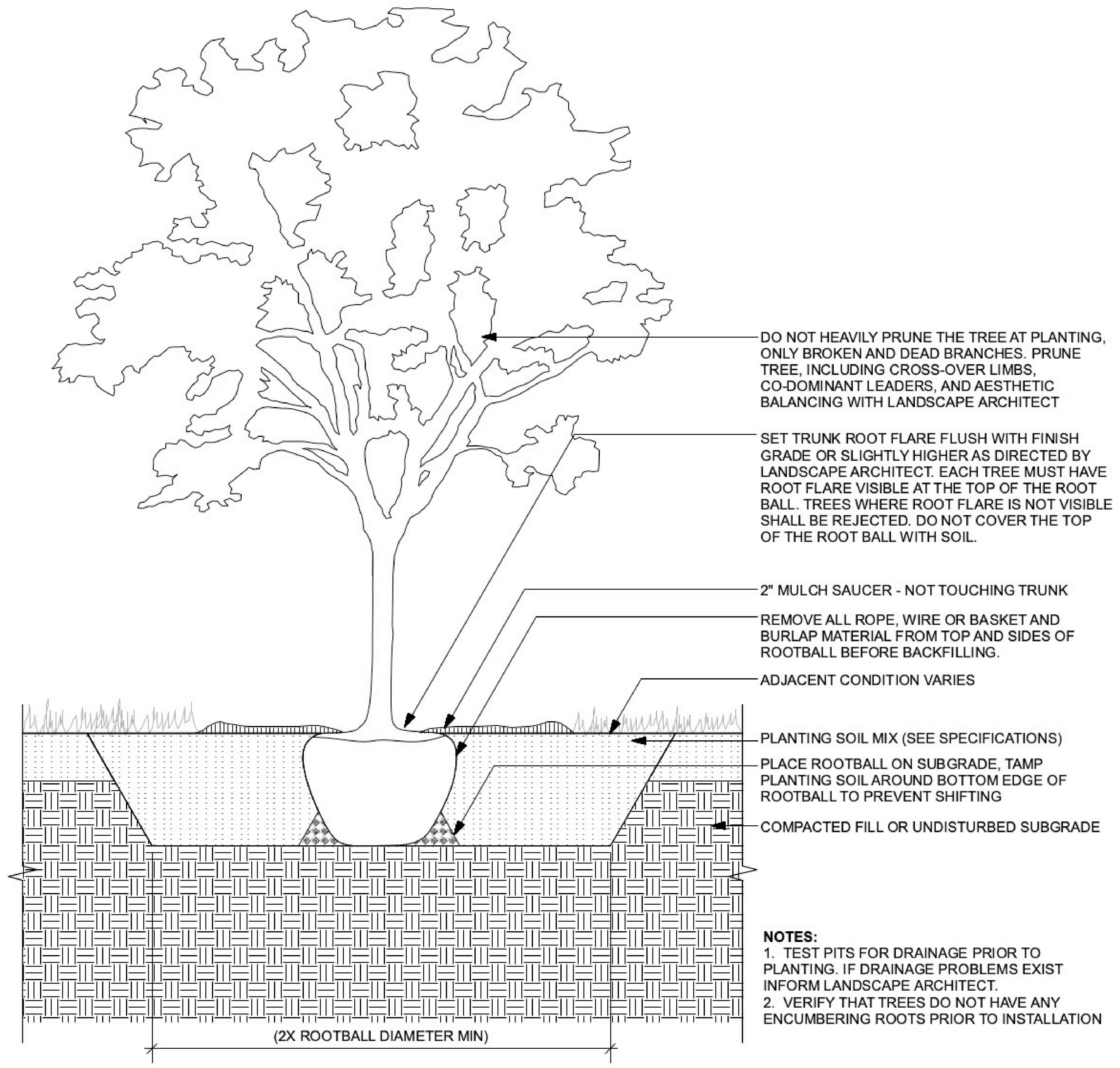
SHEET NUMBER:

L1.3

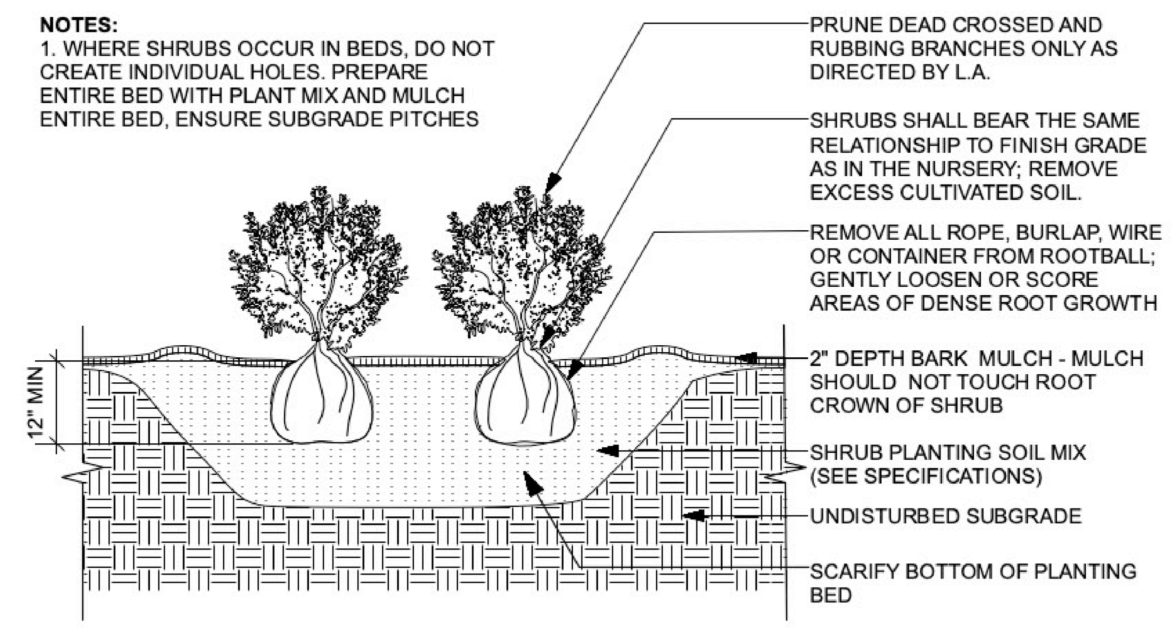
FOR PERMIT SUBMISSION



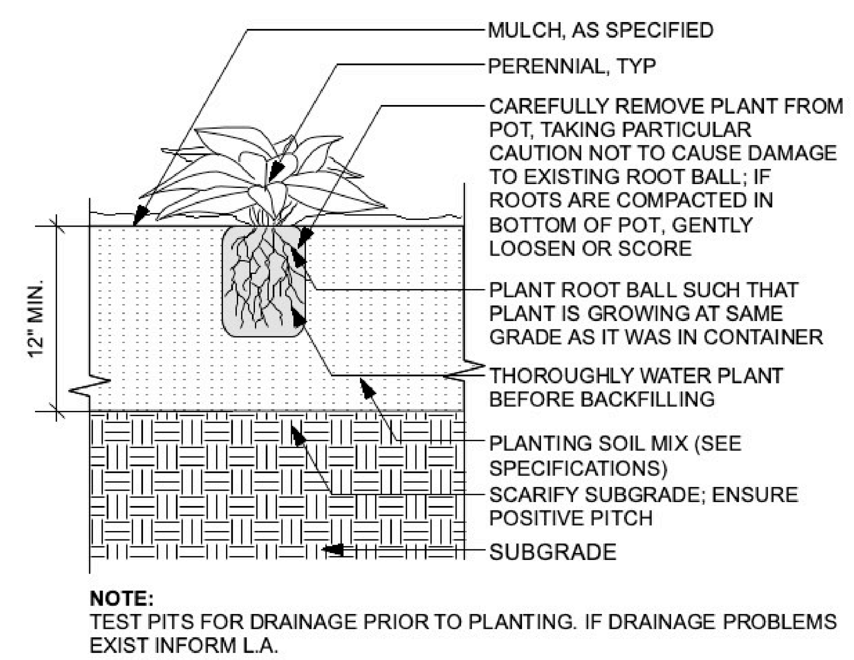
1 TREE PROTECTION FENCING
Scale: 1/2" = 1'-0"



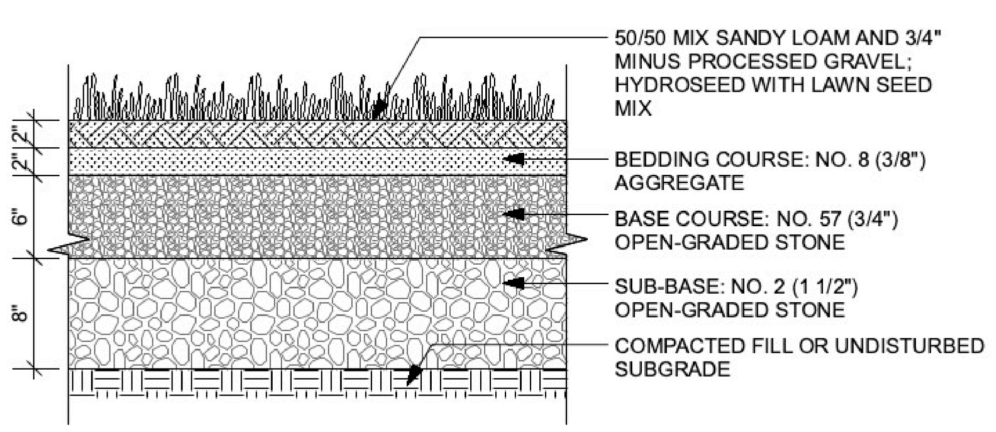
2 TREE PLANTING - TYPICAL SECTION
Scale: 1/2" = 1'-0"



