ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

December 29, 2021

Peter Britz, Interim Planning Director
City of Portsmouth Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Application for Site Plan Review
Assessor's Map 201, Lot 2
960 Sagamore Avenue
Altus Project No. 5079

Dear Peter,

On behalf of the Applicant, Sagamore Corner, LLC, Altus Engineering, Inc. respectfully submits the attached application material for the redevelopment of the former Golden Egg site at 960 Sagamore Avenue. The Proposed development will consist of a new six (6) unit building and a five (5) exterior stall visitor parking lot to serve the new building. Parking for the residents will be located on the garage level of the building. The existing paved parking lot along Sagamore Avenue will be removed and access will be provided from Sagamore Grove. This will eliminate the head-in parking from Sagamore Avenue, which improve traffic operations and reduce conflicts along Sagamore Avenue. The majority of the new parking lot and driveway will be constructed with porous pavement and a sub-surface treatment system will be constructed to treat and manage the stormwater from the roof. There will be a reduction of over 8,400 square feet of paved and gravel area impervious areas.

On December 7, 2021, the project team met with the Technical Advisory Committee (TAC), who voted to recommend approval with seven (7) stipulations. The stipulations are listed below with the comments on how the comments have been or will be addressed for the approval.

1. *Label address in the title block of the CUP plan.*

Response: The title block has been revised to include the property address.

2. *The UG electrical service should be drawn to go from the pole to the building directly.*

Response: The UG electric service has been re-drawn to go directly from the pole.

3. *Applicant should coordinate with DPW on viable water source prior to building permit issuance.*

Response: The applicant has coordinated with DPW and water service will be provided directly from the main in Sagamore Avenue. Separate connections swill be required for domestic and fire services.

4. *DES approval of holding tank*

Response: Notes are added to the plan that DES approval is required if the holding tank is required to be installed.

5. *Fire service plan.*

Response: A Fire sieve plan will be submitted for the building permit application.

6. *The natural stone finish of the proposed retaining wall shall be finalized and reviewed by the Planning Department prior to approval by the Planning Board*

Response: The owner is working with the Planning Department to determine to finish stone for the retaining wall.

7. *The proposed community storage room in the basement level shall be reduced in size in order to support egress from parking space #10.*

Response: The community storage room has been reduced in size to support egress as requested.

On December 8, 2021, the project team met with the Conservation Commission, who also voted to recommend approval.

8. *The applicant shall include signage to demonstrate delineation that there is a sensitive resource/wetland area beyond the 10x10 patio area.*

Response: Signage has been added to the plan to indicate "Sensitive Resource Area / Wetland Buffer" in the area of the patio.

9. *Along the existing stonewall and existing tree line beyond the proposed patio the applicant shall include additional buffer plantings.*

Response: The Landscape Plan (Sheet L-1) has been revised to include additional plantings to provide a native plan buffer, which consists of a combination of ferns as groundcover, Winterberry (12), and one small Amelanchier.

Enclosed please find the following items for consideration at the January 19th Planning Board Meeting:

- Letter of Authorization (Applicant to Altus)
- Full sized sets of Site Plans
- Wetlands Conditional Use Plan
- "Green" Statement
- Average Grade Plane Worksheets
- Profiles worksheet
- Wetlands and Buffer Evaluation
    - Wetlands Letter
    - NHD Data Review
- Drainage Report
    - Stormwater Inspection and Maintenance Manual
- Traffic Impact Study (by VAI)
- Septic Approval Plan (The Wright Choice, 2011)
- Site Pictures
- Sitework Cost Estimate
- Site Review Checklist
- Letter of Decision - Technical Advisory Committee, dated December 14, 2021.
- Letter of Decision – Conservation Commission, dated December 20, 2021.

Please call me if you have any questions or need any additional information.

Sincerely,

ALTUS ENGINEERING, INC.

Cory D. Belden, PE
Associate Principal

ebs/5079-APP-PB-CovLtr-122921.docx

Enclosures

eCopy: Eric Katz, Sagamore Corner, LLC

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801

(603) 610-7216

TECHNICAL ADVISORY COMMITTEE

December 14, 2021

Sagamore Corner LLC
273 Corporate Dr, Suite 150
Portsmouth, NH 03801

RE: Site Plan approval for property located at 960 Sagamore Avenue (LU-21-204)

Dear Owner:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, December 7, 2021, considered your application for Site Plan Approval to demolish the existing mixed use structure and construct a 6-unit residential structure totaling 21,066 square feet of gross floor area, 21 parking spaces as well as associated utilities, lighting, landscaping, and site improvements. Said property is shown on Assessor Map 201, Lot 2 and lies within the Mixed Residential Business (MRB) District. As a result of said consideration, the Committee voted to recommend approval to the Planning Board with the following stipulations:

1. Label address in the title block of the CUP plan.
2. The UG electrical service should be drawn to go from the pole to the building directly.
3. Applicant should coordinate with DPW on viable water source prior to building permit issuance.
4. DES approval of holding tank.
5. Fire service plan.
6. The natural stone finish of the proposed retaining wall shall be finalized and reviewed by the Planning Department prior to approval by the Planning Board.
7. The proposed community storage room in the basement level shall be reduced in size in order to support egress from parking space #10.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, January 20, 2021.** One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than **Wednesday, December 29, 2021.**

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

CONSERVATION COMMISSION

December 20, 2021

Sagamore Corner LLC
273 Corporate Dr, Suite 150
Portsmouth, NH 03801

RE: Wetland Conditional Use Permit Application for property located at 960 Sagamore Avenue (LU-21-204)

Dear Owner:

The Conservation Commission, at its regularly scheduled meeting of **Wednesday, December 08, 2021**, considered your application for a wetland conditional use permit according to section 10.1017.5 of the Zoning ordinance to impact 1,100 square feet of wetland buffer for grading and to remove 750 square feet of impervious surface in the wetland buffer and construct a new 100 square foot porous paver patio.. Said property is shown on Assessor Map 201, Lot 2 and lies within the Mixed Residential Business (MRB) District. As a result of said consideration, the Commission voted to recommend approval of the Wetland Conditional Use Permit Application to the Planning Board with the following stipulations.

1. The applicant shall include signage to demonstrate delineation that there is a sensitive resource/wetland area beyond the 10x10 patio area.
2. Along the existing stonewall and existing tree line beyond the proposed patio the applicant shall include additional buffer plantings.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, January 20, 2021**. One (1) hard copy of any revised plans and/or exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than Wednesday, December 29, 2021.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Barbara McMillan

Barbara McMillan, Chair
Conservation Commission

cc:

Letter of Authorization

I, Eric S. Katz, Manager of Sagamore Corner, LLC, hereby authorize Altus Engineering, Inc. of Portsmouth, New Hampshire to represent Sagamore Corner, LLC in all matters concerning engineering and related permitting for the development of property at 960 Sagamore Avenue in Portsmouth, NH. The property is identified on the Assessor's Maps as Tax Map 201, Lot 2. This authorization shall include any signatures required for Federal, State and Municipal permit applications.

[signature], Manager	ERIC S. KATZ	11/1/21
Signature	Print Name	Date
[signature]	Tyler Ruger	11-1-21
Witness	Print Name	Date

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER AND ORIGINAL DOCUMENT SECURITY SCREEN ON BACK WITH PADLOCK SECURITY ICON.

ALTUS ENGINEERING, INC.

133 Court Street
Portsmouth, NH 03801
603.433.2335

Bangor Savings Bank

52-7438/2112

9426

11-22-21

PAY TO THE ORDER OF City of Portsmouth, NH $ 3095.00

Three thousand NINETY-FIVE AND xx/100 DOLLARS

960 SAGAMORE

MEMO P5079- Site Review Appln.

IMAGE FADES WHEN HEAT IS APPLIED

AUTHORIZED SIGNATURE

MP

Security features included. Details on back.

⑈009426⑈ ⑆211274382⑆ 0000175633⑈

Altus Engineering, Inc.

9426

ALTUS
ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
(603) 433-2335

Site Plan Application Fee Calculation
960 Sagamore Avenue
Multi-Family Residential Development
Altus Project #5079

Per Portmouth Fee Schedule Effective 07/01/21 - 06/30/22

$500 Base Fee
Plus $5 per $1,000 Site Costs
Plus $10 per 1000 Site Development Area
Total Fee Not the Exceed $15,000

Base Fee:		$	500.00
Site Costs:	$ 265,000.00	$	1,325.00
Wetlands CUP	(>1,000 sf dist)		$1,000
Site Development Area:	26,500	$	270.00
	Total Fee:	**$**	**3,095.00**

* Not including public and abutter notifications.

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133 Court Street
Portsmouth, NH
(603) 433-2335

960 Sagamore Avenue

Portsmouth, NH

Engineer's Opinion of Cost

(November 22, 2021 Plan Set)

PROJECT: 5079

Est. Qty	Unit	ITEM DESCRIPTION &	Cost/Unit	Total
1	LS	Site Demolition	$ 30,000.00	$ 30,000.00
1	LS	Clearing, Grubbing and Loam Stripping	$ 5,000.00	$ 5,000.00
45	TON	Hot Bituminous Pavement	$ 90.00	$ 4,050.00
40	TON	Porous Pavement	$ 130.00	$ 5,200.00
240	CY	Gravels	$ 40.00	$ 9,600.00
1	EA	Concrete Pad	$ 2,000.00	$ 2,000.00
1,250	SF	Modular Block Retaining Wall	$ 50.00	$ 62,500.00
200	LF	4" PE Underdrain	$ 25.00	$ 5,000.00
240	LF	8” PE Pipe (smooth interior)	$ 30.00	$ 7,200.00
115	LF	12” PE Pipe (smooth interior)	$ 40.00	$ 4,600.00
4	EA	Drainage Structure	$ 3,000.00	$ 12,000.00
1	EA	Trench Drain	$ 2,500.00	$ 2,500.00
1	EA	Reconstruct Drainage Structure (Curb Inlet)	$ 1,500.00	$ 1,500.00
90	LF	24" Perforated Stormwater Chamber	$ 80.00	$ 7,200.00
1	EA	Septic Holding Tank	$ 15,000.00	$ 15,000.00
3	EA	Bollards	$ 200.00	$ 600.00
220	LF	Vertical Granite Curb	$ 55.00	$ 12,100.00
20	LF	6" SDR 35 Sewer Pipe	$ 45.00	$ 900.00
80	LF	4" D.I. Water Pipe	$ 50.00	$ 4,000.00
90	LF	6" D.I. Water Pipe	$ 60.00	$ 5,400.00
2	EA	Traffic Sign Type C	$ 100.00	$ 200.00
26	LF	Wood Beam Guardrail	$ 75.00	$ 1,950.00
1	LS	Site Elctrical (Incl Generator)	$ 20,000.00	$ 20,000.00
1	LS	Lighting	$ 5,000.00	$ 5,000.00
1	LS	Site Gas (Incl Propane Tank)	$ 15,000.00	$ 15,000.00
1	EA	Concrete Base and Light Pole	$ 3,000.00	$ 3,000.00
1	LS	Misc. Temp. Erosion and Sediment Control	$ 3,000.00	$ 3,000.00
100	SF	Porous Paver (Patio)	$ 25.00	$ 2,500.00
1	LS	Loam and Seed	$ 8,000.00	$ 8,000.00
1	LS	Planted Landscape	$ 10,000.00	$ 10,000.00
			****SUBTOTAL:**	**$ 265,000.00**

**** Exclusions:**

Ledge Removal, Hazardous Waste Remediation, Traffic Control, Offsite Work,
Site Construction Monitoring and Reporting

City of Portsmouth, New Hampshire

Site Plan Application Checklist

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

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

Name of Owner/Applicant: Sagamore Corner LLC Date Submitted: 11/22/21

Phone Number: 603-427-5100 E-mail: ekatz@katzcompanies.com

Site Address: 960 Sagamore Ave Map: 201 Lot: 2

Zoning District: MRB Lot area: 42,929 sq. ft.

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

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	Green Statement	
☒	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	VP	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	Site Plan, C-2	N/A
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	VP, Cover Sheet	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	Existing Conditions Plan, 3 sheets	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	Cover Sheet	N/A
☒	List of reference plans. **(2.5.3.1G)**	Existing Conditions Plan, 1 of 3	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	Utilities Plan, C-4	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**		N/A
☒	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**		N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	Existing Conditions 1 of 3, note 6	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Cover Sheet, Site Plans	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Title block	N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**		N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Site Plan, C-2	N/A
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Site Plan, C-2	N/A
☒	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	Landscape Plan Sheet L-1	N/A

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

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
☒	a. The size, type and location of solid waste facilities.	Utilities Plan	
	9. Storm water Management: (2.5.4.3I)		
☒	a. The location, elevation and layout of all storm-water drainage.	Grading & Drainage Plan	
	10. Outdoor Lighting: (2.5.4.3J)		
☒	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	Lighting Plan, S-1	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	"	
	12. Landscaping: (2.5.4.3K)		
☒	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	Landscape Plan, L-1	
☐	**b.** Location of any irrigation system and water source.	N/A	
	13. Contours and Elevation: (2.5.4.3L)		
☒	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Grading & Drainage Plan, C-3	
	14. Open Space: (2.5.4.3M)		
☒	a. Type, extent and location of all existing/proposed open space.	Landscape Plan	
☐	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	Existing Conditions Plans, 3 shts	
☒	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	Site Plan, C-2	
☐	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	N/A	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. *(Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application)* **(3.2.1-2)**	Traffic Impact Study (by VAI)	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Green Statement	
☐	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☒	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	Green Statement	
☒	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**	Drainage Report	
☒	Stormwater Management and Erosion Control Plan. *(Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application)* **(7.4.4.1)**	Drainage Report, Stormwater Manual, Grading & Drainage Plan	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**	Site Plan table Sheet C-2	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**	Drainage Report, Traffic Impact Study, Wetland and Buffer Evaluation, NHD data check	

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

Applicant's Signature: [signature] **Date:** 11/22/21

VIEW FROM SAGAMORE AVENUE - WESTSIDE

VIEW FROM SAGAMORE GROVE - NORTHSIDE

View of Backyard - Northside

View of East Backyard - Eastside

VIEW OF REAR OF EXISTING BUILDING - NORTHSIDE

VIEW OF SIDE YARD - SOUTHSIDE

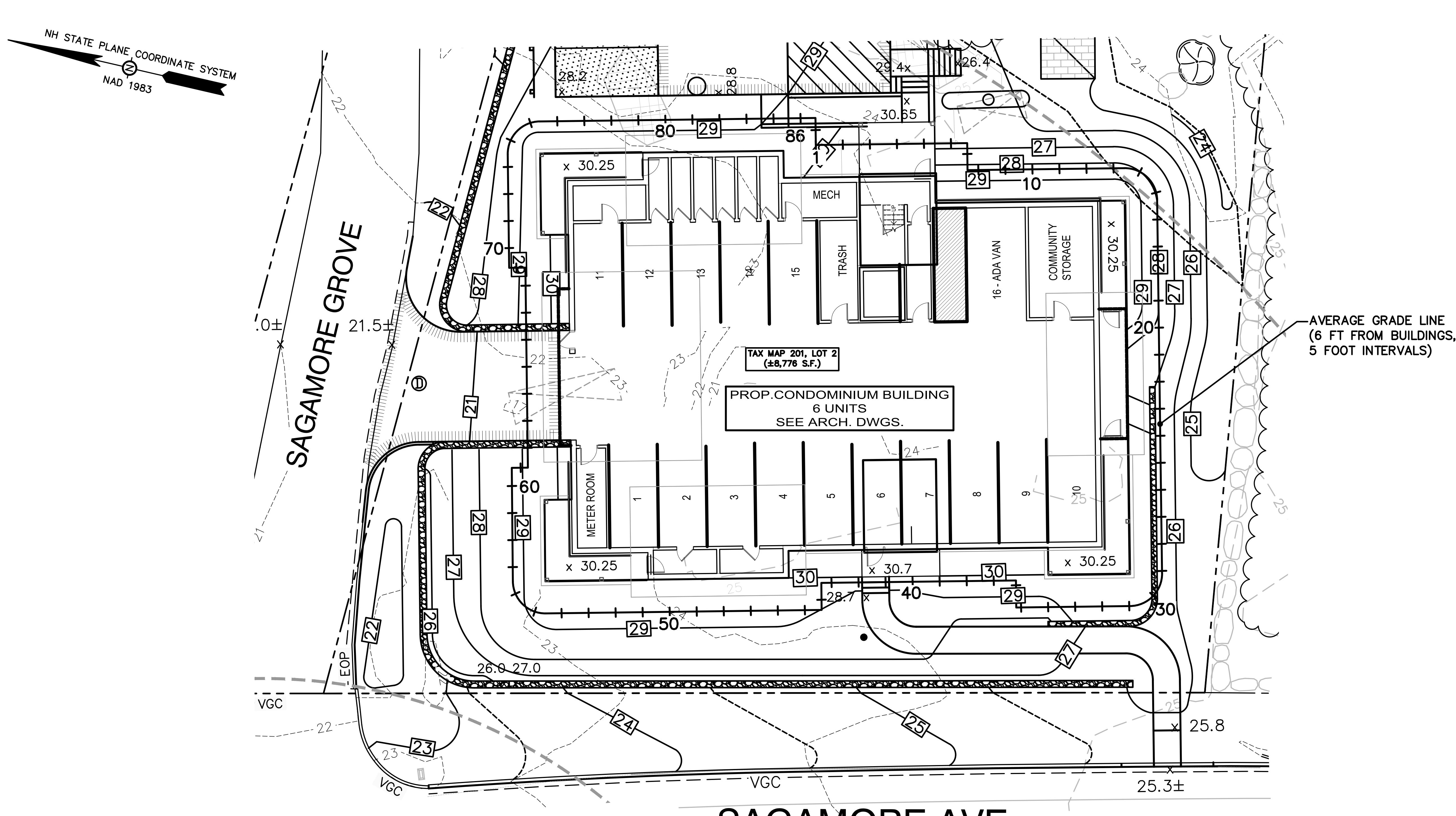
ALTUS
ENGINEERING, INC.

"Green" Statement
MULTI-FAMILY RESIDENTIAL DEVELOPMENT
Assessor's Map 201, Lot 2
960 Sagamore Avenue
Altus Project 5079

Pursuant to Section 2.5.3.1(a) of the Site Plan Review Regulations, Altus Engineering, Inc. respectfully submits the following list of the project's "green" components for the redevelopment of the former Golden Egg restaurant site to construct a new 6-Unit multi-family residential building at 960 Sagamore Avenue:

- The existing impervious areas will be decreased by over 6,600 square feet and over 8,400 square feet including the porous pavement area. This will reduce the heat island effect, reduce runoff, and improve the surface water quality.
- The existing site has approximately 26 exterior surface parking stalls to accommodate a restaurant, retail store, and apartment. The proposed development will have all resident parking in the basement garage and only 5 exterior surface visitor parking stalls. This reduces the site impervious and improves stormwater runoff quality.
- The proposed site lighting will have LED fixtures. The light will be mounted at a maximum height of 14-feet. The lights will be dark sky friendly and will exceed the minimum City requirements.
- The existing wetland buffer will have approximately 750 sf of gravel parking area removed. There will be no new impervious surfaces in the 100 ft wetland buffer.
- The existing mature trees along Sagamore Grove will be preserved where possible.
- A robust planting plan and increased green space is proposed to reduce heat island effects.
- The proposed development will have an interior bicycle rack and moped storage area.
- The existing site was constructed prior to stormwater treatment or detention design considerations. Runoff from the site currently discharge directly into the closed drainage system that discharges to Sagamore Creek, or the wetland in the rear of the property. The proposed stormwater management design will treat the runoff with a sub-surface chamber system and porous pavement to reduce the peak rates of runoff to improve the stormwater quality discharge.

- Low Impact Development (LID) has been used for the proposed site development by incorporating basement level parking, porous pavement surfaces, and stormwater retentions and treatment facilities. The impervious areas are reduced by over 8,400 square feet and peak storm runoff for the 10 year storm event is reduced by 29% for the developed area of the parcel.
- The obsolete building will be replaced with a new building code compliant building with components that will meet or exceed all applicable energy codes.
- The new building will meet or exceed all applicable current energy codes.
- Electric vehicle charging stations will be provided in the garage basement for the residents of the new building.



AVERAGE GRADE CALCULATION (MEASURES 6 FT FROM BUILDING EVERY 5 FT)

POINT	ELEVATION	POINT	ELEVATION	POINT	ELEVATION	POINT	ELEVATION	POINT	ELEVATION	POINT	ELEVATION
1	30	16	28	31	29.7	46	29.4	61	29	76	28.5
2	30.4	17	28	32	29.7	47	29.4	62	30	77	28.5
3	30.7	18	28	33	29.7	48	29.4	63	20.5	78	28.5
4	30.7	19	28	34	28.5	49	29.4	64	20.5	79	28.5
5	30.7	20	27.8	35	28.5	50	29.4	65	20.5	80	28.5
6	27	21	27.3	36	29.5	51	29.4	66	20.5	81	28.5
7	27.5	22	27	37	29.7	52	29.4	67	29.3	82	28.5
8	28.4	23	26.9	38	29.7	53	29.4	68	29.3	83	28.5
9	28.4	24	26.9	39	29.7	54	29.4	69	29	84	29
10	28.4	25	26.9	40	29.7	55	29.2	70	28.7	85	29.2
11	28.4	26	26.9	41	30.4	56	28.8	71	28.6	86	29.7
12	28.4	27	26.9	42	29.7	57	28.7	72	28.5		
13	28.4	28	26.9	43	29.7	58	28.7	73	28.5	TOTAL	2441.1
14	28	29	26.9	44	29.2	59	28.7	74	28.5		
15	28	30	29.5	45	29.2	60	28.7	75	28.5	**AVE.**	**28.4**

SAGAMORE AVE

AVERAGE GRADE SUMMARY

AVERAGE GRADE 6 FT AROUND BUILDING = 28.4

1ST FLOOR ELEVATION OF PROPOSED BUILDING = 30.75

HEIGHT OF BUILDING 1ST FLR TO TOP OF ROOF = 26.5 FT

TOTAL HEIGHT OF BUILDING FROM AVERAGE GRADE = 28.85 FT

TOTAL ALLOWABLE BUILDING HEIGHT = 30.00 FT

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

P5079

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/22/21

DRAWN BY: CDB

APPROVED BY: EDW

DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 10'
11"x17" 1" = 20'

OWNER:
WENTWORTH CORNER, LLC
1150 SAGAMORE AVENUE
PORTSMOUTH, NH 03801

APPLICANT:
KATZ DEVELOPMENT CORPORATION
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

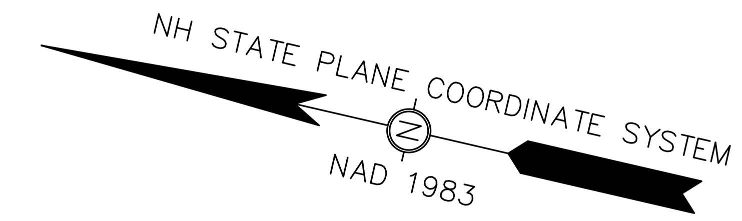
PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201
LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

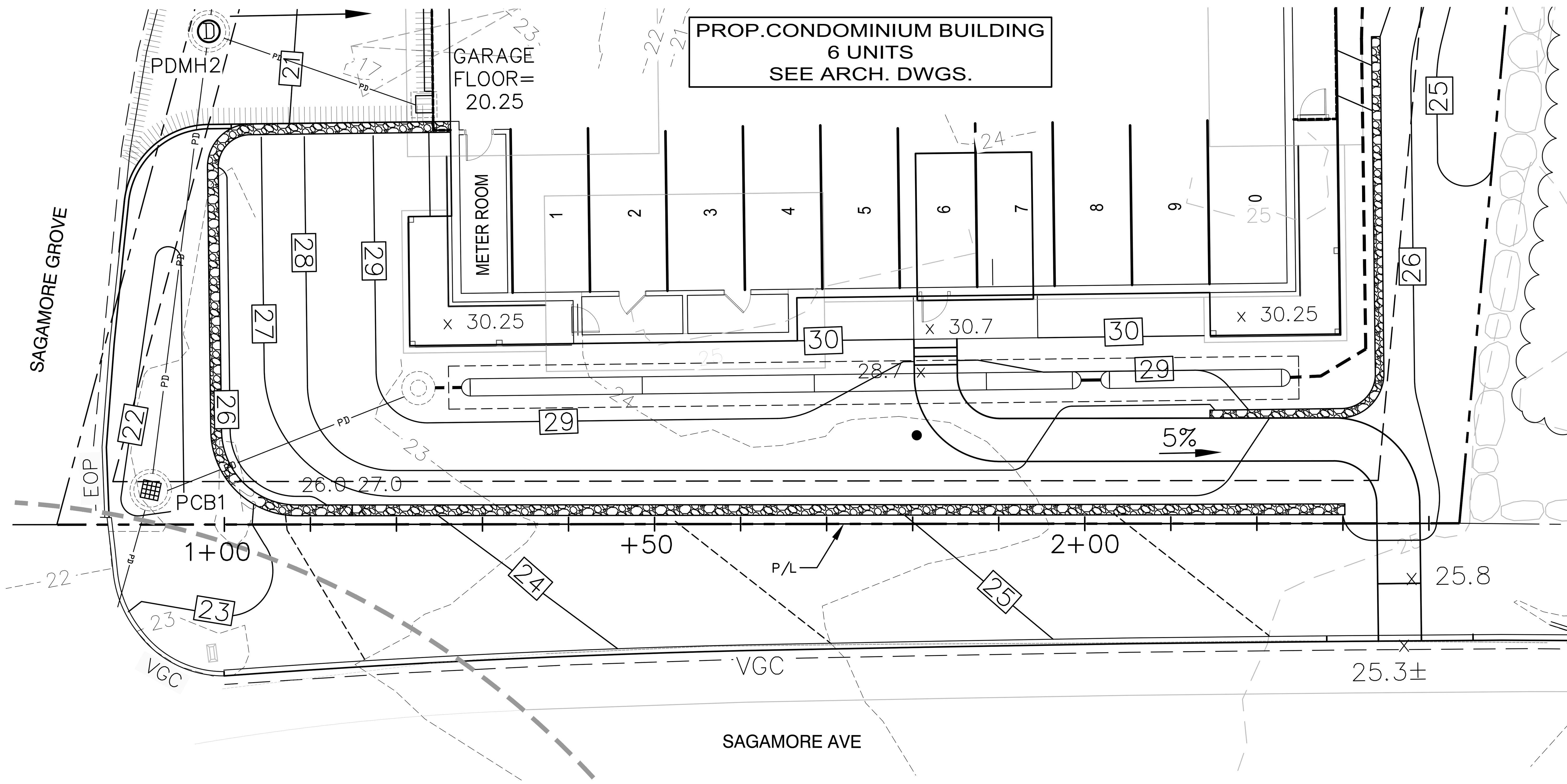
TITLE:
AVERAGE GRADE WORKSHEET

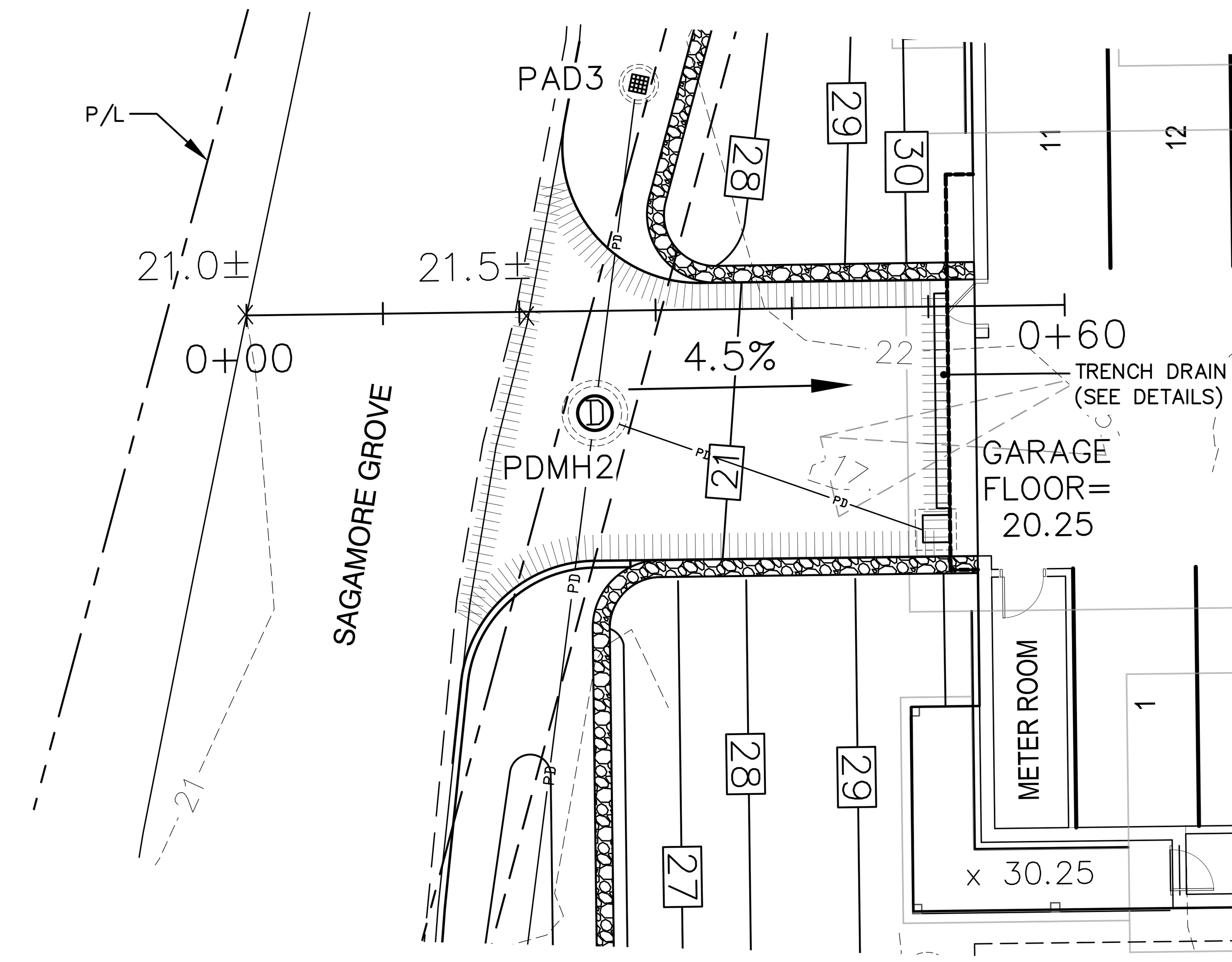
SHEET NUMBER:
WRK-1

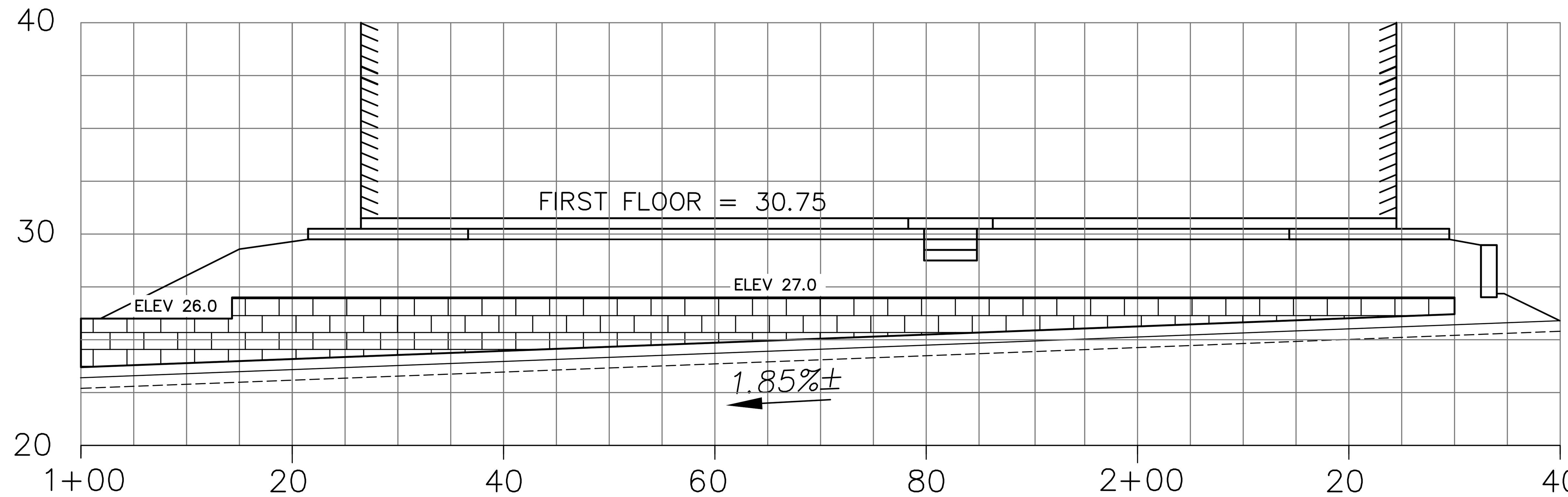
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



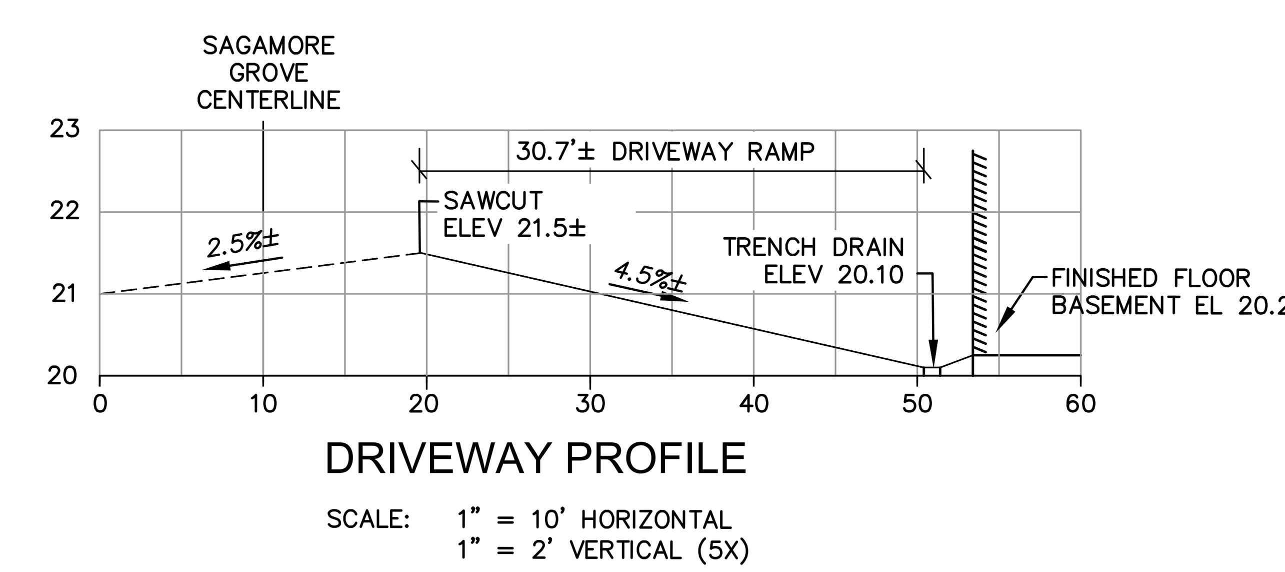






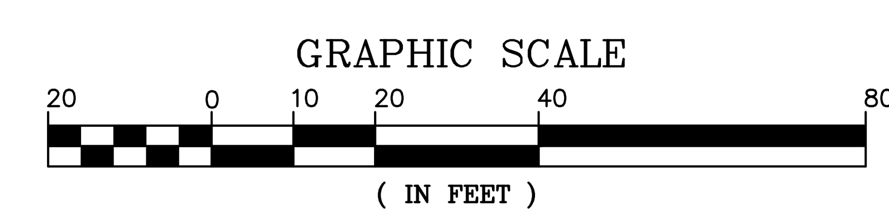
SAGAMORE AVENUE PROFILE

SCALE: 1" = 10' HORIZONTAL
1" = 5' VERTICAL (2X)



DRIVEWAY PROFILE

SCALE: 1" = 10' HORIZONTAL
1" = 2' VERTICAL (5X)



P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 10'
11"x17" 1" = 20'

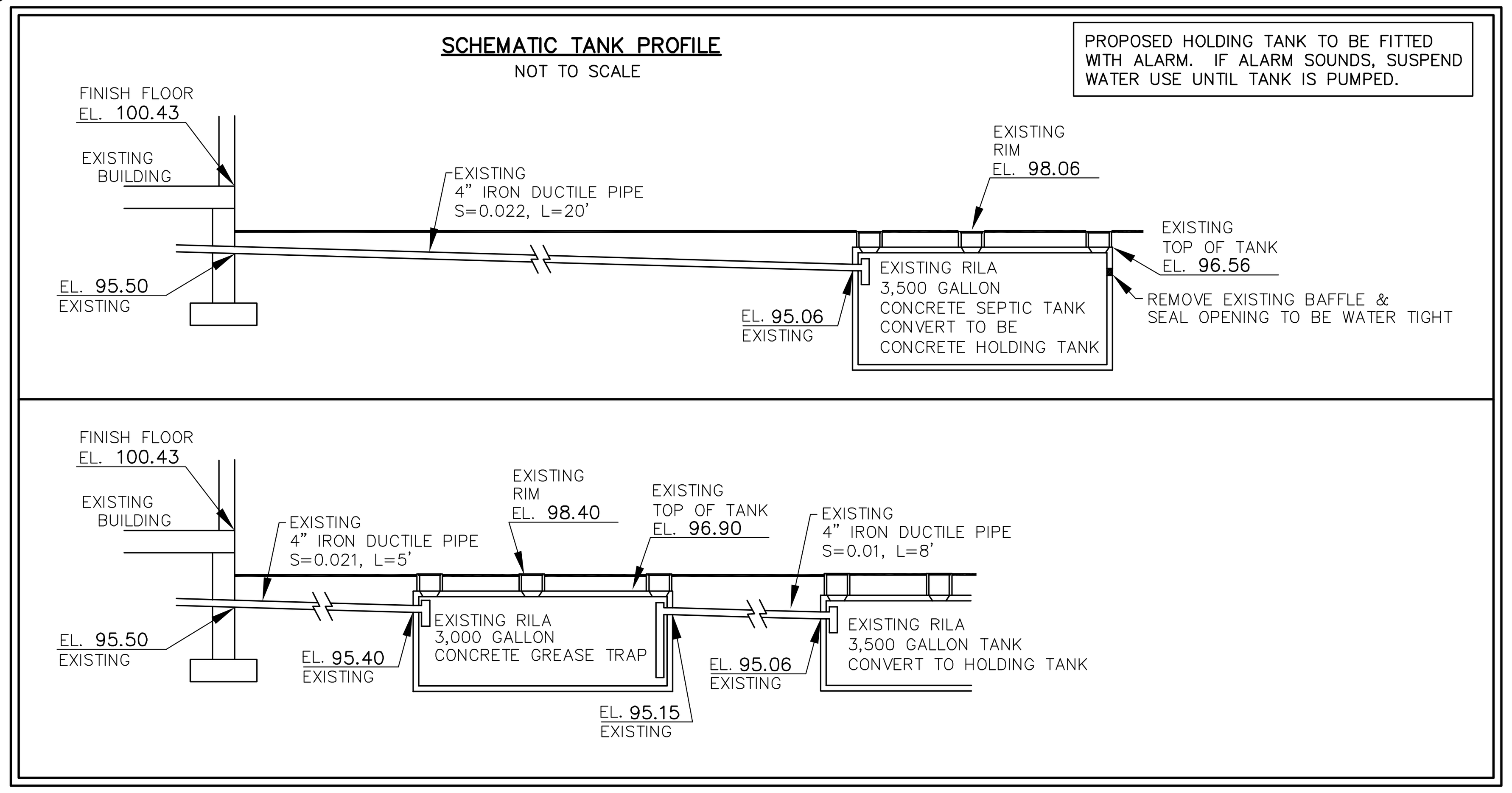
OWNER:
WENTWORTH CORNER, LLC
1150 SAGAMORE AVENUE PORTSMOUTH, NH 03801

APPLICANT:
KATZ DEVELOPMENT CORPORATION
273 CORPORATE DRIVE PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201
LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:
PROFILES

SHEET NUMBER:
WRK-2



PLAN INTENT:

THE INTENT OF THIS PLAN IS TO CONVERT THE EXISTING SEPTIC TANK TO A HOLDING TANK, PER REQUEST OF THE CLIENT AND CITY OF PORTSMOUTH.

THE CURRENT SEPTIC SYSTEM IS IN FAILURE. THE OWNER IS HAVING THE SEPTIC TANK PUMPED AS A HOLDING TANK TO KEEP THE PROPERTY FUNCTIONING. WE ARE REQUESTING THAT THE SEPTIC TANK BE CONVERTED TO A HOLDING TANK WITH AN ALARM AND BE SEALED WATER TIGHT PERMANENTLY. THE LOT HAS SIGNIFICANT LEDGE, AND THE CURRENT FAILED SYSTEM IS LOCATED UNDER A PRIVATE ROAD RIGHT OF WAY. IT IS UNDERSTOOD THAT THE HOLDING TANK WOULD REQUIRE A CONTRACT TO ENSURE KEEPING IT FROM BECOMING A HEALTH HAZARD.

GENERAL NOTES:

1. THIS PLAN IS NOT A PROPERTY BOUNDARY SURVEY OR ENGINEERED SITE PLAN. THE WRIGHT CHOICE ACCEPTS NO LIABILITY IF THIS PLAN IS USED INAPPROPRIATELY.
2. BOUNDRY INFORMATION PER SEPTIC PLAN CA190641, 1/2/1992.
4. **ANY DISCREPANCY BETWEEN THESE PLANS AND THE APPARENT FIELD CONDITIONS TO BE REPORTED TO THE WRIGHT CHOICE PRIOR TO CONSTRUCTION.**
5. CONCRETE STRUCTURES TO BE WATERTIGHT. HOLDING TANK TO BE FITTED WITH ALARM.

OPERATION AND MAINTENANCE

1. IT IS THE OWNER'S RESPONSIBILITY TO MAINTAIN THIS SYSTEM IN ACCORDANCE WITH THESE "OPERATION AND MAINTENANCE" INSTRUCTIONS. PLANS SHOULD BE PROVIDED TO FUTURE OWNERS.
2. HOLDING TANK MUST BE PUMPED BY A LICENSED HAULER BEFORE FULL. IF ALARM SOUNDS, WATER USE MUST BE STOPPED UNTIL TANK IS PUMPED, TO ADVOID OVERFLOWING OF TANK THAT WILL CREATE A HEALTH HAZARD. KEEP PUMPING RECEIPTS AS PROOF OF MAINTENANCE. CHECK TANK REGULARLY.
3. BACKWASH FROM WATER SOFTENERS IS NOT TO BE DISCHARGED INTO THE SEPTIC SYSTEM.
4. CAREFUL AND REASONABLE WATER USE REQUIRED TO MAXIMIZE SYSTEM'S LIFE.
5. ONLY TOILET PAPER, IN SMALL AMOUNTS, IS TO BE DISPOSED OF VIA THIS SYSTEM.
6. USE TOILET CLEANING CHEMICALS JUDICIOUSLY.
7. **DO NOT DISPOSE OF PAPER TOWELS, FEMINE PRODUCTS, DIAPERS, INCONTINANCE PADS, DUSTING PRODUCTS, OR ANY OTHER OBJECTS OR ITEMS, VIA THIS SYSTEM.**
8. **DO NOT DISPOSE OF GREASE, CHEMICALS, SOLVENTS, PAINT, MOTOR OIL, ETC. VIA THIS SYSTEM.**

TEST PITS:

Test Pit: 1 Designer: Others Job # 11–0136
Witness: None Date: 10/16/1991
0" – 84" No predominant color, very gravelly sandy loam, massive, friable
Large stones starting at 72"
Estimated Seasonal High Water Table: None, Observed Water: None
Restrictive: None, Refusal: None
Note: Test Pit from approved septic design CA190641, 1/2/1992 & installed 5/10/1996

Test Pit: 2 Designer: Others Job # 11–0136
Witness: None Date: 10/16/1991
0" – 6" 2.5 Y 6/4, Light yellowish brown, gravelly sand, no structure
6" – 13" 10 YR 6/8, Brownish yellow, medium sand, no structure
13" – 27" 2.5 Y 4/4, Olive brown, gravelly sand, no structure
27" – 50" 5 Y 6/3, Pale olive, gravelly silt loam, no structure
50" – 96" 2.5 Y 6/4, Light yellowish brown, medium sand, no structure
Estimated Seasonal High Water Table: None, Observed Water: None
Restrictive: None, Refusal: None
Note: Test Pit from approved septic design CA190641, 1/2/1992 & installed 5/10/1996

Percolation Test:
Designer: Others Witness: None Date: 10/16/1991
Percolation Rate: 2 mins/inch

HOLDING TANK SIZE:

EXISTING: 3,500 GALLON
[NOTE: PER PUMPER, EXISTING TANK IS IN GOOD CONDITION]

DESIGN NOTES:

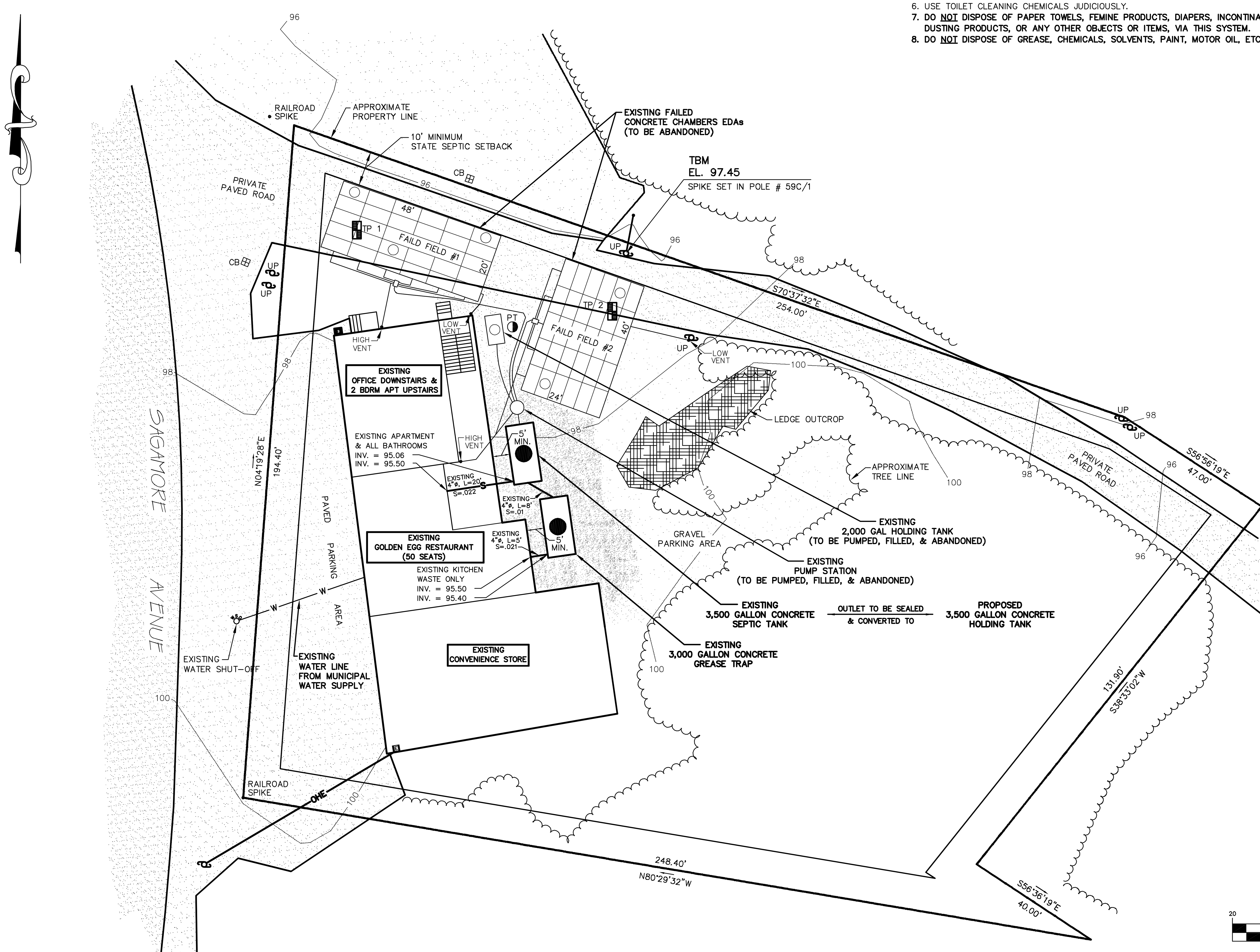
FOUNDATION DRAINS: NONE
NEAREST ABUTTING WELL: OVER 75'
NEAREST POORLY DRAINED WETLAND: OVER 75'
NEAREST VERY POORLY DRAINED WETLAND: OVER 75'
NEAREST SURFACE WATER: OVER 75'

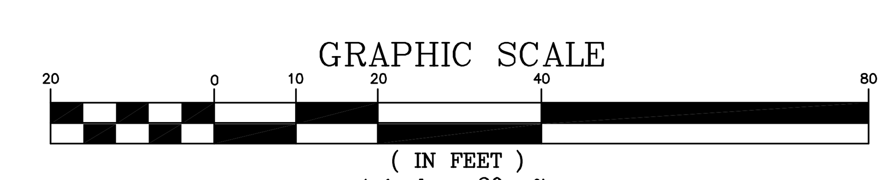
LOT LOADING BY SOILS:

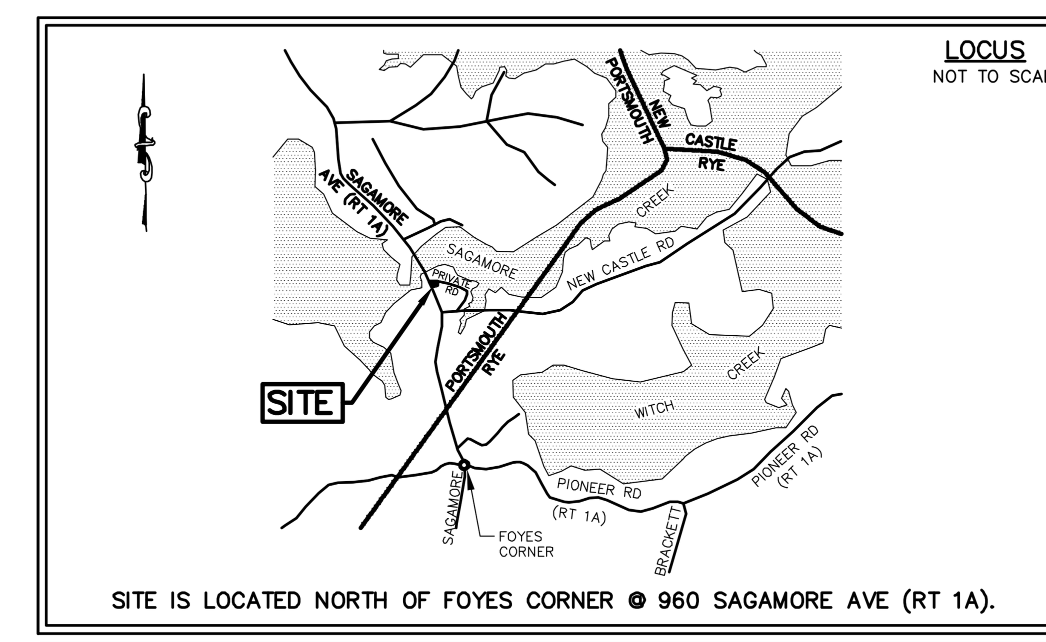
140B – HOLLIS (GROUP 4B) = 1,379 GPD/ACRE x 1.01 ACRES = 1,392 GPD
TOTAL ALLOWED = 1,392 GPD
EXISTING USE = 1,430 GPD

PER REAL WATER METER READINGS: (FROM CA190641 APPROVED PLANS)

YEARLY CONSUMPTION = 69,800 cubic feet/year x 7.48 gallons/cubic feet = 522,104 gallons/year
EXISTING DAILY CONSUMPTION = 522,104 gallons/year / 365 days/year = **1,430 GPD**







SITE IS LOCATED NORTH OF FOYES CORNER @ 960 SAGAMORE AVE (RT 1A).

Official Stamps	NH Designer Stamp
	NEW HAMPSHIRE Designer of Subsurface Disposal Systems ★ ★ ★ Penny R. Wright No. 1353 Department of Environmental Services

SUBSURFACE SEWAGE DISPOSAL SYSTEM FOR

THE GOLDEN EGG

GOSSELIN LIVING TRUST / THOMAS GOSSELIN, TRUSTEE
960 SAGAMORE AVE
PORTSMOUTH, NH 03801

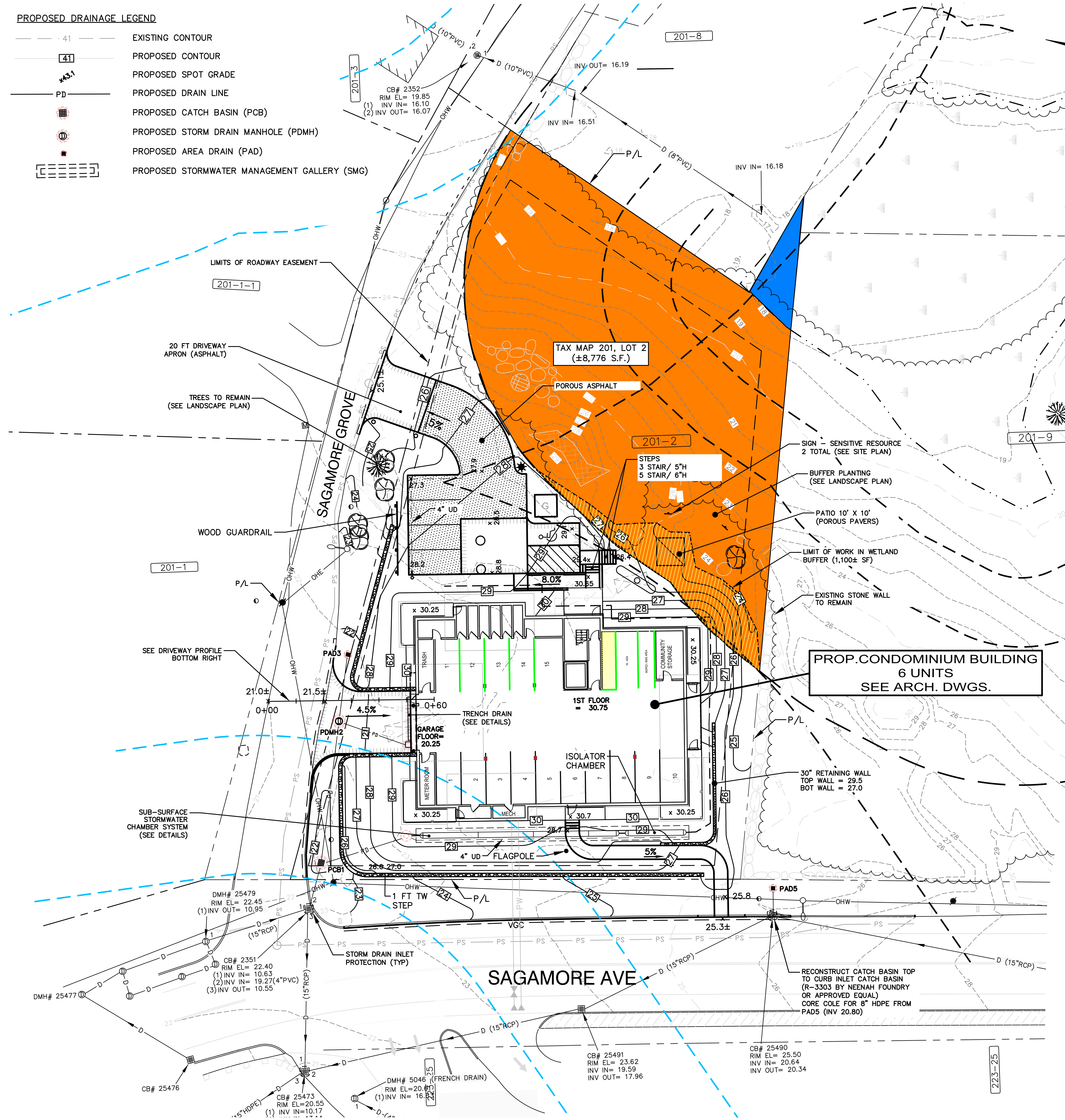
TAX MAP 201, LOT 2 SD#: PREDATES 1967 DEED Bk/Pg: 3469 / 2151

Drawing #: 11–0136
Job #: 11–0136
Date: 10/11
Drawn By: PRW
Checked By: PRW

Date	Revision	By
10/22/11	REVISED PER STATE REVIEW	PRW

The Wright Choice
For the Right SEPTIC Design

32 Route 156
Nottingham, NH 03290
thewrightchoice.pw@gmail.com
Phone: 603–679–1455
Fax: 603–679–5599
Cell: 603–303–5552
thewrightchoiceseptics.com



WETLANDS IMPACT TABLE

DIRECT WETLANDS IMPACTS	= 0 SF
WETLANDS BUFFER IMPACTS	= 1,100 SF
EXISTING IMPERVIOUS AREA IN WETLANDS BUFFER	= 750 SF
PROPOSED IMPERVIOUS AREA IN WETLANDS BUFFER	= 0 SF

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET (603) 433-2335
PORTSMOUTH, NH 03801 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER

12/29/2021

NOT FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: DECEMBER 29, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21
2	CC COMMENTS	CDB	12/29/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
960 SAGAMORE ROAD
PORTSMOUTH, NH 03801
TAX MAP 201, LOT 2

TITLE:

WETLANDS CONDITIONAL USE PLAN

SHEET NUMBER:

CUP-1

P5079

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02

DRAINAGE REPORT

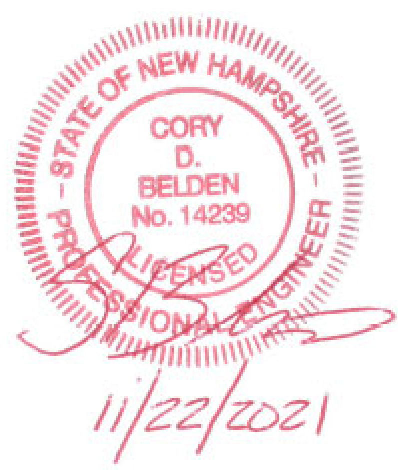
November 2021

Prepared for:

Sagamore Corner, LLC
273 Corporate Drive
Portsmouth, NH 03801

Prepared By:

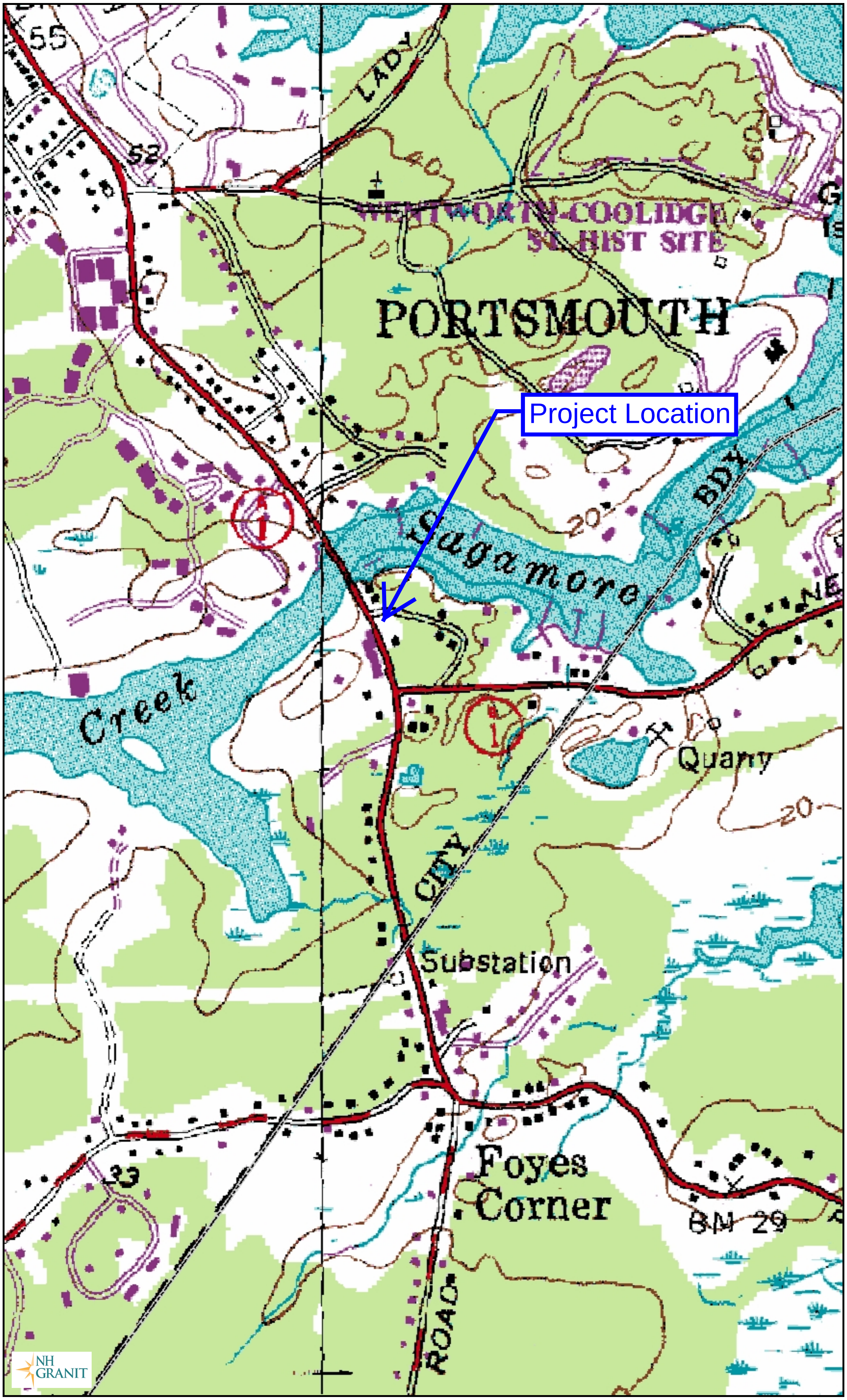
ALTUS ENGINEERING, INC.
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335



960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02

TABLE OF CONTENTS

960 Sagamore Avenue, Portsmouth, NH



Legend

- State
- County
- City/Town

Map Scale

1: 10,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 11/15/2021

Notes

Drainage Report

960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02
Altus Project P5079

PROJECT DESCRIPTION

Sagamore Corner, LLC is proposing to re-develop the site located at 960 Sagamore Avenue (Assessor's Map 201, Lot 02) to construct a new multi-family building that will provide six (6) housing units. The property is currently the current home to the former Golden Egg restaurant, a single unit apartment, and a retail store. The Property is identified as Tax Map 201-Lot 2 and is approximately 42,930 square feet (sf) in size and is located in the City's Mixed Residential Business (MRB) zoning district.

The proposed project will demolish the existing buildings and ancillary site features, including the paved parking, gravel parking, and site utilities. The new 6-Unit residential building will be constructed completely outside of the 100 foot wetland buffer, that extends onto the lot. The existing site was constructed in 1970 (according to City assessor data), prior to stormwater regulations, and does not have stormwater treatment on site for the buildings, pavement, and gravel parking lot areas, which total approximately 25,000 square feet, including the paved parking in the Sagamore Avenue right of way. The front of the lot that contains the majority of the developed site drains to the municipal storm drain system in Sagamore Avenue and discharges to Sagamore Creek without treatment or retention. The rear portion of the lot drains to the wetland located in the southeast corner of the property. The proposed project will provide treatment through the use of a sub-surface chamber systems for the roof runoff and porous asphalt for the exterior parking area. The project will minimize site impervious area by constructing covered parking in the basement level of the building. The current site discharges approximately 2,400 square feet of untreated impervious (roof and gravel parking areas) to the wetlands in the rear of the property. The proposed project will remove all gravel parking lot areas draining to the wetlands and collect all of the roof runoff for retention and treatment before discharging to the front of the lot. The proposed project will reduce the total impervious area by over 8,400 sf (1,780 sf of porous pavement) compared to the existing conditions.

The site is located within the *Coastal and Great Bay Regional Communities*, so the rainfall precipitation results obtained from the Northeast Regional Climate Center (NRCC) have been increased by 15% for the hydrologic analysis. The stormwater management system proposed for the site will reduce peak flows and treat site runoff prior to discharging back to the storm drain systems.

Pre-Development (Existing Conditions)

The pre-development site conditions reflect the existing conditions of the site, which include the existing restaurant, apartment, retail store and associated paved and gravel parking areas. The current site primarily discharges to the municipal storm drain system in Sagamore Avenue through a catch basin located at corner of Sagamore Avenue and Sagamore Grove (CB #2351) identified as the Point of Analysis #1 (POA1) on the drainage area plans. The existing parking lot and majority of the existing building drain to the catch basin in this area as untreated sheet flow. Point of Analysis #2 (POA2) is the existing wetland in the rear of the property and includes portions of the roof and gravel parking lot that drain to the wetlands untreated, as well as the undeveloped wooded area in the buffer.

The Pre-Development analysis models the existing conditions for the two points of analysis. The points of analysis are the same for the pre and post development models for comparison of flows prior to construction and after the site is development as shown on the plans. The grades and elevations shown on the plans are based on the site survey completed by James Verra and Associates, dated November 22, 2021 and included in the plan set (3 sheets).

Post-Development (Proposed Site Design)

The Proposed development will construct a new six (6) unit building and a five (5) exterior stall visitor parking lot to serve the new building. Parking for the residents will be located on the garage level of the building. The existing paved parking lot along Sagamore Avenue will be removed and access will be provided from Sagamore Grove. This will eliminate the head-in parking from Sagamore Avenue. The visitor entrance will be from the visitor parking area and an ADA accessible stall and ramp will be provided. The majority of the new parking lot and driveway will be constructed with porous pavement to infiltrate the surface water from the lot and a sub-surface treatment system will be constructed to treat and manage the stormwater from the roof.

The proposed stormwater system is depicted on the Grading and Drainage Plan in the project plans and the attached Post-Development Drainage Plan. For the post development analysis, the site was divided into eight (8) watershed areas to depict the post-development conditions. The same points of analysis that were used in the Pre-Development model were used for comparison of the Pre and Post development conditions. The “Post-Development Drainage Plan” illustrates the proposed stormwater management system. Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control facilites are based on the “New Hampshire Stormwater Manual Volumes 1 through 3” prepared by NHDES and Comprehensive Environmental, Inc. as amended.

Drainage Analysis

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the two Points of Analysis identified on the plans for the 2, 10, 25, and 50 year storm events:

Stormwater Modeling Summary

Peak Q (cfs) for Type III 24-Hour Storm Events

*Rainfall Intensities reflect 15% Increase per AOT	**2-Yr Storm (4.12 inch)**	**10-Yr Storm (5.60 inch)**	**25-Yr Storm (8.20 inch)**	**50-Yr Storm (9.91 inch)**
POA #1				
Pre	0.70	1.35	2.65	3.56
Post	0.53	1.12	2.35	3.22
Net Change	**-0.17 (24.3%)**	**-0.23 (17.0%)**	**-0.30 (11.3%)**	**-0.34 (9.6%)**
POA #2				
Pre	3.09	4.40	6.67	8.14
Post	1.63	3.12	4.86	6.14
Net Change	**-1.46 (47.2%)**	**-1.28 (29.1%)**	**-1.81 (27.1%)**	**-2.00 (24.6%)**

As the above table demonstrates, the proposed peak rates of runoff will be reduced from the existing conditions for all of the analyzed storm events.

Effective Impervious Area

The existing lot is 42,930 square feet that consists of a restaurant, retail store, residential apartment unit, and associated driveways and parking. The existing site effective impervious area is all of the impervious areas on the lot, which total 23,000 square feet, or 53.6% of the lot (not including impervious in Sagamore Ave right of way). The proposed project will construct a new 6-Unit residential building and associated parking and walkways. The exterior parking lot will be reduced to five parking stalls and walkways will be added for access and emergency egress. The total impervious area will be reduced by over 6,000 sf. The proposed improvements will provide stormwater treatment to the new development area, which will reduced the effective impervious area to 6,250 sf (14.6%), a reduction of approximately 16,750 sf or (39% of the site).

CONCLUSION

The proposed six (6) unit residential development will not have an adverse effect on abutting properties and infrastructure as a result of stormwater runoff. The existing site was developed in the 1970's and has no designed stormwater treatment facilities. The proposed improvements will reduce the total impervious area by approximately 8,400 square feet and the effective impervious area will be reduced by 16,750 sf, which is a reduction of 39% (from 53.6% to 14.6%) compared to the existing conditions. The new development will provide stormwater treatment and retention to the new building, parking and walkways with the construction of a stormwater drainage system consisting of porous pavement and a subsurface chamber system. The analysis of the site utilized a 15% increase to the rainfall intensities for seacoast communities, as is recommended by NHDES and the peak runoff rates for the site will be reduced for the all analyzed storm events (2, 10, 25, and 50 year). Appropriate steps will be taken during construction to properly mitigate erosion and sedimentation through the use of Best Management Practices for sediment and erosion control.

CALCULATION METHODS

The project lies with the ***Coastal and Great Bay Regional Communities*** as identified in Section 6 – One-Stop AoT Screening Layers Results. As a result, the rainfall precipitation results obtained from the Northeast Regional Climate Center for the project site have been increased by 15% for the hydrologic analysis. The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method which automates the calculation of Tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25, and 50 Year - 24-hour storm events using rainfall data provided by Northeast Regional Climate Center – Extreme Precipitation Tables.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

National Flood Hazard Layer FIRMette

FEMA

70°45'11"W 43°3'27"N

70°44'34"W 43°3'N

Feet 0 250 500 1,000 1,500 2,000

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
		Future Conditions 1% Annual Chance Flood Hazard *Zone X*
		Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
		Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
		Effective LOMRs
		Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8	Coastal Transect
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/17/2021 at 7:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.


960 Sagamore Avenue
Portsmouth, NH
Legend
Sagamore Ave
1A
Sagamore Grove
960 Sagamore Ave
Sagamore Ave
1B
Wentworth Rd
Wentworth Rd
Google Earth
N
200 ft

NEW HAMPSHIRE DEPARTMENT OF **Environmental Services**

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Storm Water Gallery A**

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

Yes		Have you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a)?	
0.18	ac	A = Area draining to the practice	
0.18	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)	
0.17	ac-in	WQV= 1" x Rv x A	
621	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
155	cf	25% x WQV (check calc for sediment forebay volume)	
466	cf	75% x WQV (check calc for surface sand filter volume)	
roof		Method of Pretreatment? (not required for clean or roof runoff)	
N/A	cf	V_{SED} = sediment forebay volume, if used for pretreatment	← **≥ 25%WQV**
500	sf	A_{SA} = surface area of the practice	
1.00	iph	$Ksat_{DESIGN}$ = design infiltration rate[1]	
Yes	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
14.9	hours	T_{DRAIN} = drain time = V / (A_{SA} * I_{DESIGN})	← **≤ 72-hrs**
	feet	E_{FC} = elevation of the bottom of the filter course material[2]	
23.75	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)	
(23.75)	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'**
26.30	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
27.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← **yes**

If a surface sand filter or underground sand filter is proposed:

YES	ac	Drainage Area check.	← **< 10 ac**
	cf	V = volume of storage[3] (attach a stage-storage table)	← **≥ 75%WQV**
	inches	D_{FC} = filter course thickness	← **18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← **yes**

If a bioretention area is proposed:

YES	ac	Drainage Area no larger than 5 ac?	← yes
	cf	V = volume of storage[3] (attach a stage-storage table)	← ≥ 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	
	:1	Pond side slopes	← ≥3:1
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	

If porous pavement is proposed:

		Type of pavement proposed (concrete? Asphalt? Pavers? Etc)	
	acres	A_{SA} = surface area of the pervious pavement	
#DIV/0!	:1	ratio of the contributing area to the pervious surface area	← 5:1
	inches	D_{FC} = filter course thickness	← 12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	← 304.1 sand

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 10P: Stormwater Gallery A

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
24.00	0	25.06	251	26.12	571
24.02	4	25.08	257	26.14	577
24.04	8	25.10	263	26.16	583
24.06	12	25.12	269	26.18	588
24.08	16	25.14	275	26.20	594
24.10	20	25.16	281	26.22	599
24.12	24	25.18	287	26.24	605
24.14	28	25.20	293	26.26	610
24.16	32	25.22	299	26.28	615
24.18	36	25.24	305	26.30	621
24.20	40	25.26	311	26.32	626
24.22	44	25.28	317	26.34	631
24.24	48	25.30	323	26.36	636
24.26	52	25.32	329	26.38	641
24.28	56	25.34	336	26.40	646
24.30	60	25.36	342	26.42	651
24.32	64	25.38	348	26.44	656
24.34	68	25.40	354	26.46	661
24.36	72	25.42	360	26.48	665
24.38	76	25.44	366	26.50	670
24.40	80	25.46	373	26.52	674
24.42	84	25.48	379	26.54	678
24.44	88	25.50	385	26.56	682
24.46	92	25.52	391	26.58	686
24.48	96	25.54	397	26.60	690
24.50	100	25.56	403	26.62	694
24.52	104	25.58	409	26.64	698
24.54	109	25.60	416	26.66	702
24.56	113	25.62	422	26.68	706
24.58	118	25.64	428	26.70	710
24.60	123	25.66	434	26.72	714
24.62	128	25.68	440	26.74	718
24.64	133	25.70	446	26.76	722
24.66	138	25.72	452	26.78	726
24.68	144	25.74	458	26.80	730
24.70	149	25.76	465	26.82	734
24.72	154	25.78	471	26.84	738
24.74	160	25.80	477	26.86	742
24.76	165	25.82	483	26.88	746
24.78	170	25.84	489	26.90	750
24.80	176	25.86	495	26.92	754
24.82	182	25.88	501	26.94	758
24.84	187	25.90	507	26.96	762
24.86	193	25.92	513	26.98	766
24.88	198	25.94	519	27.00	**770**
24.90	204	25.96	525		
24.92	210	25.98	531		
24.94	216	26.00	536		
24.96	221	26.02	542		
24.98	227	26.04	548		
25.00	233	26.06	554		
25.02	239	26.08	560		
25.04	245	26.10	565		

United States Department of Agriculture

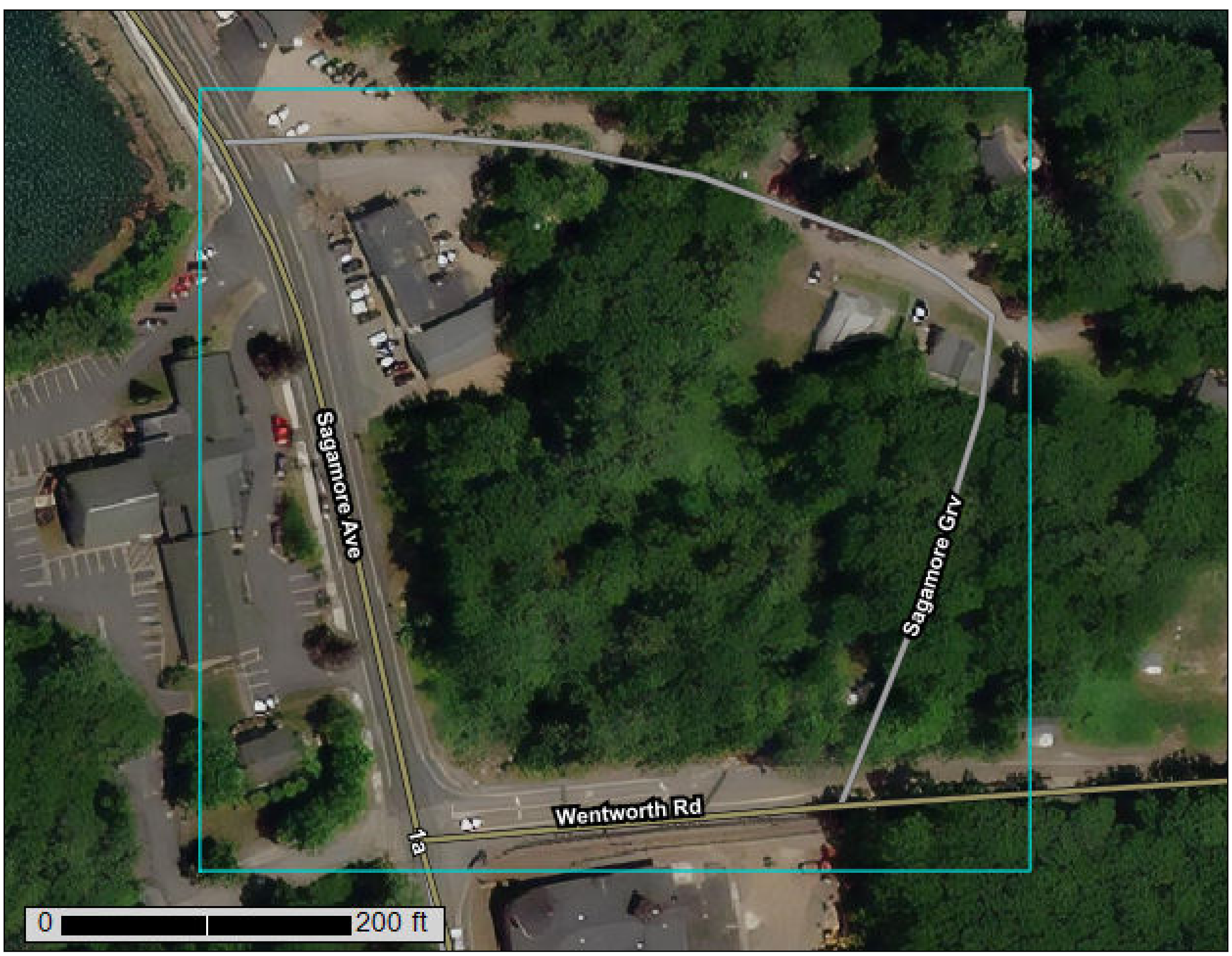
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

Sagamore Rd., Portsmouth, Tax Map 2, Lot 2



November 10, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:1,400 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 20, 40, 80, 120

Feet: 0, 50, 100, 200, 300

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—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	4.7	66.1%
699	Urban land	2.4	33.9%
Totals for Area of Interest		**7.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82m
Elevation: 380 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Freetown

Percent of map unit: 5 percent
Landform: Marshes, depressions, bogs, kettles, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole, very stony

Percent of map unit: 3 percent
Landform: Deltas, depressions, outwash plains, depressions, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

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	43.054 degrees North
Elevation	0 feet
Date/Time	Tue, 09 Nov 2021 08:45:44 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr	add 15%	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	3.38	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	4.12	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	5.29	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	5.60	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	8.20	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	9.91	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	11.98	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		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		11.97	15.58	17.81	19.89	21.57	**500yr**

Lower Confidence Limits

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

Upper Confidence Limits

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

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Northeast Regional Climate Center

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	organic over silt
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
~~Canterbury~~	~~166~~	~~0.6~~	~~2.0~~	~~0.06~~	~~0.6~~	~~C~~	~~3~~	~~Firm, platy, loamy till~~	~~frigid~~	~~loamy~~	~~no~~	~~loam in Cd~~
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
~~Cardigan~~	~~357~~	~~0.6~~	~~2.0~~	~~0.60~~	~~2.0~~	~~B~~	~~4~~	~~Friable till, silty, schist & phyllite~~	~~mesic~~	~~loamy~~	~~no~~	~~20 to 40 in. deep~~
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
~~Charlton~~	~~62~~	~~0.6~~	~~6.0~~	~~0.60~~	~~6.0~~	~~B~~	~~2~~	~~Loose till, loamy textures~~	~~mesic~~	~~loamy~~	~~no~~	~~fine sandy loam~~
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
~~Chatfield Var.~~	~~289~~	~~0.6~~	~~6.0~~	~~0.60~~	~~6.0~~	~~B~~	~~3~~	~~Loose till, bedrock~~	~~mesic~~	~~loamy~~	~~no~~	~~mwd to swpd~~
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Fryeburg	208	0.6	2.0	2.00	6.0	B	2	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Gilmanton	478	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Glebe	671	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	cryic	loamy	yes	20 to 40 in. deep
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Glover	NA	0.6	2.0	0.60	2	D	4	Friable till, silty, schist & phyllite	frigid	loamy	no	less than 20 in. deep
Grange	433	0.6	2.0	0.60	2.0	C	5	Outwash and Stream Terraces	frigid	co. loamy over sandy (skeletal)	no	
Greenwood	295					A/D	6	Organic Materials - Freshwater	frigid	hemic	no	deep organic
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Hadley	108	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand, occ flooded
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Haven	410	0.6	2.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Hitchcock	130	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Hoosic	510	2.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	slate, loamy cap
Houghtonville	795	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	cobbly fine sandy loam
Howland	566	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Ipswich	397					D	6	Tidal Flat	mesic	hemic/sapric	no	deep organic
Kearsarge	359	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	less than 20 in. deep
Kinsman	614	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	frigid	sandy	yes	
Lanesboro	228	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Leicester	514	0.6	6.0	0.60	20.0	C	5	Loose till, loamy textures	mesic	loamy	no	
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Limerick	109	0.6	2.0	0.60	2.0	C	5	Flood Plain (Bottom Land)	mesic	silty	no	
Lombard	259	0.6	6.0	2.00	20.0	C/D	2	Weathered bedrock, phyllite	frigid	loamy	no	very channery
Lovewell	307	0.6	2.0	0.60	2.0	B	3	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyme	246	0.6	6.0	0.60	6.0	C	5	Loose till, sandy textures	frigid	loamy	no	
Machias	520	2.0	6.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Macomber	252	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
ladawaska, aquer	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Mashpee	315	6.0	20.0	6.00	20.0	B	5	Outwash and Stream Terraces	mesic	sandy	yes	
Matunuck	797			20.00	100.0	D	6	Tidal Flat	mesic	sandy	no	organic over sand
Maybid	134	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	mesic	fine	no	silt over clay
Meadowsedge	894					D	6	Organic Materials - Freshwater	frigid	peat	no	deep organic
Medomak	406	0.6	2.0	0.60	2.0	D	6	Flood Plain (Bottom Land)	frigid	silty	no	organic over silt
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Metacomet	458	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	6.0	100.0	6.00	100.0	B	3	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Millsite	251	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	no	20 to 40 in. deep
Monadnock	142	0.6	2.0	2.00	6.0	B	2	Loose till, sandy textures	frigid	oamy over sandy, sandy-skeleta	yes	gravelly loamy sand in C
Monarda	569	0.2	2.0	0.02	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Monson	133	0.6	2.0	0.60	2.0	D	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	less than 20 in. deep
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Moosilauke	414	6.0	20.0	6.00	20.0	C	5	Loose till, sandy textures	frigid	sandy	no	

Sorted by Soil Series
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SSSNNE special pub no. 5

Soil Series	number	NHDES Soil Group	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Buckland	237	3	0.6	2.0	0.06	0.2	C	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Buxton	232	3	0.1	0.6	0.00	0.2	C	Silt and Clay Deposits	frigid	fine	no	silty clay
Chatfield Var.	289	3	0.6	6.0	0.60	6.0	B	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Colonel	927	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Croghan	613	3	20.0	100.0	20.00	100.0	B	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	3	6.0	20.0	20.00	100.0	B	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	3	0.6	2.0	0.60	2.0	C	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Eldridge	38	3	6.0	20.0	0.06	0.6	C	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elmridge	238	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116	3					C	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)
Gilmanton	478	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	no	fine sandy loam in Cd
Henniker	46	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Hitchcock	130	3	0.6	2.0	0.06	0.6	B	Terraces and glacial lake plains	mesic	silty	no	silt loam to silt in C
Howland	566	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	silt loam, platy in Cd
Lanesboro	228	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	channery silt loam in Cd
Lovewell	307	3	0.6	2.0	0.60	2.0	B	Flood Plain (Bottom Land)	frigid	silty	no	very fine sandy loam
Machias	520	3	2.0	6.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy or sandy-skeletal	yes	strata sand/gravel in C
Madawaska	28	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
ladawaska, aquer	48	3	0.6	2.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Marlow	76	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Melrose	37	3	2.0	6.0	0.00	0.2	C	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Metacomet	458	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Metallak	404	3	6.0	100.0	6.00	100.0	B	Flood Plain (Bottom Land)	frigid	loamy over sandy	no	sandy or sandy-skeletal
Millis	39	3					C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Montauk	44	3	0.6	6.0	0.06	0.6	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Mundal	610	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	gravelly sandy loam in Cd
Newfields	444	3	0.6	2.0	0.60	2.0	B	Loose till, sandy textures	mesic	loamy over sandy	no	sandy or sandy-skeletal
Nicholville	632	3	0.6	2.0	0.60	2.0	C	Terraces and glacial lake plains	frigid	silty	yes	very fine sandy loam
Ninigret	513	3	0.6	6.0	6.00	20.0	B	Outwash and Stream Terraces	mesic	loamy over sandy	no	sandy or sandy-skeletal
Paxton	66	3	0.6	2.0	0.00	0.2	C	Firm, platy, loamy till	mesic	loamy	no	
Peru	78	3	0.6	2.0	0.06	0.6	C	Firm, platy, loamy till	frigid	loamy	yes	
Pittstown	334	3	0.6	2.0	0.06	0.2	C	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Plaisted	563	3	0.6	2.0	0.06	0.6	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Podunk	104	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	frigid	loamy	no	loamy to coarse sand in C
Poocham	230	3	0.6	2.0	0.20	2.0	B	Terraces and glacial lake plains	mesic	silty	no	silt loam in C
Pootatuck	4	3	0.6	6.0	6.00	20.0	B	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Scio	531	3	0.6	2.0	0.60	2.0	B	Terraces and glacial lake plains	mesic	silty	no	gravelly sand in 2C
Scituate	448	3	0.6	2.0	0.06	0.2	C	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Sheepscot	14	3	6.0	20.0	6.00	20.0	B	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Sisk	667	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	sandy loam in Cd
Skerry	558	3	0.6	2.0	0.06	0.6	C	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Sudbury	118	3	2.0	6.0	2.00	20.0	B	Outwash and Stream Terraces	mesic	sandy	no	loam over gravelly sand
Suffield	536	3	0.6	2.0	0.00	0.2	C	Sandy/loamy over silt/clay	mesic	silty over clayey	no	deep to clay C
Sunapee	168	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	
Sunapee var	269	3	0.6	2.0	0.60	6.0	B	Loose till, loamy textures	frigid	loamy	yes	frigid dystrudept
Surplus	669	3	0.6	2.0	0.00	0.6	C	Firm, platy, loamy till	cryic	loamy	yes	mwd, sandy loam in Cd
Sutton	68	3	0.6	6.0	0.60	6.0	B	Loose till, loamy textures	mesic	loamy	no	
Telos	123	3	0.6	2.0	0.02	0.2	C	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd

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	43.054 degrees North
Elevation	0 feet
Date/Time	Tue, 09 Nov 2021 08:45:44 -0500

Extreme Precipitation Estimates

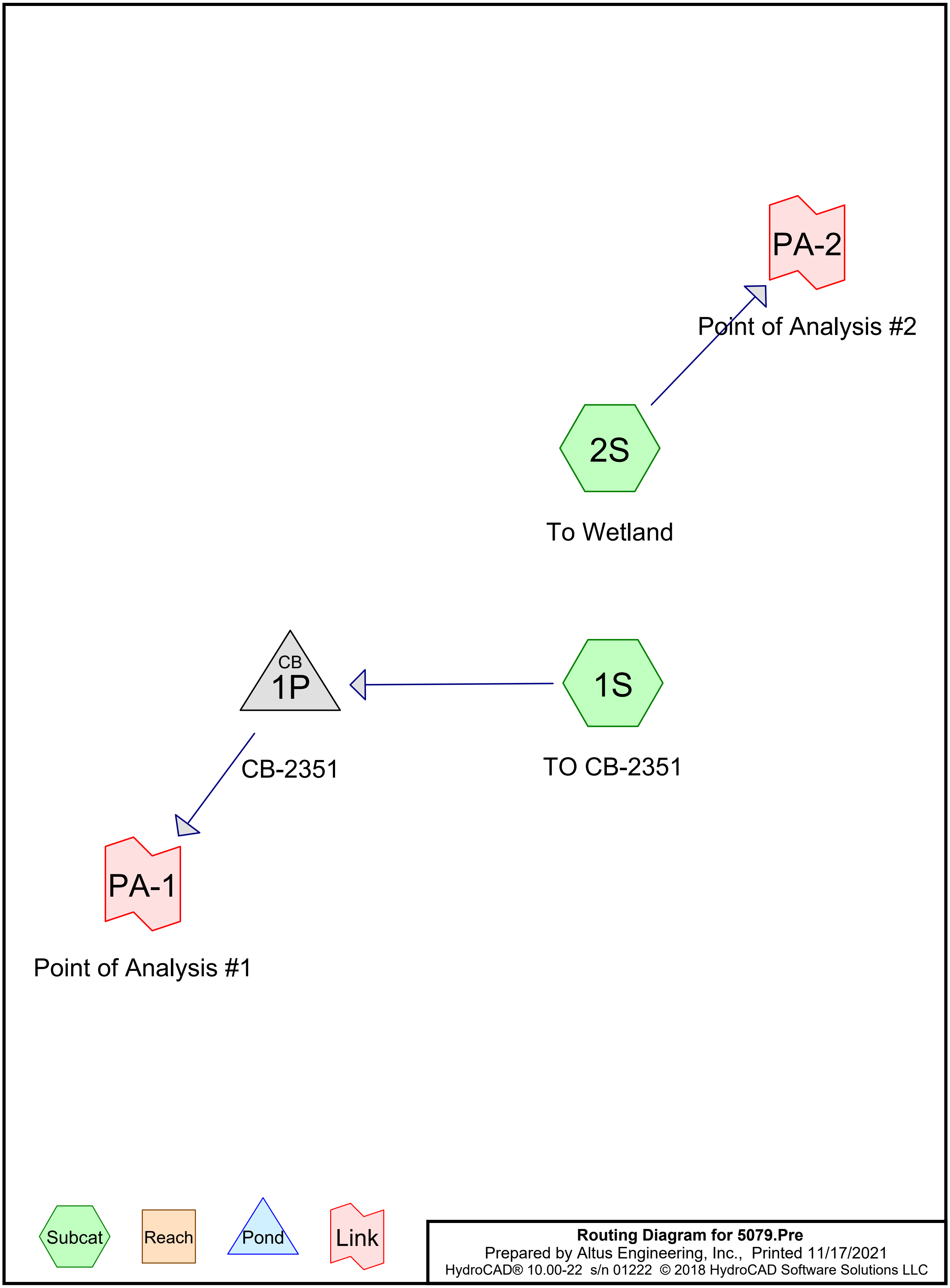
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr	add 15%	1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.67	2.94	3.38	2.36	2.82	3.24	3.96	4.57	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.30	**2yr**	0.89	1.18	1.52	1.94	2.49	3.22	3.58	4.12	2.85	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	5.29	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	5.60	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	8.20	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	9.91	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	11.98	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		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		11.97	15.58	17.81	19.89	21.57	**500yr**

Lower Confidence Limits

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

Upper Confidence Limits

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



Routing Diagram for 5079.Pre
Prepared by Altus Engineering, Inc., Printed 11/17/2021
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.161	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.187	96	Gravel surface, HSG B (1S, 2S)
0.017	98	Ledge, HSG B (1S, 2S)
0.274	98	Paved parking, HSG B (1S, 2S)
0.126	98	Roofs, HSG B (1S, 2S)
0.290	55	Woods, Good, HSG B (2S)
1.054	**80**	**TOTAL AREA**

Soil Listing (all nodes)

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

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.161	0.000	0.000	0.000	0.161	>75% Grass cover, Good	1S, 2S
0.000	0.187	0.000	0.000	0.000	0.187	Gravel surface	1S, 2S
0.000	0.017	0.000	0.000	0.000	0.017	Ledge	1S, 2S
0.000	0.274	0.000	0.000	0.000	0.274	Paved parking	1S, 2S
0.000	0.126	0.000	0.000	0.000	0.126	Roofs	1S, 2S
0.000	0.290	0.000	0.000	0.000	0.290	Woods, Good	2S
0.000	**1.054**	**0.000**	**0.000**	**0.000**	**1.054**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: TO CB-2351 Runoff Area=26,448 sf 56.60% Impervious Runoff Depth=4.57"
Tc=6.0 min CN=91 Runoff=4.40 cfs 0.231 af

Subcatchment 2S: To Wetland Runoff Area=19,478 sf 16.36% Impervious Runoff Depth=2.15"
Tc=12.0 min CN=66 Runoff=1.35 cfs 0.080 af

Pond 1P: CB-2351 Peak Elev=11.72' Inflow=4.40 cfs 0.231 af
Outflow=4.40 cfs 0.231 af

Link PA-1: Point of Analysis #1 Inflow=4.40 cfs 0.231 af
Primary=4.40 cfs 0.231 af

Link PA-2: Point of Analysis #2 Inflow=1.35 cfs 0.080 af
Primary=1.35 cfs 0.080 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.311 af Average Runoff Depth = 3.54"
60.46% Pervious = 0.637 ac 39.54% Impervious = 0.417 ac

Summary for Subcatchment 1S: TO CB-2351

Runoff = 4.40 cfs @ 11.96 hrs, Volume= 0.231 af, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

	Area (sf)	CN	Description
	4,372	98	Roofs, HSG B
	10,058	98	Paved parking, HSG B
	6,716	96	Gravel surface, HSG B
*	540	98	Ledge, HSG B
	4,762	61	>75% Grass cover, Good, HSG B
	26,448	91	Weighted Average
	11,478		43.40% Pervious Area
	14,970		56.60% Impervious Area

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

Summary for Subcatchment 2S: To Wetland

Runoff = 1.35 cfs @ 12.05 hrs, Volume= 0.080 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

	Area (sf)	CN	Description
	1,125	98	Roofs, HSG B
	1,882	98	Paved parking, HSG B
	1,410	96	Gravel surface, HSG B
*	180	98	Ledge, HSG B
	2,232	61	>75% Grass cover, Good, HSG B
	12,649	55	Woods, Good, HSG B
	19,478	66	Weighted Average
	16,291		83.64% Pervious Area
	3,187		16.36% Impervious Area

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.607 ac, 56.60% Impervious, Inflow Depth = 4.57" for 10-yr event
Inflow = 4.40 cfs @ 11.96 hrs, Volume= 0.231 af
Outflow = 4.40 cfs @ 11.96 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min
Primary = 4.40 cfs @ 11.96 hrs, Volume= 0.231 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 11.72' @ 11.96 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.30 cfs @ 11.96 hrs HW=11.70' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 4.30 cfs @ 3.64 fps)

Summary for Link PA-1: Point of Analysis #1

Inflow Area =	0.607 ac, 56.60% Impervious, Inflow Depth = 4.57"	for 10-yr event	
Inflow =	4.40 cfs @ 11.96 hrs, Volume=	0.231 af	
Primary =	4.40 cfs @ 11.96 hrs, Volume=	0.231 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area =	0.447 ac, 16.36% Impervious, Inflow Depth = 2.15"	for 10-yr event	
Inflow =	1.35 cfs @ 12.05 hrs, Volume=	0.080 af	
Primary =	1.35 cfs @ 12.05 hrs, Volume=	0.080 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: TO CB-2351 Runoff Area=26,448 sf 56.60% Impervious Runoff Depth=3.13"
Tc=6.0 min CN=91 Runoff=3.09 cfs 0.158 af

Subcatchment 2S: To Wetland Runoff Area=19,478 sf 16.36% Impervious Runoff Depth=1.16"
Tc=12.0 min CN=66 Runoff=0.70 cfs 0.043 af

Pond 1P: CB-2351 Peak Elev=11.46' Inflow=3.09 cfs 0.158 af
Outflow=3.09 cfs 0.158 af

Link PA-1: Point of Analysis #1 Inflow=3.09 cfs 0.158 af
Primary=3.09 cfs 0.158 af

Link PA-2: Point of Analysis #2 Inflow=0.70 cfs 0.043 af
Primary=0.70 cfs 0.043 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.202 af Average Runoff Depth = 2.30"
60.46% Pervious = 0.637 ac 39.54% Impervious = 0.417 ac

Summary for Subcatchment 1S: TO CB-2351

Runoff = 3.09 cfs @ 11.96 hrs, Volume= 0.158 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

	Area (sf)	CN	Description
	4,372	98	Roofs, HSG B
	10,058	98	Paved parking, HSG B
	6,716	96	Gravel surface, HSG B
*	540	98	Ledge, HSG B
	4,762	61	>75% Grass cover, Good, HSG B
	26,448	91	Weighted Average
	11,478		43.40% Pervious Area
	14,970		56.60% Impervious Area

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

Summary for Subcatchment 2S: To Wetland

Runoff = 0.70 cfs @ 12.05 hrs, Volume= 0.043 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

	Area (sf)	CN	Description
	1,125	98	Roofs, HSG B
	1,882	98	Paved parking, HSG B
	1,410	96	Gravel surface, HSG B
*	180	98	Ledge, HSG B
	2,232	61	>75% Grass cover, Good, HSG B
	12,649	55	Woods, Good, HSG B
	19,478	66	Weighted Average
	16,291		83.64% Pervious Area
	3,187		16.36% Impervious Area

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.607 ac, 56.60% Impervious, Inflow Depth = 3.13" for 2-yr event
Inflow = 3.09 cfs @ 11.96 hrs, Volume= 0.158 af
Outflow = 3.09 cfs @ 11.96 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min
Primary = 3.09 cfs @ 11.96 hrs, Volume= 0.158 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 11.46' @ 11.96 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.00 cfs @ 11.96 hrs HW=11.44' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 3.00 cfs @ 3.21 fps)

Summary for Link PA-1: Point of Analysis #1

Inflow Area =	0.607 ac, 56.60% Impervious, Inflow Depth = 3.13" for 2-yr event		
Inflow =	3.09 cfs @ 11.96 hrs, Volume=	0.158 af	
Primary =	3.09 cfs @ 11.96 hrs, Volume=	0.158 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area =	0.447 ac, 16.36% Impervious, Inflow Depth = 1.16" for 2-yr event		
Inflow =	0.70 cfs @ 12.05 hrs, Volume=	0.043 af	
Primary =	0.70 cfs @ 12.05 hrs, Volume=	0.043 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: TO CB-2351 Runoff Area=26,448 sf 56.60% Impervious Runoff Depth=7.12"
Tc=6.0 min CN=91 Runoff=6.67 cfs 0.360 af

Subcatchment 2S: To Wetland Runoff Area=19,478 sf 16.36% Impervious Runoff Depth=4.17"
Tc=12.0 min CN=66 Runoff=2.65 cfs 0.155 af

Pond 1P: CB-2351 Peak Elev=12.44' Inflow=6.67 cfs 0.360 af
Outflow=6.67 cfs 0.360 af

Link PA-1: Point of Analysis #1 Inflow=6.67 cfs 0.360 af
Primary=6.67 cfs 0.360 af

Link PA-2: Point of Analysis #2 Inflow=2.65 cfs 0.155 af
Primary=2.65 cfs 0.155 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.516 af Average Runoff Depth = 5.87"
60.46% Pervious = 0.637 ac 39.54% Impervious = 0.417 ac

Summary for Subcatchment 1S: TO CB-2351

Runoff = 6.67 cfs @ 11.96 hrs, Volume= 0.360 af, Depth= 7.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

	Area (sf)	CN	Description
	4,372	98	Roofs, HSG B
	10,058	98	Paved parking, HSG B
	6,716	96	Gravel surface, HSG B
*	540	98	Ledge, HSG B
	4,762	61	>75% Grass cover, Good, HSG B
	26,448	91	Weighted Average
	11,478		43.40% Pervious Area
	14,970		56.60% Impervious Area

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

Summary for Subcatchment 2S: To Wetland

Runoff = 2.65 cfs @ 12.04 hrs, Volume= 0.155 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

	Area (sf)	CN	Description
	1,125	98	Roofs, HSG B
	1,882	98	Paved parking, HSG B
	1,410	96	Gravel surface, HSG B
*	180	98	Ledge, HSG B
	2,232	61	>75% Grass cover, Good, HSG B
	12,649	55	Woods, Good, HSG B
	19,478	66	Weighted Average
	16,291		83.64% Pervious Area
	3,187		16.36% Impervious Area

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.607 ac, 56.60% Impervious, Inflow Depth = 7.12" for 25-yr event
Inflow = 6.67 cfs @ 11.96 hrs, Volume= 0.360 af
Outflow = 6.67 cfs @ 11.96 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min
Primary = 6.67 cfs @ 11.96 hrs, Volume= 0.360 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 12.44' @ 11.96 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.50 cfs @ 11.96 hrs HW=12.39' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 6.50 cfs @ 5.30 fps)

Summary for Link PA-1: Point of Analysis #1

Inflow Area =	0.607 ac, 56.60% Impervious, Inflow Depth = 7.12"	for 25-yr event	
Inflow =	6.67 cfs @ 11.96 hrs, Volume=	0.360 af	
Primary =	6.67 cfs @ 11.96 hrs, Volume=	0.360 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area =	0.447 ac, 16.36% Impervious, Inflow Depth = 4.17"	for 25-yr event	
Inflow =	2.65 cfs @ 12.04 hrs, Volume=	0.155 af	
Primary =	2.65 cfs @ 12.04 hrs, Volume=	0.155 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: TO CB-2351 Runoff Area=26,448 sf 56.60% Impervious Runoff Depth=8.81"
Tc=6.0 min CN=91 Runoff=8.14 cfs 0.446 af

Subcatchment 2S: To Wetland Runoff Area=19,478 sf 16.36% Impervious Runoff Depth=5.62"
Tc=12.0 min CN=66 Runoff=3.56 cfs 0.209 af

Pond 1P: CB-2351 Peak Elev=13.07' Inflow=8.14 cfs 0.446 af
Outflow=8.14 cfs 0.446 af

Link PA-1: Point of Analysis #1 Inflow=8.14 cfs 0.446 af
Primary=8.14 cfs 0.446 af

Link PA-2: Point of Analysis #2 Inflow=3.56 cfs 0.209 af
Primary=3.56 cfs 0.209 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.655 af Average Runoff Depth = 7.46"
60.46% Pervious = 0.637 ac 39.54% Impervious = 0.417 ac

Summary for Subcatchment 1S: TO CB-2351

Runoff = 8.14 cfs @ 11.96 hrs, Volume= 0.446 af, Depth= 8.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

	Area (sf)	CN	Description
	4,372	98	Roofs, HSG B
	10,058	98	Paved parking, HSG B
	6,716	96	Gravel surface, HSG B
*	540	98	Ledge, HSG B
	4,762	61	>75% Grass cover, Good, HSG B
	26,448	91	Weighted Average
	11,478		43.40% Pervious Area
	14,970		56.60% Impervious Area

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

Summary for Subcatchment 2S: To Wetland

Runoff = 3.56 cfs @ 12.04 hrs, Volume= 0.209 af, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

	Area (sf)	CN	Description
	1,125	98	Roofs, HSG B
	1,882	98	Paved parking, HSG B
	1,410	96	Gravel surface, HSG B
*	180	98	Ledge, HSG B
	2,232	61	>75% Grass cover, Good, HSG B
	12,649	55	Woods, Good, HSG B
	19,478	66	Weighted Average
	16,291		83.64% Pervious Area
	3,187		16.36% Impervious Area

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.607 ac, 56.60% Impervious, Inflow Depth = 8.81" for 50-yr event
Inflow = 8.14 cfs @ 11.96 hrs, Volume= 0.446 af
Outflow = 8.14 cfs @ 11.96 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.0 min
Primary = 8.14 cfs @ 11.96 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 13.07' @ 11.96 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=7.95 cfs @ 11.96 hrs HW=12.98' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 7.95 cfs @ 6.48 fps)

Summary for Link PA-1: Point of Analysis #1

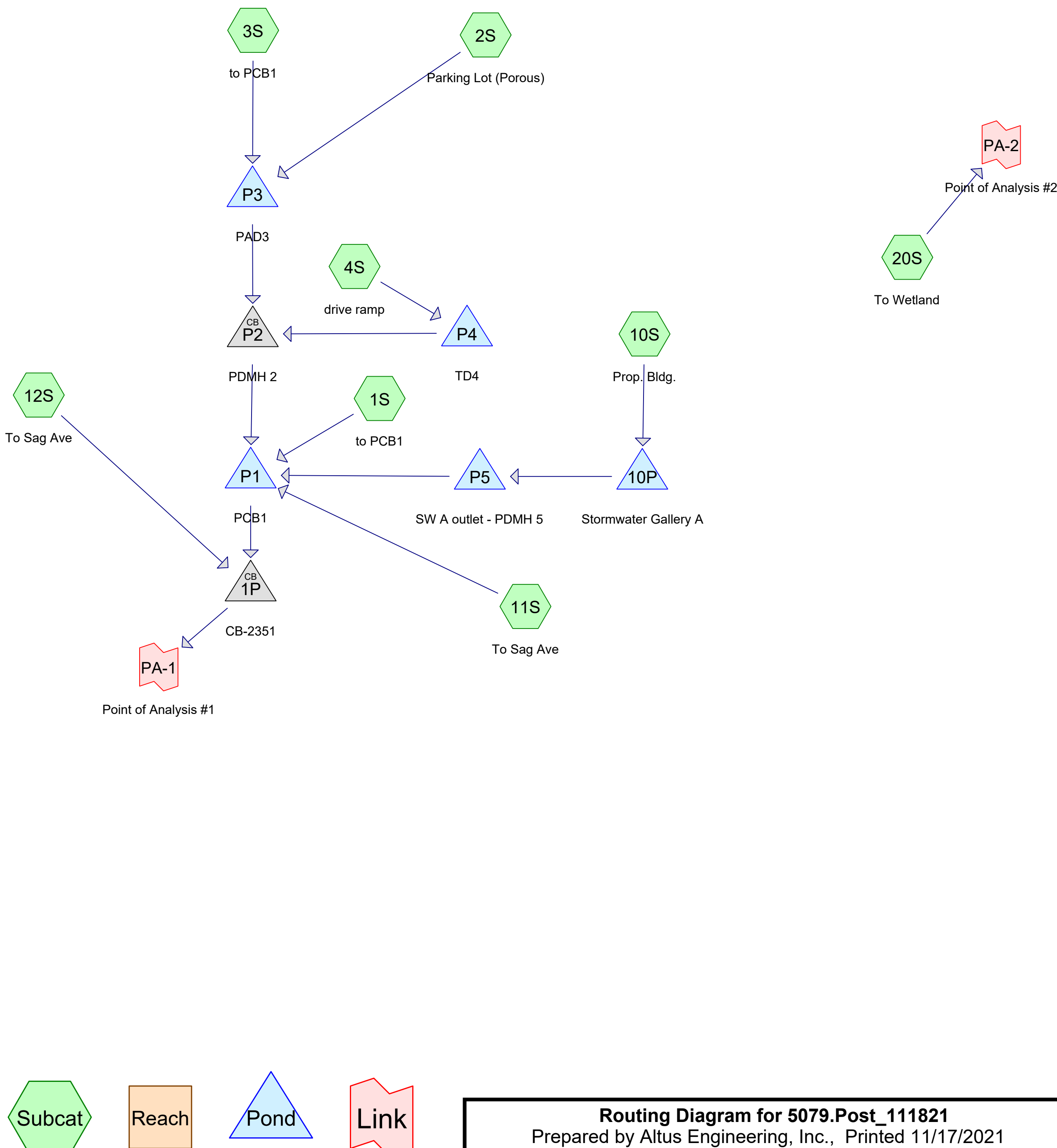
Inflow Area =	0.607 ac, 56.60% Impervious,	Inflow Depth = 8.81"	for 50-yr event	
Inflow =	8.14 cfs @	11.96 hrs, Volume=	0.446 af	
Primary =	8.14 cfs @	11.96 hrs, Volume=	0.446 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area =	0.447 ac, 16.36% Impervious,	Inflow Depth = 5.62"	for 50-yr event	
Inflow =	3.56 cfs @	12.04 hrs, Volume=	0.209 af	
Primary =	3.56 cfs @	12.04 hrs, Volume=	0.209 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs



Routing Diagram for 5079.Post_111821
Prepared by Altus Engineering, Inc., Printed 11/17/2021
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.336	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 11S, 12S, 20S)
0.004	98	Ledge, HSG B (20S)
0.174	98	Paved parking, HSG B (2S, 3S, 4S, 12S, 20S)
0.002	98	Pavers, HSG B (20S)
0.041	98	Porous Pavement, HSG B (2S)
0.189	98	Roofs, HSG B (10S)
0.028	98	Unconnected pavement, HSG B (1S, 2S, 3S, 11S, 12S, 20S)
0.280	55	Woods, Good, HSG B (20S)
1.054	**75**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.054	HSG B	1S, 2S, 3S, 4S, 10S, 11S, 12S, 20S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.054		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.336	0.000	0.000	0.000	0.336	>75% Grass cover, Good	1S, 2S, 3S, 11S, 12S, 20S
0.000	0.004	0.000	0.000	0.000	0.004	Ledge	20S
0.000	0.174	0.000	0.000	0.000	0.174	Paved parking	2S, 3S, 4S, 12S, 20S
0.000	0.002	0.000	0.000	0.000	0.002	Pavers	20S
0.000	0.041	0.000	0.000	0.000	0.041	Porous Pavement	2S
0.000	0.189	0.000	0.000	0.000	0.189	Roofs	10S
0.000	0.028	0.000	0.000	0.000	0.028	Unconnected pavement	1S, 2S, 3S, 11S, 12S, 20S
0.000	0.280	0.000	0.000	0.000	0.280	Woods, Good	20S
0.000	**1.054**	**0.000**	**0.000**	**0.000**	**1.054**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	P1	16.40	16.20	12.0	0.0167	0.012	12.0	0.0	0.0
2	P2	16.80	16.50	50.0	0.0060	0.012	12.0	0.0	0.0
3	P3	17.00	16.90	20.0	0.0050	0.012	12.0	0.0	0.0
4	P4	17.10	16.90	24.0	0.0083	0.012	8.0	0.0	0.0
5	P5	16.50	16.40	10.0	0.0100	0.012	12.0	0.0	0.0

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: to PCB1 Runoff Area=2,145 sf 5.13% Impervious Runoff Depth=1.82"
Tc=6.0 min UI Adjusted CN=62 Runoff=0.15 cfs 0.007 af

Subcatchment 2S: Parking Lot (Porous) Runoff Area=3,595 sf 82.48% Impervious Runoff Depth>3.77"
Tc=790.0 min CN=92 Runoff=0.03 cfs 0.026 af

Subcatchment 3S: to PCB1 Runoff Area=2,735 sf 11.52% Impervious Runoff Depth=2.06"
Tc=6.0 min CN=65 Runoff=0.23 cfs 0.011 af

Subcatchment 4S: drive ramp Runoff Area=680 sf 100.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.007 af

Subcatchment 10S: Prop. Bldg. Runoff Area=8,245 sf 100.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=1.47 cfs 0.085 af

Subcatchment 11S: To Sag Ave Runoff Area=3,695 sf 10.96% Impervious Runoff Depth=1.90"
Tc=6.0 min UI Adjusted CN=63 Runoff=0.28 cfs 0.013 af

Subcatchment 12S: To Sag Ave Runoff Area=5,395 sf 73.03% Impervious Runoff Depth=4.24"
Tc=6.0 min CN=88 Runoff=0.85 cfs 0.044 af

Subcatchment 20S: To Wetland Runoff Area=19,422 sf 12.51% Impervious Runoff Depth=1.82"
Tc=12.0 min CN=62 Runoff=1.12 cfs 0.068 af

Pond 1P: CB-2351 Peak Elev=11.46' Inflow=3.12 cfs 0.191 af
Outflow=3.12 cfs 0.191 af

Pond 10P: Stormwater Gallery A Peak Elev=26.18' Storage=588 cf Inflow=1.47 cfs 0.085 af
Outflow=1.51 cfs 0.082 af

Pond P1: PCB1 Peak Elev=17.32' Storage=12 cf Inflow=2.28 cfs 0.147 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=2.29 cfs 0.147 af

Pond P2: PDMH 2 Peak Elev=17.11' Inflow=0.34 cfs 0.044 af
12.0" Round Culvert n=0.012 L=50.0' S=0.0060 '/' Outflow=0.34 cfs 0.044 af

Pond P3: PAD3 Peak Elev=17.27' Storage=1 cf Inflow=0.23 cfs 0.037 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.23 cfs 0.037 af

Pond P4: TD4 Peak Elev=17.30' Storage=1 cf Inflow=0.12 cfs 0.007 af
8.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=0.12 cfs 0.007 af

Pond P5: SW A outlet - PDMH 5 Peak Elev=17.26' Storage=10 cf Inflow=1.51 cfs 0.082 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=1.51 cfs 0.082 af

Link PA-1: Point of Analysis #1 Inflow=3.12 cfs 0.191 af
Primary=3.12 cfs 0.191 af

Link PA-2: Point of Analysis #2

Inflow=1.12 cfs 0.068 af
Primary=1.12 cfs 0.068 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.261 af Average Runoff Depth = 2.97"
58.42% Pervious = 0.616 ac 41.58% Impervious = 0.438 ac

Summary for Subcatchment 1S: to PCB1

Runoff = 0.15 cfs @ 11.98 hrs, Volume= 0.007 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Adj	Description
2,035	61		>75% Grass cover, Good, HSG B
110	98		Unconnected pavement, HSG B
2,145	63	62	Weighted Average, UI Adjusted
2,035			94.87% Pervious Area
110			5.13% Impervious Area
110			100.00% Unconnected

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

Summary for Subcatchment 2S: Parking Lot (Porous)

Runoff = 0.03 cfs @ 21.94 hrs, Volume= 0.026 af, Depth> 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

	Area (sf)	CN	Description
	630	61	>75% Grass cover, Good, HSG B
	825	98	Paved parking, HSG B
*	1,780	98	Porous Pavement, HSG B
	360	98	Unconnected pavement, HSG B
	3,595	92	Weighted Average
	630		17.52% Pervious Area
	2,965		82.48% Impervious Area
	360		12.14% Unconnected

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

Summary for Subcatchment 3S: to PCB1

Runoff = 0.23 cfs @ 11.98 hrs, Volume= 0.011 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
2,420	61	>75% Grass cover, Good, HSG B
210	98	Paved parking, HSG B
105	98	Unconnected pavement, HSG B
2,735	65	Weighted Average
2,420		88.48% Pervious Area
315		11.52% Impervious Area
105		33.33% Unconnected

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

Summary for Subcatchment 4S: drive ramp

Runoff = 0.12 cfs @ 11.96 hrs, Volume= 0.007 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
680	98	Paved parking, HSG B
680		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. Bldg.

Runoff = 1.47 cfs @ 11.96 hrs, Volume= 0.085 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
8,245	98	Roofs, HSG B
8,245		100.00% Impervious Area

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

Summary for Subcatchment 11S: To Sag Ave

Runoff = 0.28 cfs @ 11.98 hrs, Volume= 0.013 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Adj	Description
3,290	61		>75% Grass cover, Good, HSG B
275	98		Unconnected pavement, HSG B
130	98		Unconnected pavement, HSG B
3,695	65	63	Weighted Average, UI Adjusted
3,290			89.04% Pervious Area
405			10.96% Impervious Area
405			100.00% Unconnected

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

Summary for Subcatchment 12S: To Sag Ave

Runoff = 0.85 cfs @ 11.96 hrs, Volume= 0.044 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG B
480	98	Paved parking, HSG B
730	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
725	61	>75% Grass cover, Good, HSG B
5,395	88	Weighted Average
1,455		26.97% Pervious Area
3,940		73.03% Impervious Area
200		5.08% Unconnected

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

Summary for Subcatchment 20S: To Wetland

Runoff = 1.12 cfs @ 12.05 hrs, Volume= 0.068 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.60"

	Area (sf)	CN	Description
	2,110	98	Paved parking, HSG B
*	100	98	Pavers, HSG B
	40	98	Unconnected pavement, HSG B
*	180	98	Ledge, HSG B
	4,810	61	>75% Grass cover, Good, HSG B
	12,182	55	Woods, Good, HSG B
	19,422	62	Weighted Average
	16,992		87.49% Pervious Area
	2,430		12.51% Impervious Area
	40		1.65% Unconnected

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 3.76" for 10-yr event
Inflow = 3.12 cfs @ 11.99 hrs, Volume= 0.191 af
Outflow = 3.12 cfs @ 11.99 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min
Primary = 3.12 cfs @ 11.99 hrs, Volume= 0.191 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 11.46' @ 11.99 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.98 cfs @ 11.99 hrs HW=11.44' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.98 cfs @ 3.20 fps)

Summary for Pond 10P: Stormwater Gallery A

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 5.36" for 10-yr event
Inflow = 1.47 cfs @ 11.96 hrs, Volume= 0.085 af
Outflow = 1.51 cfs @ 11.99 hrs, Volume= 0.082 af, Atten= 0%, Lag= 1.9 min
Primary = 1.51 cfs @ 11.99 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 26.18' @ 11.99 hrs Surf.Area= 500 sf Storage= 588 cf

Plug-Flow detention time= 45.0 min calculated for 0.082 af (97% of inflow)
Center-of-Mass det. time= 27.8 min (769.8 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	487 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,500 cf Overall - 283 cf Embedded = 1,217 cf x 40.0% Voids
#2	24.50'	283 cf	**24.0" Round Pipe Storage** x 4.5 Inside #1 L= 20.0'
		770 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	500	0	0
27.00	500	1,500	1,500

Device	Routing	Invert	Outlet Devices
#1	Primary	24.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	26.00'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=1.45 cfs @ 11.99 hrs HW=26.17' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.52 cfs @ 5.91 fps)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 0.93 cfs @ 1.36 fps)

Summary for Pond P1: PCB1

Inflow Area = 0.484 ac, 60.30% Impervious, Inflow Depth > 3.64" for 10-yr event
Inflow = 2.28 cfs @ 11.99 hrs, Volume= 0.147 af
Outflow = 2.29 cfs @ 11.99 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.1 min
Primary = 2.29 cfs @ 11.99 hrs, Volume= 0.147 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.32' @ 11.99 hrs Surf.Area= 13 sf Storage= 12 cf

Plug-Flow detention time= 0.3 min calculated for 0.147 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (887.6 - 887.4)

Volume	Invert	Avail.Storage	Storage Description
#1	16.40'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 16.20' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.20 cfs @ 11.99 hrs HW=17.29' (Free Discharge)
1=Culvert (Barrel Controls 2.20 cfs @ 3.93 fps)

Summary for Pond P2: PDMH 2

Inflow Area = 0.161 ac, 56.49% Impervious, Inflow Depth > 3.26" for 10-yr event
Inflow = 0.34 cfs @ 11.97 hrs, Volume= 0.044 af
Outflow = 0.34 cfs @ 11.97 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 11.97 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.11' @ 11.97 hrs
Flood Elev= 30.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.80'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.80' / 16.50' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 11.97 hrs HW=17.11' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.32 cfs @ 2.33 fps)

Summary for Pond P3: PAD3

Inflow Area =	0.145 ac, 51.82% Impervious,	Inflow Depth > 3.03"	for 10-yr event
Inflow =	0.23 cfs @ 11.98 hrs,	Volume=	0.037 af
Outflow =	0.23 cfs @ 11.98 hrs,	Volume=	0.037 af, Atten= 0%, Lag= 0.1 min
Primary =	0.23 cfs @ 11.98 hrs,	Volume=	0.037 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.27' @ 11.98 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.2 min calculated for 0.037 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,195.9 - 1,195.8)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	13 cf	**2.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 11.98 hrs HW=17.27' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.22 cfs @ 1.92 fps)

Summary for Pond P4: TD4

Inflow Area =	0.016 ac,100.00% Impervious,	Inflow Depth = 5.36"	for 10-yr event
Inflow =	0.12 cfs @ 11.96 hrs,	Volume=	0.007 af
Outflow =	0.12 cfs @ 11.96 hrs,	Volume=	0.007 af, Atten= 0%, Lag= 0.1 min
Primary =	0.12 cfs @ 11.96 hrs,	Volume=	0.007 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.30' @ 11.96 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.4 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (742.4 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	17.10'	9 cf	**2.00'D x 3.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**8.0" Round Culvert** L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 17.10' / 16.90' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.12 cfs @ 11.96 hrs HW=17.30' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.12 cfs @ 2.00 fps)

Summary for Pond P5: SW A outlet - PDMH 5

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 5.22" for 10-yr event
Inflow = 1.51 cfs @ 11.99 hrs, Volume= 0.082 af
Outflow = 1.51 cfs @ 11.99 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 11.99 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 17.26' @ 11.99 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 40.50' Surf.Area= 13 sf Storage= 132 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (770.0 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1	16.50'	132 cf	**4.00'D x 10.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.50' / 16.40' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.45 cfs @ 11.99 hrs HW=17.24' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.45 cfs @ 3.24 fps)

Summary for Link PA-1: Point of Analysis #1

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 3.76" for 10-yr event
Inflow = 3.12 cfs @ 11.99 hrs, Volume= 0.191 af
Primary = 3.12 cfs @ 11.99 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area = 0.446 ac, 12.51% Impervious, Inflow Depth = 1.82" for 10-yr event
Inflow = 1.12 cfs @ 12.05 hrs, Volume= 0.068 af
Primary = 1.12 cfs @ 12.05 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	P1	16.40	16.20	12.0	0.0167	0.012	12.0	0.0	0.0
2	P2	16.80	16.50	50.0	0.0060	0.012	12.0	0.0	0.0
3	P3	17.00	16.90	20.0	0.0050	0.012	12.0	0.0	0.0
4	P4	17.10	16.90	24.0	0.0083	0.012	8.0	0.0	0.0
5	P5	16.50	16.40	10.0	0.0100	0.012	12.0	0.0	0.0

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: to PCB1 Runoff Area=2,145 sf 5.13% Impervious Runoff Depth=0.93"
Tc=6.0 min UI Adjusted CN=62 Runoff=0.07 cfs 0.004 af

Subcatchment 2S: Parking Lot (Porous) Runoff Area=3,595 sf 82.48% Impervious Runoff Depth>2.59"
Tc=790.0 min CN=92 Runoff=0.02 cfs 0.018 af

Subcatchment 3S: to PCB1 Runoff Area=2,735 sf 11.52% Impervious Runoff Depth=1.10"
Tc=6.0 min CN=65 Runoff=0.12 cfs 0.006 af

Subcatchment 4S: drive ramp Runoff Area=680 sf 100.00% Impervious Runoff Depth=3.88"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.005 af

Subcatchment 10S: Prop. Bldg. Runoff Area=8,245 sf 100.00% Impervious Runoff Depth=3.88"
Tc=6.0 min CN=98 Runoff=1.08 cfs 0.061 af

Subcatchment 11S: To Sag Ave Runoff Area=3,695 sf 10.96% Impervious Runoff Depth=0.98"
Tc=6.0 min UI Adjusted CN=63 Runoff=0.14 cfs 0.007 af

Subcatchment 12S: To Sag Ave Runoff Area=5,395 sf 73.03% Impervious Runoff Depth=2.84"
Tc=6.0 min CN=88 Runoff=0.59 cfs 0.029 af

Subcatchment 20S: To Wetland Runoff Area=19,422 sf 12.51% Impervious Runoff Depth=0.93"
Tc=12.0 min CN=62 Runoff=0.53 cfs 0.034 af

Pond 1P: CB-2351 Peak Elev=11.17' Inflow=1.63 cfs 0.128 af
Outflow=1.63 cfs 0.128 af

Pond 10P: Stormwater Gallery A Peak Elev=26.09' Storage=564 cf Inflow=1.08 cfs 0.061 af
Outflow=0.85 cfs 0.059 af

Pond P1: PCB1 Peak Elev=16.99' Storage=7 cf Inflow=1.16 cfs 0.098 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=1.16 cfs 0.098 af

Pond P2: PDMH 2 Peak Elev=17.04' Inflow=0.20 cfs 0.029 af
12.0" Round Culvert n=0.012 L=50.0' S=0.0060 '/' Outflow=0.20 cfs 0.029 af

Pond P3: PAD3 Peak Elev=17.19' Storage=1 cf Inflow=0.12 cfs 0.024 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.12 cfs 0.024 af

Pond P4: TD4 Peak Elev=17.27' Storage=1 cf Inflow=0.09 cfs 0.005 af
8.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=0.09 cfs 0.005 af

Pond P5: SW A outlet - PDMH 5 Peak Elev=17.03' Storage=7 cf Inflow=0.85 cfs 0.059 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=0.84 cfs 0.059 af

Link PA-1: Point of Analysis #1 Inflow=1.63 cfs 0.128 af
Primary=1.63 cfs 0.128 af

Link PA-2: Point of Analysis #2

Inflow=0.53 cfs 0.034 af
Primary=0.53 cfs 0.034 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.164 af Average Runoff Depth = 1.87"
58.42% Pervious = 0.616 ac 41.58% Impervious = 0.438 ac

Summary for Subcatchment 1S: to PCB1

Runoff = 0.07 cfs @ 11.99 hrs, Volume= 0.004 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

Area (sf)	CN	Adj	Description
2,035	61		>75% Grass cover, Good, HSG B
110	98		Unconnected pavement, HSG B
2,145	63	62	Weighted Average, UI Adjusted
2,035			94.87% Pervious Area
110			5.13% Impervious Area
110			100.00% Unconnected

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

Summary for Subcatchment 2S: Parking Lot (Porous)

Runoff = 0.02 cfs @ 21.95 hrs, Volume= 0.018 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

	Area (sf)	CN	Description
	630	61	>75% Grass cover, Good, HSG B
	825	98	Paved parking, HSG B
*	1,780	98	Porous Pavement, HSG B
	360	98	Unconnected pavement, HSG B
	3,595	92	Weighted Average
	630		17.52% Pervious Area
	2,965		82.48% Impervious Area
	360		12.14% Unconnected

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

Summary for Subcatchment 3S: to PCB1

Runoff = 0.12 cfs @ 11.98 hrs, Volume= 0.006 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

Area (sf)	CN	Description
2,420	61	>75% Grass cover, Good, HSG B
210	98	Paved parking, HSG B
105	98	Unconnected pavement, HSG B
2,735	65	Weighted Average
2,420		88.48% Pervious Area
315		11.52% Impervious Area
105		33.33% Unconnected

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

Summary for Subcatchment 4S: drive ramp

Runoff = 0.09 cfs @ 11.96 hrs, Volume= 0.005 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

Area (sf)	CN	Description
680	98	Paved parking, HSG B
680		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. Bldg.

Runoff = 1.08 cfs @ 11.96 hrs, Volume= 0.061 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

Area (sf)	CN	Description
8,245	98	Roofs, HSG B
8,245		100.00% Impervious Area

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

Summary for Subcatchment 11S: To Sag Ave

Runoff = 0.14 cfs @ 11.99 hrs, Volume= 0.007 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

Area (sf)	CN	Adj	Description
3,290	61		>75% Grass cover, Good, HSG B
275	98		Unconnected pavement, HSG B
130	98		Unconnected pavement, HSG B
3,695	65	63	Weighted Average, UI Adjusted
3,290			89.04% Pervious Area
405			10.96% Impervious Area
405			100.00% Unconnected

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

Summary for Subcatchment 12S: To Sag Ave

Runoff = 0.59 cfs @ 11.97 hrs, Volume= 0.029 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG B
480	98	Paved parking, HSG B
730	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
725	61	>75% Grass cover, Good, HSG B
5,395	88	Weighted Average
1,455		26.97% Pervious Area
3,940		73.03% Impervious Area
200		5.08% Unconnected

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

Summary for Subcatchment 20S: To Wetland

Runoff = 0.53 cfs @ 12.06 hrs, Volume= 0.034 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=4.12"

	Area (sf)	CN	Description
	2,110	98	Paved parking, HSG B
*	100	98	Pavers, HSG B
	40	98	Unconnected pavement, HSG B
*	180	98	Ledge, HSG B
	4,810	61	>75% Grass cover, Good, HSG B
	12,182	55	Woods, Good, HSG B
	19,422	62	Weighted Average
	16,992		87.49% Pervious Area
	2,430		12.51% Impervious Area
	40		1.65% Unconnected

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 2.52" for 2-yr event
Inflow = 1.63 cfs @ 12.00 hrs, Volume= 0.128 af
Outflow = 1.63 cfs @ 12.00 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min
Primary = 1.63 cfs @ 12.00 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 11.17' @ 12.00 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.61 cfs @ 12.00 hrs HW=11.17' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.61 cfs @ 2.67 fps)

Summary for Pond 10P: Stormwater Gallery A

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 3.88" for 2-yr event
Inflow = 1.08 cfs @ 11.96 hrs, Volume= 0.061 af
Outflow = 0.85 cfs @ 12.04 hrs, Volume= 0.059 af, Atten= 21%, Lag= 4.7 min
Primary = 0.85 cfs @ 12.04 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 26.09' @ 12.03 hrs Surf.Area= 500 sf Storage= 564 cf

Plug-Flow detention time= 56.6 min calculated for 0.059 af (96% of inflow)
Center-of-Mass det. time= 33.5 min (780.9 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	487 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,500 cf Overall - 283 cf Embedded = 1,217 cf x 40.0% Voids
#2	24.50'	283 cf	**24.0" Round Pipe Storage** x 4.5 Inside #1 L= 20.0'
		770 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	500	0	0
27.00	500	1,500	1,500

Device	Routing	Invert	Outlet Devices
#1	Primary	24.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	26.00'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.80 cfs @ 12.04 hrs HW=26.08' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.50 cfs @ 5.73 fps)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 0.30 cfs @ 0.93 fps)

Summary for Pond P1: PCB1

Inflow Area = 0.484 ac, 60.30% Impervious, Inflow Depth > 2.44" for 2-yr event
Inflow = 1.16 cfs @ 12.03 hrs, Volume= 0.098 af
Outflow = 1.16 cfs @ 12.03 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.1 min
Primary = 1.16 cfs @ 12.03 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 16.99' @ 12.03 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 0.098 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (898.0 - 897.8)

Volume	Invert	Avail.Storage	Storage Description
#1	16.40'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 16.20' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.09 cfs @ 12.03 hrs HW=16.97' (Free Discharge)
1=Culvert (Barrel Controls 1.09 cfs @ 3.43 fps)

Summary for Pond P2: PDMH 2

Inflow Area = 0.161 ac, 56.49% Impervious, Inflow Depth > 2.13" for 2-yr event
Inflow = 0.20 cfs @ 11.98 hrs, Volume= 0.029 af
Outflow = 0.20 cfs @ 11.98 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 11.98 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.04' @ 11.98 hrs
Flood Elev= 30.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.80'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.80' / 16.50' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.19 cfs @ 11.98 hrs HW=17.03' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.19 cfs @ 2.02 fps)

Summary for Pond P3: PAD3

Inflow Area = 0.145 ac, 51.82% Impervious, Inflow Depth > 1.94" for 2-yr event
Inflow = 0.12 cfs @ 11.98 hrs, Volume= 0.024 af
Outflow = 0.12 cfs @ 11.98 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.1 min
Primary = 0.12 cfs @ 11.98 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.19' @ 11.98 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.2 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,230.8 - 1,230.7)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	13 cf	**2.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 11.98 hrs HW=17.19' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.11 cfs @ 1.62 fps)

Summary for Pond P4: TD4

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth = 3.88" for 2-yr event
Inflow = 0.09 cfs @ 11.96 hrs, Volume= 0.005 af
Outflow = 0.09 cfs @ 11.96 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.1 min
Primary = 0.09 cfs @ 11.96 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.27' @ 11.96 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.4 min calculated for 0.005 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (747.8 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1	17.10'	9 cf	**2.00'D x 3.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**8.0" Round Culvert** L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 17.10' / 16.90' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.09 cfs @ 11.96 hrs HW=17.27' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.09 cfs @ 1.85 fps)

Summary for Pond P5: SW A outlet - PDMH 5

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 3.74" for 2-yr event
Inflow = 0.85 cfs @ 12.04 hrs, Volume= 0.059 af
Outflow = 0.84 cfs @ 12.04 hrs, Volume= 0.059 af, Atten= 1%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.04 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 17.03' @ 12.04 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 40.50' Surf.Area= 13 sf Storage= 132 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min (781.1 - 780.9)

Volume	Invert	Avail.Storage	Storage Description
#1	16.50'	132 cf	**4.00'D x 10.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.50' / 16.40' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.79 cfs @ 12.04 hrs HW=17.01' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.79 cfs @ 2.83 fps)

Summary for Link PA-1: Point of Analysis #1

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 2.52" for 2-yr event
Inflow = 1.63 cfs @ 12.00 hrs, Volume= 0.128 af
Primary = 1.63 cfs @ 12.00 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area = 0.446 ac, 12.51% Impervious, Inflow Depth = 0.93" for 2-yr event
Inflow = 0.53 cfs @ 12.06 hrs, Volume= 0.034 af
Primary = 0.53 cfs @ 12.06 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: to PCB1 Runoff Area=2,145 sf 5.13% Impervious Runoff Depth=3.71"
Tc=6.0 min UI Adjusted CN=62 Runoff=0.32 cfs 0.015 af

Subcatchment 2S: Parking Lot (Porous) Runoff Area=3,595 sf 82.48% Impervious Runoff Depth>5.87"
Tc=790.0 min CN=92 Runoff=0.04 cfs 0.040 af

Subcatchment 3S: to PCB1 Runoff Area=2,735 sf 11.52% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=65 Runoff=0.44 cfs 0.021 af

Subcatchment 4S: drive ramp Runoff Area=680 sf 100.00% Impervious Runoff Depth=7.96"
Tc=6.0 min CN=98 Runoff=0.18 cfs 0.010 af

Subcatchment 10S: Prop. Bldg. Runoff Area=8,245 sf 100.00% Impervious Runoff Depth=7.96"
Tc=6.0 min CN=98 Runoff=2.16 cfs 0.126 af

Subcatchment 11S: To Sag Ave Runoff Area=3,695 sf 10.96% Impervious Runoff Depth=3.83"
Tc=6.0 min UI Adjusted CN=63 Runoff=0.56 cfs 0.027 af

Subcatchment 12S: To Sag Ave Runoff Area=5,395 sf 73.03% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=88 Runoff=1.32 cfs 0.070 af

Subcatchment 20S: To Wetland Runoff Area=19,422 sf 12.51% Impervious Runoff Depth=3.71"
Tc=12.0 min CN=62 Runoff=2.35 cfs 0.138 af

Pond 1P: CB-2351 Peak Elev=11.85' Inflow=4.86 cfs 0.307 af
Outflow=4.86 cfs 0.307 af

Pond 10P: Stormwater Gallery A Peak Elev=26.25' Storage=607 cf Inflow=2.16 cfs 0.126 af
Outflow=2.16 cfs 0.123 af

Pond P1: PCB1 Peak Elev=17.81' Storage=18 cf Inflow=3.66 cfs 0.238 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=3.63 cfs 0.238 af

Pond P2: PDMH 2 Peak Elev=17.24' Inflow=0.62 cfs 0.072 af
12.0" Round Culvert n=0.012 L=50.0' S=0.0060 '/' Outflow=0.62 cfs 0.072 af

Pond P3: PAD3 Peak Elev=17.39' Storage=1 cf Inflow=0.44 cfs 0.062 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.44 cfs 0.062 af

Pond P4: TD4 Peak Elev=17.35' Storage=1 cf Inflow=0.18 cfs 0.010 af
8.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=0.18 cfs 0.010 af

Pond P5: SW A outlet - PDMH 5 Peak Elev=17.46' Storage=12 cf Inflow=2.16 cfs 0.123 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=2.16 cfs 0.123 af

Link PA-1: Point of Analysis #1 Inflow=4.86 cfs 0.307 af
Primary=4.86 cfs 0.307 af

Link PA-2: Point of Analysis #2

Inflow=2.35 cfs 0.138 af
Primary=2.35 cfs 0.138 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.448 af Average Runoff Depth = 5.09"
58.42% Pervious = 0.616 ac 41.58% Impervious = 0.438 ac

Summary for Subcatchment 1S: to PCB1

Runoff = 0.32 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

Area (sf)	CN	Adj	Description
2,035	61		>75% Grass cover, Good, HSG B
110	98		Unconnected pavement, HSG B
2,145	63	62	Weighted Average, UI Adjusted
2,035			94.87% Pervious Area
110			5.13% Impervious Area
110			100.00% Unconnected

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

Summary for Subcatchment 2S: Parking Lot (Porous)

Runoff = 0.04 cfs @ 21.94 hrs, Volume= 0.040 af, Depth> 5.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

	Area (sf)	CN	Description
	630	61	>75% Grass cover, Good, HSG B
	825	98	Paved parking, HSG B
*	1,780	98	Porous Pavement, HSG B
	360	98	Unconnected pavement, HSG B
	3,595	92	Weighted Average
	630		17.52% Pervious Area
	2,965		82.48% Impervious Area
	360		12.14% Unconnected

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

Summary for Subcatchment 3S: to PCB1

Runoff = 0.44 cfs @ 11.97 hrs, Volume= 0.021 af, Depth= 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

Area (sf)	CN	Description
2,420	61	>75% Grass cover, Good, HSG B
210	98	Paved parking, HSG B
105	98	Unconnected pavement, HSG B
2,735	65	Weighted Average
2,420		88.48% Pervious Area
315		11.52% Impervious Area
105		33.33% Unconnected

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

Summary for Subcatchment 4S: drive ramp

Runoff = 0.18 cfs @ 11.96 hrs, Volume= 0.010 af, Depth= 7.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

Area (sf)	CN	Description
680	98	Paved parking, HSG B
680		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. Bldg.

Runoff = 2.16 cfs @ 11.96 hrs, Volume= 0.126 af, Depth= 7.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

Area (sf)	CN	Description
8,245	98	Roofs, HSG B
8,245		100.00% Impervious Area

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

Summary for Subcatchment 11S: To Sag Ave

Runoff = 0.56 cfs @ 11.97 hrs, Volume= 0.027 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

Area (sf)	CN	Adj	Description
3,290	61		>75% Grass cover, Good, HSG B
275	98		Unconnected pavement, HSG B
130	98		Unconnected pavement, HSG B
3,695	65	63	Weighted Average, UI Adjusted
3,290			89.04% Pervious Area
405			10.96% Impervious Area
405			100.00% Unconnected

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

Summary for Subcatchment 12S: To Sag Ave

Runoff = 1.32 cfs @ 11.96 hrs, Volume= 0.070 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG B
480	98	Paved parking, HSG B
730	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
725	61	>75% Grass cover, Good, HSG B
5,395	88	Weighted Average
1,455		26.97% Pervious Area
3,940		73.03% Impervious Area
200		5.08% Unconnected

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

Summary for Subcatchment 20S: To Wetland

Runoff = 2.35 cfs @ 12.04 hrs, Volume= 0.138 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=8.20"

	Area (sf)	CN	Description
	2,110	98	Paved parking, HSG B
*	100	98	Pavers, HSG B
	40	98	Unconnected pavement, HSG B
*	180	98	Ledge, HSG B
	4,810	61	>75% Grass cover, Good, HSG B
	12,182	55	Woods, Good, HSG B
	19,422	62	Weighted Average
	16,992		87.49% Pervious Area
	2,430		12.51% Impervious Area
	40		1.65% Unconnected

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 6.07" for 25-yr event
Inflow = 4.86 cfs @ 11.97 hrs, Volume= 0.307 af
Outflow = 4.86 cfs @ 11.97 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min
Primary = 4.86 cfs @ 11.97 hrs, Volume= 0.307 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 11.85' @ 11.97 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.75 cfs @ 11.97 hrs HW=11.82' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 4.75 cfs @ 3.87 fps)

Summary for Pond 10P: Stormwater Gallery A

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 7.96" for 25-yr event
Inflow = 2.16 cfs @ 11.96 hrs, Volume= 0.126 af
Outflow = 2.16 cfs @ 11.98 hrs, Volume= 0.123 af, Atten= 0%, Lag= 1.3 min
Primary = 2.16 cfs @ 11.98 hrs, Volume= 0.123 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 26.25' @ 11.98 hrs Surf.Area= 500 sf Storage= 607 cf

Plug-Flow detention time= 34.2 min calculated for 0.123 af (98% of inflow)
Center-of-Mass det. time= 21.8 min (758.4 - 736.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	487 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,500 cf Overall - 283 cf Embedded = 1,217 cf x 40.0% Voids
#2	24.50'	283 cf	**24.0" Round Pipe Storage** x 4.5 Inside #1 L= 20.0'
		770 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	500	0	0
27.00	500	1,500	1,500

Device	Routing	Invert	Outlet Devices
#1	Primary	24.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	26.00'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=2.06 cfs @ 11.98 hrs HW=26.24' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.53 cfs @ 6.04 fps)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 1.53 cfs @ 1.60 fps)

Summary for Pond P1: PCB1

Inflow Area = 0.484 ac, 60.30% Impervious, Inflow Depth > 5.89" for 25-yr event
Inflow = 3.66 cfs @ 11.98 hrs, Volume= 0.238 af
Outflow = 3.63 cfs @ 11.98 hrs, Volume= 0.238 af, Atten= 1%, Lag= 0.0 min
Primary = 3.63 cfs @ 11.98 hrs, Volume= 0.238 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.81' @ 11.98 hrs Surf.Area= 13 sf Storage= 18 cf

Plug-Flow detention time= 0.3 min calculated for 0.237 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (875.3 - 875.1)

Volume	Invert	Avail.Storage	Storage Description
#1	16.40'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 16.20' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.49 cfs @ 11.98 hrs HW=17.76' (Free Discharge)
1=Culvert (Barrel Controls 3.49 cfs @ 4.44 fps)

Summary for Pond P2: PDMH 2

Inflow Area = 0.161 ac, 56.49% Impervious, Inflow Depth > 5.36" for 25-yr event
Inflow = 0.62 cfs @ 11.97 hrs, Volume= 0.072 af
Outflow = 0.62 cfs @ 11.97 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 11.97 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.24' @ 11.97 hrs
Flood Elev= 30.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.80'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.80' / 16.50' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.59 cfs @ 11.97 hrs HW=17.23' (Free Discharge)
1=Culvert (Barrel Controls 0.59 cfs @ 2.71 fps)

Summary for Pond P3: PAD3

Inflow Area = 0.145 ac, 51.82% Impervious, Inflow Depth > 5.08" for 25-yr event
Inflow = 0.44 cfs @ 11.97 hrs, Volume= 0.062 af
Outflow = 0.44 cfs @ 11.97 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 11.97 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.39' @ 11.97 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.1 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,158.9 - 1,158.8)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	13 cf	**2.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 11.97 hrs HW=17.38' (Free Discharge)
1=Culvert (Barrel Controls 0.43 cfs @ 2.28 fps)

Summary for Pond P4: TD4

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth = 7.96" for 25-yr event
Inflow = 0.18 cfs @ 11.96 hrs, Volume= 0.010 af
Outflow = 0.18 cfs @ 11.96 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.1 min
Primary = 0.18 cfs @ 11.96 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.35' @ 11.96 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.3 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (737.0 - 736.7)

Volume	Invert	Avail.Storage	Storage Description
#1	17.10'	9 cf	**2.00'D x 3.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**8.0" Round Culvert** L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 17.10' / 16.90' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.17 cfs @ 11.96 hrs HW=17.35' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.17 cfs @ 2.19 fps)

Summary for Pond P5: SW A outlet - PDMH 5

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 7.81" for 25-yr event
Inflow = 2.16 cfs @ 11.98 hrs, Volume= 0.123 af
Outflow = 2.16 cfs @ 11.98 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min
Primary = 2.16 cfs @ 11.98 hrs, Volume= 0.123 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 17.46' @ 11.98 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 40.50' Surf.Area= 13 sf Storage= 132 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (758.6 - 758.4)

Volume	Invert	Avail.Storage	Storage Description
#1	16.50'	132 cf	**4.00'D x 10.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.50' / 16.40' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.06 cfs @ 11.98 hrs HW=17.43' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.06 cfs @ 3.53 fps)

Summary for Link PA-1: Point of Analysis #1

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 6.07" for 25-yr event
Inflow = 4.86 cfs @ 11.97 hrs, Volume= 0.307 af
Primary = 4.86 cfs @ 11.97 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area = 0.446 ac, 12.51% Impervious, Inflow Depth = 3.71" for 25-yr event
Inflow = 2.35 cfs @ 12.04 hrs, Volume= 0.138 af
Primary = 2.35 cfs @ 12.04 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: to PCB1 Runoff Area=2,145 sf 5.13% Impervious Runoff Depth=5.09"
Tc=6.0 min UI Adjusted CN=62 Runoff=0.43 cfs 0.021 af

Subcatchment 2S: Parking Lot (Porous) Runoff Area=3,595 sf 82.48% Impervious Runoff Depth>7.26"
Tc=790.0 min CN=92 Runoff=0.05 cfs 0.050 af

Subcatchment 3S: to PCB1 Runoff Area=2,735 sf 11.52% Impervious Runoff Depth=5.49"
Tc=6.0 min CN=65 Runoff=0.59 cfs 0.029 af

Subcatchment 4S: drive ramp Runoff Area=680 sf 100.00% Impervious Runoff Depth=9.67"
Tc=6.0 min CN=98 Runoff=0.22 cfs 0.013 af

Subcatchment 10S: Prop. Bldg. Runoff Area=8,245 sf 100.00% Impervious Runoff Depth=9.67"
Tc=6.0 min CN=98 Runoff=2.61 cfs 0.153 af

Subcatchment 11S: To Sag Ave Runoff Area=3,695 sf 10.96% Impervious Runoff Depth=5.22"
Tc=6.0 min UI Adjusted CN=63 Runoff=0.76 cfs 0.037 af

Subcatchment 12S: To Sag Ave Runoff Area=5,395 sf 73.03% Impervious Runoff Depth=8.44"
Tc=6.0 min CN=88 Runoff=1.63 cfs 0.087 af

Subcatchment 20S: To Wetland Runoff Area=19,422 sf 12.51% Impervious Runoff Depth=5.09"
Tc=12.0 min CN=62 Runoff=3.22 cfs 0.189 af

Pond 1P: CB-2351 Peak Elev=12.25' Inflow=6.14 cfs 0.386 af
Outflow=6.14 cfs 0.386 af

Pond 10P: Stormwater Gallery A Peak Elev=26.29' Storage=619 cf Inflow=2.61 cfs 0.153 af
Outflow=2.60 cfs 0.150 af

Pond P1: PCB1 Peak Elev=18.36' Storage=25 cf Inflow=4.54 cfs 0.299 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0167 '/' Outflow=4.61 cfs 0.299 af

Pond P2: PDMH 2 Peak Elev=17.31' Inflow=0.81 cfs 0.091 af
12.0" Round Culvert n=0.012 L=50.0' S=0.0060 '/' Outflow=0.81 cfs 0.091 af

Pond P3: PAD3 Peak Elev=17.46' Storage=1 cf Inflow=0.59 cfs 0.079 af
12.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.59 cfs 0.079 af

Pond P4: TD4 Peak Elev=17.38' Storage=1 cf Inflow=0.22 cfs 0.013 af
8.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=0.21 cfs 0.013 af

Pond P5: SW A outlet - PDMH 5 Peak Elev=17.60' Storage=14 cf Inflow=2.60 cfs 0.150 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=2.60 cfs 0.150 af

Link PA-1: Point of Analysis #1 Inflow=6.14 cfs 0.386 af
Primary=6.14 cfs 0.386 af

Link PA-2: Point of Analysis #2

Inflow=3.22 cfs 0.189 af
Primary=3.22 cfs 0.189 af

Total Runoff Area = 1.054 ac Runoff Volume = 0.578 af Average Runoff Depth = 6.58"
58.42% Pervious = 0.616 ac 41.58% Impervious = 0.438 ac

Summary for Subcatchment 1S: to PCB1

Runoff = 0.43 cfs @ 11.97 hrs, Volume= 0.021 af, Depth= 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

Area (sf)	CN	Adj	Description
2,035	61		>75% Grass cover, Good, HSG B
110	98		Unconnected pavement, HSG B
2,145	63	62	Weighted Average, UI Adjusted
2,035			94.87% Pervious Area
110			5.13% Impervious Area
110			100.00% Unconnected

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

Summary for Subcatchment 2S: Parking Lot (Porous)

Runoff = 0.05 cfs @ 21.93 hrs, Volume= 0.050 af, Depth> 7.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

	Area (sf)	CN	Description
	630	61	>75% Grass cover, Good, HSG B
	825	98	Paved parking, HSG B
*	1,780	98	Porous Pavement, HSG B
	360	98	Unconnected pavement, HSG B
	3,595	92	Weighted Average
	630		17.52% Pervious Area
	2,965		82.48% Impervious Area
	360		12.14% Unconnected

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

Summary for Subcatchment 3S: to PCB1

Runoff = 0.59 cfs @ 11.97 hrs, Volume= 0.029 af, Depth= 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

Area (sf)	CN	Description
2,420	61	>75% Grass cover, Good, HSG B
210	98	Paved parking, HSG B
105	98	Unconnected pavement, HSG B
2,735	65	Weighted Average
2,420		88.48% Pervious Area
315		11.52% Impervious Area
105		33.33% Unconnected

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

Summary for Subcatchment 4S: drive ramp

Runoff = 0.22 cfs @ 11.96 hrs, Volume= 0.013 af, Depth= 9.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

Area (sf)	CN	Description
680	98	Paved parking, HSG B
680		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. Bldg.

Runoff = 2.61 cfs @ 11.96 hrs, Volume= 0.153 af, Depth= 9.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

Area (sf)	CN	Description
8,245	98	Roofs, HSG B
8,245		100.00% Impervious Area

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

Summary for Subcatchment 11S: To Sag Ave

Runoff = 0.76 cfs @ 11.97 hrs, Volume= 0.037 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

Area (sf)	CN	Adj	Description
3,290	61		>75% Grass cover, Good, HSG B
275	98		Unconnected pavement, HSG B
130	98		Unconnected pavement, HSG B
3,695	65	63	Weighted Average, UI Adjusted
3,290			89.04% Pervious Area
405			10.96% Impervious Area
405			100.00% Unconnected

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

Summary for Subcatchment 12S: To Sag Ave

Runoff = 1.63 cfs @ 11.96 hrs, Volume= 0.087 af, Depth= 8.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

Area (sf)	CN	Description
3,260	98	Paved parking, HSG B
480	98	Paved parking, HSG B
730	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
725	61	>75% Grass cover, Good, HSG B
5,395	88	Weighted Average
1,455		26.97% Pervious Area
3,940		73.03% Impervious Area
200		5.08% Unconnected

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

Summary for Subcatchment 20S: To Wetland

Runoff = 3.22 cfs @ 12.04 hrs, Volume= 0.189 af, Depth= 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=9.91"

	Area (sf)	CN	Description
	2,110	98	Paved parking, HSG B
*	100	98	Pavers, HSG B
	40	98	Unconnected pavement, HSG B
*	180	98	Ledge, HSG B
	4,810	61	>75% Grass cover, Good, HSG B
	12,182	55	Woods, Good, HSG B
	19,422	62	Weighted Average
	16,992		87.49% Pervious Area
	2,430		12.51% Impervious Area
	40		1.65% Unconnected

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

Summary for Pond 1P: CB-2351

Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 7.63" for 50-yr event
Inflow = 6.14 cfs @ 11.97 hrs, Volume= 0.386 af
Outflow = 6.14 cfs @ 11.97 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min
Primary = 6.14 cfs @ 11.97 hrs, Volume= 0.386 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 12.25' @ 11.97 hrs
Flood Elev= 22.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.55'	**15.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.98 cfs @ 11.97 hrs HW=12.20' (Free Discharge)
└—**1=Orifice/Grate** (Orifice Controls 5.98 cfs @ 4.87 fps)

Summary for Pond 10P: Stormwater Gallery A

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 9.67" for 50-yr event
Inflow = 2.61 cfs @ 11.96 hrs, Volume= 0.153 af
Outflow = 2.60 cfs @ 11.98 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.8 min
Primary = 2.60 cfs @ 11.98 hrs, Volume= 0.150 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 26.29' @ 11.98 hrs Surf.Area= 500 sf Storage= 619 cf

Plug-Flow detention time= 29.7 min calculated for 0.150 af (98% of inflow)
Center-of-Mass det. time= 19.3 min (753.7 - 734.5)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	487 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,500 cf Overall - 283 cf Embedded = 1,217 cf x 40.0% Voids
#2	24.50'	283 cf	**24.0" Round Pipe Storage** x 4.5 Inside #1 L= 20.0'
		770 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	500	0	0
27.00	500	1,500	1,500

Device	Routing	Invert	Outlet Devices
#1	Primary	24.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	26.00'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=2.49 cfs @ 11.98 hrs HW=26.28' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.53 cfs @ 6.12 fps)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 1.96 cfs @ 1.74 fps)

Summary for Pond P1: PCB1

Inflow Area = 0.484 ac, 60.30% Impervious, Inflow Depth > 7.42" for 50-yr event
Inflow = 4.54 cfs @ 11.97 hrs, Volume= 0.299 af
Outflow = 4.61 cfs @ 11.98 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.2 min
Primary = 4.61 cfs @ 11.98 hrs, Volume= 0.299 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 18.36' @ 11.98 hrs Surf.Area= 13 sf Storage= 25 cf

Plug-Flow detention time= 0.2 min calculated for 0.299 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (869.6 - 869.4)

Volume	Invert	Avail.Storage	Storage Description
#1	16.40'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.40'	**12.0" Round Culvert** L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 16.40' / 16.20' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.42 cfs @ 11.98 hrs HW=18.27' (Free Discharge)
1=Culvert (Inlet Controls 4.42 cfs @ 5.63 fps)

Summary for Pond P2: PDMH 2

Inflow Area = 0.161 ac, 56.49% Impervious, Inflow Depth > 6.80" for 50-yr event
Inflow = 0.81 cfs @ 11.97 hrs, Volume= 0.091 af
Outflow = 0.81 cfs @ 11.97 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 11.97 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.31' @ 11.97 hrs
Flood Elev= 30.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.80'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.80' / 16.50' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.78 cfs @ 11.97 hrs HW=17.30' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.78 cfs @ 2.90 fps)

Summary for Pond P3: PAD3

Inflow Area = 0.145 ac, 51.82% Impervious, Inflow Depth > 6.49" for 50-yr event
Inflow = 0.59 cfs @ 11.97 hrs, Volume= 0.079 af
Outflow = 0.59 cfs @ 11.97 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 11.97 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.46' @ 11.97 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.1 min calculated for 0.079 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,143.1 - 1,143.0)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	13 cf	**2.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**12.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 17.00' / 16.90' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 11.97 hrs HW=17.45' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.57 cfs @ 2.45 fps)

Summary for Pond P4: TD4

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth = 9.67" for 50-yr event
Inflow = 0.22 cfs @ 11.96 hrs, Volume= 0.013 af
Outflow = 0.21 cfs @ 11.96 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.1 min
Primary = 0.21 cfs @ 11.96 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 17.38' @ 11.96 hrs Surf.Area= 3 sf Storage= 1 cf

Plug-Flow detention time= 0.3 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (734.7 - 734.5)

Volume	Invert	Avail.Storage	Storage Description
#1	17.10'	9 cf	**2.00'D x 3.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.10'	**8.0" Round Culvert** L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 17.10' / 16.90' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.21 cfs @ 11.96 hrs HW=17.37' (Free Discharge)
└—**1=Culvert** (Barrel Controls 0.21 cfs @ 2.30 fps)

Summary for Pond P5: SW A outlet - PDMH 5

Inflow Area = 0.189 ac,100.00% Impervious, Inflow Depth = 9.52" for 50-yr event
Inflow = 2.60 cfs @ 11.98 hrs, Volume= 0.150 af
Outflow = 2.60 cfs @ 11.98 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Primary = 2.60 cfs @ 11.98 hrs, Volume= 0.150 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 17.60' @ 11.98 hrs Surf.Area= 13 sf Storage= 14 cf
Flood Elev= 40.50' Surf.Area= 13 sf Storage= 132 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min (753.9 - 753.7)

Volume	Invert	Avail.Storage	Storage Description
#1	16.50'	132 cf	**4.00'D x 10.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	16.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.50' / 16.40' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.51 cfs @ 11.98 hrs HW=17.57' (Free Discharge)
└—**1=Culvert** (Barrel Controls 2.51 cfs @ 3.72 fps)

Summary for Link PA-1: Point of Analysis #1

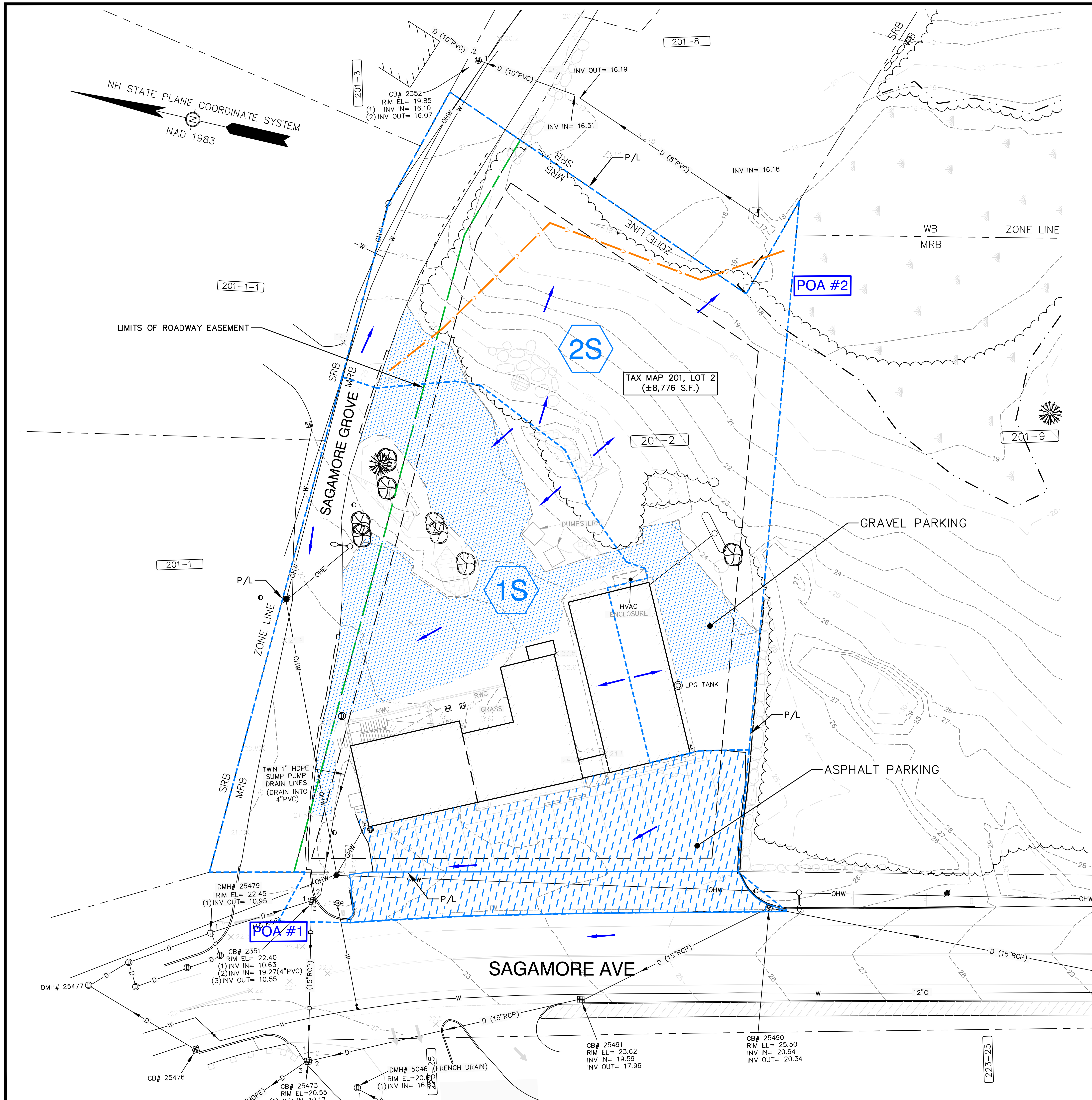
Inflow Area = 0.608 ac, 62.89% Impervious, Inflow Depth > 7.63" for 50-yr event
Inflow = 6.14 cfs @ 11.97 hrs, Volume= 0.386 af
Primary = 6.14 cfs @ 11.97 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis #2

Inflow Area =	0.446 ac,	12.51% Impervious,	Inflow Depth = 5.09"	for 50-yr event
Inflow =	3.22 cfs @	12.04 hrs, Volume=	0.189 af	
Primary =	3.22 cfs @	12.04 hrs, Volume=	0.189 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs



LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- EXISTING GROUND SLOPE DIRECTION
- SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

SOILS:

SERIES	DESRIPTION	HSG
140B	CHATFIELD-HOLLIS-CANTON	B
699	URBAN LAND	B

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

P5079

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR: DRAINAGE REPORT

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

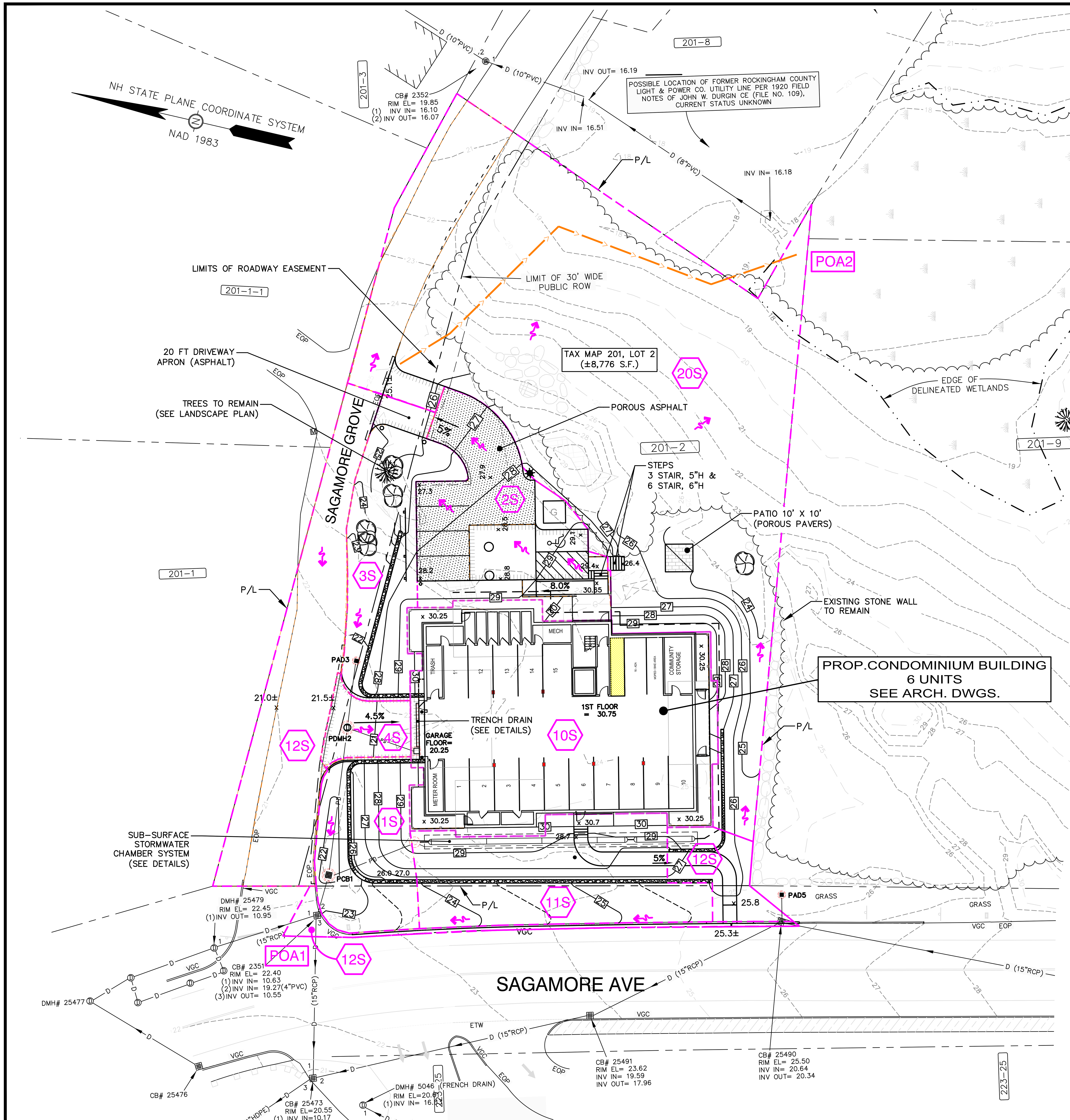
SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:
SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:
PRE-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:
DA-1



LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- EXISTING CONTOUR
- 60 PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- PROPOSED GROUND SLOPE DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

SOILS:

SERIES	DESRIPTION	HSG
140B	CHATFIELD–HOLLIS–CANTON	B
699	URBAN LAND	B

DRAINAGE STRUCTURES

CB1
RIM = 21.50
12" INV. IN = 16.50 (PDMH2)
12" INV. IN = 16.50 (OS1)
12" INV. OUT = 16.40

PDMH2
RIM = 21.30
8" INV. IN = 16.90 (TRENCH DRAIN)
12" INV. IN = 16.90 (PAD3)
12" INV. OUT = 16.80

PAD3
RIM = 21.00
12" INV. OUT = 17.00

TRENCH DRAIN
ELEV = 20.10
8" INV. OUT = 17.10

STORMWATER PRACTICES

STORMWATER GALLERY A
24" DIA PERF PIPE
1 ROW / 90 FT LENGTH
(20 FT ISOLATION CHAMBER)
PIPE INV = 24.50
ROCK BOTTOM = 24.00

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

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ISSUED FOR: DRAINAGE REPORT

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/22/21

DRAWN BY: CDB
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SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:
SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:
POST-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:
DA-2

STORMWATER MANAGEMENT
INSPECTION AND MAINTENANCE MANUAL
FOR

MULTI-FAMILY RESIDENTIAL DEVELOPMENT
960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02

Proper inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality. The following responsible parties shall be in charge of managing the stormwater facilities:

RESPONSIBLE PARTIES:

Owner: ________________ *Sagamore Corner, LLC* ________________________

Name *Company* *Phone*

Inspection and Maintenance : ____

Name *Phone*

NOTE: Inspection and maintenance responsibilities transfer to future property owners.

Included in this Inspection and Maintenance Manual are the following components:

- Drainage Features and Site BMP Functions and Maintenance Descriptions
- Regular Inspection and Maintenance Guidance for Permeable Pavements
- Checklists for Inspection of Permeable Pavements
- Stormwater System Operations and Maintenance Report Form
- Site Grading and Drainage Plan

POROUS PAVEMENTS

Function – Porous pavement (or Pavers) is designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. Proper maintenance of porous pavement is crucial for ensuring its longevity and functionality to infiltrate runoff.

Maintenance

- Reference attached "Regular Inspection and Maintenance Guidance for Permeable Pavements

- New porous pavement shall be inspected several times in the first month after construction and at least annually thereafter. Inspections shall be conducted after major storms to check for surface ponding that might indicate possible clogging.

- Inspect annually for pavement deterioration or spalling.

- Vacuum sweeping shall be performed once a year or as needed to maintain permeability. Power washing may be required prior to vacuum sweeping to dislodge trapped particles.

- Sand and abrasives shall not be used for winter maintenance, as they will clog the pores; de-icing materials shall be used instead.

- Never reseal or repave with impermeable materials. If the porous pavement is damaged, it can be repaired using conventional, non-porous patching mixes as long as the cumulative area repaired does not exceed 10 percent of the paved area.

CULVERTS AND DRAINAGE PIPES

Function – Culverts and drainage pipes convey stormwater away from buildings, walkways, and parking areas and to surface waters or closed drainage systems.

Maintenance

- Culverts and drainage pipes shall be inspected semi-annually, or more often as needed, for accumulation of debris and structural integrity. Leaves and other debris shall be removed from the inlet and outlet to insure the functionality of drainage structures. Debris shall be disposed of on site where it will not concentrate back at the drainage structures or at a solid waste disposal facility.

- Riprap Areas - Culvert outlets and inlets shall be inspected during annual maintenance and operations for erosion and scour. If scour or creek erosion is identified, the outlet owner shall take appropriate means to prevent further erosion. Increased lengths of riprap may require a NHDES Wetlands Permit modification.

SUB-SURFACE STORMWATER TREATMENT SYSTEM

Function – Sub-Surface treatment systems treat runoff prior to directing it to surface stormwater systems by filtering sediment and suspended solids, trapping them in the isolation rows and in the filter rock. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

The Sub-Surface Stormwater Treatment System shall be inspected and maintained at m a minimum of every 6 months for the first year and annually thereafter. Inspections shall comply with to the requirements of the manufacturer. At a minimum, the following inspection and maintenance requirements are included:

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT

A. Inspection ports (if present)
- a.1. Remove/open lid on nyloplast inline drain
- a.2. Remove and clean flexstorm filter if installed
- a.3. Using a flashlight and stadia rod, measure depth of sediment and record on maintenance log
- a.4. Lower a camera into isolator row for visual inspection of sediment levels (optional)
- a.5. If sediment is at, or above, 3" (80 mm) proceed to step 2. if not, proceed to step 3.

B. All isolator rows
- b.1. Remove cover from structure at upstream end of isolator row
- b.2. using a flashlight, inspect down the isolator row through outlet pipe
  - i) Mirrors on poles or cameras may be used to avoid a confined space entry
  - ii) Follow osha regulations for confined space entry if entering manhole
- b.3. If sediment is at, or above, 3" (80 mm) proceed to step 2. if not, proceed to step 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS

A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION AND ANNUALLY EVERY YEAR THEREAFTER. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

CATCH BASINS

Function – Catch basins collect stormwater, primarily from paved surfaces and roofs. Stormwater from paved areas often contains sediment and contaminants. Catch basin sumps serve to trap sediment, trace metals, nutrients and debris. Hooded catch basins trap hydrocarbons and floating debris.

Maintenance

- Remove leaves and debris from structure grates on an as-needed basis.
- Sumps shall be inspected and cleaned (as needed) on an annual basis to protect water quality and infiltration capacity. Catch basin debris shall be disposed of at a solid waste disposal facility.

