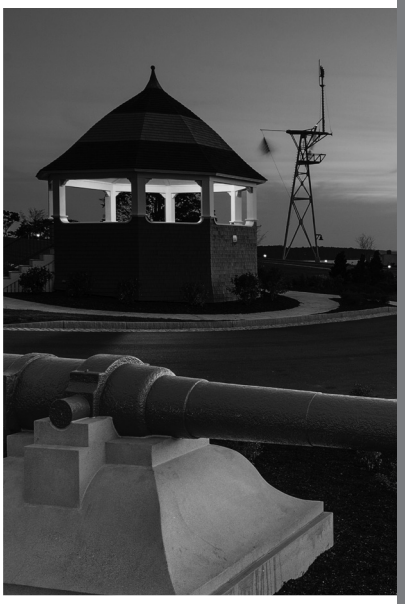
Relationships.
Responsiveness.
Results.



# Site Plan Review Application

## North Yarmouth Academy - Lower School Portable Classroom

PREPARED FOR:
North Yarmouth Academy
148 Main Street
Yarmouth, Maine 04096

May 17, 2023

SUBMITTED BY:

Gorrill Palmer
300 Southborough Dr
Suite 200
So. Portland, ME 04106
207-772-2515

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

May 17, 2023

Ms. Erin Zwirko, AICP, LEED AP, Director of Planning & Development
Town of Yarmouth
200 Main Street
Yarmouth, ME 04096

Subject: North Yarmouth Academy
Temporary Classroom for Lower School
Site Plan Submission

Dear Erin,

Gorrill Palmer, Inc. is pleased to submit this application for Site Plan Review for a temporary/portable classroom located near the end of the main driveway for North Yarmouth Academy (NYA). The site is located on Tax Map 32, Lot 111. This lot is approximately 0.5 acres and is part of several lots owned by NYA that total about 16.2 acres. The site is in the SD1-NYA Campus Special District and is subject to the Character Based Development Code.

**Project Description**

NYA proposes to lease, install and use a portable classroom building on their main campus. The building is approximately 1,821 square feet (66' long x 27.58' wide) to accommodate additional lower school students on a temporary basis. The building will also have an accessible ramp and stairs to access the main entry door. Water, sewer, electric and communications utilities will be extended to the building from nearby existing utilities. Detailed drawings of the building are provided with this application.

**Utilities**

Ability to serve letters have been submitted to the Yarmouth Water District and the Yarmouth Sewer and Wastewater Pollution Control Department. The Utility Plan shows proposed connections to existing, nearby utility infrastructure.

**Stormwater**

Stormwater from the project site will be directed to a drip strip filter on the southerly side of the building. This filter, which is located at the top of the existing slope, will collect runoff from the temporary building roof, gravel pad and a portion of the existing parking area. Runoff will flow through a filter layer which will slow down the runoff and provide water quality treatment before discharging to the storm drain system adjacent to the turf field. The existing enclosed drainage system discharges to the Town skating pond and eventually flows to the Royal River. A comprehensive stormwater report is included with this application.

**Traffic**

The proposed development is forecast to generate a high of 27 trip ends during the AM peak hours. Therefore, a Maine DOT Traffic Movement Permit with a trigger of 100 trip ends during a peak hour is

not required. The project is located within the Urban Compact of Yarmouth, so it will not require a MaineDOT Entrance Permit. Based on a review of MaineDOT crash history, no high crash locations were identified within the immediate area along the site frontage. Based on a field review and sight distance evaluation, the existing site access exceeds required Town sight distances. No alterations to the driveway entrance are proposed as part of this project.

**Character Based Development Code Requirements**

The following items are required by the Town of Yarmouth Character-Based Development Code.

5.K – Parking

- Table 5.K.1 requires 3 parking spots per 1,000 SF. NYA is not proposing the construction of any new parking spaces. One existing space in front of the temporary building will be eliminated to provide access to the front entrance to the building.
- 5.K.1.d requires up to 10% of parking, close to main entrance, shall be for 'reduced mobility' parking. NYA is not proposing any changes to existing parking in the vicinity of the temporary building other than the loss of one existing parking space. There is one reduced mobility parking space in the Curtis Lot on the way in to the site from Main Street.
- 5.K.1.f requires one bicycle rack per 20 parking spots. NYA is not proposing any new parking spaces. There is an existing bike rack near the Middle School with a capacity of 5. There is a new bike rack at Travis Roy Arena with a capacity of 11. It is rare that students ride their bikes to the school, especially at the Lower School which is the intended use for the portable classroom.
- 5.K.1.e requires one electrical vehicle charging station per 30 parking spaces. As noted, this is a temporary building and NYA is not proposing any new parking spaces, therefore, they are not proposing any new EV charging stations.

5.N - Landscaping Standards

- 5.N.2.j requires parking/loading dock areas shall be screened from public frontage (up to 50' long). As there are no new parking/loading spaces proposed, there is no additional landscape screening proposed.
- 5.N.2.s requires one tree planted per 30' of frontage. There are existing mature street trees along Main Street. No new street trees are proposed.
- 5.N.2.u requires 30% minimum landscaping area in First Lot Layer. The existing area along the Main Street frontage is well landscaped with mature trees and plantings. NYA is not proposing any new landscaping as part of this project.
- 5.N.2.u requires 20% minimum landscaping for the entire lot. NYA is not proposing new landscaping for this temporary/portable classroom.
- 5.N.2.ee.i requires one landscaped island per 20 parking spaces. NYA is not proposing any new parking spaces in the vicinity of the temporary building, therefore, no landscaped islands are proposed.
- 5.N.2.ee.ii requires one tree installed or preserved per 2,000 SF of parking lot. NYA is not proposing any new parking lot area, therefore, they are not proposing any new trees to be planted.
- 5.N.2.ee.iii requires no parking space shall be more than 72' from a tree. NYA is not proposing any new parking spaces or tree plantings as part of this project.
- 5.N.2.ee.v notes that trees within 20' of parking lot counts towards satisfying the requirements of 5.N.2.ee.ii. No response required to this item.

- 5.N.2.ii requires that if parking exceeds 60 spaces > need 5' pedestrian walkway through parking lot being a different color, material, or etc. This is not applicable to this project.
- 5.L.1 requires that parking shall be located 20' from thoroughfare (in second or third Lot Layer). This item is not applicable to this project.

**SD1 Building & Lot Plan Standards**

Note: the tabulated values represent the less restrictive value of the CD4 and CD4-C requirements, per Article 4.D.2.c.i.

| Standard | Requirement | Provided |
|---|---|---|
| Building Placement - Principal Building | | |
| Front Setback, Principal | 0 ft min, 16 ft max | Not applicable |
| Front Setback, Secondary Frontage | 2 ft min, 12 ft max | Not applicable |
| Side | 0 ft min | Not applicable |
| Rear Setback | Greater of 3 ft min or 15 ft from centerline of alley, if any, or from any abutting zone | Not applicable |
| Yard Types | | |
| Edgeyard | Permitted | Not Applicable |
| Sideyard | Permitted | Not Applicable |
| Rearyard | Permitted | Not Applicable |
| Building & Lot Principal Use | Education – Secondary | Provided |
| Lot Occupation | | |
| Lot Width | 18 ft min, 120 ft max | Not applicable |
| Lot Coverage | 85% max | Approx. 16% |
| Frontage Buildout | 40% min, 100% max at front setback | Does not front on street |
| Building Form – Principal Building | | |
| Building Height | 35 ft max, 55 ft with approval | 11.25' incl. height above finish grade |
| First Story Height | 10 ft min, 25 ft max | 11.25' |
| Upper Story Height | 10 ft min, 15 ft max | Not Applicable |
| Façade Glazing | 20% min, 70% max non-shopfront | 10.3% |
| Roof Type | Flat, hip, gambrel, gable, mansard | gable |
| Roof Pitch, if any | 8:12 to 14:12 | Only a slight pitch |
| Building Placement – Outbuilding | | |
| Front Setback | Principal bldg. setback + 20 ft | Not applicable |
| Side Setback | 0 ft min | Not applicable |
| Rear Setback | 3 ft min | Not applicable |
| Parking | | |
| Third Lot Layer | Principal bldg. setback + 20 ft | Not applicable |
| Other | 3 spaces per 1,000 SF of floor space | Not applicable |
| Private Frontages & Encroachments | | |

| Private Frontage Types | | |
|---|---|---|
| Common Yard | Permitted | Not Applicable |
| Porch | Permitted | Not Applicable |
| Forecourt | Permitted | Not Applicable |
| Stoop | Permitted | Not Applicable |
| Shopfront | Permitted | Not Applicable |
| Encroachment of Building Elements | | |
| Encl landings, stairs, stoops, bays, ramps and similar projections upon indicated setbacks by the following distances: | | |
| Front Setback, Principal Frontage | 10 ft max | No encroachment proposed |
| Front Setback, Secondary Frontage | 10 ft max | No encroachment proposed |
| Rear Setback | 5 ft max | No encroachment proposed |

**Conclusion**

As required by the Site Plan Review Ordinance, Gorrill Palmer, on behalf of North Yarmouth Academy is submitting the enclosed information for Site Plan Review. The project team looks forward to the Planning Board's review of this project. We look forward to meeting with the Planning Board at the June 14, 2023 Planning Board Meeting.

Please contact our office with any questions you may have or if additional information is needed.

Sincerely,

Gorrill Palmer

William C. Haskell, PE, CPESC
Principal

Enc

Copy: Ben Jackson, Simons Architects; Tim Hebert

WCH/HWH/U:\4123_NYA_Lower School Temp Classroom\P Applications\Local\J2023-05-17 Zwirko site plan cover letter.docx

# TOWN OF YARMOUTH

**Department of Planning and Development**
**200 Main Street Yarmouth, Maine 04096**
**(207)846-2401 WWW.YARMOUTH.ME.US Fax: (207)846-2438**

## SITE PLAN APPLICATION FORM

○ **Minor** ◉ **Major**

**Date:** 5/17/2023 **Zoning District** SD1-NYA Special District **Map** 32 **Lot** 111 **Ext**

| | |
|---|---|
| Site Location | 24 Storer Street |
| Property Owner | North Yarmouth Academy |
| Mailing Address | 148 Main Street Yarmouth, Maine 04096 |
| E-mail Address | |
| Phone | Fax |

| | |
|---|---|
| Name of Project | North Yarmouth Academy - Temporary Classroom for Lower School |
| Existing Use | Education-PVT |
| Proposed Use | Education-PVT |

Amendment to a previously approved site plan? Yes ☐ No ☑
Special exception use? Yes ☐ No ☑

**Fee: $100.00/1000 sq. ft.; up to $3000.00**

The Department of Planning and Development shall send notices to all property owners at a minimum of 500 feet including a description of the proposal. Letters will be at a cost of $5/letter to the applicant.

The Town will correspond with only one contact person/agent for this project. Please provide the requested information regarding the contact person/agent.

| | |
|---|---|
| Contact person/agent | Will Haskell |
| Mailing Address | 300 Southborough Drive, Suite 200, South Portland, Maine 04106 |
| E-mail Address | whaskell@gorrillpalmer.com |
| Phone | (207) 800-4511 Fax |

I certify that, to the best of my knowledge, all information provided in this application form and accompanying materials is true and accurate.

Signature of Owner
(If signed by Owner's agent, provide written documentation of authority to act on behalf of applicant.)

**"I authorize appropriate staff within the Yarmouth Planning Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to collect facts pertaining to my application."**

Benjamin Jackson Head of School
Print or type name and title of signer



Revised 5/1/18wls

## 1. PROJECT DESCRIPTION

A. In a separate document please describe the overall project objectives and proposed uses of property, including quantity and type of residential units (if any).

B. Project details

1. Name and approval date of subdivision this site is in (if applicable)

   _____

   Subdivision lot numbers (if applicable)_____

2. Assessor's Map number(s) 32 Lot number(s) 111

3. Existing zone(s) of the site

   SD1 NYA Campus Special District

   Shoreland Overlay District ☐ Yes ☑ No

   Affordable Housing District ☐ Yes ☑ No

   Mobile Home Park Overlay ☐ Yes ☑ No

4. a. Total land area of site (all contiguous land in same ownership)

   16.2 acres

   b. Total floor area of each proposed building in square feet

   1698 sf

   c. Footprint of each proposed building in square feet

   1821 sf

   d. Height of proposed building(s) 11.75 feet _____ stories

   e. Total number of proposed parking spaces 0

   f. Number of proposed handicap parking spaces 0

C. Existing conditions

1. Existing land use Education-PVT

2. Total floor area of each existing building in square feet

   Multiple buildings on NYA campus

3. Footprint of each existing building in square feet

   Multiple buildings on NYA campus

D. Attach as Exhibit #1 a map such as the Maine Atlas and Gazetteer map (clean photocopies are acceptable). Indicate the location of your project on map.

E. Construction sequence

1. Estimated time of start of project July 2023

   Estimated time of completion of project September 2023

2. Is this to be a phased project? Yes ☐ No ☑

3. Attach as Exhibit #2 a construction schedule outlining the anticipated sequence of construction (beginning and completion) for the major aspects of the proposed project, including roads, erosion control and drainage measures, structures, sewer and water lines, other utilities, paving, landscaping.

## 2. RIGHT, TITLE, OR INTEREST

A. Name and mailing address of record owner of the site

North Yarmouth Academy 148 Main Street Yarmouth Maine 04096

_____

_____

Phone (207) 846-9051 Fax _____

B. Attach as Exhibit #3 evidence of corporate or partnership status, if applicant is not an individual.

C. Attach as Exhibit #4 evidence of applicant's right, title, or interest in the site. A complete copy of the document must be provided; financial information may be deleted.
D. Attach as Exhibit #5 a copy of the current owner's existing deed for the site.
E. Attach as Exhibit #6 summary lists of all existing and all proposed easements or other burdens for this property. More detailed information may be required, depending on the particular circumstances of the site.
F. If a condominium, homeowners, or property owners association will be established, attach as Exhibit #7 the articles of incorporation, the Declaration of Covenants and Responsibilities, and the proposed by-laws of the organization.

**3. FINANCIAL CAPACITY**

A. Estimated cost of the project (including land purchase and development costs)
$123,000 (startup and installation)

B. Attach as Exhibit #8 evidence of your financial capacity to complete the proposed development. Submit one or more of the following (please check as appropriate):

☑ 1. A written statement from the applicant's bank or a certified public accountant who recently has audited the applicant's finances stating that the applicant has cash reserves in the amount of the estimated cost of the project and can devote those reserves to the project.

☐ 2. When the applicant will personally finance the development, provide copies of bank statements or other evidence, which will indicate availability of funds, and evidence that the applicant can devote these funds to the project.

☐ 3. The most recent corporate annual report showing availability of sufficient funds to finance the development, together with a statement from the applicant that the funds are available and will be used for the proposed project.

☐ 4. A letter from a financial institution, governmental agency, or other funding agency, which indicates a timely commitment to provide a specified amount of funds and the uses for which the funds may be utilized.

☐ 5. In cases where outside funding is required, but there can be no commitment of money until regulatory approvals are received, a formal letter of "intent to fund upon approval" from a funding institution indicating the amount of funds it is prepared to provide, their specified uses and the conditions on which funds will be made available.

**4. TECHNICAL ABILITY**

A. List all projects undertaken by the applicant within the last five years, beginning with the most recent project:
Ice Arena Expansion

B. Have done no prior projects ☐

C. Attach as Exhibit #9 a list of all consultants retained for this proposed project, such as engineers, architects, landscape architects, environmental consultants; and those firms or personnel who will be responsible for constructing, operating and maintaining the project.

**5. SOLID WASTE**

Attach as Exhibit #10 an explanation of the proposed method of collection, removal, and disposal for anticipated solid waste from this project.

**6. WATER**

Attach as Exhibit #11 written confirmation from the Yarmouth Water District that it can supply the proposed development and that the proposed plan has been approved by the District. If the

applicant proposes a private supply, provide evidence that a sufficient and healthful water supply is available for the proposed development.

**7. TRAFFIC**

Attach as Exhibit #12 a written evaluation and demonstration of the adequacy and availability of adjacent streets to serve the proposed project. If you must submit a full traffic study to DEP, provide two (2) copies with this application. (see Ch. 702 H.2.)

**8. SANITARY SEWERS AND STORM DRAINS**

A. Estimated sewage gallons per day for the completed project
304
Please note that the Town Manager must approve new sanitary sewer connections that are considered sewer extensions.

B. Will this project generate industrial or non-sanitary waste that will enter the public sewer or drains? No ☑ Yes ☐
If yes, please describe proposed types and amounts:

_____

_____

C. If a subsurface wastewater disposal system is proposed, provide evidence that it conforms to the requirements of the State Plumbing Code.

**9. SURFACE DRAINAGE AND-RUNOFF, STORMWATER MANAGEMENT**

A. Attach as Exhibit #13 a description of any problems of drainage or topography, or a representation that, in the opinion of the applicant, there are none.

B. Attach as Exhibit #14 a complete stormwater management plan, including drainage calculations for pre- and post-development for 2 yr. and 25 yr. storm events, a drainage plan, and an assessment of any pollutants in the stormwater runoff, that meets the requirements of Chapter 702, Review Criteria re Stormwater Management.

**10. EROSION AND SEDIMENTATION CONTROL**

A. Attach as Exhibit #15 a written description of erosion and sedimentation control measures to be used during and after construction of the proposed project.

B. Show on a plan the proposed location, type, and detail of erosion control devices, unless this information is included on a site plan drawing.

**11. SOILS**

A. Attach as Exhibit #16 a medium intensity soils classification report, including description of soils and interpretation of engineering properties. Include geotechnical report, if applicable.

B. Show on a plan the existing soil conditions on the site, unless this information is included on a site plan drawing. Include wetlands delineation and report, if applicable.

**12. SITE PLAN ORDINANCE REQUIREMENTS**

A. Attach as Exhibit #17 list of approvals needed from other agencies, such as the General Board of Appeals, Army Corps of Engineers, and Maine Department of Environmental Protection.

B. Attach as Exhibit #18 a written statement that explains how the project complies with the site plan review criteria and with specific performance standards required in the zoning district, if applicable. If applicable, please note how the proposal specifically complies with the separate components of the Route One Corridor Design Guidelines.

C. Attach as Exhibit #19 a summary list and a written offer of cession to the Town of all proposed streets, utilities and open space proposed for dedication.

D. Attach as Exhibit #20 all requests for waivers including an explanation of the undue hardship or special design requirements, which are the basis for the requests.

E. Attach as Exhibit #21 a written explanation of all potential nuisances associated with this project and how they will be mitigated, or a representation that, in the opinion of the

applicant, there are none.

**13. SITE PLAN DRAWINGS, MAPS**

A. Site plan drawings
   a. paper no larger than 24" x 36", with all drawings in a set the same size
   b. bound and folded no larger than 9" x 12", with project name shown on front face of folded plan
   c. number and date drawings, with space for revision dates
   d. scale of the drawings shall be between 1"=20' and 1"=50'
   e. show the entire parcel in single ownership, plus off-site easements

B. Title block shall include:
   a. identification of plan as "Site Plan"; "Amended" if applicable
   b. name and address of project
   c. name(s) and address(es) of site owner and of applicant
   d. name and address of plan designer(s)

C. Location map shall include:
   a. abutting property within one thousand feet of project boundaries
   b. outline of proposed project
   c. zoning district(s) of abutting properties
   d. at least one street intersection

D. North arrow and scale.

E. General plan notes shall include:
   a. zoning district and list of applicable dimensional regulations comparing the required and proposed
   b. proposed number of units
   c. required and proposed number of parking spaces
   d. total square footage of existing and proposed buildings
   e. square footage of proposed building footprint
   f. all requested waivers
   g. indication if proposed structure is to be sprinklered
   h. total square footage for each use, if applicable

F. Name, location, width of existing and proposed streets.

G. A Boundary Survey, Category 1, Condition 2, showing site boundaries.

H. Setbacks as required by zoning ordinance; zone line if site is transected by a zone line or if zone line is within 30 feet of the boundaries of the site.

I. Existing and proposed contours at 2' intervals. Show l' contours and/or spot elevations if sufficient detail cannot be shown with 2' contours.

J. Buildings, structures, and signs
   a. location, dimensions, shape, facade elevations, entrances, materials, colors of exterior of proposed buildings, structures, and signs. (see Ch. 701, II, C, E, F)
   b. description of all finish surface materials
   c. location, dimensions, shape of existing buildings
   d. building's setbacks from property line, if different from required yard setbacks

K. Names of abutting property owners and locations of buildings and curb cuts on abutting properties.

L. Locations and dimensions of parking areas, loading and unloading facilities, driveways, fire lanes, access points. Give typical parking space dimensions. (see Ch. 701, II H; Ch. 702, J.1, 2, 3)

M. Location of all existing and proposed easements and rights-of-way, including identification of who has or will receive the easement.

N. Location, dimensions, materials of existing and proposed pedestrian access ways.
O. Location and size of existing and proposed utilities, both on-site and in adjoining public ways. Location of nearest existing hydrant. Include installation details for proposed utilities.
P. Construction drawings showing plans, profiles, cross-sections, and details of appurtenances for sanitary sewer and storm drainage systems.
Q. Location, height, wattage, bulb type of exterior and building-mounted lighting. Photometric plan consistent with requirements of site plan and zoning ordinances. (See Ch. 701, II X; Ch. 702, J. 4)
R. Location and description of existing natural features, such as wetlands, watercourses, marshes, rock outcroppings, stands of trees. Natural features to be preserved must be identified on plan.
S. Existing and proposed landscaping, fencing, screening. Include fence dimensions, location, material, and a table showing number of plants of each species, common and botanical names. Include planting and preservation details, if applicable. Indicate proposed snow storage area, if applicable. (see Ch. 701, II Y, and Ch. 702 J. 5)
T. Grades, street profiles, typical cross-section, and specifications of proposed streets and sidewalks. These must meet the standards of Ch. 601, Article IV.
U. A description of any right-of-way, street, sidewalk, open space, or other area the applicant proposes to designate as public.
V. Name, registration number, seal, and signature of all registered professionals (engineer, land surveyor, architect, landscape architect, etc.) who prepared the plan.
W. First floor finished floor elevation(s) for all proposed buildings.
X. If project is within the RP district, extent of floodway and floodway fringe.
Y. If project is within Shoreland Overlay District, show required setbacks.

Please be advised to keep in touch with the Director of Planning and Development throughout the process, 846-2401; fax 846-2403. Your responsiveness will help the process to run smoothly.

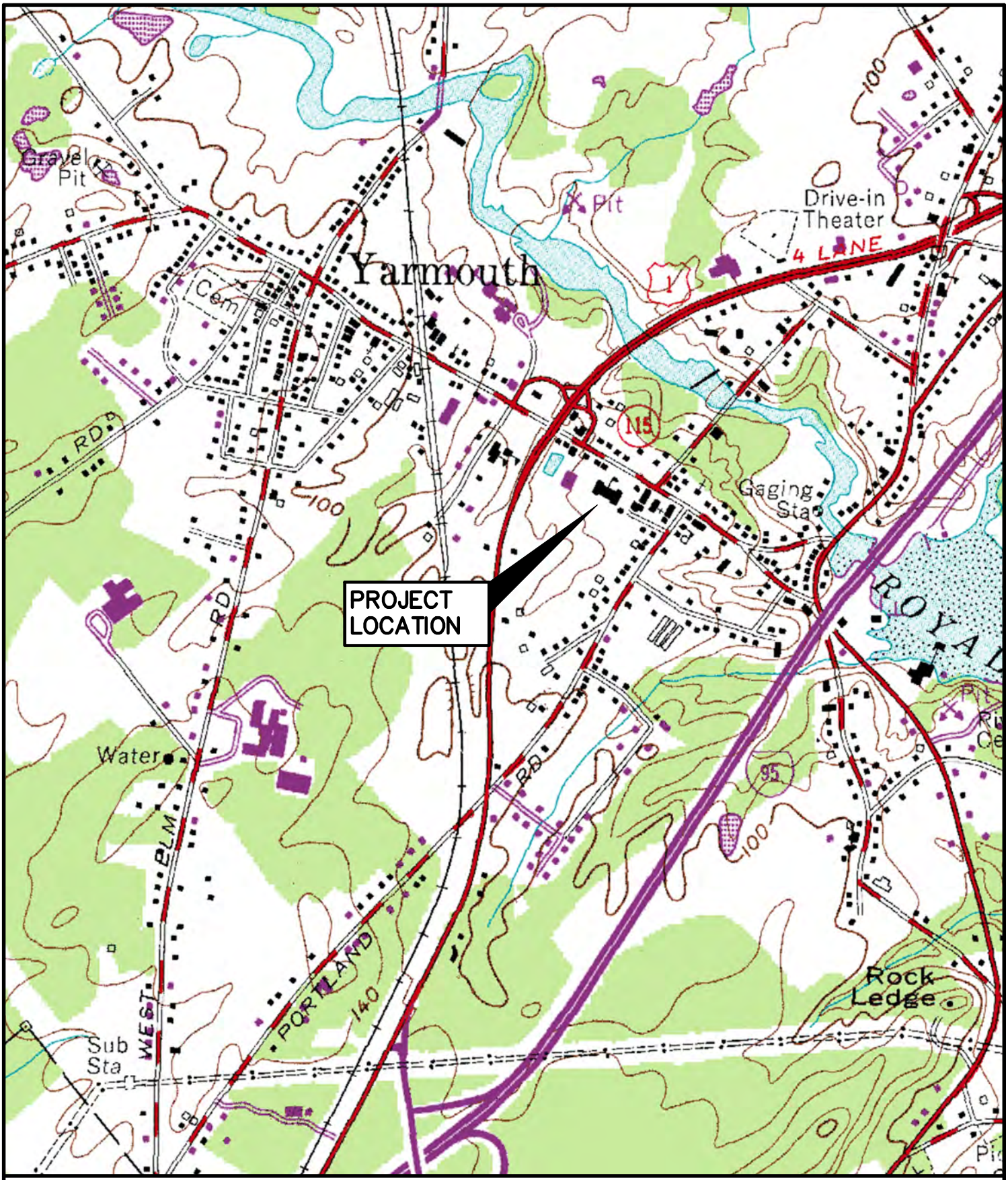
## CONDITIONS OF APPROVAL

The property shown on this plan may be developed and used only as depicted on this approved plan. All elements and features of the plan and all representations made by the applicant concerning the development and use of the property which appear in the record of the Planning Board proceedings are conditions of approval. No change from the conditions of approval is permitted unless an amended plan is first submitted to and approved by the Planning Board.

Surface Water and Groundwater: No owner of a lot, his agents, or successors in interest shall alter the natural course of surface water on any lot in a way which would alter the natural flow of such water across any other parcel, unless such alteration is approved by the owners of all parcels affected. No owner of a lot, his agents, or successors in interest shall use blasting chemicals that generate perhlorates.

# EXHIBIT I

# LOCATION MAP




# U.S.G.S. Location Map

NYA Temporary Classroom for Lower School - Yarmouth, Maine

U.S.G.S. Yarmouth, State-7.5 Minute Series (Topographic)

| | | | |
|---|---|---|---|
| Design: HWH | Date: MAY 2023 | GORRILL PALMER | Figure 1 |
| Draft: HWH | Job No.: 4123 | | |
| Checked: WCH | Scale: None | | |
| File Name: 4123–LocMap.dwg | | | |

Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

# EXHIBIT 2

# CONSTRUCTION SCHEDULE

A sequence of construction is attached to this exhibit.

.

**Implementation Schedule**

| **Task** | **Time** |
|---|---|
| Install Erosion Control | July 2023 |
| Construct Gravel Pad | July 2023 |
| Construct Water/Sewer/Electric/Communications Utilities to Pad/Building Site | July 2023 |
| Deliver/Install/Set Up Portable Building | August 2023 |
| Occupy and Use Portable Building | September 2023 |

# EXHIBIT 3

# CORPORATE STANDING

Attached to this exhibit is the certificate of good standing for North Yarmouth Academy.

.

MAINE
Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

# Information Summary

Subscriber activity report

**This record contains information from the CEC database and is accurate as of: Mon May 01 2023 14:36:02. Please print or save for your records.**

| Legal Name | Charter Number | Filing Type | Status |
|---|---|---|---|
| NORTH YARMOUTH ACADEMY | 18140000ND | NONPROFIT CORPORATION (T13-B) | GOOD STANDING |

| Filing Date | Expiration Date | Jurisdiction |
|---|---|---|
| 02/04/1814 | N/A | MAINE |

| Other Names | (A=Assumed ; F=Former) |
|---|---|
| TRUSTEES OF NORTH YARMOUTH ACADEMY | F |

**Clerk/Registered Agent**

BENJAMIN JACKSON
148 MAIN STREET
YARMOUTH, ME 04096

New Search

**Click on a link to obtain additional information.**

| | | |
|---|---|---|
| List of Filings | View list of filings | |
| **Obtain additional information:** | | |
| Certificate of Existence (more info) | Short Form without amendments ($10.00) | Long Form with amendments ($10.00) |

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the troubleshooting page.

If you encounter technical difficulties while using these services, please contact the Webmaster. If you are unable to find the information you need through the resources provided on this web site, please contact the Division of Corporations, UCC & Commissions Reporting and Information Section at 207-624-7752 or e-mail.

# EXHIBIT 4/5

# TITLE/RIGHT/INTEREST

.

