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

June 29, 2022

Portsmouth Conservation Commission Board
Attn: Board Members
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Wetland Conditional Use Application
1169 & 1171 Sagamore Avenue, Portsmouth, NH
Tax Map 224, Lots 14 & 15, and Tax Map 201, Lot 26
JBE Project No. 21047

Dear Board Members,

Jones & Beach Engineers, Inc., respectfully submits a Wetland Conditional Use Application for the above-referenced properties on behalf of the applicant, The Sagamore Group, LLC. The intent of this project is to remove existing structures on the subject parcels and construct 10 condominium units. Runoff from impervious surfaces will be treated and detained on-site, and some of it infiltrated. Then, it is discharged toward a depression with an isolated wetland in the northeast corner of the subject parcel. Peak rates of runoff toward the depression will be reduced in the proposed condition compared with the existing condition during all analyzed storm events.

After discussions with the Technical Advisory Committee and with the abutters, we have agreed to install a cross-culvert under Sagamore Avenue to connect the wetlands on either side. Although no one could find a culvert in the field an old culvert in the field or on old plans, it was agreed that one should be located here. The culvert also collects and treats roadway drainage with catch basins and a proprietary treatment device called a Jellyfish.

The culvert will drain toward a larger wetland located across the street on City-owned property (Tax Map 201, Lot 26). The intent of the proposed culvert is to reduce peak water elevations within the depression in the proposed condition and to mitigate the potential for flooding during larger storm events, as modelled. The culvert will unavoidably need to be within the buffer of the larger wetland and therefore triggers the need for a Conditional Use Permit. The smaller wetland on Lot 15 is under 10,000 S.F. in area and therefore too small to have a buffer of its own. Proposed temporary buffer impacts are as follows (whereas work within the right of way is exempt from the requirement for a CUP):

- 300 S.F. on Lot 15 (Proposed Condominium Site)
- 270 S.F. on Lot 26 (City Owned Property)
- 570 S.F. Total

Additionally, because a new sidewalk is being proposed as requested by the City, runoff from a 460' ± long stretch of the southbound side of Sagamore Avenue which currently drains via sheet flow is proposed to be directed into a closed drainage system. This closed drainage system is proposed to be tied into the proposed cross-culvert. Road runoff will be treated via a "Jellyfish" filtration device before being discharged toward the larger wetland on Lot 26. Runoff from the proposed condominium development will be treated on-site.

10.1017.50 Criteria for Approval of Conditional Use Applications:

1. *The land is reasonably suited to the use, activity or alteration.*
   RESPONSE: As agreed to by the Technical Advisory Committee, the wetland located on Map 201, Lot 26 has much more available flood storage than the depression surrounding the isolated wetland in the corner of the subject parcel on which the condominium units are proposed. The large wetland on this City-owned property is able to handle the runoff better than the isolated depression surrounding the smaller wetland across the street, and it should be noted that peak rates of runoff toward that isolated depression are reduced in the proposed conditions and the intent of the proposed culvert is to act as an overflow. The City-owned land is in conservation and therefore won't be developed and provides excellent stormwater attenuation.

2. *There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.*
   RESPONSE: It is not possible to build this culvert outside of the wetland buffer. The culvert directly provides an overflow from a smaller wetland to drain toward a larger one; therefore, it must be located in the wetland buffer.

3. *There will be no adverse impact on the wetland functional values of the site or surrounding properties.*
   RESPONSE: In the existing condition, the runoff from Sagamore Ave and from the subject parcel reach a wetland untreated. In the proposed condition, all runoff will be treated before reaching the wetland on the City-owned property. Runoff from the proposed condominium development will be treated on-site and runoff from the road will be treated with a proposed Jellyfish filtration device.

4. *Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.*
   RESPONSE: A very minimal amount of vegetation will need to be cleared for the proposed culvert. It will be primarily underneath the roadway and only the inlet and outlet with associated erosion control measures will be in existing vegetated areas. Existing vegetation will only be disturbed on the side slope of the road for the installation of the culvert and of the rip rap. Grass and naturally occurring shrubs may be allowed to grow back over the proposed culvert along the side slope of the road, but trees should not be allowed to grow over it.

5. *The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.*
   RESPONSE: There will be minimal temporary impact for the installation of the culvert. In the existing condition, stormwater enters the wetland untreated. In the proposed condition, the runoff from the condominium development and the roadway will be treated, which mitigates the potential for degradation of water quality downstream. The culvert is to be installed within the wetland buffer, not the wetland itself. Proposed temporary impacts to the wetland buffer are as noted above. There will be no permanent impacts to the wetland buffer.

6. *Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.*
   RESPONSE: The installation of the culvert results in only temporary disturbance. Grass may be allowed to grow back over the culvert. For maintenance purposes, trees should not be allowed to grow over the culvert, but the remainder of the wooded area within the wetland buffer will remain wooded.

The following information is additionally required for Conditional Use Applications:

- Total area of inland wetland (both on and off subject parcel): 521 S.F. *
- Distance of proposed activity to wetland requiring CUP: 7' (Only the wetland on Lot 26 is large enough to require a CUP)
- Wetland buffer total area on lot: 1,354 S.F. *
- Wetland buffer area to be disturbed: See Above
- Inland wetland total area on lot: 257 S.F.
- Inland wetland area to be disturbed: 0 S.F.

* Responses with asterisk refer only to Tax Map 224, Lot 15; Tax Map 201, Lot 26 has not been fully surveyed, only the portion shown on the plans.

The following items are provided in support of this Application:

1. Conditional Use Application Completed & Submitted Online.
2. Fee Check.
3. Signed Letter of Authorization.
4. Current Deed.
5. One (1) Full Size Plan Set.
6. One (1) Drainage Analysis.
7. Off-Site Wetland Buffer Impact Letter prepared by Gove Environmental Services, Inc.

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

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph A. Coronati
Vice President

cc: Michael Garrepy (via email)
Mick Khavari (via email)
Tim Phoenix, Hoefle, Phoenix, Gormley & Roberts (via email)
Peter Britz, Portsmouth Planning (via email)
Stefanie Casella, Portsmouth Planning (via email)

Letter of Authorization

The Sagamore Group, LLC, 4 Merrill Industrial Drive, Hampton, NH, 03842, USA, developer of property located in Portsmouth, NH, known as Tax Map 224, Lots 14 & 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on our behalf concerning the subject properties. The parcels are located at 1169 & 1171 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.

The Sagamore Group, LLC

Daniel Jackson, Member
Duly authorized

5/4/21
Date

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 Hebert — Date

dotloop verified 05/04/21 2:47 PM EDT 5E1O-M1AR-15WP-P2NG

Witness — Colleen Hebert — Date

dotloop verified 05/04/21 2:49 PM EDT QIRG-7MIM-TUEK-BAFX

Letter of Authorization

I, Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owner of property located in Portsmouth, NH, known as Tax Map 224, Lot 14, 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 1171 Sagamore Avenue in Portsmouth, NH.

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

Witness

Colleen Hebert dotloop verified 05/04/21 2:49 PM EDT RLSS-SIAZ-YMFI-YU8D

Colleen Hebert

Date

KNOW ALL MEN BY THESE PRESENTS

2299-1707

'77 DEC -5 A11:00
REC'D ROCKINGHAM COUNTY 3571
REGISTRY OF DEEDS

THAT the Mark H. Wentworth Home for Chronic Invalids, a voluntary corporation duly established by law and having a usual place of business in Portsmouth ~~of~~ Rockingham County, State of New Hampshire, for consideration paid, grant to the City of Portsmouth, a municipal corporation in the County of Rockingham and State of New Hampshire

~~of~~ ~~County, State of~~

, with WARRANTY COVENANTS,

(Description and incumbrances, if any)

A certain tract of land situate on the Easterly side of Sagamore Avenue and the Southerly side of Wentworth Road, also known as Wentworth House Road in said Portsmouth and more particularly bounded as follows:

Beginning at a point in the Southerly sideline of Wentworth Road at the Northeasterly corner of land of Harold and Katherine Abbott and running Easterly along the Southerly sideline of Wentworth Road 464 feet more or less to land of Herman and Bertraude L. Odiorne; thence turning and running Southerly by said Odiornes, land of Mike Kuchtey and land of Helen F. Mulcahy 605 feet more or less to the Portsmouth-Rye town line; thence turning and running Southwesterly by said Portsmouth-Rye town line 1090 feet more or less to the Westerly sideline of Sagamore Avenue; thence turning and running Northerly by said Sagamore Avenue 1200 feet more or less to an iron pipe in the ground at land of Richard and Kathryn Cooper; thence turning and running Easterly by said land of Cooper 100 feet to an iron pipe in the ground; thence turning and running Northerly by said land of Cooper 100 feet to a drill hole in a ledge; thence continuing Northerly by land of Richard Cooper and others 80 feet to a corner at land of Valley Oil Company; thence turning and running Easterly by land of said Oil Company 49 feet more or less to an iron pipe at land of said Abbotts; thence continuing in an Easterly direction by land of Abbotts 100 feet more or less to an iron pipe; thence turning and running Northerly by said land of said Abbotts 139 feet more or less to Wentworth Road and the point of beginning. Containing by estimation 16.5 acres.

Being the same premises acquired by deed of Charles J. Griffin Executor of the will of Henry Kenney dated October 17, 1939, recorded in Rockingham County Registry of Deeds Book 963 Page 375 less a certain lot conveyed to Richard Cooper and Kathryn E. Cooper by deed dated September 27, 1956, recorded in Rockingham County Registry of Deeds Book 1410 Page 350.

~~wife~~ husband ~~of said Grantor~~ ~~release to said Grantee all rights of~~ ~~dower~~ ~~curtesy~~ ~~and homestead and other interest therein~~

WITNESS the ~~hand~~ and corporate seal this 27th day of September, 19 77

Witness: Patricia A. Pugh

Mark H. Wentworth Home for Chronic Invalids

By: Wyman P. Boynton, President

State of New Hampshire

Rockingham, ss. September 27, 1977

Then personally appeared the above named Wyman P. Boynton, President of the Board of Trustees of the Mark H. Wentworth Home for Chronic Invalids, and for this purpose duly authorized and acknowledged the foregoing instrument to be the voluntary act and deed before me of said corporation, before me

Patricia A. Pugh
Notary Public — Justice of the Peace

2299-1708

Mark H. Wentworth Home
for Chronic Invalids

Meeting of the Board of Trustees of the Mark H. Wentworth Home for Chronic Invalids held at the Home on December 3, 1976, with a quorum of the Trustees present.

President, Wyman P. Boynton, presided.

On motion it was

VOTED: To sell the Sagamore Avenue property of the Home to the City of Portsmouth for the sum of $40,000.00, together with the appraisers fee and the abatement of the 1976 taxes; and further that the President be authorized to execute all deeds and other instruments required.

A true extract from the reco

Richard E. Winslow, Cl

THE MARK H. WENTWORTH HOME FOR CHRONIC INVALIDS INCORPORATED NEW HAMPSHIRE 1911

Approved

Jul 29 2 56 PM '82 14391

KNOW ALL MEN BY THESE PRESENTS, That Norman J. Smith, of P.O. Box 95, Portsmouth, County of Rockingham and State of New Hampshire,

BK2418 P0173

for consideration paid, grant to Colleen M. Hebert of 1169 Sagamore Avenue, Portsmouth, County of Rockingham and State of New Hampshire,

with warranty covenants

A certain parcel of land, together with the buildings thereon, situate on the Westerly side of Sagamore Avenue, so-called, in Portsmouth in the County of Rockingham and State of New Hampshire, more particularly bounded and described as follows:

Beginning in the Westerly sideline of the Avenue at land now or formerly of Haven L. Joy; thence running Westerly by other land of Joy, Two Hundred Ninety-three and Five Tenths (293.5) feet to land now or formerly of Ralph W. Junkins Est. et als; thence turning and running Norterly by other land of Junkins et als One Hundred Twenty-six and Thirty-two Hundredths (126.32) feet to a point at other land now or formerly of John J. and Harriet Scammon; thence turning and running Easterly by other land of Scammon Three Hundred (300) feet, more or less, to the Westerly sideline of the Avenue, thence running Southerly by the sideline Forty-seven and Sixty-five Hundredths (47.65) feet to a point, thence running Southeasterly by the sideline Forty-nine and Eight Hundredths (49.08) feet to land of Joy which is the point of beginning.

Being the same premises conveyed to Norman J. Smith and Janet S. Smith by deed of John J. Scammon et al dated July 24, 1954 and recorded in the Rockingham County Registry of Deeds in Book 1323 Page 324.

STATE OF NEW HAMPSHIRE
TAX ON TRANSFER OF REAL PROPERTY
STATE TAX COMMISSION
JUL 29 '82
325.00
RR 10455
19068

Norman J. Smith, being single . husband xxxxxxxxxxxxxxxxx release to and quitclaim all rights of curtesy dower and homestead and other interests therein

Witness, my hand xxxxxxx this 29th day of July A.D. 82.

Witness
Juliette A. Cole

Norman J. Smith L.S.

L.S.

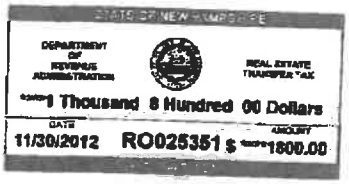
L.S.

State of New Hampshire
Rockingham ss.: July 29 A.D. 82

Personally appeared Norman J. Smith

known to me, or satisfactorily proven to be the person whose name subscribed to the foregoing instrument and acknowledged that he executed the same for the purposes therein contained

Before me, Juliette A. Cole
Justice of the Peace



061594

2012 NOV 30 PM 1:45

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS THAT I, ROBERT F. SCAMMON, JR., single and not a party to a civil union, of 1169 Sagamore Avenue, Portsmouth, New Hampshire, 03801

For consideration paid, grant to **JOHN J. HEBERT AND COLLEEN HEBERT,** husband and wife, of 54 Pioneer Road, Rye, New Hampshire, 03870, as joint tenants with rights of survivorship,

With Warranty Covenants, the following described premises situate in Portsmouth, Rockingham County, New Hampshire:

A certain lot or parcel of land with the buildings thereon situate on Sagamore Avenue, City of Portsmouth, County Rockingham and State of New Hampshire, bounded and described as follows:

Beginning at the concrete bound at the Northeasterly corner of the within described lot, the said bound being Four Hundred Seventy-nine (479) feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running Southerly twenty-four (24) degrees thirty-four (34) minutes west along said Sagamore Avenue one hundred (100) feet to a stake in the stone wall at other land now or formerly of Allen B. Keen; thence turning and running N 83° 43' W by other land of said Keen 300 feet to a stake; thence turning and running N 24° 30' E 100 feet by land now or formerly of Frank E. Brooks, etals; thence turning and running S 83° 43' E by land of said Brooks and other 300 feet to Sagamore Avenue and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth adjoining and lying on the northerly side of the above described parcel and bounded and described as follows: Beginning at a concrete bound at the southeasterly corner of these premises at land described above, said bound being 479 feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running N 83° 43' W by the above described parcel 300 feet to a point of land now or formerly of Frank E Brooks et als; thence turning and running N 24° 30' E by other land of said Brooks and others 300 feet, more or less to

said Sagamore Avenue; thence turning and running southerly along said Sagamore Avenue 50 feet to said concrete bound and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth and bounded and described as follows: Beginning at the northeasterly corner of the herein described parcel at the intersection of the westerly sideline of said Sagamore Avenue and land now or formerly of Allen B. Keen, said point being 100 feet S 24° 34' W along said Sagamore Avenue from the concrete bound aforementioned; thence running southerly along said Avenue 25 feet to land now or formerly of Frank E .Brooks, et als; thence turning and running N 83° 43' W by land now or formerly Frank E. Brooks, et als 300 feet, more or less, to a point; thence turning and running N 24° 30' E 25 feet by land of said Brooks, et als, to a stake at other land now or formerly of Allen B. Keen; thence turning and running Southeast 83° 43' E by other land of said Keen 300 feet to Sagamore Avenue and being the point of beginning. This parcel adjoining and lying on the southerly side of the first described parcel herein.

Being the same premises conveyed to the within Grantor by deed of Barbara Scammon dated April 25, 1995, recorded in Rockingham County Registry of Deeds, Book 3097, Page 1715.

Signed this 30th day of November, 2012.

Robert F. Scammon, Jr.

STATE OF NEW HAMPSHIRE
ROCKINGHAM COUNTY

Personally appeared this 30th day of November, 2012, Robert F. Scammon, Jr., who acknowledged that he/she/they executed the foregoing instrument as his/her/their free act and deed for the purposes contained herein.

Before me,

Lori Hebert, Notary Public

My commission expires: 05/09/2017

LORI HEBERT NOTARY PUBLIC HAMPSHIRE

GES, Inc.
8 Continental Drive
Exeter, NH 03833

1169 Sagamore Road
Portsmouth, NH

Off-site Wetland Buffer Impact:

Photos taken on June 28, 2022

Location of proposed culvert outlet is at log. The wetland edge is at the Phragmities growing next to the road.

Phragmities is adjacent the road and extends back into the wetland.

The majority of the wetland has Phragmities, with only some of the hydrologically wetter areas being too wet to allow the common reed to grow.

It is my understanding that the culvert is essentially a stormwater overflow for only major storm events and does not flow into the wetlands on most smaller storms. Further, the discharge has been cleaned by other upslope stormwater controls. This limited amount of discharge should have no appreciable impact on the wetlands.

Compiled by Jim Gove, CWS # 051, CSS # 004 on 6-28-2022.

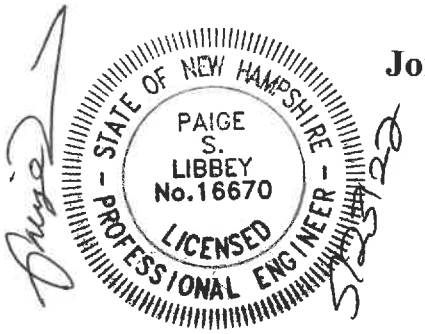
DRAINAGE ANALYSIS

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
Revised April 18, 2022
Revised May 10, 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	0.31	1.40	0.87	2.11	1.40	2.80	1.92
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	0.80	3.98	1.07
Analysis Point #4	0.24	0.21	0.50	0.40	0.73	0.56	0.94	0.70
Analysis Point #5	N/A	0.69	N/A	1.05	N/A	1.50	N/A	2.40

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	0.036	0.140	0.089	0.208	0.139	0.275	0.189
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	0.039	0.402	0.058	0.573	0.077
Analysis Point #4	0.022	0.019	0.045	0.037	0.064	0.051	0.083	0.065
Analysis Point #5	N/A	0.082	N/A	0.206	N/A	0.343	N/A	0.478

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 depression (Analysis Point 1) after overflowing from the isolated wetland in the rear of the site. 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 nineteen (19) 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 Analysis Points #1-4 during all analyzed storm events.

Otherwise, some roof runoff will be infiltrated through subsurface stone beds. 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.

Additionally, although the system has been designed to reduce the amount of flooding on to abutting properties in the proposed condition, a cross-street culvert is proposed as an overflow from the depression surrounding the isolated wetland. As modelled, this culvert protects against flooding on to adjacent properties during all analyzed storm events. This culvert outlets across the street into a larger wetland area, so new Analysis Point 5 is introduced in the proposed condition for the runoff that is captured by this culvert.

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

TABLE OF CONTENTS

1.0 RAINFALL CHARACTERISTICS

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.70"), 10 Year – 24 Hour (5.61"), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows 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 nineteen (19) 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, 17S, and 18S represent three stretches of Sagamore Avenue that are to drain toward proposed deep sump catch basins, the purpose of which is to pre-treat roadway runoff and drain it to the wetland across the street. The three proposed catch basins drain toward a proposed "Jellyfish" filtration system for treatment. Finally, Subcatchment 19S represents the sections of 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 toward AP1-AP4 below the existing condition.

As stated in the executive summary, a new cross street culvert is proposed to be installed as an overflow to prevent runoff from cresting on to adjacent properties after filling the depression surrounding the isolated wetland. Because this culvert carries water across the road, a new analysis point is introduced, represented as Analysis Point 5 to delineate the runoff that enters the larger wetland across the street. The three proposed catch basins along Sagamore Ave feed into a "Jellyfish" filtration system which intercepts the cross-street culvert and treats runoff directed toward it, and therefore the roadway runoff that enters the proposed catch basin also directly reaches Analysis Point AP5 after being treated.

As modelled, this proposed culvert reduces the peak elevation within the depression surrounding the isolated wetland and reduces the potential for flooding during peak storm events. A summary of the peak elevations during each analyzed storm event are as follows, noting that the flood elevation is situated at 31.3:

	2 Year	10 Year	25 Year	50 Year
Existing	30.48	31.32 (Flooding)	31.36 (Flooding)	31.44 (Flooding)
Proposed	30.42	30.65	30.96	31.18

After passing through the bioretention systems and concrete "Galley" chambers, treated and attenuated runoff will gradually drain toward the isolated wetland in the northeast corner of the site, from which any overflow will drain across the street via the proposed culvert during all analyzed storm events. The peak rates and volumes of runoff will be reduced in all analyzed storm events toward Analysis Points 1-4 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 clean 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, a rip rap outlet protection apron is proposed in order to dissipate any concentrated flows that result, and a proposed cross-street culvert will work to reduce the potential for flooding on adjacent properties. The contours surrounding the isolated wetland in the northeastern corner of the site are modelled as a pond, 21P, in the proposed condition, where it is modelled as 2P in the existing condition.

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

nitrogen removal, OR to retain and treat the Water Quality Volume. This plan exceeds the requirements for pollutant removal because appropriate treatment / groundwater recharge systems are used and the Water Quality Volume is retained and treated.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, properties, and wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, catch basins, drain manholes, yard drains, bioretention systems, concrete "Galley" chambers, subsurface stone infiltration beds, rip rap outlet protection, a "Jellyfish" filtration system for road runoff, and a proposed cross-street culvert 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.