LANDSCAPED AREAS - FERTILIZER MANAGEMENT

Function – Fertilizer management involves controlling the rate, timing and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns.

NOTE: SLOW OR CONTROLLED RELEASE FERTILIZE IS REQUIRED WITHIN THE 250 FOOT SHORELAND PROTECTION AREA. SEE PLANS FOR LOCATIONS.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply fertilizer to frozen ground.
- Clean up any fertilizer spills.
- Do not allow fertilizer to be broadcast into water bodies.
- When fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.

GENERAL CLEAN UP

Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet basket, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.

Once in operation, all paved areas of the site should be swept at least once annually, preferably at the end of winter prior to significant spring rains.

APPENDIX

A. PERMEABLE PAVEMENTS
   a. REGULAR INSPECTION AND MAINTENANCE GUIDANCE
   b. CHECKLIST FOR INSPECTION

B. STORMWATER SYSTEM OPERATIONS AND MAINTENANCE REPORT

C. GRADING AND DRAINAGE PLAN

Regular Inspection and Maintenance Guidance for Permeable Pavements

Regular inspection and maintenance is critical to the effective operation of permeable pavement. It is the responsibility of the owner to maintain the pavement in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, seasonal changes, and traffic conditions.

ACTIVITIES

Visual inspections are an integral part of system maintenance. This includes monitoring pavement to ensure water drainage, debris accumulation, and surface deterioration.

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
Adjacent vegetated areas show no signs of erosion and run-on to permeable pavement. **Remedy:** Repair or replace any damaged structural parts.	Whenever vacuuming adjacent permeable pavements
Adjacent non-permeable sections of pavement are clean of debris to prevent debris tracking. **Remedy:** Vacuuming adjacent pavement non-permeable pavement can be effective at minimizing run-on.	
Check for standing water remaining on the surface of the pavement after a precipitation event within 30 minutes. **Remedy:** Use of a power washer or compressed air blower at an angle of 30 degrees or less can be effective, particularly in combination with a vacuum or vacuum sweeper.	1-2 times per year, more frequently for high-use sites or sites with higher potential for run-on
Check for debris accumulation, particularly in the winter. **Remedy:** Loose debris such as leaves or trash can be removed using a power/leaf blower or gutter broom. Fall and spring cleanup should be accompanied by pavement vacuuming.	
Accumulation of sediment and organic debris on the pavement surface. **Remedy:** Regular use of a vacuum sweeper can remove sediment and organic debris. The sweeper may be fitted with water jets.	
PAVEMENT CONDITION	
Check for accumulation of snow or other stockpiles of materials such as sand/salt, mulch, soil, yard waste, etc. Stockpiling of these materials on permeable pavements can lead to premature clogging. **Remedy:** Remove stockpile if possible and check for clogging in storage area.	As Needed
Damage to pavement **Remedy:** Repairs should be repaired as they are identified	

CHECKLIST FOR INSPECTION OF PERMEABLE PAVEMENT		
Location: Inspector: Date: Time: Site Conditions: Date Since Last Rain Event:		
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**	**Comments/Corrective Action**
1. Salt / Deicing (Winter/Spring)		
Use salt only for ice management	**S U**	
Accumulated salt removed in spring	**S U**	
2. Debris Cleanup (1-2 times per year minimum, Spring/Fall)		
Remove sediment and organic debris using vacuum street sweeper	**S U**	
Clean catch basins (if available)	**S U**	
3. Controlling Run-On		
Adjacent vegetated areas show no signs of erosion and run-on to permeable pavement	**S U**	
4. Outlet / Catch Basin Inspection (if available) (1-2 times per year, after large storm events)		
No evidence of blockage	**S U**	
Good condition, no need for cleaning/repair	**S U**	
5. Poorly Drained Pavement		
Recently cleaned and vacuumed	**S U**	
6. Pavement Condition		
No evidence of deterioration	**S U**	
7. Signage / Stockpiling (As Needed)		
No evidence of damage	**S U**	
Proper signage posted indicating usage for traffic load	**S U**	
No stockpiling of materials and other unauthorized uses	**S U**	
Corrective Action Needed		**Due Date**
1.		
2.		
3.		
Inspector's Signature		Date

STORM WATER SYSTEM OPERATION AND MAINTENANCE REPORT

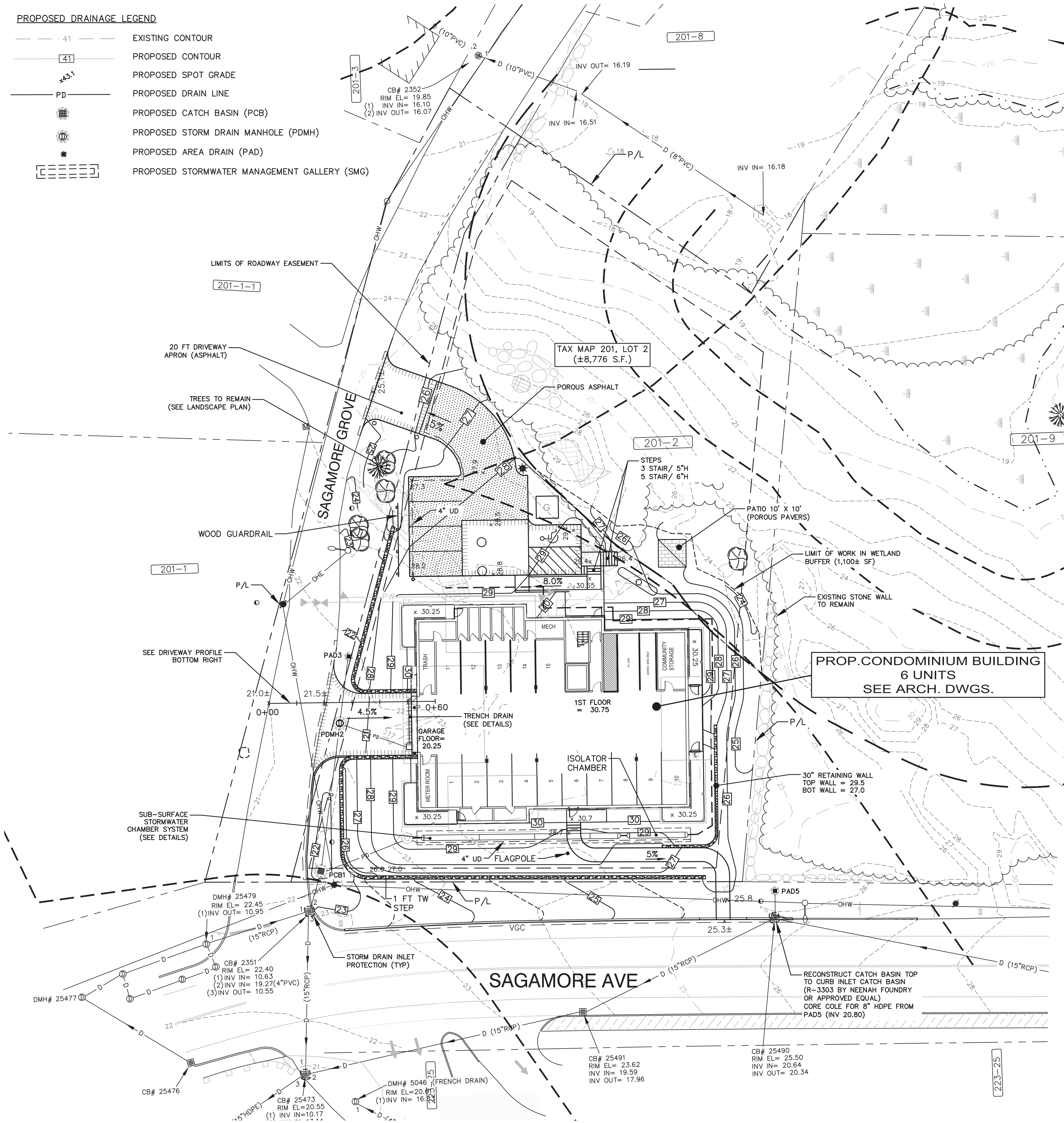
General Information	
Project Name	
Owner	
Inspector's Name(s)	
Inspector's Contact Information	
Date of Inspection	**Start Time:** **End Time:**
Type of Inspection: ☐ Annual Report ☐ Post-storm event ☐ Due to a discharge of significant amounts of sediment	
Notes:	

General Site Questions and Discharges of Significant Amounts of Sediment			
Subject		**Status**	**Notes**
A discharge of significant amounts of sediment may be indicated by (but is not limited to) observations of the following. Note whether any are observed during this inspection:			*Notes/ Action taken:*
1	Do the current site conditions reflect the attached site plan?	❑Yes ❑No	
2	Is the site permanently stabilized, temporary erosion and sediment controls are removed, and stormwater discharges from construction activity are eliminated?	❑Yes ❑No	
3	Is there evidence of the discharge of significant amounts of sediment to surface waters, or conveyance systems leading to surface waters?	❑Yes ❑No	
4	Is there evidence of concentrated flows of stormwater such as rills or channels that cause erosion when such flows are not filtered, settled or otherwise treated to remove sediment?	❑Yes ❑No	
5	Is there evidence of deposits of sediment from the site on any adjacent property or stormwater system.	❑Yes ❑No	
6	Is there evidence of discharges from the site to streams running through or along the site where visual observations indicate significant amounts of sediment present in them.	❑Yes ❑No	
7	Is there evidence of invasive species within the stormwater treatment areas?	❑Yes ❑No	

Permit Coverage and Plans				
#	**BMP/Facility**	**Inspected**	**Corrective Action Needed and Notes**	**Date Corrected**
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		☐Yes ☐No		
		☐Yes ☐No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		

PROPOSED DRAINAGE LEGEND

41	EXISTING CONTOUR
[41]	PROPOSED CONTOUR
x43.1	PROPOSED SPOT GRADE
PD	PROPOSED DRAIN LINE
	PROPOSED CATCH BASIN (PCB)
	PROPOSED STORM DRAIN MANHOLE (PDMH)
	PROPOSED AREA DRAIN (PAD)
	PROPOSED STORMWATER MANAGEMENT GALLERY (SMG)



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRADING AND DRAINAGE NOTES

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
2. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL READ AND FAMILIARIZE THEMSELVES WITH THE PROJECT GEOTECHNICAL REPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.
4. DEWATERING ACTIVITIES SHALL BE DONE IN ACCORDANCE WITH EPA AND NHDES REGULATIONS AND GUIDELINES.
5. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES AREA SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS DEGREE OF INSULATION AGAINST FREEZING.
6. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
7. ALL STORM DRAIN PIPE SHALL BE ADS N-12 OR EQUAL AND APPROVED BY THE ENGINEER.
8. ALL CATCH BASIN, GATE VALVE COVERS, AND MANHOLE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISHED GRADE. ANY RIM OR VALVE COVER ABOVE SURROUNDING FINISHED GRADE WILL NOT BE ACCEPTED.
9. ALL CATCH BASINS SHALL BE PRECAST, H-20 LOADING AND BE EQUIPPED WITH 4-FOOT DEEP MIN SEDIMENTATION SUMPS AND GREASE HOODS. (SEE DETAILS)
10. ALL SPOT GRADES ARE AT THE FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
11. UNLESS OTHERWISE SPECIFIED, RETAINING WALL AND BUILDING PERIMETER DRAINS SHALL BE DIRECTED TO THE NEAREST DRAINAGE STRUCTURE. IF DEEMED APPROPRIATE, CONTRACTOR SHALL PROVIDE ADDITIONAL UNDERDRAINS AT THE DIRECTION OF THE ENGINEER.
12. MODULAR BLOCK RETAINING WALL FINISH TO BE SELECTED BY OWNER.
13. ALL INTERNAL FLOOR DRAINS SHALL BE EVAPORATIVE AND SHALL NOT TIE INTO EXTERNAL STORM DRAIN SYSTEM.
14. CONTRACTOR SHALL PROTECT ALL RAINGARDENS FROM CONSTRUCTION STORMWATER RUNOFF. TEMPORARY SEDIMENT BASINS SHALL BE CONSTRUCTED DURING CONSTRUCTION. STORMWATER SHALL NOT BE DIRECTED TO THE RAINGARDENS UNTIL THE WATERSHED ARE HAS BEEN STABILIZED.

DRAINAGE STRUCTURES

CB1
RIM = 21.50
12" INV. IN = 16.50 (PDMH2)
12" INV. IN = 16.50 (OS1)
12" INV. OUT = 16.40

PDMH2
RIM = 21.30
8" INV. IN = 16.90 (TRENCH DRAIN)
12" INV. IN = 16.90 (PAD3)
12" INV. OUT = 16.80

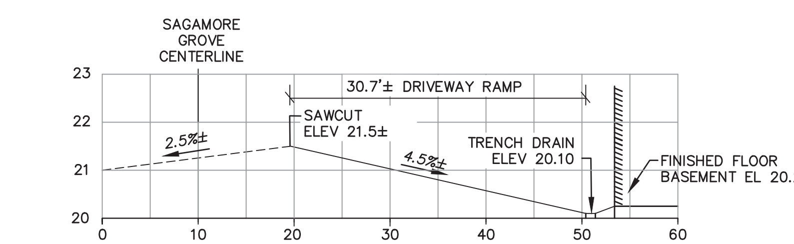
PAD3
RIM = 21.00
12" INV. OUT = 17.00

TRENCH DRAIN
ELEV = 20.10
8" INV. OUT = 17.10

PAD5
RIM = 25.30
8" INV. OUT = 21.3

STORMWATER PRACTICES

STORMWATER GALLERY A
24" DIA PERF PIPE
1 ROW / 90 FT LENGTH
(20 FT ISOLATION CHAMBER)
PIPE INV = 24.50
ROCK BOTTOM = 24.00



DRIVEWAY PROFILE
SCALE: 1" = 10' HORIZONTAL
1" = 2' VERTICAL (5X)

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:
GRADING AND DRAINAGE PLAN

SHEET NUMBER:
C-3

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
207 363 4532
mcuomosoil@gmail.com

Eric Weinrieb, P.E.
Altus Engineering, Inc.
133 Court Street
Portsmouth, NH 03801-4413

3 December 2019

Dear Mr. Weinrieb;

This letter is in reference to three vacant parcels on Wentworth House Road in Portsmouth, NH, identified as tax map 201, lots 9, 10, and 11. On 14 November 2019 I conducted a wetland delineation to assist you in planning the development of this property.

The City of Portsmouth defines wetlands as follows:
"An area that is inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include, but are not limited to, swamps, marshes, bogs, vernal pools, and similar areas. The following are specifically included in the definition of wetland:

Created wetland: An area that has been transformed from upland to wetland where the upland was not created by human activity such as filling or water diversion.

Inland wetland: A wetland that is not subject to periodic inundation by tidal waters.

Tidal wetland: A wetland whose vegetation, hydrology or *soils are influenced by periodic inundation of tidal waters."*

Wetland characteristics were identified using the technical criteria in the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region*. The soil component was classified using the *Field Indicators of Hydric Soils in the United States* and the *Field Indicators for Identifying Hydric Soils in New England*. The wetland status of plants were determined using the *National List of Plant Species that Occur in Wetlands: Northeast (Region 1)*. This is the standard used by State and Federal regulators.

A single freshwater wetland was identified along the common boundary of lots 9 and 10. The wetland-upland boundary was marked with 24 sequentially numbered blue flags. This isolated freshwater 'inland' wetland ends along the rear property line of parcel 201/8.

Please contact me if you have questions regarding this work.

Sincerely,

Michael Cuomo

Michael Cuomo
NH Wetland Scientist #004
NH Soil Scientist #006

STATE OF NEW HAMPSHIRE
MICHAEL CUOMO
No. 006
CERTIFIED SOIL SCIENTIST

STATE OF NEW HAMPSHIRE
MICHAEL CUOMO
No. 004
CERTIFIED WETLAND SCIENTIST

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

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WETLAND AND BUFFER EVALUATION
using the
Highway Methodology Workbook Supplement

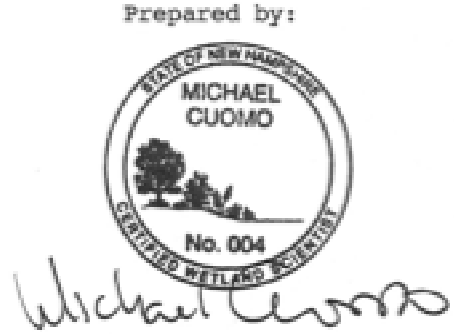
960 Sagamore Road
and
Wentworth Road

Tax map 201, Lot 9

Prepared for:

Altus Engineering, Inc.
133 Court Street
Portsmouth, NH

Prepared by:



27 December 2016

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

PURPOSE

This report uses *The Highway Methodology Workbook Supplement* (hereafter referred to as the 'Highway Method') to assess the wetlands and buffers at this site. This information is required by City of Portsmouth zoning as part of the Conditional Use Permit application for impact within the wetland buffer. No direct wetland impact is proposed.

SITE

The 'Sagamore Studios' project site is located at the intersection of Wentworth and Sagamore Roads in Portsmouth, NH. This wooded 1.44 acre lot is vacant. A portion of the existing conditions plan is attached at the rear of this report for reference.

WETLAND in the LANDSCAPE

One wetland exists on this site and continues off site to the east. The entire wetland, including the portion off-site, is estimated to be 1/2 acre (about 20,000 square feet) in size. This wetland is regulated by the City because it is greater than 10,000 square feet. It requires a 100 foot buffer, per local zoning.

The wetland receives water from natural subsurface and surface flows, including rain water and snow melt. It is supplemented by flow from a culvert under Wentworth Road. The wetland is not associated with any natural surface water body. Water ponds to shallow depth and for medium duration in this wetland. The wetland does not have the physical characteristics associated with a vernal pool.

The wetland probably extended further to the north and east but was filled at some time in the past when the area was developed. This is inferred by the straight wetland-upland boundaries along these margins of the wetland. The wetland may have flowed north in a small channel to Sagamore Creek prior to development of the Sagamore Grove neighborhood. This is inferred by the presence of a 8" diameter culvert pipe which now flows from the wetland, beneath map 201, lots 8 and 3. Two catch basins on these abutting lots identify the apparent route of this pipe.

The wetland has been modified by human activity as described above. The long lasting evidence of this disturbance is reflected in the significant population of non-native invasive plant species which are displacing native plants. Native wildlife is adapted to native plants, so invasive plants generally have reduced wildlife habitat value and disrupt native ecosystems. Invasive shrubs are also found in the uplands on this site. Invasive plants are noted below with an asterisk (*).

VEGETATION AND SOIL

Common plant species in the wetland are listed below by strata.

Trees:
- American elm *(Ulmus americana)*
- red maple *(Acer rubrum)*
- American ash *(Fraxinus americana)*

Shrubs:
- glossy buckthorn *(Rhamnus frangula)**
- common winterberry holly *(Ilex verticillata)*
- American cranberrybush *(Viburnum trilobum)*
- northern arrow-wood (*Viburnum recognitum*)
- multiflora rose *(Rosa multiflora)**

Herbs:
- broad-leaf cattail (*Typha latifolia*)
- purple loose-strife (*Lythrum salicaria*)*
- sensitive fern (*Onoclea sensibilis*)
- fireweed *(Epilobium sp.)*
- buttercup *(Ranunculus sp.)*
- soft rush *(Juncus effusus)*

* Invasive plants

The soils in the wetland are poorly drained fine textured sediments of glacio-marine origin. This is the Scitico soil series. The soil is typically saturated to the surface for less than 9 months of the average year. The soils have increasing clay content with depth and absorb water slowly. Though deep to bedrock, these soils have shallow effective rooting depth.

Using the *Classification of Wetlands and Deepwater Habitats of the United States*, developed by Cowardin and others, this wetland is labeled 'PEM1' with a 'PFO1' fringe. This indicates the core of the wetland is a freshwater marsh with persistent emergent plants. The edge is a forested freshwater swamp dominated by deciduous trees.

Additional invasive plants noted in the uplands are bittersweet (*Celastrus scandens*), honeysuckle (*Lonicera sp.*), barberry (*Berberis sp.*), Japanese knotweed (*Polygonum cuspidatum*), and burning bush (*Euonymus atropurpureus*).

The soils in the upland are dominated by shallow and moderately deep to bedrock medium textured glacial till. This would be the Chatfield and Hollis soil series. There are a number of bedrock outcroppings at the surface.

HIGHWAY METHOD
The wetland and buffer were evaluated using the Highway Method on 8 December 2016 by Michael Cuomo, NH Wetland Scientist #4. The results are summarized on the worksheet attached at the rear of this report and described in detail below.

The Highway Method was developed to rapidly evaluate and compare a series of wetlands, primarily for the purpose of selecting the highway corridor with the least environmental impact from among alternative routes. For the purpose of this work, it provides an evaluation framework for drawing attention to the most important functions the wetland serves. The Highway Method does not produce a numerical score. It provides guidance and a framework for the professional judgment of the evaluator, who selects which functions occur and determines the Principal Function(s). The Highway Method evaluates the entire wetland and buffer, including those areas which are off-site and can not be controlled by the applicant.

SUMMARY OF HIGHWAY METHOD RESULTS

The Principal Function served by the wetland is Nutrient Removal. Nutrient Removal is defined in the Highway Method as "...the effectiveness of the wetland as a trap for nutrients in the runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels...to prevent ill effects of nutrients entering aquifers or surface waters ..." This wetland performs Nutrient Removal relatively well because of it's ability to trap sediments, the fine textured soil, dense emergent vegetation, and it's cyclical wetting and drying.

The second most important wetland function is Sediment/Toxicant Retention, which "...reduces or prevents degradation of water quality." This wetland performs Sediment/Toxicant Retention relatively well because of it's ability to trap sediments, dense emergent vegetation, and the constricted outlet.

The third most important wetland function is Wildlife Habitat "...the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge." In this case the function is related to the density of wetland vegetation and the wetland as a refuge for small animals in an otherwise developed area along Sagamore Creek.

The wetland performs the Floodflow Alteration function to a limited degree. "This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of flood waters." Positive indicators of this function are dense vegetation, constricted outlet, and topography.

Production Export is "...the effectiveness of the wetland to produce food or usable products for humans or other living organisms." Wetlands closely associated with waterbodies perform this function best. There is no waterbody associated with this wetland so the function is performed to a limited degree.

Fish and Shellfish Habitat is "...the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles." The wetland does not support this function because it lacks aquatic habitat.

Sediment/Shoreline Stabilization is "...the effectiveness of a wetland to stabilize streambanks and shorelines against erosion." The wetland is not associated with a waterbody so does not perform this function.

Visual Quality/Aesthetics "...considers the visual and aesthetic quality or usefulness of a wetland." This wetland has no exceptional visual features and is not easily accessible or visible from public places, so the function is performed to a very limited degree.

Recreation "...considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities." Because of the small size, lack of public access, lack of a waterbody, and surrounding development, this wetland does not provide recreational opportunities.

Educational/Scientific Value is "...the suitability of the wetland as a site for an outdoor classroom or as a location for scientific study or research." The disturbed nature, lack of public access, and lack of wetland diversity mean this wetland performs this function to a very limited degree.

Uniqueness/Heritage "...may include archeological sites, critical habitat for endangered species, overall health and appearance, it’s role in the ecosystem of the area...” The disturbed nature of the wetland and the common occurrence of this wetland type in the area means the wetland does not perform this function. Inquiry to NH Natural Heritage Bureau revealed no endangered species habitat.

Endangered Species Habitat “...considers the suitability of the wetland to support threatened or endangered species.” The disturbed nature of the wetland and the common occurrence of this wetland type in the area means the wetland does not perform this function. Inquiry to NH Natural Heritage Bureau revealed no endangered species habitat.

Groundwater Recharge/Discharge is “...the potential for the wetland to serve as a groundwater recharge and/or discharge area...the fundamental interaction between wetlands and aquifers....” Very slow soil permeability and soil transmissivity indicate the wetland does not perform this function.

CONCLUSIONS

All wetlands have value, even those such as this one that are degraded. There is widespread agreement among professionals that degraded wetlands in urban environments can have higher importance than may be reflected in wetland evaluation methods because they offer refuge for small wildlife, provide screening and green space, and are remnant wetlands in urban environments where many wetlands have historically been filled. This degraded wetland also has increased value due to it’s physical proximity to Sagamore Creek.

Using the Highway Method as a framework for the functional assessment of this wetland, Nutrient Removal is the principle wetland function.

The wetland performs three other functions: Sediment/Toxicant Retention, Wildlife Habitat, and Floodflow Alteration.

The wetland does not perform, or performs to a very limited degree the remaining functions the Highway Method considers: Groundwater Recharge/Discharge, Sediment/Shoreline Stabilization, Production Export, Fish & Shellfish Habitat, Endangered Species Habitat, Visual Quality/Aesthetics, Education/Scientific Value, Recreation, and Uniqueness/Heritage.

The wetland has been partially degraded by historical filling of part of the wetland off the subject property. What may be the historical outflow has been culverted and now runs under the yards of abutting properties and under Sagamore Grove in a system of pipes and receives untreated stormwater through catch-basins. The wetland has a number of undesirable invasive plants, a sign of past disturbance, human induced nutrient enrichment, and sediment deposition. Surrounding land uses, medium density residential and commercial development, partially degrade the 100 foot buffer around the wetlands. Much of the off-site wetland buffer contains structures, parking pavement and lawns. The on-site buffer contains invasive shrubs as well as native plants.

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

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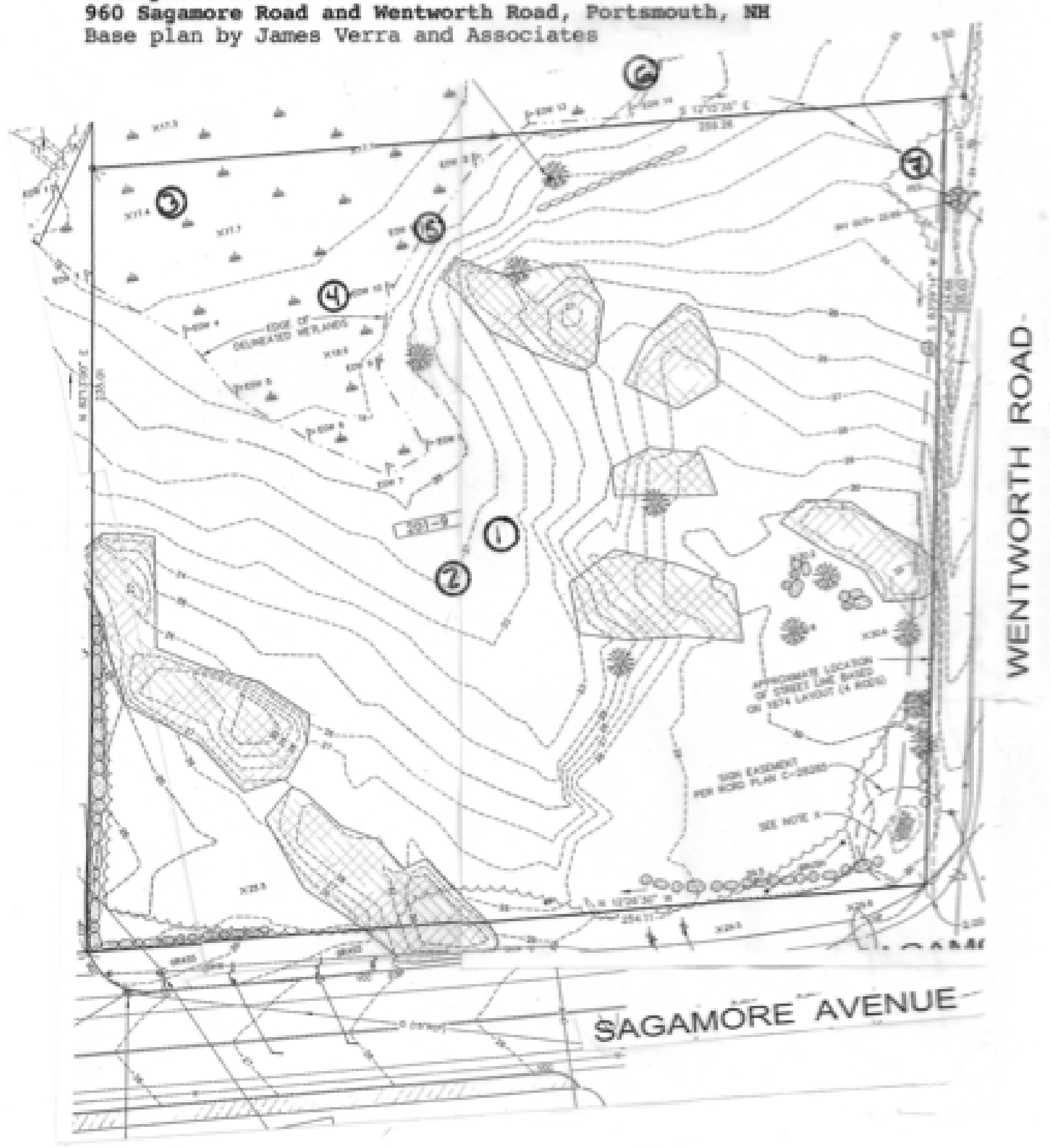
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Portion of PRELIMINARY EXISTING CONDITIONS PLAN
with photo locations added
960 Sagamore Road and Wentworth Road, Portsmouth, NH
Base plan by James Verra and Associates



Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 1: Bittersweet on buckthorn

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 2: Multiflora rose and bittersweet

Sagamore Studios photo 3: Purple loose-strife

Sagamore Studios photo 4: Forested wetland edge

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 5: Buckthorn along wetland-upland boundary

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 6: View of wetland

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 7: Upland near culvert discharge alongside Wentworth Road

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Michael Cuomo
6 York Pond Road
York, ME 03909

From: NH Natural Heritage Bureau

Date: 12/20/2016 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 12/13/2016

NHB File ID: NHB16-3737 **Applicant:** Eric Wiereib

Location: Portsmouth
Tax Maps: 201/9

Project Description: Commercial bldg proposed for vacant lot. No wetland impact. Wetland buffer (City requirement) impact

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 12/13/2016, and cannot be used for any other project.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

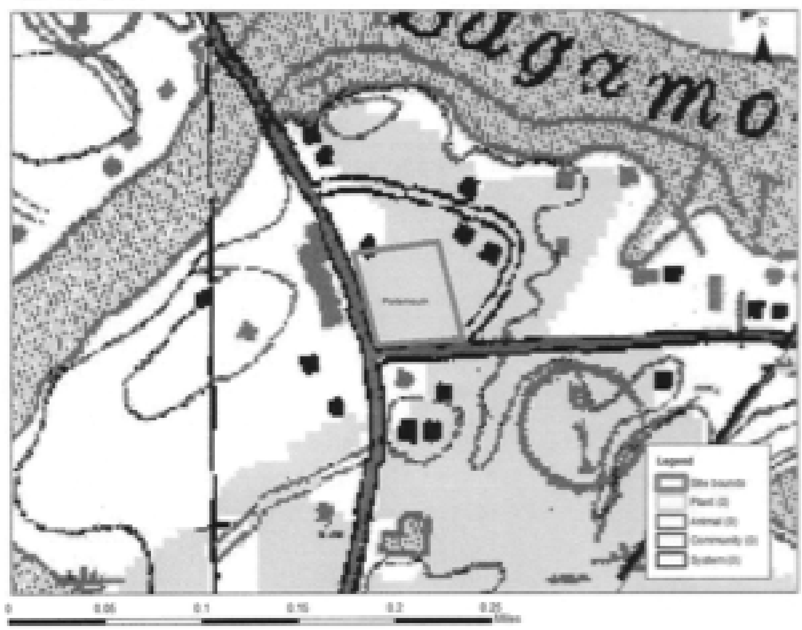
DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

MAP OF PROJECT BOUNDARIES FOR: **NHB16-3737**

NHB16-3737



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WETLAND FUNCTION-VALUE ASSESSMENT

WETLAND I.D. 1 of 1

ROJECT NAME: SAGAMORE STUDIOS

ROJECT LOCATION: WENTWORTH RD. + SAGAMORE AV. PREPARED BY: M CUOMO DATE: 8 DEC 16 No snow

OTAL APPROXIMATE AREA OF WETLAND: 1/2 ACRE IS WETLAND PART OF A WILDLIFE CORRIDOR? N OR A "HABITAT ISLAND"? Y

DJACENT LAND USE? RESIDENTIAL/COMMERCIAL HUMAN MADE? N DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT 50 FT

OMINANT WETLAND SYSTEMS PRESENT: PEM1 AND PFO1 CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? NO

THE WETLAND A SEPARATE HYDRAULIC SYSTEM? Y IF NOT, WHERE DOES THE WETLAND LIE IN THE DRAINAGE BASIN? ISOLATED

OF TRIBUTARIES INTO THE WETLAND? 0 AQUATIC DIVERSITY/ABUNDANCE NONE VEGETATIVE DIVERSITY/ABUNDANCE MODERATE

ILDLIFE DIVERSITY/ABUNDANCE LOW ANTICIPATED IMPACTS BUFFER ONLY WETLAND AREA IMPACTED: 0

TREES	SHRUBS	HERBS	WILDLIFE	COMMENTS
ULMUS AMERICANA	RHAMNUS FRANGULA	ONOCLEA SENSIBILIS		
ACER RUBRUM	ILEX VERTICILLATA	LYTHRUM SALICARIA		
FRAXINUS AMERICANA	VIBURNUM TRILOBUM	TYPHA LATIFOLIA		
	VIBURNUM RECOGNITUM	EPILOBIUM SP.		
		RANUNCULUS SP.		

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

FUNCTION	Occurrence Y	Occurrence N	Rationale Numbers	Principal Valuable Function(s)	Comments
Groundwater Recharge/Discharge		X	NO 6 YES 10		SEE REPORT
Floodflow Alteration	YES		NO — YES 2, 8, 15, 18		
Sediment/Shoreline Stabilization		X			
Sediment/Toxicant Retention	YES		NO — YES 4, 5, 7		
Nutrient Removal	YES		NO — YES 3, 4, 8, 9, 11, 14	X	
Production Export (Nutrient)		X	NO — YES 2, 7		
Fish & Shellfish Habitat		X	NO 1, 2 YES —		
Wildlife Habitat	YES		NO — YES 11, 13, 21		
Endangered Species Habitat		X	NO — YES —		
Visual Quality/Aesthetics		X	NO — YES —		
Educational Scientific Value		X	NO — YES —		
Recreation ((Non)Consumptive)		X	NO — YES 5, 12		
Uniqueness/Heritage		X	NO 1, 2, 5 YES —		

To: Michael Cuomo
6 York Pond Road
York, ME 03909

From: NH Natural Heritage Bureau

Date: 12/20/2016 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 12/13/2016

NHB File ID: NHB16-3737 **Applicant:** Eric Wiereib

Location: Portsmouth
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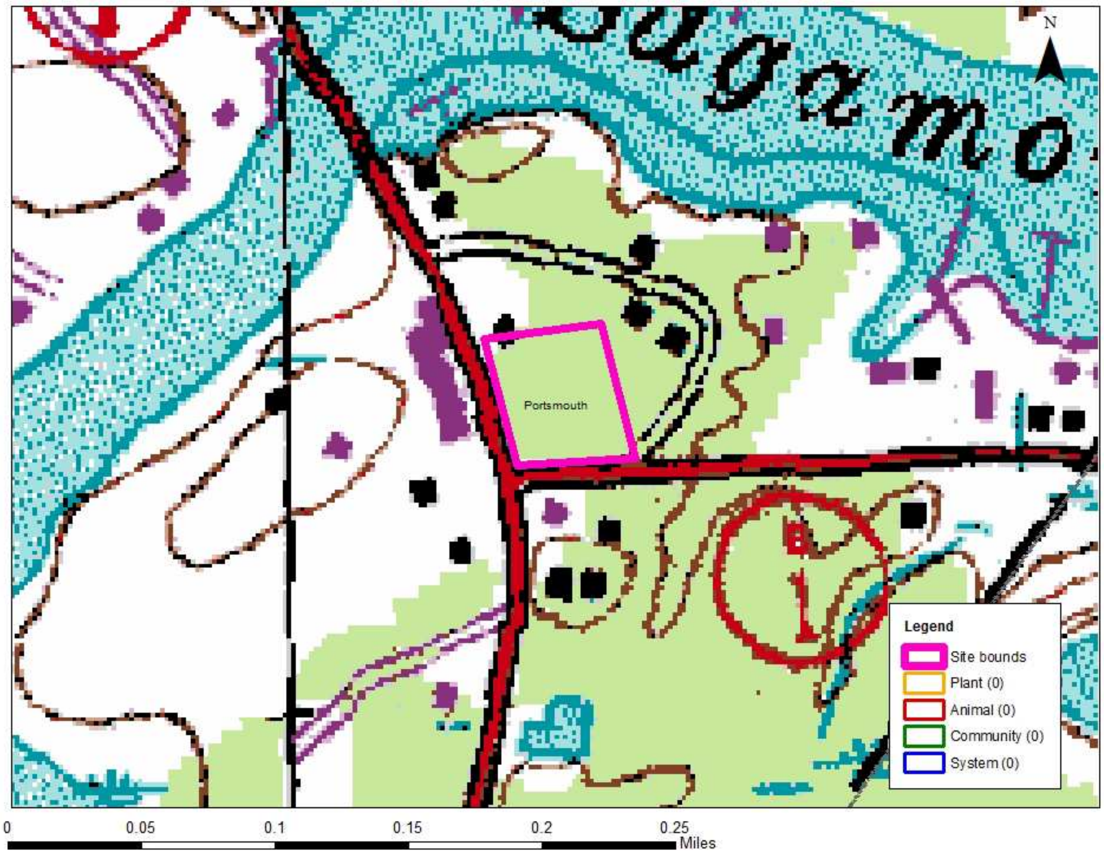
Project Description: Commercial bldg proposed for vacant lot. No wetland impact. Wetland buffer (City requirement) impact

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 12/13/2016, and cannot be used for any other project.

MAP OF PROJECT BOUNDARIES FOR: **NHB16-3737**

NHB16-3737



MEMORANDUM

TO: Katz Development Corporation
c/o Mr. Eric S. Katz
273 Corporate Drive, Suite 150
Portsmouth, NH 03801

FROM: Mr. Jeffrey S. Dirk, P.E., PTOE, FITE JSD
Managing Partner
Vanasse & Associates, Inc.
35 New England Business Center Drive
Suite 140
Andover, MA 01810-1066
(978) 269-6830
jdirk@rdva.com
Professional Engineer in CT, MA, ME, NH, RI and VA

DATE: May 25, 2021

RE: 8992

SUBJECT: Traffic Impact Study
Proposed Multifamily Residential Development – 960 Sagamore Avenue (NH Route 1A)
Portsmouth, New Hampshire

Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact Study (TIS) in order to determine the potential impacts on the transportation infrastructure associated with the proposed age-targeted multifamily residential development to be located at 960 Sagamore Avenue (NH Route 1A) in Portsmouth, New Hampshire (hereafter referred to as the "Project"). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project along Sagamore Grove and at the following specific intersections: NH Route 1A at Sagamore Grove; Sagamore Grove at the west Project site driveway; and Sagamore Grove at the east Project site driveway.

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE),[1] the Project is expected to generate approximately 20 vehicle trips on an average weekday (two-way volume over the operational day of the Project), with 4 vehicle trips expected during the weekday morning peak hour and 6 vehicle trips expected during the weekday evening peak hour;

2. In comparison to the existing uses that occupy the site, the Project is expected to generate approximately 188 *fewer* vehicle trips on an average weekday, with 10 *fewer* vehicle trips expected during the weekday morning peak hour, and 12 *fewer* vehicle trips expected during the weekday evening peak hour;

3. Given the significant reduction in traffic that is predicted as a result of the Project, the Project will be less impactful on the transportation infrastructure when compared to the existing uses that occupy the Project site;

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[1] *Trip Generation,* 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.

4. A review of motorist delays and vehicle queuing at the NH Route 1A/Sagamore Grove intersection indicates that the Project will not result in a significant increase in motorist delays or vehicle queuing, with Project-related impacts defined as an increase in average motorist delay of less than 1.0 seconds with no predicted increase in vehicle queuing; and

5. Lines of sight at the Project site driveway intersections were found to meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations defined herein.

The following details our assessment of the Project.

PROJECT DESCRIPTION

The Project will entail the construction of an 8-unit multifamily residential development to be located at 960 Sagamore Avenue (NH Route 1A) in Portsmouth, New Hampshire. The Project site encompasses approximately 0.98± acres of land that is bounded by Sagamore Grove to the north; areas of open and wooded space to the south and east; and NH Route 1A to the west. The Project site currently contains a mixed-use building that includes a residential unit, 1,420± square feet (sf) of retail space and 1,230 sf of restaurant space. The existing building and associated appurtenances will be removed to accommodate the Project. Access to the Project site will be provided by way of two new driveways that will intersect the south side of Sagamore Grove approximately 75 feet and 175 feet east of NH Route 1A, respectively. The existing driveway that currently serves the Project site along NH Route 1A will be closed in conjunction with the Project resulting in an overall improvement in safety through the elimination of a conflict point for vehicles, pedestrians and bicyclists along NH Route 1A.

Imagery ©2021 Google

On-site parking will be provided for up to 25 vehicles, or a parking ratio of 3.12 spaces per unit, consisting of 7 exterior parking spaces and 18 parking spaces to be located in a garage beneath the residential building. This parking ratio (3.12 parking spaces per unit) exceeds the requirements of Section 10.1112.30, *Off-Street Parking Requirements*, of the City of Portsmouth Zoning Ordinance.[2]

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in May 2021. This inventory included the collection of traffic volume data and vehicle travel speed measurements, as well as a review of existing pedestrian and bicycle accommodations, public transportation services, and motor vehicle crash data. The following summarizes existing conditions within the study area.

Roadways

NH Route 1A

NH Route 1A is a two-lane minor arterial roadway (Tier 5, Class IV) under the jurisdiction of the City of Portsmouth that traverses the study area in a general north-south alignment. In the vicinity of the Project site, NH Route 1A provides two 11± foot wide travel lanes separated by a double-yellow centerline with 6± foot wide marked shoulders provided. The posted speed limit along NH Route 1A within the study area is 30 miles per hour (mph); prevailing travel speeds measured in May 2021 were found to be 35 mph.[3] Illumination is provided by way of streetlights mounted on wood poles. Land use along NH Route 1A within the study area consists of the Project site, commercial properties, areas of open and wooded space, and the Sagamore Creek.

Sagamore Grove

Sagamore Grove is a two-lane local road (Tier 5, Class V) under the jurisdiction of the City of Portsmouth that traverses the study area in a general east-west direction for a distance of approximately 475 feet east of NH Route 1A. In the vicinity of the Project site, Sagamore Grove provides a 21± foot wide traveled-way with no marked centerline or shoulders provided. A posted speed limit is not provided along Sagamore Grove and, as such, the statutory speed limit is 30 mph.[4] Illumination is provided by way of streetlights mounted on wood poles. Land use along Sagamore Grove within the study area consists of the Project site, residential properties and areas of open and wooded space.

Intersection

NH Route 1A at Sagamore Grove

Sagamore Grove intersects NH Route 1A from the east to form a three-way intersection under STOP-sign control. The NH Route 1A approaches consist of a single 11± foot wide general-purpose travel lane with 6± foot wide marked shoulders. The Sagamore Grove approach provides a single general-purpose lane that

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[2] The Zoning Ordinance requires a minimum of 0.5 spaces per dwelling units of less than 500 sf; 1.0 spaces per dwelling units between 500 to 750 sf; and 1.3 spaces for dwelling units greater than 750 sf.

[3] The prevailing travel speed is also known as the 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below during the observation period.

[4] The statutory speed limit for any business or urban residence district is 30 mph as defined in the 2019 New Hampshire Revised Statutes Section 265:60 *Basic Rule and Maximum Limits*.

is under STOP-sign control with a marked STOP-line provided. A sidewalk is provided along the west side of NH Route 1A and illumination is provided by way of streetlights mounted on wood poles. Land use in the vicinity of the intersection consists of residential properties, Seacoast Mental Health Center, Freedom Boat Club and areas of open and wooded space.

Existing Traffic Volumes

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in May 2021. The ATR counts were conducted on NH Route 1A in the vicinity of the Project site on May 12th through May 13th, 2021 (Wednesday through Thursday, inclusive) in order to record weekday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period manual TMCs performed at the intersection of NH Route 1A at Sagamore Grove on May 12, 2021 (Wednesday). These time periods were selected for analysis purposes as they are representative of the peak traffic-volume hours for both the Project and the adjacent roadway network.

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, 2019 peak-hour and average daily traffic count data were reviewed for NHDOT count station No. 02345001, which is located on Route 1, north of North Road in North Hampton. Based on a review of this data, it was determined that traffic volumes for the month of May are approximately 7.2 percent below peak-month conditions and, therefore, the raw traffic count data that forms the basis of this assessment was adjusted upward accordingly (by 7.2 percent) to represent peak-month conditions in accordance with NHDOT standards.

In order to account for the impact on traffic volumes and trip patterns resulting from the COVID-19 pandemic, traffic-volume data collected at NH DOT Continuous Count Station No. 02345001 in May 2021 was compared to May 2019 traffic volumes that were collected at the same location. The 2019 traffic volumes were expanded to 2021 by applying a background traffic growth rate of 1.0 percent per year in order to allow for a comparison of the data. Based on this comparison, the May 2021 traffic volumes that were collected as a part of this assessment were adjusted upward by an additional 15.1 percent.

Based on a review of the adjusted (as defined above) traffic count data, NH Route 1A in the vicinity of the Project site accommodates approximately 9,790 vehicles per day on an average weekday under peak-month conditions (two-way, 24-hour volume), with approximately 689 vehicles per hour (vph) during the weekday morning peak hour (8:00 to 9:00 AM) and 852 vph during the weekday evening peak hour (4:30 to 5:30 PM).

Pedestrian and Bicycle Facilities

Sidewalks are currently provided along the west side of NH Route 1A. Formal bicycle facilities were not identified within the immediate study area; however, both NH Route 1A and Sagamore Grove provide sufficient width to accommodate bicycle travel in a shared traveled-way configuration (i.e., bicyclists and motor vehicles sharing the traveled-way).[5] Signs indicating that bicycles may use the full travel lane are provided along Route 1A.

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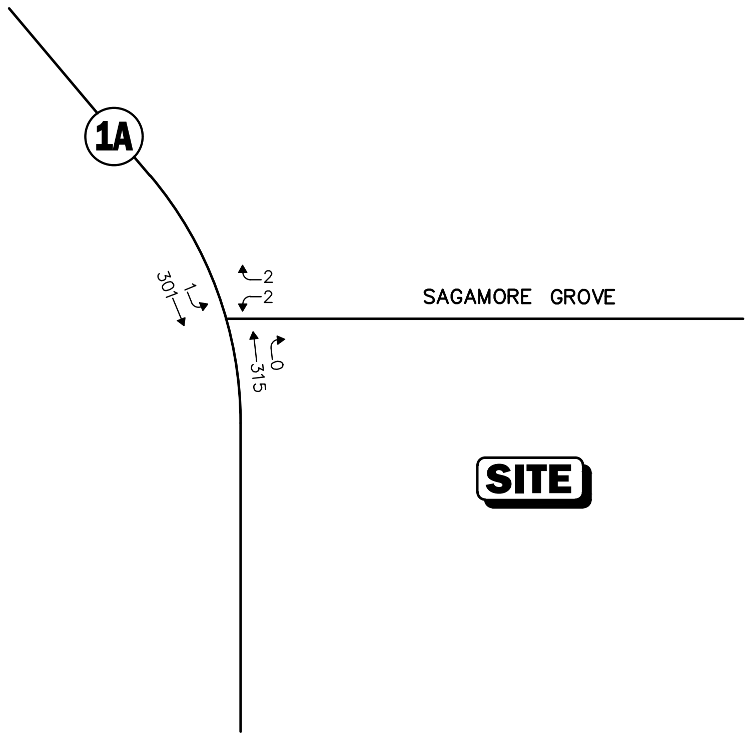
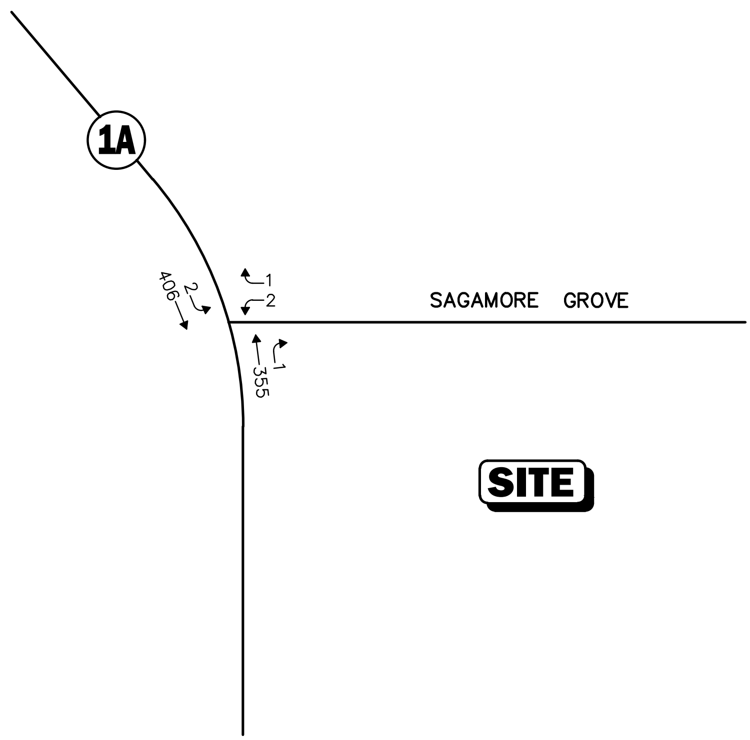
[5] A minimum combined travel lane and paved shoulder width of 14-feet is recommended to support bicycle travel in a shared traveled-way condition.

WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



Not To Scale

Figure 1

Vanasse & Associates inc

2021 Existing Peak-Month Peak-Hour Traffic Volumes

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Public Transportation Services

Regularly scheduled fixed-route bus service is provided within the City of Portsmouth by way of the Cooperative Alliance for Seacoast Transportation (COAST); however, these services are not directly accessible at the Project site. In addition to fixed-route bus services, COAST operates paratransit services for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive, or mental disability in compliance with the Americans with Disabilities Act (ADA). COAST and the City of Portsmouth also provide transportation services for eligible seniors, including free transportation to the Seacoast Mental Health Center.

Motor Vehicle Crash Data

Motor vehicle crash information for the intersection of NH Route 1A at Sagamore Grove has been requested from the Portsmouth Police Department in order to examine motor vehicle crash trends occurring at this location. This data will be summarized in a supplemental memorandum as soon as it is received.

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the years 2022 and 2032, which reflect the anticipated opening-year of the Project and a ten-year planning horizon from opening-year, respectively, consistent with NHDOT TIS guidelines. The future condition traffic-volume projections incorporate identified specific development projects by others, as well as general background traffic growth as a result of development external to the study area and presently unforeseen projects. Anticipated Project-generated traffic volumes superimposed upon the 2022 and 2032 No-Build traffic volumes reflect the Build conditions with the Project.

Future Traffic Growth

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

Specific Development by Others

The City of Portsmouth has been contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on these discussions, no projects were identified at this time that are expected to result in an increase in traffic that would exceed the general background traffic growth rate (discussion follows). A small (11-unit) multifamily residential development to be located at 1169 Sagamore Avenue is in the initial planning stages; however, formal plans have not been submitted to the City at this time.

General Background Traffic Growth

A review of historic traffic growth information compiled by NHDOT for the City of Portsmouth, and the Towns of New Castle and Rye was undertaken in order to determine general traffic growth trends. This data indicates that traffic volumes have fluctuated over the 10-year period between 2009 and 2019, with an average traffic growth rate of 0.54 percent. In order to provide a prudent planning condition for the Project, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Roadway Improvement Projects

The City of Portsmouth and NHDOT were contacted in order to determine if there were any planned roadway improvement projects expected to be completed within the study area. Based on these discussions, no roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

No-Build Traffic Volumes

The 2022 and 2032 No-Build peak-month peak-hour traffic volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2021 Existing peak-month peak-hour traffic volumes. The resulting 2022 No-Build weekday morning and evening peak-month peak-hour traffic volumes are shown on Figure 2, with the corresponding 2032 No-Build peak-month peak-hour traffic volumes shown on Figure 3.

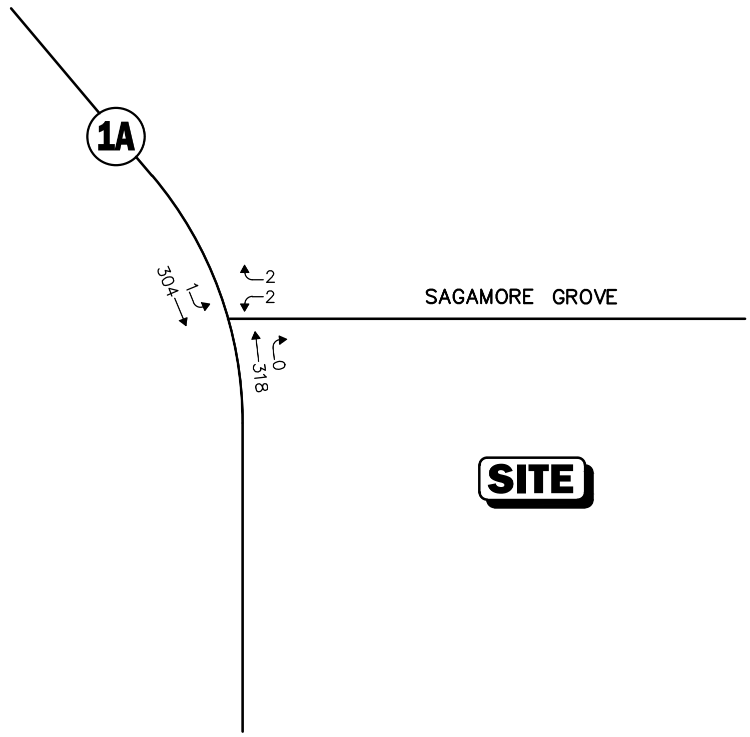
PROJECT-GENERATED TRAFFIC

Design year (2022 and 2032) Build traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

As proposed, the Project will entail the construction of an 8-unit multifamily residential community. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE[6] for a similar land use as that proposed were used. ITE Land Use Code (LUC) 220, *Multifamily Housing (Low-Rise)*, was used to develop the traffic characteristics of the Project, the results of which are summarized in Table 1.

[6]Ibid 1.

WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)

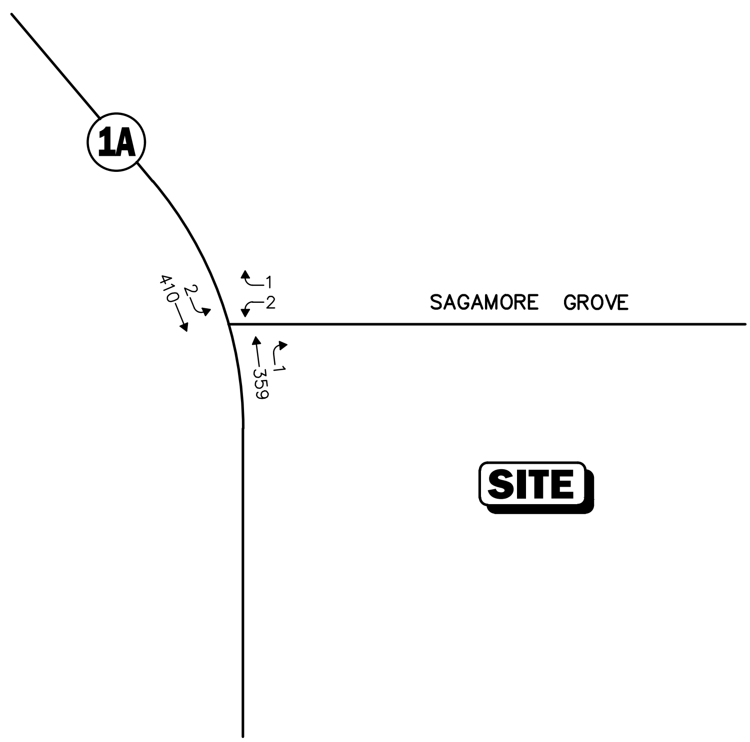


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Figure 2

Vanasse & Associates inc

2022 No-Build Peak-Month Peak-Hour Traffic Volumes

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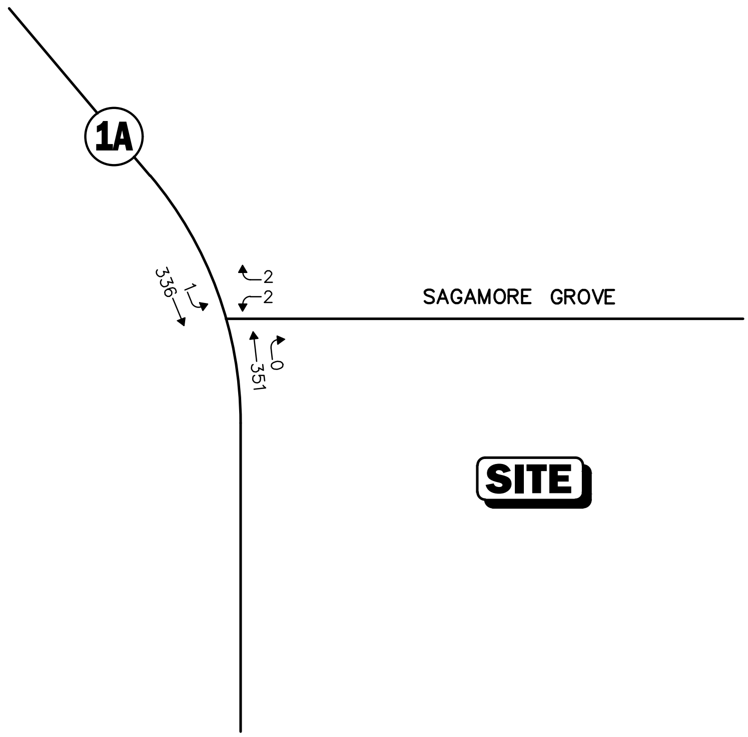
WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)

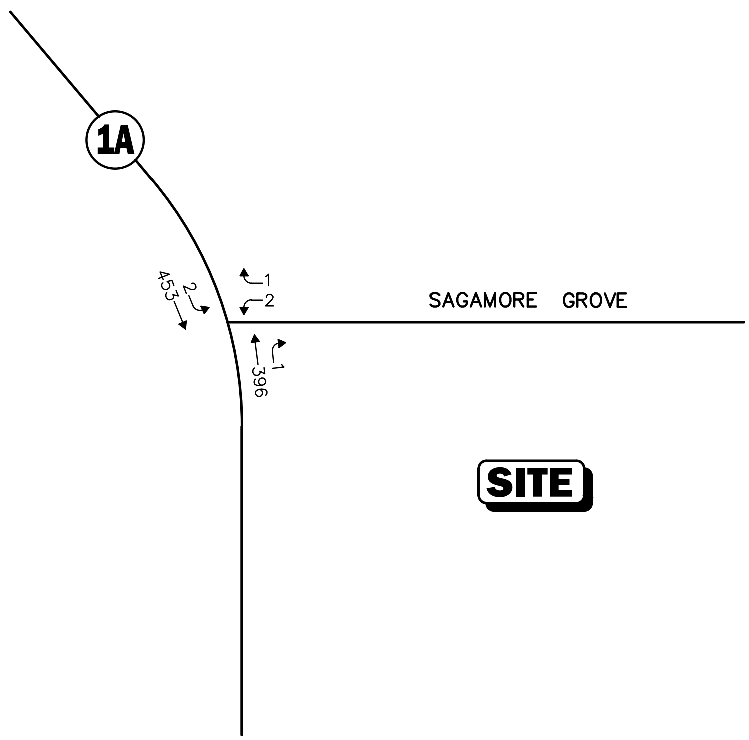


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Figure 3

Vanasse & Associates inc

2032 No-Build Peak-Month Peak-Hour Traffic Volumes

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Table 1
TRIP-GENERATION SUMMARY

	Vehicle Trips		
Time Period	Entering	Exiting	Total
Average Weekday:	10	10	20
Weekday Morning Peak Hour:	1	3	4
Weekday Evening Peak Hour:	4	2	6

[a]Based on ITE LUC 220, *Multifamily Housing (Low-Rise)*, 8 dwelling units.

Project-Generated Traffic Volume Summary

As can be seen in Table 1, the Project is expected to generate approximately 20 vehicle trips on an average weekday (two-way, 24-hour volume, or 10 vehicles entering and 10 exiting), with 4 vehicle trips (1 vehicle entering and 3 exiting) expected during the weekday morning peak hour and 6 vehicle trips (4 vehicles entering and 2 exiting) expected during the weekday evening peak hour.

Table 2 compares the traffic volumes associated with the Project to those of the existing uses that currently occupy the Project site and that will be removed.

Table 2
TRAFFIC VOLUME COMPARISON

	Vehicle Trips		
Time Period/Direction	(A) Proposed Residential Development[a]	(B) Existing Uses[b]	(C= A - B) Difference
Average Weekday Daily:	20	208	-188
Weekday Morning Peak Hour:	4	14	-10
Weekday Evening Peak Hour:	6	18	-12

[a]Based on ITE LUC 220, *Multifamily Housing (Low-Rise)*, 8 dwelling units.
[b]Based on ITE LUC 210, *Single-Family Detached Housing,* 1 dwelling unit; LUC 820, *Shopping Center,* 1,420 sf, and using the average trip rate given the small size of the demised area; and LUC 932, *High-Turnover (Sit-Down) Restaurant,* 1,230 sf

Traffic-Volume Comparison

As can be seen in Table 2, in comparison to the existing uses that occupy the Project site and that will be removed to accommodate the Project, the Project is expected to generate approximately 188 *fewer* vehicle trips on an average weekday (a 90 percent reduction), with 10 *fewer* vehicle trips expected during the weekday morning peak hour (a 71 percent reduction, and 12 *fewer* vehicle trips expected during the weekday evening peak-hour (a 67 percent reduction).

Based on this comparative analysis, it is clear that the Project will be significantly less impactful on the transportation infrastructure when compared to the existing uses that occupy the Project site.

Trip Distribution and Assignment

The directional distribution of generated trips to and from the Project site was determined based on a review of existing traffic patterns within the study area during the peak periods. The general trip distribution for the Project is shown on Figure 4. The additional traffic expected to be generated by the Project was assigned on the study area roadway network as shown on Figure 5.

Build Traffic Volumes

The 2022 Opening-Year and 2032 Build condition traffic-volumes were developed by adding Project-generated traffic to the corresponding 2022 and 2032 No-Build peak-month peak-hour traffic-volumes. The resulting 2022 Opening-Year Build condition weekday morning and evening peak-month peak-hour traffic volumes are graphically depicted on Figure 6, with the corresponding 2032 Build condition peak-month peak-hour traffic volumes depicted on Figure 7.

TRAFFIC OPERATIONS ANALYSIS

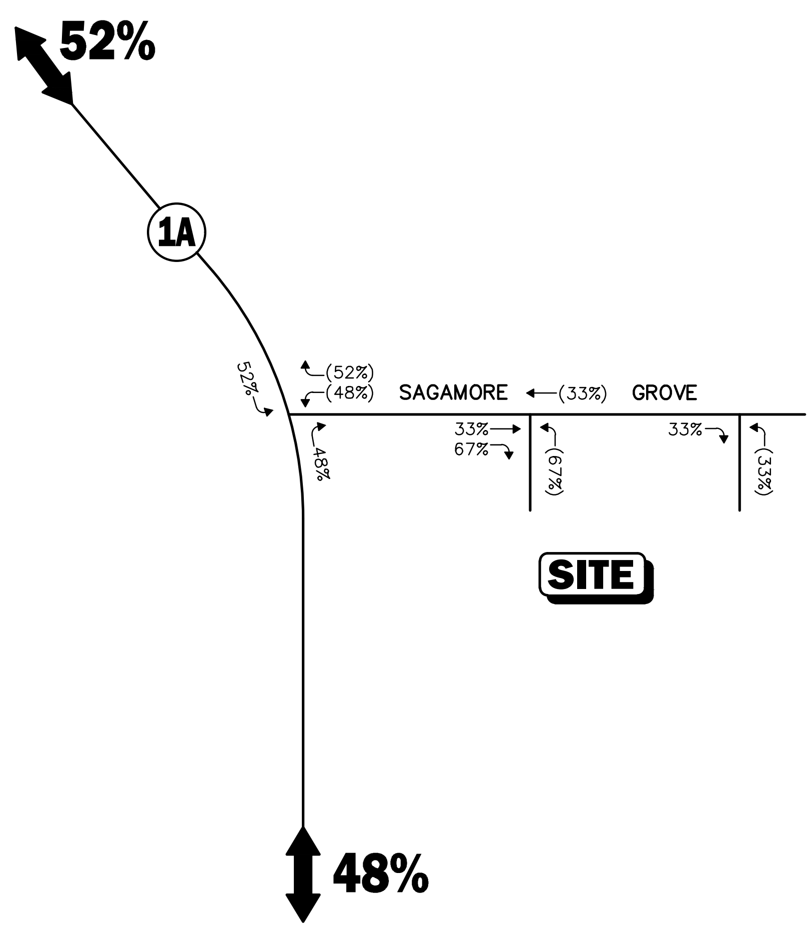
In order to assess the potential impact of the Project on the roadway network, a detailed traffic operations analysis (motorist delays, vehicle queuing and level-of-service) was performed at the study area intersections. Capacity analyses provide an indication of how well transportation facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

In brief, six levels of service are defined for each type of facility. They are given letter designations ranging from A to F, with level-of-service (LOS) "A" representing the best operating conditions and LOS "F" representing congested or constrained operations. An LOS of "E" is representative of a transportation facility that is operating at its design capacity with an LOS of "D" generally defined as the limit of "acceptable" traffic operations. Since the level-of-service of a traffic facility is a function of the flows placed upon it, such a facility may operate at a wide range of levels of service depending on the time of day, day of week, or period of the year. The Synchro® intersection capacity analysis software, which is based on the analysis methodologies and procedures presented in the 2010 *Highway Capacity Manual* (HCM)[7] for unsignalized intersections, was used to complete the level-of-service and vehicle queue analyses.

[7] *Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2010.

Legend:

XX	Entering Trips
(XX)	Exiting Trips



Not To Scale

Figure 4

Trip Distribution Map

Vanasse & Associates inc

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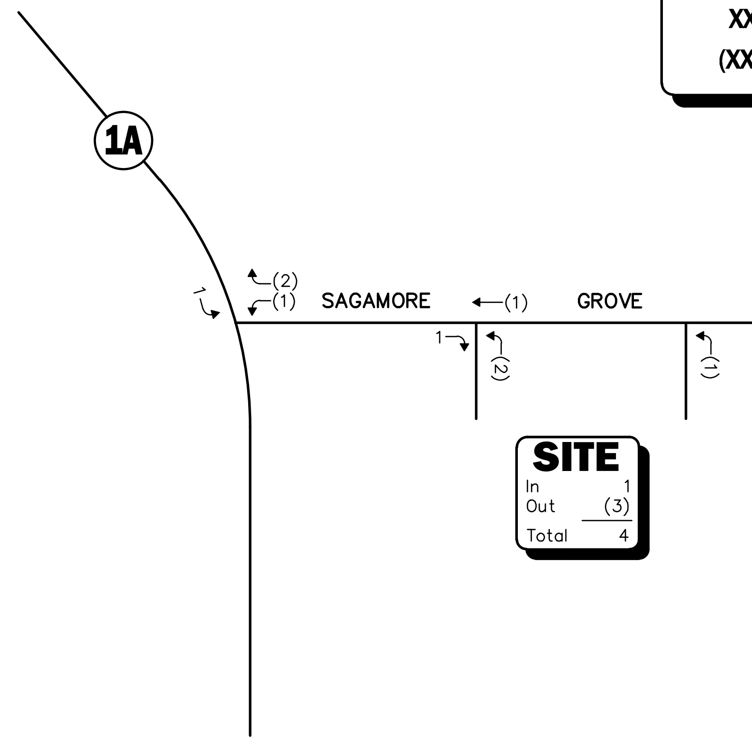
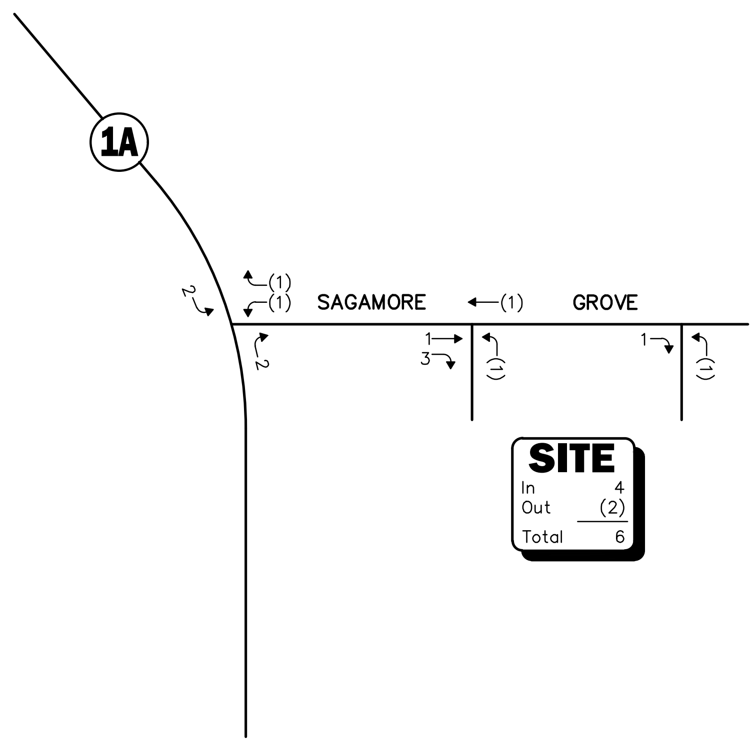
WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)

Legend:

XX	Entering Trips
(XX)	Exiting Trips



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



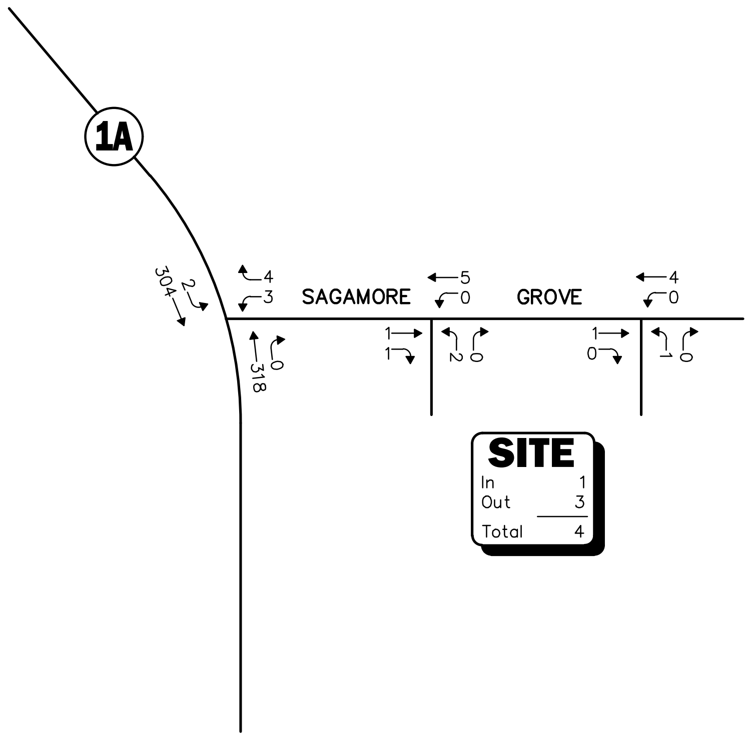
Not To Scale

Figure 5

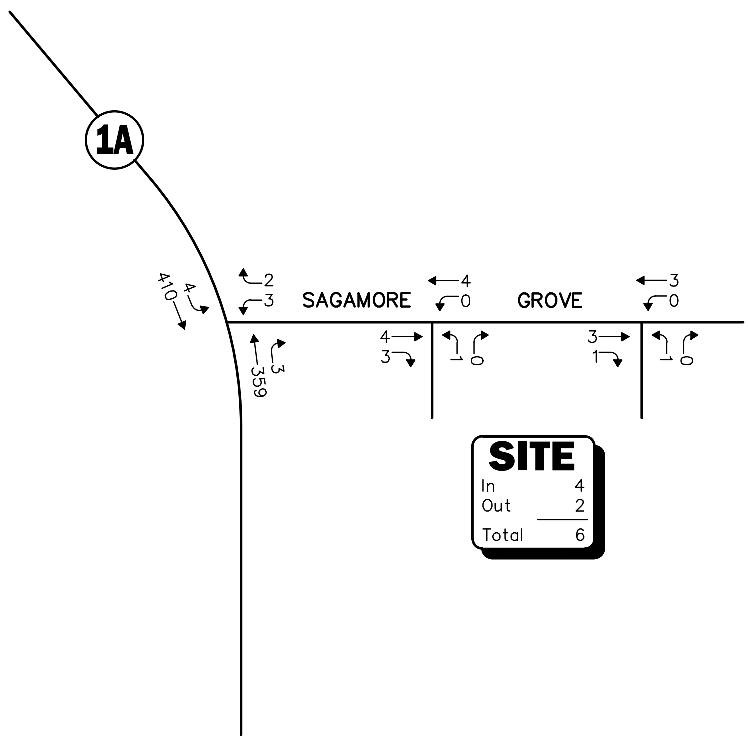
Project-Generated Peak-Hour Traffic Volumes

Vanasse & Associates inc

WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



Not To Scale

Figure 6

2022 Build Peak-Month Peak-Hour Traffic Volumes

Vanasse & Associates inc

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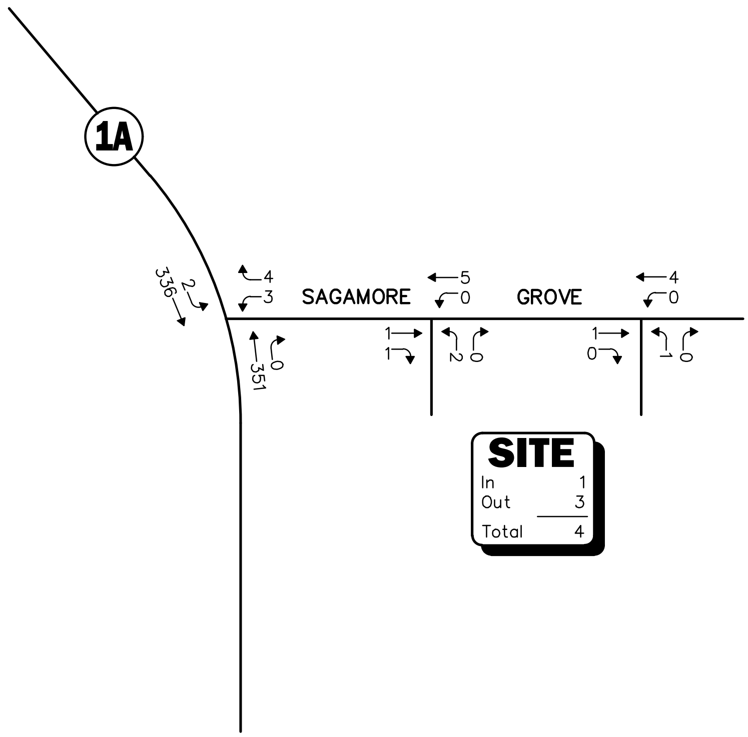
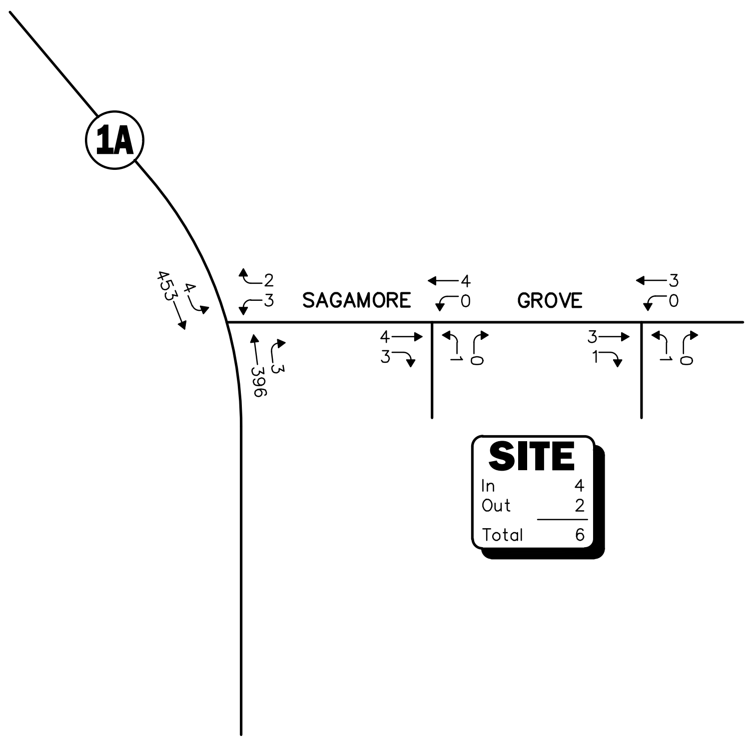
WEEKDAY EVENING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



Not To Scale

Figure 7

Vanasse & Associates inc

2032 Build
Peak-Month
Peak-Hour Traffic Volumes

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Analysis Results

The results of the intersection capacity and vehicle queue analyses for the study intersections are summarized in Table 3, with the detailed analysis results presented in the Appendix.

NH Route 1A at Sagamore Grove

Under 2021 Existing, 2022 No-Build and 2022 Opening Year Build peak-month conditions, the critical movements at this unsignalized intersection (all movements from Sagamore Grove) were shown to operate at LOS B during both the weekday morning and evening peak hours. Project-related impacts over 2022 No-Build conditions were defined as an increase in average motorist delay of less than 1.0 seconds with vehicle queuing continuing to be negligible.

Under 2032 No-Build and 2032 Build peak-month conditions, the critical movements were shown to operate at LOS B during the weekday morning peak-hour and at LOS C during the weekday evening peak-hour. Project-related impacts over 2032 No-Build conditions were defined as an increase in average motorist delay of less than 1.0 seconds with vehicle queuing shown to be negligible.

Sagamore Grove at the Project site driveways

All movements at the Project site driveway intersections with Sagamore Grove were shown to operate at LOS A with negligible vehicle queuing under all analysis conditions.

Table 3
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2021 Existing				2022 No-Build				2022 Opening Year				2032 No-Build				2032 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
NH Route 1A at Sagamore Grove																				
Weekday Morning:																				
Sagamore Grove WB LT/RT	4	12.0	B	0	4	12.0	B	0	7	12.0	B	0	4	12.6	B	0	7	12.6	B	0
NH Route 1A NB TH/RT	315	0.0	A	0	318	0.0	A	0	318	0.0	A	0	351	0.0	A	0	351	0.0	A	0
NH Route 1A SB LT/TH	302	0.0	A	0	305	0.0	A	0	306	0.0	A	0	337	0.0	A	0	338	0.0	A	0
Weekday Evening:																				
Sagamore Grove WB LT/RT	3	13.9	B	0	3	14.0	B	0	5	14.0	B	0	3	15.0	C	0	5	15.0	C	0
NH Route 1A NB TH/RT	356	0.0	A	0	360	0.0	A	0	362	0.0	A	0	397	0.0	A	0	399	0.0	A	0
NH Route 1A SB LT/TH	408	0.0	A	0	412	0.0	A	0	414	0.1	A	0	455	0.0	A	0	457	0.1	A	0
Sagamore Grove at the West Project Site Driveway																				
Weekday Morning:																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	2	0.0	A	0	--	--	--	--	2	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	5	0.0	A	0	--	--	--	--	5	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	2	8.6	A	0	--	--	--	--	2	8.6	A	0
Weekday Evening:																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	7	0.0	A	0	--	--	--	--	7	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	4	0.0	A	0	--	--	--	--	4	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	1	8.6	A	0	--	--	--	--	1	8.6	A	0
Sagamore Grove at the East Project Site Driveway																				
Weekday Morning:																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	1	0.0	A	0	--	--	--	--	1	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	4	0.0	A	0	--	--	--	--	4	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	1	8.5	A	0	--	--	--	--	1	8.5	A	0
Weekday Evening:																				
Sagamore Grove EB TH/RT	--	--	--	--	--	--	--	--	4	0.0	A	0	--	--	--	--	4	0.0	A	0
Sagamore Grove WB LT/TH	--	--	--	--	--	--	--	--	3	0.0	A	0	--	--	--	--	3	0.0	A	0
Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	1	8.6	A	0	--	--	--	--	1	8.6	A	0

[a]Demand in vehicles per hour.
[b]Average control delay per vehicle (in seconds).
[c]Level-of-Service.
[d]Queue length in vehicles.
SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

SIGHT DISTANCE ASSESSMENT

Sight distance measurements were performed at the Project site driveway intersections with Sagamore Grove in accordance with American Association of State Highway and Transportation Officials (AASHTO)[8] requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with oncoming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 4 presents the measured SSD and ISD at the subject intersections.

Table 4
SIGHT DISTANCE MEASUREMENTS[a]

	Feet		
Intersection/Sight Distance Measurement	Required Minimum (SSD)	Desirable (ISD)[b]	Measured
Sagamore Grove at the West Project Site Driveway			
Stopping Sight Distance:			
Sagamore Grove approaching from the east	155	--	177
Sagamore Grove approaching from the west	80	--	80[c]
Intersection Sight Distance:			
Looking to the east from the Project Site Driveway	155	280	111/201[d]
Looking to the west from the Project Site Driveway	80	145	80[c]
Sagamore Grove at the East Project Site Driveway			
Stopping Sight Distance:			
Sagamore Grove approaching from the east	155	--	315
Sagamore Grove approaching from the west	155	--	176[c]
Intersection Sight Distance:			
Looking to the east from the Project Site Driveway	155	280	111/189[d]
Looking to the west from the Project Site Driveway	155	240	176[c]

[a]Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 15 mph speed approaching the west Project site driveway from the east and a 25 mph approach speed for all other approaches.
[b]Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.
[c]Clear line of sight is provided to/from NH Route 1A.
[d]With the selective trimming/removal of vegetation.

As can be seen in Table 3, with the selective trimming or removal of vegetation located within the site triangle areas of the Project site driveways, the available lines of sight to and from the Project site driveways meet or exceed the recommended minimum sight distances to function in a safe (SSD) manner based on a 25 mph approach speed and with consideration to the reduced speed of vehicles transitioning to/from NH Route 1A.

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[8]*A Policy on Geometric Design of Highway and Streets,* 7th Edition; AASHTO; Washington D.C.; 2018.

SUMMARY

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed multifamily residential development to be located at 960 Sagamore Grove in Portsmouth, New Hampshire (hereafter referred to as the "Project"). The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE,[9] the Project is expected to generate approximately 20 vehicle trips on an average weekday (two-way volume over the operational day of the Project), with 4 vehicle trips expected during the weekday morning peak hour and 6 vehicle trips expected during the weekday evening peak hour;

2. In comparison to the existing uses that occupy the site, the Project is expected to generate approximately 188 *fewer* vehicle trips on an average weekday, with 10 *fewer* vehicle trips expected during the weekday morning peak hour, and 12 *fewer* vehicle trips expected during the weekday evening peak hour;

3. Given the significant reduction in traffic that is predicted as a result of the Project, the Project will be less impactful on the transportation infrastructure when compared to the existing uses that occupy the Project site;

4. A review of motorist delays and vehicle queuing at the NH Route 1A/Sagamore Grove intersection indicates that the Project will not result in a significant increase in motorist delays or vehicle queuing, with Project-related impacts defined as an increase in average motorist delay of less than 1.0 seconds with no predicted increase in vehicle queuing; and

5. Lines of sight at the Project site driveway intersections were found to meet, exceed or could be made to meet or exceed the recommended minimum distances for safe operation.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations that follow.

RECOMMENDATIONS

Project Access

Access to the Project site will be provided by way of two new driveways that will intersect the south side of Sagamore Grove approximately 75 feet and 175 feet east of NH Route 1A, respectively. The existing driveway that currently serves the Project site along NH Route 1A will be closed in conjunction with the Project resulting in an overall improvement in safety through the elimination of a conflict point for vehicles, pedestrians and bicyclists along NH Route 1A. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation:

---

[9]Ibid 1.

- The Project site driveways should be a minimum of 22 feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle as defined by the Portsmouth Fire Department.

- Vehicles exiting the Project site should be under stop control.

- Drive aisles behind perpendicular parking should be 23-feet wide in order to accommodate parking maneuvers.

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[10]

- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site driveways should be designed and maintained so as not to restrict lines of sight.

- Existing vegetation located along the south side of Sagamore Grove within the sight triangle areas of the Project site driveways should be selectively trimmed or removed and maintained.

- Snow windrows within sight triangle areas of the Project site driveways should be promptly removed where such accumulations would impede sight lines.

- Bicycle parking should be provided at an appropriate location within the Project site.

With the implementation of the above recommendations, safe and efficient access can be provided to the Project site and the Project can be accommodated within the confines of the existing transportation infrastructure.