Cumberland County Register of Deeds Current datetime: 5/1/2023 2:02:43 PM

# DETAILS REPORT

**Note: Report is Sorted in Ascending Order by Office, Recorded Date, Document Number

| Doc# | Document Type | Book/Vlm/Page | File Date |
|---|---|---|---|
| 9693 | DEED | 03131/781 | 06/19/1970 |

| Street | Street Name | Description |
|---|---|---|
| | | |

| Grantors | Grantees | Street | Property Description |
|---|---|---|---|
| CROUDIS WILLIAM F | NORTH YARMOUTH ACADEMY , TRUSTEES OF NORTH YARMOUTH ACADEMY | | |

**References**

| Book/Vlm/Page | Description | Recorded year |
|---|---|---|
| | | |

**Legal Description\Remarks**

| Lot | Block | Subdivision | Plat |
|---|---|---|---|
| | | | |

ADMINISTRATOR'S OR GUARDIAN'S DEED — PRIVATE SALE — MARTIN'S FORM NO. 45

9693

# Know All Men by These Presents,

That I, BERNARD W. CROUDIS, of Portland, County of Cumberland and State of Maine, Guardian of WILLIAM F. CROUDIS, JR., of Yarmouth, County of Cumberland and State of Maine,

having on the 2nd day of June A. D. 19 70, obtained License from the Honorable Nathaniel M. Haskell, Judge of Probate within and for the County of Cumberland and State of Maine, to sell and convey at private sale the Real Estate hereinafter described, of the said William F. Croudis, Jr.

for the sum of Twelve Thousand ($12,000.00) dollars, the same being an advantageous offer therefor, and having agreeably to the order and decree of said Court, given due notice upon the petition for license to make such sale, and having given the bond required by law, by virtue of the power and authority with which I am as aforesaid vested, and in consideration of the aforesaid sum of Twelve Thousand dollars, to me paid by THE TRUSTEES OF NORTH YARMOUTH ACADEMY, a corporation existing under the laws of the State of Maine and having its principal place of business in Yarmouth, County of Cumberland and State of Maine,

the receipt whereof I do hereby acknowledge, have given, granted and sold, and by these Presents do ~~give, grant, sell and convey~~ to the said The Trustees of North Yarmouth Academy, its Successors

~~Heirs~~ and Assigns forever, the following described Real Estate, viz:

(1) A certain lot or parcel of land with the buildings thereon, situated in said Yarmouth, and bounded and described as follows Viz: Beginning at the southerly corner of land now or formerly of heirs of William E. Bucknam; thence northeasterly by said Bucknam's heirs' land five rods and four links; thence southerly four rods and thirteen and one half links; thence westerly parallel with said Bucknam line five rods and four links; thence northerly four rods and thirteen and one half links to the place of beginning. Also a right of way twenty-eight feet wide from said lot to Portland Street, the same now being an accepted highway.

(2) Also another piece of land adjoining the preceding described lot and containing nine square rods of land, more or less, bounded southwesterly by land of the late John M. Cobb; southeasterly by the Bibber land; northwesterly by the above described premises and northeasterly by the town way leading to Portland Street.

(3) Also another certain piece of land situated in said Yarmouth and adjoining the two previously mentioned tracts of land and described as follows Viz: Beginning at the westerly corner of land now or formerly of Norman Grant; thence northwesterly along the line of land belonging to North Yarmouth Academy six rods and nine and one half links; thence northeasterly to the west corner of the lot

of land first described in this deed four rods; thence southeast on the southerly line of the first described tract of land to Norman Grant's land; thence southwest on said Grant's line to the place of beginning and containing twenty-five and one half square rods of land, more or less.

(4) Also another piece or parcel of land adjoining the last named tract of land and described as follows: Beginning at the most westerly corner of the first herein named piece of land; thence running north 43½ degrees west six rods and twenty-two links to a stake; thence northeasterly three rods and twenty-four links to the westerly corner of land of the heirs of W. E. Bucknam's orchard lot; thence southeasterly by said Bucknam's land seven rods to said Cobb's lot; thence southwesterly by said Cobb's lot to the bound begun at and containing twenty-eight rods of land more or less.

Excepting and reserving from the above a certain narrow strip of land and the rights of way incident thereto as described in a deed from John M. Cobb to Joseph E. Merrill dated August 25, 1906 and recorded in the Registry of Deeds for Cumberland County in Book 791, Page 125.

Being the same premises conveyed to William F. Croudis, Jr. by Quit-Claim Deed of Bertha G. Hayes to William F. Croudis, Jr. dated June 3, 1915 and recorded in Cumberland County Registry of Deeds, Book 946, Page 362, and Administratrix Deed of the said Bertha G. Hayes, in her capacity as Administratrix of the Estate of John M. Cobb to William F. Croudis, Jr., dated June 6, 1915 and recorded in said County in Book 946, Page 361.

This conveyance is made subject to 1970 Real Estate taxes, which the Grantee herein named assumes and agrees to pay when due and payable to the Town of Yarmouth.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
JUN 4 1970
Bureau of Taxation
$13.20

To have and to hold the same, with all the privileges and appurtenances to the same belonging, in manner as aforesaid to the said The Trustees of North Yarmouth Academy, its Successors Heirs and Assigns forever.

And I the said Bernard W. Croudis in my said capacity do covenant to and with the said The Trustees of North Yarmouth Academy, its Successors Heirs and Assigns, that I have in all things observed the rules and directions of law relative to the selling of said Estate, and have good right and lawful authority to sell and convey the same in manner aforesaid.

In Witness Whereof, I hereunto set my hand and seal in my said capacity, this 3rd day of June in the year of our Lord one thousand nine hundred and seventy.

Signed, Sealed and Delivered
in presence of

Arthur Chapman Jr.

Bernard W. Croudis (L.S.)
Guardian of Willaim F. Croudis, Jr.

State of Maine. Cumberland, ss. June 3, 1970

Personally appeared the above named Bernard W. Croudis

and acknowledged the foregoing instrument to be his free act and deed in said capacity.

Before me,

Justice of the Peace
Notary Public

JUN 19 1970
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 9 H 32 M A.M., and recorded in
BOOK 3131 PAGE 781 Margaret L. Weber Deputy Register

Form 246
5-65

# 9692

For and in consideration of the sum of One Dollar ($1.00) and other valuable considerations to me/us paid by New England Telephone and Telegraph Company, a corporation duly organized under the laws of the State of New York, the receipt of which is hereby acknowledged, I/we hereby grant unto said Company, its successors and assigns, the right

to attach and maintain wires and cables as may be necessary on poles 1-11 on Private Route 3175 located in a southeasterly diraction off the Bailey Island Road at pole 88 in the Town of Harpswell, County of Cumberland, and State of Maine in order to provide phone service to our cottage only.

with permission to enter upon my/our property for the above purposes.

Witness my/our hands and common seal this -21- day of May 1970

Witnesses:

Mary A. Hueles ← James M Alison Husband

James M Alison → Mary A. Hueles Wife

State of Maine County of Cumberland ss., May 21, 1970

Then personally appeared the above named James Alison

and acknowledged the foregoing instrument to be his free act and deed, before me.

My Commission expires: NOTARY PUBLIC COMMISSION EXPIRES SEPTEMBER 4, 1976

Ralph H. Dunton
Justice of the Peace/Notary Public

RALPH H. DUNTON NOTARY PUBLIC MAINE

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE JUN 19 1970
Received at 9 H 31 M A.M., and recorded in
BOOK 3131 PAGE 783 Margaret L. Weber Deputy Register

# EXHIBIT 6

# EASEMENTS

There are no known existing or proposed easements within the proposed project area.

.

# EXHIBIT 7

# HOMEOWNERS ASSOCIATION

The Applicant does not propose a condominium, homeowners, or property owners association for this project.

.

# EXHIBIT 8

# FINANCIAL CAPACITY


# Bath Savings Institution

*Since 1852*

May 16, 2023

To Whom It May Concern:

North Yarmouth Academy of North Yarmouth, Maine has requested a reference for their upcoming project to expand classroom capacity on their campus.

Bath Savings Institution has a relationship with North Yarmouth Academy. The organization currently has a variety of deposit products with the organization with an aggregate deposit account balances in the low-seven figure range. The bank has made multiple loans to North Yarmouth Academy and considers them an excellent credit risk. Their loans require regular monthly payments that have always been made as agreed. They have demonstrated an ability to handle all accounts in a satisfactory manner.

Based on this relationship and their track record of success, we would be pleased to consider future financing requests from them.

If you need further information, please contact me at (207) 371-4218.

Sincerely,

Mara K. Pennell, Vice President
Commercial Lending

General Business
105 Front Street, PO Box 548, Bath, Maine 04530
Tel 207-442-7711 Fax 207-442-9137
1-800-447-4559
MEMBER FDIC

# EXHIBIT 9

# CONSULTANTS

North Yarmouth Academy has assembled a project team consisting of Simons Architects and Gorrill-Palmer to prepare plans and permit applications for the proposed project.

| Consultant | Responsibility |
|---|---|
| Simons Architects | Architect |
| Gorrill Palmer | Site/Civil Design & Permitting |
| Bennett Engineering | MEP Design |
| Hebert Construction | Building Contractor |

.

# EXHIBIT 10

# SOLID WASTE

The proposed project is not anticipated to increase solid waste generation above current levels. The Applicant will remove solid waste from the site utilizing the currently contracted waste removal firm.

.

# EXHIBIT I I

# WATER & SEWER

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

May 16, 2023

Mr. Eric Gagnon, Superintendent
Yarmouth Water District
P.O. Box 419
Yarmouth, ME 04096

Re: North Yarmouth Academy – Temporary Classroom for Lower School
Storer Road, Yarmouth, Maine
Letter of Ability to Serve

Dear Eric:

North Yarmouth Academy (NYA) has retained Gorrill Palmer as part of a design team with Scott Simons Architects to prepare plans and permit applications for the development of an 1,821 square-foot temporary modular elementary school building at NYA. The site is shown on Assessor's Map 32 Lot 111. Refer to Figure 1 – Location Map following this page for the project location.

As required by the reviewing authorities, we are writing to request a letter indicating the ability of the Yarmouth Water District to serve this project. A preliminary Utility Plan is enclosed for your review.

**Project Description**

NYA proposes one – 1,821 square foot temporary modular school building located on the southerly side of the parking lot that is located just south of the Safford Center and just northerly of the artificial turf field. The building site is currently grassed lawn area. The street address is located at 24 Storer Street. We are proposing to extend a new 1" water service from the nearby Toddler House. See attached plan for service extension location.

The estimated water demand for the portable building is estimated as follows:

- Total students per day: 28
- Total teachers per day: 2
- Design flow (student): 10 gpd (Maine Subsurface Rules)
- Design flow (teacher): 12 gpd (Maine Subsurface Rules)

Estimated water demand = 28 x 10 gpd + 2 x 12 gpd = 304 gpd. This is a daily peak flow.

**Ability to Serve**

It is our understanding that the Yarmouth Water District would be able to serve this new building with a new 1" service extended from the Toddler House. Consideration will be taken that this temporary service may become permanent someday and necessitate a 1" permanent service.

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of Yarmouth Water District to serve the proposed project. In addition, we are interested in receiving:

- Information as to any easements that Yarmouth Water District may require on site.

- Any other information that you believe would be useful as this project proceeds.

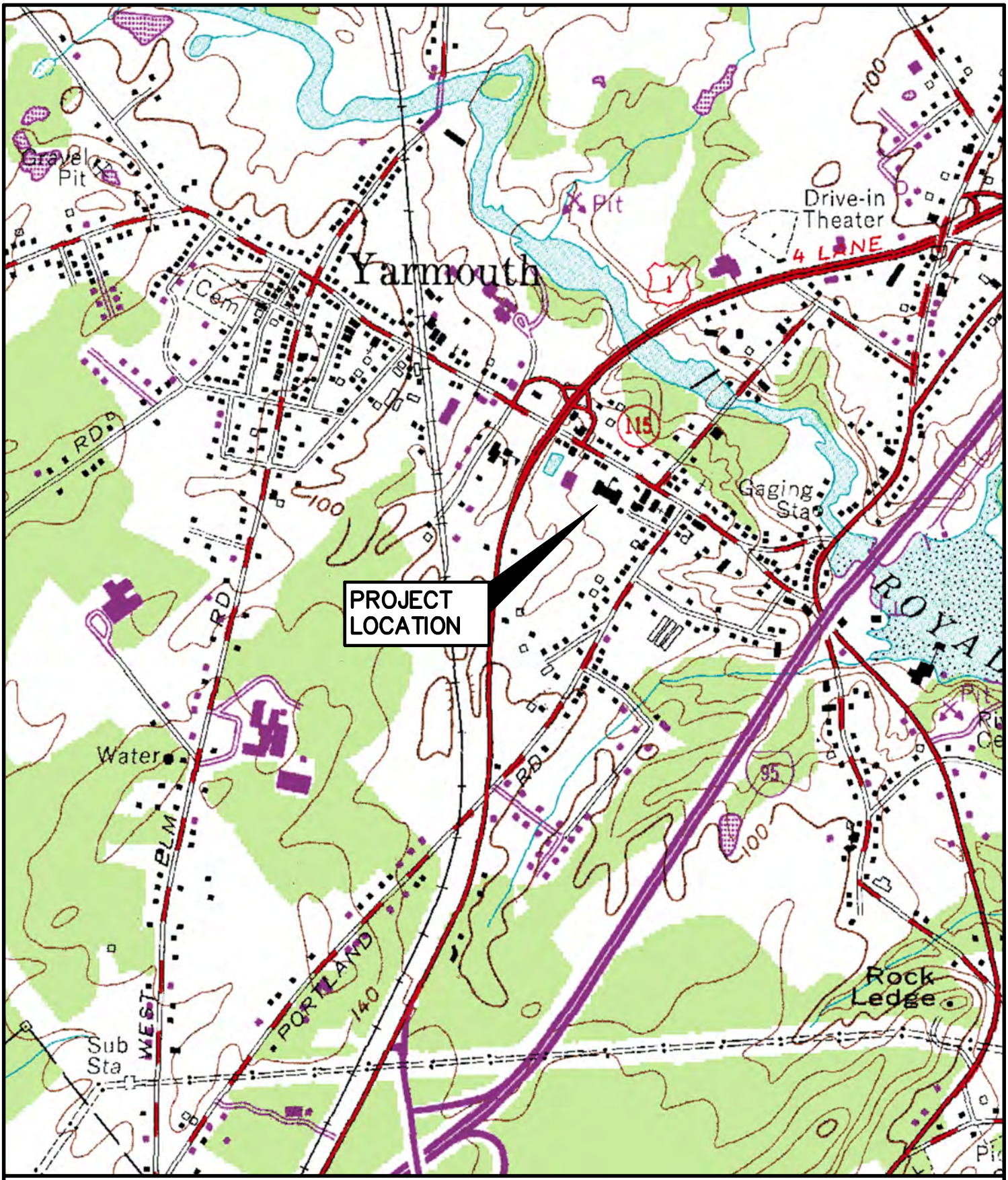
Please contact me if you have any questions relative to this matter.

Sincerely,
Gorrill Palmer

William C. Haskell, PE
Principal
whaskell@gorrillpalmer.com

Enclosure

U:\4123_NYA_Lower School Temp Classroom\H Utilities\2023-05-15 YWD1 Ability to Serve.docx




# U.S.G.S. Location Map

NYA Temporary Classroom for Lower School - Yarmouth, Maine

U.S.G.S. Yarmouth, State-7.5 Minute Series (Topographic)

| | | | |
|---|---|---|---|
| Design: HWH | Date: MAY 2023 | GORRILL PALMER | Figure 1 |
| Draft: HWH | Job No.: 4123 | | |
| Checked: WCH | Scale: None | | |
| File Name: 4123–LocMap.dwg | | | |

Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

May 16, 2023

Steve Johnson, PE, Town Engineer
Town of Yarmouth – Water Pollution Control Department
200 Main Street
Yarmouth, ME 04096

Re: North Yarmouth Academy – Temporary Classroom for Lower School
Storer Road, Yarmouth, Maine
Letter of Ability to Serve

Dear Steve:

North Yarmouth Academy (NYA) has retained Gorrill Palmer as part of a design team with Scott Simons Architects to prepare plans and permit applications for the development of an 1,821 square-foot temporary modular elementary school building at NYA. The site is shown on Assessor's Map 32 Lot 111. Refer to Figure 1 – Location Map following this page for the project location.

As required by the reviewing authorities, we are writing to request a letter indicating the ability of the Yarmouth Water Pollution Control Department to serve this project. A preliminary utility plan is enclosed for your review.

**Project Description**

NYA proposes one – 1,821 square foot temporary modular school building located on the southerly side of the parking lot that is located just south of the Safford Center and just northerly of the artificial turf field. The building site is currently grassed lawn area. The street address is located at 24 Storer Street. We are proposing to extend a new 4" sewer service from the nearby existing sanitary sewer manhole in the parking lot. See attached plan for sewer service extension location.

The estimated sewer demand for the portable building is estimated as follows:

- Total students per day: 28
- Total teachers per day: 2
- Design flow (student): 10 gallons per day (gpd) (Maine Subsurface Rules)
- Design flow (teacher): 12 gpd (Maine Subsurface Rules)

Estimated water demand = 28 x 10 gpd + 2 x 12 gpd = 304 gpd. This is a daily peak flow.

**Ability to Serve**

It is our understanding that the Yarmouth Water Pollution Control Department would be able to serve this new building. We have attached a plan showing a new 4" sanitary sewer lateral to an existing sewer manhole located in the NYA driveway. Sewage flow from this existing manhole flows to Main Street in an existing 8" or 10" vitrified clay gravity sewer pipe.

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of Yarmouth Water Pollution Control Department to serve the proposed project. In addition, we are interested in receiving:

- Information as to any easements that Yarmouth Water Pollution Control Department may require on site.
- Any other information that you believe would be useful as this project proceeds.

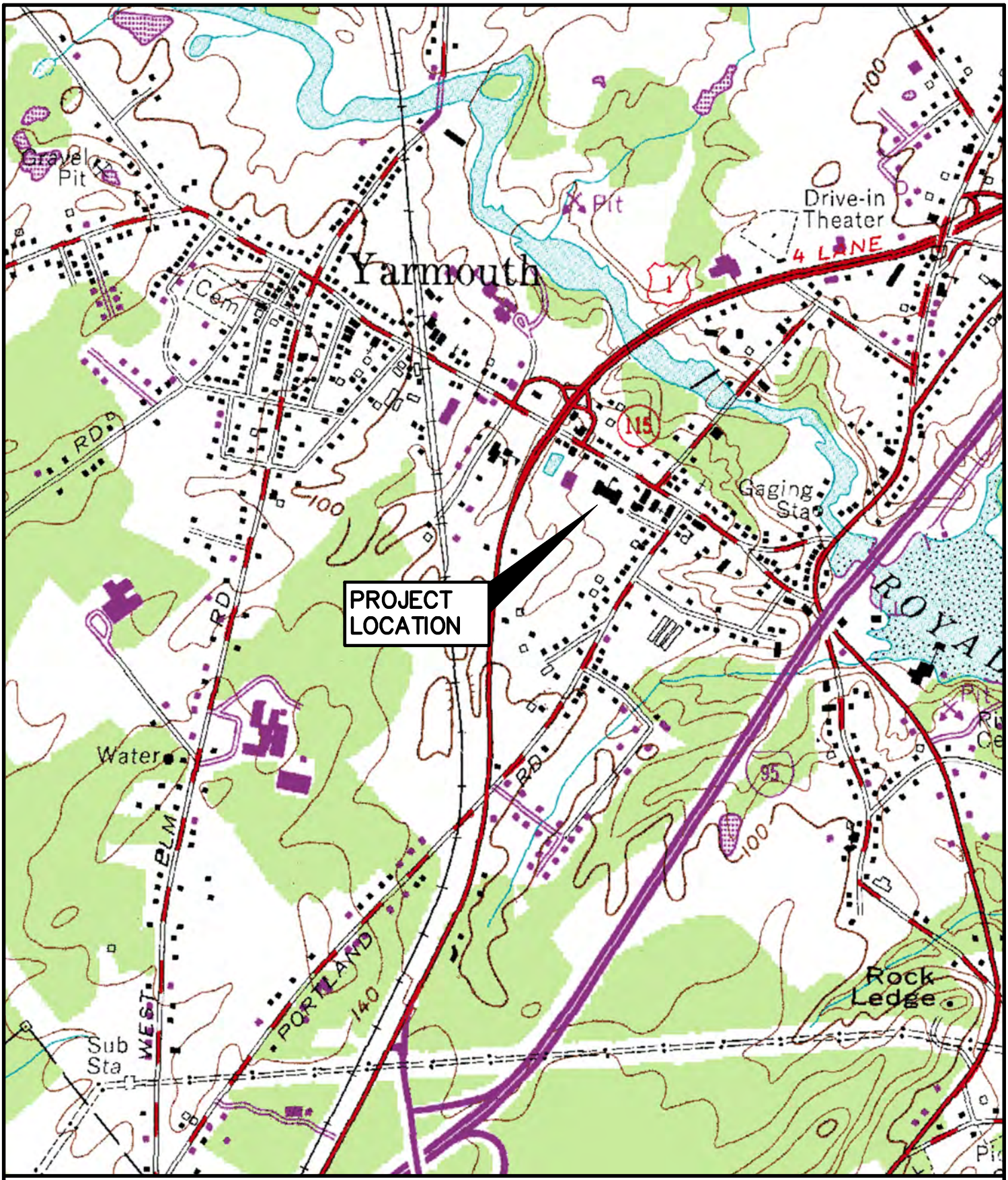
Please contact me if you have any questions relative to this matter.

Sincerely,
Gorrill Palmer

William C. Haskell, PE
Principal
whaskell@gorrillpalmer.com

Enclosure

U:\4123_NYA_Lower School Temp Classroom\H Utilities\2023-05-15 YS Ability to Serve.docx




# U.S.G.S. Location Map

NYA Temporary Classroom for Lower School - Yarmouth, Maine

U.S.G.S. Yarmouth, State-7.5 Minute Series (Topographic)

| | | | |
|---|---|---|---|
| Design: HWH | Date: MAY 2023 | GORRILL PALMER | Figure 1 |
| Draft: HWH | Job No.: 4123 | | |
| Checked: WCH | Scale: None | | |
| File Name: 4123–LocMap.dwg | | | |

Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

# EXHIBIT 12

# TRAFFIC

See below for a memorandum on traffic evaluation.

.

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

**MEMORANDUM**
**TRAFFIC EVALUATION**
**TEMPORARY CLASSROOM FOR NYA LOWER SCHOOL**
**YARMOUTH, ME**
**MAY 15, 2023**

## PROJECT UNDERSTANDING

A new temporary classroom is proposed to be sited on the southerly side of the NYA parking lot that is located just south of the Safford Center and just northerly of the artificial turf field. This temporary classroom is expected to increase the lower school (toddler – grade 4) capacity by approximately 27 students.

## TRIP GENERATION

Trip generation for the site has been calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, Eleventh Edition, the most recent edition accepted by MaineDOT. As identified previously, NYA is proposing a 27-student temporary classroom. After careful review of the Land Use Codes (LUC) provided in the 11th Edition of the *Trip Generation,* the following was selected to calculate the trip generation for the proposed site:

- LUC 530 – Private School (K-8)

The following table summarizes the trip generation for the proposed school campus.

**Table 1 – Trip Generation – 27 Students**

| Time Period | Trip Generation (Trip Ends) | |
|---|---|---|
| | Trip Gen Rates | Trip Generation |
| Weekday | 4.11 | 111 |
| AM Peak Hour of Adjacent Street | 1.01 | 27 |
| PM Peak Hour of Adjacent Street | 0.26 | 7 |
| AM Peak Hour Generator | 1.01 | 27 |
| PM Peak Hour Generator | 0.60 | 16 |

Shown in Table 1 above are the trip end forecast for the proposed use, where a trip end is a trip into or out of the site, thus a round trip is equal to two trip ends. The supporting documentation for the trip generation calculations for the proposed development are attached.

As seen in Table 1, the proposed development is forecast to generate a high of 27 trip ends during the AM peak hours. Therefore, a MaineDOT Traffic Movement Permit (TMP) that has a trigger of 100 trip ends during a peak hour is not required. It should be noted that the above trip generation may be conservatively high, since it assumes that all 27 students are new to the school and a brother or sister is not already being driven to the school.

In addition to not requiring a MaineDOT TMP, this project is located within the Urban Compact of Yarmouth, so it will not require a MaineDOT Entrance Permit either. This traffic evaluation has been sent to MaineDOT requesting concurrence of these findings.

## SAFETY REVIEW

*Crash History:*

To complete the safety review, the latest three-year crash history (2020-2022) was requested from MaineDOT and reviewed to determine if there are any high crash locations within the study area. To evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met to be classified as an HCL. The criteria are as follows:

1. A critical rate factor (CRF) of 1.00 or more for a three-year period. A CRF compares the actual crash rate to the rate for similar intersections in the state, A CRF of less than 1.00 indicates a rate of less than average **and:**

2. A minimum of eight crashes over the same three-year period.

Based on a review of the crash history information, there are no HCLs within the study area. The crash data used for this evaluation is attached.

## DRIVEWAY SIGHT DISTANCE EVALUATION

The existing site currently has a single full movement unsignalized access onto Main Street that is proposed to be maintained.

Gorrill Palmer completed a site visit to evaluate sight distances for the existing driveway. The Town of Yarmouth's Site Plan Review Ordinance (Chapter 702, J. Technical Standards, 3.a.) provides the Town's Minimum Sight Distance requirements. Table 2 below summarizes the sight distance standards.

**Table 2 - Yarmouth Standards for Sight Distance**

| Speed Limit (mph) | Minimum Required (ft) |
|---|---|
| 25 | 160 |
| 40 | 275 |
| 45 | 325 |

Yarmouth uses the following evaluation methodology to measure sight distance:

| | |
|---|---|
| Driveway Observation Point: | driver's seat of vehicle 10 feet from traveled way or edge of shoulder |
| Height of Eye at Driveway: | 3.75 feet above the ground |
| Height of Approaching vehicle: | 4.50 feet above the ground |

Based on the MaineDOT Map Viewer, the legal speed limit of Main Street along the site frontage is 25 mph, which results in a required minimum sight distance of 160 feet. The following Table 3 summarizes the minimum required and measured sight distances at the existing driveway.

**Table 3 – Available Sight Distance Summary**

| Approach | Sight Distance (ft) | | |
|---|---|---|---|
| | Minimum Required (ft) | Available Looking Left | Available Looking Right |
| Driveway onto Main Street – Legal (25 mph) | 160 | 275+ | 275+ |

As shown in Table 3, the existing driveway to be maintained exceeds the required minimum sight distance. It should be noted that Main Street allows for on-street parking along the site frontage. During the field review, there were no on-street vehicles parked. The above sight distances could be impacted based on the size and location of on-street parked vehicles.

## CONCLUSIONS

1. Based on the ITE Trip Generation Manual, 11th Edition, for an Elementary School, the proposed temporary classroom is forecast to increase traffic by approximately 27 AM & 16 PM weekday peak hour trips ends.

2. Based on a review of the MaineDOT crash history, no high crash locations were identified within the immediate area along the site frontage.

3. Based on a field review and sight distance evaluation, the existing site access which is proposed to be maintained, exceeds required town sight distances.

Attachments

- Trip generation data
- MaineDOT Crash Data

# Land Use: 530
# Private School (K-8)

## Description

A private school (K-8) serves students attending kindergarten through the eighth grade. The school may also offer pre-kindergarten classes and extended care and day care. Students may travel a long distance from their residence to the private school. Elementary school (Land Use 520), middle school/junior high school (Land Use 522), private school (K-12) (Land Use 532), private high school (Land Use 534), charter elementary school (Land Use 536), and charter school (Land Use 538) are related uses.

## Additional Data

The sites were surveyed in the 1980s, 1990s, the 2000s, and the 2010s in Arizona, Florida, Maryland, Oregon, Pennsylvania, and Texas.