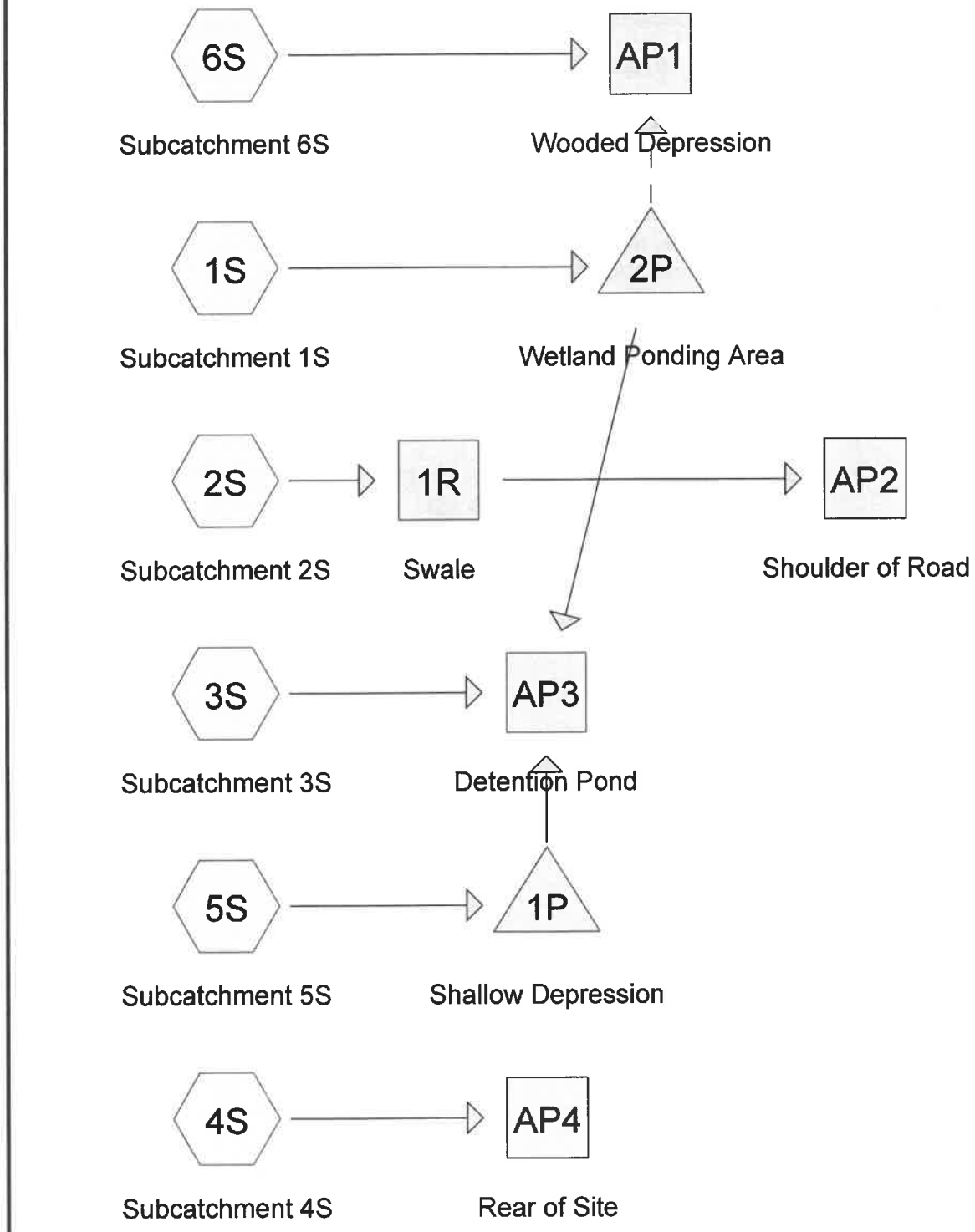
Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

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 5/10/2022

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'

‡

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'

‡

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

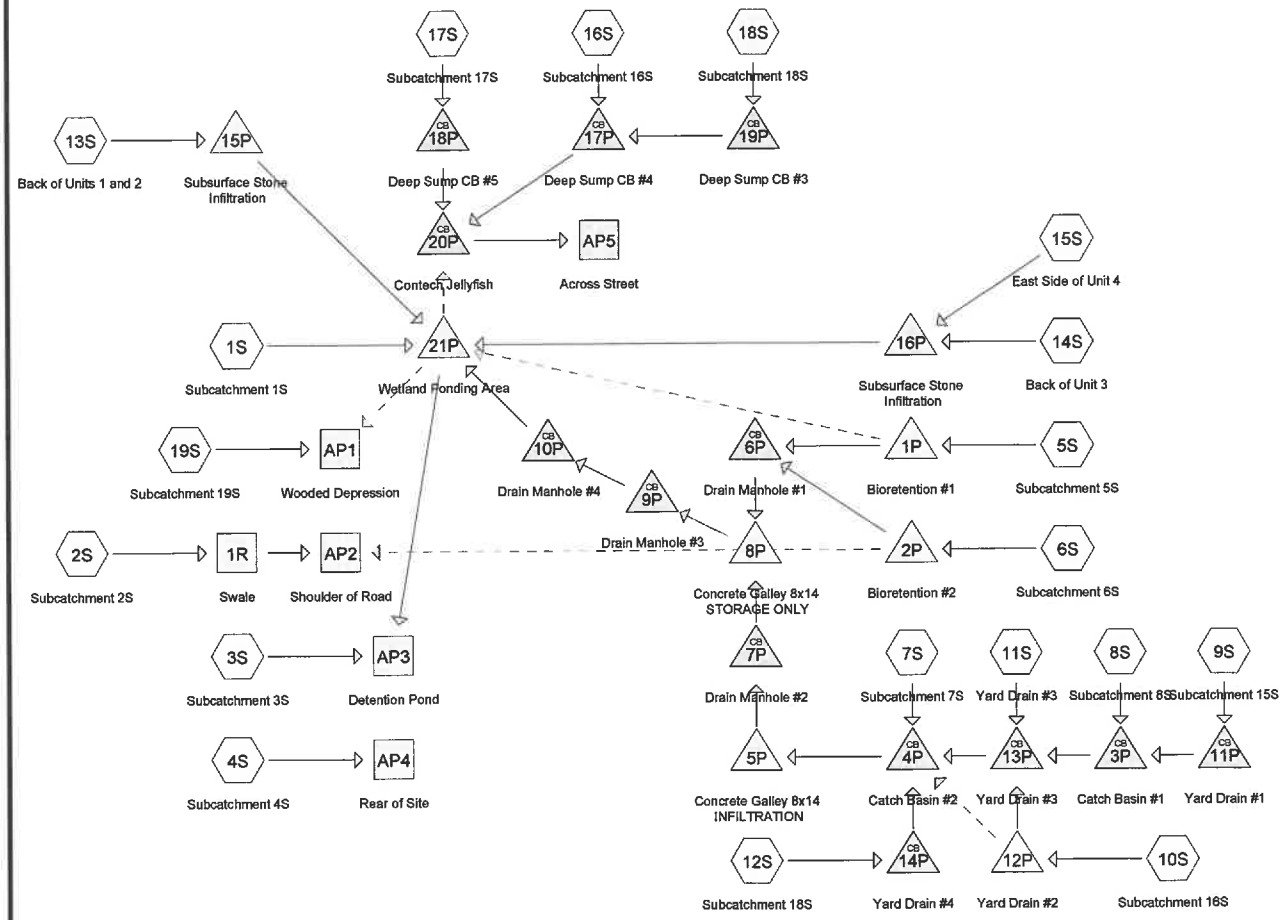
Primary OutFlow Max=1.86 cfs @ 12.57 hrs HW=31.43' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.86 cfs @ 0.87 fps)

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 5/10/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.673	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 19S)
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)
0.522	98	Paved parking, HSG B (5S, 6S, 7S, 8S, 17S, 18S, 19S)
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, 19S)
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, 19S)
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, 19S
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 73.74% Impervious Runoff Depth>2.45"
Tc=6.0 min CN=88 Runoff=0.44 cfs 0.033 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% 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 83.39% 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 70.01% 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

Subcatchment17S: Subcatchment17S 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

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.36 cfs 0.030 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>0.80"
Flow Length=137' Tc=16.7 min CN=64 Runoff=0.31 cfs 0.036 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=0.31 cfs 0.036 af
Outflow=0.31 cfs 0.036 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

Reach AP5: Across Street Inflow=0.69 cfs 0.082 af
Outflow=0.69 cfs 0.082 af

Pond 1P: Bioretention #1 Peak Elev=35.21' Storage=137 cf Inflow=0.44 cfs 0.033 af
Primary=0.44 cfs 0.030 af Secondary=0.00 cfs 0.000 af Outflow=0.44 cfs 0.030 af

Pond 2P: Bioretention #2 Peak Elev=35.40' Storage=218 cf Inflow=0.71 cfs 0.052 af
Primary=0.60 cfs 0.051 af Secondary=0.00 cfs 0.000 af Outflow=0.60 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=34.70' Inflow=1.02 cfs 0.081 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=1.02 cfs 0.081 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=33.77' Storage=0.021 af Inflow=1.02 cfs 0.081 af
Primary=0.38 cfs 0.080 af Secondary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.080 af

Pond 9P: Drain Manhole #3 Peak Elev=31.97' Inflow=0.38 cfs 0.080 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=0.38 cfs 0.080 af

Pond 10P: Drain Manhole #4 Peak Elev=31.47' Inflow=0.38 cfs 0.080 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.38 cfs 0.080 af

Pond 11P: 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 12P: 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 13P: 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 14P: 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 15P: 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 16P: 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 17P: Deep Sump CB #4 Peak Elev=29.99' Inflow=0.46 cfs 0.038 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=0.46 cfs 0.038 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.53' Inflow=0.23 cfs 0.019 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.23 cfs 0.019 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.20' Inflow=0.36 cfs 0.030 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.36 cfs 0.030 af

Pond 20P: Contech Jellyfish Peak Elev=29.41' Inflow=0.69 cfs 0.082 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=0.69 cfs 0.082 af

Pond 21P: Wetland Ponding Area Peak Elev=30.42' Storage=3,584 cf Inflow=0.63 cfs 0.106 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.05 cfs 0.026 af Outflow=0.05 cfs 0.026 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.464 af Average Runoff Depth = 1.91"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 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 73.74% Impervious Runoff Depth>4.25"
Tc=6.0 min CN=88 Runoff=0.75 cfs 0.056 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% 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 83.39% 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 70.01% 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

Subcatchment17S: Subcatchment17S 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

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.046 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>1.98"
Flow Length=137' Tc=16.7 min CN=64 Runoff=0.87 cfs 0.089 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=0.87 cfs 0.089 af
Outflow=0.87 cfs 0.089 af

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

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

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

Reach AP5: Across Street Inflow=1.05 cfs 0.206 af
Outflow=1.05 cfs 0.206 af

Pond 1P: Bioretention #1 Peak Elev=35.60' Storage=155 cf Inflow=0.75 cfs 0.056 af
Primary=0.73 cfs 0.054 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 0.054 af

Pond 2P: Bioretention #2 Peak Elev=36.19' Storage=303 cf Inflow=1.17 cfs 0.089 af
Primary=1.03 cfs 0.087 af Secondary=0.00 cfs 0.000 af Outflow=1.03 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=1.76 cfs 0.141 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=1.76 cfs 0.141 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=34.73' Storage=0.041 af Inflow=1.76 cfs 0.141 af
Primary=0.50 cfs 0.140 af Secondary=0.00 cfs 0.000 af Outflow=0.50 cfs 0.140 af

Pond 9P: Drain Manhole #3 Peak Elev=32.03' Inflow=0.50 cfs 0.140 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=0.50 cfs 0.140 af

Pond 10P: Drain Manhole #4 Peak Elev=31.53' Inflow=0.50 cfs 0.140 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.50 cfs 0.140 af

Pond 11P: 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 12P: 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 13P: 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 14P: 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 15P: 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 16P: 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 17P: Deep Sump CB #4 Peak Elev=30.09' Inflow=0.70 cfs 0.059 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=0.70 cfs 0.059 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.64' Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.35 cfs 0.029 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.31' Inflow=0.55 cfs 0.046 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.55 cfs 0.046 af

Pond 20P: Contech Jellyfish Peak Elev=29.53' Inflow=1.05 cfs 0.206 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=1.05 cfs 0.206 af

Pond 21P: Wetland Ponding Area Peak Elev=30.65' Storage=4,209 cf Inflow=1.19 cfs 0.200 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.44 cfs 0.119 af Outflow=0.44 cfs 0.119 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.846 af Average Runoff Depth = 3.48"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 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 = 0.75 cfs @ 12.09 hrs, Volume= 0.056 af, Depth> 4.25"

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
1,824	61	>75% Grass cover, Good, HSG B
14	98	Paved parking, HSG D
3,268	98	Paved parking, HSG B
1,840	98	Roofs, HSG B
6,946	88	Weighted Average
1,824		26.26% Pervious Area
5,122		73.74% 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
687	61	>75% Grass cover, Good, HSG B
1,334	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
3,883		37.29% Pervious Area
6,529		62.71% 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
2,857	98	Paved parking, HSG B
1,047	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
1,619		16.61% Pervious Area
8,130		83.39% 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
	1,788	61	>75% Grass cover, Good, HSG B
	4,412	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
	3,982		29.99% Pervious Area
	9,294		70.01% 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 = 0.55 cfs @ 12.09 hrs, Volume= 0.046 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
4,475	98	Paved parking, HSG B
4,475		100.00% Impervious Area

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

Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 0.87 cfs @ 12.25 hrs, Volume= 0.089 af, Depth> 1.98"

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
4,147	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
23,588	64	Weighted Average
19,339		81.99% Pervious Area
4,249		18.01% 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			

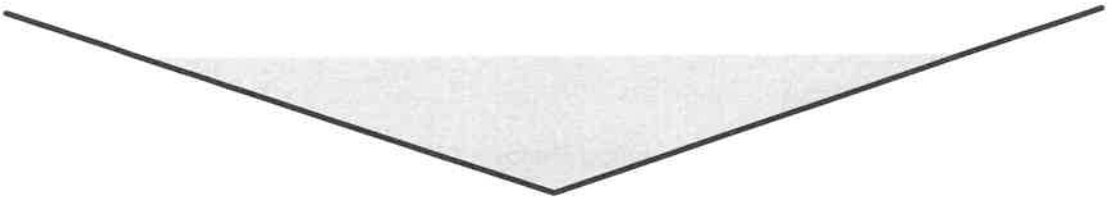
Summary for Reach 1R: Swale

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 = 0.542 ac, 18.01% Impervious, Inflow Depth > 1.98" for 10 Yr 24 Hr(+15%) event
Inflow = 0.87 cfs @ 12.25 hrs, Volume= 0.089 af
Outflow = 0.87 cfs @ 12.25 hrs, Volume= 0.089 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 = 1.720 ac, 49.10% Impervious, Inflow Depth > 0.27" for 10 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 12.10 hrs, Volume= 0.039 af
Outflow = 0.53 cfs @ 12.10 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

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

Summary for Reach AP4: Rear of Site

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

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

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

Summary for Reach AP5: Across Street

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

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 12.64" for 10 Yr 24 Hr(+15%) event
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af
Outflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 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, 73.74% Impervious, Inflow Depth > 4.25" for 10 Yr 24 Hr(+15%) event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.73 cfs @ 12.11 hrs, Volume= 0.054 af, Atten= 3%, Lag= 1.1 min
Primary = 0.73 cfs @ 12.11 hrs, Volume= 0.054 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= 35.60' @ 12.11 hrs Surf.Area= 315 sf Storage= 155 cf

Plug-Flow detention time= 39.0 min calculated for 0.054 af (96% of inflow)
Center-of-Mass det. time= 15.9 min (809.2 - 793.3)

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	34.75'	**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=0.72 cfs @ 12.11 hrs HW=35.58' TW=34.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.72 cfs of 1.00 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.72 cfs @ 3.68 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, 62.71% Impervious, Inflow Depth > 4.46" for 10 Yr 24 Hr(+15%) event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.089 af
Outflow = 1.03 cfs @ 12.13 hrs, Volume= 0.087 af, Atten= 12%, Lag= 2.7 min
Primary = 1.03 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= 36.19' @ 12.13 hrs Surf.Area= 600 sf Storage= 303 cf

Plug-Flow detention time= 24.2 min calculated for 0.087 af (98% of inflow)
Center-of-Mass det. time= 12.3 min (798.7 - 786.4)

Volume	Invert	Avail.Storage	Storage Description
#1	34.49'	1,249 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	600	0.0	0	0
34.50	600	40.0	2	2
35.49	600	40.0	238	240
35.50	600	15.0	1	241
36.99	600	15.0	134	375
37.00	600	100.0	6	381
38.00	1,113	100.0	857	1,237
38.01	1,113	100.0	11	1,249

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=1.02 cfs @ 12.13 hrs HW=36.15' TW=34.94' (Dynamic Tailwater)
└1=**Culvert** (Passes 1.02 cfs of 1.46 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 1.02 cfs @ 5.17 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, 61.86% 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, 56.90% 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, 56.90% 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=34.69' (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, 67.12% Impervious, Inflow Depth > 4.25" for 10 Yr 24 Hr(+15%) event
Inflow = 1.76 cfs @ 12.12 hrs, Volume= 0.141 af
Outflow = 1.76 cfs @ 12.12 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.0 min
Primary = 1.76 cfs @ 12.12 hrs, Volume= 0.141 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=1.71 cfs @ 12.12 hrs HW=34.94' TW=33.93' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.71 cfs @ 3.16 fps)

Summary for Pond 7P: Drain Manhole #2

Inflow Area = 0.768 ac, 56.90% 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' @ 12.54 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=34.69' TW=34.71' (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 0.41' @ 12.70 hrs (0.46 cfs 0.010 af)

Inflow Area =	1.167 ac,	60.39% Impervious,	Inflow Depth >	1.45"	for 10 Yr 24 Hr(+15%) event
Inflow =	1.76 cfs @	12.12 hrs,	Volume=	0.141 af	
Outflow =	0.50 cfs @	12.50 hrs,	Volume=	0.140 af,	Atten= 72%, Lag= 22.8 min
Primary =	0.50 cfs @	12.50 hrs,	Volume=	0.140 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= 34.73' @ 12.50 hrs Surf.Area= 0.055 ac Storage= 0.041 af

Plug-Flow detention time= 38.0 min calculated for 0.140 af (99% of inflow)
Center-of-Mass det. time= 32.6 min (835.3 - 802.8)

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=34.73' TW=32.03' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.50 cfs @ 5.72 fps)
└─**2=Orifice/Grate** (Passes 0.50 cfs of 0.63 cfs potential flow)
└─**3=Culvert** (Barrel Controls 0.00 cfs @ 0.60 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, 60.39% Impervious, Inflow Depth > 1.44" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af
Outflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.03' @ 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=32.03' TW=31.53' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.50 cfs @ 2.30 fps)

Summary for Pond 10P: Drain Manhole #4

Inflow Area = 1.167 ac, 60.39% Impervious, Inflow Depth > 1.44" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af
Outflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.53' @ 12.50 hrs
Flood Elev= 36.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.10'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.10' / 30.90' S= 0.0050 '/' 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=31.53' TW=30.20' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.50 cfs @ 2.28 fps)

Summary for Pond 11P: 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 12P: 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 13P: Yard Drain #3

Inflow Area = 0.514 ac, 47.23% 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 14P: 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 15P: 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 16P: 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 17P: Deep Sump CB #4

Inflow Area = 0.131 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.059 af
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.09' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.60'	**12.0" Round Culvert** L= 67.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.60' / 29.20' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=30.08' TW=29.52' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.69 cfs @ 2.66 fps)

Summary for Pond 18P: Deep Sump CB #5

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

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.64' @ 12.09 hrs
Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.25'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.25' / 29.20' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=29.63' TW=29.52' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.34 cfs @ 1.84 fps)

Summary for Pond 19P: Deep Sump CB #3

Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.31' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.09 hrs HW=30.30' TW=30.08' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.54 cfs @ 1.99 fps)

Summary for Pond 20P: Contech Jellyfish

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 12.64" for 10 Yr 24 Hr(+15%) event
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af
Outflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min
Primary = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.53' @ 12.09 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.95'	**15.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 28.70' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.09 hrs HW=29.52' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.02 cfs @ 2.76 fps)

Summary for Pond 21P: Wetland Ponding Area

Inflow Area = 1.527 ac, 52.60% Impervious, Inflow Depth > 1.57" for 10 Yr 24 Hr(+15%) event
Inflow = 1.19 cfs @ 12.11 hrs, Volume= 0.200 af
Outflow = 0.44 cfs @ 13.61 hrs, Volume= 0.119 af, Atten= 63%, Lag= 90.1 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.44 cfs @ 13.61 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.65' @ 13.61 hrs Surf.Area= 2,746 sf Storage= 4,209 cf

Plug-Flow detention time= 216.1 min calculated for 0.119 af (59% of inflow)
Center-of-Mass det. time= 112.2 min (951.6 - 839.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	7,242 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	2,174	307.0	1,688	2,602	5,152
31.00	3,074	298.0	2,611	5,213	5,680
31.50	4,916	435.0	1,980	7,193	13,674
31.51	4,916	435.0	49	7,242	13,678

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
#3	Tertiary	30.30'	**15.0" Round Culvert** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.30' / 30.20' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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)

Tertiary OutFlow Max=0.44 cfs @ 13.61 hrs HW=30.65' TW=29.34' (Dynamic Tailwater)
↑—**3=Culvert** (Barrel Controls 0.44 cfs @ 2.30 fps)

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

Subcatchment1S: Subcatchment1S Runoff Area=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 73.74% Impervious Runoff Depth>5.71"
Tc=6.0 min CN=88 Runoff=1.00 cfs 0.076 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% 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 83.39% 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 70.01% 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

Subcatchment17S: Subcatchment17S 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

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.70 cfs 0.059 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>3.08"
Flow Length=137' Tc=16.7 min CN=64 Runoff=1.40 cfs 0.139 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=1.40 cfs 0.139 af
Outflow=1.40 cfs 0.139 af

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

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

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

Reach AP5: Across Street Inflow=1.50 cfs 0.343 af
Outflow=1.50 cfs 0.343 af

Pond 1P: Bioretention#1 Peak Elev=36.08' Storage=178 cf Inflow=1.00 cfs 0.076 af
Primary=0.93 cfs 0.073 af Secondary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.073 af

