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March 22, 2022

Peter Stith, Principal Planner
Planning Department
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Response Letter 5 – Altus Engineering & Technical Advisory Committee
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 February 24, 2022, and from the Portsmouth Technical Advisory Committee, dated February 28, 2022. Review comments are listed below with our responses in bold. Additionally, the architect Mick Khavari met with Principal Planner Nick Cracknell on March 16th, 2022. The two discussed a strategy of relocating what was previously building mass at the rear of the units to the front of the units in order to allow for both increased yards at the rear, and a set-back garage condition at the fronts. Revised building footprints and architectural plans for all 10 units are included with this resubmission.

GRADING AND DRAINAGE PLAN:

5. *The Designer is proposing to mitigate the impacts from the roofs by discharging into crushed stone infiltration beds. Altus believes that this is an acceptable design approach. However, the Designer has not provided roof plans indicating where the runoff will discharge. It will be critical that the crushed stone infiltration basins are constructed according to the plans and that the roof areas each discharge to the appropriate area. Deviations during construction could have substantial impact on the rate and volume of runoff that discharges from the site. Issue partially addressed. Stone drip edges have been eliminated and replaced with underground stone infiltration beds. See additional comments below.*
   RESPONSE: See responses to comments below.

ii. *The outlet pipe for catch basin 1 in Sagamore Avenue will have less than 2- feet of cover. The Designer needs to confirm that NHDOT finds that acceptable. Issue partially addressed. Cover over pipe increased to 2.3-feet. NHDOT will still need to confirm that this is acceptable.*
   RESPONSE: This has been submitted to NHDOT for review.

iii. *The Designer is now proposing an underground concrete galley stormwater storage/infiltration system. Based on the two test pits provided, the approach seems viable. However, the ledge profile is variable. The Designer needs to provide assurance that there will be at least 2-feet of natural soil below the crushed stone base or that ledge will be removed and replaced with granular material. Open issue.*

RESPONSE: Our previous response to this comment per the 1/20/2022 response letter was to add Note #9 to the Shea Concrete Products Galley detail on Sheet D6 specifying that ledge shall be removed to an elevation at least 2 feet below the bottom of the stone base and replaced with granular material. When this became a repeat comment, we reached out via email and in response Altus informed us on 3/15/22 that it is acceptable to require a percentage of the surface area to not require ledge removal within 2' of the bottom of the crushed stone base (i.e. have 2' of natural soil below the system).

Based on this response, we believe we satisfy the intent of this comment with the design as-is. There are two test pits in or nearby the footprint of the Galley chamber: B1 and B2, where we have been basing our design to this point exclusively on B2 (and are continuing to do so) as it provides the more limiting results.

Test pit B1 was performed at an elevation of 34.1 and indicates a depth to ledge of 84", while test pit B2 was performed at an elevation of 34.9 and indicates a depth to ledge of 65". Therefore, the elevation at which ledge is encountered slopes roughly from 29.48 to 27.1 along the line between the two test pits. The highest existing ground contour in the footprint of the system is at elevation 35, so assuming that the ledge profile at that location is governed by test pit B2, ledge is at an elevation of 29.58 at this point.

The bottom of the stone base is 3' below the chambers at an elevation of 30.9 as it was determined that this is the depth of stone necessary to optimize storage and infiltration. Two feet below the bottom of the stone base is elevation 28.9. The elevation of ledge approximately varies from 27.1 to 29.58 throughout the system and the existing slope of the ground is more or less consistent diagonally across the proposed system footprint. Blasting of ledge in order to achieve at least 2' of natural soil below the stone base is only necessary underneath approximately 43% of the system. Underneath the remaining 57% ± of the system, there is 2' of natural soil between the proposed stone base elevation and the elevation of ledge. See profile depicting this on Sheet D6.

v. *The Designer needs to check the drainage run from Yard Drain 4 to Catch Basin 2 (on-site) for conflicts. Open issue. Water, sewer, and drainage lines all run close to each other. The Designer should provide sewer and storm drain profiles to confirm that there are no conflicts.*

RESPONSE: Crossing between drainage run from Yard Drain 4 to CB 2 & sewer service to Unit 4: Invert of 8" HDPE drain pipe = 36.37, top of sewer pipe = 33.95 assuming 5' of cover over a sewer lateral per detail. (2.42' separation provided)

Crossing of drainage run from Yard Drain 4 to CB 2 & water service to Unit 4: Invert of 8" HDPE drain pipe = 36.26, top of water service = 33.9 with 5' min. cover. (2.36' separation provided)
Crossing of 8" HDPE drainage run from Yard Drain 4 to CB 2 & 12" HDPE drainage run from Galley chamber to DMH 2: Invert of 8" HDPE = 36.15 (thus bottom of outside diameter = 36.10), Invert of 12" HDPE = 34.76 so top of 12" HDPE with 14.45" outside diameter and 12.15" inside diameter = 35.87

So, there is approximately 3" vertical separation between the two drain pipes where they cross.

vi. *The Design now provides for a culvert discharging from the State right-of way onto private property. The proposed development will need to provide the State with an easement to maintain the culvert. Open issue. Approval from NHDOT is required.*
RESPONSE: This has been submitted to NHDOT for review.

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. Open issue. There is a ledge outcrop within 1-foot of the infiltration practice. The Designer has not demonstrated that infiltration will occur. It is unclear as to what happens to the runoff as it encounters ledge*
RESPONSE: The proposed infiltration practice has been moved closer to Unit 4 and further from the ledge outcrop.

This infiltration practice was designed based off Test Pit X7, where ledge was found 65" below ground at elevation 34.0, so the top of ledge is at elevation 28.58. The bottom of the system is proposed at elevation 31.8, providing 3.22' of natural soil beneath the system. Note #9 on the house roof infiltration detail on Sheet D6 indicates additionally that ledge shall be removed to at least 2' below the bottom of the infiltration practice, if it is found at any point to have less than 2' separation, but based on our available test pit data it should be feasible to have at least 2' of natural soil below the system.

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 demonstrating that subsurface conditions support the proposed design. Open issue. The Designer needs to amend the design to eliminate the potential for the runoff from entering the adjacent perimeter drains.*
RESPONSE: The Units are no longer proposed to have basements, therefore there will not be perimeter drains.

x. *The sidewalk construction detail indicates that the surface will pitch towards the street. The proposed grading indicates that the sidewalk will drain away from the street. The Design needs to confirm which is correct. Plans now indicate that the runoff will pitch away from the street. The City should weigh in as to whether or not they want the runoff to be treated in the catch basins or not. Issue partially addressed.*
RESPONSE: We will discuss with the city at the TAC meeting.

xi. *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. Open issue. Infiltration is still proposed over a ledge outcrop.*
RESPONSE: The infiltration practices underneath the decks have been removed from the design.

OFFSITE IMPROVEMENTS PLAN:

9. *A raised sidewalk is proposed along the westerly side of Sagamore Avenue from the site driveway to "Sea Star Drive." Installing curbing alters the drainage pattern along the roadway. The Designer is proposing to install a tip down to allow untreated runoff to discharge across the sidewalk into the small, isolated wetland at the northeast corner of the site. Altus believes that the tip down will have concentrated runoff that could create an icing issue during the winter months and erosion at the down slope edge of the sidewalk. Altus recommends that a catch basin with a deep sump be installed to pretreat the runoff and to minimize issues at the tip down. Issue partially addressed. The Design needs to be reviewed and approved by NHDOT District 6.*
RESPONSE: This has been submitted to NHDOT for review

UTILITY PLAN:

i. *The Designer has the water, drainage and sewer pipes all crossing approximately 15-feet west of SMH #1. The Designer should consider alternate layouts to reduce the potential for conflicts. Open issue.*
RESPONSE: The sewer service for Unit #1 and the underground electric line have been moved to reduce conflicts.

LANDSCAPE PLAN:

12. *Section 6.6.1 requires that side slopes for all landscaped areas shall not exceed 3 to 1 slope. The landscape buffer behind Building units 5 and 6 exceed that requirement. See note 7 above for additional concerns in this area. Issue partially addressed. The slope behind Buildings 1 through 4 appear to be graded with a 2 to 1 slope.*
RESPONSE: The slope behind Units 1 through 4 has been changed to a 3:1 slope.

DETAIL SHEET:

15. *The Shea Concrete products "galley 8 x 14" detail needs further clarification:*
    b. *Specification for the clay liner needs to be provided. Open issue. The Designer changed the material to a PVC liner. Crushed stone will be placed on the liner with the concrete galleys above. It is not clear if the liner can support the weight of the galleys without puncturing the liner.*
    RESPONSE: This issue was resolved with the January 20, 2022 response letter as we have switched the liner specification to 36 mil polypropylene and provided puncture resistance calculations. We have further confirmed with Altus via email on 3/6/22 that they are satisfied with this approach.

17. *The Designer needs to provide a material specification for the bioretention system pea stone and coarse gravel. The Detail should indicate if any over excavation is required if ledge is encountered. Issue not addressed. Specification for pea stone needs to be provided.*

RESPONSE: This issue was resolved with the January 20, 2022 response letter as we provided a sieve specification for the pea stone. We have further confirmed with Altus via email on 3/6/22 that they are satisfied with the sieve specification that was provided.

EXISTING AND PROPOSED WATERSHED PLANS:

21. *The Designer should model the off-site flow discharging to the property. There appears to be a significant flow from the condominium development to the south as well as flow from the northerly abutting property. All areas contributing runoff to the site should be included in the modelling. Issue partially addressed. The runoff from the southerly property has been added to the model. It appears that the Designer is overestimating the area. Based on our observations, the underground conduits from the street to the Sea Star Condominium development creates a dam limiting the flow to the depression.*

RESPONSE: We have received additional topographic survey and concur that this berm cuts off the subcatchment that drains directly toward the isolated wetland. There is another wooded ponding area toward which the remainder of the subcatchment that was modelled actually drains. Overflow from the wetland is split between this ponding area and the Sea Star Cove detention pond, though the overflow toward the detention pond occurs at a lower elevation.

DRAINAGE ANALYSIS:

24. *The Drainage computations indicate that generally there will be a decrease in the rate of runoff discharging to the four points of analysis. However, there will be a significant increase in the volume of runoff discharging to analysis point 1, the isolated wetland in the northeast corner of the site. The Designer did not model the isolated wetland as a pond. It is presumed that without an outlet, the increase in volume will elevate the water ponded in the wetland. The wetland extends beyond the property line. Thus, it is also presumed that there will be additional ponding on the abutting property. Section 7.4.2.9 states that "the applicant shall demonstrate that on- and off-site downstream channel or system capacity is sufficient to carry the stormwater run-off volume and flow without adverse effects, such as flooding and erosion of stream banks and shoreland areas." Based on the computations, it is Altus' opinion that the increase in volume attributed to the development will increase flooding on the abutting property to the north. Issue not satisfactorily addressed. Altus agrees with the Designer that using the accepted rates of infiltration based on the soil types as a general rule is a valid practice. However, when the underlying soils are ledge, it is not reasonable to use a 0.3 inches per hour infiltration rate. Altus did not confirm that using this rate over ledge is acceptable. We stated that if the soils are suitable, then the published infiltration rate could be applied. It is our opinion that the stormwater management practice proposed between units 3 and 4 does not support infiltration. We discussed this in the field with Mr. Garrepy. He concurred and agreed to relocate the infiltration basin. We also agreed that the practice under Unit 3 deck is not feasible. We remain concerned with the practices behind Units 1 and 2 being on a steep slope and above non-native materials is not viable as presented. Altus notes that the model does not provide for storage above elevation 31.01 for the*

isolated wetland. The model indicates that the storage exceeds the maximum. Thus, the model needs to be revised and include an outlet device with flow discharging to the west. In all cases, there is an increase in volume onto the abutting property to the north which means that the impoundment on the abutting property will increase. Without a defined outlet, this means that there will be an increase in flooding to the abutting property which is not acceptable.

RESPONSE: We have relocated the subsurface stone infiltration practice between units 3 & 4 closer to Unit 4 and pulled it toward the road to be closer to the ledge outcrop. See response to comment vii.

As for the stone infiltration practice behind units 1 & 2, Test Pit X4 indicates that ledge is 75" below existing grade at 31.8, thus at an elevation of 25.55. With the bottom of the proposed system at 27.5, there is approximately 2' of natural soil between the bottom of the system and ledge. Furthermore, per Note #9 on the house roof infiltration detail, ledge shall be removed to at least 2' below the bottom of the infiltration practice if this is not already achieved. The fill that is brought in to replace the soil in this area should have a better infiltration capacity than the native soil.

The infiltration areas that were below the decks have been removed, as peak flows and volumes directed toward all analysis points can now be reduced without it given other changes that were made to the buildings and respective roof watersheds. The topographic survey to the north of the subject parcel has been updated and there is more ponding area around the isolated wetland than previously understood, and additionally, there is a wooded ponding area that receives runoff directly from the road in the existing condition. In any case, peak flows and volumes directed toward the neighbor's detention pond and toward the wooded ponding area will be reduced, therefore there should not be an increase in flooding on abutting properties.

32. *Subsurface evaluations should be provided in each of the rain gardens and within the galley stormwater storage area to identify any construction issues and to confirm the exfiltration rate in the raingardens where infiltration is being considered. Open issue.*

RESPONSE: Test pits were performed in each of the bioretention locations and it was determined that infiltration would not be viable due to the observed ledge elevations. Therefore, the bioretention systems will be lined and underdrained. Two test pits were also performed in the vicinity of the Galley chambers that are designed for infiltration and we are using the more restrictive of the two for design. Per our response to comment 8-iii, the ledge profile varies such that within the footprint of the majority of the Galley system, ledge is at least 2' below the bottom naturally, and ledge will be removed where this is not the case.

33. *The Design premise is to allow for infiltration of roof water in the backfill material adjacent to the building foundation. Thus, foundation perimeter drains should not be installed as the drains will collect the runoff that is intended to recharge the groundwater table. Open issue. The Designer has removed the infiltration drip edges and now is proposing perimeter drains adjacent to the infiltration practices at units 1 through 4. The Designer needs to depict where the foundation drains will discharge for all of the buildings or state that perimeter drains are not allowed.*
RESPONSE: The Units are no longer proposed to have basements, therefore there will not be perimeter drains.

i. *The limits of subcatchment 1 and the time of concentration should be confirmed by the Designer. Issue partially addressed. The Designer has amended the computations to include off-site flow from the northerly abutting property. It is our opinion that the subcatchment area depicted on the plan overestimates the contributing area. There is a utility conduit berm that redirects runoff away from the isolated wetland.*
RESPONSE: We have received updated survey and revised the existing conditions accordingly. We concur that there is a berm that redirects runoff away from the isolated wetland. There is a larger pond behind the site that collects the runoff from Sagamore Ave.

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL:

35. *This document should be included in the condominium documents and should be recorded at the Registry of Deeds to ensure that the association and all owners are aware of the requirements to maintain the site. Open issue. Designer has indicated that the O & M manual will be recorded. The City needs to assure that this will be a condition of the approval.*
RESPONSE: No Response necessary.

i. *The Designer has now added at grade (under deck) and subsurface stone infiltration practices. The manual needs to clearly state if the practice cannot be remediated as noted in the document that they shall be replaced, and the City of Portsmouth shall be notified that the system has failed. Open issue.*
RESPONSE: This issue was resolved with the January 20, 2022 response letter as added a note to this effect to Sections 6.2.D and 6.2.E of the Operations and Maintenance Manual (now only 6.2.D as stone under decks has been eliminated.) The Operations & Maintenance Manual is included with this response.

TECHNICAL ADVISORY COMMITTEE COMMENTS:

1. *The applicant needs to grade the south east corner of the site (the area behind units 7-10) through a shallow swale and into Rain garden 2P otherwise this area will flood once the future sidewalk gets constructed.*
RESPONSE: This swale would carry runoff from the back of the roofs of both the proposed development and Westwind Townhomes. While the design is such that peak flows and volume directed toward this analysis point (the shoulder of Sagamore Ave) will be reduced in the proposed condition, Rain Garden 2P is not sized for this additional runoff. Furthermore, this would enter the drainage system going toward the isolated wetland in the back of the site, which does not occur in the existing condition. Our design intent is to mimic the existing drainage patterns on

site and doing this would redirect offsite runoff to a location where it is not going in the existing condition. There is no way to handle the additional volume as infiltration is not feasible in this section of the site. Adding this runoff would inundate the drainage system on the north abutting property.

The runoff should be allowed to retain its current flow patterns to AP2 in order to best distribute flows and volumes in the proposed condition and mimic existing drainage patterns. Per Comment #17 of the 2/15/22 response letter, we are showing a 10'x10' drainage easement to benefit the City of Portsmouth, the purpose of which is to allow for a future drainage structure. Either this can be utilized or a swale can be introduced alongside the future sidewalk, if feasible given the right of way width.

2. *This project is not approvable in its current design. The site will shed additional volume onto properties of others that will overwhelm the capacity of the little wetland and flood the area, shedding water toward Seastar. The site is generally over-engineered and the plan requires all infiltration areas to work at peak capacity throughout their lifetimes. In general, relying on infiltration to work consistently on every storm without expecting system overload due to hydraulic mounding is not good practice. With the introduction of the liner under system A, system B is required to infiltrate almost all the flows. System B is too close to units 4 and 5 not to expect that the foundation drains for units 4 and 5 will not be impacted by the infiltration area. In addition, ground water flows encountered by foundation drains and System A underdrains are not accounted for at all in the drainage calculations. We expect there will be significant base flow picked up by these foundation drains. Using Ksat values based on planning level soil mapping on a small site that has been heavily altered and has very shallow ledge is not good practice in our opinion. Please provide a viable solution for onsite stormwater treatment or obtain the necessary permits and easements for offsite stormwater discharge.*
RESPONSE: The stormwater system is now designed such that peak volumes of runoff are reduced toward adjacent properties. Any overflow from the isolated wetland to the north of the subject site would first be directed toward the abutter's detention pond as it does in the existing condition and then in extreme overflow events, beyond even the 50-Year 24-Hour storm, it would crest toward another wooded ponding area behind the site. The isolated wetland floods more frequently in the existing condition than the proposed condition, as modelled. We are utilizing design methodologies that are accepted by the Alteration of Terrain Bureau, and this project meets their requirements even though an AOT permit is not required due to the area of disturbance. A professional soil scientist classified the soil types on site and the lowest Ksat value in the published range for each soil type was utilized for the design, so a design infiltration rate of 0.3 in/hr was utilized for most of the stormwater systems on site. This is a conservative approach, and in general, actual infiltration rates are higher than those that are published (particularly after a factor of safety of two is applied). Beneath the concrete Galley system B and the house roof infiltration systems, the seasonal high water table stands above ledge, with test pits B1 & B2 being used for concrete Galley system B, test pit X7 being used for the infiltration system between units 3&4, and test pits X4 & X6 being used for the infiltration system behind units 1&2.

The design intent does not rely on infiltration of all runoff during every storm, so the systems will not be required to work at peak capacity at all times. Concrete Galley chamber system "B" has a carefully designed overflow, and as modelled, this will only be activated during storms greater than the 10-Year, 24-Hour storm event, as the modelling shows that it will completely infiltrate runoff directed toward it from the 2-Year 24-Hour and 10-Year 24 Hour storms. Some of the runoff from the 25-Year and 50-Year storms will pass through the overflow, but to reiterate, the ultimate peak rates and volumes of runoff toward all analysis points will be decreased during all analyzed storm events. We recognize that infiltration may not be as feasible during larger storms as it is during smaller storms, so the stormwater system was designed accordingly.

The units are no longer proposed to have basements and therefore there will not be foundation drains. Galley system A and both of the bioretention systems are proposed to be lined, so underdrains will not be picking up groundwater flows.

In summary, the stormwater system was carefully engineered to reduce rates and volumes of runoff and to promote groundwater recharge while not relying on it as a design feature, particularly for larger storms during which it may not be feasible.

3. *The subcatchment that extends north of the property is not depicted properly, its northern boundary should be the man made earth berm that covers the underground utilities that exist between the pole and the Verizon building on the adjacent lot.*
   RESPONSE: Additional topography was surveyed and the watersheds were revised accordingly. We concur that this earth berm divides the watershed draining toward the isolated wetland from the one draining toward the newly surveyed larger wooded pond to the north.

4. *It is not good practice to hydraulically load the soil directly adjacent to a foundation wall. A few of the systems have bottoms inside of the spring water table and will not be able to work at full capacity at those times*
   RESPONSE: The units are no longer proposed to have basements and under-deck stone infiltration has been removed from the design.

5. *The sidewalk on Sagamore is still labeled as 5' wide on the site plans. It needs to be at least 5.5' wide (concrete width) in order to meet current standards. Please change all plans for consistency.*
   RESPONSE: The label on Sheet C2 has been corrected for consistency with the label on Sheet C4 and on the details.

6. *The catch basins required for the sidewalk along Sagamore should drain to the east side of the road so that they do not overwhelm the little wetland on site if no culvert is constructed*
   RESPONSE: If the catch basins were to drain toward the east side of the road, it will overwhelm the wetland on that property unless appropriate detention were to be installed, as it is introducing runoff that is not reaching that side of the street in the existing condition. The two proposed road catch basins are directed toward the isolated wetland to which existing flows are currently running off, and as modelled, peak flows and volumes will now be reduced toward all analysis points in the proposed condition.

7. *The driveway of 1167 Sagamore is too steep in the sidewalk area to meet ADA code. The area needs to be re-graded.*
   RESPONSE: New spotgrades have been added and the 33 contour rerouted to meet this design intent. Also, a leadered callout has been added to Sheet C4 stating to regrade the driveway curb cuts appropriately.

8. *The proposed flushing hydrant needs to be located nearest to unit 1, adjacent to the 4" valve to flush the main properly*
   RESPONSE: The proposed flushing hydrant has been moved to the front of Unit 1.

9. *The sewer pipe from SMH 2088 to SMH 1 needs to be SDR 21 as stated previously. This will eliminate the need to relocate the water unless it is in direct conflict.*
   RESPONSE: Sheet P1 has been revised to specify SDR-21 for this pipe run.

10. *Primary voltage conduit needs to be incased in concrete near the fire hydrant*
    RESPONSE: Sheet C4 has been revised to depict a 10' length of primary underground conduit being encased in concrete, centered around the fire hydrant.

11. *Relocate pole 136/69 1 additional foot back to ensure room for future sidewalk.*
    RESPONSE: Pole 136/69 has been moved a foot back (toward the property) on Sheets C4 and C5 of the plan set.

12. *Pavement repairs in Sagamore to meet State of NH standards, it is their road, not ours.*
    RESPONSE: The pavement repair detail is per State standards, also see Note #6 on the pavement repair detail on Sheet D1.

13. *As stated previously, hydrants do not have drain holes any longer. Please remove them off the detail. Development will need to secure an agreement with DPW for yearly flushing and maintenance.*
    RESPONSE: Drain holes have been removed from the fire hydrant detail. Portsmouth Water will be granted an easement per Note #40 on Sheet C4.

14. *If CTS pipe is being used for services, tracing wire needs to be shown on the details and installed per DPW standards. An easement will be required on the parcel for valve access and leak detection.*
RESPONSE: See revised water service connection detail indicating that tracing wire is to be installed per DPW standards if CTS piping is used for water services. See also new Note #40 on Sheet C5 which states that an easement shall be granted.

15. *On-site sewer manhole covers will not be coming from the City of Portsmouth, they will need to be purchased*
RESPONSE: See new Note #10 on the sewer manhole detail on Sheet D3.

16. *Conduit drops off pole 136/69 shall be on the back side of the pole so that they do not hinder the future sidewalk*
RESPONSE: This has been noted on the leadered callout to the proposed relocated pole on Sheet C5.

17. *Do not plant new plants (especially trees) within 8' of a utility.*
RESPONSE: The landscaping plan has been adjusted so that no new trees are proposed within 8' of a utility.

18. *A sidewalk agreement will be required by NHDOT.*
RESPONSE: A sidewalk agreement is in the process of being drafted.

19. *Irrigation meter and backflow will need to be inside of one of the structures*
RESPONSE: The proposed irrigation meter is shown adjacent to Unit 9 and is noted on Sheet C5 to be inside the structure and have a backflow enclosure.

20. *Please explain the solid waste plan for the site.*
RESPONSE: Per Note #22 on Sheet C2, the owner of each unit shall store trash in their garage and trash will be picked up by a private hauler.

21. *Please provide a green building statement*
RESPONSE: A green building statement is provided with this resubmission.