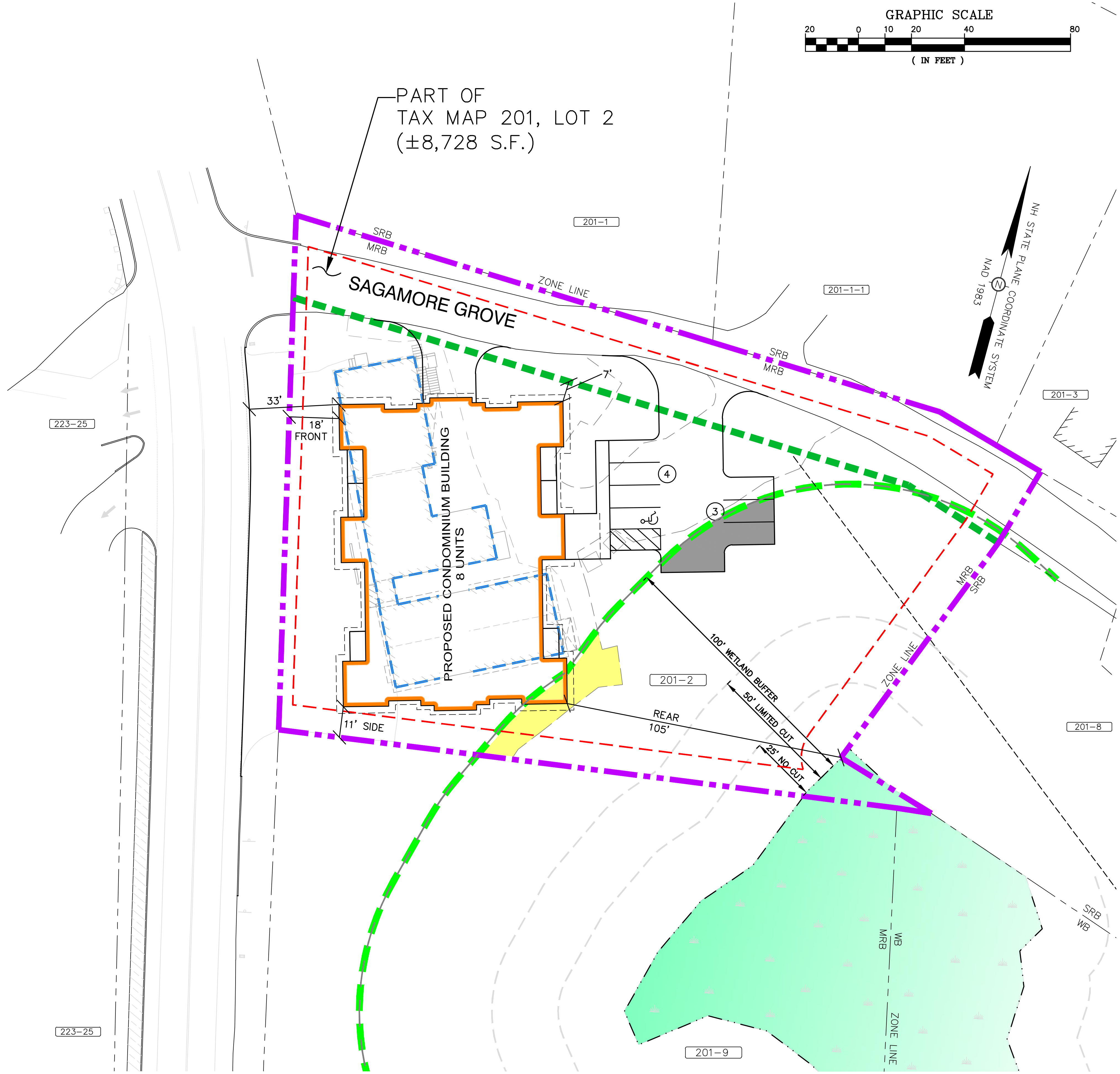
cc: File

[10] *Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

ATTACHMENTS

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
MANUAL TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
COVID-19 ADJUSTMENT DATA
VEHICLE TRAVEL SPEED DATA
GENERAL BACKGROUND TRAFFIC GROWTH
TRIP-GENERATION CALCULATIONS
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN



NOTES

1. DESIGN INTENT – THIS PLAN IS INTENDED TO DEPICT A CONCEPTUAL MULTI–FAMILY RESIDENTIAL BUILDING TOGETHER WITH ASSOCIATED PARKING AND ACCESSWAYS.

2. THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING CONDITIONS PLAN, SAGAMORE AVENUE, SAGAMORE GROVE & WENTWORTH HOUSE ROAD, PORTSMOUTH, N.H., ASSESSOR'S PARCELS 201–2, 201–9, 201–10 & 209–11" BY JAMES VERRA AND ASSOCIATES, INC., DATED FEBRUARY 20, 2020.

3. ZONES: MRB (MIXED RESIDENTIAL BUSINESS)

4. PROJECT PARCEL: TAX MAP 201 LOT 2 42,882 S.F. (0.98 AC.)

5. DIMENSIONAL REQUIREMENTS:

DIMENSIONAL REQUIREMENTS:	MRB	PROVIDED
MIN. LOT AREA:	7,500 S.F. (0.17 AC.)	42,882 S.F.
LOT AREA PER DWELLING:	7,500 S.F.	±5,360 S.F.
MIN. STREET FRONTAGE:	100'	±194'
MIN. LOT DEPTH:	80'	±212'
FRONT SETBACK:	5'	±18'
SIDE SETBACK:	10'	±11'
REAR SETBACK:	15'	±105'
MAX. BUILDING HEIGHT:	40' (SLOPED ROOF)	<40'
MULTI–FAM. BLDG. LENGTH:	160' (MAX)	±120'
MAX. BUILDING COVERAGE:	40%	±19.8%
DWELLING UNITS PER BLDG:	8 (MAX)	8
MIN. OPEN SPACE:	25%	±57.4%
WETLAND BUFFER:	100'	82'
WETLAND LIMITED CUT:	50'	50'
WETLAND NO–CUT:	25'	25'

6. ZONING SECTION 10.521 – VARIANCE REQUIRED TO ALLOW A DENSITY OF 8 DWELLING UNITS WHERE 5.7 ARE PERMITTED.

7. AREA OF DISTURBANCE UNDER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT NOT REQUIRED.

LOT AREA IN WETLAND: ±400 S.F. (±0.9%)

LOT AREA IN WETLAND & WETLAND BUFFER: ±13,650 S.F. (±31.8%)

EXISTING LOT IMPERVIOUS IN WETLAND BUFFER: ±760 S.F. (±1.8%)

PROPOSED LOT IMPERVIOUS IN WETLAND BUFFER: ±710 S.F. (±1.7%)

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR: BOARD OF ADJUSTMENT

ISSUE DATE: MAY 26, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	CONCEPTUAL	EDW	05/26/21

DRAWN BY: EBS

APPROVED BY: EDW

DRAWING FILE: 5079–C016.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER:
WENTWORTH CORNER, LLC
1150 SAGAMORE AVENUE
PORTSMOUTH, NH 03801

APPLICANT:
STONEGATE NH CONSTRUCTION, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI–FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201
LOTS 2, 9 & 10
SAGAMORE ROAD
& WENTWORTH HOUSE ROAD
PORTSMOUTH, NH 03801

TITLE:
BOARD OF ADJUSTMENT SITE PLAN

P5079

SHEET NUMBER:
1 of 1

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts
978-664-2565

Location : Route 1A
89920001
Location : South of Sagamore Grove
City/State: Portsmouth, NH

5/12/2021	NB,		Hour Totals		SB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	62			0	77				
12:15	3	70			1	83				
12:30	1	58			3	67				
12:45	2	91	7	281	1	73	5	300	12	581
1:00	1	81			4	83				
1:15	0	58			0	85				
1:30	0	68			0	73				
1:45	3	77	4	284	2	67	6	308	10	592
2:00	0	65			0	72				
2:15	1	75			2	72				
2:30	0	74			0	67				
2:45	0	73	1	287	0	93	2	304	3	591
3:00	0	74			1	92				
3:15	0	65			0	109				
3:30	0	79			2	101				
3:45	0	79	0	297	1	90	4	392	4	689
4:00	3	80			0	68				
4:15	2	68			0	91				
4:30	2	69			1	98				
4:45	5	63	12	280	3	111	4	368	16	648
5:00	5	64			4	98				
5:15	5	73			3	102				
5:30	9	68			5	86				
5:45	10	60	29	265	3	69	15	355	44	620
6:00	11	53			7	73				
6:15	8	64			17	57				
6:30	18	37			23	66				
6:45	23	45	60	199	35	55	82	251	142	450
7:00	20	36			33	63				
7:15	34	38			51	54				
7:30	42	36			50	32				
7:45	60	36	156	146	59	25	193	174	349	320
8:00	73	21			79	46				
8:15	67	28			73	50				
8:30	51	15			64	36				
8:45	62	17	253	81	89	32	305	164	558	245
9:00	49	16			64	28				
9:15	57	13			58	19				
9:30	61	8			45	11				
9:45	61	6	228	43	58	11	225	69	453	112
10:00	56	7			61	13				
10:15	60	4			79	8				
10:30	53	5			57	2				
10:45	55	7	224	23	79	5	276	28	500	51
11:00	50	7			66	6				
11:15	64	4			100	3				
11:30	64	2			71	0				
11:45	71	2	249	15	98	4	335	13	584	28
Total	1223	2201			1452	2726			2675	4927
Percent	35.7%	64.3%			34.8%	65.2%			35.2%	64.8%

Accurate Counts
978-664-2565

Location : Route 1A
Location : South of Sagamore Grove
City/State: Portsmouth, NH

89920001

5/13/2021	NB,		Hour Totals		SB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	62			1	70				
12:15	0	43			1	93				
12:30	1	72			6	97				
12:45	1	74	3	251	1	92	9	352	12	603
1:00	1	73			1	103				
1:15	1	56			0	88				
1:30	0	74			1	48				
1:45	0	60	2	263	0	63	2	302	4	565
2:00	0	80			0	85				
2:15	1	104			3	113				
2:30	0	85			0	88				
2:45	1	76	2	345	1	88	4	374	6	719
3:00	0	89			2	70				
3:15	1	65			1	110				
3:30	0	82			0	116				
3:45	2	79	3	315	1	86	4	382	7	697
4:00	2	83			0	97				
4:15	2	83			1	98				
4:30	5	61			4	83				
4:45	4	60	13	287	1	129	6	407	19	694
5:00	3	78			4	105				
5:15	3	89			4	82				
5:30	9	73			3	125				
5:45	7	63	22	303	4	111	15	423	37	726
6:00	7	70			9	100				
6:15	14	57			10	93				
6:30	11	43			24	58				
6:45	26	59	58	229	41	52	84	303	142	532
7:00	34	52			36	70				
7:15	32	47			57	59				
7:30	49	55			63	46				
7:45	75	45	190	199	66	42	222	217	412	416
8:00	92	34			70	52				
8:15	70	38			71	41				
8:30	42	32			82	38				
8:45	51	29	255	133	79	34	302	165	557	298
9:00	52	27			52	23				
9:15	50	20			46	16				
9:30	64	10			57	19				
9:45	51	20	217	77	80	21	235	79	452	156
10:00	40	16			67	11				
10:15	65	8			71	13				
10:30	54	7			72	13				
10:45	54	4	213	35	62	5	272	42	485	77
11:00	74	3			70	2				
11:15	68	3			86	7				
11:30	78	5			85	9				
11:45	62	3	282	14	93	4	334	22	616	36
Total	1260	2451			1489	3068			2749	5519
Percent	34.0%	66.0%			32.7%	67.3%			33.2%	66.8%
Grand Total	2483	4652			2941	5794			5424	10446
Percent	34.8%	65.2%			33.7%	66.3%			34.2%	65.8%
ADT		ADT: 7,935		AADT: 7,935						

Accurate Counts
978-664-2565

Location : Route 1A
Location : South of Sagamore Grove
City/State: Portsmouth, NH

89920001

5/10/2021	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,
12:00 AM	*	*	*	*	7	5	3	9	*	*	*	*	*	*	5	7
1:00	*	*	*	*	4	6	2	2	*	*	*	*	*	*	3	4
2:00	*	*	*	*	1	2	2	4	*	*	*	*	*	*	2	3
3:00	*	*	*	*	0	4	3	4	*	*	*	*	*	*	2	4
4:00	*	*	*	*	12	4	13	6	*	*	*	*	*	*	12	5
5:00	*	*	*	*	29	15	22	15	*	*	*	*	*	*	26	15
6:00	*	*	*	*	60	82	58	84	*	*	*	*	*	*	59	83
7:00	*	*	*	*	156	193	190	222	*	*	*	*	*	*	173	208
8:00	*	*	*	*	253	305	255	302	*	*	*	*	*	*	254	304
9:00	*	*	*	*	228	225	217	235	*	*	*	*	*	*	222	230
10:00	*	*	*	*	224	276	213	272	*	*	*	*	*	*	218	274
11:00	*	*	*	*	249	335	282	334	*	*	*	*	*	*	266	334
12:00 PM	*	*	*	*	281	300	251	352	*	*	*	*	*	*	266	326
1:00	*	*	*	*	284	308	263	302	*	*	*	*	*	*	274	305
2:00	*	*	*	*	287	304	345	374	*	*	*	*	*	*	316	339
3:00	*	*	*	*	297	392	315	382	*	*	*	*	*	*	306	387
4:00	*	*	*	*	280	368	287	407	*	*	*	*	*	*	284	388
5:00	*	*	*	*	265	355	303	423	*	*	*	*	*	*	284	389
6:00	*	*	*	*	199	251	229	303	*	*	*	*	*	*	214	277
7:00	*	*	*	*	146	174	199	217	*	*	*	*	*	*	172	196
8:00	*	*	*	*	81	164	133	165	*	*	*	*	*	*	107	164
9:00	*	*	*	*	43	69	77	79	*	*	*	*	*	*	60	74
10:00	*	*	*	*	23	28	35	42	*	*	*	*	*	*	29	35
11:00	*	*	*	*	15	13	14	22	*	*	*	*	*	*	14	18
Total	0	0	0	0	3424	4178	3711	4557	0	0	0	0	0	0	3568	4369
Day	0		0		7602		8268		0		0		0		7937	
AM Peak					8:00	11:00	11:00	11:00							11:00	11:00
Volume					253	335	282	334							266	334
PM Peak					3:00	3:00	2:00	5:00							2:00	5:00
Volume					297	392	345	423							316	389
Comb Total	0		0		7602		8268		0		0		0		7937	
ADT	ADT: 7,935		AADT: 7,935													

MANUAL TURNING MOVEMENT DATA

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 1

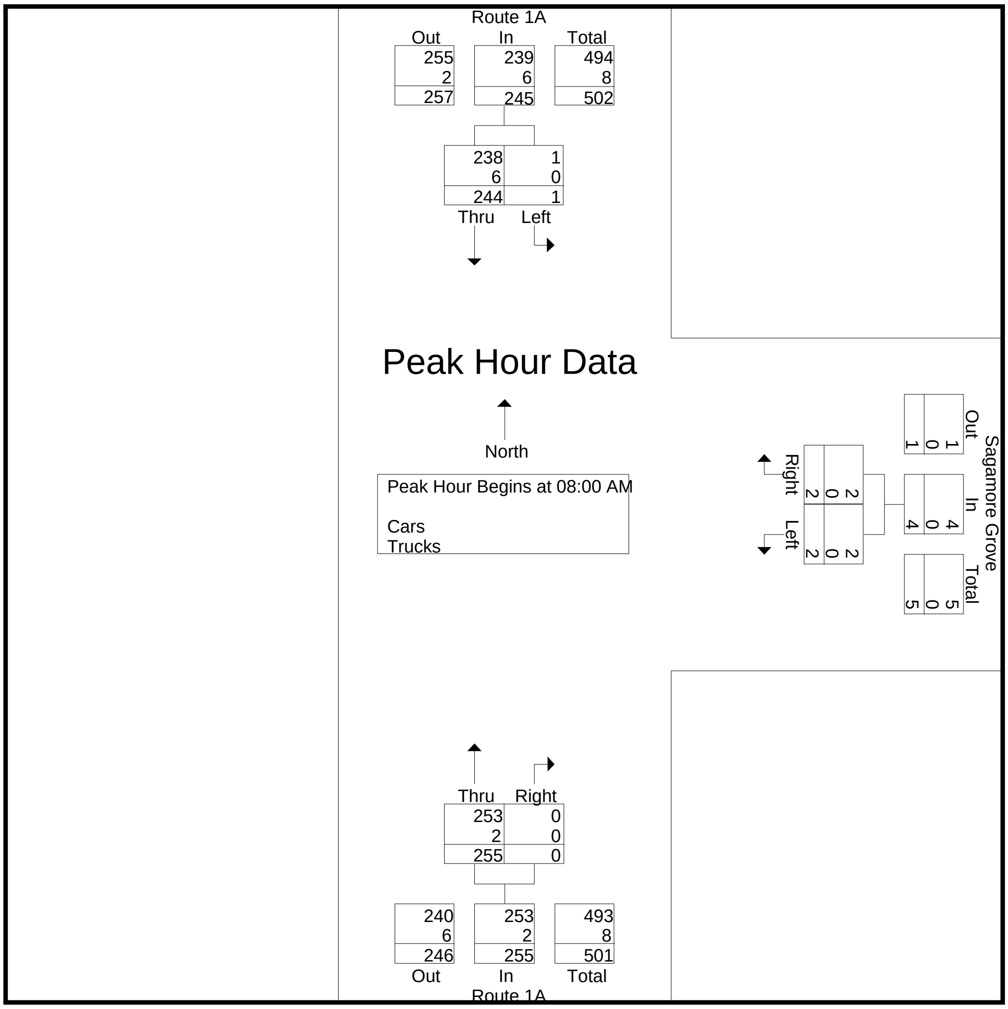
Groups Printed- Cars - Trucks

	Route 1A From North		Sagamore Grove From East		Route 1A From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	31	0	0	24	0	55
07:15 AM	1	38	0	1	31	0	71
07:30 AM	1	45	2	0	41	0	89
07:45 AM	0	57	0	0	57	0	114
Total	2	171	2	1	153	0	329
08:00 AM	0	63	0	0	71	0	134
08:15 AM	1	61	0	1	72	0	135
08:30 AM	0	55	1	0	49	0	105
08:45 AM	0	65	1	1	63	0	130
Total	1	244	2	2	255	0	504
Grand Total	3	415	4	3	408	0	833
Apprch %	0.7	99.3	57.1	42.9	100	0	
Total %	0.4	49.8	0.5	0.4	49	0	
Cars	3	406	4	3	404	0	820
% Cars	100	97.8	100	100	99	0	98.4
Trucks	0	9	0	0	4	0	13
% Trucks	0	2.2	0	0	1	0	1.6

	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	63	63	0	0	0	71	0	71	134
08:15 AM	**1**	61	62	0	**1**	1	**72**	0	**72**	**135**
08:30 AM	0	55	55	**1**	0	1	49	0	49	105
08:45 AM	0	**65**	**65**	1	1	**2**	63	0	63	130
Total Volume	1	244	245	2	2	4	255	0	255	504
% App. Total	0.4	99.6		50	50		100	0		
PHF	.250	.938	.942	.500	.500	.500	.885	.000	.885	.933
Cars	1	238	239	2	2	4	253	0	253	496
% Cars	100	97.5	97.6	100	100	100	99.2	0	99.2	98.4
Trucks	0	6	6	0	0	0	2	0	2	8
% Trucks	0	2.5	2.4	0	0	0	0.8	0	0.8	1.6

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 2

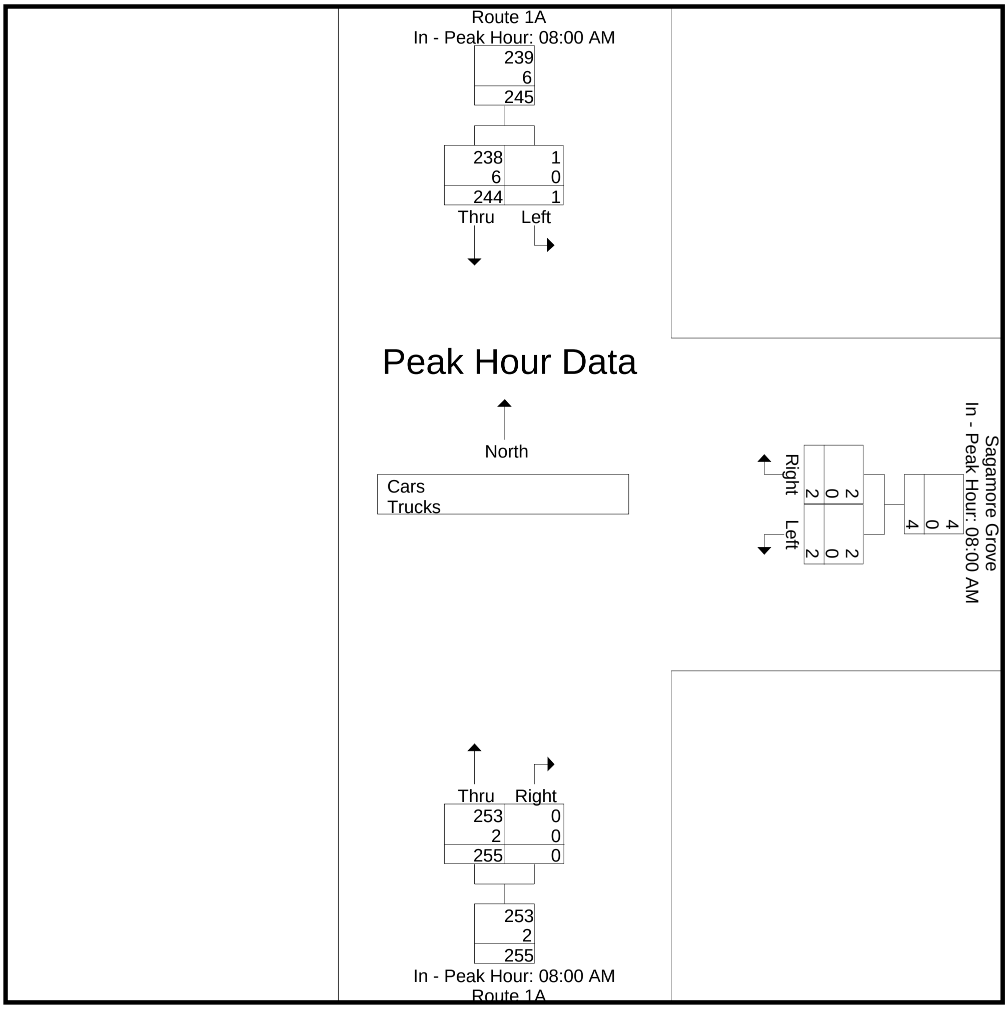


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	0	63	63	0	0	0	71	0	71
+15 mins.	**1**	61	62	0	**1**	1	**72**	0	**72**
+30 mins.	0	55	55	**1**	0	1	49	0	49
+45 mins.	0	**65**	**65**	1	1	**2**	63	0	63
Total Volume	1	244	245	2	2	4	255	0	255
% App. Total	0.4	99.6		50	50		100	0	
PHF	.250	.938	.942	.500	.500	.500	.885	.000	.885
Cars	1	238	239	2	2	4	253	0	253
% Cars	100	97.5	97.6	100	100	100	99.2	0	99.2
Trucks	0	6	6	0	0	0	2	0	2
% Trucks	0	2.5	2.4	0	0	0	0.8	0	0.8

Accurate Counts
978-664-2565

N/S Street	: Route 1A	File Name	: 89920001
E/W Street	: Sagamore Grove	Site Code	: 89920001
City/State	: Portsmouth, NH	Start Date	: 5/12/2021
Weather	: Cloudy	Page No	: 3



Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 4

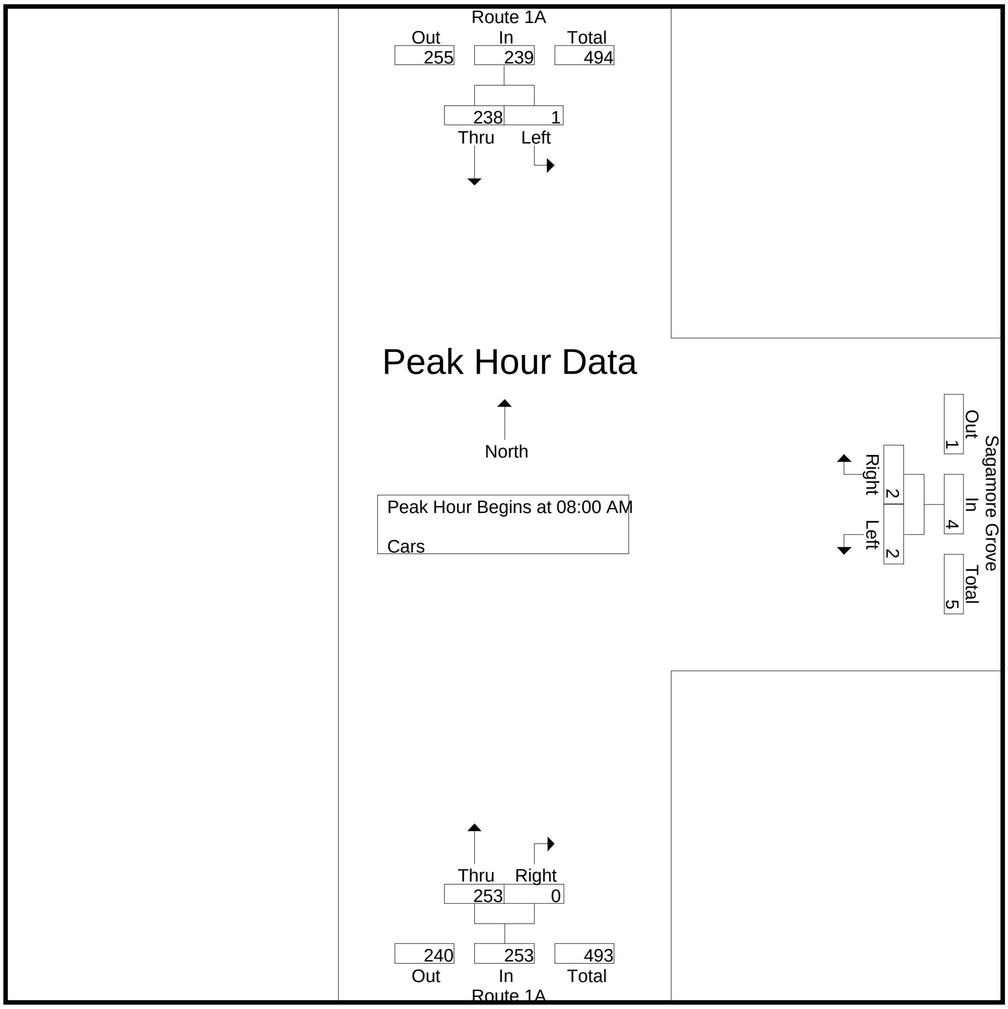
Groups Printed- Cars

	Route 1A From North		Sagamore Grove From East		Route 1A From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	31	0	0	24	0	55
07:15 AM	1	37	0	1	29	0	68
07:30 AM	1	45	2	0	41	0	89
07:45 AM	0	55	0	0	57	0	112
Total	2	168	2	1	151	0	324
08:00 AM	0	62	0	0	71	0	133
08:15 AM	1	57	0	1	72	0	131
08:30 AM	0	54	1	0	48	0	103
08:45 AM	0	65	1	1	62	0	129
Total	1	238	2	2	253	0	496
Grand Total	3	406	4	3	404	0	820
Apprch %	0.7	99.3	57.1	42.9	100	0	
Total %	0.4	49.5	0.5	0.4	49.3	0	

	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	62	62	0	0	0	71	0	71	**133**
08:15 AM	**1**	57	58	0	**1**	1	**72**	0	**72**	131
08:30 AM	0	54	54	**1**	0	1	48	0	48	103
08:45 AM	0	**65**	**65**	1	1	**2**	62	0	62	129
Total Volume	1	238	239	2	2	4	253	0	253	496
% App. Total	0.4	99.6		50	50		100	0		
PHF	.250	.915	.919	.500	.500	.500	.878	.000	.878	.932

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021

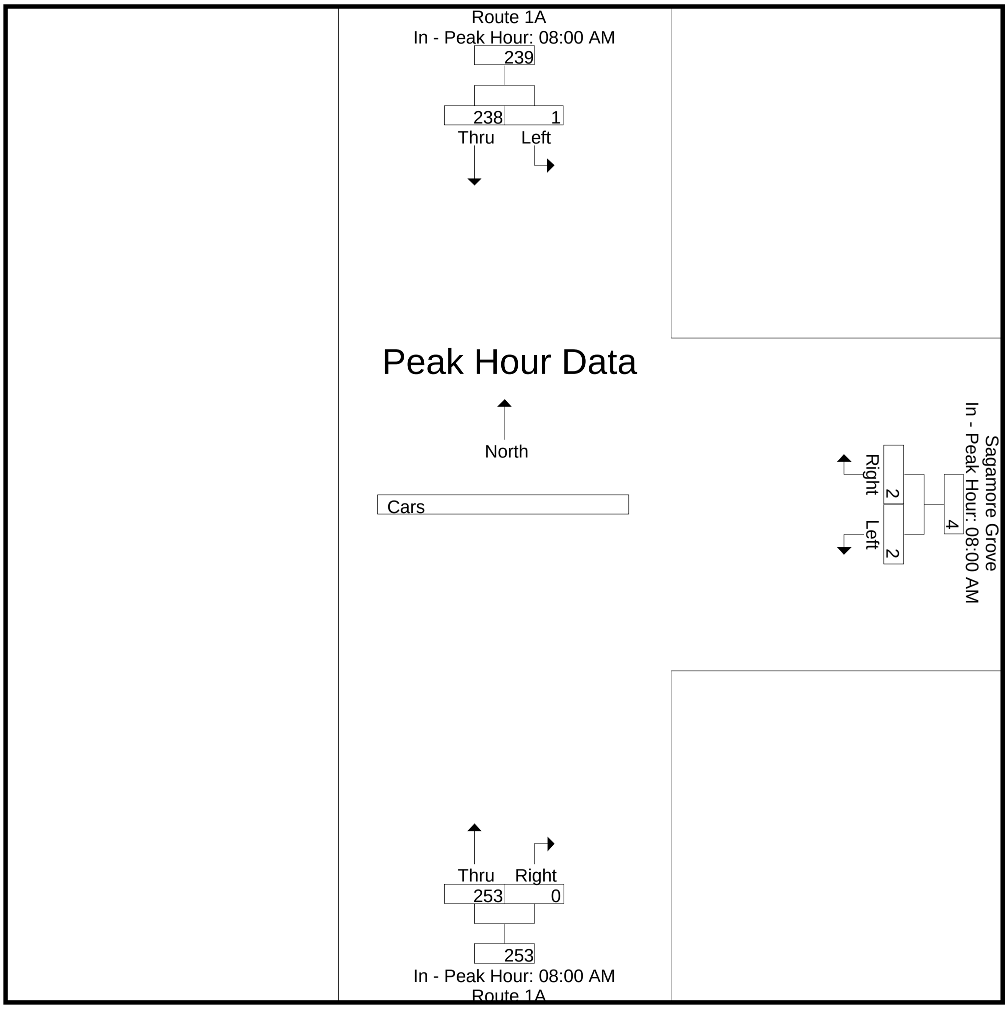


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	0	62	62	0	0	0	71	0	71
+15 mins.	**1**	57	58	0	**1**	1	**72**	0	**72**
+30 mins.	0	54	54	**1**	0	1	48	0	48
+45 mins.	0	**65**	**65**	1	1	**2**	62	0	62
Total Volume	1	238	239	2	2	4	253	0	253
% App. Total	0.4	99.6		50	50		100	0	
PHF	.250	.915	.919	.500	.500	.500	.878	.000	.878

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 6



Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 7

Groups Printed- Trucks

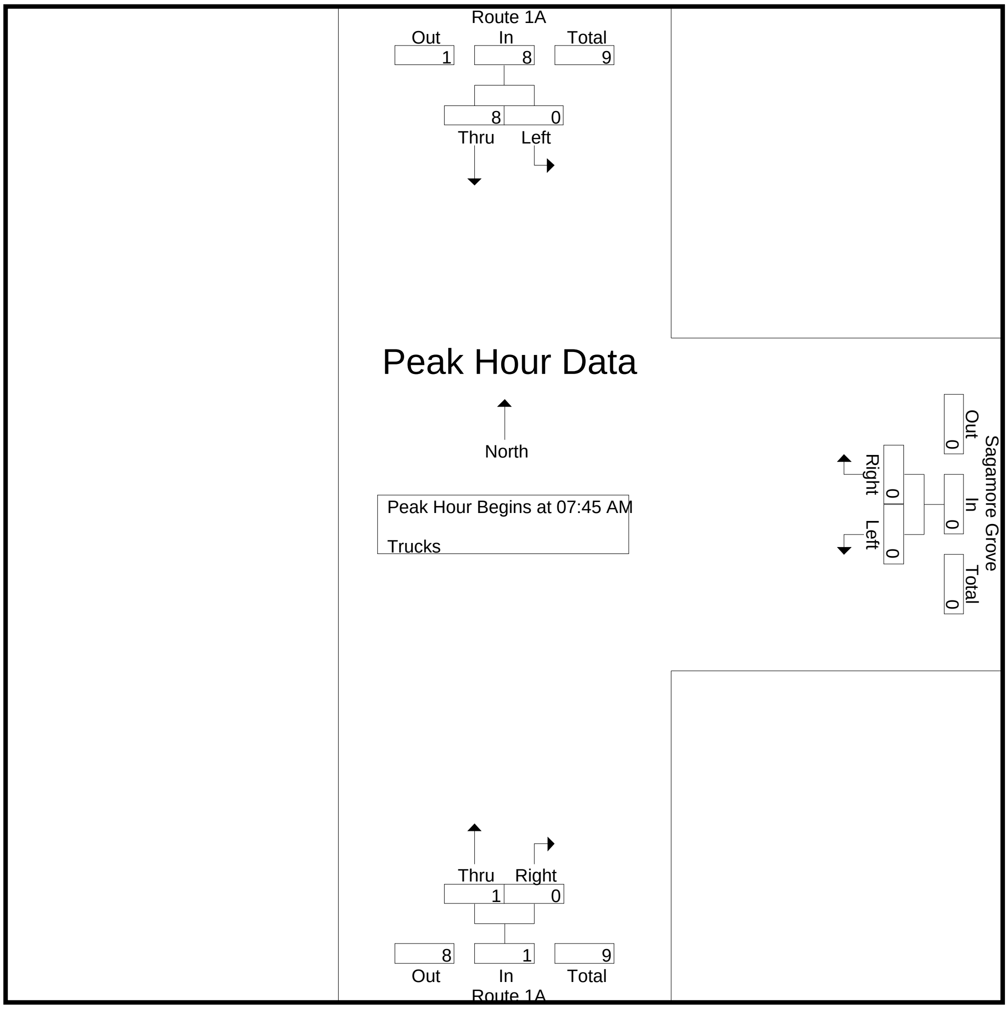
	Route 1A From North		Sagamore Grove From East		Route 1A From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	1	0	0	2	0	3
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	2	0	0	0	0	2
Total	0	3	0	0	2	0	5
08:00 AM	0	1	0	0	0	0	1
08:15 AM	0	4	0	0	0	0	4
08:30 AM	0	1	0	0	1	0	2
08:45 AM	0	0	0	0	1	0	1
Total	0	6	0	0	2	0	8
Grand Total	0	9	0	0	4	0	13
Apprch %	0	100	0	0	100	0	
Total %	0	69.2	0	0	30.8	0	

	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	2	2	0	0	0	0	0	0	2
08:00 AM	0	1	1	0	0	0	0	0	0	1
08:15 AM	0	**4**	**4**	0	0	0	0	0	0	**4**
08:30 AM	0	1	1	0	0	0	**1**	0	**1**	2
Total Volume	0	8	8	0	0	0	1	0	1	9
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250	.563

Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 8



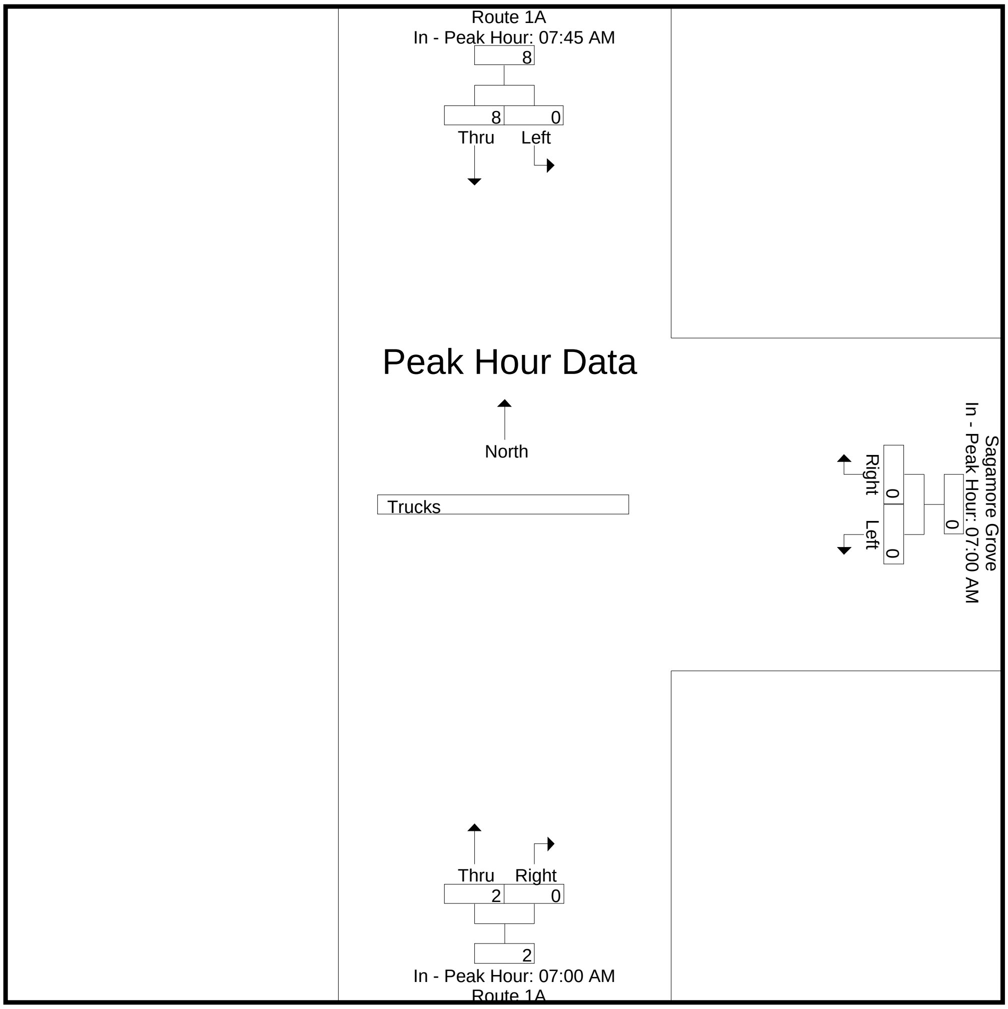
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:00 AM			07:00 AM		
+0 mins.	0	2	2	0	0	0	0	0	0
+15 mins.	0	1	1	0	0	0	**2**	0	**2**
+30 mins.	0	**4**	**4**	0	0	0	0	0	0
+45 mins.	0	1	1	0	0	0	0	0	0
Total Volume	0	8	8	0	0	0	2	0	2
% App. Total	0	100		0	0		100	0	
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250

Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 9



Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021

Groups Printed- Bikes Peds

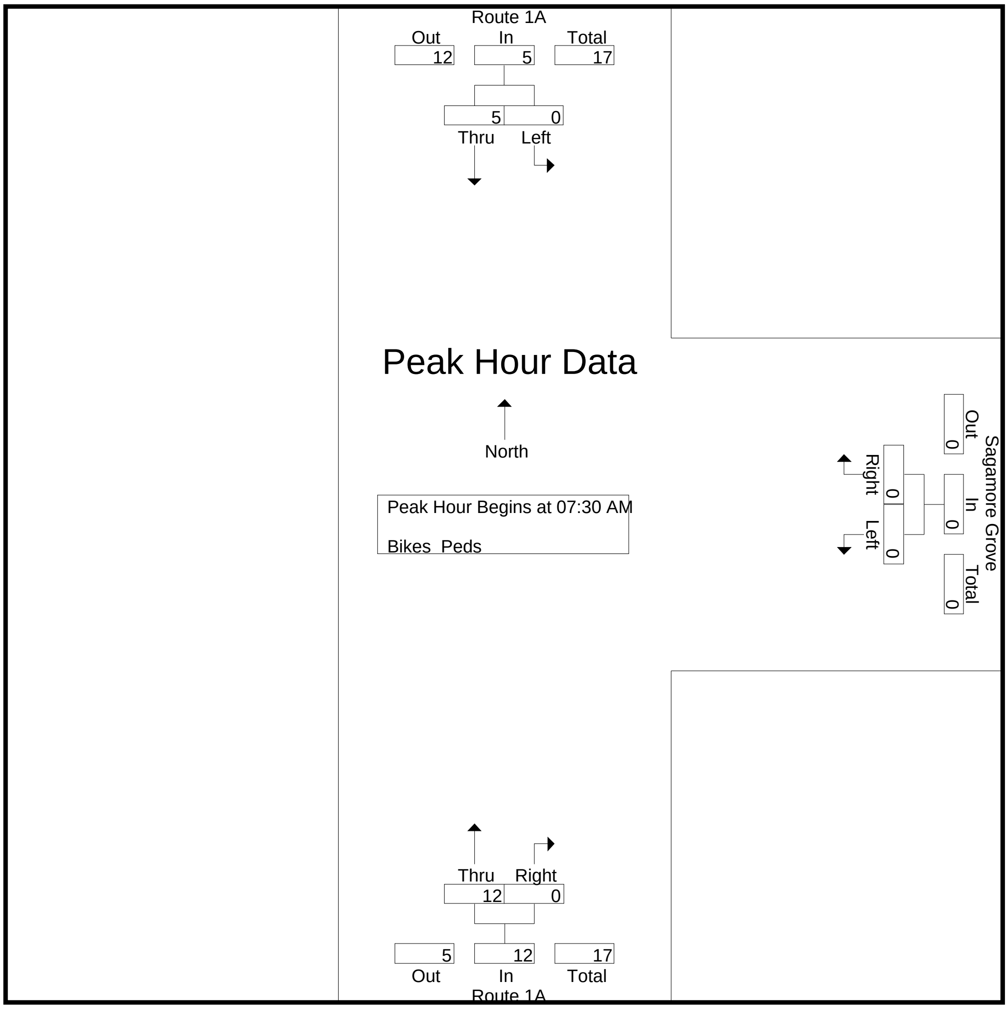
	Route 1A From North			Sagamore Grove From East			Route 1A From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	2	0	0	0	0	0	0	0	0	2	2
07:30 AM	0	1	0	0	0	0	5	0	0	0	6	6
07:45 AM	0	2	0	0	0	0	2	0	0	0	4	4
Total	0	5	0	0	0	0	7	0	0	0	12	12
08:00 AM	0	1	0	0	0	1	2	0	0	1	3	4
08:15 AM	0	1	0	0	0	0	3	0	0	0	4	4
08:30 AM	0	1	0	0	0	0	1	0	0	0	2	2
08:45 AM	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	3	0	0	0	1	7	0	0	1	10	11
Grand Total	0	8	0	0	0	1	14	0	0	1	22	23
Apprch %	0	100		0	0		100	0				
Total %	0	36.4		0	0		63.6	0		4.3	95.7	

	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	1	1	0	0	0	**5**	0	**5**	**6**
07:45 AM	0	**2**	**2**	0	0	0	2	0	2	4
08:00 AM	0	1	1	0	0	0	2	0	2	3
08:15 AM	0	1	1	0	0	0	3	0	3	4
Total Volume	0	5	5	0	0	0	12	0	12	17
% App. Total	0	100		0	0		100	0		
PHF	.000	.625	.625	.000	.000	.000	.600	.000	.600	.708

Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

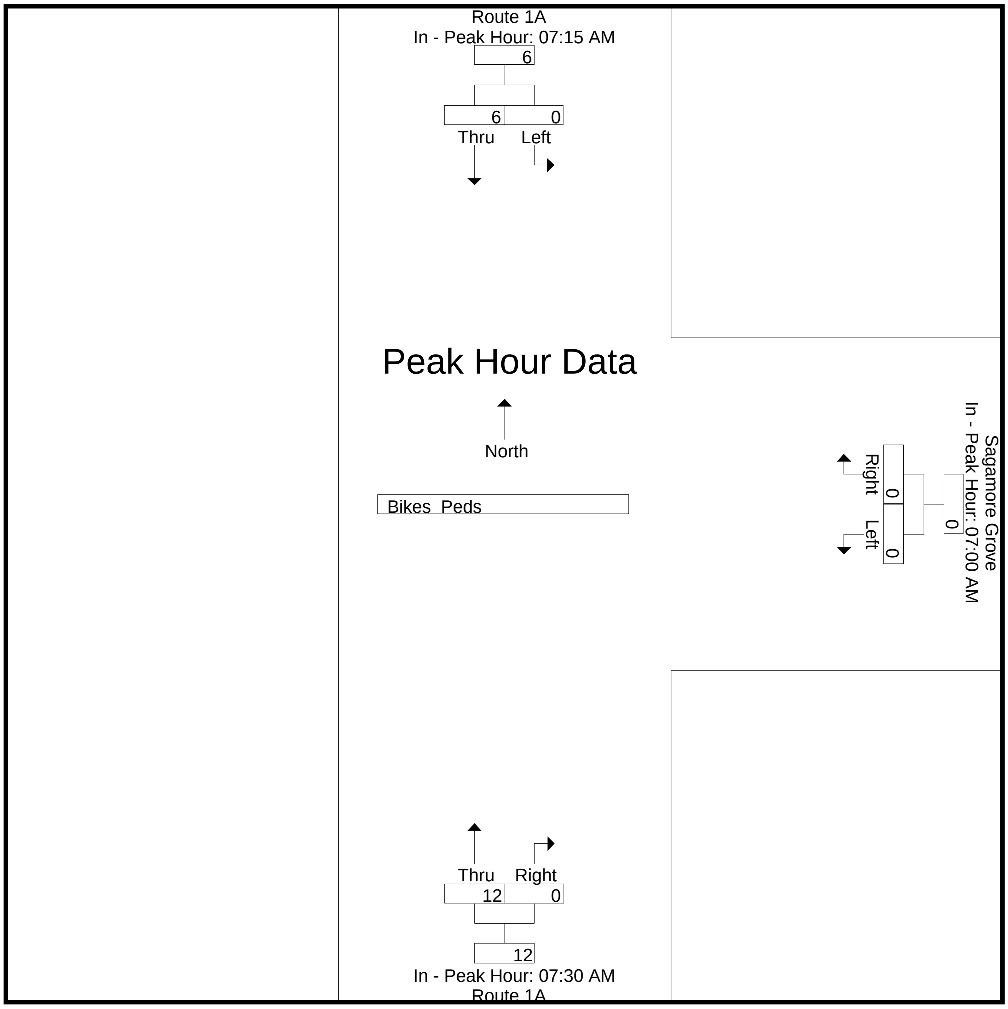
	07:15 AM			07:00 AM			07:30 AM		
+0 mins.	0	**2**	**2**	0	0	0	**5**	0	**5**
+15 mins.	0	1	1	0	0	0	2	0	2
+30 mins.	0	2	2	0	0	0	2	0	2
+45 mins.	0	1	1	0	0	0	3	0	3
Total Volume	0	6	6	0	0	0	12	0	12
% App. Total	0	100		0	0		100	0	
PHF	.000	.750	.750	.000	.000	.000	.600	.000	.600

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 1

Groups Printed- Cars - Trucks

	Route 1A From North		Sagamore Grove From East		Route 1A From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	63	0	0	82	0	145
04:15 PM	0	76	0	0	61	0	137
04:30 PM	0	77	0	0	73	0	150
04:45 PM	0	90	0	0	70	0	160
Total	0	306	0	0	286	0	592
05:00 PM	2	81	1	1	69	0	154
05:15 PM	0	81	1	0	76	1	159
05:30 PM	1	81	0	1	66	0	149
05:45 PM	0	61	1	0	73	0	135
Total	3	304	3	2	284	1	597
Grand Total	3	610	3	2	570	1	1189
Apprch %	0.5	99.5	60	40	99.8	0.2	
Total %	0.3	51.3	0.3	0.2	47.9	0.1	
Cars	3	606	3	2	568	1	1183
% Cars	100	99.3	100	100	99.6	100	99.5
Trucks	0	4	0	0	2	0	6
% Trucks	0	0.7	0	0	0.4	0	0.5

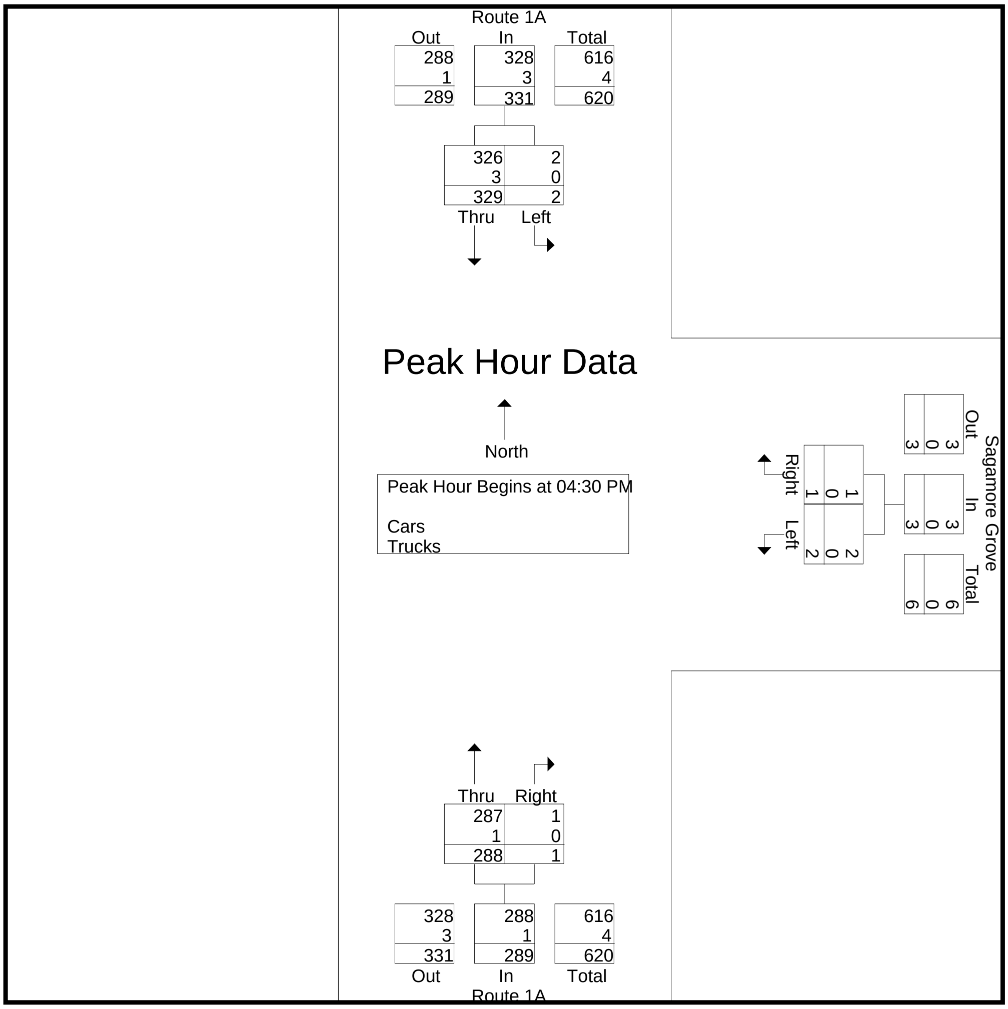
	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	77	77	0	0	0	73	0	73	150
04:45 PM	0	**90**	**90**	0	0	0	70	0	70	**160**
05:00 PM	**2**	81	83	**1**	**1**	**2**	69	0	69	154
05:15 PM	0	81	81	1	0	1	**76**	**1**	**77**	159
Total Volume	2	329	331	2	1	3	288	1	289	623
% App. Total	0.6	99.4		66.7	33.3		99.7	0.3		
PHF	.250	.914	.919	.500	.250	.375	.947	.250	.938	.973
Cars	2	326	328	2	1	3	287	1	288	619
% Cars	100	99.1	99.1	100	100	100	99.7	100	99.7	99.4
Trucks	0	3	3	0	0	0	1	0	1	4
% Trucks	0	0.9	0.9	0	0	0	0.3	0	0.3	0.6

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 2



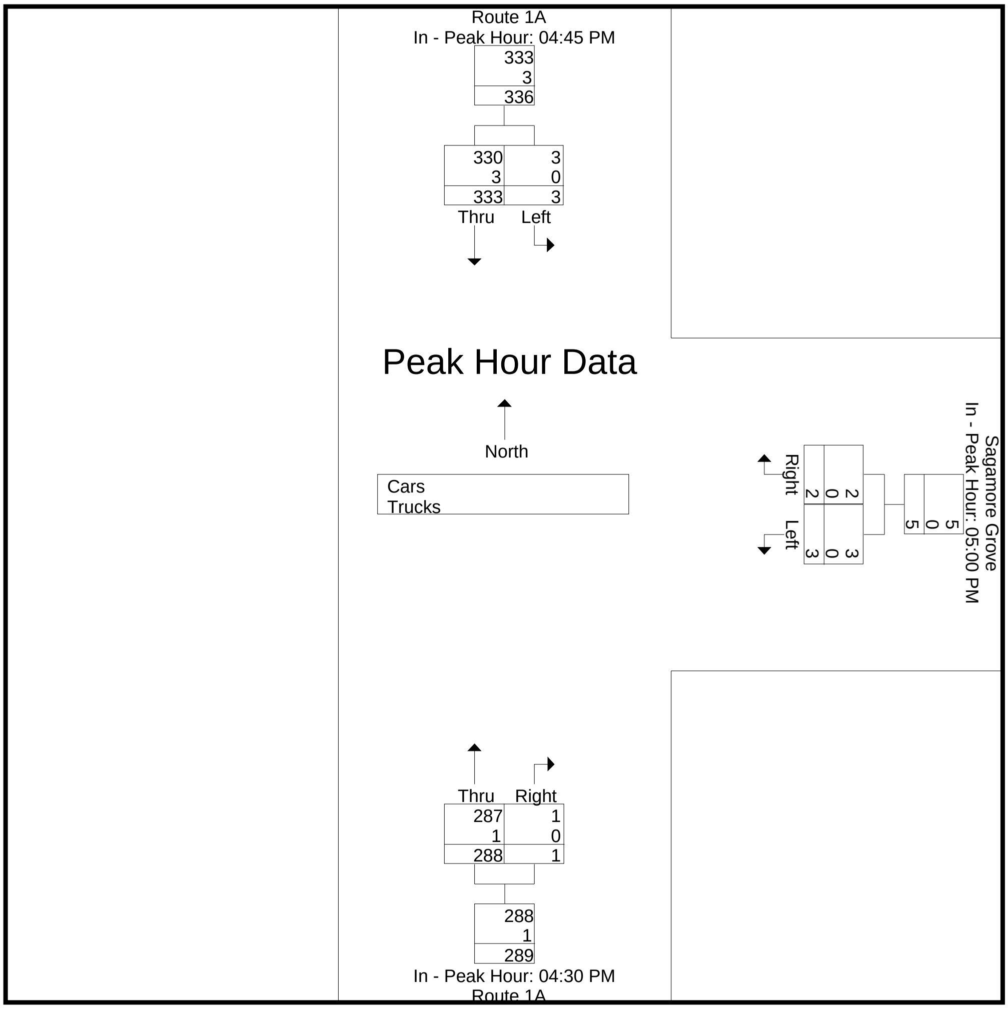
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	0	**90**	**90**	**1**	**1**	**2**	73	0	73
+15 mins.	**2**	81	83	1	0	1	70	0	70
+30 mins.	0	81	81	0	1	1	69	0	69
+45 mins.	1	81	82	1	0	1	**76**	**1**	**77**
Total Volume	3	333	336	3	2	5	288	1	289
% App. Total	0.9	99.1		60	40		99.7	0.3	
PHF	.375	.925	.933	.750	.500	.625	.947	.250	.938
Cars	3	330	333	3	2	5	287	1	288
% Cars	100	99.1	99.1	100	100	100	99.7	100	99.7
Trucks	0	3	3	0	0	0	1	0	1
% Trucks	0	0.9	0.9	0	0	0	0.3	0	0.3

Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021

Groups Printed- Cars

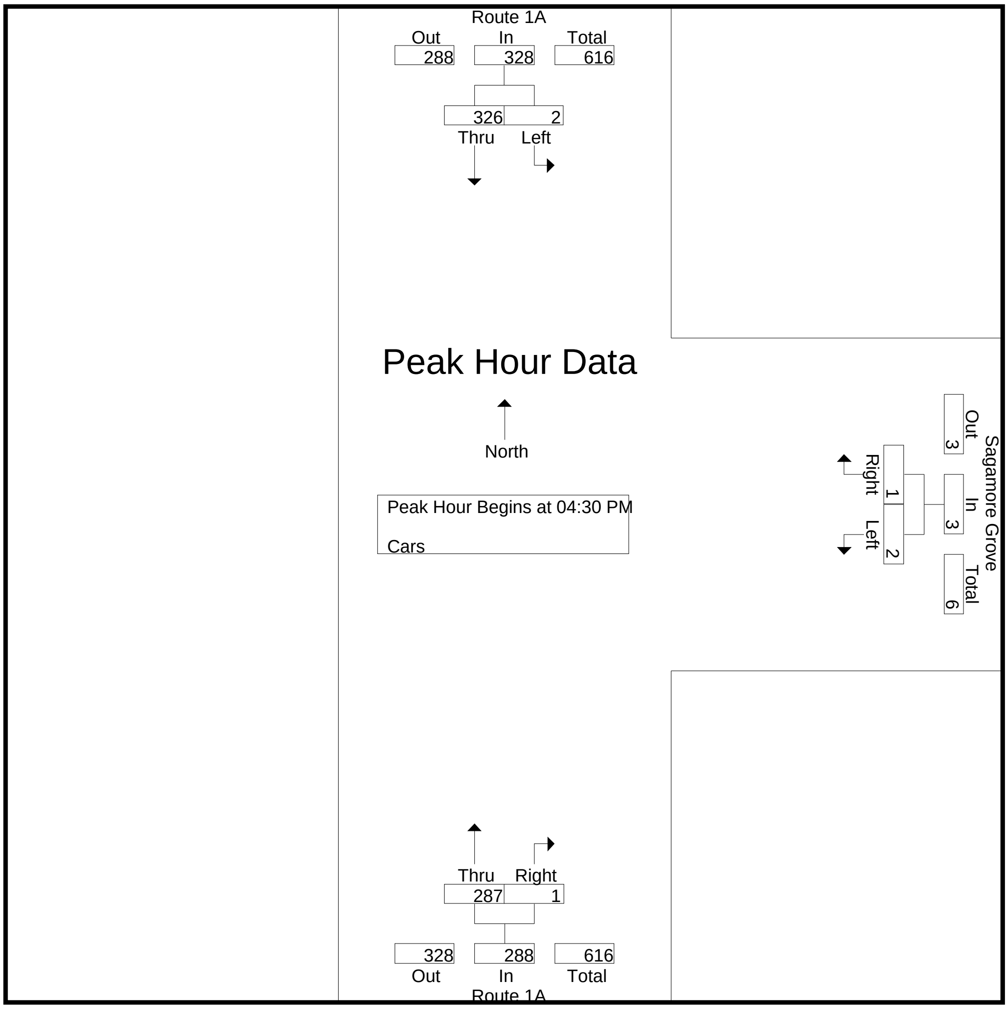
	Route 1A From North		Sagamore Grove From East		Route 1A From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	63	0	0	81	0	144
04:15 PM	0	75	0	0	61	0	136
04:30 PM	0	77	0	0	73	0	150
04:45 PM	0	87	0	0	70	0	157
Total	0	302	0	0	285	0	587
05:00 PM	2	81	1	1	69	0	154
05:15 PM	0	81	1	0	75	1	158
05:30 PM	1	81	0	1	66	0	149
05:45 PM	0	61	1	0	73	0	135
Total	3	304	3	2	283	1	596
Grand Total	3	606	3	2	568	1	1183
Apprch %	0.5	99.5	60	40	99.8	0.2	
Total %	0.3	51.2	0.3	0.2	48	0.1	

	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	77	77	0	0	0	73	0	73	150
04:45 PM	0	**87**	**87**	0	0	0	70	0	70	157
05:00 PM	**2**	81	83	**1**	**1**	**2**	69	0	69	154
05:15 PM	0	81	81	1	0	1	**75**	**1**	**76**	**158**
Total Volume	2	326	328	2	1	3	287	1	288	619
% App. Total	0.6	99.4		66.7	33.3		99.7	0.3		
PHF	.250	.937	.943	.500	.250	.375	.957	.250	.947	.979

Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

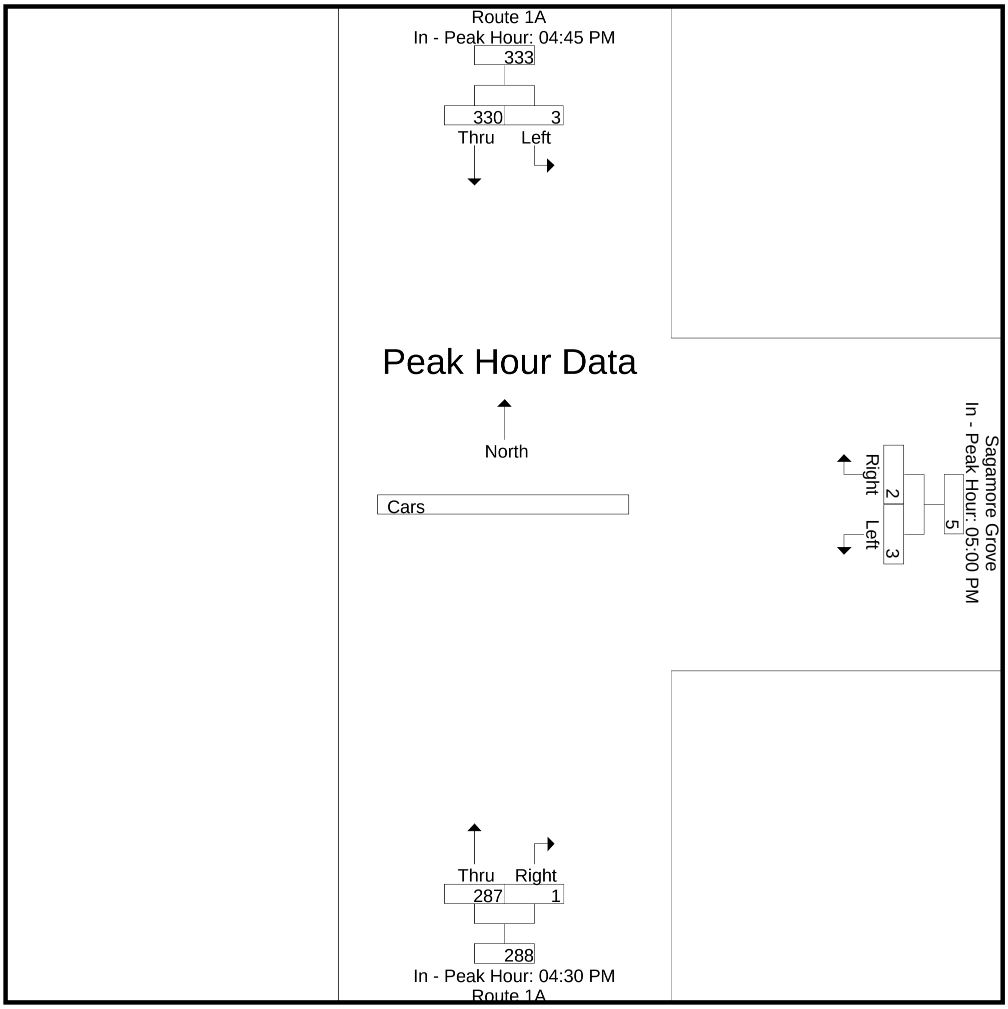
	04:45 PM			05:00 PM			04:30 PM		
+0 mins.	0	**87**	**87**	**1**	**1**	**2**	73	0	73
+15 mins.	**2**	81	83	1	0	1	70	0	70
+30 mins.	0	81	81	0	1	1	69	0	69
+45 mins.	1	81	82	1	0	1	**75**	**1**	**76**
Total Volume	3	330	333	3	2	5	287	1	288
% App. Total	0.9	99.1		60	40		99.7	0.3	
PHF	.375	.948	.957	.750	.500	.625	.957	.250	.947

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 6



Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021

Groups Printed- Trucks

	Route 1A From North		Sagamore Grove From East		Route 1A From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	0	0	0	1	0	1
04:15 PM	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	3	0	0	0	0	3
Total	0	4	0	0	1	0	5
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	1
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1
Grand Total	0	4	0	0	2	0	6
Apprch %	0	100	0	0	100	0	
Total %	0	66.7	0	0	33.3	0	

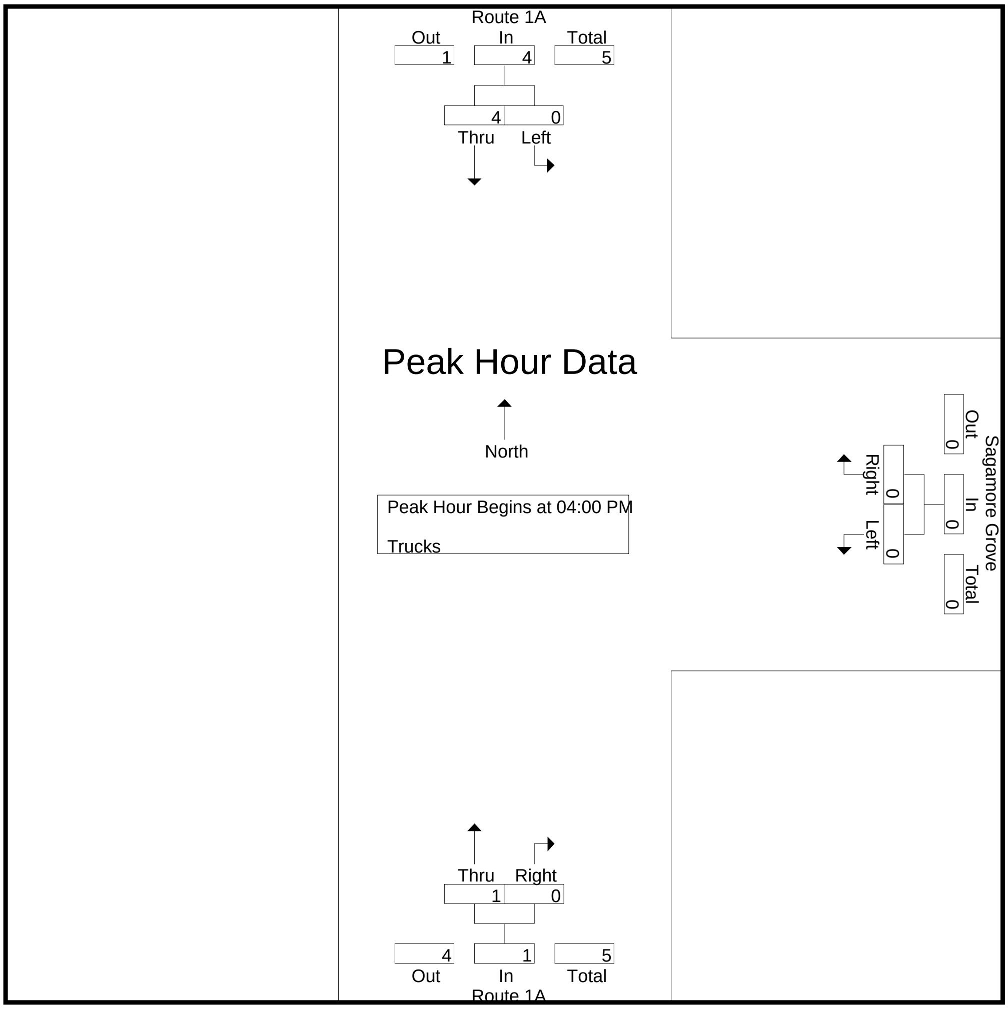
	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	**1**	0	**1**	1
04:15 PM	0	1	1	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	**3**	**3**	0	0	0	0	0	0	**3**
Total Volume	0	4	4	0	0	0	1	0	1	5
% App. Total	0	100		0	0		100	0		
PHF	.000	.333	.333	.000	.000	.000	.250	.000	.250	.417

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

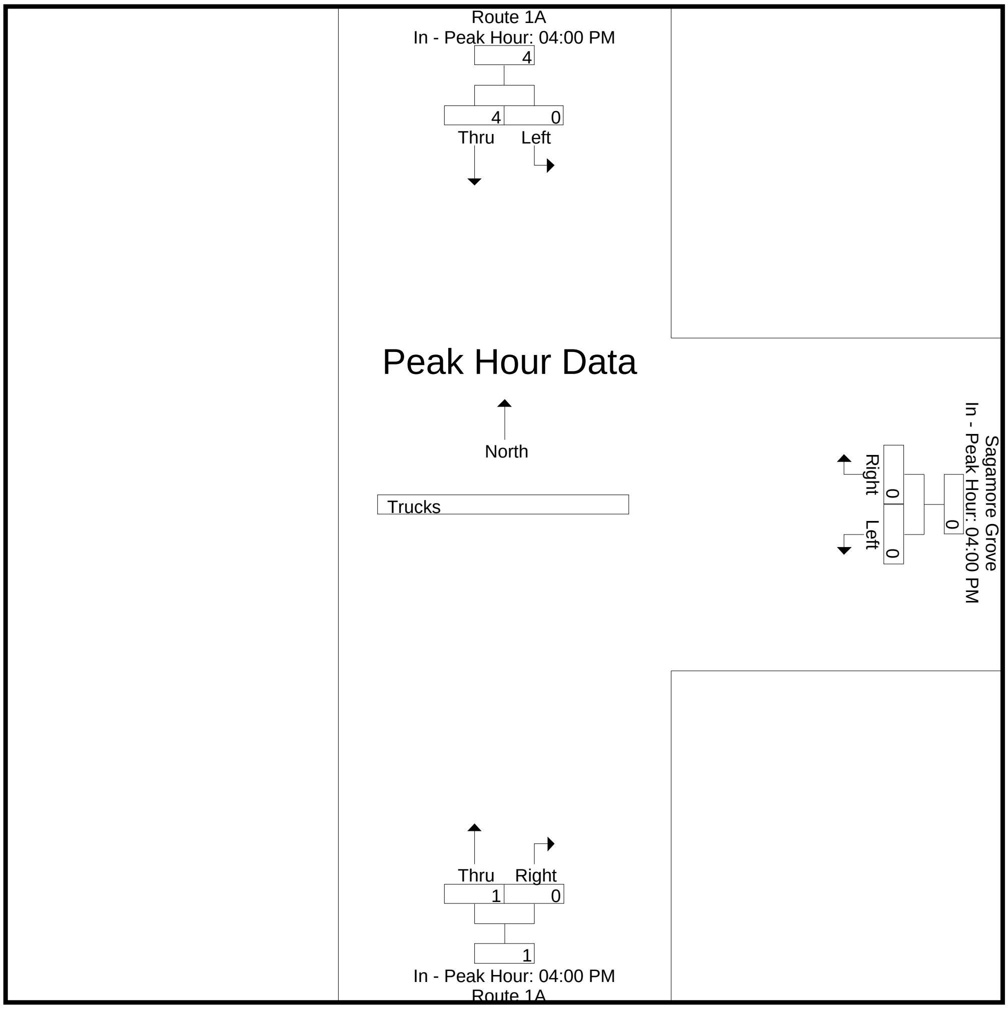
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	1	1	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	**3**	**3**	0	0	0	0	0	0
Total Volume	0	4	4	0	0	0	1	0	1
% App. Total	0	100		0	0		100	0	
PHF	.000	.333	.333	.000	.000	.000	.250	.000	.250

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 9



Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 10

Groups Printed- Bikes Peds

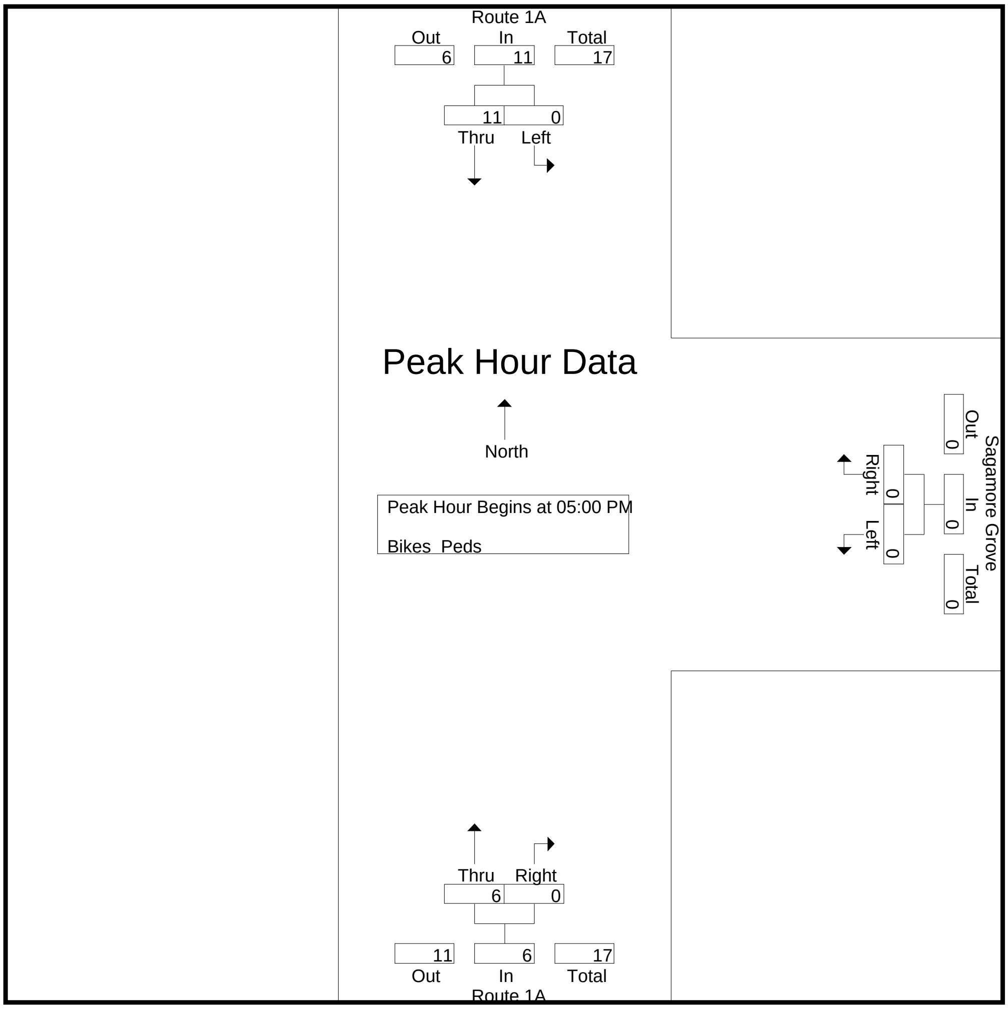
	Route 1A From North			Sagamore Grove From East			Route 1A From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	4	0	0	0	0	1	0	0	0	5	5
04:15 PM	0	1	0	0	0	0	4	0	0	0	5	5
04:30 PM	0	2	0	0	0	0	0	0	0	0	2	2
04:45 PM	0	2	0	0	0	0	0	0	0	0	2	2
Total	0	9	0	0	0	0	5	0	0	0	14	14
05:00 PM	0	2	0	0	0	0	1	0	0	0	3	3
05:15 PM	0	3	0	0	0	0	2	0	4	4	5	9
05:30 PM	0	3	0	0	0	0	1	0	0	0	4	4
05:45 PM	0	3	0	0	0	0	2	0	0	0	5	5
Total	0	11	0	0	0	0	6	0	4	4	17	21
Grand Total	0	20	0	0	0	0	11	0	4	4	31	35
Apprch %	0	100		0	0		100	0				
Total %	0	64.5		0	0		35.5	0		11.4	88.6	

	Route 1A From North			Sagamore Grove From East			Route 1A From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	2	2	0	0	0	1	0	1	3
05:15 PM	0	**3**	**3**	0	0	0	**2**	0	**2**	**5**
05:30 PM	0	3	3	0	0	0	1	0	1	4
05:45 PM	0	3	3	0	0	0	2	0	2	5
Total Volume	0	11	11	0	0	0	6	0	6	17
% App. Total	0	100		0	0		100	0		
PHF	.000	.917	.917	.000	.000	.000	.750	.000	.750	.850

Accurate Counts
978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

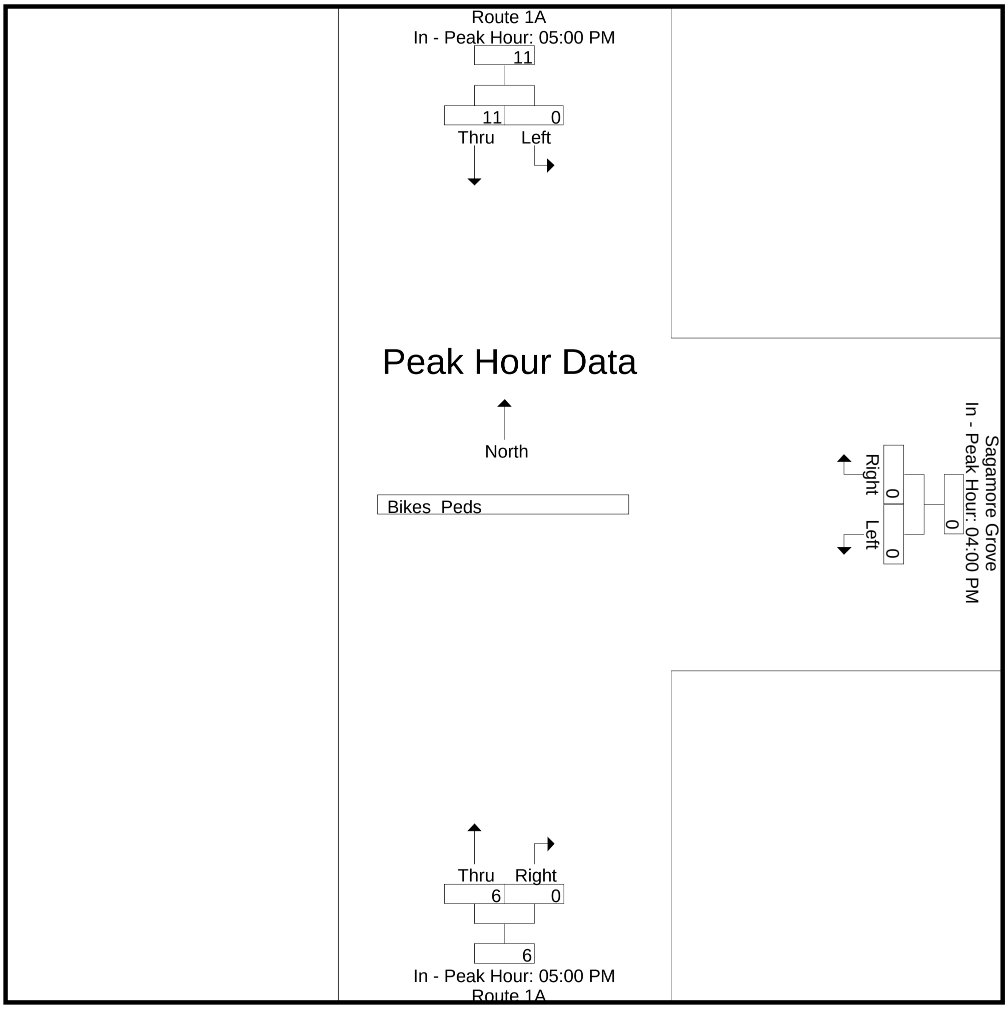
	05:00 PM			04:00 PM			05:00 PM		
+0 mins.	0	2	2	0	0	0	1	0	1
+15 mins.	0	**3**	**3**	0	0	0	**2**	0	**2**
+30 mins.	0	3	3	0	0	0	1	0	1
+45 mins.	0	3	3	0	0	0	2	0	2
Total Volume	0	11	11	0	0	0	6	0	6
% App. Total	0	100		0	0		100	0	
PHF	.000	.917	.917	.000	.000	.000	.750	.000	.750

Accurate Counts

978-664-2565

N/S Street : Route 1A
E/W Street : Sagamore Grove
City/State : Portsmouth, NH
Weather : Cloudy

File Name : 89920001
Site Code : 89920001
Start Date : 5/12/2021
Page No : 12



SEASONAL ADJUSTMENT DATA

New Hampshire DOT
02345001: Monthly Hourly Volume for May 2019

Location ID: 02345001
County: ROCKINGHAM
Functional Class 3
Location: Lafayette Rd

Seasonal Factor Group: 04
Daily Factor Group:
Axle Factor Group:
Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	37	25	12	48	73	246	604	1162	1282	1033	1097	1216	1261	1153	1215	1336	1360	1383	993	632	428	263	150	90	17099	Accepted
2	40	24	14	36	76	244	607	1115	1279	991	1070	1172	1168	1173	1217	1394	1405	1361	932	611	467	244	166	95	16901	Accepted
3	52	29	17	39	73	266	601	1178	1290	1157	1189	1258	1409	1317	1428	1435	1327	1423	936	659	465	359	222	139	18268	Accepted
4	82	41	27	29	37	124	257	565	767	939	1160	1340	1342	1371	1332	1237	1190	1048	817	654	474	342	248	178	15601	Accepted
5	86	51	32	24	28	82	160	362	614	684	1020	1161	1187	1117	1131	1000	926	799	655	445	317	154	148	69	12252	Accepted
6	36	23	19	21	62	267	611	1088	1263	981	984	1140	1216	1168	1229	1410	1474	1434	931	585	414	234	116	67	16773	Accepted
7	42	30	23	36	73	276	610	1164	1339	1040	1016	1129	1240	1177	1282	1383	1458	1398	925	522	357	240	116	59	16935	Accepted
8	39	20	29	39	75	266	632	1289	1354	1100	1095	1258	1320	1290	1331	1402	1412	1463	1066	640	501	312	141	85	18159	Accepted
9	42	22	19	36	74	278	632	1179	1333	1078	1138	1253	1266	1285	1277	1502	1422	1449	964	636	469	264	137	101	17856	Accepted
10	61	32	18	34	72	251	585	1079	1327	1155	1182	1305	1447	1331	1355	1478	1454	1386	934	626	564	356	245	135	18412	Accepted
11	74	43	23	31	44	127	285	600	842	1072	1230	1365	1331	1385	1384	1339	1255	1119	916	746	582	337	230	166	16526	Accepted
12	102	58	27	17	19	68	185	366	651	784	1025	1036	1198	1178	1141	1084	951	757	658	493	343	190	124	88	12543	Accepted
13	30	16	17	33	84	258	653	1122	1275	1036	1116	1276	1242	1151	1282	1366	1451	1418	938	573	345	225	112	60	17079	Accepted
14	34	19	22	45	80	260	582	1143	1362	1014	1065	1248	1269	1221	1276	1405	1372	1415	968	539	364	263	130	78	17174	Accepted
15	55	27	20	43	73	254	635	1176	1314	1092	1183	1206	1336	1269	1262	1491	1499	1376	967	580	491	286	131	100	17866	Accepted
16	42	27	15	42	89	267	615	1178	1365	1091	1097	1309	1379	1231	1379	1468	1557	1528	951	663	535	301	174	123	18426	Accepted
17	69	65	80	67	123	255	607	1134	1221	1088	1117	1364	1397	1277	1396	1476	1481	1403	1034	747	634	420	250	138	18843	Accepted
18	84	43	24	34	47	124	265	591	835	1136	1277	1386	1464	1363	1304	1283	1132	1046	902	690	539	339	266	154	16328	Accepted
19	84	49	26	20	33	97	305	443	665	783	1153	1265	1259	1135	1163	1122	1056	797	730	613	321	196	121	75	13511	Accepted
20	64	26	27	39	86	247	625	1228	1306	1056	1100	1211	1261	1202	1273	1477	1457	1388	890	646	394	271	134	105	17513	Accepted
21	71	57	44	51	88	285	653	1177	1450	1115	1149	1254	1326	1371	1313	1478	1503	1495	940	654	457	272	143	86	18432	Accepted
22	67	49	54	89	119	282	628	1163	1326	1108	1079	1195	1347	1355	1282	1439	1531	1474	1015	660	430	272	126	105	18195	Accepted
23	49	67	49	86	95	247	654	1132	1306	1118	1087	1224	1350	1274	1314	1493	1472	1373	972	695	451	367	220	206	18301	Accepted
24																										
25																										
26																										
27																										
28																										
29																										
30																										
31																										

