Public Facilities Committee Budget Agenda

City of Newton
In City Council

Thursday, May 14, 2020

The Public Facilities Committee will hold this meeting as a virtual meeting on Thursday, May 14, 2020 at 7:00 pm. To view this meeting use this link at the above date and time:
https://us02web.zoom.us/j/941974961
One tap mobile
+16465588656,,941974961# US (New York)

Dial by your location
+1 646 558 8656 US (New York)

Meeting ID: 941 974 961

Public Hearing

#234-20 **5-58 for the Oak Hill Middle School at 130 Wheeler Road**
DESIGN REVIEW COMMMITTEE petition, pursuant to 5-58, for schematic design and site plan approval at 130 Wheeler Road for the construction of three-classroom additions to accommodate a significant and sustained increase in enrollment.

PLEASE BRING YOUR BUDGET, CIP BOOKS AND SUPPLEMENTAL CIP

BUDGET & CIP DISCUSSIONS: Public Buildings Department

Referred to Finance and Appropriate Committees

#8-20(2) **Submittal of the FY 2021 Municipal/School Operating Budget**
HER HONOR THE MAYOR submitting in accordance with Section 5-1 of the City of Newton Charter the FY21 Municipal/School Operating Budget, passage of which shall be concurrent with the FY21-FY25 Capital Improvement Program (#8-20).
EFFECTIVE DATE OF SUBMISSION 05/11/20; LAST DATE TO PASS THE BUDGET

The location of this meeting is accessible and reasonable accommodations will be provided to persons with disabilities who require assistance. If you need a reasonable accommodation, please contact the city of Newton's ADA Coordinator, Jini Fairley, at least two business days in advance of the meeting: jfairley@newtonma.gov or (617) 796-1253. The city's TTY/TDD direct line is: 617-796-1089. For the Telecommunications Relay Service (TRS), please dial 711.

Referred to Finance and Appropriate Committees

#8-20 **Submittal of the FY 2021 to FY 2025 Capital Improvement Plan (#8-20)**
HER HONOR THE MAYOR submitting the Fiscal Years 2021 to 2025 Capital Improvement Plan pursuant to section 5-3 of the Newton City Charter.

Referred to Finance and Appropriate Committees

#8-20(3) **Submittal of the FY 2021 – FY 2025 Supplemental Capital Improvement Plan**
HER HONOR THE MAYOR submitting the FY 2021 – FY 2025 Supplemental Capital Improvement Plan.

Respectfully submitted,

Alison M. Leary, Chair

City of Newton

Design Review Committee
PUBLIC BUILDINGS DEPARTMENT
Ellen Light and Peter Barrer, Co-Chairs
Joshua R. Morse, Commissioner
Telephone (617) 796-1600
FAX (617) 796-1601
TTY: (617) 796-1089
52 Elliot Street
Newton Highlands, MA 02461-1605

Ruthanne Fuller
Mayor

Honorable City Council
City of Newton
1000 Commonwealth Avenue
Newton Centre, MA 02459

7 April 2020

RE: Oak Hill Middle School Three Classroom Addition Project

SUBJECT: Site Plan Review

Honorable Council:

The City of Newton is proposing to construct a three-classroom addition to the existing Oak Hill Middle School at 130 Wheeler Road to accommodate a significant and sustained increase in enrollment. Newton Public Schools, NPS, has asked the administration and Public Buildings Department to move as expeditiously as possible to deliver three instructional classrooms to meet the rising enrollment needs. Although NPS recognizes that there are many areas at the Oak Hill Middle School, which could use evaluation and modification, at this time based on the district priorities, funding availability, and enrollment, NPS recommends focusing on delivering the best three-classroom addition as soon as possible. The goal is to have these classrooms designed, bid, and built by the summer of 2021.

On Monday, 6 April 2020 the Design Review Committee, DRC, met remotely via Zoom and reviewed the proposed site plan and schematic design for the Oak Hill Middle School Three Classroom Addition. The project was presented by Raymond Design Associates, RDA, on behalf of Newton Public Schools and the Public Buildings Department.

The project proposes a new single story, 5,000 S.F. addition on the southwest corner of the existing school and fronting on Wheeler Road. The addition provides three classrooms to accommodate 75 additional students and includes two small group and individualized learning spaces, toilets and associated support space. The existing school building will have interior modifications to connect and support access / egress from both the existing facility and the new addition, and also include required building code and accessibility upgrades. To address programmatic concerns with existing core space, should construction bidding prove favorable, the project has identified two existing spaces for renovation, which can create a multi-purpose room to augment cafeteria space and provide additional group program space

Additional site improvement will include a new ADA accessible ramp, rain garden - best management practice (BMP), and minor drainage upgrades to accommodate same. The proposed rain garden is designed to meet the latest storm water management regulation instituted by Mass DEP and meets the design requirements of the City of Newton.

During the reviews of the project and design approach the DRC requested that the team provide an option that could accommodate the immediate need but which is designed to accommodate a future second floor addition to provide an additional four classrooms should the need arise. Although the current project budget does not allow for this approach the Committee is concerned that the City will miss out on a valuable opportunity. Therefore, the DRC strongly encourages the City to consider adjusting the project scope and funding to take advantage of this opportunity.

That said and recognizing the current funding limitations the Committee voted unanimously to recommend that the proposed single-story project be presented for site plan approval. In accordance with Section 5-58 of the Revised Ordinances, this letter is

to petition the City Council on behalf of the School Department for Site Plan Approval. The DRC identified the following conditions of its approval which will continue to be evaluated and refined by the design team and City throughout the design process:

- The project will continue to pursue sustainability initiatives, reduce project energy consumption and embodied carbon, and eliminate fossil fuel consumption.
- The project will evaluate opportunities to incorporate PV and will endeavor to achieve a net zero energy project.
- . The project will develop landscaping and site lighting to minimize the impact to the abutters and the neighborhood.
- Accessible walks, rails, landscaping and rain garden plantings and details shall be coordinated with Parks & Recreation.
- Earthwork and foundation design shall be further reviewed with the DRC during design development.
- Existing foundation, exterior walls and interior finishes shall be examined in consideration of potential vibratory design options and prior to construction. Specifications shall set strict limits on allowable vibrations and equipment.
- The project will continue to refine and address all parking, traffic, and site circulation challenges both during construction and in the final condition.

Sincerely,

Ellen Light, AIA, LEED AP BD+C

Peter J. Barrer

Design Review Committee, Co-Chairs

CC: Joshua R. Morse, Commissioner of Public Buildings
Jonathan Yeo, Chief Operations Officer
Maureen Lemieux, Chief Financial Officer
Dr. David Fleishman, School Superintendent
Liam Hurly, Deputy Superintendent/Chief Administrative Officer

NEWTON PUBLIC SCHOOLS
Equity & Excellence

Business, Finance and Planning

TO: Josh Morse, Newton Public Building Commissioner

FROM: Liam Hurley, Assistant Superintendent/Chief Financial & Administrative Officer

DATE: February 7, 2020

RE: Oak Hill Three Classroom Addition

The Oak Hill Middle School is on the cusp of a significant and sustained enrollment increase. Currently, there are 632 students attending Oak Hill, but due to rising enrollment at the feeder elementary schools such as Zervas, enrollment is projected to rise significantly in over the next few years. The following is the projected enrollment for the Oak Hill Middle School:

- FY21: 674
- FY22: 695
- FY23: 705
- FY24: 711
- FY25: 710

As identified above, the school will experience a very significant increase in student population over the next two years, with modest gains after that before leveling out. Based on the elementary school enrollment projections, Oak Hill projects to sustain enrollments above 700 students for the foreseeable future.

To address this sudden increase in student enrollment, we have asked the administration and Public Buildings Department to move as expeditiously as possible to deliver three instructional classrooms to meet the rising enrollment needs. Although we recognize there are many areas at the Oak Hill Middle School which could use evaluation and modification, at this time based on the district priorities, funding availability, and enrollment, our recommendation is to focus on delivering the best three-classroom addition as soon as possible. The goal is to have these classrooms designed, bid, and built by the summer of 2021.

There would be a significant impact to the educational learning environment at Oak Hill, should we not be able to complete the project in time for the incoming students. The total project budget is $3,000,000, with $2,500,000 coming from the City, and $500,000 coming from Newton Public Schools.

We believe the existing parking at Oak Hill as well as the shared parking between Oak Hill and Brown will satisfy the minimal staffing increase we may have in the coming years to address our rising enrollment. Additionally, bus and parent pick-up operations should not be adversely impacted by the anticipated enrollment increases due to the staggered end times with Brown and Oak Hill as well as the very long Wheeler road pick-up and drop-off zone in front of Oak Hill.

234-20

OAK HILL MIDDLE SCHOOL

130 WHEELER ROAD, NEWTON, MASSACHUSETTS 02459

PROPOSED CLASSROOM ADDITION

5-58 SCHEMATIC DESIGN / SITE PLAN APPROVAL SUBMITTAL

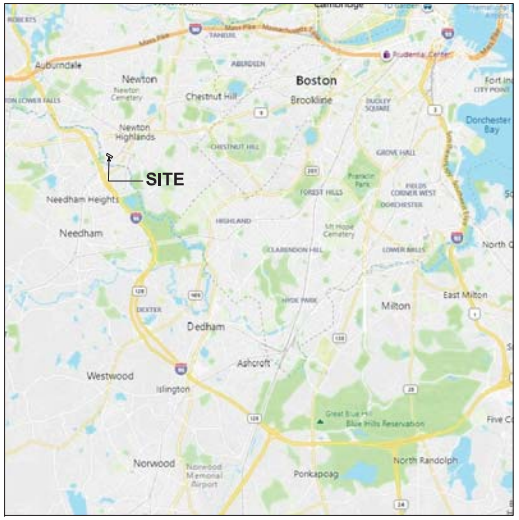
RAYMOND DESIGN ASSOCIATES, INC • **ARCHITECT**

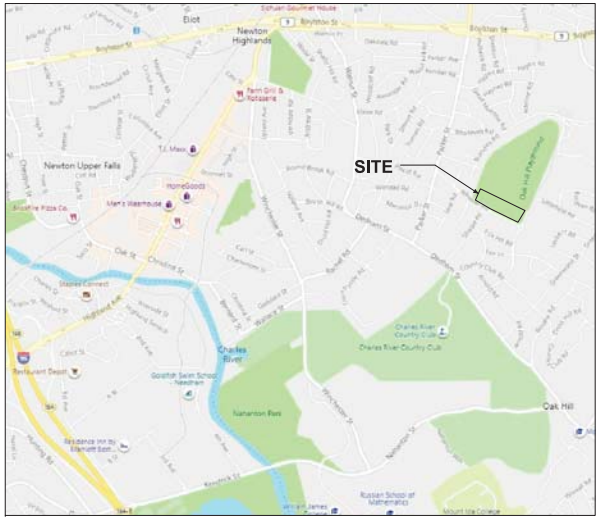
60 LEDGEWOOD PLACE. ROCKLAND, MASSACHUSETTS 02370 781.561.5270

DRAWING LIST

LOCATION PLANS

NO SCALE





5-58 SCHEMATIC DESIGN / SITE PLAN APPROVAL SUBMITTAL

APRIL 17, 2020

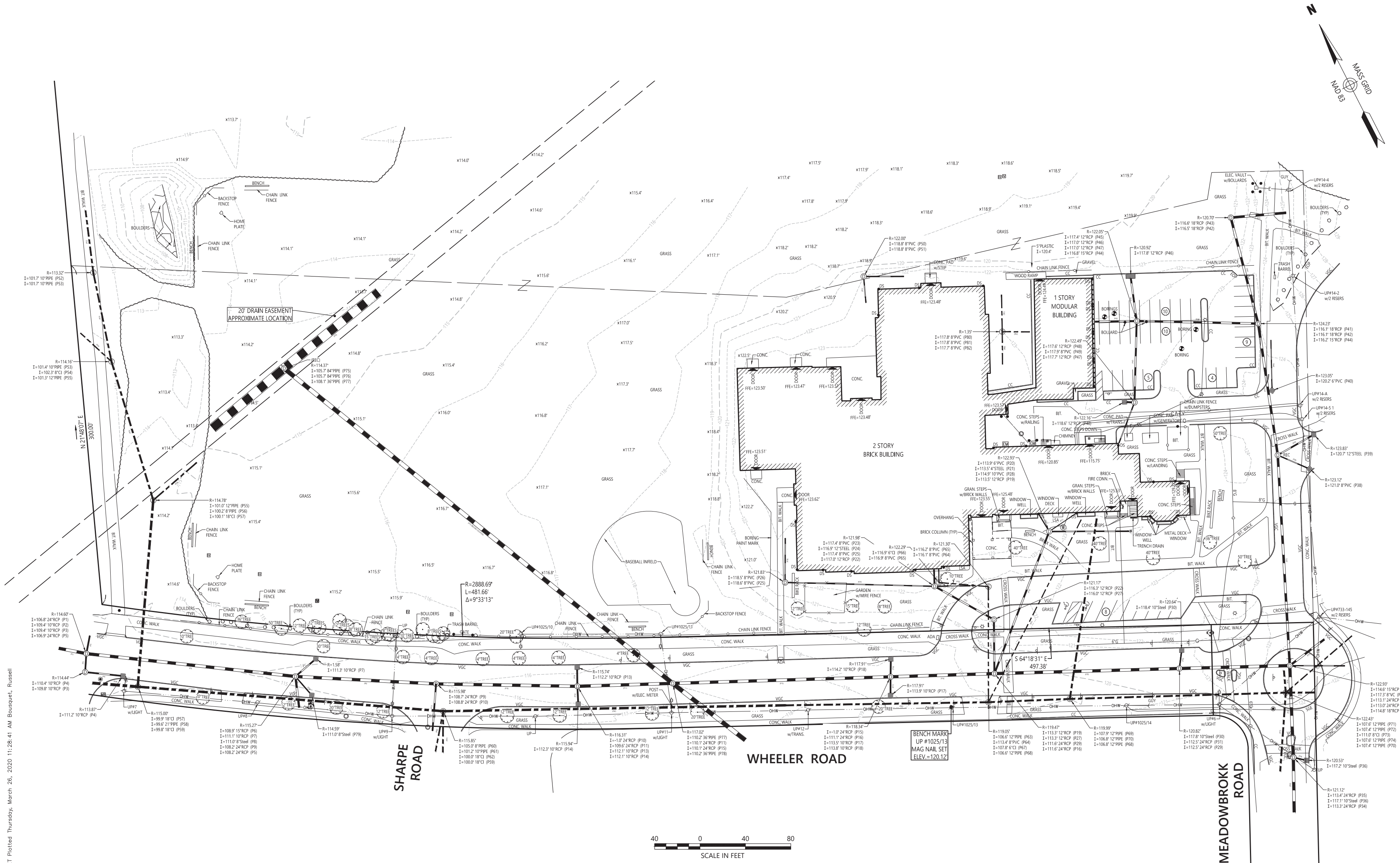
OAK HILL MIDDLE SCHOOL

130 WHEELER ROAD, NEWTON, MASSACHUSETTS 02459

vhb.com

vhb

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770



Legend

	DRAIN MANHOLE
	CATCH BASIN
	SEWER MANHOLE
	ELECTRIC MANHOLE
	TELEPHONE MANHOLE
	MANHOLE
HH	HAND HOLE
	WATER GATE
	FIRE HYDRANT
	GAS GATE
	BOLLARD w/LIGHT
	STREET SIGN
	LIGHT POLE
	UTILITY POLE
	GUY POLE
	GUY WIRE
	MONITORING WELL
	FLOOD LIGHT
	WELL
	MARSH
	F.F.E.=45.27' FINISHED FLOOR ELEVATION
CNO	COULD NOT OPEN
NPV	NO PIPES VISIBLE
DYL	DOUBLE YELLOW LINE
DWL	DASHED WHITE LINE
SYL	SINGLE YELLOW LINE
LSA	LANDSCAPED AREA
EOP	EDGE OF PAVEMENT
CC	CONCRETE CURB
VGC	VERTICAL GRANITE CURB
SGE	SLOPED GRANITE EDGE
BB	BITUMINOUS BERM
BC	BITUMINOUS CURB
	GUARD RAIL
	CHAIN LINK FENCE
	DRAINAGE LINE
	SEWER LINE
OHW	OVERHEAD WIRE
E	UNDERGROUND ELECTRIC
T	TELEPHONE LINE
G	GAS LINE
W	WATER LINE
	STONE WALL
	TREE LINE
100'BZ	100-FT BUFFER ZONE
100'RA	100-FT RIVER FRONT AREA
200'RA	200-FT RIVER FRONT AREA
AF1-100	LIMIT MEAN ANNUAL HIGH WATER
BF1-100	LIMIT OF BANK
WF1-100	VEGETATED WETLAND BOUNDARY

Oak Hill School

Wheeler Road
Newton, Massachusetts

No.	Revision	Date	Appvd.

Designed by | Checked by

Issued for | Date
March 4, 2020

Drawing Title
Existing Conditions Plan of Land

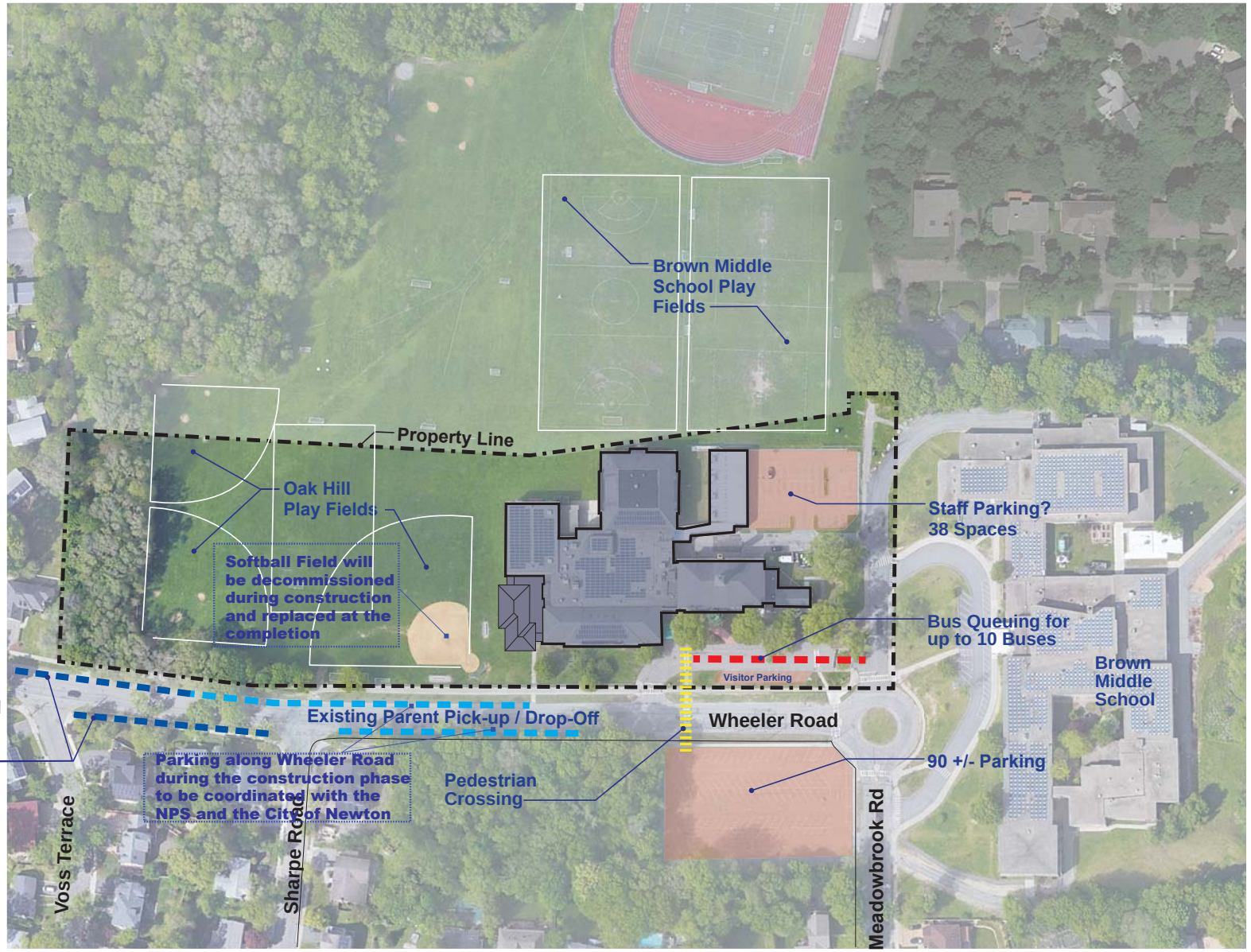
Drawing Number
Sv-1

Sheet 1 of 1

Project Number
04687.01

General Notes

1) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN APRIL, 1996 AND FROM DEEDS AND PLANS OF RECORD AND VERIFIED IN FEBRUARY, 2020.
2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN MARCH, 2020.
3) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.
4) HORIZONTAL DATUM IS BASED ON MASS. GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988.
5) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
6) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND MAY BE SUBJECT TO ADDITIONAL INFORMATION DISCLOSED IN SUCH.



Site Circulation

RDA
Raymond Design Associates, Inc.
Architects & Planners
60 Ledgewood Place
Rockland MA, 02370

Oak Hill Middle School
Classroom Addition
130 Wheeler Road, Newton, Massachusetts 02459

Revisions:

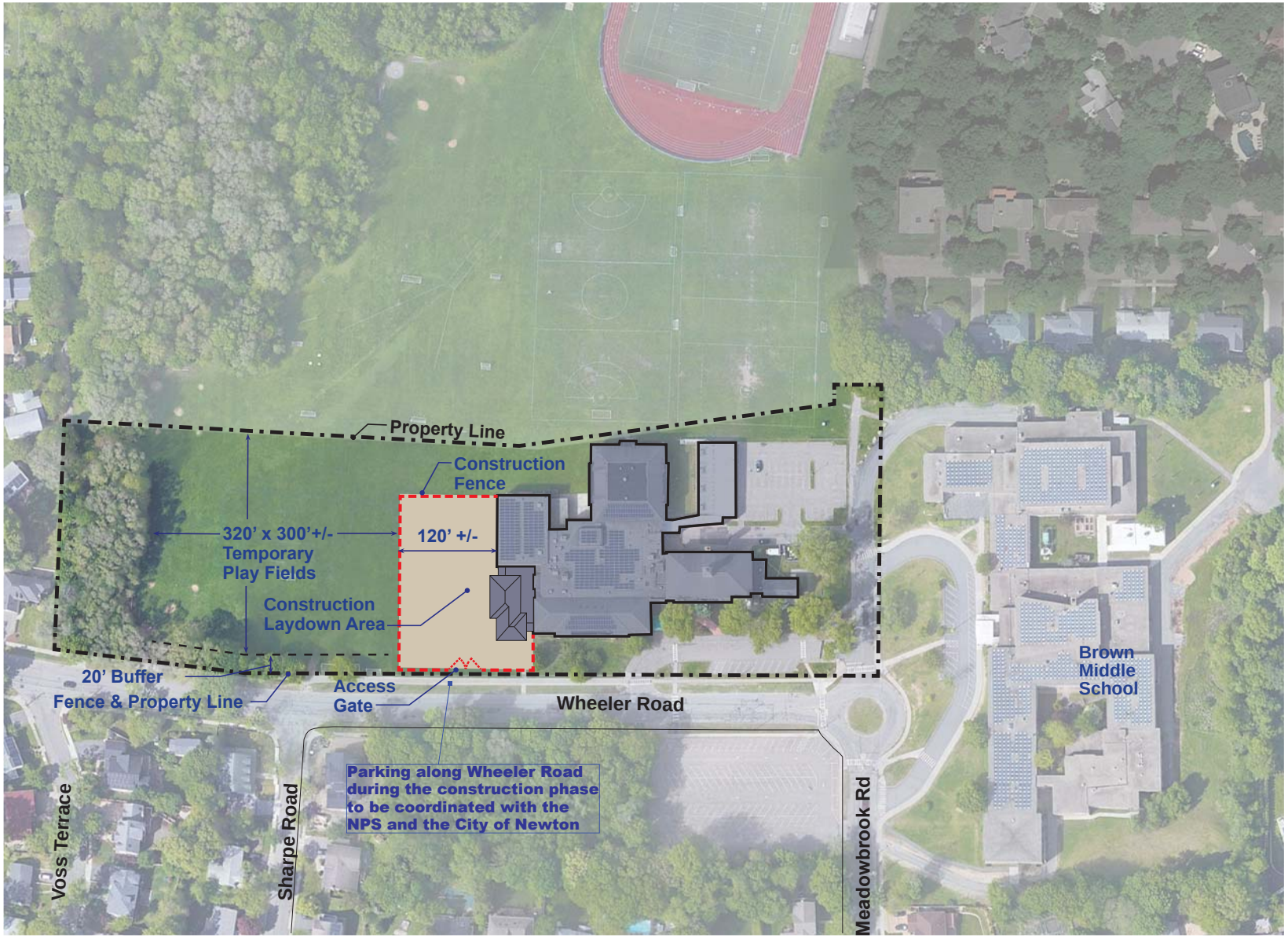
No.	Date	Description

Drawn By: ND
Checked By: DB
Approved By: GR

Drawing Scale: as noted

Project Number:

Date: May 6, 2020



Construction Plan

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

RDA
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Architects & Planners
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Rockland MA, 02370

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Project Number:

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LEGEND

- Fire Hydrant
- Electrical Pole
- Light Pole
- G Generator
- W Water Line
- E Electrical Line
- S Sewer Line
- SPK Fire Sprinkler
- SD Storm Drain

Utility & Stormwater Management Plan

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

RDA
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Classroom Addition
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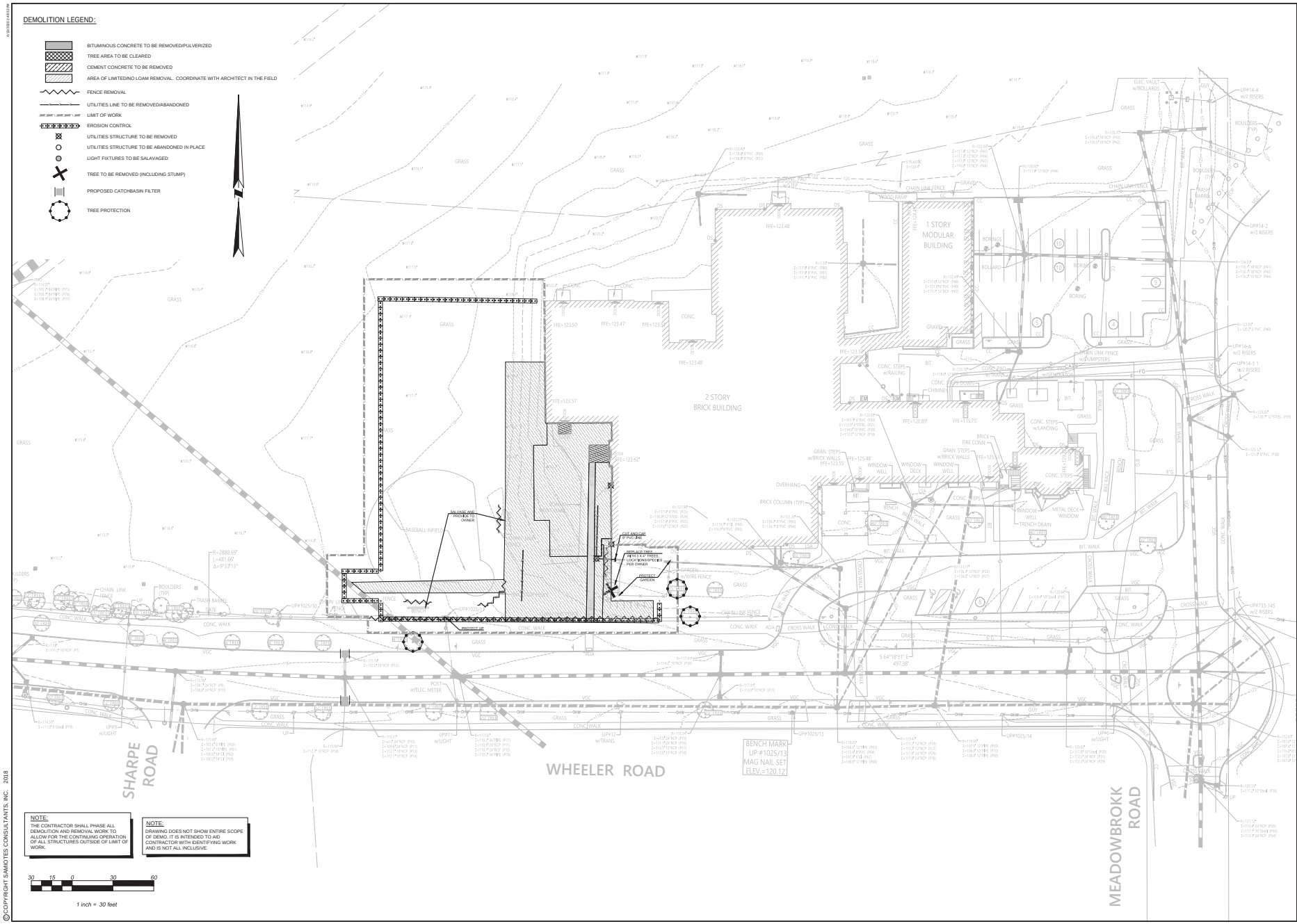

Samiotes Consultants Inc.
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20 A Street
Framingham, MA 01701
T 508.877.6688
F 508.877.8349
www.samiotes.com

OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

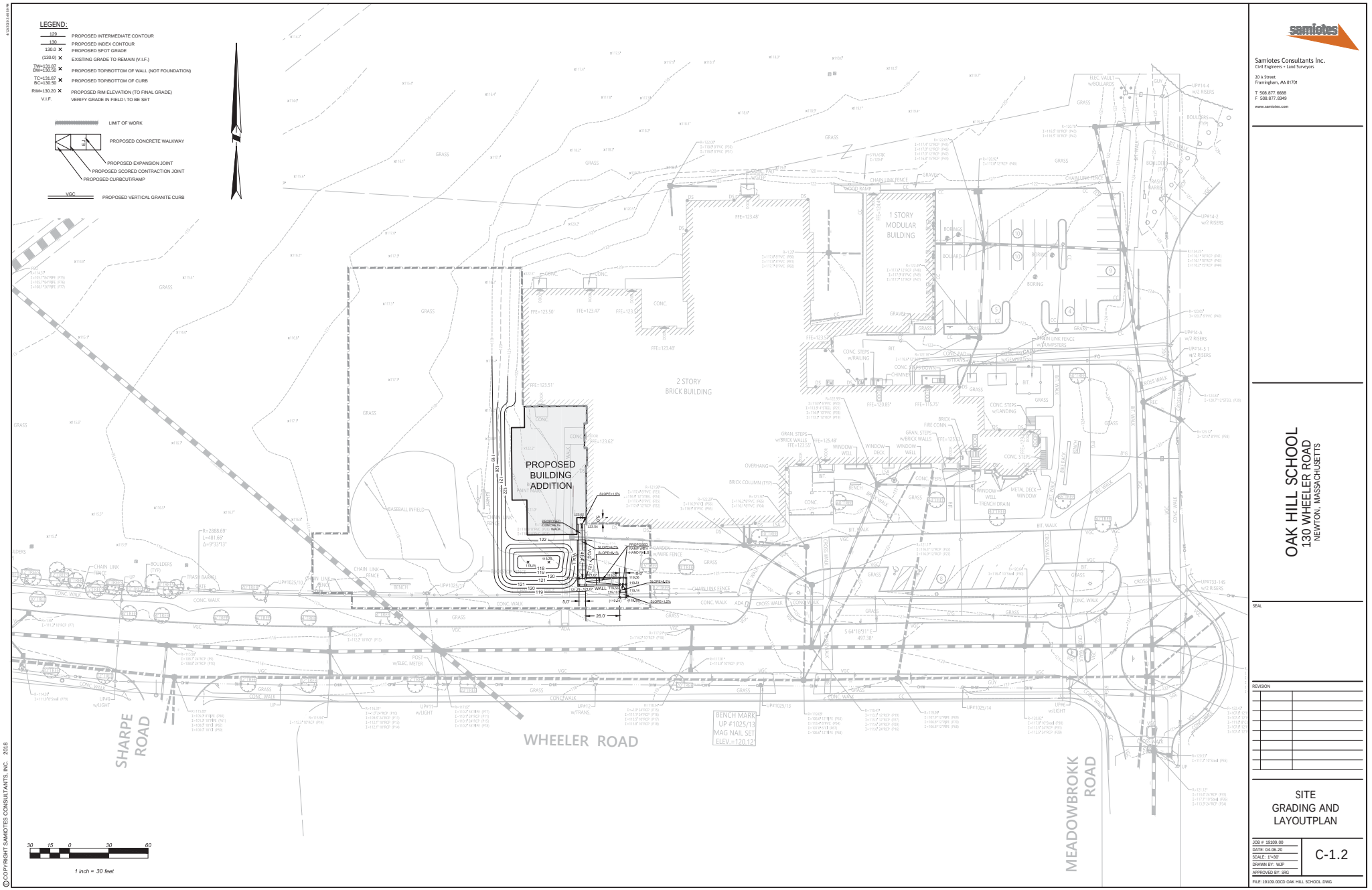
REVISION

SITE PREPARATION AND EROSION CONTROL PLAN

JOB # 19109.00
DATE: 04.06.20
SCALE: 1"=30'
DRAWN BY: WJP
APPROVED BY: SRG

C-1.1

FILE: 19109.00CD OAK HILL SCHOOL.DWG



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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

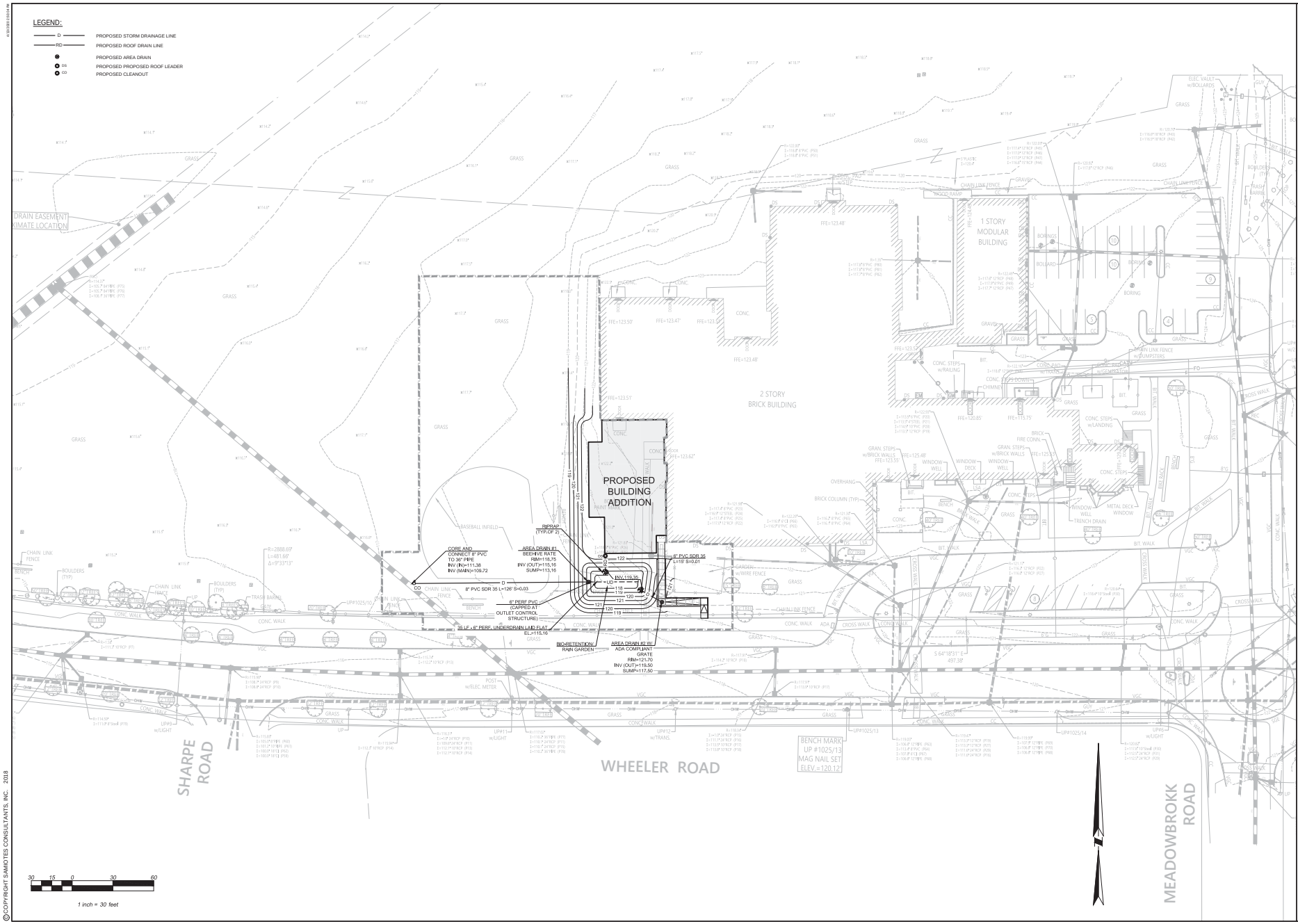
REVISION

SITE GRADING AND LAYOUTPLAN

JOB # 19109.00
DATE: 04.06.20
SCALE: 1"=30'
DRAWN BY: WJP
APPROVED BY: SRG

C-1.2

FILE: 19109.00CD OAK HILL SCHOOL.DWG



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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