22. *Architectural plans have not been provided. Please provide exterior elevations, gross floor areas, and dimensions for all buildings*
RESPONSE: Architectural plans are included with this resubmission.

23. *Please have plans stamped by the wetland scientist*
RESPONSE: Sheet C1 is stamped by the wetland scientist.

24. *Please provide the width of the proposed curb cut on Sagamore Ave*
RESPONSE: The width of the proposed curb cut has been dimensioned on revised Sheet C2.

25. *Please identify if irrigation system will be installed.*
RESPONSE: An irrigation system will be installed.

26. *Please identify if proposed plantings are adequate for snow storage to be located on top of them.*
    RESPONSE: The landscaping plan and site plan have been modified so that snow storage is not proposed on top of shrubs.

27. *Please indicate which units are to have basements*
    RESPONSE: No units are to have basements.

28. *Please update checklist throughout process to properly identify where information is in application and plan set*
    RESPONSE: Updated submission checklist is included with this resubmission package.

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) Half Size Architectural Plan Set.
4. One (1) Revised Drainage Analysis.
5. One (1) Revised Stormwater Operations & Maintenance Manual.
6. Green Building Statement.
7. Updated City of Portsmouth Submission Checklist.

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.

Paige Libbey, P.E.
Project Manager

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. 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: The Sagamore Group, LLC Date Submitted: 08/23/22

Application # (in City's online permitting): LU-21-167

Site Address: 1169 & 1171 Sagamore Ave. Map: 224 Lot: 14&15

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)**	Included	
☒	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)**	C1 & C2	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	C1	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
X	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Application	N/A
X	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 & C2	N/A
X	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Sheet	N/A
X	List of reference plans. **(2.5.3.1H)**	C1 & C2	N/A
X	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**
X	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
X	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
X	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 #15	N/A
X	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
X	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	C1	N/A
X	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Cover Sheet	N/A
X	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	All Sheets	N/A
X	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
X	Source and date of data displayed on the plan. **(2.5.4.2D)**	C1	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.	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	
☒	**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 T1-T4	
☒	**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 & C5	
☒	**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, C5, P1	

☒	**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.	C1 & C5	
☒	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	C2 Note #22	
☒	**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 C2 C2 Note #35	
☒	**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.	L2	
☒	**11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)**	L2	
☒	**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 C5	
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C1 & C3	
☒	**14. Open Space: (2.5.4.3M)** • 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)**	C1 & C2	
☐	**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.	N/A	

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)**	Previously Submitted	
☒	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	
☒	Stormwater Management and Erosion Control Plan. **(7.4)**	Included	
☒	Inspection and Maintenance Plan **(7.6.5)**	Included	

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)**	Easements shown on C1 & C2	
☒	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)**	Enclosed	
☐	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	

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)**	C2 Note #5	
☒	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
☐	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)**	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

Applicant's Signature: (Patricia Dagorth) **Date:** 3/22/22

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.

Witness	John J Hebert dotloop verified 05/04/21 2:47 PM EDT 5E1O-MUAR-1SWP-P2NG John Hebert	Date
Witness	Colleen Hebert dotloop verified 05/04/21 2:49 PM EDT QIBG-ZMLM-FUFK-BAEX Colleen Hebert	Date

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

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL

"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 6, 2021
Revised December 13, 2021
Revised January 20, 2022
Revised March 22, 2022
JBE Project No. 21047

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. The Condominium Association, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Association shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form.

B. General Inspection and Maintenance Requirements

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

    a. Roadway and driveways
    b. Vegetation and landscaping
    c. Bioretention systems
    d. Subsurface Stone Infiltration Areas
    e. Drain Manholes
    f. Culverts
    g. Rip-Rap Outlet Protection Aprons
    h. Shea Concrete Galley Chambers
    i. Catch Basins / Yard Drains

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

    a. Normal winter roadway maintenance including plowing and snow removal. Road sweeping at the end of every winter, preferably at the start of the spring rain season.

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

    c. Bioretention Systems:

        - Visually inspect monthly and repair erosion. Use small stones to stabilize erosion along drainage paths.
        - Check the pH once a year if grass is not surviving. Apply an alkaline product, such as limestone, if needed.
        - Re-seed any bare areas by hand as needed.
        - Immediately after the completion of cell construction, water grass for 14 consecutive days unless there is sufficient natural rainfall.

- Once a month (more frequently in the summer), residents are encouraged to visually inspect vegetation for disease or pest problems and treat as required.
- During times of extended drought, look for physical features of stress. Water in the early morning as needed.
- Weed regularly, if needed.
- After rainstorms, inspect the cell and make sure that drainage paths are clear and that ponding water dissipates over 4-6 hours. (Water may pond for longer times during the winter and early spring.)
- Twice annually, inspect the outlet control structures (grated risers) to ensure that they are not clogged and correct any clogging found as needed.
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHOULD NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

d. Subsurface Stone Infiltration Beds:

The following recommendations will help assure that the stone areas are maintained to preserve their effectiveness. These are located behind Units 1&2, and between Units 3&4

In the spring and fall, visually inspect the area around these underground systems and repair any erosion. Use small stones to stabilize erosion along drainage paths. Twice a year open the cleanout and check for signs of debris, sediment build-up, or standing water. If more than 12" of sediment is observed, plug the outlet and flush the system thoroughly. Pump water into system until at least 1" of standing water covers the system bottom. Capture sediment-laden water for proper disposal according to local state, and EPA regulation. **If the practice cannot be remediated as noted, it shall be replaced, and the City of Portsmouth shall be notified that the system has failed.**

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

f. **Inspection** of culvert inlets and outlets at least **once per month** during the rainy season (March to November). Any debris is to be removed and disposed of properly.

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

stream or other waterbody, the water should be kept clear of obstructions, debris, and sediment deposits.

h. Shea Concrete Galley Chambers: Once annually, open the inspection ports and visually inspect the condition of the stone base. If more than 12" of sediment is observed, plug the outlet and flush the system thoroughly. Pump water into system until at least 1" of standing water covers the system bottom. Repeat at both inspection ports and pump out back-flush water. Capture sediment-laden water for proper disposal according to local state, and EPA regulation. Additionally, vacuum all adjacent manhole structures.

i. **Annual inspection** of catch basins and yard drains to determine if they need to be cleaned. Catch basins and yard drains are to be cleaned if the depth of deposits is greater than one-half the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin. If a catch basin or yard drain significantly exceeds the one-half depth standard during the inspection, then it should be cleaned more frequently. If woody debris or trash accumulates in the catch basin or yard drain, then it should be cleaned on a weekly basis. The catch basin or yard drain can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials should be stored, treated, and disposed. Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet should also be removed.

See attached sample forms as a guideline.

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

Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885

T#: (603) 772-4746
F#: (603) 772-0227

Commitment to maintenance requirements

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

_____

Signature

_____

Print Name

_____

Title

_____

Date

Annual Operations and Maintenance Report

The Condominium Association, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Association shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form.

Construction Activity	Date of Inspection	Who Inspected	Findings of Inspector
Roadway and Driveways			
Vegetation and Landscaping			
Bioretention #1			
Bioretention #2			
Subsurface Stone Infiltration Beds			

Drain Manhole #1			
Drain Manhole #2			
Drain Manhole #3			
Culvert Outlet and Rip-Rap Outlet Protection Apron			
Shea Concrete Galley Chambers (Center of site in "pocket park", designed for detention)			
Shea Concrete Galley Chambers (In northeast corner of site, designed for infiltration)			

Catch Basin #1			
Catch Basin #2			
Yard Drain #1			
Yard Drain #2			
Yard Drain #3			
Yard Drain #4			

Other (please note):			

Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of leaves from the system and bypass structure. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Mulch and/or vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then biannually.
Check to insure the filter surface remains well draining after storm event. **Remedy:** If filter bed is clogged, draining poorly, or standing water covers more than 15% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy:** Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
Check for animal burrows and short circuiting in the system . **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted.	
Check to insure the filter bed does not contain more than 2 inches accumulated material **Remedy:** Remove sediment as necessary. If 2 inches or more of filter bed has been removed, replace media with either mulch or a (50% sand, 20% woodchips, 20% compost, 10% soil) mixture.	
During extended periods without rainfall, inspect plants for signs of distress. **Remedy:** Plants should be watered until established (typical only for first few months) or as needed thereafter.	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	Annually
Check for robust vegetation coverage throughout the system. **Remedy:** If at least 50% vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
Check for dead or dying plants, and general long term plant health. **Remedy:** This vegetation should be cut and removed from the system. If woody vegetation is present, care should be taken to remove dead or decaying plant Material. Separation of Herbaceous vegetation rootstock should occur when overcrowding is observed.	As needed

1/15/2011, University of New Hampshire Stormwater Center

JONES&BEACH ENGINEERS INC.

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location: Inspector:

Date: Time: Site Conditions:

Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1. Initial Inspection After Planting and Mulching			
Plants are stable, roots not exposed	S	U	
Surface is at design level, typically 4" below overpass	S	U	
Overflow bypass / inlet (if available) is functional	S	U	
2. Debris Cleanup (2 times a year minimum, Spring & Fall)			
Litter, leaves, and dead vegetation removed from the system	S	U	
Prune perennial vegetation	S	U	
3. Standing Water (1 time a year, After large storm events)			
No evidence of standing water after 72 hours	S	U	
4. Short Circuiting & Erosion (1 time a year, After large storm events)			
No evidence of animal burrows or other holes	S	U	
No evidence of erosion	S	U	
5. Drought Conditions (As needed)			
Water plants as needed	S	U	
Dead or dying plants			
6. Overflow Bypass / Inlet Inspection (1 time a year, After large storm events)			
No evidence of blockage or accumulated leaves	S	U	
Good condition, no need for repair	S	U	
7. Vegetation Coverage (once a year)			
50% coverage established throughout system by first year	S	U	
Robust coverage by year 2 or later	S	U	
8. Mulch Depth (if applicable)(once every 2 years)			
Mulch at original design depth after tilling or replacement	S	U	
9. Vegetation Health (once every 3 years)			
Dead or decaying plants removed from the system	S	U	
10. Tree Pruning (once every 3 years)			
Prune dead, diseased, or crossing branches	S	U	
Corrective Action Needed			**Due Date**
1.			
2.			
3.			

1/15/2011, University of New Hampshire Stormwater Center

JONES&BEACH ENGINEERS INC.

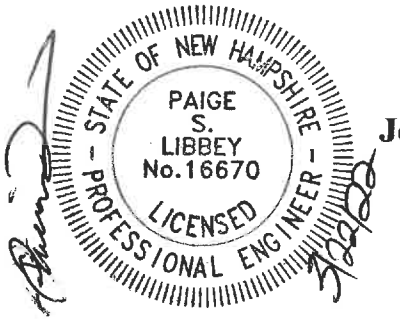
DRAINAGE ANALYSIS

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
Revised March 22, 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	0.60	0.54	1.40	1.29	2.11	1.96	2.80	2.62
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	2.24	0.53	3.14	2.00	3.98	3.28
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	0.063	0.058	0.140	0.129	0.208	0.193	0.275	0.257
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	0.228	0.143	0.402	0.287	0.573	0.430
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 as well as a stretch of Sagamore Ave. that is considered in this analysis define six (6) subcatchments, which drain to four (4) analysis points. Subcatchments 2S-4S drain directly toward their respective analysis points while subcatchment 6S drains directly toward Analysis Point #1, subcatchment 1S drains directly toward an isolated wetland which overflows toward both Analysis Points 1&3, and 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 ultimately reaching either the isolated wetland or a wooded depression defined as Analysis Point 1.

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 eighteen (18) 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 and volume of runoff is reduced toward all analysis points during all analyzed storm events.

Otherwise, some roof runoff will be infiltrated through subsurface stone beds as. These systems, in combination with the concrete galley field designed for infiltration, will help to reduce volumes of runoff below the existing condition and promote groundwater recharge.

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.

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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 and volumes 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 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).

There are two berms on the isolated wetland in the northeast corner of the subject site. A lower berm carries overflow toward the abutter's detention pond and a higher, 70' long x 10' wide berm carries any extreme overflow toward a depression in the woods represented as Analysis Point AP1. Additionally, a stretch of the road and areas of abutting properties drain directly toward Analysis Point AP1 and are represented as Subcatchment 6S.

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 eighteen (18) subcatchments. Subcatchments 2S-4S drain directly into their respective Analysis Points, AP2-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-15S represent roof subcatchments from which runoff will be infiltrated through subsurface stone infiltration beds in lawn areas. Subcatchments 16S and 17S 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. Finally, Subcatchment 21S represents the stretch of Sagamore Ave and adjacent properties draining directly toward the wooded depression to the north of the site represented as AP1. As explained in the executive summary, the proposed stormwater management features help to reduce off-site peak rates and volumes to below the existing condition.

After passing through the bioretention systems and concrete "Galley" chambers, treated and attenuated runoff will be gradually drained toward the isolated wetland in the northeast corner of the site. The peak rates and volumes of runoff, will be reduced in all analyzed storm events in the proposed condition compared to the existing 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 peak rate and volume 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. The contours surrounding the isolated wetland in the northeastern corner of the site are modelled as a pond, 19P, 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 and volumes of runoff from the site will be reduced toward all analysis points during all analyzed storm events.

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

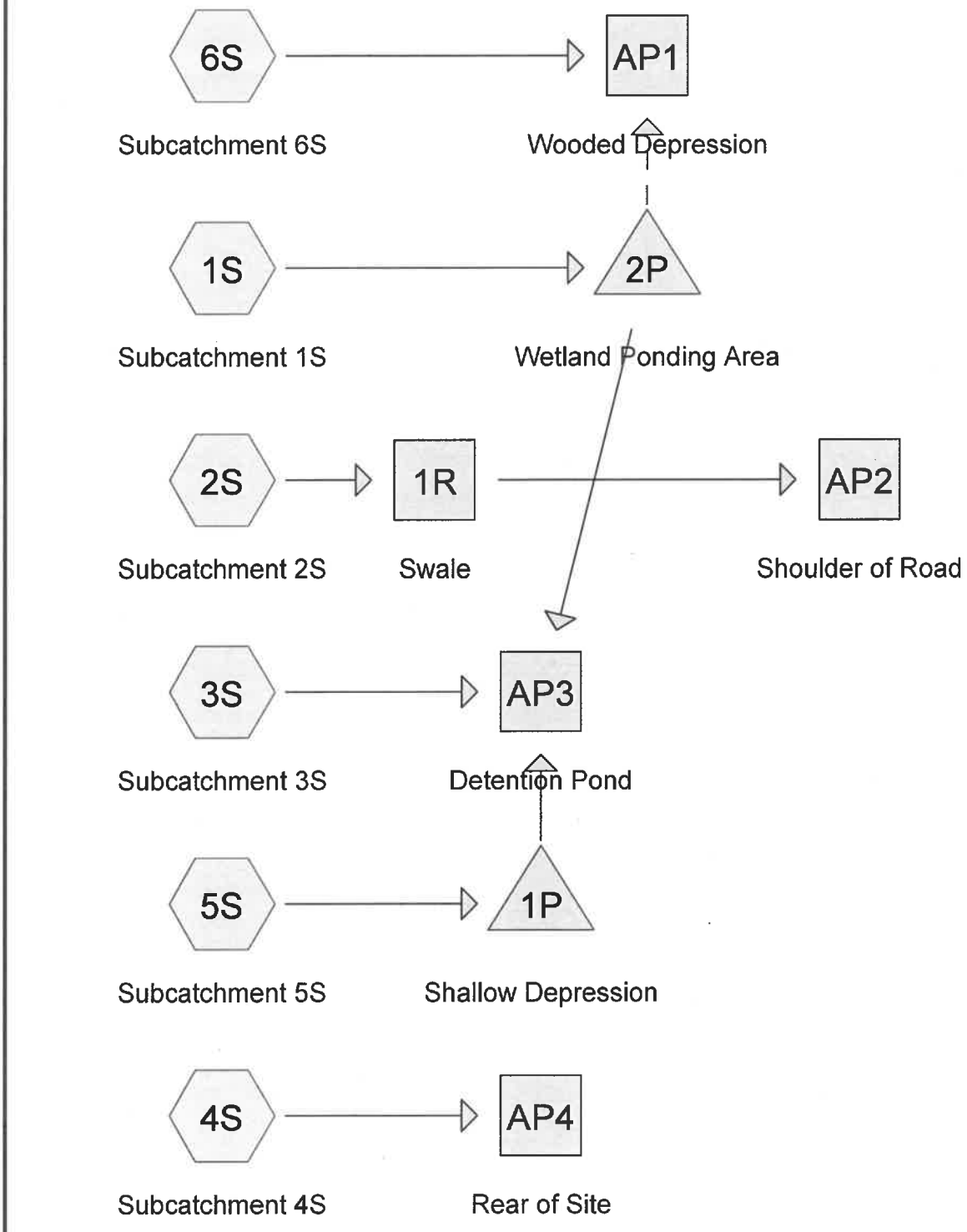
Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

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



Routing Diagram for 21047-EXISTING
Prepared by Jones and Beach Engineers, Inc., Printed 3/21/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.644	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 6S)
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)
0.228	98	Paved parking, HSG B (5S, 6S)
0.047	98	Paved roads w/curbs & sewers, HSG B (1S)
0.040	98	Paved roads w/curbs & sewers, HSG D (1S, 2S)
0.064	98	Roofs, HSG B (1S, 4S, 5S, 6S)
0.103	98	Roofs, HSG D (1S, 2S, 4S, 5S)
0.861	55	Woods, Good, HSG B (1S, 3S, 4S, 5S, 6S)
0.088	77	Woods, Good, HSG D (1S, 3S, 4S, 5S)
2.921	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.980	HSG B	1S, 3S, 4S, 5S, 6S
0.000	HSG C	
0.941	HSG D	1S, 2S, 3S, 4S, 5S
0.000	Other	
2.921		**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=34,729 sf 15.46% Impervious Runoff Depth>1.25"
Flow Length=112' Tc=20.1 min CN=72 Runoff=0.75 cfs 0.083 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=16,448 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

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>1.13"
Flow Length=137' Tc=16.7 min CN=70 Runoff=0.60 cfs 0.063 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: Wooded Depression Inflow=0.60 cfs 0.063 af
Outflow=0.60 cfs 0.063 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=30.48' Storage=3,609 cf Inflow=0.75 cfs 0.083 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.339 af Average Runoff Depth = 1.39"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 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=34,729 sf 15.46% Impervious Runoff Depth>2.67"
Flow Length=112' Tc=20.1 min CN=72 Runoff=1.67 cfs 0.177 af

Subcatchment2S: Subcatchment2S 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

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>1.66"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.43 cfs 0.052 af

Subcatchment4S: Subcatchment4S 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

Subcatchment5S: Subcatchment5S 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

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>2.49"
Flow Length=137' Tc=16.7 min CN=70 Runoff=1.40 cfs 0.140 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: Wooded Depression Inflow=1.40 cfs 0.140 af
Outflow=1.40 cfs 0.140 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=2.24 cfs 0.228 af
Outflow=2.24 cfs 0.228 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=31.32' Storage=6,101 cf Inflow=1.67 cfs 0.177 af
Primary=0.10 cfs 0.038 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.038 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.692 af Average Runoff Depth = 2.84"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.67 cfs @ 12.29 hrs, Volume= 0.177 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 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	4,202	55	Woods, Good, HSG B
	191	61	>75% Grass cover, Good, HSG B
	9,900	61	>75% Grass cover, Good, HSG B
	4,049	96	Gravel surface, HSG B
	2,054	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
	1,901	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
	34,729	72	Weighted Average
	29,359		84.54% Pervious Area
	5,370		15.46% 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 = 0.43 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
	9,535	55	Woods, Good, HSG B
	16,448	60	Weighted Average
	16,420		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 Subcatchment 6S: Subcatchment 6S

Runoff = 1.40 cfs @ 12.24 hrs, Volume= 0.140 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
9,085	98	Paved parking, HSG B
5,246	61	>75% Grass cover, Good, HSG B
14,877	55	Woods, Good, HSG B
102	98	Roofs, HSG B
29,310	70	Weighted Average
20,123		68.66% Pervious Area
9,187		31.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

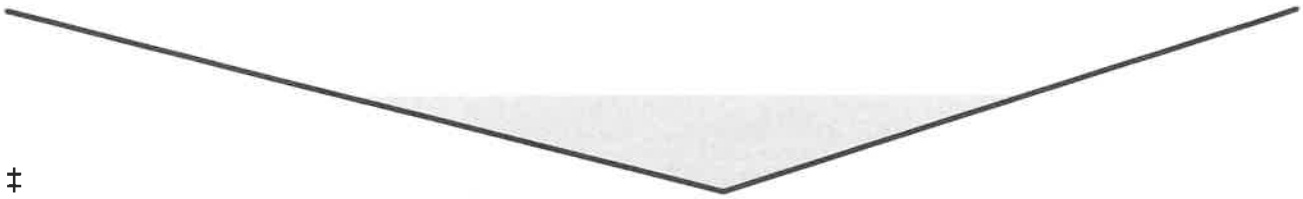
Summary for Reach 1R: Swale

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: Wooded Depression

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

Inflow Area = 0.673 ac, 31.34% Impervious, Inflow Depth > 2.49" for 10 Yr 24 Hr(+15%) event
Inflow = 1.40 cfs @ 12.24 hrs, Volume= 0.140 af
Outflow = 1.40 cfs @ 12.24 hrs, Volume= 0.140 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 = 1.688 ac, 14.97% Impervious, Inflow Depth > 1.62" for 10 Yr 24 Hr(+15%) event
Inflow = 2.24 cfs @ 12.11 hrs, Volume= 0.228 af
Outflow = 2.24 cfs @ 12.11 hrs, Volume= 0.228 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

Inflow Area =	0.797 ac,	15.46% Impervious,	Inflow Depth >	2.67" for 10 Yr 24 Hr(+15%) event
Inflow =	1.67 cfs @	12.29 hrs, Volume=	0.177 af	
Outflow =	0.10 cfs @	16.12 hrs, Volume=	0.038 af,	Atten= 94%, Lag= 230.1 min
Primary =	0.10 cfs @	16.12 hrs, Volume=	0.038 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= 31.32' @ 16.12 hrs Surf.Area= 4,120 sf Storage= 6,101 cf

Plug-Flow detention time= 438.2 min calculated for 0.038 af (21% of inflow)

Center-of-Mass det. time= 299.4 min (1,146.8 - 847.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	6,968 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,036	357.0	1,624	2,538	7,787
31.00	2,891	433.0	2,451	4,989	12,582
31.50	4,916	435.0	1,929	6,919	12,839
31.51	4,916	435.0	49	6,968	12,843

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' 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=0.10 cfs @ 16.12 hrs HW=31.32' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.33 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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=34,729 sf 15.46% Impervious Runoff Depth>3.92"
Flow Length=112' Tc=20.1 min CN=72 Runoff=2.46 cfs 0.260 af

Subcatchment2S: Subcatchment2S 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

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>2.67"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.72 cfs 0.084 af

Subcatchment4S: Subcatchment4S 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

Subcatchment5S: Subcatchment5S 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

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>3.71"
Flow Length=137' Tc=16.7 min CN=70 Runoff=2.11 cfs 0.208 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: Wooded Depression Inflow=2.11 cfs 0.208 af
Outflow=2.11 cfs 0.208 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 0.402 af
Outflow=3.14 cfs 0.402 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=31.36' Storage=6,271 cf Inflow=2.46 cfs 0.260 af
Primary=0.55 cfs 0.121 af Secondary=0.00 cfs 0.000 af Outflow=0.55 cfs 0.121 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.999 af Average Runoff Depth = 4.11"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 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=34,729 sf 15.46% Impervious Runoff Depth>5.14"
Flow Length=112' Tc=20.1 min CN=72 Runoff=3.23 cfs 0.342 af

Subcatchment2S: Subcatchment2S 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

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>3.72"
Flow Length=180' Tc=24.1 min CN=60 Runoff=1.01 cfs 0.117 af

Subcatchment4S: Subcatchment4S 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

Subcatchment5S: Subcatchment5S 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

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>4.91"
Flow Length=137' Tc=16.7 min CN=70 Runoff=2.80 cfs 0.275 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: Wooded Depression Inflow=2.80 cfs 0.275 af
Outflow=2.80 cfs 0.275 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=3.98 cfs 0.573 af
Outflow=3.98 cfs 0.573 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=31.44' Storage=6,611 cf Inflow=3.23 cfs 0.342 af
Primary=1.90 cfs 0.202 af Secondary=0.00 cfs 0.000 af Outflow=1.90 cfs 0.202 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.300 af Average Runoff Depth = 5.34"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.23 cfs @ 12.28 hrs, Volume= 0.342 af, Depth> 5.14"