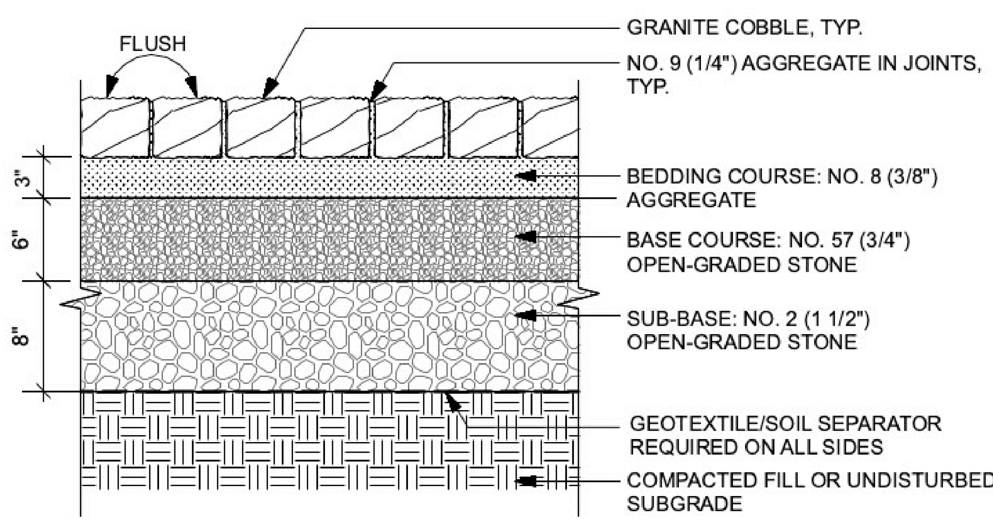
3 SHRUB PLANTING - TYPICAL SECTION
Scale: 1/2" = 1'-0"



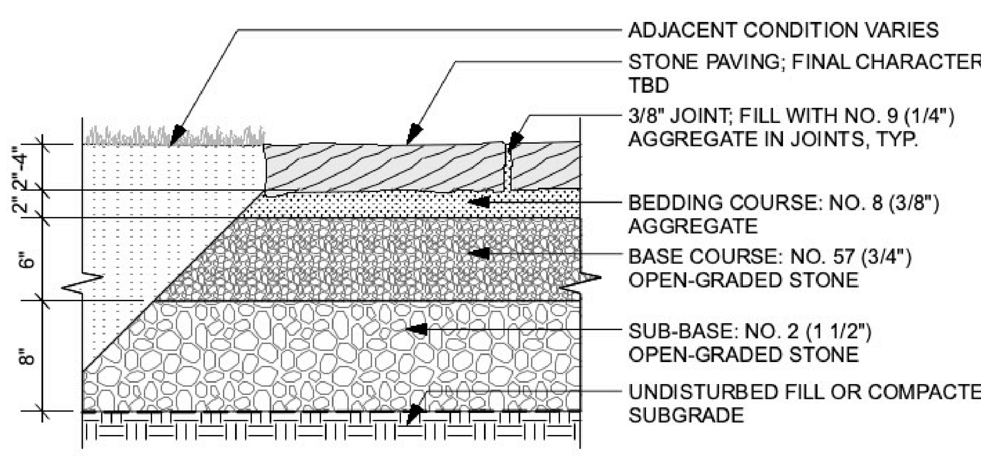
4 PERENNIAL PLANTING - TYPICAL SECTION
Scale: 1/2" = 1'-0"



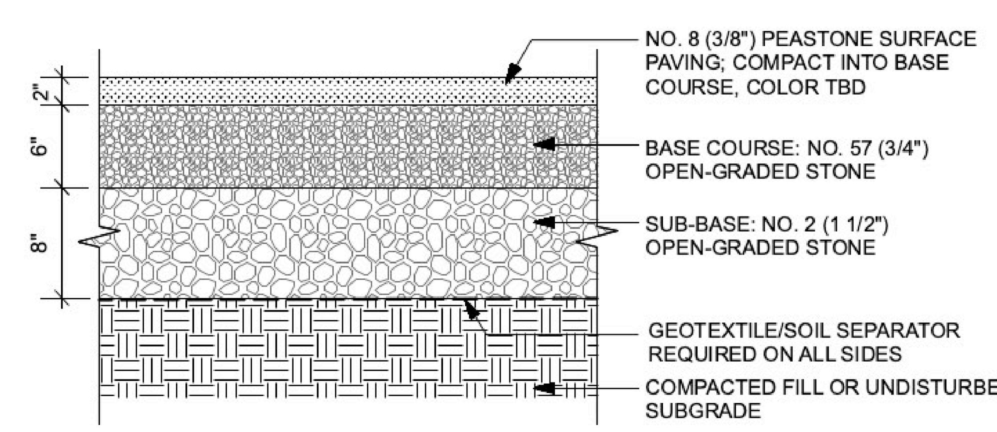
5 STABILIZED SEEDED GRAVEL VEHICULAR PAVING
Scale: 1" = 1'-0"



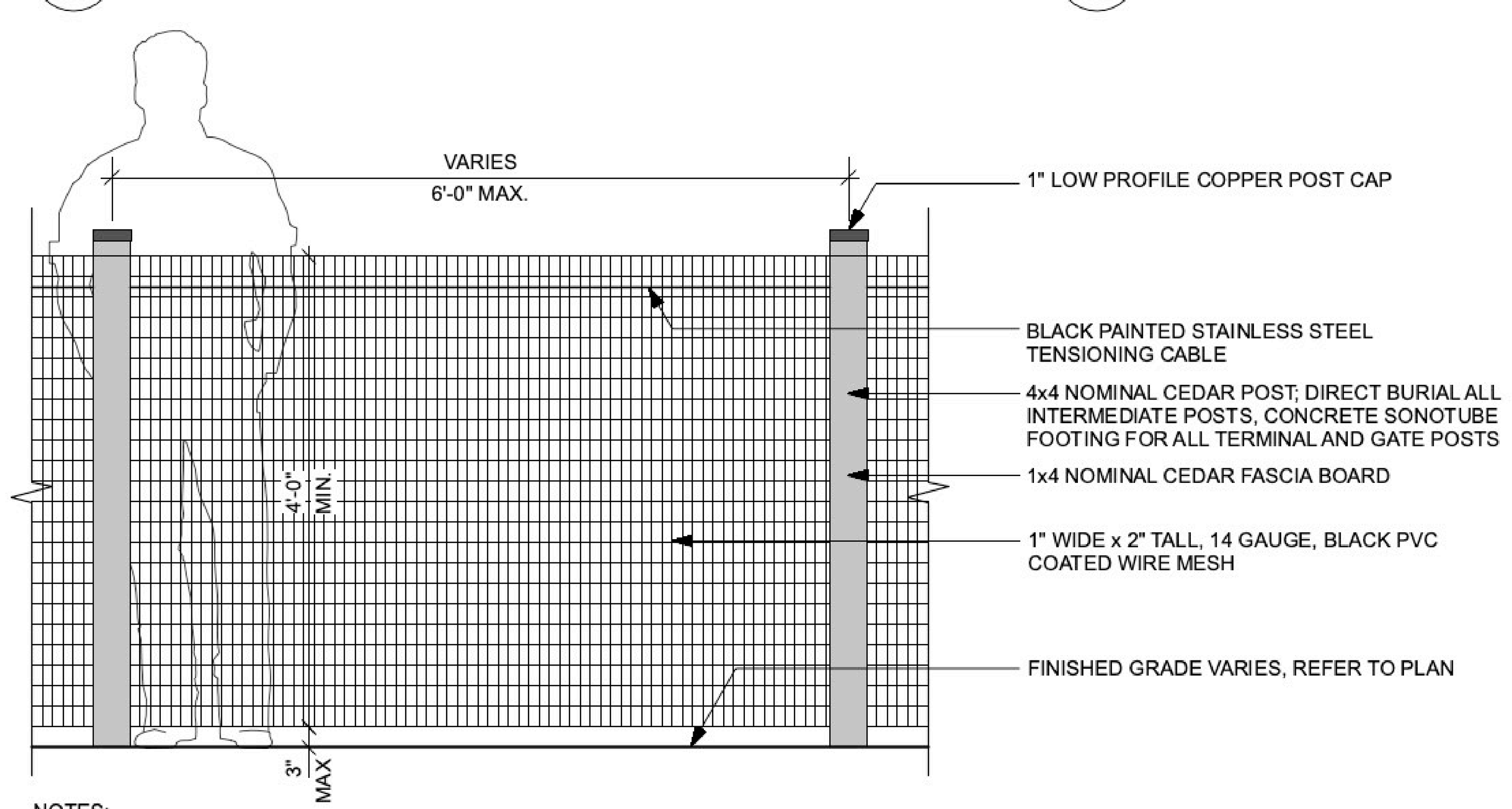
6 PERMEABLE COBBLE PAVING
Scale: 1" = 1'-0"