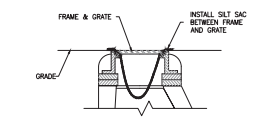
SEAL

REVISION

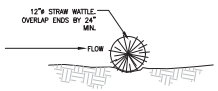
UTILITY PLAN

JOB # 19109.00
DATE: 04.06.20
SCALE: 1"=30'
DRAWN BY: WJP
APPROVED BY: SRG
FILE: 19109.00CD OAK HILL SCHOOL.DWG

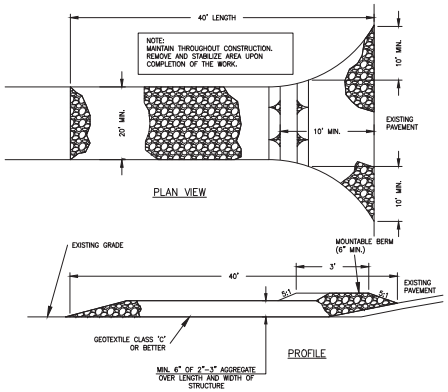
C-1.3



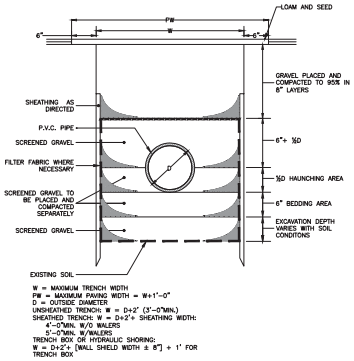
1 SILT SAC
NTS



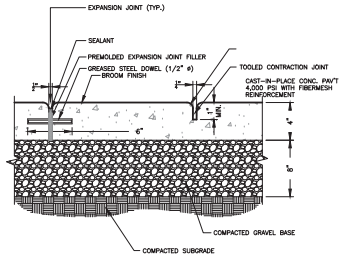
2 STRAW WATTLE
NTS



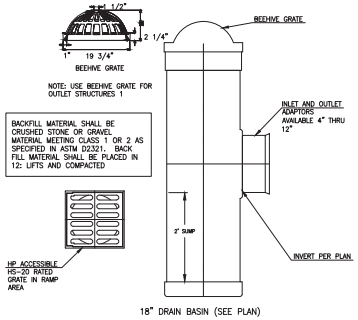
3 STABILIZED CONSTRUCTION ENTRANCE
NTS



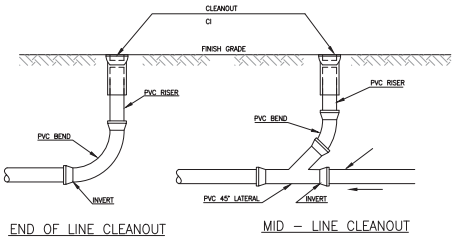
4 TRENCH DETAILS FOR PVC PIPE
NTS



5 BROOM FINISH CONCRETE WALKWAY
NTS

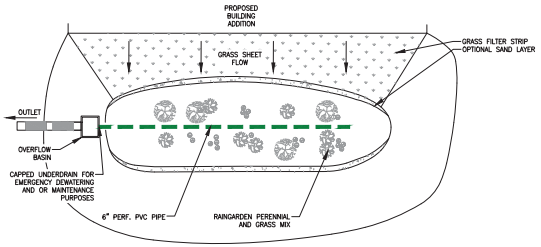


6 AREA DRAIN - OUTLET STRUCTURE
NTS

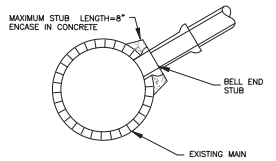


7 CLEANOUT
NTS

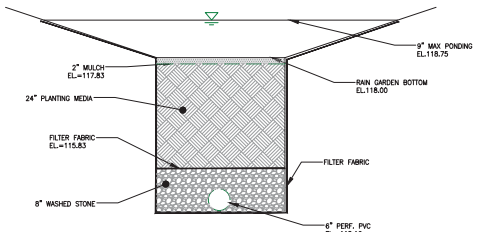
PLANTING MEDIUM		
FILTER MEDIA	MIXTURE BY VOLUME	SPECIFICATION
SAND	40%	FINE AGGREGATE FOR CONCRETE
TOPSOIL	20–30%	BETWEEN 15–25% FINES PASSING THE #200 SIEVE
COMPOST	30–40%	WASHED STONE



8 BIORETENTION/ RAIN GARDEN - PLAN
NTS



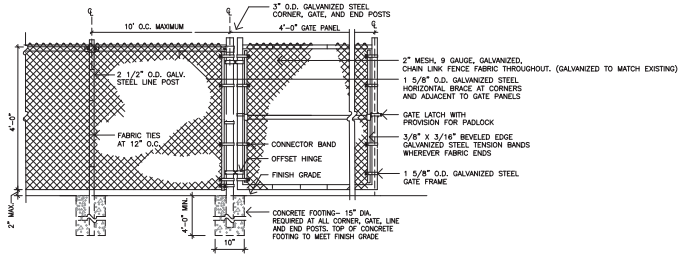
9 CONNECTION TO LARGE STORM DRAINAGE MAIN
NTS



NOTES

1. PLANTING MEDIUM SHALL NOT BE EXPOSED TO SEDIMENT LADEN WATER DURING CONSTRUCTION. UPSTREAM RUNOFF SHOULD BE STABILIZED (E.G. HAY BALES OR OTHER BARRIERS) PRIOR TO REACHING RAINGARDEN. IF POSSIBLE INSTALLATION OF THE FILTER MEDIA SHOULD NOT OCCUR UNTIL THE MAJORITY OF UPSTREAM AREAS ARE STABILIZED.
2. THE PLANTING MEDIUM SHALL BE INSPECTED AFTER EVERY MAJOR STORM IN THE FIRST FEW MONTHS TO ENSURE PROPER FUNCTION.
3. THE TOP SEVERAL INCHES OF THE FILTER SHALL BE REPLACED WITH FRESH MATERIAL WHEN WATER PONDS ON THE SURFACE FOR MORE THAN 72 HOURS. THE REMOVED SEDIMENTS SHOULD BE DISPOSED OF IN AN ACCEPTABLE MANNER.
4. COMPACTION OF THE SOIL BED MATERIAL AND UNDISTURBED EARTH BASE SHALL BE AVOIDED. IF COMPACTION OCCURS, ROTOTILL PRIOR TO SEEDING OR SODDING.
5. IF RELEVANT, PLACE COMMON BORROW MATERIAL IN 12" LIFTS COMPACTED TO 85% OF MAXIMUM DRY DENSITY.
6. MULCH IS AN IMPORTANT COMPONENT OF THE FILTER SYSTEM. PLACE OVER THE PLANTING MEDIUM WELL AGED, SHREDDED, DARK BROWN, HARDWOOD, MODERATELY FINE, BARK OR WOOD FIBER MULCH WILL LESS THAN 5% PASSING THE #200 SIEVE.
7. ADD 20% BY VOLUME TO THE PLANTING MEDIUMSOIL FILTER OF WELL AGED, ORGANIC, AERATED, GRADED LEAF COMPOST.

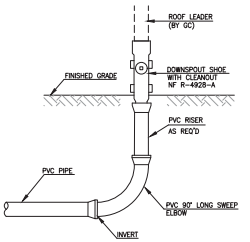
10 BIORETENTION/ RAIN GARDEN - SECTION
NTS



NOTES:

1. ALL MATERIALS SHALL BE GALVANIZED STEEL UNLESS OTHERWISE NOTED.
2. POST SPACING SHALL BE EQUIDISTANT. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUED MAINTENANCE OF FENCE DURING CONSTRUCTION.

11 4'-0" CHAIN LINK FENCE AND GATE
SCALE: N.T.S.



13 ROOF LEADER
NTS

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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

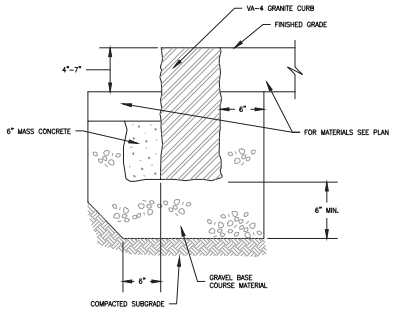
REVISION

CIVIL
DETAIL SHEET

JOB # 19109.00
DATE: 04.06.20
SCALE: NTS
DRAWN BY: WJP
APPROVED BY: SRG

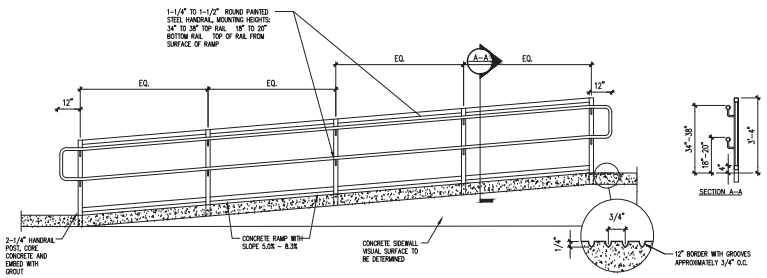
C-2.1

FILE: 19109.00CD OAK HILL SCHOOL.DWG



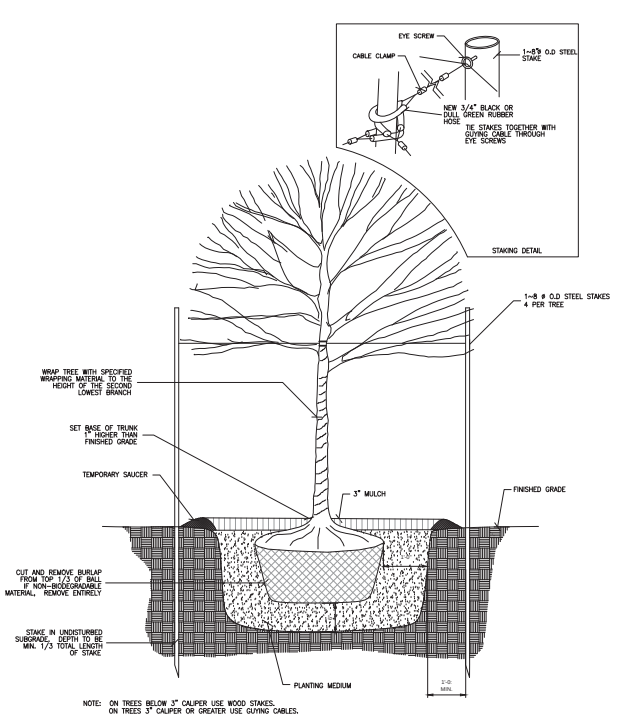
1 VERTICAL GRANITE CURB

NTS



2 ACCESSIBLE RAMP & HANDRAIL

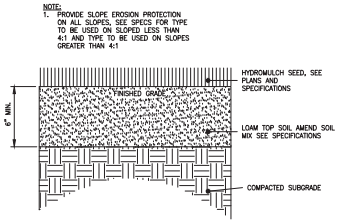
NTS



NOTE: ON TREES BELOW 3" CALIPER USE WOOD STAKES. ON TREES 3" CALIPER OR GREATER USE GUYING CABLES.

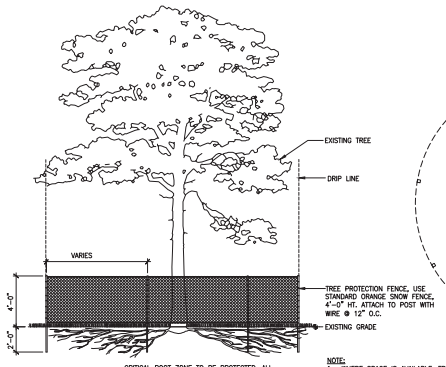
3 TREE GUYING/STAKING

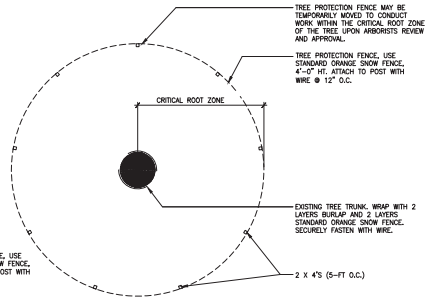
NTS



4 LOAM AND SEED AREA

NTS





NOTE:
1. WHERE SPACE IS AVAILABLE, TREE PROTECTION FENCE TO BE PLACE AT A MINIMUM OF 10' FROM BASE OF TREE PLUS AN ADDITIONAL 1' FOR EACH ADDITIONAL DBH FOR TREES GREATER THAN 10" DBH (DIAMETER AT BREAST HEIGHT).
2. ALL WORK DONE WITHIN TREE PROTECTION FENCE IS TO BE DONE BY HAND AND LIGHT EQUIPMENT.
3. ROOTS EXPOSED DURING EXCAVATION SHALL BE NEATLY CUT AND COVERED WITH SOIL IMMEDIATELY.
4. FOR TREES THAT OCCUR IN GROUPS PROVIDE TREE PROTECTION FENCE AROUND ENTIRE AREA. SEE PLAN FOR LOCATIONS.
5. MAINTAIN FENCE PROTECTION IN SOUND CONDITION UNTIL FENCE COMPLETION.
6. A CERTIFIED ARBORIST SHALL DELINEATE LIMIT OF TREE PROTECTION FENCE AS THEY RELATE TO THE LIMIT OF THE CRITICAL ROOT ZONE.

5 EXISTING TREE PROTECTION

NTS

NOTES AND SPECIFICATIONS

GENERAL

1. ALL SURVEY INFORMATION OF EXISTING CONDITIONS, INCLUDING BUT NOT LIMITED TO PROPERTY LINES, FENCES, PAVING, OVERHEAD WIRES, ETC. ARE BASED ON THE ON A SURVEY BY VHB, INC. AS DEPICTED EXISTING SITE PLAN. ALL SUCH INFORMATION IS APPROXIMATE AND THE CONTRACTOR IS RESPONSIBLE TO SURVEY AND FIELD VERIFY SUCH INFORMATION PRIOR TO CONSTRUCTION. CONSTRUCTION DELAYS AND/OR OTHER DAMAGES RESULTING FROM DISCREPANCIES BETWEEN INFORMATION PROVIDED AND ACTUAL EXISTING CONDITIONS WILL BE AT NO ADDITIONAL COST TO THE OWNER.
2. AS OF JANUARY 1, 2009, ALL TRENCH EXCAVATION CONTRACTORS SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82A, TRENCH EXCAVATION SAFETY REQUIREMENTS, TO PROTECT THE GENERAL PUBLIC FROM UNAUTHORIZED ACCESS TO UNATTENDED TRENCHES. TRENCH EXCAVATION PERMIT REQUIRED. THIS APPLIES TO ALL TRENCHES ON PUBLIC AND PRIVATE PROPERTY.
3. PRIOR TO OCCUPANCY PERMIT BEING ISSUED, AN AS-BUILT PLAN BY THE GENERAL CONTRACTOR SHALL BE SUBMITTED TO THE ENGINEERING DEVISION IN BOTH DIGITAL FORMAT AND IN HARD COPY. THE PLAN SHOULD SHOW ALL UTILITIES AND FINAL GRADES, ANY EASEMENTS AND FINAL GRADING.
4. THE CONTRACTOR WILL HAVE TO APPLY FOR A STREET OPENING & UTILITIES CONNECTION PERMITS AS WELL AS A SIDEWALK CROSSING PERMIT WITH THE NEWTON DPW.
5. THE CONTRACTOR SHALL NOTIFY AND COORDINATE ALL WORK WITH THE RESPECTIVE UTILITY COMPANIES 48 HOURS PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL REGISTER WITH "DIG SAFE" AT (888) DIG-SAFE, 72 HOURS PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN "DIG SAFE" REGISTRATION AND "DIG SAFE" MARKINGS.
7. ALL WASTE MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, CITY AND MUNICIPAL REGULATIONS.
8. ALL WORK SHALL COMPLY WITH FEDERAL, STATE AND MUNICIPAL REGULATIONS AND STANDARDS.
9. THE CONTRACTOR SHALL HAVE THE PROPER LICENSES AS REQUIRED BY THE STATE AND ANY OTHER GOVERNING AGENCIES.
10. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUILDINGS AT NO ADDITIONAL COST TO THE OWNER.
11. THE CONTRACTOR SHALL MAINTAIN APPROPRIATE DETOUR SIGNS WHEN WORK WILL IMPEDE TRAFFIC FLOW.
12. ALL UTILITY RIMS SHALL BE ADJUSTED TO MEET FINAL GRADE AND SHALL CONFORM WITH THE CONSTRUCTION STANDARDS OF THE RESPECTIVE UTILITY COMPANY.
13. FILL SHALL BE PLACED IN NO GREATER THAN 6" LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM COMPACTION.
14. CEMENT CONCRETE SHALL CONFORM TO ACI SPECIFICATION 316, AND ASTM A 616 AND D 1557.
15. ADA AND MAAB COMPLIANCE

A. SPECIAL ATTENTION IS TO BE GIVEN TO COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB)

a. SLOPES: ALL WALKWAYS AS DEFINED BY SECTION 22.1 OF 521 CMR SHALL BE GRADED TO A MAXIMUM 4.5%. THE CROSS PITCH (PERPENDICULAR TO TRAVEL) FOR ALL WALKWAYS AND PATHS SHALL BE CONSTRUCTED AT 1.5%. THE SLOPE OF ALL RAMPS AND SIDE SLOPES OF HANDICAP CURB CUTS AS DEFINED BY SECTION 21.1 OF 521 CMR SHALL BE CONSTRUCTED AT 7% MAXIMUM. RAMPS AS DEFINED IN SECTION 24.1 OF 521 CMR SHALL BE CONSTRUCTED TO A MAXIMUM SLOPE OF 7%.

b. THE CONTRACTOR IS TO ASSUME THAT ALL GRADES IN PEDESTRIAN PATHS OF TRAVEL SHALL BE VERIFIED/CHECKED WITH A 2-FOOT ELECTRONIC "SMART LEVEL".

c. A 5'-0" MINIMUM LEVEL (1.5% SLOPE) AREA SHALL BE PROVIDED AT ALL FLUSH ENTRANCES TO BUILDINGS. PUDDLING OF WATER AT THE ENTRANCES WILL NOT BE ALLOWED.

B. THE ABOVE REQUIREMENTS SHALL SUPERSEDE THE GRADES SHOWN ON THE PLANS. IF THESE REQUIREMENTS CANNOT BE MET WITH THE GRADES SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR DIRECTION.

16. THE CONTRACTOR SHALL EFFECT A SMOOTH TRANSITION IN LANDSCAPED AREAS BETWEEN THE EXISTING GROUND AND THE PROPOSED GRADE.
17. NEW PAVEMENT SHALL TIE INTO EXISTING PAVEMENT WITH A SMOOTH TRANSITION. THE EXISTING PAVEMENT SHALL BE SAW CUT.
18. CONCRETE SIDEWALK SHALL BE NON-REINFORCED. CONCRETE SHALL BE "CLASS D" IN ACCORDANCE WITH SECTION M4.02.00 OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES: MassDOT - HIGHWAY STANDARD SPECIFICATIONS LATEST EDITION , WITH 620 LBS. OF PORTLAND CEMENT, 6% ± 1% AIR ENTRAINMENT IN PLACE.

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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

REVISION

CIVIL
DETAIL SHEET

JOB # 19109.00
DATE: 04.06.20
SCALE: NTS
DRAWN BY: WJP
APPROVED BY: SRG

C-2.2

FILE: 19109.00CD OAK HILL SCHOOL.DWG

234-20

1 OVERALL GROUND FLOOR PLAN
SCALE: 1/16" = 1'-0"

RDA

Raymond Design Associates, Inc.
Architects & Planners
60 Ledgewood Place
Rockland MA, 02370

Oak Hill Middle School
Classroom Addition
130 Wheeler Road, Newton, Massachusetts 02459

OVERALL FIRST FLOOR PLAN

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

Revisions:

No.	Date	Description

Drawn By: ND
Checked By: DB
Approved By: GR

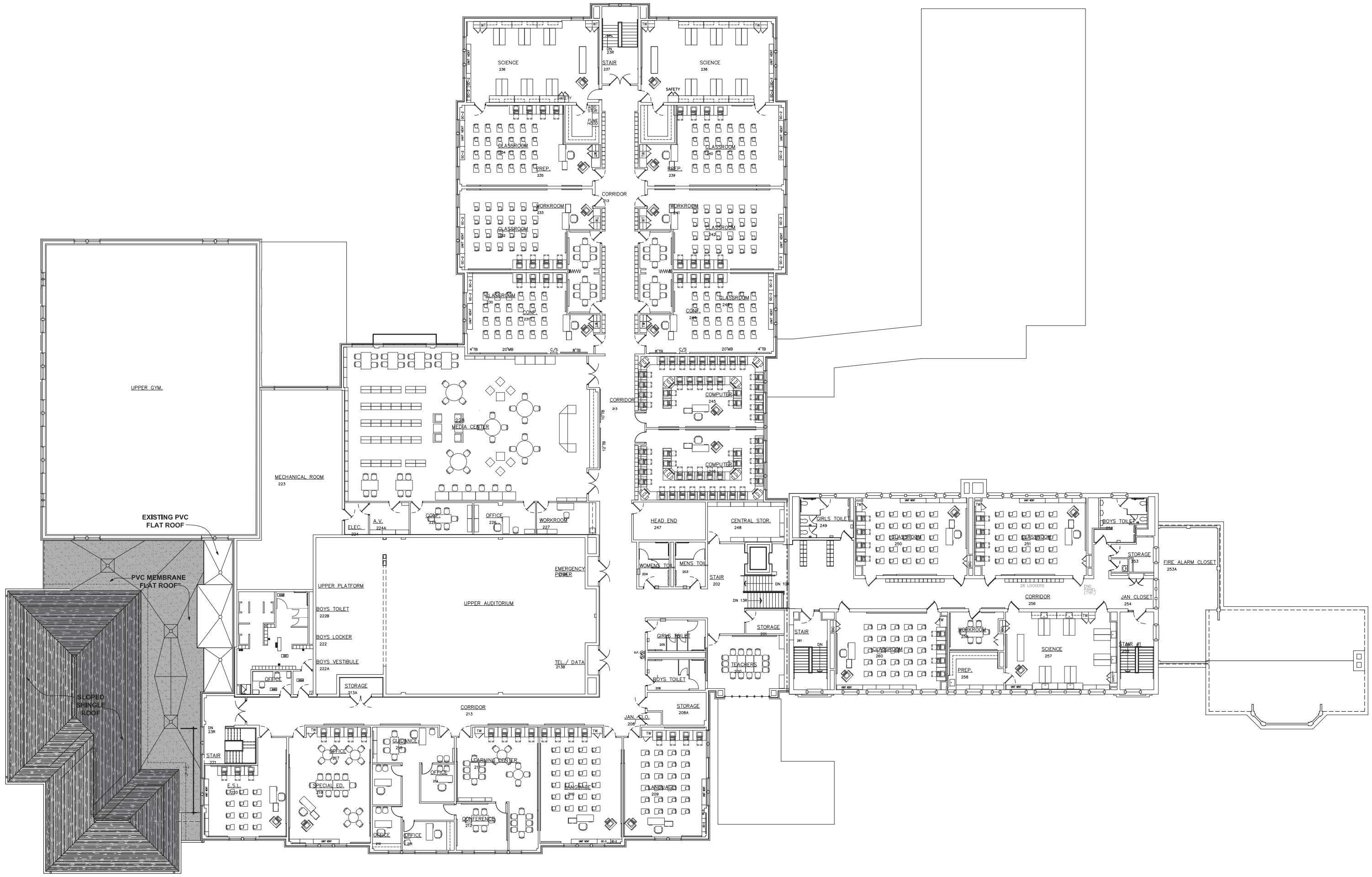
Drawing Scale: as noted

Project Number:

Date: May 6, 2020

A1.1

234-20



1 OVERALL SECOND FLOOR PLAN
SCALE: 1/16" = 1'-0"

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

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Classroom Addition
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OVERALL ROOF PLAN

Revisions:

No.	Date	Description

Drawn By: ND
Checked By: DB
Approved By: GR

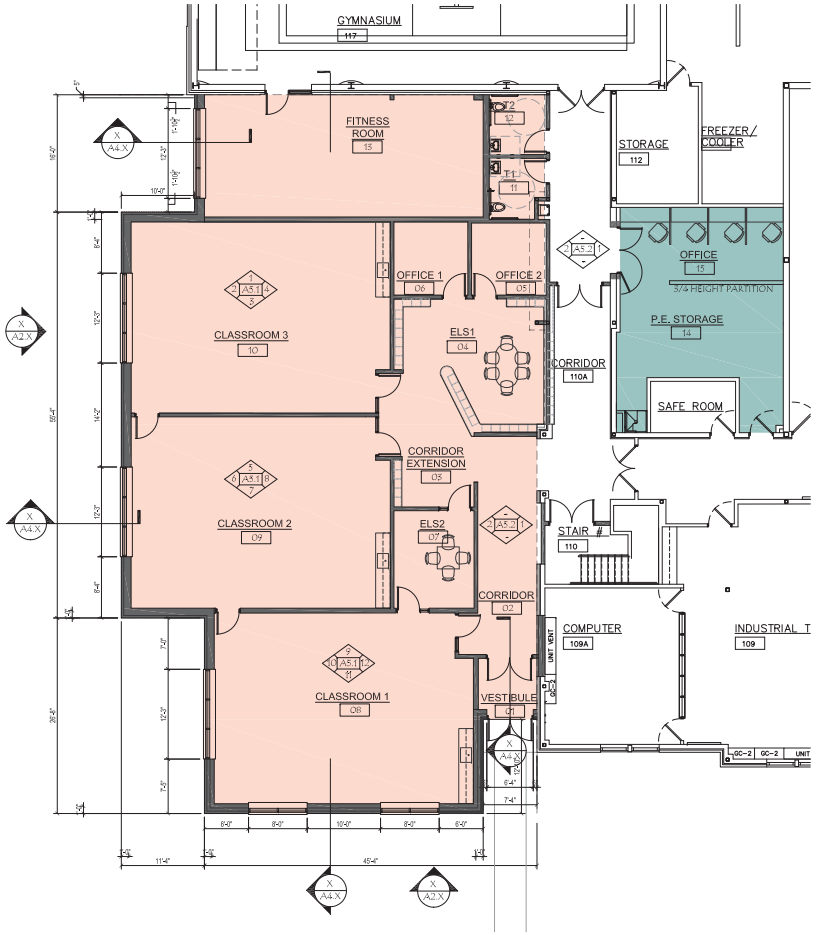
Drawing Scale: as noted

Project Number:

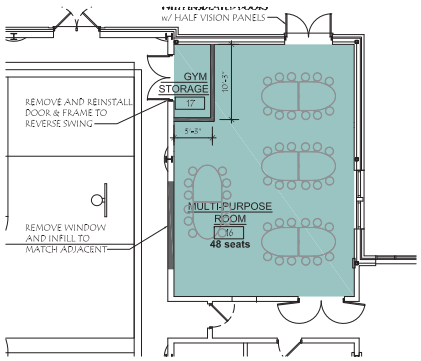
Date: April 17, 2020

A1.2

234-20



1 PROPOSED FLOOR PLAN
SCALE: 1/8" = 1'-0"



2 PROPOSED MULTI-PURPOSE ROOM
SCALE: 1/8" = 1'-0"

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Rockland MA, 02370

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Oak Hill Middle School
Classroom Addition
130 Wheeler Road, Newton, Massachusetts 02459

ENLARGED PLAN

Revisions:

No.	Date	Description

Drawn By: ND
Checked By: DB
Approved By: GR

Drawing Scale: as noted

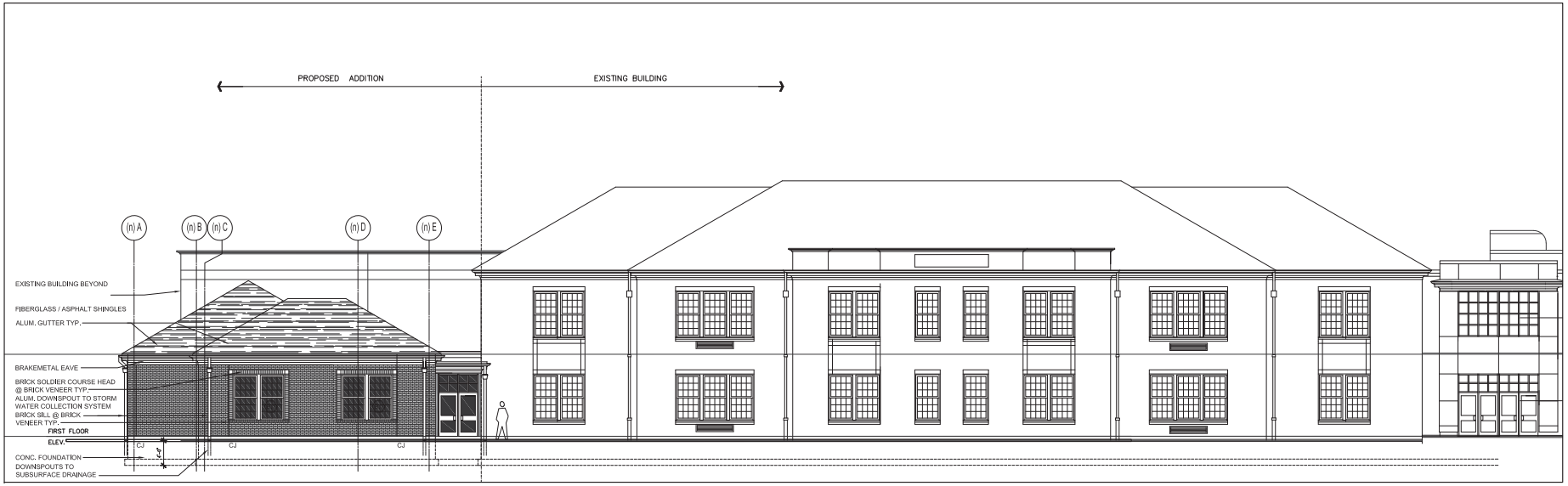
Project Number:

Date: May 6, 2020

A1.3

234-20

2 WEST ELEVATION
SCALE: 1/8" = 1'-0"



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

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130 Wheeler Road, Newton, Massachusetts 02459

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A3.1

Presentation to the
Newton Public Facilities Committee

Classroom Addition to the

OAK HILL
MIDDLE SCHOOL

Meeting Agenda

1. Site Information
   - Survey Plans
   - Logistics Plans
   - Civil Design Plans
2. Building Design Plans
   - Floor Plans
   - Interior and Exterior 3-D views
   - Exterior Envelop Construction
3. Estimates

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Rockland, MA 02370

PROJECT BENCHMARK SCHEDULE

1. Schematic Design

·Meetings, hearings, and activities

- ✓ -Working Group (12-12-2019, 1-9-2020, 1-23-2020, 2-6-2020, 2-13-2020, 3-5-2020)
- ✓ -DRC - Introduction Meeting (January 15, 2020)
- ✓ -Historic Commission
- ✓ -Preliminary Cost Estimate (by February 12, 2020)
- ✓ -DRC - Preliminary Meeting (February 12, 2020)
- ✓ -DRT - Preliminary (February 19, 2020)
- ✓ -Generate a survey plan March 6, 2020)
- ✓ -Perform borings (March 6, 2020)
- ✓ -Generate code review report (March 13, 2020)

Cancelled -DRC - Site Plan Development (March 18, 2020)

- ✓ -Produce a soil analysis report (March 19, 2020)
- ✓ -Perform soil analysis for Storm Water Management (March 20, 2020)
- ✓ -Meet with City Engineer (March 24, 2020)

-Community Presentation (March 25, 2020) (Postponed, - to be a future webcast)

- ✓ -DRT - 90% Schematic Design - Site Plan (March 25, 2020)
- ✓ -DRC - Final Site Review (April 6, 2020)
- ✓ -DRT Submission - 100% Site Plan (April 17, 2020)
- ⇒ -Public Facilities Committee (May 6, 2020)

-Finance Committee (May 11, 2020)

-City Council (May 18, 2020)

2. Design Development/Construction Documents and Estimate– **complete by June 1, 2020**
3. Bidding & Award – **complete by July 15, 2020**
4. Construction (13 1/2 months) – **complete by August 15, 2021**

Bird's Eye View Looking NorthWest

Bird's Eye View Looking East

Bird's Eye View Looking North East

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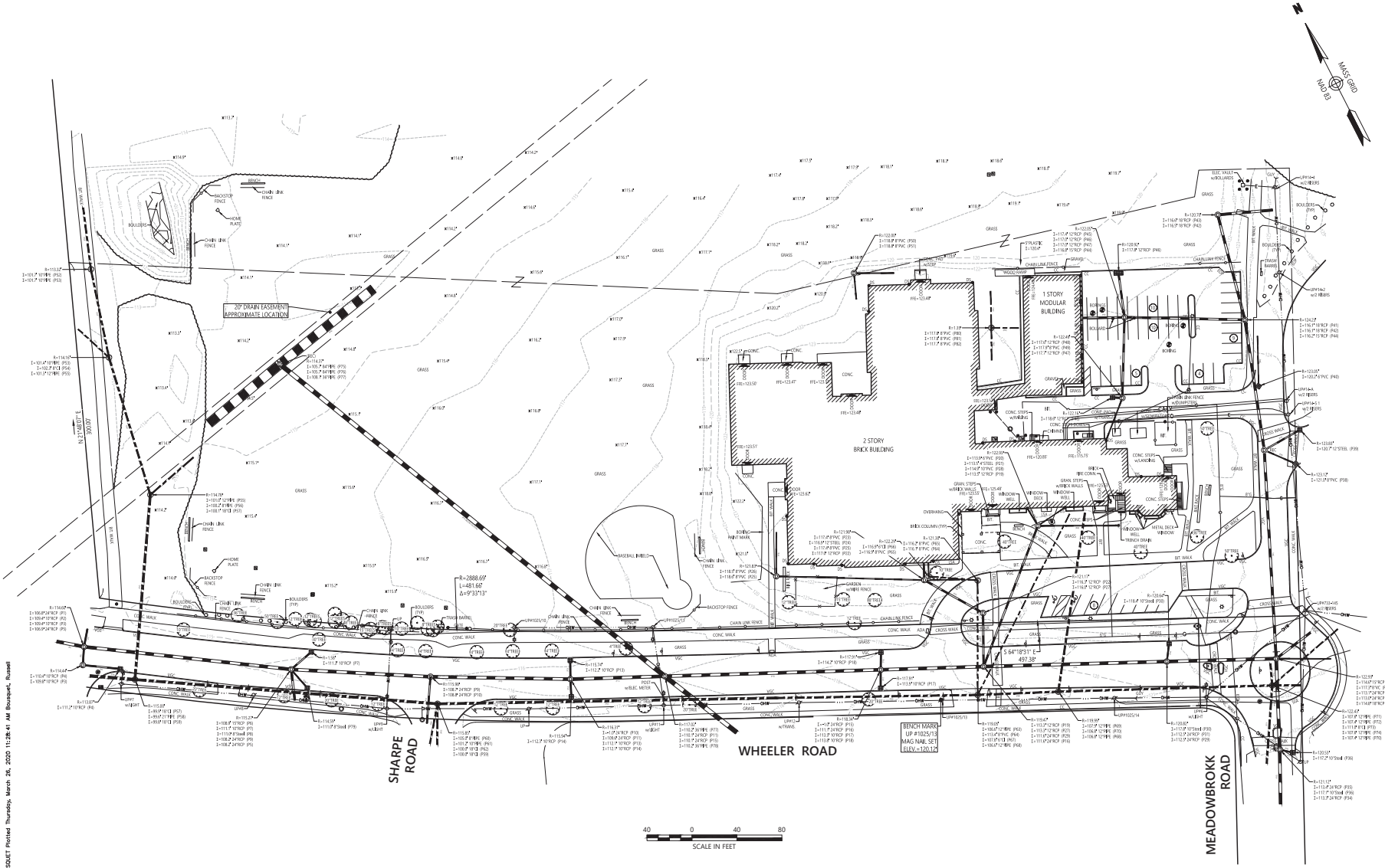

General Notes

1) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN APRIL, 1996 AND FROM DEEDS AND PLANS OF RECORD AND VERIFIED IN FEBRUARY, 2020.
2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN MARCH, 2020.
3) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.
4) HORIZONTAL DATUM IS BASED ON MASS. GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988.
5) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
6) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND MAY BE SUBJECT TO ADDITIONAL INFORMATION DISCLOSED IN SUCH.

vhb.com

vhb

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Watertown, MA 02471
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Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- WELL
- MARSH
- F.F.E.=45.2' FINISHED FLOOR ELEVATION
- CNO COULD NOT OPEN
- NPV NO PIPES VISIBLE
- DYL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- SYL SINGLE YELLOW LINE
- LSA LANDSCAPED AREA
- EDGE OF PAVEMENT
- CONCRETE CURB
- VERTICAL GRANITE CURB
- SLOPED GRANITE EDGE
- BITUMINOUS BERM
- BITUMINOUS CURB
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OVERHEAD WIRE
- UNDERGROUND ELECTRIC
- TELEPHONE LINE
- GAS LINE
- WATER LINE
- STONE WALL
- TREE LINE
- 100-FT BUFFER ZONE
- 100-FT RIVER FRONT AREA
- 200-FT RIVER FRONT AREA
- ELEV. MEAN ANNUAL HIGH WATER
- LIMIT OF BANK
- VEGETATED WETLAND BOUNDARY

Oak Hill School

Wheeler Road
Newton, Massachusetts

No.	Revision	Date	Appvd.