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

	Area (sf)	CN	Description
	4,202	55	Woods, Good, HSG B
	191	61	>75% Grass cover, Good, HSG B
	9,900	61	>75% Grass cover, Good, HSG B
	4,049	96	Gravel surface, HSG B
	2,054	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
	1,901	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
	34,729	72	Weighted Average
	29,359		84.54% Pervious Area
	5,370		15.46% 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= 0.117 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
	9,535	55	Woods, Good, HSG B
	16,448	60	Weighted Average
	16,420		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 Subcatchment 6S: Subcatchment 6S

Runoff = 2.80 cfs @ 12.23 hrs, Volume= 0.275 af, Depth> 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
9,085	98	Paved parking, HSG B
5,246	61	>75% Grass cover, Good, HSG B
14,877	55	Woods, Good, HSG B
102	98	Roofs, HSG B
29,310	70	Weighted Average
20,123		68.66% Pervious Area
9,187		31.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

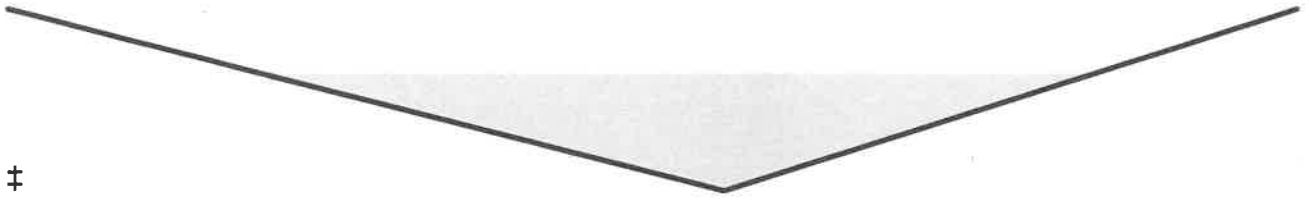
Summary for Reach 1R: Swale

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'



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Summary for Reach AP1: Wooded Depression

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

Inflow Area = 0.673 ac, 31.34% Impervious, Inflow Depth > 4.91" for 50 Yr 24 Hr(+15%) event
Inflow = 2.80 cfs @ 12.23 hrs, Volume= 0.275 af
Outflow = 2.80 cfs @ 12.23 hrs, Volume= 0.275 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 = 1.688 ac, 14.97% Impervious, Inflow Depth > 4.07" for 50 Yr 24 Hr(+15%) event
Inflow = 3.98 cfs @ 12.11 hrs, Volume= 0.573 af
Outflow = 3.98 cfs @ 12.11 hrs, Volume= 0.573 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

Inflow Area = 0.797 ac, 15.46% Impervious, Inflow Depth > 5.14" for 50 Yr 24 Hr(+15%) event
Inflow = 3.23 cfs @ 12.28 hrs, Volume= 0.342 af
Outflow = 1.90 cfs @ 12.57 hrs, Volume= 0.202 af, Atten= 41%, Lag= 17.7 min
Primary = 1.90 cfs @ 12.57 hrs, Volume= 0.202 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= 31.44' @ 12.57 hrs Surf.Area= 4,625 sf Storage= 6,611 cf

Plug-Flow detention time= 192.9 min calculated for 0.202 af (59% of inflow)
Center-of-Mass det. time= 88.0 min (916.6 - 828.7)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	6,968 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,036	357.0	1,624	2,538	7,787
31.00	2,891	433.0	2,451	4,989	12,582
31.50	4,916	435.0	1,929	6,919	12,839
31.51	4,916	435.0	49	6,968	12,843

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' 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

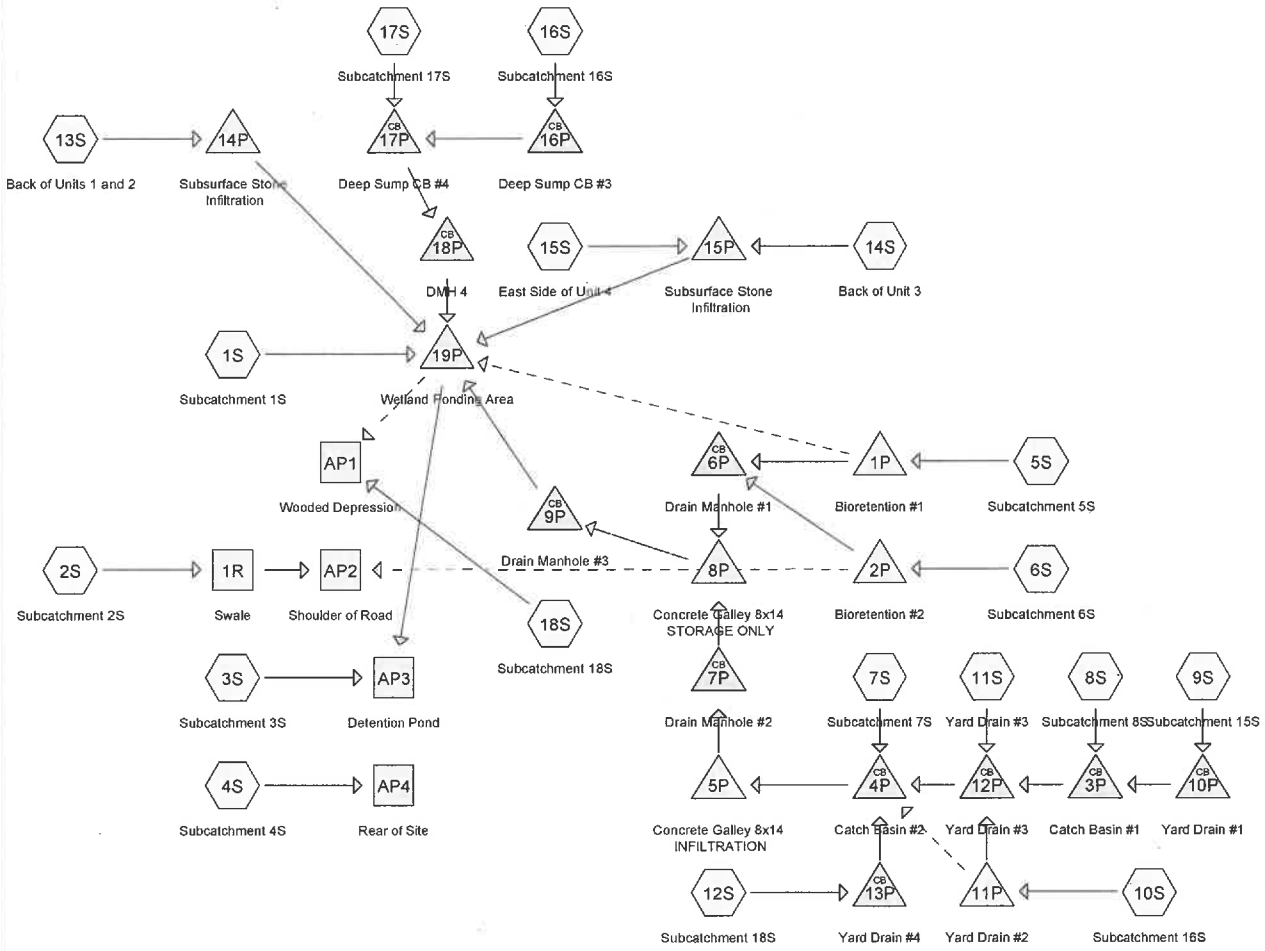
Primary OutFlow Max=1.86 cfs @ 12.57 hrs HW=31.43' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.86 cfs @ 0.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

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



Subcat Reach Pond Link

Routing Diagram for 21047-PROPOSED

Prepared by Jones and Beach Engineers, Inc., Printed 3/21/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.666	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 18S)
0.400	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)
0.529	98	Paved parking, HSG B (5S, 6S, 7S, 8S, 17S, 18S)
0.136	98	Paved parking, HSG D (5S, 6S, 7S, 8S, 17S)
0.042	98	Paved roads w/curbs & sewers, HSG B (1S, 16S)
0.007	98	Paved roads w/curbs & sewers, HSG D (2S)
0.257	98	Roofs, HSG B (1S, 3S, 4S, 5S, 7S, 8S, 9S, 11S, 12S, 13S, 15S, 18S)
0.289	98	Roofs, HSG D (1S, 2S, 6S, 7S, 8S, 9S, 12S, 14S, 15S)
0.487	55	Woods, Good, HSG B (1S, 3S, 4S, 18S)
0.014	77	Woods, Good, HSG D (1S, 4S)
2.921	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.980	HSG B	1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 15S, 16S, 17S, 18S
0.000	HSG C	
0.941	HSG D	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S, 14S, 15S, 17S
0.000	Other	
2.921		**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=13,938 sf 18.32% Impervious Runoff Depth>0.96"
Flow Length=48' Tc=6.6 min CN=67 Runoff=0.31 cfs 0.026 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: 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

Subcatchment15S: 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

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment 17S: Subcatchment 17S 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

Subcatchment 18S: Subcatchment 18S Runoff Area=28,063 sf 31.09% Impervious Runoff Depth>1.07"
Flow Length=137' Tc=16.7 min CN=69 Runoff=0.54 cfs 0.058 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: Wooded Depression Inflow=0.54 cfs 0.058 af
Outflow=0.54 cfs 0.058 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=35.59' 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=35.08' Inflow=1.70 cfs 0.145 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' 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=34.72' Inflow=1.07 cfs 0.083 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=1.07 cfs 0.083 af

Pond 7P: Drain Manhole #2 Peak Elev=34.20' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' 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=35.31' Inflow=0.98 cfs 0.086 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' 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=40.0' S=0.0100 '/' 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: 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 16P: Deep Sump CB #3 Peak Elev=31.24' Inflow=0.10 cfs 0.008 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=0.10 cfs 0.008 af

Pond 17P: Deep Sump CB #4 Peak Elev=31.25' Inflow=0.33 cfs 0.027 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.33 cfs 0.027 af

Pond 18P: DMH 4 Peak Elev=31.26' 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 19P: Wetland Ponding Area Peak Elev=31.26' Storage=5,858 cf Inflow=0.95 cfs 0.135 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.457 af Average Runoff Depth = 1.88"
53.64% Pervious = 1.567 ac 46.36% Impervious = 1.354 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=13,938 sf 18.32% Impervious Runoff Depth>2.24"
Flow Length=48' Tc=6.6 min CN=67 Runoff=0.80 cfs 0.060 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: 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

Subcatchment15S: 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

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.013 af

Subcatchment 17S: Subcatchment 17S 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

Subcatchment 18S: Subcatchment 18S Runoff Area=28,063 sf 31.09% Impervious Runoff Depth>2.40"
Flow Length=137' Tc=16.7 min CN=69 Runoff=1.29 cfs 0.129 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: Wooded Depression Inflow=1.29 cfs 0.129 af
Outflow=1.29 cfs 0.129 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 0.143 af
Outflow=0.53 cfs 0.143 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=152 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=35.87' 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=35.75' Inflow=2.93 cfs 0.254 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' 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=48.0' S=0.0056 '/' Outflow=1.78 cfs 0.143 af

Pond 7P: Drain Manhole #2 Peak Elev=34.71' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' 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=35.76' Inflow=1.76 cfs 0.155 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' 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=40.0' S=0.0100 '/' 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: 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 16P: Deep Sump CB #3 Peak Elev=31.35' Inflow=0.15 cfs 0.013 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=0.15 cfs 0.013 af

Pond 17P: Deep Sump CB #4 Peak Elev=31.35' Inflow=0.50 cfs 0.042 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.50 cfs 0.042 af

Pond 18P: DMH 4 Peak Elev=31.35' 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 19P: Wetland Ponding Area Peak Elev=31.35' Storage=6,248 cf Inflow=1.68 cfs 0.243 af
Primary=0.48 cfs 0.104 af Secondary=0.00 cfs 0.000 af Outflow=0.48 cfs 0.104 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.841 af Average Runoff Depth = 3.46"
53.64% Pervious = 1.567 ac 46.36% Impervious = 1.354 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.060 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
586	98	Paved roads w/curbs & sewers, HSG B
1,864	55	Woods, Good, HSG B
3,396	61	>75% Grass cover, Good, HSG B
611	80	>75% Grass cover, Good, HSG D
541	77	Woods, Good, HSG D
3,408	55	Woods, Good, HSG B
1,564	61	>75% Grass cover, Good, HSG B
1,600	98	Roofs, HSG B
368	98	Roofs, HSG D
13,938	67	Weighted Average
11,384		81.68% Pervious Area
2,554		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	32	0.0625	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	16	0.3300	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
6.6	48	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: 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 15S: 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 16S: Subcatchment 16S

Runoff = 0.15 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
1,247	98	Paved roads w/curbs & sewers, HSG B
1,247		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: Subcatchment 17S

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 Subcatchment 18S: Subcatchment 18S

Runoff = 1.29 cfs @ 12.24 hrs, Volume= 0.129 af, Depth> 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
8,622	98	Paved parking, HSG B
4,462	61	>75% Grass cover, Good, HSG B
102	98	Roofs, HSG B
14,877	55	Woods, Good, HSG B
28,063	69	Weighted Average
19,339		68.91% Pervious Area
8,724		31.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

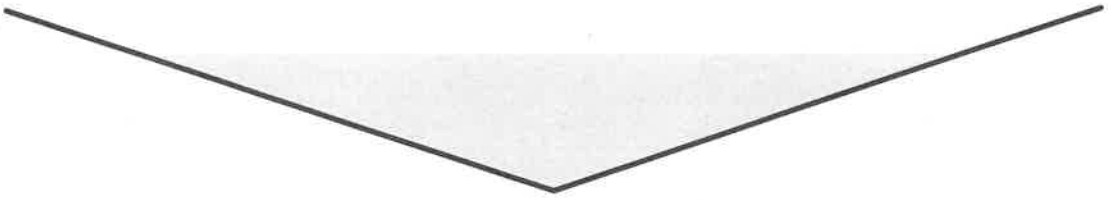
Summary for Reach 1R: Swale

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: Wooded Depression

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

Inflow Area = 0.644 ac, 31.09% Impervious, Inflow Depth > 2.40" for 10 Yr 24 Hr(+15%) event
Inflow = 1.29 cfs @ 12.24 hrs, Volume= 0.129 af
Outflow = 1.29 cfs @ 12.24 hrs, Volume= 0.129 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 = 1.813 ac, 52.10% Impervious, Inflow Depth > 0.95" for 10 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 12.10 hrs, Volume= 0.143 af
Outflow = 0.53 cfs @ 12.10 hrs, Volume= 0.143 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= 152 cf

Plug-Flow detention time= 33.3 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=35.51' TW=34.95' (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=28.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

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=34.95' (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= 35.87' @ 12.13 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=35.86' TW=35.61' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.49 cfs @ 2.33 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= 35.75' @ 12.55 hrs
Flood Elev= 38.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.30'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.30' / 34.10' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.88 cfs @ 12.11 hrs HW=35.38' TW=34.39' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.88 cfs @ 3.42 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= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.70' / 34.30' S= 0.0233 '/' 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= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.07' / 33.80' S= 0.0056 '/' 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=34.95' TW=33.97' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.74 cfs @ 3.17 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= 34.71' @ 12.56 hrs
Flood Elev= 39.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 34.00' S= 0.0050 '/' 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 0.43' @ 12.70 hrs (0.49 cfs 0.010 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=31.60' (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=30.77' (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' @ 12.12 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=35.85' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.24 cfs @ 1.98 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=35.55' (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=34.30' (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= 35.76' @ 12.53 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.65'	**15.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.65' / 34.40' S= 0.0052 '/' 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=35.61' TW=35.36' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.74 cfs @ 2.38 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= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.50' / 36.10' S= 0.0100 '/' 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=35.37' (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=28.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: 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=28.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16P: Deep Sump CB #3

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=103)

Inflow Area = 0.029 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.15 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= 31.35' @ 13.61 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.50' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=30.15' TW=30.16' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 17P: Deep Sump CB #4

[80] Warning: Exceeded Pond 16P by 1.52' @ 17.90 hrs (2.87 cfs 1.071 af)

Inflow Area = 0.093 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= 31.35' @ 13.60 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=0.49 cfs @ 12.09 hrs HW=30.16' TW=30.09' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.49 cfs @ 0.98 fps)

Summary for Pond 18P: DMH 4

[80] Warning: Exceeded Pond 17P by 1.70' @ 17.30 hrs (3.33 cfs 0.099 af)

Inflow Area =	0.093 ac,100.00% Impervious,	Inflow Depth >	5.36"	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= 31.35' @ 13.60 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=30.09' TW=30.04' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.49 cfs @ 0.85 fps)

Summary for Pond 19P: Wetland Ponding Area

[80] Warning: Exceeded Pond 18P by 1.92' @ 15.60 hrs (3.56 cfs 0.379 af)

Inflow Area =	1.620 ac, 55.77% Impervious,	Inflow Depth >	1.80"	for	10 Yr 24 Hr(+15%) event
Inflow =	1.68 cfs @	12.10 hrs,	Volume=	0.243 af	
Outflow =	0.48 cfs @	13.60 hrs,	Volume=	0.104 af,	Atten= 72%, Lag= 89.7 min
Primary =	0.48 cfs @	13.60 hrs,	Volume=	0.104 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= 31.35' @ 13.60 hrs Surf.Area= 4,269 sf Storage= 6,248 cf

Plug-Flow detention time= 285.8 min calculated for 0.104 af (43% of inflow)
Center-of-Mass det. time= 154.6 min (976.2 - 821.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	6,968 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,036	357.0	1,624	2,538	7,787
31.00	2,891	433.0	2,451	4,989	12,582
31.50	4,916	435.0	1,929	6,919	12,839
31.51	4,916	435.0	49	6,968	12,843

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' 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=0.48 cfs @ 13.60 hrs HW=31.35' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.48 cfs @ 0.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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=13,938 sf 18.32% Impervious Runoff Depth>3.40"
Flow Length=48' Tc=6.6 min CN=67 Runoff=1.23 cfs 0.091 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: 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

Subcatchment15S: 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

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af

Subcatchment 17S: Subcatchment 17S 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

Subcatchment 18S: Subcatchment 18S Runoff Area=28,063 sf 31.09% Impervious Runoff Depth>3.60"
Flow Length=137' Tc=16.7 min CN=69 Runoff=1.96 cfs 0.193 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: Wooded Depression Inflow=1.96 cfs 0.193 af
Outflow=1.96 cfs 0.193 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=2.00 cfs 0.287 af
Outflow=2.00 cfs 0.287 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=36.58' 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=36.51' Inflow=3.93 cfs 0.343 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' 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=48.0' S=0.0056 '/' Outflow=2.26 cfs 0.192 af

Pond 7P: Drain Manhole #2 Peak Elev=35.72' Inflow=1.10 cfs 0.033 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' 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=1.60 cfs 0.224 af Secondary=0.00 cfs 0.000 af Outflow=1.60 cfs 0.224 af

Pond 9P: Drain Manhole #3 Peak Elev=32.40' Inflow=1.60 cfs 0.224 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=1.60 cfs 0.224 af

Pond 10P: Yard Drain #1 Peak Elev=36.67' 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=36.62' Inflow=2.39 cfs 0.213 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' 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=40.0' S=0.0100 '/' 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: 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 16P: Deep Sump CB #3 Peak Elev=31.44' Inflow=0.20 cfs 0.016 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=0.20 cfs 0.016 af

Pond 17P: Deep Sump CB #4 Peak Elev=31.44' Inflow=0.63 cfs 0.053 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.63 cfs 0.053 af

Pond 18P: DMH 4 Peak Elev=31.43' Inflow=0.63 cfs 0.053 af
12.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=0.63 cfs 0.053 af

Pond 19P: Wetland Ponding Area Peak Elev=31.43' Storage=6,602 cf Inflow=2.30 cfs 0.368 af
Primary=1.86 cfs 0.228 af Secondary=0.00 cfs 0.000 af Outflow=1.86 cfs 0.228 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.166 af Average Runoff Depth = 4.79"
53.64% Pervious = 1.567 ac 46.36% Impervious = 1.354 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=13,938 sf 18.32% Impervious Runoff Depth>4.56"
Flow Length=48' Tc=6.6 min CN=67 Runoff=1.65 cfs 0.122 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: 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

Subcatchment15S: 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

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.020 af

Subcatchment 17S: Subcatchment 17S 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

Subcatchment 18S: Subcatchment 18S Runoff Area=28,063 sf 31.09% Impervious Runoff Depth>4.79"
Flow Length=137' Tc=16.7 min CN=69 Runoff=2.62 cfs 0.257 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: Wooded Depression Inflow=2.62 cfs 0.257 af
Outflow=2.62 cfs 0.257 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=3.28 cfs 0.430 af
Outflow=3.28 cfs 0.430 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=302 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=37.51' 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=37.27' Inflow=4.86 cfs 0.429 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' 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=1.90 cfs 0.070 af Outflow=2.70 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=48.0' S=0.0056 '/' Outflow=2.34 cfs 0.238 af

Pond 7P: Drain Manhole #2 Peak Elev=36.75' Inflow=1.90 cfs 0.070 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.90 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=37.85' 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=37.69' Inflow=3.00 cfs 0.269 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' Outflow=3.00 cfs 0.269 af

Pond 13P: Yard Drain #4 Peak Elev=37.28' Inflow=0.22 cfs 0.017 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' 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: 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 16P: Deep Sump CB #3 Peak Elev=31.49' Inflow=0.23 cfs 0.020 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=0.23 cfs 0.020 af

Pond 17P: Deep Sump CB #4 Peak Elev=31.50' Inflow=0.76 cfs 0.064 af
12.0" Round Culvert n=0.013 L=2.0' S=0.0250 '/' Outflow=0.76 cfs 0.064 af

Pond 18P: DMH 4 Peak Elev=31.49' Inflow=0.76 cfs 0.064 af
12.0" Round Culvert n=0.013 L=8.0' S=0.0125 '/' Outflow=0.76 cfs 0.064 af

Pond 19P: Wetland Ponding Area Peak Elev=31.48' Storage=6,821 cf Inflow=3.05 cfs 0.492 af
Primary=2.91 cfs 0.352 af Secondary=0.00 cfs 0.000 af Outflow=2.91 cfs 0.352 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.479 af Average Runoff Depth = 6.08"
53.64% Pervious = 1.567 ac 46.36% Impervious = 1.354 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.65 cfs @ 12.10 hrs, Volume= 0.122 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
586	98	Paved roads w/curbs & sewers, HSG B
1,864	55	Woods, Good, HSG B
3,396	61	>75% Grass cover, Good, HSG B
611	80	>75% Grass cover, Good, HSG D
541	77	Woods, Good, HSG D
3,408	55	Woods, Good, HSG B
1,564	61	>75% Grass cover, Good, HSG B
1,600	98	Roofs, HSG B
368	98	Roofs, HSG D
13,938	67	Weighted Average
11,384		81.68% Pervious Area
2,554		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	32	0.0625	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	16	0.3300	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
6.6	48	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: 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 15S: 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 16S: Subcatchment 16S

Runoff = 0.23 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
1,247	98	Paved roads w/curbs & sewers, HSG B
1,247		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: Subcatchment 17S

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 Subcatchment 18S: Subcatchment 18S

Runoff = 2.62 cfs @ 12.23 hrs, Volume= 0.257 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 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
8,622	98	Paved parking, HSG B
4,462	61	>75% Grass cover, Good, HSG B
102	98	Roofs, HSG B
14,877	55	Woods, Good, HSG B
28,063	69	Weighted Average
19,339		68.91% Pervious Area
8,724		31.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

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: Wooded Depression

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

Inflow Area = 0.644 ac, 31.09% Impervious, Inflow Depth > 4.79" for 50 Yr 24 Hr(+15%) event
Inflow = 2.62 cfs @ 12.23 hrs, Volume= 0.257 af
Outflow = 2.62 cfs @ 12.23 hrs, Volume= 0.257 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 = 1.813 ac, 52.10% Impervious, Inflow Depth > 2.84" for 50 Yr 24 Hr(+15%) event
Inflow = 3.28 cfs @ 12.39 hrs, Volume= 0.430 af
Outflow = 3.28 cfs @ 12.39 hrs, Volume= 0.430 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= 410 sf Storage= 302 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=28.00' (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= 16.2 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 0.20' @ 12.10 hrs (0.59 cfs 0.005 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= 37.51' @ 12.20 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=37.34' TW=37.59' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin #2