Pond 2P: Bioretention#2 Peak Elev=37.00' Storage=382 cf Inflow=1.53 cfs 0.118 af
Primary=1.30 cfs 0.116 af Secondary=0.00 cfs 0.000 af Outflow=1.30 cfs 0.116 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=35.66' Inflow=2.22 cfs 0.190 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=2.22 cfs 0.190 af

Pond 7P: Drain Manhole #2 Peak Elev=35.71' Inflow=1.10 cfs 0.033 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.10 cfs 0.033 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=35.60' Storage=0.059 af Inflow=2.22 cfs 0.223 af
Primary=1.59 cfs 0.222 af Secondary=0.00 cfs 0.000 af Outflow=1.59 cfs 0.222 af

Pond 9P: Drain Manhole #3 Peak Elev=32.48' Inflow=1.59 cfs 0.222 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=1.59 cfs 0.222 af

Pond 10P: Drain Manhole #4 Peak Elev=31.95' Inflow=1.59 cfs 0.222 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.59 cfs 0.222 af

Pond 11P: 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 12P: 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 13P: 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 14P: 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 15P: 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 16P: 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 17P: Deep Sump CB #4 Peak Elev=30.16' Inflow=0.90 cfs 0.075 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=0.90 cfs 0.075 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.72' Inflow=0.44 cfs 0.037 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.44 cfs 0.037 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.39' Inflow=0.70 cfs 0.059 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.70 cfs 0.059 af

Pond 20P: Contech Jellyfish Peak Elev=29.66' Inflow=1.50 cfs 0.343 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=1.50 cfs 0.343 af

Pond 21P: Wetland Ponding Area Peak Elev=30.96' Storage=5,086 cf Inflow=2.00 cfs 0.312 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=1.35 cfs 0.230 af Outflow=1.35 cfs 0.230 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.169 af Average Runoff Depth = 4.80"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 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 73.74% Impervious Runoff Depth>7.08"
Tc=6.0 min CN=88 Runoff=1.22 cfs 0.094 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% 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 83.39% 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 70.01% 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

Subcatchment17S: Subcatchment17S 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

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.84 cfs 0.071 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>4.19"
Flow Length=137' Tc=16.7 min CN=64 Runoff=1.92 cfs 0.189 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=1.92 cfs 0.189 af
Outflow=1.92 cfs 0.189 af

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

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

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

Reach AP5: Across Street Inflow=2.40 cfs 0.478 af
Outflow=2.40 cfs 0.478 af

Pond 1P: Bioretention #1 Peak Elev=36.75' Storage=289 cf Inflow=1.22 cfs 0.094 af
Primary=1.06 cfs 0.092 af Secondary=0.00 cfs 0.000 af Outflow=1.06 cfs 0.092 af

Pond 2P: Bioretention #2 Peak Elev=37.27' Storage=561 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=36.86' Storage=0.125 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=36.79' Inflow=2.35 cfs 0.236 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=2.35 cfs 0.236 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=36.26' Storage=0.073 af Inflow=3.62 cfs 0.305 af
Primary=2.10 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=2.10 cfs 0.304 af

Pond 9P: Drain Manhole #3 Peak Elev=32.75' Inflow=2.10 cfs 0.304 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=2.10 cfs 0.304 af

Pond 10P: Drain Manhole #4 Peak Elev=32.13' Inflow=2.10 cfs 0.304 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=2.10 cfs 0.304 af

Pond 11P: 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 12P: 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 13P: 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 14P: 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 15P: 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 16P: 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 17P: Deep Sump CB #4 Peak Elev=30.24' Inflow=1.07 cfs 0.091 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=1.07 cfs 0.091 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.90' Inflow=0.53 cfs 0.044 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.53 cfs 0.044 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.47' Inflow=0.84 cfs 0.071 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.84 cfs 0.071 af

Pond 20P: Contech Jellyfish Peak Elev=29.89' Inflow=2.40 cfs 0.478 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=2.40 cfs 0.478 af

Pond 21P: Wetland Ponding Area Peak Elev=31.18' Storage=5,810 cf Inflow=2.73 cfs 0.426 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=2.20 cfs 0.343 af Outflow=2.20 cfs 0.343 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.481 af Average Runoff Depth = 6.08"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 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 = 1.22 cfs @ 12.09 hrs, Volume= 0.094 af, Depth> 7.08"

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
1,824	61	>75% Grass cover, Good, HSG B
14	98	Paved parking, HSG D
3,268	98	Paved parking, HSG B
1,840	98	Roofs, HSG B
6,946	88	Weighted Average
1,824		26.26% Pervious Area
5,122		73.74% 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
687	61	>75% Grass cover, Good, HSG B
1,334	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
3,883		37.29% Pervious Area
6,529		62.71% 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
2,857	98	Paved parking, HSG B
1,047	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
1,619		16.61% Pervious Area
8,130		83.39% 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
	1,788	61	>75% Grass cover, Good, HSG B
	4,412	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
	3,982		29.99% Pervious Area
	9,294		70.01% 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 = 0.84 cfs @ 12.09 hrs, Volume= 0.071 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
4,475	98	Paved parking, HSG B
4,475		100.00% Impervious Area

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

Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 1.92 cfs @ 12.24 hrs, Volume= 0.189 af, Depth> 4.19"

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

Area (sf)	CN	Description
4,147	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
23,588	64	Weighted Average
19,339		81.99% Pervious Area
4,249		18.01% 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 = 0.542 ac, 18.01% Impervious, Inflow Depth > 4.19" for 50 Yr 24 Hr(+15%) event
Inflow = 1.92 cfs @ 12.24 hrs, Volume= 0.189 af
Outflow = 1.92 cfs @ 12.24 hrs, Volume= 0.189 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 = 1.720 ac, 49.10% Impervious, Inflow Depth > 0.54" for 50 Yr 24 Hr(+15%) event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

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

Summary for Reach AP4: Rear of Site

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

Inflow Area = 0.125 ac, 56.24% Impervious, Inflow Depth > 6.23" for 50 Yr 24 Hr(+15%) event
Inflow = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af
Outflow = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

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

Summary for Reach AP5: Across Street

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

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 29.31" for 50 Yr 24 Hr(+15%) event
Inflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af
Outflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 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=1)

Inflow Area = 0.159 ac, 73.74% Impervious, Inflow Depth > 7.08" for 50 Yr 24 Hr(+15%) event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.094 af
Outflow = 1.06 cfs @ 12.10 hrs, Volume= 0.092 af, Atten= 13%, Lag= 0.5 min
Primary = 1.06 cfs @ 12.10 hrs, Volume= 0.092 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= 36.75' @ 12.49 hrs Surf.Area= 400 sf Storage= 289 cf

Plug-Flow detention time= 28.5 min calculated for 0.092 af (97% of inflow)
Center-of-Mass det. time= 13.5 min (793.2 - 779.6)

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	34.75'	**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=1.06 cfs @ 12.10 hrs HW=36.49' TW=35.24' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.06 cfs of 1.48 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.38 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, 62.71% 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 @ 12.09 hrs, Volume=	0.144 af, Atten= 31%, Lag= 0.3 min		
Primary =	1.29 cfs @ 12.09 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= 37.27' @ 12.22 hrs Surf.Area= 738 sf Storage= 561 cf

Plug-Flow detention time= 19.5 min calculated for 0.144 af (99% of inflow)
Center-of-Mass det. time= 11.5 min (785.1 - 773.6)

Volume	Invert	Avail.Storage	Storage Description
#1	34.49'	1,249 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	600	0.0	0	0
34.50	600	40.0	2	2
35.49	600	40.0	238	240
35.50	600	15.0	1	241
36.99	600	15.0	134	375
37.00	600	100.0	6	381
38.00	1,113	100.0	857	1,237
38.01	1,113	100.0	11	1,249

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 @ 12.09 hrs HW=37.06' TW=35.23' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.28 cfs of 1.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.28 cfs @ 6.52 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 11P by 0.20' @ 12.10 hrs (0.59 cfs 0.005 af)

Inflow Area =	0.375 ac, 61.86% 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 14P by 0.01' @ 12.30 hrs (0.12 cfs 0.001 af)

Inflow Area =	0.768 ac, 56.90% 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 0.01' @ 12.50 hrs (0.51 cfs 0.002 af)

Inflow Area =	0.768 ac, 56.90% 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 @	12.22 hrs,	Volume=	0.423 af,	Atten= 44%, Lag= 6.2 min
Discarded =	0.83 cfs @	12.40 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= 36.86' @ 12.40 hrs Surf.Area= 0.071 ac Storage= 0.125 af

Plug-Flow detention time= 69.4 min calculated for 0.422 af (98% of inflow)
Center-of-Mass det. time= 61.1 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 @ 12.40 hrs HW=36.86' (Free Discharge)
└**1=Exfiltration** (Controls 0.83 cfs)

Primary OutFlow Max=1.96 cfs @ 12.21 hrs HW=36.63' TW=35.99' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 1.96 cfs @ 2.59 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 (0.20 cfs 0.001 af)

Inflow Area =	0.398 ac, 67.12% Impervious, Inflow Depth > 7.10"			for 50 Yr 24 Hr(+15%) event	
Inflow	=	2.35 cfs @	12.09 hrs, Volume=	0.236 af	
Outflow	=	2.35 cfs @	12.09 hrs, Volume=	0.236 af, Atten= 0%, Lag= 0.0 min	
Primary	=	2.35 cfs @	12.09 hrs, Volume=	0.236 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.79' @ 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=35.23' TW=34.59' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.39 cfs @ 3.04 fps)

Summary for Pond 7P: Drain Manhole #2

Inflow Area =	0.768 ac, 56.90% 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=1.91 cfs @ 12.21 hrs HW=35.99' TW=35.58' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.91 cfs @ 2.43 fps)

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

[92] Warning: Device #4 is above defined storage
[80] Warning: Exceeded Pond 6P by 0.01' @ 12.70 hrs (0.31 cfs 0.004 af)
[80] Warning: Exceeded Pond 7P by 0.61' @ 13.30 hrs (0.91 cfs 0.022 af)

Inflow Area =	1.167 ac,	60.39% Impervious,	Inflow Depth >	3.14"	for 50 Yr 24 Hr(+15%) event
Inflow =	3.62 cfs @	12.20 hrs,	Volume=	0.305 af	
Outflow =	2.10 cfs @	12.44 hrs,	Volume=	0.304 af,	Atten= 42%, Lag= 14.4 min
Primary =	2.10 cfs @	12.44 hrs,	Volume=	0.304 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= 36.26' @ 12.44 hrs Surf.Area= 0.055 ac Storage= 0.073 af

Plug-Flow detention time= 31.6 min calculated for 0.304 af (99% of inflow)
Center-of-Mass det. time= 28.4 min (807.3 - 779.0)

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=36.25' TW=32.70' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.63 cfs @ 7.16 fps)
└─**2=Orifice/Grate** (Passes 0.63 cfs of 0.79 cfs potential flow)
└─**3=Culvert** (Inlet Controls 1.47 cfs @ 4.20 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, 60.39% Impervious, Inflow Depth > 3.13" for 50 Yr 24 Hr(+15%) event
Inflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af
Outflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.75' @ 12.49 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=2.12 cfs @ 12.44 hrs HW=32.70' TW=32.13' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.12 cfs @ 3.05 fps)

Summary for Pond 10P: Drain Manhole #4

Inflow Area = 1.167 ac, 60.39% Impervious, Inflow Depth > 3.13" for 50 Yr 24 Hr(+15%) event
Inflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af
Outflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.13' @ 12.44 hrs
Flood Elev= 36.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.10'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.10' / 30.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.44 hrs HW=32.13' TW=31.11' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 2.09 cfs @ 3.21 fps)

Summary for Pond 11P: 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 12P: 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 13P: 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,	47.23% 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 14P: 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 15P: 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 16P: 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 17P: Deep Sump CB #4

Inflow Area = 0.131 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.091 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.09 hrs, Volume= 0.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.24' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.60'	**12.0" Round Culvert** L= 67.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.60' / 29.20' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.09 hrs HW=30.23' TW=29.70' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.05 cfs @ 2.88 fps)

Summary for Pond 18P: Deep Sump CB #5

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.90' @ 12.51 hrs
Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.25'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.25' / 29.20' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=29.79' TW=29.70' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.51 cfs @ 1.17 fps)

Summary for Pond 19P: Deep Sump CB #3

Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.47' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.09 hrs HW=30.45' TW=30.23' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.82 cfs @ 2.14 fps)

Summary for Pond 20P: Contech Jellyfish

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 29.31" for 50 Yr 24 Hr(+15%) event
Inflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af
Outflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.89' @ 12.52 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.95'	**15.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 28.70' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.39 cfs @ 12.52 hrs HW=29.89' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.39 cfs @ 3.35 fps)

Summary for Pond 21P: Wetland Ponding Area

Inflow Area = 1.527 ac, 52.60% Impervious, Inflow Depth > 3.34" for 50 Yr 24 Hr(+15%) event
Inflow = 2.73 cfs @ 12.33 hrs, Volume= 0.426 af
Outflow = 2.20 cfs @ 12.69 hrs, Volume= 0.343 af, Atten= 19%, Lag= 21.7 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 2.20 cfs @ 12.69 hrs, Volume= 0.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.18' @ 12.69 hrs Surf.Area= 3,677 sf Storage= 5,810 cf

Plug-Flow detention time= 121.0 min calculated for 0.343 af (81% of inflow)
Center-of-Mass det. time= 56.5 min (869.7 - 813.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	7,242 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	2,174	307.0	1,688	2,602	5,152
31.00	3,074	298.0	2,611	5,213	5,680
31.50	4,916	435.0	1,980	7,193	13,674
31.51	4,916	435.0	49	7,242	13,678

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
#3	Tertiary	30.30'	**15.0" Round Culvert** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.30' / 30.20' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

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

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)

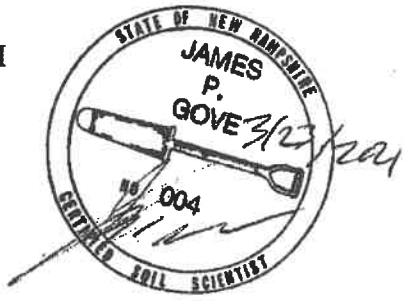
Tertiary OutFlow Max=2.20 cfs @ 12.69 hrs HW=31.18' TW=29.89' (Dynamic Tailwater)
└**3=Culvert** (Barrel Controls 2.20 cfs @ 3.37 fps)

APPENDIX III

Test Pit Logs

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA



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

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"					

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
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

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

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

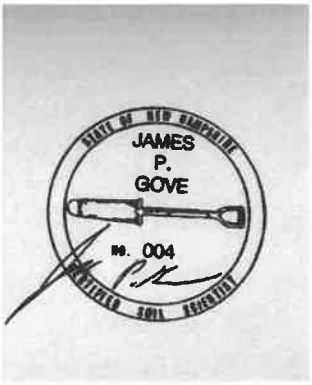
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 4/4	GRS	OM	FR	NONE , Fill
25–36"	10YR 3/2	FSL	GR	FR	NONE, buried A
36–47"	10YR 4/6	FSL	GR	FR	NONE, buried B
47–62"	2.5Y 5/3	FSL	OM	FR	30%, C

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				

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

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

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

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

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

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

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

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

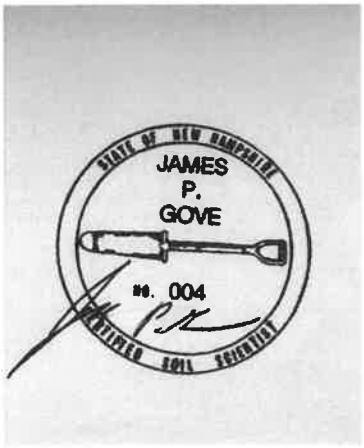
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–10"	10YR 3/2	LS	GR	FR	NONE , Fill
10–49"	10YR 4/4	LS	OM	FR	NONE, Fill
49–65"	10YR3/2	FSL	GR	FR	5%, Buried Ap
65"	Bedrock				

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

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

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

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



1-26-2022

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.

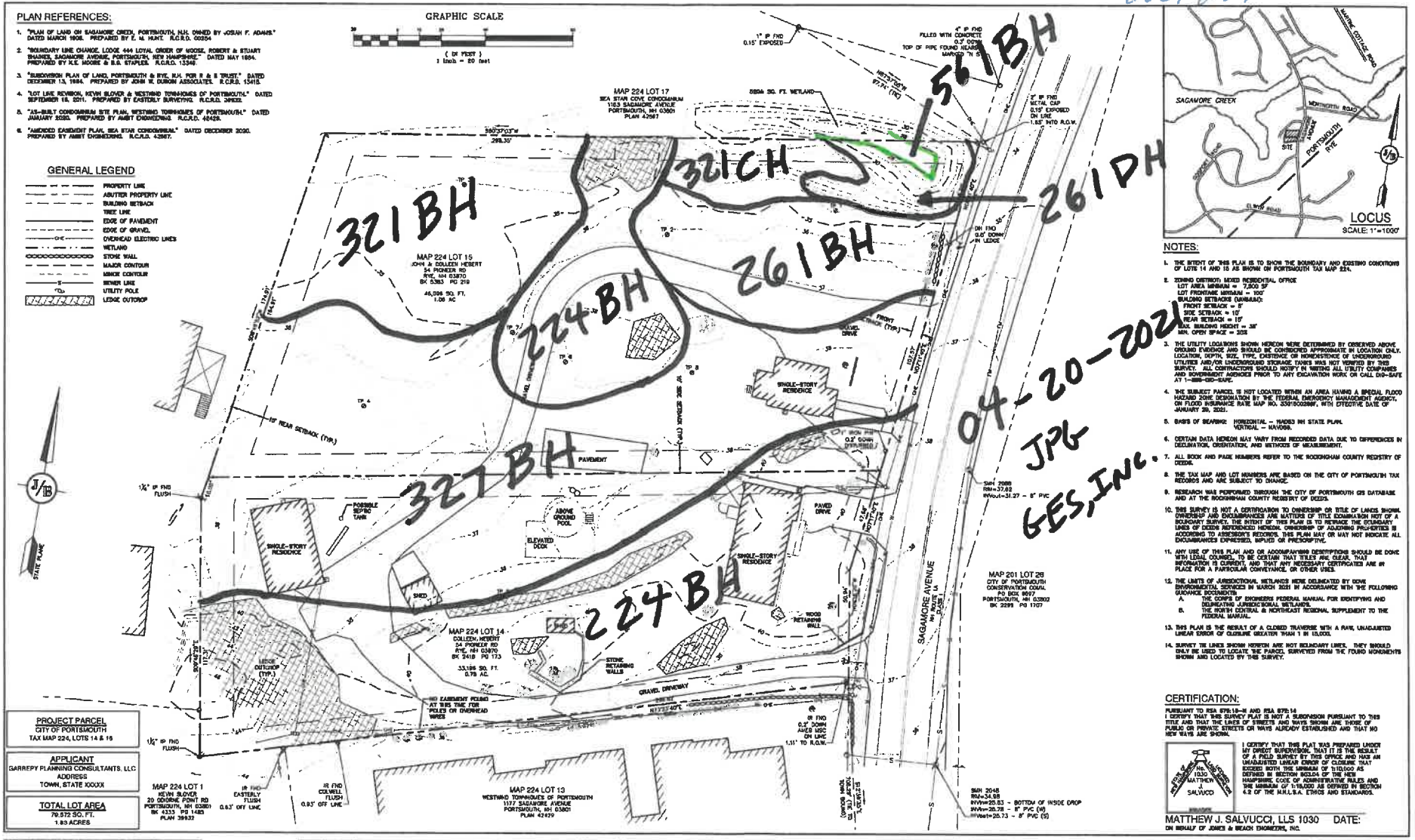
Soil Map Units were identified using the Key to Soil Types. The conversion of High Intensity Soil Map Unit to NRCS Soil Map Unit Name was based upon the observed soil profiles, as was hydrologic soil group, as taken from SSSNNE Special Publication No. 5.