Designed by | Checked by

Issued for | Date

March 4, 2020

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-1

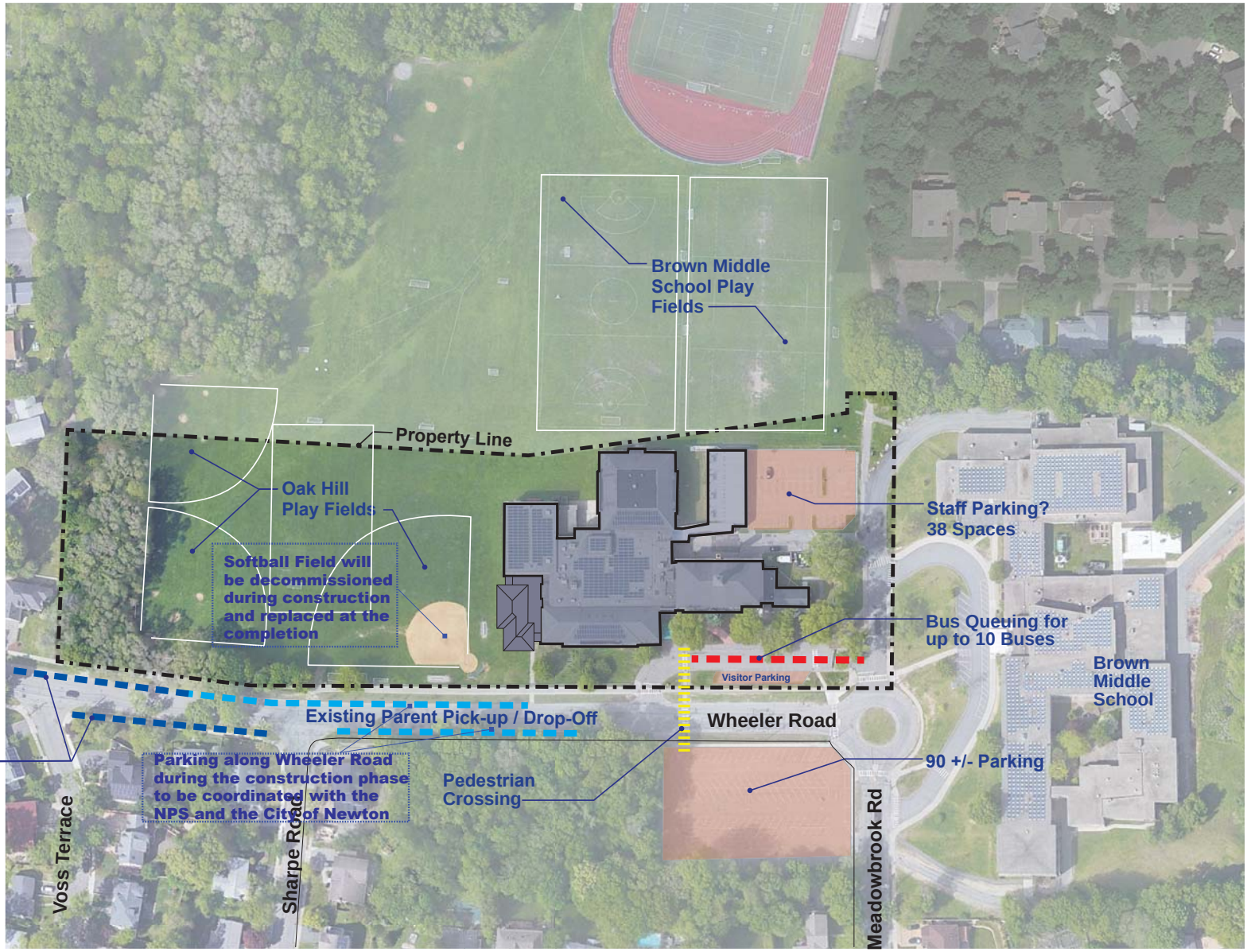
Sheet 1 of 1

Project Number

04687.01

Saved Thursday, March 26, 2020 11:27:46 AM RBOUSQUET Plotted Thursday, March 26, 2020 11:28:41 AM Bousquet, Russell

234-20



Site Circulation

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

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Classroom Addition
130 Wheeler Road, Newton, Massachusetts 02459

Revisions:

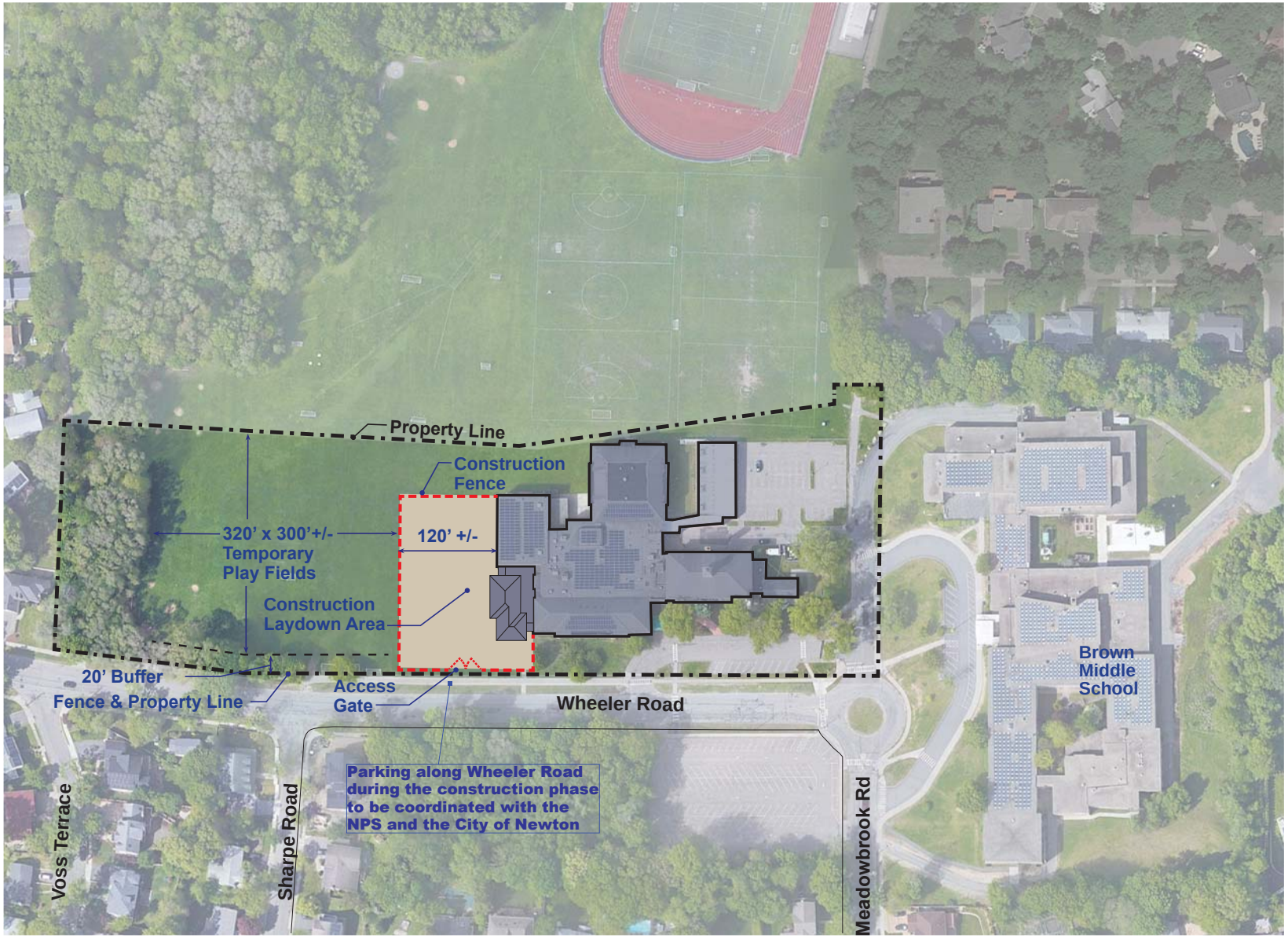
No.	Date	Description

Drawn By: ND
Checked By: DB
Approved By: GR

Drawing Scale: as noted

Project Number:

Date: May 6, 2020



Construction Plan

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234-20

LEGEND

- Fire Hydrant
- Electrical Pole
- Light Pole
- G Generator
- W Water Line
- E Electrical Line
- S Sewer Line
- SPK Fire Sprinkler
- SD Storm Drain

Utility & Stormwater Management Plan

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

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Stormwater Management Report

Synopsis

- The development will entail removal of existing site amenities such as pavement areas, fences, trees, utilities etc. to accommodate a new 5,000+/- sf. building additional along the south west section of the building. Additional site improvement will include a new ADA accessible ramp, rain garden - Best management practice (BMP), and minor drainage upgrades to accommodate same.

- The proposed Rain Garden is designed to meet the latest stormwater management regulation instituted by MassDEP. Some of the stormwater requirements that was addressed are as follows:
  - Water quality
  - Recharge
  - Draw down
  - Flow rate mitigation

- Existing site drainage infrastructure will be modified to accommodate new roof leader and ramp drain will be routed to the onsite raingarden facility.

- As per soil testing performed on March 19, 2020, estimate seasonal high ground water (ESHGW) from redoximorphic observation was depicted at 84" below finish grade. This elevation was approx. 113.00 which is 7 feet below existing grade at testing location. The facility was designed to maintain at least a 2 feet minimum groundwater separation to the bottom of the rain garden envelop set at el. 115.16 per MassDEP requirements.

- Onsite soil testing performed on March 19, 2020, test pit results depicted predominately fill and sandy loam horizons from approx. 16" to 120" below finish grade. Therefore, an infiltration rate of 0.17in/hr was used for the design the system which is consistence with onsite testing observation.

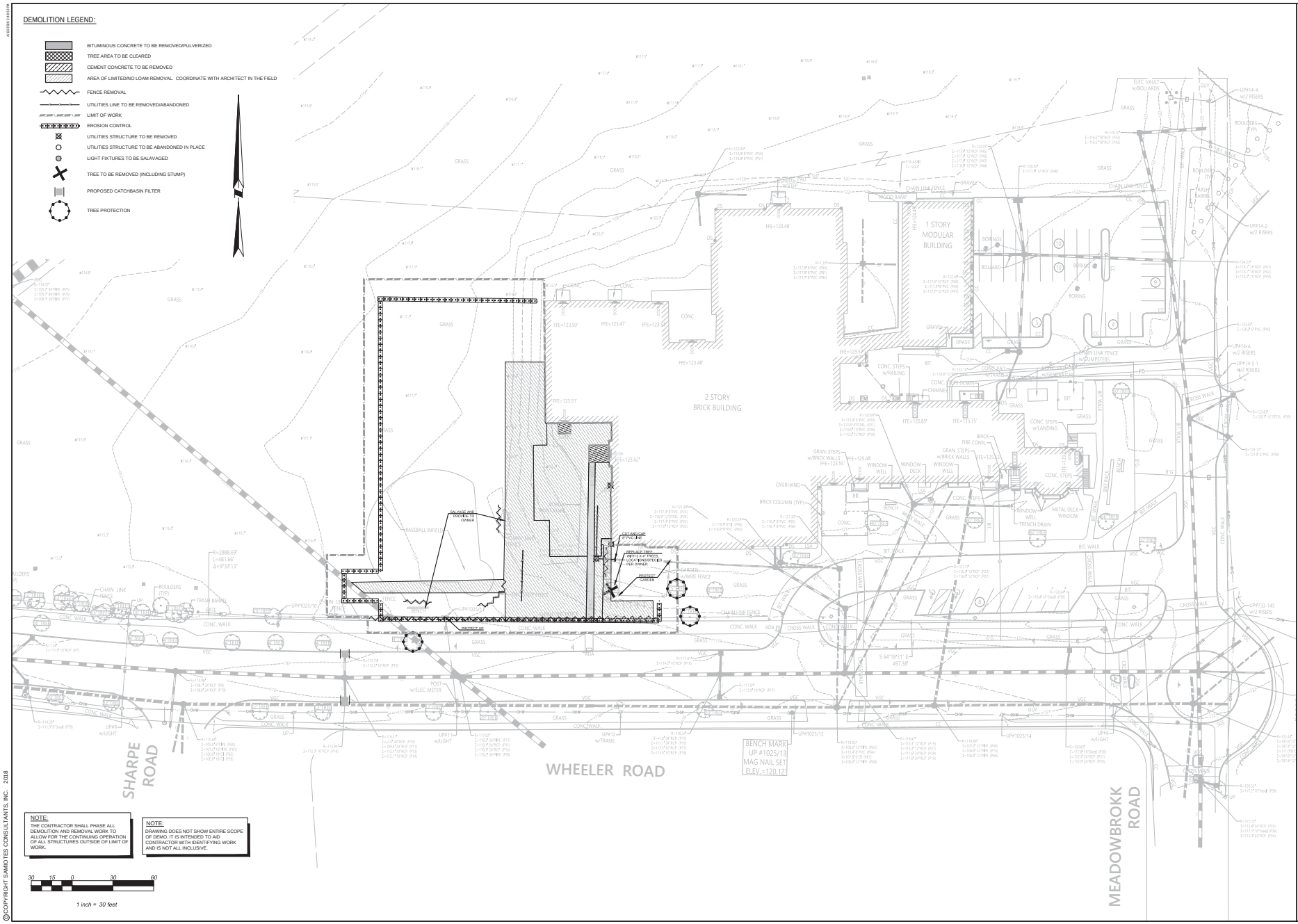
- Site drainage will discharge to the existing 84" open culvert located along the western portion of the site via a 36" culvert the crosses the site.

- The post-development rates of runoff are reduced when compared to the existing peak rates at the point of analysis. Site drainage improvement will not exhibit erosive characteristic at said discharge nor adversely affect the surrounding areas as per the design included in the stormwater report.

- The Operation and Maintenance procedure essentially provides guidance to the contractor/owner to ensure site construction activities does not negatively affect the surrounding environment from a drainage/earthwork stand point. It also provides guidance on performing periodic maintenance of the proposed stormwater system.

DEMOLITION LEGEND:

- BITUMINOUS CONCRETE TO BE REMOVED/PULVERIZED
- TREE AREA TO BE CLEARED
- CEMENT CONCRETE TO BE REMOVED
- AREA OF LIMITEDINO LOAM REMOVAL. COORDINATE WITH ARCHITECT IN THE FIELD
- FENCE REMOVAL
- UTILITIES LINE TO BE REMOVED/ABANDONED
- LIMIT OF WORK
- EROSION CONTROL
- UTILITIES STRUCTURE TO BE REMOVED
- UTILITIES STRUCTURE TO BE ABANDONED IN PLACE
- LIGHT FIXTURES TO BE SALAVAGED
- TREE TO BE REMOVED (INCLUDING STUMP)
- PROPOSED CATCHBASIN FILTER
- TREE PROTECTION



NOTE:
THE CONTRACTOR SHALL PHASE ALL DEMOLITION AND REMOVAL WORK TO ALLOW FOR THE CONTINUING OPERATION OF ALL STRUCTURES OUTSIDE OF LIMIT OF WORK.

NOTE:
DRAWING DOES NOT SHOW ENTIRE SCOPE OF DEMO. IT IS INTENDED TO AID CONTRACTOR WITH IDENTIFYING WORK AND IS NOT ALL INCLUSIVE.

30 15 0 30 60

1 inch = 30 feet

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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

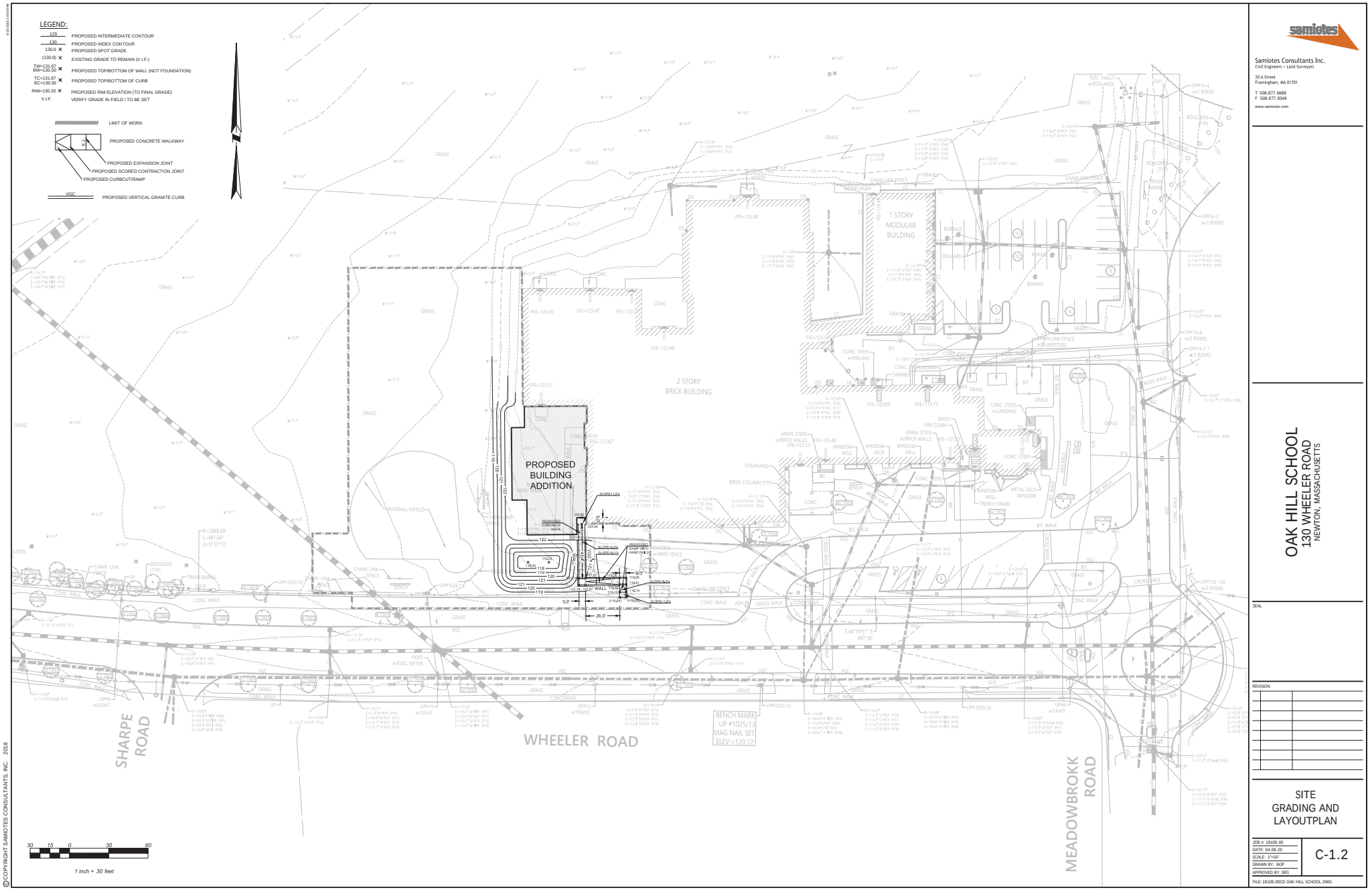
REVISION

SITE PREPARATION AND EROSION CONTROL PLAN

JOB # 19109.00
DATE: 04.06.20
SCALE: 1"=30'
DRAWN BY: WJP
APPROVED BY: SRG

C-1.1

FILE: 19109.00CD OAK HILL SCHOOL.DWG



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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

REVISION

SITE GRADING AND LAYOUTPLAN

JOB # 19109.00
DATE: 04.06.20
SCALE: 1"=30'
DRAWN BY: WJP
APPROVED BY: SRG

C-1.2

FILE: 19109.00CD OAK HILL SCHOOL.DWG

LEGEND:

- D — PROPOSED STORM DRAINAGE LINE
- RD — PROPOSED ROOF DRAIN LINE
- PROPOSED AREA DRAIN
- DS — PROPOSED PROPOSED ROOF LEADER
- CO — PROPOSED CLEANOUT

PROPOSED BUILDING ADDITION

2 STORY BRICK BUILDING

CORE AND CONNECT 8" PVC TO 36" PIPE
INV.IN=111.38
INV.(MANH)=109.72

AREA DRAIN #1
BEEHIVE RATE
RIM=118.75
INV.(OUT)=115.16
SUMP=113.16

RIPRAP (TYP.OF 2)

8" PVC SDR 35 L=126' S=0.03

6" PERF PVC (CAPPED AT OUTLET CONTROL STRUCTURE)

35 LF - 6" PERF. UNDERDRAIN LAID FLAT EL.=115.16

BIO-RETENTION RAIN GARDEN

AREA DRAIN #2 W/ ADA COMPLIANT GRATE
RIM=121.70
INV.(OUT)=119.50
SUMP=117.50

6" PVC SDR 35 L=15' S=0.01

INV. 119.35

BENCH MARK
UP #1025/13
MAG NAIL SET
ELEV.=120.12'

S 64°18'31" E
497.38'

DRAIN EASEMENT
APPROXIMATE LOCATION

SHARPE ROAD

WHEELER ROAD

MEADOWBROKK ROAD

30 15 0 30 60

1 inch = 30 feet

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OAK HILL SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS

SEAL

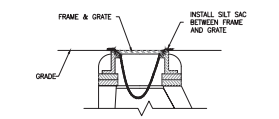
REVISION

UTILITY PLAN

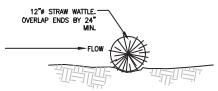
JOB # 19109.00
DATE: 04.06.20
SCALE: 1"=30'
DRAWN BY: WJP
APPROVED BY: SRG

C-1.3

FILE: 19109.00CD OAK HILL SCHOOL.DWG



1 SILT SAC
NTS



2 STRAW WATTLE
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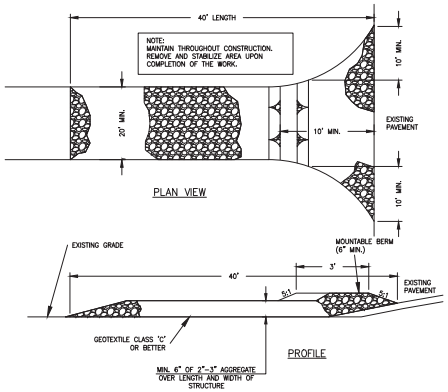
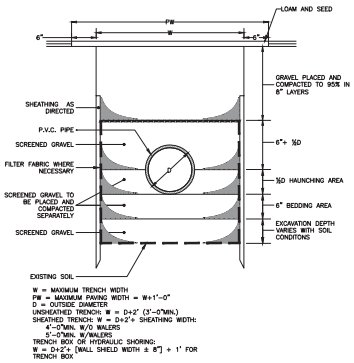
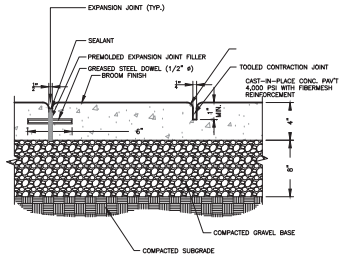


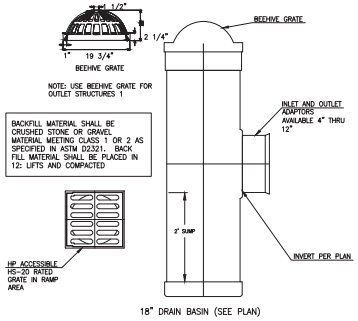
3 STABILIZED CONSTRUCTION ENTRANCE
NTS



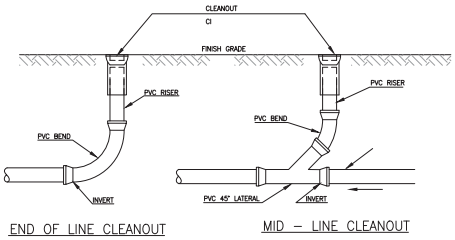
4 TRENCH DETAILS FOR PVC PIPE
NTS



5 BROOM FINISH CONCRETE WALKWAY
NTS

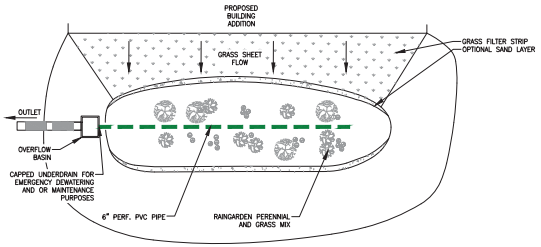


6 AREA DRAIN - OUTLET STRUCTURE
NTS

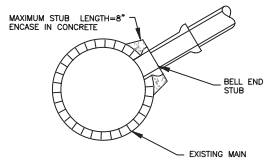


7 CLEANOUT
NTS

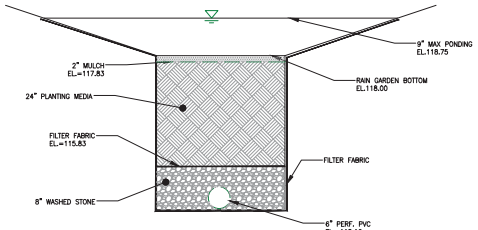
PLANTING MEDIUM		
FILTER MEDIA	MIXTURE BY VOLUME	SPECIFICATION
SAND	40%	FINE AGGREGATE FOR CONCRETE
TOPSOIL	20–30%	BETWEEN 15–25% FINES PASSING THE #200 SIEVE
COMPOST	30–40%	WASHED STONE



8 BIORETENTION/ RAIN GARDEN - PLAN
NTS



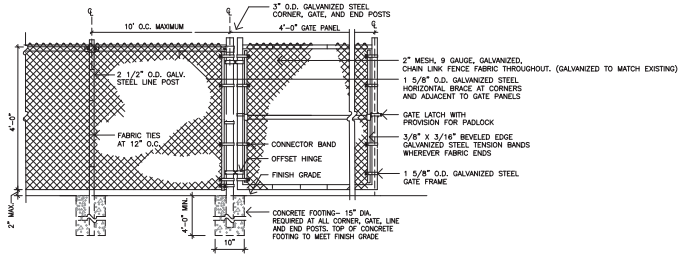
9 CONNECTION TO LARGE STORM DRAINAGE MAIN
NTS



NOTES

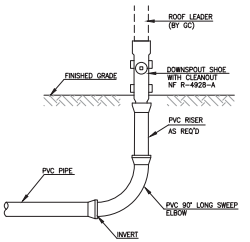
1. PLANTING MEDIUM SHALL NOT BE EXPOSED TO SEDIMENT LADEN WATER DURING CONSTRUCTION. UPSTREAM RUNOFF SHOULD BE STABILIZED (E.G. HAY BALES OR OTHER BARRIERS) PRIOR TO REACHING RAINGARDEN. IF POSSIBLE INSTALLATION OF THE FILTER MEDIA SHOULD NOT OCCUR UNTIL THE MAJORITY OF UPSTREAM AREAS ARE STABILIZED.
2. THE PLANTING MEDIUM SHALL BE INSPECTED AFTER EVERY MAJOR STORM IN THE FIRST FEW MONTHS TO ENSURE PROPER FUNCTION.
3. THE TOP SEVERAL INCHES OF THE FILTER SHALL BE REPLACED WITH FRESH MATERIAL WHEN WATER PONDS ON THE SURFACE FOR MORE THAN 72 HOURS. THE REMOVED SEDIMENTS SHOULD BE DISPOSED OF IN AN ACCEPTABLE MANNER.
4. COMPACTION OF THE SOIL BED MATERIAL AND UNDISTURBED EARTH BASE SHALL BE AVOIDED. IF COMPACTION OCCURS, ROTOTILL PRIOR TO SEEDING OR SODDING.
5. IF RELEVANT, PLACE COMMON BORROW MATERIAL IN 12" LIFTS COMPACTED TO 85% OF MAXIMUM DRY DENSITY.
6. MULCH IS AN IMPORTANT COMPONENT OF THE FILTER SYSTEM. PLACE OVER THE PLANTING MEDIUM WELL AGED, SHREDDED, DARK BROWN, HARDWOOD, MODERATELY FINE, BARK OR WOOD FIBER MULCH MILL LESS THAN 5% PASSING THE #200 SIEVE.
7. ADD 20% BY VOLUME TO THE PLANTING MEDIUMSOIL FILTER OF WELL AGED, ORGANIC, AERATED, GRADED LEAF COMPOST.

10 BIORETENTION/ RAIN GARDEN - SECTION
NTS



NOTES:
1. ALL MATERIALS SHALL BE GALVANIZED STEEL UNLESS OTHERWISE NOTED.
2. POST SPACING SHALL BE EQUIDISTANT. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUED MAINTENANCE OF FENCE DURING CONSTRUCTION.

11 4'-0" CHAIN LINK FENCE AND GATE
SCALE: N.T.S.



13 ROOF LEADER
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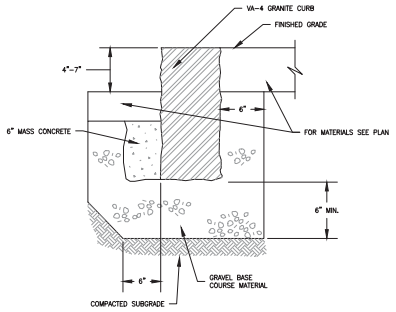
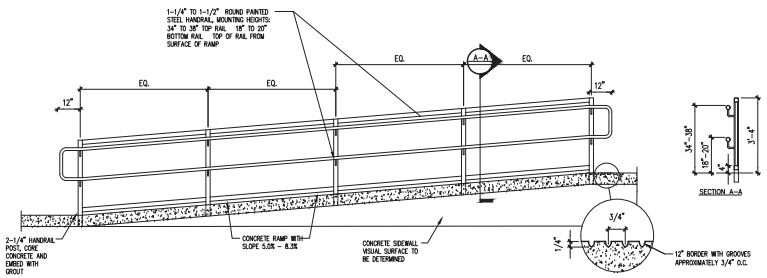
C-2.1

FILE: 19109.00CD OAK HILL SCHOOL.DWG



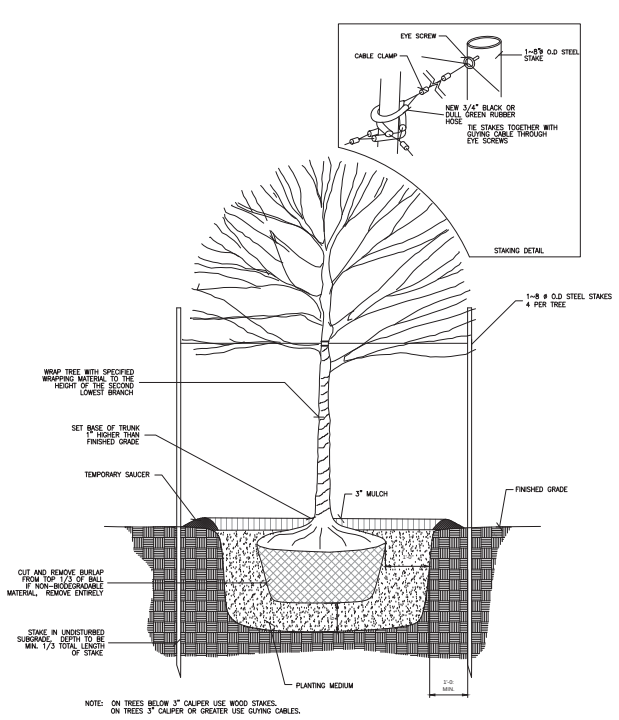
1 VERTICAL GRANITE CURB

NTS



2 ACCESSIBLE RAMP & HANDRAIL

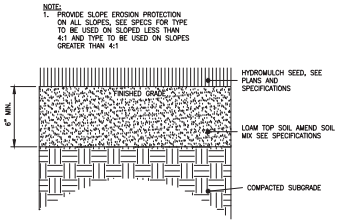
NTS



NOTE: ON TREES BELOW 3" CALIPER USE WOOD STAKES. ON TREES 3" CALIPER OR GREATER USE GUYING CABLES.

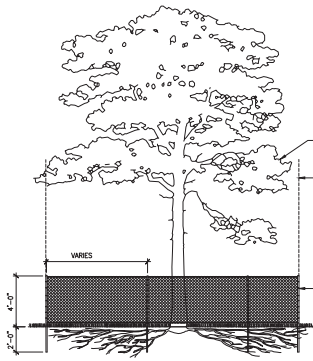
3 TREE GUYING/STAKING

NTS

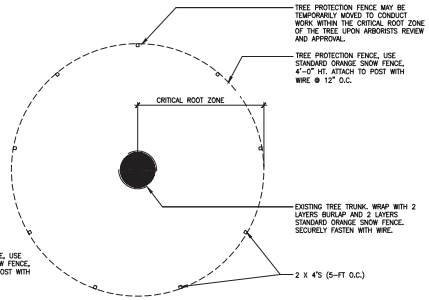


4 LOAM AND SEED AREA

NTS



CRITICAL ROOT ZONE TO BE PROTECTED, ALL WORK NECESSARY WITHIN THE CRITICAL ROOT ZOONE SHALL BE PERFORMED BY HAND.



NOTE:
1. WHERE SPACE IS AVAILABLE, TREE PROTECTION FENCE TO BE PLACE AT A MINIMUM OF 10' FROM BASE OF TREE PLUS AN ADDITIONAL 1' FOR EACH ADDITIONAL DBH FOR TREES GREATER THAN 10" DBH (DIAMETER AT BREAST HEIGHT).
2. ALL WORK DONE WITHIN TREE PROTECTION FENCE IS TO BE DONE BY HAND AND LIGHT EQUIPMENT.
3. ROOTS EXPOSED DURING EXCAVATION SHALL BE NEATLY CUT AND COVERED WITH SOIL IMMEDIATELY.
4. FOR TREES THAT OCCUR IN GROUPS PROVIDE TREE PROTECTION FENCE AROUND ENTIRE AREA. SEE PLAN FOR LOCATIONS.
5. MAINTAIN FENCE PROTECTION IN SOUND CONDITION UNTIL FENCE COMPLETION.
6. A CERTIFIED ARBORIST SHALL DELINEATE LIMIT OF TREE PROTECTION FENCE AS THEY RELATE TO THE LIMIT OF THE CRITICAL ROOT ZONE.

5 EXISTING TREE PROTECTION

NTS

NOTES AND SPECIFICATIONS

GENERAL

1. ALL SURVEY INFORMATION OF EXISTING CONDITIONS, INCLUDING BUT NOT LIMITED TO PROPERTY LINES, FENCES, PAVING, OVERHEAD WIRES, ETC. ARE BASED ON THE ON A SURVEY BY VHB, INC. AS DEPICTED EXISTING SITE PLAN. ALL SUCH INFORMATION IS APPROXIMATE AND THE CONTRACTOR IS RESPONSIBLE TO SURVEY AND FIELD VERIFY SUCH INFORMATION PRIOR TO CONSTRUCTION. CONSTRUCTION DELAYS AND/OR OTHER DAMAGES RESULTING FROM DISCREPANCIES BETWEEN INFORMATION PROVIDED AND ACTUAL EXISTING CONDITIONS WILL BE AT NO ADDITIONAL COST TO THE OWNER.
2. AS OF JANUARY 1, 2009, ALL TRENCH EXCAVATION CONTRACTORS SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82A, TRENCH EXCAVATION SAFETY REQUIREMENTS, TO PROTECT THE GENERAL PUBLIC FROM UNAUTHORIZED ACCESS TO UNATTENDED TRENCHES. TRENCH EXCAVATION PERMIT REQUIRED. THIS APPLIES TO ALL TRENCHES ON PUBLIC AND PRIVATE PROPERTY.
3. PRIOR TO OCCUPANCY PERMIT BEING ISSUED, AN AS-BUILT PLAN BY THE GENERAL CONTRACTOR SHALL BE SUBMITTED TO THE ENGINEERING DEVISION IN BOTH DIGITAL FORMAT AND IN HARD COPY. THE PLAN SHOULD SHOW ALL UTILITIES AND FINAL GRADES, ANY EASEMENTS AND FINAL GRADING.
4. THE CONTRACTOR WILL HAVE TO APPLY FOR A STREET OPENING & UTILITIES CONNECTION PERMITS AS WELL AS A SIDEWALK CROSSING PERMIT WITH THE NEWTON DPW.
5. THE CONTRACTOR SHALL NOTIFY AND COORDINATE ALL WORK WITH THE RESPECTIVE UTILITY COMPANIES 48 HOURS PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL REGISTER WITH "DIG SAFE" AT (888) DIG-SAFE, 72 HOURS PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN "DIG SAFE" REGISTRATION AND "DIG SAFE" MARKINGS.
7. ALL WASTE MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, CITY AND MUNICIPAL REGULATIONS.
8. ALL WORK SHALL COMPLY WITH FEDERAL, STATE AND MUNICIPAL REGULATIONS AND STANDARDS.
9. THE CONTRACTOR SHALL HAVE THE PROPER LICENSES AS REQUIRED BY THE STATE AND ANY OTHER GOVERNING AGENCIES.
10. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUILDINGS AT NO ADDITIONAL COST TO THE OWNER.
11. THE CONTRACTOR SHALL MAINTAIN APPROPRIATE DETOUR SIGNS WHEN WORK WILL IMPEDE TRAFFIC FLOW.
12. ALL UTILITY RIMS SHALL BE ADJUSTED TO MEET FINAL GRADE AND SHALL CONFORM WITH THE CONSTRUCTION STANDARDS OF THE RESPECTIVE UTILITY COMPANY.
13. FILL SHALL BE PLACED IN NO GREATER THAN 6" LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM COMPACTION.
14. CEMENT CONCRETE SHALL CONFORM TO ACI SPECIFICATION 316, AND ASTM A 616 AND D 1557.
15. ADA AND MAAB COMPLIANCE

A. SPECIAL ATTENTION IS TO BE GIVEN TO COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB)

a. SLOPES: ALL WALKWAYS AS DEFINED BY SECTION 22.1 OF 521 CMR SHALL BE GRADED TO A MAXIMUM 4.5%. THE CROSS PITCH (PERPENDICULAR TO TRAVEL) FOR ALL WALKWAYS AND PATHS SHALL BE CONSTRUCTED AT 1.5%. THE SLOPE OF ALL RAMPS AND SIDE SLOPES OF HANDICAP CURB CUTS AS DEFINED BY SECTION 21.1 OF 521 CMR SHALL BE CONSTRUCTED AT 7% MAXIMUM. RAMPS AS DEFINED IN SECTION 24.1 OF 521 CMR SHALL BE CONSTRUCTED TO A MAXIMUM SLOPE OF 7%.

b. THE CONTRACTOR IS TO ASSUME THAT ALL GRADES IN PEDESTRIAN PATHS OF TRAVEL SHALL BE VERIFIED/CHECKED WITH A 2-FOOT ELECTRONIC "SMART LEVEL".

c. A 5'-0" MINIMUM LEVEL (1.5% SLOPE) AREA SHALL BE PROVIDED AT ALL FLUSH ENTRANCES TO BUILDINGS. PUDDLING OF WATER AT THE ENTRANCES WILL NOT BE ALLOWED.