## Source Numbers

355, 444, 516, 536, 634, 905, 906, 940

# Private School (K-8)
(530)

**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday**

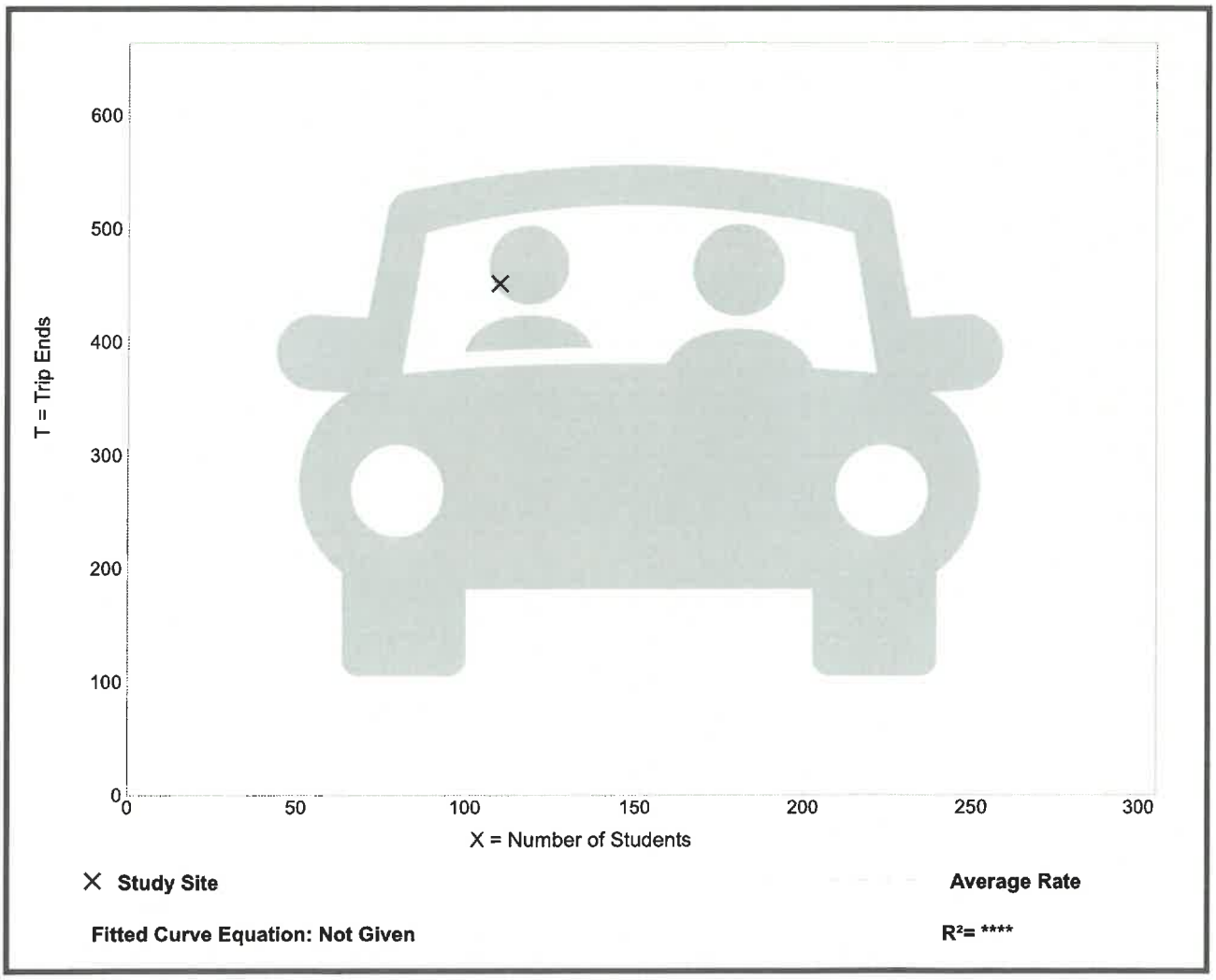
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Students: 110
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 4.11 | 4.11 - 4.11 | * |

## Data Plot and Equation

***Caution – Small Sample Size***



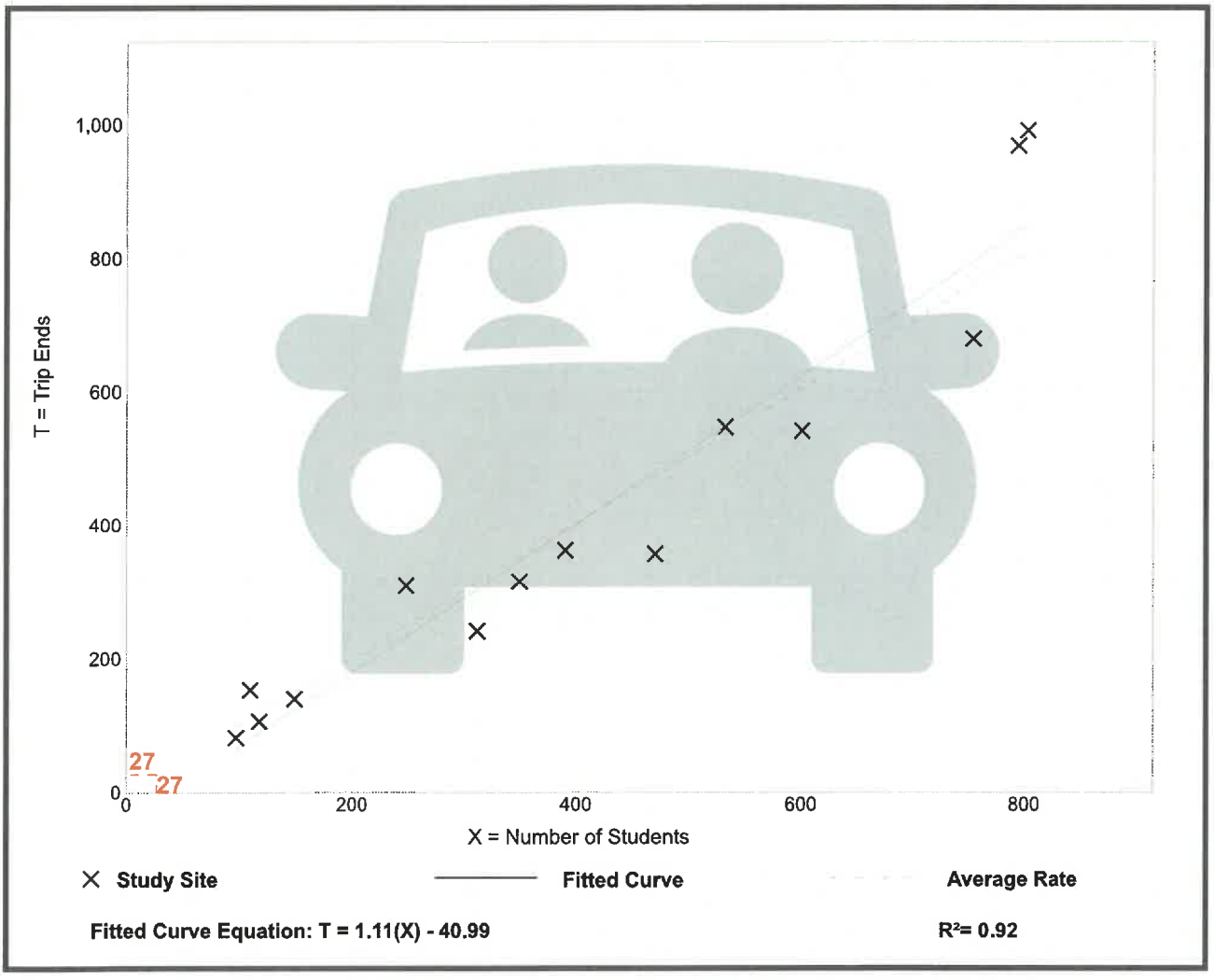
# Private School (K-8)
(530)

| | |
|---|---|
| **Vehicle Trip Ends vs:** | **Students** |
| **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: | 14 |
| Avg. Num. of Students: | 409 |
| Directional Distribution: | 56% entering, 44% exiting |

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.01 | 0.76 - 1.39 | 0.18 |

## Data Plot and Equation



# Private School (K-8)
(530)

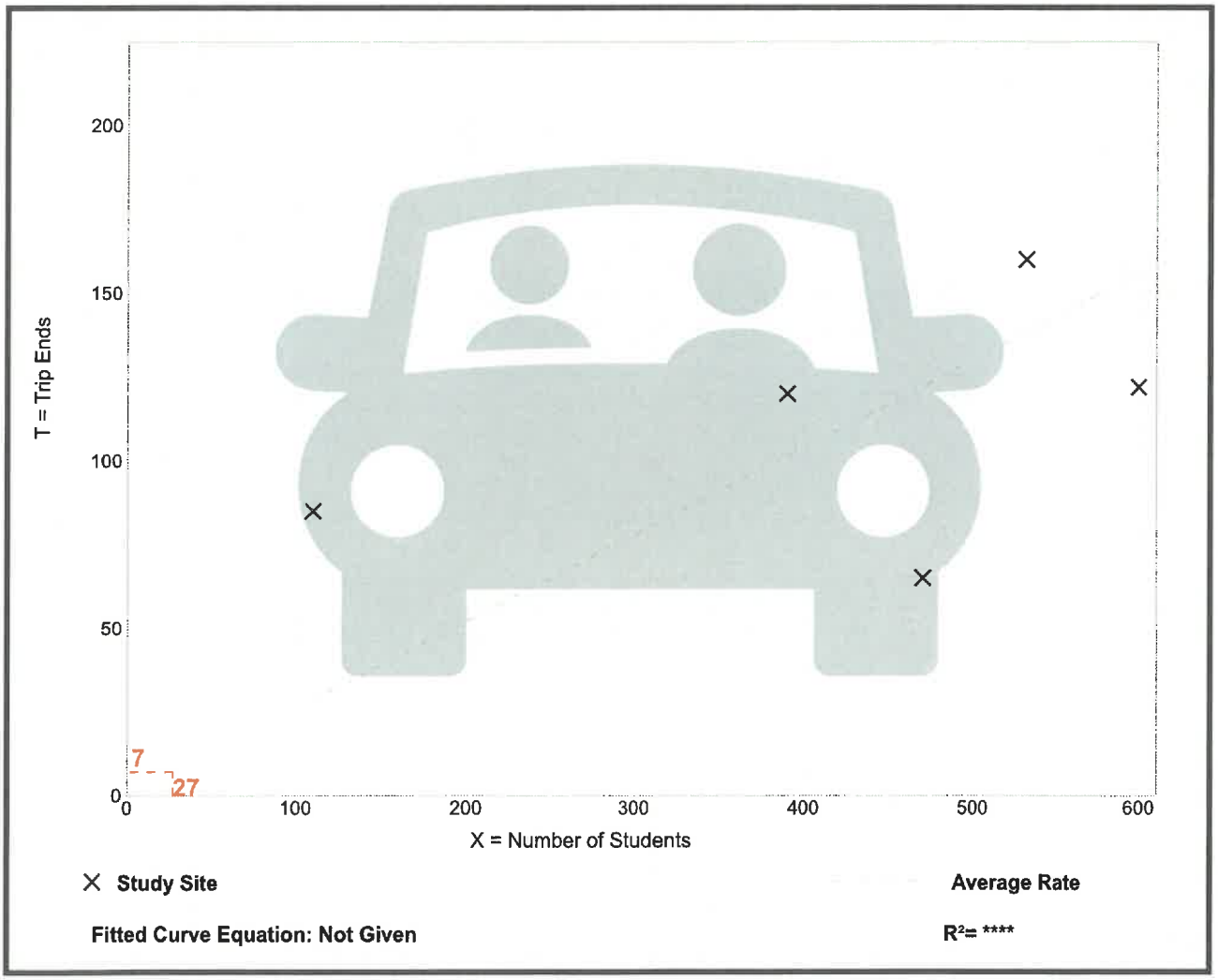
**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 5
Avg. Num. of Students: 420
Directional Distribution: 46% entering, 54% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.26 | 0.14 - 0.77 | 0.15 |

## Data Plot and Equation

***Caution – Small Sample Size***



# Private School (K-8)
(530)

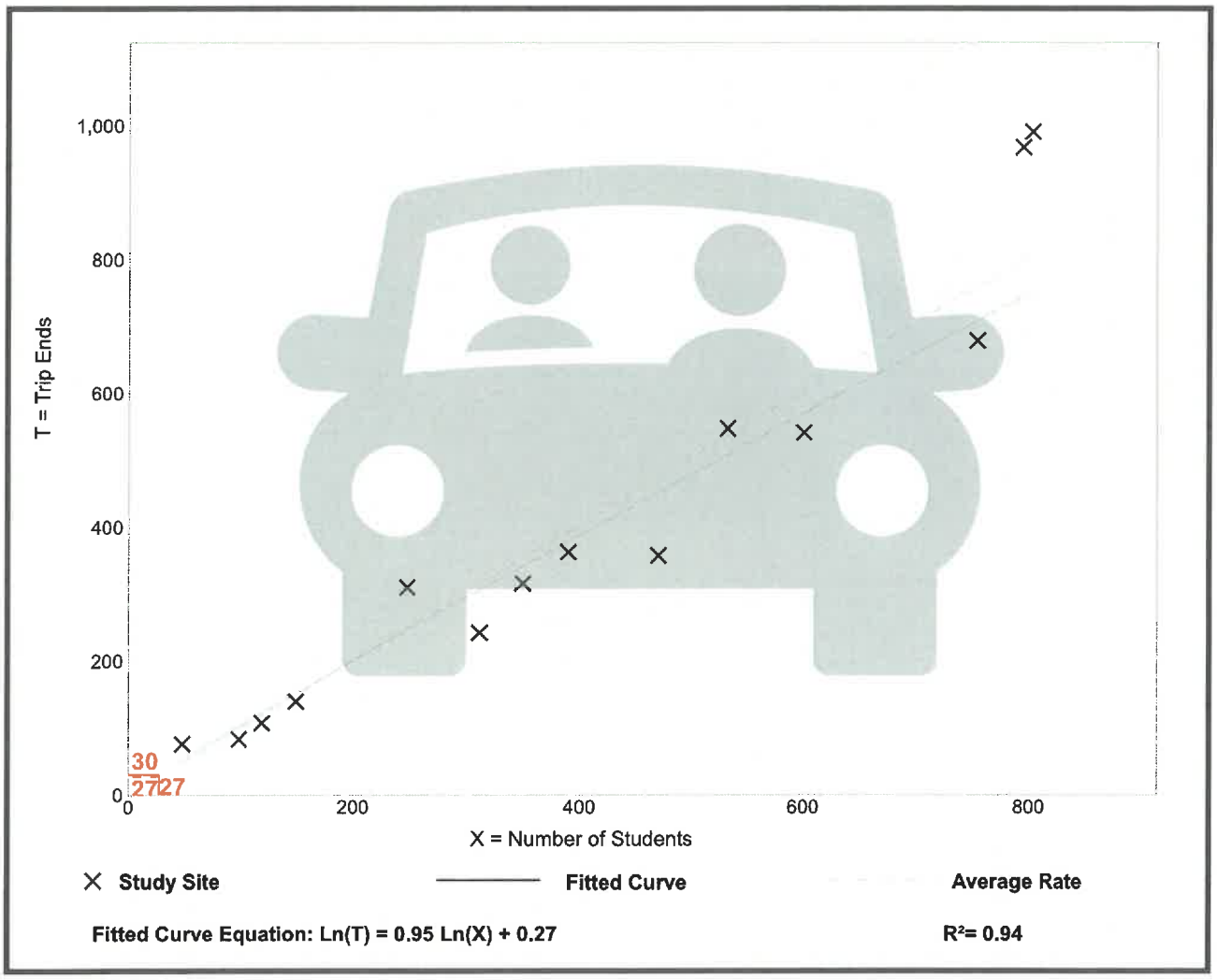
**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday,**
**AM Peak Hour of Generator**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 14
Avg. Num. of Students: 405
Directional Distribution: 56% entering, 44% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.01 | 0.76 - 1.58 | 0.18 |

## Data Plot and Equation




*Trip Gen Manual,* 11th Edition • Institute of Transportation Engineers

# Private School (K-8)
(530)

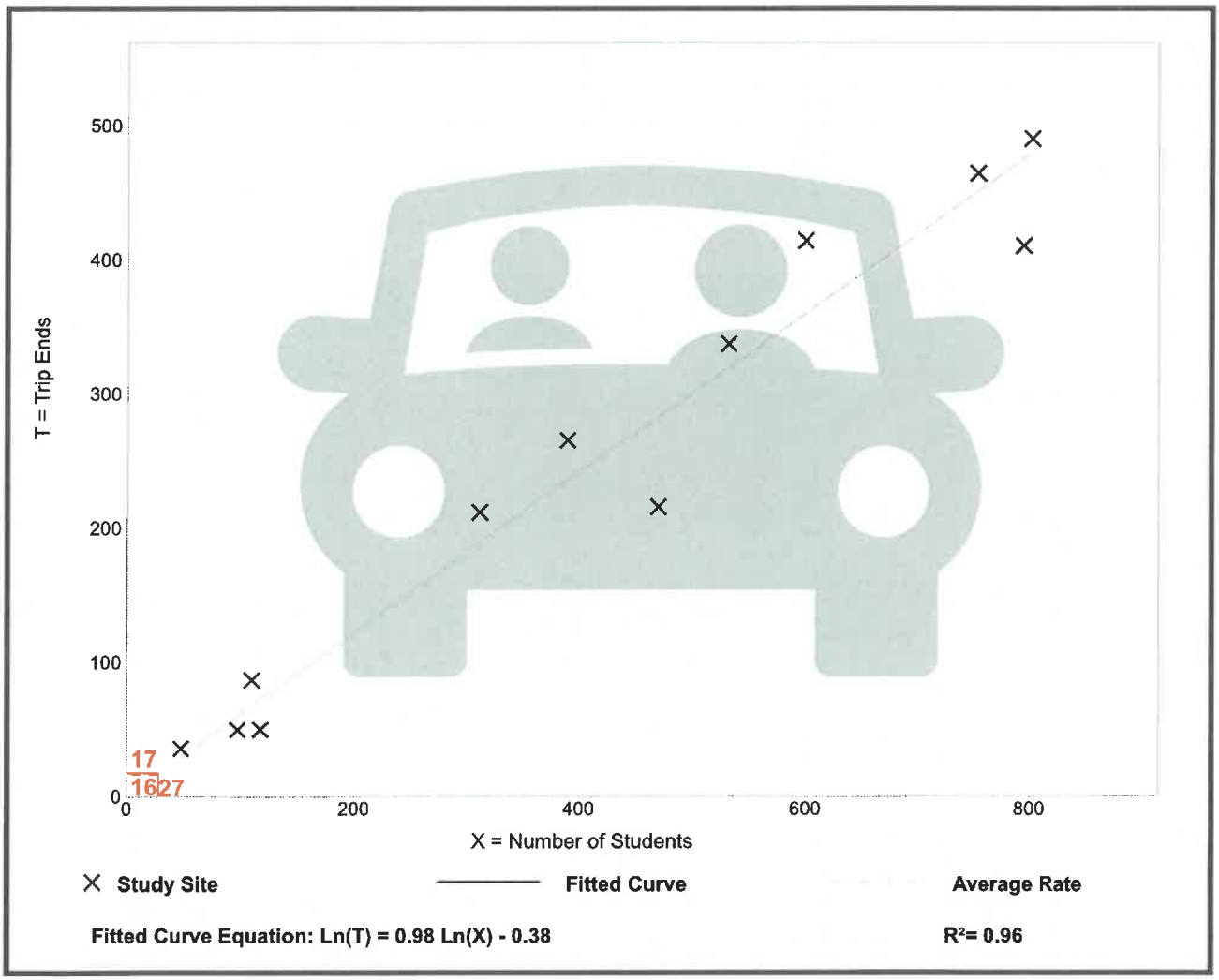
**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday,**
**PM Peak Hour of Generator**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 12
Avg. Num. of Students: 419
Directional Distribution: 47% entering, 53% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.60 | 0.42 - 0.79 | 0.09 |

## Data Plot and Equation



Maine Department Of Transportation - Office of Safety, Crash Records Section

# Crash Summary Report

## Report Selections and Input Parameters

REPORT SELECTIONS

☑ **Crash Summary I** ☐ **Section Detail** ☑ **Crash Summary II** ☐ **1320 Public** ☐ **1320 Private** ☐ **1320 Summary**

REPORT DESCRIPTION

Yarmouth
Rte. 115/Main St. from York St. to Portland St.

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

| | | | | |
|---|---|---|---|---|
| Route: **0115X** | Start Node: **11702** | Start Offset: **0** | ☐ **Exclude First Node** |
| | End Node: **11699** | End Offset: **0** | ☐ **Exclude Last Node** |

# Crash Summary I

**Nodes**

| Node | Route - MP | Node Description | U/R | Total Crashes | Injury Crashes K | A | B | C | PD | Percent Injury | Annual M Ent-Veh | Crash Rate | Critical Rate | CRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11700 | 0115X - 17.71 | Int of BRIDGE ST MAIN ST | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 1.773 | 0.00 | 0.41 | 0.00 |
| | | | | | | | | | | | | Statewide Crash Rate: | 0.12 | |
| 11699 | 0115X - 17.77 | Int of MAIN ST PORTLAND ST | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 2.479 | 0.00 | 0.38 | 0.00 |
| | | | | | | | | | | | | Statewide Crash Rate: | 0.12 | |
| 11702 | 0115X - 17.59 | Int of MAIN ST YORK ST | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 100.0 | 2.577 | 0.13 | 0.38 | 0.00 |
| | | | | | | | | | | | | Statewide Crash Rate: | 0.12 | |
| **Study Years:** | 3.00 | **NODE TOTALS:** | | 1 | 0 | 0 | 1 | 0 | 0 | 100.0 | 6.829 | 0.05 | 0.29 | 0.17 |

# Crash Summary I

**Sections**

| Start Node | End Node | Element | Offset Begin - End | Route - MP | Section Length | U/R | Total Crashes | Injury Crashes K | A | B | C | PD | Percent Injury | Annual HMVM | Crash Rate | Critical Rate | CRF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11700 | 11702 | 3131523 | 0 - 0.12 | 0115X - 17.59 | 0.12 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0.0 | 0.00160 | 207.93 | 514.96 | 0.00 |
| Int of BRIDGE ST | MAIN ST | | | ST RTE 115 | | | | | | | | | | | Statewide Crash Rate: 155.59 | | |
| 11699 | 11700 | 3939663 | 0 - 0.06 | 0115X - 17.71 | 0.06 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.00115 | 0.00 | 557.37 | 0.00 |
| Int of MAIN ST | PORTLAND ST | | | ST RTE 115 | | | | | | | | | | | Statewide Crash Rate: 155.59 | | |
| **Study Years:** | 3.00 | | | **Section Totals:** | 0.18 | | 1 | 0 | 0 | 0 | 0 | 1 | 0.0 | 0.00276 | 120.94 | 448.48 | 0.27 |
| | | | | **Grand Totals:** | 0.18 | | 2 | 0 | 0 | 1 | 0 | 1 | 50.0 | 0.00276 | 241.89 | 640.97 | 0.38 |

# Crash Summary

**Section Details**

| Start Node | End Node | Element | Offset Begin - End | Route - MP | Total Crashes | Injury Crashes K | A | B | C | PD | Crash Report | Crash Date | Crash Mile Point | Injury Degree |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11700 | 11702 | 3131523 | 0 - 0.12 | 0115X - 17.59 | 1 | 0 | 0 | 0 | 0 | 1 | 2020-3488 | 01/29/2020 | 17.69 | PD |
| 11699 | 11700 | 3939663 | 0 - 0.06 | 0115X - 17.71 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| | | | | **Totals:** | 1 | 0 | 0 | 0 | 0 | 1 | | | | |

# Crash Summary II - Characteristics

## Crashes by Day and Hour

| | AM | | | | | | | | | | | | PM | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hour of Day | | | | | | | | | | | | | | | | | | | | | | | | |
| **Day Of Week** | **12** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **Un** | **Tot** |
| SUNDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MONDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TUESDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| WEDNESDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| THURSDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FRIDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SATURDAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Totals** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** |

## Vehicle Counts by Type

| Unit Type | Total |
|---|---|
| 1-Passenger Car | 1 |
| 2-(Sport) Utility Vehicle | 1 |
| 3-Passenger Van | 1 |
| 4-Cargo Van (10K lbs or Less) | 0 |
| 5-Pickup | 0 |
| 6-Motor Home | 0 |
| 7-School Bus | 0 |
| 8-Transit Bus | 0 |
| 9-Motor Coach | 0 |
| 10-Other Bus | 0 |
| 11-Motorcycle | 0 |
| 12-Moped | 0 |
| 13-Low Speed Vehicle | 0 |
| 14-Autocycle | 0 |
| 15-Experimental | 0 |
| 16-Other Light Trucks (10,000 lbs or Less) | 0 |
| 17-Medium/Heavy Trucks (More than 10,000 lbs) | 1 |
| 18-ATV - (4 wheel) | 0 |
| 20-ATV - (2 wheel) | 0 |
| 21-Snowmobile | 0 |
| 22-Pedestrian | 0 |
| 23-Bicyclist | 0 |
| 24-Witness | 2 |
| 25-Other | 0 |
| 26-Construction | 0 |
| 27-Farm Vehicle | 0 |
| 28-Horse and Buggy | 0 |
| **Total** | **6** |

# Crash Summary II - Characteristics

## Crashes by Driver Action at Time of Crash

| Driver Action at Time of Crash | Dr 1 | Dr 2 | Dr 3 | Dr 4 | Dr 5 | Other | Total |
|---|---|---|---|---|---|---|---|
| No Contributing Action | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Ran Off Roadway | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Failed to Yield Right-of-Way | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ran Red Light | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ran Stop Sign | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Disregarded Other Traffic Sign | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Disregarded Other Road Markings | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exceeded Posted Speed Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drove Too Fast For Conditions | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Improper Turn | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Improper Backing | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Improper Passing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wrong Way | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Followed Too Closely | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Failed to Keep in Proper Lane | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Over-Correcting/Over-Steering | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Contributing Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **2** | **2** | **0** | **0** | **0** | **0** | **4** |

## Crashes by Apparent Physical Condition And Driver

| Apparent Physical Condition | Dr 1 | Dr 2 | Dr 3 | Dr 4 | Dr 5 | Other | Total |
|---|---|---|---|---|---|---|---|
| Apparently Normal | 2 | 1 | 0 | 0 | 0 | 0 | 3 |
| Physically Impaired | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Emotional(Depressed, Angry, Disturbed, etc.) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ill (Sick) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asleep or Fatigued | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Under the Influence of Medications/Drugs/Alcohol | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| **Total** | **2** | **2** | **0** | **0** | **0** | **0** | **4** |

## Driver Age by Unit Type

| Age | Driver | Bicycle | SnowMobile | Pedestrian | ATV | Total |
|---|---|---|---|---|---|---|
| 09-Under | 0 | 0 | 0 | 0 | 0 | 0 |
| 10-14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15-19 | 1 | 0 | 0 | 0 | 0 | 1 |
| 20-24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25-29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30-39 | 1 | 0 | 0 | 0 | 0 | 1 |
| 40-49 | 1 | 0 | 0 | 0 | 0 | 1 |
| 50-59 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60-69 | 1 | 0 | 0 | 0 | 0 | 1 |
| 70-79 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80-Over | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **4** | **0** | **0** | **0** | **0** | **4** |

# Crash Summary II - Characteristics

## Most Harmful Event

| Most Harmful Event | Total | Most Harmful Event | Total |
|---|---|---|---|
| 1-Overturn / Rollover | 0 | 38-Other Fixed Object (wall, building, tunnel, etc.) | 0 |
| 2-Fire / Explosion | 0 | 39-Unknown | 0 |
| 3-Immersion | 0 | 40-Gate or Cable | 0 |
| 4-Jackknife | 0 | 41-Pressure Ridge | 0 |
| 5-Cargo / Equipment Loss Or Shift | 0 | **Total** | **4** |
| 6-Fell / Jumped from Motor Vehicle | 0 | | |
| 7-Thrown or Falling Object | 0 | | |
| 8-Other Non-Collision | 0 | | |
| 9-Pedestrian | 0 | | |
| 10-Pedalcycle | 0 | | |
| 11-Railway Vehicle - Train, Engine | 0 | | |
| 12-Animal | 0 | | |
| 13-Motor Vehicle in Transport | 3 | | |
| 14-Parked Motor Vehicle | 1 | | |
| 15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle | 0 | | |
| 16-Work Zone / Maintenance Equipment | 0 | | |
| 17-Other Non-Fixed Object | 0 | | |
| 18-Impact Attenuator / Crash Cushion | 0 | | |
| 19-Bridge Overhead Structure | 0 | | |
| 20-Bridge Pier or Support | 0 | | |
| 21-Bridge Rail | 0 | | |
| 22-Cable Barrier | 0 | | |
| 23-Culvert | 0 | | |
| 24-Curb | 0 | | |
| 25-Ditch | 0 | | |
| 26-Embankment | 0 | | |
| 27-Guardrail Face | 0 | | |
| 28-Guardrail End | 0 | | |
| 29-Concrete Traffic Barrier | 0 | | |
| 30-Other Traffic Barrier | 0 | | |
| 31-Tree (Standing) | 0 | | |
| 32-Utility Pole / Light Support | 0 | | |
| 33-Traffic Sign Support | 0 | | |
| 34-Traffic Signal Support | 0 | | |
| 35-Fence | 0 | | |
| 36-Mailbox | 0 | | |
| 37-Other Post, Pole, or Support | 0 | | |

## Injury Data

| Severity Code | Injury Crashes | Number Of Injuries |
|---|---|---|
| K | 0 | 0 |
| A | 0 | 0 |
| B | 1 | 1 |
| C | 0 | 0 |
| PD | 1 | 0 |
| **Total** | **2** | **1** |

## Road Character

| Road Grade | Total |
|---|---|
| 1-Level | 1 |
| 2-On Grade | 1 |
| 3-Top of Hill | 0 |
| 4-Bottom of Hill | 0 |
| 5-Other | 0 |
| **Total** | **2** |

## Traffic Control Devices

| Traffic Control Device | Total |
|---|---|
| 1-Traffic Signals (Stop & Go) | 0 |
| 2-Traffic Signals (Flashing) | 0 |
| 3-Advisory/Warning Sign | 0 |
| 4-Stop Signs - All Approaches | 0 |
| 5-Stop Signs - Other | 1 |
| 6-Yield Sign | 0 |
| 7-Curve Warning Sign | 0 |
| 8-Officer, Flagman, School Patrol | 0 |
| 9-School Bus Stop Arm | 0 |
| 10-School Zone Sign | 0 |
| 11-R.R. Crossing Device | 0 |
| 12-No Passing Zone | 0 |
| 13-None | 1 |
| 14-Other | 0 |
| **Total** | **2** |

## Light

| Light Condition | Total |
|---|---|
| 1-Daylight | 2 |
| 2-Dawn | 0 |
| 3-Dusk | 0 |
| 4-Dark - Lighted | 0 |
| 5-Dark - Not Lighted | 0 |
| 6-Dark - Unknown Lighting | 0 |
| 7-Unknown | 0 |
| **Total** | **2** |

# Crash Summary II - Characteristics

## Crashes by Year and Month

| Month | 2020 | 2021 | 2022 | Total |
|---|---|---|---|---|
| JANUARY | 1 | 0 | 0 | 1 |
| FEBRUARY | 0 | 0 | 0 | 0 |
| MARCH | 0 | 0 | 0 | 0 |
| APRIL | 0 | 0 | 0 | 0 |
| MAY | 0 | 0 | 0 | 0 |
| JUNE | 0 | 0 | 0 | 0 |
| JULY | 0 | 0 | 1 | 1 |
| AUGUST | 0 | 0 | 0 | 0 |
| SEPTEMBER | 0 | 0 | 0 | 0 |
| OCTOBER | 0 | 0 | 0 | 0 |
| NOVEMBER | 0 | 0 | 0 | 0 |
| DECEMBER | 0 | 0 | 0 | 0 |
| **Total** | **1** | **0** | **1** | **2** |

**Report is limited to the last 10 years of data.**

# Crash Summary II - Characteristics

## Crashes by Crash Type and Type of Location

| Crash Type | Straight Road | Curved Road | Three Leg Intersection | Four Leg Intersection | Five or More Leg Intersection | Driveways | Bridges | Interchanges | Other | Parking Lot | Private Way | Cross Over | Railroad Crossing | Traffic Circle-Roundabout | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Object in Road | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rear End - Sideswipe | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Head-on - Sideswipe | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Intersection Movement | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pedestrians | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Train | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Went Off Road | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All Other Animal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jackknife | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rollover | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Submersion | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Thrown or Falling Object | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bear | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Deer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Moose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Turkey | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** |

# Crash Summary II - Characteristics

## Crashes by Weather, Light Condition and Road Surface

| Weather<br>Light | Dry | Ice/Frost | Mud, Dirt, Gravel | Oil | Other | Sand | Slush | Snow | Unknown | Water (Standing, Moving) | Wet | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blowing Sand, Soil, Dirt** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Blowing Snow** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Clear** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Cloudy** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Crash Summary II - Characteristics

## Crashes by Weather, Light Condition and Road Surface

| Weather / Light | Dry | Ice/Frost | Mud, Dirt, Gravel | Oil | Other | Sand | Slush | Snow | Unknown | Water (Standing, Moving) | Wet | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fog, Smog, Smoke** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Other** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Rain** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Severe Crosswinds** | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Crash Summary II - Characteristics

## Crashes by Weather, Light Condition and Road Surface

| Weather / Light | Dry | Ice/Frost | Mud, Dirt, Gravel | Oil | Other | Sand | Slush | Snow | Unknown | Water (Standing, Moving) | Wet | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sleet, Hail (Freezing Rain or Drizzle) | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Snow | | | | | | | | | | | | |
| Dark - Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Not Lighted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dark - Unknown Lighting | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dawn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daylight | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dusk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

# EXHIBIT 13

# SURFACE DRAINAGE

In the opinion of the Applicant, there are no drainage or topography problems within the proposed project area.