7 GRANITE VEHICULAR PAVING
Scale: 1" = 1'-0"



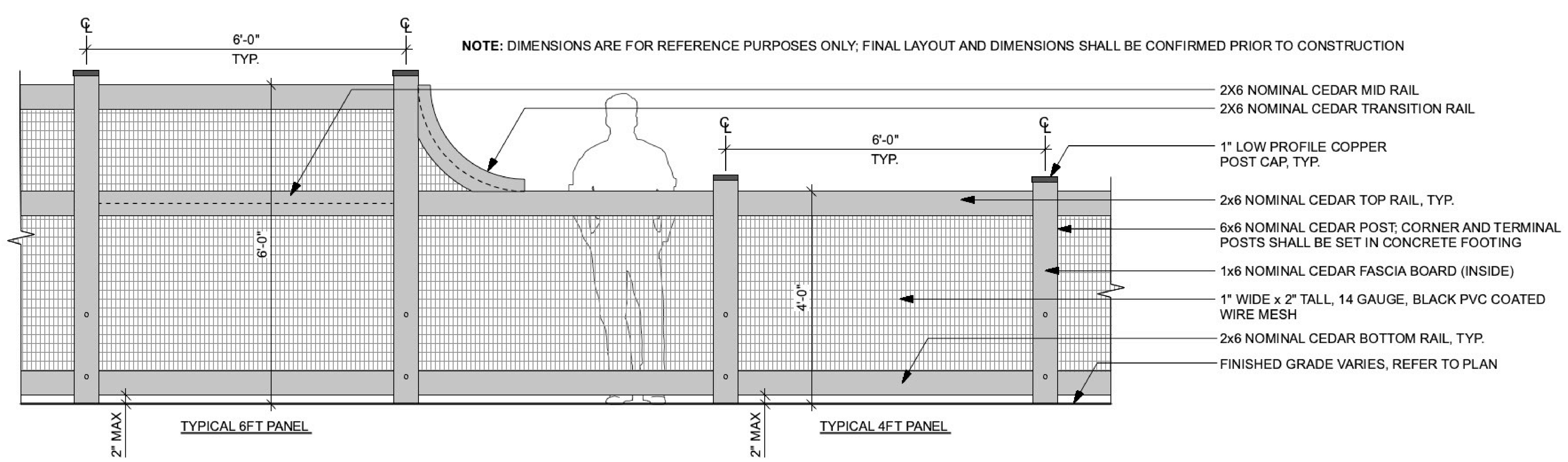
8 PEASTONE VEHICULAR PAVING
Scale: 1" = 1'-0"



NOTES:
1. ALL FENCING SHALL CONFORM TO STATE AND LOCAL POOL ENCLOSURE REQUIREMENTS
2. DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY, FINAL LAYOUT AND DIMENSIONS SHALL BE CONFIRMED PRIOR TO CONSTRUCTION

9 POOL ENCLOSURE MESH FENCE - TYPICAL PANEL ELEVATION
Scale: 3/4" = 1'-0"

NOTE: DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY; FINAL LAYOUT AND DIMENSIONS SHALL BE CONFIRMED PRIOR TO CONSTRUCTION



10 TENNIS COURT FENCING - TYPICAL PANEL ELEVATION
Scale: 1/2" = 1'-0"

Lady Isle

325 Little Harbor Road,
Portsmouth NH

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LICENSED LANDSCAPE ARCHITECT
MATTHEW J. CUNNINGHAM
00161
STATE OF NEW HAMPSHIRE

MATTHEW CUNNINGHAM LANDSCAPE DESIGN LLC
matthew-cunningham.com

SCALE: AS NOTED DATE: 24 NOVEMBER 2021

SHEET TITLE:
LANDSCAPE DETAILS

SHEET NUMBER:
L1.4

FOR PERMIT SUBMISSION

PLANNING BOARD | EXISTING AERIAL PHOTO (06/02/21)

Lady Isle | 325 Little Harbor Road, Portsmouth NH
24 November 2021

G. P. SCHAFER ARCHITECT
ARCHITECTURE & DESIGN

TFM Since 1968
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Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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PLANNING BOARD | EXISTING AERIAL PHOTOS (06/02/21)

Lady Isle | 325 Little Harbor Road, Portsmouth NH
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PLANNING BOARD | EXISTING AERIAL PHOTOS (06/02/21)

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PLANNING BOARD | PROPOSED ILLUSTRATIVE RENDERINGS

Lady Isle | 325 Little Harbor Road, Portsmouth NH
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Land Management Plan

A Narrative for Invasive Plant Management and Native Plant Restoration

325 Little Harbor Road, Portsmouth, NE

Fall 2021

PARTERRE
ECOLOGICAL

Table of Contents

Introduction and Primary Goals

The Dilorenzo residence is located at 325 Little Harbor Road in Portsmouth. The 11-acre island lies near the mouth of the Piscataqua River and the majority of the site is within the 100' tidal river buffer. An inventory of existing native and invasive plant species can be found in this plan.

The primary goal of this plan is to seek approval from the Portsmouth Conservation Commission to offset home construction and landscape improvements within the 100' Tidal buffer. We propose to remove invasive species on site and to restore the area with native species that will benefit the ecosystem around Piscataqua Rive and reduce further incursion of invasive species on the island. An inventory of existing native and invasive plant species can be found in this plan.

We propose removing invasive species by low-impact manual hand methods and cut & dab herbicide application by licensed applicators. All invasive species greater than 1" in caliper will be cut and dabbed with herbicide to reduce the chance of erosion along the banks. All existing erosion will be stabilize and any soil disturbed during planting will be stabilized and seeded with native wildflower mix. Techniques are outlined in the report. After removal of invasive species we will restore with native shrubs and perennials that will help prevent resurgence of the invasive plants and enhance the existing ecology.

A mass of invasive Multiflora Rose along the edges of the horse paddock with maturing Black Swallowort pods hanging from the stem. The majority of the western portion of the island is healthy pine/oak forest, but invasives are dense in areas with historically high disturbance. We propose managing all invasive species and replacing with native alternatives.

325 Little Harbor Road
Invasive Plant Inventory

Mature invasive species have developed isolated populations along the tidal river buffer and threaten to spread into an otherwise healthy native ecosystem. We propose controlling invasive plant species that have developed self sustaining populations on the Dilorenzo's property and restoring with native species. The physiology of the invasive plants has enabled them to out compete the native plant community and compromise the ecological value of the native plant community. The dominant invasive plants, including Multiflora Rose and Barberry, disrupt the formation of a native understory by filling ecological niches and resisting any browsing by native species. A very small Japanese Knotweed population exists near the southwestern corner of the paddock. It can spread quickly in coastal areas and should be managed before it can establish itself. All invasive perennials and shrubs with viable fruit will be removed from the site. Poison Ivy is a native species with valuable ecological benefits. We propose control the and areas of human traffic.

Invasive Plant Species Identified:

Acer platanoides, Norway Maple
Alliaria petiolata, Garlic Mustard
Berberis thunbergii, Japanese Barberry
Celastrus orbiculatus, Asiatic Bittersweet
Cynanchum louiseae, Black Swallowort
Elaeagnus umbellata, Autumn Olive
Fallopia japonica, Japanese Knotweed
Frangula alnus, Glossy Buckthorn
Lonicera morrowii, Morrow's Honeysuckle
Rhamnus cathartica, Common Buckthorn
Rosa multiflora, Multiflora Rose

****Likely Invasive Plant Species Identified:***

Artemisia vulgaris, Mugwort
Deutzia scabra, Fuzzy Deutzia
Ligustrum vulgaris, Common Privet
Rhodotypos scandens, Jetbead
Vitus sp., Grape (Native but control)

* While not listed as an Invasive Species by ISC (New Hampshire Invasive Species Committee) these species can dominate the shrub layer and crowd out native trees and shrubs. We recommend removal of along with listed invasive plant species in wetland buffers and replace with native shrubs and trees.