B. THE ABOVE REQUIREMENTS SHALL SUPERSEDE THE GRADES SHOWN ON THE PLANS. IF THESE REQUIREMENTS CANNOT BE MET WITH THE GRADES SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR DIRECTION.

16. THE CONTRACTOR SHALL EFFECT A SMOOTH TRANSITION IN LANDSCAPED AREAS BETWEEN THE EXISTING GROUND AND THE PROPOSED GRADE.
17. NEW PAVEMENT SHALL TIE INTO EXISTING PAVEMENT WITH A SMOOTH TRANSITION. THE EXISTING PAVEMENT SHALL BE SAW CUT.
18. CONCRETE SIDEWALK SHALL BE NON-REINFORCED. CONCRETE SHALL BE "CLASS D" IN ACCORDANCE WITH SECTION M4.02.00 OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES: MassDOT - HIGHWAY STANDARD SPECIFICATIONS LATEST EDITION , WITH 620 LBS. OF PORTLAND CEMENT, 6% ± 1% AIR ENTRAINMENT IN PLACE.

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JOB # 19109.00
DATE: 04.06.20
SCALE: NTS
DRAWN BY: WJP
APPROVED BY: SRG

C-2.2

FILE: 19109.00CD OAK HILL SCHOOL.DWG

Geotech Report Summary

- On March 6, 2020, four soil test borings were drilled to depths of approximately 12 to 19 feet below the existing ground surface within the proposed addition footprint. The borings were advanced by flush joint casing using a Geoprobe 6610DT drill rig equipped with an automatic hammer.
- The subsurface conditions encountered consist of very loose to very dense, undocumented fill material (~5 to 9 feet) underlain by stiff to hard silt and medium dense to very dense glacial till soils to the depths explored.
- The depth at which groundwater was observed within the borings during drilling operations was approximately 10 to 12 feet below surface grade. Therefore, excavations are not expected to encounter groundwater.
- Foundations and grade-supported concrete floor slabs supported on undocumented fill carry with it less confidence and, therefore, more risk.
- In order to completely eliminate the risk of excessive settlement of the new foundations, the existing fill would have to be completely removed and replaced, or ground improvement would be required, such as aggregate piers.
- Because the addition is immediately adjacent to the existing structure on two sides, complete removal of existing fill would require extensive underpinning of existing foundations.
- PSI has proposed a risk mitigation program that, while not eliminating the risk, substantially lessens the risk and is more economical. Provided the risk is accepted by the Owner, a partial over-excavation and replacement program may be considered.
    - At a minimum, within the building addition plus a minimum of 5 feet from the south and west edges, we recommend existing Fill be over-excavated to a depth of at least 2 feet below existing surface grades. Exposed subgrades should be proof-rolled, and placement/compaction of new fill should be in lifts compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D1557 at plus/minus 2% of the optimum moisture content. All of these activities should be observed on a full-time basis by the geotechnical engineer.
    - The depths of removal and replacement for foundations will need to be determined at the time of excavation and will need to account for the proximity to existing footings. Those bearing materials that are observed to contain debris or organics, or are determined to exhibit loose conditions should be removed and replaced.
    - In areas of the new addition that are away from the existing building edges, the foundations can be over-excavated to bottom of fill to reduce risk of settlement without having to be concerned with underpinning.
- Accounting for existing surficial topsoil removal, new floor slab concrete and new granular base materials, we estimate that as much as approximately 5½ feet of new fill may be required to attain the finished soil subgrade elevation. Fill material placed below footings should be Structural Fill material, while Granular Fill can be used above footing grade.
- The concrete slabs may be designed as grade-supported slabs provided the slab subgrade is proof-rolled to verify that the soil is firm prior to constructing the slab base course layer.

Building Code Review

The code report identifies the applicable code sections of 780 CMR (building) and 521 CMR (accessibility). More specifically, the report identifies the applicable criteria for the project code compliance relative to:

- Use/Occupancy Classification
- Construction Type
- Interior Finish
- Fire Protection Systems
- Egress
- Accessibility

Notable items are as follows:

1. Construction Classification - The existing building and the addition have to be within specific "limits" for height and area based on the construction type. In order for the addition to be constructed without a structurally independent fire wall the construction type limits of the existing building must be satisfied. A fire wall can be very expensive, extremely distributive to the "flow" of the building use and architecturally undesirable. So it is desirable to build an addition without a fire wall if possible.

- The analysis concludes the addition may be constructed with Type IIB materials, without the need for a fire wall, and the overall building is compliant with the height and area limits.

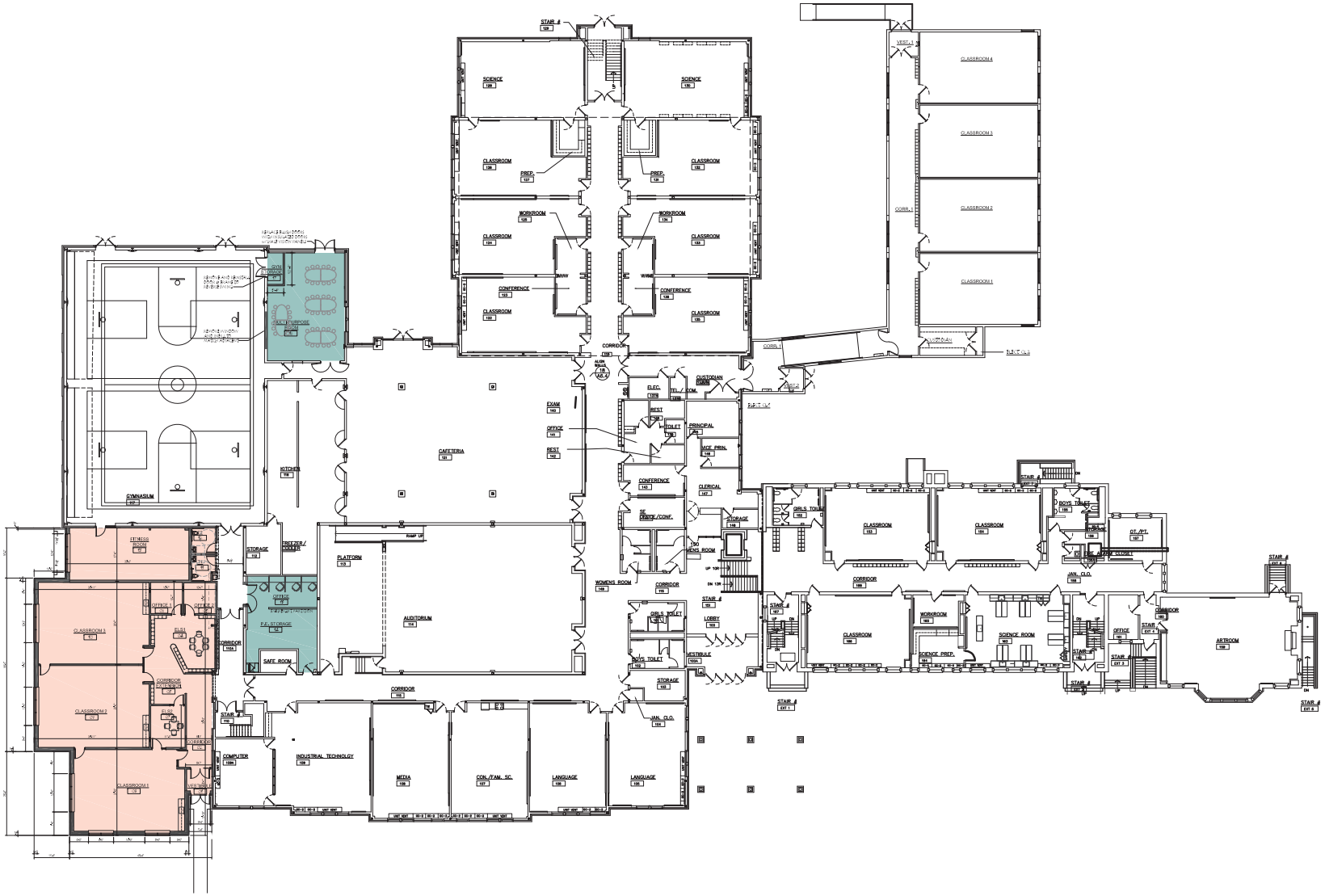
- The key to this outcome, is the consideration that the modular element (Northeast plan) is a separate building from the remainder of the existing building. This is accomplished because of the pedestrian walkway connected between the buildings.

2. Fire Protection Systems - Because the addition is "new construction" under the code, it is required to be provided with all the fire protection features of a new building including sprinklers, voice fire alarm and emergency responder radio coverage. If the existing building does not have a voice fire alarm system and or emergency responder radio coverage, upgrades within the existing building may be necessary.

3. Egress - The existing egress system is more than adequate in terms of number of exits and capacity even with the occupants of the addition. The design is compliant.

4. Toilet & Lavatory Fixture Counts - The existing fixtures, along with the 2 new single user gender neutral bathrooms is sufficient to accommodate the total number of students and staff. The new bathrooms also resolve a potential existing nonconforming condition relative to cafeteria staff.

234-20



FIRST FLOOR PLAN

SCALE: 1/32" = 1'-0"

0' 8' 16' 32'

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Architects & Planners
60 Ledgewood Place
Rockland, MA 02370

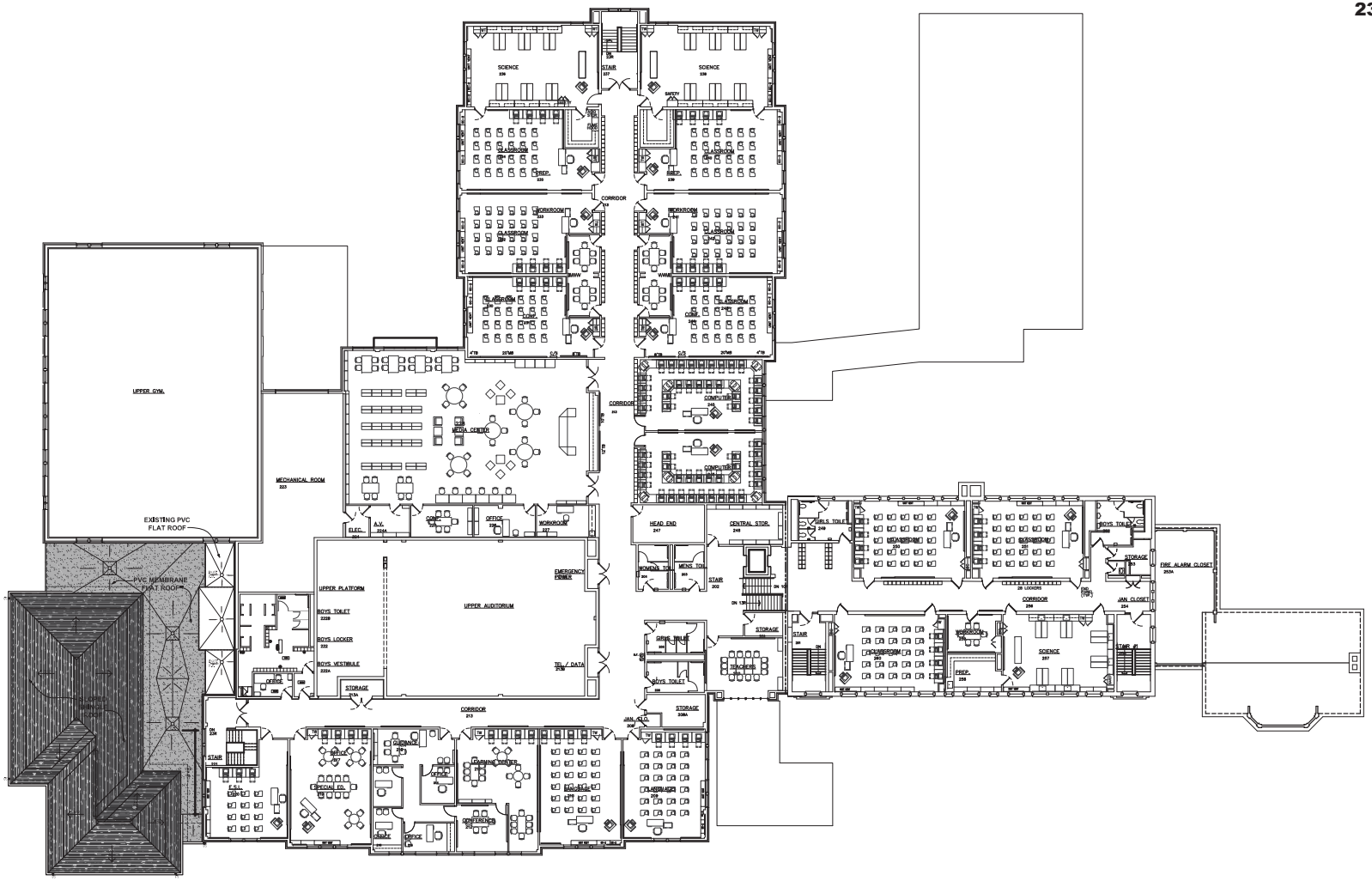
N

PROPOSED FLOOR PLAN

OAK HILL MIDDLE SCHOOL
PROPOSED ADDITION
May 6, 2020

PREFERRED OPTION

234-20



ROOF / SECOND FLOOR PLAN

SCALE: 1/32" = 1'-0"

0' 8' 16' 32'

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Rockland, MA 02370

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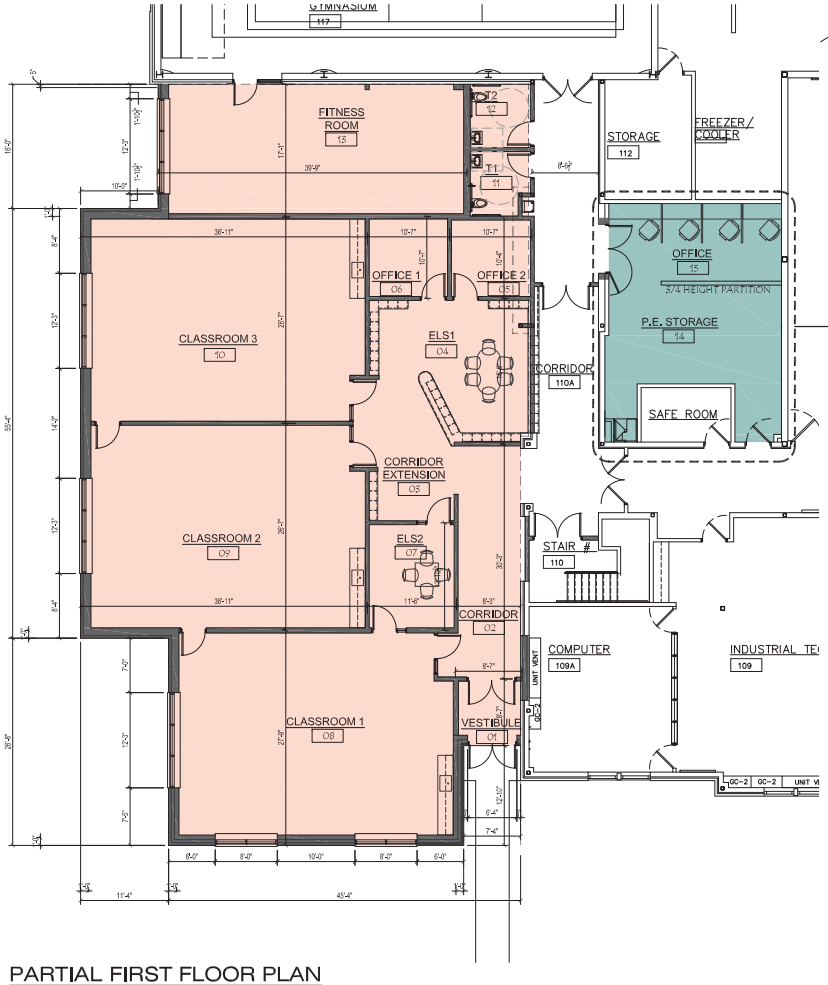
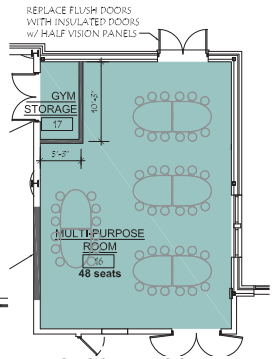
PROPOSED FLOOR PLAN

OAK HILL MIDDLE SCHOOL
PROPOSED ADDITION
May 6, 2020

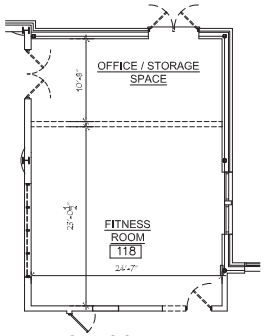
PREFERRED OPTION

234-20

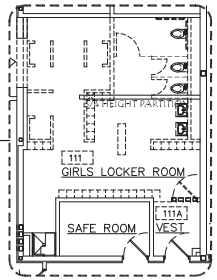




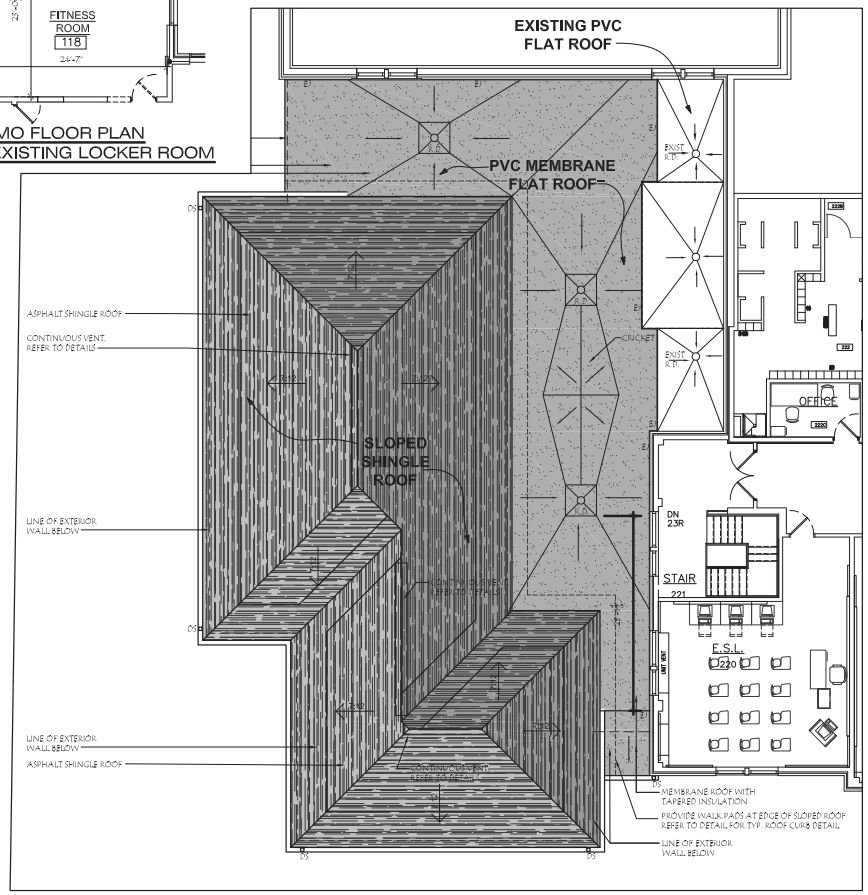
PROPOSED FLOOR PLAN
@ MUTLI-PURPOSE ROOM



DEMO FLOOR PLAN
@ EXISTING LOCKER ROOM



DEMO FLOOR PLAN
@ EXISTING LOCKER ROOM



PARTIAL FIRST FLOOR PLAN

PARTIAL ROOF PLAN

SCALE: 1/16" = 1'-0"

0' 4' 8' 16'

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Rockland, MA 02370

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PROPOSED FLOOR PLANS

ONE STORY- 3 CLASSROOMS
(5,004 S.F.)

OAK HILL MIDDLE SCHOOL
PROPOSED ADDITION
May 6, 2020

PREFERRED OPTION

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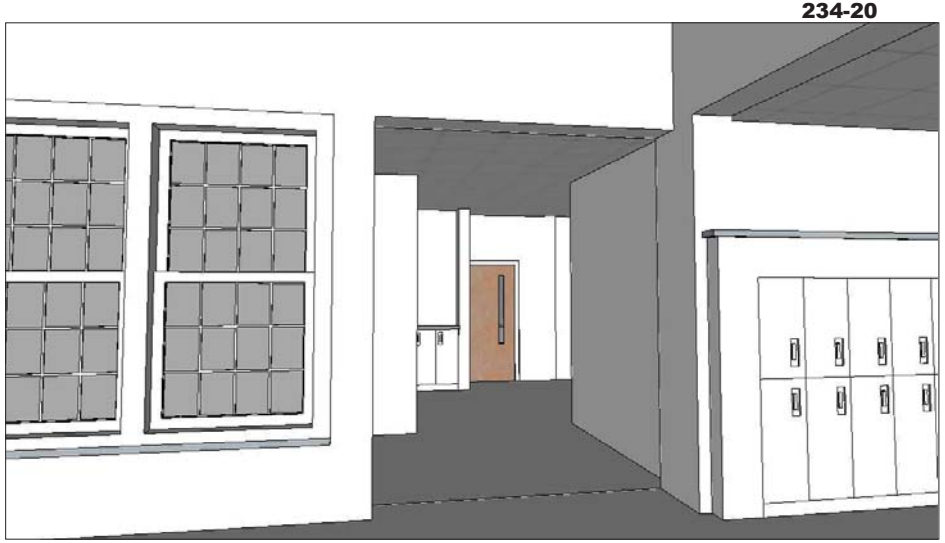
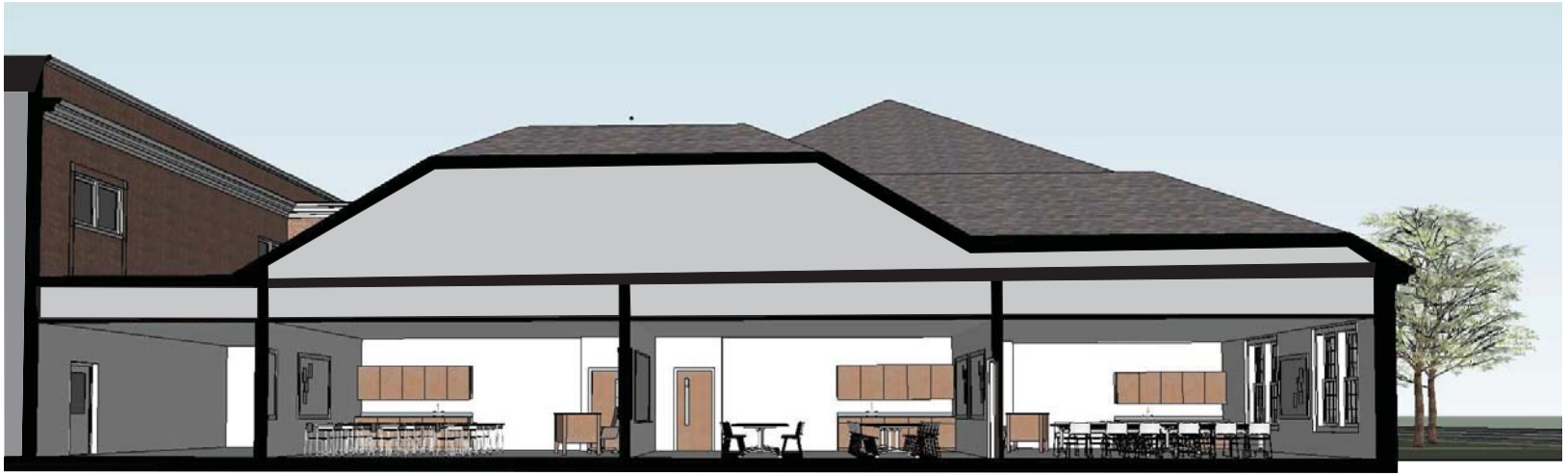
INTERIOR VIEWS

OAK HILL MIDDLE SCHOOL
PROPOSED ADDITION
May 6, 2020

VIEW OF EXTENDED LEARNING SPACES



VIEW FROM EXISTING BUILDING



BUILDING SECTION

Raymond Design Associates, Inc
Architects & Planners
60 Ledgewood Place
Rockland, MA 02370

INTERIOR VIEWS

OAK HILL MIDDLE SCHOOL
PROPOSED ADDITION
May 6, 2020

STREET VIEW LOOKING NORTHEAST

STREET VIEW LOOKING EAST

RDA
Raymond Design Associates, Inc
Architects & Planners
60 Ledgewood Place
Rockland, MA 02370

PERSPECTIVE VIEWS

OAK HILL MIDDLE SCHOOL
PROPOSED ADDITION
May 6, 2020

Garcia.Galuska.DeSousa
Consulting Engineers Inc

Energy Model Report

Mechanical Lifecycle Engineering Economic Analysis

GOAL - Assess the performance of various mechanical systems in comparison to a baseline mechanical system.

- Each option is compared to the baseline system to determine the lowest combined savings over a 30-year cycle to determine the most advantageous system considering electrical costs, gas costs, maintenance costs, and initial construction costs.
- An air-source heat pump unit system was selected as the baseline system as it is an International Energy Conservation Code (IECC) 2018 baseline system for an all-electric building that generally results in a low installed cost system. The selection may result in overall ownership costs that in some cases could be higher when compared to the alterative systems primarily relating to the increased annual operating costs for the building. The option comparison of each alternative system to the baseline assesses the benefits of improved systems with potentially reduced combined operating costs and improved thermal comfort with the goal of selecting the system with the highest ownership savings over the 30-year study period.

MECHANICAL SYSTEM OPTIONS STUDIED

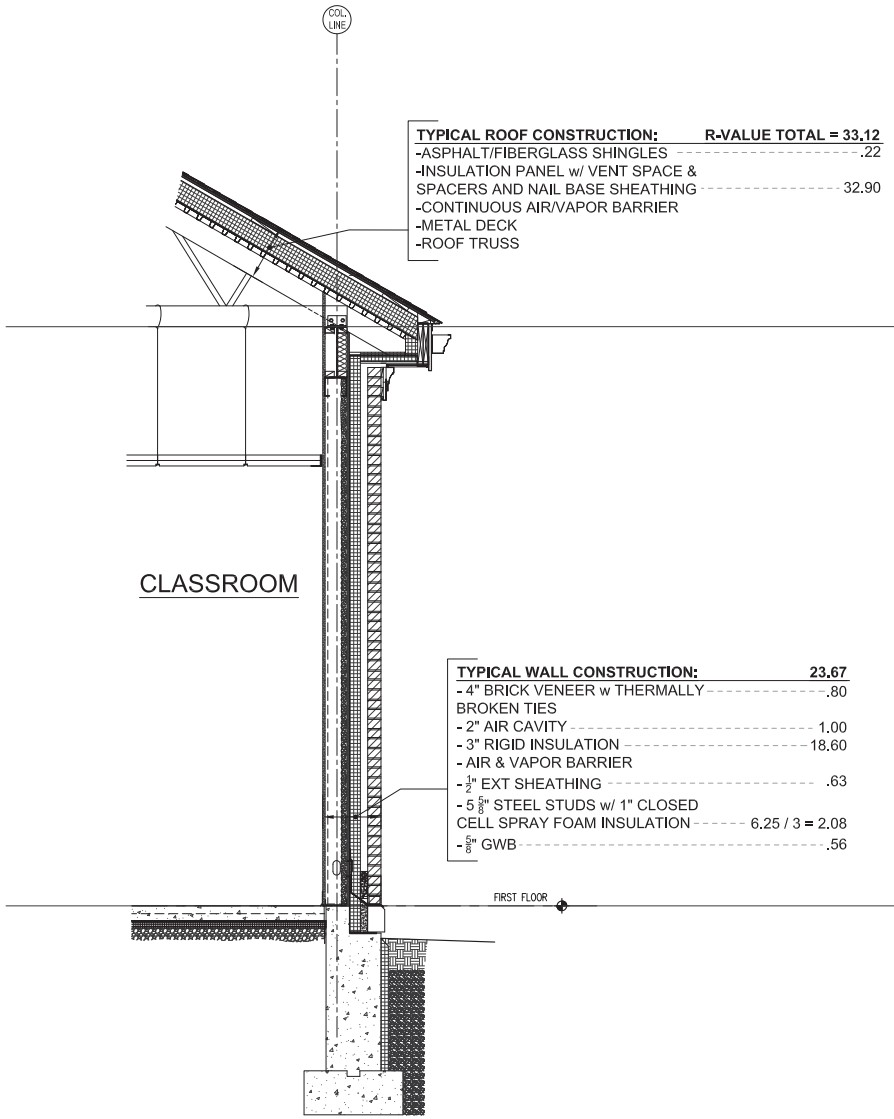
- **Baseline System** – Air-Source Heat Pump Rooftop Units
- **Option One** – Electric Resistance Heating/DX Cooling Fan-Powered Variable Air Volume (VAV) Rooftop Unit System
- **Option Two** – Air-Source Variable Refrigerant Flow (VRF) Heat Pump System (Design System)
- **Option Three** – Hot Water Heating/DX Cooling Variable Air Volume (VAV) Air Handling Unit System (connecting to existing HW plant)

MECHANICAL SYSTEM ANALYSIS CONCLUSION

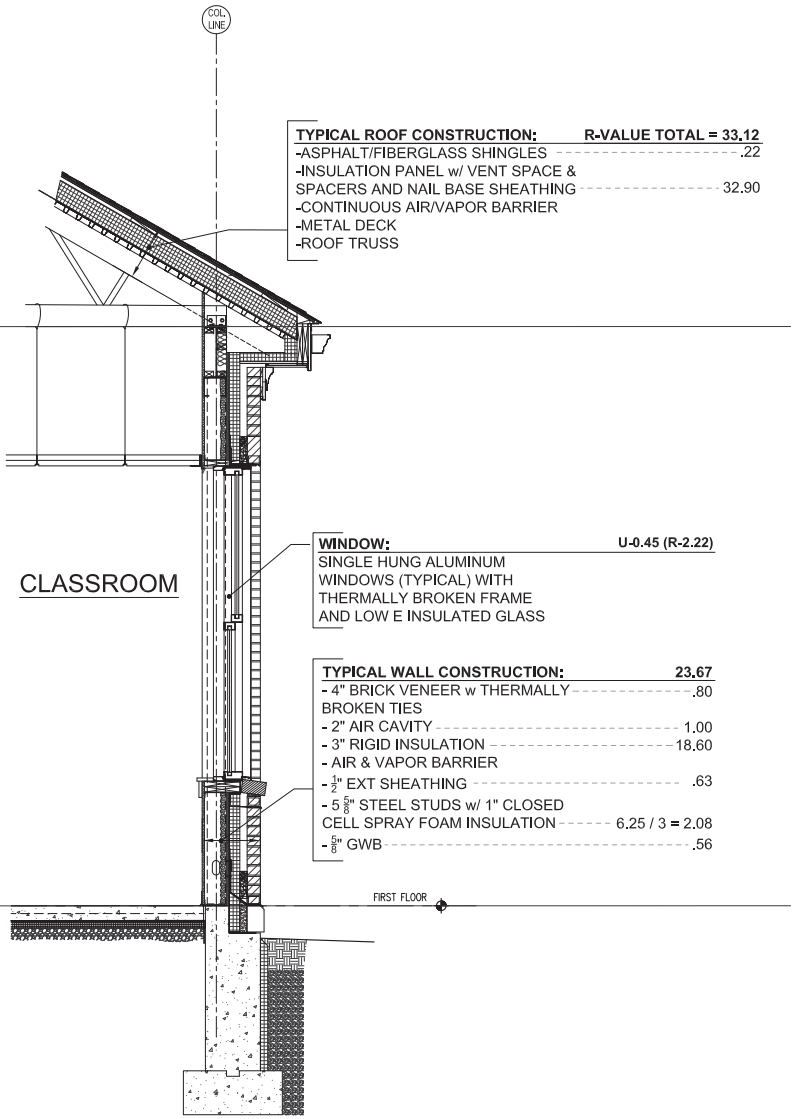
- Annual electrical consumption is calculated thru the results of a thermal dynamic heat transfer analysis utilizing Department of Energy (DOE-2)/eQuest software with all architectural data provided by Raymond Design Associates.
- The building envelope consists of the following insulation values: The roof has R-32.9 continuous insulation, the walls have R-20.68 continuous insulation, and the windows have a U-Value of 0.45 and 0.40 SHGC.
- Our observations of the Mechanical System Payback Summary suggest that **Option 2, air-source variable refrigerant flow (VRF) heat pump units, represents the most cost effective system** by yielding an approximate $184,565 savings over the 30 year study period with an instant payback as it has the lowest installed and operating utility costs of all systems studied including the baseline system.

INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2018 ENERGY SAVINGS SUMMARY

- To predict the anticipated energy cost savings percentage the project achieves beyond code, an updated energy model simulation has been performed comparing the design building to a baseline IECC 2018 building. A comparison of the Design Building against the IECC 2018 Baseline Building results in **a projected energy cost savings of 31.5%.**



2 TYPICAL WALL SECTION
SCALE: 3/4" = 1'-0"



1 TYPICAL WALL SECTION
SCALE: 3/4" = 1'-0"

RDA
Raymond Design Associates, Inc.
Architects & Planners
60 Ledgewood Place
Rockland MA, 02370

Oak Hill Middle School
Classroom Addition
130 Wheeler Road, Newton, Massachusetts 02459

Revisions:

No.	Date	Description

Drawn By: ND
Checked By: DB
Approved By: GR
Drawing Scale: as noted
Project Number:
Date: May 6, 2020

PROGRESS SET - NOT FOR PERMIT - NOT FOR CONSTRUCTION

PM&C

Oak Hill Middle School
Addition/Renovation
Newton, MA

12-Mar-20

Schematic Design Estimate

	Construction Start		Gross Floor Area	$/sf	Estimated Construction Cost
RENOVATION + ADDITION					
	Jun-20				
RENOVATIONS TO EXISTING SCHOOL			1,700	$113.68	$193,256
ADDITIONS			5,100	$336.25	$1,714,895
REMOVE HAZARDOUS MATERIALS					NIC
SITEWORK					$68,212
SUB-TOTAL			6,800	$290.64	$1,976,363
DESIGN AND PRICING CONTINGENCY	10.0%				$197,636
ESCALATION (3% p.a.)	1.3%				$25,693
PHASING & LOGISTICS					$39,527
SUB-TOTAL			6,800	$329.30	$2,239,219
GENERAL CONDITIONS		10 MTHS		$40,000	$400,000
GENERAL REQUIREMENTS					assumed above
BONDS	1.00%				$22,392
INSURANCE	1.25%				$33,270
PERMIT					Waived
FEE	5.00%				$134,744
TOTAL OF ALL CONSTRUCTION			6,800	$416.12	**$2,829,625**

ADDITION VS RENOVATION COST BREAKDOWN

		Addition/Renovation Estimate	Interior Renovations to Existing School	3 Classroom Addition and Sitework
		$ 1,976,363	$ 193,256	$ 1,783,107
Design and Pricing Contingency	10%	$ 197,636	$ 19,326	$ 178,311
Escalation (3% p.a.)	1.30%	$ 25,693	$ 2,512	$ 23,180
Phasing and Logistics	1.90%	$ 39,527	$ 5,648	$ 33,879
Sub-Total		**$ 2,239,219**	**$ 220,742**	**$ 2,018,477**
General Conditions		$ 400,000	$ 40,000	$ 360,000
Bonds	1.00%	$ 22,392	$ 2,207	$ 20,185
Insurance	1.25%	$ 33,270	$ 3,287	$ 29,983
Fee	5%	$ 134,744	$ 13,312	$ 121,432
Sub-Total		**$ 590,406**	**$ 58,806**	**$ 531,600**
Construction Totals		**$ 2,829,625**	**$ 279,548**	**$ 2,550,077**

Stormwater Management Report

Synopsis

- The development will entail removal of existing site amenities such as pavement areas, fences, trees, utilities etc. to accommodate a new 5,000+/- sf. building additional along the south west section of the building. Additional site improvement will include a new ADA accessible ramp, rain garden - Best management practice (BMP), and minor drainage upgrades to accommodate same.

- The proposed Rain Garden is designed to meet the latest stormwater management regulation instituted by MassDEP. Some of the stormwater requirements that was addressed are as follows:
  - Water quality
  - Recharge
  - Draw down
  - Flow rate mitigation

- Existing site drainage infrastructure will be modified to accommodate new roof leader and ramp drain will be routed to the onsite raingarden facility.

- As per soil testing performed on March 19, 2020, estimate seasonal high ground water (ESHGW) from redoximorphic observation was depicted at 84" below finish grade. This elevation was approx. 113.00 which is 7 feet below existing grade at testing location. The facility was designed to maintain at least a 2 feet minimum groundwater separation to the bottom of the rain garden envelop set at el. 115.16 per MassDEP requirements.

- Onsite soil testing performed on March 19, 2020, test pit results depicted predominately fill and sandy loam horizons from approx. 16" to 120" below finish grade. Therefore, an infiltration rate of 0.17in/hr was used for the design the system which is consistence with onsite testing observation.

- Site drainage will discharge to the existing 84" open culvert located along the western portion of the site via a 36" culvert the crosses the site.

- The post-development rates of runoff are reduced when compared to the existing peak rates at the point of analysis. Site drainage improvement will not exhibit erosive characteristic at said discharge nor adversely affect the surrounding areas as per the design included in the stormwater report.

- The Operation and Maintenance procedure essentially provides guidance to the contractor/owner to ensure site construction activities does not negatively affect the surrounding environment from a drainage/earthwork standpoint. It also provides guidance on performing periodic maintenance of the proposed stormwater system.