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# EXHIBIT 14

# STORMWATER MANAGEMENT

# EXHIBIT 14

# STORMWATER MANAGEMENT REPORT

# NORTH YARMOUTH ACADEMY
# YARMOUTH, MAINE

**Prepared for**

**NORTH YARMOUTH ACADEMY**
**148 Main Street**
**Yarmouth, ME 04096**

**Prepared by**

**Gorrill Palmer**
**300 Southborough Drive – Suite 200**
**South Portland, Maine 04106**
**207.772.2515**

**May 2023**

# STORMWATER MANAGEMENT REPORT

## TABLE OF CONTENTS

## 12.0 INTRODUCTION

North Yarmouth Academy (NYA) proposes to add a temporary classroom at the North Yarmouth Academy site in Yarmouth Maine. Figure 1 is a map showing the project location.

NYA obtained an after-the fact SLDA permit on July 26, 2022 for cumulative development of the site since 1975. The stormwater report approved as part of that submission concluded that peak flow control at the site limited peak post development flows to be at or below predevelopment levels. Stormwater quality control was provided based upon a redevelopment analysis of the site. NYA was required to provide water quality control for a minimum of 50% of the developed area. The provided water quality control was 89% of the Impervious Area and 67% of the Developed Area.

NYA is currently seeking a Site Plan Permit from the City of Yarmouth. The currently proposed development for the temporary classroom will result in the addition of approximately 1,936 sf (0.04 acres) of impervious area, the developed area will remain unchanged.

The addition of the temporary classroom will be a redevelopment project for the purposes of stormwater quality control. The plans prepared by Gorrill Palmer include the infrastructure necessary to serve the project and to comply with current local stormwater standards. Erosion and Sedimentation Controls (Basic Standards) will be employed during the construction of this project and are summarized in the Erosion and Sedimentation Control Plans provided in the plan set.

## 12.1 EXISTING SITE CONDITIONS

The NYA Campus is located between US Route 1 and Route 115 in Yarmouth. The campus is approximately 16.2 acres in size. The campus area is mostly developed with small areas of undeveloped land adjacent to drainageways and the site boundaries.

Stormwater runoff from the site adjacent to Route 115 is tributary to the infrastructure within Route 115. The stormwater runoff from the proposed temporary classroom site, ice arena and surrounding athletic fields is tributary to the Town ice skating pond adjacent to the site. All runoff is ultimately tributary to the Royal River. Runoff from the site is not tributary to a lake or urban impaired stream.

Topography in the area of the proposed temporary classroom is relatively flat with slopes from 1% to 4%. The soils on the site are shown on the watershed maps and are from the Maine GIS Mapping. The soils range from hydrologic soil group C to D, with areas of made land and cut land. An unnamed stream is adjacent to the easterly side of the ice arena and is conveyed across the site through a 30" diameter culvert installed and permitted in 1995. The stream is tributary to the Town skating pond. The overall watershed for the stream is shown on the watershed maps and includes soils with hydrologic ratings of A to D.

## 12.2 DEVELOPMENT DESCRIPTION

The proposed development includes a temporary classroom and associated walkway with an impervious footprint of approximately 1,936 sf.

Abutting land uses include:

- North – Residential/Commercial
- East – Residential

- South – Residential/Commercial
- West – Commercial

Runoff from the site is tributary to the Royal River. The river is not currently listed as an "Urban Impaired Stream"; therefore, the development will not be required to meet the Chapter 500 Urban Impaired Stream Standard.

Changes in land cover will include removal of grassed areas, and the addition of roof, other impervious surfaces, and lawn areas. The site will require a Site Plan permit from the Town of Yarmouth.

## 12.3 REFERENCES

The following reference sources were reviewed during preparation of the stormwater analysis:

1. Maine Erosion and Sedimentation Control Handbook for Construction: Best Management Practices, MaineDEP, current edition.
2. Stormwater Management for Maine, Volume III BMPS Technical Design Manual, MeDEP, January 2006.

The following sources were used for preparation of the stormwater quality analysis:

1. Stormwater Management for Maine, Volume III BMPS Technical Design Manual, MaineDEP, May 2016
2. MeDEP Chapter 500, Stormwater Management Rules.

Computer programs used to assist in the various components of this analysis include:

1. HydroCAD 10.00, HydroCAD Software Solutions LLC – used for modeling watersheds for pre and post development conditions.
2. Microsoft Excel, Microsoft Corporation – used for spreadsheet computations.
3. AutoCAD Civil 3D 2010, 2011, and 2019, Autodesk - used to determine areas and graphical representation of design.

Data resources used to obtain the hydrologic input data for the stormwater models are identified later in this report.

## 12.4 OVERVIEW OF STORMWATER RUNOFF MODELING

The stormwater analysis evaluates the following elements:

- Pre-development and post-development stormwater runoff and peak discharge rates; The Pre-development analysis is based upon the "turf field" condition and the prior approved ice arena expansion. The Post-development condition includes the proposed temporary classroom.
- The impacts of the proposed development and subsequent modification to site discharge rates and locations;
- The effect of land cover modifications within the site, especially those that are expected to increase site runoff rates;

## 12.5 METHODS OF ANALYSIS – STORMWATER QUANTITY

The hydrologic analyses for pre-development and post-development conditions have been conducted based upon the methodology contained in the USDA Soil Conservation Service's Technical Releases No. 20 and 55 (SCS TR-20 and TR-55) as modified for special site conditions. For this section of Cumberland County, Maine, a 24-hour SCS Type III Storm distribution was used for the analysis using the following storm frequencies and rainfall amounts:

| Storm Event | 24-Hour Rainfall |
|---|---|
| 2-Year Storm | 3.1 |
| 10-Year Storm | 4.6 |
| 25-Year Storm | 5.8 |

The SCS TR-20 methodology, using the HydroCAD computer program, was employed by Gorrill Palmer to analyze the pre- and post-development watersheds.

Land use, cover, delineation of watershed subcatchments, hydraulic flow paths, and hydrologic soil types were obtained using the following data:

1. Yarmouth, Maine USGS 7.5-minute Quadrangle Maps.
2. State of Maine GIS Soil Mapping Information.
3. Onsite Topographic Survey with 1-foot contour intervals prepared by Titcomb Associates for the ice arena expansion.
4. Field reconnaissance.

## 12.6 DESCRIPTION OF SITE WATERSHED MODEL

The watershed model was developed to predict peak discharge rates at the Points of Interest (POI) depicted on the watershed maps. The following sections describe the pre-development and the post-development conditions.

## 12.7 PRE-DEVELOPMENT CONDITIONS

The pre-development condition includes recent changes to the stormwater system for the turf field plus the changes associated with the recent ice arena expansion project. Tributary area outside of the NYA campus site are modeled as they are depicted on the watershed map aerial photo for both the pre- and post-development condition. Attachment A includes the pre-development watershed plan.

The project areas are tributary to the adjacent Town skating pond. The runoff is analyzed at two points of interest representing the stormdrain outlets on the NYA campus property at the edge of the Town skating pond.

The pre-development condition is analyzed as five subcatchments with two points of interest (POI). The tributary areas to the POI which are affected by the proposed redevelopment are analyzed for this stormwater report.

Subcatchment 1S is the ice arena site tributary to the stormdrain system which conveys runoff to POI #2. It reflects the recent ice arena expansion project.

Subcatchment 2S is the stream watershed tributary to the stream culvert inlet. The subcatchment contains roof, pavement, and lawn area on the NYA campus.

Subcatchment 3S is the turf field with an assumed 6 minute time of concentration to represent the quicker runoff as compared to a grass field. The runoff is tributary to pond 7P.

Pond 3P represents the inlet of the stream culvert. The pond size is based on the GIS contours depicted on the watershed map. The outlet of the pond is the 30" diameter culvert. The outflow of the pond is tributary to POI #2.

Subcatchment 4S is an athletic field tributary to POI #1

Subcatchment 5S is an area containing school buildings, parking, and lawn which is tributary to a stormdrain system with an outlet at POI #1. The catch basin on the stormdrain system is modelled as pond 6P.

Pond 7P is a representation of the gravel base and underdrain system of the artificial turf field. The addition of the artificial turf field also resulted in a reconfiguration of the stormdrain system tributary to POI #1. Subcatchment 5S is now tributary to the stormdrain system connected to the field underdrain system. The underdrain system has two outlets. One outlet is tributary to the stream culvert inlet. The second outlet is tributary to POI #1. The outlet inverts and sizes were taken from the 2006 plans for the turf field construction. The gravel elevations are from the same plans. The gravel is assumed to have a 40% void ratio. The outlet conveying runoff to the stream culvert inlet is a daylight outlet at the bank of the stream.

A watershed map for the pre-development condition is attached to this section as drawing number W3 in Attachment A. Attachment B contains the TR-20 calculations.

Table 1 presents the peak flow rates at the POI for the design storms.

**Table 1– Pre Peak Flow Rates (cfs)**

| Point of Interest | Peak Flow (cfs) | | |
|---|---|---|---|
| | 2 Year | 10 Year | 25 Year |
| POI # 1 | 2.21 | 3.38 | 4.17 |
| POI # 2 | 33.87 | 48.23 | 55.66 |

## 12.8 POST-DEVELOPMENT CONDITION

The post-development condition includes the proposed temporary classroom.

Analysis for the post-development condition consists of determining post-development peak flows and limiting the post-development flows to pre-development levels.

The five pre-development subcatchments have been modified to reflect the proposed project, the post-development condition contains five subcatchments tributary to two points of interest. The post-development points of interest are the same as the pre-development points of interest. The overall watershed area remains the same as in the pre-development condition.

Subcatchment 1S is the ice arena site tributary to the stormdrain system which conveys runoff to POI #2. It reflects the recent ice arena expansion project.

Subcatchment 2S is the stream watershed with slightly less tributary area that has been shifted to subcatchment 1S.

Subcatchment 3S is the turf field with an assumed 6 minute time of concentration to represent the quicker runoff as compared to a grass field. The runoff is tributary to pond 7P.

Subcatchment 4S is an athletic field tributary to POI #1.

Subcatchment 5S is an area containing school buildings, parking, and lawn. Subcatchment 5S is shown as tributary to pond 7P. The proposed temporary classroom is contained in Subcatchment 5S. 1,936 sf of lawn area will be converted to impervious area for the temporary classroom.

Pond 7P is a representation of the gravel base and underdrain system of the artificial turf field. The addition of the artificial turf field also resulted in a reconfiguration of the stormdrain system tributary to POI #1. Subcatchment 5S is now tributary to the stormdrain system connected to the field underdrain system. The underdrain system has two outlets. One outlet is tributary to the stream culvert inlet. The second outlet is tributary to POI #1. The outlet inverts and sizes were taken from the 2006 plans for the turf field construction. The gravel elevations are from the same plans. The gravel is assumed to have a 40% void ratio. The outlet conveying runoff to the stream culvert inlet is a daylight outlet at the bank of the stream.

Pond 3P remains unchanged from the pre development condition.

A watershed map for the post-development condition is attached as drawing number W4 in Attachment A. Attachment B contains the TR-20 calculations.

**Table 2 – Comparison of Peak flows**

| Point of Interest | Peak Flow (cfs) | | | | | |
|---|---|---|---|---|---|---|
| | 2 Year | | 10 Year | | 25 Year | |
| | Pre | Post | Pre | Post | Pre | Post |
| POI #1 | 2.21 | 2.20 | 3.38 | 3.38 | 4.17 | 4.17 |
| POI #2 | 33.87 | 33.87 | 48.23 | 48.23 | 55.66 | 55.66 |

As shown in Table 2 above, the peak post-development flow is at or below predevelopment levels at POI #1 and POI #2

**Conclusion – Overall Water Quantity**

The addition of the temporary classroom does not result in an increase above predevelopment conditions at POI #1 or POI #2.

No additional controls are required for the current temporary classroom project.

## 12.9 APPROACH AND ANALYSIS FOR QUALITY

A drip strip filter on the southerly side of the temporary classroom has been designed to collect runoff from the portable roof. Additionally, some runoff from the existing parking area will flow to the drip strip and get treated as well.

## 12.10 MAINTENANCE OF FACILITIES

The stormwater management facilities will be maintained by the Applicant or their assigns after construction is completed. The general contractor will be responsible for maintenance during construction. The contract documents will require that the contractor designate a person for maintenance of the facilities during construction as required by this application. Long-term operation/maintenance schedules for the facilities are provided in the O&M Manual included in Attachment C of the Erosion and Sedimentation Control report for this project.

## 12.11 CONCLUSION

Runoff from the propose portable classroom will be directed to a drip strip filter that will provide some peak flow attenuation and water quality treatment before discharge to the closed drainage system in the athletic fields and discharge to the Town Skating Pond.

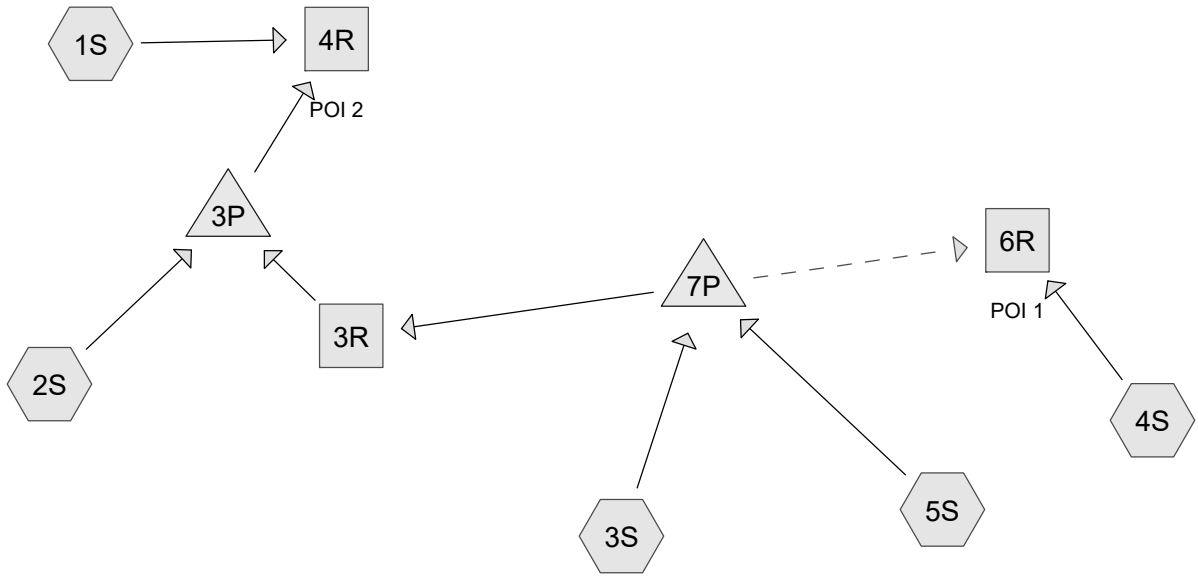
# ATTACHMENT A

# PLANS/WATERSHED MAPS

# ATTACHMENT B

# PRE AND POST DEVELOPMENT HYDROCAD MODEL

# PRE DEVELOPMENT




Subcat Reach Pond Link

**Routing Diagram for Pre_2023-05-16_Shaw**
Prepared by Gorrill Palmer Consulting Engs, Printed 5/17/2023

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S:** Runoff Area=143,440 sf 70.18% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=91 Runoff=8.23 cfs 0.594 af

**Subcatchment 2S:** Runoff Area=3,543,318 sf 33.66% Impervious Runoff Depth=1.14"
Flow Length=3,560' Tc=52.3 min CN=77 Runoff=44.73 cfs 7.734 af

**Subcatchment 3S:** Runoff Area=84,546 sf 0.00% Impervious Runoff Depth=0.97"
Tc=6.0 min CN=74 Runoff=2.08 cfs 0.157 af

**Subcatchment 4S:** Runoff Area=47,600 sf 7.56% Impervious Runoff Depth=1.08"
Flow Length=230' Tc=27.0 min CN=76 Runoff=0.79 cfs 0.099 af

**Subcatchment 5S:** Runoff Area=43,600 sf 44.04% Impervious Runoff Depth=1.67"
Flow Length=235' Slope=0.0200 '/' Tc=3.4 min CN=85 Runoff=2.16 cfs 0.140 af

**Reach 3R:** Avg. Flow Depth=0.17' Max Vel=2.70 fps Inflow=1.29 cfs 0.222 af
n=0.030 L=120.0' S=0.0537 '/' Capacity=57.39 cfs Outflow=1.29 cfs 0.222 af

**Reach 4R: POI 2** Inflow=33.87 cfs 8.546 af
Outflow=33.87 cfs 8.546 af

**Reach 6R: POI 1** Inflow=2.21 cfs 0.174 af
Outflow=2.21 cfs 0.174 af

**Pond 3P:** Peak Elev=77.47' Storage=34,290 cf Inflow=45.18 cfs 7.955 af
30.0" Round Culvert n=0.013 L=340.0' S=0.0084 '/' Outflow=33.19 cfs 7.952 af

**Pond 7P:** Peak Elev=84.12' Storage=867 cf Inflow=4.06 cfs 0.297 af
Primary=1.29 cfs 0.222 af Secondary=1.68 cfs 0.075 af Outflow=2.97 cfs 0.297 af

**Total Runoff Area = 88.671 ac Runoff Volume = 8.723 af Average Runoff Depth = 1.18"**
**65.92% Pervious = 58.455 ac 34.08% Impervious = 30.216 ac**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S:** Runoff Area=143,440 sf 70.18% Impervious Runoff Depth=3.59"
Tc=6.0 min CN=91 Runoff=13.36 cfs 0.986 af

**Subcatchment 2S:** Runoff Area=3,543,318 sf 33.66% Impervious Runoff Depth=2.29"
Flow Length=3,560' Tc=52.3 min CN=77 Runoff=93.05 cfs 15.537 af

**Subcatchment 3S:** Runoff Area=84,546 sf 0.00% Impervious Runoff Depth=2.05"
Tc=6.0 min CN=74 Runoff=4.62 cfs 0.332 af

**Subcatchment 4S:** Runoff Area=47,600 sf 7.56% Impervious Runoff Depth=2.21"
Flow Length=230' Tc=27.0 min CN=76 Runoff=1.67 cfs 0.201 af

**Subcatchment 5S:** Runoff Area=43,600 sf 44.04% Impervious Runoff Depth=3.00"
Flow Length=235' Slope=0.0200 '/' Tc=3.4 min CN=85 Runoff=3.84 cfs 0.250 af

**Reach 3R:** Avg. Flow Depth=0.17' Max Vel=2.72 fps Inflow=1.31 cfs 0.382 af
n=0.030 L=120.0' S=0.0537 '/' Capacity=57.39 cfs Outflow=1.31 cfs 0.382 af

**Reach 4R: POI 2** Inflow=48.23 cfs 16.903 af
Outflow=48.23 cfs 16.903 af

**Reach 6R: POI 1** Inflow=3.38 cfs 0.400 af
Outflow=3.38 cfs 0.400 af

**Pond 3P:** Peak Elev=80.72' Storage=139,788 cf Inflow=94.35 cfs 15.920 af
30.0" Round Culvert n=0.013 L=340.0' S=0.0084 '/' Outflow=47.26 cfs 15.917 af

**Pond 7P:** Peak Elev=84.22' Storage=3,887 cf Inflow=8.15 cfs 0.582 af
Primary=1.31 cfs 0.382 af Secondary=1.71 cfs 0.199 af Outflow=3.01 cfs 0.582 af

**Total Runoff Area = 88.671 ac Runoff Volume = 17.307 af Average Runoff Depth = 2.34"**
**65.92% Pervious = 58.455 ac 34.08% Impervious = 30.216 ac**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S:** Runoff Area=143,440 sf 70.18% Impervious Runoff Depth=4.76"
Tc=6.0 min CN=91 Runoff=17.42 cfs 1.307 af

**Subcatchment 2S:** Runoff Area=3,543,318 sf 33.66% Impervious Runoff Depth=3.31"
Flow Length=3,560' Tc=52.3 min CN=77 Runoff=134.73 cfs 22.404 af

**Subcatchment 3S:** Runoff Area=84,546 sf 0.00% Impervious Runoff Depth=3.02"
Tc=6.0 min CN=74 Runoff=6.87 cfs 0.488 af

**Subcatchment 4S:** Runoff Area=47,600 sf 7.56% Impervious Runoff Depth=3.21"
Flow Length=230' Tc=27.0 min CN=76 Runoff=2.44 cfs 0.292 af

**Subcatchment 5S:** Runoff Area=43,600 sf 44.04% Impervious Runoff Depth=4.11"
Flow Length=235' Slope=0.0200 '/' Tc=3.4 min CN=85 Runoff=5.21 cfs 0.343 af

**Reach 3R:** Avg. Flow Depth=0.17' Max Vel=2.73 fps Inflow=1.32 cfs 0.510 af
n=0.030 L=120.0' S=0.0537 '/' Capacity=57.39 cfs Outflow=1.32 cfs 0.510 af

**Reach 4R: POI 2** Inflow=55.66 cfs 24.217 af
Outflow=55.66 cfs 24.217 af

**Reach 6R: POI 1** Inflow=4.17 cfs 0.613 af
Outflow=4.17 cfs 0.613 af

**Pond 3P:** Peak Elev=82.83' Storage=258,031 cf Inflow=136.05 cfs 22.914 af
30.0" Round Culvert n=0.013 L=340.0' S=0.0084 '/' Outflow=54.48 cfs 22.911 af

**Pond 7P:** Peak Elev=84.33' Storage=7,752 cf Inflow=11.66 cfs 0.831 af
Primary=1.32 cfs 0.510 af Secondary=1.73 cfs 0.321 af Outflow=3.06 cfs 0.831 af

**Total Runoff Area = 88.671 ac Runoff Volume = 24.834 af Average Runoff Depth = 3.36"**
**65.92% Pervious = 58.455 ac 34.08% Impervious = 30.216 ac**

## Summary for Subcatchment 1S:

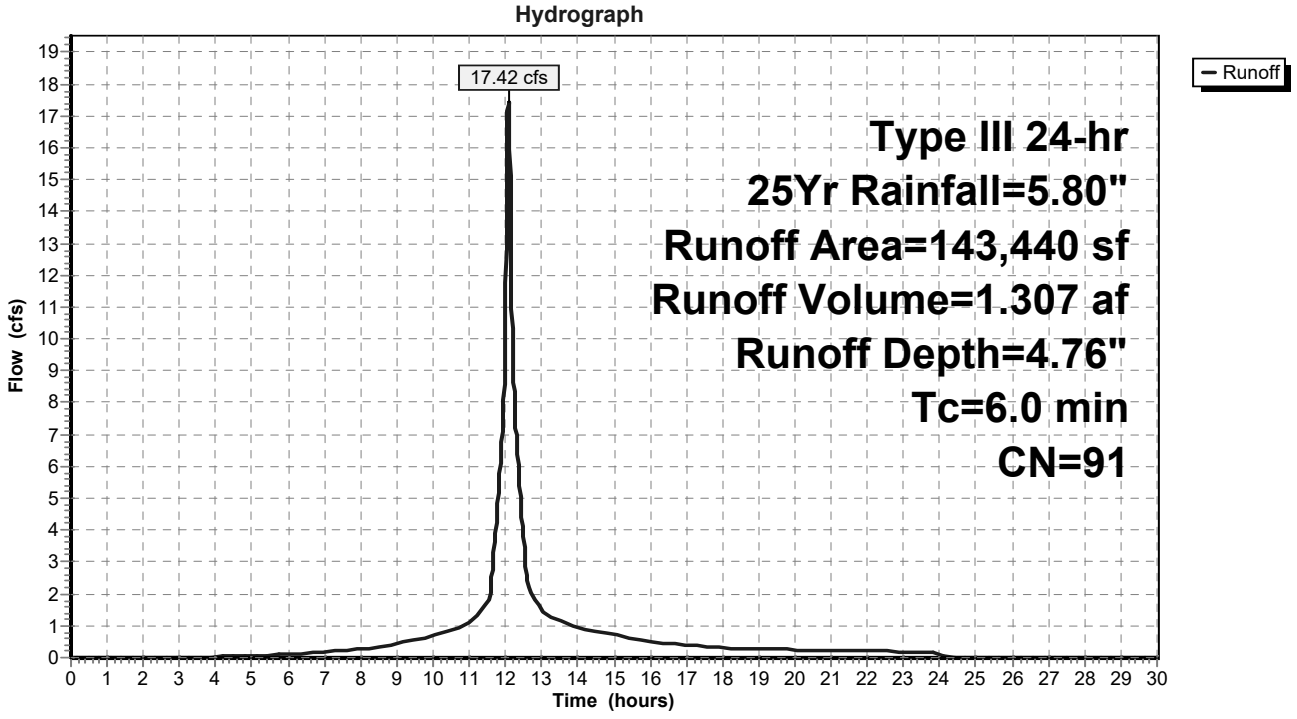
Runoff = 17.42 cfs @ 12.08 hrs, Volume= 1.307 af, Depth= 4.76"
Routed to Reach 4R : POI 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 100,673 | 98 | Paved parking, HSG C |
| 41,567 | 74 | >75% Grass cover, Good, HSG C |
| 1,200 | 65 | Brush, Good, HSG C |
| 143,440 | 91 | Weighted Average |
| 42,767 | | 29.82% Pervious Area |
| 100,673 | | 70.18% Impervious Area |

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

## Subcatchment 1S:



## Summary for Subcatchment 2S:

Runoff = 134.73 cfs @ 12.72 hrs, Volume= 22.404 af, Depth= 3.31"
Routed to Pond 3P :

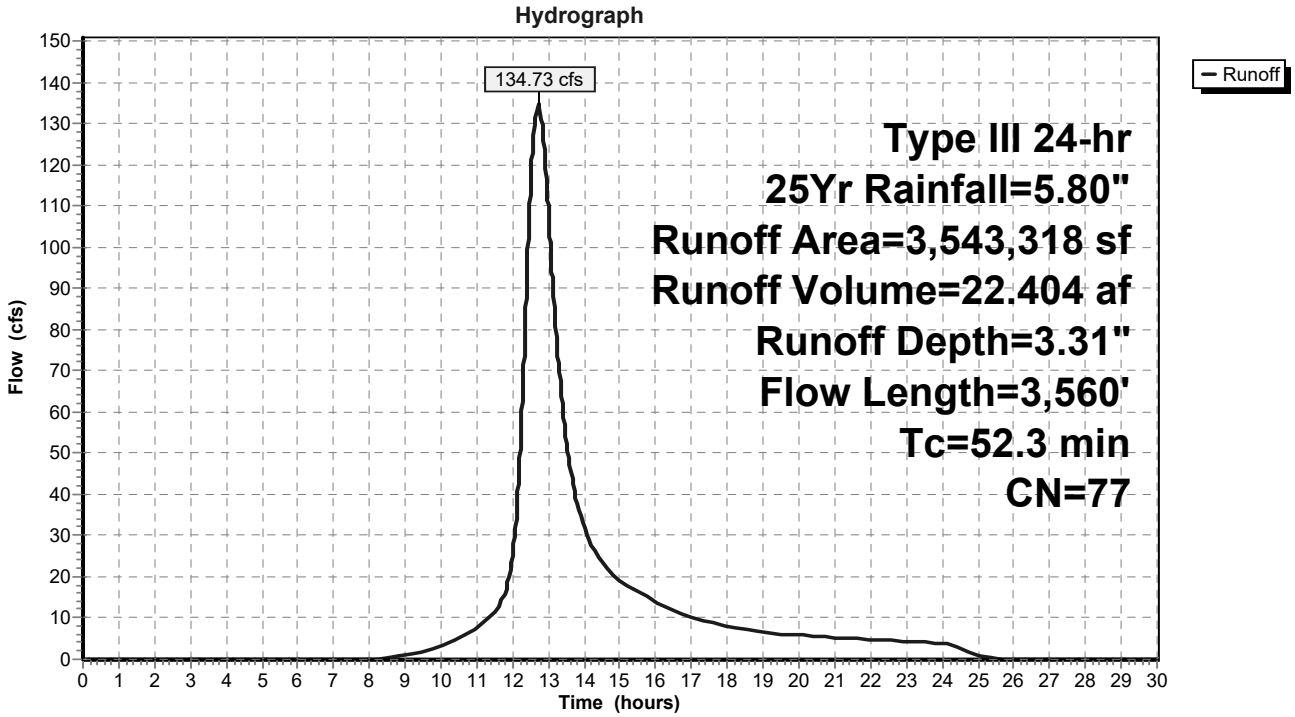
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 107,158 | 39 | >75% Grass cover, Good, HSG A |
| 77,900 | 61 | >75% Grass cover, Good, HSG B |
| 421,553 | 74 | >75% Grass cover, Good, HSG C |
| 24,000 | 80 | >75% Grass cover, Good, HSG D |
| 204,400 | 30 | Woods, Good, HSG A |
| 894,000 | 70 | Woods, Good, HSG C |
| 92,000 | 77 | Woods, Good, HSG D |
| 60,400 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 495,600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 181,600 | 87 | 1/4 acre lots, 38% imp, HSG D |
| 984,707 | 98 | Paved parking, HSG C |
| 3,543,318 | 77 | Weighted Average |
| 2,350,603 | | 66.34% Pervious Area |
| 1,192,715 | | 33.66% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 19.4 | 150 | 0.0600 | 0.13 | | **Sheet Flow, A-B**<br>Woods: Light underbrush n= 0.400 P2= 3.10" |
| 4.2 | 250 | 0.0400 | 1.00 | | **Shallow Concentrated Flow, B-C**<br>Woodland Kv= 5.0 fps |
| 0.8 | 150 | 0.0480 | 3.29 | | **Shallow Concentrated Flow, C-D**<br>Grassed Waterway Kv= 15.0 fps |
| 0.4 | 230 | 0.0430 | 10.92 | 13.40 | **Pipe Channel, D-E**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.013 |
| 0.8 | 100 | 0.0200 | 2.12 | | **Shallow Concentrated Flow, E-F**<br>Grassed Waterway Kv= 15.0 fps |
| 0.2 | 100 | 0.0100 | 7.20 | 22.62 | **Pipe Channel, F-G**<br>24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'<br>n= 0.013 Corrugated PE, smooth interior |
| 10.0 | 900 | 0.0100 | 1.50 | | **Shallow Concentrated Flow, G-H**<br>Grassed Waterway Kv= 15.0 fps |
| 0.3 | 100 | 0.0100 | 5.31 | 106.28 | **Pipe Channel, H-I**<br>48.0" x 60.0" Box Area= 20.0 sf Perim= 18.0' r= 1.11'<br>n= 0.030 Stream, clean & straight |
| 2.6 | 230 | 0.0100 | 1.50 | | **Shallow Concentrated Flow, I-J**<br>Grassed Waterway Kv= 15.0 fps |
| 0.3 | 150 | 0.0100 | 9.44 | 66.70 | **Pipe Channel, J-K**<br>36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75'<br>n= 0.013 |
| 13.3 | 1,200 | 0.0100 | 1.50 | | **Shallow Concentrated Flow, K-L**<br>Grassed Waterway Kv= 15.0 fps |