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



Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: 1" = 20'	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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

REV.	DATE	REVISION	BY
0	4/8/21	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
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:	1169 & 1171 SAGAMORE AVENUE PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14 COLLEEN HEBERT 54 PIONEER RD RYE, NH 03870 BK 5418 PG 173 — LOT 15 JOHN J & COLLEEN HEBERT 54 PIONEER RD RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C1
SHEET 2 OF 18
JBE PROJECT NO. 21047

APPENDIX V

NRCS Soil Map

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

Map 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

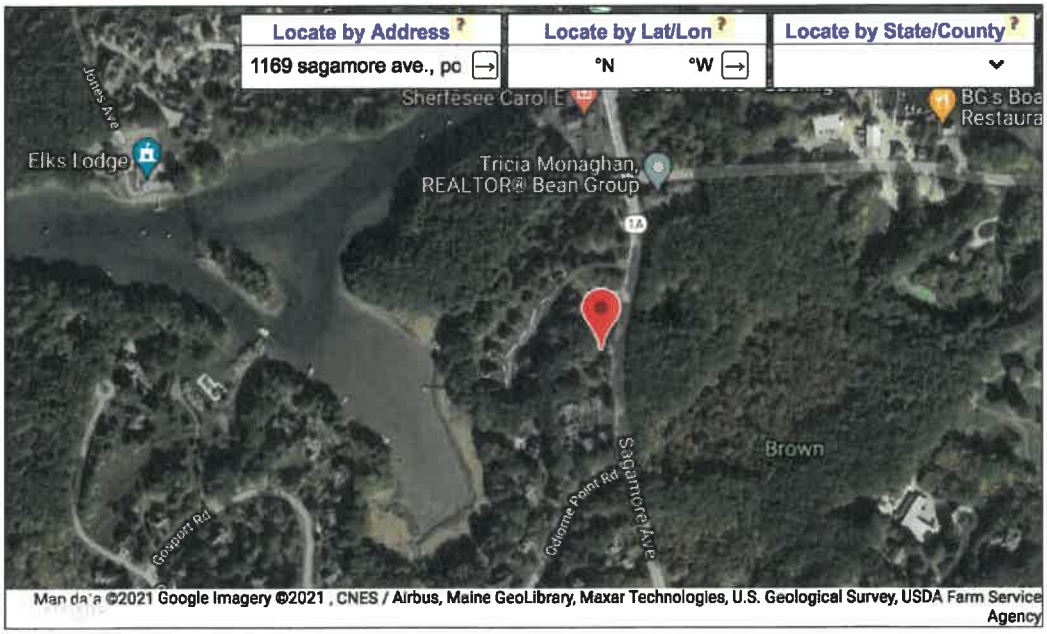
About this Project **Data & Products** **Daily Monitoring** **Documentation**

Select Product

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

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

Locate by Address	Locate by Lat/Lon	Locate by State/County
1169 sagamore ave., po	°N °W	



Select Options

Smoothing	Delivery
Yes	Popup

Submit

This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) Cornell University

Natural Resources Conservation Service (NRCS) USDA NRCS

Contact: precip@cornell.edu

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	
Location	
Longitude	70.748 degrees West
Latitude	43.051 degrees North
Elevation	0 feet
Date/Time	Wed, 16 Jun 2021 12:03:11 -0400

Extreme Precipitation Estimates

+15%

	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**

3.70
5.61
7.12
8.53

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.86	0.93	1.34	1.69	2.26	2.50	**1yr**	2.00	2.41	2.88	3.21	3.94	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.81	2.33	3.07	3.47	**2yr**	2.72	3.33	3.84	4.56	5.11	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.11	2.72	3.80	4.20	**5yr**	3.36	4.04	4.74	5.56	6.26	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.80	2.38	3.05	4.38	4.88	**10yr**	3.88	4.69	5.47	6.44	7.22	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.74	3.52	4.78	5.91	**25yr**	4.23	5.68	6.69	7.83	8.72	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.53	2.12	2.35	3.05	3.91	5.41	6.82	**50yr**	4.79	6.56	7.77	9.10	10.06	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.41	2.63	3.39	4.31	6.10	7.87	**100yr**	5.40	7.57	9.04	10.58	11.63	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.81	**200yr**	1.97	2.75	2.94	3.74	4.74	6.86	9.09	**200yr**	6.07	8.74	10.50	12.32	13.45	**200yr**
500yr	0.69	1.02	1.31	1.91	2.72	3.36	**500yr**	2.34	3.29	3.42	4.26	5.39	8.01	10.98	**500yr**	7.09	10.56	12.80	15.09	16.30	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.98	3.18	**1yr**	2.64	3.06	3.59	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.43	3.72	**2yr**	3.03	3.58	4.11	4.86	5.64	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.89	2.54	3.26	4.36	4.98	**5yr**	3.85	4.79	5.40	6.40	7.18	**5yr**
10yr	0.47	0.72	0.89	1.25	1.62	1.99	**10yr**	1.39	1.94	2.29	3.11	3.97	5.36	6.23	**10yr**	4.74	5.99	6.85	7.87	8.79	**10yr**
25yr	0.58	0.88	1.10	1.57	2.06	2.59	**25yr**	1.78	2.53	2.97	4.08	5.18	7.75	8.38	**25yr**	6.86	8.05	9.20	10.38	11.45	**25yr**
50yr	0.68	1.03	1.28	1.84	2.48	3.15	**50yr**	2.14	3.08	3.61	5.02	6.36	9.69	10.50	**50yr**	8.57	10.10	11.51	12.78	14.01	**50yr**
100yr	0.80	1.20	1.51	2.18	2.99	3.84	**100yr**	2.58	3.76	4.40	6.19	7.83	12.11	13.16	**100yr**	10.71	12.65	14.40	15.76	17.15	**100yr**
200yr	0.93	1.41	1.78	2.58	3.60	4.70	**200yr**	3.10	4.59	5.37	7.63	9.63	15.17	16.51	**200yr**	13.43	15.87	18.04	19.43	20.98	**200yr**
500yr	1.16	1.73	2.22	3.23	4.59	6.11	**500yr**	3.96	5.97	6.97	10.10	12.71	20.46	22.28	**500yr**	18.11	21.43	24.31	25.62	27.41	**500yr**

Powered by ACIS
Northeast Regional Climate Center

APPENDIX VII

Rip Rap Calculations

RIP RAP CALCULATIONS
Sagamore Avenue Condominiums
1169 & 1171 Sagamore Avenue
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
8/11/2021, Rev 9/20/2021, Rev 12/22/2021, Rev 1/28/2022, Rev 3/21/22, Rev 4/18/22, Rev 5/10/22

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)
15" HDPE (Pond 20P)	0.47	1.5	1.25	10.7	14	0.06

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 10P)	0.63	1.59	1	11.8	8	0.06

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

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]	
		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
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

Bottom of filter course = 35.0

Storage below = 126 cf

Riser Grate El. = 37.3
Storage below = 556 cf

WQV Required = 427 cf
WQV Provided = 556-126 = 430 cf > 427 cf

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
677	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	600	0
34.54	600	12
34.59	600	24
34.64	600	36
34.69	600	48
34.74	600	60
34.79	600	72
34.84	600	84
34.89	600	96
34.94	600	108
34.99	600	120
35.04	600	132
35.09	600	144
35.14	600	156
35.19	600	168
35.24	600	180
35.29	600	192
35.34	600	204
35.39	600	216
35.44	600	228
35.49	600	240
35.54	600	244
35.59	600	249
35.64	600	253
35.69	600	258
35.74	600	263
35.79	600	267
35.84	600	272
35.89	600	276
35.94	600	281
35.99	600	285
36.04	600	289
36.09	600	294
36.14	600	298
36.19	600	303
36.24	600	308
36.29	600	312
36.34	600	317
36.39	600	321
36.44	600	326
36.49	600	330
36.54	600	334
36.59	600	339
36.64	600	343
36.69	600	348
36.74	600	353
36.79	600	357
36.84	600	362
36.89	600	366
36.94	600	371
36.99	600	375
37.04	621	405
37.09	646	437
37.14	672	470
37.19	697	504
37.24	723	540
37.29	749	577
37.34	774	615
37.39	800	654
37.44	826	695
37.49	851	737
37.54	877	780
37.59	903	824
37.64	928	870
37.69	954	917
37.74	980	965
37.79	1,005	1,015
37.84	1,031	1,066
37.89	1,057	1,118
37.94	1,082	1,172
37.99	1,108	1,226

Bottom of filter course = 35.5
Storage below = 240 cf

Riser Grate El. = 37.7
Storage below = 917 cf

WQV Required = 533 cf
WQV Provided = 917-240 = 677 cf

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	I_{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)	
36.86	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**

Bottom of basin = 33.9
Storage below = 0.043 ac-ft = 1873 cf

WQV Required = 1,577 cf
WQV Provided = 4,051 cf - 1,873 cf = 2,178 cf > 1,577 cf
(see below calculations)

Overflow invert = 35.7
Storage below = 0.093 ac-ft = 4051 cf

APPENDIX IX

Jellyfish Design Information

CONTECH
ENGINEERED SOLUTIONS

CONTECH Stormwater Solutions Inc. Engineer:	JBS
Date Prepared:	**5/4/2022**

Site Information

Project Name	**Sagamore Avenue Condominiums**	
Project State	**NH**	
Project City	**Portsmouth**	
Site Designation	**Jellyfish**	
Total Drainage Area, Ad	**0.19**	ac
Post Development Impervious Area, Ai	**0.19**	ac
Pervious Area, Ap	**0.00**	ac
% Impervious	**100%**	
Runoff Coefficient, Rc	**0.95**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**29,485**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M total	**138**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**40**	in

Jelly Fish Sizing Parameters

Mass to be Captured by Fitler Vault	**110**	lbs
Water Quality Flow to be treated by Filter Vault	**0.18**	cfs

Method to Use **FLOW BASED**

Summary		
Flow	Required Size	**JF4-1-1**
	Treatment Flow Rate provided:	0.20 cfs

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

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

Water Quality Volume (WQV)

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

Water Quality Flow (WQF)

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

Designer's Notes:

This sheet is for the design of the Jellyfish filter system. System is designed to only treat runoff from Sagamore Ave., as all other impervious runoff directed toward it is already treated.

APPENDIX X

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		

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

REV.	DATE	REVISION	BY
7	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
6	4/18/22	REVISED DRAINAGE	DJM
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

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

Plan Name: EXISTING WATERSHED PLAN

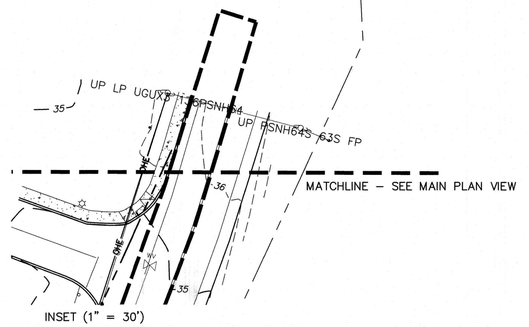
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

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

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH (X)
- POND (X)
- TC PATH
- WETLANDS
- HISS SOILS (224BH)
- FLOW ARROW



INSET (1" = 30')

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

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

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: 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
7	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
6	4/18/22	REVISED DRAINAGE	DJM
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

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: PROPOSED WATERSHED PLAN

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

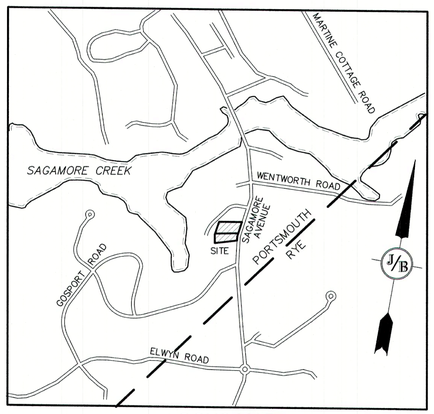
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 — LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 21047

CONDOMINIUM SITE PLAN
"SAGAMORE AVENUE CONDOMINIUMS"
TAX MAP 224, LOTS 14 & 15
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
CCB	CCB	SLOPE GRANITE CURB
PCC	PCC	CAPE COD BERM
		POURED CONCRETE CURB
		SILT FENCE
		DRAINAGE LINE
		SEWER LINE
		GAS LINE
		WATER LINE
		WATER SERVICE
		OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
		GUARDRAIL
		UNDERDRAIN
		FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	SPOT GRADE
100.00	100.00	PAVEMENT SPOT GRADE
100.00 / 99.50	100.00 / 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
		WELL
TP1		TEST PIT
PT		FAILED TEST PIT
M	M	MONITORING WELL
1		PERC TEST
		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
EMAIL: JCORONATI@JONESANDBEACH.COM

LIGHTING CONSULTANT
CHARRON, INC.
P.O BOX 4550
MANCHESTER, NH 03108
(603) 945-3500
CONTACT: KEN SWEENEY
EMAIL: KSWEENEY@CHARRONINC.COM

WETLAND CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DR., BLDG 2, UNIT H
EXETER, NH 03833-7507
(603) 418-7260
CONTACT: JAMES GOVE
EMAIL: JGOVE@GESINC.BIZ

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

WATER
CITY OF PORTMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: BRIAN GOETZ, P.E.
(603) 427-1530

SEWER
CITY OF PORTMOUTH
DEPARTMENT OF PUBLIC WORKS
SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: TERRY DESMARAIS, P.E.
(603) 766-1421

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

PAIGE S. LIBBY No. 16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
6/28/22

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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: 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 15, 6/28/22

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
- LEDGE OUTCROP

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

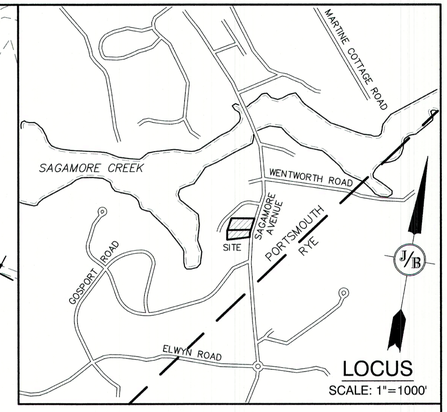
MAP 224 LOT 14
COLLEEN HEBERT
54 PIONEER RD
RYE, NH 03870
BK 2418 PG 173
33,196 SQ. FT.
0.76 AC.

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

1" IP FND 0.15' EXPOSED
4" IP FND FILLED WITH CONCRETE 0.3' DOWN TOP OF PIPE FOUND NEARBY MARKED "N S"
EXISTING UNDERGROUND ELECTRIC SERVICE
EXISTING UTILITY POLE WITH DROP
N67°57'08"W 97.74' (TIE)
RIGHT OF WAY PER PLAN REF. 1
2" IP FND METAL CAP 0.15' EXPOSED ON LINE 1.65' INTO R.O.W.
APPROXIMATE BURIED WETLAND LOCATION
520± SQ. FT. WETLAND
100' BUFFER FROM OFFSITE WETLAND (TYP.)
OFFSITE WETLAND
25' VEGETATED BUFFER STRIP
S80°37'03"W 298.35'
TP X3
TP X4
TP X5
TP X6
TP X7
TP X8
TP B1
TP B2
TP 1
TP 2
TP 3
TP 4
TP 5
TP 6
TP 7
TP 8
TP B3
TP B4
TP B5
TP B6
TP B7
TP X1
TP X2
321 BH
321 CH
261 BH
261 DH
561 BH
224 BH
327 BH
FINE LAWN AREA
GRAVEL DRIVEWAY
10' SIDE SETBACK (TYP.)
15' REAR SETBACK (TYP.)
5' FRONT SETBACK (TYP.)
APPROXIMATE AREA OF OLD FILL AND BURIED TOPSOIL
EXISTING 12" CAST IRON WATER MAIN
EXISTING WATER SERVICE WITH SHUTOFF
EXISTING GATE VALVE AND FIRE HYDRANT
EXISTING UTILITY POLE
TBM — NAIL IN UP EL = 37.72
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)
DH FND 0.8' DOWN IN LEDGE
IR FND 0.2' DOWN AMES MSC ON LINE 1.11' TO R.O.W.
1" IRON PIN 0.2' DOWN DISTURBED
N71°14'40"E 101.62'
N71°14'40"E 47.67'
N06°41'40"E 48.22'
N09°16'20"W 40.99'
S09°49'02"W 174.91'
S09°46'29"E 117.31'
N79°16'50"E 305.92'
N73°23'40"E 296.83'
S15°39'32"E 206.28' (TIE TO TOWN BOUND)
1¼" IP FND FLUSH
IR FND EASTERLY FLUSH 0.63' OFF LINE
IR FND COLWELL FLUSH 0.93' OFF LINE
NO EASEMENT FOUND AT THIS TIME FOR POLES OR OVERHEAD WIRES
POSSIBLE SEPTIC TANK
ABOVE GROUND POOL
ELEVATED DECK
SINGLE-STORY RESIDENCE
SHED
PAVEMENT
PAVED DRIVE
WOOD RETAINING WALL
STONE RETAINING WALLS
LEDGE OUTCROP (TYP.)
SAGAMORE AVENUE
NH ROUTE 1A
CLASS I



NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF LOTS 14 AND 15 AS SHOWN ON PORTSMOUTH TAX MAP 224.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND BUFFER = 100' FROM WETLANDS > 10,000 S.F. IN AREA
   MAX. BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 25%
3. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
5. BASIS OF BEARING:
   HORIZONTAL – NAD83 NH STATE PLANE.
   VERTICAL – NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
11. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2021 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

HISS SOIL NOTE

THIS SOIL MAP WAS PREPARED BY A PROFESSIONAL SOIL SCIENTIST AND MEETS THE TECHNICAL STANDARDS OF THE SSSNNE PUBLICATION NO. 1, HIGH INTENSITY SOIL MAPS FOR NH, DECEMBER 2017. SOIL MAP WAS PREPARED ON 4 APRIL 2021. SOIL MAP SITE WAS 1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NH.

SOIL MAP UNITS WERE IDENTIFIED USING THE KEY TO SOIL TYPES. THE CONVERSION OF HIGH INTENSITY SOIL MAP UNIT TO NRCS SOIL MAP UNIT NAME WAS BASED UPON THE OBSERVED SOIL PROFILES, AS WAS HYDROLOGIC SOIL GROUP, AS TAKEN FROM SSSNNE SPECIAL PUBLICATION NO. 5.

SOIL MAPPING WAS PERFORMED BY JAMES GOVE, CSS # 004.

HISS SOIL MAP UNIT	SOIL MAP UNIT NAME	HYDROLOGIC SOIL GROUP
224 (SLOPE) H	HOLLIS–ROCK OUTCROP COMPLEX	D
261 (SLOPE) H	MADE LAND – SIMILAR TO CANTON	B
321 (SLOPE) H	NEWFIELDS	B
327 (SLOPE) H	CHATFIELD VARIANT	B
561 (SLOPE) H	MADE LAND– SIMILAR TO WALPOLE	C

B SLOPE = 0–8%, C SLOPE = 8–15%, D SLOPE = 15–25%

CERTIFICATION:

PURSUANT TO RSA 676:18–III AND RSA 672:14
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE — JAMES P. GOVE — 004 — CERTIFIED SOIL SCIENTIST — 6/28/22

STATE OF NEW HAMPSHIRE — JAMES P. GOVE — NO. 0051 — CERTIFIED WETLAND SCIENTIST — 6/28/22

STATE OF NEW HAMPSHIRE — No. 1030 — MATTHEW J. SALVUCCI — LAND SURVEYOR — SIGNATURE

6/29/22

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

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

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

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

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

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

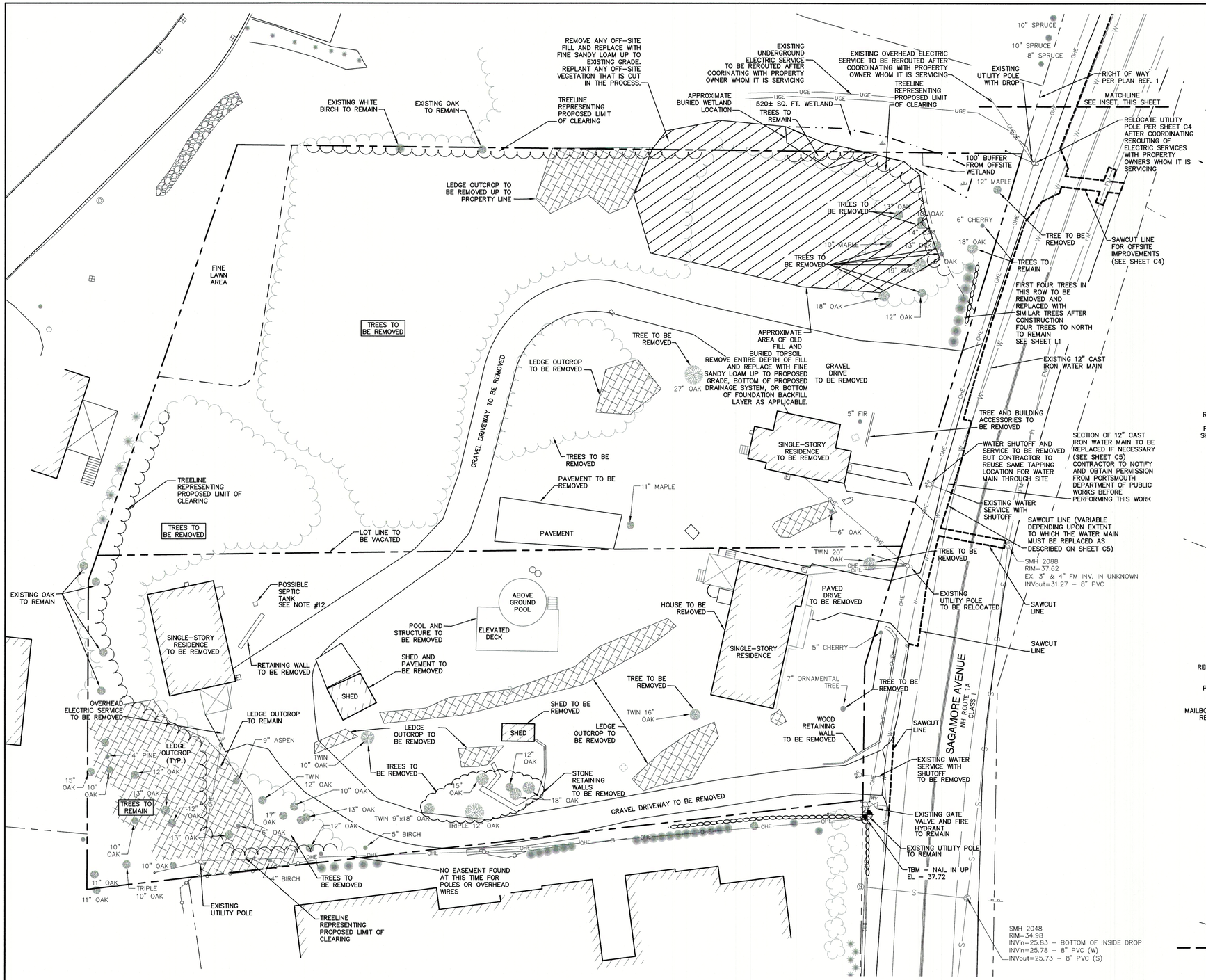
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

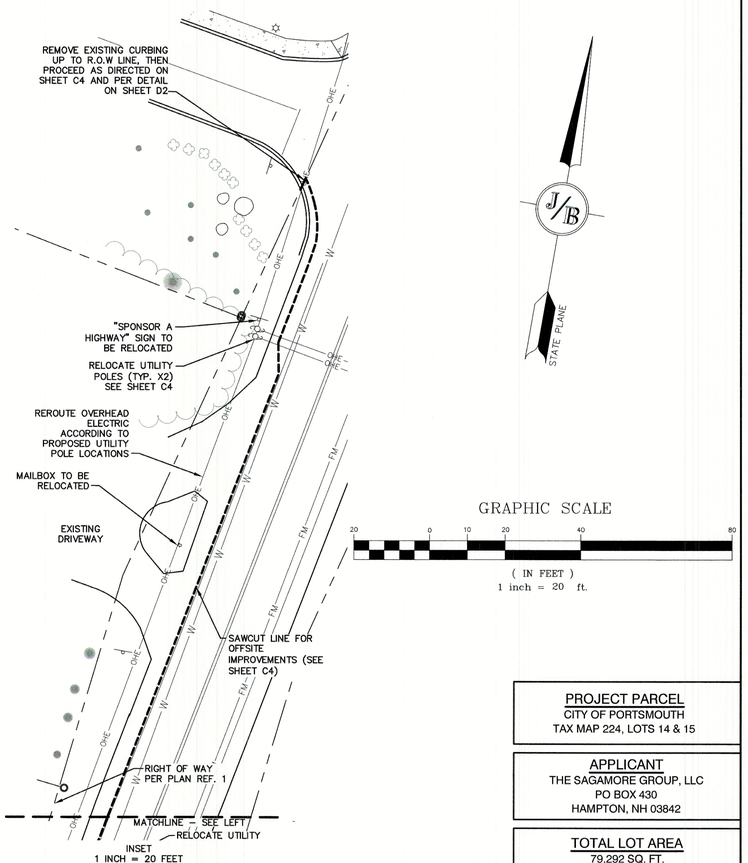
Plan Name: EXISTING CONDITIONS PLAN
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

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, AND SEPTIC TANK AND LEACH FIELD SHALL BE REMOVED 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	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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: **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.C. 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.