[80] Warning: Exceeded Pond 13P by 0.01' @ 12.30 hrs (0.13 cfs 0.001 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 =	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= 37.27' @ 12.18 hrs
Flood Elev= 38.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.30'	**15.0" Round Culvert**
			L= 36.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 34.30' / 34.10' S= 0.0056 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.77 cfs @ 12.11 hrs HW=36.94' TW=35.90' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.77 cfs @ 3.89 fps)

Summary for Pond 5P: Concrete Galley 8x14 INFILTRATION

[80] Warning: Exceeded Pond 4P by 0.02' @ 12.50 hrs (0.62 cfs 0.003 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 =	2.70 cfs @	12.21 hrs,	Volume=	0.423 af,	Atten= 45%, Lag= 6.2 min
Discarded =	0.83 cfs @	12.41 hrs,	Volume=	0.353 af	
Primary =	1.90 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 0.423 af (99% of inflow)
Center-of-Mass det. time= 61.2 min (843.7 - 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= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.70' / 34.30' S= 0.0233 '/' 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=1.96 cfs @ 12.21 hrs HW=36.62' TW=36.00' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 1.96 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= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.07' / 33.80' S= 0.0056 '/' 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 =	1.90 cfs @	12.21 hrs, Volume=	0.070 af	
Outflow =	1.90 cfs @	12.21 hrs, Volume=	0.070 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.90 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	34.20'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 34.00' S= 0.0050 '/' 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=36.00' TW=35.59' (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 (0.32 cfs 0.004 af)
[80] Warning: Exceeded Pond 7P by 0.55' @ 13.35 hrs (0.76 cfs 0.021 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=36.23' 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 1.45 cfs @ 4.16 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=31.60' (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=2.08 cfs @ 12.44 hrs HW=32.58' TW=31.48' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.08 cfs @ 2.66 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= 37.85' @ 12.20 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=0.00 cfs @ 12.10 hrs HW=36.78' TW=36.94' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

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=37.60' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.26 cfs of 1.58 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=34.30' (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 0.032 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= 37.69' @ 12.17 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.65'	**15.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.65' / 34.40' S= 0.0052 '/' 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=37.58' TW=37.17' (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= 37.28' @ 12.18 hrs
Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.50' / 36.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=36.91' TW=36.65' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.31 cfs @ 1.99 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=28.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: 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=28.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16P: Deep Sump CB #3

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=92)

Inflow Area = 0.029 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.23 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.23 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= 31.49' @ 12.42 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.50' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=31.00' TW=31.15' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 17P: Deep Sump CB #4

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=10)
[80] Warning: Exceeded Pond 16P by 1.48' @ 18.00 hrs (2.83 cfs 0.187 af)

Inflow Area =	0.093 ac,100.00% Impervious,	Inflow Depth >	8.28"	for	50 Yr 24 Hr(+15%) event
Inflow =	0.76 cfs @	12.09 hrs,	Volume=	0.064 af	
Outflow =	0.76 cfs @	12.09 hrs,	Volume=	0.064 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.76 cfs @	12.09 hrs,	Volume=	0.064 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.50' @ 12.38 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=0.74 cfs @ 12.09 hrs HW=31.15' TW=31.09' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.74 cfs @ 0.94 fps)

Summary for Pond 18P: DMH 4

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=13)
[80] Warning: Exceeded Pond 17P by 1.77' @ 18.55 hrs (3.36 cfs 0.449 af)

Inflow Area =	0.093 ac,100.00% Impervious,	Inflow Depth >	8.28"	for	50 Yr 24 Hr(+15%) event
Inflow =	0.76 cfs @	12.09 hrs,	Volume=	0.064 af	
Outflow =	0.76 cfs @	12.09 hrs,	Volume=	0.064 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.76 cfs @	12.09 hrs,	Volume=	0.064 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.49' @ 12.39 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=0.74 cfs @ 12.09 hrs HW=31.09' TW=31.03' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.74 cfs @ 0.94 fps)

Summary for Pond 19P: Wetland Ponding Area

[80] Warning: Exceeded Pond 18P by 1.92' @ 17.60 hrs (3.56 cfs 0.509 af)

Inflow Area =	1.620 ac,	55.77% Impervious,	Inflow Depth >	3.64" for 50 Yr 24 Hr(+15%) event
Inflow =	3.05 cfs @	12.27 hrs, Volume=	0.492 af	
Outflow =	2.91 cfs @	12.41 hrs, Volume=	0.352 af,	Atten= 5%, Lag= 8.1 min
Primary =	2.91 cfs @	12.41 hrs, Volume=	0.352 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= 31.48' @ 12.41 hrs Surf.Area= 4,825 sf Storage= 6,821 cf

Plug-Flow detention time= 144.2 min calculated for 0.352 af (72% of inflow)
Center-of-Mass det. time= 63.2 min (865.7 - 802.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	6,968 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,036	357.0	1,624	2,538	7,787
31.00	2,891	433.0	2,451	4,989	12,582
31.50	4,916	435.0	1,929	6,919	12,839
31.51	4,916	435.0	49	6,968	12,843

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' 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=2.90 cfs @ 12.41 hrs HW=31.48' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.90 cfs @ 1.01 fps)

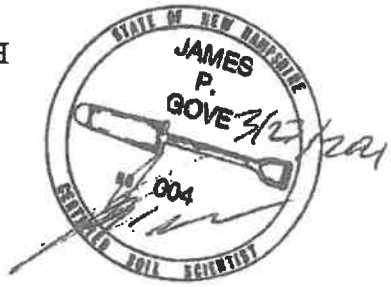
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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

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

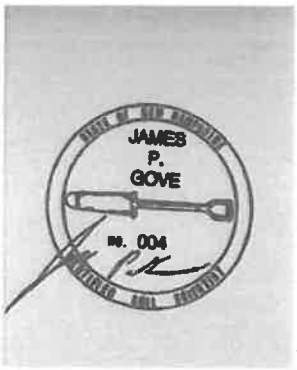
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 4/4	GRS	OM	FR	NONE , Fill
25–36"	10YR 3/2	FSL	GR	FR	NONE, buried A
36–47"	10YR 4/6	FSL	GR	FR	NONE, buried B
47–62"	2.5Y 5/3	FSL	OM	FR	30%, C

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

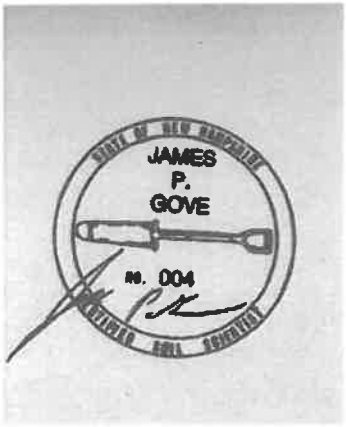
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–10"	10YR 3/2	LS	GR	FR	NONE , Fill
10–49"	10YR 4/4	LS	OM	FR	NONE, Fill
49–65"	10YR3/2	FSL	GR	FR	5%, Buried Ap
65"	Bedrock				

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

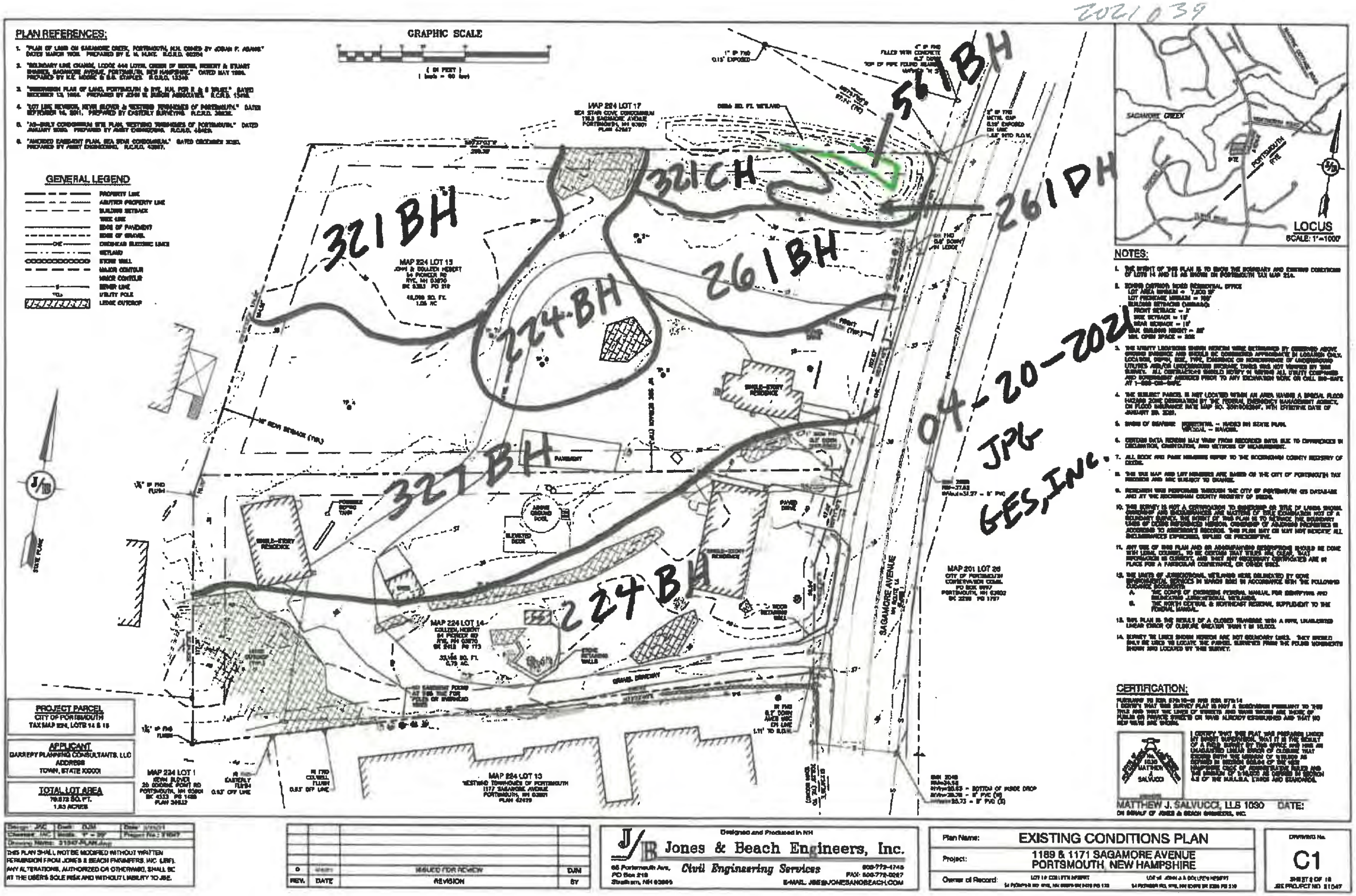
This soil map was prepared by a professional soil scientist and meets the technical standards of the SSSNNE Publication No. 1, High Intensity Soil Maps for NH, December 2017. Soil map was prepared on 4 April 2021. Soil map site was 1169 &1171 Sagamore Avenue, Portsmouth, NH.

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:
GRAPHIC SCALE
GENERAL LEGEND
MAP 224 LOT 17
MAP 224 LOT 13
MAP 224 LOT 14
MAP 224 LOT 1
MAP 201 LOT 26
SAGAMORE AVENUE
SAGAMORE CREEK
LOCUS
SCALE: 1"=1000'
NOTES:
CERTIFICATION:
PROJECT PARCEL
CITY OF PORTSMOUTH
APPLICANT
TOTAL LOT AREA
561BH
321CH
261DH
321BH
261BH
224BH
321BH
224BH
04-20-2021
JPG
GES, Inc.
MATTHEW J. SALVUCCI, LLS 1030 DATE:
REV. DATE REVISION BY
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
Plan Name: EXISTING CONDITIONS PLAN
Project: 1189 & 1171 SAGAMORE AVENUE PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:
DRAWING No.
C1

APPENDIX V

NRCS Soil Map

Soil Map—Rockingham County, New Hampshire
(1169 & 1171 Sagamore Ave)

Map Scale: 1:1,280 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 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

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: 1169 sagamore ave., po

Locate by Lat/Lon: °N °W

Locate by State/County:

Select Options

Smoothing: Yes

Delivery: Popup

Submit

This project is a joint collaboration between:

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

Cornell University

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

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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, Revised 3/21/22

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.*
Aprons are sized for the 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	0.63	1	8.1	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	1.6	1	11.8	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)	
36.88	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**

Overflow El. = 35.7, Vol. Below = 0.093 ac-ft
Bottom of Chamber = 33.9, Vol. Below = 0.043 ac-ft
WQV Required = 1,577 cf
WQV Provided = 0.05 ac-ft * 43560 = 2,178 cf

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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 mod. 304.1 (see spec)
Sheet		Note what sheet in the plan set contains the filter course spec.	

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

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

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

Designer's Notes:

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**

Overflow El. = 37.3, Vol. below = 556 cf

Bottom of Filter Course = 35.0, Vol. Below = 126 cf

WQV Required = 427 cf

WQV Provided = 556 - 126 = 430 cf

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]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(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 mod. 304.1 (see spec)
Sheet		Note what sheet in the plan set contains the filter course spec.	

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

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

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

Designer's Notes:

Stage-Area-Storage for Pond 2P: Bioretention #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.49	494	0
34.54	494	10
34.59	494	20
34.64	494	30
34.69	494	40
34.74	494	49
34.79	494	59
34.84	494	69
34.89	494	79
34.94	494	89
34.99	494	99
35.04	494	109
35.09	494	119
35.14	494	128
35.19	494	138
35.24	494	148
35.29	494	158
35.34	494	168
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
37.14	541	386
37.19	558	414
37.24	575	442
37.29	592	471
37.34	609	501
37.39	625	532
37.44	642	564
37.49	659	596
37.54	676	630
37.59	693	664
37.64	710	699
37.69	727	735
37.74	743	772
37.79	760	809
37.84	777	848
37.89	794	887
37.94	811	927
37.99	**828**	**968**

Overflow El. = 37.7, Vol. below = 735 cf
Bottom of Filter Course = 35.5, Vol. below = 198 cf
WQV Required = 533 cf
WQV Provided = 735 - 198 = 537 cf

APPENDIX IX

Pre- and Post-Construction Watershed Plans

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		

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No. 16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
5	3/21/22	REVISED PER CITY COMMENTS	DJM
4	2/23/22	REVISED PER NHDOT COMMENTS	DJM
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

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: 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		

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
5	3/21/22	REVISED PER CITY COMMENTS	DJM
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1	10/5/21	REVISED PER CITY COMMENTS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
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

KHAVARI
ARCHITECTS

March 22nd, 2022.

City of Portsmouth
Planning Department
Attn: Peter Stith, Principal Planner
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

Dear Mr. Stith,

The residential units proposed for the project at 1169 & 1171 Sagamore road are being designed to meet or exceed the applicable green building standards as set forth in the 2015 set of iCodes adopted by the State of New Hampshire along with associated amendments codified by the City of Portsmouth.

In promoting the buildings' longevity, efficiency, and health of their occupants, particular attention shall be given to the following building categories:

- Tight building enclosures
  - Watertightness (moisture barriers)
  - Vapor permeability
  - Airtightness
  - Air quality, environmental controls & whole house ventilation
- Thermal control for reduced energy use
  - Envelope framing assembly R values & window U-Values
- High-efficiency water heating & HVAC equipment
- ENERGY STAR appliances
- High-efficiency lighting
- Low-flow water fixtures

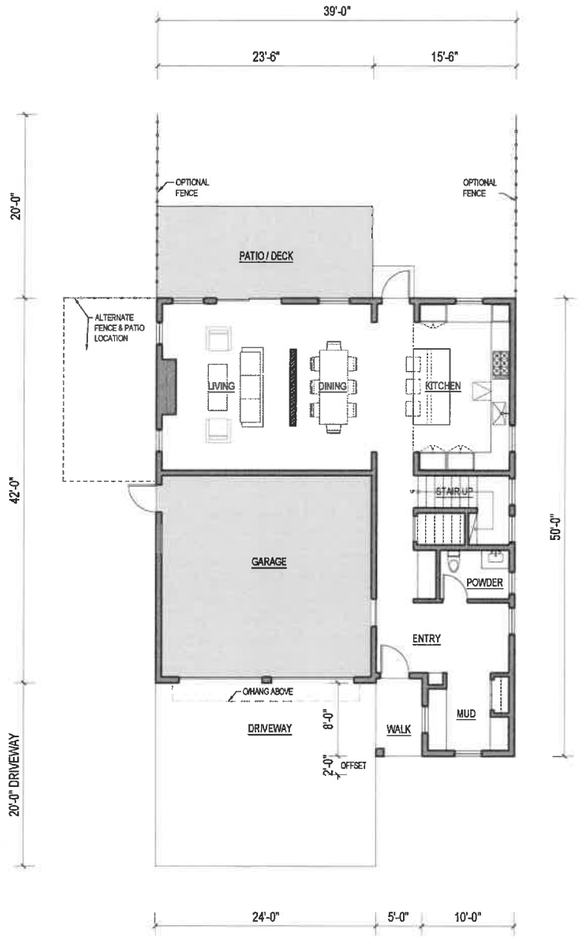
Assemblies and systems for the units shall be specified during the Building Permit application phase.

Respectfully,

Mick Khavari, AIA

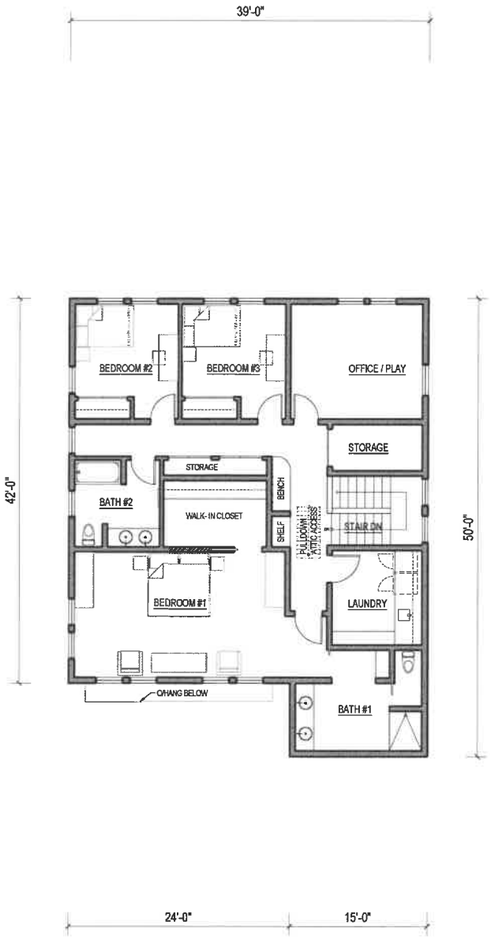
SINGLE DETATCHED

TYPE MAY MIRROR



1 FIRST FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT



2 SECOND FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT

EXAMPLE UNIT GROSS FLOOR AREA	
FIRST FLOOR:	1,130 SF
SECOND FLOOR:	1,700 SF
TOTAL	2,830 SF

0 4' 8' 16'

SCALE: 1/8" = 1'-0"

KHAVARI ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

SINGLE FAMILY UNIT PLANS

1169 & 1171 SAGAMORE RD
PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

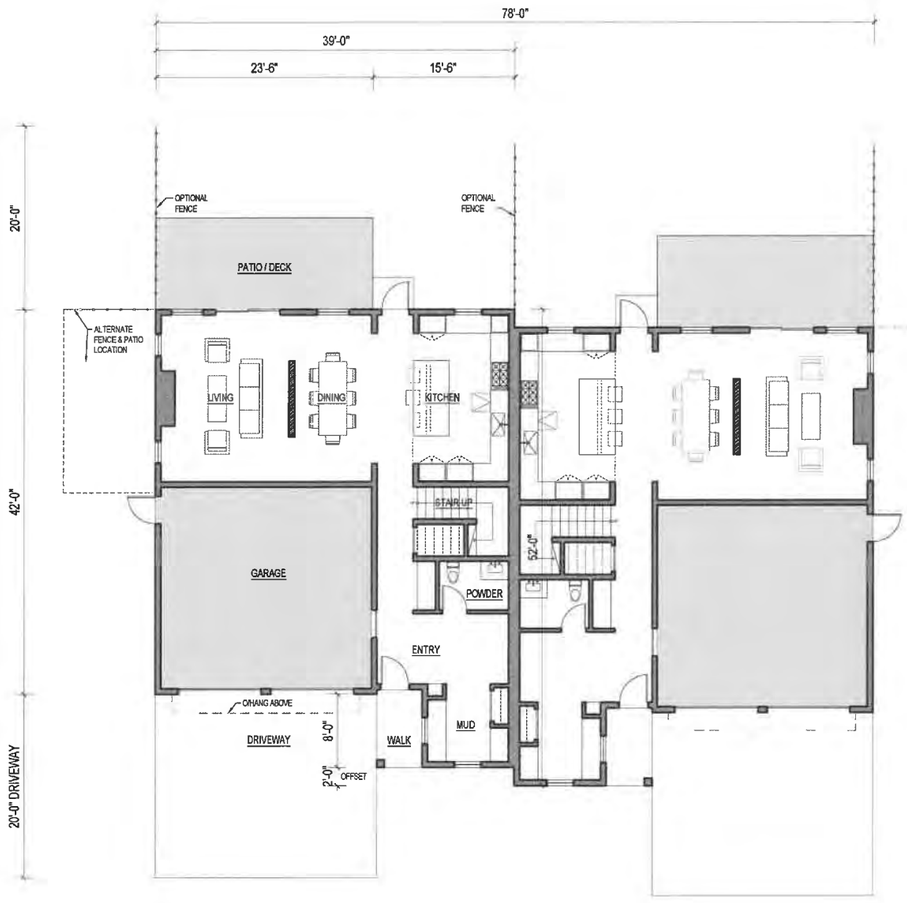
FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

TYP. SINGLE FAMILY UNIT FLOOR PLANS

A-01

DUPLEX

TYPE MAY MIRROR

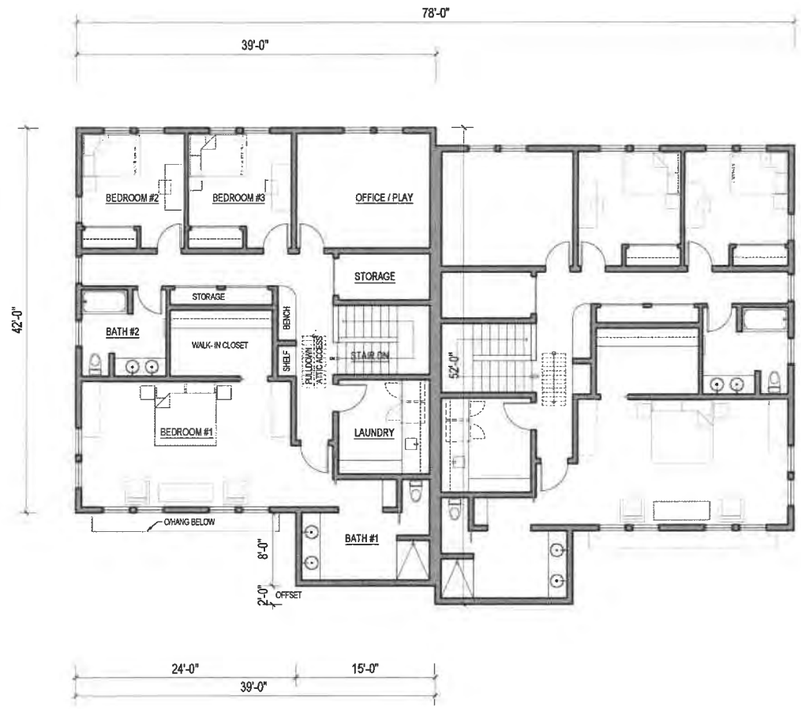


1 FIRST FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT

FIRST FLOOR CONCEPT PLAN

1/8" = 1'-0" MIRRORED ADJ. UNIT



2 SECOND FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT

SECOND FLOOR CONCEPT PLAN

1/8" = 1'-0" MIRRORED ADJ. UNIT

EXAMPLE UNIT GROSS FLOOR AREA	
FIRST FLOOR:	1,130 SF
SECOND FLOOR:	1,700 SF
TOTAL	2,830 SF

0 4' 8' 16'

SCALE: 1/8" = 1'-0"