52.3 3,560 Total

**Subcatchment 2S:**



## Summary for Subcatchment 3S:

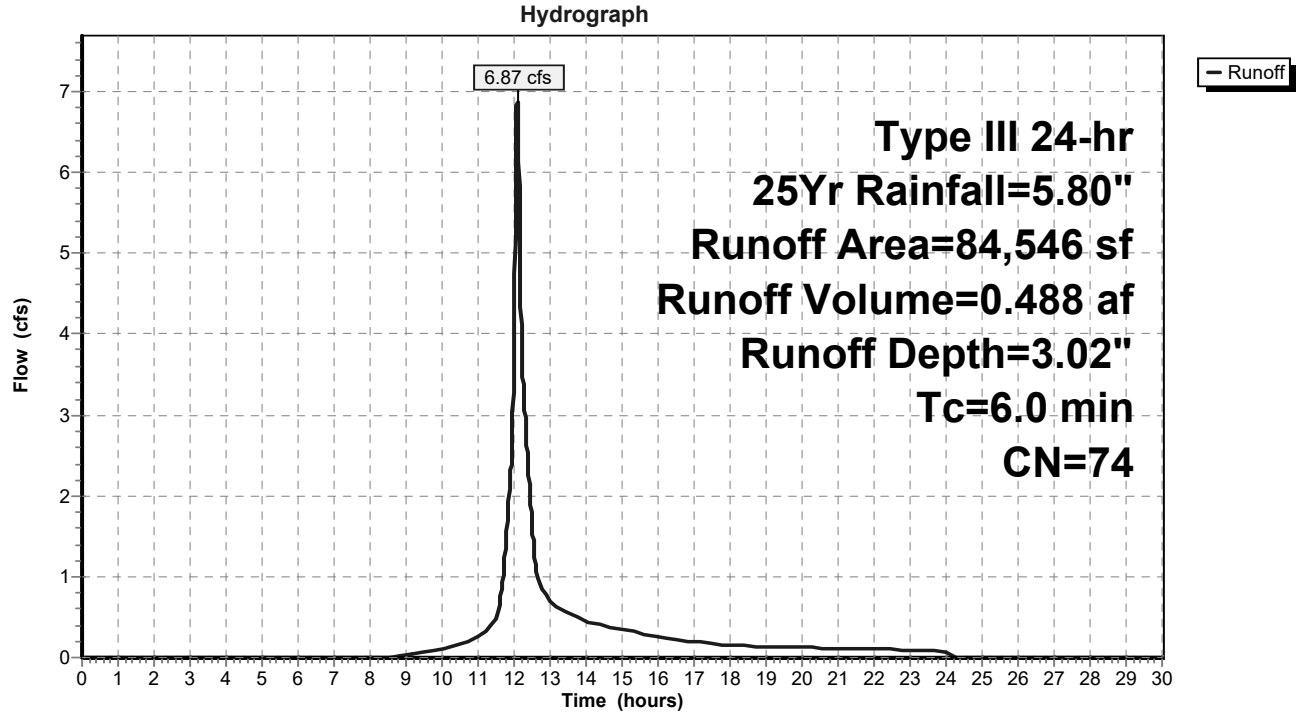
Runoff = 6.87 cfs @ 12.09 hrs, Volume= 0.488 af, Depth= 3.02"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 84,546 | 74 | >75% Grass cover, Good, HSG C |
| 84,546 | | 100.00% Pervious Area |

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

## Subcatchment 3S:



## Summary for Subcatchment 4S:

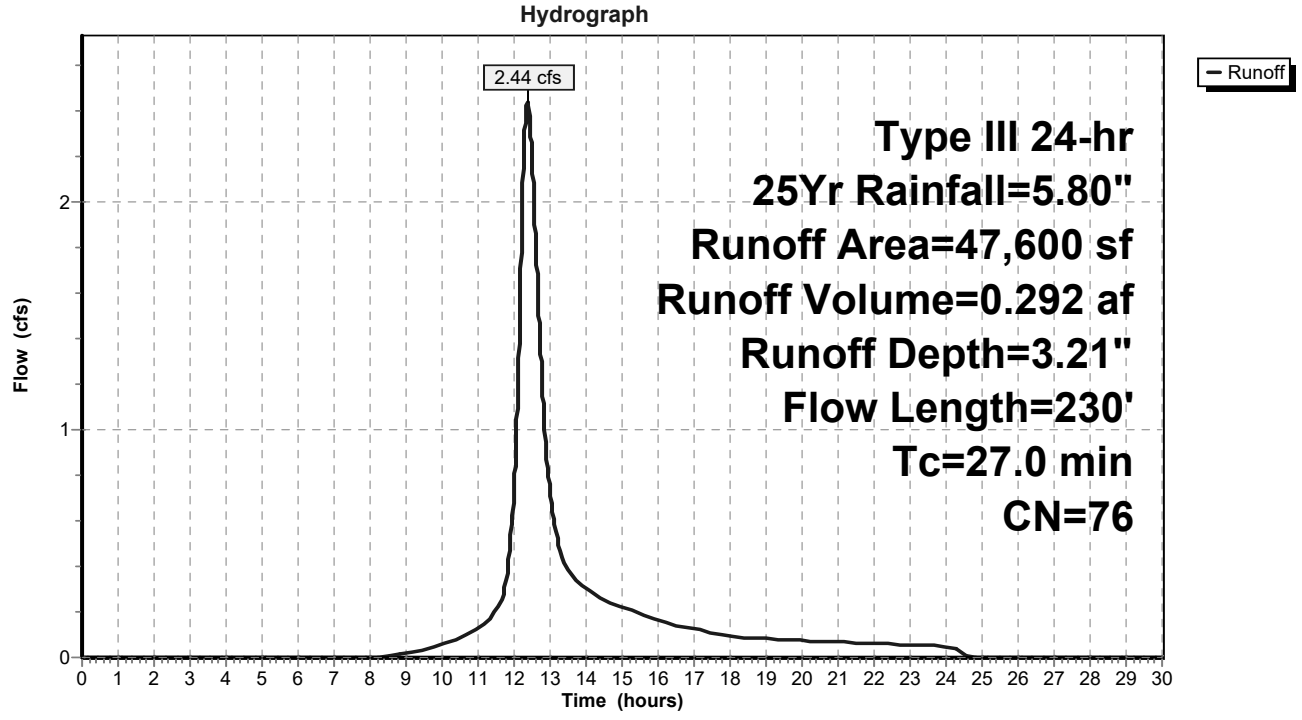
Runoff = 2.44 cfs @ 12.39 hrs, Volume= 0.292 af, Depth= 3.21"
Routed to Reach 6R : POI 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 3,600 | 98 | Paved parking, HSG C |
| 44,000 | 74 | >75% Grass cover, Good, HSG C |
| 47,600 | 76 | Weighted Average |
| 44,000 | | 92.44% Pervious Area |
| 3,600 | | 7.56% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 26.5 | 150 | 0.0100 | 0.09 | | **Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.10" |
| 0.5 | 80 | 0.3300 | 2.87 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 27.0 | 230 | Total | | | |

## Subcatchment 4S:



## Summary for Subcatchment 5S:

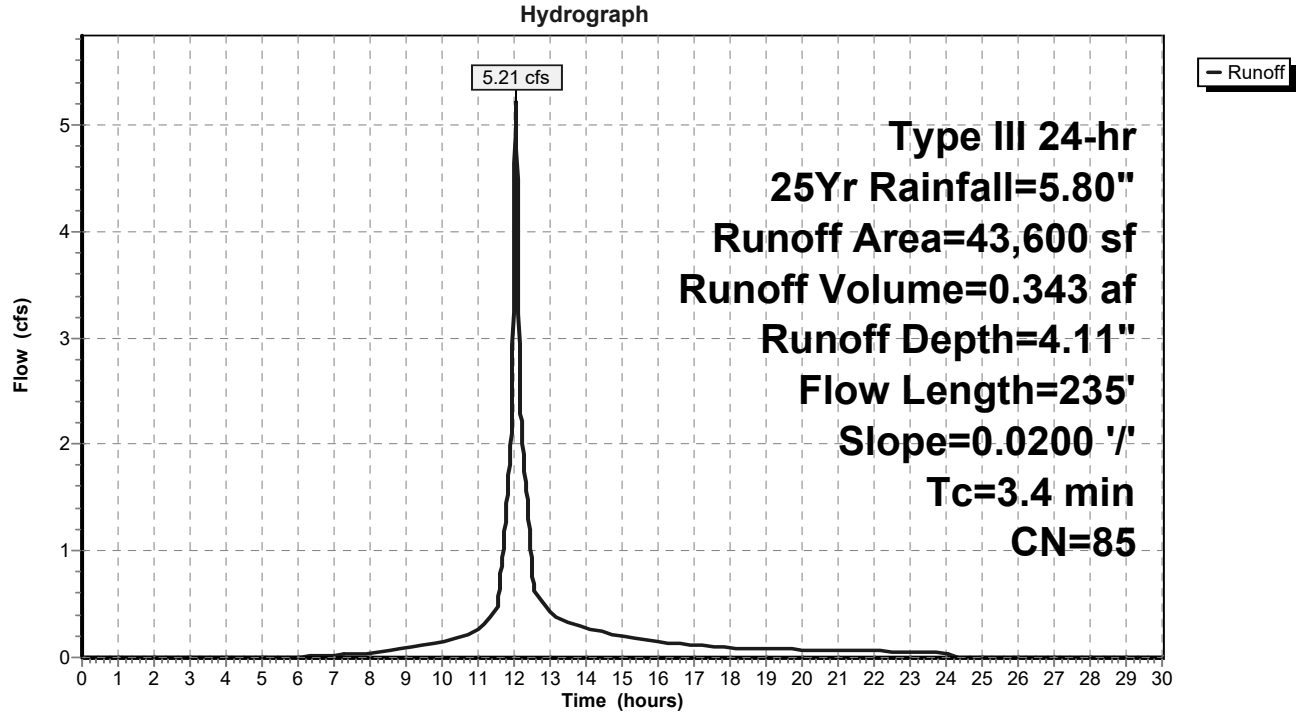
Runoff = 5.21 cfs @ 12.05 hrs, Volume= 0.343 af, Depth= 4.11"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 19,200 | 98 | Paved parking, HSG C |
| 24,400 | 74 | >75% Grass cover, Good, HSG C |
| 43,600 | 85 | Weighted Average |
| 24,400 | | 55.96% Pervious Area |
| 19,200 | | 44.04% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 115 | 0.0200 | 1.39 | | **Sheet Flow, Parking Lot to Lawn** Smooth surfaces n= 0.011 P2= 3.10" |
| 2.0 | 120 | 0.0200 | 0.99 | | **Shallow Concentrated Flow, Lawn to CB** Short Grass Pasture Kv= 7.0 fps |
| 3.4 | 235 | Total | | | |

## Subcatchment 5S:



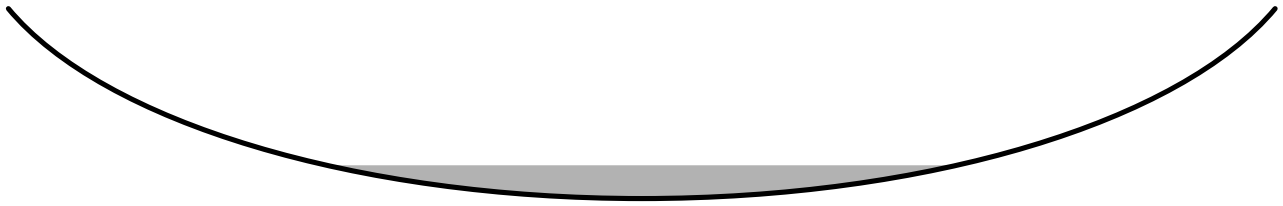
## Summary for Reach 3R:

Inflow Area = 2.942 ac, 14.98% Impervious, Inflow Depth = 2.08" for 25Yr event
Inflow = 1.32 cfs @ 12.45 hrs, Volume= 0.510 af
Outflow = 1.32 cfs @ 12.46 hrs, Volume= 0.510 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 3P :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.73 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.5 min

Peak Storage= 58 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 4.18'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 57.39 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.030
Length= 120.0' Slope= 0.0537 '/'
Inlet Invert= 79.50', Outlet Invert= 73.06'



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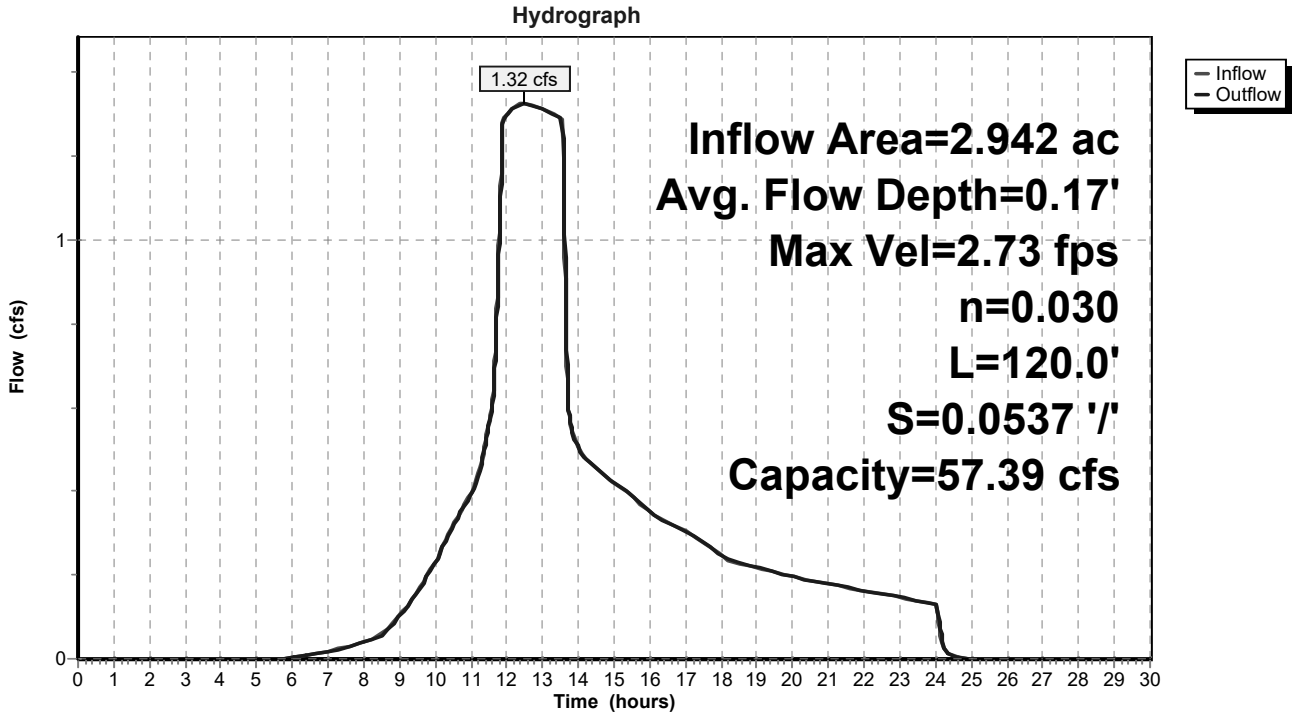
## Reach 3R:

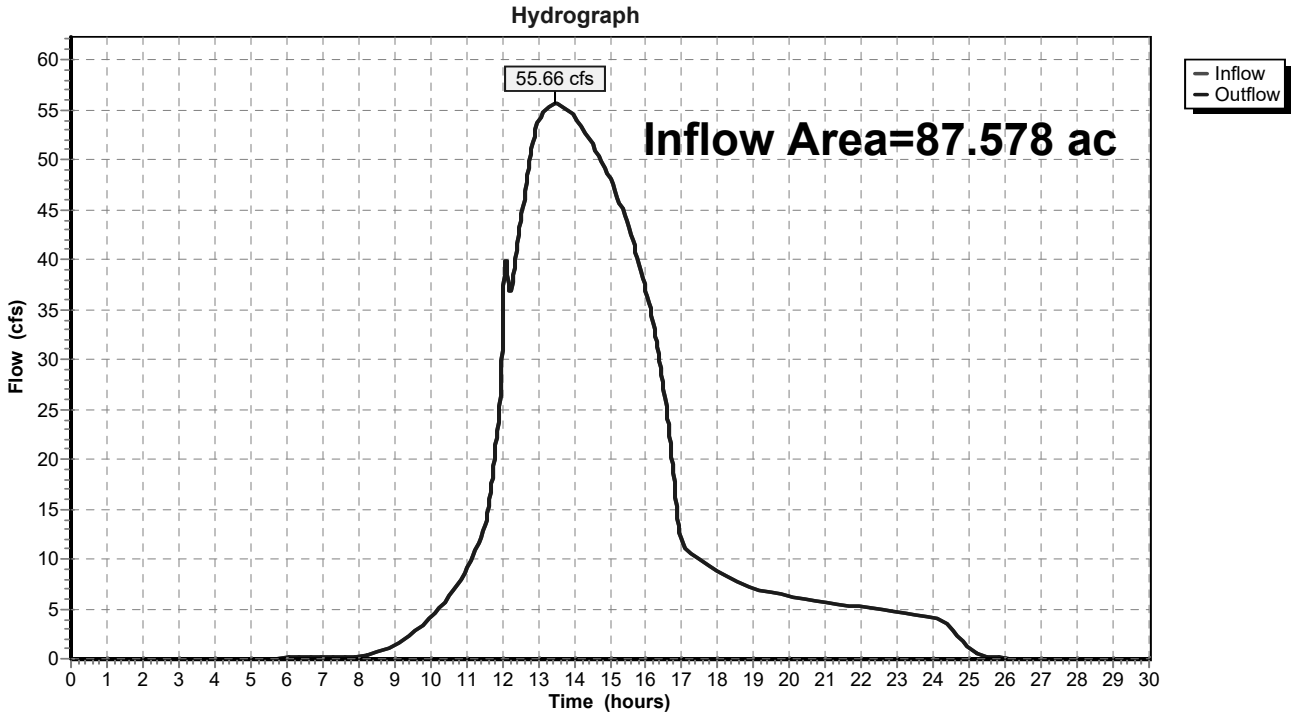


## Summary for Reach 4R: POI 2

Inflow Area = 87.578 ac, 34.41% Impervious, Inflow Depth = 3.32" for 25Yr event
Inflow = 55.66 cfs @ 13.46 hrs, Volume= 24.217 af
Outflow = 55.66 cfs @ 13.46 hrs, Volume= 24.217 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

## Reach 4R: POI 2

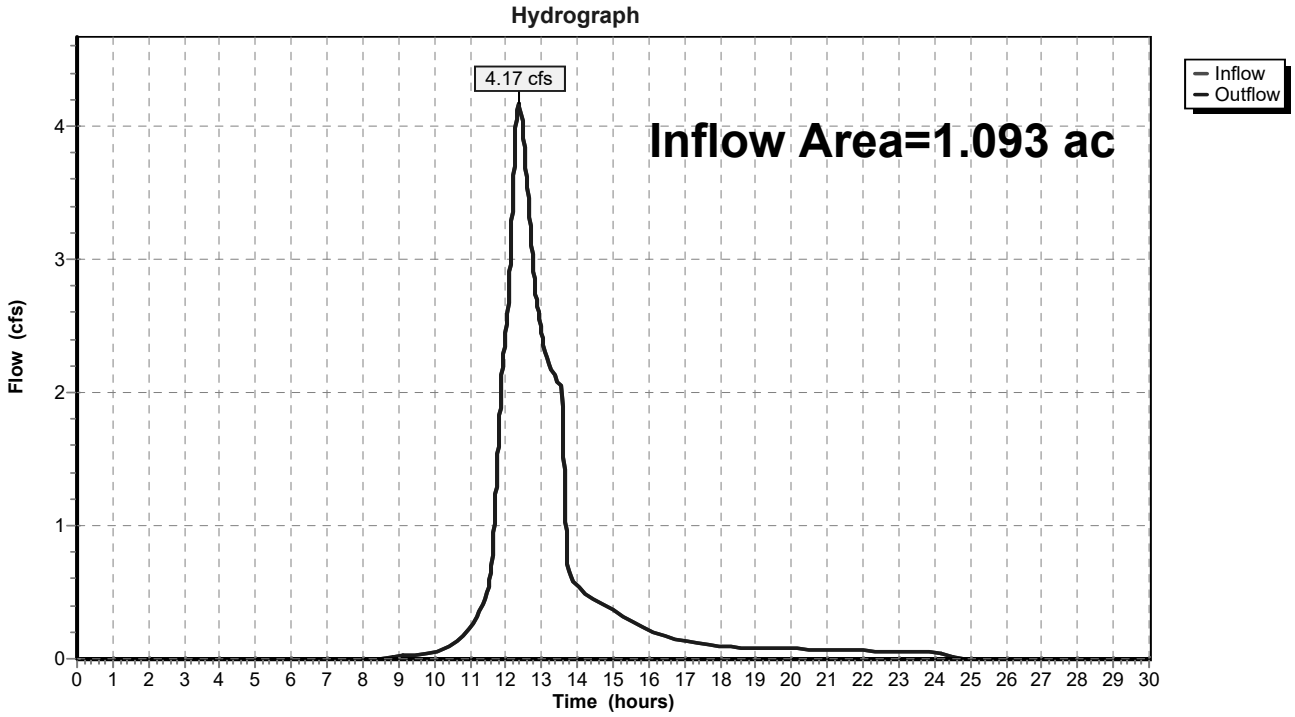


## Summary for Reach 6R: POI 1

Inflow Area = 1.093 ac, 7.56% Impervious, Inflow Depth = 6.74" for 25Yr event
Inflow = 4.17 cfs @ 12.39 hrs, Volume= 0.613 af
Outflow = 4.17 cfs @ 12.39 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

## Reach 6R: POI 1



## Summary for Pond 3P:

Inflow Area = 84.285 ac, 33.01% Impervious, Inflow Depth = 3.26" for 25Yr event
Inflow = 136.05 cfs @ 12.72 hrs, Volume= 22.914 af
Outflow = 54.48 cfs @ 13.50 hrs, Volume= 22.911 af, Atten= 60%, Lag= 46.5 min
Primary = 54.48 cfs @ 13.50 hrs, Volume= 22.911 af
Routed to Reach 4R : POI 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 82.83' @ 13.50 hrs Surf.Area= 67,989 sf Storage= 258,031 cf

Plug-Flow detention time= 38.9 min calculated for 22.903 af (100% of inflow)
Center-of-Mass det. time= 38.8 min ( 905.0 - 866.2 )

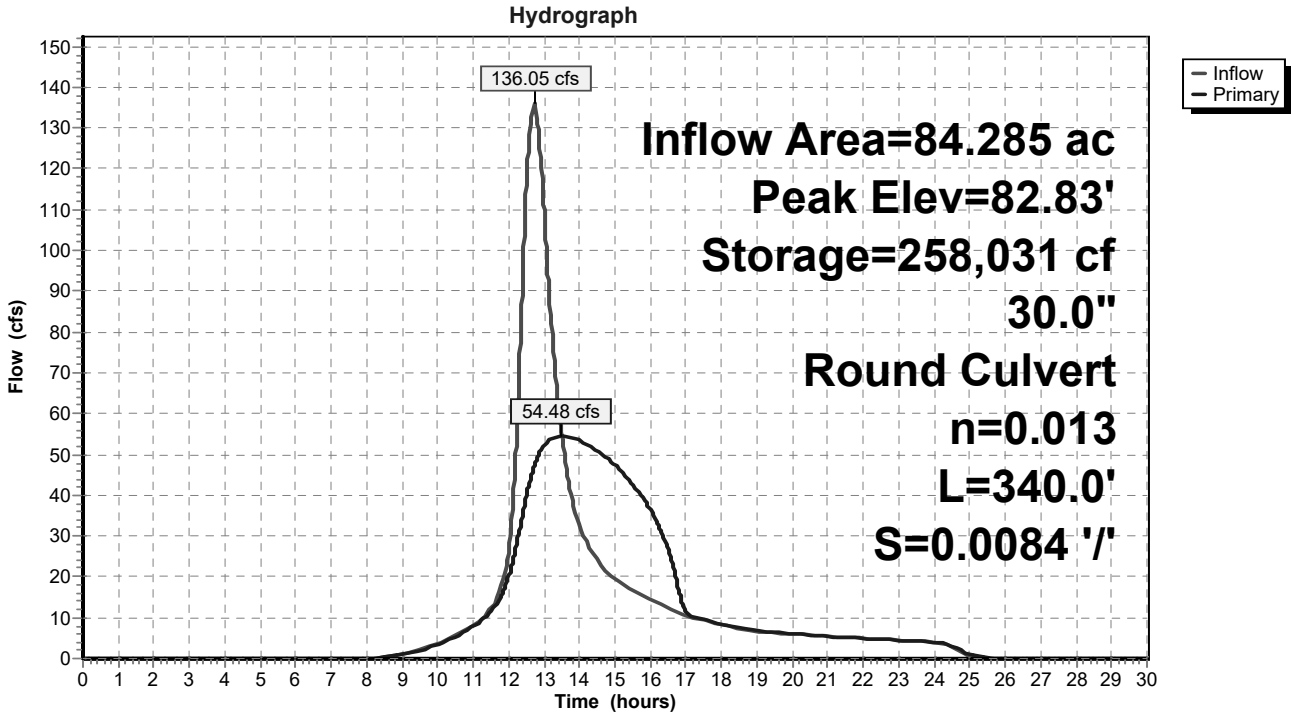
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 72.47' | 346,255 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 72.47 | 100 | 40.0 | 0 | 0 | 100 |
| 74.00 | 1,008 | 320.0 | 727 | 727 | 8,126 |
| 76.00 | 11,328 | 680.0 | 10,477 | 11,204 | 36,791 |
| 78.00 | 24,320 | 1,110.0 | 34,831 | 46,034 | 98,068 |
| 82.00 | 57,872 | 1,920.0 | 159,611 | 205,645 | 293,469 |
| 84.00 | 83,520 | 2,120.0 | 140,610 | 346,255 | 357,895 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 73.06' | **30.0" Round Culvert**<br>L= 340.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 73.06' / 70.20' S= 0.0084 '/' Cc= 0.900<br>n= 0.013, Flow Area= 4.91 sf |

**Primary OutFlow** Max=54.48 cfs @ 13.50 hrs HW=82.83' TW=0.00' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 54.48 cfs @ 11.10 fps)

## Pond 3P:


Hydrograph
136.05 cfs
54.48 cfs
Inflow Area=84.285 ac
Peak Elev=82.83'
Storage=258,031 cf
30.0"
Round Culvert
n=0.013
L=340.0'
S=0.0084 '/'
Inflow
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 7P:

Inflow Area = 2.942 ac, 14.98% Impervious, Inflow Depth = 3.39" for 25Yr event
Inflow = 11.66 cfs @ 12.07 hrs, Volume= 0.831 af
Outflow = 3.06 cfs @ 12.45 hrs, Volume= 0.831 af, Atten= 74%, Lag= 23.0 min
Primary = 1.32 cfs @ 12.45 hrs, Volume= 0.510 af
Routed to Reach 3R :
Secondary = 1.73 cfs @ 12.45 hrs, Volume= 0.321 af
Routed to Reach 6R : POI 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 84.33' @ 12.45 hrs Surf.Area= 84,546 sf Storage= 7,752 cf

Plug-Flow detention time= 15.5 min calculated for 0.831 af (100% of inflow)
Center-of-Mass det. time= 15.4 min ( 833.0 - 817.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.05' | 47,283 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

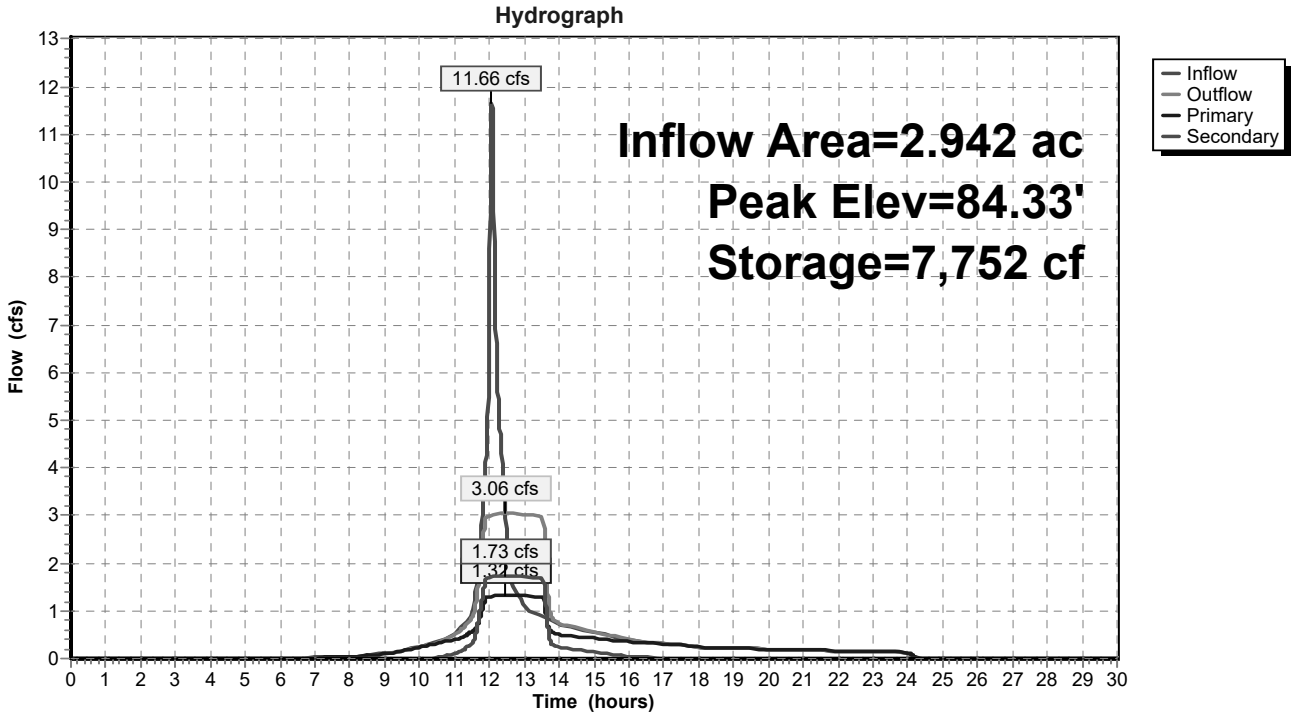
| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 80.05 | 480 | 0.0 | 0 | 0 |
| 84.10 | 480 | 40.0 | 778 | 778 |
| 84.15 | 84,546 | 40.0 | 850 | 1,628 |
| 85.00 | 84,546 | 40.0 | 28,746 | 30,374 |
| 85.50 | 84,546 | 40.0 | 16,909 | 47,283 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.05' | **5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #2 | Secondary | 78.15' | **12.0" Round Culvert**<br>L= 293.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 78.15' / 75.00' S= 0.0108 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 2 | 80.40' | **4.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Device 2 | 80.90' | **4.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