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

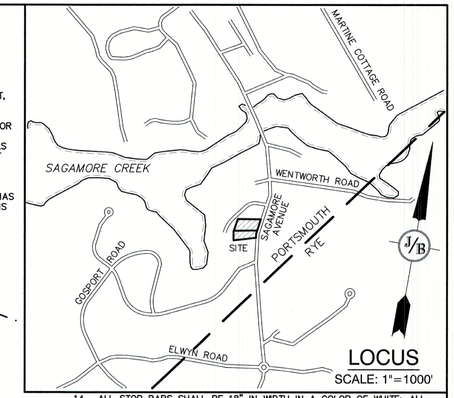
MAP 224 LOT 16
SIMONE ROCCO
1167 SAGAMORE AVE.
PORTSMOUTH, NH 03801
BK 2253 PG 0986

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
WESTWIND 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'
   MAX BUILDING COVERAGE = 40%
   MIN. OPEN SPACE = 25%
   MIN. LOT AREA PER DWELLING UNIT = 7,500 S.F.
   BUILDING COVERAGE PROVIDED = 18,610 S.F. = 23.5%
   OPEN SPACE PROVIDED = 42,300 S.F. = 53.3%
3. DENSITY CALCULATION:
   LOT AREA = 79,292 S.F., 10 UNITS PROPOSED
   7,929 S.F. PER DWELLING UNIT PROVIDED > 7,500 S.F.
   7,500 S.F. PER DWELLING UNIT REQUIRED
4. PARKING CALCULATIONS:
   1.3 SPACES PER UNIT AND 1 VISITOR SPACE PER 5 UNITS REQUIRED
   1.3 SPACES * 10 UNITS + 1 SPACES * (10 UNITS / 5) =
   15 SPACES REQUIRED
   2 SPACES PROVIDED IN EACH GARAGE
   22 SPACES PROVIDED INCLUDING 2 VISITOR SPACES
5. NHDES SEWER CONNECTION PERMIT NO. , DATED .
   NHDOT DRIVEWAY PERMIT NO. , DATED .
6. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
7. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
8. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
9. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
10. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.
11. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
12. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
13. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED.
14. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
15. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
16. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
17. ALL ARCHITECTURAL BLOCK RETAINING WALLS ARE TO BE DESIGNED AND STAMPED BY THE MANUFACTURER'S STRUCTURAL ENGINEER. CONTRACTOR TO COORDINATE WITH APPROVED MANUFACTURER PRIOR TO INSTALLATION.
18. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
19. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
20. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
21. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
22. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
23. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
24. BASIS OF BEARING:
    HORIZONTAL – NH STATE PLANE. VERTICAL – NAVD88.
25. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
26. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
27. 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.
28. 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.
29. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
30. ON-SITE SALT STORAGE IS PROHIBITED WITHIN 250' OF AN INLAND WETLAND UNLESS COMPLETELY COVERED AND CONTAINED IN A STRUCTURE.
31. LANDOWNERS OR CONDOMINIUM ASSOCIATION SHALL BE RESPONSIBLE FOR MAINTAINING DRIVEWAY SIGHT LINES.

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-B:20 (I).

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR SIGNATURE

MATTHEW J. SALVUCCI, LLS 1030 DATE: 6/27/22
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

APPROVED – PORTSMOUTH, NH PLANNING BOARD

DATE:

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

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

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

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

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

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

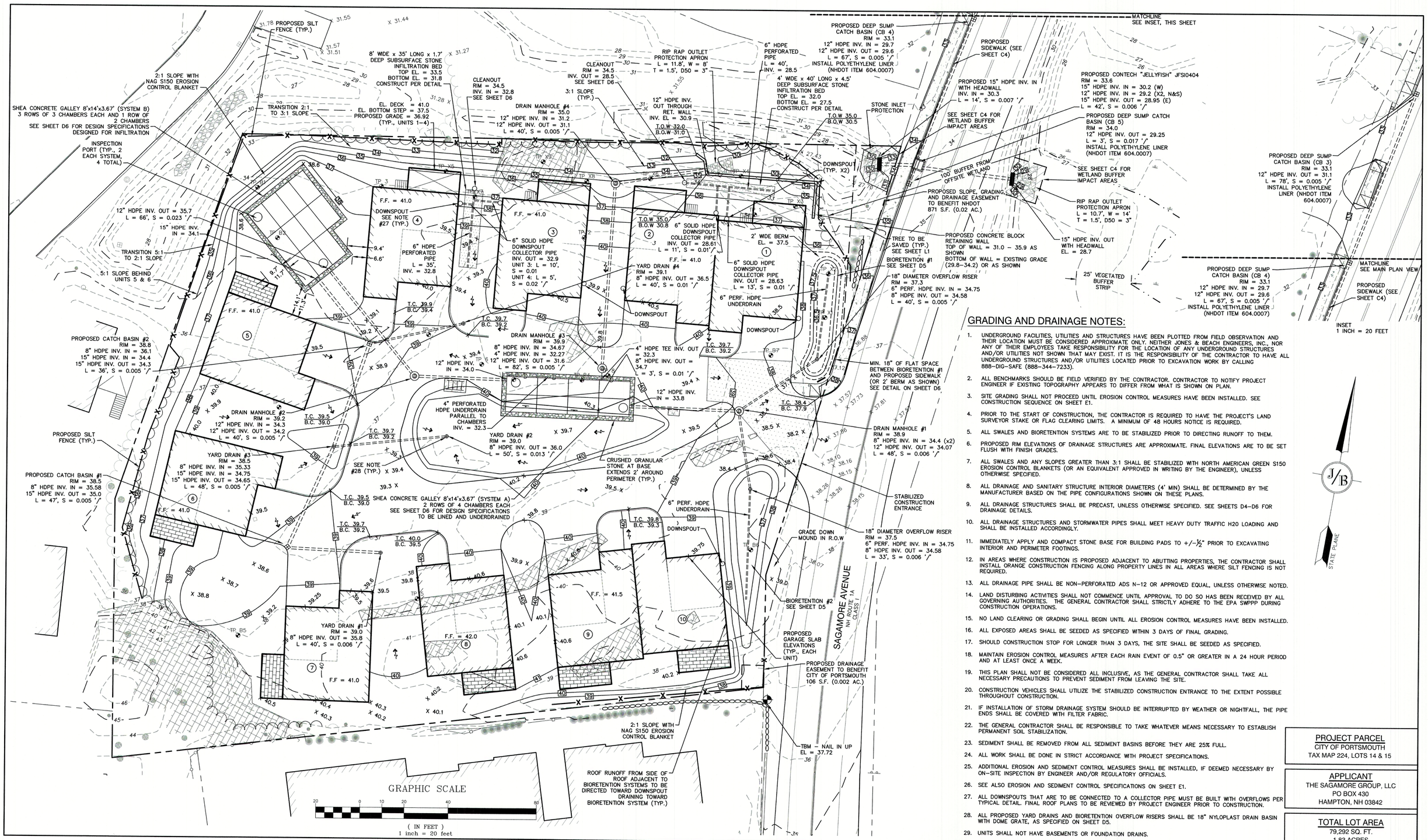
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: 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 SHOULD BE FIELD VERIFIED BY THE CONTRACTOR. CONTRACTOR TO NOTIFY PROJECT ENGINEER IF EXISTING TOPOGRAPHY APPEARS TO DIFFER FROM WHAT IS SHOWN ON PLAN.
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. FINAL ROOF PLANS TO BE REVIEWED BY PROJECT ENGINEER PRIOR TO CONSTRUCTION.
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

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
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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: 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

NEW ENGLAND CONSERVATION/WILDLIFE MIX

BOTANICAL NAME	COMMON NAME	INDICATOR
ELYMUS VIRGINCUS	VIRGINIA WILD RYE	FACW-
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
ANDROPOGEN GERARDII	BIG BLUESTEM	FAC
FESTUCA RUBRA	RED FESCUE	FACU
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
PANICUM VIRGATUM	SWITCH GRASS	FAC
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
DESMODIUM CANADENSE	SHOWY TICK TREFOIL	FAC
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	NI
BIDENS FRONDOSA	BEGGAR TICKS	FACW
EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	FAC
RUDBECKIA HIRTA	BLACK EYED SYSAN	FACU-
ASTER PILOSUS	HEATH (OR HAIRY) ASTER	UPL
SOLIDAGO JUNCEA	EARLY GOLDENROD	

SEED MIX NOTES:

1. APPLICATION RATE: 25 LBS/ACRE, 1750 SQ. FT./LB
2. PLACE THE "NEW ENGLAND CONSERVATION/WILDLIFE MIX" ACROSS THE BOTTOM OF THE DETENTION POND AFTER CONSTRUCTION IS COMPLETE.
3. THIS MIX CAN BE APPLIED BY HYDRO-SEEDING (NO TACKIFIERS), BY MECHANICAL SPREADER, OR BY HAND. LIGHTLY RAKE OR ROLL AFTER SOWING TO INCREASE SEED TO SOIL CONTACT. APPLY ON A CLEAN, WEED FREE SEED BED, BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE FALL DORMANT SEEDING.
4. SOURCE: NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002. PHONE: 413-548-8000. EMAIL: INFO@NEWP.COM, WEB: WWW.NEWP.COM

WETLAND BUFFER IMPACT SUMMARY

300 S.F. TEMPORARY IMPACT TO WETLAND BUFFER ON LOT 15, ALL OUTSIDE OF VEGETATED BUFFER STRIP

270 S.F. TEMPORARY IMPACT TO WETLAND BUFFER ON LOT 26, ALL WITHIN 25' VEGETATED BUFFER STRIP

570 S.F. TOTAL TEMPORARY IMPACT TO WETLAND BUFFER (INCLUDING 270 S.F. TOTAL TEMPORARY IMPACT TO 25' VEGETATED BUFFER STRIP)

WORK IN RIGHT OF WAY, AS WELL AS REMOVAL OF INVASIVE PLANTS AND NEW PLANTINGS ARE PERMITTED IN WETLAND BUFFER WITHOUT A CONDITIONAL USE PERMIT. THESE ACTIVITIES ARE NOT COUNTED IN THE ABOVE CALCULATIONS.

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

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

300 S.F. PROPOSED TEMPORARY BUFFER IMPACT ON LOT 15

PROPOSED RELOCATED UTILITY POLE

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

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

100' WETLAND BUFFER

PROPOSED CONTECH "JELLYFISH" JFSI0404 WITH THREE INLETS SEE SHEET C3

SEE SHEET C5, NOTE #39 IN CASE OF DIRECT CONFLICT BETWEEN PROPOSED DRAINAGE AND EXISTING UTILITIES

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

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

REVEGETATE AREA AFTER CULVERT IS INSTALLED

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

CONTRACTOR TO SAWCUT ONLY BEYOND SOLID WHITE LINE EXCEPT WHERE NECESSARY FOR PROPOSED SEWER MAIN AND CULVERT. IF CONTRACTOR MUST SAWCUT INTO TRAVEL LANE EXCEPT AT THESE TWO LOCATIONS, PROJECT ENGINEER SHALL BE NOTIFIED PRIOR TO ROAD EXCAVATION.

25' VEGETATED BUFFER STRIP

FORESTED WETLAND SURROUNDING POND

270 S.F. PROPOSED TEMPORARY BUFFER IMPACT ON LOT 26

EDGE OF WETLAND (TYP.)

PROVIDE 2" R-10 FOAM BOARD INSULATION BETWEEN EXISTING FORCEMAIN AND PROPOSED CULVERT

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

REMOVE INVASIVE PLANTS FROM THIS AREA AND RESEED WITH "NEW ENGLAND CONSERVATION/WILDLIFE MIX" AS SPECIFIED ABOVE

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 DETECTABLE WARNING PANEL BEFORE 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

EXISTING CONCRETE SIDEWALK & TIP DOWNS

EXISTING UTILITY POLES AND OVERHEAD ELECTRIC FOR REFERENCE

TIP DOWN, NO TRUNCATED DOME (TYP.)

DEEP SUMP CATCH BASIN SEE SHEET C3

PROPOSED RELOCATED MAILBOX

DEEP SUMP CATCH BASIN SEE SHEET C3

DEEP SUMP CATCH BASIN SEE SHEET C3

TIP DOWN, NO TRUNCATED DOME

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

RECONFIGURE DRIVEWAY CURB CUTS FOR SPECIFIED WIDTHS

PROPOSED RELOCATED OVERHEAD ELECTRIC

B.C. 33.7 ±
T.C. 34.2 ±

REMOVE EXISTING CURBING AT PROPOSED LANDING AND ADDITIONALLY ANOTHER 3' 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.

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
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
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

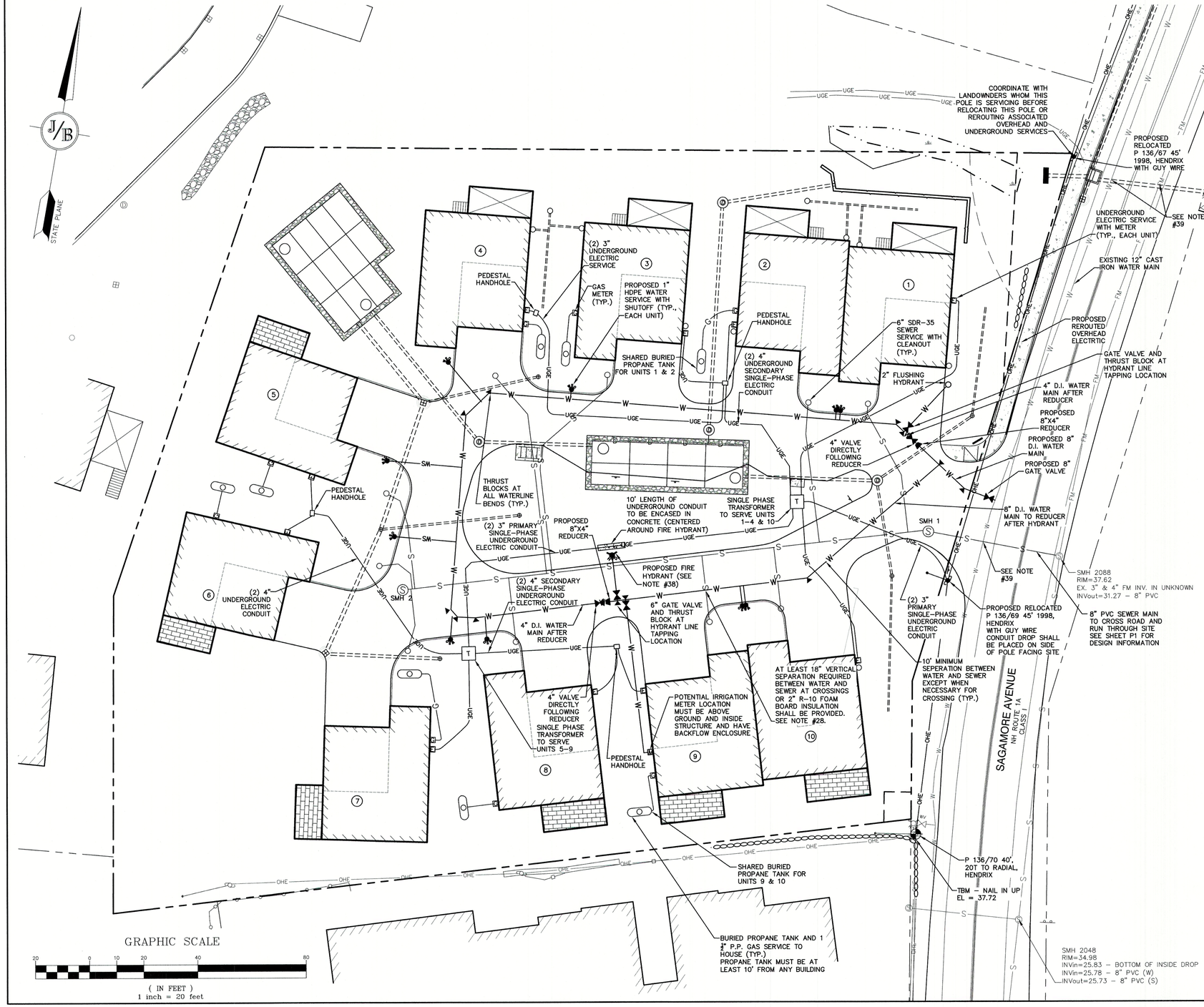
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **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 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
13. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS AND SERVICES.
14. SANITARY SEWER FLOW CALCULATIONS:
    10 - THREE BEDROOM UNITS @ 150 GPD/BEDROOM = 4,500 GPD
    IRRIGATION USE = 1,000 GPD ±
15. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
16. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
17. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
18. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
19. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
20. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND HYDRANTS.
21. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
22. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV-WQ 700. ADOPTED ON 10-15-14.
26. ENV-WQ 704.06 GRAVITY SEWER PIPE TESTING: GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW-PRESSURE AIR TESTS CONFORMING WITH ASTM F1417-92(2005) OR UNI-BELL PVC PIPE ASSOCIATION UNI-B-6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.
27. ENV-WQ 704.17 SEWER MANHOLE TESTING: SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
28. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES FROM AN EXISTING OR PROPOSED WATER LINE, EXCEPT THAT WHERE 18" VERTICAL SEPARATION CANNOT BE ACHIEVED (AS DEPICTED ON SHEET P1), PROVIDE TWO INCHES R-10 FOAM BOARD INSULATION ABOVE THE SEWER AND BELOW THE WATER LINE.
29. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. PROVIDE TWO-INCHES OF R-10 FOAM BOARD INSULATION 2-FOOT WIDE TO BE INSTALLED 6-INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
30. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE CITY SEWER DEPARTMENT.
31. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
32. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
33. AN AS-BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH WATER DEPARTMENT.
34. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
35. SHOP DRAWINGS TO BE SUBMITTED TO CITY OF PORTSMOUTH FOR REVIEW AND APPROVAL.
36. NEW DUCTILE IRON WATER LINE SHALL BE WRAPPED WITH A WATER TIGHT POLYETHYLENE WRAPPING FOR THE FULL LENGTH. ALL WATER LINE JOINTS SHALL HAVE THREE (3) BRASS WEDGES PER JOINT. CONTRACTOR SHALL CONTACT CITY OF PORTSMOUTH WATER DEPARTMENT (JIM TOW AT 603-766-1439) PRIOR TO WATER LINE INSTALLATION.
37. IF IRRIGATION IS TO BE USED, THE PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY THE PORTSMOUTH CITY PLANNER, CITY ENGINEER, AND THE WATER DEPARTMENT PRIOR TO INSTALLATION.
38. LAY WATER MAIN WITH FIRE HYDRANT AT HIGH SPOT TO ALLOW FOR AIR TO BE RELEASED DURING FILLING OF THE WATER MAIN.
39. CONTRACTOR TO DIG TEST PITS AT CROSSING OF PROPOSED SEWER AND EXISTING WATER MAIN, AND AT CROSSINGS OF PROPOSED DRAINAGE PIPE WITH EXISTING WATER MAIN AND FORCEMAIN. IF THE EXISTING WATER MAIN IS IN CONFLICT WITH THE PROPOSED SEWER, OR IF EXISTING WATER OR FORCEMAIN ARE IN CONFLICT WITH THE PROPOSED DRAINAGE PIPE, 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, OR TO REPLACE SECTION OF 12" CAST IRON WATER MAIN OR 3" & 4" FORCEMAIN AS NECESSARY TO AVOID DIRECT CONFLICT WITH PROPOSED DRAINAGE PIPE.
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
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

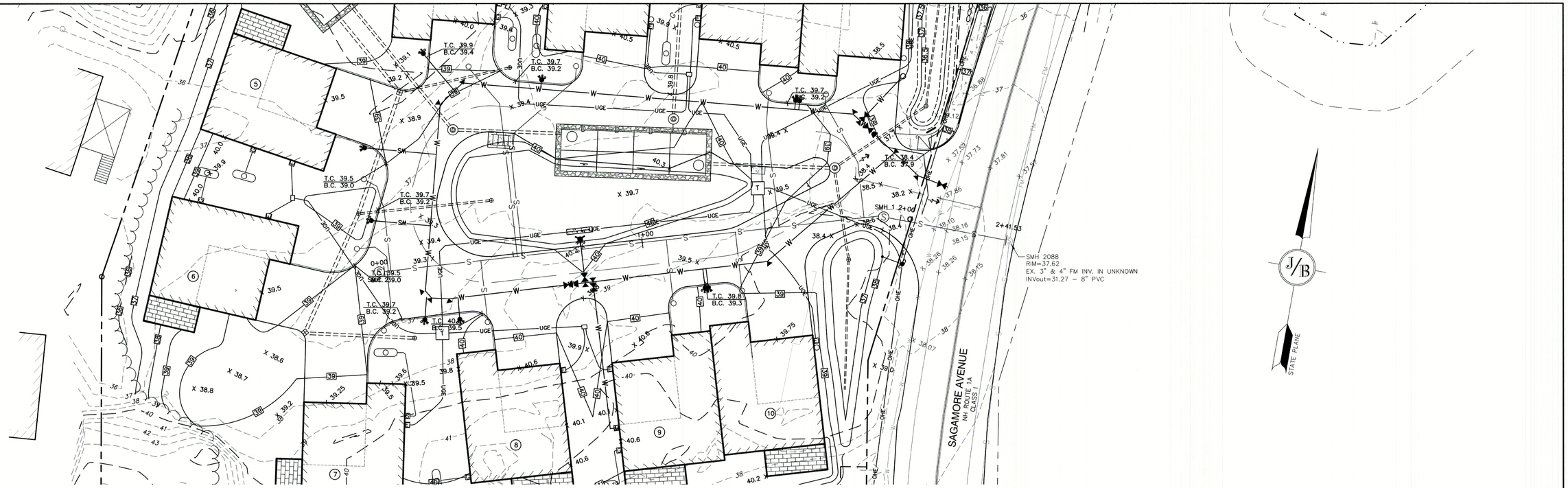
STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED PROFESSIONAL ENGINEER
Aug 25, 2022

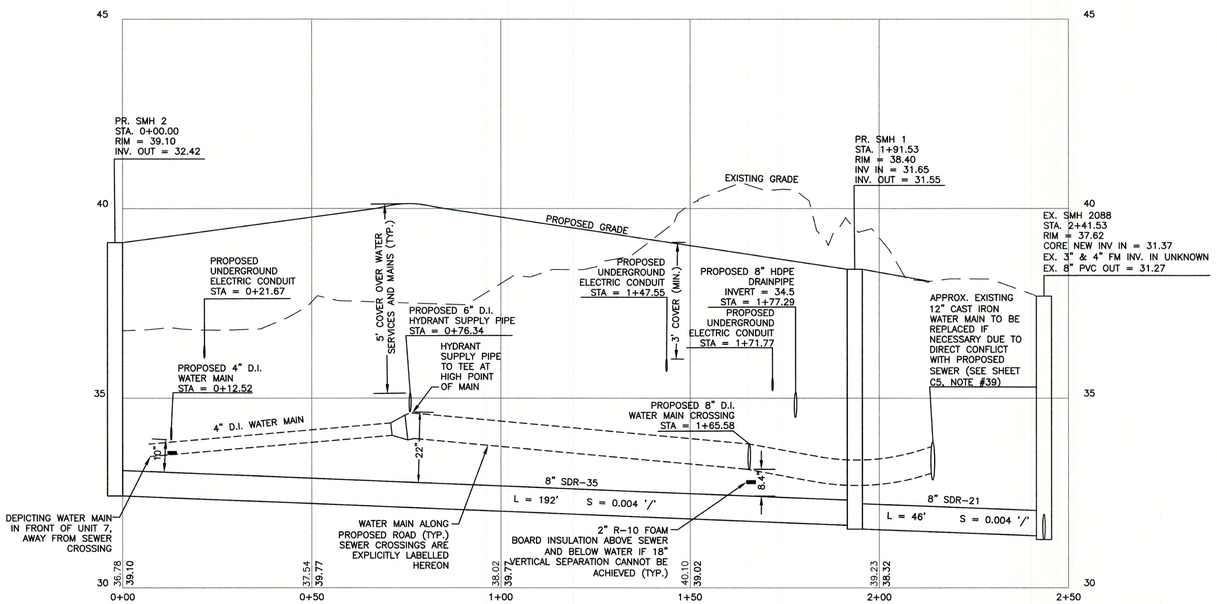
REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

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:	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.