May Average	**16913**
Peak Month (Aug)	**18127**
Seasonal Adjustment	**1.072**

COVID-19 ADJUSTMENT DATA

2019 Average Count Data – Sta. 02345001

May ADT: 16,913

Growth Rate: 1.0%/Year

$$16{,}913 \times (1.010^2) = 17{,}253$$

2021 Average Count Data – Sta. 02345001

May ADT: 14,995

COVID Adjustment

$$\frac{17{,}253}{14{,}995} = 1.151$$

New Hampshire DOT
02345001: Monthly Hourly Volume for May 2021

Location ID:	**02345001**	**Seasonal Factor Group:**	**04**
County:	**ROCKINGHAM**	**Daily Factor Group:**	
Functional Class	**3**	**Axle Factor Group:**	
Location:	**Lafayette Rd**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	51	29	28	20	46	96	232	467	620	964	1175	1310	1404	1351	1312	1205	1169	957	756	622	451	310	170	116	14861	Accepted
2	60	40	24	14	15	80	148	306	520	702	887	1095	1221	1242	1298	1112	939	828	670	510	371	205	109	80	12476	Accepted
3	32	10	23	14	69	245	560	1029	1109	906	940	1146	1161	1184	1236	1373	1297	1219	784	533	321	211	149	98	15649	Accepted
4	41	28	27	30	74	258	593	995	1130	974	1028	1143	1244	1171	1268	1386	1381	1218	858	520	371	225	173	123	16259	Accepted
5	64	22	24	24	73	228	557	973	1115	956	1001	1113	1231	1178	1240	1357	1304	1275	784	474	298	215	143	82	15731	Accepted
6																										
7																										
8																										
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30																										
31																										

May Average **14995**

VEHICLE TRAVEL SPEED DATA

Accurate Counts
978-664-2565

Location : Route 1A
Location : South of Sagamore Grove
City/State: Portsmouth, NH
Direction: NB,

89920001

5/12/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	1	0	5	0	1	0	7
1:00	0	0	0	0	0	0	0	1	1	2	0	0	0	0	4
2:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	4	2	3	3	0	12
5:00	0	0	0	0	0	0	0	2	4	5	9	7	2	0	29
6:00	0	0	0	1	0	0	1	0	8	11	17	10	8	4	60
7:00	0	0	0	0	0	0	3	4	15	37	47	35	14	1	156
8:00	0	0	0	0	0	0	2	3	15	58	86	56	27	6	253
9:00	0	0	0	0	0	1	2	3	26	56	60	53	23	4	228
10:00	0	0	0	0	1	0	6	11	24	55	72	31	23	1	224
11:00	0	0	0	0	0	2	4	9	33	52	83	46	17	3	249
12:00 PM	0	0	0	0	1	0	4	9	28	67	93	50	24	5	281
1:00	0	0	0	1	0	0	5	10	41	74	88	40	19	6	284
2:00	0	0	0	0	0	0	2	9	46	72	86	54	15	3	287
3:00	0	0	0	0	1	1	2	16	44	81	99	36	12	5	297
4:00	0	0	0	0	0	0	1	9	29	76	82	58	23	2	280
5:00	0	0	0	0	0	0	2	10	33	66	88	53	12	1	265
6:00	0	0	0	0	0	0	0	9	25	39	62	35	22	7	199
7:00	0	0	0	0	1	0	1	4	17	41	46	22	12	2	146
8:00	0	0	0	0	0	0	0	2	8	20	23	23	5	0	81
9:00	0	0	0	0	0	0	0	0	8	8	13	7	7	0	43
10:00	0	0	0	0	0	0	0	2	3	3	7	3	4	1	23
11:00	0	0	0	0	0	0	1	0	2	4	3	2	2	1	15
Total	0	0	0	2	4	4	36	113	411	831	1071	625	275	52	3424

Percentile	15th	50th	85th	95th
Speed	26.6	31	34.7	36.6
Mean Speed (Average)	32.4			
10 MPH Pace Speed	26-35			
Number in Pace	2657			
Percent in Pace	77.6%			
Number > 30 MPH	2023			
Percent > 30 MPH	59.1%			

Accurate Counts
978-664-2565

Location : Route 1A
89920001
Location : South of Sagamore Grove
City/State: Portsmouth, NH
Direction: NB,

5/13/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	1	1	0	1	0	0	3
1:00	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
2:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
3:00	0	0	0	0	0	0	0	0	1	0	0	1	1	0	3
4:00	0	0	0	0	0	0	0	0	0	5	1	3	2	2	13
5:00	0	0	0	0	0	0	0	1	5	4	4	5	2	1	22
6:00	0	0	1	0	0	0	2	1	3	21	6	11	10	3	58
7:00	0	0	0	0	0	0	0	3	15	34	63	53	17	5	190
8:00	0	0	0	1	0	0	0	4	16	41	77	67	39	10	255
9:00	0	0	0	0	0	0	2	3	22	50	78	36	20	6	217
10:00	0	0	0	0	0	2	3	9	22	55	70	31	18	3	213
11:00	0	0	0	0	0	0	3	6	35	83	92	38	23	2	282
12:00 PM	0	0	0	0	0	0	2	14	27	59	82	44	19	4	251
1:00	0	0	0	0	0	0	3	8	30	59	87	48	19	9	263
2:00	0	0	0	0	0	0	0	5	39	78	117	64	32	10	345
3:00	0	0	0	0	0	0	0	7	38	76	102	59	27	6	315
4:00	0	0	0	0	0	0	0	4	32	61	101	54	29	6	287
5:00	0	0	0	0	0	2	2	15	21	70	96	58	31	8	303
6:00	0	0	1	0	0	0	0	8	27	44	59	59	24	7	229
7:00	0	0	0	0	0	0	1	4	15	48	68	42	18	3	199
8:00	0	0	0	0	0	0	2	3	21	32	39	21	12	3	133
9:00	0	0	0	0	0	1	0	3	17	29	18	5	4	0	77
10:00	0	0	0	0	0	1	0	0	7	5	10	7	3	2	35
11:00	0	0	0	0	0	0	0	0	1	2	8	3	0	0	14
Total	0	0	2	1	0	6	20	99	395	858	1178	711	350	91	3711

Percentile	15th	50th	85th	95th
Speed	27.2	31	35.3	37.2
Mean Speed (Average)	33.9			
10 MPH Pace Speed	26-35			
Number in Pace	2868			
Percent in Pace	77.3%			
Number > 30 MPH	2330			
Percent > 30 MPH	62.8%			

Grand Total	0	0	2	3	4	10	56	212	806	1689	2249	1336	625	143	7135

Stats

Percentile	15th	50th	85th	95th
Speed	26.6	31	34.7	37.2
Mean Speed (Average)	33.2			
10 MPH Pace Speed	26-35			
Number in Pace	5525			
Percent in Pace	77.4%			
Number > 30 MPH	4353			
Percent > 30 MPH	61.0%			

Accurate Counts
978-664-2565

Location : Route 1A
89920001
Location : South of Sagamore Grove
City/State: Portsmouth, NH
Direction: SB,

5/12/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	5
1:00	0	0	0	0	0	0	0	0	1	0	0	3	2	0	6
2:00	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	2	1	0	0	1	4
4:00	0	0	0	0	0	0	0	0	1	1	1	1	0	0	4
5:00	0	0	0	0	0	0	1	0	0	2	3	4	4	1	15
6:00	0	0	0	0	0	0	0	3	8	21	28	7	10	5	82
7:00	0	0	0	0	0	0	0	10	30	47	56	29	18	3	193
8:00	0	0	0	0	0	1	8	21	57	68	80	44	22	4	305
9:00	0	0	0	0	0	2	4	9	46	59	57	28	15	5	225
10:00	0	0	0	0	0	2	1	16	51	61	71	43	25	6	276
11:00	0	0	0	0	1	2	9	37	58	68	88	44	23	5	335
12:00 PM	0	0	0	0	0	2	2	15	36	81	76	52	30	6	300
1:00	0	0	1	1	9	11	12	22	43	73	68	39	26	3	308
2:00	0	0	0	0	2	3	14	13	63	58	73	46	23	9	304
3:00	0	0	1	4	6	6	15	17	65	103	104	39	28	4	392
4:00	0	0	2	1	1	1	9	20	72	80	116	42	22	2	368
5:00	0	0	0	0	2	0	6	19	44	100	105	41	27	11	355
6:00	0	0	0	0	0	0	15	14	40	53	55	44	21	9	251
7:00	0	0	0	0	0	0	3	8	22	32	51	29	22	7	174
8:00	0	0	0	0	0	0	2	12	35	37	48	19	6	5	164
9:00	0	0	0	0	0	0	0	2	8	7	28	14	9	1	69
10:00	0	0	0	0	0	0	0	0	1	4	4	7	10	2	28
11:00	0	0	0	0	0	0	0	0	1	4	5	1	2	0	13
Total	0	0	4	6	21	30	101	238	682	963	1123	576	345	89	4178

Percentile	15th	50th	85th	95th
Speed	24.8	30.3	34.7	36.6
Mean Speed (Average)	32.2			
10 MPH Pace Speed	24-33			
Number in Pace	2949			
Percent in Pace	70.6%			
Number > 30 MPH	2133			
Percent > 30 MPH	51.1%			

Accurate Counts
978-664-2565

Location : Route 1A
Location : South of Sagamore Grove
City/State: Portsmouth, NH
Direction: SB,

89920001

5/13/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	4	3	2	0	0	9
1:00	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
2:00	0	0	0	0	0	0	0	0	1	2	0	0	0	1	4
3:00	0	0	0	0	0	0	0	0	1	0	3	0	0	0	4
4:00	0	0	0	1	0	0	0	0	0	1	0	1	0	3	6
5:00	0	0	0	0	0	0	1	0	2	2	1	4	3	2	15
6:00	0	0	0	0	0	1	2	1	9	13	26	20	9	3	84
7:00	0	0	0	1	0	0	7	22	34	49	54	28	18	9	222
8:00	0	0	0	0	0	0	4	12	57	80	89	40	18	2	302
9:00	0	0	0	0	0	0	1	6	40	67	66	34	15	6	235
10:00	0	0	0	0	1	8	12	28	41	56	63	33	23	7	272
11:00	0	0	0	0	3	1	11	23	58	91	79	42	24	2	334
12:00 PM	0	0	0	0	1	2	16	28	66	85	107	24	19	4	352
1:00	0	0	0	3	4	3	15	34	66	59	68	36	13	1	302
2:00	0	0	2	2	3	2	15	24	50	102	99	46	21	8	374
3:00	0	0	0	0	0	0	3	23	66	102	109	51	22	6	382
4:00	0	0	0	0	2	2	17	22	66	94	132	44	24	4	407
5:00	0	0	0	2	2	7	10	30	75	122	91	45	28	11	423
6:00	0	0	0	0	3	4	11	21	68	65	74	31	23	3	303
7:00	0	0	0	0	0	0	6	13	20	60	62	32	21	3	217
8:00	0	0	0	0	0	0	3	10	30	36	54	23	7	2	165
9:00	0	0	0	0	0	1	1	2	8	15	32	16	4	0	79
10:00	0	0	0	0	0	0	0	4	7	2	10	7	9	3	42
11:00	0	0	0	0	0	0	0	0	3	4	5	5	4	1	22
Total	0	0	2	9	19	31	135	303	768	1111	1227	565	305	82	4557
			Percentile	15th	50th	85th	95th								
			Speed	24.8	29.7	34.1	36.6								
			Mean Speed (Average)	31.5											
			10 MPH Pace Speed	24-33											
			Number in Pace	3286											
			Percent in Pace	72.1%											
			Number > 30 MPH	2179											
			Percent > 30 MPH	47.8%											
Grand Total	0	0	6	15	40	61	236	541	1450	2074	2350	1141	650	171	8735
Stats			Percentile	15th	50th	85th	95th								
			Speed	24.8	29.7	34.7	36.6								
			Mean Speed (Average)	31.8											
			10 MPH Pace Speed	24-33											
			Number in Pace	6234											
			Percent in Pace	71.4%											
			Number > 30 MPH	4312											
			Percent > 30 MPH	49.4%											

Accurate Counts
978-664-2565

Location : Route 1A
Location : South of Sagamore Grove
City/State: Portsmouth, NH
Direction: Combined

89920001

5/12/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	1	1	9	0	1	0	12
1:00	0	0	0	0	0	0	0	1	2	2	0	3	2	0	10
2:00	0	0	0	0	0	0	0	0	0	1	1	1	0	0	3
3:00	0	0	0	0	0	0	0	0	0	2	1	0	0	1	4
4:00	0	0	0	0	0	0	0	0	1	5	3	4	3	0	16
5:00	0	0	0	0	0	0	1	2	4	7	12	11	6	1	44
6:00	0	0	0	1	0	0	1	3	16	32	45	17	18	9	142
7:00	0	0	0	0	0	0	3	14	45	84	103	64	32	4	349
8:00	0	0	0	0	0	1	10	24	72	126	166	100	49	10	558
9:00	0	0	0	0	0	3	6	12	72	115	117	81	38	9	453
10:00	0	0	0	0	1	2	7	27	75	116	143	74	48	7	500
11:00	0	0	0	0	1	4	13	46	91	120	171	90	40	8	584
12:00 PM	0	0	0	0	1	2	6	24	64	148	169	102	54	11	581
1:00	0	0	1	2	9	11	17	32	84	147	156	79	45	9	592
2:00	0	0	0	0	2	3	16	22	109	130	159	100	38	12	591
3:00	0	0	1	4	7	7	17	33	109	184	203	75	40	9	689
4:00	0	0	2	1	1	1	10	29	101	156	198	100	45	4	648
5:00	0	0	0	0	2	0	8	29	77	166	193	94	39	12	620
6:00	0	0	0	0	0	0	15	23	65	92	117	79	43	16	450
7:00	0	0	0	0	1	0	4	12	39	73	97	51	34	9	320
8:00	0	0	0	0	0	0	2	14	43	57	71	42	11	5	245
9:00	0	0	0	0	0	0	0	2	16	15	41	21	16	1	112
10:00	0	0	0	0	0	0	0	2	4	7	11	10	14	3	51
11:00	0	0	0	0	0	0	1	0	3	8	8	3	4	1	28
Total	0	0	4	8	25	34	137	351	1093	1794	2194	1201	620	141	7602

Percentile	15th	50th	85th	95th
Speed	26	30.3	34.7	36.6
Mean Speed (Average)	32.3			
10 MPH Pace Speed	26-35			
Number in Pace	5550			
Percent in Pace	73.0%			
Number > 30 MPH	4156			
Percent > 30 MPH	54.7%			

Accurate Counts
978-664-2565

Location : Route 1A 89920001
Location : South of Sagamore Grove
City/State: Portsmouth, NH
Direction: Combined

5/13/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	1	5	3	3	0	0	12
1:00	0	0	0	0	0	0	0	0	0	1	0	1	0	2	4
2:00	0	0	0	0	0	0	0	1	1	2	0	1	0	1	6
3:00	0	0	0	0	0	0	0	0	2	0	3	1	1	0	7
4:00	0	0	0	1	0	0	0	0	0	6	1	4	2	5	19
5:00	0	0	0	0	0	0	1	1	7	6	5	9	5	3	37
6:00	0	0	1	0	0	1	4	2	12	34	32	31	19	6	142
7:00	0	0	0	1	0	0	7	25	49	83	117	81	35	14	412
8:00	0	0	0	1	0	0	4	16	73	121	166	107	57	12	557
9:00	0	0	0	0	0	0	3	9	62	117	144	70	35	12	452
10:00	0	0	0	0	1	10	15	37	63	111	133	64	41	10	485
11:00	0	0	0	0	3	1	14	29	93	174	171	80	47	4	616
12:00 PM	0	0	0	0	1	2	18	42	93	144	189	68	38	8	603
1:00	0	0	0	3	4	3	18	42	96	118	155	84	32	10	565
2:00	0	0	2	2	3	2	15	29	89	180	216	110	53	18	719
3:00	0	0	0	0	0	0	3	30	104	178	211	110	49	12	697
4:00	0	0	0	0	2	2	17	26	98	155	233	98	53	10	694
5:00	0	0	0	2	2	9	12	45	96	192	187	103	59	19	726
6:00	0	0	1	0	3	4	11	29	95	109	133	90	47	10	532
7:00	0	0	0	0	0	0	7	17	35	108	130	74	39	6	416
8:00	0	0	0	0	0	0	5	13	51	68	93	44	19	5	298
9:00	0	0	0	0	0	2	1	5	25	44	50	21	8	0	156
10:00	0	0	0	0	0	1	0	4	14	7	20	14	12	5	77
11:00	0	0	0	0	0	0	0	0	4	6	13	8	4	1	36
Total	0	0	4	10	19	37	155	402	1163	1969	2405	1276	655	173	8268
			Percentile	15th	50th	85th	95th								
			Speed	25.4	30.3	34.7	36.6								
			Mean Speed (Average)	32.5											
			10 MPH Pace Speed	26-35											
			Number in Pace	6034											
			Percent in Pace	73.0%											
			Number > 30 MPH	4509											
			Percent > 30 MPH	54.5%											
Grand Total	0	0	8	18	44	71	292	753	2256	3763	4599	2477	1275	314	15870
Stats			Percentile	15th	50th	85th	95th								
			Speed	25.4	30.3	34.7	36.6								
			Mean Speed (Average)	32.4											
			10 MPH Pace Speed	26-35											
			Number in Pace	11584											
			Percent in Pace	73.0%											
			Number > 30 MPH	8665											
			Percent > 30 MPH	54.6%											

GENERAL BACKGROUND TRAFFIC GROWTH

General Background Traffic Growth - Daily Traffic Volumes

CITY/TOWN	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth Rate
Portsmouth	Lafayette Road	South of South Street	12,000			13,000			12,000	12,240	12,485	11,179	11,313	**-1.25%**
New Castle	Wentworth Road	At Rye Town Line		4,200			4,000	4,088	4,211	3,551	3,803	3,879	3,167	**-2.68%**
Portsmouth	South Street	East of US Route 1	5,800			8,800			7,600	7,752	7,907	7,366	7,454	**0.46%**
Portsmouth	Middle Street	South of Mendum Avenue		10,000			7,900	8,074	8,316	9,628	9,821	10,017	8,793	**1.75%**
Portsmouth	Middle Street	East of US Route 1	6,200			6,800			7,200	7,344	7,491	6,686	6,766	**-0.10%**
Portsmouth	Newcastle Avenue	At New Castle Town Line	3,400			2,900			2,900	2,958	3,017	3,163	3,201	**0.86%**
Portsmouth	Richards Avenue	South of US Route 1	1,800			1,300			1,400	1,428	1,457	1,700	1,720	**2.60%**
Portsmouth	Newcastle Avenue	East of South Street	1,400			1,400			1,400	1,428	1,457	1,486	1,374	**0.15%**
Portsmouth	Marcy Street	At Mill Pond Bridge				2,900		6,000	6,180	6,304	5,291	5,397	5,462	**4.18%**
Portsmouth	Sagamore Avenue	At Sagamore Creek		8,100			6,500	6,643	6,842	7,520	7,670	7,823	7,086	**1.14%**
Portsmouth	Cass Street	West of US Route 1		2,700			2,400	2,453	2,527	2,953	3,012	3,072	2,557	**2.02%**
Portsmouth	Junkins Avenue	North of Lincoln Avenue		3,900			3,300	3,373	3,474	2,962	3,021	3,081	2,766	**-3.07%**
Portsmouth	South Street	West of Monroe Street	4,700		4,700			4,600	4,738	4,833	4,066	4,147	4,197	**-1.73%**
Portsmouth	Elwyn Road	At Rye Town Line		7,800				7,400	7,790	10,317	10,523	10,733	8,408	**4.28%**
Rye	Wentworth Road	At Portsmouth City Line		5,200			4,900	5,008	5,158	5,767	5,882	6,000	4,937	**1.38%**
Rye	Brackett Road	South of NH Route 1A		2,100			1,400	1,431	1,474	1,804	1,840	1,877	1,469	**1.08%**
Rye	Sagamore Road	South of Berry Brook Lane		4,400			4,700	4,803	4,947	4,394	4,482	4,572	3,840	**-1.87%**
														0.54%

TRIP-GENERATION CALCULATIONS

Multifamily Housing (Low-Rise)
(220)

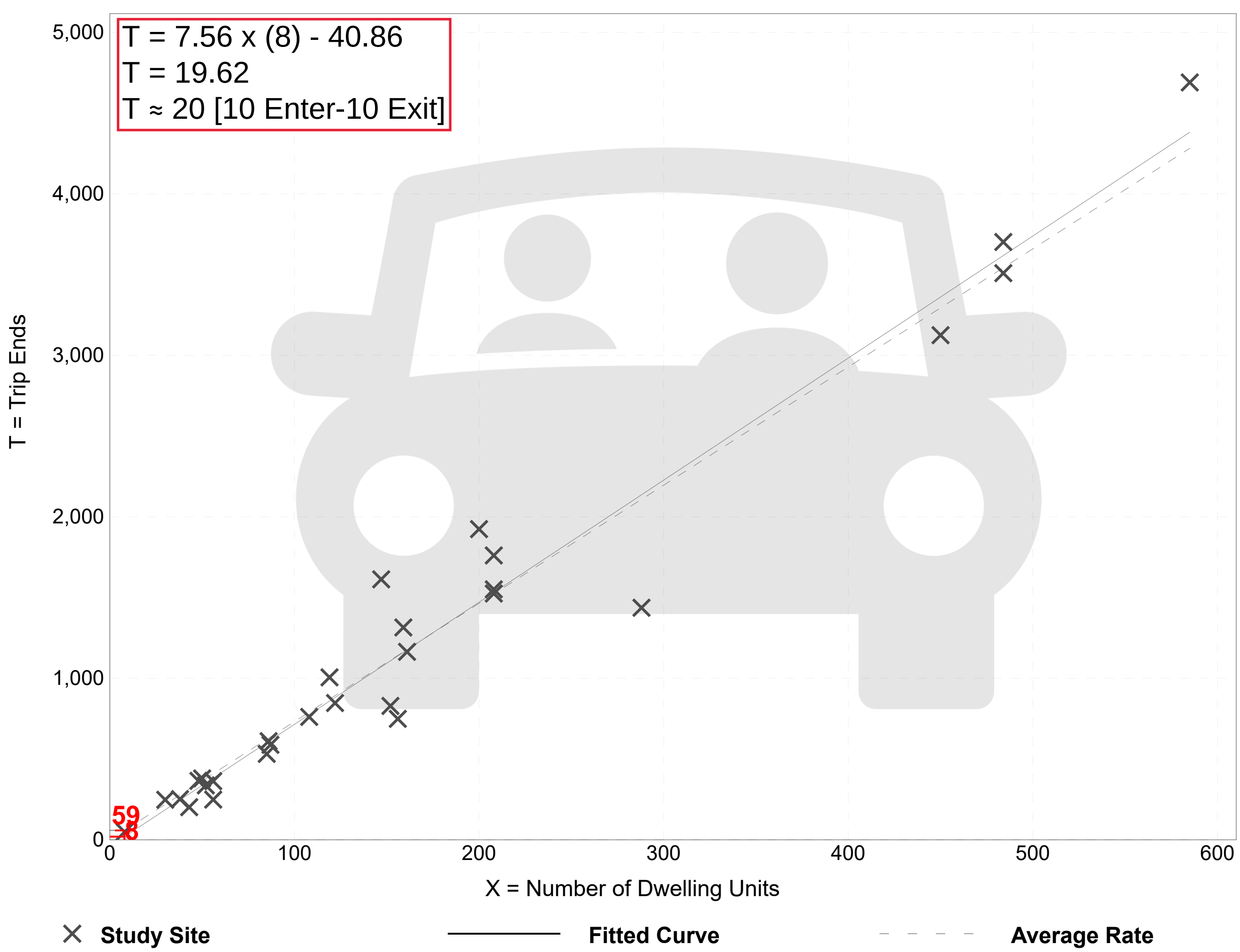
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 29
Avg. Num. of Dwelling Units: 168
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

Data Plot and Equation



Fitted Curve Equation: T = 7.56(X) - 40.86 **R^2= 0.96**

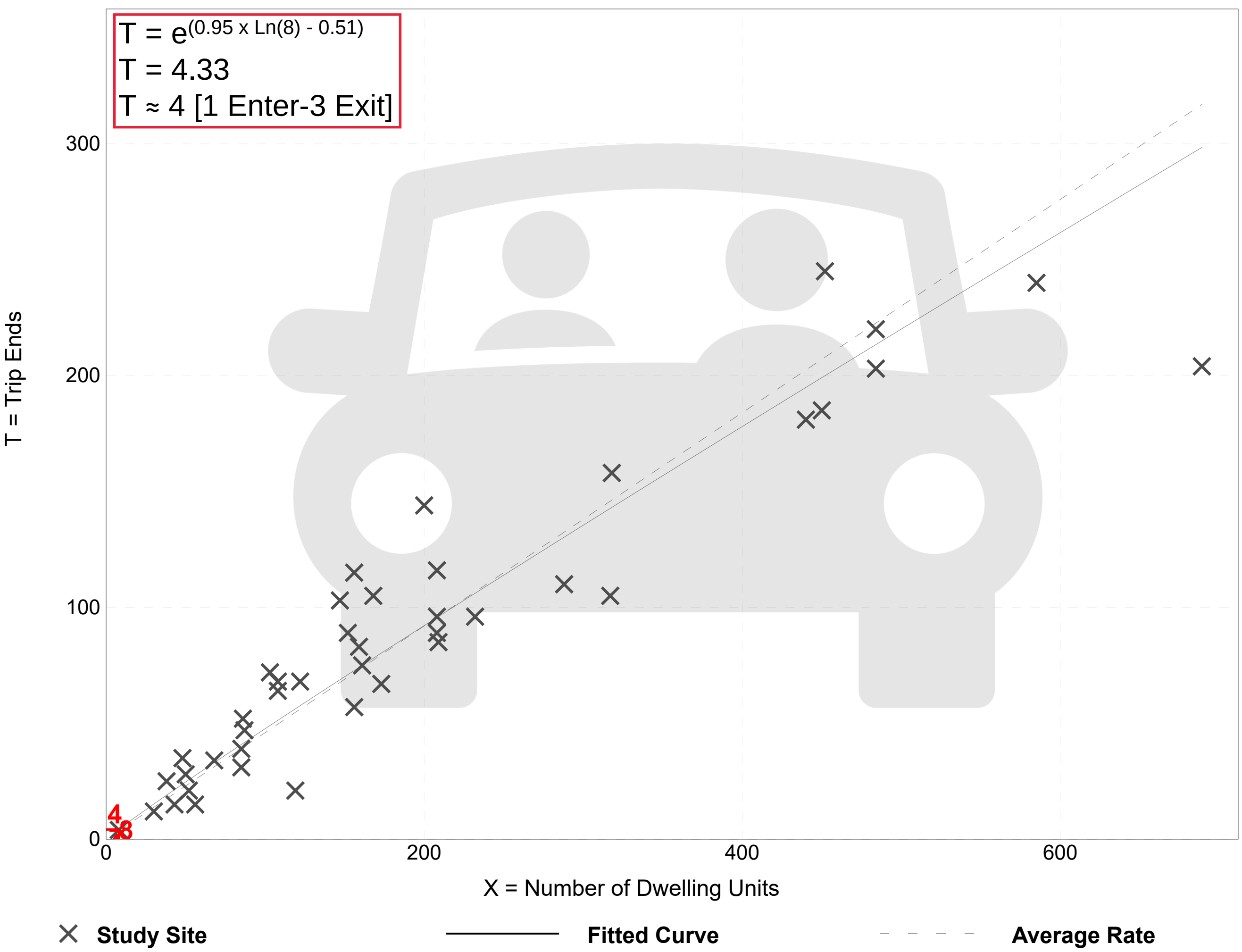
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	42
Avg. Num. of Dwelling Units:	199
Directional Distribution:	23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.95 Ln(X) - 0.51

R^2= 0.90

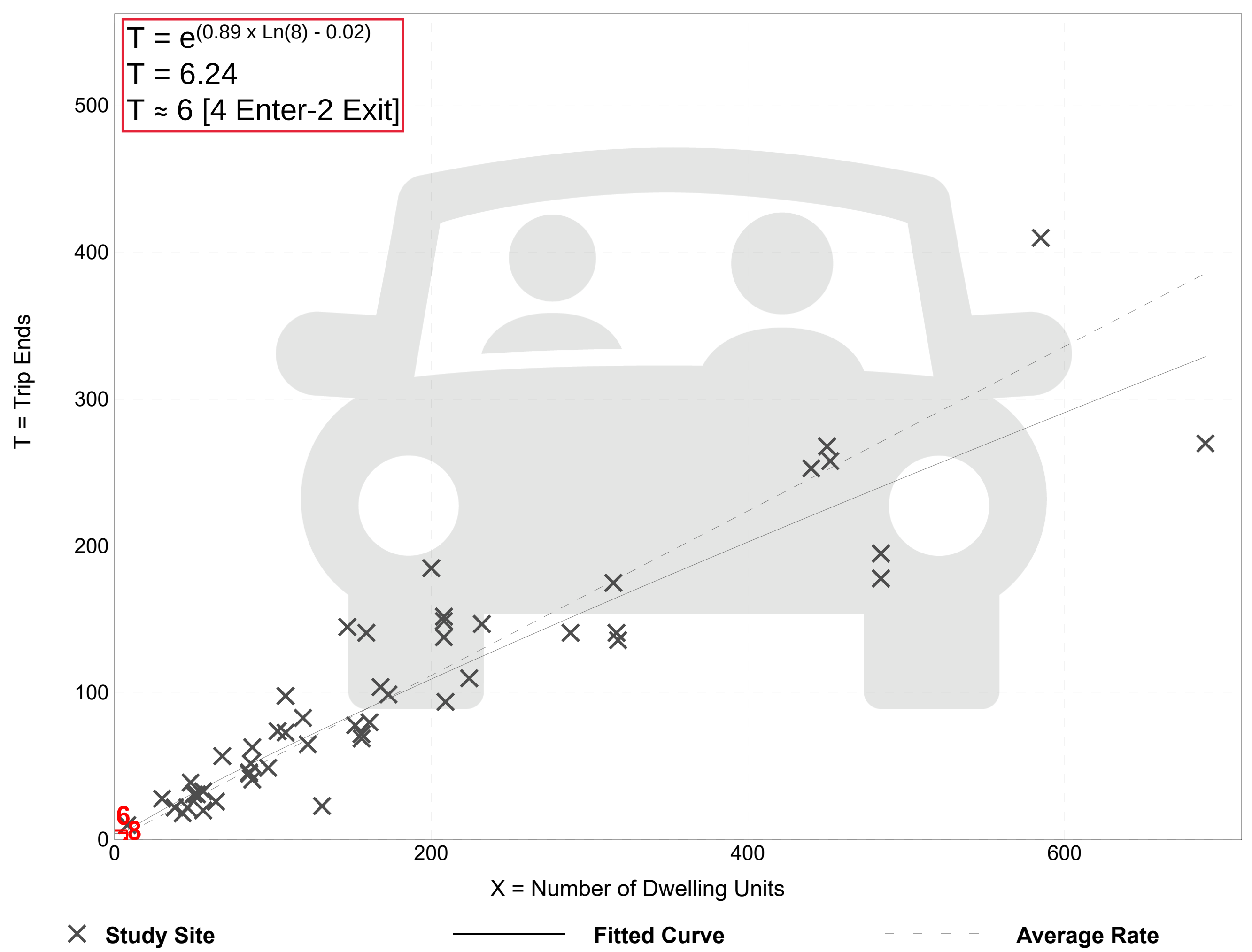
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	50
Avg. Num. of Dwelling Units:	187
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.89 Ln(X) - 0.02 **R^2= 0.86**

Single-Family Detached Housing
(210)

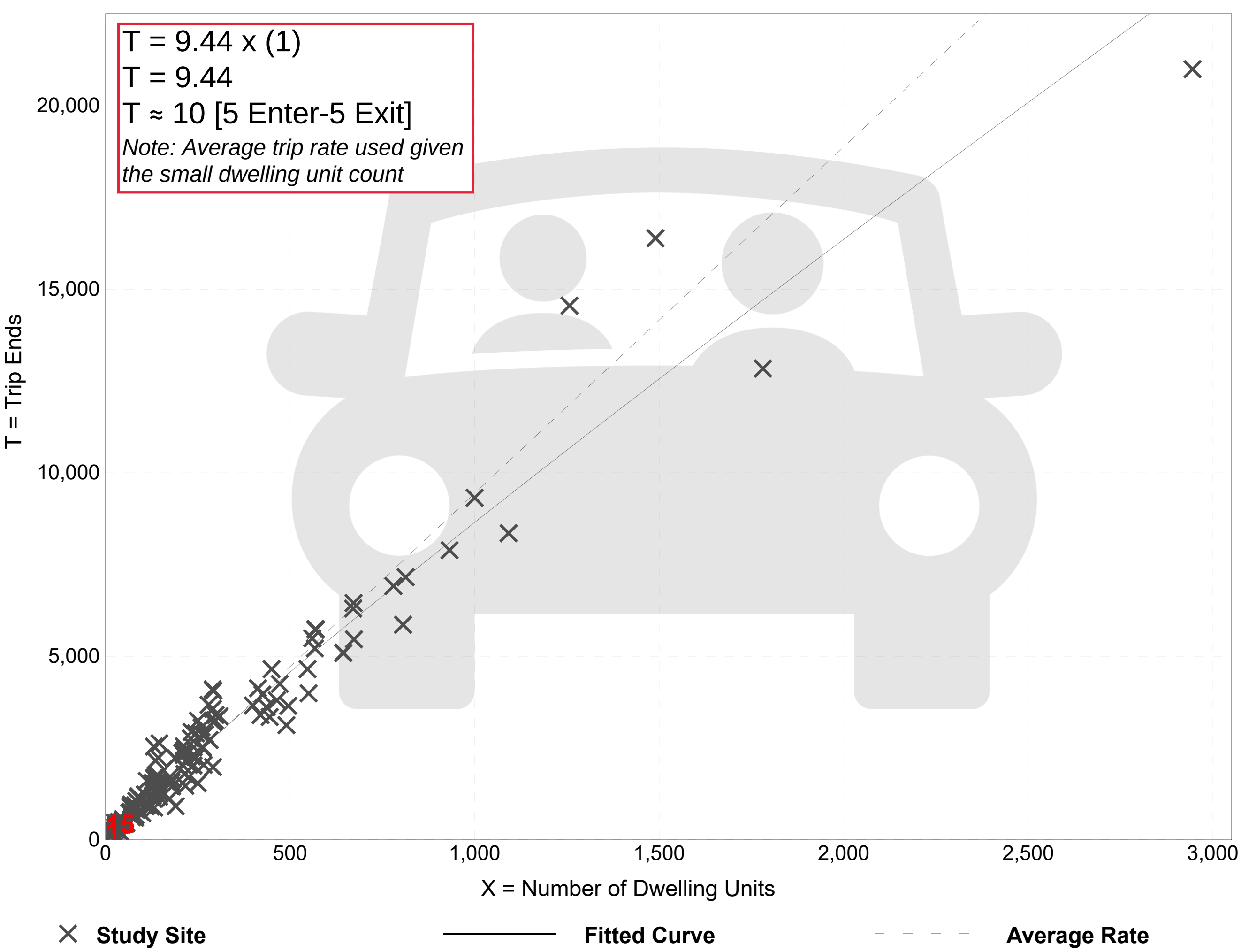
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.71 **R^2= 0.95**

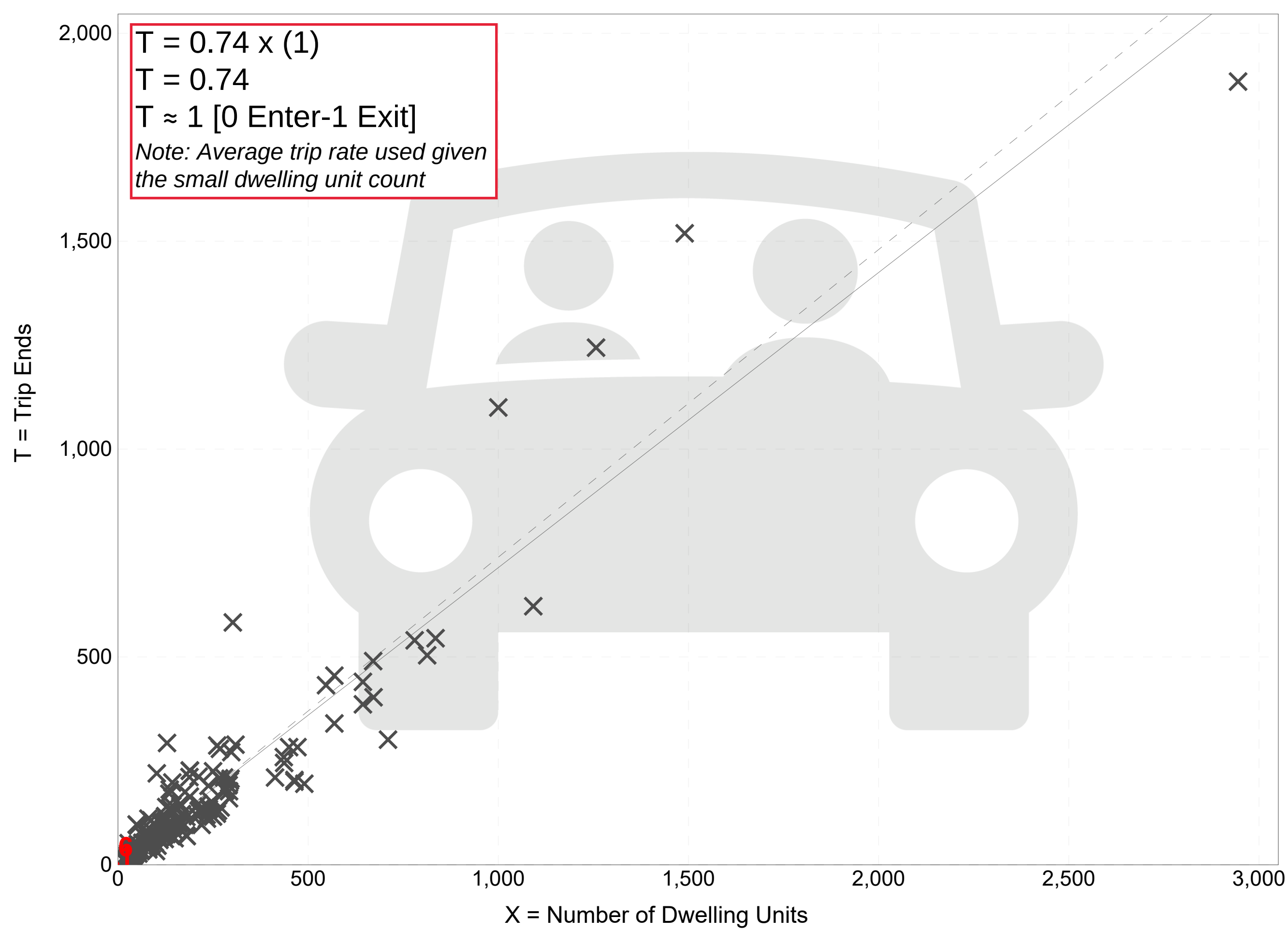
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	173
Avg. Num. of Dwelling Units:	219
Directional Distribution:	25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



Study Site — Fitted Curve — Average Rate

Fitted Curve Equation: T = 0.71(X) + 4.80 **R^2= 0.89**

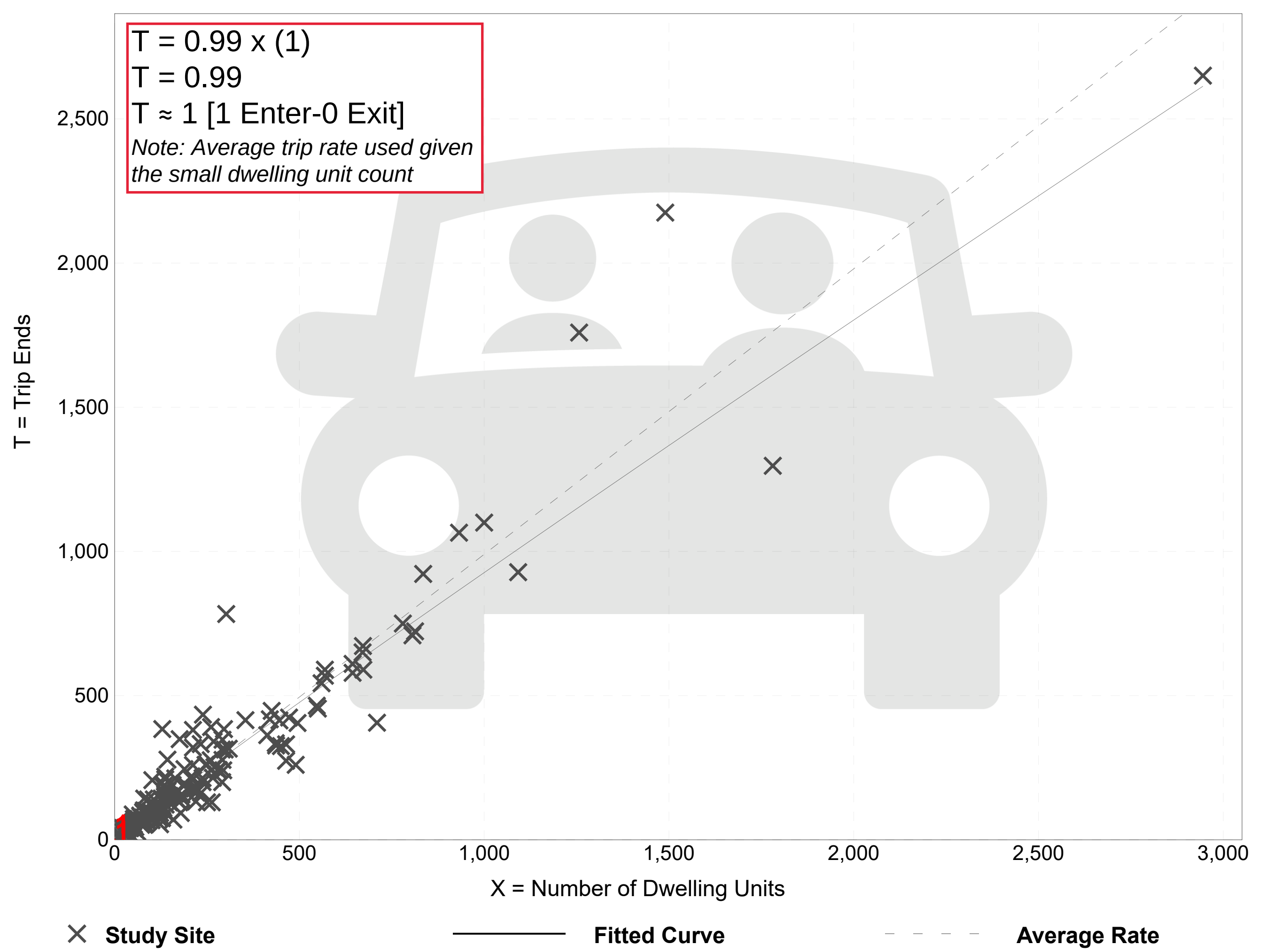
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 4 and 6 p.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	190
Avg. Num. of Dwelling Units:	242
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.96 Ln(X) + 0.20 **R^2= 0.92**

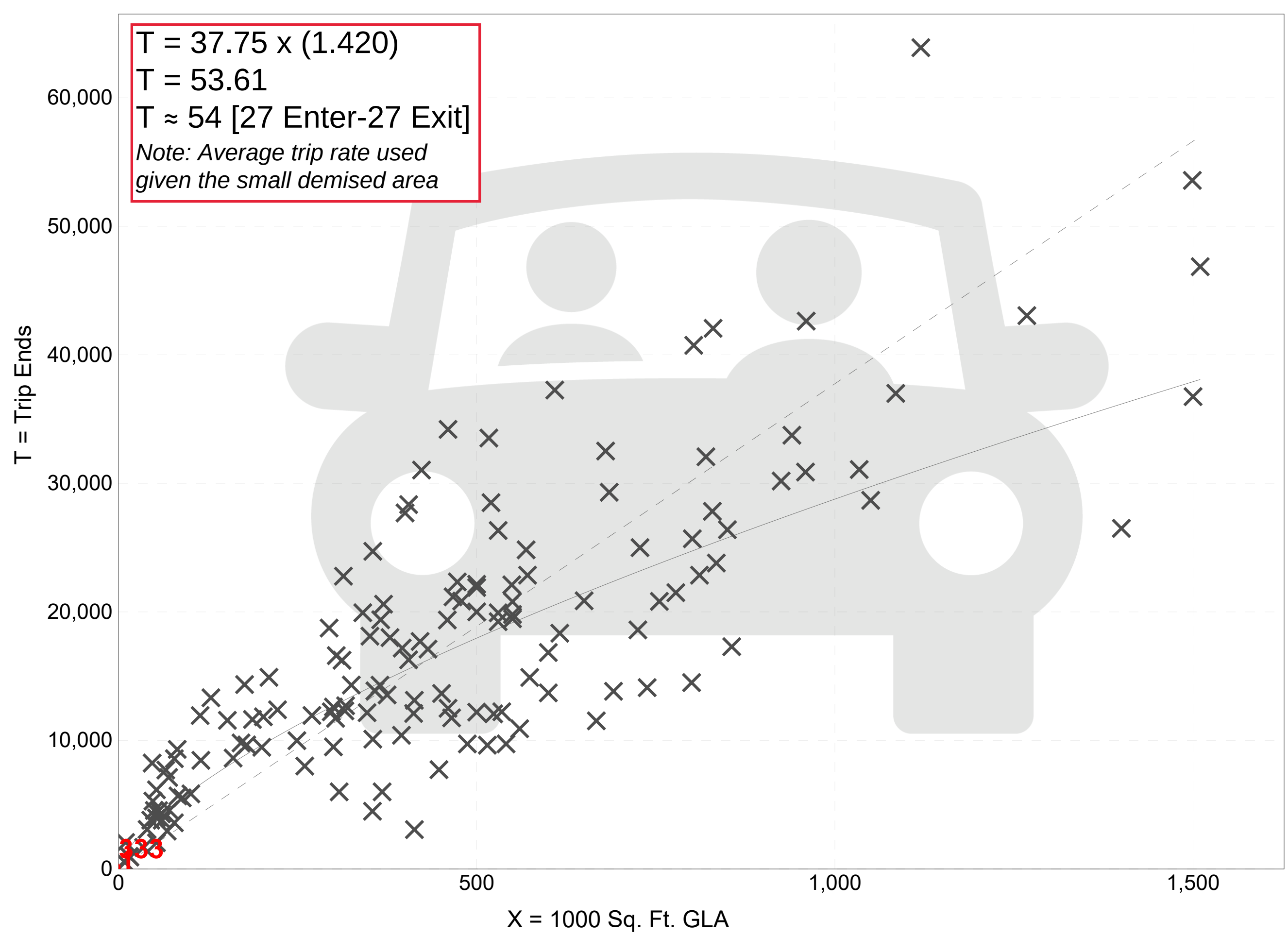
Shopping Center
(820)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GLA**
On a:	**Weekday**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	147
Avg. 1000 Sq. Ft. GLA:	453
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



Study Site — Fitted Curve — Average Rate

Fitted Curve Equation: Ln(T) = 0.68 Ln(X) + 5.57 **R^2= 0.76**

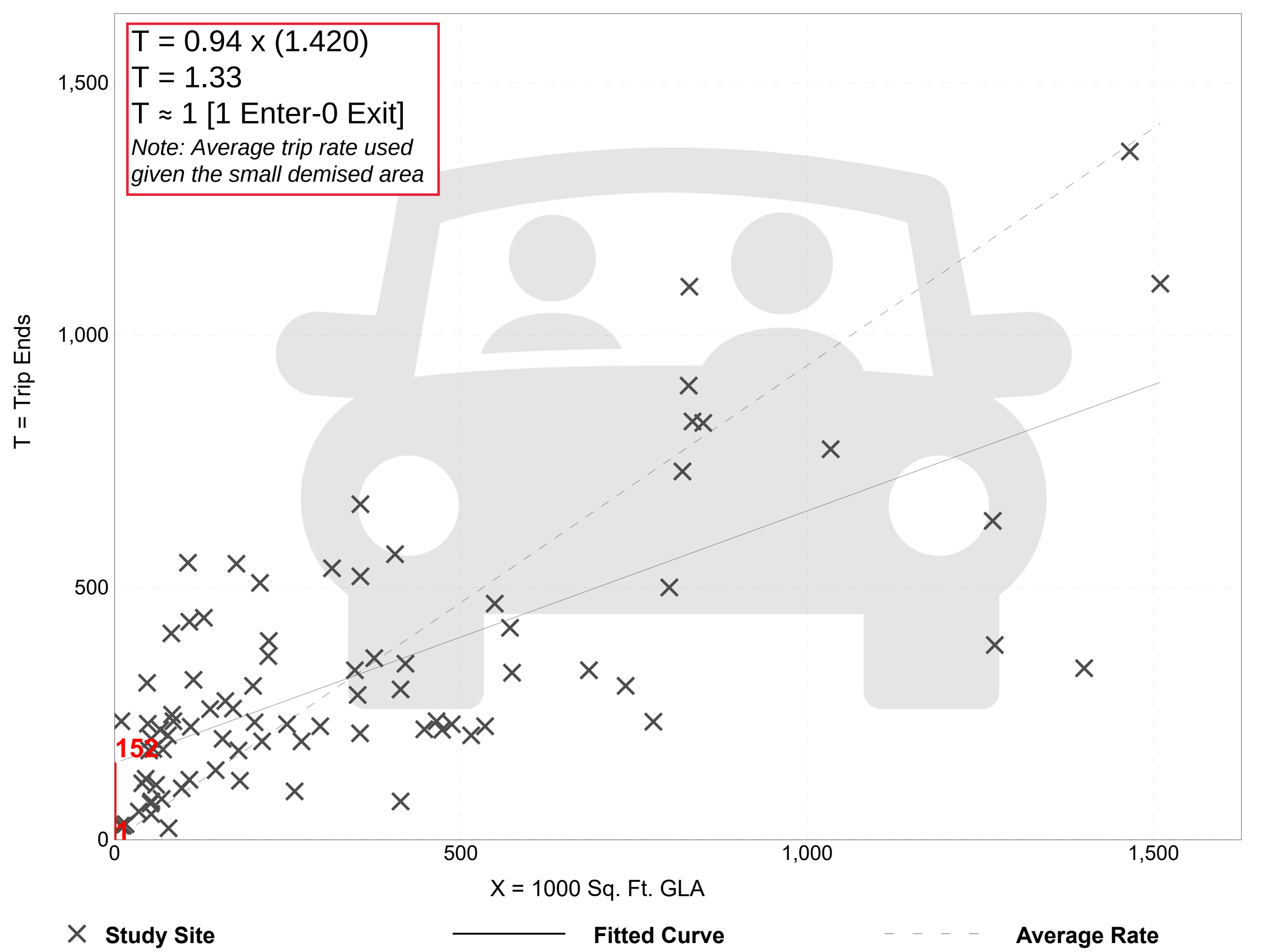
Shopping Center
(820)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GLA**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	84
Avg. 1000 Sq. Ft. GLA:	351
Directional Distribution:	62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



Fitted Curve Equation: T = 0.50(X) + 151.78 **R^2= 0.50**

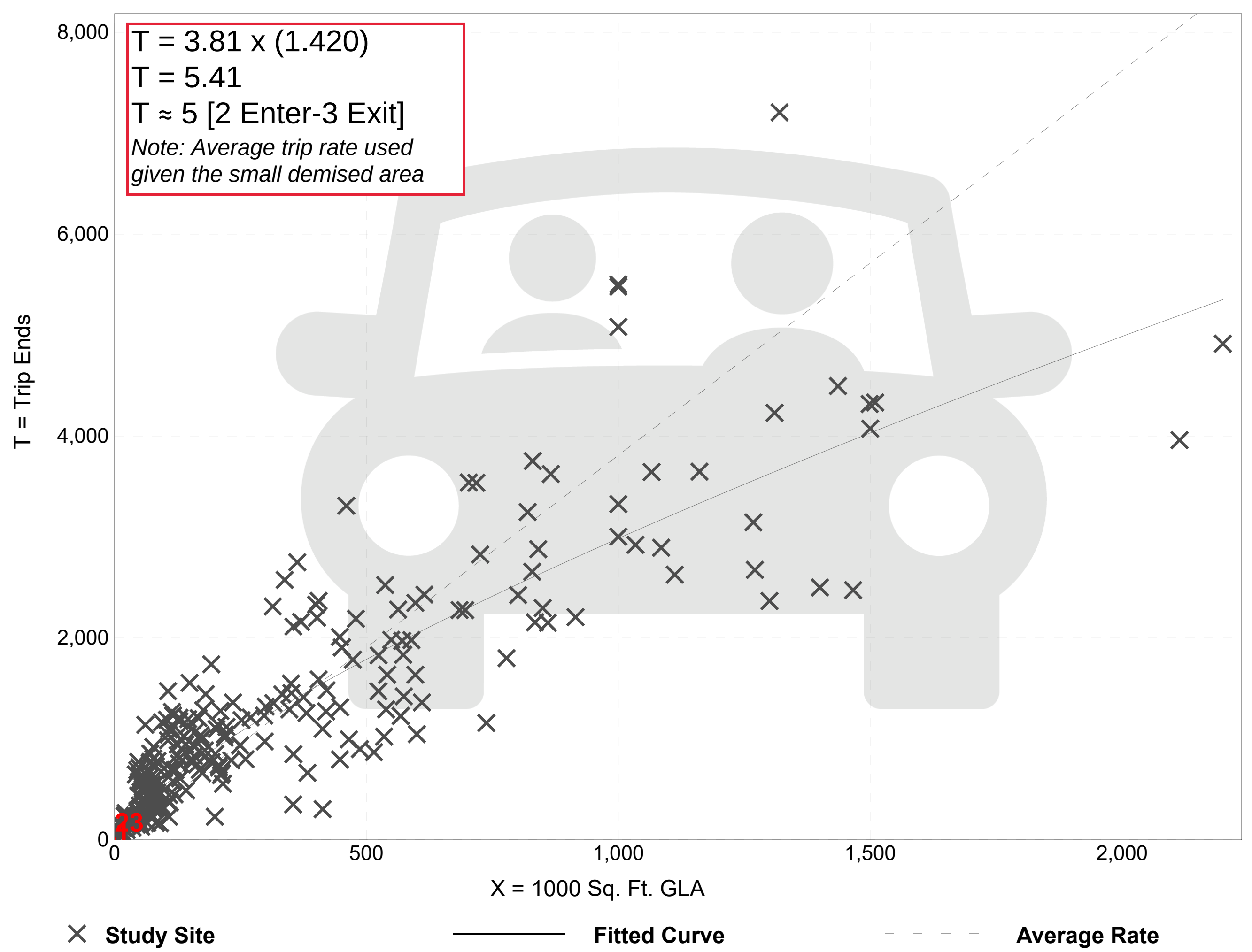
Shopping Center
(820)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GLA**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 4 and 6 p.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	261
Avg. 1000 Sq. Ft. GLA:	327
Directional Distribution:	48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.74 Ln(X) + 2.89

R^2= 0.82

High-Turnover (Sit-Down) Restaurant
(932)

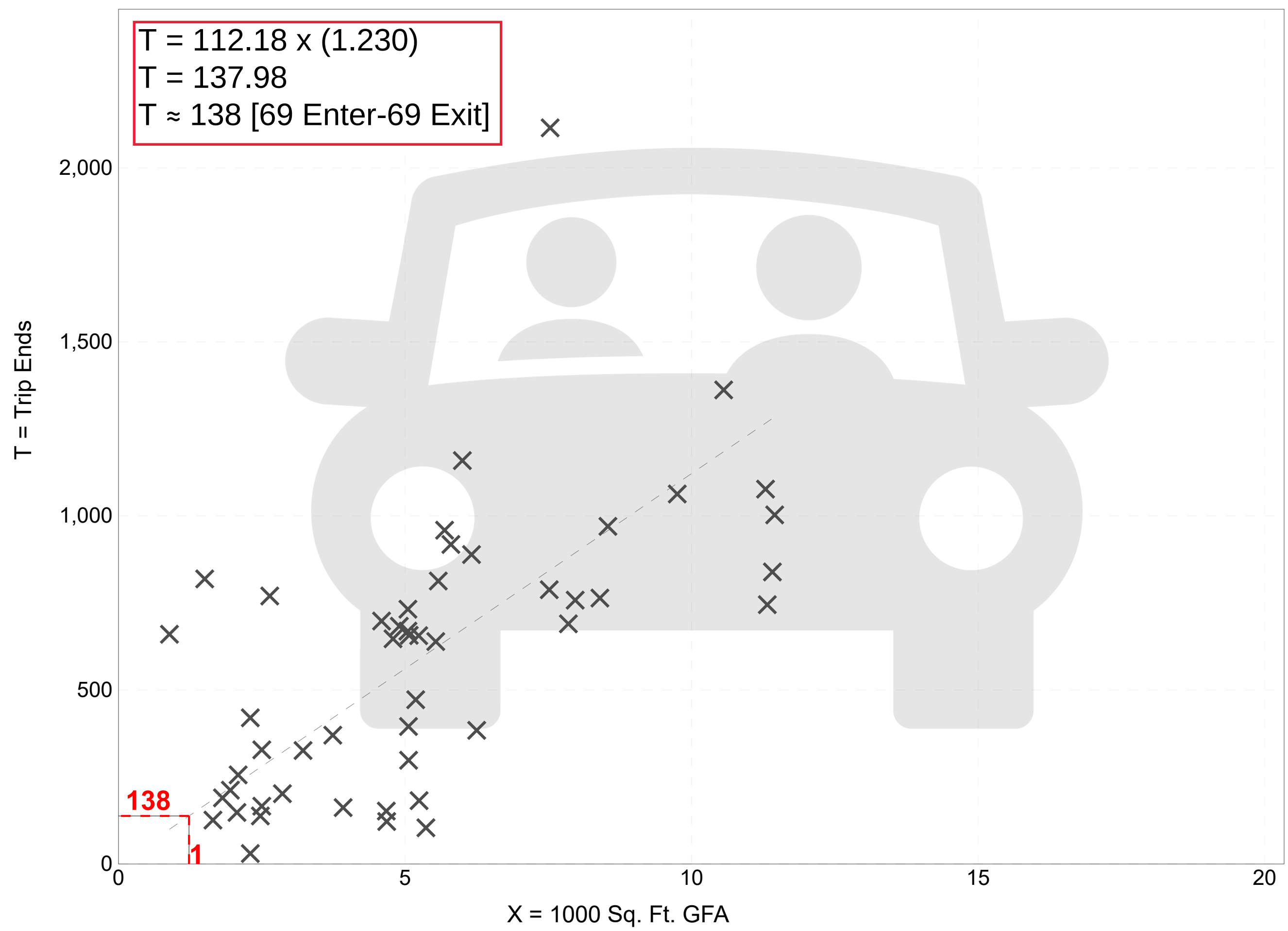
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 50
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
112.18	13.04 - 742.41	72.51

Data Plot and Equation



Fitted Curve Equation: Not Given **R^2= ******

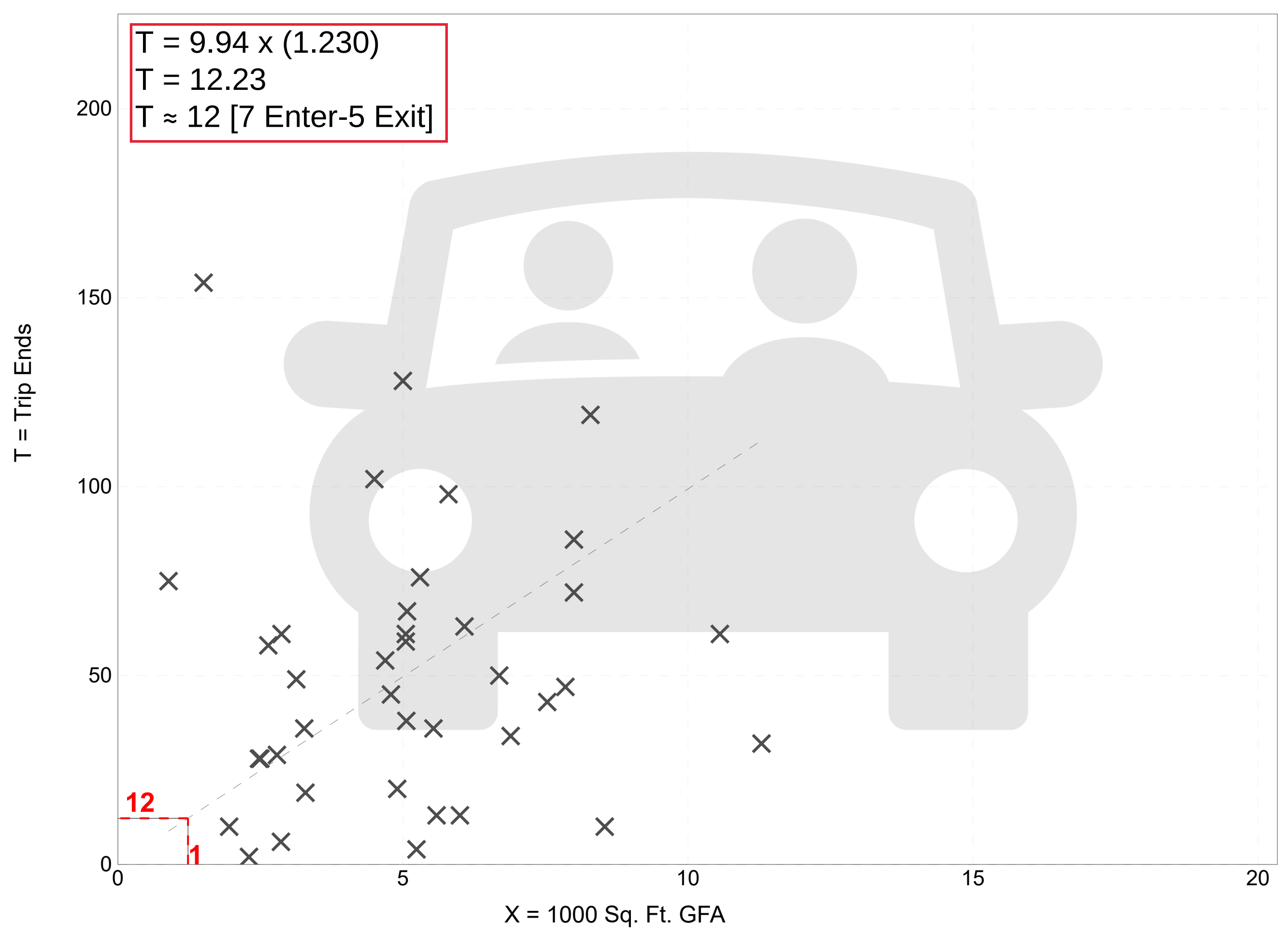
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	39
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.94	0.76 - 102.39	11.33

Data Plot and Equation



Fitted Curve Equation: Not Given **R^2= ******

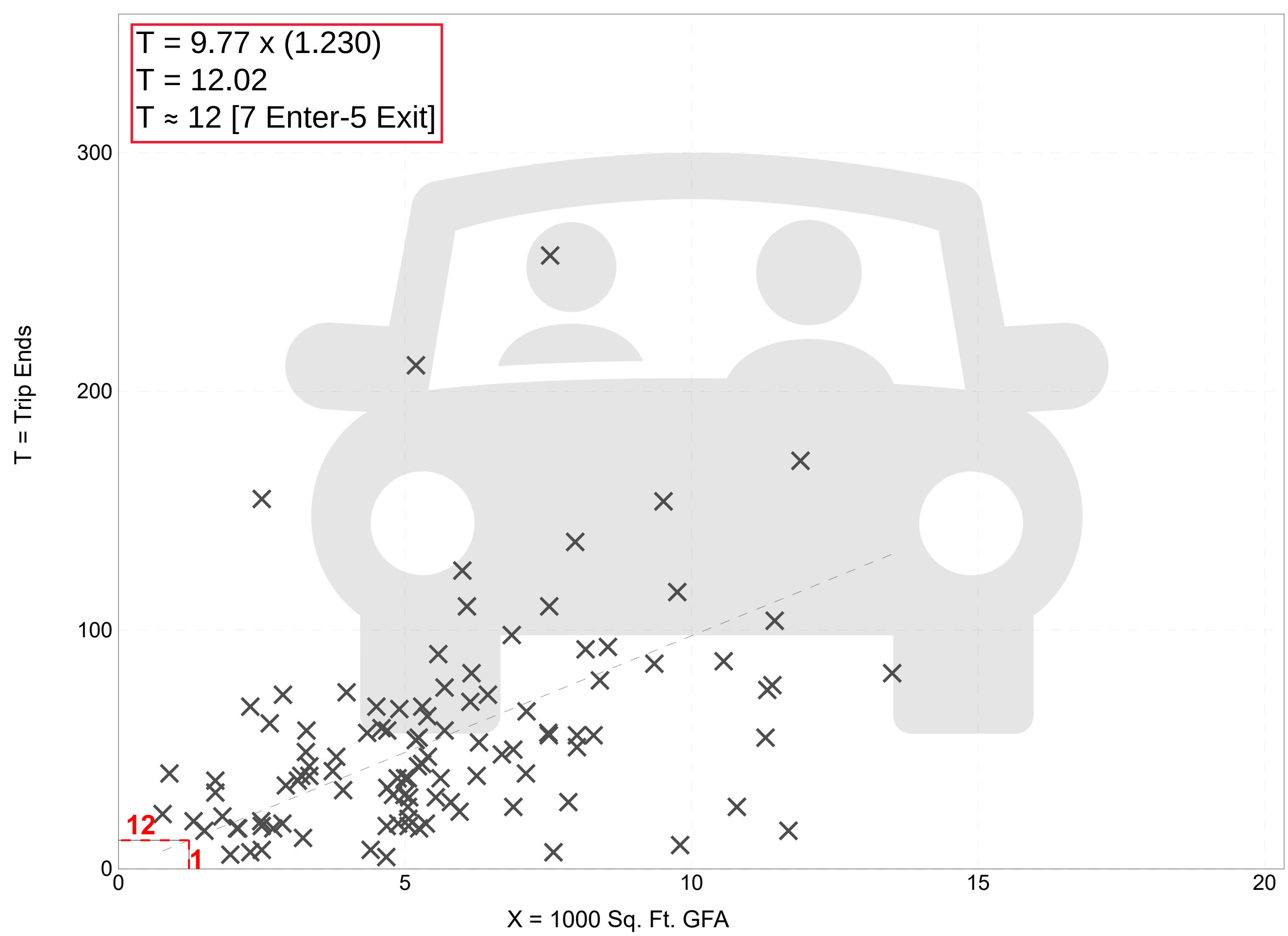
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 4 and 6 p.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	107
Avg. 1000 Sq. Ft. GFA:	6
Directional Distribution:	62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.77	0.92 - 62.00	7.37

Data Plot and Equation



Study Site

Average Rate

Fitted Curve Equation: Not Given

R^2= ****

CAPACITY ANALYSIS WORKSHEETS

NH Route 1A at Sagamore Grove
Sagamore Grove at the West Project Site Driveway
Sagamore Grove at the East Project Site Driveway

NH Route 1A at Sagamore Grove

Intersection						
Int Delay, s/veh	0.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	315	0	1	301
Future Vol, veh/h	2	2	315	0	1	301
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	4	4	354	0	1	320

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	676	354	0	0	354	0
Stage 1	354	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	422	694	-	-	1216	-
Stage 1	715	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	694	-	-	1216	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	525	1216	-
HCM Lane V/C Ratio	-	-	0.015	0.001	-
HCM Control Delay (s)	-	-	12	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	355	1	2	406
Future Vol, veh/h	2	1	355	1	2	406
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	5	3	378	1	2	441

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	824	379	0	0	379	0
Stage 1	379	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	346	672	-	-	1191	-
Stage 1	696	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	345	672	-	-	1191	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	412	1191	-
HCM Lane V/C Ratio	-	-	0.019	0.002	-
HCM Control Delay (s)	-	-	13.9	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	318	0	1	304
Future Vol, veh/h	2	2	318	0	1	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	4	4	357	0	1	323

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	682	357	0	0	357	0
Stage 1	357	-	-	-	-	-
Stage 2	325	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	419	692	-	-	1213	-
Stage 1	713	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	419	692	-	-	1213	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	522	1213	-
HCM Lane V/C Ratio	-	-	0.015	0.001	-
HCM Control Delay (s)	-	-	12	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	359	1	2	410
Future Vol, veh/h	2	1	359	1	2	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	5	3	382	1	2	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	833	383	0	0	383	0
Stage 1	383	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	341	669	-	-	1187	-
Stage 1	694	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	340	669	-	-	1187	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	1187	-
HCM Lane V/C Ratio	-	-	0.019	0.002	-
HCM Control Delay (s)	-	-	14	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2022 Build Weekday Morning Peak Hour
1: NH Route 1A & Sagamore Grove

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	318	0	2	304
Future Vol, veh/h	3	4	318	0	2	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	6	8	357	0	2	323

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	684	357	0	0	357	0
Stage 1	357	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	417	692	-	-	1213	-
Stage 1	713	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	416	692	-	-	1213	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	539	1213	-
HCM Lane V/C Ratio	-	-	0.026	0.002	-
HCM Control Delay (s)	-	-	11.9	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	359	3	4	410
Future Vol, veh/h	3	2	359	3	4	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	8	5	382	3	4	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	838	384	0	0	385	0
Stage 1	384	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	339	668	-	-	1185	-
Stage 1	693	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	338	668	-	-	1185	-
Mov Cap-2 Maneuver	338	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	421	1185	-
HCM Lane V/C Ratio	-	-	0.031	0.004	-
HCM Control Delay (s)	-	-	13.8	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	351	0	1	336
Future Vol, veh/h	2	2	351	0	1	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	4	4	394	0	1	357

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	753	394	0	0	394	0
Stage 1	394	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	380	659	-	-	1176	-
Stage 1	686	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	659	-	-	1176	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	482	1176	-
HCM Lane V/C Ratio	-	-	0.017	0.001	-
HCM Control Delay (s)	-	-	12.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	396	1	2	453
Future Vol, veh/h	2	1	396	1	2	453
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	5	3	421	1	2	492

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	918	422	0	0	422	0
Stage 1	422	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	304	636	-	-	1148	-
Stage 1	666	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	303	636	-	-	1148	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	615	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	367	1148	-
HCM Lane V/C Ratio	-	-	0.022	0.002	-
HCM Control Delay (s)	-	-	15	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	351	0	2	336
Future Vol, veh/h	3	4	351	0	2	336
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	94	94
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	6	8	394	0	2	357

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	755	394	0	0	394	0
Stage 1	394	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	379	659	-	-	1176	-
Stage 1	686	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	378	659	-	-	1176	-
Mov Cap-2 Maneuver	378	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	500	1176	-
HCM Lane V/C Ratio	-	-	0.028	0.002	-
HCM Control Delay (s)	-	-	12.4	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	396	3	4	453
Future Vol, veh/h	3	2	396	3	4	453
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	94	94	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	8	5	421	3	4	492

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	923	423	0	0	424	0
Stage 1	423	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	302	635	-	-	1146	-
Stage 1	665	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	300	635	-	-	1146	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	380	1146	-
HCM Lane V/C Ratio	-	-	0.035	0.004	-
HCM Control Delay (s)	-	-	14.8	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Sagamore Grove at the West Project Site Driveway

Intersection						
Int Delay, s/veh	1.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	1	0	5	2	0
Future Vol, veh/h	1	1	0	5	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	1	0	6	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2	0	8	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1620	-	1013	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1017	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1620	-	1013	1082
Mov Cap-2 Maneuver	-	-	-	-	1013	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1013	-	-	1620	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	3	0	4	1	0
Future Vol, veh/h	4	3	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	4	3	0	4	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	10	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1614	-	1010	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1614	-	1010	1077
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1614	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	1.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	1	0	5	2	0
Future Vol, veh/h	1	1	0	5	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	1	0	6	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2	0	8	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1620	-	1013	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1017	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1620	-	1013	1082
Mov Cap-2 Maneuver	-	-	-	-	1013	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1017	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1013	-	-	1620	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	0.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	3	0	4	1	0
Future Vol, veh/h	4	3	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	4	3	0	4	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	10	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1614	-	1010	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1614	-	1010	1077
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1614	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Sagamore Grove at the East Project Site Driveway

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	4	1	0
Future Vol, veh/h	1	0	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	0	0	4	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	5	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	1017	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1622	-	1017	1084
Mov Cap-2 Maneuver	-	-	-	-	1017	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1017	-	-	1622	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	1.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	1	0	3	1	0
Future Vol, veh/h	3	1	0	3	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	3	1	0	3	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	4	0	7	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1618	-	1014	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1020	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1618	-	1014	1080
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1020	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1618	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	1.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	4	1	0
Future Vol, veh/h	1	0	0	4	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	1	0	0	4	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	5	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	1017	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1622	-	1017	1084
Mov Cap-2 Maneuver	-	-	-	-	1017	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1017	-	-	1622	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	1	0	3	1	0
Future Vol, veh/h	3	1	0	3	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	2	2
Mvmt Flow	3	1	0	3	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	4	0	7	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1618	-	1014	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1020	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1618	-	1014	1080
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1020	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1618	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Site Redevelopment Plans

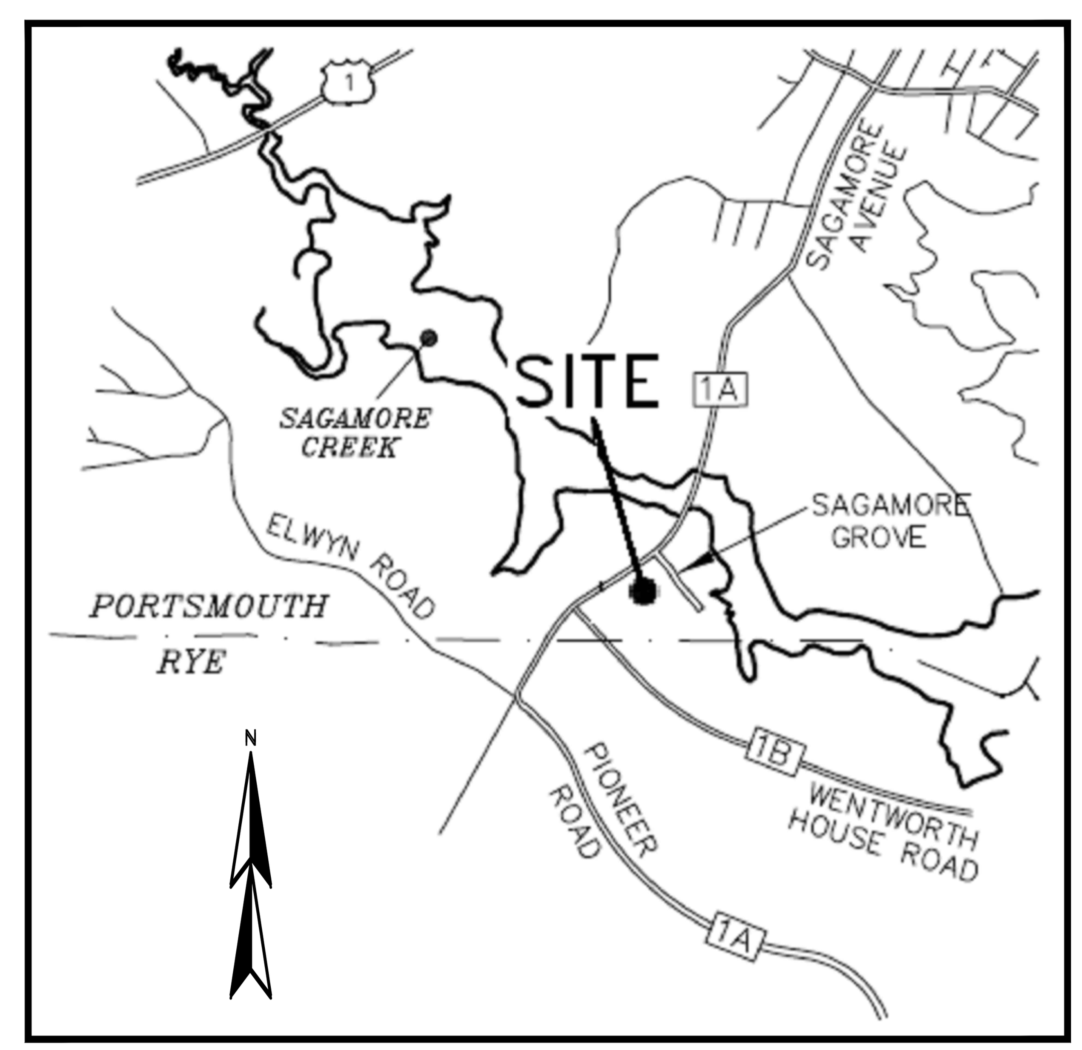
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

960 SAGAMORE AVENUE
PORTSMOUTH, NH 03801

TAX MAP 201, LOT 2

Issued for:

DECEMBER 29, 2021 PLANNING BOARD



Locus Map
Scale: Not to Scale

Owner / Applicant:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE, STE 150
PORTSMOUTH, NH 03801
(603)427-5100

Civil Engineer:

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

Surveyor:

James Verra and Associates, Inc.
LAND SURVEYORS
101 SHATTUCK WAY - SUITE 8
NEWINGTON, N.H. 03801- 7876
603-436-3557

Architect:

JSA ARCHITECTURE | PLANNING | INTERIORS
273 CORPORATE DRIVE, SUITE 100
PORTSMOUTH NH 03801
603.436.2551
INFO@JSAINC.COM

Landscape Architect:

WOODBURN & COMPANY
Landscape Architecture, LLC
103 Kent Place
Newmarket, NH 03857
Tel 603.659.5949
Fax: 603.659.5939

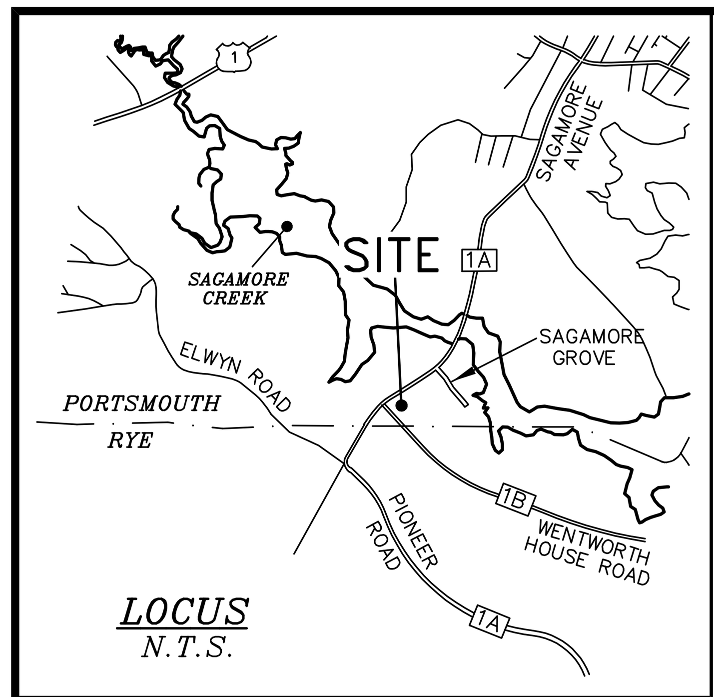
Sheet Index

Title	*Sheet No.:*	*Rev.*	*Date*
Existing Conditions Plan (by JVA)	3 SHEETS	0	11/22/21
Demolition Plan	C-1	2	12/29/21
Site Plan	C-2	2	12/29/21
Grading and Drainage Plan	C-3	2	12/29/21
Utilities Plan	C-4	2	12/29/21
Erosion Control Notes and Details	C-5	1	11/22/21
Construction Details	C-6	1	11/22/21
Construction Details	C-7	1	11/22/21
Construction Details	C-8	1	11/22/21
Construction Details	C-9	1	11/22/21
Construction Details	C-10	1	11/22/21
Site Lighting Plan (by Visible Light, Inc.)	S-1	0	11/15/21
Landscape Plan (by Woodburn & Co.)	L-1	1	12/28/21
Garage Level Floor Plan (by JSA)	A-1	0	10/04/21
Elevations (by JSA)	A-2	0	10/4/21
Reference:			
90% Sagamore Grove Sewer Extension (Wright-Pierce)	C-3A		03/21

Permit Summary

ZONING - THE FOLLOWING TWO VARIANCES WERE GRANTED ON SEPTEMBER 21, 2021.

1. SECTION 10.1114.31 -TO ALLOW TWO (2) DRIVEWAYS WHERE ONE (1) IS PERMITTED.
2. ZONING SECTION 10.521 - TO ALLOW A DENSITY OF SIX (6) DWELLING UNITS WHERE 5.7 ARE PERMITTED.



LOCUS
N.T.S.

LEGEND:

- STONE WALL
- IRON ROD FOUND
- IRON ROD SET
- IRON PIPE FOUND
- BOUND as DESCRIBED
- DRILL HOLE
- PSNH .... PUBLIC SERVICE CO. OF NH
- VZ .... VERIZON
- 110-5 .... TAX SHEET – LOT NUMBER
- (A) .... SEE SIGN TABLE
- RCRD .... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- EOP .... EDGE OF PAVEMENT
- ETW .... EDGE OF TRAVELLED WAY
- VGC .... VERTICAL FACED GRANITE CURB
- BOLLARD
- REFLECTOR
- SIGN
- DOUBLE POST SIGN
- UTILITY POLE
- UTILITY POLE W/TRANSFORMER
- LIGHT POLE
- UTILITY POLE WITH ARM & LIGHT
- GUY
- (E) .... ELECTRIC METER
- VERTICAL PROPANE TANK
- HORIZONTAL PROPANE TANK
- WATER GATE VALVE
- WATER SHUT OFF VALVE
- HYDRANT
- CATCH BASIN
- TREE LINE/BRUSH LINE
- CONIFEROUS TREE
- — W — .... WATER LINE
- — D — .... DRAIN LINE
- —UGU— .... UNDERGROUND UTILITIES
- —OHW— .... OVERHEAD WIRES
- CEMENT CONCRETE
- RIP RAP
- EXPOSED ROCK/LEDGE
- ×12.5 .... SPOT GRADE
- BORING
- (A) .... SEE SIGNAGE TABLE
- (A) .... SEE BUILDING ELEVATION TABLE

ABUTTERS LIST

MAP-LOT	OWNER OF RECORD	DEED REF.
201-1	955 SAGAMORE REALTY TRUST – 3/12/2008 MICHAEL T. GOODRIDGE, TRUSTEE 39 FERRY RD, SALISBURY, MA 01952	4903/695
201-1-1	WILLIAM L. PINGREE 2013 REV. TRUST 11 SAGAMORE GROVE, PORTSMOUTH, NH 03801	6155/537
201-3	LUCIAN SZMYD & DIANE M. SZMYD 41 HARBORVIEW DR, RYE, NH 03870	4547/2733
201-6	JASON GOULEMAS 2002 FAMILY TRUST JASON GOULEMAS, TRUSTEE LISA M. GOULEMAS 2002 FAMILY TRUST LISA M. GOULEMAS, TRUSTEE 5 SAGAMORE GROVE, PORTSMOUTH, NH 03801	5784/2715
201-7	BRIAN L. NESTE BRADFORD J. BYRD 184 WALKER BUNGALOW, PORTSMOUTH, NH 03801	5222/1547
201-8	WALTER J. ALLEN 1 SAGAMORE GROVE, PORTSMOUTH, NH 03801	2296/878
201-12	SEA LEVEL, LLC PO BOX 4094, PORTSMOUTH, NH 03802-4094	5743/352
201-22	WENTWORTH-SAGAMORE, LLC 1150 SAGAMORE AVE, PORTSMOUTH, NH 03801	
201-26	CITY OF PORTSMOUTH C/O CONSERVATION COMMISSION 1 JUNKINS AVE, PORTSMOUTH, NH 03801	
223-25	SEACOAST MENTAL HEALTH CENTER 1145 SAGAMORE AVE, PORTSMOUTH, NH 03801	
223-25-A	SEACOAST MENTAL HEALTH CENTER 1145 SAGAMORE AVE, PORTSMOUTH, NH 03801	
223-25-B	CITY OF PORTSMOUTH 1 JUNKINS AVE, PORTSMOUTH, NH 03801	
224-19	JUSTIN P. NADEAU & MICHELLE FIRMBACH NADEAU 507 STATE ST, PORTSMOUTH, NH 03801	

SEE SHEETS 2 & 3 FOR PLANIMETRIC INFORMATION

NOTES:

1. OWNER OF RECORD.................SAGAMORE CORNER, LLC
   ADDRESS..................................273 CORPORATE DR, SUITE 150, PORTSMOUTH, NH 03801
   DEED REFERENCE.....................6350/364
   TAX SHEET / LOT...................201-2
   PARCEL AREA ....42,929 S.F. (0.986 ACRES)
   ZONED ....MRB

   OWNER OF RECORD.................LIVE FREE REAL ESTATE LLC
   ADDRESS..................................314 MIDDLE ST, PORTSMOUTH, NH 03801
   DEED REFERENCE.....................6172/974
   TAX SHEET / LOT...................201-9
   PARCEL AREA ....59,243 S.F. (1.360 ACRES)
   ZONED ....MRB

   OWNER OF RECORD.................LIVE FREE REAL ESTATE LLC
   ADDRESS..................................314 MIDDLE ST, PORTSMOUTH, NH 03801
   DEED REFERENCE.....................6187/68
   TAX SHEET / LOT...................201-10
   PARCEL AREA ....31,857 S.F. (0.731 ACRES)
   ZONED ....WB

   OWNER OF RECORD.................LIVE FREE REAL ESTATE LLC
   ADDRESS..................................314 MIDDLE ST, PORTSMOUTH, NH 03801
   DEED REFERENCE.....................6201/1839
   TAX SHEET / LOT...................201-11
   PARCEL AREA ....14,186 S.F. (0.326 ACRES)
   ZONED ....WB

2. ZONED:.................. MRB — FRONT YARD SETBACK....5'
   MINIMUM LOT AREA 7,500 S.F. — SIDE YARD SETBACK........10'
   FRONTAGE.............. 100' — REAR YARD SETBACK.......15'
   ZONED:.................. WB — FRONT YARD SETBACK....30'
   MINIMUM LOT AREA 20,000 S.F. — SIDE YARD SETBACK........30'
   FRONTAGE.............. 100' — REAR YARD SETBACK.......20'

3. THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.

4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.

5. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
   HORIZONTAL DATUM: NAD 1983 (2011)
   VERTICAL DATUM: NAVD 1988
   PRIMARY BM: CITY CONTROL POINT "ALBA"

6. WETLANDS DELINEATION 12/2015 & 11/2019 BY MICHAEL CUOMO, NHCWS# 4, 6 YORK POND RD, YORK, ME 03909.

7. LOCATION OF "WARRANT HIGHWAY EASEMENT" PER RCRD BOOK 3123, PAGE 2896, DATED OCTOBER 18, 1995 & SHOWN ON "PLAN OF WENTWORTH ROAD (ROUTE 1-B), PORTSMOUTH, HIGHWAY EASEMENT". SAID PLAN IS NOT RECORDED & CAN NOT BE LOCATED BY NHDOT. SEE SAID DEED FOR OTHER RIGHTS GRANTED TO THE STATE OF NH.

8. THE SUBJECT TRACT LIES IN ZONE X (NO SCREEN), AREA OF MINIMAL FLOOD HAZARD, AS SHOWN ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, MAP REVISED TO JANUARY 29, 2021, BY FEMA.

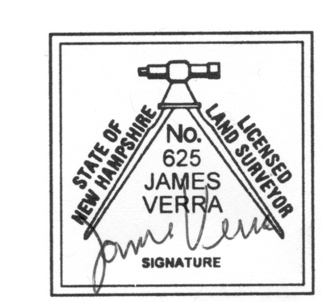
9. THIS PLAN IS BASED ON A FIELD SURVEY 2016 & 2020 BY JAMES VERRA AND ASSOCIATES, INC.

10. SAGAMORE GROVE ROAD IS A PUBLIC WAY. THE UNDERLYING FEE OF THIS PORTION OF THE ROAD REMAINS WITH FRANCES & ARMAND GOSSELIN, THEIR HEIRS, SUCCESSORS & ASSIGNS. SEE ACKNOWLEDGEMENT & RELEASE DATED 3/17/1997, RCRD BOOK 3231, PAGE 470.

11. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.

REFERENCE PLANS:

1. PLAN OF LAND, 1150 SAGAMORE AVENUE, PORTSMOUTH, N.H., RYE CORNER GAS, LLC, DATED 4/8/2015, RCRD PLAN C-38865.
2. PLAN OF LAND FOR NC WENTWORTH, LLC, WENTWORTH ROAD, NEW CASTLE, N.H., REVISED TO 8/14/2000, RCRD PLAN C-28285.
3. LAND IN PORTSMOUTH, N.H., SADIE P. GOUSE TO FRANCES L. PENDERGAST, DATED 7/1954, RCRD PLAN 02283.
4. PLAN OF LAND, PORTSMOUTH, N.H., SADIE P. GOUSE TO JOHN S. DIMOCK, DATED 6/1950, FILE NO. 109, PLAN NO. 1-420, BY JOHN W. DURGIN, CE, NOT RECORDED.
5. PLAN OF LAND, PORTSMOUTH, N.H., SADIE P. GOUSE TO LEONARD & EMILY OSTERMAN, DATED 3/1946, FILE NO. 109, PLAN NO. 1-295, BY JOHN W. DURGIN, CE, NOT RECORDED.
6. PLAN OF LAND FOR MICHAEL KUCHTEY REVOCABLE TRUST, WENTWORTH ROAD, PORTSMOUTH/RYE, NH, DATED 3/25/1999, RCRD PLAN D-27320.
7. RIGHT OF WAY PLAT, SAGAMORE GROVE, PORTSMOUTH, N.H. FOR CITY OF PORTSMOUTH, N.H., DATED 4/9/1995, RCRD PLAN D-25616.
8. SUBDIVISION PLAN, TAX MAP 201 – LOT 1, OWNER: 955 SAGAMORE REALTY TRUST, 955 SAGAMORE AVENUE, PORTSMOUTH, N.H., REVISED TO 6/29/2016, RCRD PLAN D-39767.
9. SUBSURFACE SEWAGE DISPOSAL SYSTEM FOR THE GOLDEN EGG, GOSSELIN LIVING TRUST / THOMAS GOSSELIN, TRUSTEE, 960 SAGAMORE AVENUE, PORTSMOUTH, NH, JOB # 11-0136, REVISED TO 10/22/2011, BY THE WRIGHT CHOICE, NOT RECORDED.



P4763

SURVEYOR:
James Verra and Associates, Inc.
LAND SURVEYORS
101 SHATTUCK WAY – SUITE 8
NEWINGTON, N.H. 03801- 7876
603-436-3557
JOB NO: 23655
PLAN NO: 23655-2

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

ISSUED FOR:
DESIGN & PERMITTING

ISSUE DATE:
NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
1	DESIGN & PERMITTING	JV	11/22/21

DRAWN BY: JCS
APPROVED BY: JV
DRAWING FILE: 23655-2.DWG

SCALE:
22" x 34" – 1" = 20'
11" x 17" – 1" = 40'

APPLICANT:

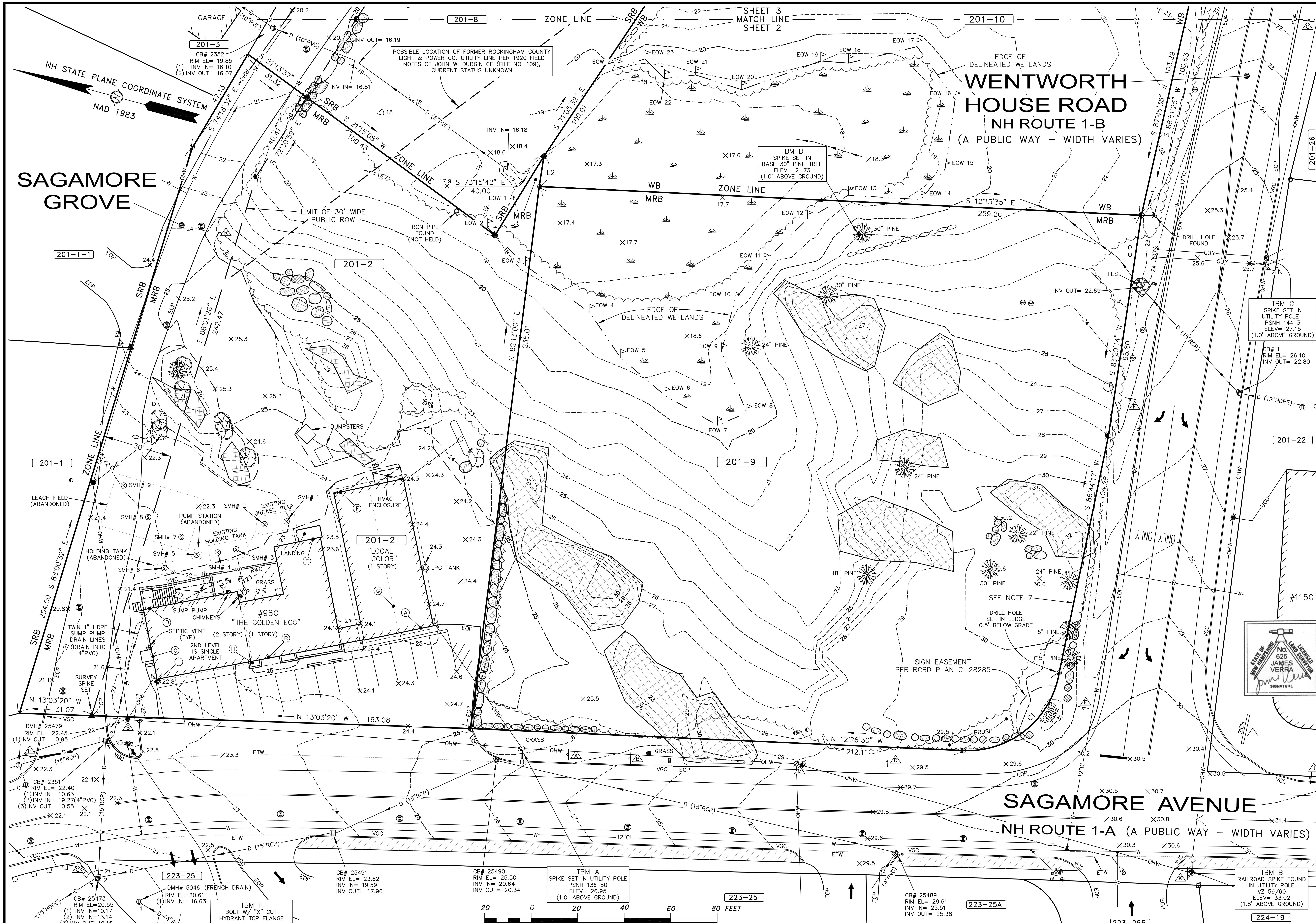
OWNERS:
SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
SUITE 150
PORTSMOUTH, NH 03801
DEED REF: 6350/364
ASSESSOR'S PARCEL 201-2

LIVE FREE REAL ESTATE LLC
1150 SAGAMORE ROAD
PORTSMOUTH, NH 03801
DEED REF: 6172/974
ASSESSOR'S PARCEL 201-9
DEED REF: 6187/68
ASSESSOR'S PARCEL 201-10
DEED REF: 6201/1839
ASSESSOR'S PARCEL 201-11

PROJECT:
PROPOSED SITE DEVELOPMENT PLANS
SAGAMORE AVENUE, SAGAMORE GROVE & WENTWORTH HOUSE ROAD
PORTSMOUTH, N.H.
ASSESSOR'S PARCELS 201-2, 201-9, 201-10 & 209-11

TITLE:
EXISTING CONDITIONS PLAN

SHEET NUMBER:



SEE SHEET 1 FOR NOTES, ABUTTERS INFORMATION & LEGEND

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TITLE:
EXISTING CONDITIONS PLAN

SHEET NUMBER:
2 OF 3

BUILDING ELEVATION TABLE

KEY	TAKEN TO ...	ELEV.
A	ALUMINUM THRESHOLD AT ENTRY	25.49
B	FINISH FLOOR – CARPET	25.47
C	ALUMINUM THRESHOLD AT ENTRY	25.30
D	ALUMINUM THRESHOLD AT ENTRY	25.29
E	ALUMINUM THRESHOLD AT ENTRY	25.13
F	ALUMINUM THRESHOLD AT ENTRY	25.40
G	ROOF PEAK	41.35
H	TOP OF FLAT ROOF	43.85
I	TOP OF FLAT ROOF	43.82

SEWER MANHOLE ELEVATION TABLE

SMH#	RIM ELEVATION
1	22.93
2	22.86
3	22.53
4	22.52
5	22.55
6	21.95
7	22.30
8	21.92
9	22.04

SIGNAGE TABLE

A	"NO PARKING"
B	"SPEED LIMIT 30"
D	"NORTH 1–A" "N.H.D.O.T. URBAN COMPACT"
E	"STOP"
F	LANE DELINEATION
G	"SPEED LIMIT 35"
H	"NORTH 1–B"
I	"WENTWORTH BY THE SEA"
J	"BRIDGE WEIGHT LIMIT 15 TONS" "NEXT RIGHT" (ROUTE 1–B)
K	NH 1–B (TURN LEFT) NH 1–A (STRAIGHT AHEAD)
L	"SPEED LIMIT 35"
M	"ROTARY INTERNATIONAL" "SHARE THE ROAD" BICYCLE SYMBOL "MAY USE FULL LANE"
N	"SHARE THE ROAD"
O	NH 1–A SOUTH (TURN LEFT) NH 1–A NORTH (TURN RIGHT) ECG (TURN LEFT)
P	"STOP"
Q	"NO JUMPING OR DIVING FROM BRIDGE"
R	"DEAD END"
S	"SAGAMORE GRV" "DEAD END"

LINE TABLE

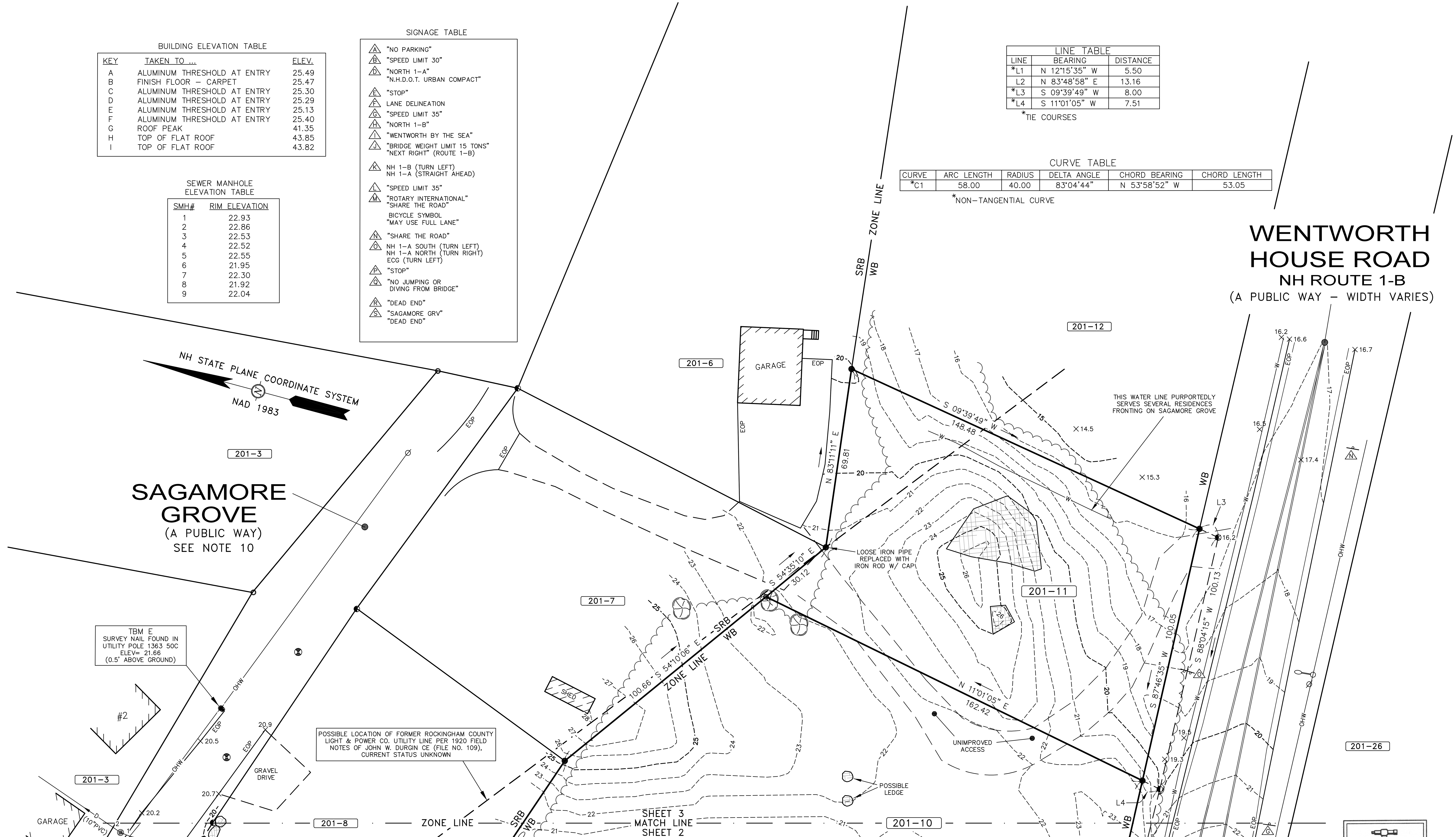
LINE	BEARING	DISTANCE
*L1	N 12°15'35" W	5.50
L2	N 83°48'58" E	13.16
*L3	S 09°39'49" W	8.00
*L4	S 11°01'05" W	7.51

*TIE COURSES

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
*C1	58.00	40.00	83°04'44"	N 53°58'52" W	53.05

*NON-TANGENTIAL CURVE



SEE SHEET 1 FOR NOTES, ABUTTERS INFORMATION & LEGEND

20 0 20 40 60 80 FEET
10 0 10 20 METERS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 625 JAMES VERRA SIGNATURE

P4763

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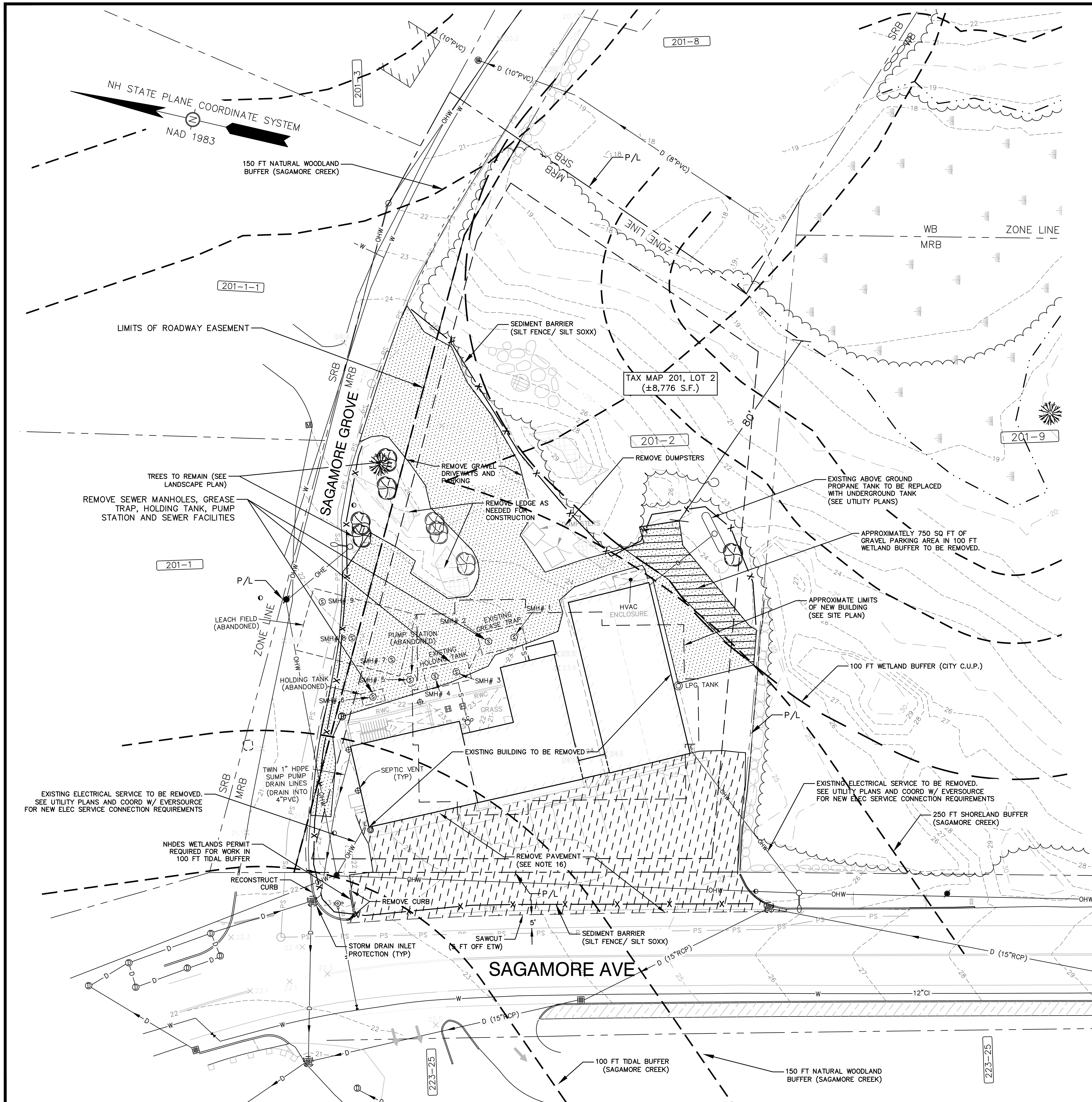


APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

DEMOLITION NOTES

1. CONTRACTOR SHALL SAFELY SECURE THE SITE WITH SECURITY FENCING. FENCING SHALL BE LOCKED DURING NON-WORK HOURS.
2. CITY DEMOLITION PERMIT REQUIRED PRIOR TO ANY DEMOLITION ACTIVITIES. CONTRACTOR IS NOTIFIED THAT THIS PERMIT PROCESS MAY REQUIRE A 30-DAY LEAD TIME.
3. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
4. THIS DEMOLITION PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR THE DEMOLITION OF EXISTING SITE FEATURES. UNLESS OTHERWISE NOTED TO REMAIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL PAVEMENT, CONCRETE, CURBING, SIGNS, POLES, UTILITIES, FENCES, VEGETATION AND OTHER EXISTING FEATURES AS NECESSARY TO FULLY CONSTRUCT THE PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMELY NOTIFICATION OF ALL PARTIES, CORPORATIONS, COMPANIES, INDIVIDUALS AND STATE AND LOCAL AUTHORITIES OWNING AND/OR HAVING JURISDICTION OVER ANY UTILITIES RUNNING TO, THROUGH OR ACROSS AREAS TO BE DISTURBED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES WHETHER OR NOT SAID UTILITIES ARE SUBJECT TO DEMOLITION, RELOCATION, MODIFICATION AND/OR CONSTRUCTION.
6. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
7. ALL STRUCTURES, CURBING, CONCRETE, PAVEMENT AND SUBBASE MATERIALS SHALL BE REMOVED FROM PROPOSED LANDSCAPE AREAS AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPE AND/OR STORMWATER MANAGEMENT PURPOSES AND MEETING THE PROJECT SPECIFICATIONS.
8. WHERE SPECIFIED TO REMAIN, MANHOLE RIMS, CATCH BASIN GRATES, VALVE COVERS, HANDHOLES, MONITORING WELLS, ETC. SHALL BE ADJUSTED TO FINISH GRADE.
9. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
10. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
11. IN AREAS WHERE CONSTRUCTION IS TO BE ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG THE PROPERTY LINE IN ALL AREAS WHERE SILT FENCING IS NOT OTHERWISE REQUIRED.
12. SEE EROSION CONTROL PLANS FOR EROSION CONTROL REQUIREMENTS TO BE IN PLACE PRIOR TO START OF DEMOLITION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO; SILT FENCING, STABILIZED CONSTRUCTION SITE EXITS, AND STORM DRAIN INLET PROTECTION.
13. ALL DEMOLISHED MATERIALS OR MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS SPECIFIED.
14. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS AND CODES.
15. LEDGE REMOVAL IS ANTICIPATED ON THE PROJECT. THE CONTRACTOR SHALL PROVIDE THE CITY WITH A LEDGE REMOVAL PLAN. IF BLASTING IS TO BE PERFORMED, ALL STATE AND LOCAL REQUIREMENTS SHALL BE COMPLIED WITH. SEE BEST MANAGEMENT PRACTICES FOR BLASTING NOTES.
16. EXISTING PAVEMENT ALONG SAGAMOVE AVENUE TO REMAIN DURING CONSTRUCTION UNTIL FOIUNDATIONS ARE BACK FILLED.
17. AS PART OF THIS PROPOSED PROJECT APPROXIMATELY 200 SF OF PAVEMENT WITHIN THE 100-FOOT NHDES WETLANDS BUFFER WILL BE REMOVED AND THE AREA RESTORED TO LAWN OR LANDSCAPING. THE WORK OCCURS WITHIN THE CITY OF PORTSMOUTH RIGHT-OF-WAY. COORDINATE WITH THE CITY DEPARTMENT OF PUBLIC WORKS PRIOR TO ACTIVITY WITHIN THIS AREA.

UTILITY CONTACTS:

18. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DISCONNECTIONS/INSTALLATIONS WITH EVERSOURCE. CONTACT NICK KOSKO @ 603-332-4227, EXT. 5555334
19. CONTRACTOR SHALL COORDINATE ALL NATURAL GAS DISCONNECTIONS/INSTALLATIONS WITH UNITIL CORPORATION. CONTACT DAVID BEAULIEU @ 603-294-5144
20. CONTRACTOR SHALL COORDINATE ALL CABLE DISCONNECTIONS/INSTALLATIONS WITH COMCAST. CONTACT MIKE COLLINS @ 603-679-5695 EXT 1037
21. CONTRACTOR SHALL COORDINATE ALL TELE-COMMUNICATION DISCONNECTIONS AND INSTALLATION WITH FAIRPOINT COMMUNICATIONS. CONTACT JOE CONSIONE @ 603-427-5255

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER

12/29/2021

NOT FOR CONSTRUCTION

ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 3, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21
2	INITIAL NHDES SUBMITTAL	CDB	12/03/21

DRAWN BY: CDB

APPROVED BY: EDW

DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

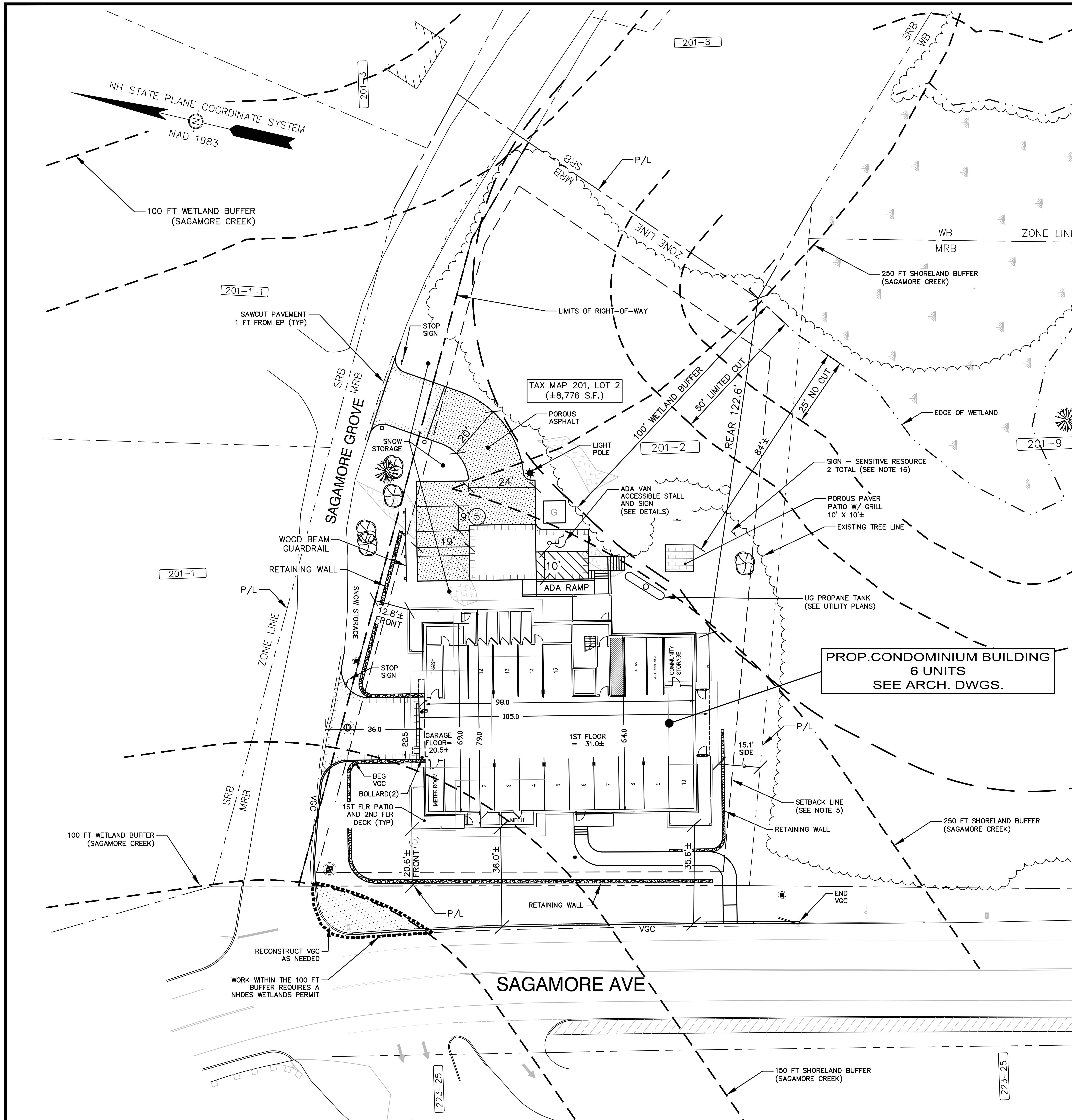
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
960 SAGAMORE ROAD
PORTSMOUTH, NH 03801
TAX MAP 201, LOT 2

TITLE:

DEMOLITION PLAN

SHEET NUMBER:

C-1



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

NOTES

1. DESIGN INTENT – THIS PLAN IS INTENDED TO DEPICT A CONCEPTUAL MULTI-FAMILY RESIDENTIAL BUILDING TOGETHER WITH ASSOCIATED PARKING AND ACCESSWAYS.

2. THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING CONDITIONS PLAN, SAGAMORE AVENUE, SAGAMORE GROVE & WENTWORTH HOUSE ROAD, PORTSMOUTH, N.H., ASSESSOR'S PARCELS 201-2, 201-9, 201-10 & 209-11" BY JAMES VERRA AND ASSOCIATES, INC., DATED NOVEMBER 22, 2021.

3. *WETLANDS DELINEATION 12/2015 & 11/2019 BY MICHAEL CUOMO, NHCWS# 4, 6 YORK POND RD, YORK, ME 03909.*

4. ZONES: MRB (MIXED RESIDENTIAL BUSINESS)

5. PROJECT PARCEL: TAX MAP 201 LOT 2 42,930 S.F. (±0.99 AC.)

6. DIMENSIONAL REQUIREMENTS:

DIMENSIONAL REQUIREMENTS:	MRB	PROVIDED
MIN. LOT AREA:	7,500 S.F. (0.17 AC.)	42,929 S.F.
LOT AREA PER DWELLING:	7,500 S.F.	±7,155 S.F.
MIN. STREET FRONTAGE:	100'	±194'
MIN. LOT DEPTH:	80'	±212'
FRONT SETBACK:	5' (±17' EXISTING)	±20.6'/±12.8'
SIDE SETBACK:	10' (±21' EXISTING)	±15.1'
REAR SETBACK:	15' (±111' EXISTING)	±122.6'
MAX. BUILDING HEIGHT:	30' (FLAT ROOF) (±22' – EXISTING TWO STORIES)	28.85'
MULTI-FAM. BLDG. LENGTH:	160' (MAX)	±105'
MAX. BUILDING COVERAGE:	40% (±12.2% EXISTING)	±17.9%
DWELLING UNITS PER BLDG:	8 (MAX)	6
MIN. OPEN SPACE:	25% (±45.4% EXISTING)	±55.0%
WETLAND BUFFER:	100' (80' EXISTING)	84±'
WETLAND LIMITED CUT:	50'	50'
WETLAND NO-CUT:	25'	25'
DRIVEWAY/RD/PARKING/BLDG:	±52.2% (EXISTING)	±42.2%

7. ZONING – THE FOLLOWING TWO VARIANCES WERE GRANTED ON SEPTEMBER 21, 2021.
   - SECTION 10.1114.31 –TO ALLOW TWO (2) DRIVEWAYS WHERE ONE (1) IS PERMITTED.
   - ZONING SECTION 10.521 – TO ALLOW A DENSITY OF SIX (6) DWELLING UNITS WHERE 5.7 ARE PERMITTED.

8. AREA OF DISTURBANCE UNDER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT NOT REQUIRED.
   - LOT AREA IN WETLAND: ±400 S.F. (±0.9%)
   - LOT AREA IN WETLAND & WETLAND BUFFER: ±13,650 S.F. (±31.8%)
   - EXISTING LOT IMPERVIOUS IN WETLAND BUFFER: ±760 S.F. (±1.8%)
   - PROPOSED LOT IMPERVIOUS IN WETLAND BUFFER: 0 S.F. (0%)

9. PARKING REQUIREMENTS:

   DWELLING UNITS: 1.3 SPACES PER DWELLING UNIT
   6 UNITS x 1.3 = 7.8 SPACES REQUIRED

   TOTAL PARKING PROVIDED: 16 SPACES (INTERIOR)
   5 SPACES (EXTERIOR)
   21 SPACES TOTAL

   NO MAXIMUM REQUIREMENT

   EXISTING PARKING SPACES: 15 PAVED
   11 GRAVEL (APPROX)
   26 TOTAL

10. BICYCLE PARKING WILL BE PROVIDED IN THE BASEMENT OF THE BUILDING.

11. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN UPLAND AREAS SHOWN THEREON. IF ADEQUATE ON-SITE SNOW STORAGE IS NOT AVAILABLE, THE SNOW SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED.

12. THE PROPOSED LIGHTING SHALL BE DARK SKY FRIENDLY.

13. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.

14. THIS PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

15. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

16. INSTALL SIGN INDICATING SENSITIVE RESOURCE, "SENSITIVE RESOURCE AREA / WETLAND BUFFER" OR APPROVED EQUAL.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P5079

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STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
12/29/2021

NOT FOR CONSTRUCTION

ISSUED FOR: APPROVAL

ISSUE DATE: DECEMBER 3, 2021

REVISIONS

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DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

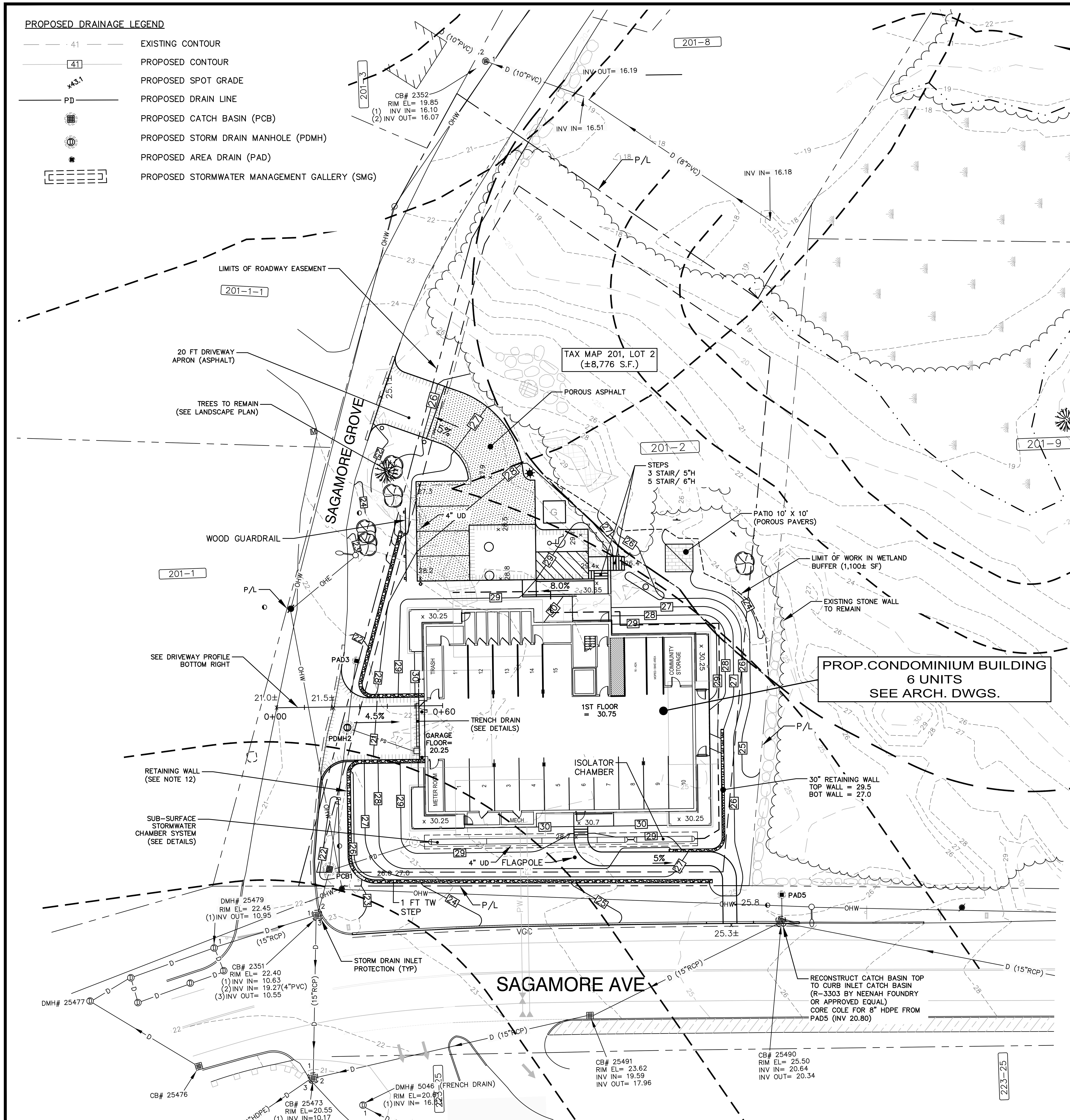
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
960 SAGAMORE ROAD
PORTSMOUTH, NH 03801
TAX MAP 201, LOT 2

TITLE:

SITE PLAN

SHEET NUMBER:

C-2



NH STATE PLANE COORDINATE SYSTEM
NAD 1983

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRADING AND DRAINAGE NOTES

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
2. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL READ AND FAMILIARIZE THEMSELVES WITH THE PROJECT GEOTECHNICAL REPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.
4. DEWATERING ACTIVITIES SHALL BE DONE IN ACCORDANCE WITH EPA AND NHDES REGULATIONS AND GUIDELINES.
5. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES AREA SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS DEGREE OF INSULATION AGAINST FREEZING.
6. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
7. ALL STORM DRAIN PIPE SHALL BE ADS N-12 OR EQUAL AND APPROVED BY THE ENGINEER.
8. ALL CATCH BASIN, GATE VALVE COVERS, AND MANHOLE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISHED GRADE. ANY RIM OR VALVE COVER ABOVE SURROUNDING FINISHED GRADE WILL NOT BE ACCEPTED.
9. ALL CATCH BASINS SHALL BE PRECAST, H-20 LOADING AND BE EQUIPPED WITH 4-FOOT DEEP MIN SEDIMENTATION SUMPS AND GREASE HOODS. (SEE DETAILS)
10. ALL SPOT GRADES ARE AT THE FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
11. UNLESS OTHERWISE SPECIFIED, RETAINING WALL AND BUILDING PERIMETER DRAINS SHALL BE DIRECTED TO THE NEAREST DRAINAGE STRUCTURE. IF DEEMED APPROPRIATE, CONTRACTOR SHALL PROVIDE ADDITIONAL UNDERDRAINS AT THE DIRECTION OF THE ENGINEER.
12. RETAINING WALL FINISH TO BE CULTURED STONE "DRESSED FIELDSTONE" VENEER, UNLESS OTHERWISE APPROVED F BY PORTSMOUTH PLANNING DEPARTMENT.
13. ALL INTERNAL FLOOR DRAINS SHALL BE EVAPORATIVE AND SHALL NOT TIE INTO EXTERNAL STORM DRAIN SYSTEM.
14. CONTRACTOR SHALL PROTECT ALL RAINGARDENS FROM CONSTRUCTION STORMWATER RUNOFF. TEMPORARY SEDIMENT BASINS SHALL BE CONSTRUCTED DURING CONSTRUCTION. STORMWATER SHALL NOT BE DIRECTED TO THE RAINGARDENS UNTIL THE WATERSHED ARE HAS BEEN STABILIZED.

DRAINAGE STRUCTURES

CB1
RIM = 21.50
12" INV. IN = 16.50 (PDMH2)
12" INV. IN = 16.50 (OS1)
12" INV. OUT = 16.40

PDMH2
RIM = 21.30
8" INV. IN = 16.90 (TRENCH DRAIN)
12" INV. IN = 16.90 (PAD3)
12" INV. OUT = 16.80

PAD3
RIM = 21.00
12" INV. OUT = 17.00

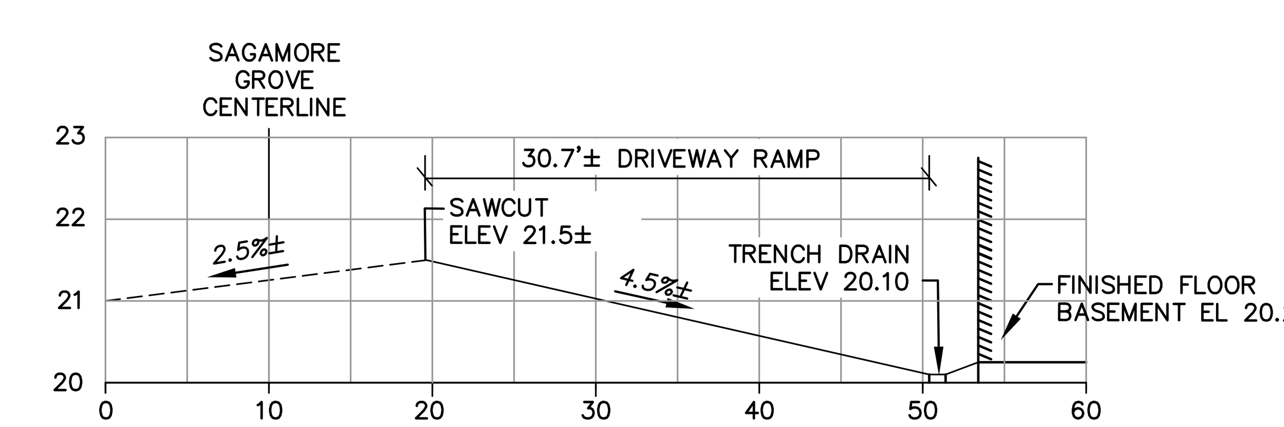
TRENCH DRAIN
ELEV = 20.10
8" INV. OUT = 17.10

PAD5
RIM = 25.30
8" INV. OUT = 21.3

STORMWATER PRACTICES

STORMWATER GALLERY A
24" DIA PERF PIPE
1 ROW / 90 FT LENGTH
(20 FT ISOLATION CHAMBER)
PIPE INV = 24.50
ROCK BOTTOM = 24.00

OUTLET STRUCTURE
RIM = 29.50
(SEE CONTROL PLATE DTL, SHT C-6)
6" UD IN = 23.60
12" INV IN – 23.75
12" INV. OUT = 23.50



DRIVEWAY PROFILE
SCALE: 1" = 10' HORIZONTAL
1" = 2' VERTICAL (5X)

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

P5079

ALTUS
ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
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STATE OF NEW HAMPSHIRE
CORY D. BELDEN No. 14239
LICENSED PROFESSIONAL ENGINEER
12/29/2021

NOT FOR CONSTRUCTION

ISSUED FOR:
PLANNING BOARD

ISSUE DATE:
DECEMBER 29, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21
2	TAC COMMENTS	CDB	12/29/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE:
22"x34" 1" = 20'
11"x17" 1" = 40'

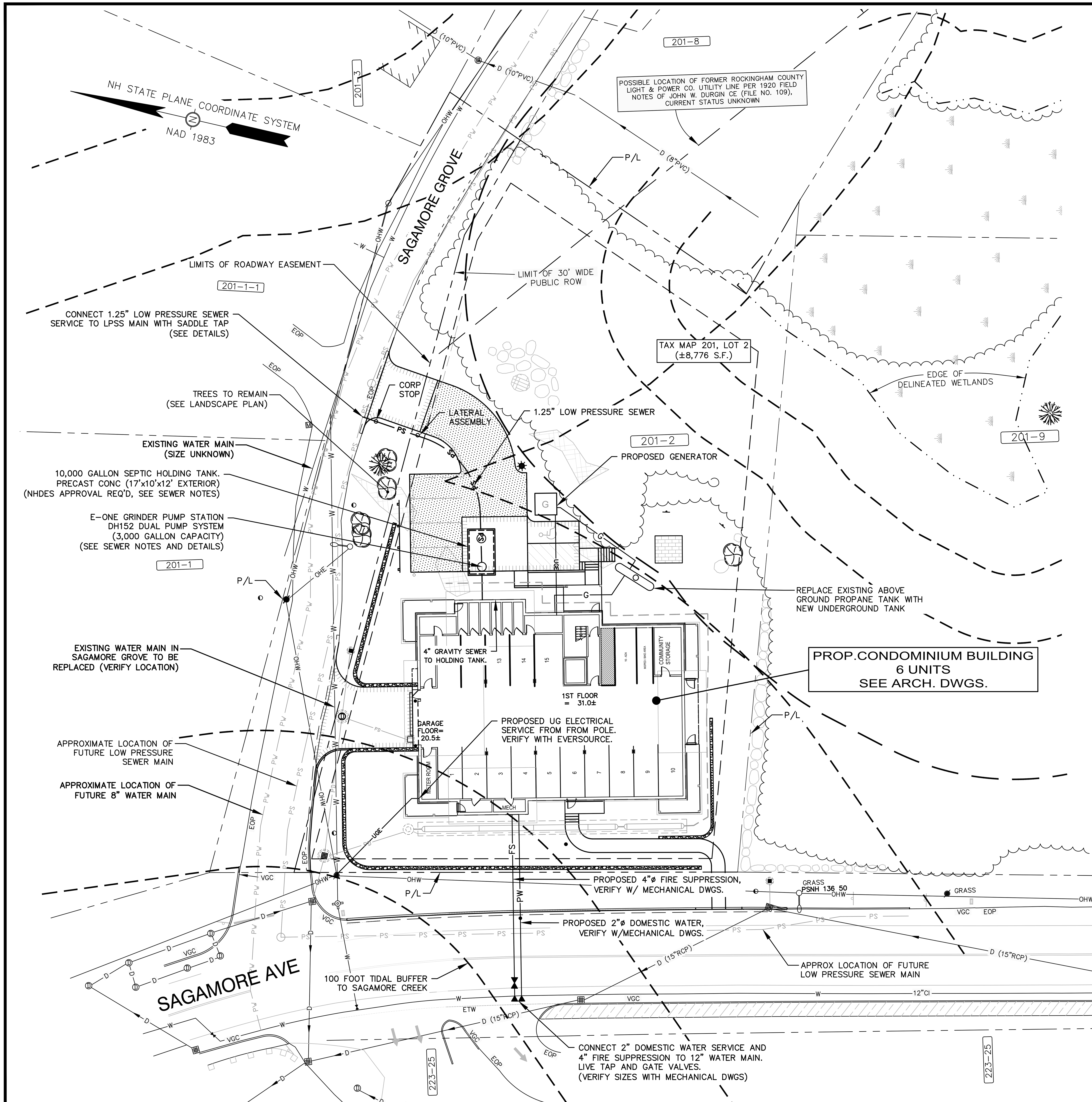
OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
960 SAGAMORE ROAD
PORTSMOUTH, NH 03801
TAX MAP 201, LOT 2

TITLE:
GRADING AND DRAINAGE PLAN

SHEET NUMBER:
C-3



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

UTILITY NOTES

1. ALL ROAD/LANE CLOSURES OR OTHER TRAFFIC INTERRUPTIONS ON CITY ROADS SHALL BE COORDINATED WITH THE PORTSMOUTH POLICE DEPARTMENT AND/OR PORTSMOUTH DPW.
2. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL, AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL PERMIT CONDITIONS AND REQUIREMENTS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSTING OF ALL BONDS AND PAYMENT OF ALL TAP, TIE-IN AND CONNECTION FEES.
4. ALL WATER MAIN INSTALLATIONS AND SERVICE CONNECTIONS SHALL CONFORM TO PORTSMOUTH WATER DEPARTMENT STANDARDS. WATER MAIN SHALL BE WRAPPED WITH A WATER TIGHT POLYETHYLENE WRAPPING. ALL JOINTS SHALL HAVE THREE (3) WEDGES PER JOINT.
5. THE WATER MAIN IN SAGAMORE GROVE WILL BE REPLACED AT THE SAME TIME AS THE LOW PRESSURE SEWER INSTALLATION. THE NEW WATER SERVICE SHALL CONNECT TO ACTIVE MAIN LINE SAGAMORE GROVE. COORDINATE WITH CITY OF PORTSMOUTH WATER DEPARTMENT.
6. FIRE ALARM PANEL SHALL MONITORED THROUGH A THIRD-PARTY SECURITY COMPANY. CONTRACTOR SHALL COORDINATE ALL PANEL LOCATIONS AND INTERCONNECTIONS WITH FIRE DEPARTMENT.
7. THE APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATION DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE POLICE AND RADIO CONFIGURATION. IF THE SITE SURVEY INDICATES IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE APPLICANT SHALL BE REQUIRED TO PAY FOR THE SITE SURVEY WHETHER OR NOT THE SURVEY INDICATES A REPEATER IS NECESSARY. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY. THE SURVEY SHALL BE COMPLETED AND THE REPEATER, IF DETERMINED IT IS REQUIRED, SHALL BE INSTALLED PRIOR TO THE ISSUANCE OF CERTIFICATE OF OCCUPANCY.
8. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND CITY REGULATIONS.
9. SITEWORK CONTRACTOR SHALL COORDINATE ALL WORK WITH MECHANICAL DRAWINGS.
10. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDINGS. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCING RELATED WORK.
11. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE ARCHITECT.
12. CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH CONSOLIDATED COMMUNICATIONS.
13. CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.
14. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL, 48-HOUR MINIMUM NOTICE REQUIRED.
15. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.

SEWER NOTES

1. THE PROJECT HAS TWO OPTIONS FOR SEWER SERVICE. THE CITY OF PORTSMOUTH INTENDS TO INSTALL A NEW LOW PRESSURE SEWER FORCE MAIN ALONG SAGAMORE GROVE AS AN AGREEMENT TO THE CONSENT DECREE WITH USEPA. IF THE SEWER CONSTRUCTION IS ESTIMATED TO BE COMPLETED IN NOVEMBER OF 2022, PENDING ALLOWABLE FUNDING.
   - 1.1. IF THE LOW PRESSURE SEWER MAIN IS COMPLETE, THE PROJECT WILL INSTALL AN E-ONE GRINDER PUMP STATION AND DISCHARGE TO THE 2" LOW PRESSURE SEER IN SAGAMORE GROVE.
   - 1.2. IF THE LOW PRESSURE SEWER IN SAGAMORE GROVE IS NOT COMPLETE, THE PROJECT WILL INSTALL A 10,000 GALLON TEMPORARY HOLDING TANK. A PERMIT FROM NHDES SUBSURFACE SYSTEMS BUREAU IS REQUIRED FOR THE INSTALLATION OF THE HOLDING TANK. WHEN THE LPSS IS COMPLETED, THE HOLDING TANK MAY BE USED TO HOUSE THE NEW E-ONE PUMP STATION.
2. ALL SEWER INSTALLATIONS AND SERVICE CONNECTIONS SHALL CONFORM TO PORTSMOUTH WATER AND SEWER DEPARTMENT STANDARDS. CONTRACTOR SHALL CONTACT CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AT 603-427-1530 TO COORDINATE INSPECTION OF SEWER AND WATER WORK.
3. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL, AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL PERMIT CONDITIONS AND REQUIREMENTS.
4. ELEVATOR SUMP TO BE CONSTRUCTED MONOLITHICALLY AND SEALED TO BE WATER TIGHT. ELEVATOR TO OPERATE ON BELT SYSTEM, NOT HYDRAULICS. EMERGENCY PUMP IN ELEVATOR SUMP TO TIE INTO SEWER.
5. THE PROPOSED SEWER DESIGN FLOW IS 1,260 GPD, BASED ON 70 GPD PER PERSON AND 3 OCCUPANTS PER UNIT.
   THE EXISTING SITE SEPTIC IS PERMITTED AT 1,430 GPD CAPACITY BASED ON METERED FLOW.
   REFERENCE "SUBSURFACE SEWERAGE DISPOSAL SYSTEM" FOR THE GOLDEN EGG, GOSSELIN LIVING TRUST, 960 SAGAMORE AVE, PORTSMOUTH, NH 03801, BY THE WRIGHT CHOICE, 10/22/2011.

P5079

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STATE OF NEW HAMPSHIRE
CORY D. BELDEN No. 14239
LICENSED PROFESSIONAL ENGINEER
12/29/2021

NOT FOR CONSTRUCTION

ISSUED FOR:
PLANNING BOARD

ISSUE DATE:
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DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE:
22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

960 SAGAMORE ROAD
PORTSMOUTH, NH 03801

TAX MAP 201, LOT 2

TITLE:

UTILITIES PLAN

SHEET NUMBER:

C-4

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

Owner:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

DESCRIPTION

The project consists of the redevelopment of a commercial retail property on Sagamore Road. The existing building will be razed and replaced with a modern 2–story residential building containing six (6) new residential units, underground parking, and site amenities. Stormwater will be managed and treated with sub–surface chambers and porous pavement. Site improvements include underground utilities, landscaping and associated site improvements.

DISTURBED AREA

The total area to be disturbed on the parcel and for the building, driveway, parking area, drainage, and utility construction is approximately 26,500 SF± (less than 1–acre). The combined disturbed area does NOT exceed 43,560 SF (1 acre), thus a SWPPP will NOT be required for compliance with the USEPA–NPDES Construction General Permit. All local requirements for stormwater adn erosion control during constyruction are still required.

NPDES CONSTRUCTION GENERAL PERMIT– exempt

Contractor shall is NOT required to prepare a Stormwater Pollution Prevention Plan (SWPPP) or file an NOI (Notice of Intent) in accordance with federal storm water permit requirements under the USEPA–NPDES Construction General Permit.

SEQUENCE OF MAJOR ACTIVITIES

1. Hold a pre–construction meeting with City & stake holders.
2. Install temporary erosion control measures, including drain inlet protection, silt fences, and stabilized construction exit/entrance.
3. Remove existing bulding, disconnect and remove utilities.
4. Clear and Grub vegetated areas per plan; Strip and stockpile loam. Stockpiles shall be temporarily stabilized with hay bales, mulch and surrounded by a hay bale or silt fence barrier until material is removed and final grading is complete. Remove debris. Remove pavement and structures intended to be removed within the initial work limits.
5. Construct utility infrastructure. Rough grade lot to prepare for site development. Stabilize swales prior to directing flow to them.
6. Construct Foundations and underground garage parking. install temporary septic holding tank.
7. Construct building. Construct pavement & driveway access.
8. Construct stormwater treatment chambers.
9. Loam and seed disturbed areas.
10. When all construction activity is complete and site is stabilized, remove all silt fences and temporary structures and sediment that has been trapped by these devices.

NAME OF RECEIVING WATER

The site drainage discharges into a municipal closed drainage system outletting to Sagamore Creek.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 – 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, stormwater ponds, level spreaders and their contributing areas prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time, but in no case shall it exceed 5 acres at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.25 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built–up sediment shall be removed from silt fence or other barriers when it has reached one–third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
9. All cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade.
10. An area shall be considered stable if one of the following has occurred:
    a. Base coarse gravels have been installed in areas to be paved;
    b. A minimum of 85% vegetated growth as been established;
    c. A minimum of 3 inches of non–erosive material such as stone of riprap has been installed;
    – or –
    d. Erosion control blankets have been properly installed.
11. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing – In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
    a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
    b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

2. Guidelines for Winter Mulch Application –

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1–1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance – All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation –
   Apply fertilizer at the rate of 600 pounds per acre of 10–10–10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.
2. Seeding –
    a. Utilize annual rye grass at a rate of 40 lbs/acre.
    b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
    c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.
3. Maintenance –
   Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Tubular Sediment Barrier
    a. See detail.
    b. Install per manufacturer's requirements.
2. Silt Fence (if used)
    a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM–51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM–52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)
Flow Rate	VTM–51	0.3 gal/sf/min (min)

* Requirements reduced by 50 percent after six (6) months of installation.

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

    b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).
    c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.
    d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
    e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
    f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.
    g. The trench shall be backfilled and the soil compacted over the filter fabric.
    h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.
3. Sequence of Installation –
   Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.
4. Maintenance –
    a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.
    b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
    c. Sediment deposits must be removed when deposits reach approximately one–third (1/3) the height of the barrier.
    d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.
    e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

E. PERMANENT SEEDING –

1. Bedding – stones larger than $1\frac{1}{2}$", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.
2. Fertilizer – lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds 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 @ 100 lbs. per 1,000 s.f.
   10–20–20 fertilizer @ 12 lbs. per 1,000 s.f.
3. Seed Mixture (See Landscape Drawings for additional information):
   3.1. Lawn seed mix shall be a fresh, clean new seed crop. The Contractor shall furnish a dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.
   3.2. Seed mixture shall consist of
      a. 1/3 Kentucky blue,
      b. 1/3 perennial rye, and
      c. 1/3 fine fescue.
   3.1. Turf type tall fescue is unacceptable.
4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. 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;
2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

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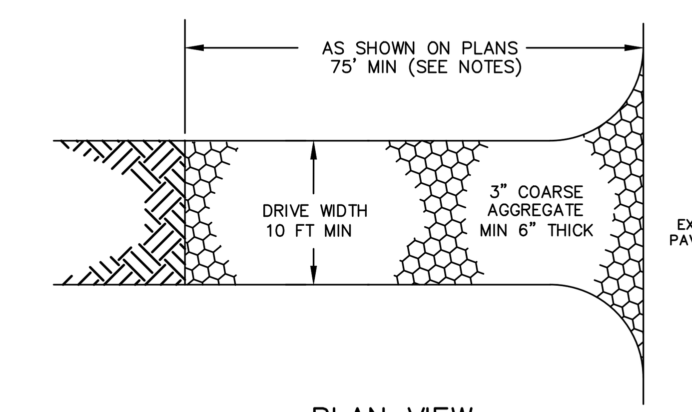
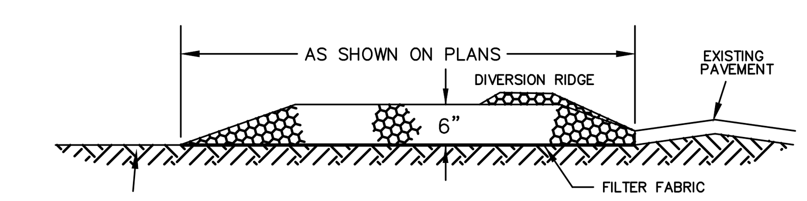
Long Term Inspection & Maintenance Schedule

	Spring	Fall or Yearly	After Major Storm	Every 2-5 Years
Vegetated Areas				
Inspect all slopes and embankments	x		x	
Replant bare areas or areas with sparse growth	x		x	
Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows.	x		x	
Stormwater Channels				
Inspect ditches, swales and other open stormwater channels	x	x	x	
Remove any obstructions and accumulated sediments or debris	x	x		
Control vegetated growth and woody vegetation		x		
Repair any erosion of the ditch lining		x		
Mow vegetated ditches		x		
Remove woody vegetation growing through riprap		x		
Repair any slumping side slopes		x		
Replace riprap where underlying filter fabric or underdrain gravel is exposed or where stones have been dislodged		x		
Culverts				
Remove accumulated sediments and debris at inlet, outlet and within the conduit	x	x	x	
Repair any erosion damage at the culvert's inlet and outlet	x	x	x	
Remove woody vegetation growing through riprap		x		
Roadways and Parking Surfaces				
Remove accumulated winter sand along roadways	x			
Sweep pavement to remove sediment	x			
Grade road shoulders and remove excess sand either manually or by a front-end loader	x			
Grade gravel roads and gravel shoulders	x			
Clean out sediment contained in water bars or open-top culverts	x			
Ensure that stormwater is not impeded by accumulations of material or false ditches in the roadway shoulder	x			
Runoff Infiltration Facilities				
Remove dead vegetation and any accumulated sediment (normally at the entrance to the garden) to allow for new growth	x			
Weed; add additional hardwood mulch to suppress weeds	x	x		
Mow turf three (3) times a growing season				
Aerate area with deep tines, if water ponds on the surface for more than 24 hours during the first year or for a length of 72 hours		x		
Vegetative Swale				
Mow grass swales monthly				
Inspect swale following significant rainfall event	x	x	x	
Control vegetated growth and woody vegetation	x	x		
Repair any erosion of the ditch	x	x		
Remove debris and liter as necessary				



PLAN VIEW



PROFILE

CONSTRUCTION SPECIFICATIONS

1. REFERENCE NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3 (LATEST EDITION), SECTION 4.2 "TEMPORARY CONSTRUCTION EXIT" REQUIREMENTS AND BMP DETAIL.
2. STONE SIZE – 3" COARSE AGGREGATE
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. LENGTH – 75 FOOT MINIMUM, OR 50 FOOT ALLOWED WHEN DIVERSION RIDGE IS PROVIDED.
5. WIDTH – 1/2 OF DRIVEWAY (10 FOOT MINIMUM).
6. FILTER FABRIC – MIRAFI 600X OR APPROVED EQUAL.
7. SURFACE WATER CONTROL – ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
8. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
9. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION EXIT NOT TO SCALE

NOTE:
ALL FACILITIES SHOULD BE INSPECTED ON AN ANNUAL BASIS AT A MINIMUM. IN ADDITION, ALL FACILITIES SHOULD BE INSPECTED AFTER A SIGNIFICANT PRECIPITATION EVENT TO ENSURE THE FACILITY IS DRAINING APPROPRIATELY AND TO IDENTIFY ANY DAMAGE THAT OCCURRED AS A RESULT OF THE INCREASED RUNOFF. FOR THE PURPOSE OF THIS STORMWATER MANAGEMENT PROGRAM, A SIGNIFICANT RAINFALL EVENT IS CONSIDERED AN EVENT OF THREE (3) INCHES IN A 24–HOUR PERIOD OR 0.25 INCHES IN A ONE–HOUR PERIOD. IT IS ANTICIPATED THAT A SHORT, INTENSE EVENT IS LIKELY TO HAVE A HIGHER POTENTIAL OF EROSION FOR THIS SITE THAN A LONGER, HIGH VOLUME EVENT.

P5079

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED
PROFESSIONAL ENGINEER
11/22/2021

NOT FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079–SITE.dwg

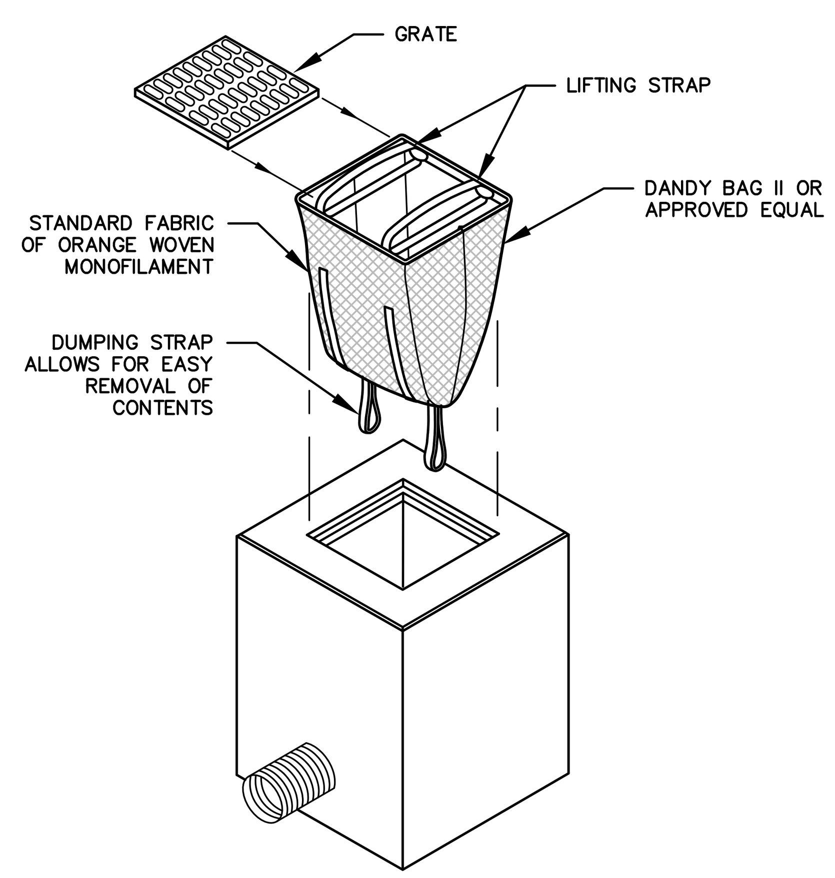
SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:
SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI–FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:
EROSION CONTROL NOTES AND DETAILS

SHEET NUMBER:
C-5



INSTALLATION AND MAINTENANCE:

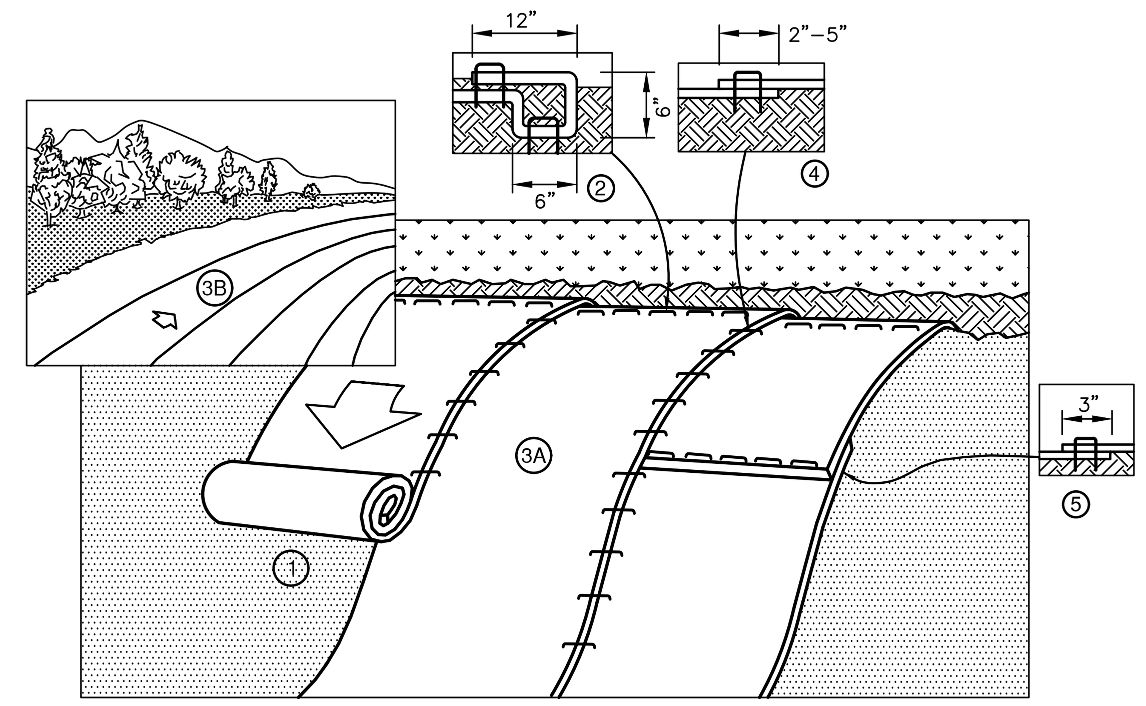
INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

UNACCEPTABLE INLET PROTECTION METHOD:

A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

STORM DRAIN INLET PROTECTION NOT TO SCALE



NOTES

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
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.
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.

EROSION CONTROL BLANKET - SLOPE NOT TO SCALE

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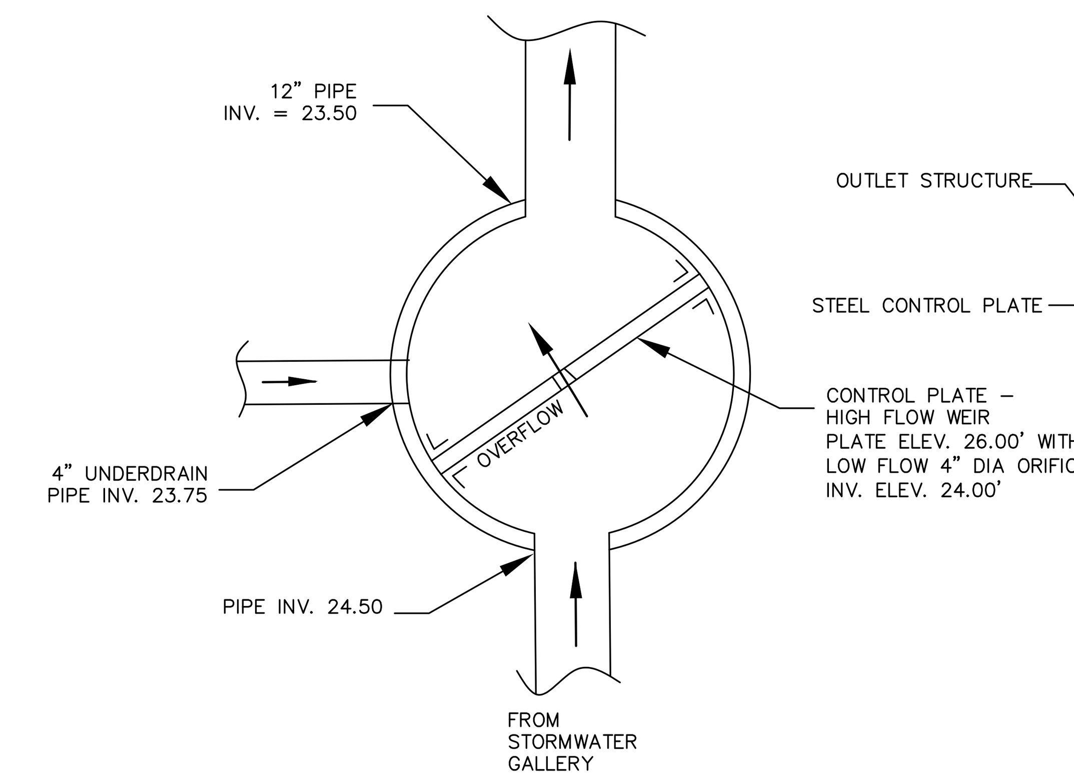
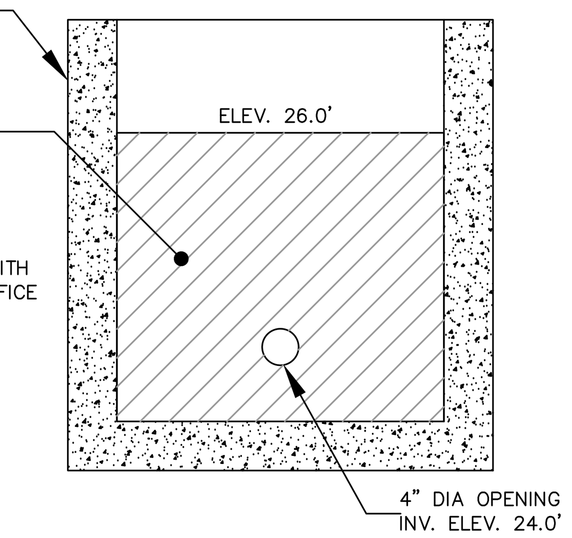
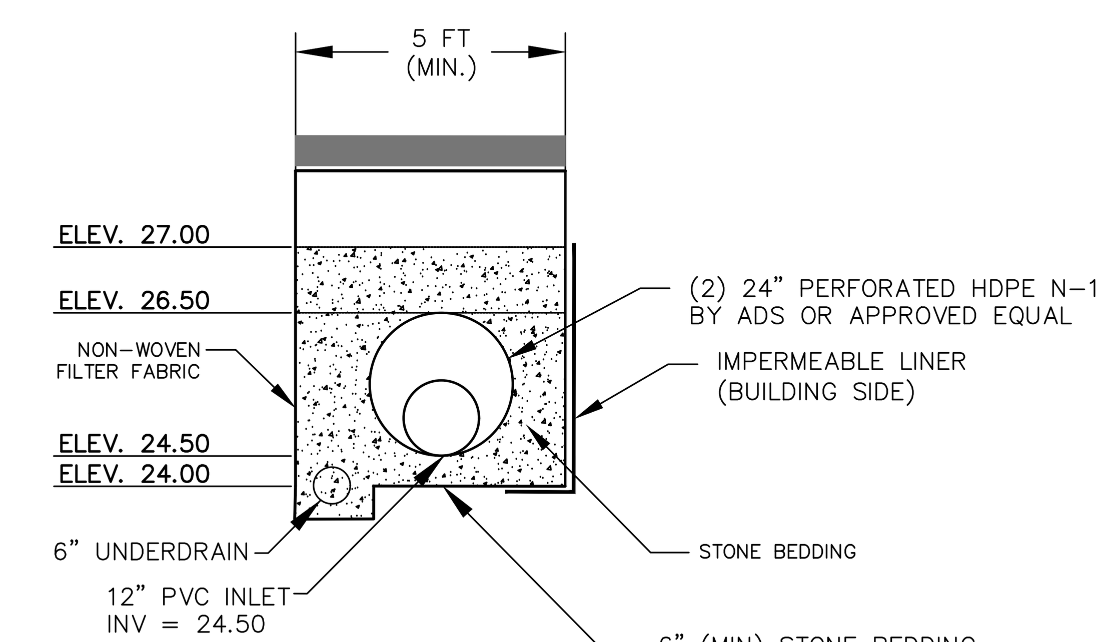


OUTLET CONTROL STRUCTURE



CONTROL PLATE

NOT TO SCALE

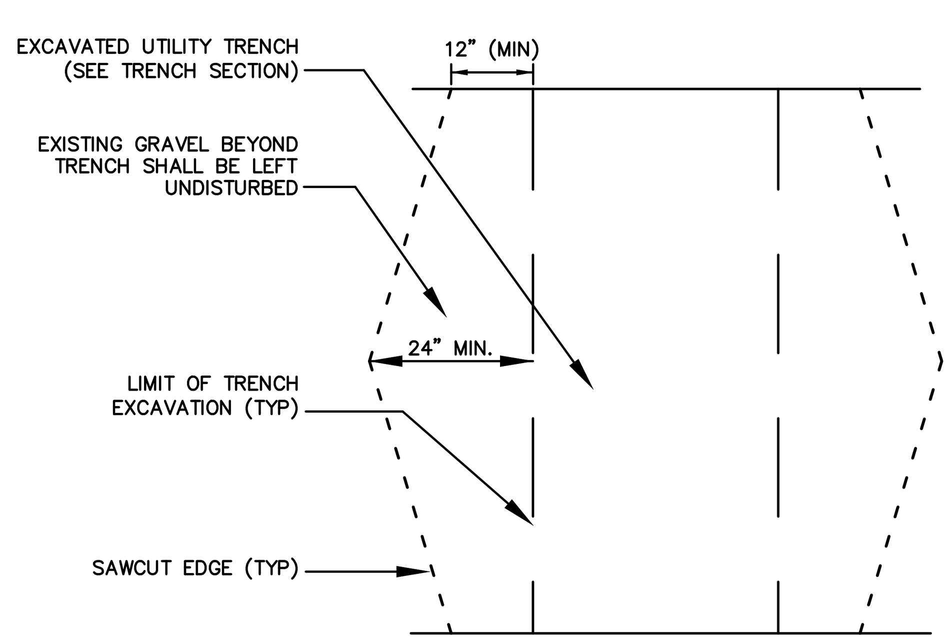


SECTION

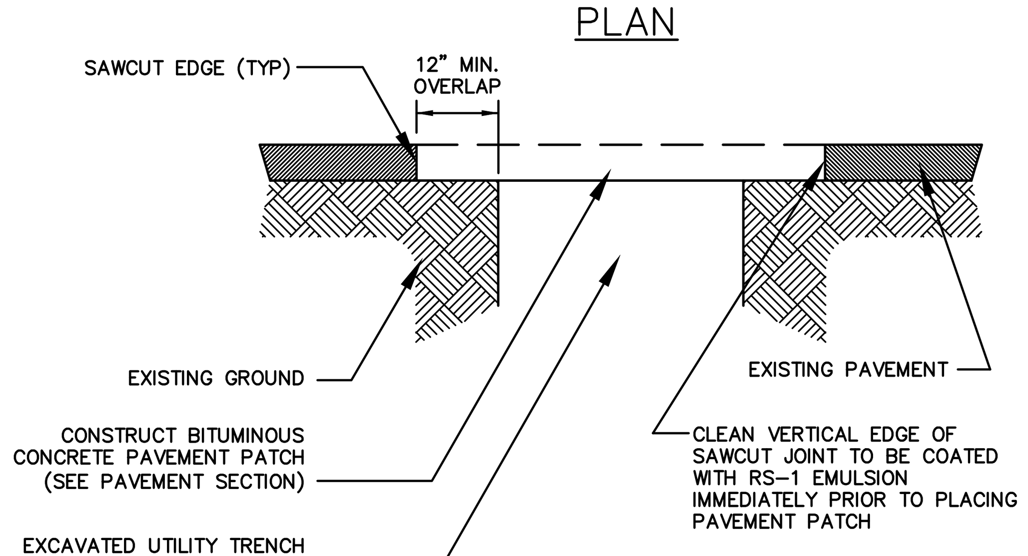
NOTE: PERFERATED PIPES TO BE LAYED FLAT.
6" MINIMUM THICKNESS OF ROCK ABOVE AND BELOW PIPE

STORMWATER MANAGEMENT GALLERY

NOT TO SCALE



PLAN

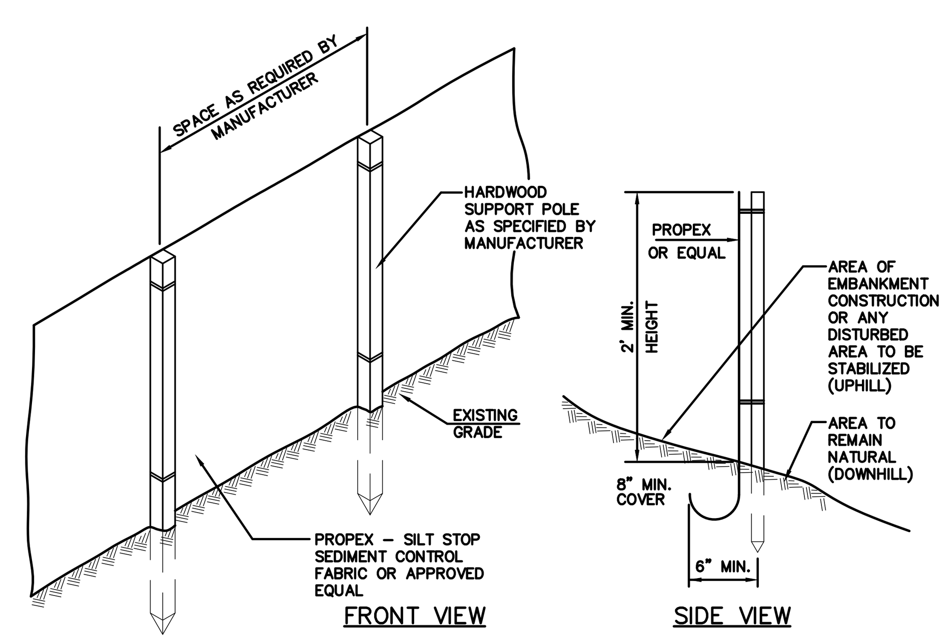


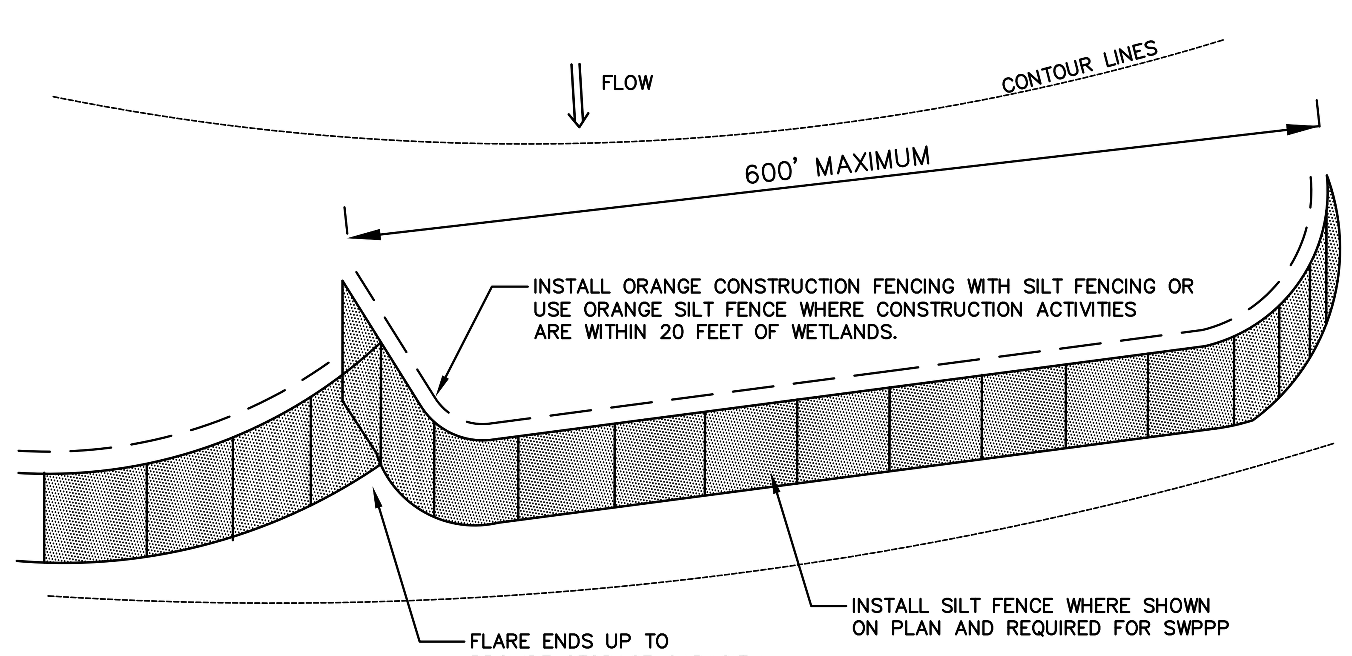
SECTION

NOTES

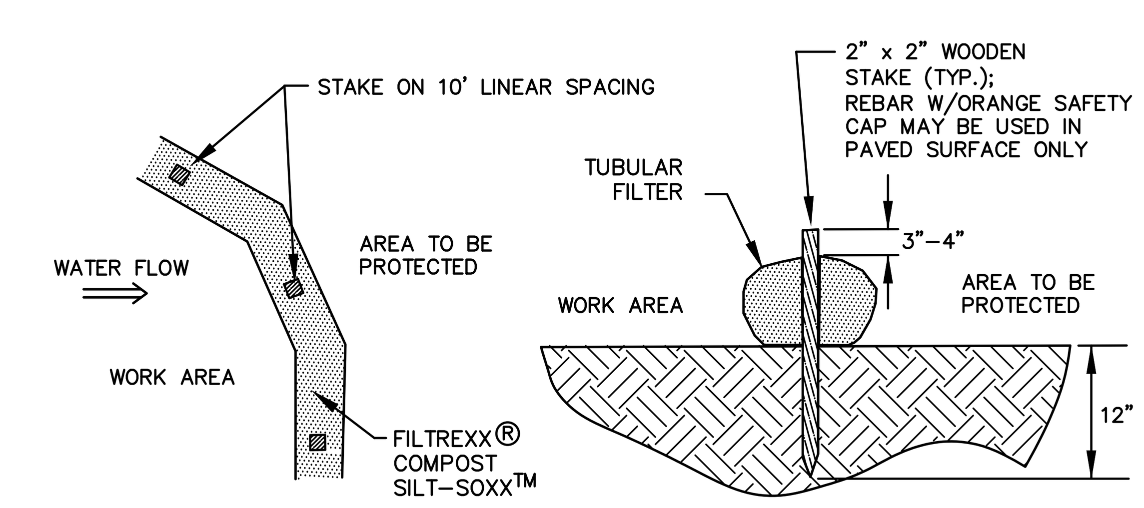
1. MACHINE CUT EXISTING PAVEMENT.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.

TYPICAL TRENCH PATCH NOT TO SCALE





SILT AND ORANGE CONSTRUCTION FENCE DETAIL NOT TO SCALE



NOTES:
1. SILTSOXX OR APPROVED EQUAL SHALL BE USED FOR TUBULAR SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY BARRIER SHALL BE DISPOSED OF PROPERLY.