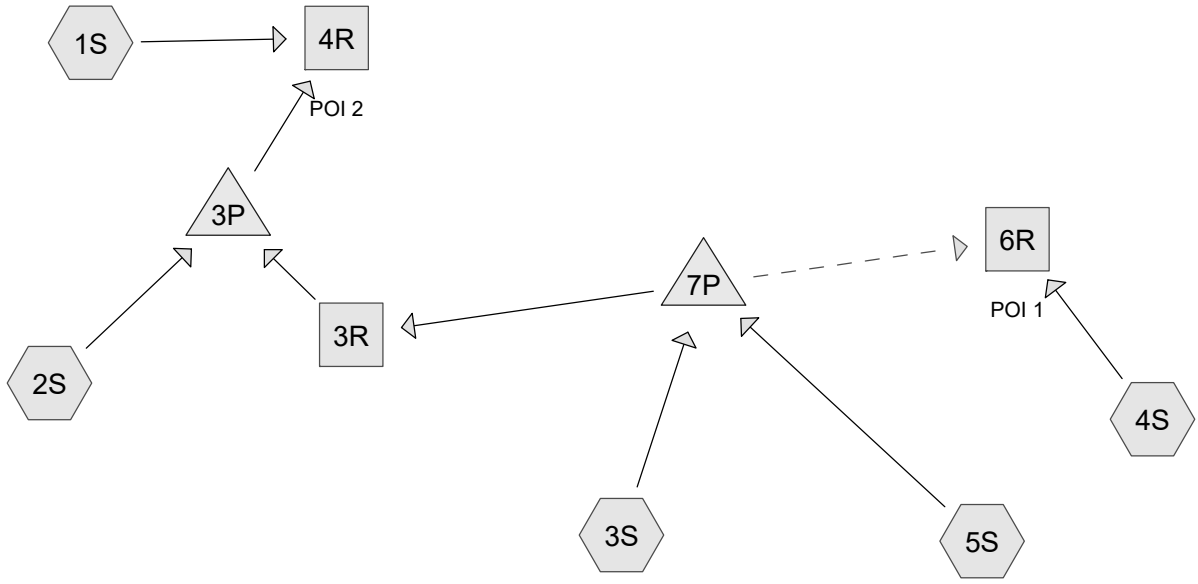
**Primary OutFlow** Max=1.32 cfs @ 12.45 hrs HW=84.33' TW=79.67' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 1.32 cfs @ 9.72 fps)

**Secondary OutFlow** Max=1.73 cfs @ 12.45 hrs HW=84.33' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.73 cfs of 5.56 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.90 cfs @ 9.33 fps)
└**4=Orifice/Grate** (Orifice Controls 0.84 cfs @ 8.69 fps)

## Pond 7P:


Hydrograph
Inflow Area=2.942 ac
Peak Elev=84.33'
Storage=7,752 cf
11.66 cfs
3.06 cfs
1.73 cfs
1.32 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

# POST DEVELOPMENT




Subcat Reach Pond Link

**Routing Diagram for Post_2023-05-16_Shaw**
Prepared by Gorrill Palmer Consulting Engs, Printed 5/17/2023

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S:** Runoff Area=143,440 sf 70.18% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=91 Runoff=8.23 cfs 0.594 af

**Subcatchment 2S:** Runoff Area=3,543,318 sf 33.66% Impervious Runoff Depth=1.14"
Flow Length=3,560' Tc=52.3 min CN=77 Runoff=44.73 cfs 7.734 af

**Subcatchment 3S:** Runoff Area=84,546 sf 0.00% Impervious Runoff Depth=0.97"
Tc=6.0 min CN=74 Runoff=2.08 cfs 0.157 af

**Subcatchment 4S:** Runoff Area=47,600 sf 7.56% Impervious Runoff Depth=1.08"
Flow Length=230' Tc=27.0 min CN=76 Runoff=0.79 cfs 0.099 af

**Subcatchment 5S:** Runoff Area=43,600 sf 48.48% Impervious Runoff Depth=1.75"
Flow Length=160' Slope=0.0200 '/' Tc=2.1 min CN=86 Runoff=2.37 cfs 0.146 af

**Reach 3R:** Avg. Flow Depth=0.17' Max Vel=2.70 fps Inflow=1.29 cfs 0.226 af
n=0.030 L=120.0' S=0.0537 '/' Capacity=57.39 cfs Outflow=1.29 cfs 0.226 af

**Reach 4R: POI 2** Inflow=33.87 cfs 8.550 af
Outflow=33.87 cfs 8.550 af

**Reach 6R: POI 1** Inflow=2.20 cfs 0.176 af
Outflow=2.20 cfs 0.176 af

**Pond 3P:** Peak Elev=77.47' Storage=34,288 cf Inflow=45.18 cfs 7.959 af
30.0" Round Culvert n=0.013 L=340.0' S=0.0084 '/' Outflow=33.19 cfs 7.956 af

**Pond 7P:** Peak Elev=84.12' Storage=876 cf Inflow=4.02 cfs 0.303 af
Primary=1.29 cfs 0.226 af Secondary=1.68 cfs 0.077 af Outflow=2.97 cfs 0.303 af

**Total Runoff Area = 88.671 ac Runoff Volume = 8.729 af Average Runoff Depth = 1.18"**
**65.87% Pervious = 58.411 ac 34.13% Impervious = 30.260 ac**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S:** Runoff Area=143,440 sf 70.18% Impervious Runoff Depth=3.59"
Tc=6.0 min CN=91 Runoff=13.36 cfs 0.986 af

**Subcatchment 2S:** Runoff Area=3,543,318 sf 33.66% Impervious Runoff Depth=2.29"
Flow Length=3,560' Tc=52.3 min CN=77 Runoff=93.05 cfs 15.537 af

**Subcatchment 3S:** Runoff Area=84,546 sf 0.00% Impervious Runoff Depth=2.05"
Tc=6.0 min CN=74 Runoff=4.62 cfs 0.332 af

**Subcatchment 4S:** Runoff Area=47,600 sf 7.56% Impervious Runoff Depth=2.21"
Flow Length=230' Tc=27.0 min CN=76 Runoff=1.67 cfs 0.201 af

**Subcatchment 5S:** Runoff Area=43,600 sf 48.48% Impervious Runoff Depth=3.10"
Flow Length=160' Slope=0.0200 '/' Tc=2.1 min CN=86 Runoff=4.14 cfs 0.258 af

**Reach 3R:** Avg. Flow Depth=0.17' Max Vel=2.72 fps Inflow=1.31 cfs 0.387 af
n=0.030 L=120.0' S=0.0537 '/' Capacity=57.39 cfs Outflow=1.31 cfs 0.387 af

**Reach 4R: POI 2** Inflow=48.23 cfs 16.908 af
Outflow=48.23 cfs 16.908 af

**Reach 6R: POI 1** Inflow=3.38 cfs 0.404 af
Outflow=3.38 cfs 0.404 af

**Pond 3P:** Peak Elev=80.72' Storage=139,800 cf Inflow=94.35 cfs 15.925 af
30.0" Round Culvert n=0.013 L=340.0' S=0.0084 '/' Outflow=47.26 cfs 15.922 af

**Pond 7P:** Peak Elev=84.22' Storage=3,957 cf Inflow=8.01 cfs 0.590 af
Primary=1.31 cfs 0.387 af Secondary=1.71 cfs 0.202 af Outflow=3.01 cfs 0.590 af

**Total Runoff Area = 88.671 ac Runoff Volume = 17.315 af Average Runoff Depth = 2.34"**
**65.87% Pervious = 58.411 ac 34.13% Impervious = 30.260 ac**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S:** Runoff Area=143,440 sf 70.18% Impervious Runoff Depth=4.76"
Tc=6.0 min CN=91 Runoff=17.42 cfs 1.307 af

**Subcatchment 2S:** Runoff Area=3,543,318 sf 33.66% Impervious Runoff Depth=3.31"
Flow Length=3,560' Tc=52.3 min CN=77 Runoff=134.73 cfs 22.404 af

**Subcatchment 3S:** Runoff Area=84,546 sf 0.00% Impervious Runoff Depth=3.02"
Tc=6.0 min CN=74 Runoff=6.87 cfs 0.488 af

**Subcatchment 4S:** Runoff Area=47,600 sf 7.56% Impervious Runoff Depth=3.21"
Flow Length=230' Tc=27.0 min CN=76 Runoff=2.44 cfs 0.292 af

**Subcatchment 5S:** Runoff Area=43,600 sf 48.48% Impervious Runoff Depth=4.22"
Flow Length=160' Slope=0.0200 '/' Tc=2.1 min CN=86 Runoff=5.58 cfs 0.352 af

**Reach 3R:** Avg. Flow Depth=0.17' Max Vel=2.73 fps Inflow=1.33 cfs 0.515 af
n=0.030 L=120.0' S=0.0537 '/' Capacity=57.39 cfs Outflow=1.33 cfs 0.515 af

**Reach 4R: POI 2** Inflow=55.66 cfs 24.223 af
Outflow=55.66 cfs 24.223 af

**Reach 6R: POI 1** Inflow=4.17 cfs 0.617 af
Outflow=4.17 cfs 0.617 af

**Pond 3P:** Peak Elev=82.83' Storage=258,035 cf Inflow=136.05 cfs 22.919 af
30.0" Round Culvert n=0.013 L=340.0' S=0.0084 '/' Outflow=54.48 cfs 22.916 af

**Pond 7P:** Peak Elev=84.33' Storage=7,845 cf Inflow=11.41 cfs 0.840 af
Primary=1.33 cfs 0.515 af Secondary=1.73 cfs 0.325 af Outflow=3.06 cfs 0.840 af

**Total Runoff Area = 88.671 ac Runoff Volume = 24.842 af Average Runoff Depth = 3.36"**
**65.87% Pervious = 58.411 ac 34.13% Impervious = 30.260 ac**

## Summary for Subcatchment 1S:

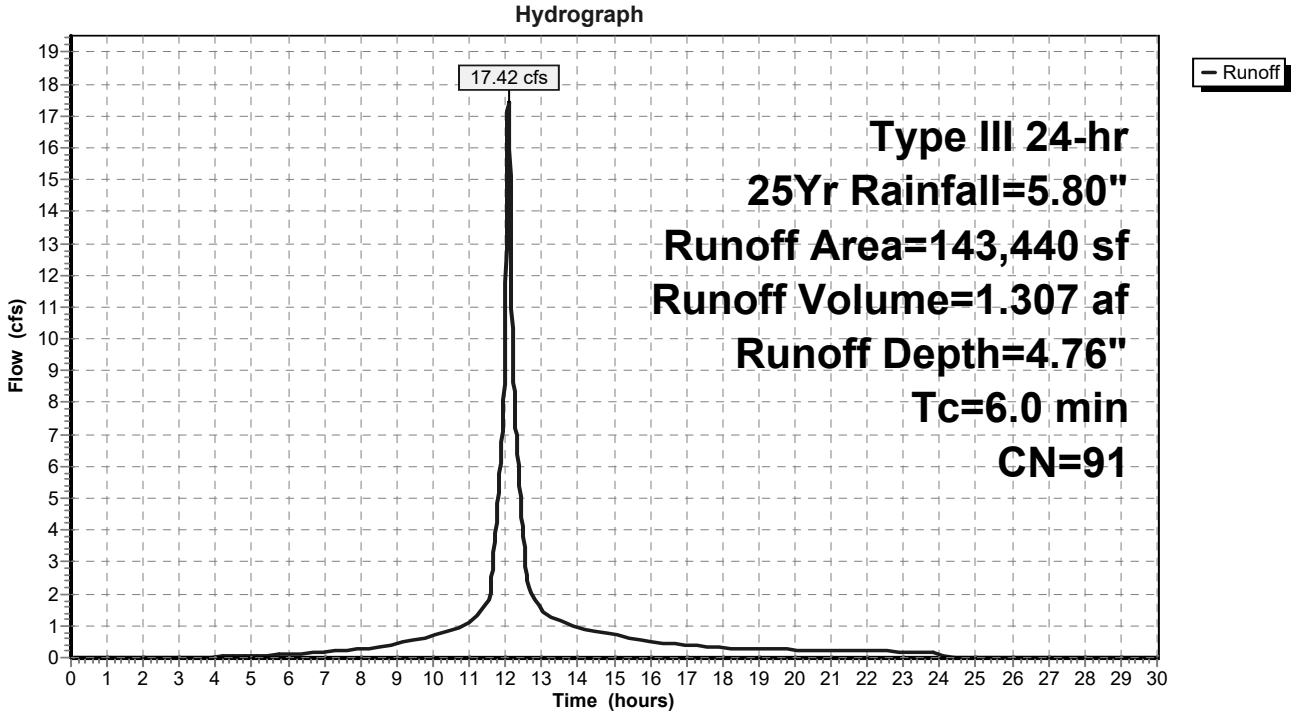
Runoff = 17.42 cfs @ 12.08 hrs, Volume= 1.307 af, Depth= 4.76"
Routed to Reach 4R : POI 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 100,673 | 98 | Paved parking, HSG C |
| 41,567 | 74 | >75% Grass cover, Good, HSG C |
| 1,200 | 65 | Brush, Good, HSG C |
| 143,440 | 91 | Weighted Average |
| 42,767 | | 29.82% Pervious Area |
| 100,673 | | 70.18% Impervious Area |

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

## Subcatchment 1S:



## Summary for Subcatchment 2S:

Runoff = 134.73 cfs @ 12.72 hrs, Volume= 22.404 af, Depth= 3.31"
Routed to Pond 3P :

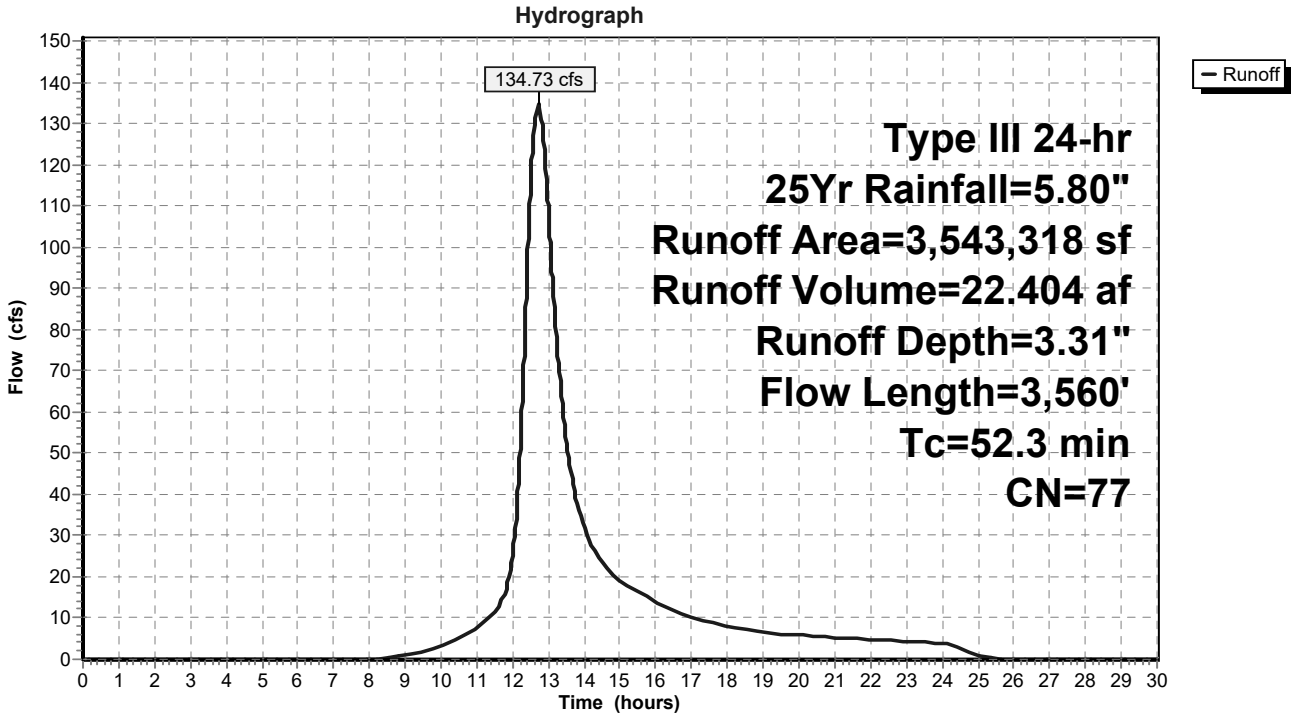
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 107,158 | 39 | >75% Grass cover, Good, HSG A |
| 77,900 | 61 | >75% Grass cover, Good, HSG B |
| 421,553 | 74 | >75% Grass cover, Good, HSG C |
| 24,000 | 80 | >75% Grass cover, Good, HSG D |
| 204,400 | 30 | Woods, Good, HSG A |
| 894,000 | 70 | Woods, Good, HSG C |
| 92,000 | 77 | Woods, Good, HSG D |
| 60,400 | 70 | 1/2 acre lots, 25% imp, HSG B |
| 495,600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 181,600 | 87 | 1/4 acre lots, 38% imp, HSG D |
| 984,707 | 98 | Paved parking, HSG C |
| 3,543,318 | 77 | Weighted Average |
| 2,350,603 | | 66.34% Pervious Area |
| 1,192,715 | | 33.66% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 19.4 | 150 | 0.0600 | 0.13 | | **Sheet Flow, A-B**<br>Woods: Light underbrush n= 0.400 P2= 3.10" |
| 4.2 | 250 | 0.0400 | 1.00 | | **Shallow Concentrated Flow, B-C**<br>Woodland Kv= 5.0 fps |
| 0.8 | 150 | 0.0480 | 3.29 | | **Shallow Concentrated Flow, C-D**<br>Grassed Waterway Kv= 15.0 fps |
| 0.4 | 230 | 0.0430 | 10.92 | 13.40 | **Pipe Channel, D-E**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.013 |
| 0.8 | 100 | 0.0200 | 2.12 | | **Shallow Concentrated Flow, E-F**<br>Grassed Waterway Kv= 15.0 fps |
| 0.2 | 100 | 0.0100 | 7.20 | 22.62 | **Pipe Channel, F-G**<br>24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'<br>n= 0.013 Corrugated PE, smooth interior |
| 10.0 | 900 | 0.0100 | 1.50 | | **Shallow Concentrated Flow, G-H**<br>Grassed Waterway Kv= 15.0 fps |
| 0.3 | 100 | 0.0100 | 5.31 | 106.28 | **Pipe Channel, H-I**<br>48.0" x 60.0" Box Area= 20.0 sf Perim= 18.0' r= 1.11'<br>n= 0.030 Stream, clean & straight |
| 2.6 | 230 | 0.0100 | 1.50 | | **Shallow Concentrated Flow, I-J**<br>Grassed Waterway Kv= 15.0 fps |
| 0.3 | 150 | 0.0100 | 9.44 | 66.70 | **Pipe Channel, J-K**<br>36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75'<br>n= 0.013 |
| 13.3 | 1,200 | 0.0100 | 1.50 | | **Shallow Concentrated Flow, K-L**<br>Grassed Waterway Kv= 15.0 fps |

52.3 3,560 Total

**Subcatchment 2S:**



## Summary for Subcatchment 3S:

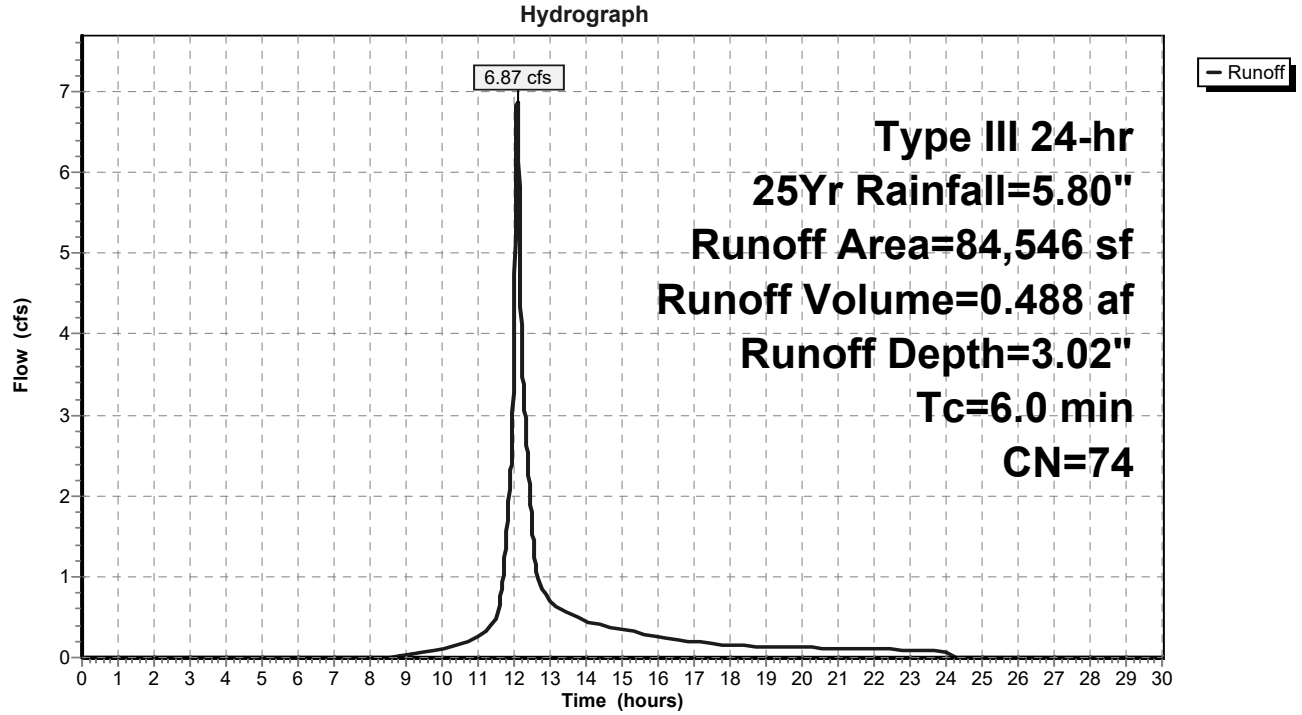
Runoff = 6.87 cfs @ 12.09 hrs, Volume= 0.488 af, Depth= 3.02"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 84,546 | 74 | >75% Grass cover, Good, HSG C |
| 84,546 | | 100.00% Pervious Area |

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

## Subcatchment 3S:



## Summary for Subcatchment 4S:

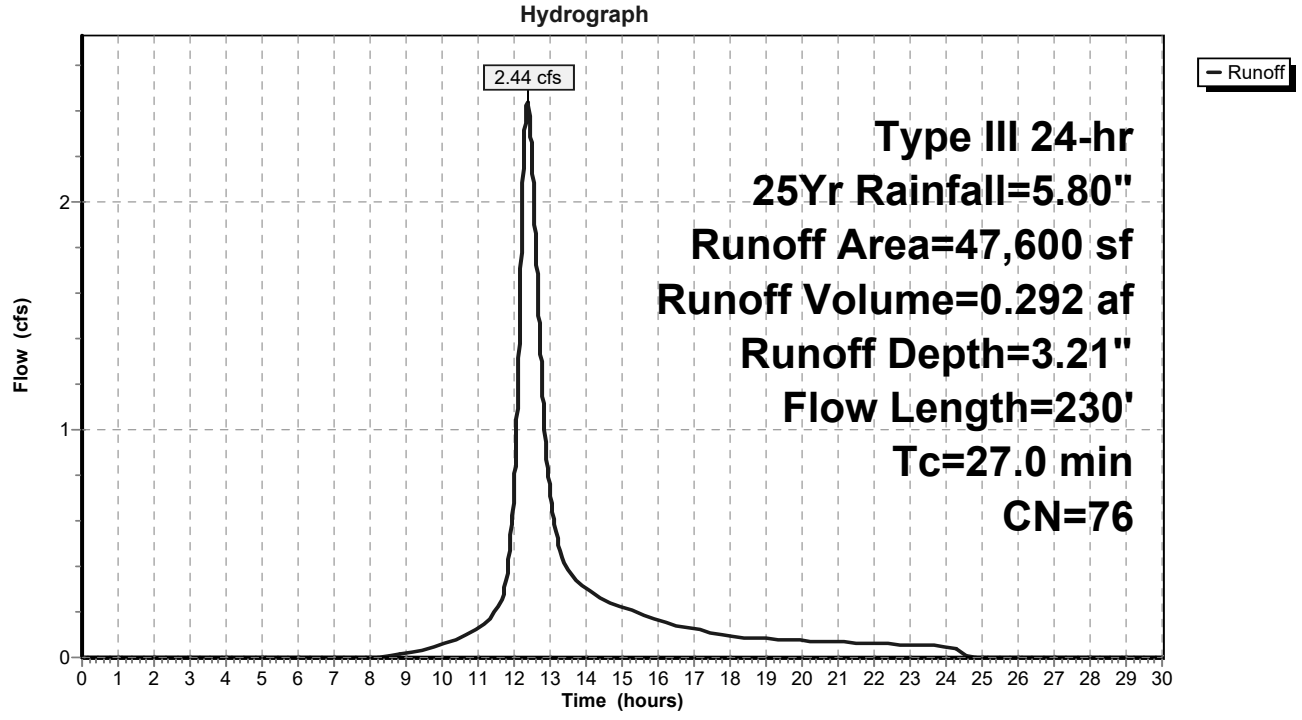
Runoff = 2.44 cfs @ 12.39 hrs, Volume= 0.292 af, Depth= 3.21"
Routed to Reach 6R : POI 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 3,600 | 98 | Paved parking, HSG C |
| 44,000 | 74 | >75% Grass cover, Good, HSG C |
| 47,600 | 76 | Weighted Average |
| 44,000 | | 92.44% Pervious Area |
| 3,600 | | 7.56% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 26.5 | 150 | 0.0100 | 0.09 | | **Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.10" |
| 0.5 | 80 | 0.3300 | 2.87 | | **Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps |
| 27.0 | 230 | Total | | | |

## Subcatchment 4S:



## Summary for Subcatchment 5S:

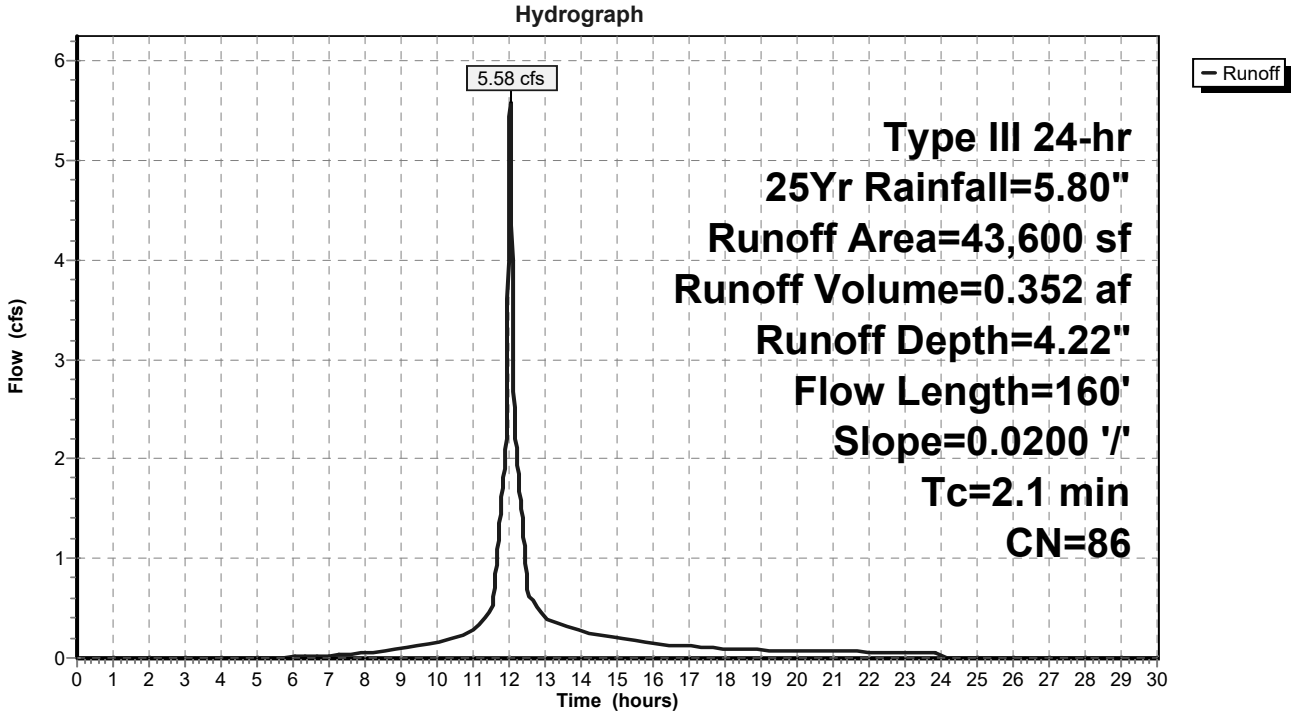
Runoff = 5.58 cfs @ 12.03 hrs, Volume= 0.352 af, Depth= 4.22"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 19,200 | 98 | Paved parking, HSG C |
| 22,464 | 74 | >75% Grass cover, Good, HSG C |
| 1,936 | 98 | Roofs, HSG C |
| 43,600 | 86 | Weighted Average |
| 22,464 | | 51.52% Pervious Area |
| 21,136 | | 48.48% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 120 | 0.0200 | 1.40 | | **Sheet Flow, Parking Lot to Lawn** Smooth surfaces n= 0.011 P2= 3.10" |
| 0.7 | 40 | 0.0200 | 0.99 | | **Shallow Concentrated Flow, Lawn to Drip Strip** Short Grass Pasture Kv= 7.0 fps |
| 2.1 | 160 | Total | | | |