OAK HILL MIDDLE SCHOOL
130 WHEELER ROAD
NEWTON, MASSACHUSETTS
STORMWATER REPORT

Submitted to:
Department of Public Works
Newton City Hall, Room 102
1000 Commonwealth Avenue
Newton Centre, MA 02459

Applicant:
Oak Hill Middle School
130 Wheeler Road
Newton, MA 02459

Civil Engineer:
Samiotes Consultants, Inc.
20 A Street
Framingham, MA 01701

Architect:
Raymond Design Associates, Inc.
60 Ledgewood Place,
Rockland, MA 02370

samiotes

April 2020

OAK HILL MIDDLE SCHOOL
STORMWATER MANAGEMENT NARRATIVE

April 1, 2020

Synopsis:

The site development resides at 130 Wheeler Road in Newton, MA. Currently, the site harbors an existing school that includes drainage and utility infrastructure along with associated parking and landscaped areas. The development will entail removal of existing site amenities such as pavement areas, fences, trees, utilities etc. to accommodate a new 5,000+/- sf. building additional along the south west section of the building. Additional site improvement will include a new ADA accessible ramp, rain garden - Best management practice (BMP), and minor drainage upgrades to accommodate same.

Soils:

A Natural Resource Conservation (NRCS) Soil Report generated for the subject property has mapped the following soils with corresponding hydrologic soil groups (HSG): Udorthents and Urban lands with inconclusive HSG values (See appendix of this report). Based on onsite soil testing performed on March 19, 2020, test pit results depicted predominately fill horizons from approx. 16" to 120" below finish grade . estimate seasonal high ground water (ESHGW) from redoximorphic observation was depicted at 84" below finish grade (See appendix of this report).

Existing Stormwater Management:

The existing site consists of the stormwater runoff being captures by onsite drainage infrastructure that hydraulically connects to the the City of Newtons drainage system within Wheeler Road. This system eventually routes through a 36" culvert before entering an existing 84" open channel culvert. It is to be noted that the 84" culvert is located within an easement that runs across the a portion of the property

Proposed Stormwater Management:

The proposed stormwater runoff generated from the proposed development will be routed and mitigated through the proposed rain garden facility. The rain garden will be designed to recharge the increase to impervious area, treat the required water quality volume and attenuate pre and post rainfall associated with the 2 yr,10 yr,100 yr and 100 yr (local 24 hr- rainfall event value of 8.78) rainfall events based on local and MassDEP stormwater regulations (See calculations within narrative of this report). The mitigated stormwater from the rain garden will flow through an outlet control structure that connects to a 36" pipe before ultimately discharging to a 84" culvert at the design POA.

Watershed Routing:

Below is a summary of the various existing and proposed watersheds with a brief narrative describing the routing. The descriptions of the watersheds are depicted in sketches EX-HYD and PR-HYD located in the Appendix.

EX-WS1: The watershed consists of 4.579 ac. of pervious area and 0.14 ac. of impervious area. The runoff from this watershed runs overland to a low lying area along the western boundary of the site before ultimately entering the 84" culvert system designated as POA.

EX-WS2: The watershed consists of 0.855 ac. of pervious area and 2.44 ac. of impervious area. The runoff from this watershed runs is captured by onsite drainage infrastructure that hydraulically connects to the City of Newtons drainage system within Wheeler Road. This system eventually routes through a

36″ culvert before entering an existing 84″ pipe designated as POA. It is to be noted that the 84″ culvert is located within an easement that runs across a portion of the property.

Proposed Watersheds:

PWS-1: The watershed consists of 0.047 ac. of pervious area and 0.115 ac. of impervious area. The runoff from this watershed is mitigated by the rain garden which also provides water quality through the sub planting media. Stormwater from this system is further filtrated into the underlying soil. A beehive grate outlet control structure will be utilized to mitigate peak storm events. A 6″ underdrain will be provided as a means to dewater the system in the event the subsurface infiltration process get inundated. Ultimately, the outlet control structure conveys flow to a 36″ pipe before discharging to the 84″ culvert system designated as POA.

PWS-2: The watershed consists of 0.713ac. of pervious area and 2.415 ac. of impervious area. The runoff from this watershed runs is captured by onsite drainage infrastructure that hydraulically connects to the City of Newtons drainage system within Wheeler Road. This system eventually routes through a 36″ culvert before entering an existing 84″ pipe designated as POA. It is to be noted that the 84″ culvert is located within an easement that runs across a portion of the property.

PWS-3: The watershed consists of 4.575 ac. of pervious area and 0.14 ac. of impervious area. The runoff from this watershed runs overland to a low lying area along the western boundary of the site before ultimately entering the 84″ culvert system designated as POA.

Analysis

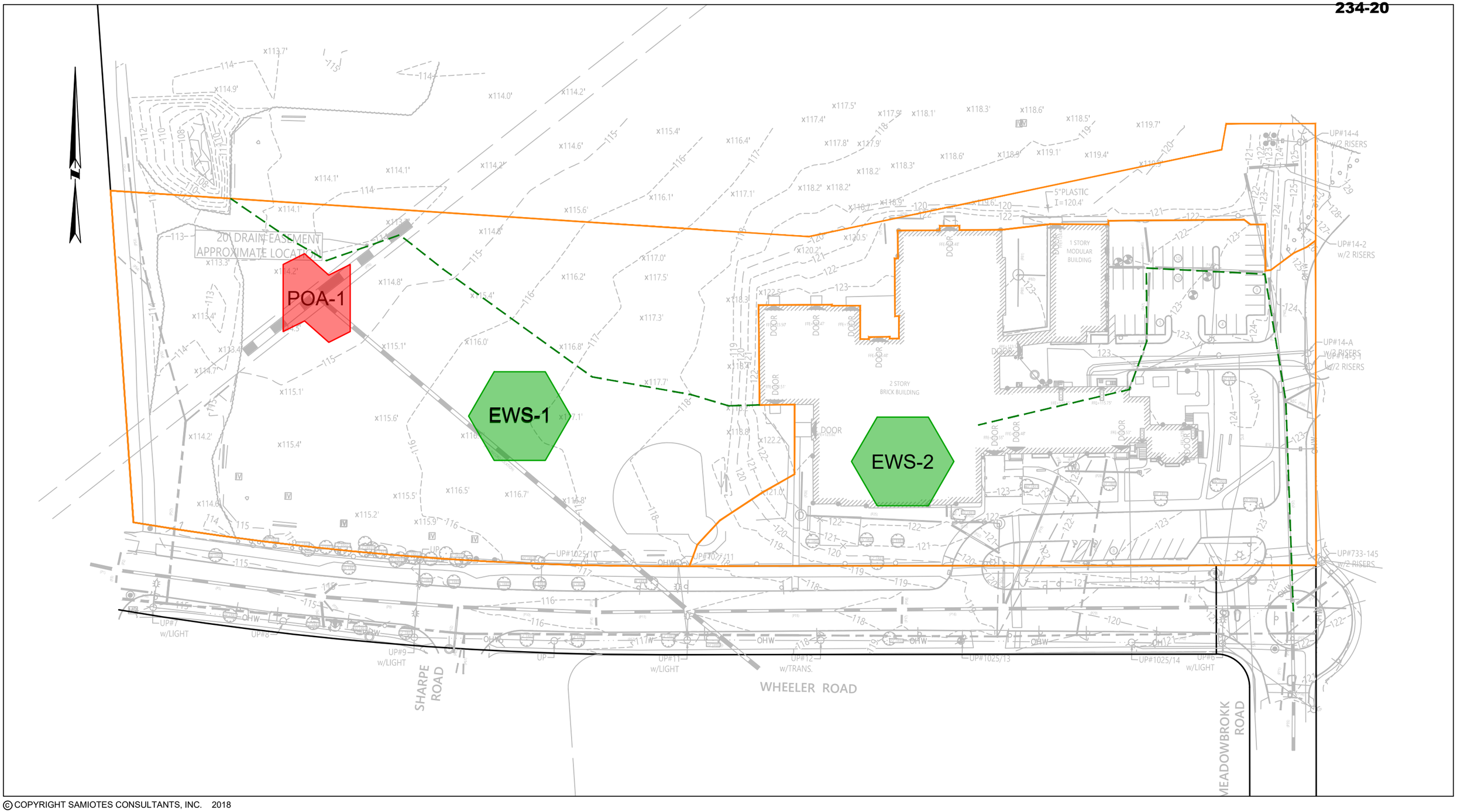
The analysis was based on the pre and post development peak discharge rates at the point of analysis. The proposed construction of the 130 Wheeler Road site improvements will result in an increase in impervious area of approx. 5,319 sf. or 0.122 ac, therefore the proposed stormwater management system will be designed to mitigate any increase in the rate of runoff and will recharge the requisite volume (See appendix of this report).

Results of Analysis

Through the use of the HydroCAD Software, the curve numbers, times of concentrations, total volume of runoff, and peak discharge rates were determined for both the existing conditions and the proposed conditions. The results of the study shows that the post-development rates of runoff are reduced when compared to the existing peak rates at the point of analysis.

Table 1: Analysis Point Peak Rate of Runoff (cubic feet per second, cfs)

Oak Hill School				
	Flow Rate (cfs)			
	Storm Event (Yr)			
	2	10	100	100 - Local
Existing	14.99	24.02	41.77	54.77
Proposed	13.48	22.68	40.97	54.18
Change Δ	-0.10	-0.06	-0.02	-0.01



Sketch No.	EX-WS
Reference Drawing	-

Job #:	19109.00
Drawn by:	DTB
Scale:	1" = 80'
Date:	4-1-20

Project: OAK HILL SCHOOL

Title: EXISTING WATERSHEDS

Samiotes Consultants Inc.
Civil Engineers + Land Surveyors

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Framingham, MA 01701

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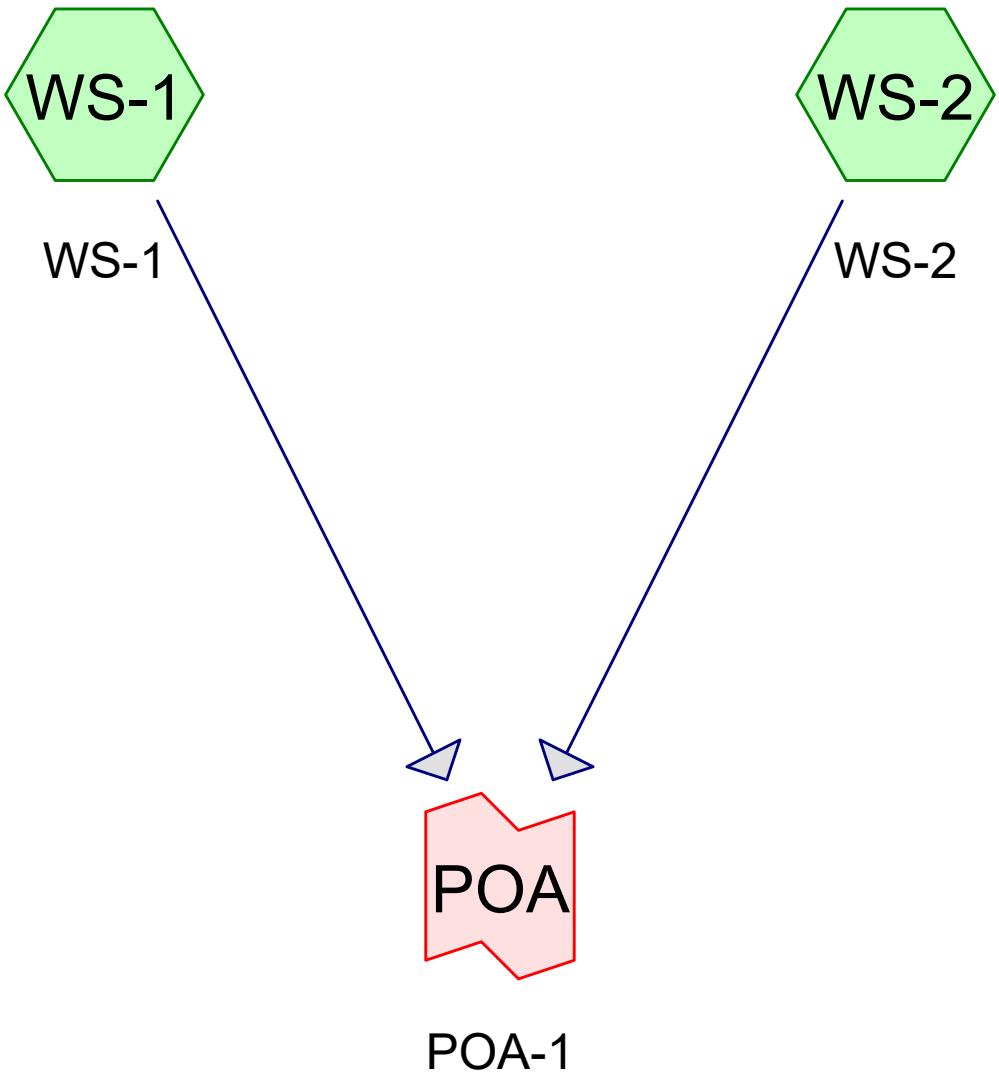
samiotes



Subcat Reach Pond Link

Routing Diagram for 19109.00 Oak Hill Existing
Prepared by {enter your company name here}, Printed 4/1/2020

19109.00 Oak Hill Existing
Prepared by {enter your company name here}

Summary for Subcatchment WS-1: WS-1

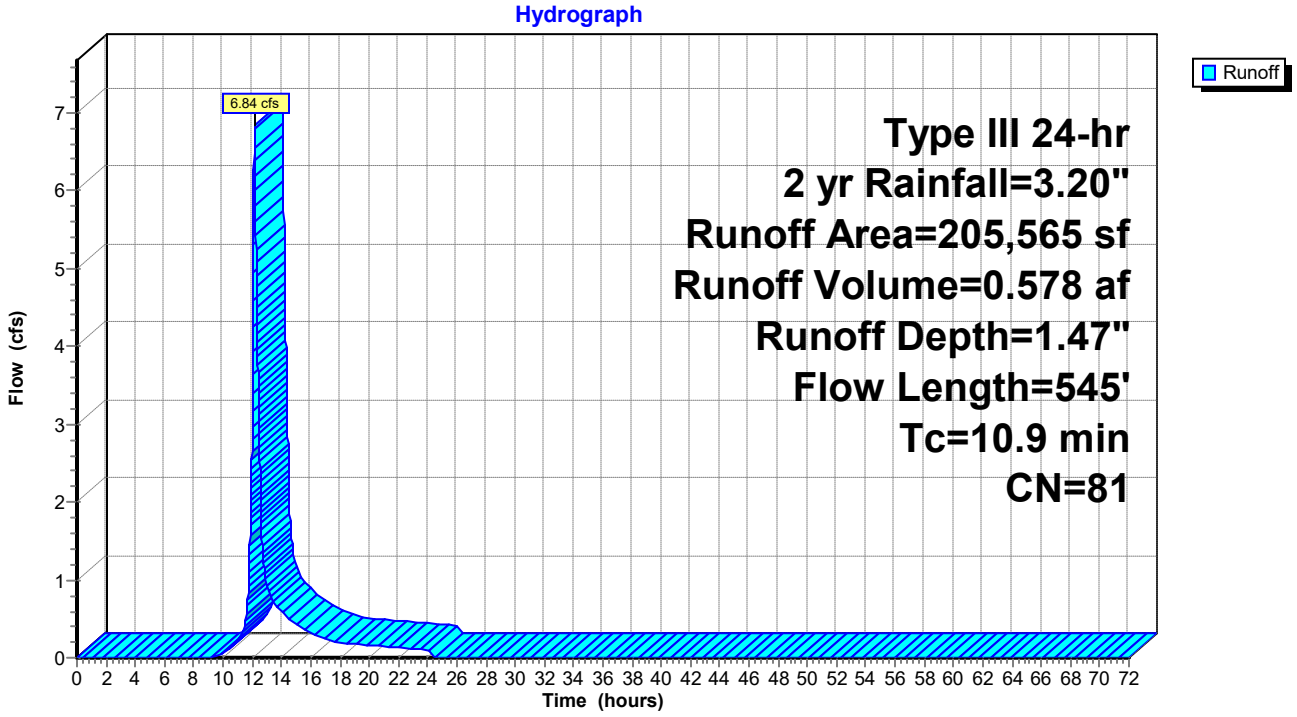
Runoff = 6.84 cfs @ 12.15 hrs, Volume= 0.578 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.20"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG D
75	98	Paved parking, HSG D
199,481	80	>75% Grass cover, Good, HSG D
205,565	81	Weighted Average
199,481		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
3.7	21	0.0100	0.09		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.5	493	0.0100	1.50		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
10.9	545	Total			

Subcatchment WS-1: WS-1



19109.00 Oak Hill Existing
Prepared by {enter your company name here}

Summary for Subcatchment WS-2: WS-2

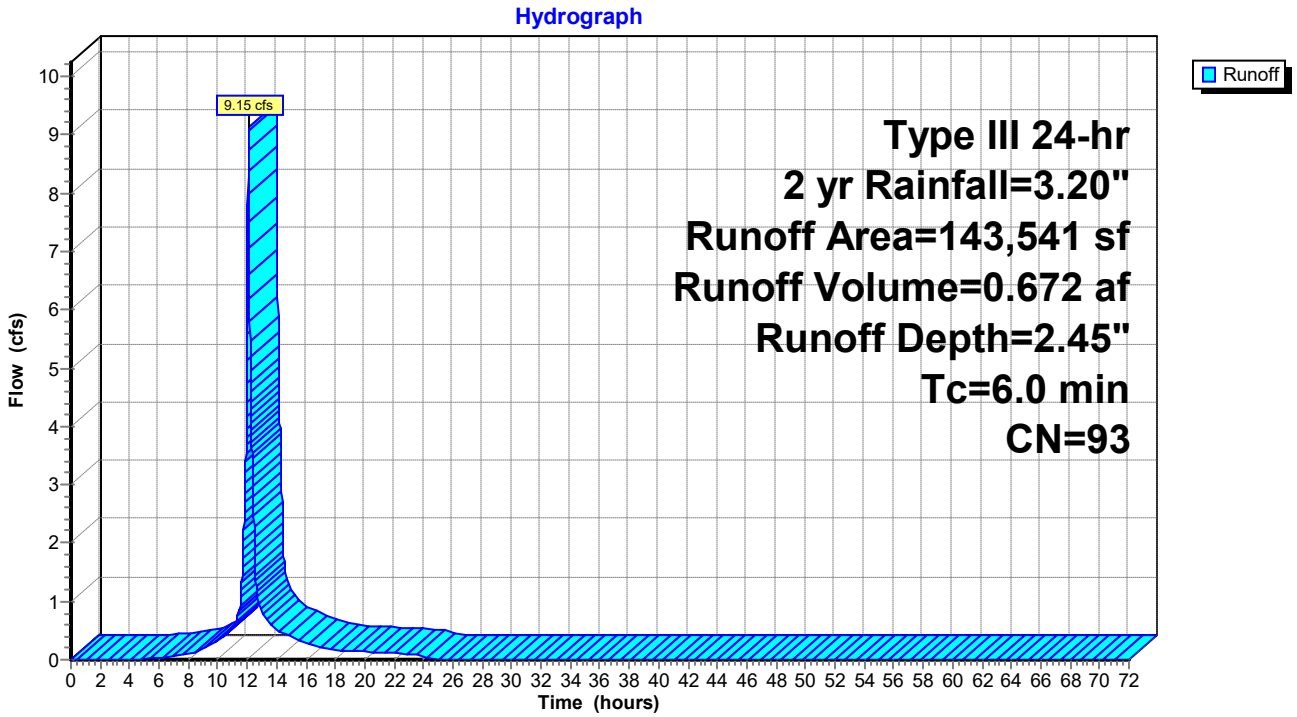
Runoff = 9.15 cfs @ 12.09 hrs, Volume= 0.672 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.20"

Area (sf)	CN	Description
54,962	98	Roofs, HSG D
781	98	Paved parking, HSG D
377	98	Paved parking, HSG D
127	98	Paved parking, HSG D
47	98	Paved parking, HSG D
49,986	98	Paved parking, HSG D
37,261	80	>75% Grass cover, Good, HSG D
143,541	93	Weighted Average
37,261		25.96% Pervious Area
106,280		74.04% Impervious Area

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

Subcatchment WS-2: WS-2

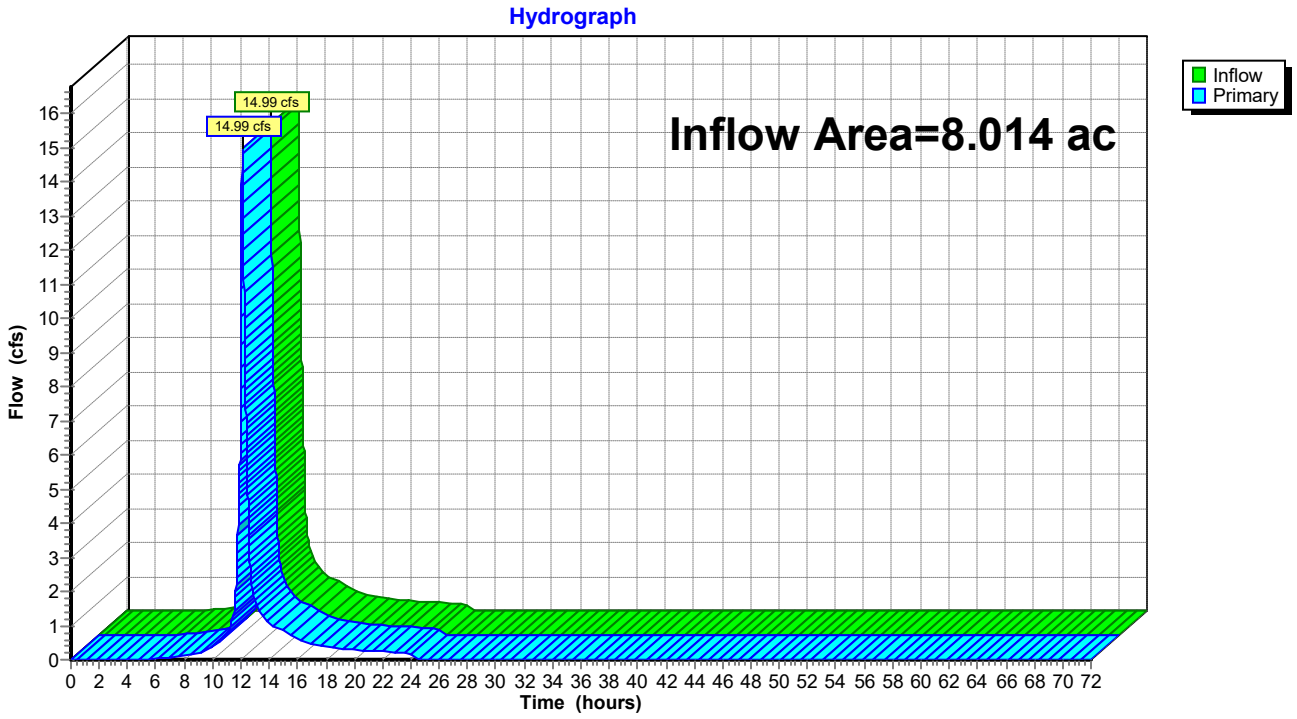


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 32.19% Impervious, Inflow Depth = 1.87" for 2 yr event
Inflow = 14.99 cfs @ 12.11 hrs, Volume= 1.249 af
Primary = 14.99 cfs @ 12.11 hrs, Volume= 1.249 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



19109.00 Oak Hill Existing
Prepared by {enter your company name here}

Summary for Subcatchment WS-1: WS-1

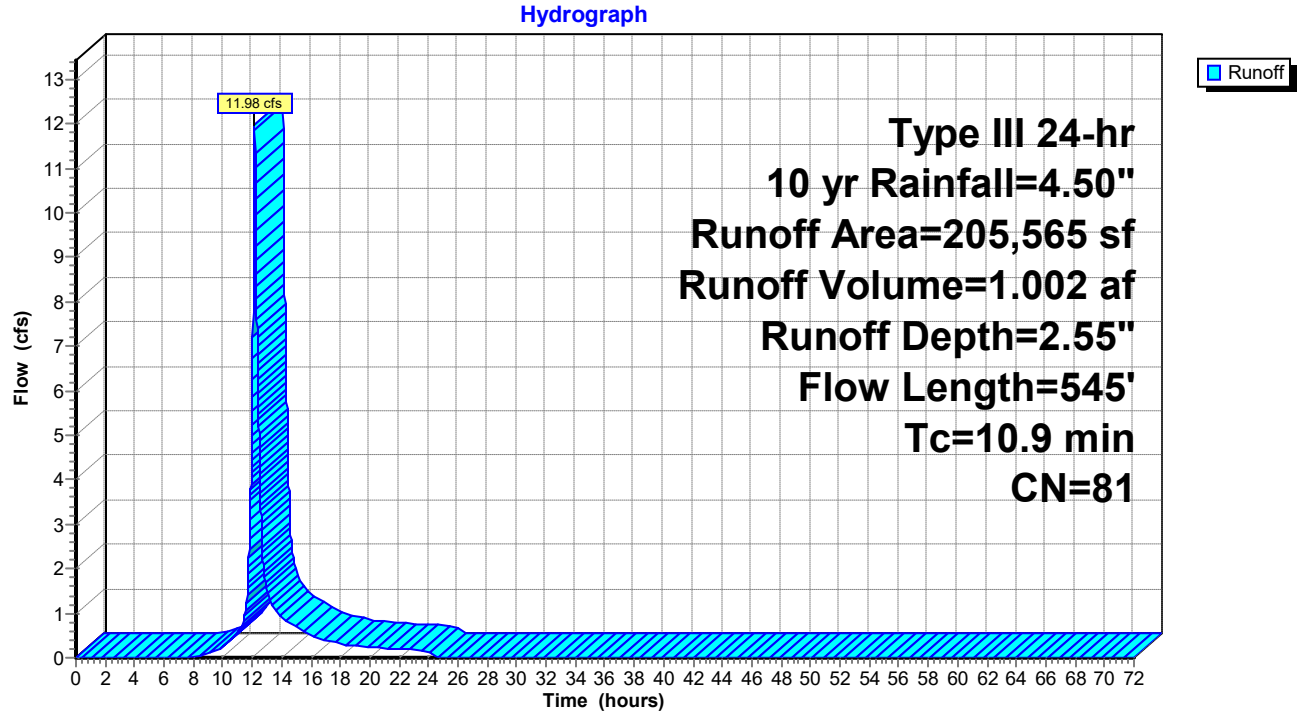
Runoff = 11.98 cfs @ 12.15 hrs, Volume= 1.002 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.50"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG D
75	98	Paved parking, HSG D
199,481	80	>75% Grass cover, Good, HSG D
205,565	81	Weighted Average
199,481		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
3.7	21	0.0100	0.09		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.5	493	0.0100	1.50		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
10.9	545	Total			

Subcatchment WS-1: WS-1



19109.00 Oak Hill Existing
Prepared by {enter your company name here}

Summary for Subcatchment WS-2: WS-2

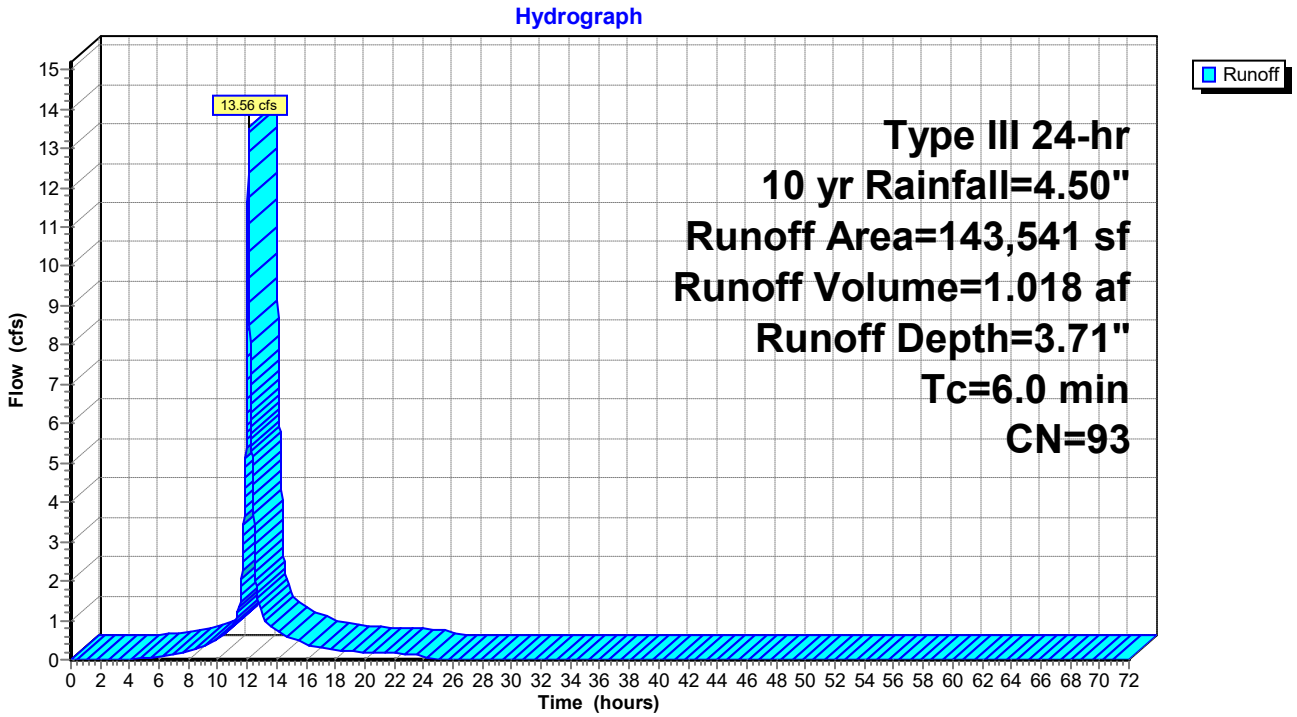
Runoff = 13.56 cfs @ 12.08 hrs, Volume= 1.018 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.50"

Area (sf)	CN	Description
54,962	98	Roofs, HSG D
781	98	Paved parking, HSG D
377	98	Paved parking, HSG D
127	98	Paved parking, HSG D
47	98	Paved parking, HSG D
49,986	98	Paved parking, HSG D
37,261	80	>75% Grass cover, Good, HSG D
143,541	93	Weighted Average
37,261		25.96% Pervious Area
106,280		74.04% Impervious Area

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

Subcatchment WS-2: WS-2

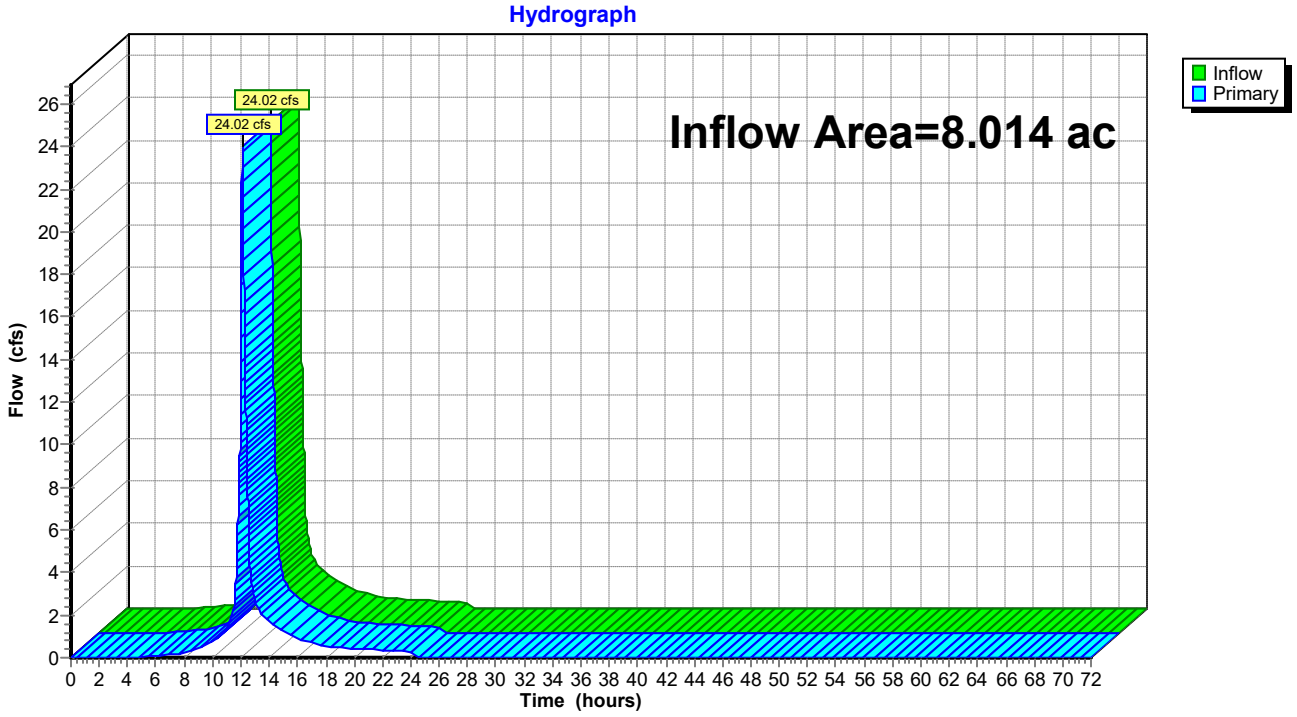


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 32.19% Impervious, Inflow Depth = 3.02" for 10 yr event
Inflow = 24.02 cfs @ 12.11 hrs, Volume= 2.020 af
Primary = 24.02 cfs @ 12.11 hrs, Volume= 2.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



19109.00 Oak Hill Existing
Prepared by {enter your company name here}

Summary for Subcatchment WS-1: WS-1

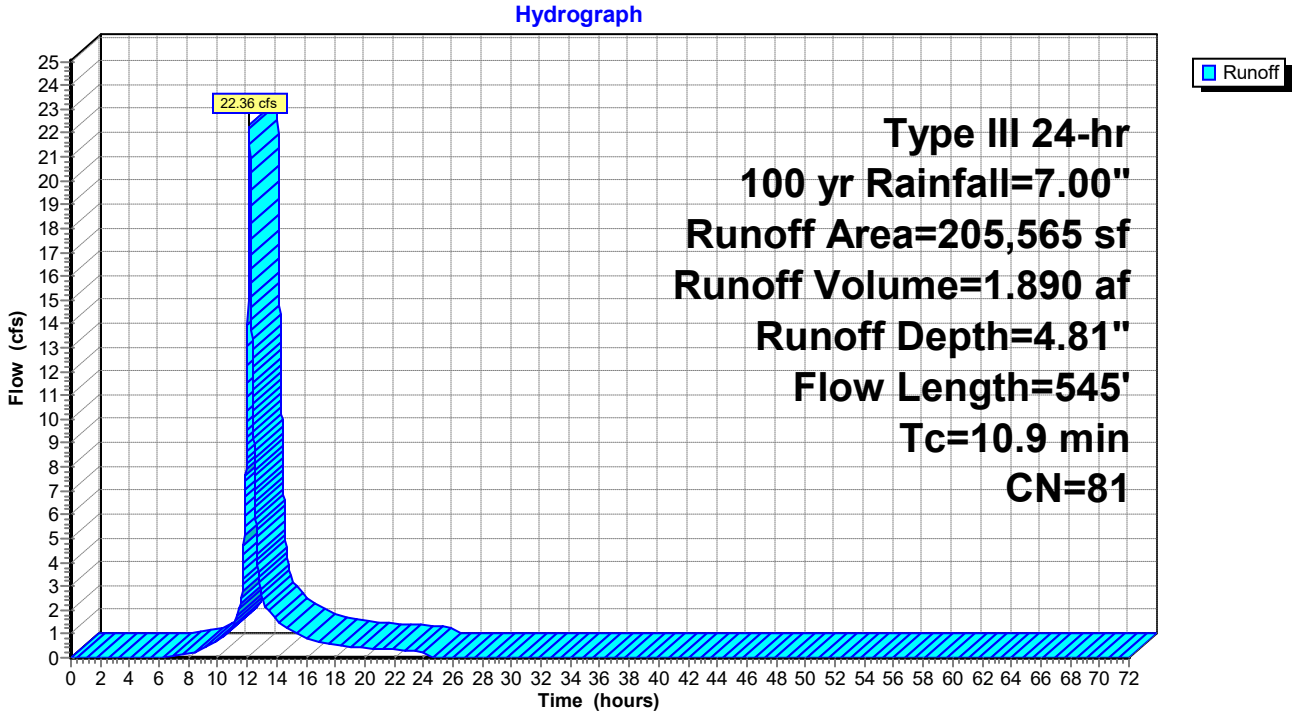
Runoff = 22.36 cfs @ 12.15 hrs, Volume= 1.890 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=7.00"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG D
75	98	Paved parking, HSG D
199,481	80	>75% Grass cover, Good, HSG D
205,565	81	Weighted Average
199,481		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
3.7	21	0.0100	0.09		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.5	493	0.0100	1.50		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
10.9	545	Total			