Black Swallowort releasing seedheads in the paddock. The majority of this area is a healthy goldenrod/blackberry meadow with patches of Milkweed, but Black Swallowort can establish itself quickly and releases compounds in the soil to limit its competitor. Without intervention there will likely be a large infestation.

mouth, NH

September 28, 2021

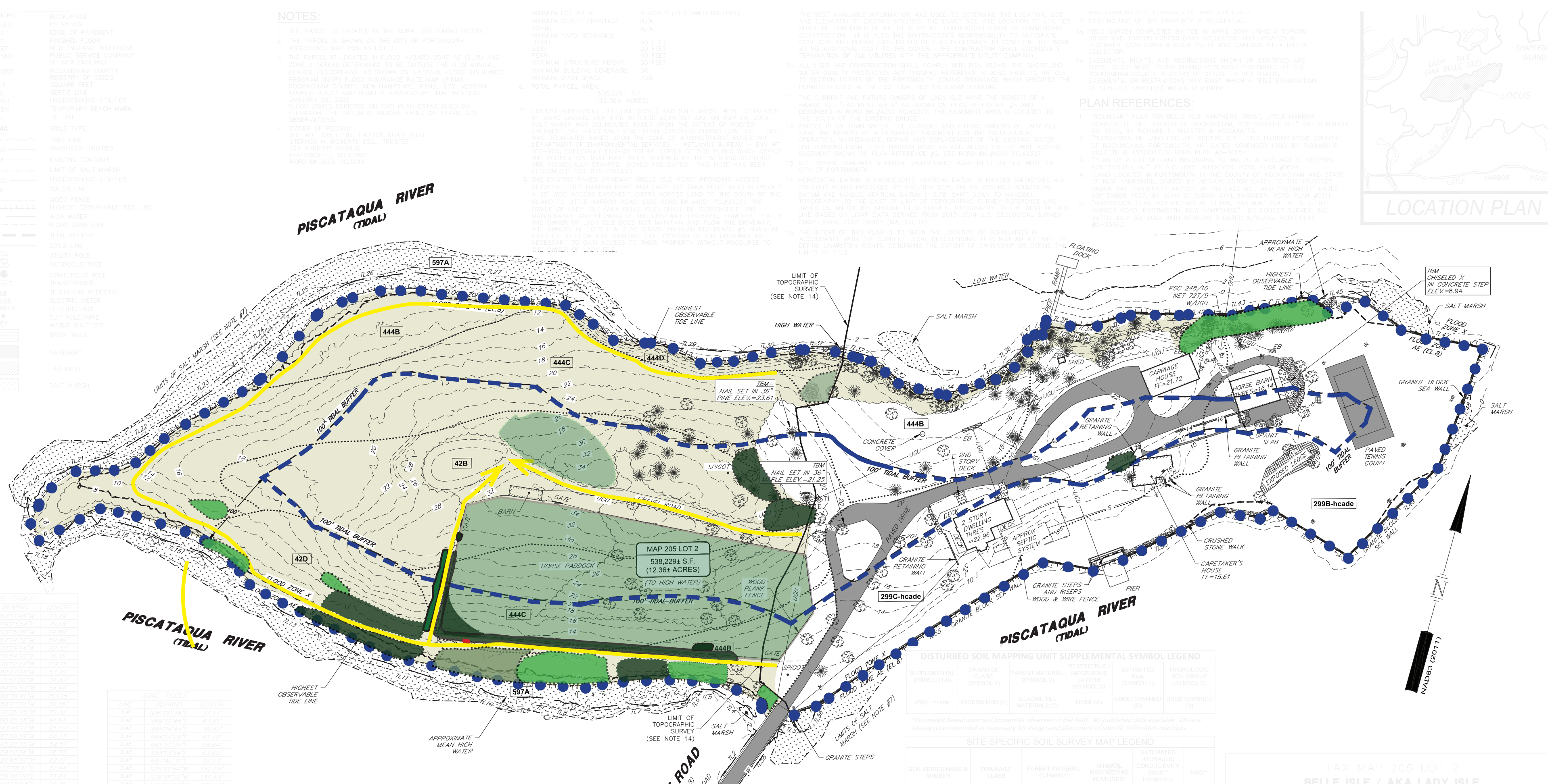
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 4/1/2019
Data updated 7/17/2019

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Property area



Invasive species are concentrated along the distrubed banks on the southwestern portion of the island. Along the pathway are dense stands of Multiflora Rose mixed with non native aggressive Forsythia and Deutzia. Along the paddock are dense patches of Bittersweet and Black Swallowort.

- Dense pockets of invasive shrubs and vines (1100 ft² @ 20% Coverage)
- Dense pockets of non-native aggressive species (not listed invasives) with some native speccies(1075 ft² @
- Mostly native species with patches of Black Swallowort and Bittersweet.
- Mostly native with a very few invasive shrubs and perennials (1075 ft² @ >1% Coverage)
- Japanese Knotweed (20 ft²)
- Wetland Buffer
- Highest Observable tide line
- Existing Pathways

325 Little Harbor Road
Invasive Plant Images


Japanese Barberry with Deutzia and Black Swallowort at the edge of the forest


Garlic Mustard seedheads with Mugwort on the northern bank


Autumn Olive in the open paddock


Japanese Barberry with viable fruits


A single small population of Japanese Knotweed on site should be managed as soon as possible

325 Little Harbor Road
Invasive management techniques

We propose a combination of manual hand removal and cut & dab herbicide to control invasive plant species within the identified project areas over a phased time line. Once the initial identified invasive plant species have been removed by manual methods (described below), we propose seeding all exposed soil with native seed blend and begin planting identified tree, shrub and perennial plant species selected from the native plant community list that will increase the density and diversity of the existing wetland buffers.

Manual Hand Removal Methods:
Manual methods of invasive plant management will include hand pulling or cutting. To minimize soil disturbance, shallow-rooted invasive plants less than 1″ in caliper will be hand pulled from the soil. Invasive plant species greater than 1″ in diameter will be cut. All invasive plant material will be disposed of off site. Manual hand pulling and cutting will remove all invasive plants from the wetland buffer.

Cut and Dab and Foam application: All invasive plant species that have a base greater than 1″ in caliper are proposed for herbicide application methods. Although invasive, the root systems of plants greater then 1″ in caliper usually have extensive fibrous root systems, providing soil stabilization. So we propose a cut & dab method of application of a Triclopyr based herbicide (Garlon) or Glyphosate based herbicide approved for wetland use (trade name Rodeo) on individual cut stumps. Licensed Pesticide Applicators will complete all aspects of the proposed restoration. For treatment of perennial species that cannot be controlled with cut and dab or by manual methods should be treated by a foam based herbicide that is wiped onto the leaves using a cotton glove. This hyper-specific treatment limits any treatment of non-target plants. No treatment will occur in areas of standing water.

Qualified applicators with necessary Personal Protective Equipment paint the stems of invasive species after cutting

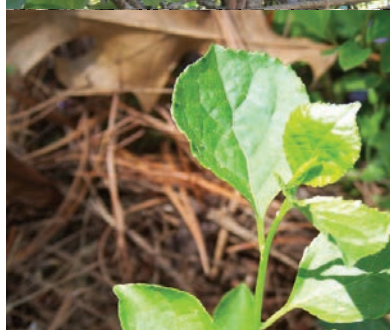
Proposed cut stump treatment (below) using hand tools and applying marking dye to eliminate possibility of treatment of stump twice, or missing stump entirely. (Above) Foam treatment allows highly specific placement of herbicide to remove invasive perennials that limits disturbance and protects surrounding species

325 Little Harbor Road
Asiatic Bittersweet ID and Management

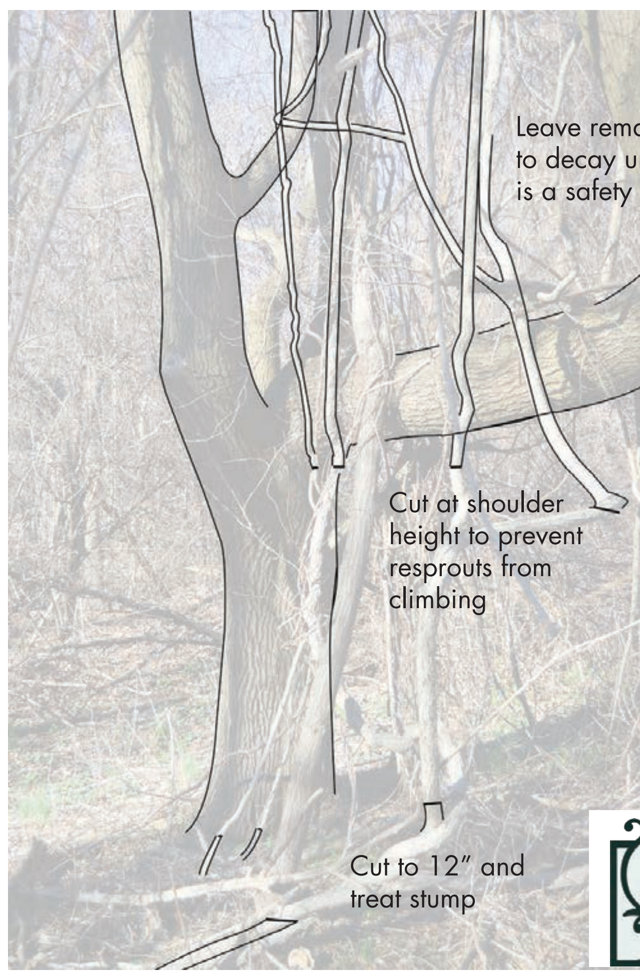
Invasive Bittersweet (*Celastrus orbiculatus)* have the capacity to girdle, weaken, and even kill mature canopy trees. Without some frequency of removal, they will eventually open large holes in the canopy while suppressing saplings from filling the holes. They readily resprout after being cut and can damage the aesthetic and ecological value of meadows.

Mature stems produce thousands of bright red berries that mature in late fall and are spread by birds.

Removing the entire vines from trees is often dangerous and unnecessary (unless it poses safety risk). Our team recommends making cuts at shoulder height followed by a cut at 12" and immediate herbicide treatment. Bittersweet aggressively suckers after cutting so it is important to cut and treat during or after its flowering period (late June to December).