## Subcatchment 5S:



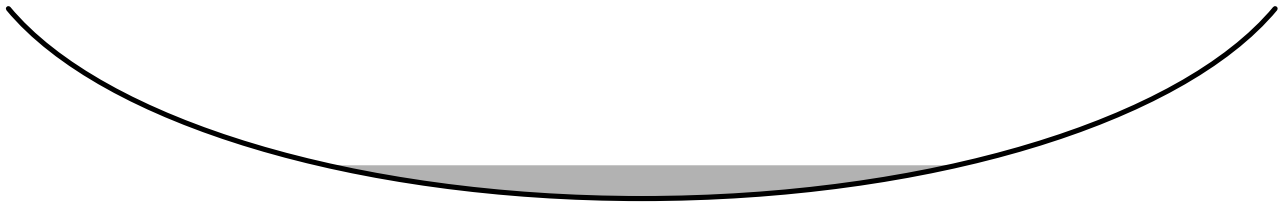
## Summary for Reach 3R:

Inflow Area = 2.942 ac, 16.49% Impervious, Inflow Depth = 2.10" for 25Yr event
Inflow = 1.33 cfs @ 12.45 hrs, Volume= 0.515 af
Outflow = 1.33 cfs @ 12.46 hrs, Volume= 0.515 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 3P :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.73 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.5 min

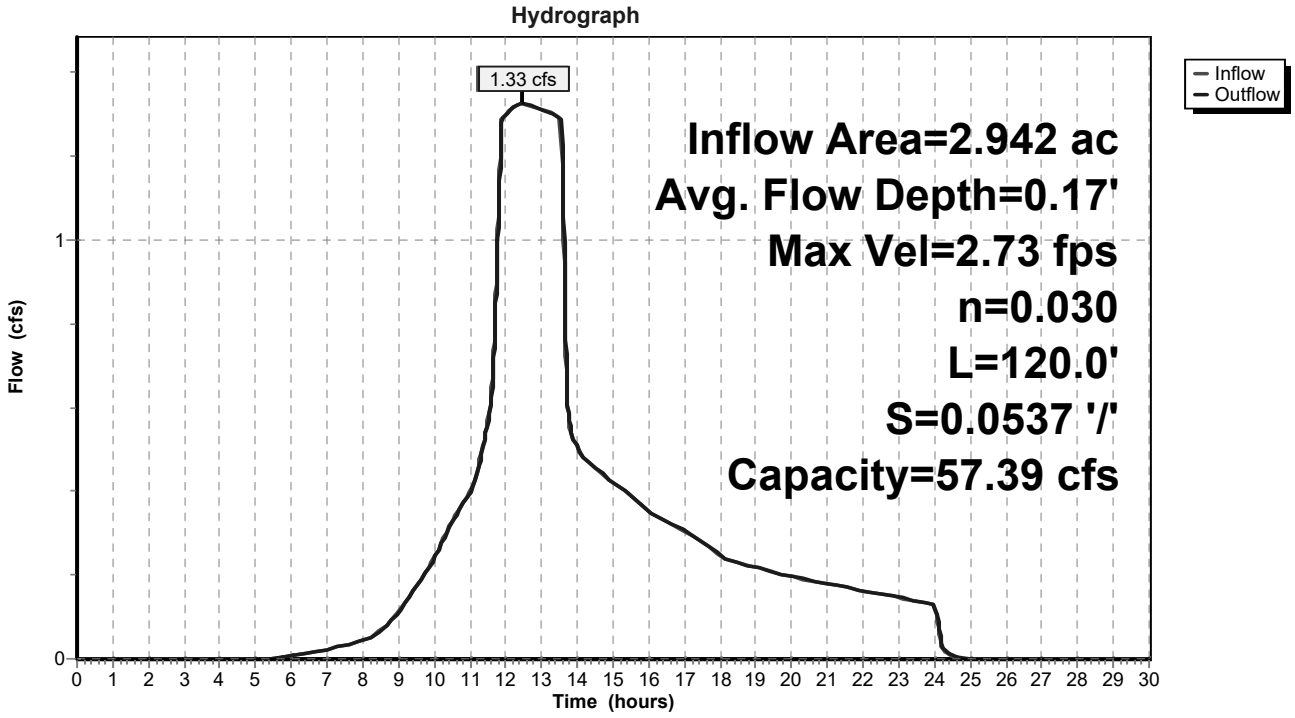
Peak Storage= 58 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 4.18'
Bank-Full Depth= 1.00' Flow Area= 6.7 sf, Capacity= 57.39 cfs

10.00' x 1.00' deep Parabolic Channel, n= 0.030
Length= 120.0' Slope= 0.0537 '/'
Inlet Invert= 79.50', Outlet Invert= 73.06'



‡

## Reach 3R:

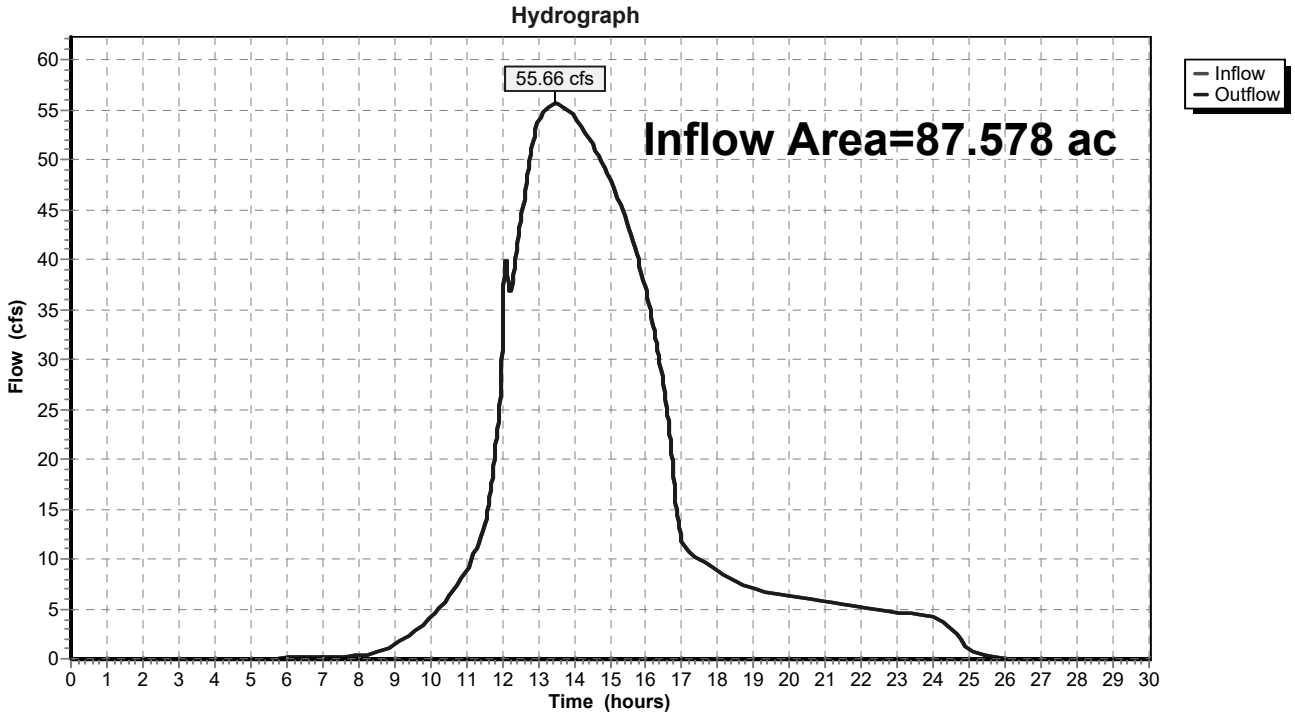


## Summary for Reach 4R: POI 2

Inflow Area = 87.578 ac, 34.46% Impervious, Inflow Depth = 3.32" for 25Yr event
Inflow = 55.66 cfs @ 13.46 hrs, Volume= 24.223 af
Outflow = 55.66 cfs @ 13.46 hrs, Volume= 24.223 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

## Reach 4R: POI 2

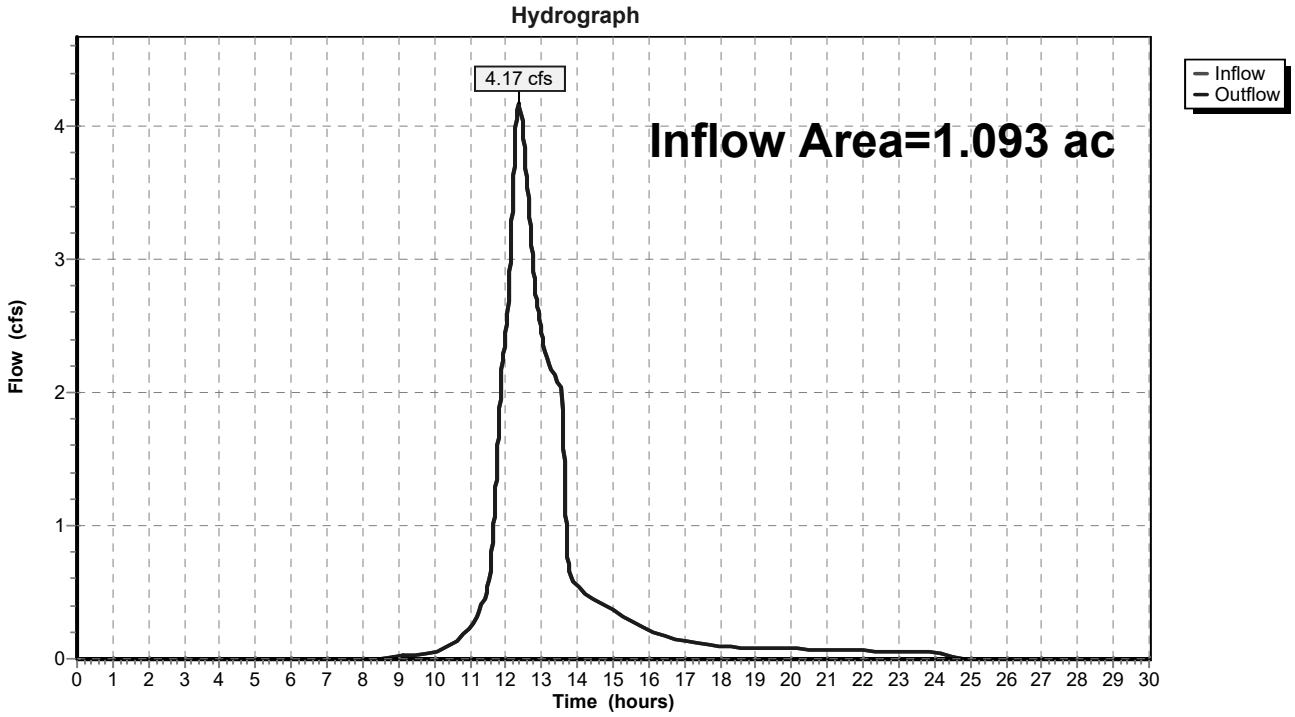


## Summary for Reach 6R: POI 1

Inflow Area = 1.093 ac, 7.56% Impervious, Inflow Depth = 6.78" for 25Yr event
Inflow = 4.17 cfs @ 12.39 hrs, Volume= 0.617 af
Outflow = 4.17 cfs @ 12.39 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

## Reach 6R: POI 1



## Summary for Pond 3P:

Inflow Area = 84.285 ac, 33.06% Impervious, Inflow Depth = 3.26" for 25Yr event
Inflow = 136.05 cfs @ 12.72 hrs, Volume= 22.919 af
Outflow = 54.48 cfs @ 13.50 hrs, Volume= 22.916 af, Atten= 60%, Lag= 46.5 min
Primary = 54.48 cfs @ 13.50 hrs, Volume= 22.916 af
Routed to Reach 4R : POI 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 82.83' @ 13.50 hrs Surf.Area= 67,989 sf Storage= 258,035 cf

Plug-Flow detention time= 38.9 min calculated for 22.908 af (100% of inflow)
Center-of-Mass det. time= 38.8 min ( 904.9 - 866.1 )

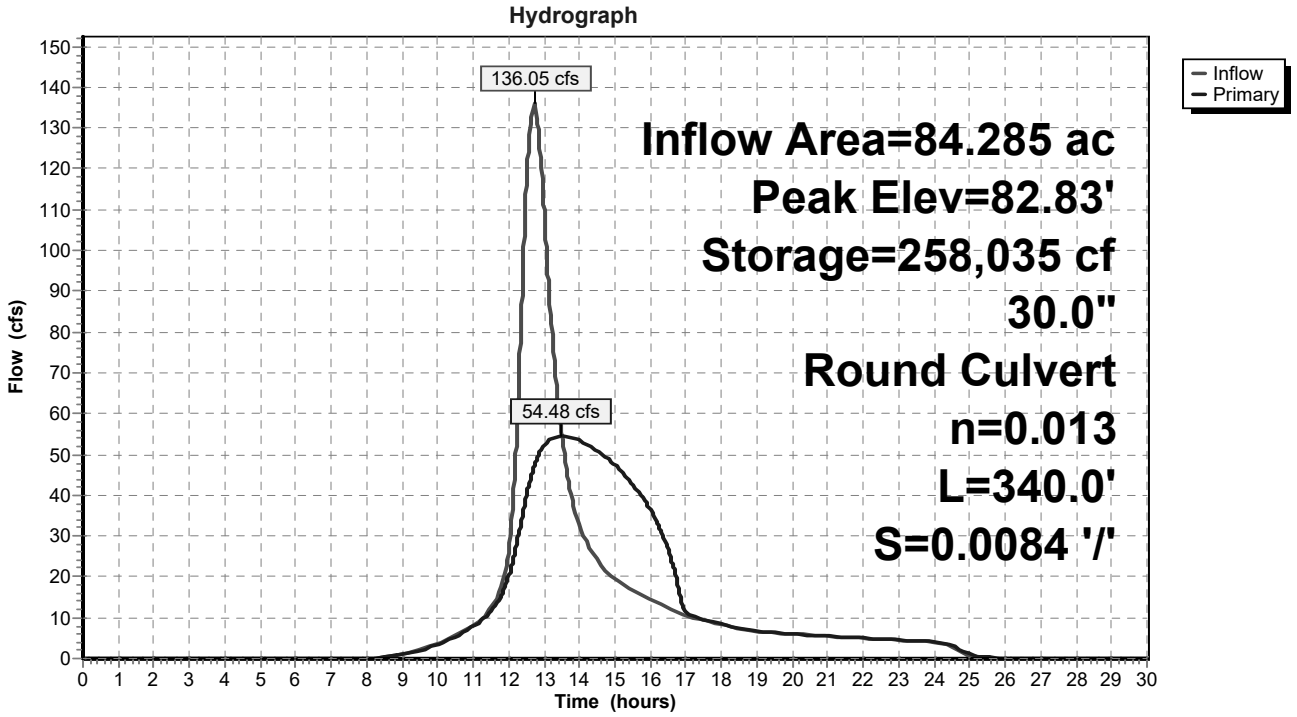
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 72.47' | 346,255 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 72.47 | 100 | 40.0 | 0 | 0 | 100 |
| 74.00 | 1,008 | 320.0 | 727 | 727 | 8,126 |
| 76.00 | 11,328 | 680.0 | 10,477 | 11,204 | 36,791 |
| 78.00 | 24,320 | 1,110.0 | 34,831 | 46,034 | 98,068 |
| 82.00 | 57,872 | 1,920.0 | 159,611 | 205,645 | 293,469 |
| 84.00 | 83,520 | 2,120.0 | 140,610 | 346,255 | 357,895 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 73.06' | **30.0" Round Culvert**<br>L= 340.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 73.06' / 70.20' S= 0.0084 '/' Cc= 0.900<br>n= 0.013, Flow Area= 4.91 sf |

**Primary OutFlow** Max=54.48 cfs @ 13.50 hrs HW=82.83' TW=0.00' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 54.48 cfs @ 11.10 fps)

## Pond 3P:


Hydrograph
136.05 cfs
54.48 cfs
Inflow Area=84.285 ac
Peak Elev=82.83'
Storage=258,035 cf
30.0"
Round Culvert
n=0.013
L=340.0'
S=0.0084 '/'
Inflow
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 7P:

Inflow Area = 2.942 ac, 16.49% Impervious, Inflow Depth = 3.43" for 25Yr event
Inflow = 11.41 cfs @ 12.06 hrs, Volume= 0.840 af
Outflow = 3.06 cfs @ 12.45 hrs, Volume= 0.840 af, Atten= 73%, Lag= 23.2 min
Primary = 1.33 cfs @ 12.45 hrs, Volume= 0.515 af
Routed to Reach 3R :
Secondary = 1.73 cfs @ 12.45 hrs, Volume= 0.325 af
Routed to Reach 6R : POI 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 84.33' @ 12.45 hrs Surf.Area= 84,546 sf Storage= 7,845 cf

Plug-Flow detention time= 15.6 min calculated for 0.840 af (100% of inflow)
Center-of-Mass det. time= 15.6 min ( 831.3 - 815.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.05' | 47,283 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

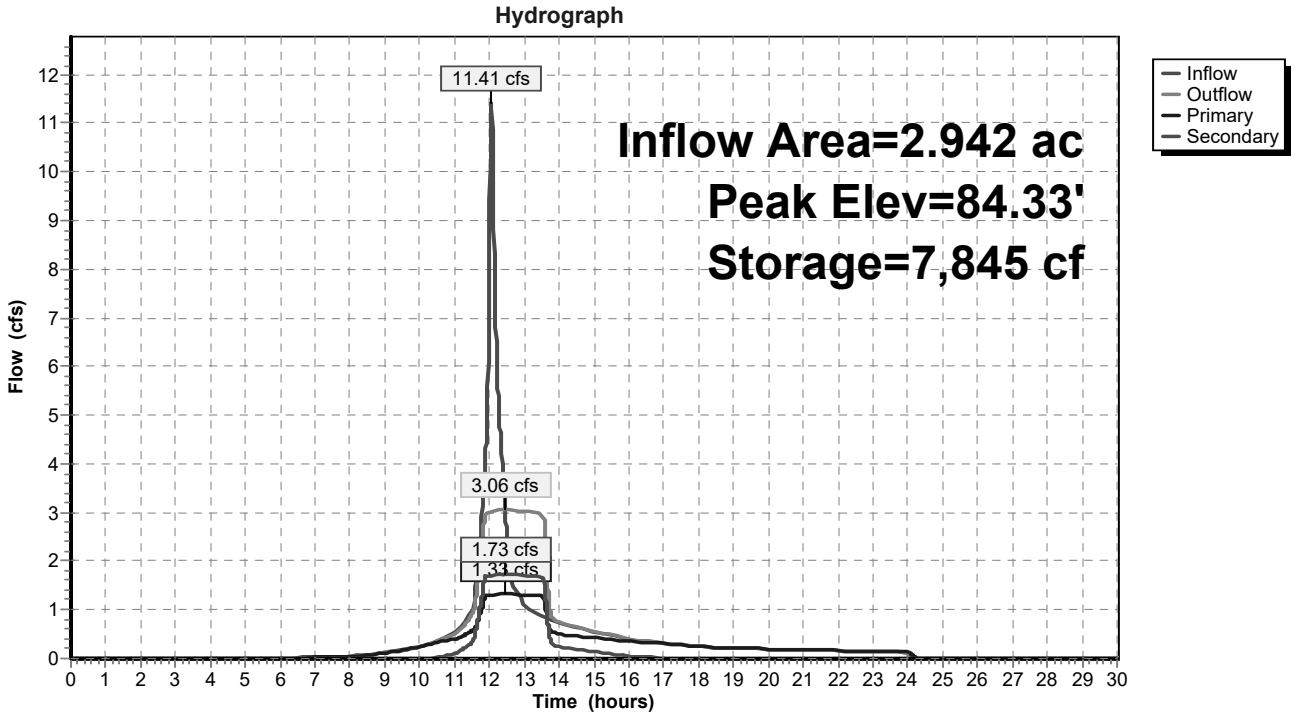
| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 80.05 | 480 | 0.0 | 0 | 0 |
| 84.10 | 480 | 40.0 | 778 | 778 |
| 84.15 | 84,546 | 40.0 | 850 | 1,628 |
| 85.00 | 84,546 | 40.0 | 28,746 | 30,374 |
| 85.50 | 84,546 | 40.0 | 16,909 | 47,283 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 80.05' | **5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #2 | Secondary | 78.15' | **12.0" Round Culvert**<br>L= 293.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 78.15' / 75.00' S= 0.0108 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |
| #3 | Device 2 | 80.40' | **4.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Device 2 | 80.90' | **4.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=1.33 cfs @ 12.45 hrs HW=84.33' TW=79.67' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Orifice Controls 1.33 cfs @ 9.72 fps)

**Secondary OutFlow** Max=1.73 cfs @ 12.45 hrs HW=84.33' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 1.73 cfs of 5.56 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 0.90 cfs @ 9.34 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.84 cfs @ 8.69 fps)

## Pond 7P:


Hydrograph
11.41 cfs
3.06 cfs
1.73 cfs
1.33 cfs
Inflow Area=2.942 ac
Peak Elev=84.33'
Storage=7,845 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

# EXHIBIT 15

# EROSION AND SEDIMENTATION CONTROL

# EXHIBIT 15
# EROSION AND SEDIMENTATION CONTROL
# BASIC STANDARDS

## 1.1 Overview

This Exhibit demonstrates the developer has made adequate provision for controlling erosion and sedimentation.

## 1.2 Introduction

Gorrill Palmer has been retained by North Yarmouth Academy (NYA) to prepare an Erosion and Sedimentation Control Report for the construction of a temporary classroom at North Yarmouth Academy in Yarmouth Maine. Figure 1 is a map showing the project location. NYA is currently seeking a Site Plan Permit from the Town of Yarmouth and a minor revision to the school's SLDA permit. Gorrill Palmer has prepared an Erosion and Sedimentation Control Plan for the proposed development. This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project.

## 1.3 Narrative

### 1.3.1 Existing Conditions and Soil Types

The proposed temporary classroom has a footprint of 1,560 sf. An ADA accessible ramp and landing will be constructed for access to the temporary classroom. The site is currently developed with the existing school parking and grassed areas. Abutting land uses include:

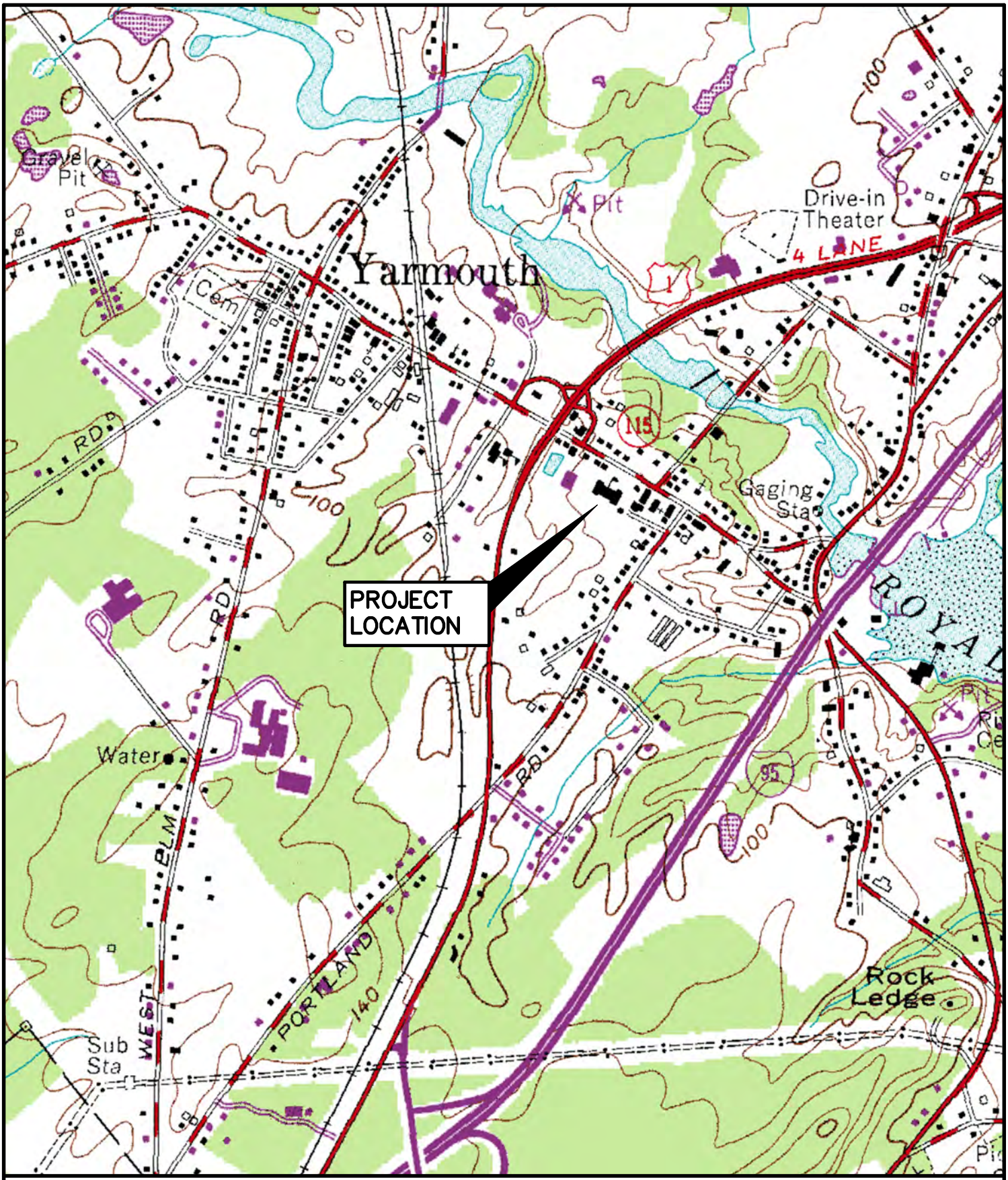
- North – Residential/Commercial
- East – Residential
- South – Residential/Commercial
- West – Commercial

Topography in the area of the proposed construction is relatively flat with slopes of approximately 1% to 4% at the site of the proposed classroom, and a steeper grass slope of approximately 3:1 south of the classroom site.

The NRCS Web Soil Survey was utilized in identifying the on-site soils. The soils at the temporary classroom site are classified as Cut and Fill, and Made Lland. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The higher values are indicative of the more erodible soils. The following table lists the soils found on site and their K values:

| K VALUE | | |
|---|---|---|
| **Type** | **Subsurface** | **Substratum** |
| Cut and Fill | N/A | N/A |
| Made Land | N/A | N/A |

It has been assumed that the disturbed soils will be moderately susceptible to erosion.




# U.S.G.S. Location Map

NYA Temporary Classroom for Lower School - Yarmouth, Maine

U.S.G.S. Yarmouth, State-7.5 Minute Series (Topographic)

| | | | |
|---|---|---|---|
| Design: HWH | Date: MAY 2023 | GORRILL PALMER | Figure 1 |
| Draft: HWH | Job No.: 4123 | | |
| Checked: WCH | Scale: None | | |
| File Name: 4123–LocMap.dwg | | | |

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# Custom Soil Resource Report
## Soil Map


Map Scale: 1:728 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 19, Aug 30, 2022

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

## MAP LEGEND

## MAP INFORMATION

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 |
|---|---|---|---|
| Cu | Cut and fill land | 0.8 | 61.5% |
| Md | Made land | 0.5 | 38.5% |
| **Totals for Area of Interest** | | **1.3** | **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,

### 1.3.2 Existing Erosion Problems

There is some erosion/bare soil adjacent to the existing parking lot, presumably caused by plowing during the winter. The denuded soil will be revegetated at the completion of the project.

### 1.3.3 Critical Areas

The proposed site is not adjacent to any wetland or stream.

### 1.3.4 Protected Natural Resources

Wetlands on-site have been delineated by Flycatcher of Yarmouth, Maine for the previous Travis Roy Arena redevelopment, and located by gps and are shown on project plans. Wetland impacts are not anticipated for this redevelopment.

Based upon the FEMA maps, the site is not located within a Zone A 100-year floodplain.

### 1.3.5 Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (hay bales/ stone check dams/silt fence, etc.)

The following temporary and permanent erosion and sediment control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control Practices Field Guide for Contractors.

#### A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource. Dewatering discharge shall not be directed across adjacent properties in a concentrated manner.

## B. Inspection and Monitoring

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

The following standards must be met during construction.

(a) **Inspection and corrective action**. Inspect disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspect these areas at least once a week as well as before and within 24 hours after a storm event (rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

(b) **Maintenance**. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If additional BMPs or significant repair of BMPs are necessary, implementation must be completed within 7 calendar days and prior to any storm event (rainfall). All measures must be maintained in effective operating condition until areas are permanently stabilized.

(c) **Documentation**. Keep a log (report) summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

The log must be made accessible to Department staff and a copy must be provided upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

## C. Temporary Erosion Control Measures

Temporary erosion control measures shall be installed by the Contractor as required by this report and as shown on the plan set for the project. Additional erosion control measures shall be installed if deemed necessary by on-site inspections of the Owner, the Town of Yarmouth, MDEP, or their representatives at no additional cost to the owner.

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. Due to the limited disturbance of soil, and the paved parking lot which will be used for access, a construction entrance is not proposed.

2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less then 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

4. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

a) Temporary stockpiles shall not be located within 100 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.

c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.

5. All denuded areas that are within 100 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

7. The parking lot shall be swept to control mud and dust as necessary. Tracking of soil to Main Street/Rt 115 is prohibited.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored. A double row of silt fence shall be used adjacent to wetlands.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or approved sediment bags (such as Silt Sack). Installation details are provided in the plan set. The barriers shall be inspected after each rainfall and repairs made as necessary. Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. The barrier shall be removed when the tributary drainage area has been stabilized.

12. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

13. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

## D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in **Temporary Erosion Control Measures** paragraph 3 of this report. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

## 1.4 Implementation Schedule

**The following construction sequence shall be required to ensure the effectiveness of the erosion and sedimentation control measures are optimized:**

It is anticipated that construction of the temporary classroom will commence in Spring of 2023 and be completed by Fall of 2023.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area.

1. Install perimeter silt fence and/or wood waste berms prior to grubbing respective areas.
2. Clear and grub site. Install stone check dams at any evident concentrated flow discharge points.
3. Foundation preparation area shall be excavated for installation of the building footings. Building work will be on going through the remainder of the project.
4. Commence earthwork and grading to subgrade.
5. Commence construction of subsurface utilities as necessary.
6. Complete remaining earthwork operations.
7. Install sub-base and base gravel within parking fields, walkways, and all driveways.
8. Install base course paving for walkway and parking area.
9. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
10. Install surface course paving for walkway and parking areas. Stripe per plan.
11. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.
12. Touch up loam and seed.

Note: All denuded areas not subject to final paving, riprap, or gravel shall be revegetated.
Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

2. The work shall be conducted in sections which shall:

a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.

b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 100 feet of an undisturbed wetland and 7 days for all other areas. Areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.

c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

## 1.5 Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control Plan is included in the plan set.

## 1.6 Details and Specifications

The Erosion Control details and specifications are included in the plan set.

## 1.7 Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to those areas in which work is expected to be undertaken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway/parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

### 1. Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or

snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 100 feet from any natural resources.

**2. Natural Resource Protection**

Any areas within 100 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 100 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

**3. Sediment Barriers**

During frozen conditions, sediment barriers shall consist of woodwaste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

**4. Mulching**

An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

**5. Mulching on Slopes and Ditches**

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

**6. Seeding**

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is

after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

**Standards for Timely Stabilization of Construction Sites During Winter**

**1. Standard for the timely stabilization of ditches and channels** -- The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the applicant fails to stabilize a ditch or channel to be grass-lined by September 1, then the applicant will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch -- The applicant shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch --The applicant shall line the ditch with stone riprap by November 15. The applicant shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the applicant shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

**2. Standard for the timely stabilization of disturbed slopes** -- The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope. If the applicant fails to stabilize any slope to be vegetated by September 1, then the applicant shall take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats -- By September 1 the applicant shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the applicant shall cover the slope with a layer of woodwaste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod -- The applicant shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the applicant pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The applicant shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with woodwaste compost -- The applicant shall place a six-inch layer of woodwaste compost on the slope by November 15. Prior to placing the woodwaste compost, the applicant shall remove any snow accumulation on the disturbed slope. The applicant shall not use woodwaste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap -- The applicant shall place a layer of stone riprap on the slope by November 15. The applicant shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

**3. Standard for the timely stabilization of disturbed soils** -- By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation -- By September 1 the applicant shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed soil before November 1, then the applicant shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod -- The applicant shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch -- By November 15 the applicant shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the applicant shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the applicant will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

## 1.8 Maintenance of facilities

The stormwater facilities will be maintained by the Applicant, North Yarmouth Academy or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report. Long-term operation/maintenance recommended for the stormwater facilities is presented below.

The responsible party may contract with such professionals, as may be necessary in order to comply with this provision and may rely on the advice of such professionals in carrying out its duty hereunder, provided, that the following operation and maintenance procedures are hereby established as a minimum for compliance with this section. A maintenance log of the inspections shall be kept by the responsible party.

A construction inspection log is included in Attachment B. An Operation and Maintenance manual including an inspection log is included in Attachment C.

**Inspection and Maintenance Frequency and Corrective Measures**:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

**Catch Basins:**
Inspect catch basins 2 times per year (preferably in Spring and Fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

**Roofline Drip Strip:**
The drip strip will be inspected within the first three months after construction; thereafter the filter will be inspected 2 times per year (preferably in Spring and Fall) Any identified deficiencies will be corrected. Inspect for unwanted or invasive plants and remove as necessary. Remove debris from the surface.

**Vegetated Areas**:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

**Roadways and Parking Surfaces:** Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

**Recertification**

As part of the Stormwater Permit, the applicant is required to meet the standards in Appendix B of the Chapter 500 Rules. Appendix B states that a project must submit a certification of the following to the department within three months of the expiration of each five-year interval from the date of issuance of the permit.

(a) Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
(b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.
(c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.
(d) Proprietary Systems. All proprietary systems have been maintained according to the manufacturer's recommendations. Where required by the Department, the permittee shall

execute a 5-year maintenance contract with a qualified professional for the coming 5-year interval. The maintenance contract must include provisions for routine inspections, cleaning, and general maintenance.

## Housekeeping

As part of the Stormwater Permit, the applicant is required to meet the standards in Appendix C of the Chapter 500 Rules. The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to Chapter 500 rules – Appendix C.

**Spill Prevention:**
Controls must be used to prevent pollutants from construction and waste materials stored on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

**Groundwater Protection:**
During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

**Fugitive Sediment and Dust:**
Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

**Debris and Other Materials:**
Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

**Trench or Foundation De-watering:**
Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through

natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site.

**Authorized Non-stormwater Discharges:**
Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:

(a) Discharges from firefighting activity;

(b) Fire hydrant flushings;

(c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);

(d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);

(e) Routine external building washdown, not including surface paint removal, that does not involve detergents;

(f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;

(g) Uncontaminated air conditioning or compressor condensate;

(h) Uncontaminated groundwater or spring water;

(i) Foundation or footer drain-water where flows are not contaminated;

(j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));

(k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

**Unauthorized Non-stormwater Discharges:**
Identify and prevent contamination by non-stormwater discharges. Specifically, the Department's approval does not authorize discharges of the following:

(a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;

(b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;

(c) Soaps, solvents, or detergents used in vehicle and equipment washing; and

(d) Toxic or hazardous substances from a spill or other release.

**Conclusion**

The Applicant has provided temporary and permanent erosion control measures as well as specifying a sequence of construction as measures to minimize erosion and sedimentation.

**Attachments**

Attachment A - Seeding Plan

Attachment B - Inspection Report

Attachment C - O&M Manual

# ATTACHMENT A

# SEEDING PLAN

SEEDING PLAN

Project: North Yarmouth Academy

Site Location: Yarmouth, ME

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   50% Winter Rye

   50% Annual Rye

6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

| | Amount | Unit # Tons. Etc. |
|---|---|---|
| 7. TOTAL LIME | 138 | #/1000 sq. ft. |
| 8. TOTAL FERTILIZER | 13.8 | #/1000 sq. ft. |
| 9. TOTAL SEED | 1.03 | #/1000 sq. ft. |
| 10. TOTAL MULCH | 75 | #/1000 sq. ft. |
| 11. TOTAL other materials, seeds, etc. | | |
| 12. REMARKS | | |

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: North Yarmouth Academy

Site Location: Yarmouth, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   40% Creeping Red Fescue

   30% Charger II Perennial Ryegrass

   20% KenBlue Kentucky Bluegrass

   10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

| | Amount | Unit # Tons. Etc. |
|---|---|---|
| 7. TOTAL LIME | 138 | #/1000 sq. ft. |
| 8. TOTAL FERTILIZER | 18.4 | #/1000 sq. ft. |
| 9. TOTAL SEED | 1.03 | #/1000 sq. ft. |
| 10. TOTAL MULCH | 75 | #/1000 sq. ft. |
| 11. TOTAL other materials, seeds, etc. | | |
| 12. REMARKS | | |

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

# ATTACHMENT B

# INSPECTION REPORT

# EROSION AND SEDIMENTATION CONTROL PLAN

## CONSTRUCTION INSPECTION REPORT

PROJECT INFORMATION

Project Name: North Yarmouth Academy

Address: Route 1
Yarmouth, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN
(MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____
Signature

_____
Typed Name

_____
Title

_____
Date

# ATTACHMENT C

# OPERATION AND MAINTAINANCE MANUAL

# NORTH YARMOUTH ACADEMY
# TEMPORARY CLASSROOM
# YARMOUTH, MAINE

# STORMWATER MANAGEMENT SYSTEM OPERATION AND MAINTENANCE MANUAL FOR STORMWATER FACILITIES

**Prepared for**

**NORTH YARMOUTH ACADEMY**
**148 Main Street**
**Yarmouth, ME 04096**

**Prepared by**

**Gorrill Palmer**
**707 Sable Oaks Drive – Suite 30**
**South Portland, Maine 04106**
**207.772.2515**

**May 2023**

## TABLE OF CONTENTS



## APPENDICES

# I. INTRODUCTION

Runoff from developed areas may contain a number of contaminants especially when emanating from rooftops, pavement or lawn areas. This runoff can contain a significant amount of non-point contaminants, which can have an adverse impact on the receiving waters.

The effectiveness of ponds and other components of the system are dependent on their upkeep and maintenance to assure they meet their design function over an extended period of years. It is critical that the stormwater management facilities are inspected on a regularly scheduled basis, and that maintenance is performed on an as needed basis. It must also be recognized that the effectiveness of these facilities, and their maintenance requirements, are related to the stormwater drainage facilities that transport the flow to the ponds or treatment measures. Thus, maintenance should be directed to the total system.

The purpose of this document is to define in detail the inspection and maintenance requirements deemed necessary to assure that the stormwater management facilities function as intended on a long-term basis for the Temporary Classroom. This Operations and Maintenance Manual is specific to the existing and proposed stormwater measures utilized to execute a successful stormwater management plan. Subsequent sections identify individual maintenance items; give a brief commentary of the function and need of the item, a description of the work required, and a suggested frequency of accomplishment. While the suggested programs and schedules must be adapted to specific projects, the material presented should provide guidance for a successful long-term program.

## A. Guidelines Overview

A summary of the individual components of stormwater management facilities for this project has been prepared. The format used in the summary is as follows:

Preface: A general description of what function/benefit the element is intended to provide. This is a short summary and not intended to provide the design basis, which can be found in other sources.

Inspection: This section provides the inspection requirements for the individual component.

Maintenance: The section provides general information on the routine maintenance requirements of this element.

Frequency: This section outlines the best judgment of the designer on the system to the frequency of maintenance.

Comments: This section provides any particular comment on the site-specific features of this element. This is a summary only. The owner/operator should review the design drawings and documents carefully to understand the particular elements of the project. The end of this section should allow the owner/operator to make notes on the specific program. This may include the selected maintenance procedure, cross-references to applicable design drawings, etc.

A list of the individual inspection/maintenance elements is provided in the table of contents. The guidelines are proposed for initial use with adjustments made as appropriate based upon specific project experience.

This report includes the Operation and Maintenance requirements for any potential BMP identified in the Stormwater Management Report for this project.

### B. Responsible Party

The responsible party for operation and maintenance of the stormwater and other site infrastructure will be the Applicant (North Yarmouth Academy) or their agents or assigns.

## II. PROJECT OVERVIEW

Key permits issued (or applied for) on the project include:

- Town of Yarmouth Site Plan Approval
- MaineDEP Site Location of Development Permit Minor Amendment

A copy of the permits and Stormwater Management Report should be appended to this manual as Appendix C. The Owner/Operator of the stormwater management system should review these permits for a general description and background of the project, as well as any specific permit conditions or requirements of the project.

The applicant has retained Gorrill Palmer for civil engineering for the development project. Gorrill Palmer has prepared the design for the stormwater management facilities and may be contacted at:

Gorrill Palmer
300 Sable Oaks Drive – Suite 200
South Portland, Maine 04106
207.772.2515

The applicable plans and design documents which apply to the project are:

1. Civil Site Plans Prepared by Gorrill Palmer
2. The Erosion Control/Sedimentation Control Plan for the project
3. The Stormwater Management Plan for the project

A copy of these documents should be retained with this manual.

The proposed design includes inlets and vegetated surfaces.

The key receiving water for this project is the Royal River that is located northeast of the project site.

The manual is intended for general guidance; however, any substituted deviations from the manual should be reviewed with respect to provisions of Appendix C.

## III. STANDARD INSPECTION/MAINTENANCE DESCRIPTIONS

The following narratives describe the inspection/maintenance provisions for the Stormwater Management system. Proper O&M is necessary to make sure the system will provide its intended purpose of conveying runoff, removing a substantial amount of the suspended solids, and other contaminants in the stormwater runoff.

### A. Stormwater Inlets

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets include catch basins, open culverts, and field inlets. Inlets exist throughout the Ice Arena property.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets and porous pavement in parking lots. Sand and salt shall not be applied to porous pavers. Grass clippings and leaves should be bagged and removed particularly near the yard inlets near the buildings.

Frequency: All inlets should be inspected on a quarterly basis, and after/during significant storm events i.e. >1" rainfall).

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/ inspections of the inlets and tributary drainage system.

Comments: Maintenance of inlets is critical on this project.

### B. Tributary Drainage System

Preface: Stormwater from most of the project will be directed through a conveyance (tributary) system which transports the flow and ultimately to the Royal River. This conveyance system will be principally overland flow discharging to piped drain systems. Most of the sediment carried by the drainage system is intended to be trapped in structures. Maintenance of this system can play a major role in the long-term maintenance costs and the effectiveness of the onsite systems. The primary pretreatment measure for the site will be through deep sumped catch basins.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that the carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems, the inlets must be

inspected to ensure the rims are set at the proper elevation to optimize flow entry and are not clogged with debris.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sediments to any downstream treatment device or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. If a temporary filter bag has been designated for the inlet during construction, silt or other deleterious materials, can significantly reduce capacity and the bags should be removed with the sediment and replaced during construction. Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the Development. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline is observed, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed.

Frequency: The tributary drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation.

### C. Roof Line Stone Drip Edge

Preface: The roof line drip edge collect stormwater runoff from the roof areas preventing erosion from the roof runoff and allowing infiltration.

Inspection/Monitoring: The drip edge should be inspected regularly to ensure that the surface is not clogged.

Maintenance: Any debris should be removed from the drip edge surface. Weeding and collection of leaves and debris should be performed on a regular basis.

Frequency: The roof drip edge should be inspected semi-annually and maintained as necessary.

Maintenance/Inspection Responsibility: The Owner or an outside agent is responsible for inspection and maintenance of the drip edge areas.

Comments: Proper maintenance is critical for the drip edge as they play a large role in the overall stormwater management plan for the development.

### D. Ditches, Swales, and Other Open Stormwater Channels

Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or side slopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

### E. Roadways and Parking Surfaces

Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

### F. Litter

Litter should be removed as a matter of course by workers and as part of the ground's maintenance contract.

## IV. PROGRAM ADMINISTRATION

### A. General

A reliable administrative structure must be established to assure implementation of the maintenance programs described in the foregoing section. Key factors that must be considered in establishing a responsive administrative structure include:

1. Administrative body must be responsible for long-term operation and maintenance of the facilities. (Maintenance continues for the lifespan of the development in accordance with this document)

2. Administrative body must have the financial resources to accomplish the inspection and maintenance program over the life of the facility.

3. The administrative body must have a responsible administrator to manage the inspection and maintenance programs.

4. The administrative body must have the staff to accomplish the inspection and maintenance programs or must have authority to contract for the required services.

5. The administrative body must have a management information system sufficient to file, retain, and retrieve all inspection and maintenance records associated with the inspection and maintenance programs.

6. A qualified post construction inspector shall be retained by the Owner. The Inspector's duties shall include preparing schedules for the Owner's maintenance, summarizing the results of this maintenance and preparing an annual report on the operation, maintenance, and repair of the stormwater system which must be copied to the Town of Yarmouth. (The Owner shall be responsible for retaining a separate entity to perform maintenance which cannot be performed by the management of building and property grounds.) This person shall also participate in troubleshooting of the stormwater management system if a problem develops.

If any of the above criteria cannot be met by the entity assigned inspection and maintenance responsibilities, it is likely that the system will fail to meet its water quality objectives at some point during its life. While each of the above criteria may be met by a variety of formats, it is critical to clearly establish the assigned administrative body in a responsible and sustainable manner.

7. The Owner shall comply with the Town of Yarmouth's Chapter 330 Post Construction Stormwater Management ordinance, including annual certification to the Town Manager.

## B. Record Keeping

Records of all inspections and maintenance work accomplished must be kept and maintained to document facility operations. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by appropriate regulatory bodies. Where possible, copies of such records should also be filed with the designated primary regulatory agency for their review for compliance with permit conditions. Typical inspection and maintenance record forms are attached hereto as Appendix B.

Beyond the initial 5-year time span of the original approval and maintenance plan, the stormwater management system will need to be recertified through the Maine Department of Environmental Protection every 5 years to confirm that there is conformance with the original permit documents. This process will ensure all systems function properly over time. This document will remain valid throughout any subsequent recertification processes.

## C. Contract Services

In some instances, or at specific times, the Maintenance Personnel may not have the staff to conduct the required inspection and/or maintenance programs as outlined in this document. In such cases, the work should be accomplished on a contractual basis with a firm or organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

# APPENDIX A

## Summary Checklist
## Inspection and Maintenance

| Stormwater Management System<br>Maintenance Program<br>Summary Checklist | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Commentary** | **Frequency** | | | | |
| | | **Monthly** | **Quarterly** | **Semi-Annual** | **Annual** | **Long Term** |
| Stormwater Inlets | Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas. | | X | | X<br>Clearing | |
| Tributary Drainage System | Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments. | | | | X | |
| Roof Line Drip Edge | Remove debris from surface of stone layer.<br>Weed overgrown areas as necessary. Snow storage is prohibited on the drip edge. | | | X | | |
| Ditches Swales and Other open Stormwater Channels | Inspect to ensure the ditch is not eroding or blocked by debris. | | | X | | |
| Roadways and Parking Surfaces | Remove accumulated sand. | | | | X | |
| Litter | Litter should be removed daily. | | | | | |
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# APPENDIX B

## Sample Inspection Logs

**TEMPORARY CLASSROOM**
**YARMOUTH, MAINE**

**STORMWATER MANAGEMENT**
**SAMPLE STORMWATER INSPECTION & MAINTENANCE LOG**

This log is intended to accompany the Operation and Maintenance Manual for Stormwater Management and Related Facilities. All stormwater BMPs shall be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions of the DEP Stormwater Permit and the Town of Yarmouth's Post Construction Stormwater Management Monitoring Ordinance, shall conduct inspections of the facilities as described in the O&M Manual and on this form, and identified deficiencies must be corrected. This log shall be kept on file for a minimum of five (5) years.

| **A. General Information** | | | |
|---|---|---|---|
| **Project Name:** | | **Inspection Date:** | |
| **Parcel/Lot:** | | **Current Weather:** | |
| **BMP Owner:** | | **Date/Amount Last Precip.:** | |
| **Owner Mailing Address:** | | **Inspection Company:** | |
| **Owner Phone #:** | | **Inspection Co. Mailing Address:** | |
| **Owner Email:** | | **Inspector Name:** | |
| | | **Inspector Phone #:** | |
| | | **Inspector Email:** | |

| **B. Stormwater Inlets (Catchbasins)** | **Observations** |
|---|---|
| **Frequency: Annually in the spring** | |
| Accumulated sediments from inflow channels and pipes between basins have been removed and legally disposed of | ☐ Yes ☐ No ☐ NA |
| Floating debris and large sediment particles have been removed from inlets. | ☐ Yes ☐ No ☐ NA |
| **Stormwater Inlet Notes:** | |

| **C. Tributary Drainage System** | **Observations** |
|---|---|
| **Frequency: Annually spring or late fall and after heavy rains** | |
| Remove and legally dispose of sediments | ☐ Yes ☐ No ☐ NA |
| Remove floatables and other objects | ☐ Yes ☐ No ☐ NA |
| Check for overgrown vegetation impeding flow | ☐ Yes ☐ No ☐ NA |
| Check pipelines for siltation and clogging | ☐ Yes ☐ No ☐ NA |
| Repair any slumping side slopes or erosion | ☐ Yes ☐ No ☐ NA |
| Replace any riprap on areas where any underlying fabric or underlying gravel is exposed. | ☐ Yes ☐ No ☐ NA |
| **Tributary Drainage System Notes:** | |

| **D. Roof Line Drip Edge** | **Observations** |
|---|---|
| **Frequency: Semi-Annually** | |
| Clear debris from stone surface area | ☐ Yes ☐ No ☐ NA |
| Check for signs of clogging | ☐ Yes ☐ No ☐ NA |
| **Roof Line Drip Edge Filter Notes:** | |

| **F. Ditches, Swales, and Other Open Stormwater Channels** | Observations |
|---|---|
| Frequency: Semi Annually spring and late fall and after heavy rains | |
| Remove and legally dispose of sediments | ☐ Yes ☐ No ☐ NA |
| Remove floatables and other objects | ☐ Yes ☐ No ☐ NA |
| Check for overgrown vegetation impeding flow. | ☐ Yes ☐ No ☐ NA |
| Mow to control growth and maintain flow capacity. | ☐ Yes ☐ No ☐ NA |
| Repair any slumping side slopes or erosion | ☐ Yes ☐ No ☐ NA |
| Replace any riprap on areas where any underlying fabric or underlying gravel is exposed. | ☐ Yes ☐ No ☐ NA |
| **Ditches Swales and Other Channel Notes:** | |

| **G. Roadways and Parking Surfaces** | **Observations** |
|---|---|
| **Frequency: Annually preferably in spring** | |
| Remove and legally dispose of accumulated winter sand | ☐ Yes ☐ No ☐ NA |
| Repair potholes and other roadway obstructions and hazards. | ☐ Yes ☐ No ☐ NA |
| **Roadways and Parking Surfaces Notes:** | |

# APPENDIX C

## Stormwater Management Report and Permits for Project

# EXHIBIT 16

# SOILS

Attached to this exhibit is a NRCS Medium Intensity Soil Map.

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# Custom Soil Resource Report
## Soil Map


Map Scale: 1:728 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 19, Aug 30, 2022

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

## MAP LEGEND

## MAP INFORMATION

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 |
|---|---|---|---|
| Cu | Cut and fill land | 0.8 | 61.5% |
| Md | Made land | 0.5 | 38.5% |
| **Totals for Area of Interest** | | **1.3** | **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.

# Cumberland County and Part of Oxford County, Maine

## Cu—Cut and fill land

**Map Unit Composition**

*Cut and fill land:* 90 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Cut And Fill Land**

**Typical profile**

*H1 - 0 to 65 inches:* very gravelly sandy loam

**Properties and qualities**

*Slope:* 0 to 35 percent
*Drainage class:* Moderately well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to very high (0.06 to 20.00 in/hr)
*Depth to water table:* About 24 to 42 inches
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

## Md—Made land

**Map Unit Composition**

*Made land:* 85 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Made Land**

**Setting**

*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear

**Typical profile**

*H1 - 0 to 65 inches:* variable

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydric soil rating:* No

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# EXHIBIT 17

# OTHER APPROVALS

No other approvals are required.

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# EXHIBIT 18

# SITE PLAN REVIEW CRITERIA

We have provided a plan set, architectural renderings, and architectural floor plans for your review along with the following narrative summarizing the Character Based Development Code and Site Plan Review standards.

**Special District (SD1) Building & Lot Plan Standards**

| Standard | Requirement | Provided |
|---|---|---|
| Building Placement - Principal Building | | |
| Front Setback, Principal | 0 ft min, 16 ft max | Not applicable |
| Front Setback, Secondary Frontage | 2 ft min, 12 ft max | Not applicable |
| Side | 0 ft min | Not applicable |
| Rear Setback | Greater of 3 ft min or 15 ft from centerline of alley, if any, or from any abutting zone | Not applicable |
| Yard Types | | |
| Edgeyard | Permitted | Not Applicable |
| Sideyard | Permitted | Not Applicable |
| Rearyard | Permitted | Not Applicable |
| Building & Lot Principal Use | Education – Secondary | Provided |
| Lot Occupation | | |
| Lot Width | 18 ft min, 120 ft max | Not applicable |
| Lot Coverage | 85% max | Approx. 16% |
| Frontage Buildout | 40% min, 100% max at front setback | Does not front on street |
| Building Form – Principal Building | | |
| Building Height | 35 ft max, 55 ft with approval | 11.25' incl. height above finish grade |
| First Story Height | 10 ft min, 25 ft max | 11.25' |
| Upper Story Height | 10 ft min, 15 ft max | Not Applicable |
| Façade Glazing | 20% min, 70% max non-shopfront | 10.3% |
| Roof Type | Flat, hip, gambrel, gable, mansard | gable |
| Roof Pitch, if any | 8:12 to 14:12 | Only a slight pitch |
| Building Placement – Outbuilding | | |
| Front Setback | Principal bldg. setback + 20 ft | Not applicable |
| Side Setback | 0 ft min | Not applicable |
| Rear Setback | 3 ft min | Not applicable |
| Parking | | |
| Third Lot Layer | Principal bldg. setback + 20 ft | Not applicable |
| Other | 3 spaces per 1,000 SF of floor space | Not applicable |
| Private Frontages & Encroachments | | |
| Private Frontage Types | | |

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| | | |
|---|---|---|
| Common Yard | Permitted | Not Applicable |
| Porch | Permitted | Not Applicable |
| Forecourt | Permitted | Not Applicable |
| Stoop | Permitted | Not Applicable |
| Shopfront | Permitted | Not Applicable |
| Encroachment of Building Elements | | |
| Encl landings, stairs, stoops, bays, ramps and similar projections upon indicated setbacks by the following distances: | | |
| Front Setback, Principal Frontage | 10 ft max | No encroachment proposed |
| Front Setback, Secondary Frontage | 10 ft max | No encroachment proposed |
| Rear Setback | 5 ft max | No encroachment proposed |

**Site Plan Standards (Chapter 702)**
The following narrative addresses the site plan review criteria of Chapter 702.H.

1. **Conformance with Comprehensive Plan** – The proposed expansion of the temporary classroom is in conformance with the SD1 Character Based District which to our knowledge complies with the Town's Comprehensive Plan.

2. **Traffic** – The proposed temporary classroom is anticipated to increase traffic to the facility by approximately 27 AM and 16 PM weekday peak hour trip ends and does not require a MaineDOT Traffic Movement Permit. In addition, based on MaineDOT crash history, no high crash locations were identified within the immediate are along the site frontage. Based on a field review and sight distance evaluation, the existing site access exceeds required town sight distances. Additional information regarding traffic is included in Exhibit 12.

3. **Parking and Vehicle Circulation** – The existing parking lot at the project site provides 34 parking spaces. One parking space will be removed to accommodate an accessible ramp to the temporary classroom, resulting in a total of 33 parking spaces. Additionally, there are other parking areas located across the NYA campus and public parking along adjacent roads that can be used during peak usage. Based on a campus-wide parking count in 2020, there are approximately 179 parking spaces on the campus. Additionally, NYA has an agreement with the abutting property (south of the ice arena) to use up to 34 parking spaces.

4. **Sanitary Sewerage** – We are proposing a 4" sanitary sewer service to an existing sewer manhole in the parking lot. A request for an ability to serve letter has been sent to the Town Engineer and is included in Exhibit 11.

5. **Water** – We are proposing a 1" water service from the nearby Toddler House. A request for an ability to serve letter has been sent to the Yarmouth Water District and is included in Exhibit 11.

6. **Fire Safety** – The proposed expansion provides adequate access for emergency vehicles. A 20-foot-wide fire truck access aisle has been provided at the eastern end of the proposed expansion. The expansion will conform with applicable fire safety requirements.

7. **Buffering** – No buffering or landscaping is proposed as the building is surrounded by existing buildings with the same use.

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8. **Natural Areas** – There are no wetlands or significant natural features that will be impacted by the proposed expansion. The expansion remains within the previously developed area.

9. **Lighting** – No additional outdoor lighting is proposed for the building. The building will utilize existing lighting adjacent to the building location.

10. **Storm Water Management** – Stormwater from the project site will be directed to a drip strip filter on the southerly side of the building. This filter, which is located at the top of the existing slope, will collect runoff from the temporary building roof, gravel pad and a portion of the existing parking area. Runoff will flow through a filter layer which will slow down the runoff and provide water quality treatment before discharging to the storm drain system adjacent to the turf field. The existing enclosed drainage system discharges to the Town skating pond and eventually flows to the Royal River. A comprehensive stormwater report is included with this application in Exhibit 14.

11. **Erosion and Sedimentation Control** – An Erosion and Sedimentation control plan for the project is provided in Attachment 15.

12. **Buildings** – Refer to architectural portions of this narrative.

13. **Existing Landscaping** – The plan minimizes the disturbance of existing landscaping.

14. **Infrastructure** – The expansion will not have an impact on offsite infrastructure. Ability to serve letters have been sent to the Yarmouth Water District and the Sewer and Engineering Department.

15. **Advertising Features** – Any new advertising signage would be submitted to the Town for approval.

16. **Design Relationship to Site and Surrounding Properties** – The proposed expansion is relatively small compared to the scale of the existing lot area and development. It will be partially visible from Route 1 but is not anticipated to have any negative impacts.

17. **Scenic Vistas and Areas** – No scenic vistas are affected by this project.

18. **Utilities** – We are proposing a new 1" water service and a new 4" sanitary sewer service. Details are included in our plan set. Exhibit 11 includes the ability to serve letters sent to the Yarmouth Water District and Town Engineer.

19. **Technical Standards** – The technical standards of Article 1.J will be met.

20. **Route 1 Corridor Design Guidelines** – Not Applicable.

21. **Title, Right, Interest** – Exhibit 4/5 contains the evidence of Title, Right, Interest.

22. **Technical and Financial Ability** – Exhibits 8 and 9 contain the financial capacity information and the consultants for this project.

23. **Special Exception Standards** – The proposed project will meet the applicable special exception standards and will be compatible with the surrounding development.

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# EXHIBIT 19

# OPEN SPACE

The Applicant does not propose dedication to the Town of any open space, roads, or utilities.

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# EXHIBIT 20

# WAIVERS

The Applicant requests waivers from the following ordinance requirements.

Article I.G.3.h:
The applicant requests a waiver from the requirement to provide a high intensity soils classifications of the soils located on site. The location of the temporary classroom is currently developed and the building will utilize public sewer and water services, therefore, a high intensity soil survey is not warranted.

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# EXHIBIT 21

# NUISANCES

The project is located adjacent to an existing parking lot and school buildings and is the same use as the surrounding school buildings. The building is not readily visible from Route 1 or Main Street and therefore is not anticipated to result in a nuisance.

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