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. 16170 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

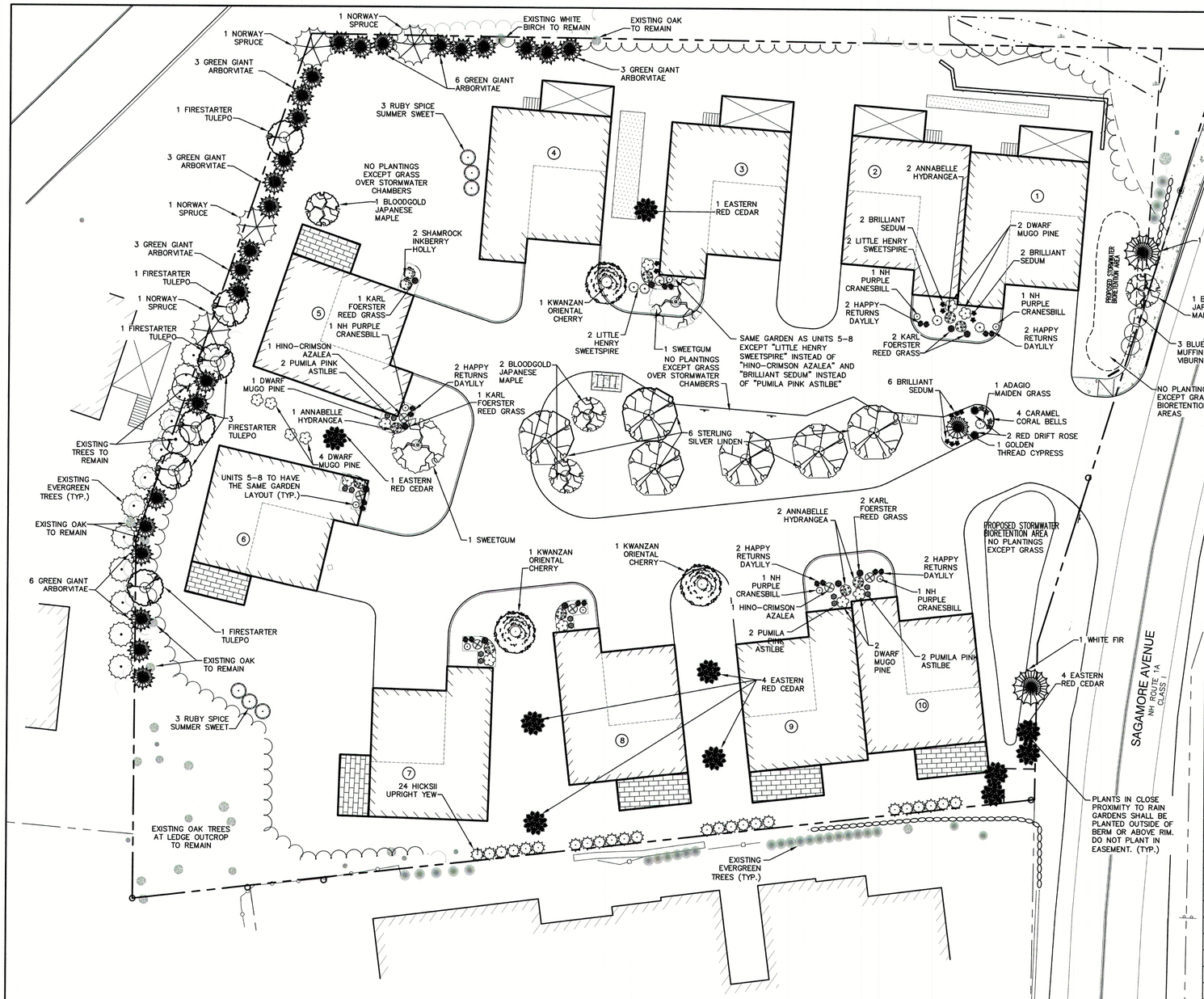
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: 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



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
4	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.
26	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
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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

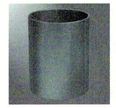
Plan Name: LANDSCAPE PLAN

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

ARP ALUMINUM
ROUND TAPERED
DECORATIVE

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

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 non-grounded mounted installations (e.g., 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.

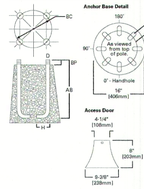
ORDERING INFORMATION

SAMPLE NUMBER: ARP5L310ABZ2

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. [1] **4**=4-1/2" O.D. **6**=6" O.D. [1]	**10**=10' **12**=12' **14**=14' **16**=16' **18**=18' [1] **22**=22' [1]	**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) **5**=3" O.D. Tenon (4" Long)	**X**=None	**C**=Convenience Outlet [2] **E**=GFCI Convenience Outlet [2] **G**=Ground Lug **V**=Vibration Dampener [3]

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, provision only. 4. Provides 3'O.D. pole top suited for Arbor Post Top. 5. Provides 4' OD pole top suited for LuleScape 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)	317AVE30	4 x 5	9	4	3/4 x 17	40704ID

COOPER Lighting Solutions

TDS130116EN
August 28, 2019 10:22 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
This 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 120-277V AC
Minimum start temperature -20° C
LED module wattage 8.9W
System wattage 12 W
Controllability 0-10V dimmable
Color rendering index Ra > 90
Luminaire lumens 724 lumens (3000K)
Lifetime at Ta +15° C 50/2,000 h (L70)
Lifetime at Ta +40° C 26/8,000 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:

LED wall luminaire - partially shielded

		K	L	N	P
66411	8.9W	12¼	14½	13½	4½

BEGA 1000 BEGA Way, Carpinteria, CA 92013 (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
© copyright BEGA 2018 Version BEGA NE

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 this 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 Colors brochure for a complete selection.Options to meet Buy American Act requirements

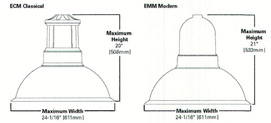
Warranty
Five-year warranty.

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* #146 LightBARs
LM79 / LM80 Compliant
2G 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.)

COOPER Lighting Solutions

*www.designlights.org

TDS00028EN
December 8, 2021 2:26 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. 17370 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

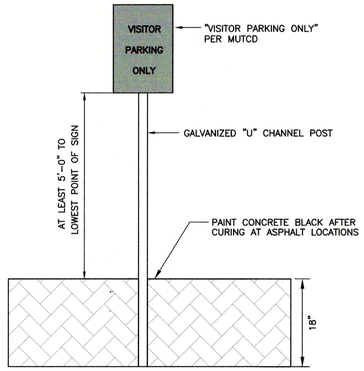
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LIGHTING PLAN

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

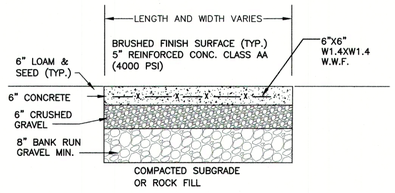
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

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



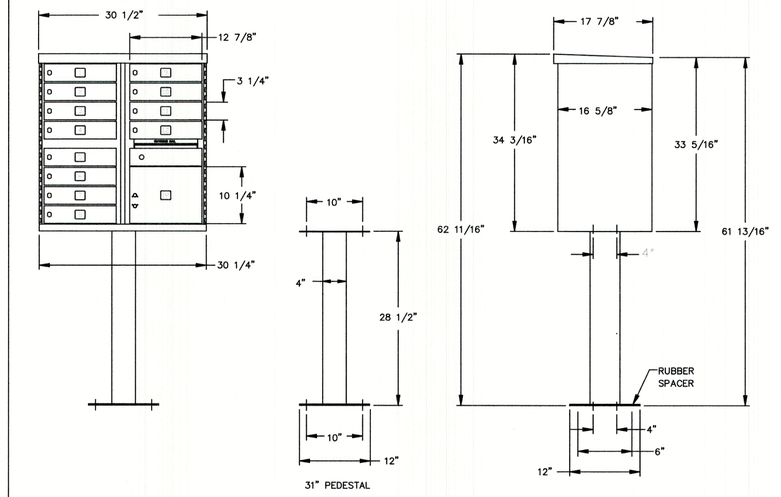
VISITOR PARKING SIGN

NOT TO SCALE



CONCRETE PAD DETAIL

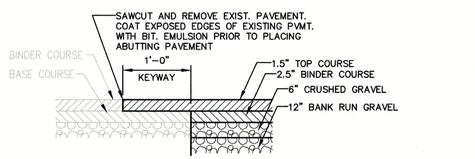
NOT TO SCALE



POSTAL PRODUCTS UNLIMITED, INC.™ A Division of American Postal Manufacturing, Inc. Phone. 1-800-229-4500 800 W. Oklahoma Ave. Milwaukee, WI 53207-2649	Product: Type II CBU with Pedestal – Front Loading – N1027875		
	Distribution: USPS Approved		Finish: Powder Coat
	Mounting: Pedestal		Total Mailboxes: 12 Doors – 1 Locker
	Date: 02/02/06	Scale: NONE	Drawn By: CDO / Checked By: AJK

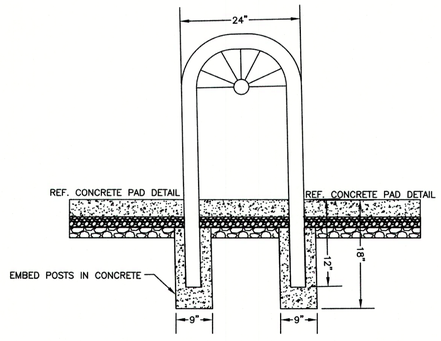
CLUSTER MAILBOX UNIT DETAIL

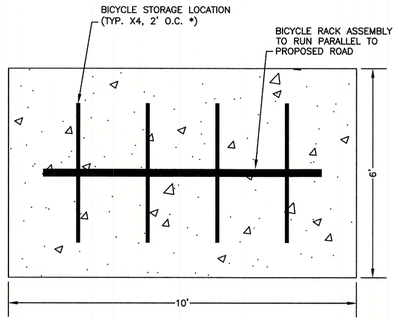
NOT TO SCALE



KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

NOT TO SCALE

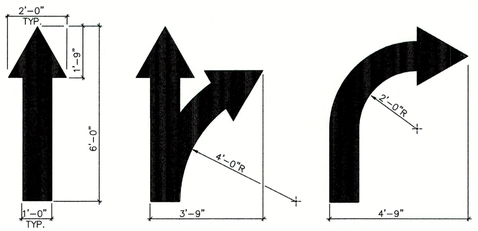




BICYCLE RACK PLAN VIEW (NOT TO SCALE)
* SEPARATION BETWEEN BICYCLE LOCATIONS MAY VARY PER PRODUCT SPECIFICATIONS AS LONG AS 4 BICYCLES CAN BE STORED ON 6'x10' CONCRETE PAD.

BICYCLE RACK

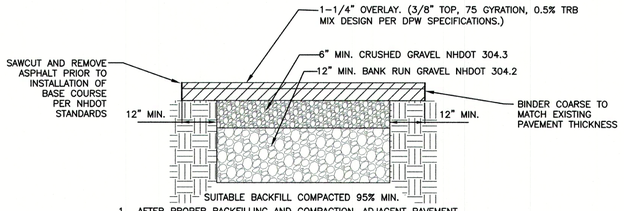
NOT TO SCALE



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

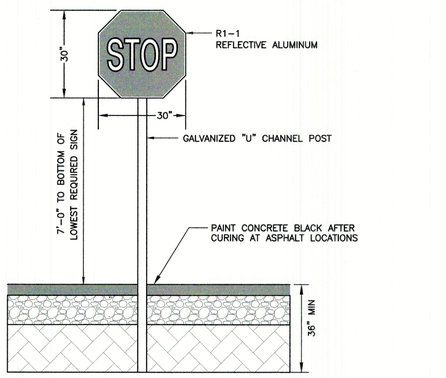
NOT TO SCALE



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.
7. WHERE WORK IMPACTS SAGAMORE AVE. TRAVEL LANE, MILL AND INLAY FOR FULL WIDTH OF LANE MAY BE REQUIRED.

TYPICAL PAVEMENT REPAIR DETAIL

NOT TO SCALE



STOP SIGN (R1-1)

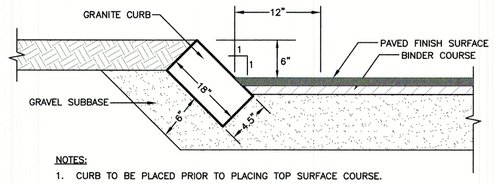
NOT TO SCALE

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.

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

STOP BAR

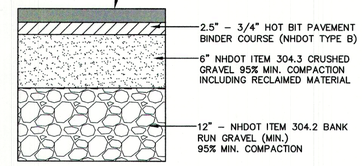
NOT TO SCALE



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

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
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

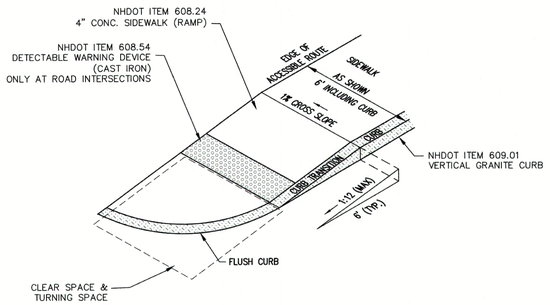
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	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

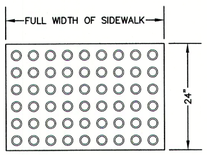


NOTES:

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



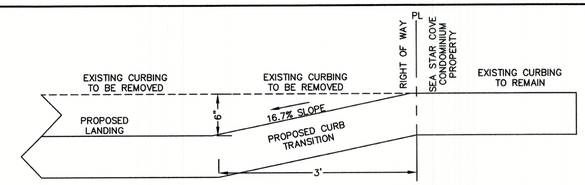
DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH THE FOLLOWING:

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. THE DETAIL PROVIDED IS NOT DRAWN TO SCALE. THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING DEVICE DETAIL IS FOR ILLUSTRATION ONLY. THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 2' MINIMUM IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE, EXCLUDING ANY FLARED SIDES. THE WIDTH OF THE DETECTABLE WARNING FIELD INCLUDES A CONCRETE BORDER, IF PROVIDED. PLACEMENT AND ORIENTATION SHALL BE IN COMPLIANCE WITH THE PLANS AND DETAILS.
C. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. IF REQUIRED, THE BORDER SHALL NOT EXCEED 2" IN WIDTH OR 6" ALONG ROADWAY EDGE/CURB. THE BORDER DIMENSION SHALL BE MEASURED FROM THE INSIDE EDGE OF THE RADIUS.
D. ON SLOPES OF 5% OR GREATER, THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE LOWER GRADE BREAK ON THE RAMP RUN. WHERE DOMES ARE ARRAYED RADIALLY, THEY MAY DIFFER IN DOME DIAMETER AND CENTER-TO-CENTER SPACING. ON SLOPES LESS THAN 5%, DOME ORIENTATION IS LESS CRITICAL AND MAY DIFFER FROM PERPENDICULAR OR RADIAL ALIGNMENT TO THE GRADE BREAK.
E. 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.
F. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, STREET, HIGHWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.
G. DETECTABLE WARNING PANELS SHALL BE CAST IRON WITH NO SURFACE COATING AND SHALL BE ALLOWED TO TRANSITION TO THEIR NATURAL PATINA.

TRUNCATED DOMES TO BE PLACED IN SIDEWALK BASE IN PUBLIC TRAFFIC AREAS.

DETECTABLE WARNING PANEL WITH TRUNCATED DOMES

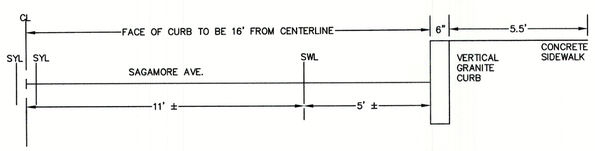
NOT TO SCALE



CONTRACTOR SHALL NOT REMOVE ANY CURBING BEYOND SEA STAR COVE CONDOMINIUM PROPERTY LINE. THE CURBING AT THE PROPOSED TIP DOWN LANDING AND 3' BEYOND IT IN THE DIRECTION OF THE SEA STAR COVE PROPERTY LINE SHALL BE REMOVED. THEN 3' OF NEW CURBING SHALL BE SET IMMEDIATELY FOLLOWING THE TIP DOWN LANDING AT A 16.7% 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

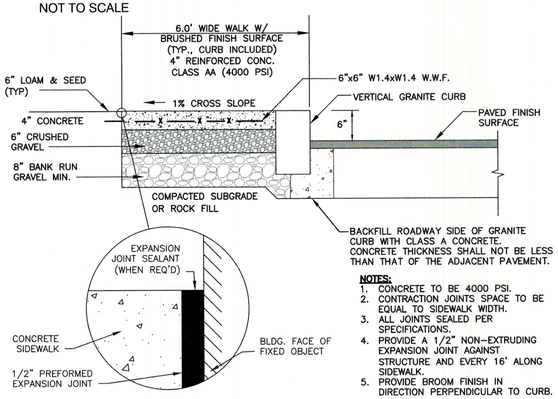
NOT TO SCALE



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

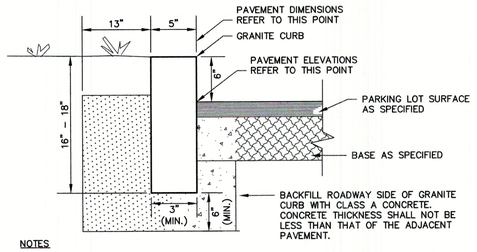


NOTES:

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

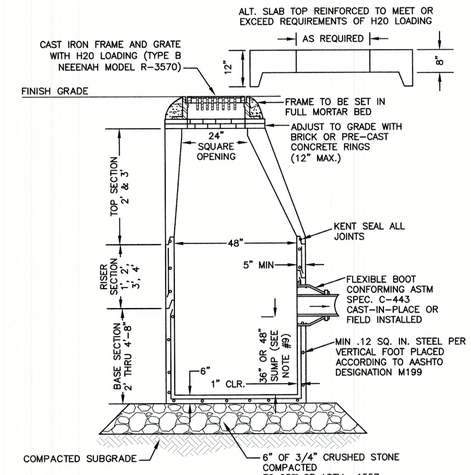


NOTES

1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. PROPOSED VERTICAL GRANITE CURB WITHIN NHDOT RIGHT OF WAY SHALL MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 609.

VERTICAL GRANITE CURB

NOT TO SCALE

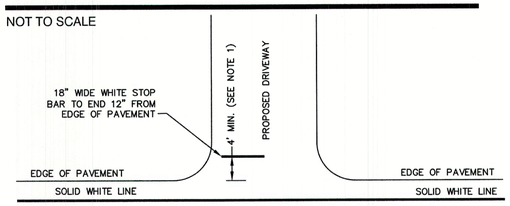


NOTES:

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). CATCH BASIN FRAME AND GRATE IN NHDOT RIGHT OF WAY MUST BE TYPE B.
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.
11. PROPOSED CATCH BASINS WITHIN SAGAMORE AVE. RIGHT OF WAY SHALL MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 604.