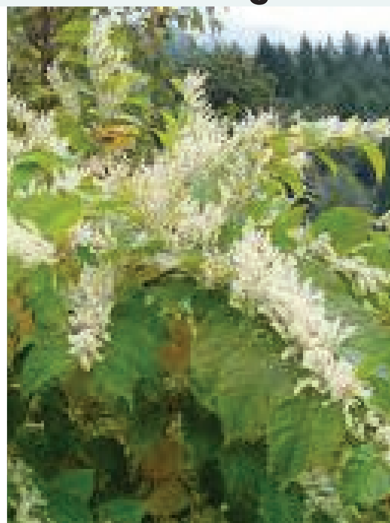
Identification: Alternate, circular light green leaves 2-5 in. long. Distinctive, large light colored vine. Red berries with orange casing appearing in late fall. Seedlings have light green leaves. Deep orange roots.



325 Little Harbor Road
Japanese Knotweed Management

Japanese Knotweed (*Fallopia japonica)* is one of the most difficult invasive species to control. Its main mode of spreading is through cut portions of its rhizomes or stem, which can actively resprout even when 1 inch in length. Growing 10-15' and shading out any competitors, Japanese Knotweed can quickly form a monoculture. It can take 2-5 seasons to fully contain through repeat herbicide treatments. It is at its weakest point during the flowering stage, when nutrients are flowing back into the roots (Aug, Sept.) Unfortunately, taproots can extend over 6' below the ground making organic eradication nearly impossible without excavation. There are two ways to approach treatment.

1. Cut and treat: For smaller areas, involves cutting the stem between the 1st and 3rd node and adding a 66% solution of Aquaneat (glyphosate), generally 5 oz per treated stem. If density is less than 5 ft per plant treat every third stem. Do this for 2-5 seasons.
2. Cut in May, wipe leaves in fall or apply to stem in fall: In this case, dense stands of Knotweed are mown in end of May so when they regrow they are at hip height by August. They can then be easily wiped with a 6.0% Aquaneat (glyphosate) solution



Identification: Herbaceous perennial, with long heart shaped leaves. Young sprouts can be red, rhubarb in nature. Extensive roots can spread and colonize quickly and can reach 15 ft. at maturity.

Japanese Knotweed cut in preparation for a fall herbicide foliar wipe treatment (top left). Treatment of Japanese Knotweed stems using a cut and fill method (above). A combination of cut and fill in the first season and foliar wipe in the second has shown to be effective. Foliar wipe can be accomplished by applying herbicide to a glove and wiping leaves or by utilizing a foaming agent to help herbicide stick to the leaves (left). It is a highly specific treatment with little risk of drift.

Management Calendar for Treatment and Planting

Task	March/ April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Remove Garlic Mustard and Lesser Celandine seedlings by hand or smothering									
Cutting of Japanese Knotweed									
Cut and dab of woody invasive species									
Treatment of Japanese Knotweed									
Invasive vine management and cut and dab treatment									
Restoration planting									
Treatment of Black Swallowort									
Mowing of meadows									

Optimal timing and efficiency

Not optimal but mostly effective

Possible, but not ideal

325 Little Harbor Road
Native Plant Inventory

Within the tidal river buffer is a diverse native plant community dominated by mature Oaks and White Pines with Chokeberry, Black Cherry, Arrowood Viburnum, and lowbush Blueberry in the understory. In the sunnier areas is a wet meadow featuring Rough Goldenrod, Alleghaney Blackberry, Sumac, Common Rush and Elderberry. An occupied Belted Kingfisher nest was found during the site visits. We propose utilizing these existing native plant species as indicators of what naturally inhabits this plant community and propose additional planting of these species and diversifying with other native trees, shrubs and perennials.

Native Plant Species Identified:

Acer rubrum, Red Maple
Acer sacharinum, Sugar Maple
Aronia melanocarpa, Black Chokeberry
Betula populifolia, Gray Birch
Betula papyrifera, Paper Birch
Iva frutescens, Bigleaf Marsh-elder
Juncus tenuis, Path Rush
Juniperus virginiana, Eastern Red Cedar
Kalmia latifolia, Mountain Laurel
Myrica pensylvanica, Bayberry
Parthenocissus quinquefolia, Virginia Creeper
Pinus strobus, Eastern White Pine
Prunus serotina, Black Cherry
Prunus virginana, Chokecherry
Toxicodendron radicans, Poison Ivy
Quercus alba, White Oak
Rosa virginiana, Virginia Rose
Rhus typhina, Staghorn Sumac
Rubus allegheniensis, Allegheny blackberry
Sambucus canadensis, Elderberry
Solidago bicolor, Silverrod
Solidago sempervirens, Sea-side Goldenrod
Solidago rugosa, Rough-leaved Goldenrod
Swida amonum, Silky Dogwood
Tilia americana, American Basswood
Vaccinium corymbosum, High-bush Blueberry
Viburnum dentatum, Arrowood Viburnum

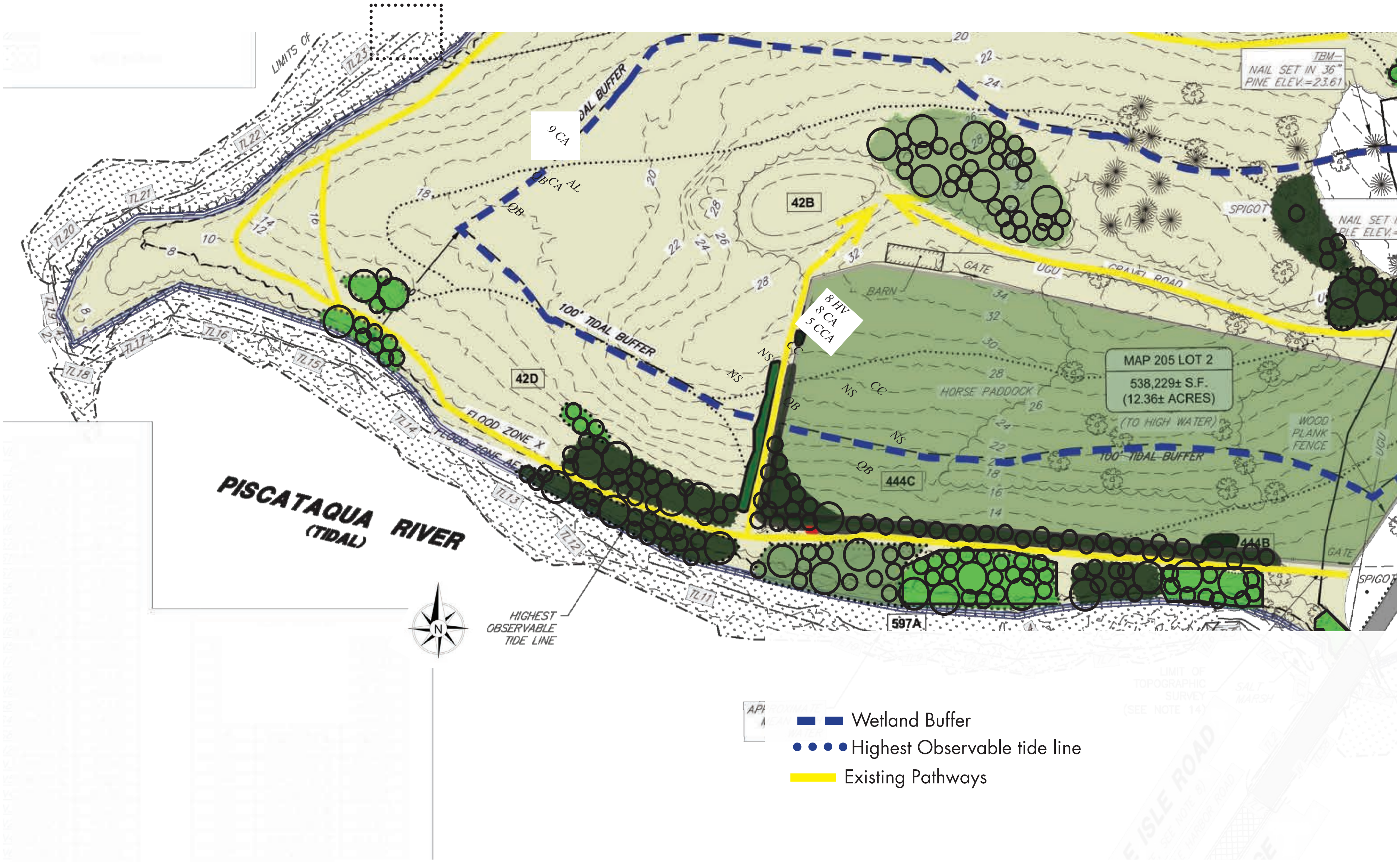
Silverrod alongside Blue-stem Goldenrod and Carex. sp