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

DUPLEX UNIT PLANS

1169 & 1171 SAGAMORE RD

PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

TYP. DUPLEX UNIT FLOOR PLANS

A-02

1 SINGLE FAMILY UNIT
EXTERIOR RENDERING

2 DUPLEX UNITS
EXTERIOR RENDERING

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

EXTERIOR RENDERING

1169 & 1171 SAGAMORE RD
PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

EXTERIOR RENDERING - EXAMPLE SINGLE & DUPLEX UNITS

A-03

A - FRONT ELEVATION

B - SIDE ELEVATION

C - REAR ELEVATION

D - SIDE ELEVATION

1 TYPICAL RESIDENTIAL UNIT - ELEVATIONS

3/16" = 1'-0"

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

EXTERIOR ELEVATIONS

1169 & 1171 SAGAMORE RD
PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

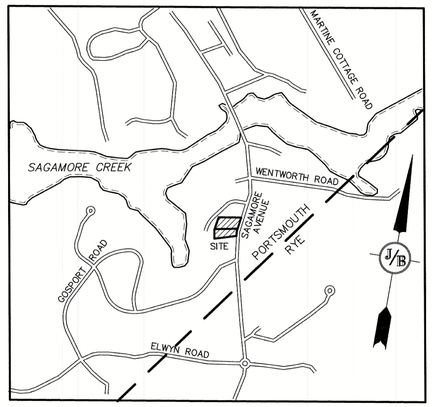
EXTERIOR ELEVATIONS - TYP. RESIDENTIAL UNIT

A-04

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
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
CCB	CCB	SLOPE GRANITE CURB
PCC	PCC	CAPE COD BERM
		POURED CONCRETE CURB
X	X	SILT FENCE
D		DRAINAGE LINE
S	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 100.00	100x0 100.00	SPOT GRADE 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
P1	M	MONITORING WELL
		PERC TEST
1		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		DRAIN MANHOLE
		SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		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

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: JOSEPH CORONATI
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P.O BOX 4550
MANCHESTER, NH 03108
(603) 945-3500
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EMAIL: KSWEENEY@CHARRONINC.COM

WETLAND CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
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EXETER, NH 03833-7507
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EMAIL: JGOVE@GESINC.BIZ

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LM LAND DESIGN, LLC
11 SOUTH ROAD
BRENTWOOD, NH 03833
(603) 770-7728
CONTACT: LISE MCNAUGHTON

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CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: BRIAN GOETZ, P.E.
(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

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EVERSOURCE
74 OLD DOVER ROAD
ROCHESTER, NH 03867
(800) 555-5334
CONTACT: NICHOLAI KOSKO

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 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
Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	Date: 3/25/21 Project No.: 21047

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER – 3/22/22

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	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 22
JBE PROJECT NO. 21047

"SAGAMORE AVENUE CONDOMINIUMS" - PORTSMOUTH, NH
JBE # 21047 REVISION 11, 3/22/22

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

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 feet

MAP 224 LOT 16
SIMONE ROCCO
1167 SAGAMORE AVE.
PORTSMOUTH, NH 03801
BK 2253 PG 0986

MAP 224 LOT 17
SEA STAR COVE CONDOMINIUM
1163 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42567

MAP 224 LOT 15
JOHN & COLLEEN HEBERT
54 PIONEER RD
RYE, NH 03870
BK 5383 PG 219
46,096 SQ. FT.
1.06 AC

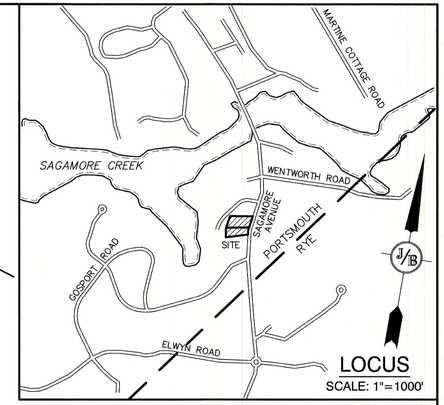
MAP 224 LOT 14
COLLEEN HEBERT
54 PIONEER RD
RYE, NH 03870
BK 2418 PG 173
33,196 SQ. FT.
0.76 AC.

MAP 224 LOT 10-1
KEVIN SLOVER
20 ODIORNE POINT RD
PORTSMOUTH, NH 03801
BK 4333 PG 1485
PLAN 39932

MAP 224 LOT 13
WESTWIND TOWNHOMES OF PORTSMOUTH
1177 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42429

MAP 201 LOT 26
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2299 PG 1707

520± SQ. FT. WETLAND
APPROXIMATE BURIED WETLAND LOCATION
100' BUFFER FROM OFFSITE WETLAND (TYP.)
OFFSITE WETLAND
FINE LAWN AREA
APPROXIMATE AREA OF OLD FILL AND BURIED TOPSOIL
GRAVEL DRIVE
GRAVEL DRIVEWAY
SINGLE-STORY RESIDENCE
SHED
ABOVE GROUND POOL
ELEVATED DECK
PAVED DRIVE
POSSIBLE SEPTIC TANK
LEDGE OUTCROP (TYP.)
STONE RETAINING WALLS
WOOD RETAINING WALL
PAVEMENT
NO EASEMENT FOUND AT THIS TIME FOR POLES OR OVERHEAD WIRES
EXISTING UTILITY POLE
EXISTING WATER SERVICE WITH SHUTOFF
EXISTING GATE VALVE AND FIRE HYDRANT
EXISTING 12" CAST IRON WATER MAIN
RIGHT OF WAY PER PLAN REF. 1
SAGAMORE AVENUE NH ROUTE 1A CLASS I
15' REAR SETBACK (TYP.)
5' FRONT SETBACK (TYP.)
10' SIDE SETBACK (TYP.)
321 BH
321 CH
261 BH
261 DH
224 BH
327 BH
561 BH
TP B1 TP B2 TP B3 TP B4 TP B5 TP B6 TP B7 TP B8
TP 1 TP 2 TP 3 TP 4 TP 5 TP 6 TP 7
TP X1 TP X2 TP X3 TP X4 TP X5 TP X6 TP X7 TP X8
1" IP FND 0.15' EXPOSED
4" IP FND FILLED WITH CONCRETE 0.3' DOWN TOP OF PIPE FOUND NEARBY MARKED "N S"
2" IP FND METAL CAP 0.15' EXPOSED ON LINE 1.65' INTO R.O.W.
1¼" IP FND FLUSH
IR FND EASTERLY FLUSH 0.63' OFF LINE
IR FND COLWELL FLUSH 0.93' OFF LINE
IR FND 0.2' DOWN AMES MSC ON LINE 1.11' TO R.O.W.
1" IRON PIN 0.2' DOWN DISTURBED
DH FND 0.8' DOWN IN LEDGE
SMH 2088 RIM=37.62 EX. 3" & 4" FM INV. IN UNKNOWN INVout=31.27 – 8" PVC
SMH 2048 RIM=34.98 INVin=25.83 – BOTTOM OF INSIDE DROP INVin=25.78 – 8" PVC (W) INVout=25.73 – 8" PVC (S)
S08°49'25"W 174.91' (164.91')
N79°16'50"E 305.92'
S09°46'29"E 117.31'
N08°17'40"W 97.74' (TIE)
S80°37'03"W 298.35'
N08°41'40"E 68.25'
N07°11'40"E 410.82'
N73°23'40"E 296.83'
N08°16'20"W 50.99'
N07°11'40"E 47.61'
S12°56'35"E 202.20' TIE TO TOWN BOUND



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 COVE 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%

STATE OF NEW HAMPSHIRE JAMES P. GOVE 3-21-22 CERTIFIED WETLAND SCIENTIST No. 0051

STATE OF NEW HAMPSHIRE JAMES P GOVE 3-21-22 No. 004 CERTIFIED SOIL SCIENTIST

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 No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR SIGNATURE

MATTHEW J. SALVUCCI, LLS 1030 DATE: 3/22/22
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: AS NOTED	Project No.: 21047	
Drawing Name: 21047-PLAN.dwg			

STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No. 16670 LICENSED PROFESSIONAL ENGINEER 3/22/22

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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

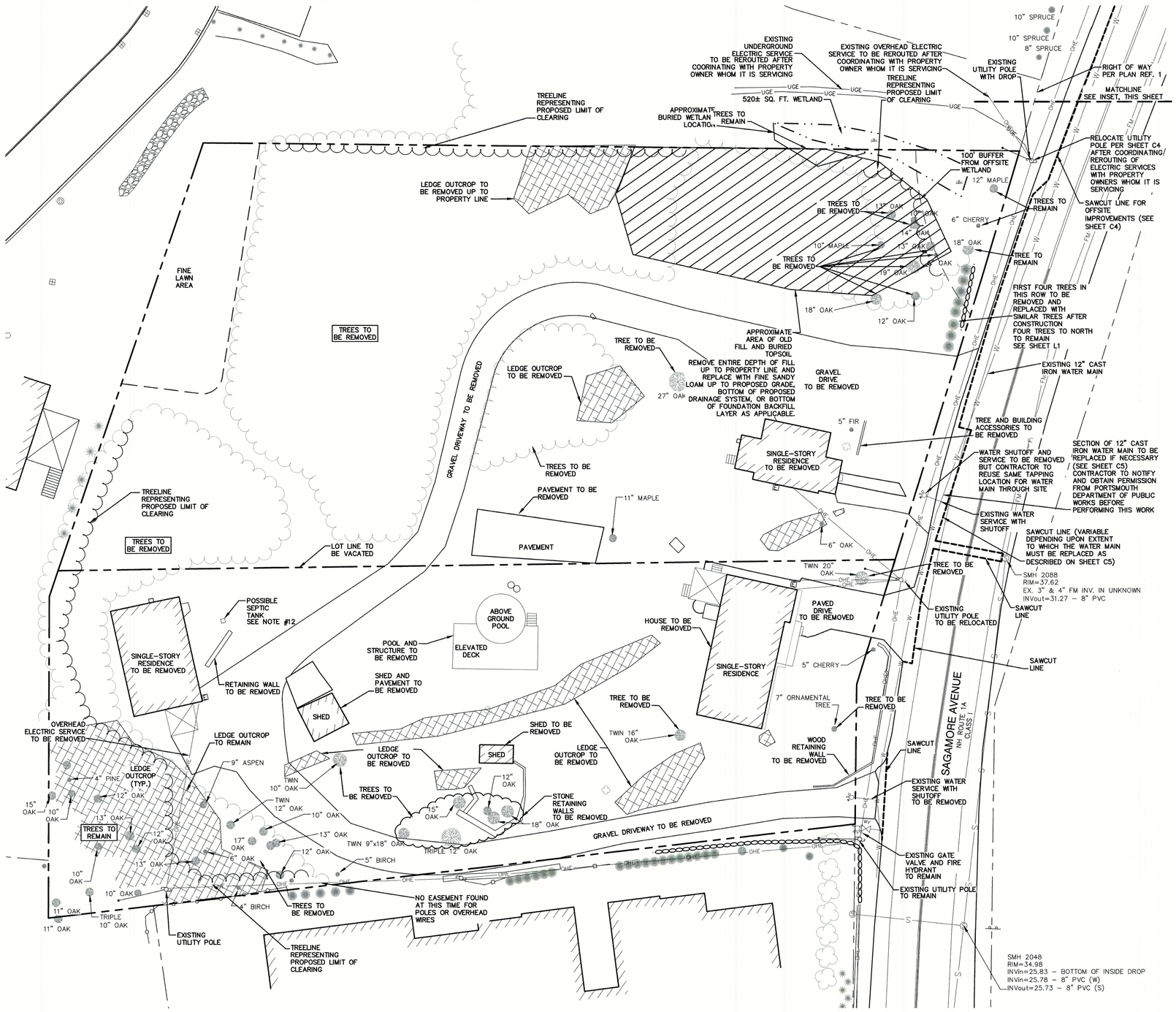
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

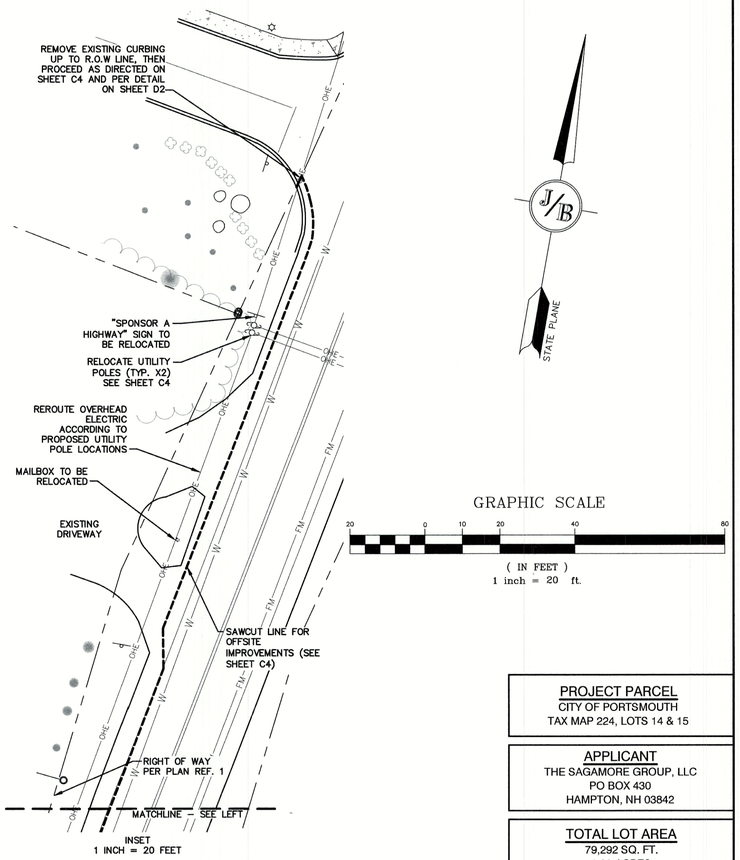
Plan Name: EXISTING CONDITIONS PLAN
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C1
SHEET 2 OF 22
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





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
Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	Date: 3/25/21
	Project No.: 21047

STATE OF NEW HAMPSHIRE - PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
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Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **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 22
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.
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 & WESTWND TOWNHOMES OF PORTSMOUTH." DATED SEPTEMBER 16, 2011. PREPARED BY EASTERLY SURVEYING. R.C.R.D. 39932.
5. "AS-BUILT CONDOMINIUM SITE PLAN, WESTWND 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.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

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

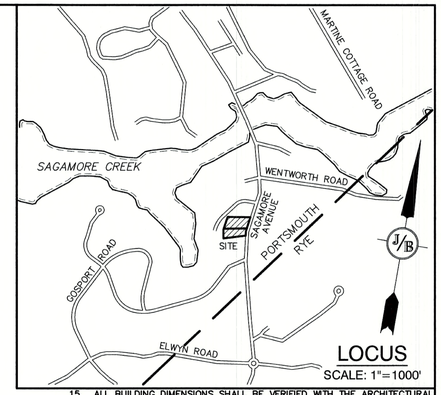
MAP 224 LOT 16
SIMONE ROCCO
1167 SAGAMORE AVE.
PORTSMOUTH, NH 03801
BK 2253 PG 0986

MAP 224 LOT 17
SEA STAR COVE CONDOMINIUM
1163 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42567

MAP 201 LOT 26
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2299 PG 1707

MAP 224 LOT 10-1
KEVIN SLOVER
20 ODIORNE POINT RD
PORTSMOUTH, NH 03801
BK 4333 PG 1485
PLAN 39932

MAP 224 LOT 13
WESTWND TOWNHOMES OF PORTSMOUTH
1177 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42429



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.
    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.
11. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
12. 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.
13. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
14. ALL 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.
15. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
16. 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.
17. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
18. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
19. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
20. 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.
21. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
22. 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.
23. BASIS OF BEARING:
    HORIZONTAL - NH STATE PLANE. VERTICAL - NAVD88.
24. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
25. 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.
26. 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.
27. 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.
32. 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.
33. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
34. ON-SITE SALT STORAGE IS PROHIBITIED WITHIN 250' OF AN INLAND WETLAND UNLESS COMPLETELY COVERED AND CONTAINED IN A STRUCTURE.
35. [illegible]

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: 3/22/22
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
Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	Date: 3/25/21
	Project No.: 21047

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.

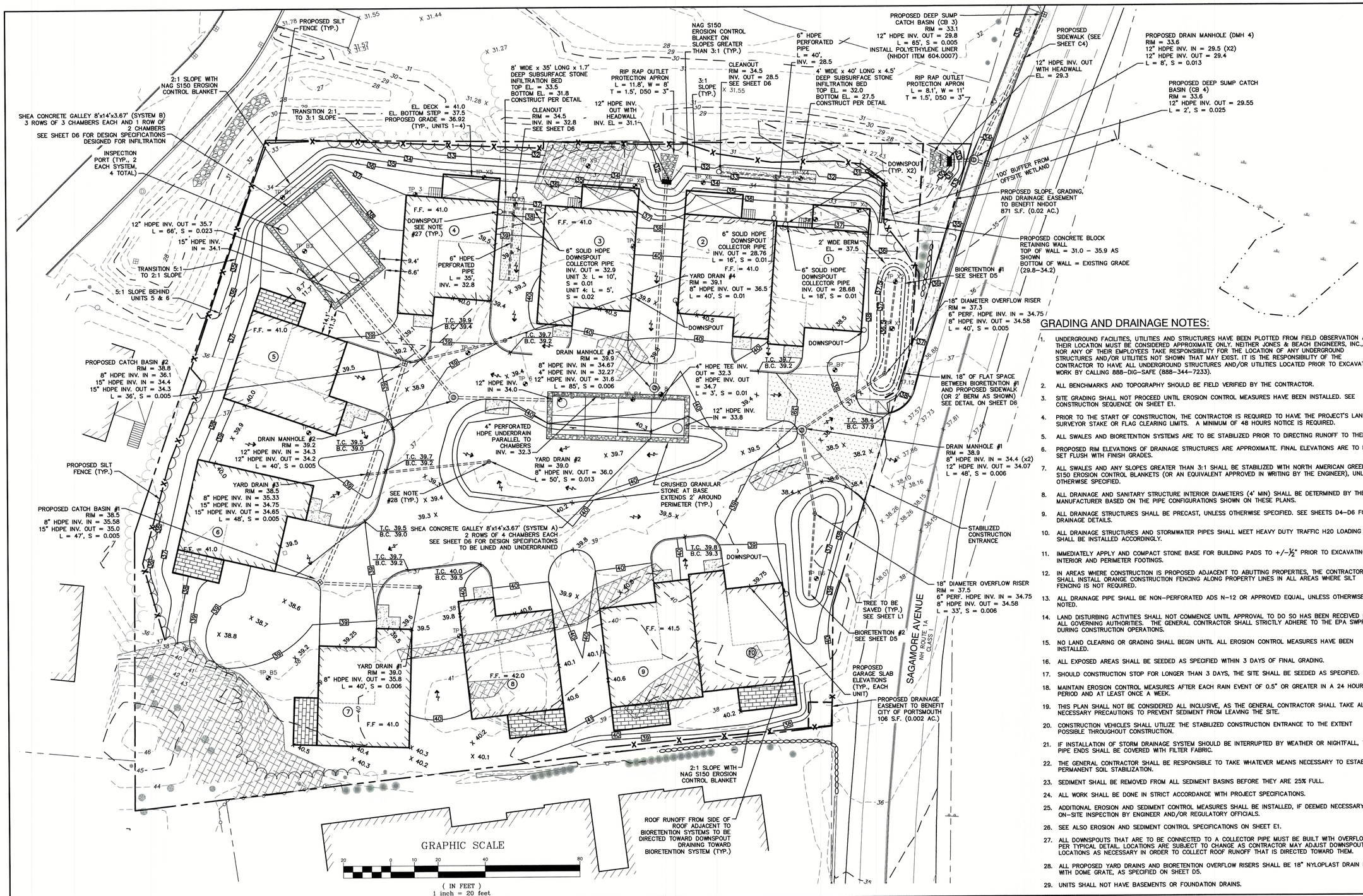
STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: 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 22
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.
29. UNITS SHALL NOT HAVE BASEMENTS OR FOUNDATION DRAINS.

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

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Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER – 3/25/21

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Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **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 22
JBE PROJECT NO. 21047

MAP 224 LOT 17
SEA STAR COVE CONDOMINIUM
1163 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 4256?

MAP 224 LOT 16
SIMONE ROCCO
1167 SAGAMORE AVE.
PORTSMOUTH, NH 03801
BK 2253 PG 0986

MAP 201 LOT 26
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2299 PG 1707

SAGAMORE AVENUE
NH ROUTE 1A
CLASS I

1163 SAGAMORE AVENUE
"SEA STAR COVE" PRIVATE ROAD

STATE PLANE

COORDINATE RELOCATION OF OVERHEAD AND UNDERGROUND ELECTRIC SERVICES WITH ASSOCIATED PROPERTY OWNERS BEFORE RELOCATING UTILITY POLE

APPROXIMATE ABUTTER PROPERTY LINE (TYP.)

PROPOSED RELOCATED UTILITY POLES (TYP. X2) REROUTE OVERHEAD ELECTRIC AS SHOWN

PROPOSED RELOCATED "SPONSOR A HIGHWAY" SIGN

TIP DOWN WITH TRUNCATED DOME AT STREET INTERSECTION

CURBING BEYOND PROPERTY LINE TO REMAIN (TYP.)

COORDINATE WITH "SEA STAR COVE" PROPERTY OWNER OR CONDOMINIUM ASSOCIATION PRIOR TO WORK ON THIS DRIVEWAY, INCLUDING RELOCATION OF OVERHEAD ELECTRIC

PROPOSED 5' WIDE PAINTED CROSSWALK

EXISTING CONCRETE SIDEWALK & TIP DOWNS

PROPOSED RELOCATED UTILITY POLE

CLEAR TREES IN RIGHT OF WAY AS NECESSARY FOR SIDEWALK (TYP.)

EXISTING UTILITY POLES AND OVERHEAD ELECTRIC FOR REFERENCE

TIP DOWN, NO TRUNCATED DOME (TYP.)

PROPOSED RELOCATED MAILBOX

PROPOSED DRAIN MANHOLE SEE SHEET C3

5.5' CONCRETE SIDEWALK WITH VERTICAL GRANITE CURB (6" WIDE INCLUDING CURB)

DEEP SUMP CATCH BASIN SEE SHEET C3

PROPOSED RELOCATED OVERHEAD ELECTRIC

TIP DOWN, NO TRUNCATED DOME

RECONFIGURE DRIVEWAY CURB CUTS FOR SPECIFIED WIDTHS

REGRADE DRIVEWAY CURB CUTS FOR NO MORE THAN 2% SLOPE IN FIRST 6', WHERE CONCURRENT WITH PROPOSED SIDEWALK

B.C. 33.7 ±
T.C. 34.2 ±

REMOVE EXISTING CURBING AT PROPOSED LANDING AND ADDITIONALLY ANOTHER 5' BEYOND LANDING, THEN INSTALL NEW CURBING BEYOND LANDING AS DEPICTED ON SHEET D2 IN ORDER TO TIP DOWN FROM TOP OF CURB TO FINISHED GRADE OF LANDING WITH TRUNCATED DOME.

PROPOSED DEEP SUMP CATCH BASIN SEE SHEET C3 (ALL PROPOSED STRUCTURES IN SAGAMORE AVE. RIGHT OF WAY SHALL MEET OR EXCEED NHDOT STANDARDS (TYP.)

SAWCUT LINE (TYP., VARIABLE DEPENDING UPON EXTENT TO WHICH WATER MAIN MUST BE REPLACED PER NOTE ON SHEET C5)

FACE OF CURB TO BE 16' OFF CENTERLINE (CENTERLINE BEING HALFWAY BETWEEN SOLID YELLOW LINES)

SIDEWALK SHALL BE AT TOP OF CURB, 6" ABOVE GRADE OF ROAD AND BE SLOPED 1% TO DRAIN AWAY FROM ROAD (TYP.)

EDGE OF WETLAND (TYP.)