Subcatchment WS-1: WS-1



19109.00 Oak Hill Existing
Prepared by {enter your company name here}

Summary for Subcatchment WS-2: WS-2

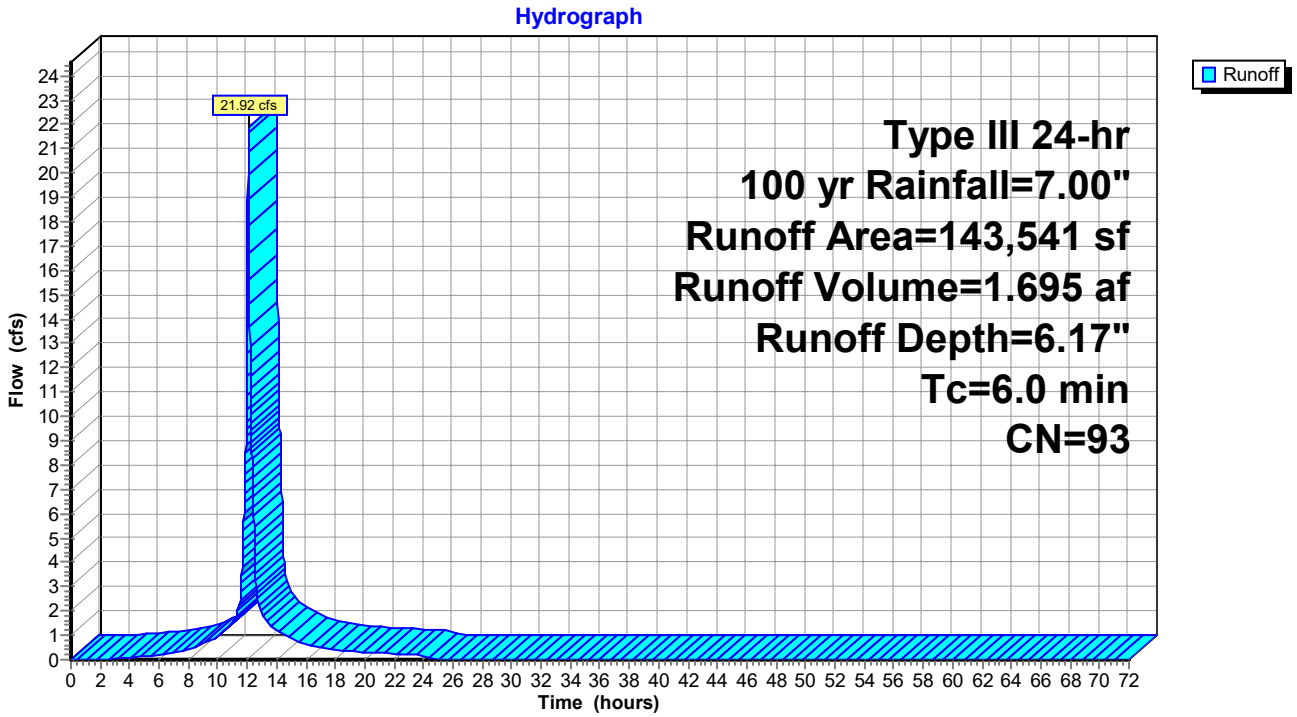
Runoff = 21.92 cfs @ 12.08 hrs, Volume= 1.695 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=7.00"

Area (sf)	CN	Description
54,962	98	Roofs, HSG D
781	98	Paved parking, HSG D
377	98	Paved parking, HSG D
127	98	Paved parking, HSG D
47	98	Paved parking, HSG D
49,986	98	Paved parking, HSG D
37,261	80	>75% Grass cover, Good, HSG D
143,541	93	Weighted Average
37,261		25.96% Pervious Area
106,280		74.04% Impervious Area

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

Subcatchment WS-2: WS-2

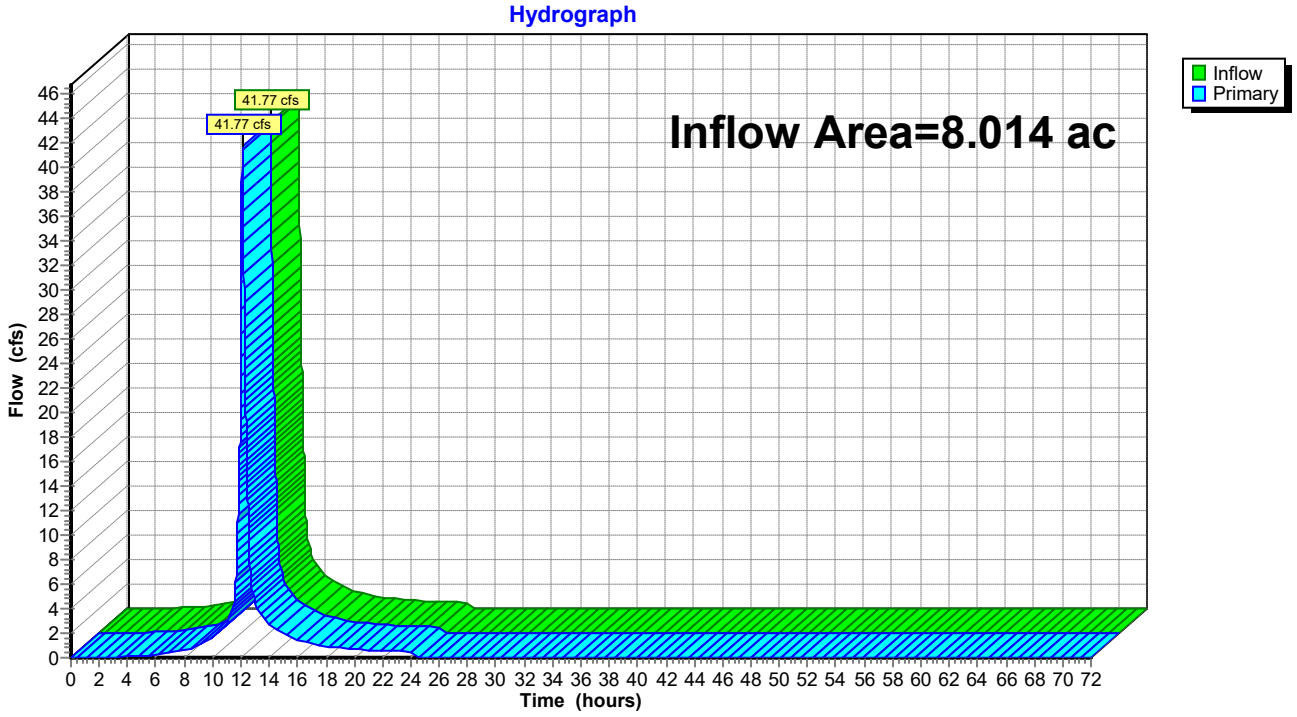


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 32.19% Impervious, Inflow Depth = 5.37" for 100 yr event
Inflow = 41.77 cfs @ 12.11 hrs, Volume= 3.584 af
Primary = 41.77 cfs @ 12.11 hrs, Volume= 3.584 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



Summary for Subcatchment WS-1: WS-1

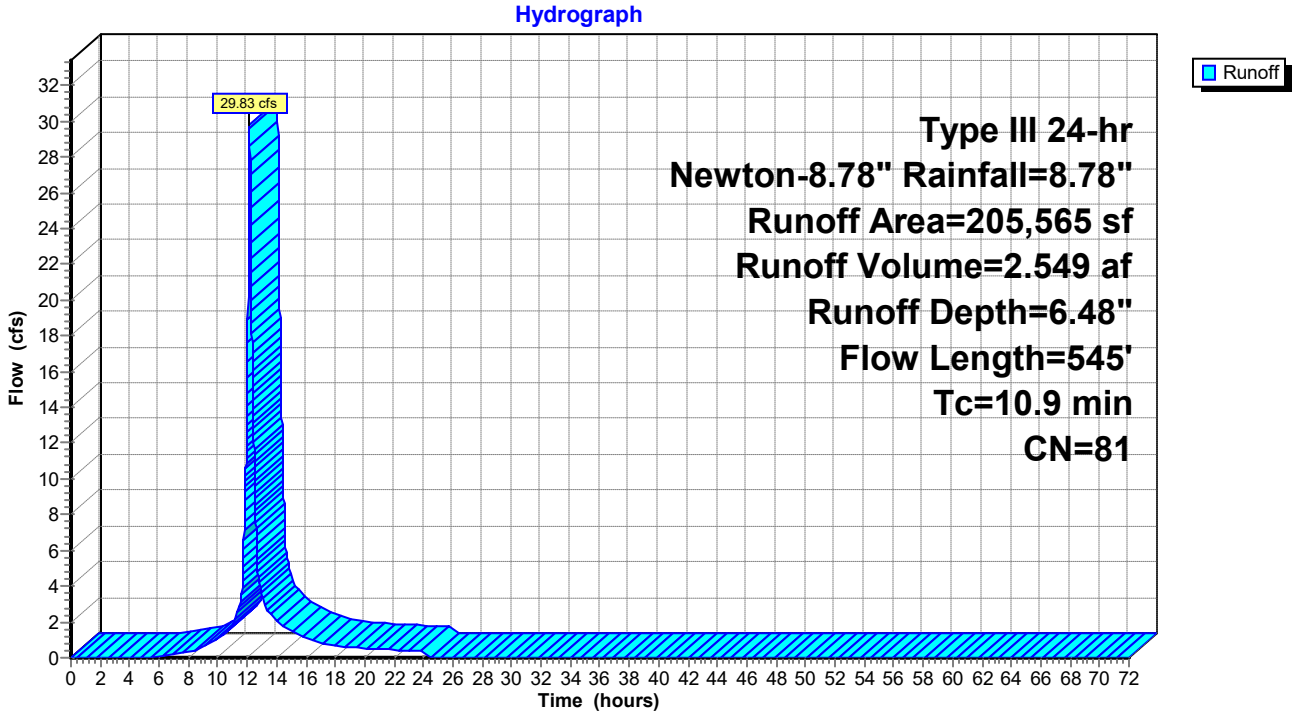
Runoff = 29.83 cfs @ 12.15 hrs, Volume= 2.549 af, Depth= 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr Newton-8.78" Rainfall=8.78"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG D
75	98	Paved parking, HSG D
199,481	80	>75% Grass cover, Good, HSG D
205,565	81	Weighted Average
199,481		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
3.7	21	0.0100	0.09		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.5	493	0.0100	1.50		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
10.9	545	Total			

Subcatchment WS-1: WS-1



Summary for Subcatchment WS-2: WS-2

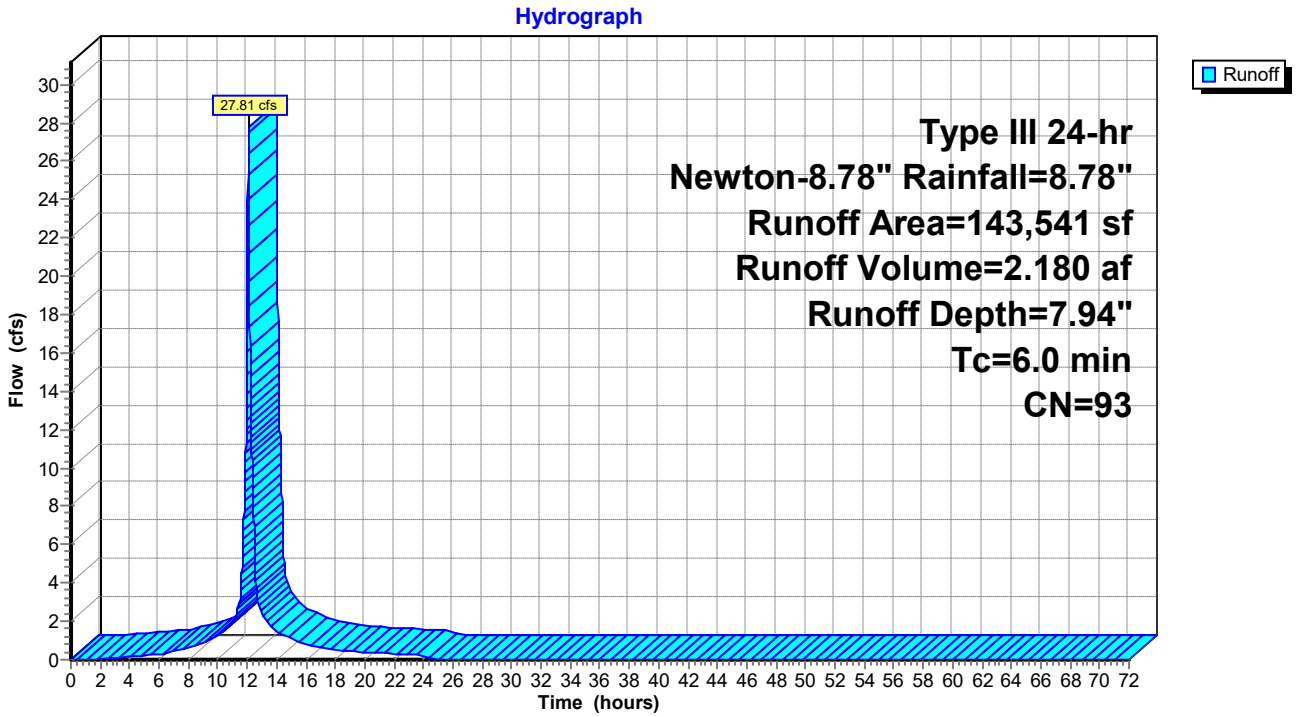
Runoff = 27.81 cfs @ 12.08 hrs, Volume= 2.180 af, Depth= 7.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr Newton-8.78" Rainfall=8.78"

Area (sf)	CN	Description
54,962	98	Roofs, HSG D
781	98	Paved parking, HSG D
377	98	Paved parking, HSG D
127	98	Paved parking, HSG D
47	98	Paved parking, HSG D
49,986	98	Paved parking, HSG D
37,261	80	>75% Grass cover, Good, HSG D
143,541	93	Weighted Average
37,261		25.96% Pervious Area
106,280		74.04% Impervious Area

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

Subcatchment WS-2: WS-2

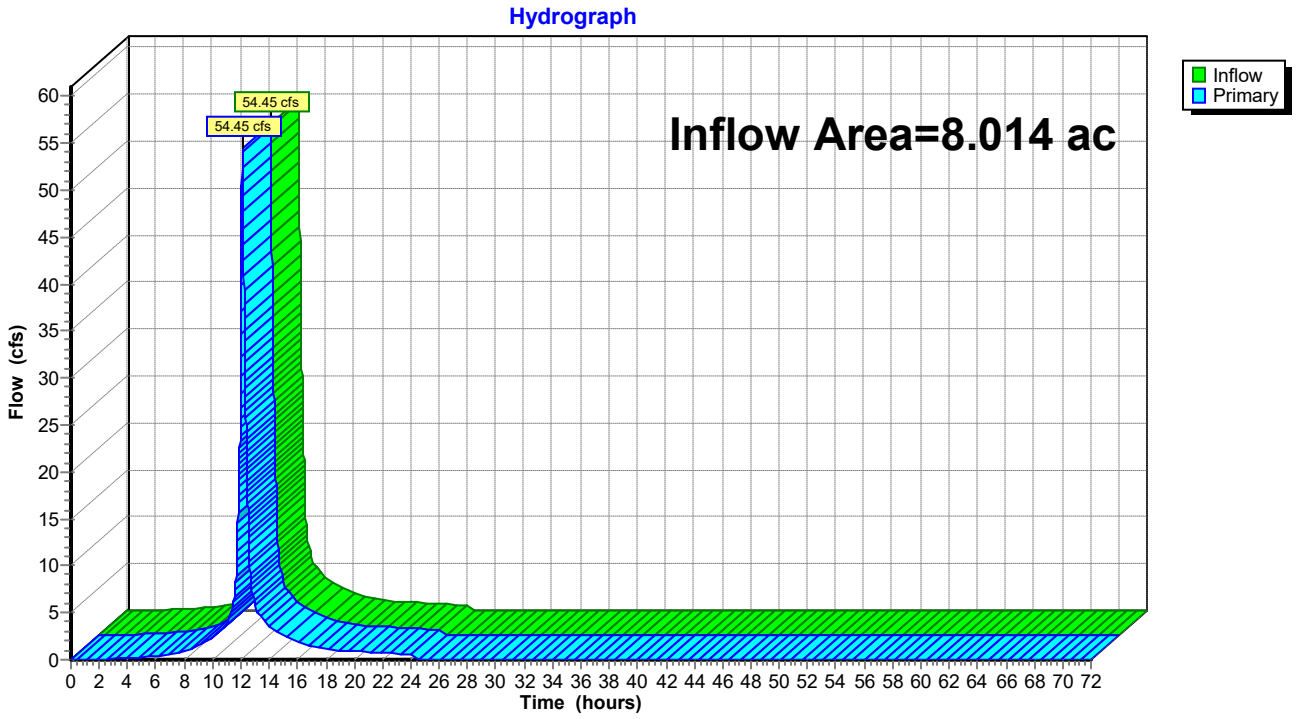


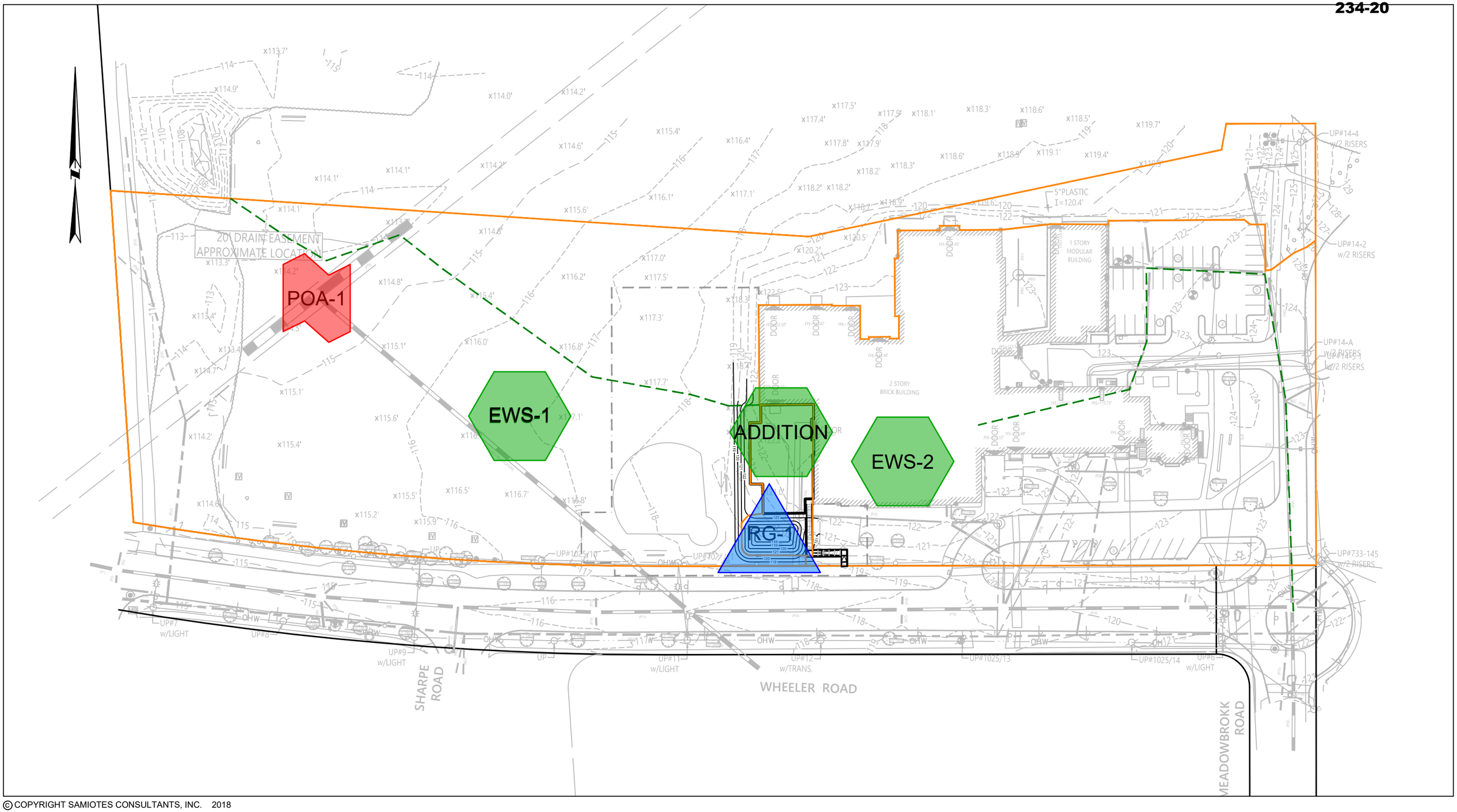
Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 32.19% Impervious, Inflow Depth = 7.08" for Newton-8.78" event
Inflow = 54.45 cfs @ 12.11 hrs, Volume= 4.728 af
Primary = 54.45 cfs @ 12.11 hrs, Volume= 4.728 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1





Sketch No.	PR-WS
Reference Drawing	-

Job #:	19109.00
Drawn by:	DTB
Scale:	1" = 80'
Date:	4-1-20

Project: OAK HILL SCHOOL

Title: PROPOSED WATERSHEDS

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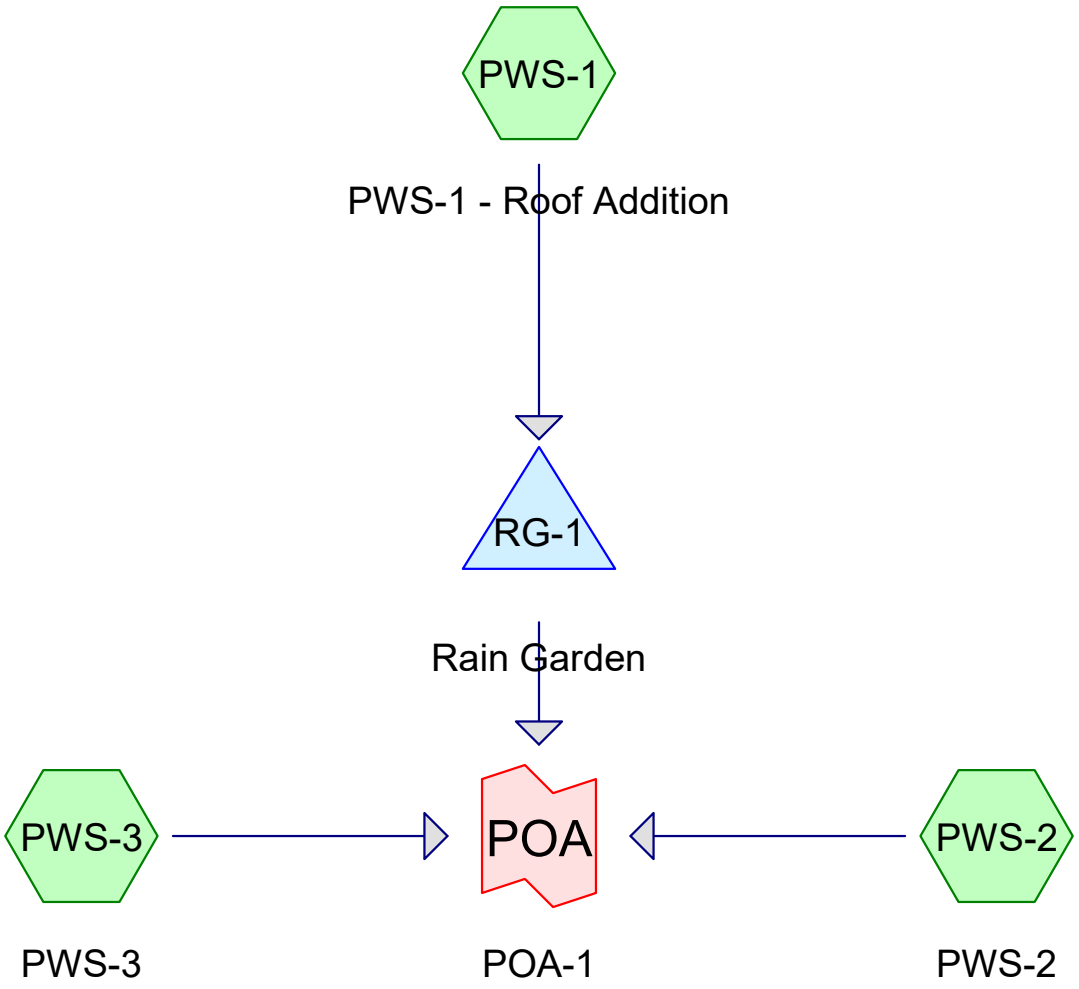


Subcat Reach Pond Link

Routing Diagram for 19109.00 Oak Hill Proposed DTB
Prepared by {enter your company name here}, Printed 4/1/2020
HydroCAD® 10.00-24 s/n 03575 © 2018 HydroCAD Software Solutions LLC

19109.00 Oak Hill Proposed DTB
Prepared by {enter your company name here}

Summary for Subcatchment PWS-1: PWS-1 - Roof Addition

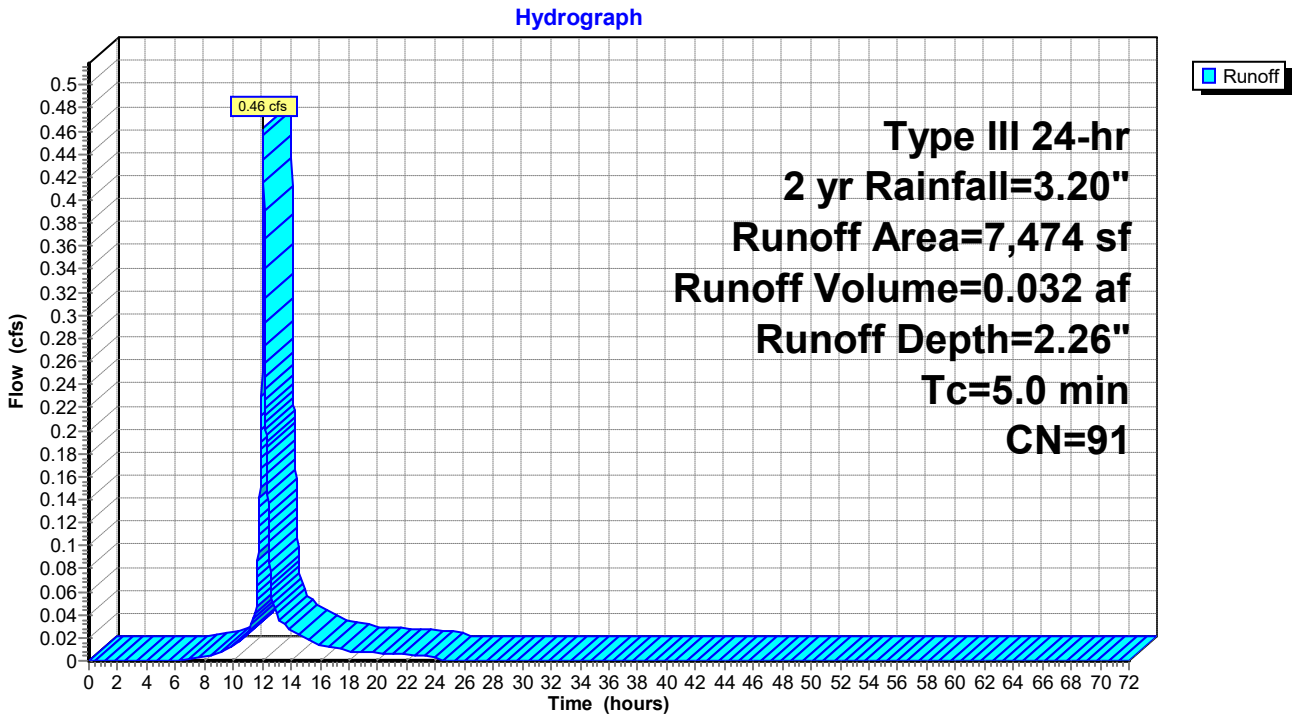
Runoff = 0.46 cfs @ 12.07 hrs, Volume= 0.032 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.20"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
2,155	74	>75% Grass cover, Good, HSG C
319	98	Paved parking, HSG C
7,474	91	Weighted Average
2,155		28.83% Pervious Area
5,319		71.17% Impervious Area

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

Subcatchment PWS-1: PWS-1 - Roof Addition



19109.00 Oak Hill Proposed DTB
Prepared by {enter your company name here}

Summary for Subcatchment PWS-2: PWS-2

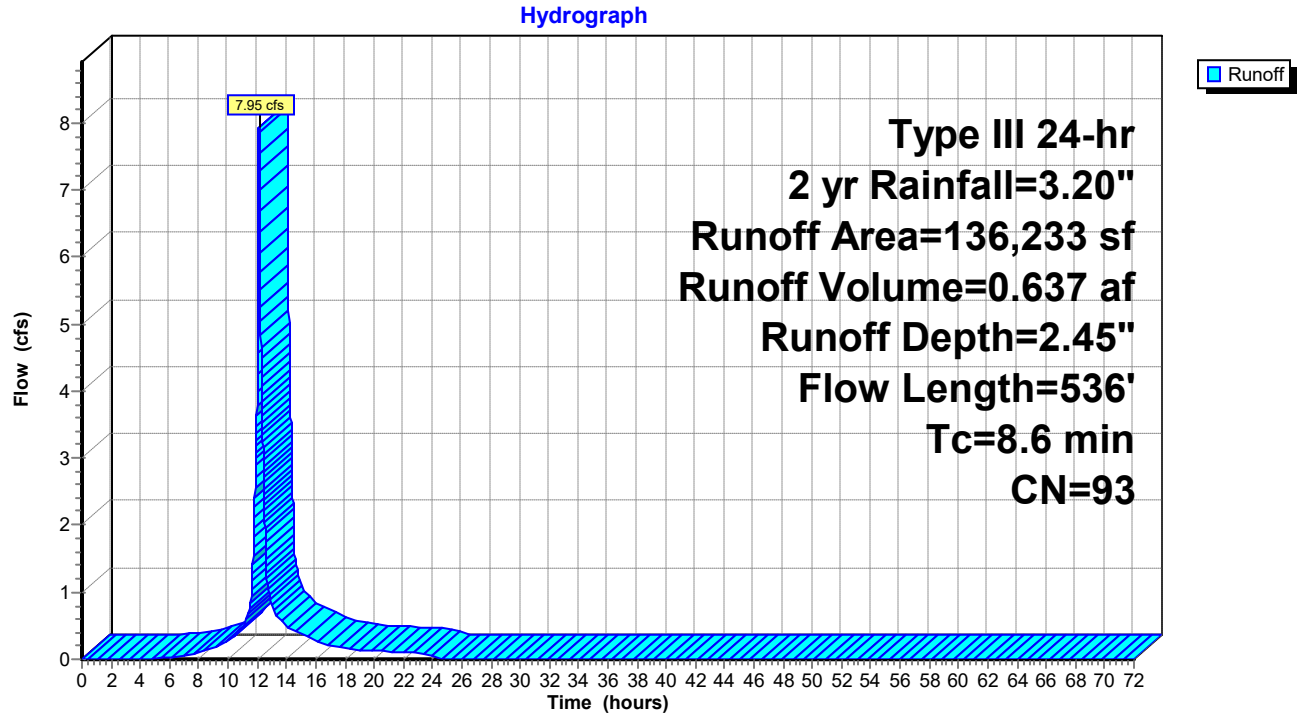
Runoff = 7.95 cfs @ 12.12 hrs, Volume= 0.637 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.20"

Area (sf)	CN	Description
54,962	98	Roofs, HSG C
232	98	Paved parking, HSG C
49,986	98	Paved parking, HSG C
31,053	74	>75% Grass cover, Good, HSG C
136,233	93	Weighted Average
31,053		22.79% Pervious Area
105,180		77.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-2: PWS-2



Summary for Subcatchment PWS-3: PWS-3

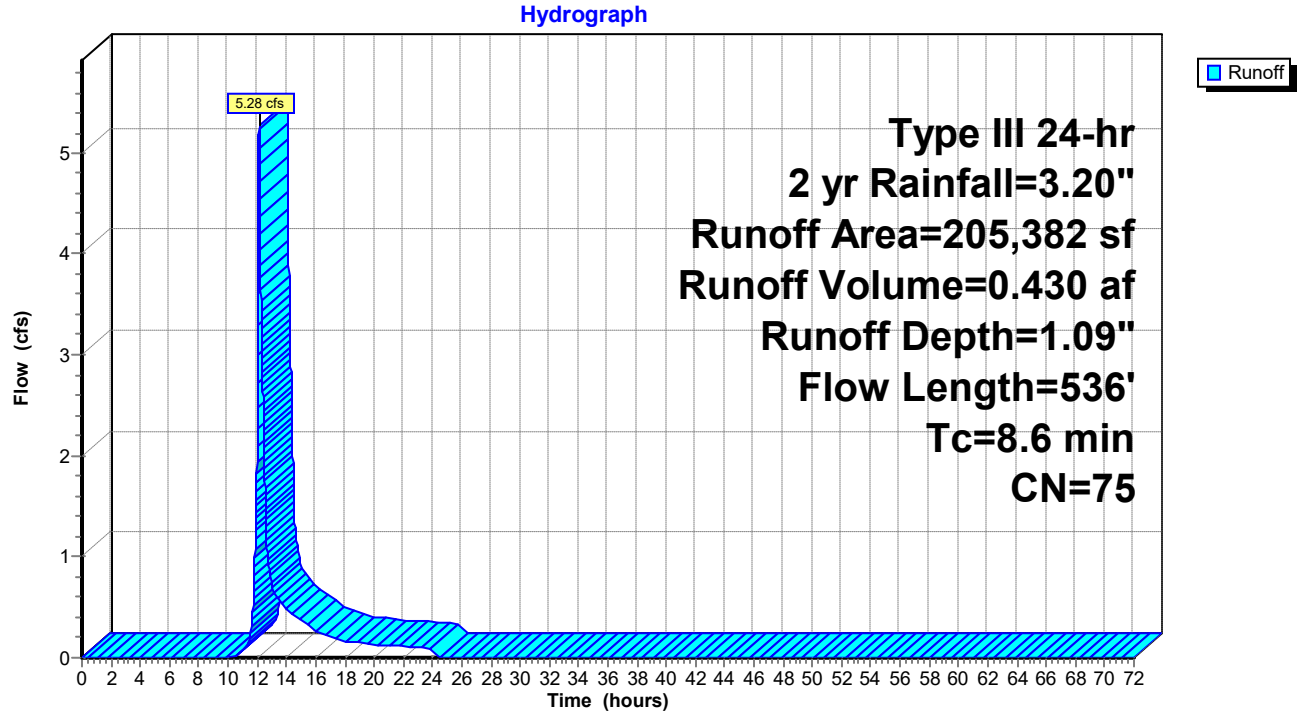
Runoff = 5.28 cfs @ 12.13 hrs, Volume= 0.430 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.20"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG C
75	98	Paved parking, HSG C
199,298	74	>75% Grass cover, Good, HSG C
205,382	75	Weighted Average
199,298		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-3: PWS-3



Summary for Pond RG-1: Rain Garden

Inflow Area = 0.172 ac, 71.17% Impervious, Inflow Depth = 2.26" for 2 yr event
Inflow = 0.46 cfs @ 12.07 hrs, Volume= 0.032 af
Outflow = 0.31 cfs @ 12.15 hrs, Volume= 0.031 af, Atten= 33%, Lag= 4.9 min
Primary = 0.31 cfs @ 12.15 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 118.88' @ 12.15 hrs Surf.Area= 592 sf Storage= 520 cf

Plug-Flow detention time= 677.1 min calculated for 0.031 af (97% of inflow)
Center-of-Mass det. time= 659.5 min (1,461.1 - 801.5)

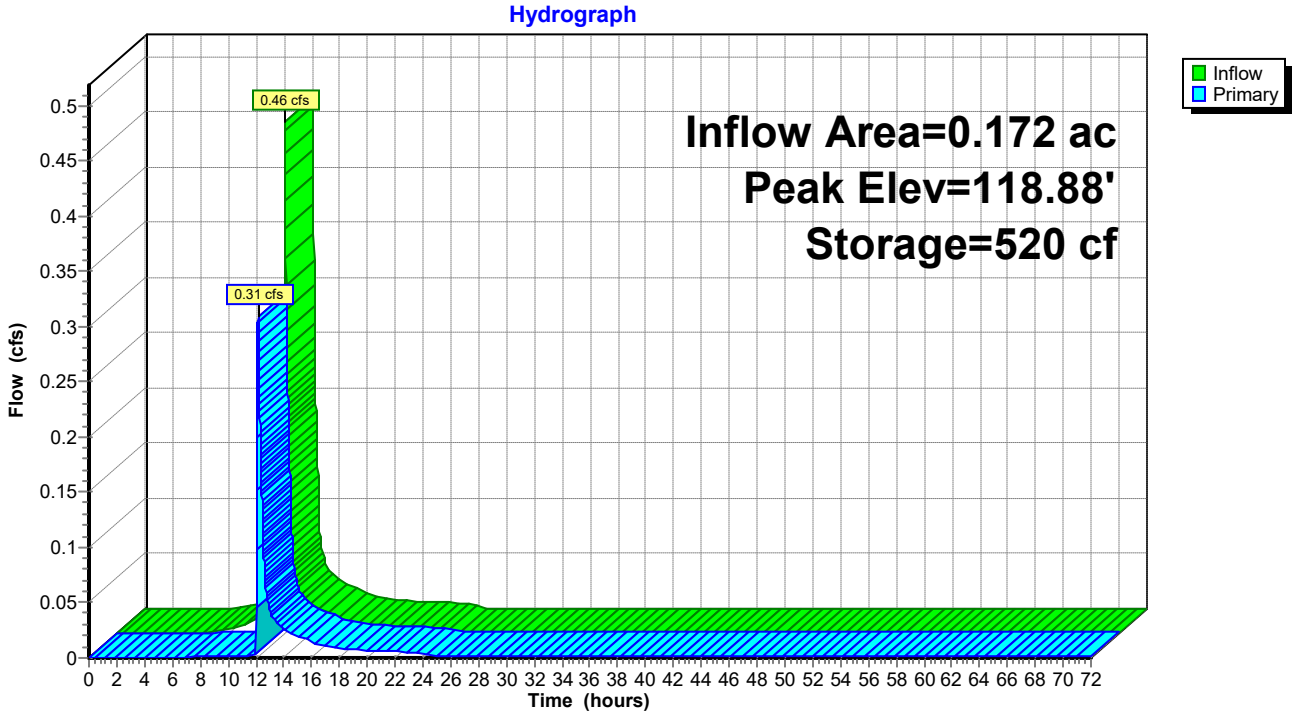
Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	2,513 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	595	0	0
119.00	592	594	594
120.00	946	769	1,363
121.00	1,355	1,151	2,513

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	118.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 12.15 hrs HW=118.88' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└**2=Orifice/Grate** (Weir Controls 0.30 cfs @ 1.16 fps)