Gray Birch along the bank

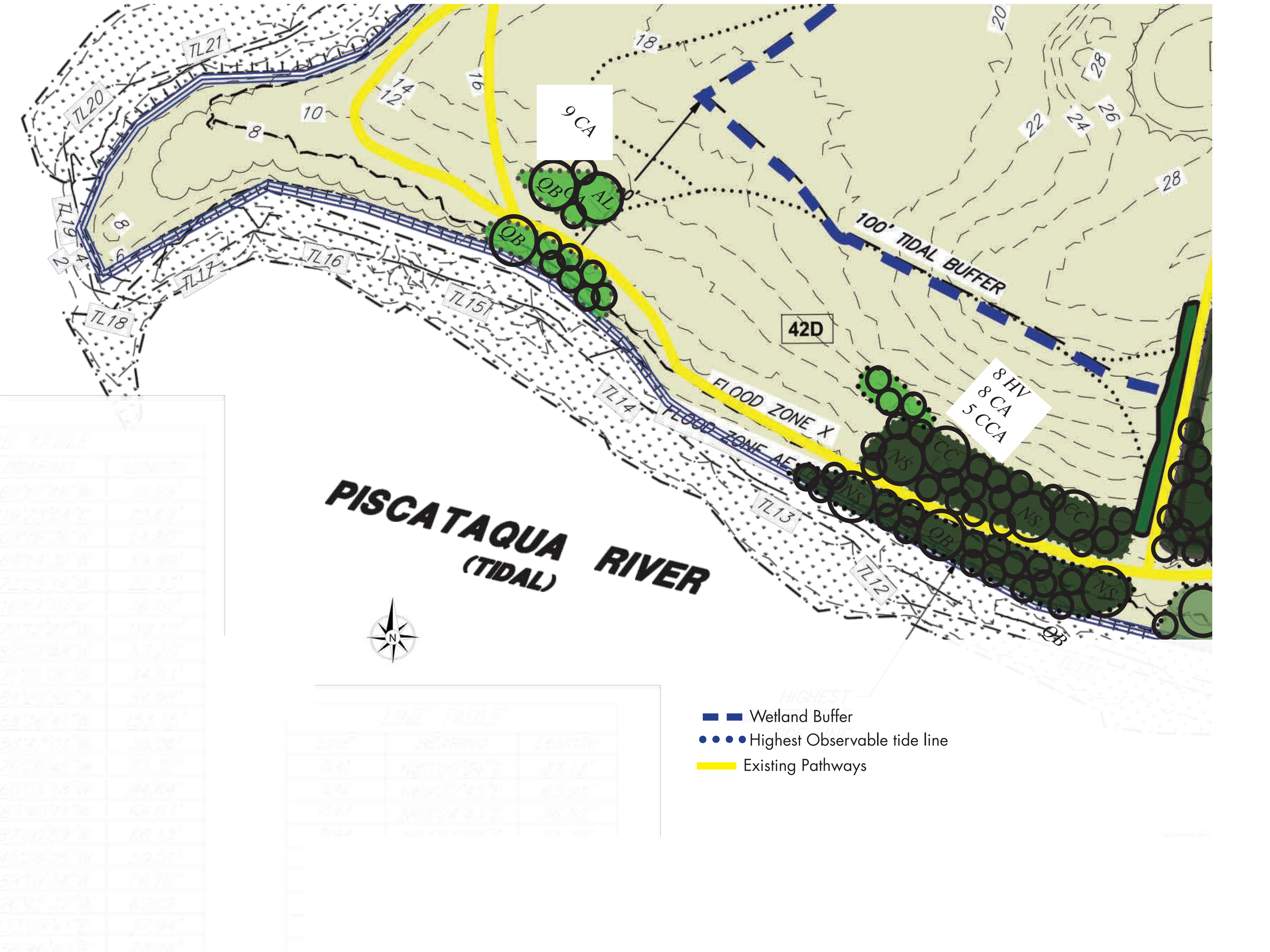
325 Little Harbor Road
Invasive Plant Images

Staghorn Sumac along the banks with Arrowood Viburnum and Virginia Rose in the foreground

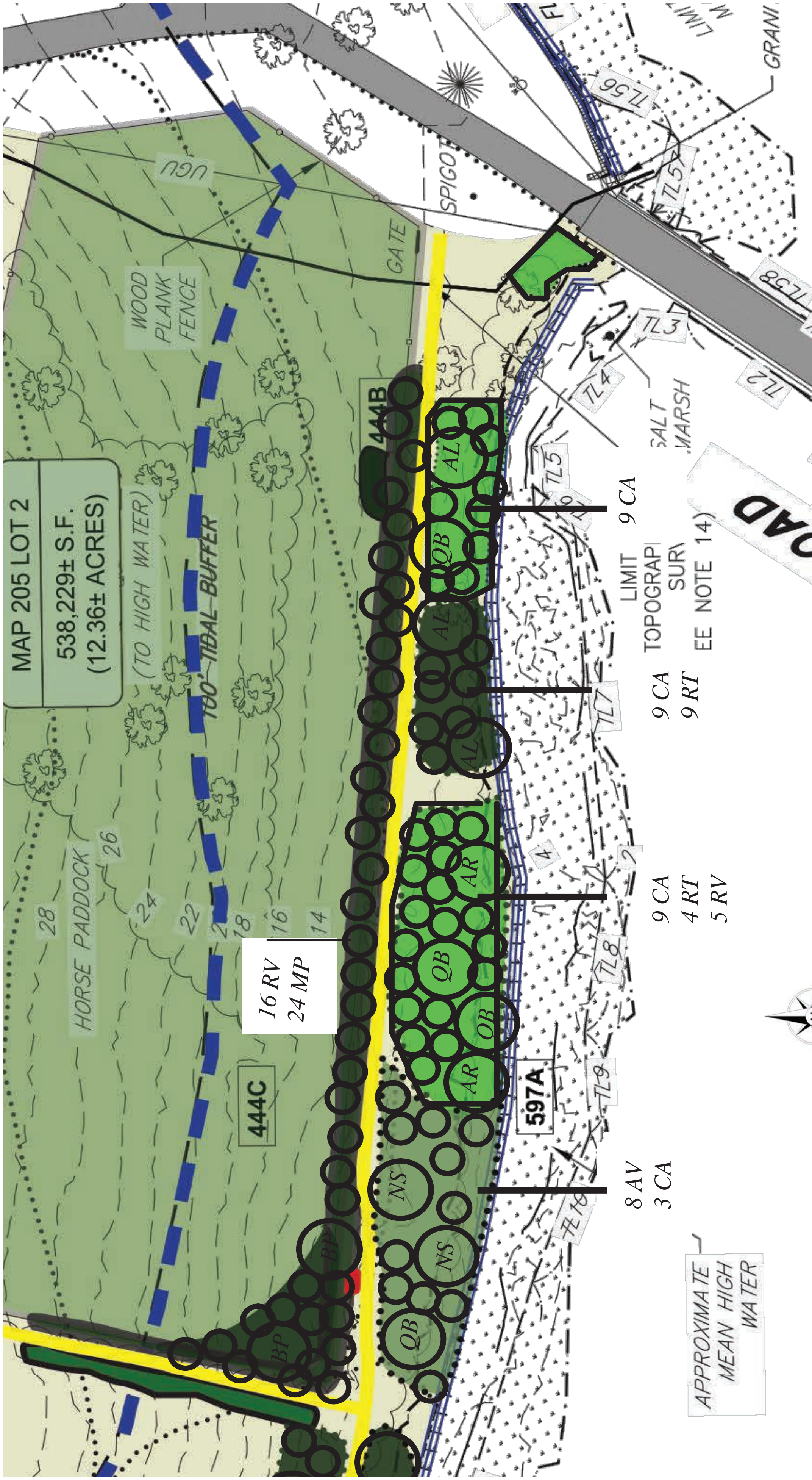
Marsh Elder along with Beechgrass line the western banks of the island

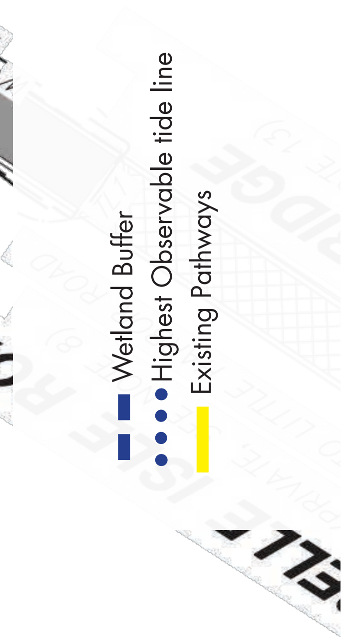


MAP 205 LOT 2
538,229± S.F.
(12.36± ACRES)
(TO HIGH WATER)
100' TIDAL BUFFER
HORSE PADDOCK
WOOD PLANK FENCE
GRAVEL ROAD
GATE
BARN
SPIGOT
TBM– NAIL SET IN 36" PINE ELEV.=23.61
42B
42D
444C
444B
597A
8 HV
8 CA
5 CCA
9 CA
CA
AL
QB
NS
CC
FLOOD ZONE X
HIGHEST OBSERVABLE TIDE LINE
PISCATAQUA RIVER
(TIDAL)
LIMITS OF
Wetland Buffer
Highest Observable tide line
Existing Pathways