TUBULAR SEDIMENT BARRIER DETAIL NOT TO SCALE

P5079

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

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ISSUED FOR:
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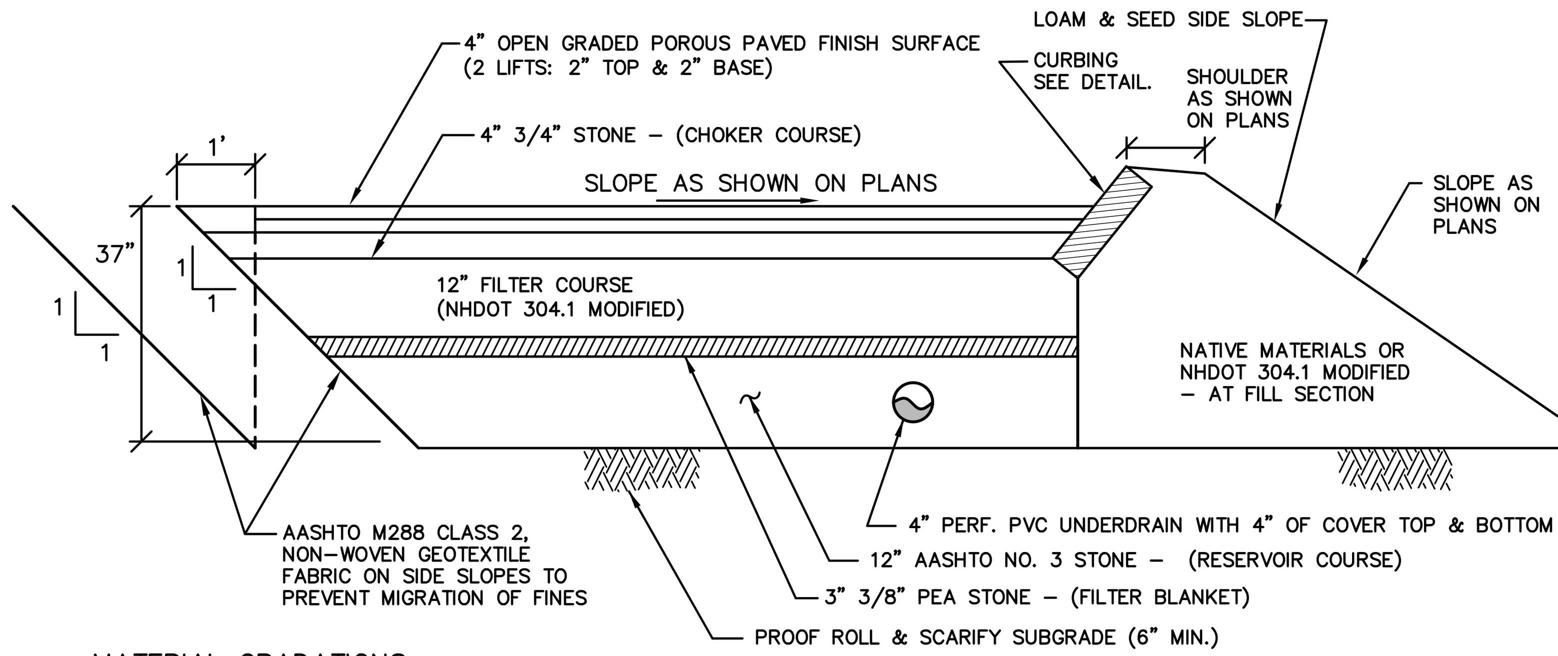
TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
C-6

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



MATERIAL GRADATIONS

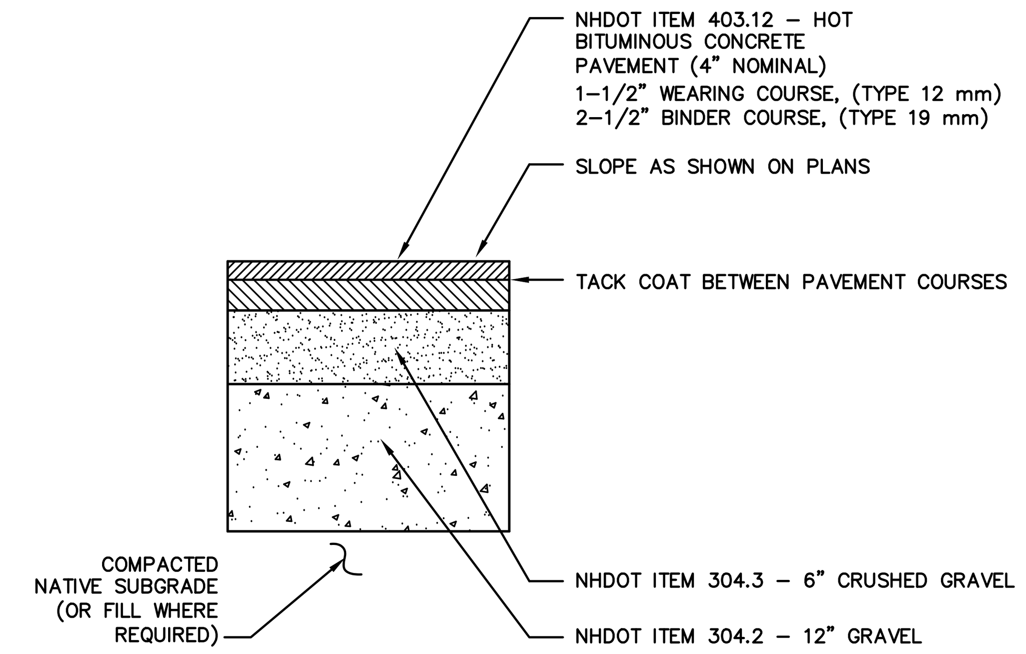
RESERVOIR COURSE		CHOKER COURSE STONE		GRAVEL FILTER COURSE (NHDOT 304.1 MODIFIED)		3/8" PEA STONE	
SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
2-1/2"	100	1-1/2"	100	6"	100	1/2"	100
2"	90 – 100	1"	95 – 100	# 4	70 – 100	3/8"	85 – 100
1-1/2"	35 – 70	1/2"	25 – 60	# 200	0 – 6	# 4	10 – 30
1"	0 – 15	# 4	0 – 10			# 8	0 – 10
1/2"	0 – 5	# 8	0 – 5			# 16	0 – 15

POROUS PAVEMENT CROSS SECTION

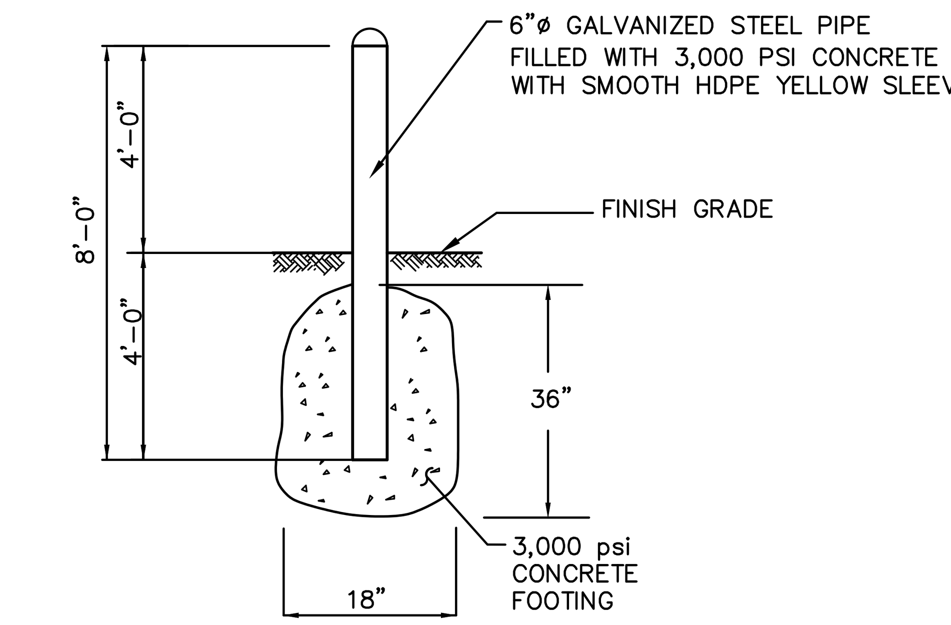
NOT TO SCALE

NOTES:

1. DESIGN OF POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS.
2. CONTRACTOR TO REMOVE ANY EXISTING BURIED LAYERS OF LOAM OR UNSUITABLE MATERIAL DURING THE EXCAVATION OF THE PARKING AREA AND/OR WHENEVER ENCOUNTERED IN TRENCHES.
3. A PROFESSIONAL ENGINEER SHALL INSPECT SITE PREPARATION AND INSTALLATION OF POROUS PAVEMENT.
4. THE TOP LAYER (WEARING COURSE) SHALL BE PRE-BLENDED PG 76-28 MODIFIED WITH SBS. THE BASE COURSE SHOULD BE, AT A MINIMUM, PG 64-28 WITH 5 POUNDS OF FIBER PER TON ASPHALT MIX. IF SUFFICIENT STAGING OR USE OF THE BASE COURSE SECTION WILL BE REQUIRED PRIOR TO THE APPLICATION OF THE WEARING COURSE, THE ENGINEER MAY DECIDE TO USE PRE-BLENDED PG 64V-28 MODIFIED WITH SBS ON BOTH COURSES.
5. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR POROUS PAVEMENT & SUBGRADE MATERIALS AS NOTED IN THE ABOVE SPECIFICATION A MINIMUM OF 14-DAYS PRIOR TO COMMENCING CONSTRUCTION.
6. THE CONSTRUCTION OF THE POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH THE UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS.

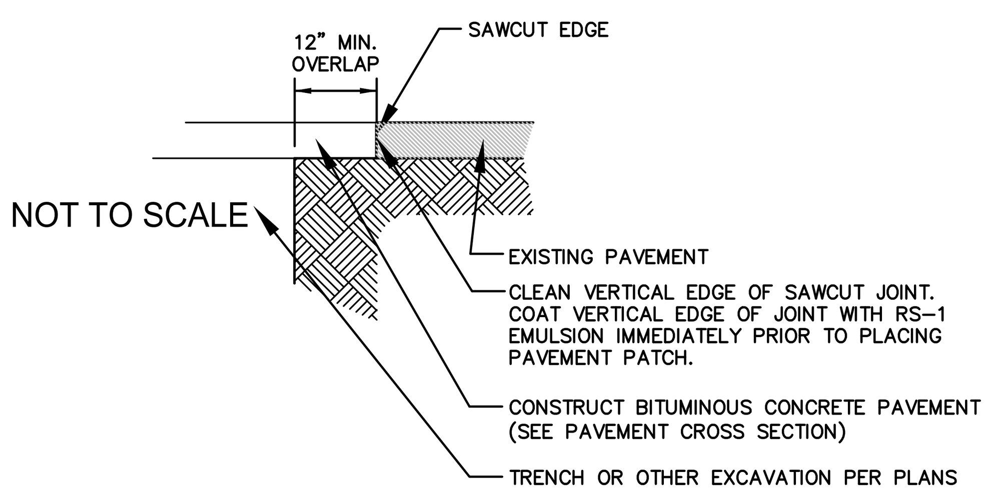


PENDING GEOTECH REPORT
PAVEMENT CROSS SECTION



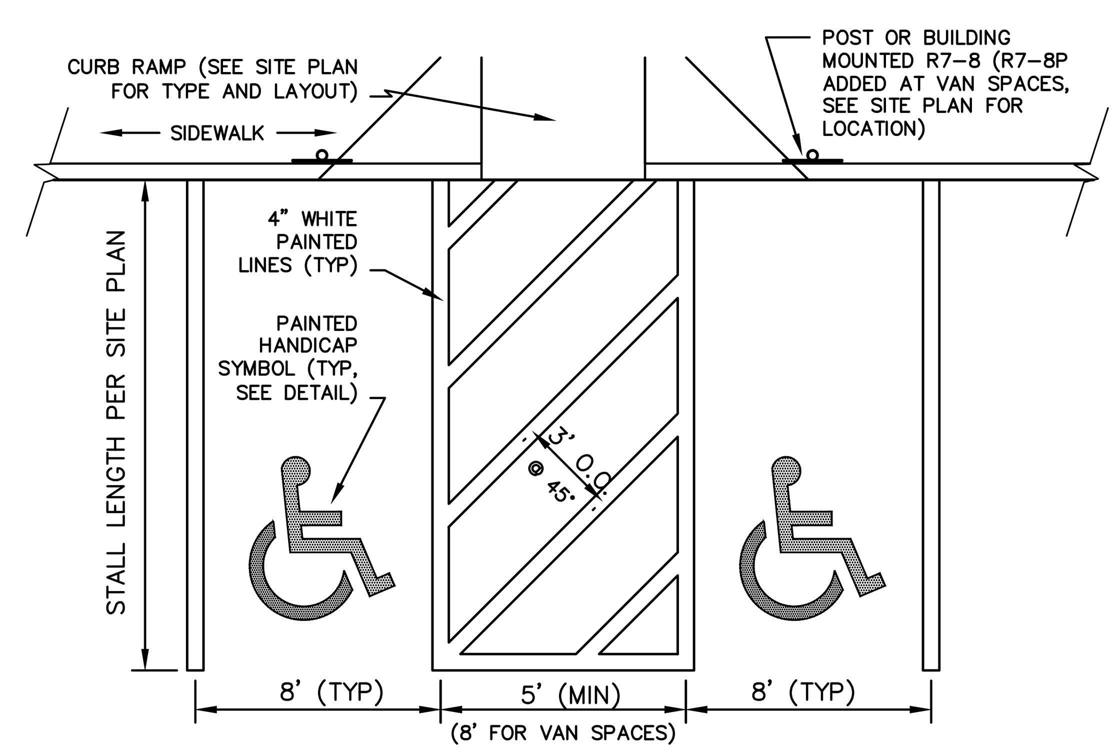
BOLLARD

NOT TO SCALE



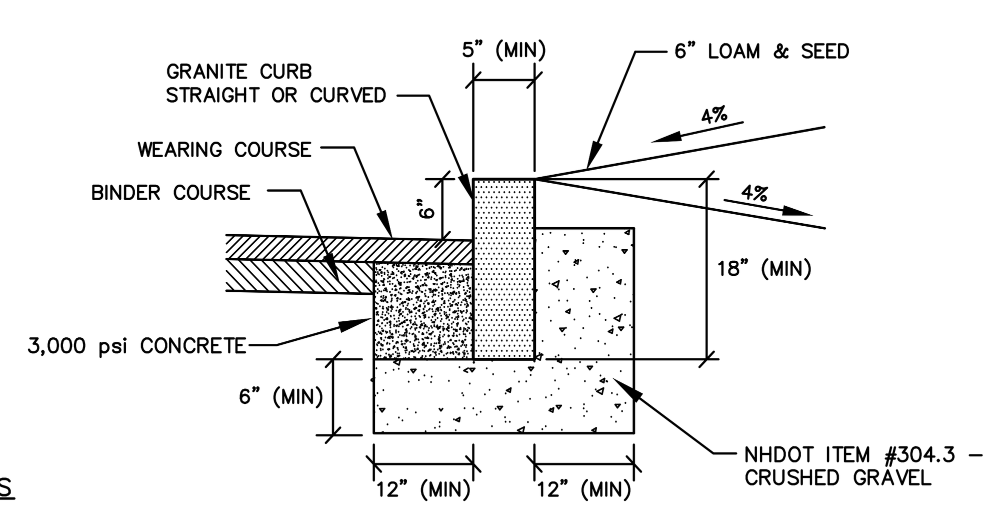
TYPICAL PAVEMENT SAWCUT

NOT TO SCALE



PARKING STALL LAYOUT

NOT TO SCALE



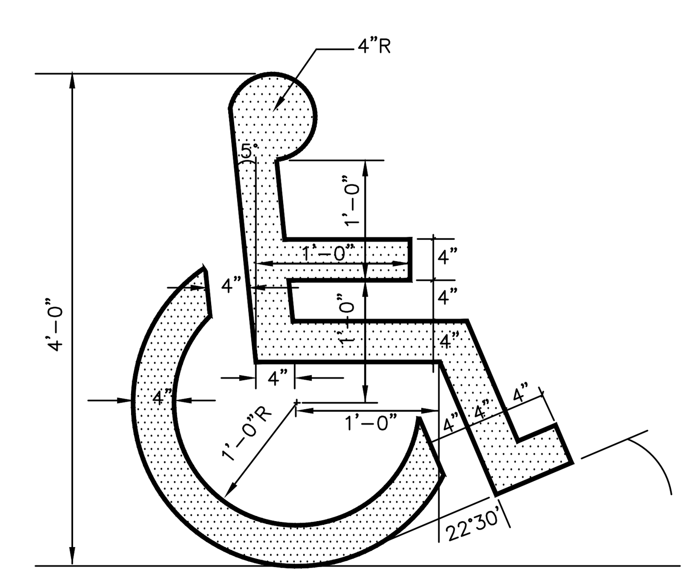
NOTES

1. SEE PLANS FOR CURB LOCATION.
2. SEE PLANS FOR PAVEMENT CROSS SECTION.
3. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
4. MINIMUM LENGTH OF CURB STONES = 4'.
5. MAXIMUM LENGTH OF CURB STONES = 10'.
6. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES – SEE CHART.
7. CURB ENDS TO ROUNDED AND BATTERED FACES TO BE CUT WHEN CALL FOR ON THE PLANS.
8. CURB SHALL BE INSTALLED PRIOR TO PLACEMENT OF TOP PAVEMENT COURSE.
9. JOINTS BETWEEN CURB STONES SHALL BE MORTARED.

RADIUS	MAX. LENGTH
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
OVER 60'	10'

VERTICAL GRANITE CURB

NOT TO SCALE

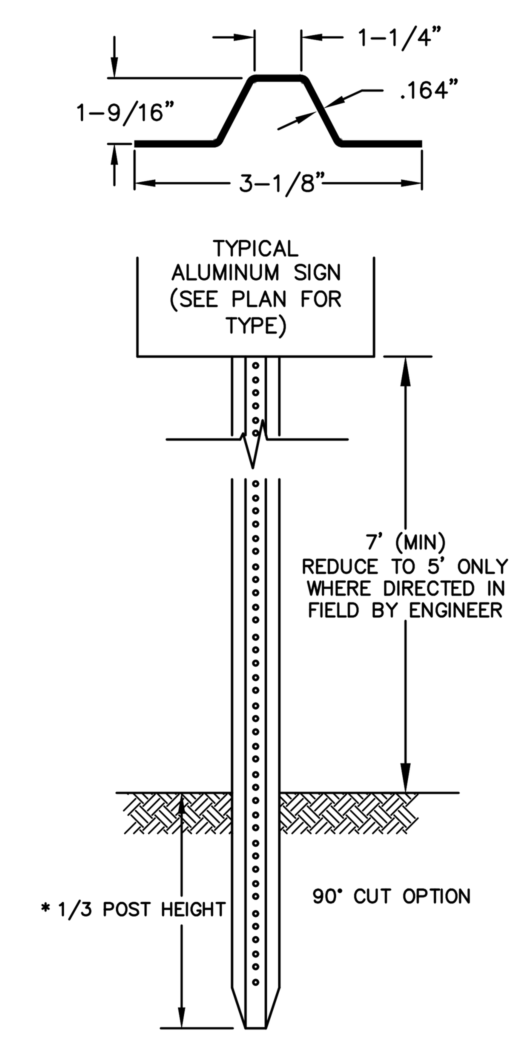


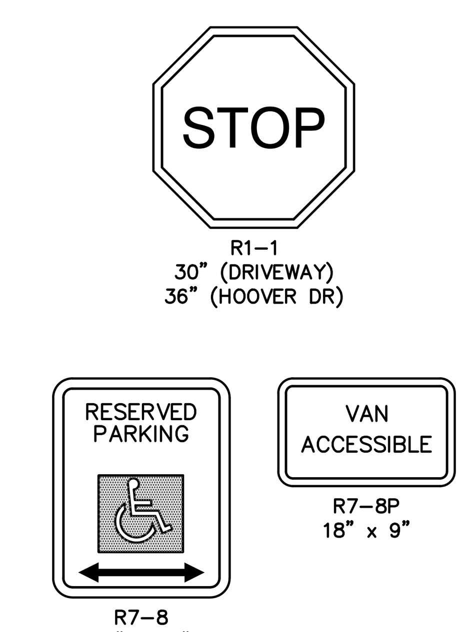
NOTES

1. SYMBOL TO BE PAINTED IN ALL HANDICAPPED ACCESSIBLE SPACES IN WHITE PAINT (BLUE-PAINTED SQUARE BACKGROUND OPTIONAL).

PAINTED ADA SYMBOL

NOT TO SCALE





NOTES

1. ALL SIGNS SHALL MEET THE REQUIREMENTS OF AND BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

* IN LEDGE DRILL & GROUT TO A MIN OF 2'

LENGTH: AS REQUIRED

WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)

HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH

STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 – 1080)

SIGN DETAILS

NOT TO SCALE

P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
11/22/2021

NOT FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21

DRAWN BY: CDB

APPROVED BY: EDW

DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:

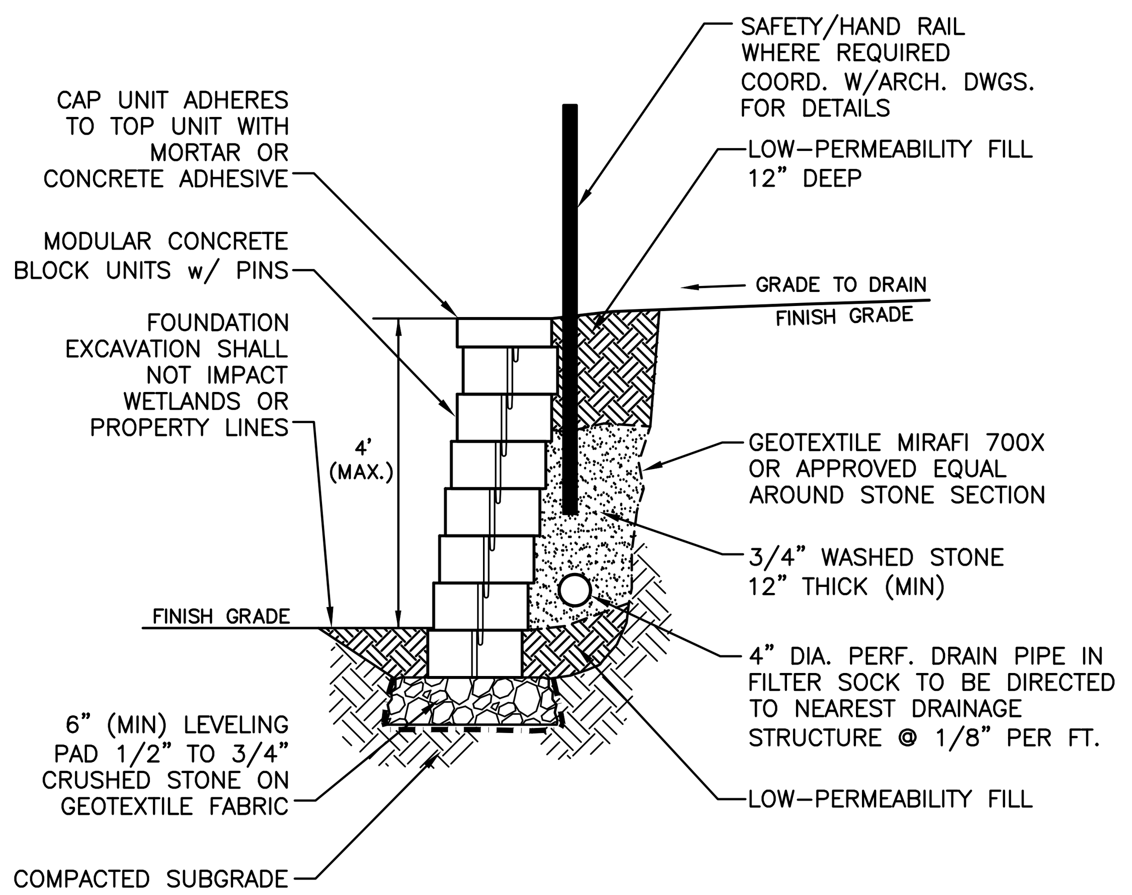
CONSTRUCTION DETAILS

SHEET NUMBER:

C-7

APPROVED BY THE PORTSMOUTH PLANNING BOARD

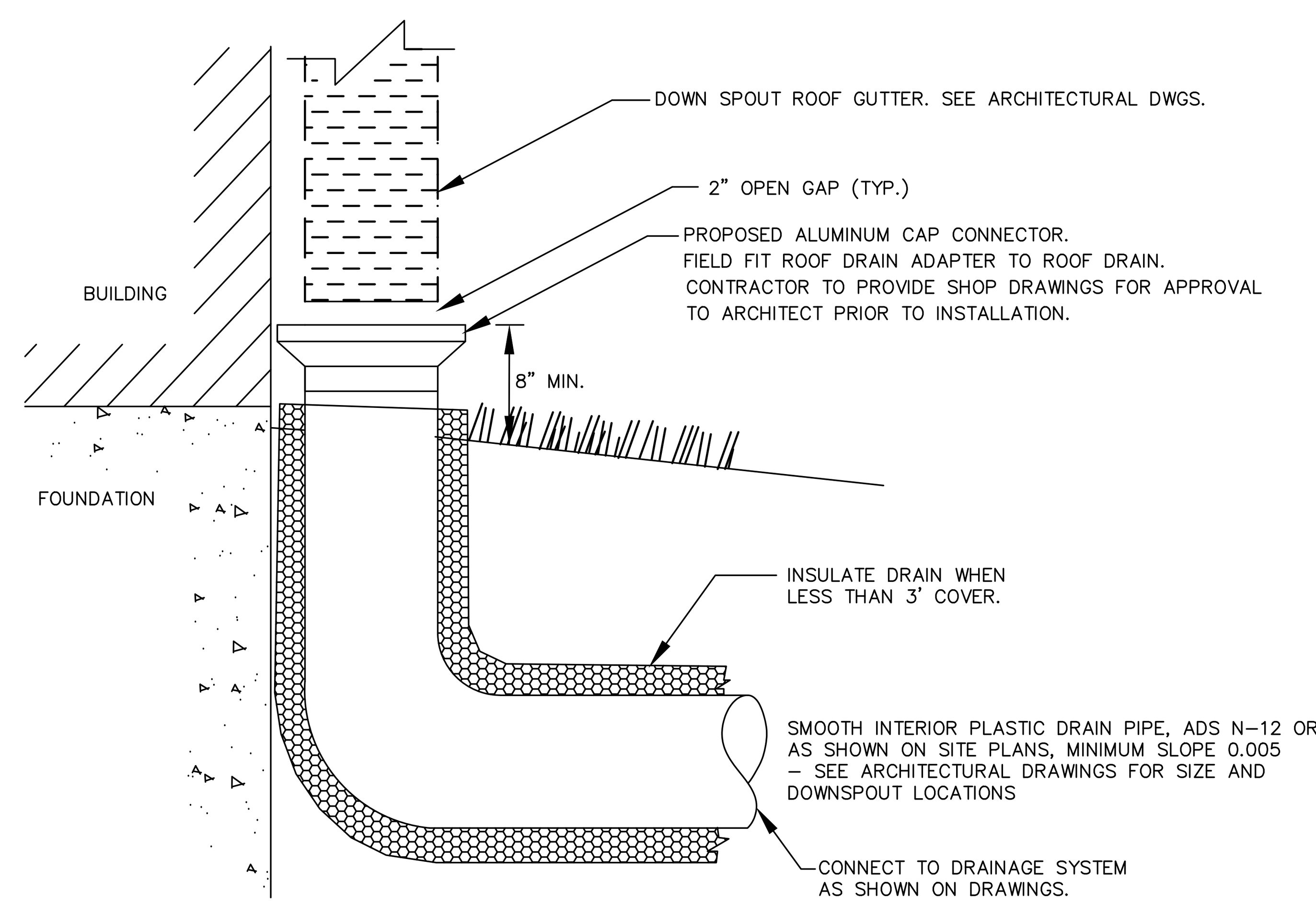
CHAIRMAN DATE



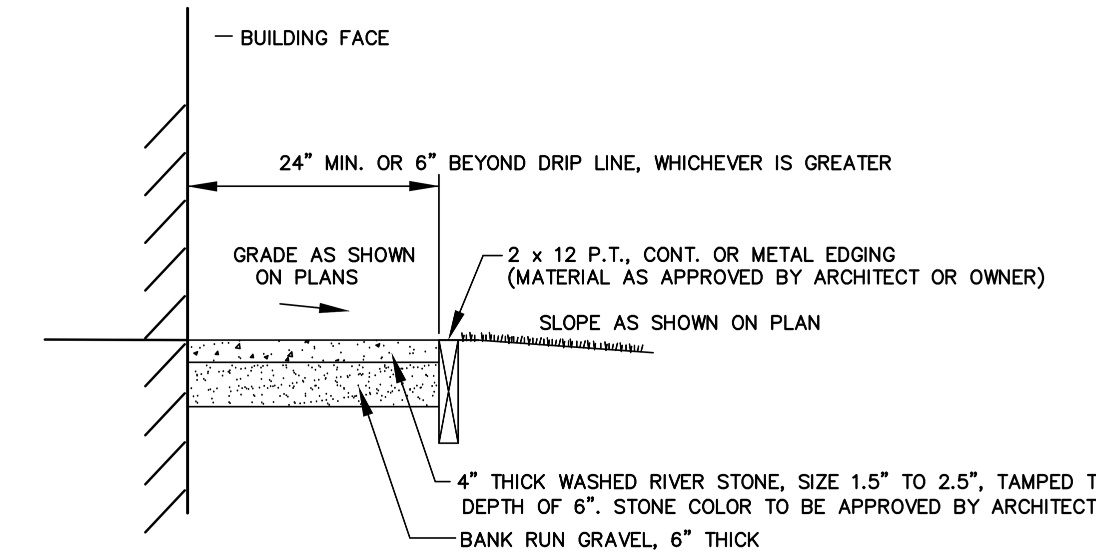
NOTES:

1. MODULAR BLOCK WALLS SHALL BE "DIAMOND PRO" RETAINING WALL SYSTEMS WITH CONCRETE BLOCKS MEASURING APPROXIMATELY 8"x18"x12" WITH WALL CAP. USE OF A DIFFERENT MODULAR BLOCK SYSTEM SHALL BE APPROVED BY BOTH THE OWNER AND ENGINEER.
2. WALL SHALL BE INSTALLED PER THE REQUIREMENTS OF THE MANUFACTURER.
3. WALL HEIGHT SHALL NOT EXCEED 4' WITHOUT DESIGN DRAWINGS STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER. WALLS EXCEEDING 4 FT IN HEIGHT WILL REQUIRE GEOSYNTHETIC REINFORCING OR ANCHORPLEX RETRAINING WALL SYSTEMS.
4. LOCKING PINS MAY OR MAY NOT BE REQUIRED BASED ON THE WALL MANUFACTURER APPROVED BY THE ENGINEER.
5. WALL SHALL BE EMBEDDED BELOW EXISTING GRADE THE DEPTH OF AT LEAST ONE BLOCK UNLESS OTHERWISE SPECIFIED BY THE WALL MANUFACTURER.
6. WALL BATTER SHALL BE PER THE MANUFACTURER'S SPECIFICATIONS.
7. BLOCK FINISH SHALL BE AT THE DISCRETION OF THE OWNER.

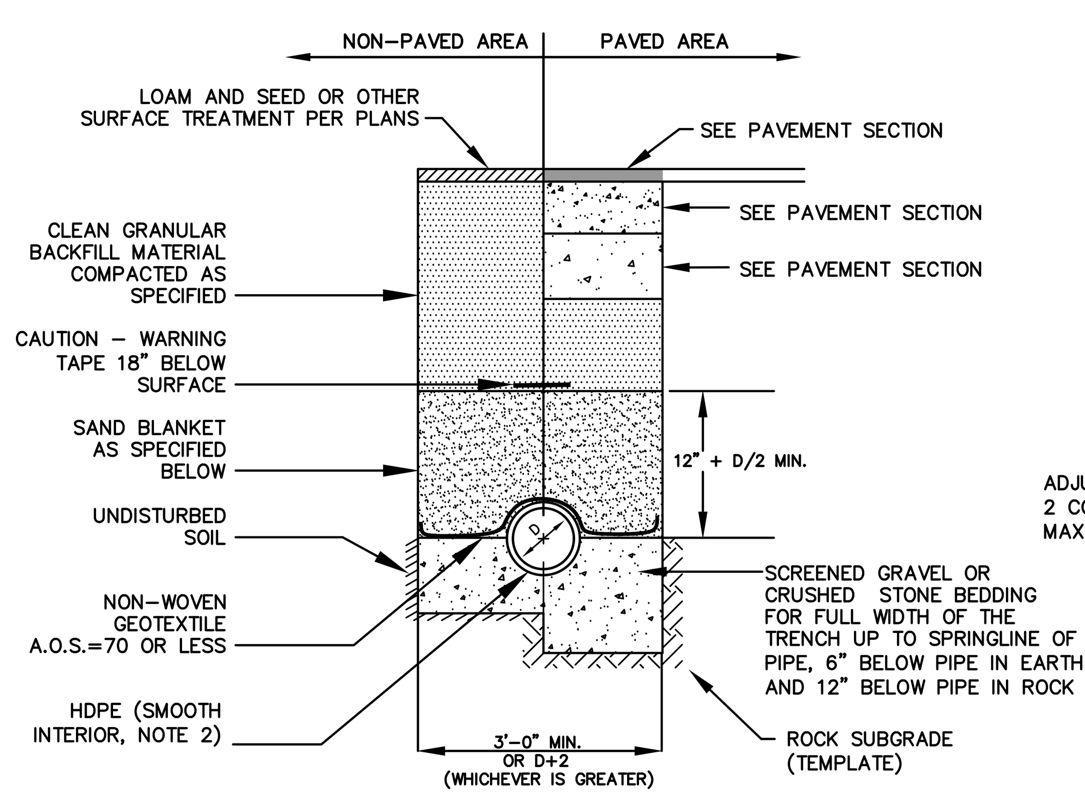
MODULAR BLOCK RETAINING WALL NOT TO SCALE



ROOF DRAIN NOT TO SCALE



DRIP EDGE DETAIL NOT TO SCALE



NOTES:

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. ALL PIPE SHALL BE HDPE WITH SMOOTH INTERIOR AND CORRUGATED EXTERIOR, ADS TYPE N-12 OR APPROVED EQUAL.

SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

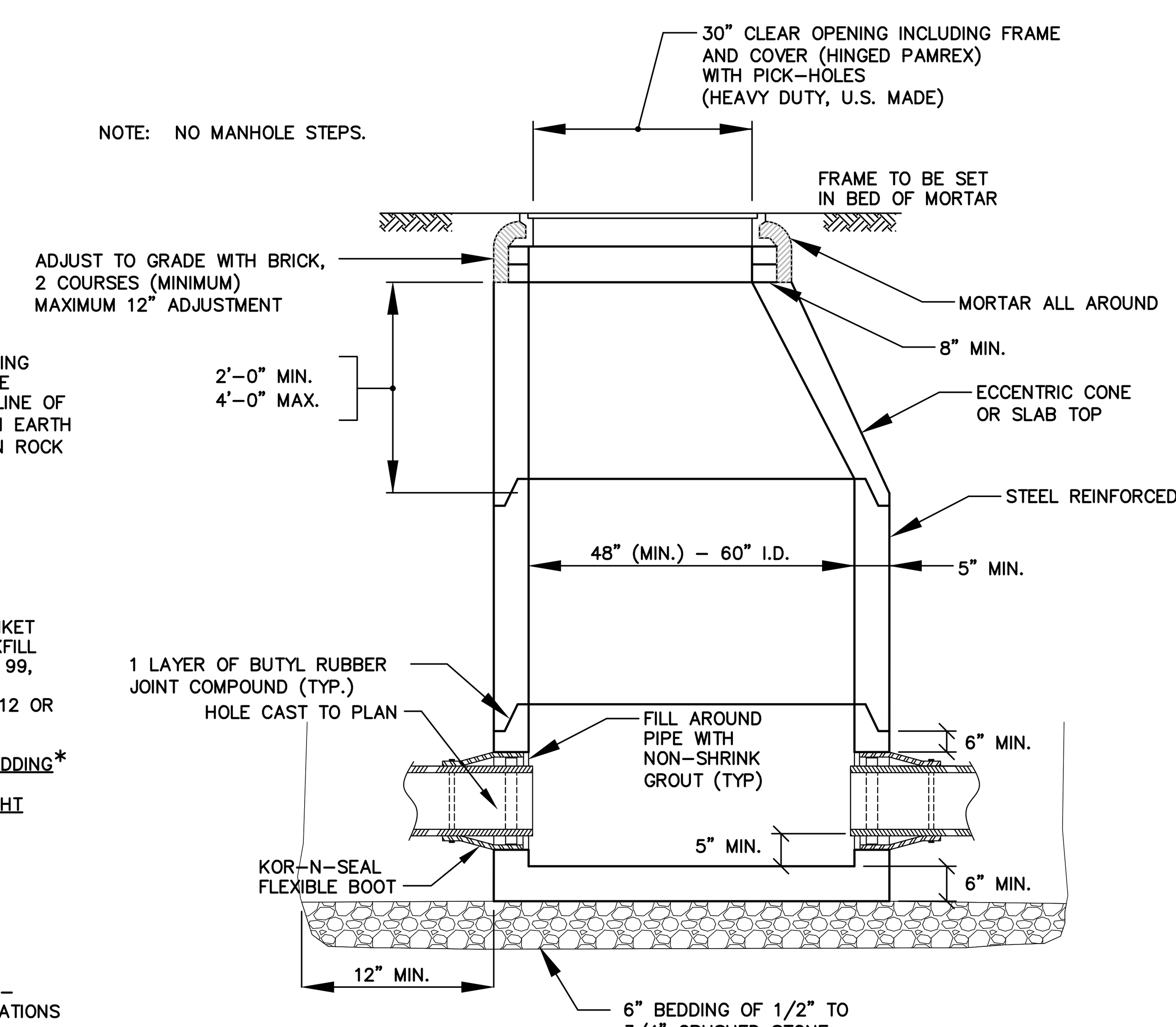
SCREENED GRAVEL OR CRUSHED STONE BEDDING*

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	20 - 55
# 4	0 - 10
# 8	0 - 5

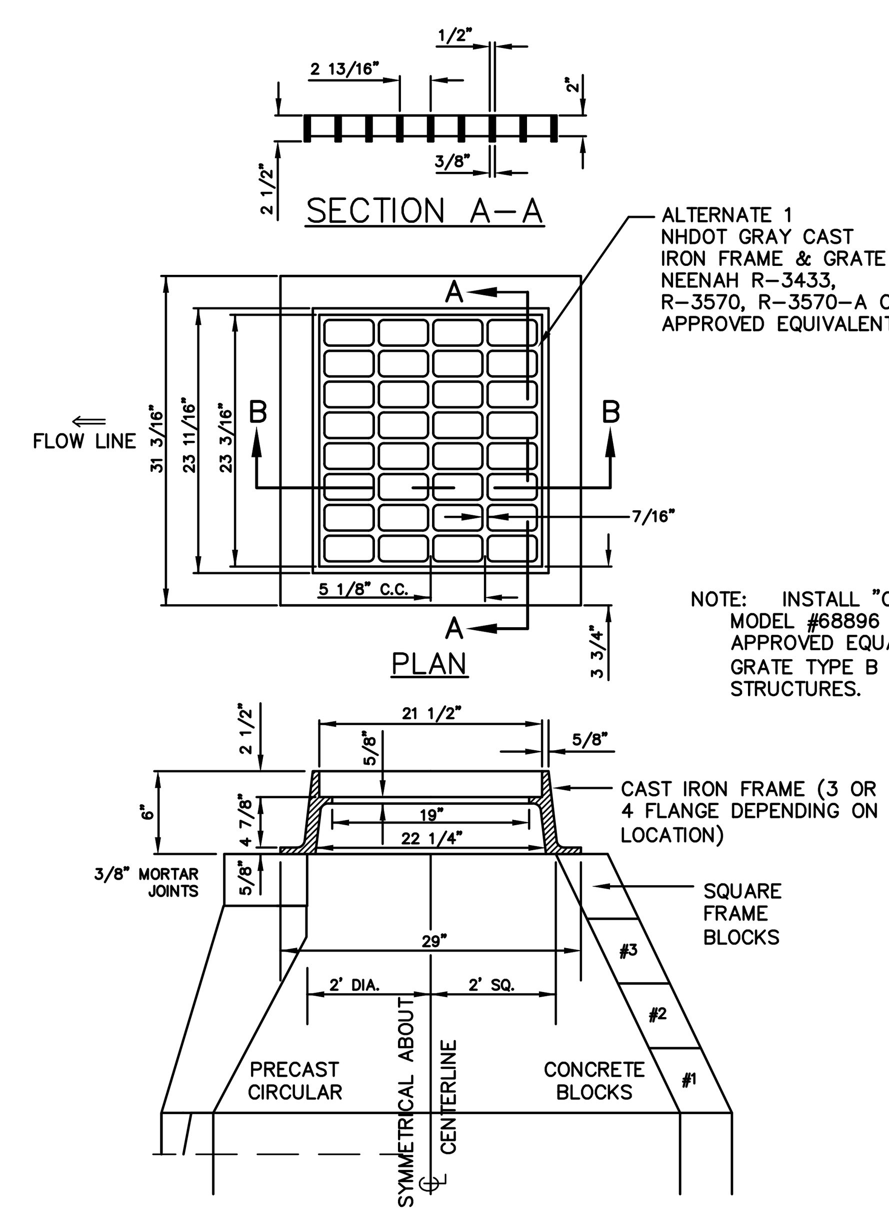
* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

STORM DRAIN TRENCH NOT TO SCALE

NOTE: NO MANHOLE STEPS.



DRAIN MANHOLE DETAIL NOT TO SCALE

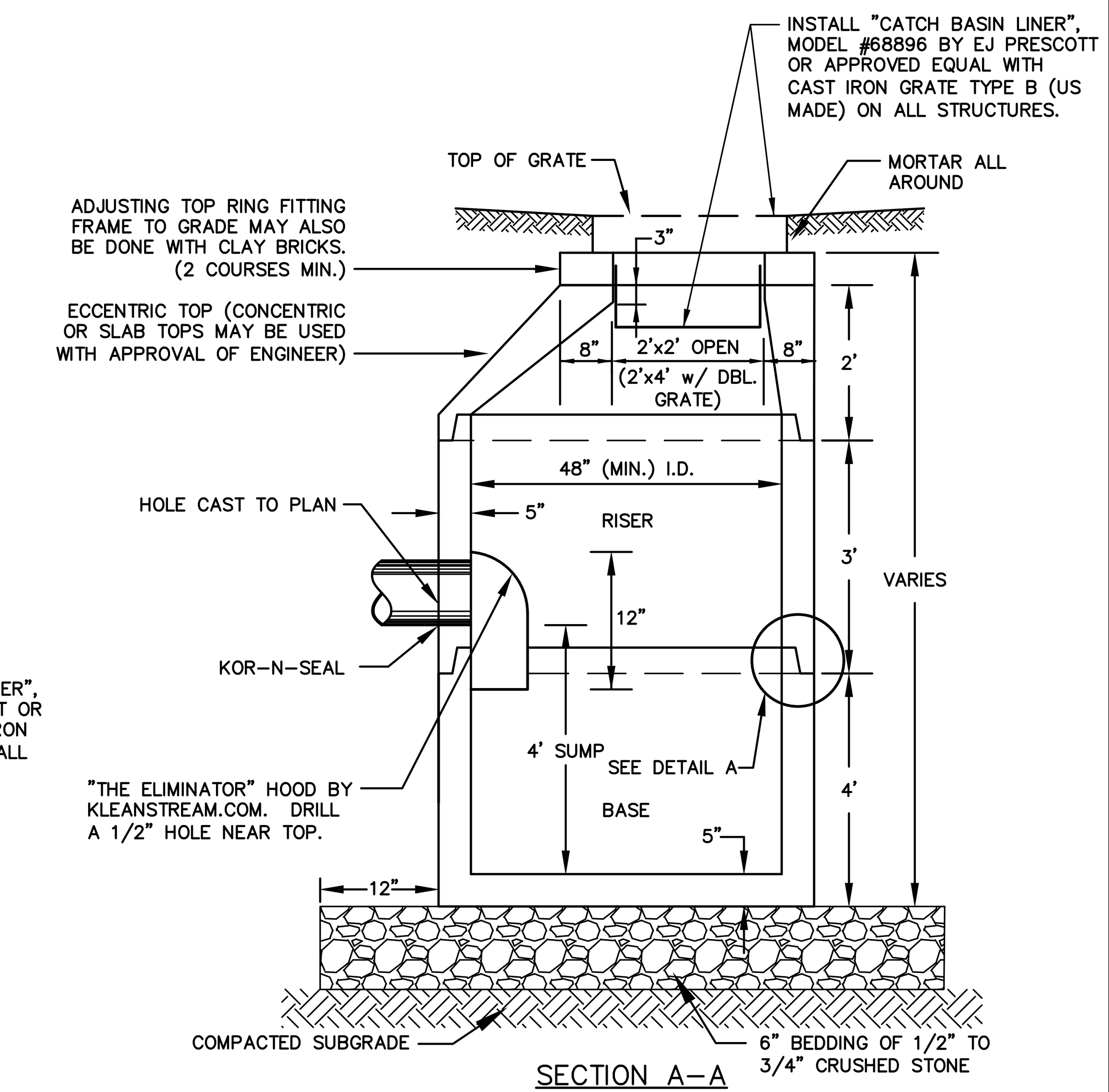


NOTE: INSTALL "CATCH BASIN LINER", MODEL #68896 BY EJ PRESCOTT OR APPROVED EQUAL WITH CAST IRON GRATE TYPE B (US MADE) ON ALL STRUCTURES.

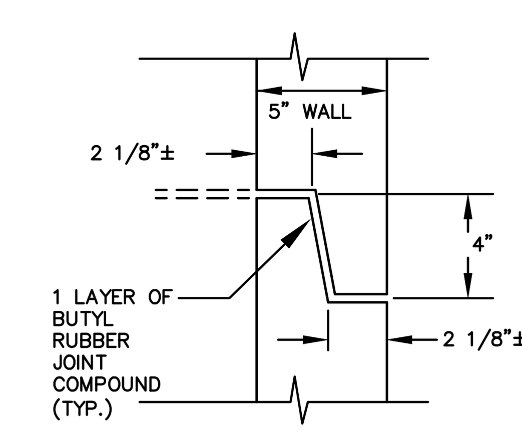
GRATE & FRAME DETAIL

NOTES

1. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. USE H20 LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4' OF FINISH GRADE.
7. FRAME AND GRATE DIMENSIONS ARE TYPICAL BUT MAY VARY BASED ON PRODUCT SELECTED OR EQUIVALENT APPROVED BY THE ENGINEER.

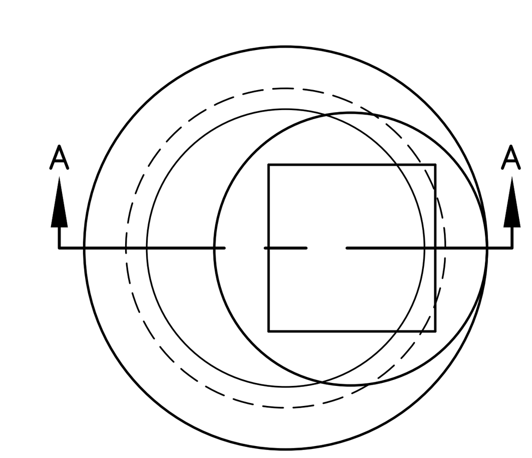


SECTION A-A



DETAIL A

(TONGUE & GROOVE JOINT)



PLAN-ECCENTRIC CONE

DEEP SUMP CATCH BASIN NOT TO SCALE

P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR:
PLANNING BOARD

ISSUE DATE:
NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

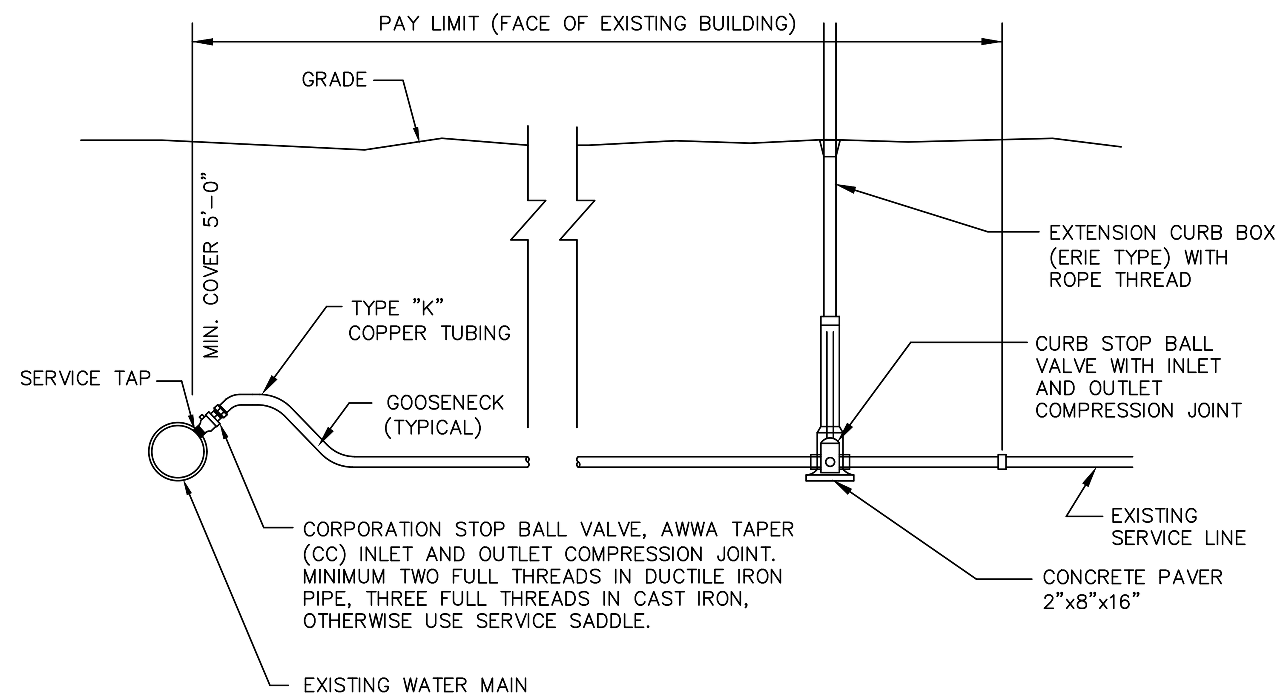
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:

CONSTRUCTION DETAILS

SHEET NUMBER:

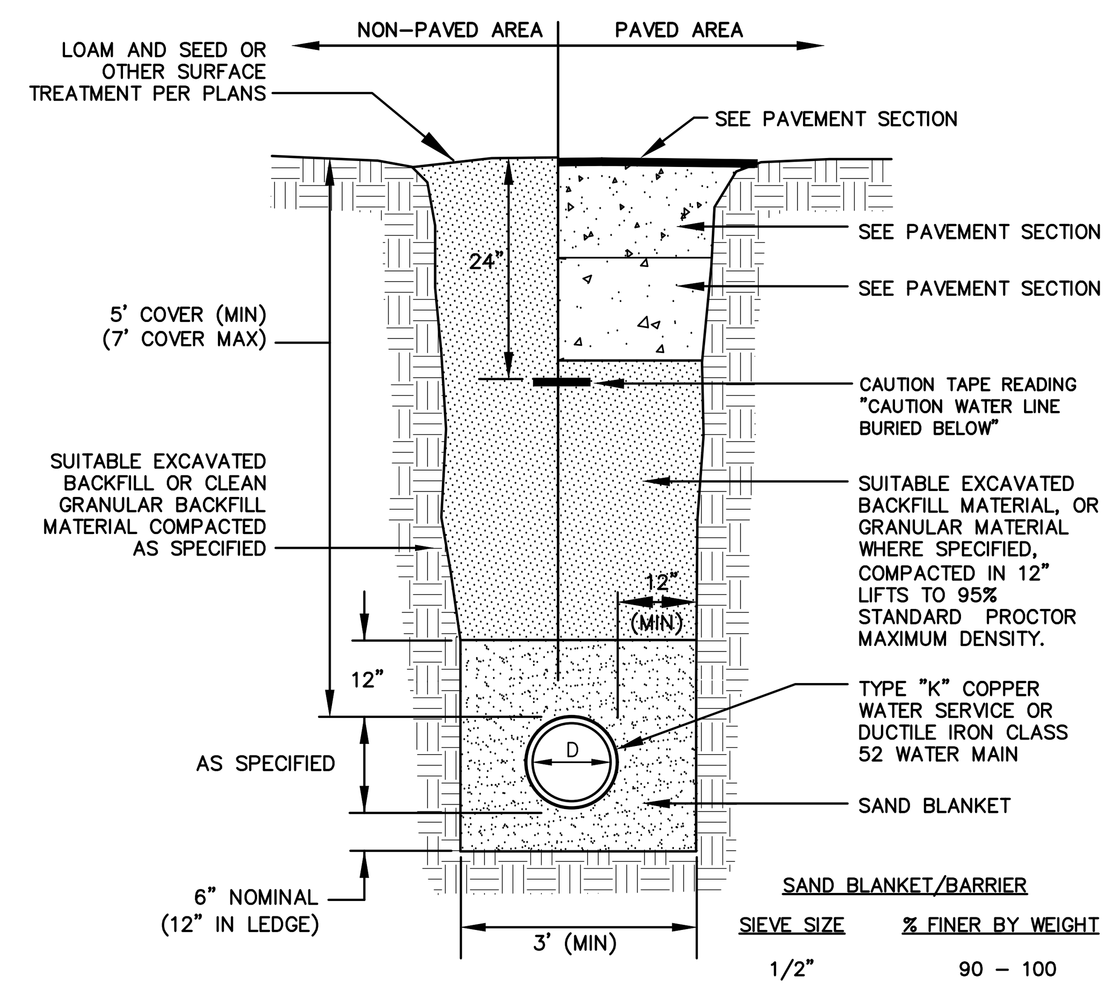
C-8



NOTES

1. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF COPPER. NO COUPLING ALLOWED IN ROADWAY WITHOUT APPROVAL OF ENGINEER.
2. TAPS TO BE MADE AT APPROXIMATELY 2:00 & 10:00
3. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
4. IF SERVICE IS INSTALLED WITH LESS THAN 5' COVER, INSULATE OVER LINE.
5. REMOVE EXISTING CURB STOP.
6. CONNECT CURB STOP TO EXISTING SERVICE LINE AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER (NO COUPLING WITHOUT APPROVAL OF ENGINEER) AFTER PRESSURE TESTING AND DISINFECTION.
7. SHUT OFF EXISTING CORPORATION AND REMOVE OR ABANDON EXISTING SERVICE LINE.
8. CURB BOX SHALL BE SET IN THE GRASS/LANDSCAPE AREA BETWEEN CURB AND SIDEWALK UNLESS DIRECTED OTHERWISE.
9. 2" OR LARGER SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.

SERVICE CONNECTION DETAIL NOT TO SCALE



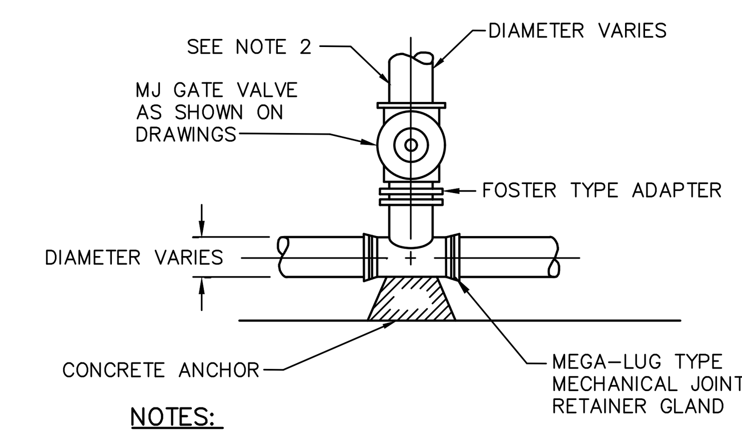
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. WATER MAINS SHALL BE POLY WRAPPED.
3. WATER MAINS SHALL HAVE 3 WEDGES PER JOINT.

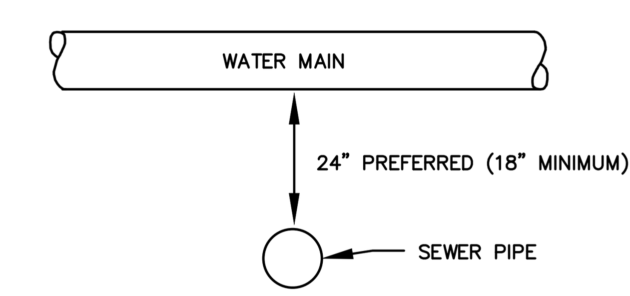
WATER TRENCH NOT TO SCALE



NOTES:

1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED AS NOTED UNDER THRUST BLOCK DETAIL REQUIREMENTS.

TEE & GATE VALVE ASSEMBLY DETAIL NOT TO SCALE



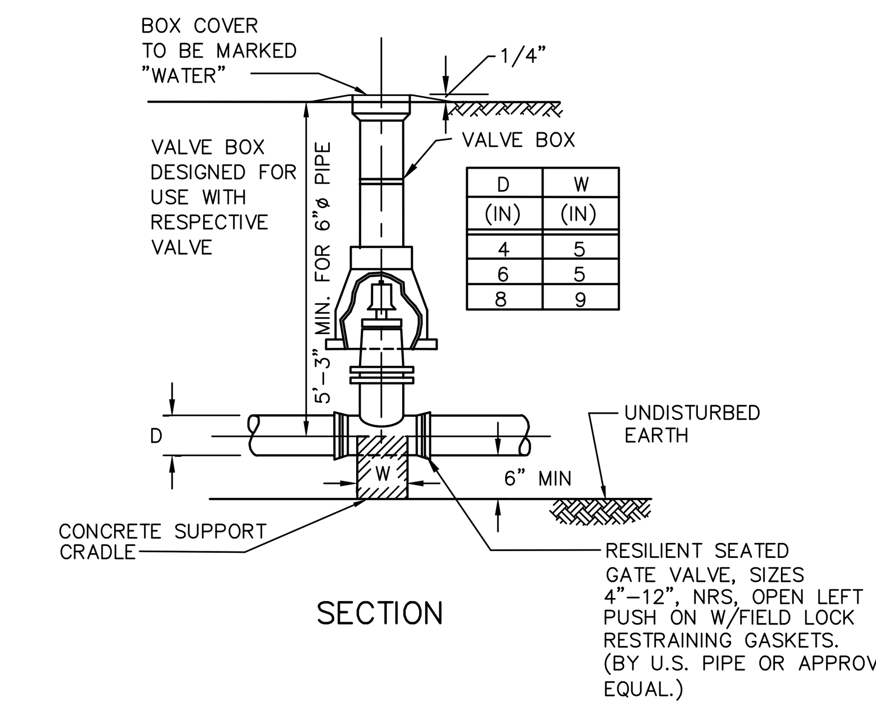
NOTES

1. A MINIMUM HORIZONTAL DISTANCE OF 10 FEET SHALL BE MAINTAINED BETWEEN WATER AND SEWER MAINS. A MINIMUM VERTICAL DISTANCE WITH WATER ABOVE SEWER SHALL BE MAINTAINED.
2. SEWER PIPE JOINTS SHALL BE LOCATED A MINIMUM OF 6 FEET HORIZONTALLY FROM WATER MAIN.
3. IF THE REQUIRED CONFIGURATION CANNOT BE MET, THE SEWER MAIN SHALL BE CONSTRUCTED TO MEET THE NHDES REQUIREMENTS FOR FORCE MAIN CONSTRUCTION.

WATER / SEWER CROSSING NOT TO SCALE

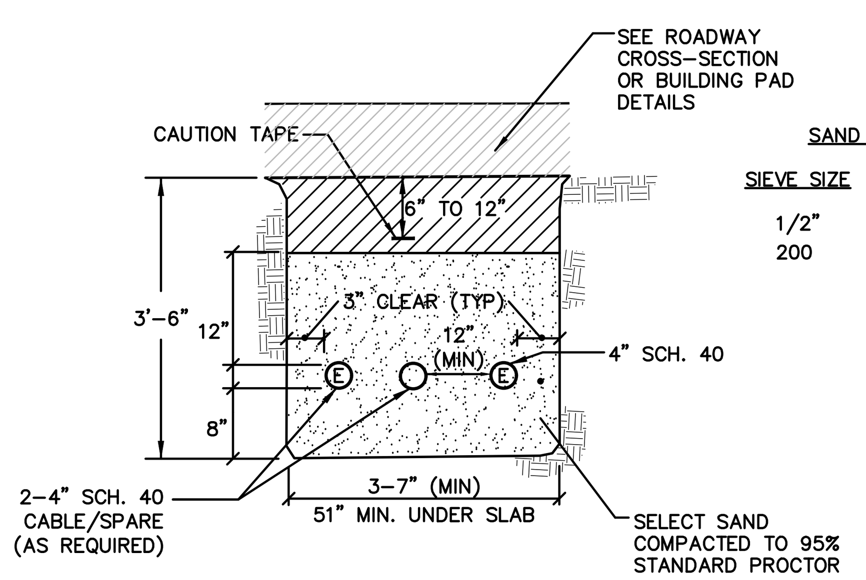
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



D (IN)	W (IN)
4	5
6	5
8	9

WATER VALVE DETAIL NOT TO SCALE



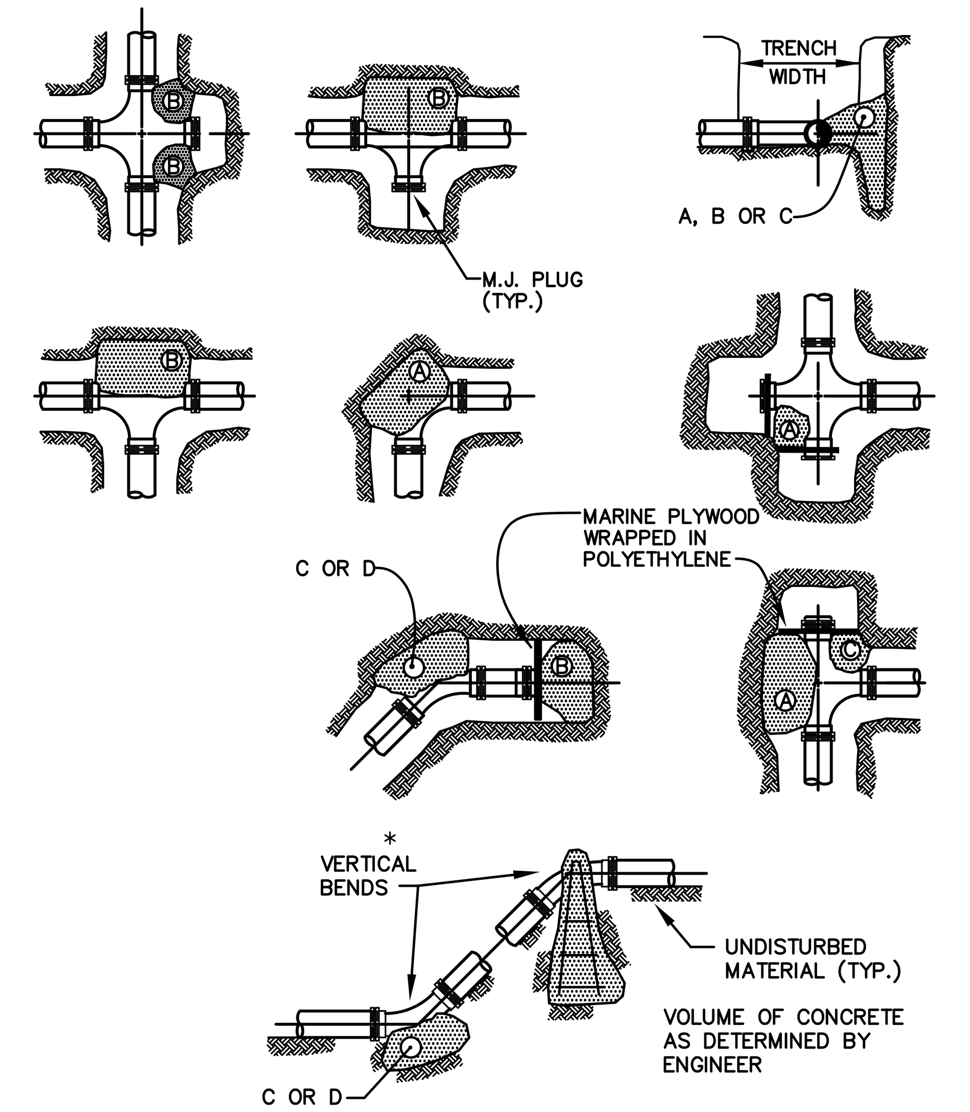
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. ALL CONDUIT IS TO BE SCHEDULE 40 PVC, ELECTRICAL GRADE, GRAY IN COLOR AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. A 10-FOOT HORIZONTAL SECTION OF RIGID GALVANIZED STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP, UNLESS IN THE OPINION OF THE SERVICE PROVIDER DESIGNER, THE SWEEP-PVC JOINT IS NOT SUBJECT TO FAILURE DURING PULLING OF THE CABLE. ALL JOINTS ARE TO BE WATERTIGHT.
2. ALL 90 DEGREE SWEEPS WILL BE MADE WITH RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 36 INCHES FOR PRIMARY CABLES AND 24 INCHES FOR SECONDARY CABLES.
3. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY SERVICE PROVIDER. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS, AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE IN 6-INCH LAYERS AND THOROUGHLY COMPACTED.
4. A SUITABLE PULLING STRING, CAPABLE OF 300 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE SERVICE PROVIDER IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT. A MINIMUM OF TWENTY-FOUR (24") INCHES OF ROPE SLACK SHALL REMAIN AT THE END OF EACH DUCT. PULL ROPE SHALL BE INSTALLED IN ALL CONDUIT FOR FUTURE PULLS. PULL ROPE SHALL BE NYLON ROPE HAVING A MINIMUM TENSILE STRENGTH OF THREE HUNDRED (300#) LBS.
5. SERVICE PROVIDER SHALL BE GIVEN THE OPPORTUNITY TO INSPECT ALL CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD SERVICE PROVIDER BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. TYPICAL CONDUIT SIZES ARE 3-INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4-INCH FOR THREE PHASE SECONDARY, AND 5-INCH FOR THREE PHASE PRIMARY. HOWEVER, <u>SERVICE PROVIDERS MAY REQUIRE DIFFERENT NUMBERS, TYPES AND SIZES OF CONDUIT THAN THOSE SHOWN HERE.</u> THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL CONDUIT SIZES, TYPES AND NUMBERS WITH EACH SERVICE PROVIDER PRIOR TO ORDERING THEM.
7. ROUTING OF CONDUIT, LOCATION OF MANHOLES, TRANSFORMERS, CABINETS, HANDHOLES, ETC., SHALL BE DETERMINED BY SERVICE PROVIDER DESIGN PERSONNEL. THE CONTRACTOR SHALL COORDINATE WITH ALL SERVICE PROVIDERS PRIOR TO THE INSTALLATION OF ANY CONDUIT.
8. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE. WHERE REQUIRED BY UTILITY PROVIDER, CONDUIT SHALL BE SUPPORTED IN PLACE USING PIPE STANCHIONS PLACED EVERY FIVE (5') FEET ALONG THE CONDUIT RUN.
9. UNDER A BUILDING SLAB THE CONDUIT SHALL BE ENCASED IN 8" OF CONCRETE ON ALL SIDES.
10. ALL CONDUIT TERMINATIONS SHALL BE CAPPED TO PREVENT DEBRIS FROM ENTERING CONDUIT.

ELECTRIC / COMMUNICATION TRENCH NOT TO SCALE

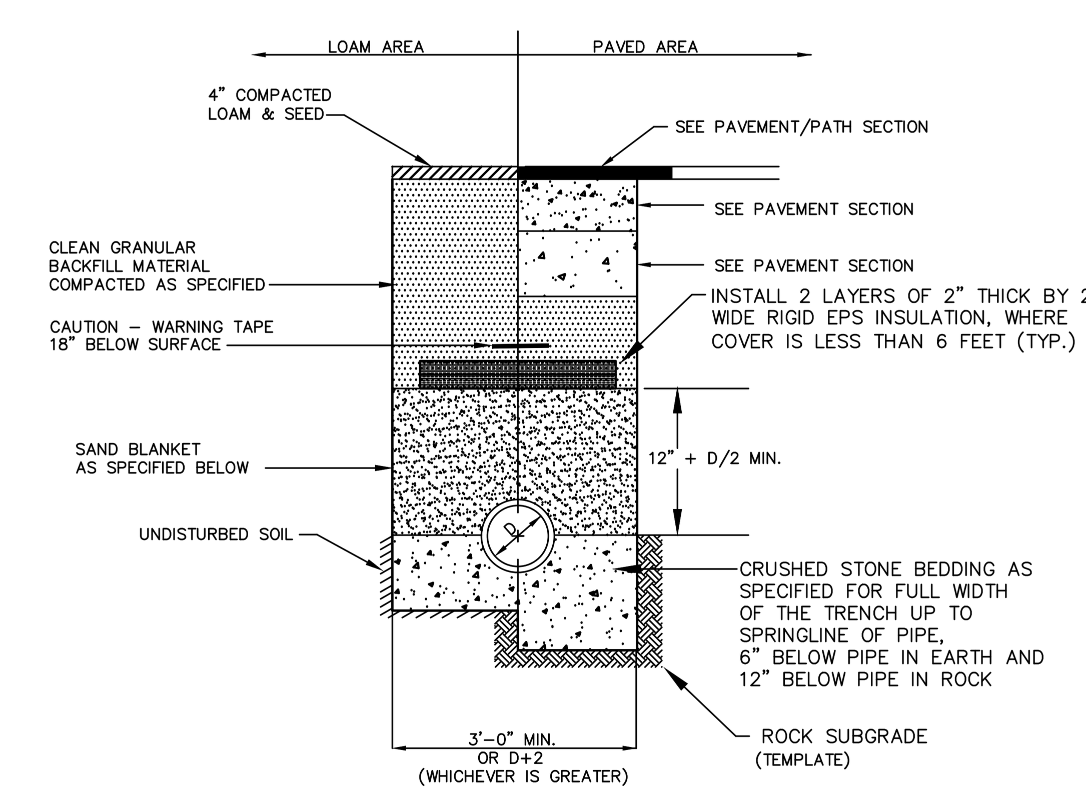


TEST PRESSURE = 150 psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
	REACTION TYPE	PIPE SIZE 4"	6"	8"	10"	12"
	A 90°	0.89	2.19	3.82	11.14	17.24
	B 180°	0.65	1.55	2.78	8.38	12.00
	C 45°	0.48	1.19	2.12	6.02	9.32
	D 22-1/2°	0.25	0.60	1.06	3.08	4.74
	E 11-1/4°	0.13	0.30	0.54	1.54	2.38

NOTES:

1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. POLYETHYLENE (6 MIL) SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT.

THRUST BLOCKING DETAIL NOT TO SCALE



BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

CRUSHED STONE BEDDING *

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 – 10
# 8	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

SEWER TRENCH SECTION NOT TO SCALE

STANDARD TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN OF THE DRAWING.
2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33, STONE SIZE NO. 67.

100%	PASSING 1 INCH SCREEN
90 – 100%	PASSING 3/4 INCH SCREEN
20 – 55%	PASSING 3/8 INCH SCREEN
0–10%	PASSING #4 SIEVE
0–5%	PASSING #8 SIEVE

WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90 – 100% PASSES 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
6. SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAT 1 FOOT ABOVE THE TOP OF THE PIPE.
7. W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#) CONCRETE AS FOLLOWS: CEMENT: 6.0 BAGS PER CUBIC YARD WATER: 5.75 GALLONS PER BAG CEMENT MAXIMUM SIZE OF AGGREGATE: 1 INCH CONCRETE ENCASEMENT IS <u>NOT</u> ALLOWED FOR PVC PIPE.
10. CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
11. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO CITY'S STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.

P5079

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
11/22/2021

NOT FOR CONSTRUCTION

ISSUED FOR:
PLANNING BOARD

ISSUE DATE:
NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

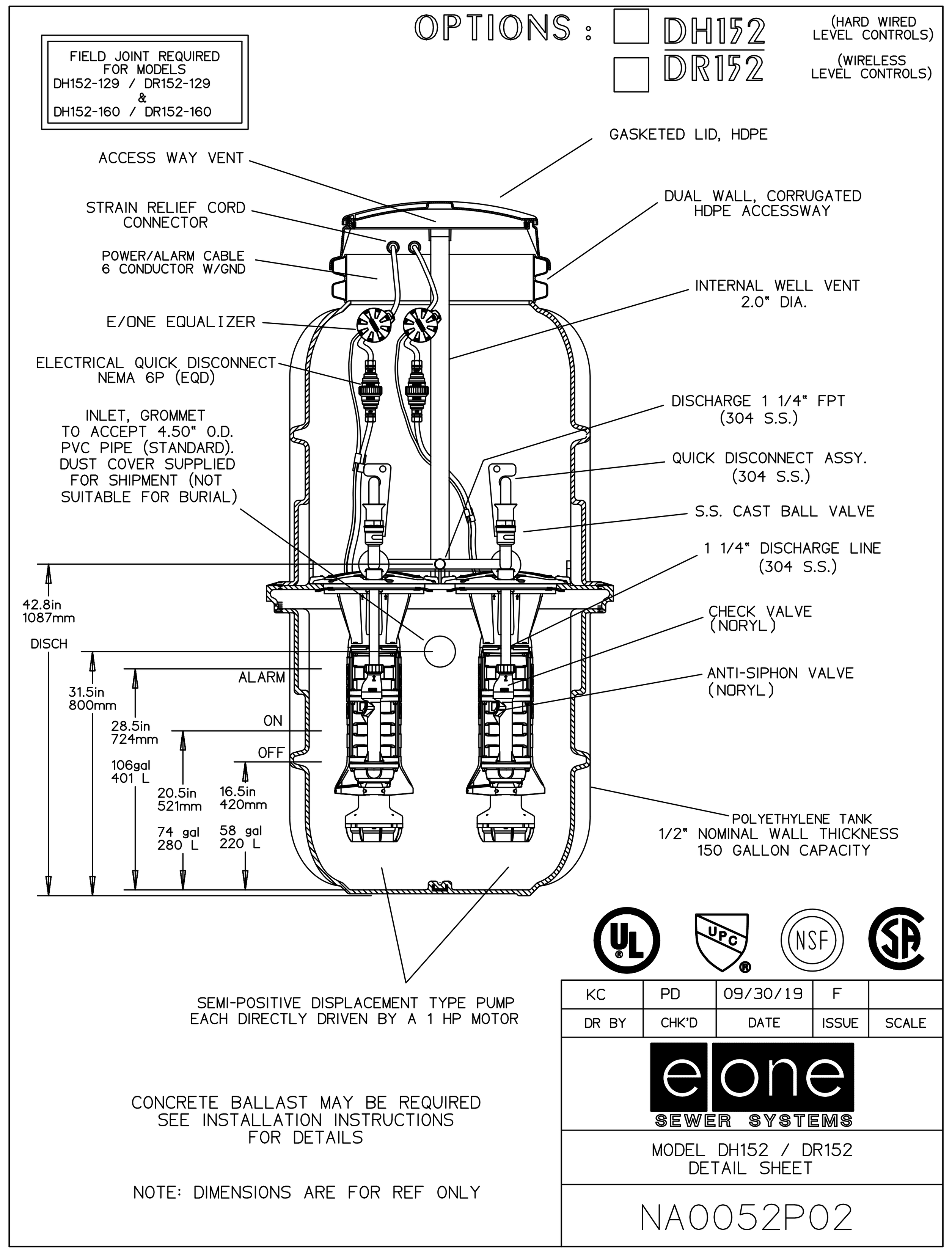
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:

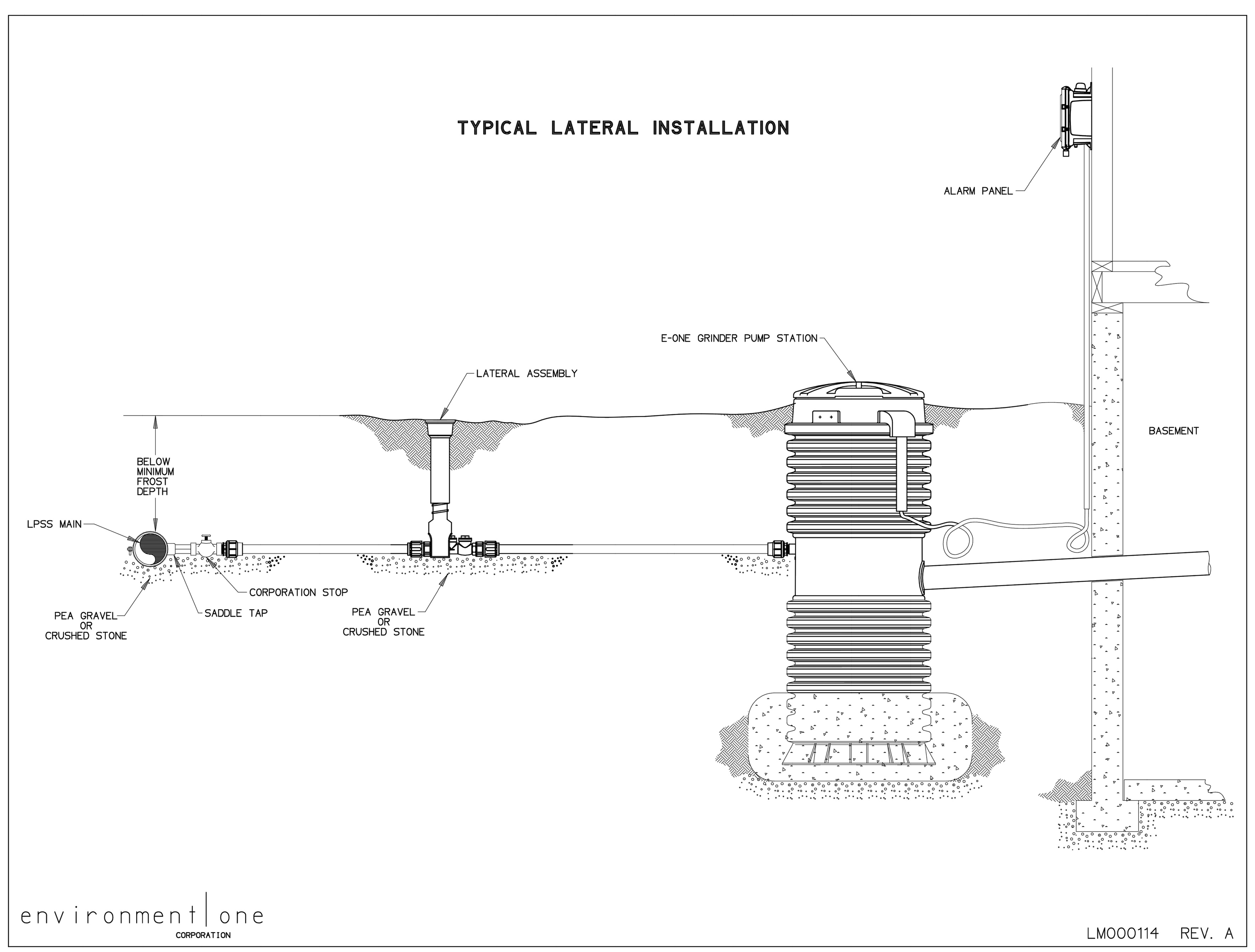
CONSTRUCTION DETAILS

SHEET NUMBER:

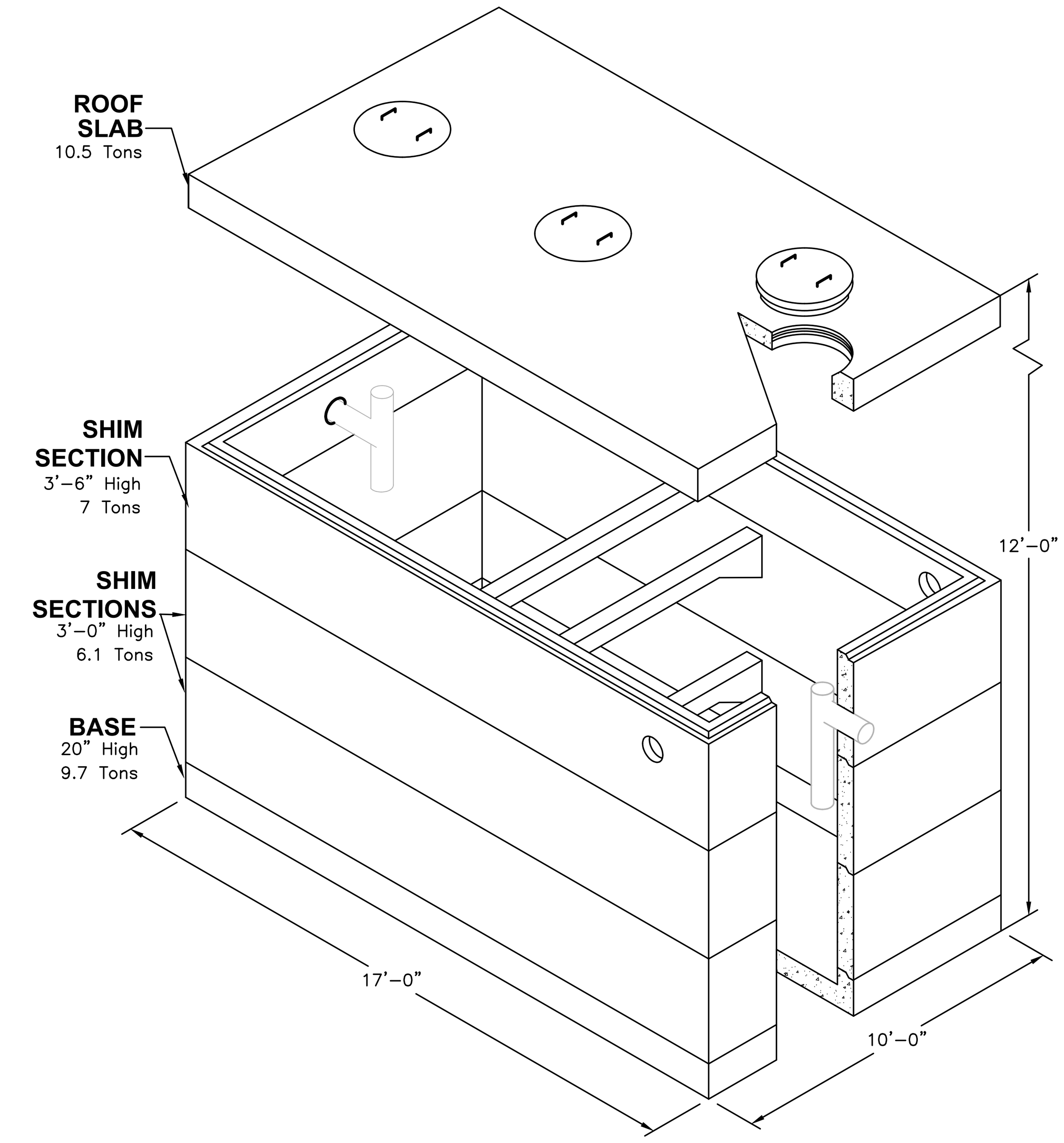
C-9



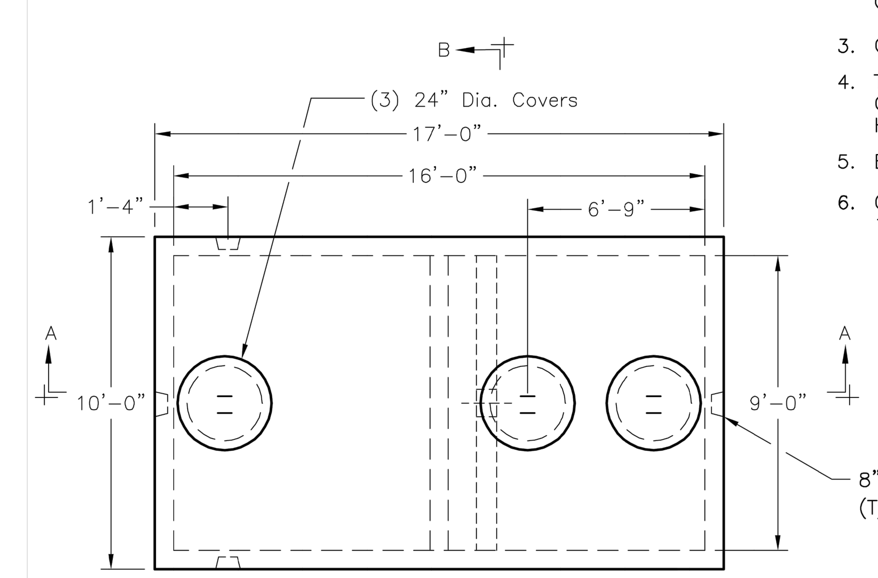
E-ONE GRINDER PUMP DETAIL NOT TO SCALE



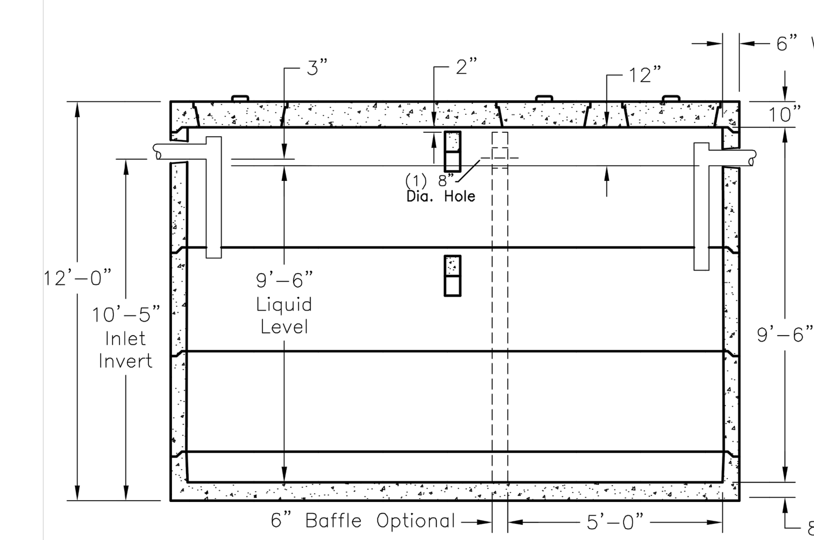
E-ONE TYPICAL SEWER SERVICE INSTALLATION NOT TO SCALE



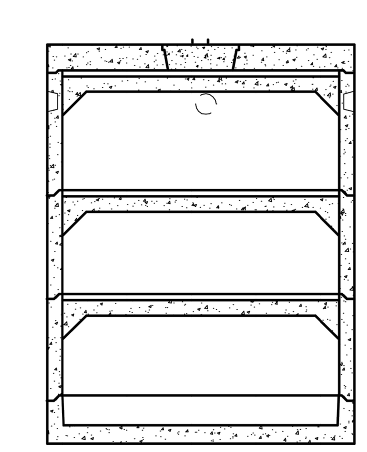
NOTES:
1. Concrete : 5,000 P.S.I Minimum Strength @ 28 Days
2. Steel Reinforcing– ASTM A-615, Grade 60.
3. Cover to Steel–1" Minimum
4. Tanks are Designed to Meet ASTM C858 and ACI 318 with AASHTO HS-20 Loading
5. Earth Cover –0 to 2 Feet Max.
6. Construction Joint–Sealed with 1" Dia Butyl Rubber or Equivalent



PLAN VIEW



SECTION A-A



SECTION B-B

Septic Tank - 10,000 Gallon Capacity
9'-0" x 16'-0" x 10'-6" I.D.
Oldcastle Precast® (OR APPROVED EQUAL)

SEPTIC HOLDING TANK DETAIL (10,000 GALLON CAPACITY) NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET (603) 433-2335
PORTSMOUTH, NH 03801 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
11/22/2021

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 10'
11"x17" 1" = 20'

OWNER / APPLICANT:
SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
960 SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
C-10

P5079

960 SAGAMORE AVE
Site Lighting Layout

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Filename	Lumens per Lamp	LLF	Distribution	Polar Plot
	B	1	Lithonia Lighting	DSXB LED 16C 700 30K SYM MVOLT DDBXD	D-SERIES BOLLARD; mounted at 3ft	LED	DSXB_LED_16C_700_30K_SYM.ies	2801	2801.369	TYPE VS, BUG RATING: B2 - U0 - G1	Max: 1082cd
	D	2	Lithonia Lighting	LDN4 30/10 LO4AR LSS MVOLT GZ1	4IN LDN, 3000K, 1000LM, CLEAR, SEMI-SPECULAR REFLECTOR, 80CRI; mounted at 10ft	LED	LDN4_30_10_LO4AR_LSS.ies	1031	1030.906	DIRECT, SC-0=1.04, SC-90=1.06	Max: 1090cd
	S4	1	Lithonia Lighting	DSX0 LED P1 30K TFTM MVOLT SPA DDBXD with SSS 14 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 14ft	LED	DSX0_LED_P1_30K_TFTM_MVOLT.ies	4373	4373.052	TYPE IV, SHORT, BUG RATING: B1 - U0 - G1	Max: 3031cd
	W-10	1	Lithonia Lighting	WDGE1 LED P2 30K 80CRI VF MVOLT SRM DDBXD	WDGE1 LED WITH P2 - PERFORMANCE PACKAGE, 3000K, 80CRI, VISUAL COMFORT FORWARD OPTIC; mounted at 10ft	LED	WDGE1_LED_P2_30K_80CRI_VF.ies	1872	1872.051	TYPE II, VERY SHORT, BUG RATING: B1 - U0 - G0	Max: 1303cd
	W-12	1	Lithonia Lighting	WDGE1 LED P2 30K 80CRI VF MVOLT SRM DDBXD	WDGE1 LED WITH P2 - PERFORMANCE PACKAGE, 3000K, 80CRI, VISUAL COMFORT FORWARD OPTIC; mounted at 12ft	LED	WDGE1_LED_P2_30K_80CRI_VF.ies	1872	1872.051	TYPE II, VERY SHORT, BUG RATING: B1 - U0 - G0	Max: 1303cd

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Driveway	+	1.7 fc	4.1 fc	0.2 fc	20.5:1	8.5:1
Ground	+	0.2 fc	33.2 fc	0.0 fc	N/A	N/A
Parking Lot	+	1.0 fc	6.1 fc	0.1 fc	61.0:1	10.0:1
Under Canopy	+	10 fc	16 fc	5 fc	3.2:1	2.0:1

Designer
Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842

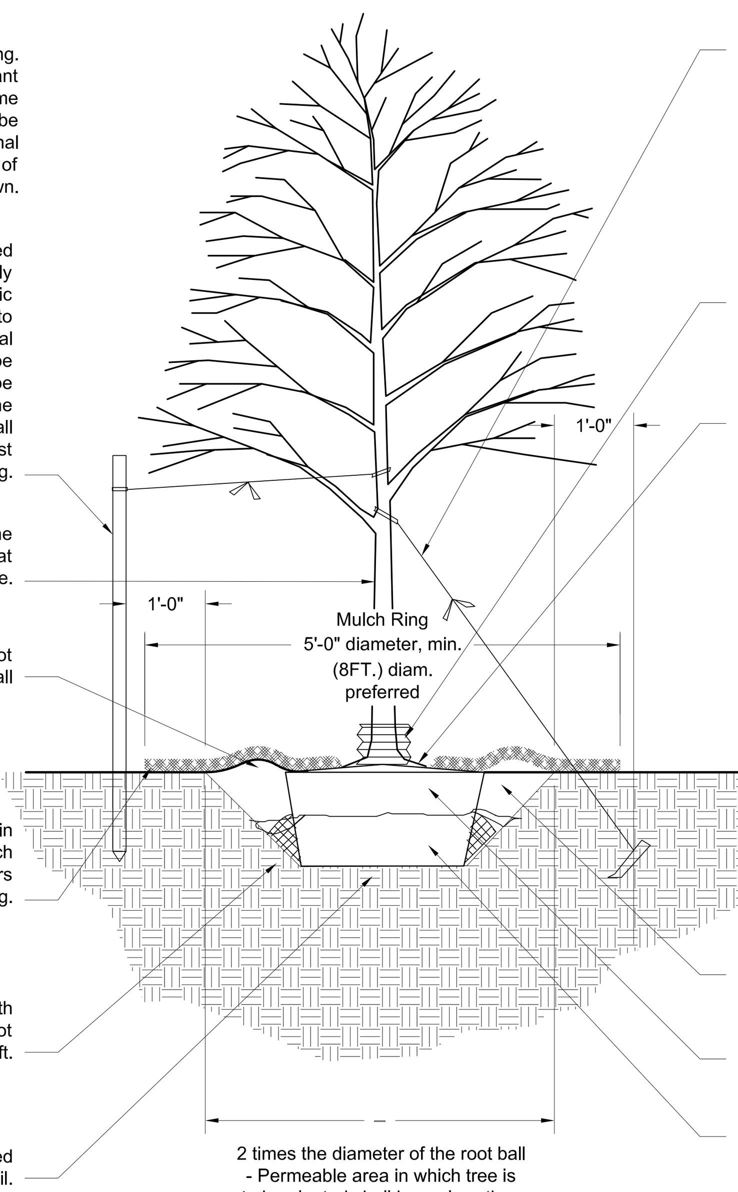
Date
11/15/2021

Scale
1"=10'

Drawing No.