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
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TOTAL LOT AREA
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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER

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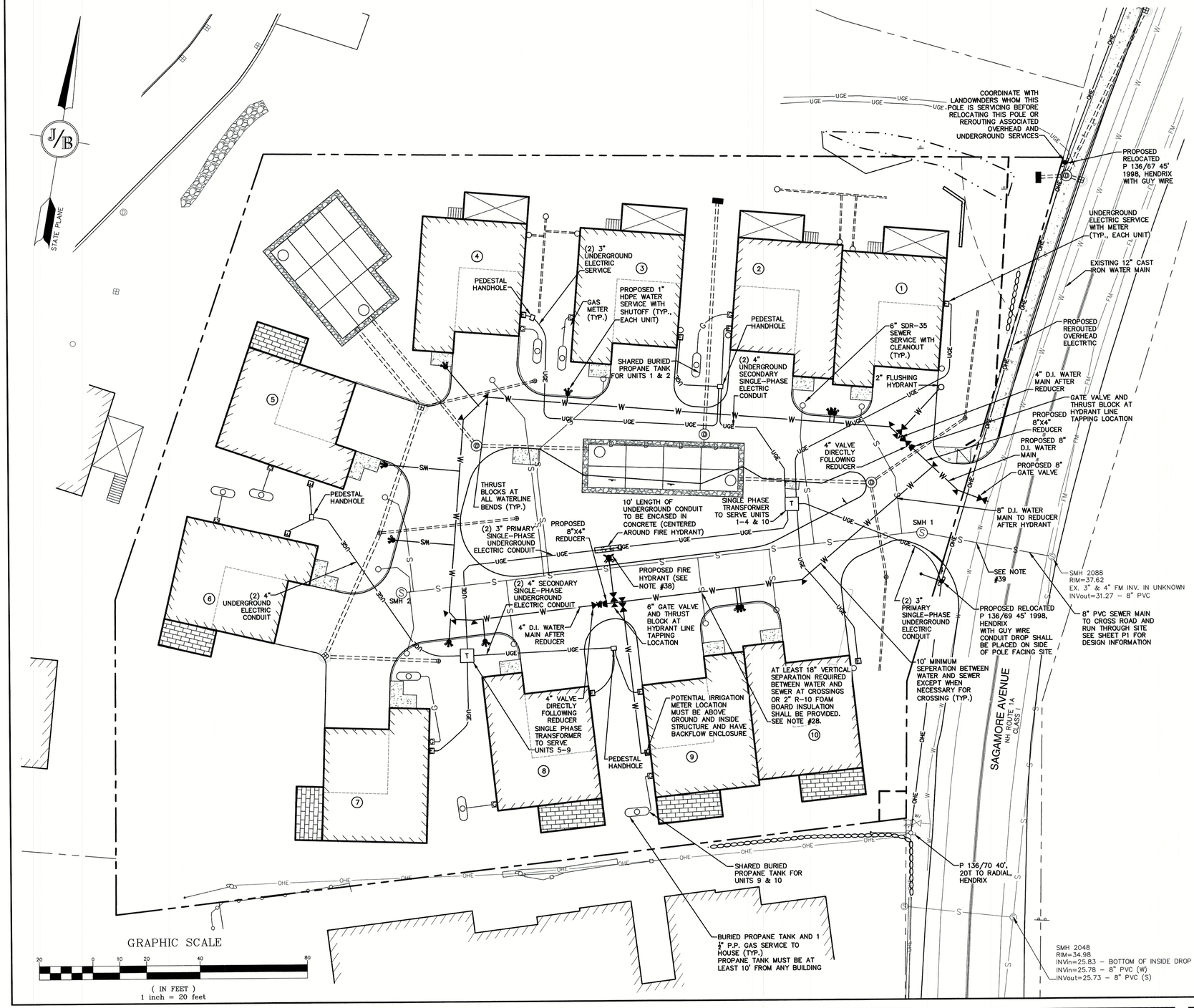
Plan Name: **OFFSITE IMPROVEMENTS PLAN**

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 22
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 8 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 ROD 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 AVOID DIRECT CONFLICT BETWEEN WATER AND SEWER.
40. AN EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR VALVE 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.

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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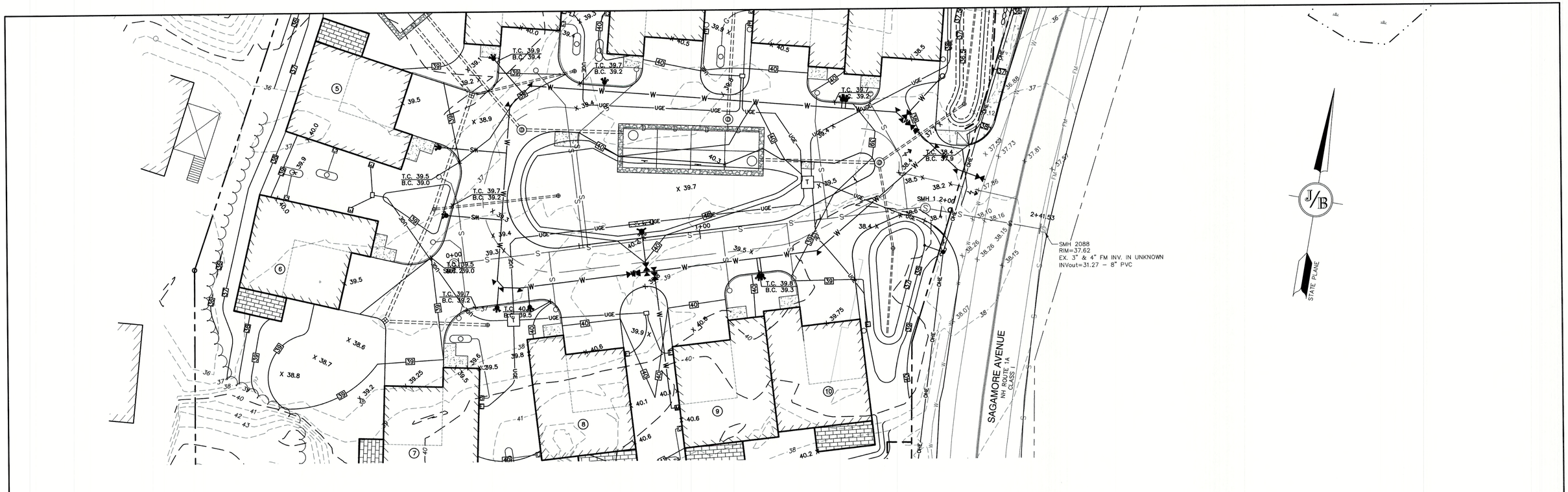
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

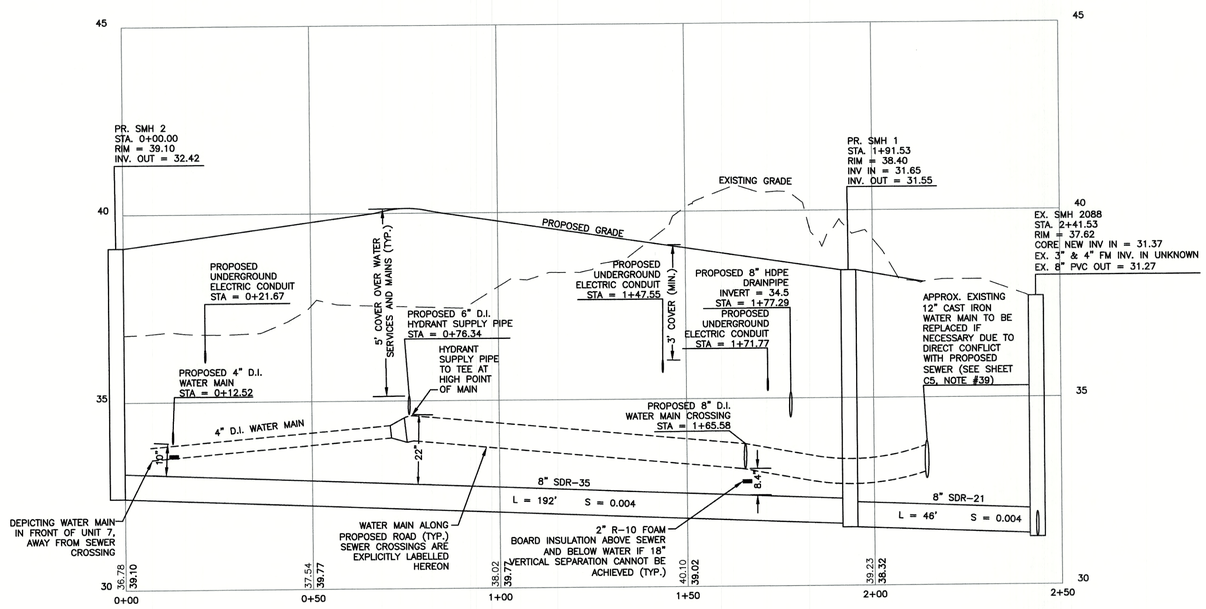
Plan Name: UTILITY PLAN

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
SHEET 7 OF 22
JBE PROJECT NO. 21047





GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.
0 20 40
0 2 4

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.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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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85 Portsmouth Ave.
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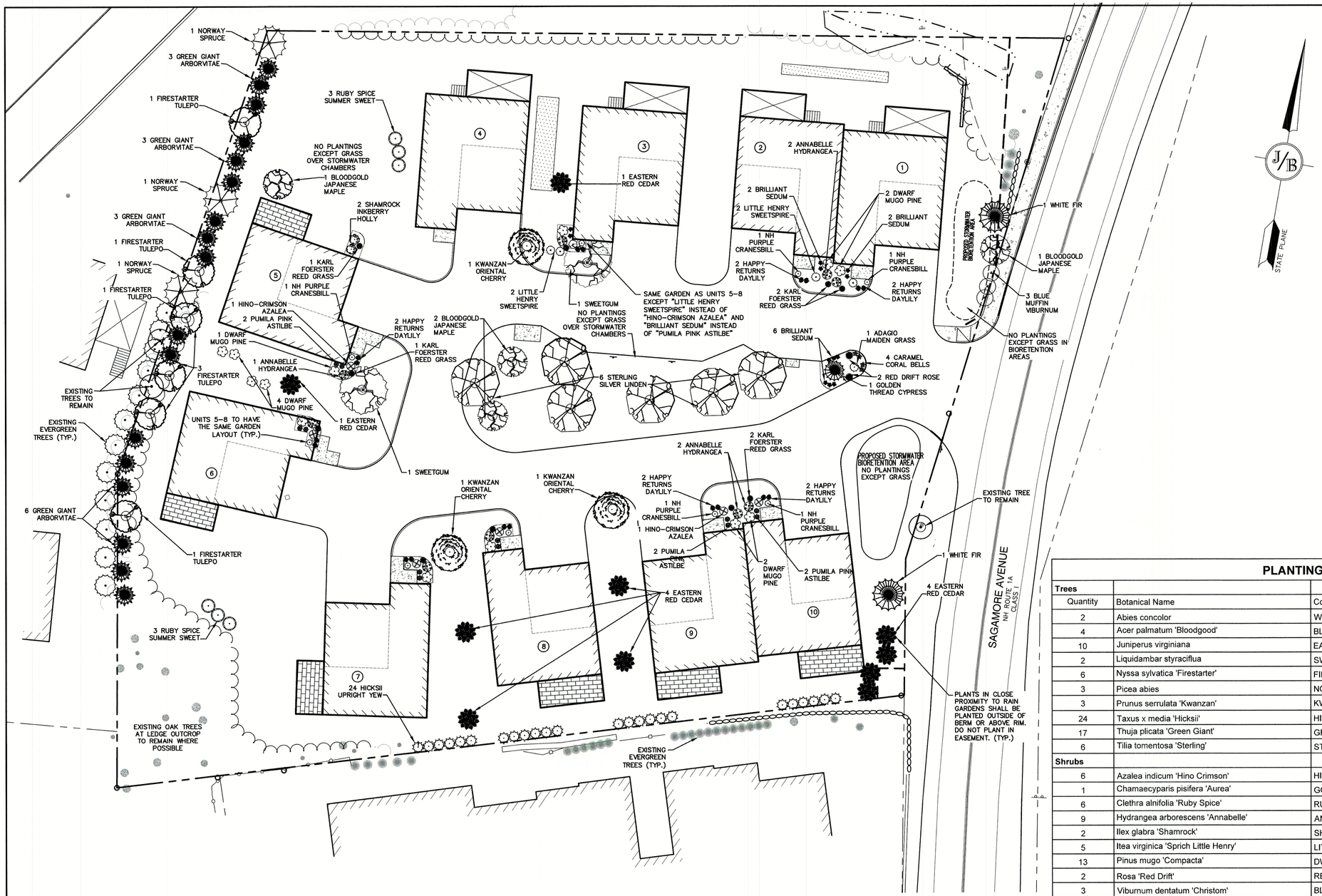
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

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 22
JBE PROJECT NO. 21047



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

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

Trees			
Quantity	Botanical Name	Common Name	Size
2	Abies concolor	WHITE FIR	7-8 ft. ht.
4	Acer palmatum 'Bloodgood'	BLOODGOOD JAPANESE MAPLE	15 Gallon
10	Juniperus virginiana	EASTERN RED CEDAR	7-8 ft. ht.
2	Liquidambar styraciflua	SWEETGUM	2.5" Caliper
6	Nyssa sylvatica 'Firestarter'	FIRESTARTER TUPELO	4.5" Caliper
3	Picea abies	NORWAY SPRUCE	10-12 ft. ht.
3	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: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
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Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LANDSCAPE PLAN

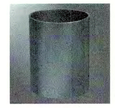
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

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 22
JBE PROJECT NO. 21047

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

Invue



Catalog #		Type
Project		
Comments		Date
Prepared by		

ARP ALUMINUM ROUND TAPERED DECORATIVE

FEATURES
- Tapered aluminum shaft spun from seamless 6063 alloy aluminum
- T6 four-bolt anchorage configuration provided
- Anchor bolt per ASTM F1554 Grade 55 with (2) hex nuts, (2) flat washers
- Cast 356 alloy aluminum base with access door
- 10' - 22' mounting heights
- Tenon mount only

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for nongrounded mounted installations. Any installations on bridges or buildings are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Cooper Lighting Solutions' Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Cooper Lighting Solutions or visit www.cooperlighting.com for available options, accessories and ordering information.

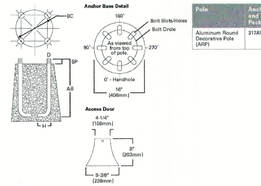
ORDERING INFORMATION

SAMPLE NUMBER: ARP5L316ABZ2

Product Family	Shaft Size (inches)*	Wall Thickness (inches)	Pole Top Diameter (inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Options (Add as Suffix)
ARP=Aluminum Round Tapered Decorative	5=5"	L=0.156" M=0.188"	3=3" O.D. † 4=4 1/2" O.D. 6=4" O.D. †	10=10' 12=12' 14=14' 16=16' 18=18' † 22=22' †	A=Aluminum (Round 4-Bolt Pole)	AP=Grey BA=Anodized Bronze BK=Black BZ=Bronze CA=Anodized Clear DA=Anodized Black DP=Dark Platinum GM=Graphite Metallic GN=Hartford Green WH=White	2=2-3/8" O.D. Tenon (4" Long) 4=3" O.D. Tenon (4" Long)	X=None	C=Convenience Outlet † E=GFCI Convenience Outlet † G=Ground Lug V=Vibration Dampener †

NOTES 1. All shaft sizes nominal; 2. Vibration damper recommended over 18 feet add suffix "V" to catalog number; 3. Specify outlet location. Receptacle not included, provisions only. 4. Provides 3"O.D. pole top suited for Arbor Post Top. 5. Provides 4" OD pole top suited for LuxeScape post tops.

ANCHORAGE DATA



Pole	Anchor Bolt and Template Package	Shaft Diameter (inches)	Bolt Circle (inches)	Number of Bolts	Bolt Size (inches)	Template Only
Aluminum Round Decorative Pole (ARP)	313AVE30	4 x 5	9	4	3/4 x 17	407040D

TDS130116EN
August 26, 2018 10:23 AM

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.

LED wall luminaire - partially shielded — **BEGA**

Application
The LED wall luminaire has a partially shielded light source and is designed for the down lighting of interior and exterior locations with glare-free illumination.

Materials
Luminaire housing constructed of die-cast and spun marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy
Three-ply opal glass
High temperature silicone gasket

NRTL listed to North American Standards, suitable for wet locations
Protection class IP44
Weight: 4.0 lbs

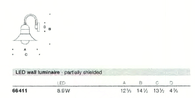
Electrical
Operating voltage 120-277VAC
Min. room start temperature -20° C
Luminaire wattage 8.9 W
System wattage 12 W
Controllability 0-10V dimmable
Color rendering index Ra > 82
Luminaire lumens 724 lumens (3000K)
Lifetime at Ta = 15° C 500,000 h (L70)
Lifetime at Ta = 40° C 268,000 h (L70)

LED color temperature
☐ 4000K - Product number = **K4**
☐ 3500K - Product number = **K35**
☐ 3000K - Product number = **K3**
☐ 2700K - Product number = **K27**

BEGA can supply you with suitable LED replacement modules for up to 20 years after the purchase of LED luminaires - see website for details

Finish
All BEGA standard finishes are matte, textured polyester powder coat with minimum 3 mil thickness.
Available colors: ☐ Black (BLK) ☐ White (WHT) ☐ RAL: ☐ Bronze (BRZ) ☐ Silver (SLV) ☐ CUS:

Type:
BEGA Product:
Project:
Modified:



BEGA · 1000 BEGA Way, Carpinteria, CA 93013 (805)684-0533 info@bega-us.com
Due to the dynamic nature of lighting products and the associated technologies, luminaire data on this sheet is subject to change at the discretion of BEGA North America. For the most current technical data, please refer to bega-us.com

Updated 08/14/19

Invue

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

The EPIC Collection delivers custom luminaire flexibility with high quality, yet availability expectations of standard specification grade product. The EPIC Collection can be dressed to suit any application. Recognizing evolving environmental and legislative trends, the EPIC Collection delivers world class LED optical and performance solutions to the decorative luminaire marketplace.

SPECIFICATION FEATURES

Construction
TOP: Cast aluminum top housing attaches to cast aluminum mounting arm hub with four stainless steel fasteners. One-piece silicone gasket between mounting hub and top casting seals out moisture and contaminants. (See the mounting accessories section for a full selection of mounting arms. (Only these arms are compatible with the Epic luminaire). MIDSECTION: Continuous silicone gaskets seal lens to top casting and shade. The mid-section features cast aluminum construction and stainless steel assembly. SHADES: Heavy gauge precision spun aluminum shades offer superior surface finish and consistency in form. DOORFRAME: Die-cast aluminum 1/8" thick door and doorframe seal to underside of shade with a thick wall continuous silicone gasket. Mounting hub ships attached to mounting arm.

Optics
Choice of twelve patented, high-efficiency AccuLED Optic™ technology manufactured from injection-molded acrylic. Optics are precisely designed to shape the optics, maximizing efficiency and application spacing. AccuLED Optic technology, creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and nominal 70 CRI. Optional 3000K CCT and 5000K CC. For the ultimate level of spill light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2, SL3 or SL4 optics.

Electrical
LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation, greater than 0.9 power factor, less that 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightBARs feature and IP66 enclosure rating and maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21. Occupancy sensor and dimming options available.

Finish
Housing is finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Color brochure for a complete selection.Options to meet Buy American Act requirements

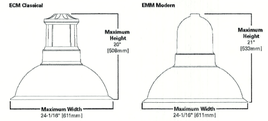
Warranty
Five-year warranty.

ECM/EMM
EPIC MEDIUM LED

1 - 4 LightBARs
Solid State LED

DECORATIVE AREA LUMINAIRE

DIMENSIONS



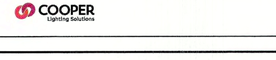
See configurations for more detailed information.

CERTIFICATION DATA
UL/cUL Listed
DesignLights Consortium® Qualified*
IP66 LightBARs
LM79 / LM80 Compliant
3G Vibration Tested
ISO 9001

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V 50/60Hz, 347V/60Hz, 480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating

EPA
Effective Projected Area: (Sq. Ft.) 0.94

SHIPPING DATA
Approximate Net Weight:
45 lbs. (20 kgs.)



*www.designlights.org

TD500016EN
December 8, 2021 2:28 PM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

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		

STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
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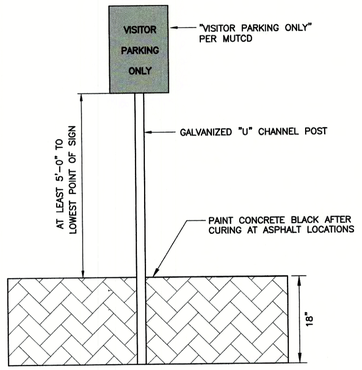
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LIGHTING PLAN

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

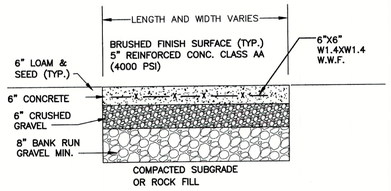
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
L2
SHEET 10 OF 22
JBE PROJECT NO. 21047



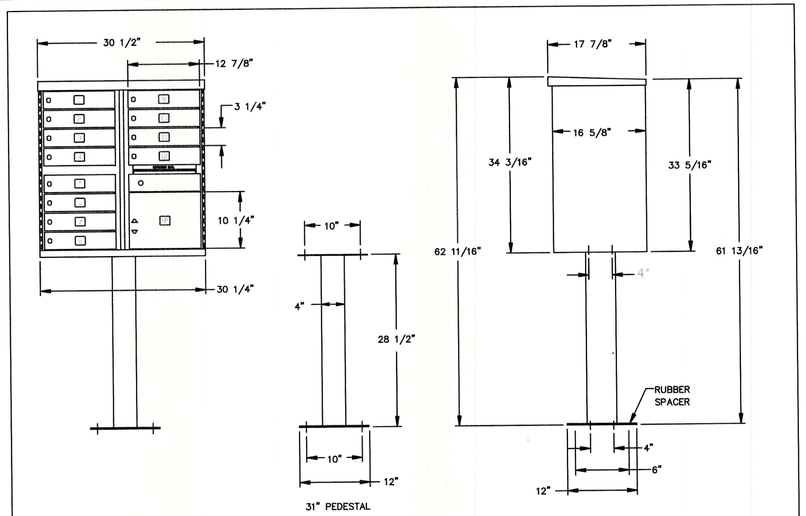
VISITOR PARKING SIGN

NOT TO SCALE



CONCRETE PAD DETAIL

NOT TO SCALE

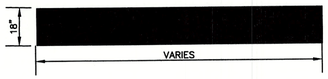


POSTAL PRODUCTS UNLIMITED, INC.™
A Division of American Postal Manufacturing, Inc.
Phone. 1-800-229-4500
800 W. Chicksaw Ave.
Milwaukee, WI 53207-5940

Product: Type II CBU with Pedestal – Front Loading – N1027675			
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

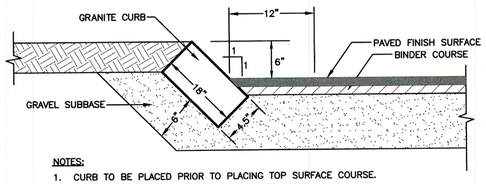
NOT TO SCALE



NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

STOP BAR

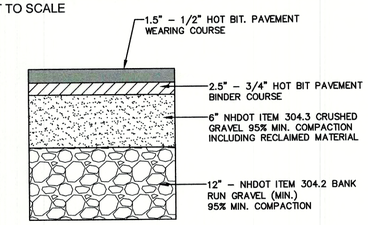
NOT TO SCALE



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

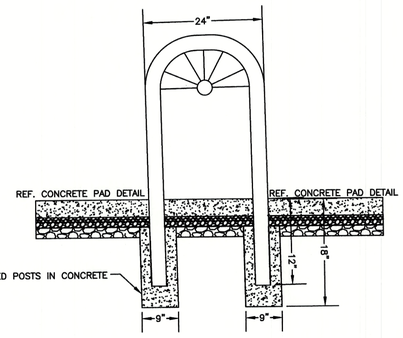


TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE

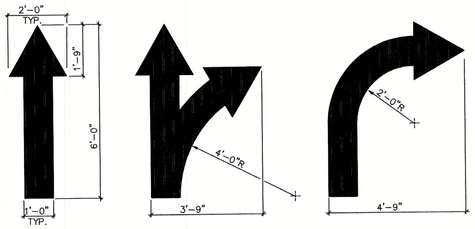
KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

NOT TO SCALE



BICYCLE RACK

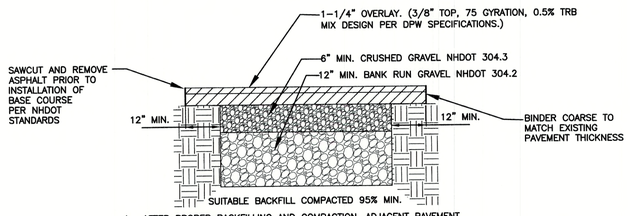
NOT TO SCALE



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

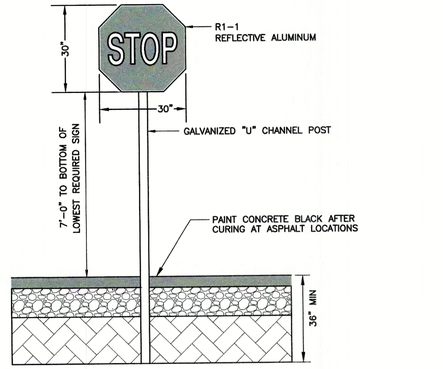
NOT TO SCALE



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.
6. PAVEMENT REPAIRS IN SAGAMORE AVE. RIGHT OF WAY TO MEET NHDOT STANDARDS.