Pond RG-1: Rain Garden

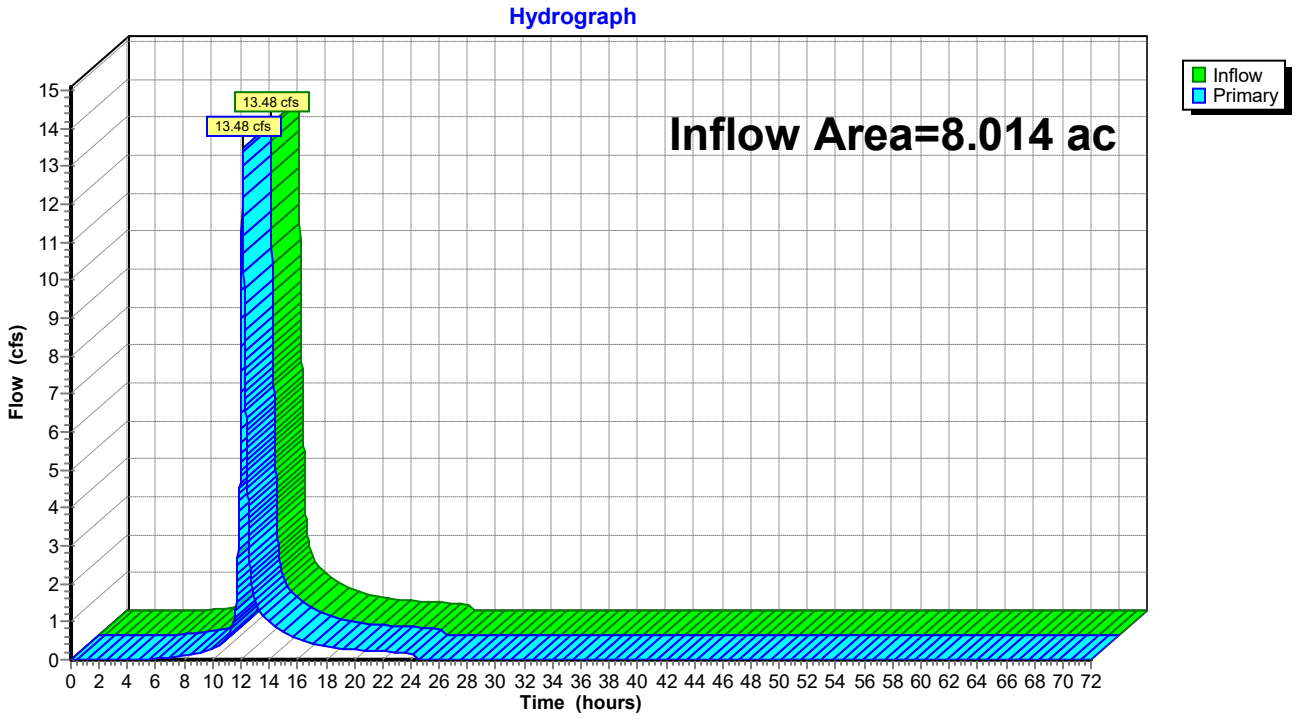


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 33.40% Impervious, Inflow Depth > 1.64" for 2 yr event
Inflow = 13.48 cfs @ 12.12 hrs, Volume= 1.099 af
Primary = 13.48 cfs @ 12.12 hrs, Volume= 1.099 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



Summary for Subcatchment PWS-1: PWS-1 - Roof Addition

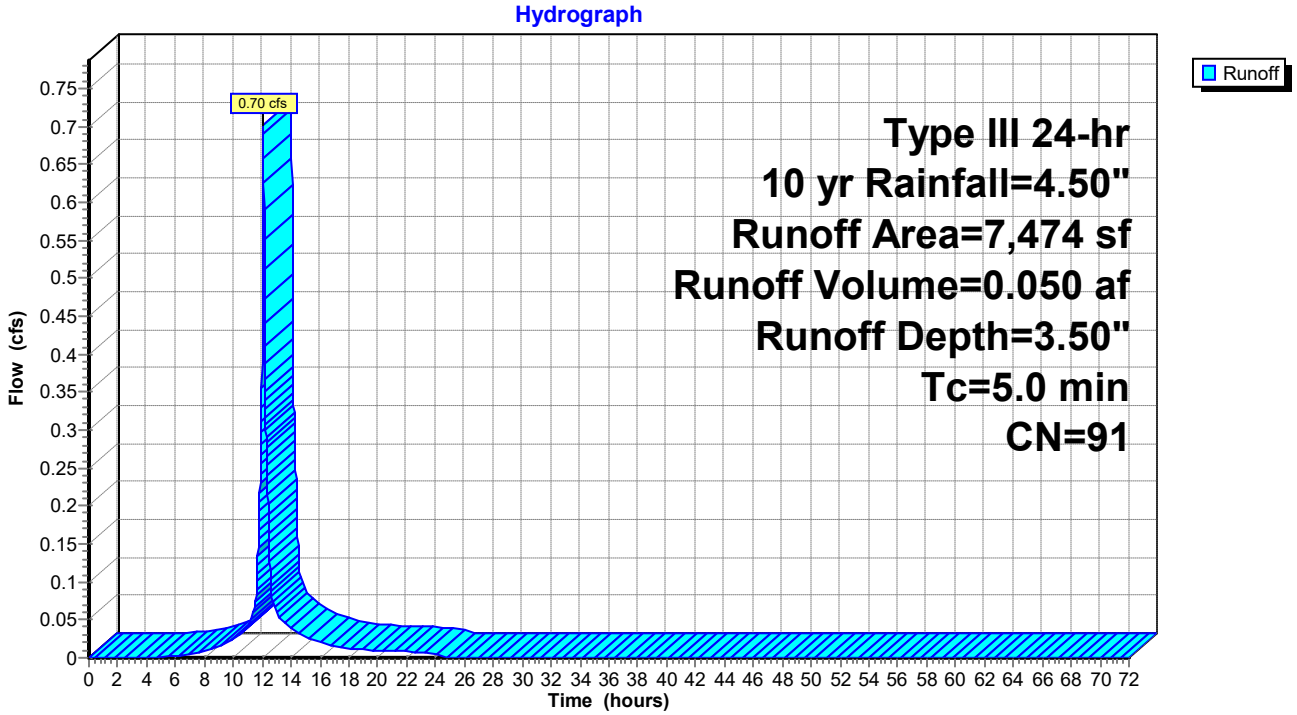
Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.50"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
2,155	74	>75% Grass cover, Good, HSG C
319	98	Paved parking, HSG C
7,474	91	Weighted Average
2,155		28.83% Pervious Area
5,319		71.17% Impervious Area

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

Subcatchment PWS-1: PWS-1 - Roof Addition



Summary for Subcatchment PWS-2: PWS-2

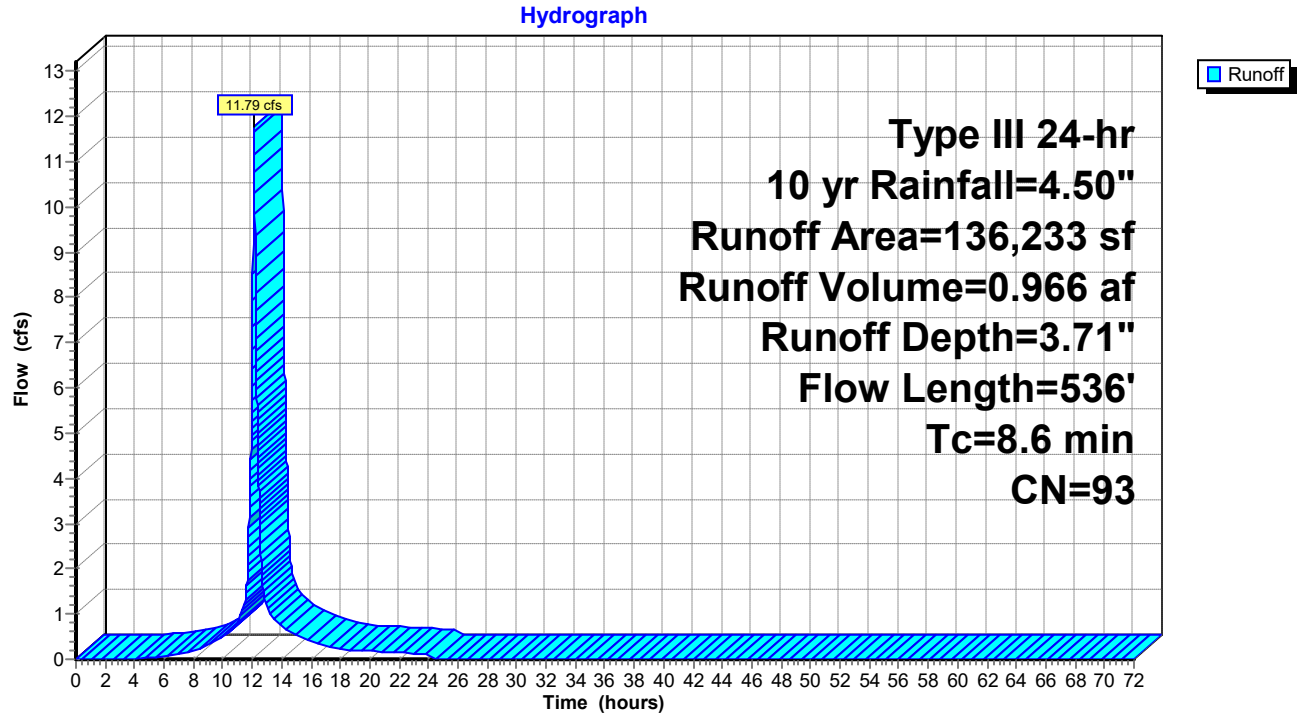
Runoff = 11.79 cfs @ 12.12 hrs, Volume= 0.966 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.50"

Area (sf)	CN	Description
54,962	98	Roofs, HSG C
232	98	Paved parking, HSG C
49,986	98	Paved parking, HSG C
31,053	74	>75% Grass cover, Good, HSG C
136,233	93	Weighted Average
31,053		22.79% Pervious Area
105,180		77.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-2: PWS-2



19109.00 Oak Hill Proposed DTB
Prepared by {enter your company name here}

Summary for Subcatchment PWS-3: PWS-3

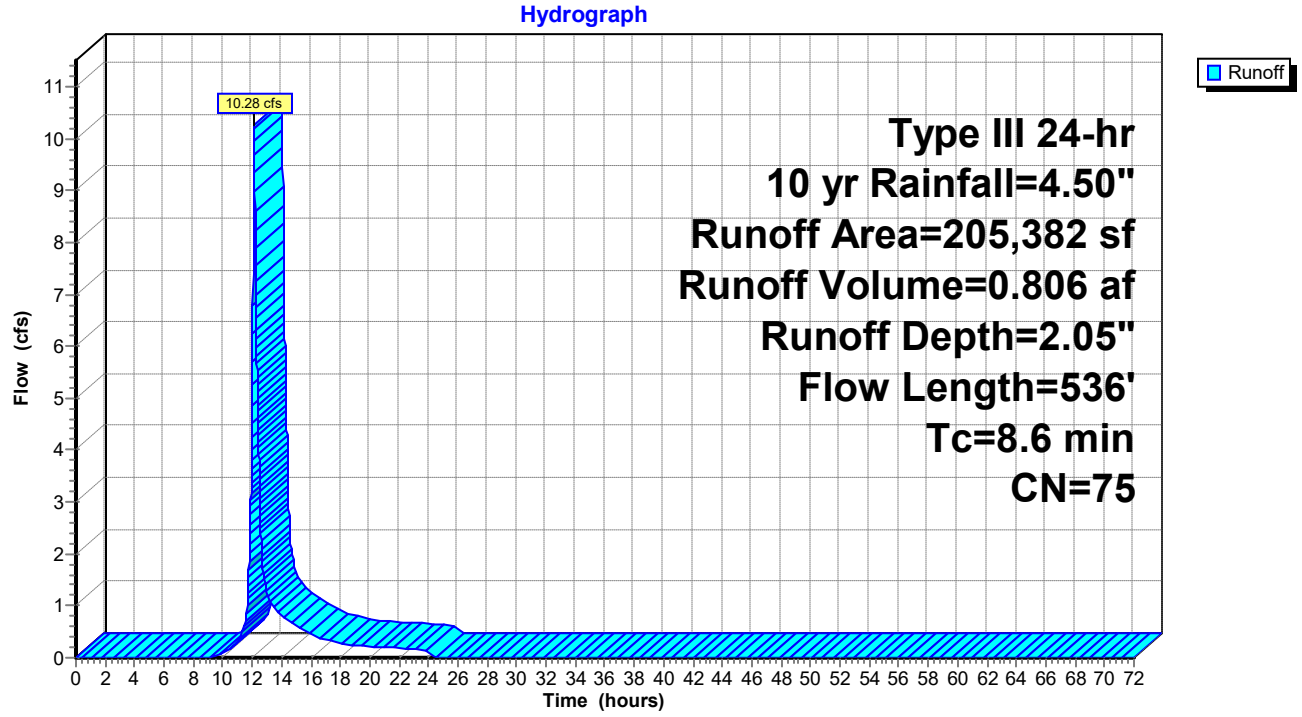
Runoff = 10.28 cfs @ 12.13 hrs, Volume= 0.806 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.50"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG C
75	98	Paved parking, HSG C
199,298	74	>75% Grass cover, Good, HSG C
205,382	75	Weighted Average
199,298		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-3: PWS-3



Summary for Pond RG-1: Rain Garden

Inflow Area = 0.172 ac, 71.17% Impervious, Inflow Depth = 3.50" for 10 yr event
Inflow = 0.70 cfs @ 12.07 hrs, Volume= 0.050 af
Outflow = 0.65 cfs @ 12.10 hrs, Volume= 0.049 af, Atten= 8%, Lag= 2.0 min
Primary = 0.65 cfs @ 12.10 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 118.96' @ 12.10 hrs Surf.Area= 592 sf Storage= 568 cf

Plug-Flow detention time= 444.8 min calculated for 0.049 af (98% of inflow)
Center-of-Mass det. time= 432.6 min (1,222.0 - 789.4)

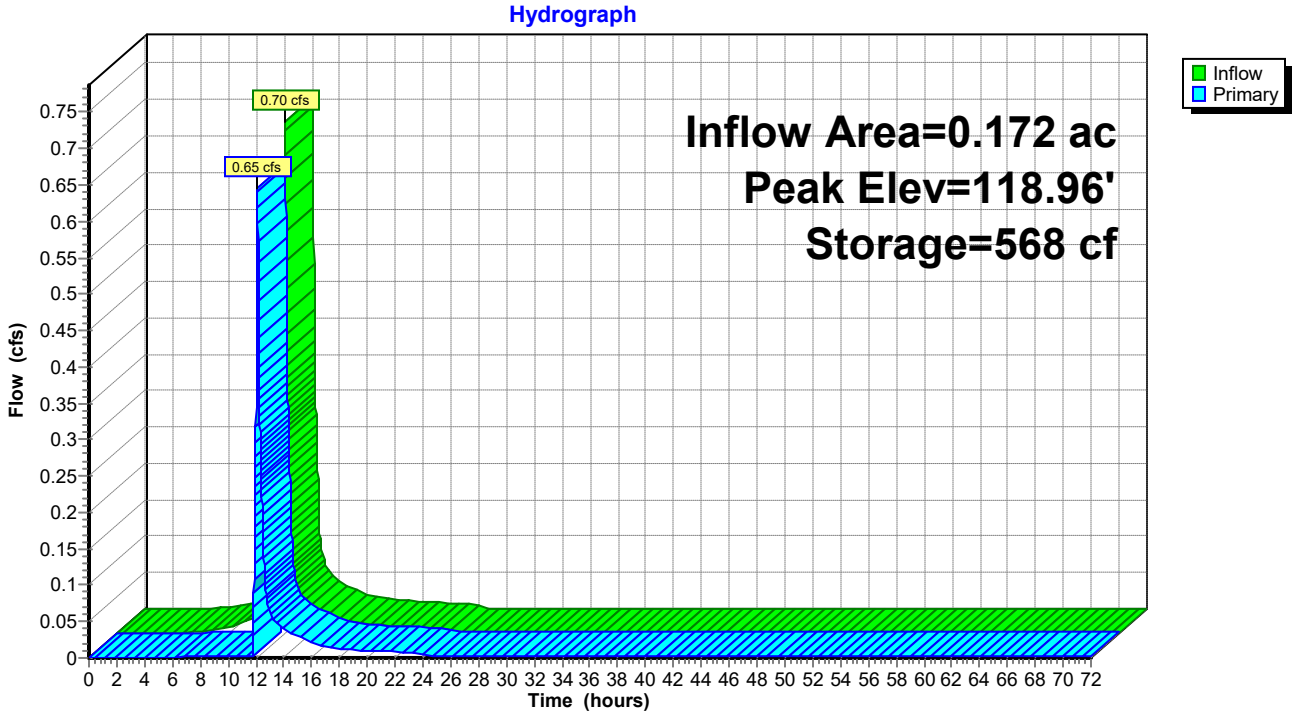
Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	2,513 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	595	0	0
119.00	592	594	594
120.00	946	769	1,363
121.00	1,355	1,151	2,513

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	118.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.64 cfs @ 12.10 hrs HW=118.96' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└**2=Orifice/Grate** (Weir Controls 0.64 cfs @ 1.49 fps)

Pond RG-1: Rain Garden

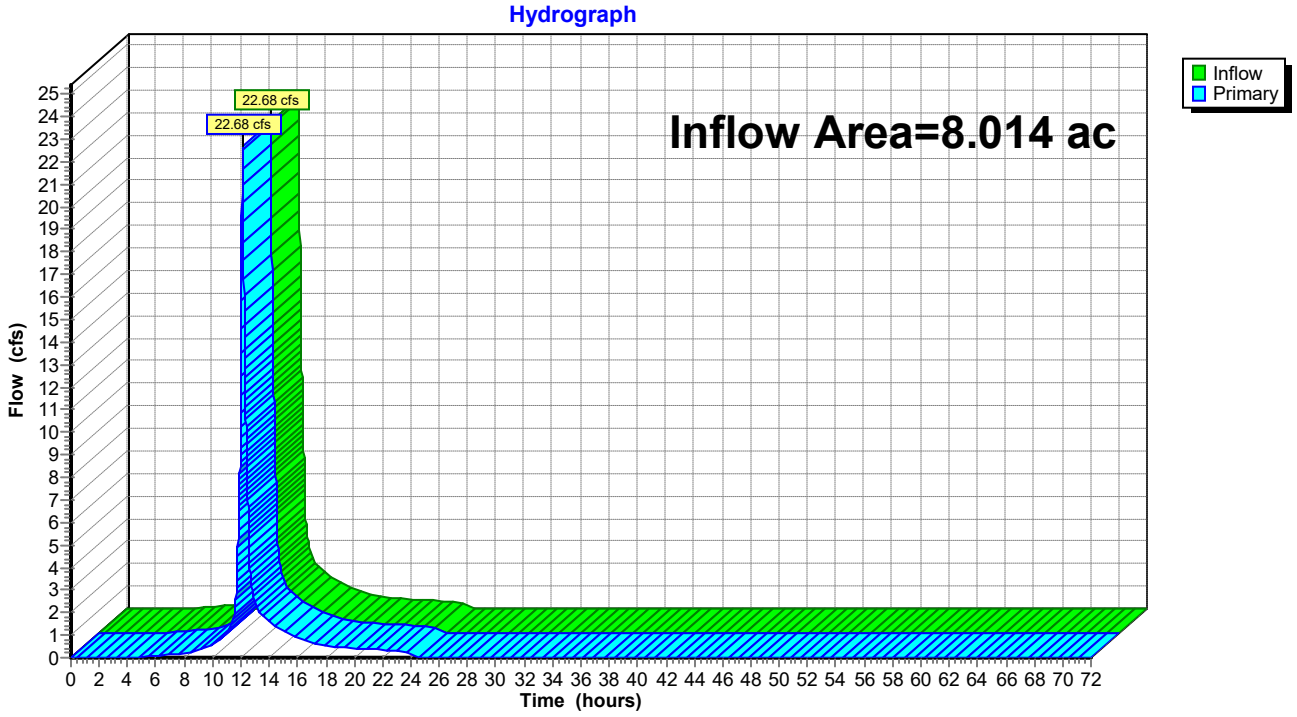


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 33.40% Impervious, Inflow Depth > 2.73" for 10 yr event
Inflow = 22.68 cfs @ 12.12 hrs, Volume= 1.821 af
Primary = 22.68 cfs @ 12.12 hrs, Volume= 1.821 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



Summary for Subcatchment PWS-1: PWS-1 - Roof Addition

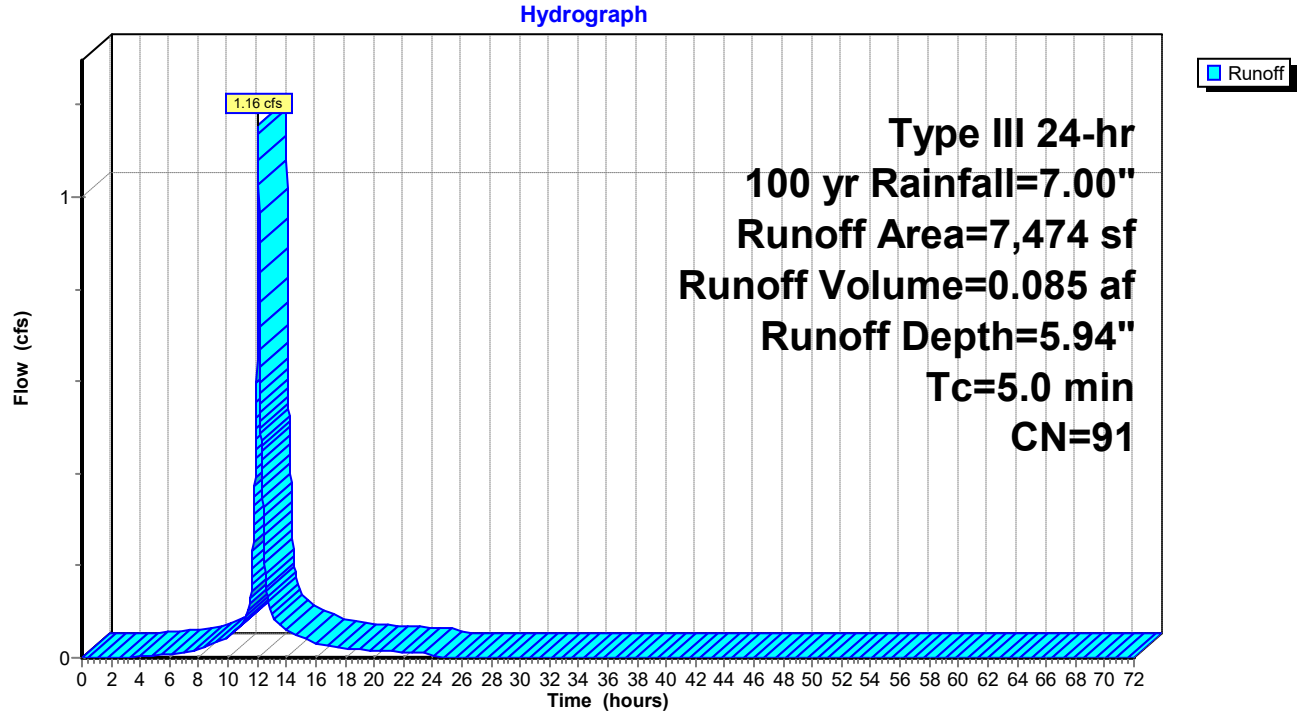
Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.085 af, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=7.00"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
2,155	74	>75% Grass cover, Good, HSG C
319	98	Paved parking, HSG C
7,474	91	Weighted Average
2,155		28.83% Pervious Area
5,319		71.17% Impervious Area

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

Subcatchment PWS-1: PWS-1 - Roof Addition



Summary for Subcatchment PWS-2: PWS-2

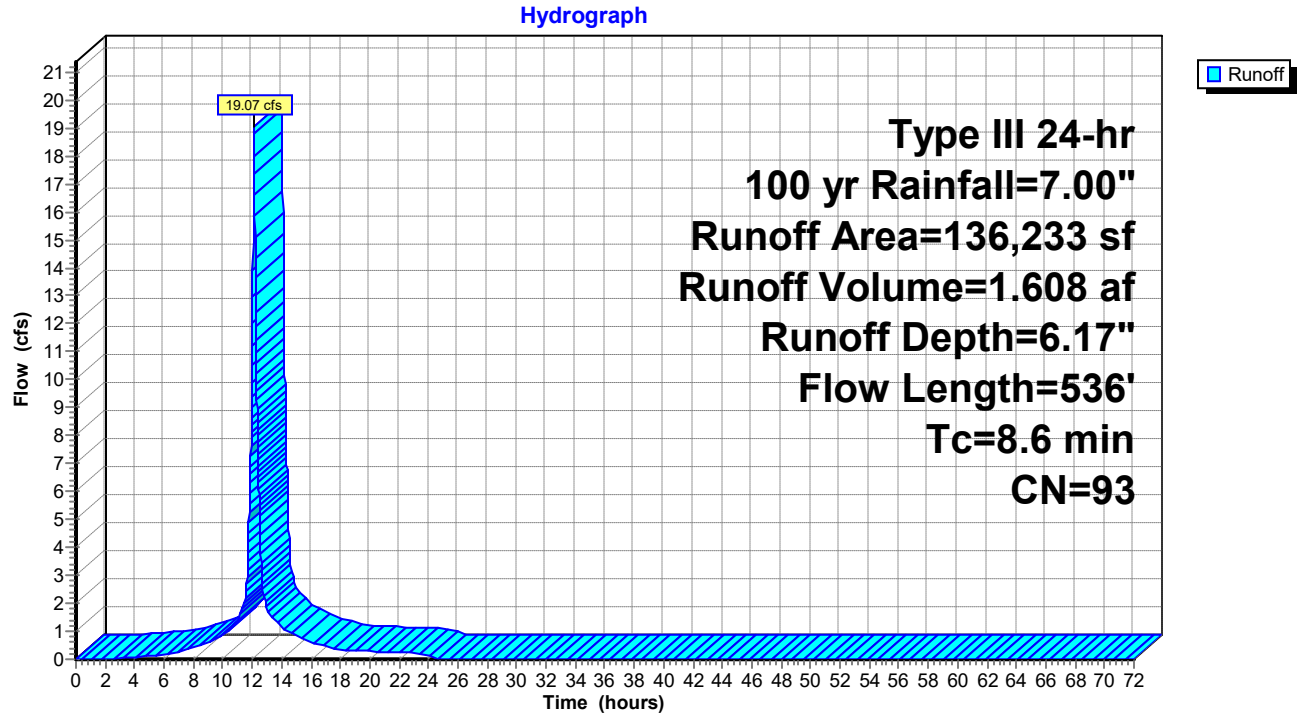
Runoff = 19.07 cfs @ 12.12 hrs, Volume= 1.608 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=7.00"

Area (sf)	CN	Description
54,962	98	Roofs, HSG C
232	98	Paved parking, HSG C
49,986	98	Paved parking, HSG C
31,053	74	>75% Grass cover, Good, HSG C
136,233	93	Weighted Average
31,053		22.79% Pervious Area
105,180		77.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-2: PWS-2



19109.00 Oak Hill Proposed DTB
Prepared by {enter your company name here}

Summary for Subcatchment PWS-3: PWS-3

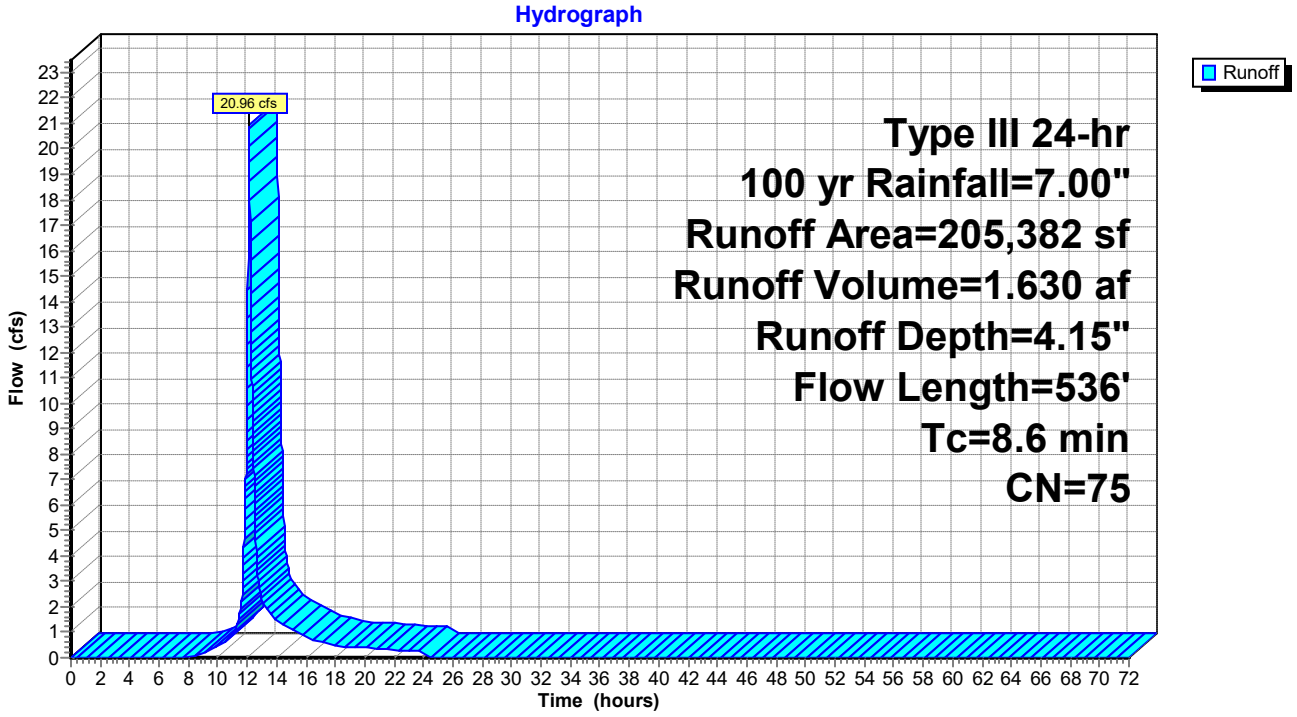
Runoff = 20.96 cfs @ 12.12 hrs, Volume= 1.630 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=7.00"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG C
75	98	Paved parking, HSG C
199,298	74	>75% Grass cover, Good, HSG C
205,382	75	Weighted Average
199,298		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-3: PWS-3



Summary for Pond RG-1: Rain Garden

Inflow Area = 0.172 ac, 71.17% Impervious, Inflow Depth = 5.94" for 100 yr event
Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.085 af
Outflow = 0.95 cfs @ 12.12 hrs, Volume= 0.084 af, Atten= 18%, Lag= 3.1 min
Primary = 0.95 cfs @ 12.12 hrs, Volume= 0.084 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 119.07' @ 12.12 hrs Surf.Area= 617 sf Storage= 647 cf

Plug-Flow detention time= 273.3 min calculated for 0.084 af (99% of inflow)
Center-of-Mass det. time= 266.0 min (1,041.5 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	2,513 cf	**Custom Stage Data (Prismatic)** Listed below

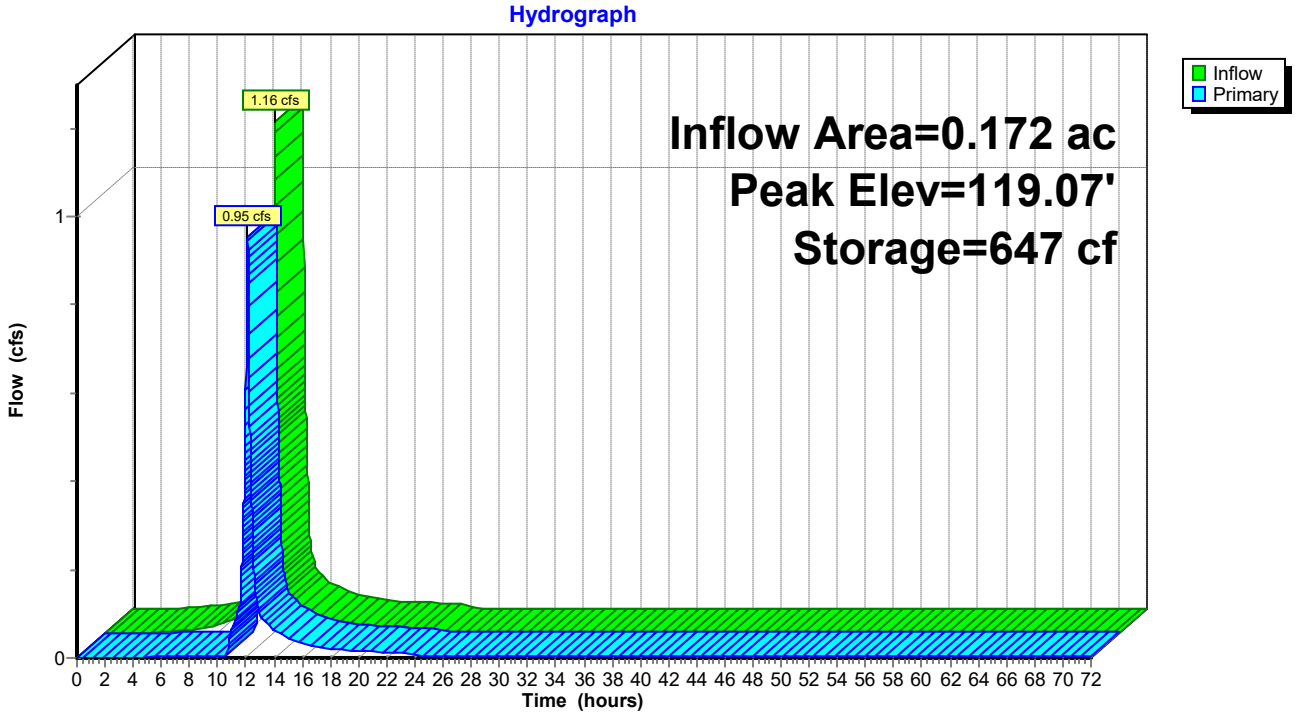
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	595	0	0
119.00	592	594	594
120.00	946	769	1,363
121.00	1,355	1,151	2,513

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	118.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.95 cfs @ 12.12 hrs HW=119.07' (Free Discharge)
↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└ **2=Orifice/Grate** (Orifice Controls 0.95 cfs @ 2.72 fps)

19109.00 Oak Hill Proposed DTB
Prepared by {enter your company name here}

Pond RG-1: Rain Garden

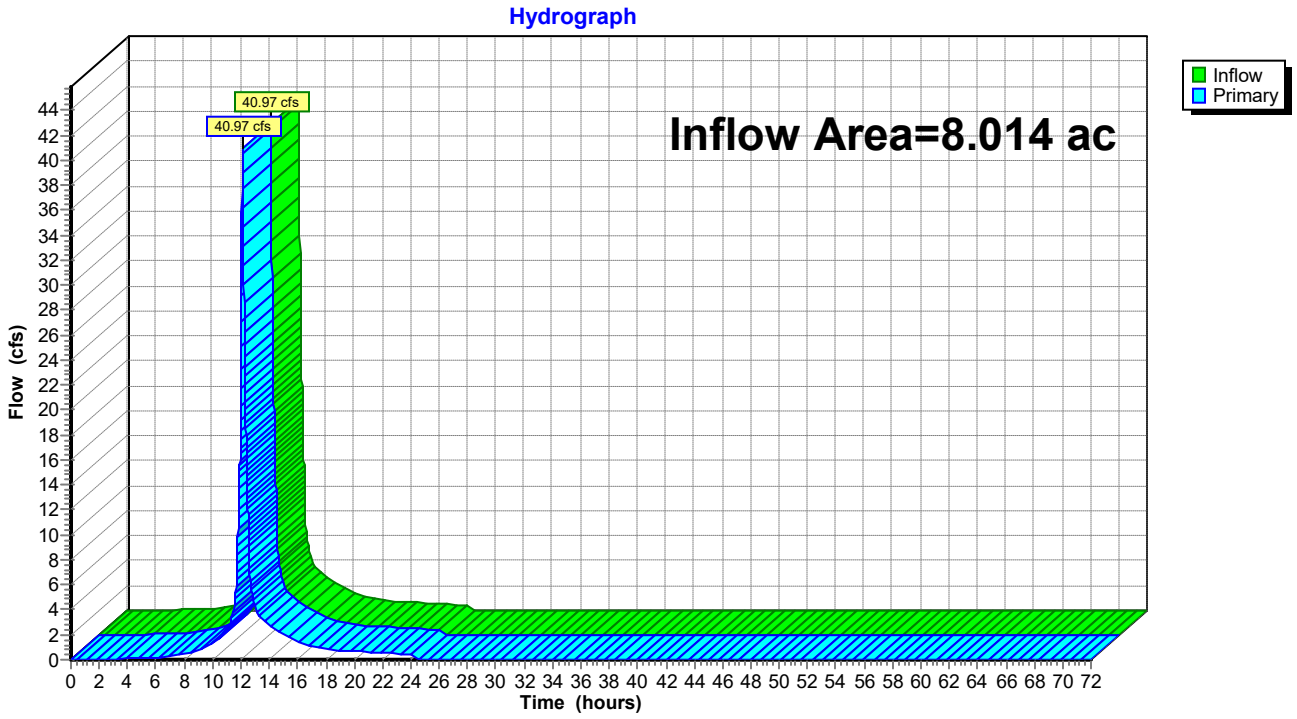


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 33.40% Impervious, Inflow Depth = 4.98" for 100 yr event
Inflow = 40.97 cfs @ 12.12 hrs, Volume= 3.323 af
Primary = 40.97 cfs @ 12.12 hrs, Volume= 3.323 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