CATCH BASIN

NOT TO SCALE



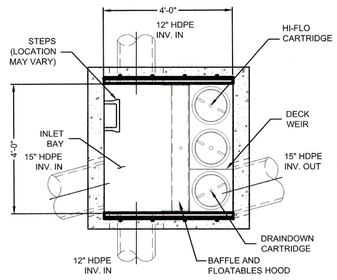
NOTES:

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.
4. SOLID WHITE LINE AND DOUBLE SOLID YELLOW LINE SHALL NOT BREAK AT THE PROPOSED DRIVEWAY.

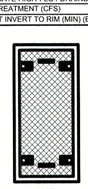
NHDOT PAVEMENT MARKINGS

NOT TO SCALE

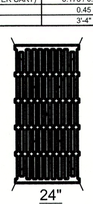
JELLYFISH DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD SURFACE INLET STYLE WITH TRENCH COVER IS SHOWN. ALTERNATE CURB INLET OR PIPE INLET OPTIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.45	0.33	0.22	0.12
OUTLET INVERT TO RIM (MIN) (B)	3'-4"	3'-4"	3'-4"	3'-4"



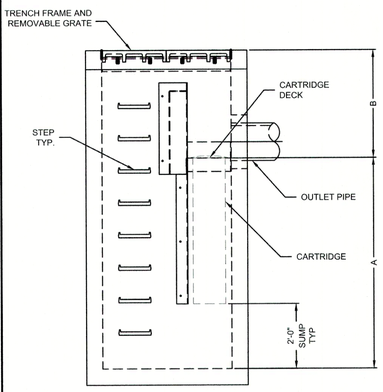
PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



24"
TRENCH COVER
N.T.S.



24"
TRENCH GRATE
N.T.S.
DO NOT USE FOR THIS APPLICATION



4' JELLYFISH FILTER - JF4

NOT TO SCALE

GENERAL NOTES:

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE (WHERE APPLICABLE) AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE. SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

PROJECT SPECIFIC NOTES

1. 24" TRENCH GRATE SHALL NOT BE UTILIZED. UTILIZE TWO SOLID TRENCH COVERS INSTEAD. THREE PIPE INLETS SHALL BE CORED PER GRADING AND DRAINAGE PLAN.
2. SURFACE INLET CONFIGURATION WITH NO GRATE SHALL BE UTILIZED. DO NOT UTILIZE IN-LINE CONFIGURATION, AS THREE INLETS ARE REQUIRED.
3. 12" INLETS SHALL ENTER AT EACH OPPOSING WALL OF INLET CHAMBER AND 15" INLET SHALL ENTER AT CORNER.
4. INLET BAY SHALL BE CLOSEST TO SIDEWALK AND ALL THREE INLETS MUST ENTER DIRECTLY INTO THIS SECTION.

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
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

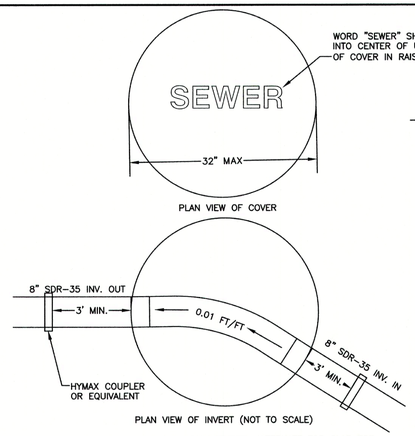
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

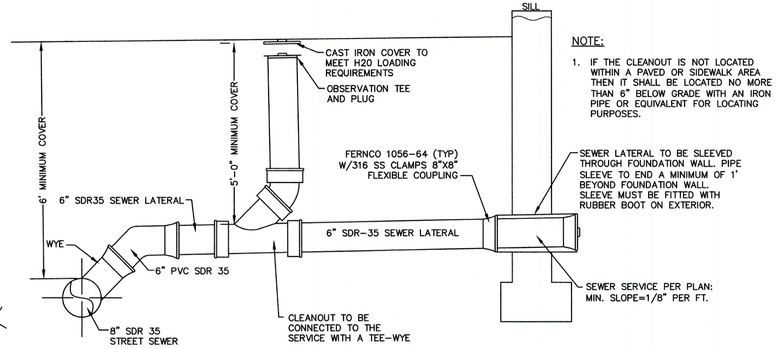
Plan Name:	DETAIL SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.

D2

SHEET 12 OF 22
JBE PROJECT NO. 21047



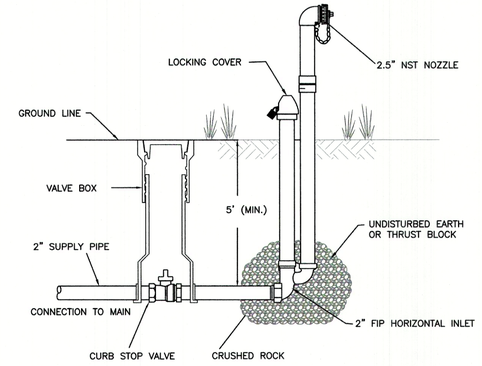


NOTE:

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

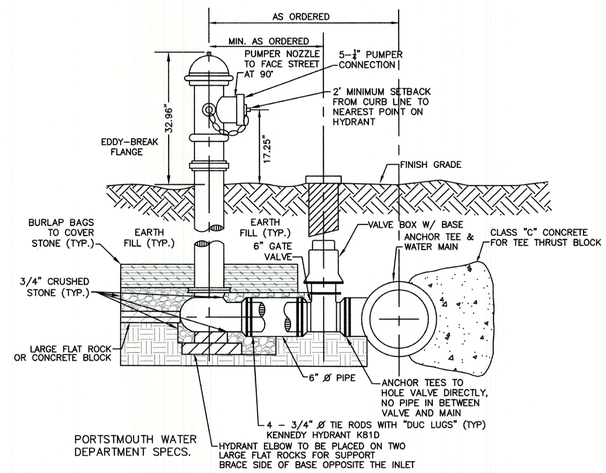


POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A 5' BURY. THESE HYDRANTS WILL BE FURNISHED WITH A 2" FIP HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN LEFT. BRONZE OPERATING MECHANISM AND ALUMINUM PLUNGER. DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET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



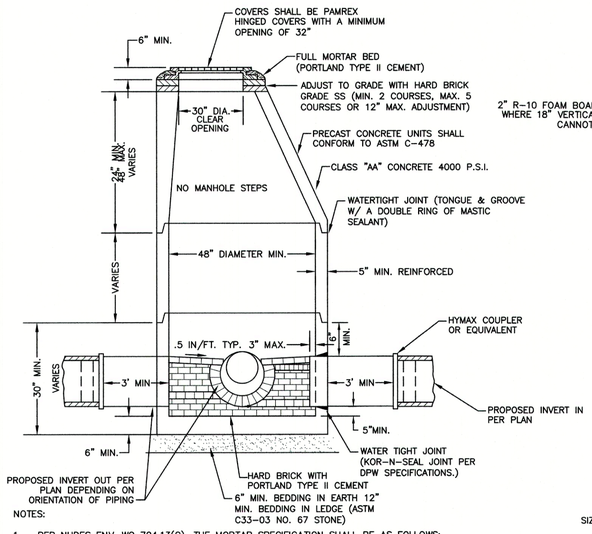
PORTSTMOUTH WATER DEPARTMENT SPECS.

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

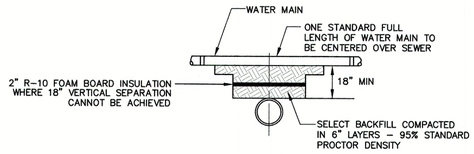


NOTES:

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

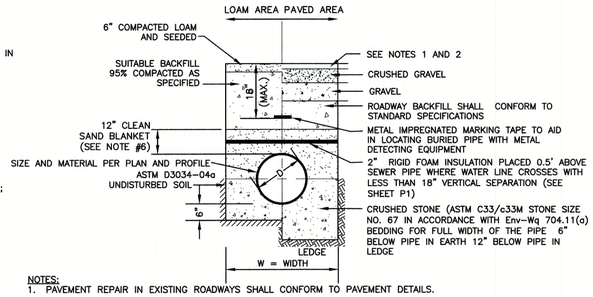


SEPARATION NOTES:

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 HORIZONTALLY FROM THE WATER MAIN.

TYPICAL WATER / SEWER SEPARATION

NOT TO SCALE

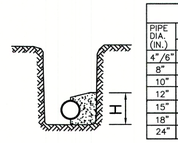


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4', PURSUANT TO DES WAIVER BEING ISSUED.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2 " SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

SEWER TRENCH

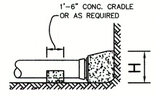
NOT TO SCALE



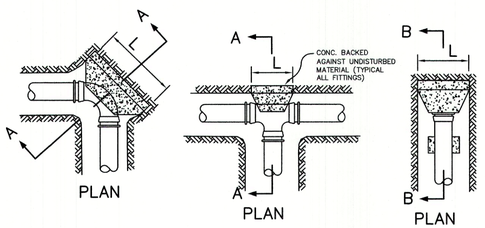
SECTION A-A

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

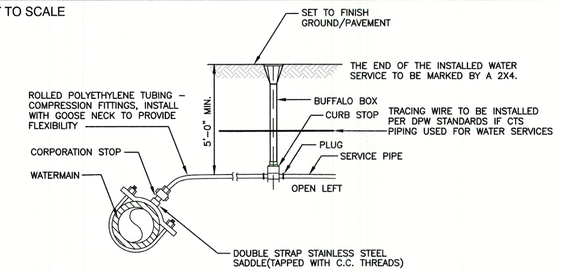


SECTION B-B



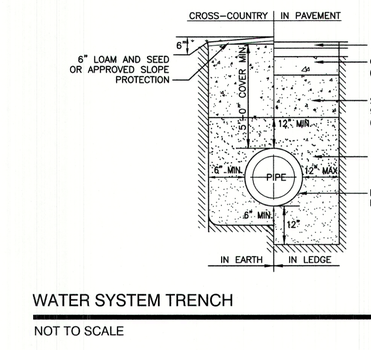
THRUST BLOCK DETAILS

NOT TO SCALE



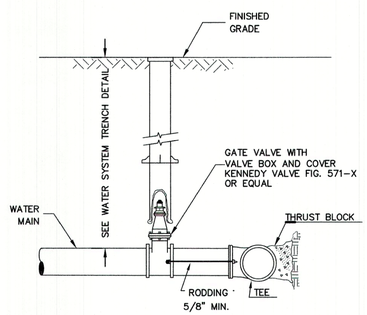
WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



WATER SYSTEM TRENCH

NOT TO SCALE



BURIED GATE VALVE DETAIL

NOT TO SCALE

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

STATE OF NEW HAMPSHIRE - PAIGE S. LIBBEY No. 16870 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

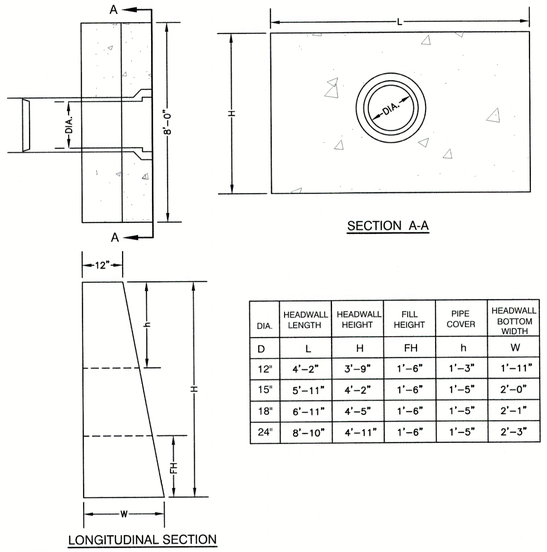
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: 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



LONGITUDINAL SECTION

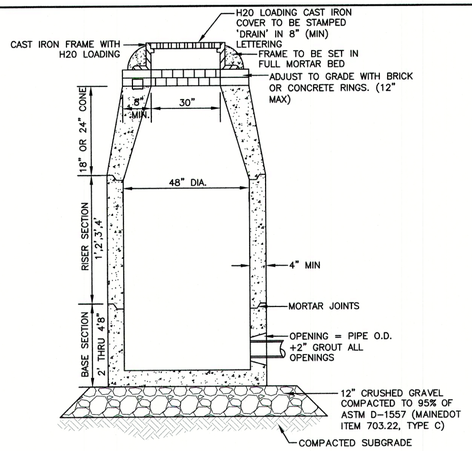
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

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

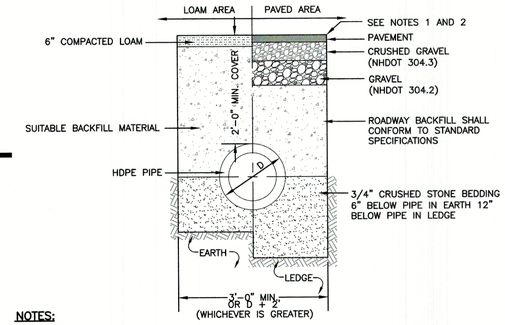


NOTES:

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

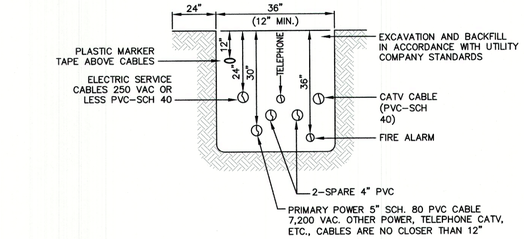


NOTES:

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

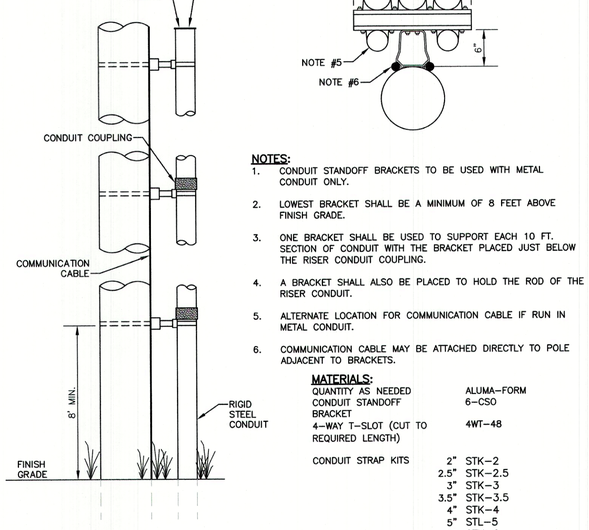
NOT TO SCALE



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

UTILITY TRENCH

NOT TO SCALE



NOTES:

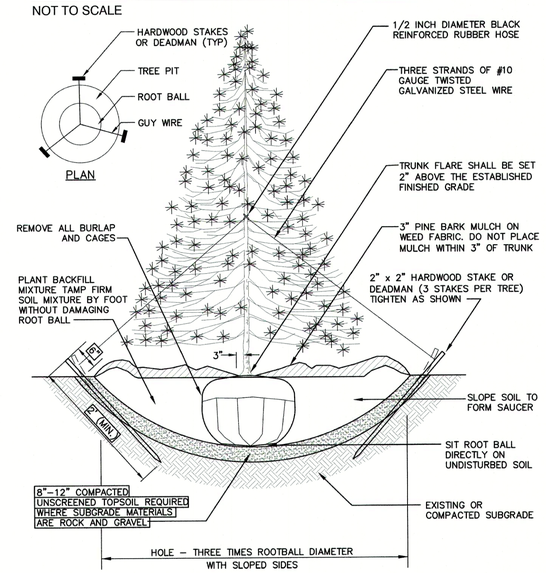
1. CONDUIT STANDOFF BRACKETS TO BE USED WITH METAL CONDUIT ONLY.
2. LOWEST BRACKET SHALL BE A MINIMUM OF 8 FEET ABOVE FINISH GRADE.
3. ONE BRACKET SHALL BE USED TO SUPPORT EACH 10 FT. SECTION OF CONDUIT WITH THE BRACKET PLACED JUST BELOW THE RISER CONDUIT COUPLING.
4. A BRACKET SHALL ALSO BE PLACED TO 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 CONDUIT STANDOFF BRACKET	ALUMA-FORM 6-CSO
4-WAY T-SLOT (CUT TO REQUIRED LENGTH)	4WT-48
CONDUIT STRAP KITS	2" STK-2
	2.5" STK-2.5
	3" STK-3
	3.5" STK-3.5
	4" STK-4
	5" STL-5
	6" STK-6

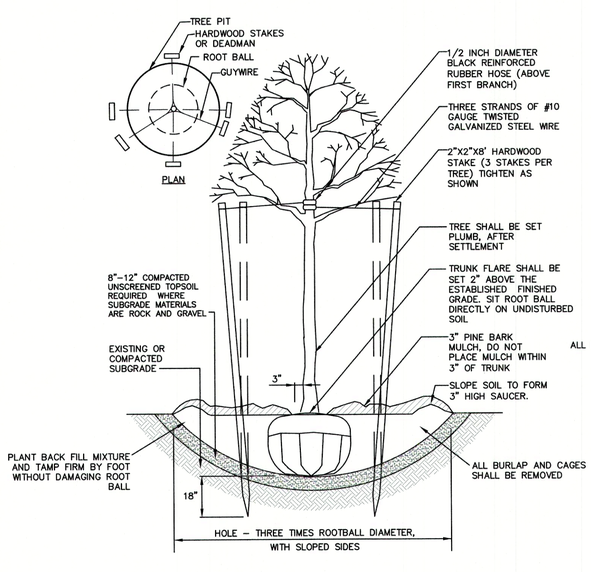
UTILITY POLE RISER DETAIL

NOT TO SCALE



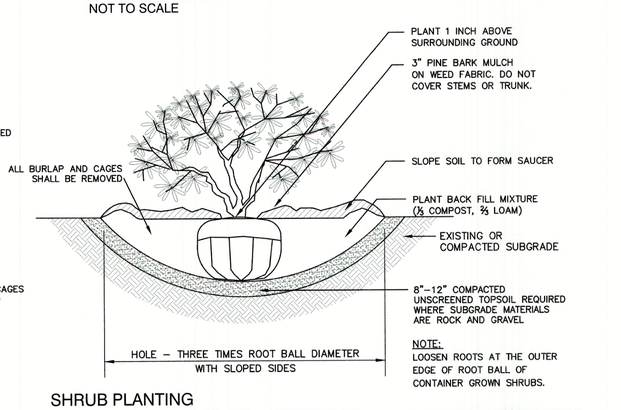
EVERGREEN PLANTING

NOT TO SCALE



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE



NOTE:
LOOSEN ROOTS AT THE OUTER EDGE OF ROOT BALL OF CONTAINER GROWN SHRUBS.

SHRUB PLANTING

NOT TO SCALE

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

STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No. 13870 (LICENSED) PROFESSIONAL ENGINEER — 6/24/22

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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:	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	VARIES	VARIES
2	600	38.00	37.70	37.00	35.50	35.25	34.75	34.50	VARIES	VARIES

* SEE NOTE #4 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

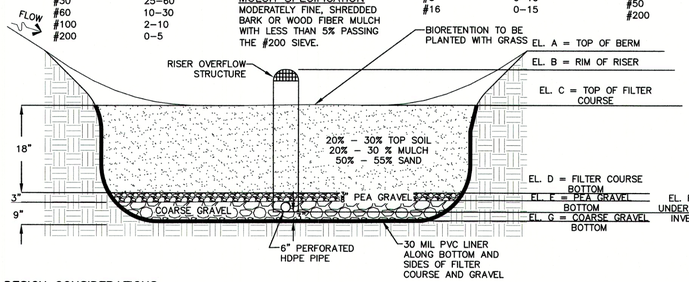
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

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

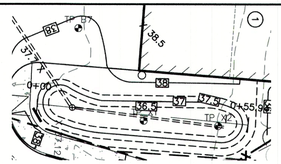
1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN SEEDED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN–OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3.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

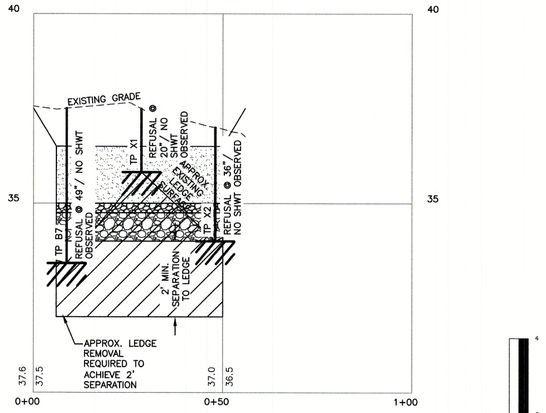
MAINTENANCE REQUIREMENTS:

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





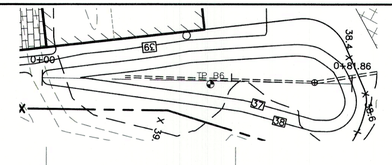
BIORETENTION #1 PROFILE

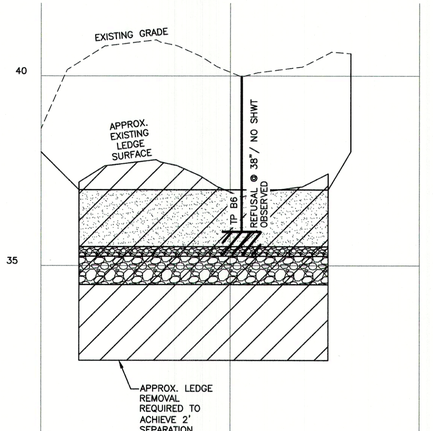
LEDGE PROFILE SHALL BE CONSIDERED APPROXIMATE AND CONTRACTOR SHALL REMOVE LEDGE TO THE EXTENT NECESSARY IN ORDER TO ACHIEVE 2' OF SEPARATION TO THE STONE BASE.