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.

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	

Date: 3/25/21
Project No.: 21047

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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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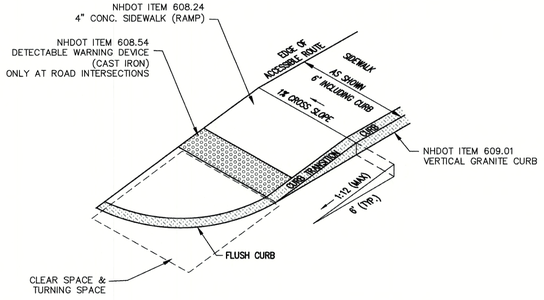
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

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

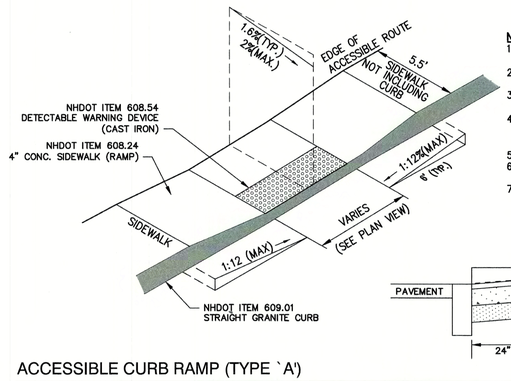
DRAWING No.
D1
SHEET 11 OF 22
JBE PROJECT NO. 21047



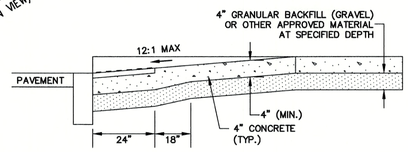
NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8.3%.
4. A MINIMUM OF 4 FEET CLEAR 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

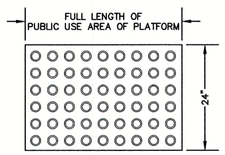


NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8%.
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.



ACCESSIBLE CURB RAMP (TYPE `A')

NOT TO SCALE

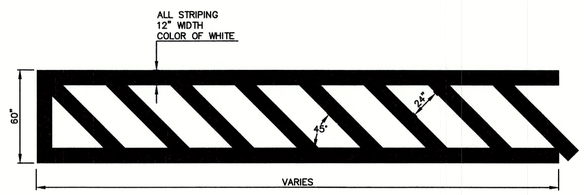


DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH THE FOLLOWING:
A. TRUNCATED DOMES SHALL HAVE A BASE DIAMETER OF 0.9" (MIN.) AND 1.4" (MAX.), A TOP DIAMETER OF 50% OF THE BASE DIAMETER MINIMUM TO 65% OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2".
B. TRUNCATED 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.

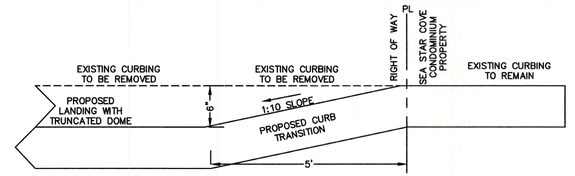
ACCESSIBLE CURB RAMP TRUNCATED DOMES

NOT TO SCALE



PAINTED CROSSWALK DETAIL

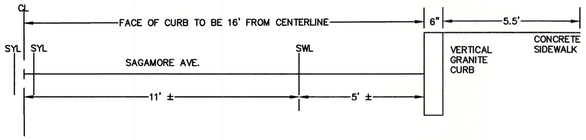
NOT TO SCALE



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

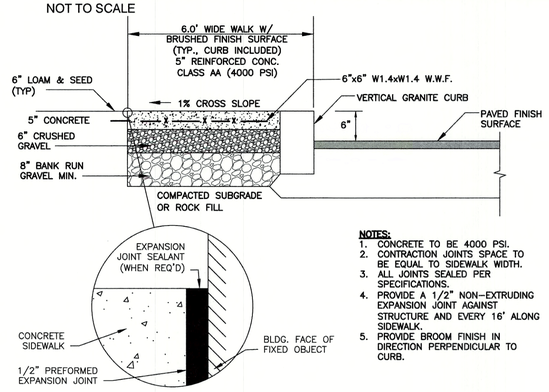
NOT TO SCALE



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

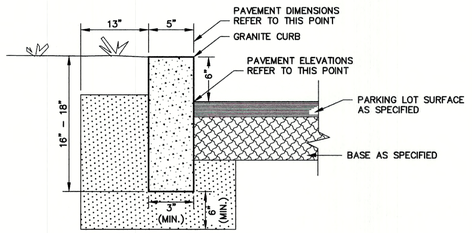
NOT TO SCALE



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

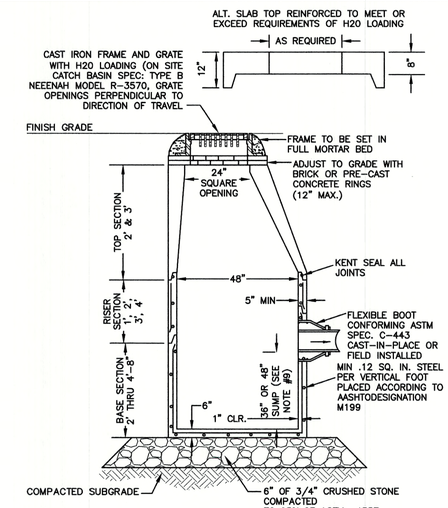
NOT TO SCALE



NOTES:
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

VERTICAL GRANITE CURB

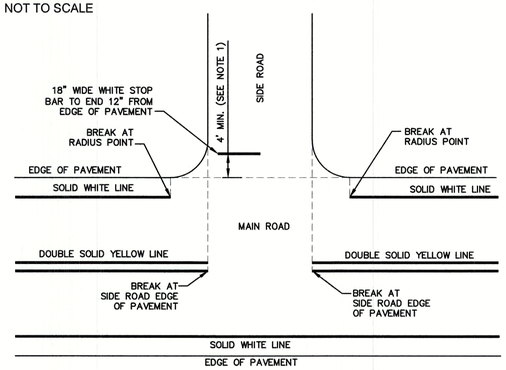
NOT TO SCALE



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		

STATE OF NEW HAMPSHIRE — PAIGE A. LIBBEY No.16670 — LICENSED PROFESSIONAL ENGINEER

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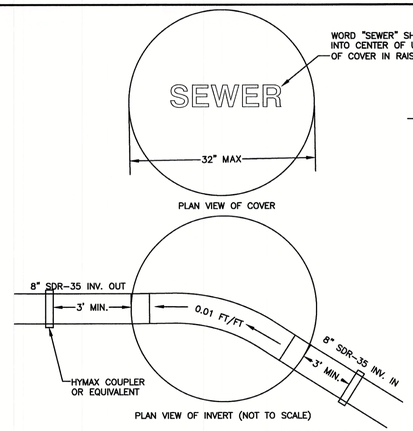
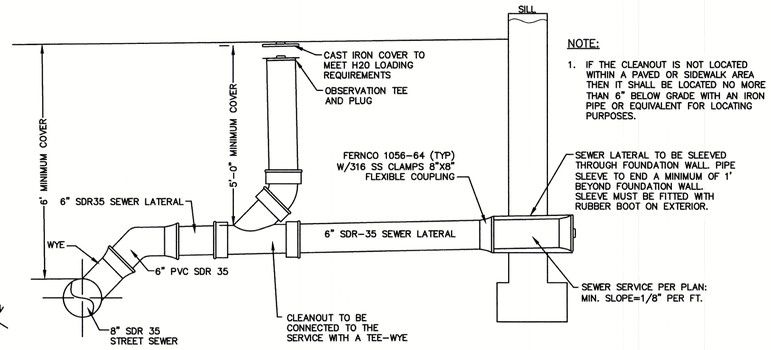
DRAWING No.
D2
SHEET 12 OF 22
JBE PROJECT NO. 21047



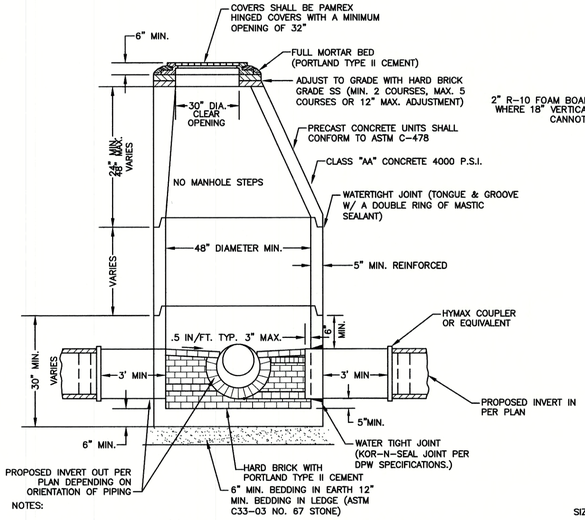


NOTE:

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

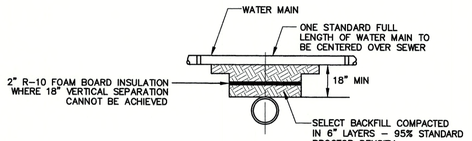


NOTES:

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).
10. ON-SITE SEWER MANHOLE COVERS WILL NEED TO BE PURCHASED BY THE APPLICANT. THE CITY OF PORTSMOUTH WILL NOT BE PROVIDING THESE.

PORTSMOUTH SEWER MANHOLE

NOT TO SCALE

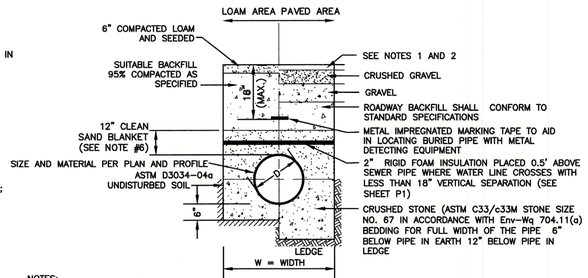


SEPARATION NOTES:

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 HORIZONTALLLY FROM THE WATER MAIN.

TYPICAL WATER / SEWER SEPARATION

NOT TO SCALE

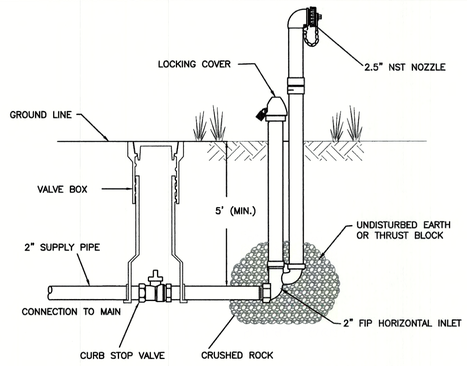


NOTES:

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

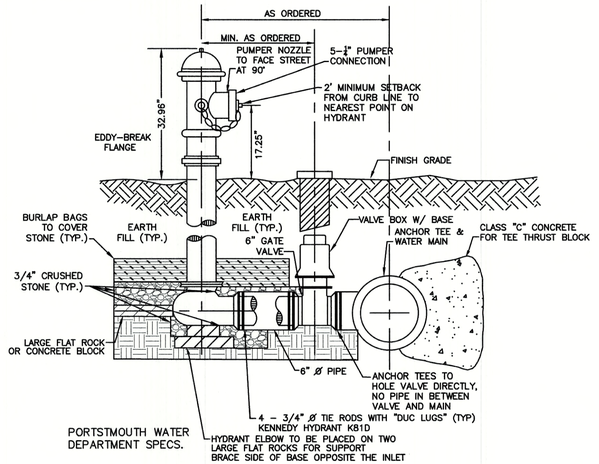


POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A 5' BURY. THESE HYDRANTS WILL BE FURNISHED WITH A 2" FIP HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN LEFT. BRONZE OPERATING MECHANISM AND ALUMINUM PLUNGER. DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET 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



PORTSTMOUTH WATER DEPARTMENT SPECS.

NOTES

1. ALL PIPE FITTINGS TO BE D.I. PRESSURE CLASS 350, THICKNESS CLASS 52.
2. HYDRANT TO BE PAINTED RED WITH WHITE "REFLECTOR" PAINT ON BONNET.
3. MECHANICAL JOINTS SHALL HAVE MEGALUG RETAINING GLANDS AS MADE BY EBBA OR APPROVED EQUAL.
4. 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.

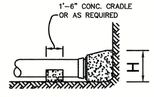
HYDRANT INSTALLATION

NOT TO SCALE

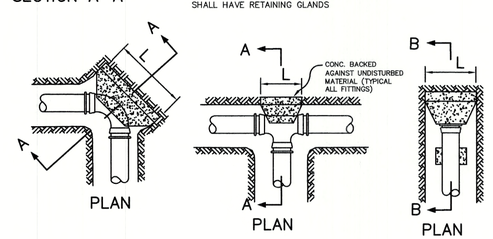
SECTION A-A

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

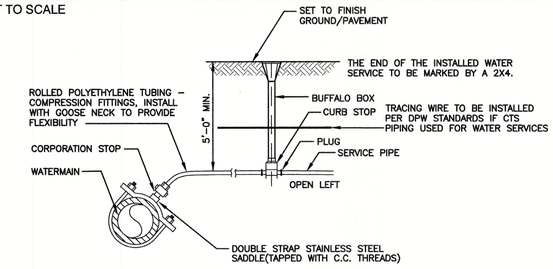


SECTION B-B



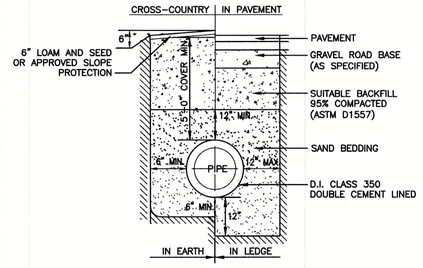
THRUST BLOCK DETAILS

NOT TO SCALE



WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



WATER SYSTEM TRENCH

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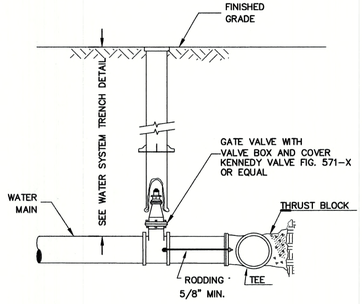

BURIED GATE VALVE DETAIL

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.16670 - LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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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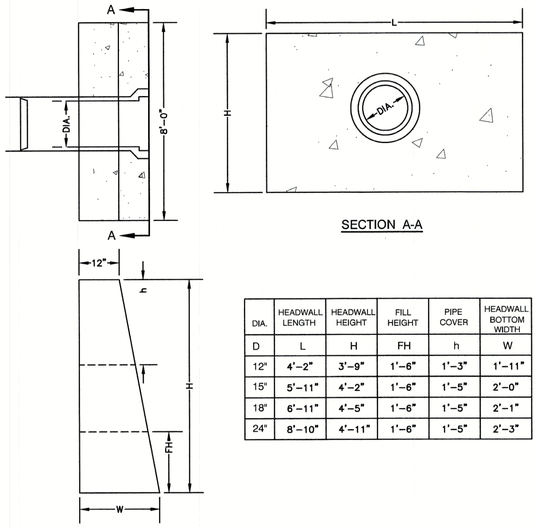
Plan Name: DETAIL SHEET

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
SHEET 13 OF 22
JBE PROJECT NO. 21047



SECTION A-A

LONGITUDINAL SECTION

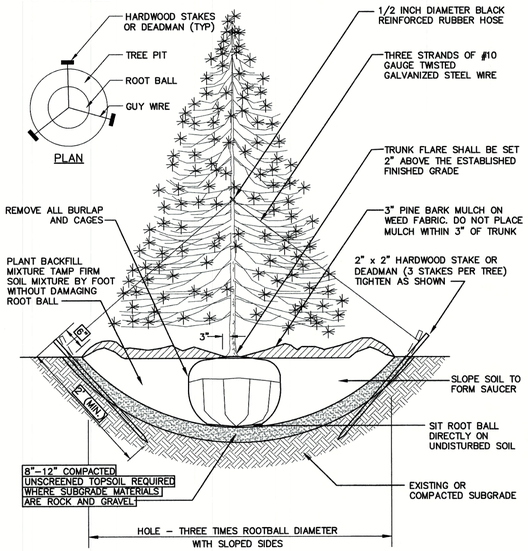
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

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.

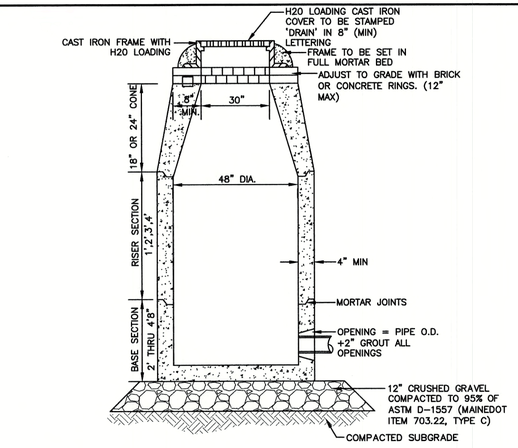
PRECAST CONCRETE HEADWALL

NOT TO SCALE



EVERGREEN PLANTING

NOT TO SCALE

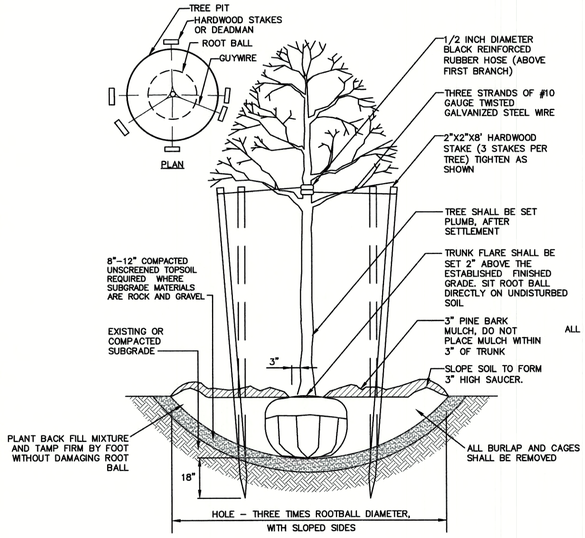


NOTES:

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'.

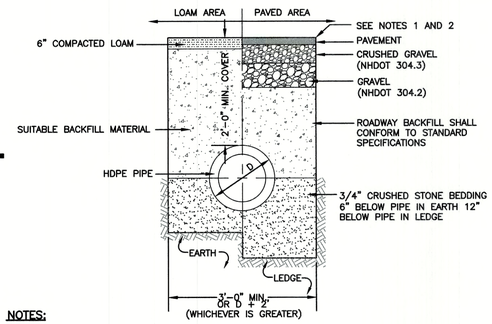
DRAIN MANHOLE (4' DIAM.)

NOT TO SCALE



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE

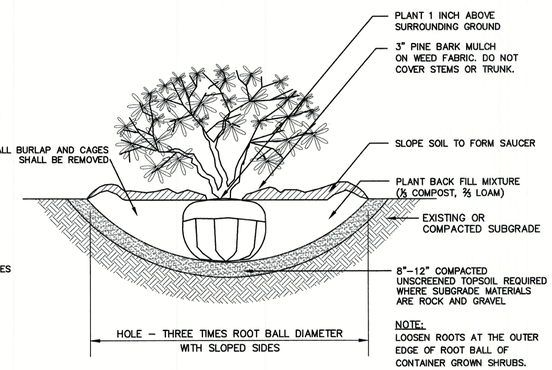


NOTES:

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.

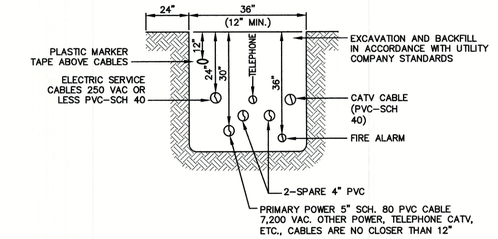
DRAINAGE TRENCH

NOT TO SCALE



SHRUB PLANTING

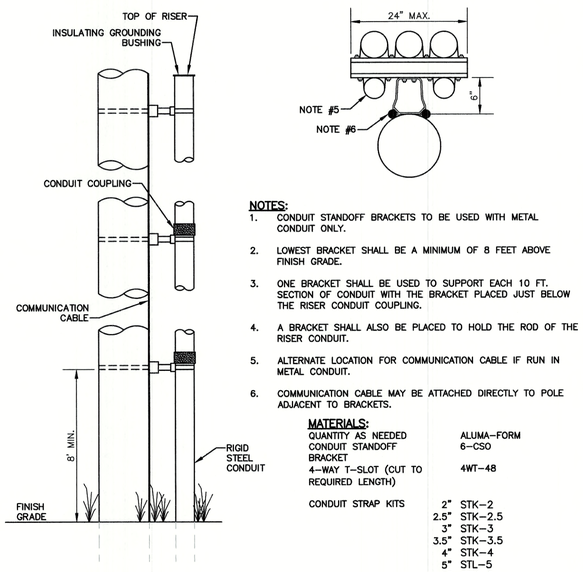
NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

UTILITY 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

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Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	

Date: 3/25/21
Project No.: 21047

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – PROFESSIONAL ENGINEER – LICENSED

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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
SHEET 14 OF 22
JBE PROJECT NO. 21047

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
⅜"	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

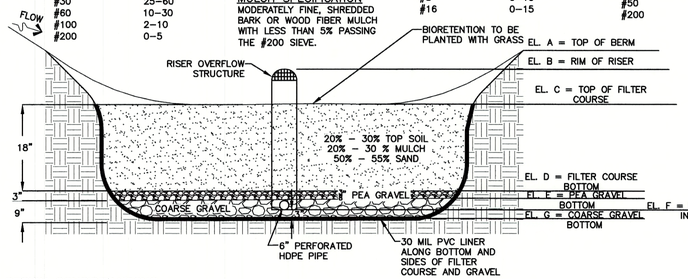
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

PEA GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
½"	100
⅜"	85–100
#4	10–30
#8	0–10
#16	0–15

COARSE GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	90–100
½"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5



DESIGN CONSIDERATIONS

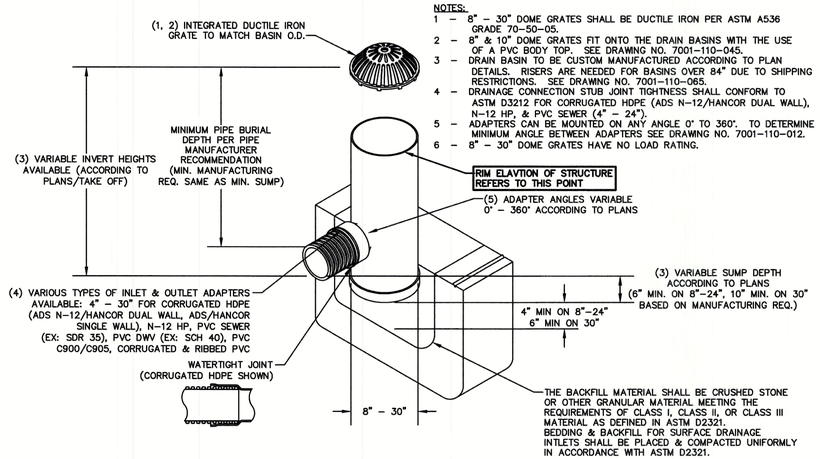
1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN SEEDED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN–OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. 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



NOTES:

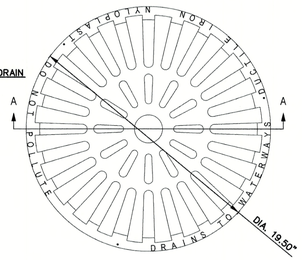
1 – 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
2 – 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001–110–045.
3 – DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE 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.