Summary

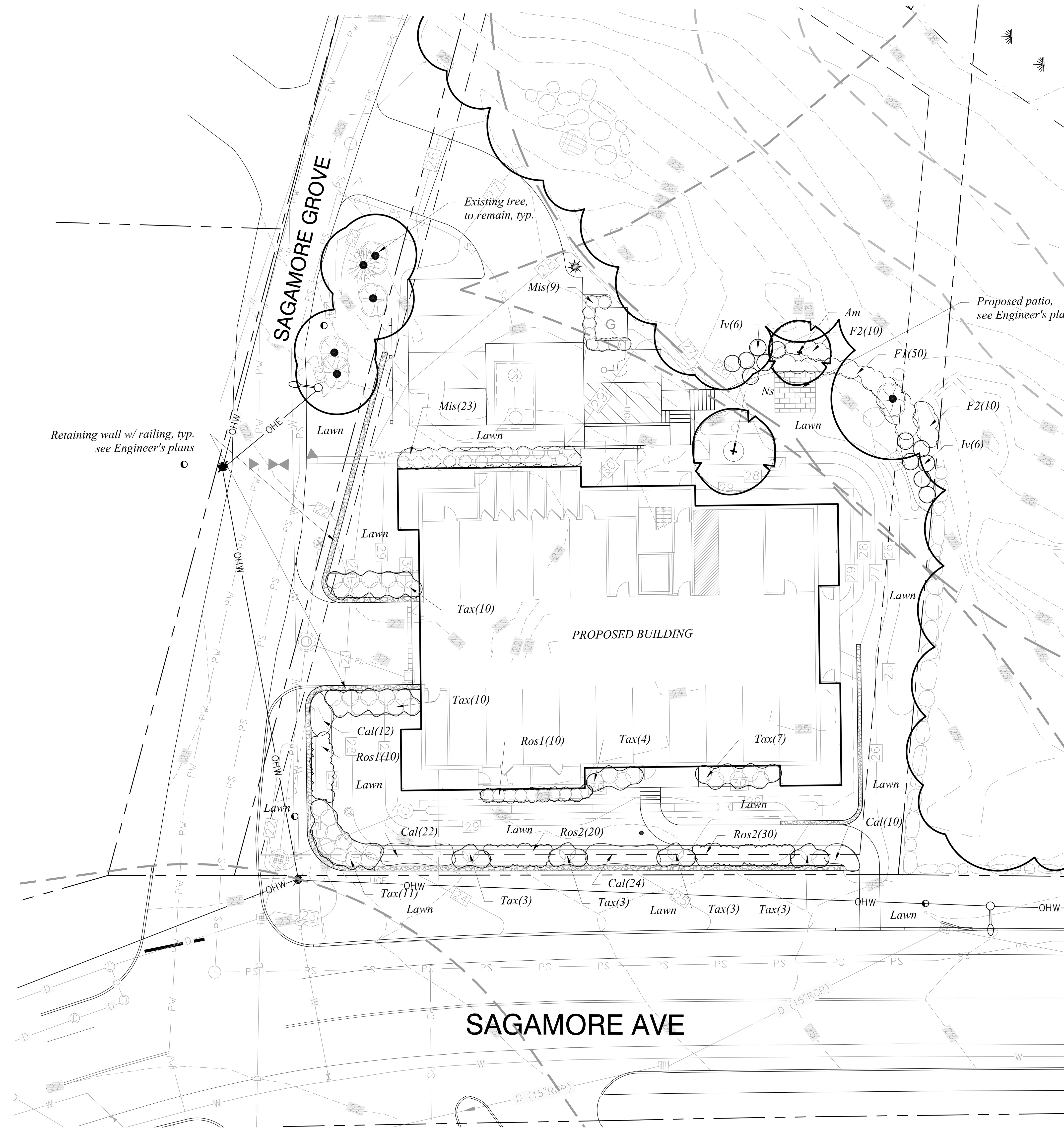
S-1



Tree Planting Detail

Landscape Notes

1. Design is based on drawings by Altus Engineering received 11/15/2021 and may require adjustment due to actual field conditions.
2. The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
3. Erosion Control shall be in place prior to construction.
4. Erosion Control to consist of Hay Bales and Erosion Control Fabric shall be staked in place between the work and Water bodies, Wetlands and/or drainage ways prior to any construction.
5. The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
6. It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
7. Trees to Remain within the construction zone shall be protected from damage for the duration of the project by snow fence or other suitable means of protection to be approved by Landscape Architect or Client's Representative. Snow fence shall be located at the drip line at a minimum and shall include any and all surface roots. Do not fill or mulch on the trunk flare. Do not disturb roots. In order to protect the integrity of the roots, branches, trunk and bark of the tree(s) no vehicles or construction equipment shall drive or park in or on the area within the drip line(s) of the tree(s). Do not store any refuse or construction materials or portalets within the tree protection area.
8. Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
9. The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 1-888-344-7233.
10. The Contractor shall procure any required permits prior to construction.
11. Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of pH, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
12. Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a contractor is aware of a potential issue, and does not bring it to the attention of the landscape architect or owner's representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
13. The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the American Standard of Nursery Stock, American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20005.
14. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
15. All plants shall be legibly tagged with proper botanical name.
16. The Contractor shall guarantee all plants for not less than one year from time of acceptance.
17. Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
18. No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
19. All landscaping shall be provided with the following:
    a. Outside hose attachments spaced a maximum of 150 feet apart, and
    b. An underground irrigation system, or
    c. A temporary irrigation system designed for a two-year period of plant establishment.
20. If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
21. The contractor is responsible for all plant material from the time their work commences until final acceptance. This includes but is not limited to maintaining all plants in good condition, the security of the plant material once delivered to the site, and watering of plants. Plants shall be appropriately watered prior to, during and after planting. It is the contractor's responsibility to provide clean water suitable for plant health from off site, should it not be available on site.
22. All disturbed areas will be dressed with 6" of topsoil and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
23. Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and ½" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be black.
24. In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
25. Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy. Within the sight distance triangles at vehicle intersections the canopies shall be raised to 8' min.
26. Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
27. Landscape Architect is not responsible for the means and methods of the contractor.



0 5 10 20 40

Plant List

TREES

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Am	Amelachier canadensis 'Glenform'	Glenform Serviceberry	1	7-8' ht.	B&B multistemmed
Ns	*Nyssa Sylvatica*	Black Tupelo	1	2.5-3" Cal	B&B

SHRUBS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Iv	Ilex verticillata ' Red Sprite'	Red Sprite Winterberry	12	3 gal	
Ros1	*Rosa 'Sunny Knockout'*	Sunny Knockout Rose	20	5 gal	
Ros2	*Rosa 'Apricot Drift'*	Apricot Drift Rose	50	3 gal	
Tax	*Taxus media 'Greenwave'*	Greenwave Yew	54	5 gal	

PERENNIALS, GROUNDCOVERS, VINES and ANNUALS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Cal	*Calamagrostis acutifolia 'Karl Foerster'*	Feather Reed Grass	68	2 gal	
F1	*Dennstaedia punctiloba*	Hayscented Fern	50	2 qt.	
F2	*Mattateucia struthiopteris*	Ostrich Fern	20	2qt.	
Mis	*Miscanthus sinensis 'Morning Light'*	Morning Light Maiden Grass	32	2 gal	

City of Portsmouth Notes

A. The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials.
B. All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair.
C. The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director.

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

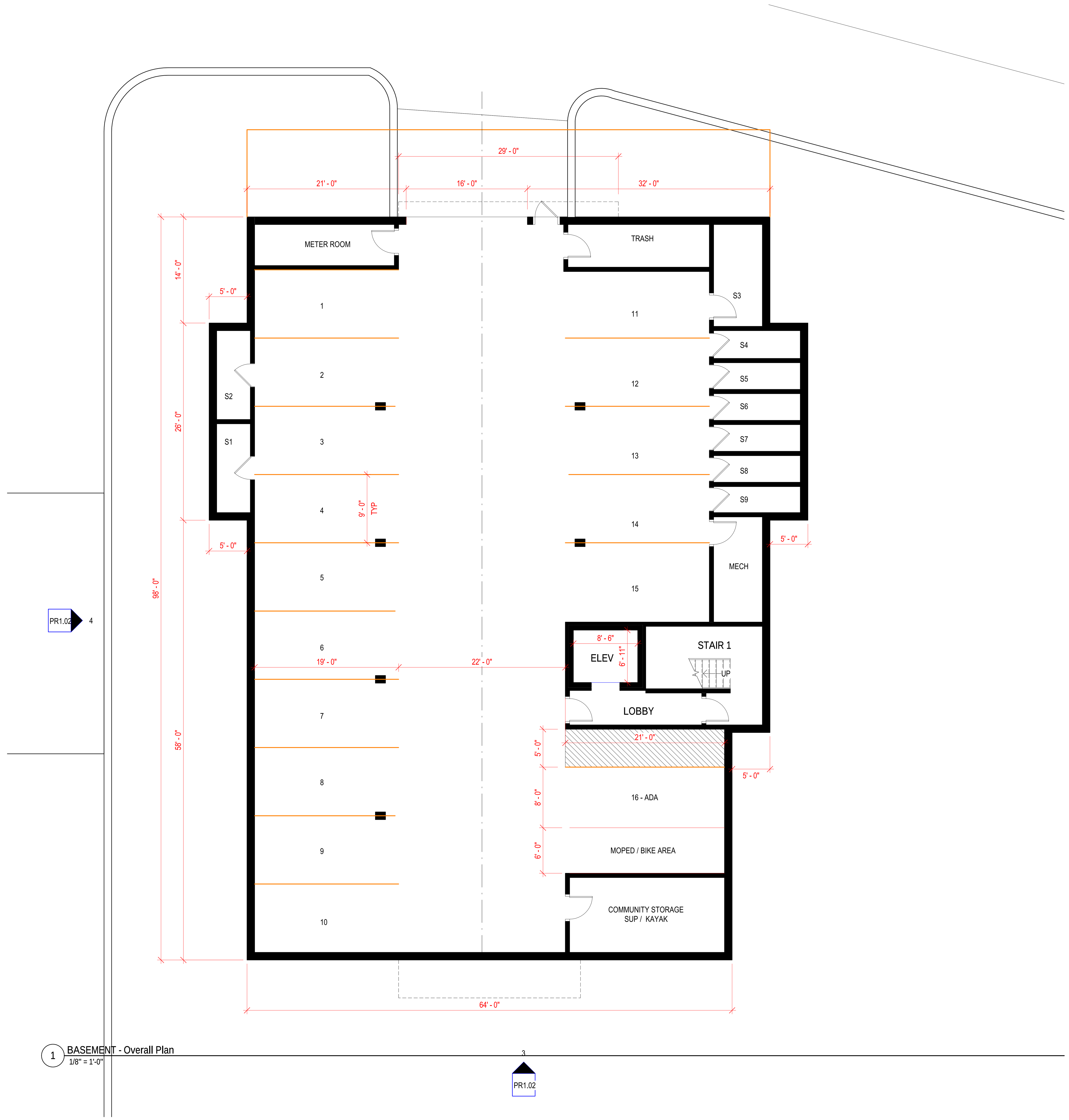
Sagamore Corner, LLC

LANDSCAPE PLAN

Sagamore Road Portsmouth, New Hampshire

Drawn By:	VM
Checked By:	RW
Scale:	1" = 20' - 0"
Date:	November 22, 2021
Revisions:	December 28, 2021

L-1



GARAGE LEVEL PLAN

1/8" = 1'-0"
10/4/2021

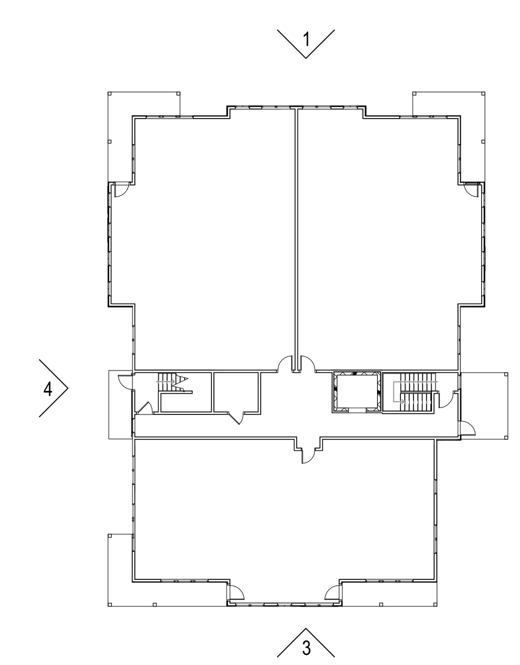
JSA
ARCHITECTS
INTERIORS
PLANNERS

1 Elevation 6 - a
1/8" = 1'-0"

2 Elevation 7 - a
1/8" = 1'-0"

3 Elevation 8 - a
1/8" = 1'-0"

4 Elevation 9 - a
1/8" = 1'-0"



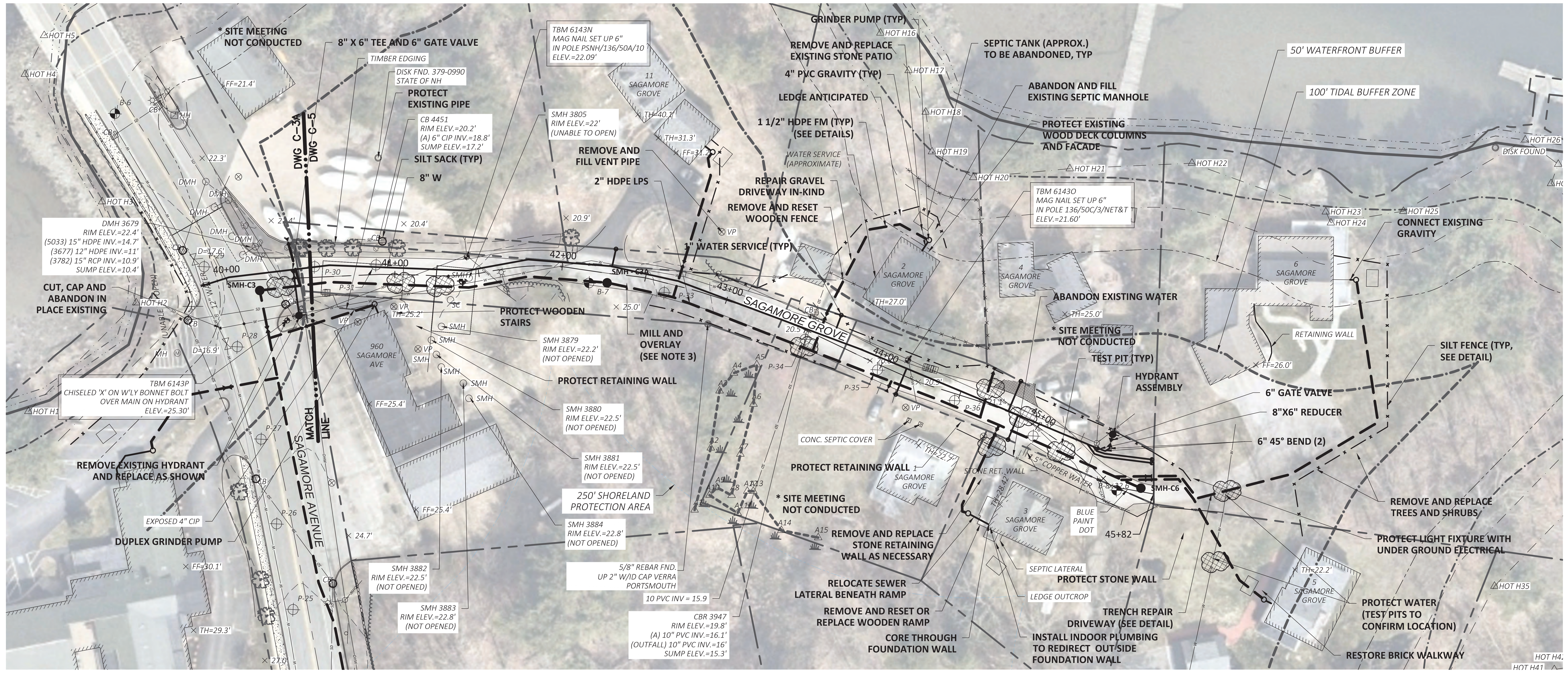
GROSS FLOOR AREAS:
Basement = 6872 (PARKING, UTILITIES, STORAGE)
1ST FLOOR = 7097 (RESIDENTIAL)
2ND FLOOR = 7097 (RESIDENTIAL)
TOTAL - 21,066 GROSS FLOOR AREA

ELEVATIONS

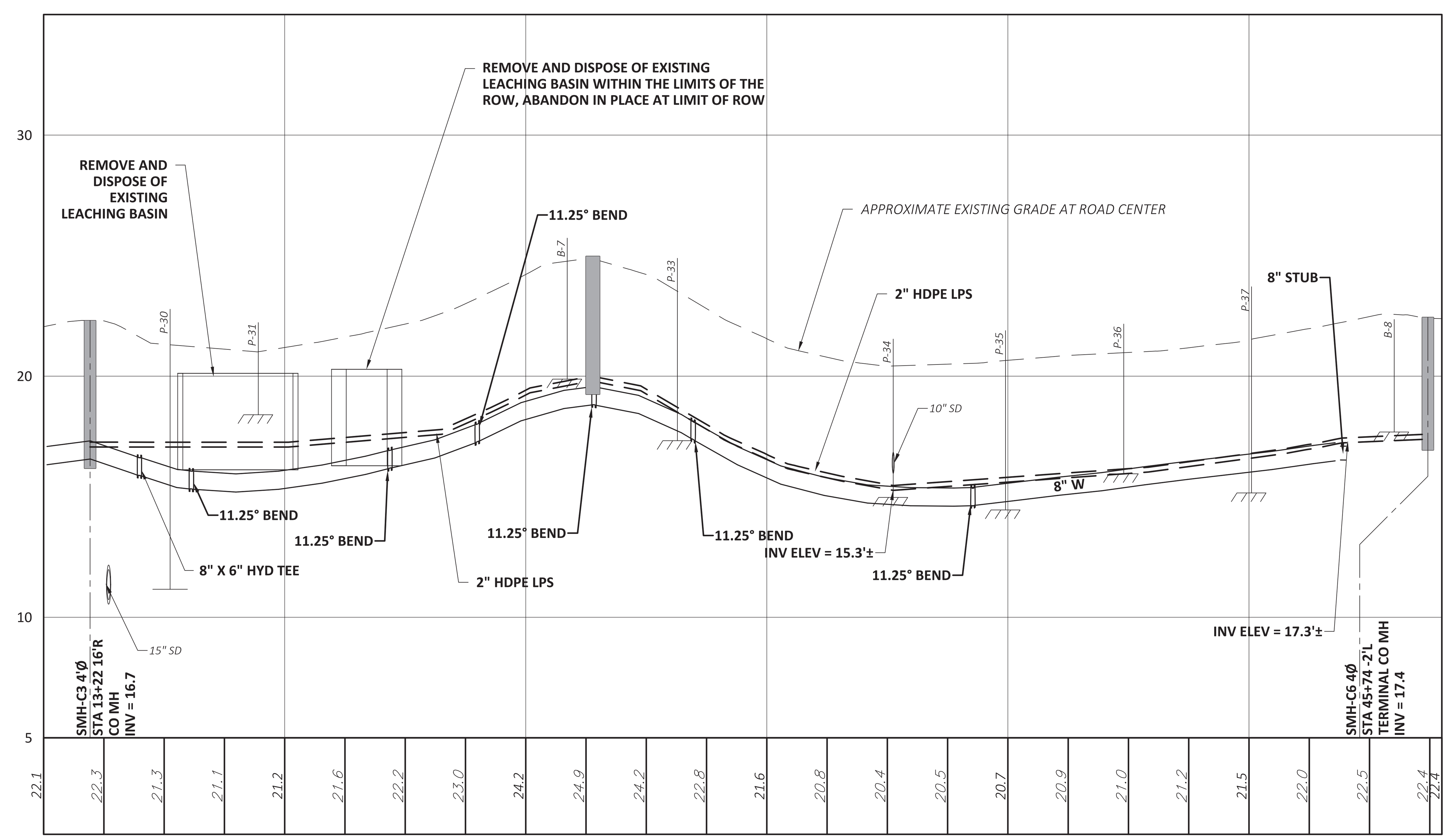
As indicated
10/4/2021

JSA
ARCHITECTS
INTERIORS
PLANNERS

LAST SAVED BY: DENISE.FUDA 5/12/2021 2:19 PM



PLAN
SCALE: 1"=40'



PROFILE
SCALES
VERT:1"=4'
HORIZ:1"=40'

NOTES:

1. WORK OUTSIDE CITY OWNED EASEMENTS AND RIGHTS OF WAY ARE NOT AUTHORIZED UNTIL HOMEOWNER AND CITY SIGN OFFS ARE EXECUTED.
2. ALL AREAS (EXCEPT GRAVEL DRIVEWAYS) THAT ARE EXCAVATED, FILLED OR OTHERWISE DISTURBED BY THE CONTRACTOR AND ARE NOT TO BE PAVED OR FILLED WITH GRAVEL OR RIPRAP SHALL BE LOAMED, GRADED, FERTILIZED, SEEDED AND MULCHED. ALL AREAS ARE TO RECEIVE A MINIMUM OF 6" OF TOPSOIL. REFER TO SPECIFICATION SECTION 02480.
3. SEE DETAIL SHEETS FOR PAVING RECOMMENDATIONS.

DRAFT

NO	SUBMISSIONS/REVISIONS	APP'D	DATE
	90% SUBMITTAL	K.GAR	03-21

DESIGNED BY: J.LOC
CAD COORD.: J.MIC
CAD: D.FUD
CHECKED BY: K.OBE
DATE: 03-21
APPROVED BY: K.GAR
DATE: 03-21
PROJECT NO.: 11304C

WRIGHT-PIERCE
Engineering a Better Environment
888.621.8156 | www.wright-pierce.com

CITY OF PORTSMOUTH, NH
SAGAMORE AVENUE SEWER EXTENSION PROJECT

PLAN AND PROFILE: SAGAMORE GROVE (STA 40+00 TO STA 45+80)

DRAWING
C-5

ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

November 24, 2021

Peter Britz, Interim Planning Director
Attn: Barbara McMillan, Conservation Commission Chair
City of Portsmouth Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Wetlands Conditional Use Permit Application
Assessor's Map 201, Lot 2
960 Sagamore Avenue
Altus Project No. 5079

Dear Peter and Barbara,

On behalf of the Applicant, Sagamore Corner, LLC, Altus Engineering, Inc. respectfully submits a Wetlands Conditional Use Permit application for the redevelopment of the former Golden Egg site at 960 Sagamore Avenue. The Proposed development will consist of a new six (6) unit building and a five (5) exterior stall visitor parking lot to serve the new building. Parking for the residents will be located on the garage level of the building. The existing paved parking lot along Sagamore Avenue will be removed and access will be provided from Sagamore Grove, which will eliminate the head-in parking from Sagamore Avenue and traffic conflicts. The majority of the new parking lot and driveway will be constructed with porous pavement and a sub-surface treatment system will be constructed to treat and manage the stormwater from the roof. There will be a reduction of over 8,400 square feet of impervious and gravel area. All existing impervious surfaces (over 750 square feet) in the 100 ft buffer will be removed. A 10 ft x 10 ft porous patio is proposed in the same location.

Per Section 10.1017.50 for criteria for approval of a conditional use permit, the following responses are provided;

(1) The land is reasonably suited to the use, activity or alteration.
The property use is residential in the MRB District and will replace an existing restaurant, retail store, and apartment. This is a reasonable use as allowed by the zoning distict.

(2) There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.
The proposed project will remove over 750 square feet of gravel parking area in the wetland buffer. A small 10 ft x 10 ft porous patio will be constructed in the location of the former parking area. There will be no impervious area in the buffer.

(3) There will be no adverse impact on the wetland functional values of the site or surrounding properties;
The proposed project will reduce approximately 8,400 square feet of impervious from the site and 750 square feet in the wetland buffer. Stormwater treatment will be provided where none currently exists. Peak runoff flows will be significantly reduced and treatment provided to improve water quality runoff.

(4) Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and
There will not be any impacts to the natural wooded wetland buffer.

(5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.
The proposed project will remove over 750 square feet of impervious area in the buffer and no new impervious is proposed. Stormwater treatment will be provided where none currently exists. Peak runoff flows will be significantly reduced and treatment provided to improve water quality runoff.

(6) Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.
There will be no impacts to the vegetated buffer strip, which exists in its natural state.

Enclosed please find eight (8) copies of the following items for consideration at the December 8th Conservation Commission Meeting:

- Site Plans (1 full size, 7 half size)
- Wetlands Conditional Use Plan
- “Green” Statement
- Wetlands and Buffer Evaluation
  - Wetlands Letter
  - NHD Data Review
- Drainage Report (summary)

Please call me if you have any questions or need any additional information.

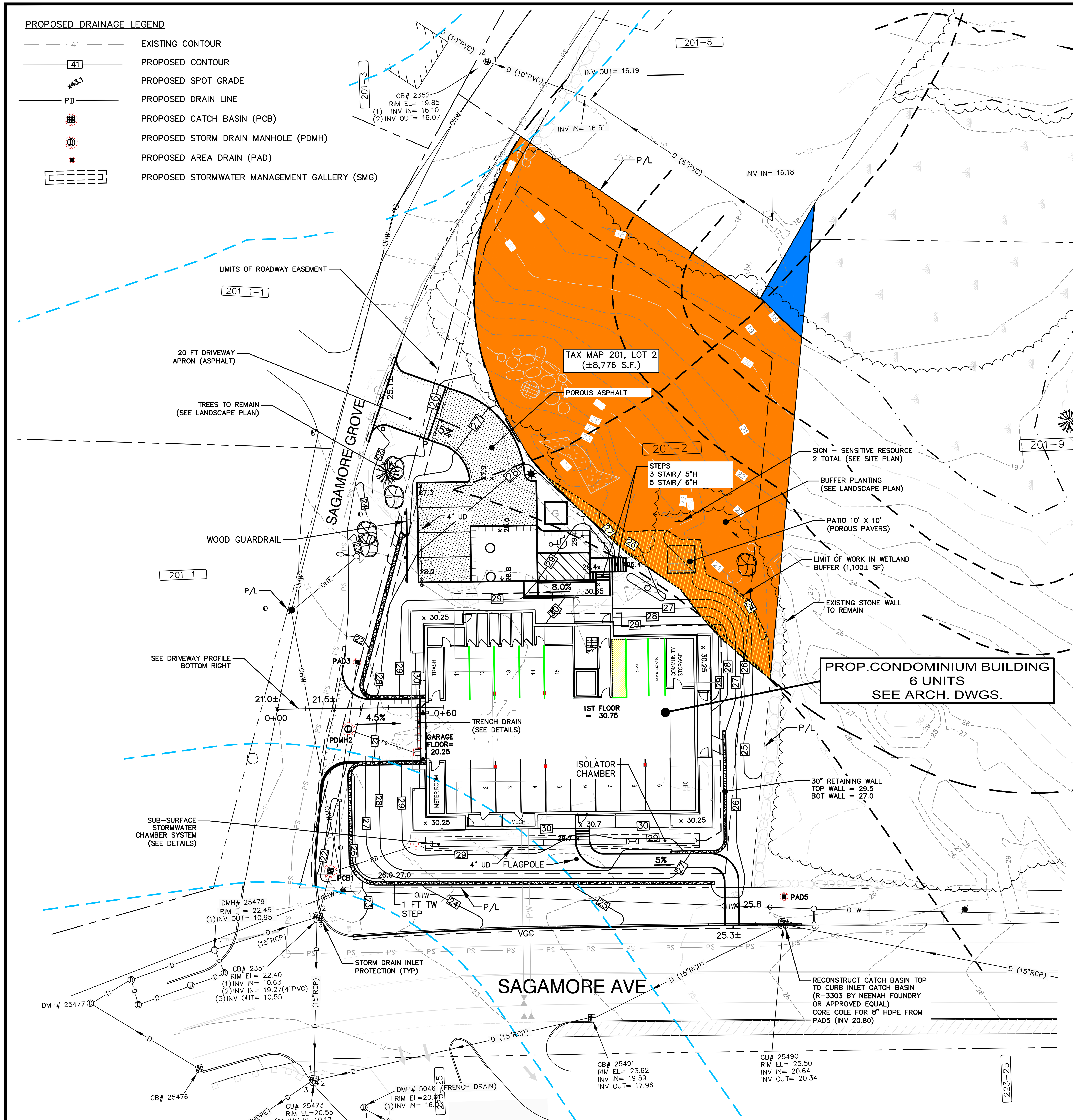
Sincerely,

ALTUS ENGINEERING, INC.

Cory D. Belden, PE
Associate Principal

ebs/5079-CUP-PB-CovLtr-112221.docx

Enclosures
eCopy: Eric Katz, Sagamore Corner, LLC



WETLANDS IMPACT TABLE	
DIRECT WETLANDS IMPACTS	= 0 SF
WETLANDS BUFFER IMPACTS	= 1,100 SF
EXISTING IMPERVIOUS AREA IN WETLANDS BUFFER	= 750 SF
PROPOSED IMPERVIOUS AREA IN WETLANDS BUFFER	= 0 SF

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ALTUS ENGINEERING, INC.
133 COURT STREET (603) 433-2335
PORTSMOUTH, NH 03801 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
12/29/2021

NOT FOR CONSTRUCTION

ISSUED FOR: PLANNING BOARD

ISSUE DATE: DECEMBER 29, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/02/21
1	TAC WS COMMENTS	CDB	11/22/21
2	CC COMMENTS	CDB	12/29/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:
SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
960 SAGAMORE ROAD
PORTSMOUTH, NH 03801
TAX MAP 201, LOT 2

TITLE:
WETLANDS CONDITIONAL USE PLAN

SHEET NUMBER:
CUP-1

P5079

ALTUS ENGINEERING, INC.

"Green" Statement
MULTI-FAMILY RESIDENTIAL DEVELOPMENT
Assessor's Map 201, Lot 2
960 Sagamore Avenue
Altus Project 5079

Pursuant to Section 2.5.3.1(a) of the Site Plan Review Regulations, Altus Engineering, Inc. respectfully submits the following list of the project's "green" components for the redevelopment of the former Golden Egg restaurant site to construct a new 6-Unit multi-family residential building at 960 Sagamore Avenue:

- The existing impervious areas will be decreased by over 6,600 square feet and over 8,400 square feet including the porous pavement area. This will reduce the heat island effect, reduce runoff, and improve the surface water quality.
- The existing site has approximately 26 exterior surface parking stalls to accommodate a restaurant, retail store, and apartment. The proposed development will have all resident parking in the basement garage and only 5 exterior surface visitor parking stalls. This reduces the site impervious and improves stormwater runoff quality.
- The proposed site lighting will have LED fixtures. The light will be mounted at a maximum height of 14-feet. The lights will be dark sky friendly and will exceed the minimum City requirements.
- The existing wetland buffer will have approximately 750 sf of gravel parking area removed. There will be no new impervious surfaces in the 100 ft wetland buffer.
- The existing mature trees along Sagamore Grove will be preserved where possible.
- A robust planting plan and increased green space is proposed to reduce heat island effects.
- The proposed development will have an interior bicycle rack and moped storage area.
- The existing site was constructed prior to stormwater treatment or detention design considerations. Runoff from the site currently discharge directly into the closed drainage system that discharges to Sagamore Creek, or the wetland in the rear of the property. The proposed stormwater management design will treat the runoff with a sub-surface chamber system and porous pavement to reduce the peak rates of runoff to improve the stormwater quality discharge.

- Low Impact Development (LID) has been used for the proposed site development by incorporating basement level parking, porous pavement surfaces, and stormwater retentions and treatment facilities. The impervious areas are reduced by over 8,400 square feet and peak storm runoff for the 10 year storm event is reduced by 29% for the developed area of the parcel.
- The obsolete building will be replaced with a new building code compliant building with components that will meet or exceed all applicable energy codes.
- The new building will meet or exceed all applicable current energy codes.
- Electric vehicle charging stations will be provided in the garage basement for the residents of the new building.

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
207 363 4532
mcuomosoil@gmail.com

Eric Weinrieb, P.E.
Altus Engineering, Inc.
133 Court Street
Portsmouth, NH 03801-4413

3 December 2019

Dear Mr. Weinrieb;

This letter is in reference to three vacant parcels on Wentworth House Road in Portsmouth, NH, identified as tax map 201, lots 9, 10, and 11. On 14 November 2019 I conducted a wetland delineation to assist you in planning the development of this property.

The City of Portsmouth defines wetlands as follows:
"An area that is inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include, but are not limited to, swamps, marshes, bogs, vernal pools, and similar areas. The following are specifically included in the definition of wetland:

Created wetland: An area that has been transformed from upland to wetland where the upland was not created by human activity such as filling or water diversion.

Inland wetland: A wetland that is not subject to periodic inundation by tidal waters.

Tidal wetland: A wetland whose vegetation, hydrology or *soils are influenced by periodic inundation of tidal waters."*

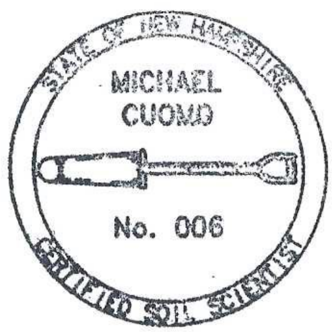
Wetland characteristics were identified using the technical criteria in the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region*. The soil component was classified using the *Field Indicators of Hydric Soils in the United States* and the *Field Indicators for Identifying Hydric Soils in New England*. The wetland status of plants were determined using the *National List of Plant Species that Occur in Wetlands: Northeast (Region 1)*. This is the standard used by State and Federal regulators.

A single freshwater wetland was identified along the common boundary of lots 9 and 10. The wetland-upland boundary was marked with 24 sequentially numbered blue flags. This isolated freshwater 'inland' wetland ends along the rear property line of parcel 201/8.

Please contact me if you have questions regarding this work.

Sincerely,

Michael Cuomo
NH Wetland Scientist #004
NH Soil Scientist #006



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WETLAND AND BUFFER EVALUATION

using the

Highway Methodology Workbook Supplement

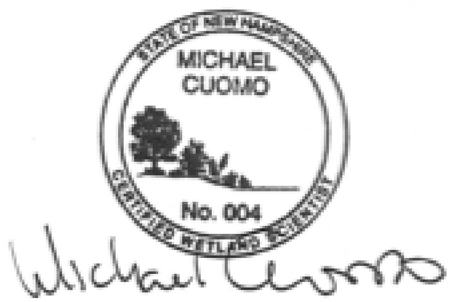
960 Sagamore Road
and
Wentworth Road

Tax map 201, Lot 9

Prepared for:

Altus Engineering, Inc.
133 Court Street
Portsmouth, NH

Prepared by:



27 December 2016

Michael Cuomo, Soil Scientist

6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

PURPOSE

This report uses *The Highway Methodology Workbook Supplement* (hereafter referred to as the 'Highway Method') to assess the wetlands and buffers at this site. This information is required by City of Portsmouth zoning as part of the Conditional Use Permit application for impact within the wetland buffer. No direct wetland impact is proposed.

SITE

The 'Sagamore Studios' project site is located at the intersection of Wentworth and Sagamore Roads in Portsmouth, NH. This wooded 1.44 acre lot is vacant. A portion of the existing conditions plan is attached at the rear of this report for reference.

WETLAND in the LANDSCAPE

One wetland exists on this site and continues off site to the east. The entire wetland, including the portion off-site, is estimated to be 1/2 acre (about 20,000 square feet) in size. This wetland is regulated by the City because it is greater than 10,000 square feet. It requires a 100 foot buffer, per local zoning.

The wetland receives water from natural subsurface and surface flows, including rain water and snow melt. It is supplemented by flow from a culvert under Wentworth Road. The wetland is not associated with any natural surface water body. Water ponds to shallow depth and for medium duration in this wetland. The wetland does not have the physical characteristics associated with a vernal pool.

The wetland probably extended further to the north and east but was filled at some time in the past when the area was developed. This is inferred by the straight wetland-upland boundaries along these margins of the wetland. The wetland may have flowed north in a small channel to Sagamore Creek prior to development of the Sagamore Grove neighborhood. This is inferred by the presence of a 8" diameter culvert pipe which now flows from the wetland, beneath

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

map 201, lots 8 and 3. Two catch basins on these abutting lots identify the apparent route of this pipe.

The wetland has been modified by human activity as described above. The long lasting evidence of this disturbance is reflected in the significant population of non-native invasive plant species which are displacing native plants. Native wildlife is adapted to native plants, so invasive plants generally have reduced wildlife habitat value and disrupt native ecosystems. Invasive shrubs are also found in the uplands on this site. Invasive plants are noted below with an asterisk (*).

VEGETATION AND SOIL

Common plant species in the wetland are listed below by strata.

Trees:

- American elm *(Ulmus americana)*
- red maple *(Acer rubrum)*
- American ash *(Fraxinus americana)*

Shrubs:

- glossy buckthorn *(Rhamnus frangula)**
- common winterberry holly *(Ilex verticillata)*
- American cranberrybush *(Viburnum trilobum)*
- northern arrow-wood (*Viburnum recognitum*)
- multiflora rose *(Rosa multiflora)**

Herbs:

- broad-leaf cattail (*Typha latifolia*)
- purple loose-strife (*Lythrum salicaria*)*
- sensitive fern (*Onoclea sensibilis*)
- fireweed *(Epilobium sp.)*
- buttercup *(Ranunculus sp.)*
- soft rush *(Juncus effusus)*

* Invasive plants

The soils in the wetland are poorly drained fine textured sediments of glacio-marine origin. This is the Scitico soil series. The soil is typically saturated to the surface for less than 9 months of the average year. The soils have increasing clay content with depth and absorb water slowly. Though deep to bedrock, these soils have shallow effective rooting depth.

Using the *Classification of Wetlands and Deepwater Habitats of the United States*, developed by Cowardin and others, this wetland is labeled ‘PEM1’ with a ‘PFO1’ fringe. This indicates the core of the wetland is a freshwater marsh with persistent emergent plants. The edge is a forested freshwater swamp dominated by deciduous trees.

Additional invasive plants noted in the uplands are bittersweet (*Celastrus scandens*), honeysuckle (*Lonicera sp.*), barberry (*Berberis sp.*), Japanese knotweed (*Polygonum cuspidatum*), and burning bush (*Euonymus atropurpureus*).

The soils in the upland are dominated by shallow and moderately deep to bedrock medium textured glacial till. This would be the Chatfield and Hollis soil series. There are a number of bedrock outcroppings at the surface.

HIGHWAY METHOD

The wetland and buffer were evaluated using the Highway Method on 8 December 2016 by Michael Cuomo, NH Wetland Scientist #4. The results are summarized on the worksheet attached at the rear of this report and described in detail below.

The Highway Method was developed to rapidly evaluate and compare a series of wetlands, primarily for the purpose of selecting the highway corridor with the least environmental impact from among alternative routes. For the purpose of this work, it provides an evaluation framework for drawing attention to the most important functions the wetland serves. The Highway Method does not produce a numerical score. It provides guidance and a framework for the professional judgment of the evaluator, who selects which functions occur and determines the Principal Function(s). The Highway Method evaluates the entire wetland and buffer, including those areas which are off-site and can not be controlled by the applicant.

SUMMARY OF HIGHWAY METHOD RESULTS

The Principal Function served by the wetland is Nutrient Removal. Nutrient Removal is defined in the Highway Method as “...the effectiveness of the wetland as a trap for nutrients in the runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels...to prevent ill effects of nutrients entering aquifers or surface waters ...” This wetland performs Nutrient Removal relatively well because of it’s ability to trap sediments, the fine textured soil, dense emergent vegetation, and it’s cyclical wetting and drying.

The second most important wetland function is Sediment/Toxicant Retention, which “...reduces or prevents degradation of water quality.” This wetland performs Sediment/Toxicant Retention relatively well because of it’s ability to trap sediments, dense emergent vegetation, and the constricted outlet.

The third most important wetland function is Wildlife Habitat “...the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge.” In this case the function is related to the density of wetland vegetation and the wetland as a refuge for small animals in an otherwise developed area along Sagamore Creek.

The wetland performs the Floodflow Alteration function to a limited degree. “This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of flood waters.” Positive indicators of this function are dense vegetation, constricted outlet, and topography.

Production Export is “...the effectiveness of the wetland to produce food or usable products for humans or other living organisms." Wetlands closely associated with waterbodies perform this function best. There is no waterbody associated with this wetland so the function is performed to a limited degree.

Fish and Shellfish Habitat is "...the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles." The wetland does not support this function because it lacks aquatic habitat.

Sediment/Shoreline Stabilization is "...the effectiveness of a wetland to stabilize streambanks and shorelines against erosion." The wetland is not associated with a waterbody so does not perform this function.

Visual Quality/Aesthetics "...considers the visual and aesthetic quality or usefulness of a wetland." This wetland has no exceptional visual features and is not easily accessible or visible from public places, so the function is performed to a very limited degree.

Recreation "...considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities." Because of the small size, lack of public access, lack of a waterbody, and surrounding development, this wetland does not provide recreational opportunities.

Educational/Scientific Value is "...the suitability of the wetland as a site for an outdoor classroom or as a location for scientific study or research." The disturbed nature, lack of public access, and lack of wetland diversity mean this wetland performs this function to a very limited degree.

Uniqueness/Heritage "...may include archeological sites, critical habitat for endangered species, overall health and appearance, it's role in the ecosystem of the area..." The disturbed nature of the wetland and the common occurrence of this wetland type in the area means the wetland does not perform this function. Inquiry to NH Natural Heritage Bureau revealed no endangered species habitat.

Endangered Species Habitat "...considers the suitability of the wetland to support threatened or endangered species." The disturbed nature of the wetland and the common occurrence of this wetland type in the area means the wetland does not perform this function. Inquiry to NH Natural Heritage Bureau revealed no endangered species habitat.

Groundwater Recharge/Discharge is "...the potential for the wetland to serve as a groundwater recharge and/or discharge area...the fundamental interaction between wetlands and aquifers...." Very slow soil permeability and soil transmissivity indicate the wetland does not perform this function.

CONCLUSIONS

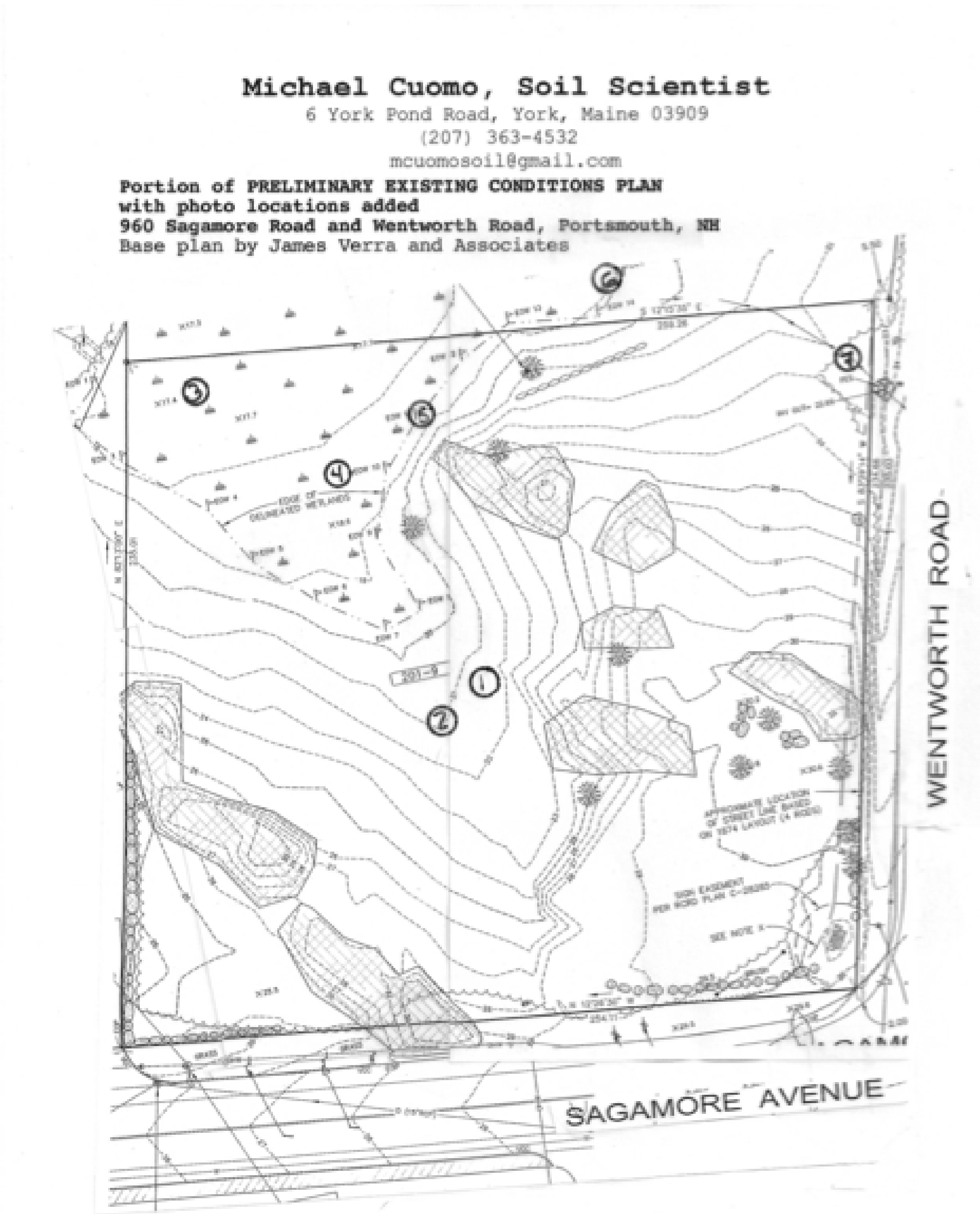
All wetlands have value, even those such as this one that are degraded. There is widespread agreement among professionals that degraded wetlands in urban environments can have higher importance than may be reflected in wetland evaluation methods because they offer refuge for small wildlife, provide screening and green space, and are remnant wetlands in urban environments where many wetlands have historically been filled. This degraded wetland also has increased value due to it's physical proximity to Sagamore Creek.

Using the Highway Method as a framework for the functional assessment of this wetland, Nutrient Removal is the principle wetland function.

The wetland performs three other functions: Sediment/Toxicant Retention, Wildlife Habitat, and Floodflow Alteration.

The wetland does not perform, or performs to a very limited degree the remaining functions the Highway Method considers: Groundwater Recharge/Discharge, Sediment/Shoreline Stabilization, Production Export, Fish & Shellfish Habitat, Endangered Species Habitat, Visual Quality/Aesthetics, Education/Scientific Value, Recreation, and Uniqueness/Heritage.

The wetland has been partially degraded by historical filling of part of the wetland off the subject property. What may be the historical outflow has been culverted and now runs under the yards of abutting properties and under Sagamore Grove in a system of pipes and receives untreated stormwater through catch-basins. The wetland has a number of undesirable invasive plants, a sign of past disturbance, human induced nutrient enrichment, and sediment deposition. Surrounding land uses, medium density residential and commercial development, partially degrade the 100 foot buffer around the wetlands. Much of the off-site wetland buffer contains structures, parking pavement and lawns. The on-site buffer contains invasive shrubs as well as native plants.


Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com
Portion of PRELIMINARY EXISTING CONDITIONS PLAN
with photo locations added
960 Sagamore Road and Wentworth Road, Portsmouth, NH
Base plan by James Verra and Associates
EDGE OF DELINEATED WETLANDS
WENTWORTH ROAD
SAGAMORE AVENUE

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 1: Bittersweet on buckthorn

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 2: Multiflora rose and bittersweet

Sagamore Studios photo 3: Purple loose-strife

Michael Cuomo, Soil Scientist

6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 4: Forested wetland edge

Sagamore Studios photo 5: Buckthorn along wetland-upland boundary

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 6: View of wetland

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

Sagamore Studios photo 7: Upland near culvert discharge alongside Wentworth Road

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Michael Cuomo
6 York Pond Road
York, ME 03909

From: NH Natural Heritage Bureau

Date: 12/20/2016 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 12/13/2016

NHB File ID: NHB16-3737 **Applicant:** Eric Wiereib

Location: Portsmouth
Tax Maps: 201/9

Project Description: Commercial bldg proposed for vacant lot. No wetland impact. Wetland buffer (City requirement) impact

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 12/13/2016, and cannot be used for any other project.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

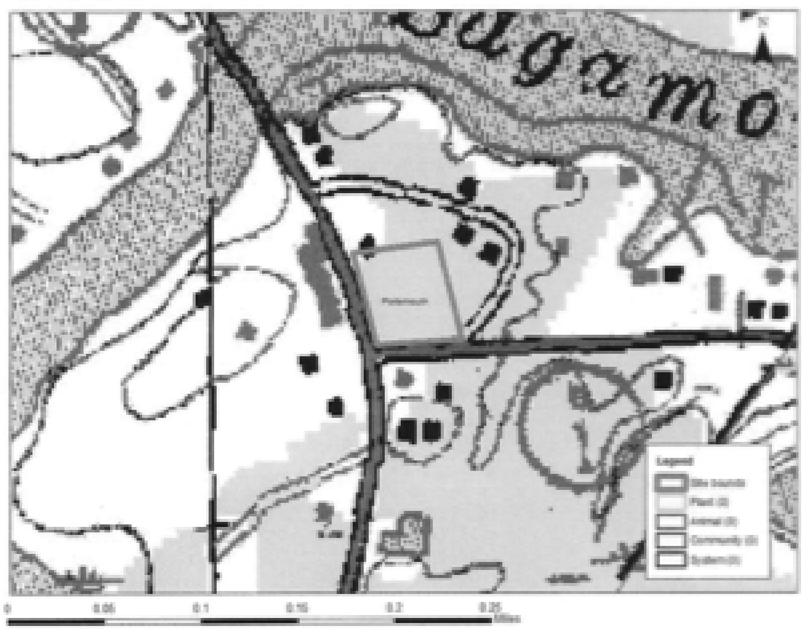
Michael Cuomo, Soil Scientist

6 York Pond Road, York, Maine 03909
(207) 363-4532
mcuomosoil@gmail.com

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

MAP OF PROJECT BOUNDARIES FOR: **NHB16-3737**

NHB16-3737



Department of Resources and Economic Development
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172 Pembroke Rd.
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WETLAND FUNCTION-VALUE ASSESSMENT

WETLAND I.D. 1 of 1

ROJECT NAME: SAGAMORE STUDIOS
ROJECT LOCATION: WENTWORTH RD. + SAGAMORE AV. PREPARED BY: M CUOMO DATE: 8 DEC 16 No snow
OTAL APPROXIMATE AREA OF WETLAND: 1/2 ACRE IS WETLAND PART OF A WILDLIFE CORRIDOR? N OR A "HABITAT ISLAND"? Y
DJACENT LAND USE? RESIDENTIAL/COMMERCIAL MAN MADE? N DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT 50 FT
OMINANT WETLAND SYSTEMS PRESENT: PEM1 AND PFO1 CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? NO
THE WETLAND A SEPARATE HYDRAULIC SYSTEM? Y IF NOT, WHERE DOES THE WETLAND LIE IN THE DRAINAGE BASIN? ISOLATED
OF TRIBUTARIES INTO THE WETLAND? 0 AQUATIC DIVERSITY/ABUNDANCE NONE VEGETATIVE DIVERSITY/ABUNDANCE MODERATE
ILDLIFE DIVERSITY/ABUNDANCE LOW ANTICIPATED IMPACTS BUFFER ONLY WETLAND AREA IMPACTED: 0

TREES	SHRUBS	HERBS	WILDLIFE	COMMENTS
ULMUS AMERICANA ACER RUBRUM FRAXINUS AMERICANA	RHAMNUS FRANGULA ILEX VERTICILLATA VIBURNUM TRILOBUM VIBURNUM RECOGNITUM	ONOCLEA SENSIBILIS LYTHRUM SALICARIA TYPHA LATIFOLIA EPILOBIUM SP. RANUNCULUS SP.		

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
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FUNCTION	Occurrence Y	Occurrence N	Rationale Numbers	Principal Valuable Function(s)	Comments
Groundwater Recharge/Discharge		X	NO 6 YES 10		SEE REPORT
Floodflow Alteration	YES		NO — YES 2,8,15,18		
Sediment/Shoreline Stabilization		X			
Sediment/Toxicant Retention	YES		NO — YES 4,5,7		
Nutrient Removal	YES		NO — YES 3,4,8,9,11,14	X	
Production Export (Nutrient)		X	NO — YES 2,7		
Fish & Shellfish Habitat		X	NO 1,2 YES —		
Wildlife Habitat	YES		NO — YES 11,13,21		
Endangered Species Habitat		X	NO — YES —		
Visual Quality/Aesthetics		X	NO — YES —		
Educational Scientific Value		X	NO — YES —		
Recreation ((Non)Consumptive)		X	NO — YES 5,12		
Uniqueness/Heritage		X	NO 1,2,5 YES —		

To: Michael Cuomo
6 York Pond Road
York, ME 03909

From: NH Natural Heritage Bureau

Date: 12/20/2016 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 12/13/2016

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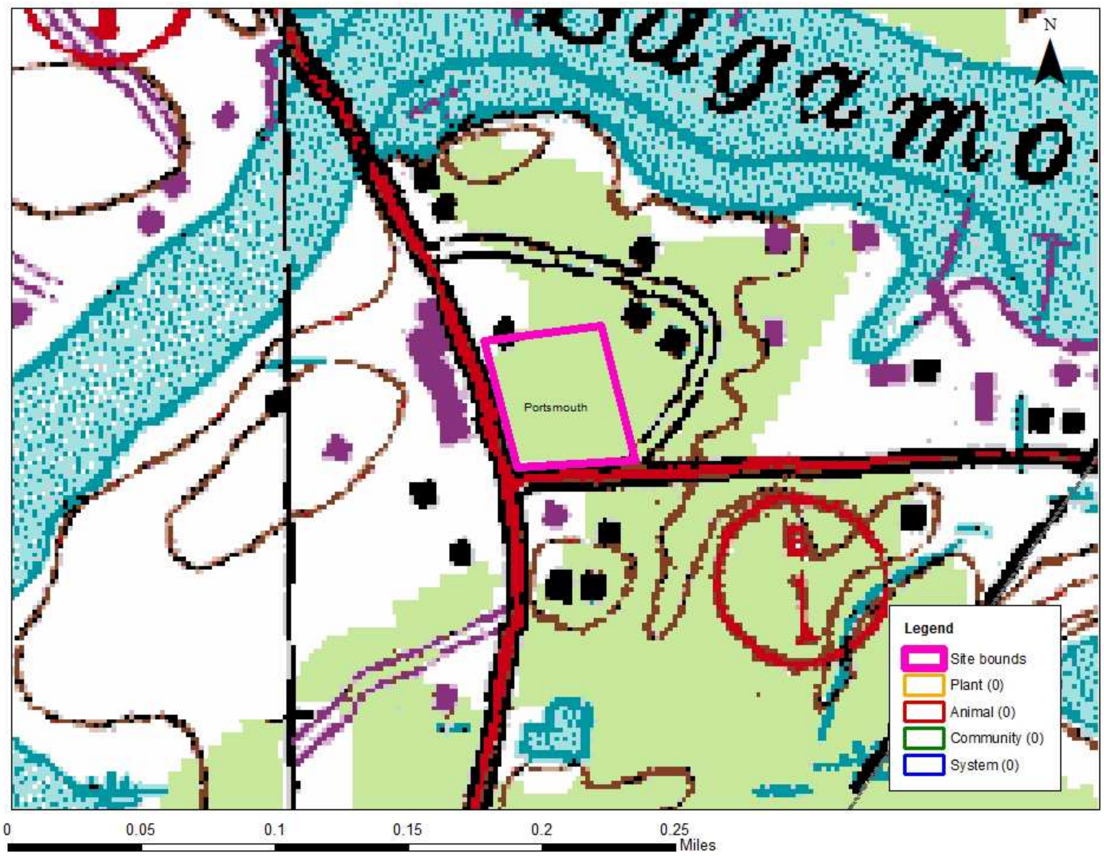
MAP OF PROJECT BOUNDARIES FOR: **NHB16-3737**

NHB16-3737



Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02

DRAINAGE REPORT

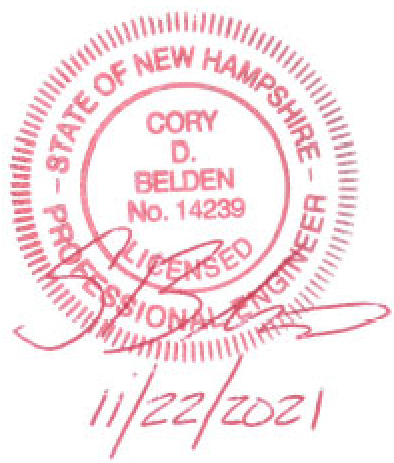
November 2021

Prepared for:

Sagamore Corner, LLC
273 Corporate Drive
Portsmouth, NH 03801

Prepared By:

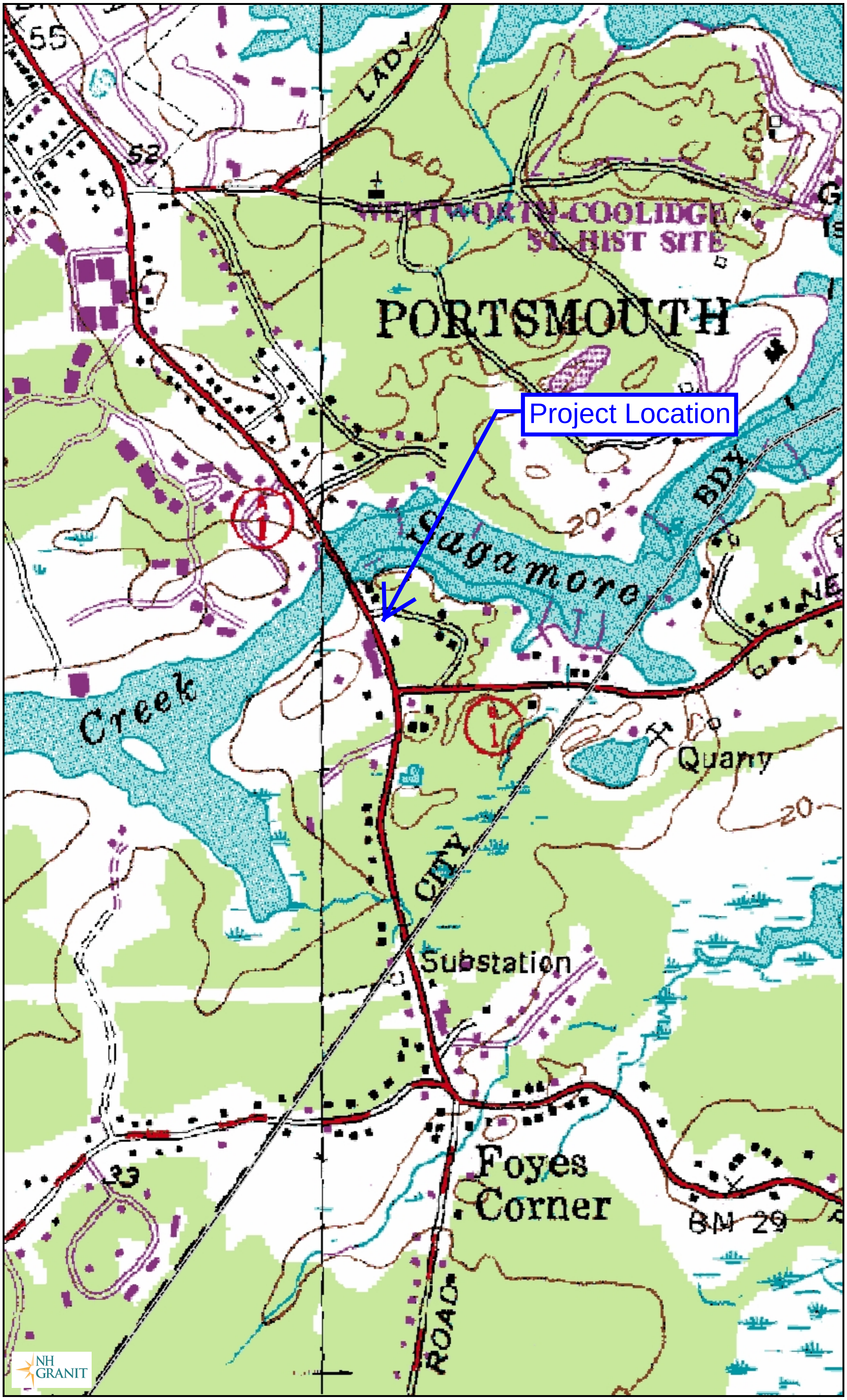
ALTUS ENGINEERING, INC.
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335



960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02

TABLE OF CONTENTS

960 Sagamore Avenue, Portsmouth, NH



Legend

- State
- County
- City/Town

Map Scale

1: 10,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 11/15/2021

Notes

Drainage Report

960 Sagamore Avenue
Portsmouth, NH
Assessor's Parcel 201-02
Altus Project P5079

PROJECT DESCRIPTION

Sagamore Corner, LLC is proposing to re-develop the site located at 960 Sagamore Avenue (Assessor's Map 201, Lot 02) to construct a new multi-family building that will provide six (6) housing units. The property is currently the current home to the former Golden Egg restaurant, a single unit apartment, and a retail store. The Property is identified as Tax Map 201-Lot 2 and is approximately 42,930 square feet (sf) in size and is located in the City's Mixed Residential Business (MRB) zoning district.

The proposed project will demolish the existing buildings and ancillary site features, including the paved parking, gravel parking, and site utilities. The new 6-Unit residential building will be constructed completely outside of the 100 foot wetland buffer, that extends onto the lot. The existing site was constructed in 1970 (according to City assessor data), prior to stormwater regulations, and does not have stormwater treatment on site for the buildings, pavement, and gravel parking lot areas, which total approximately 25,000 square feet, including the paved parking in the Sagamore Avenue right of way. The front of the lot that contains the majority of the developed site drains to the municipal storm drain system in Sagamore Avenue and discharges to Sagamore Creek without treatment or retention. The rear portion of the lot drains to the wetland located in the southeast corner of the property. The proposed project will provide treatment through the use of a sub-surface chamber systems for the roof runoff and porous asphalt for the exterior parking area. The project will minimize site impervious area by constructing covered parking in the basement level of the building. The current site discharges approximately 2,400 square feet of untreated impervious (roof and gravel parking areas) to the wetlands in the rear of the property. The proposed project will remove all gravel parking lot areas draining to the wetlands and collect all of the roof runoff for retention and treatment before discharging to the front of the lot. The proposed project will reduce the total impervious area by over 8,400 sf (1,780 sf of porous pavement) compared to the existing conditions.

The site is located within the *Coastal and Great Bay Regional Communities*, so the rainfall precipitation results obtained from the Northeast Regional Climate Center (NRCC) have been increased by 15% for the hydrologic analysis. The stormwater management system proposed for the site will reduce peak flows and treat site runoff prior to discharging back to the storm drain systems.

Pre-Development (Existing Conditions)

The pre-development site conditions reflect the existing conditions of the site, which include the existing restaurant, apartment, retail store and associated paved and gravel parking areas. The current site primarily discharges to the municipal storm drain system in Sagamore Avenue through a catch basin located at corner of Sagamore Avenue and Sagamore Grove (CB #2351) identified as the Point of Analysis #1 (POA1) on the drainage area plans. The existing parking lot and majority of the existing building drain to the catch basin in this area as untreated sheet flow. Point of Analysis #2 (POA2) is the existing wetland in the rear of the property and includes portions of the roof and gravel parking lot that drain to the wetlands untreated, as well as the undeveloped wooded area in the buffer.

The Pre-Development analysis models the existing conditions for the two points of analysis. The points of analysis are the same for the pre and post development models for comparison of flows prior to construction and after the site is development as shown on the plans. The grades and elevations shown on the plans are based on the site survey completed by James Verra and Associates, dated November 22, 2021 and included in the plan set (3 sheets).

Post-Development (Proposed Site Design)

The Proposed development will construct a new six (6) unit building and a five (5) exterior stall visitor parking lot to serve the new building. Parking for the residents will be located on the garage level of the building. The existing paved parking lot along Sagamore Avenue will be removed and access will be provided from Sagamore Grove. This will eliminate the head-in parking from Sagamore Avenue. The visitor entrance will be from the visitor parking area and an ADA accessible stall and ramp will be provided. The majority of the new parking lot and driveway will be constructed with porous pavement to infiltrate the surface water from the lot and a sub-surface treatment system will be constructed to treat and manage the stormwater from the roof.

The proposed stormwater system is depicted on the Grading and Drainage Plan in the project plans and the attached Post-Development Drainage Plan. For the post development analysis, the site was divided into eight (8) watershed areas to depict the post-development conditions. The same points of analysis that were used in the Pre-Development model were used for comparison of the Pre and Post development conditions. The "Post-Development Drainage Plan" illustrates the proposed stormwater management system. Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control facilites are based on the "New Hampshire Stormwater Manual Volumes 1 through 3" prepared by NHDES and Comprehensive Environmental, Inc. as amended.

Drainage Analysis

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the two Points of Analysis identified on the plans for the 2, 10, 25, and 50 year storm events:

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

*Rainfall Intensities reflect 15% Increase per AOT	**2-Yr Storm (4.12 inch)**	**10-Yr Storm (5.60 inch)**	**25-Yr Storm (8.20 inch)**	**50-Yr Storm (9.91 inch)**
POA #1				
Pre	0.70	1.35	2.65	3.56
Post	0.53	1.12	2.35	3.22
Net Change	**-0.17 (24.3%)**	**-0.23 (17.0%)**	**-0.30 (11.3%)**	**-0.34 (9.6%)**
POA #2				
Pre	3.09	4.40	6.67	8.14
Post	1.63	3.12	4.86	6.14
Net Change	**-1.46 (47.2%)**	**-1.28 (29.1%)**	**-1.81 (27.1%)**	**-2.00 (24.6%)**

As the above table demonstrates, the proposed peak rates of runoff will be reduced from the existing conditions for all of the analyzed storm events.

Effective Impervious Area

The existing lot is 42,930 square feet that consists of a restaurant, retail store, residential apartment unit, and associated driveways and parking. The existing site effective impervious area is all of the impervious areas on the lot, which total 23,000 square feet, or 53.6% of the lot (not including impervious in Sagamore Ave right of way). The proposed project will construct a new 6-Unit residential building and associated parking and walkways. The exterior parking lot will be reduced to five parking stalls and walkways will be added for access and emergency egress. The total impervious area will be reduced by over 6,000 sf. The proposed improvements will provide stormwater treatment to the new development area, which will reduced the effective impervious area to 6,250 sf (14.6%), a reduction of approximately 16,750 sf or (39% of the site).

CONCLUSION

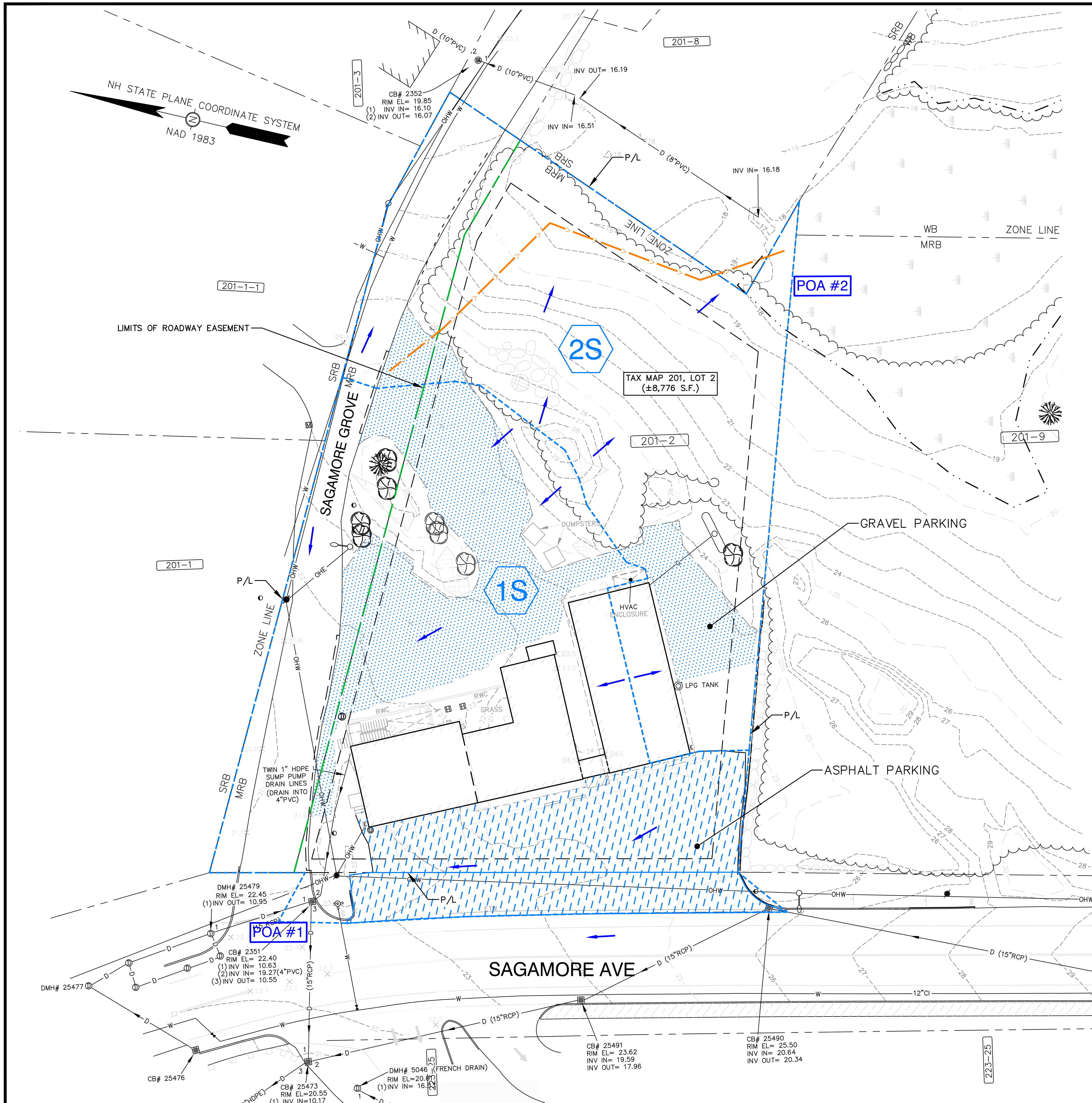
The proposed six (6) unit residential development will not have an adverse effect on abutting properties and infrastructure as a result of stormwater runoff. The existing site was developed in the 1970's and has no designed stormwater treatment facilities. The proposed improvements will reduce the total impervious area by approximately 8,400 square feet and the effective impervious area will be reduced by 16,750 sf, which is a reduction of 39% (from 53.6% to 14.6%) compared to the existing conditions. The new development will provide stormwater treatment and retention to the new building, parking and walkways with the construction of a stormwater drainage system consisting of porous pavement and a subsurface chamber system. The analysis of the site utilized a 15% increase to the rainfall intensities for seacoast communities, as is recommended by NHDES and the peak runoff rates for the site will be reduced for the all analyzed storm events (2, 10, 25, and 50 year). Appropriate steps will be taken during construction to properly mitigate erosion and sedimentation through the use of Best Management Practices for sediment and erosion control.

CALCULATION METHODS

The project lies with the ***Coastal and Great Bay Regional Communities*** as identified in Section 6 – One-Stop AoT Screening Layers Results. As a result, the rainfall precipitation results obtained from the Northeast Regional Climate Center for the project site have been increased by 15% for the hydrologic analysis. The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method which automates the calculation of Tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25, and 50 Year - 24-hour storm events using rainfall data provided by Northeast Regional Climate Center – Extreme Precipitation Tables.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.



LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- EXISTING GROUND SLOPE DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

SOILS:

SERIES	DESRIPTION	HSG
140B	CHATFIELD-HOLLIS-CANTON	B
699	URBAN LAND	B

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P5079

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

NOT FOR CONSTRUCTION

ISSUED FOR: DRAINAGE REPORT

ISSUE DATE: NOVEMBER 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMITTAL	CDB	11/22/21

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 5079-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER / APPLICANT:

SAGAMORE CORNER, LLC
273 CORPORATE DRIVE
PORTSMOUTH, NH 03801

PROJECT:

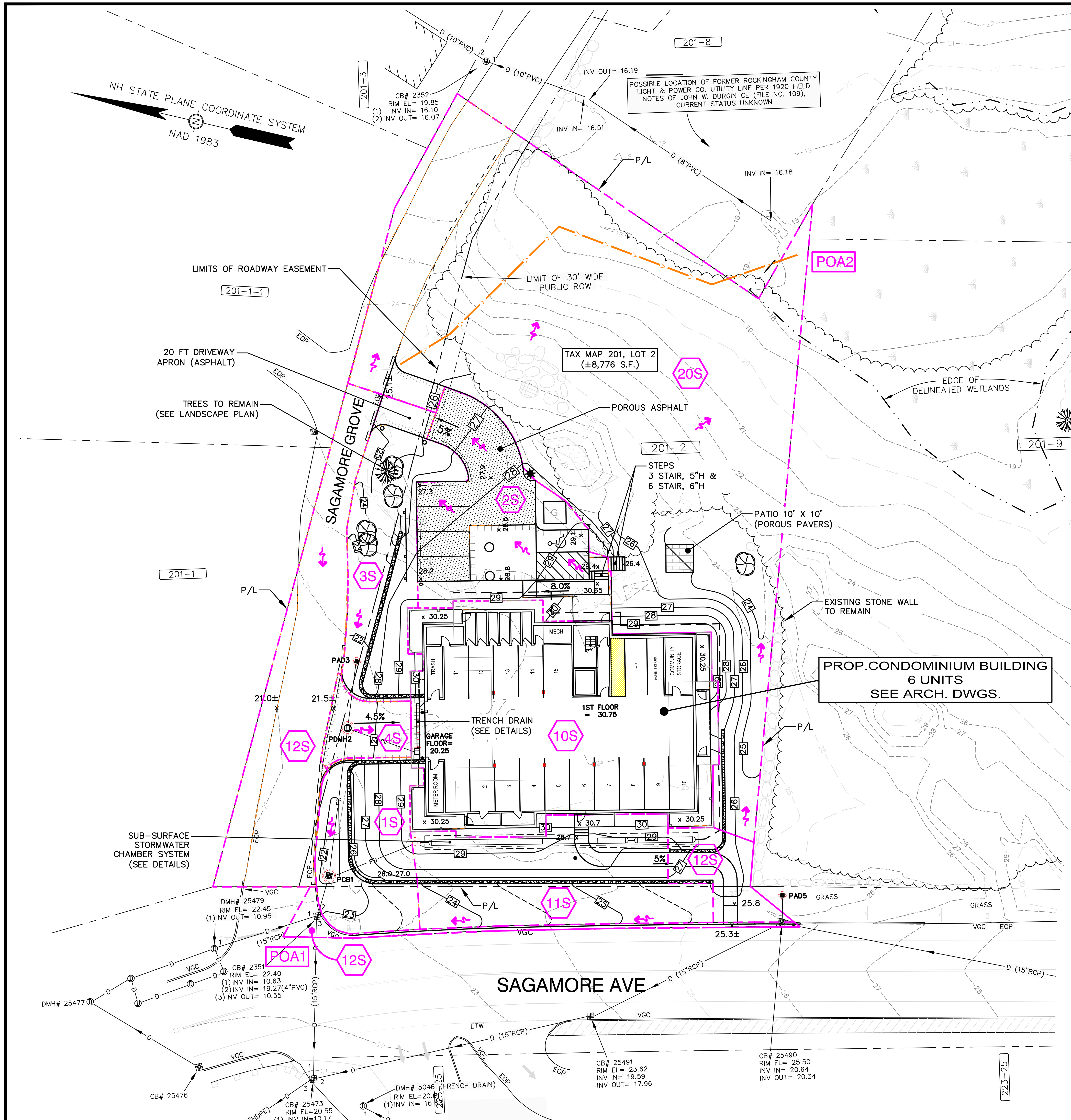
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:

PRE-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:

DA-1



LEGEND

- PROPERTY LINE
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- EXISTING CONTOUR
- 60 PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- PROPOSED GROUND SLOPE DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

SOILS:

SERIES	DESRIPTION	HSG
140B	CHATFIELD-HOLLIS-CANTON	B
699	URBAN LAND	B

DRAINAGE STRUCTURES

CB1
RIM = 21.50
12" INV. IN = 16.50 (PDMH2)
12" INV. IN = 16.50 (OS1)
12" INV. OUT = 16.40

PDMH2
RIM = 21.30
8" INV. IN = 16.90 (TRENCH DRAIN)
12" INV. IN = 16.90 (PAD3)
12" INV. OUT = 16.80

PAD3
RIM = 21.00
12" INV. OUT = 17.00

TRENCH DRAIN
ELEV = 20.10
8" INV. OUT = 17.10

STORMWATER PRACTICES

STORMWATER GALLERY A
24" DIA PERF PIPE
1 ROW / 90 FT LENGTH
(20 FT ISOLATION CHAMBER)
PIPE INV = 24.50
ROCK BOTTOM = 24.00

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)

P5079

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PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TAX MAP 201, LOT 2
SAGAMORE ROAD
PORTSMOUTH, NH 03801

TITLE:

POST-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:

DA-2