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

BIORETENTION SYSTEM LEDGE PROFILES

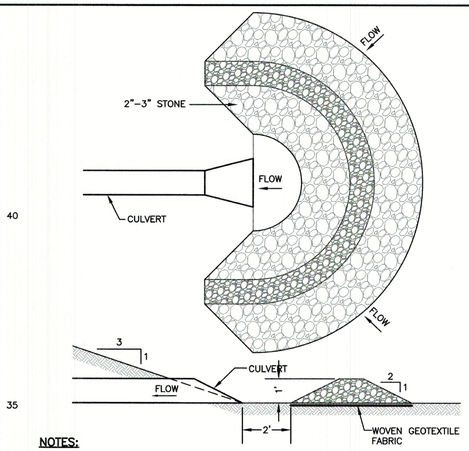
SCALE AS SHOWN





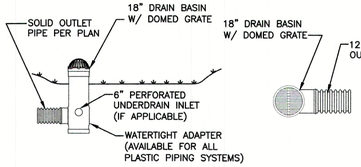
BIORETENTION #2 PROFILE

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)

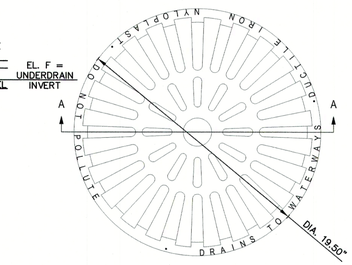
NOT TO SCALE

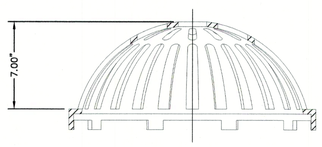


NYOPLAST DRAIN BASIN AND INLINE DRAIN (BIORETENTION RISER SPECIFICATION)

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

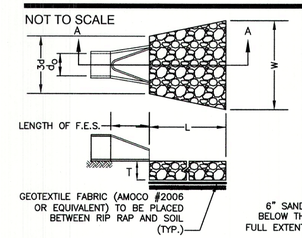
NOT TO SCALE

NOTES:

1. TEMPORARY CULVERT INLET PROTECTION CHECK DAMS SHALL BE CONSTRUCTED OF 2–3" STONE OVER WOVEN GEOTEXTILE FABRIC.
2. INLET PROTECTION MEASURES SHALL BE INSTALLED AT THE OPENINGS OF ALL EXISTING AND PROPOSED CULVERTS LOCATED BELOW (DOWNSTREAM) FROM AND WITHIN 100' OF THE PROJECT SITE.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURE WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
4. STRUCTURES SHALL BE REMOVED WHEN THE SITE IS STABILIZED WITH VEGETATION AND THE CHANNEL SHALL BE SMOOTHED AND REVEGETATED.

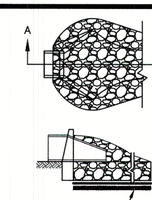
TEMPORARY CULVERT INLET PROTECTION CHECK DAM

NOT TO SCALE



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

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

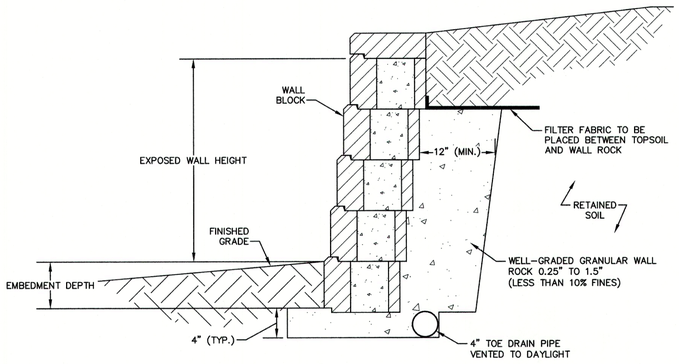
STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – PAIGE S. LIBBY No.13870 LICENSED

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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:	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

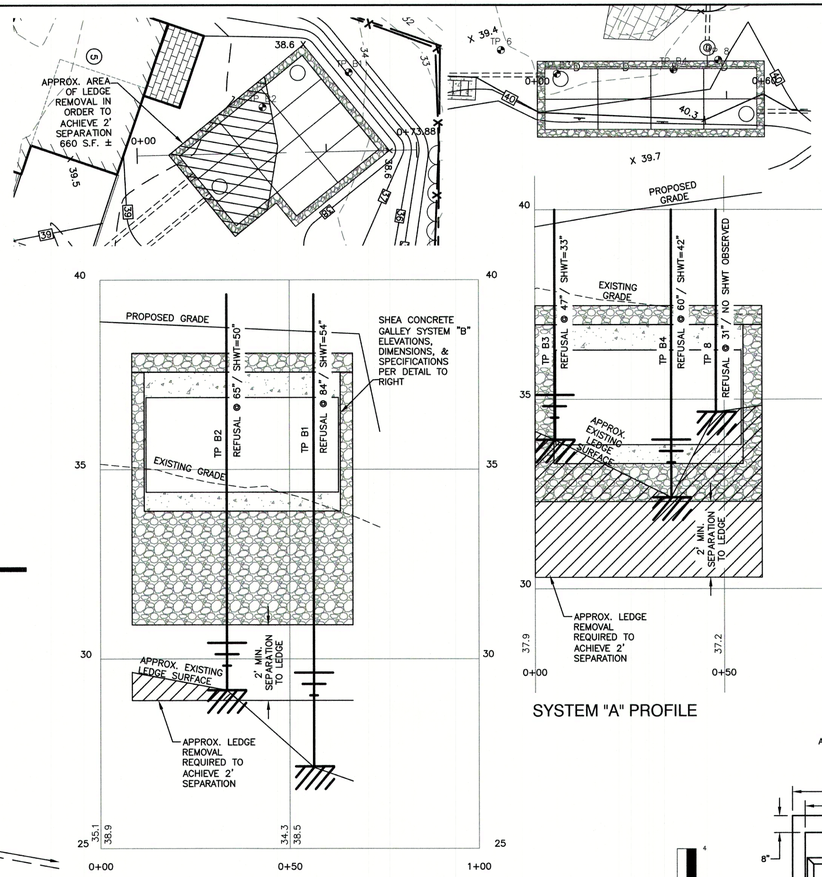
DRAWING No.
D5
SHEET 15 OF 22
JBE PROJECT NO. 21047

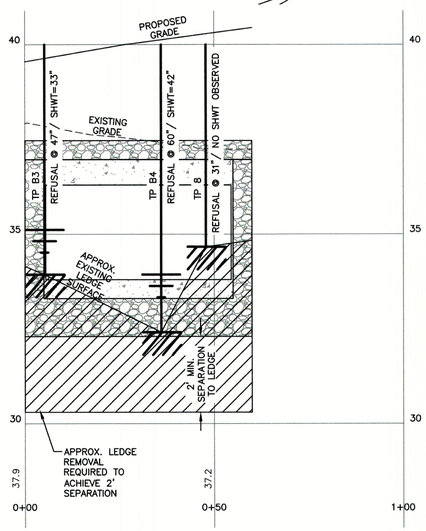


THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE SERVICES OF A STRUCTURAL ENGINEER LISENCED IN THE STATE OF NEW HAMPSHIRE TO DESIGN ANY WALL THAT HAS A HEIGHT OVER 4.0'. JONES & BEACH ENGINEERS, INC. DOES NOT ACCEPT ANY LIABILITY FOR THE STRUCTURAL DESIGN AND/OR INSTALLATION OF ANY RETAINING WALL OF ANY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

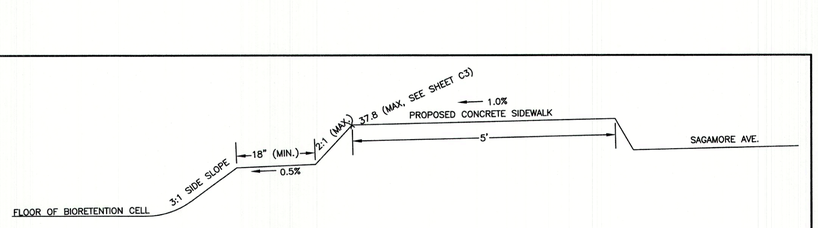
TYPICAL GRAVITY WALL DETAIL

NOT TO SCALE





SYSTEM "A" PROFILE



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

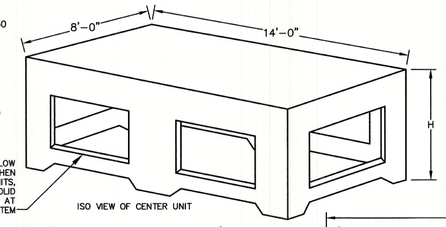
CONTRACTOR ORDER SCHEDULE				
	FLOW-THROUGH HOLES ON ALL SIDES	NO FLOW-THROUGH HOLES ON ONE 8' SIDE	NO FLOW-THROUGH HOLES ON ONE 14' SIDE	NO FLOW-THROUGH HOLES ON ONE 8' AND ONE 14' SIDE
SYSTEM A	0	0	4	4
SYSTEM B	2	3	1	5

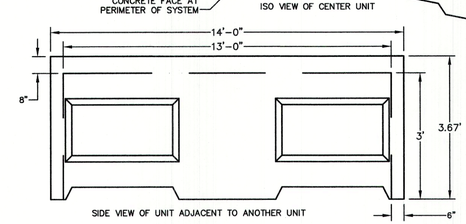
ELEVATION SCHEDULE							
	EL. A	EL. B	EL. C	EL. D	EL. E	EL.F	EL.G
SYSTEM A	> 39.0	36.97	36.3	34.7	33.3	32.3	32.3
SYSTEM B	> 38.6	37.57	36.9	35.8	33.9	N/A	30.9

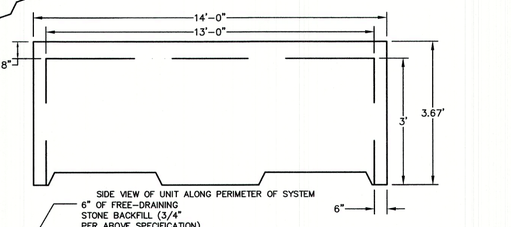
STONE BACKFILL SPECIFICATION

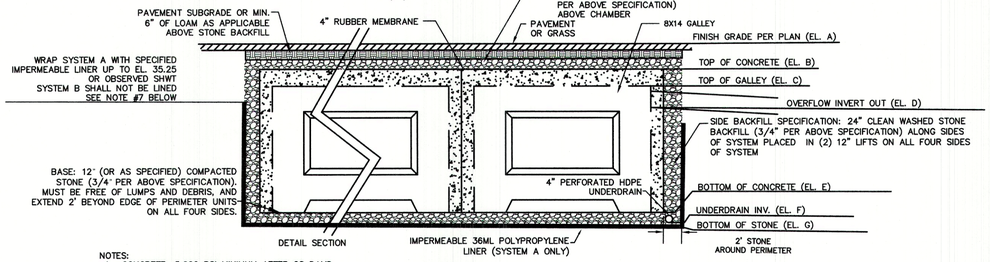
SIEVE SIZE	% BY WEIGHT
1"	100
¾"	90-100
⅜"	40-90
#8	23-49
#200	2-8

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





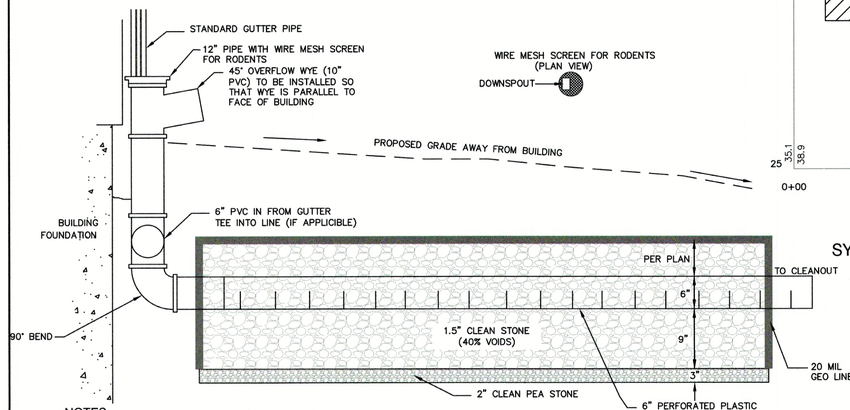




NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR AASHTO HS-20 LOAD, 0 TO 5FT COVER. CAN BE DESIGNED FOR ADDITIONAL COVER IF REQUIRED.
3. STANDARD SLAB DESIGN WITHSTANDS 40KIP OUTRIGGER LOAD ON A 24" SQUARE PAD WITH 24" COVER OVER SLAB.
4. CORE HOLE FOR MORTAR JOINT AT INVERT IN LOCATION(S).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

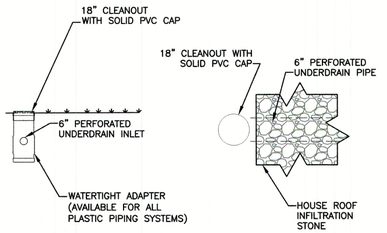
NOT TO SCALE

SHEA CONCRETE GALLEY 8X14 LEDGE PROFILES

SCALE AS SHOWN

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.
0 20 40
0 2 4



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. 15670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

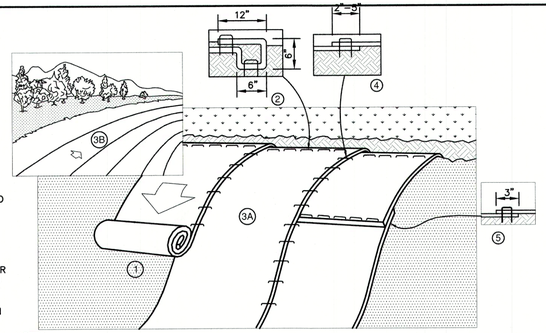
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	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.
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 SYSTEMTM, 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(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

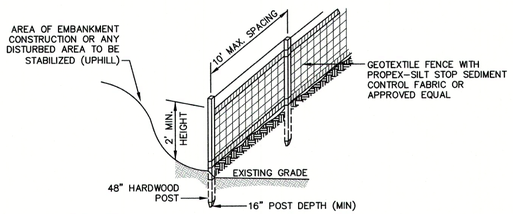
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

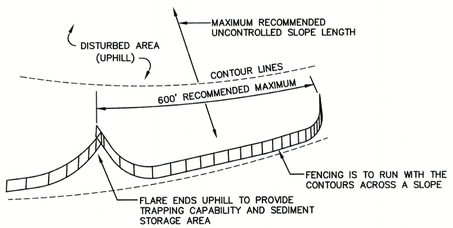
SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES





CONSTRUCTION SPECIFICATIONS:

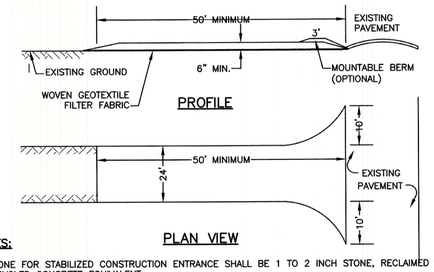
1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 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 LIBBY No. 16870 - LICENSED PROFESSIONAL ENGINEER - 9/24/22

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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

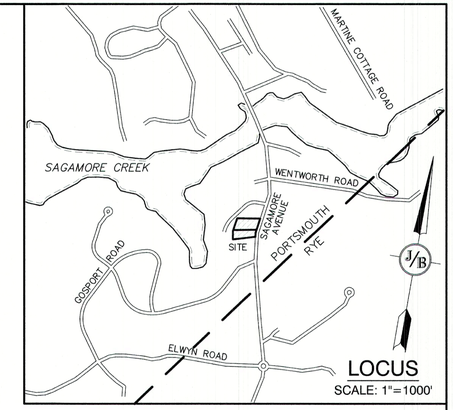
Plan Name: EROSION AND SEDIMENT CONTROL DETAILS
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

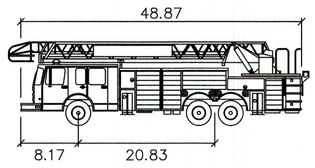
DRAWING No.
E1
SHEET 17 OF 22
JBE PROJECT NO. 21047

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

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.11670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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: 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		

PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 4/21/22

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

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

Plan Name: TRUCK TURNING PLAN

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

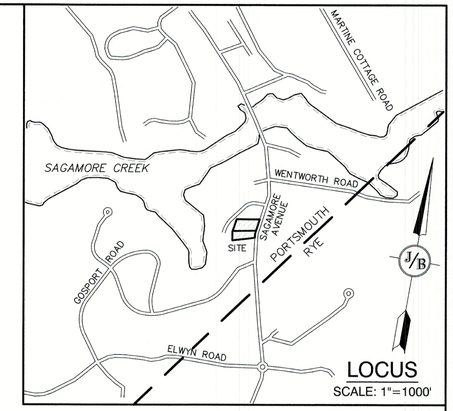
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

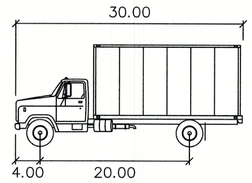
DRAWING No.
T2
SHEET 19 OF 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet





SU-30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

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
6/28/22

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	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: **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

SU-30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

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
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

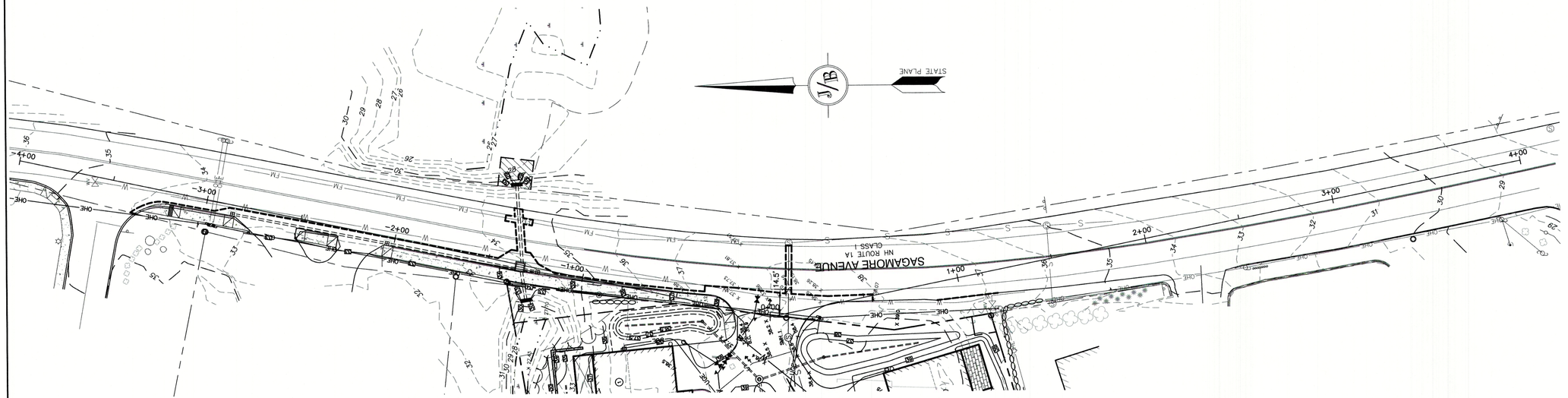
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

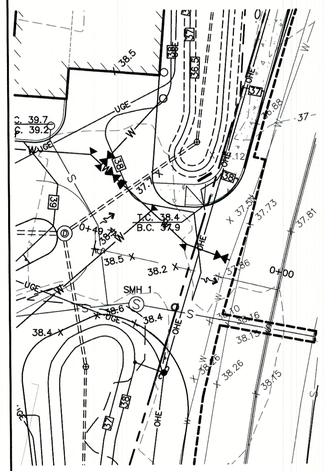
Plan Name: TRUCK TURNING PLAN

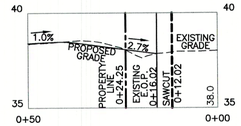
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

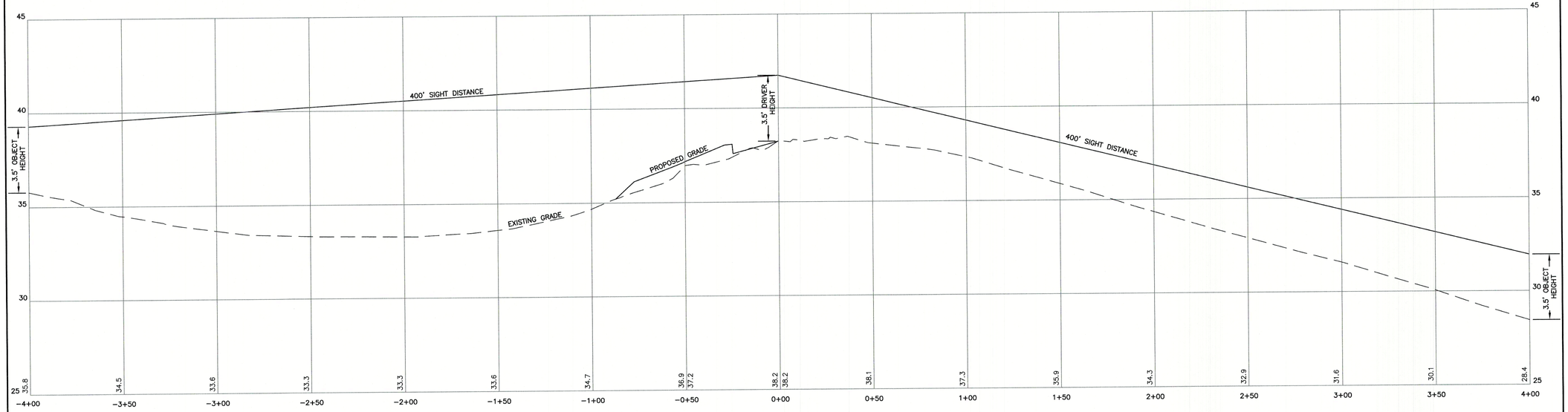
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

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



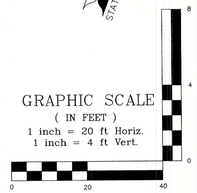






SIGHT DISTANCE PLAN AND PROFILE (SCALE AS SHOWN)

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft Horiz.
1 inch = 3 ft Vert.



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		

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16870 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM
12	4/6/22	REMOVED WALKWAYS	DJM
11	3/22/22	REVISED PER CITY COMMENTS	DJM

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

Plan Name:	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