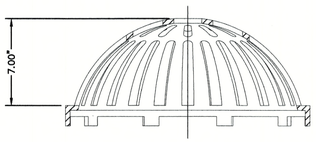
NYLOPLAST DRAIN BASIN (W/ DOME GRATE) (YARD DRAIN SPECIFICATION)

NOT TO SCALE

1899CGD

APPROX. DRAIN AREA = 175.59 SQ IN
APPROX. WEIGHT = 32.00 LBS



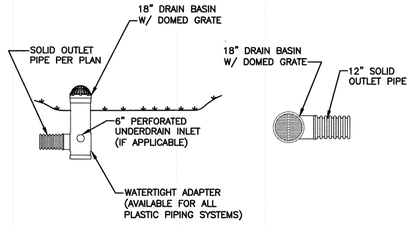


SECTION A-A

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

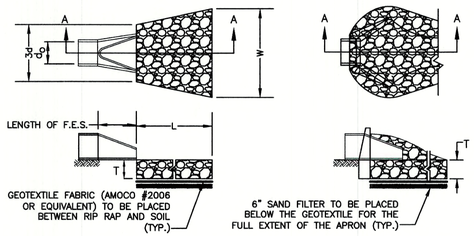
18" NYLOPLAST DOME GRATE

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

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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

Designed and Produced in NH
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Stratham, NH 03885
Civil Engineering Services
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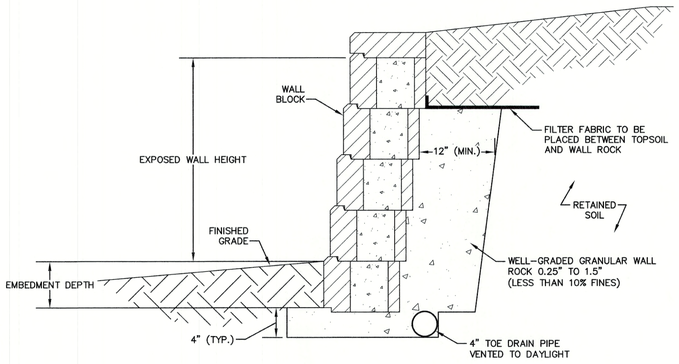
Plan Name:	DETAIL SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

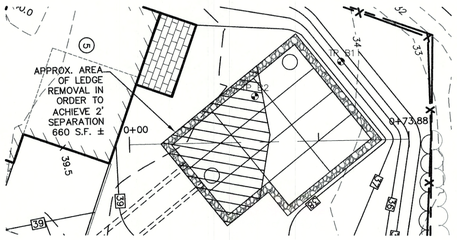
DRAWING No.
D5
SHEET 15 OF 22
JBE PROJECT NO. 21047

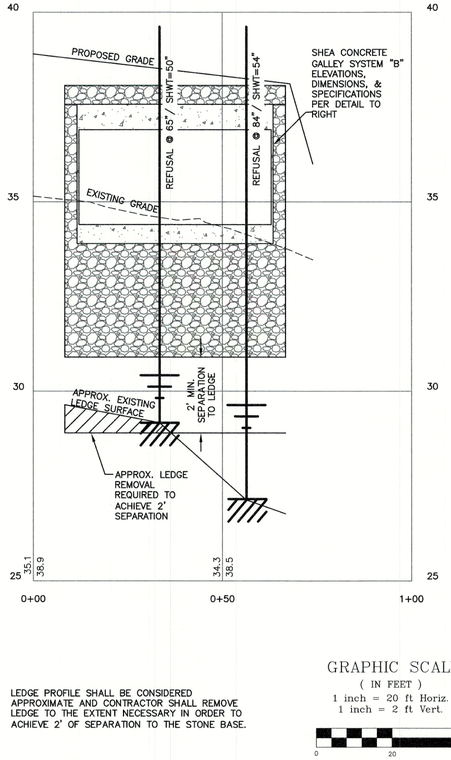


THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE SERVICES OF A STRUCTURAL ENGINEER LISENCED IN THE STATE OF NEW HAMPSHIRE TO DESIGN ANY WALL THAT HAS A HEIGHT OVER 4.0'. JONES & BEACH ENGINEERS, INC. DOES NOT ACCEPT ANY LIABILITY FOR THE STRUCTURAL DESIGN AND/OR INSTALLATION OF ANY RETAINING WALL OF ANY 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 FOR A WALL GREATER THAN 4.0' IN HEIGHT.

TYPICAL GRAVITY WALL DETAIL

NOT TO SCALE



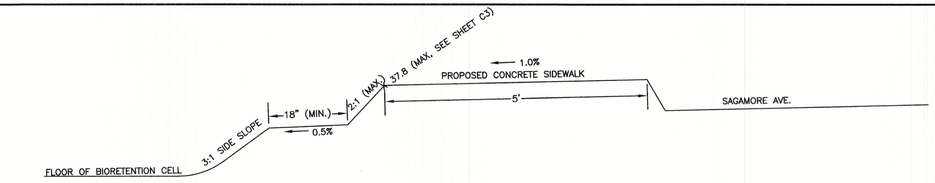


LEDGE PROFILE SHALL BE CONSIDERED APPROXIMATE AND CONTRACTOR SHALL REMOVE LEDGE TO THE EXTENT NECESSARY IN ORDER TO ACHIEVE 2' OF SEPARATION TO THE STONE BASE.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.

SHEA CONCRETE GALLEY 8X14 SYSTEM "B" LEDGE PROFILE

SCALE AS SHOWN



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

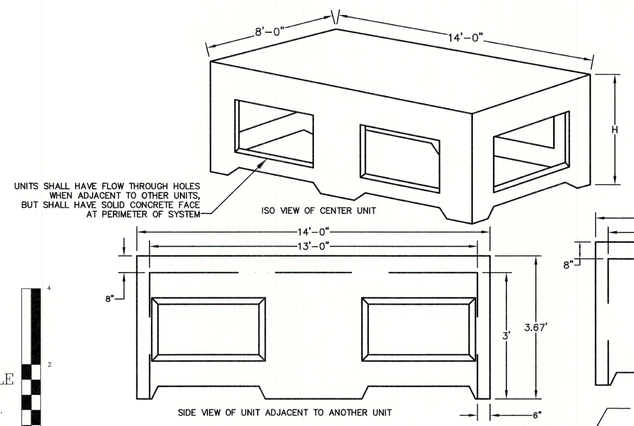
CONTRACTOR ORDER SCHEDULE				
	FLOW-THROUGH HOLES ON ALL SIDES	NO FLOW-THROUGH HOLES ON ONE 8' SIDE	NO FLOW-THROUGH HOLES ON ONE 14' SIDE	NO FLOW-THROUGH HOLES ON ONE 8' AND ONE 14' SIDE
SYSTEM A	0	0	4	4
SYSTEM B	2	3	1	5

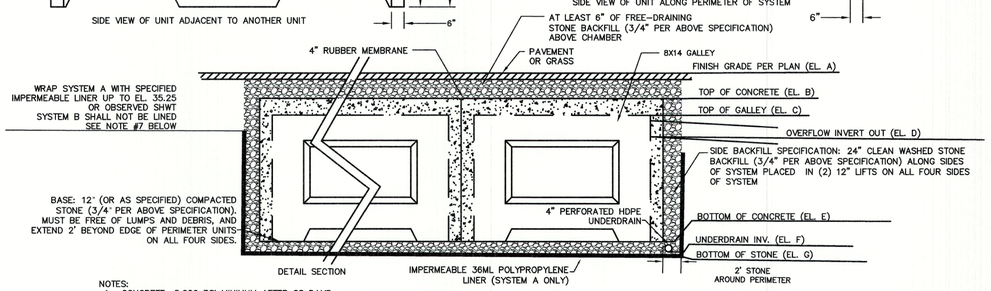
ELEVATION SCHEDULE							
	EL. A	EL. B	EL. C	EL. D	EL. E	EL.F	EL.G
SYSTEM A	> 39.0	36.97	36.3	34.7	33.3	32.3	32.3
SYSTEM B	> 38.2	37.57	36.9	35.8	33.9	N/A	30.9

STONE BACKFILL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	100
¾"	90-100
½"	40-90
#8	23-49
#200	2-8

HEIGHT(H)	VOLUME(EA)	WEIGHT
3'-0"	300CF	16,600#

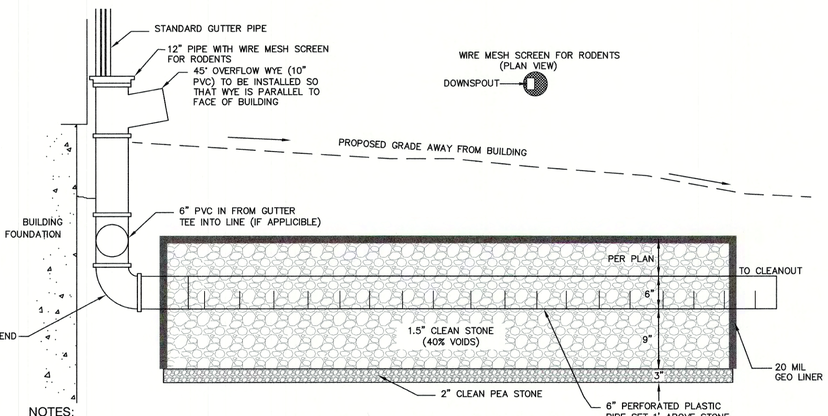




NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR AASHTO HS-20 LOAD, 0 TO 5FT COVER. CAN BE DESIGNED FOR ADDITIONAL COVER IF REQUIRED.
3. STANDARD SLAB DESIGN WITHSTANDS 40KIP OUTRIGGER LOAD ON A 24" SQUARE PAD WITH 24" COVER OVER SLAB.
4. CORE HOLE FOR MORTAR JOINT AT INVERT IN LOCATION(S). 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"

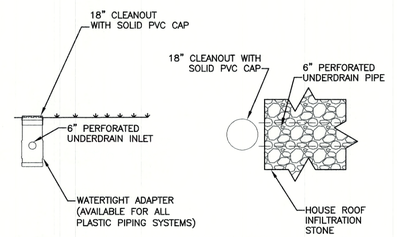
NOT TO SCALE



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 2' BELOW BOTTOM OF INFILTRATION PRACTICE.

HOUSE ROOF INFILTRATION DETAIL

NOT TO SCALE



PERFORATED UNDERDRAIN CLEANOUT 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.16670 LICENSED PROFESSIONAL ENGINEER 3/25/22

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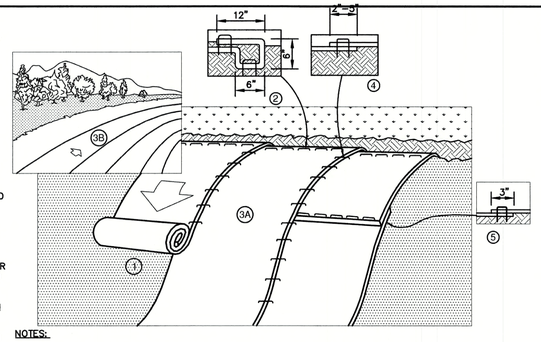
DRAWING No.
D6
SHEET 16 OF 22
JBE PROJECT NO. 21047

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	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.

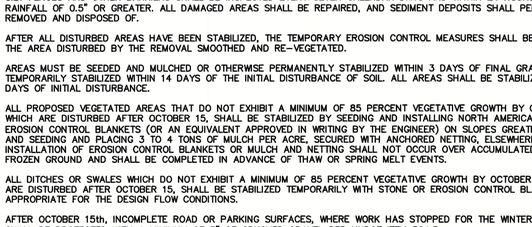
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

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



CONSTRUCTION SPECIFICATIONS:

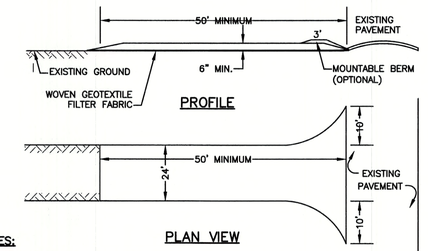
1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 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



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.

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS NOTED
Date: 3/25/21	Project No.: 21047
Drawing Name: 21047-PLAN.dwg	

STATE OF NEW HAMPSHIRE - PAIGE S. LIBBEY No.16670 - LICENSED PROFESSIONAL ENGINEER - 3/25/22

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EROSION AND SEDIMENT CONTROL DETAILS

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

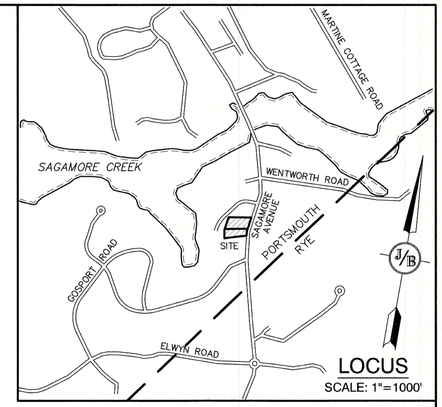
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

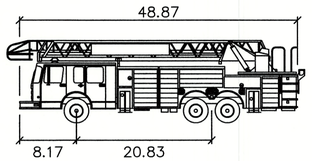
DRAWING No.
E1
SHEET 17 OF 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet





Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

- VEHICLE BODY
- FRONT WHEELS
- REAR WHEELS

Portsmouth Fire Truck

Portsmouth Fire Truck

SAGAMORE AVENUE
NH ROUTE 1A
CLASS I

STATE PLANE

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		

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED PROFESSIONAL ENGINEER
2022

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
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9	2/15/22	REVISED PER TEST PIT DATA; CITY COMMENTS; POWER COMPANY	DJM
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7	12/28/21	REVISED PER ENGINEER REVIEW COMMENTS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
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 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

- VEHICLE BODY
- FRONT WHEELS
- REAR WHEELS

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		

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: 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.
T2
SHEET 19 OF 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

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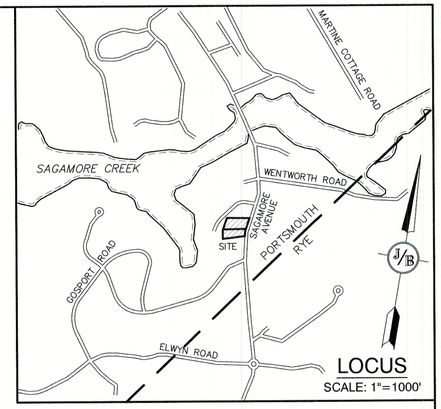
(IN FEET)
1 inch = 20 feet



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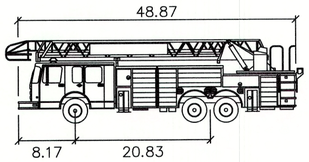

Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

= VEHICLE BODY
= FRONT WHEELS
= REAR WHEELS

SAGAMORE AVENUE
NH ROUTE 1A
CLASS I

STATE PLANE

J/B

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		

PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
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Civil Engineering Services
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

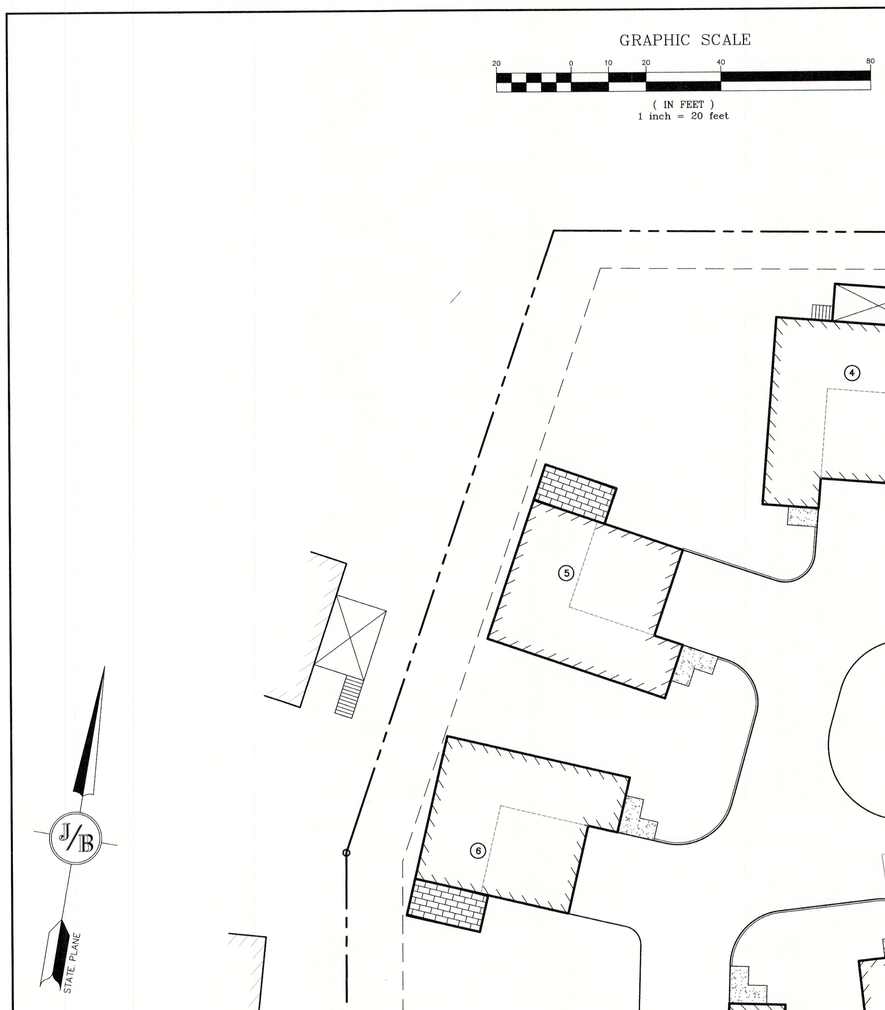
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

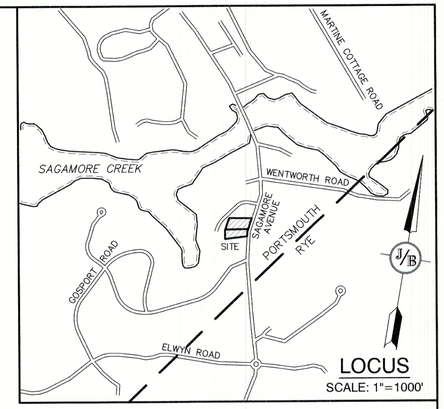
DRAWING No.
T3
SHEET 20 OF 22
JBE PROJECT NO. 21047

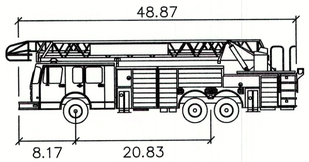
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet







Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

- = VEHICLE BODY
- = FRONT WHEELS
- = REAR WHEELS

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		

STATE OF NEW HAMPSHIRE · PAIGE S. LIBBEY No.16670 · LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
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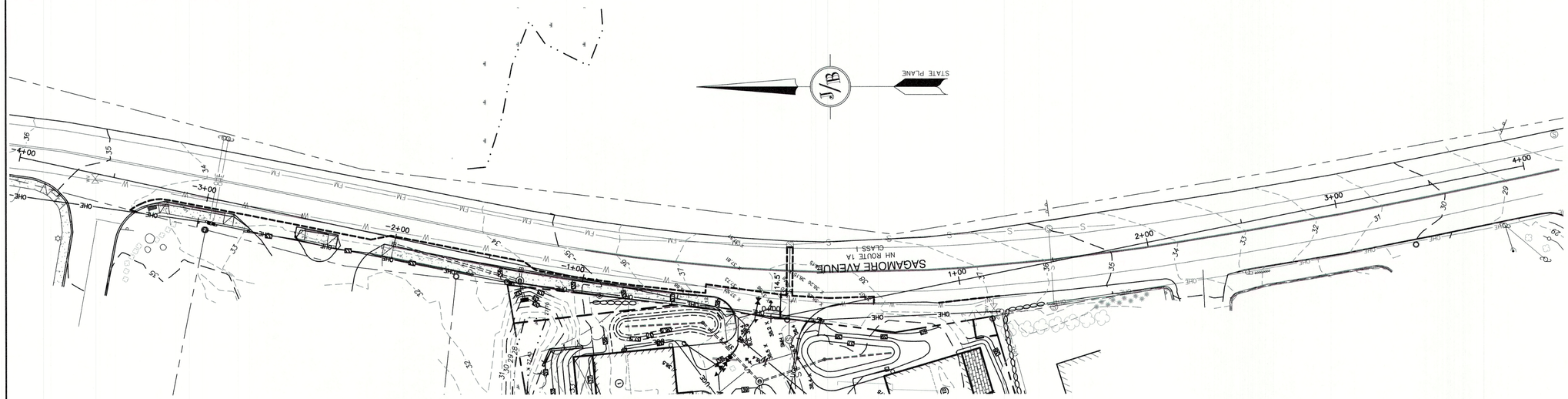
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

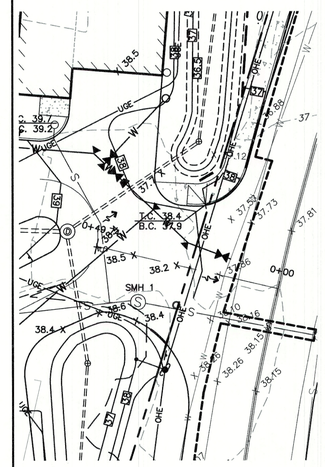
Plan Name: TRUCK TURNING PLAN

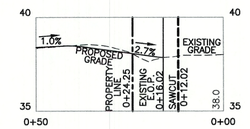
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

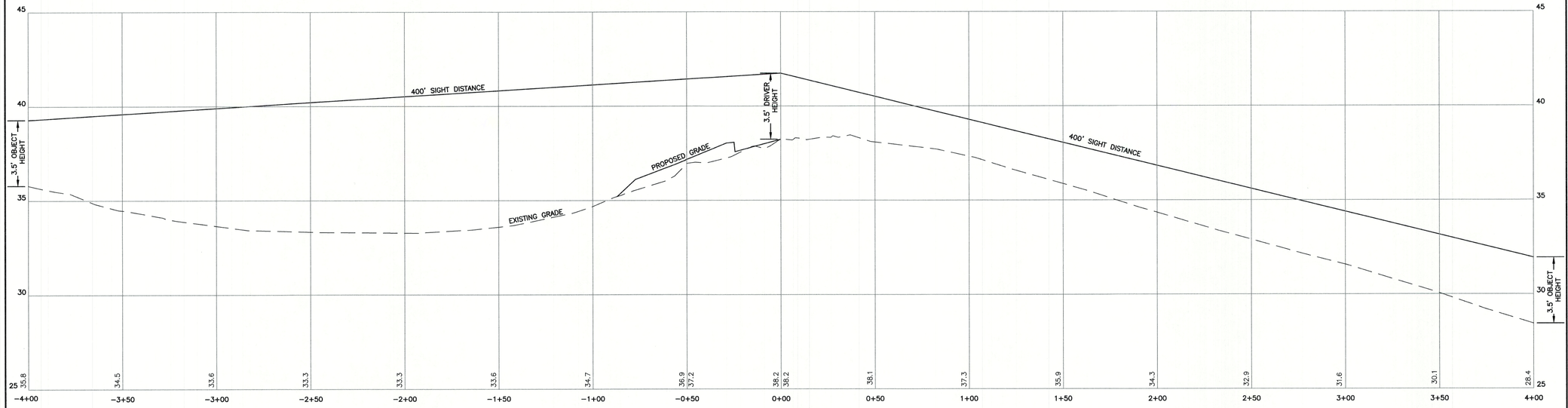
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
T4
SHEET 21 OF 22
JBE PROJECT NO. 21047

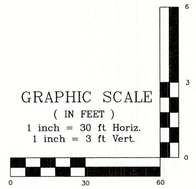


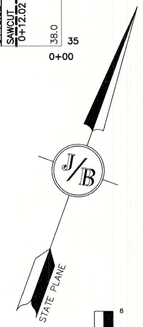


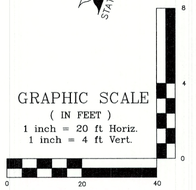




SIGHT DISTANCE PLAN AND PROFILE (SCALE AS SHOWN)







DRIVEWAY PLAN AND PROFILE (SCALE AS SHOWN)

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
11	3/22/22	REVISED PER CITY COMMENTS	DJM
10	3/4/22	REVISED PER NHDOT COMMENTS	DJM
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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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS 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.

H1

SHEET 22 OF 22
JBE PROJECT NO. 21047