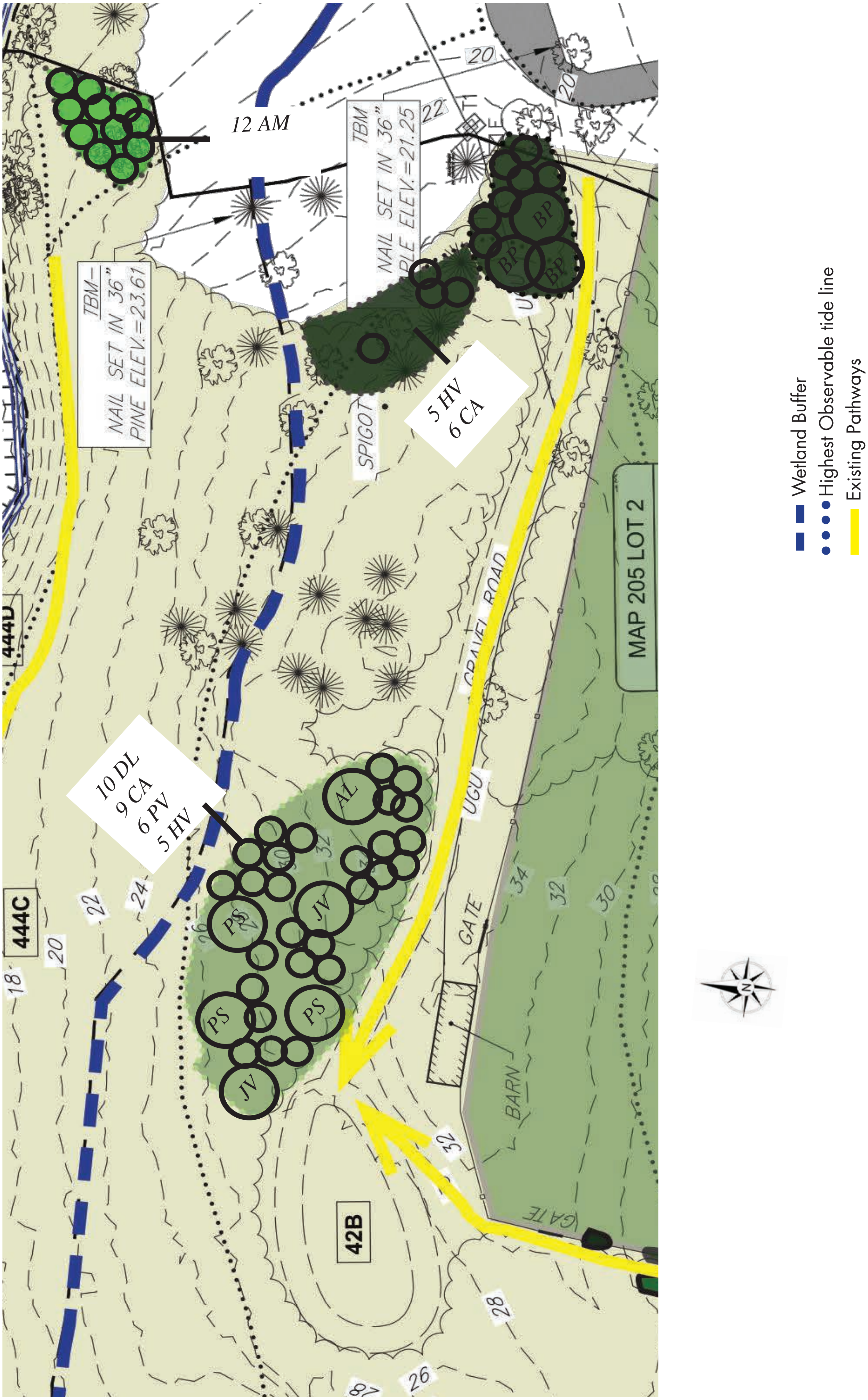


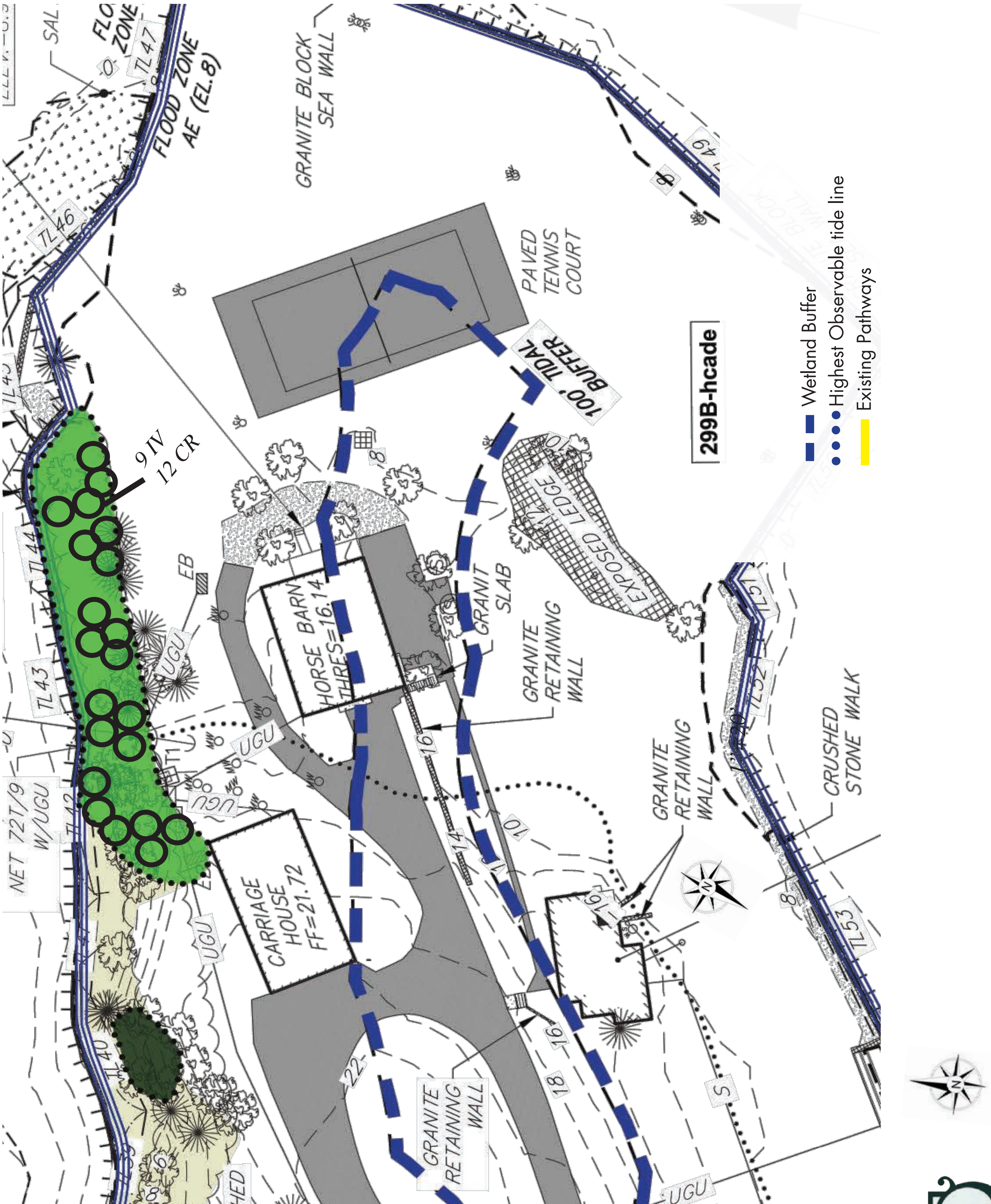
9 CA
8 HV
8 CA
5 CCA
100' TIDAL BUFFER
42D
FLOOD ZONE X
FLOOD ZONE AE
PISCATAQUA RIVER
(TIDAL)
TL12
TL13
TL14
TL15
TL16
TL17
TL18
TL19
TL20
TL21
QB
AL
NS
CC
Wetland Buffer
Highest Observable tide line
Existing Pathways





For the planting, we propose restoring a
invasive species with native shrubs and p
path through the meadow In areas propos
propose mowing and controlling existing
establish native perennials and add diver


12 AM
TBM
NAIL SET IN 36"
PLE ELEV.=21.25
TBM—
NAIL SET IN 36"
PINE ELEV.=23.61
5 HV
6 CA
SPIGOT
GRAVEL ROAD
MAP 205 LOT 2
444D
10 DL
9 CA
6 PV
5 HV
444C
AL
JV
PS
PS
PS
JV
BP
BP
BP
UGU
GATE
BARN
42B
18
20
22
24
26
28
30
32
34
Wetland Buffer
Highest Observable tide line
Existing Pathways


FLOOD ZONE AE (EL.8)
TL47
TL46
TL44
TL43
GRANITE BLOCK SEA WALL
PAVED TENNIS COURT
100' TIDAL BUFFER R
299B-hcade
Wetland Buffer
Highest Observable tide line
Existing Pathways
9 IV
12 CR
EB
UGU
NET 72T/9 W/UGU
HORSE BARN THRES=16.14
CARRIAGE HOUSE FF=21.72
GRANIT SLAB
GRANITE RETAINING WALL
EXPOSED LEDGE
CRUSHED STONE WALK
TL51
TL52
TL53

325 Little Harbor Road
Native Restoration Strategies

After invasive plant species have been removed from the wetland buffer, the area will be planted with one to five gallon native conservation grade New England native trees, shrubs and perennials from local seed and cutting sources. It is proposed that native plants will have greater than 90% coverage by the conclusion of the 3 year Order of Conditions. Native plants proposed for installation will add diversity of existing native plants, provide habitat and forage for wildlife, and reduce storm water and sediment flow wetland areas. Plants proposed for installation include:

Within 100' Tidal River Buffer

Quantity	Size	Scientific name	Common name
4	3-4'	Amelanchier laevis	Shadblow Serviceberry
2	3-4'	Acer rubrum	Red Maple
12	3-4'	*Aronia melanocarpa*	Black Chokecherry
5	3-4'	*Betula papyrifera*	*Paper Birch*
2	3-4'	*Carpinus caroliniana*	*Ironwood*
44	3-4'	*Clethra alnifolia*	Summersweet
5	3-4'	*Cornus amonum*	Silky Dogwood
12	3-4'	*Cornus racemosa*	Gray Dogwood
10	3-4'	*Diervilla lonicera*	Northern Bush Honeysuckle
18	3-4'	Hamamelis virginiana	Witchazel
9	3-4'	Ilex vertilicillata	Winterberry
2	3-4'	Juniperus virginiana	Eastern Red Cedar
24	3-4'	*Myrica pennsylvatica*	Bayberry
6	3-4'	Nyssa sylvatica	Black Tupelo
6	3-4'	Prunus virginiana	Chokecherry
3	3-4'	Prunus serotina	Black Cherry
7	3-4'	Quercus bicolor	Swamp White Oak
9	3-4'	Rhus typhina	Staghorn Sumac
16	3-4'	Rosa virginiana	Virginia Rose

After planting the conservation grade native shrubs and trees and slope stabilizing perennials, we propose the area be seeded with a custom Dormant seed mix at recommended seeding rates. This dense seed mix will supply a matrix of vegetative growth to cover disturbed soils, and reduce recolonization of invasive plant species. These mixes include:

New England Showy New England Wildflower mix
New England Understory Grass and Forb Mix

325 Little Harbor Road
Maintenance Schedule

The recommendations for restoration take into consideration the long term health of the wetland. Once the invasive plant species have been managed in a locus area and any native plants installed, a long-term maintenance plan will be set in motion with the goal of continued control of invasive plant species on site, serve, and sustain native plant populations, and improve the native plant diversity and aesthetic beauty of the wetland.

Fall - Winter 2021

- Complete invasive species management of Buckthorn and woody invasive plant species by cut and dab methods
- Identify and manually hand-pull identified invasive shrubs and vines under 1′ in caliper
- Cover all disturbed soil along with native seed mix

Winter 2021-Spring 2022

- Continue utilizing control methods of invasive plant management to exhaust seed bank
- Begin planting native plant species according to approved quantities and varieties
- Monitor plant response and continue hand pulling and herbicide application methods on re sprouting invasive plant species
- Cover exposed soils Conservation seed mix

Summer 2022

- Cut and dab/Foam application to Japanese Knotweed and remaining invasive shrub and tree species
- Continue utilizing control methods of invasive plant management to exhaust seed bank
- Continue planting native plant species according to approved quantities and varieties

Fall 2022 - Summer 2023

- Monitor plant response and continue hand pulling and herbicide application methods on re sprouting invasive plant species
- Followup treatment of Japanese Knotweed (Mowing in spring, treating in fall)
- Cover exposed soils Conservation seed mix
- Monitor native species for plant health

Ongoing Maintenance and Monitoring:

- After the treatments of fall 2023, the management plan should be re-evaluated. If management treatments have been successful, only monitoring and minimal hand removal should be required to keep invasive plant species from being reintroduced. Native trees, shrubs, and herbaceous forbs should dominate the wetland buffer.
- Implementation of the LMP should be completed by qualified professionals including:
  NH Licensed pesticide applicator
  Certified Massachusetts/NH Invasive Species Management
  MCH Massachusetts Certified Horticulturist
- Monitoring reports shall be submitted to conservation at the end of each growing season indicating invasive species management efforts and establishment of the restoration plantings.

Bittersweet

Description:

Celastrus orbiculatus, Asiatic Bittersweet is a deciduous climbing vine common in areas of disturbance in our New England forests. It has glossy, rounded leaves that are alternate with finely toothed margins. The leaves turn yellow in the fall. The fruiting plants produce small greenish flower clusters from leaf axils that mature in fall to produce high numbers of fruiting seed. The seed are noticeably yellow, globular capsules that split open at maturity to reveal red-orange fruiting seeds. Roots are also distinctly orange.

Habitat:

Bittersweet spreads easily into forest edges, woodlands, unmanaged meadows and old fields. Most disturbed sites that are not being actively managed that receive full sun are susceptible. The vine can tolerate shade but is often found in more open, sunny areas.

Management:

Asiatic Bittersweet management is a combination of manual hand pulling with cut & dab herbicide treatments. For established plants, vines should be cut to ground to reduce mass. Persistent root infestations will require repeat cutting and treatments over several seasons. Rake any seeds present, bagging in plastic bags, tying, and disposing of correctly.

Celastrus orbiculatus,
Asiatic Bittersweet

Honeysuckle

Description:
Lonicera morrowii, Morrow's honeysuckles are upright, deciduous shrubs that typically have a multi-stem mounding appearance. Oval leaves are opposite along the stem with smooth edges (no teeth or lobes) and hairy on the underside. Mature stems are often hollow on the interior and peeling on the outer bark. In the spring pairs of fragrant, tubular flowers less than an inch long are borne along the stem in the leaf axils. The fruits are red to orange, and fleshy .

Habitat:
Honeysuckles are relatively shade-intolerant and most often occur in forest edges, abandoned fields, and other open, upland habitats. Woodlands and open meadows, especially those that have been grazed or otherwise disturbed and are left unmanaged are also highly susceptible. Morrow's Honeysuckle have the greatest habitat diversity and are capable of invading wetland edges and other uncommon habitat types.

Management:
Morrows Honeysuckle management is a combination of mechanical mowing and manual hand pulling with cut and dab herbicide treatments. When feasible, the root system is generally shallow and plants can be uprooted easily. Persistent root re sprouting may require repeat cutting with herbicide application over several seasons to fully control.

Lonicera morrowii,
Morrow's Honeysuckle

Buckthorn

Description:
Frangula alnus, Glossy Buckthorn is a deciduous shrub that grows up to 20 ft.. tall. The oblong leaves are up to 2" long, arranged alternately along the stem and are dark green on the surface, glossy above and slightly pubescent beneath. The leaves turn yellow in the fall, and remain on the plant when most other species have already lost their leaves. The yellow-green flowers are arranged in 1-8 flowered sessile, glabrous umbels. This plant flowers after the leaves expand, from May to September . The fruit ripen from red to black July to August.

Habitat:
Buckthorn thrives in early successional habitat. Abandoned agricultural or pasture lands, an opening in canopy within woodland, or unmanaged meadows are common areas. Buckthorn will also tolerate wetland soils where it can form dense stands that suppress the growth of native plant species. The seed is readily dispersed by birds, and the extended productivity of the fruit into winter allows the plant to be dispersed through the entire season.

Management:
Manual methods of hand-pulling seedlings is recommended. For larger saplings, a 'Weed Wrench' is effective. Mature Buckthorn can also be cut and the stump application of Triclopyr based herbicide. Rake any seeds present, bagging and disposing of correctly.

Frangula alnus,
Glossy buckthorn

Multiflora Rose

Description:
Rosa multiflora, Multiflora Rose is a shrub with arching canes with a mounding shape in the landscape. The leaves are divided into five to eleven sharply toothed leaflets. The base of each leaf stalk has a pair of fringed bracts which is a key identifier of the plant from other wild rose. Beginning in early summer, clusters of showy white flowers appear. The flowers are followed by developing red fruit, or hips, during the summer that remain on the plant through the winter.

Habitat:
Multiflora Rose thrives in early successional habitat. The rose has a wide tolerance for various soil, moisture, and light conditions. It occurs in dense woods, along river banks and roadsides and in open unmanaged fields. It can form a dense understory that suppresses growth of native plant species. The seed is readily dispersed by birds, and the extended productivity of the fruit into winter months allows wide spread distribution of the plant.

Management:
Manual methods of hand-pulling seedlings is effective. For more established shrubs, a combination of pruning to reduce mass followed by cut & dab treatments with a Triclopyr based herbicide is recommended. Persistent root infestations may require repeat cutting over several seasons. Rake any seeds present, bagging and disposing of correctly.

Rosa multiflora,
Multiflora rose

IDENTIFICATION AND QUALIFICATION OF APPLICANT

This plan has been developed by Miles H. Connors, Director of Ecological Services at Parterre Ecological, a division of Parterre Garden Services. Parterre Ecological Services provides Land Management Planning, expert Invasive Plant Management services, Native Plant Restoration strategies, and ongoing Maintenance and Monitoring in natural area restorations.

PLAN AUTHOR AND QUALIFICATIONS

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Miles holds an Bachelor of Science degree in Environmental Planning and Policy and Biology, with a Masters of Science in Sustainable Landscape Planning and Design. Miles is also a Massachusetts Certified Horticulturist, holds an Invasive Plant Certification from UMASS Amherst and is a Licensed Pesticide Applicator.

Members of the Parterre Ecological team are licensed Massachusetts Pesticide Applicators, are Massachusetts Certified Horticulturists and hold an Invasive Plant Certification from UMASS Amherst.

Precedent Images of a Restoration Project completed in 2020

1. Existing Conditions - Client under an enforcement order to restore buffer after tree & shrub removal and hydroseeding turf

2. After installation of sediment control, we mechanically mowed area and seeded with New England Conservation and Wildlife Seed Mix

3. Covered exposed loam with straw erosion control blanket: BioNet S75BN and staple into existing slope

4. Layout native plant species suitable for an Oak Hickory Forest plant community

5. Native plant species installed: *Quercus rubra, Kalmia latifolia, Ostrya virginiana, Corylus americana, Betula lenta, Fagus grandiflora and Viburnum acerfolium*