Summary for Subcatchment PWS-1: PWS-1 - Roof Addition

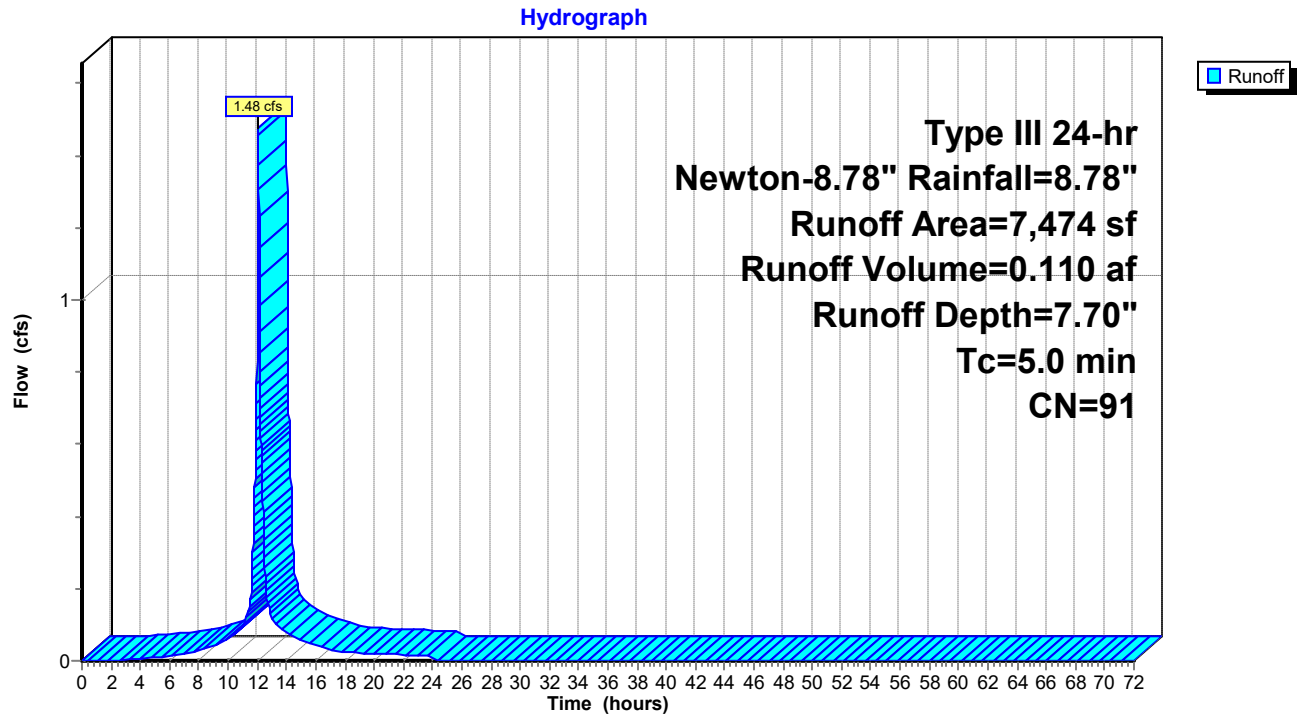
Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.110 af, Depth= 7.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr Newton-8.78" Rainfall=8.78"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
2,155	74	>75% Grass cover, Good, HSG C
319	98	Paved parking, HSG C
7,474	91	Weighted Average
2,155		28.83% Pervious Area
5,319		71.17% Impervious Area

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

Subcatchment PWS-1: PWS-1 - Roof Addition



Summary for Subcatchment PWS-2: PWS-2

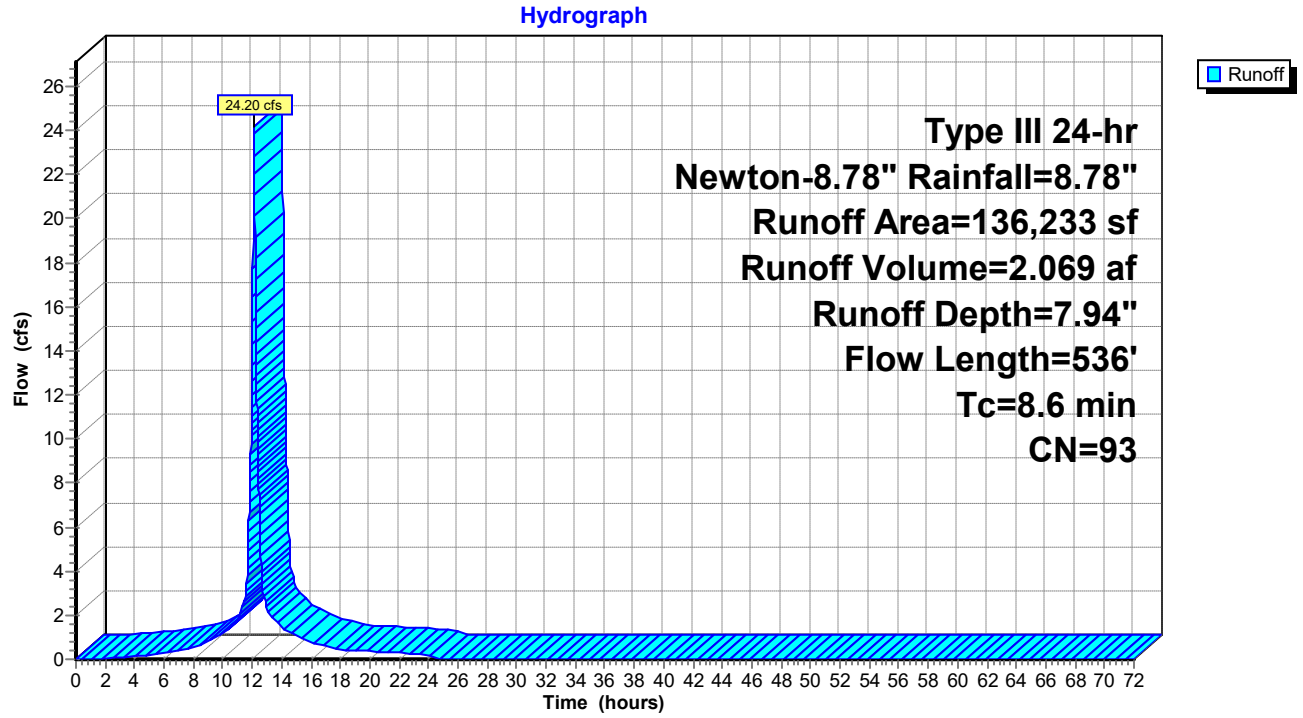
Runoff = 24.20 cfs @ 12.12 hrs, Volume= 2.069 af, Depth= 7.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr Newton-8.78" Rainfall=8.78"

Area (sf)	CN	Description
54,962	98	Roofs, HSG C
232	98	Paved parking, HSG C
49,986	98	Paved parking, HSG C
31,053	74	>75% Grass cover, Good, HSG C
136,233	93	Weighted Average
31,053		22.79% Pervious Area
105,180		77.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-2: PWS-2



Summary for Subcatchment PWS-3: PWS-3

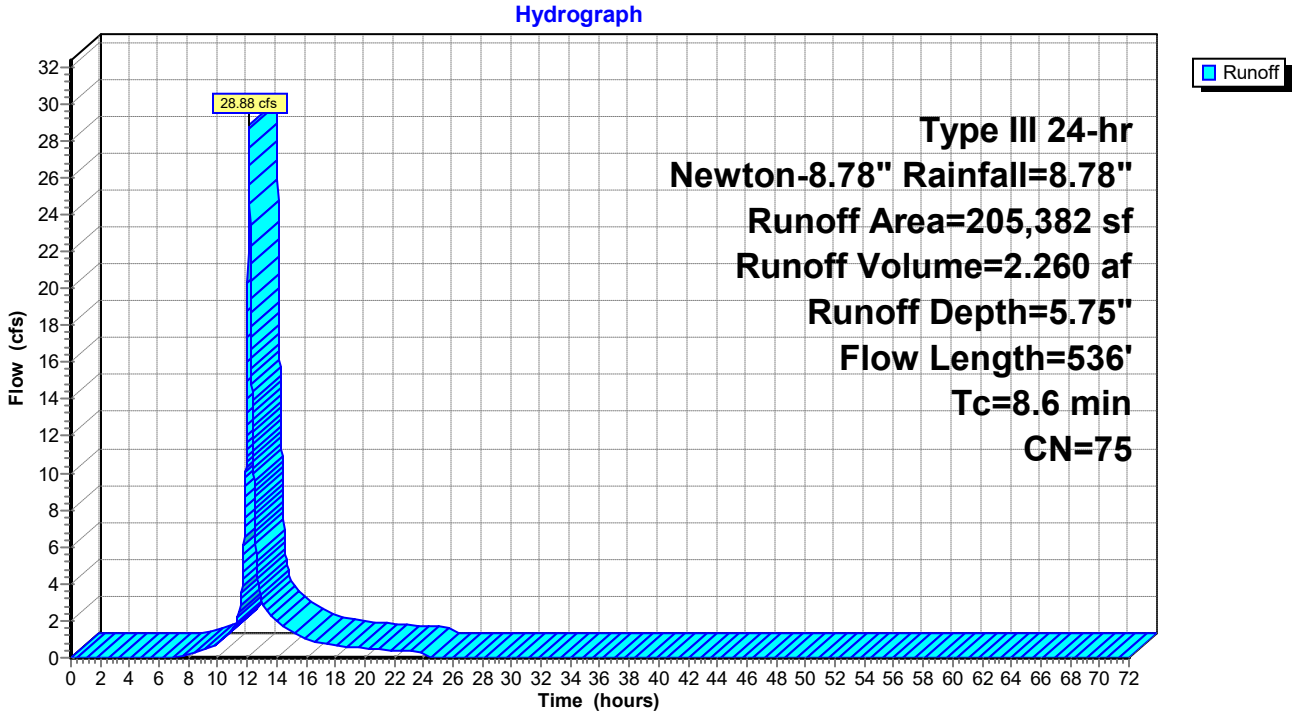
Runoff = 28.88 cfs @ 12.12 hrs, Volume= 2.260 af, Depth= 5.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr Newton-8.78" Rainfall=8.78"

Area (sf)	CN	Description
6,009	98	Paved parking, HSG C
75	98	Paved parking, HSG C
199,298	74	>75% Grass cover, Good, HSG C
205,382	75	Weighted Average
199,298		97.04% Pervious Area
6,084		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	31	0.1490	0.30		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.20"
1.7	19	0.0543	0.18		**Sheet Flow, Grass Short Sheet** Grass: Short n= 0.150 P2= 3.20"
5.2	486	0.0107	1.55		**Shallow Concentrated Flow, Field** Grassed Waterway Kv= 15.0 fps
8.6	536	Total			

Subcatchment PWS-3: PWS-3



Summary for Pond RG-1: Rain Garden

Inflow Area = 0.172 ac, 71.17% Impervious, Inflow Depth = 7.70" for Newton-8.78" event
Inflow = 1.48 cfs @ 12.07 hrs, Volume= 0.110 af
Outflow = 1.12 cfs @ 12.13 hrs, Volume= 0.109 af, Atten= 24%, Lag= 3.8 min
Primary = 1.12 cfs @ 12.13 hrs, Volume= 0.109 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 119.19' @ 12.13 hrs Surf.Area= 660 sf Storage= 740 cf

Plug-Flow detention time= 217.0 min calculated for 0.109 af (99% of inflow)
Center-of-Mass det. time= 211.0 min (980.1 - 769.1)

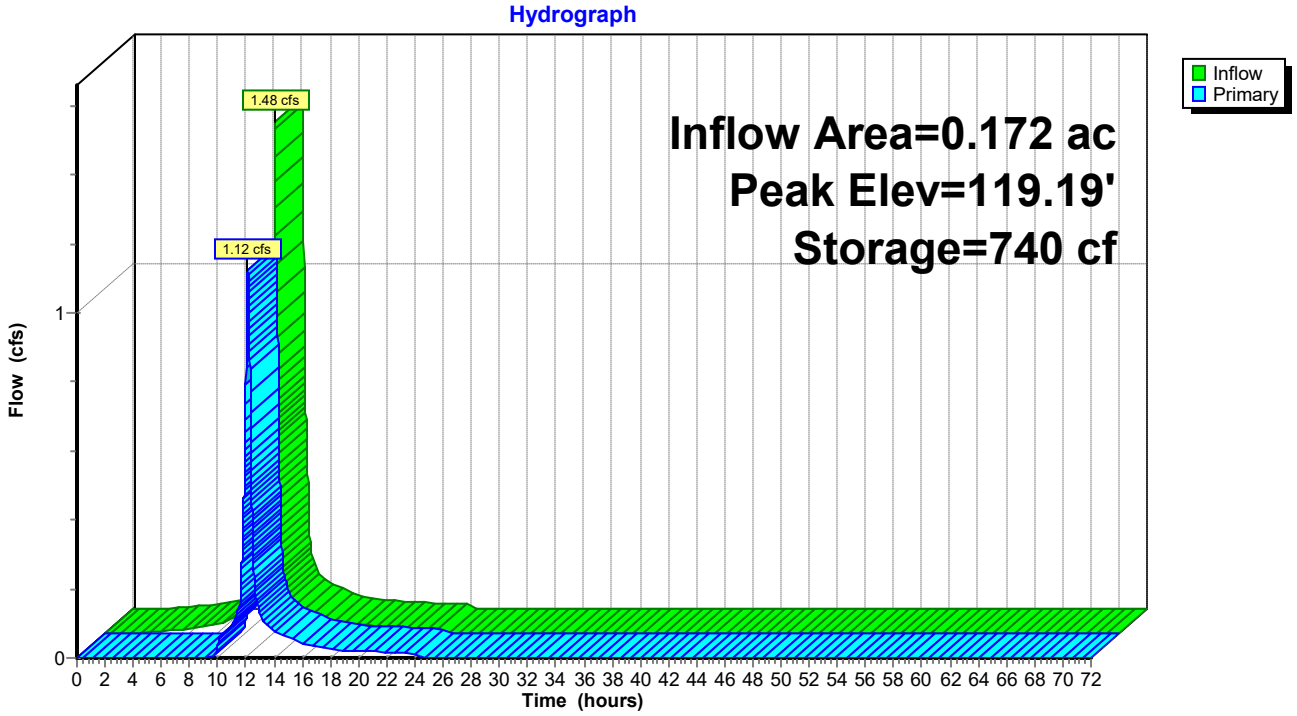
Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	2,513 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	595	0	0
119.00	592	594	594
120.00	946	769	1,363
121.00	1,355	1,151	2,513

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	118.75'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.12 cfs @ 12.13 hrs HW=119.19' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└—**2=Orifice/Grate** (Orifice Controls 1.12 cfs @ 3.20 fps)

Pond RG-1: Rain Garden

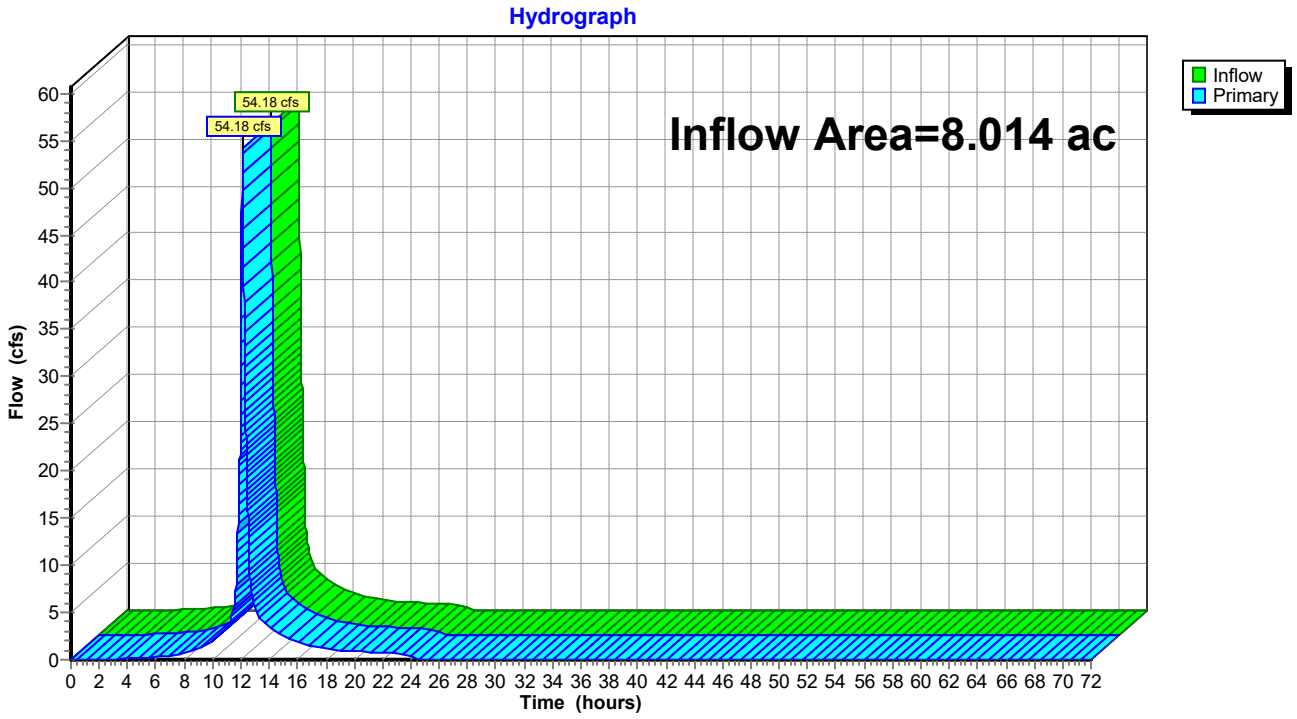


Summary for Link POA: POA-1

Inflow Area = 8.014 ac, 33.40% Impervious, Inflow Depth = 6.64" for Newton-8.78" event
Inflow = 54.18 cfs @ 12.12 hrs, Volume= 4.437 af
Primary = 54.18 cfs @ 12.12 hrs, Volume= 4.437 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POA: POA-1



Oak Hill Middle School
Newton, MA

MA DEP Standard 3: Recharge Volume Calculations

Required Recharge Volume - A Soils (0.6 in.)	
Existing Site Impervious Area (acres)	0
Proposed Site Impervious Area (Acres)	0.00
Proposed Increase in Site Impervious Area (Acres)	0.00
Proposed Increase in Site Impervious Area (SF)	0
Recharge Volume Required (CF)	**0**

Required Recharge Volume - B Soils (0.35 in.)	
Existing Site Impervious Area (acres)	0.00
Proposed Site Impervious Area (Acres)	0.00
Proposed Increase in Site Impervious Area (Acres)	0.00
Proposed Increase in Site Impervious Area (SF)	0
Recharge Volume Required (CF)	**0**

Required Recharge Volume - C Soils (0.25 in.)	
Existing Site Impervious Area (acres)	2.58
Proposed Site Impervious Area (Acres)	2.677
Proposed Increase in Site Impervious Area (Acres)	0.097
Proposed Increase in Site Impervious Area (SF)	4,225
Recharge Volume Required (CF)	**88**

Required Recharge Volume - D Soils (0.10 in.)	
Existing Site Impervious Area (acres)	0
Proposed Site Impervious Area (Acres)	0
Proposed Increase in Site Impervious Area (Acres)	0
Proposed Increase in Site Impervious Area (SF)	0
Recharge Volume Required (CF)	**0**

Total Recharge Volume Required (CF)	**88**

Recharge Volume Adjustment Factor	
Impervious Area Directed to Infiltration BMP (Acres)	2.667
%Impervious Directed to Infiltration BMP	100%
Adjustment Factor	1.0
Adjusted Total Recharge Volume Required (CF)	**88**

Provided Recharge Volume*	
Rain Garden -1 (CF)	445

Oak Hill Middle School
Newton, MA

MA DEP Standard 3: Drawdown Time Calculations

Drawdown Time - Rain Garden -1	
Volume below outlet pipe (Rv) (CF)	445
Soil Type	C - Sandy Loam/Fill
Infiltration rate (K)	0.17
Bottom Area (SF)	595
Drawdown time (Hours)	52.8

Drawdown time = Rv / (K) x (bottom area)
Infiltration Rates taken from Rawls Table

Oak Hill Middle School
Newton, MA

MA DEP Standard 4: Water Quality Volume Calculations

Water Quality Volume Required	Rain Garden -1 (Node RG-1)
Water Quality Volume (in.)	1.0
Total Post Development Impervious Area (SF)	5,319
Required Water Quality Volume (CF)	443
Water Quality Volume Provided (CF)*	445

Water Quality Volume Required	0
Water Quality Volume (in.)	0.0
Total Post Development Impervious Area (SF)	0
Required Water Quality Volume (CF)	0
Water Quality Volume Provided (CF)*	0

Water Quality Volume Required	0
Water Quality Volume (in.)	0.0
Total Post Development Impervious Area (SF)	0
Required Water Quality Volume (CF)	0
Water Quality Volume Provided (CF)*	0

Water Quality Volume Required	0
Water Quality Volume (in.)	0.0
Total Post Development Impervious Area (SF)	0
Required Water Quality Volume (CF)	0
Water Quality Volume Provided (CF)*	0

Required Water Quality Volume TOTAL (CF)	443
Water Quality Volume Provided (CF)*	445

Volume at lowest outlet orifice - See Stage Storage Chart in Appendix of Stormwater Report

Includes roof area

OAK HILL MIDDLE SCHOOL
CONSTRUCTION PERIOD POLLUTION PREVENTION PLAN AND EROSION CONTROL OPERATION AND MAINTENANCE PLAN
April 2020

During the Construction Period the General Contractor shall be responsible for the following:

1. Erosion Control

   Erosion control barriers will be placed along down-gradient portion of the site & at the limit of work as indicated on the project plans. Additional erosion control barriers will be placed at the limit of work as needed and in any sensitive areas as work progresses.

   A stockpile of additional erosion control barriers shall be kept on site at all times

2. Site Access

   Site access, for construction equipment will be from Wheeler Road as shown on the Construction Sequencing Plan, and a construction entrance will be installed at the onset of the project.

3. Construction Staging

   A construction staging area will be established outside any jurisdictional buffer area, if applicable, per the construction sequencing plan.

4. Site Grading/Site Work

   The site activities may only commence when the site is stable from erosion and all required control measures are in place and functional.

5. Slope Stabilization

   All surfaces and slopes shall be checked after each major storm event and at *least once every (7 calendar days or within 24 hours of the occurrence of a storm event 0.25 inches or greater*) to see that vegetation is in good condition. Any rills or damage from erosion shall be repaired immediately to avoid further damage. If seeps develop on the slopes, the area will be evaluated to determine if the seep will cause an unstable condition and shall be stabilized immediately if necessary. Problems found during the inspections by the General Contractor shall be repaired promptly. Areas requiring re-vegetation shall be replanted immediately or stabilized in a manner acceptable to the Conservation Commission if it is outside of the growing season. Slopes and other exposed surfaces receiving vegetation will be maintained as necessary to support healthy vegetation. If stabilization is required during the non-growing season, straw mulch, or a commercially manufactured blanket must be employed to prevent erosion.

6. Permanent Stabilization

   Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed no later than 14 days after the last construction activity. The permanent seed mix, fertilizer, and mulch shall be specified on the project plans. Permanent seeding shall occur in the Spring or Fall.

7. Drainage Structures (Area drains)

   All structures shall be inspected on a bi-weekly basis and/or after every rain storm and repairs made as necessary. Sediment shall be removed from the sump after the sediment has reached a maximum of one half the depth of the sump. The sediment shall be removed from the site and properly disposed of. Drainage

structures/sumps shall be cleaned completely at the end of construction. See manufacture requirements for infiltration structures and WQU Operation & Maintenance.

8. Dust and Sediment Control

Siltsacks:

Catch basin / area drain filters shall be placed at all inlets to drainage structures as structures are installed and prior to pavement removal. Outlet protection work shall be constructed before runoff is allowed to enter the drainage system. Construction and location of catch basin filters shall be as indicated on the Drawings at a minimum and as needed.

Straw Wattle Filter Socks:

Straw Wattle filter socks shall be installed as indicated on the Drawings.

Straw Wattle filter socks shall be placed in a row with ends tightly abutting the adjacent filter sock. Each filter sock shall be securely anchored in place by 2 stakes or re-bars driven through the filter sock. The first stake in each filter sock shall be angled toward the previously laid filter sock to force the compost filter socks together.

Construction Entrance:

The area of the construction entrance should be cleared of all vegetation, roots, and other objectionable material. The filter fabric should be placed on the subgrade prior to the gravel placement. The gravel shall be placed to the specified dimensions depicted on the plans.

The Construction entrance shall be a minimum of 50-feet in length and 24-feet wide.

Dust Control:

A mechanical street sweeper shall be utilized to clean the existing paved areas on an as-needed basis.

For emergency control of dust apply water to affected areas. The source of supply and the method of application for water are the responsibility of the contractor.

9. Allowable Non-Stormwater Discharges

No illicit discharge allowed per stormwater management policy requirement #10.

Type of Allowable Non-Stormwater Discharge:

- Discharges from emergency fire-fighting activities
- Fire hydrant flushing's
- Landscape irrigation
- Waters used to wash vehicles and equipment
- Water used to control dust
- Potable water including uncontaminated water line flushing's
- Routine external building wash down
- Pavement wash waters
- Uncontaminated air conditioning or compressor condensate
- Uncontaminated, non-turbid discharges of ground water or spring water
- Foundation or footing drains
- Construction dewatering water

Pollution Prevention Measures

1. Before, during, and after construction, functional erosion and sedimentation controls shall be implemented to prevent the silting of the wetland areas down-gradient of the site. Straw wattles, crushed stone, temporary stabilization and other controls shall be properly maintained and are not to be removed until the site is permanently stabilized. Other controls shall be added as warranted during construction to protect environmentally-sensitive areas. Sufficient extra materials (e.g. straw wattles and other control materials) shall be stored on site for emergencies.

2. Silt sacks and straw wattle check dams shall be installed at all existing and proposed infiltration areas to protect from soils and sediment.

2. Casting of excavated materials shall be stored away from wetland areas and sensitive land areas.

3. Any stockpiling of loose materials shall be properly stabilized to prevent erosion and siltation. Preventative controls such as straw wattles, temporary seeding/mulching and jute covering shall be implemented to prevent such an occurrence.

4. There shall be no flooding, ponding, or flood related damage caused by the project or surface run-off emanating from the project on lands of an abutter, nearby or down-gradient of the site.

5. There shall be no contaminant migration caused by the project to nearby and down-gradient properties, nearby aquifers, and nearby resource areas.

6. The contractor shall make sufficient provisions to control any unexpected drainage and erosion conditions that may arise during construction that may create damage on abutting properties. Said control measures are to be implemented at once.

7. During construction flood prevention, erosion, and sedimentation controls shall be in place before the natural ground cover is disturbed. Said controls shall be in place prior to other construction work and shall be monitored and approved by the Contractor. They shall be properly maintained and are not to be removed until the site is stabilized.

8. The Contractor shall designate a person or persons to inspect and supervise the erosion controls for the project. The Conservation Commission shall be notified as to the means to contact said individual or individuals on a 24-hour basis on all working and non-working days of the project. Said means of contact shall include at least 2 separate telephone number of said designated person or persons.

9. There shall be periodic inspections (All soil erosion controls shall be checked after each major storm event and at *least once every (7 calendar days or within 24 hours of the occurrence of a storm event 0.25 inches or greater*) of straw wattles, and other erosion controls by the Contractor's Designee to assure their continued effectiveness.

10. The Contractor shall make adequate provisions for controlling erosion and sediment from activities that might yield water at high volumes with high suspended solid contents, such as dewatering excavations.

11. Street sweeping shall be used to keep public ways free and clear of sediment and dirt from the site activities.

12. Throughout the construction period the Contractor shall carry on an active program for the control of fugitive dust within all site construction zones, or areas disturbed as a result of construction with the use of water truck and/or fire hose to apply water to the construction area.

Other Control Measures

Waste Materials. All trash and construction debris from the site will be hauled to an approved landfill or recycling facility. No construction waste material will be buried on the site. All personnel will receive instructions regarding the correct procedure for waste disposal. Notices describing these practices will be posted in the construction office. The site superintendent will be responsible for seeing that these procedures are followed. Employee waste and other loose materials will be collected so as to prevent the release of floatables during rainfall events.

Hazardous Waste. No Hazardous materials are expected to be encountered. The mandated State and Local permits for removal of such materials, if located, will be implemented when such materials are encountered.

After Construction Minuteman (the Owner) shall be responsible for the following:

General Land Grading and Slopes Stabilization

All surfaces and slopes shall be checked bi-annually to see that vegetation is in good condition. Any rills or damage from erosion shall be repaired immediately to avoid further damage. If seeps develop on the slopes, the area will be evaluated to determine if the seep will cause an unstable condition and shall be stabilized immediately if necessary. Problems found during the inspections by the Owner shall be repaired promptly. Areas requiring re-vegetation shall be replanted immediately. Slopes and other exposed surfaces receiving vegetation will be maintained as necessary to support healthy vegetation.

Areas of steep slopes (2.5:1 or greater) shall be stabilized using jute mesh or a similar approved erosion blanket.

Erosion Controls

Erosion controls shall not be removed or dismantled without approval from the Engineer. Sediment deposits that are removed or left in place after the barriers have been dismantled shall be graded manually to conform to the existing topography and vegetated using seeding or other long-term cover as approved in the Landscape Plan. Bare ground that cannot be permanently stabilized within 30 days shall be stabilized by temporary measures.

Street Sweeping

It is proposed that the parking and drive areas be swept with a wet brush street sweeper on a semi-annual basis, with at least two sweepings per year. One sweep shall be done at the end of the winter season (prior to the heavy rains), and the other sweep at the end of autumn (prior to snowfall).

Stormwater Management System

Catch Basins, Drain Manholes:

The catch basins, drain manholes, and drywells shall be inspected annually, and cleaned out when sumps are approximately one foot full. The use of "clam shells" for sediment removal shall not be allowed; a vacuum truck shall be the approved method of cleaning. Integrity and functionality of oil hoods shall also be checked at the time of the inspection.

Trash/Debris Removal: Remove accumulated trash and debris prior to mowing.

Sediment Removal: Check on a yearly basis and clean as needed. Use hand methods (i.e., a person with a shovel) when cleaning to minimize disturbance to vegetation and underlying soils. Sediment build-up in the grass channel reduces its capacity to treat and convey the water quality event, 2-year, and 10-year 24-hour storm.

Rain Garden:
For the first year inspect soil and repair eroded areas monthly. Re-mulch void areas as needed. Remove litter and debris monthly. Treat diseased vegetation as needed. Remove and replace dead vegetation twice per year (spring and fall).

Proper selection of plant species and support during establishment of vegetation should minimize—if not eliminate—the need for fertilizers and pesticides. Remove invasive species as needed to prevent these species from spreading into the rain garden area. Upon failure, excavate rain garden area, scarify bottom and sides, replace filter fabric and soil, replant, and mulch. Never store snow in Rain Garden areas.

Because the soil media filters contaminants from runoff, the cation exchange capacity of the soil media will eventually be exhausted. When the cation exchange capacity of the soil media decreases, change the soil media to prevent contaminants from migrating to the groundwater, or from being discharged via an underdrain outlet. The cation exchange capacity governs the ability of the soil to hold nutrients that are crucial to plant health. It is recommended the soil media should be replaced every 10 years or when the plants are showing signs of stress and nutrient deficiency. Using small shrubs and plants instead of larger trees will make it easier to replace the media with clean material when needed. Plant maintenance is critical. Concentrated salts in roadway runoff may kill plants, necessitating removal of dead vegetation each spring and replanting.

Rain Garden Maintenance Schedule:

Activity	Time of Year	Frequency
Inspect and remove trash	Year round	Monthly
Mulch	Spring	Annually
Remove dead vegetation	Fall or spring	Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or fall	Annually

Annual Records Requirements

For a minimum of the first three (3) years the responsible parties (Minuteman) must retain records of annual maintenance and inspection reports of the inspection and maintenance of the BMPs for which they are responsible.

The report must include:
A.) Descriptions of the condition of the BMPs.
B.) Descriptions of maintenance performed.
C.) Receipts showing payment for the maintenance performed.

INSPECTION REPORT FORM FOR STORM WATER SYSTEM

Project: Oak Hill Middle School

INSPECTOR:_____DATE:_____

Regular Inspection: ☐
Inspection after Rainfall: ☐ Amount of Rainfall:_____inches

BMP	Functioning Correctly	Notes/Action Taken
	Y/N	
	Y/N	
	Y/N	
	Y/N	
	Y/N	
	Y/N	
	Y/N	

Additional Observations: _____

_____

_____

Action Required: _____

_____

_____

To be performed by:_____On or Before:_____

Final Label Report

#234-20

SBL	Owner	Number	Street	Unit
81006 0009	NATANEL URI & INNA	263	ARNOLD RD	
81050 0020	JIH GUOR-CHIN & YIN-CHU	4	BRANDEIS CIR	
81050 0019	HOFFMAN ANDREW & MARLA	10	BRANDEIS CIR	
81050 0014	MEDOFF DAVID & DONNA B	11	BRANDEIS CIR	
81050 0018	RESNICK MICHAEL M	16	BRANDEIS CIR	
81050 0015	GREEN ERIC & RHONDA J	19	BRANDEIS CIR	
81050 0017	LI ZHI	22	BRANDEIS CIR	
81050 0016	FINKELSTEIN EVAN	23	BRANDEIS CIR	
81051 0054	GLAZIER ARNOLD & MARYANN GASH	9	BRANDEIS RD	
81006 0004	TORDEV LLC	15	FOX HILL RD	
81006 0005	LEWIS CRAIG A	23	FOX HILL RD	
81006 0006	WORTH ROBERT J & AMY K TRS	31	FOX HILL RD	
81006 0007	LI YE	37	FOX HILL RD	
81006 0008	WESTVIEW PARTNERS LLC	45	FOX HILL RD	
81011A0027	MALINSKY YUVAL & DAPHNA	18	JANE RD	
81051 0044	RAMADURAI MURALI & SUJATHA M	83	LITTLEFIELD RD	
81005 0008	LEE CHAO-MIN	84	LITTLEFIELD RD	
81051 0045	HOFFMAN STEVEN L & SALLY L TR	91	LITTLEFIELD RD	
81005 0009	MOSYAK ALEXANDER & LIDIA	92	LITTLEFIELD RD	
81051 0045A	LOCHEN ERLEND	99	LITTLEFIELD RD	
81005 0010	ALLEN SUSAN D	100	LITTLEFIELD RD	
81006 0003	YAO NA	118	MEADOWBROOK RD	
81050 0014A	WANG CHAO	51	PARKER TER	
81051 0053	WANG ZHENRONG	60	PARKER TER	
81011A0011	BARATZ MICHAEL	5	SHARPE RD	
81006 0012	8 SHARPE RD LLC	8	SHARPE RD	
81011A0010	RABADJIJA MIRJANA	15	SHARPE RD	
81006 0011	RHEE EDDIE & KATHERINE	16	SHARPE RD	
81006 0010	WEN BO	22	SHARPE RD	
81050 0010	RAKHIT NILANJANA	5	SHUMAN CIR	
81050 0009	ROAZEN DIANE	15	SHUMAN CIR	
81050 0008	KOVTUN STANISLAV	25	SHUMAN CIR	
81011A0025	SHI GUO-PING	5	VOSS TER	
81011A0013	HOLLOWELL ROBERT P III	10	VOSS TER	
81011A0024	LEVINE IGOR & ALLA	15	VOSS TER	
81011A0014	NANDA ASHISH	16	VOSS TER	
81011A0023	ZHANG XU	21	VOSS TER	
81011A0015	ZHANG JIANWEI	22	VOSS TER	
81050 0011	VOLDMAN GUERCH & NORA	44	WHEELER RD	
81050 0012	BULIS ALEX & NILI	50	WHEELER RD	
81011A0026	BIRNSTENGEL JOHN S	55	WHEELER RD	
81050 0013	SHUHAIBER JEFFREY	58	WHEELER RD	
81011A0012	REGELMAN YAKOV & LYUBOV	79	WHEELER RD	

(f) No voting member of the design review committee shall hold an elected or salaried position with the city.

(g) All members shall serve without compensation and all voting members shall be residents of the city. All members shall serve until their successors take office.

(h) The two (2) voting members who are community representatives shall vote only on those matters concerning facilities for which they are appointed. (Rev. Ords. 1973, § 2-363; Ord. No. 8, 8-12-74; Ord. No. 190, 12-20-76; Ord. No. S-301, 2-1-88)

Sec. 5-57. Other provisions.

Any public corporation, agency, authority, commission or body of any such private organization which is empowered to construct a public or quasi-public facility within the city and which desires to submit itself to the jurisdiction of the design review committee, may enter into an agreement, in writing, with the city for this purpose, and thereafter the design review committee shall perform all of its functions and duties with respect to such facility. (Rev. Ords. 1973, § 2-364; Ord. No. 8, 8-12-74)

Sec. 5-58. Site plan approval for construction or modification of municipal buildings and facilities.

It shall be the policy of the city to apply similar standards of planning and control of density and environmental impact, when the city's public buildings and facilities are constructed or modified, as the city applies under chapter 30, Zoning, of the Revised Ordinances when petitions for changes in land use are initiated by its citizens or property owners. In implementing this policy for land in the public use district or otherwise classified city land, the prior establishment of a zoning classification or district (in accordance with section 30-4 of these Revised Ordinances) shall not be required.

(a) Whenever construction or modification of a municipal building or facility is undertaken which involves new construction or substantial change in usage, and which involves a change in: vehicular access; off-street parking requirements; site grading; drainage; landscape features; or service areas, the following procedures shall apply:

(1) The executive department shall include in the architect's contract the requirement for preparation and submission of site plans suitable for review and approval in accordance with the procedure outlined in section 30-23 of these Revised Ordinances.

(2) The department of planning and development shall maintain cognizance over the development of specifications, conceptual designs and site plans to determine the consistency and compatibility of such designs and plans with the city's comprehensive plan and other pertinent planning and analytical studies. The director of planning and development shall make written notification of this finding to the mayor, to the clerk of the board of aldermen, to the design review committee, and (in the case of school buildings) to the secretary of the school committee.

(3) The design review committee shall consider the project plans, designs, and specifications not only in terms of the details of layout and construction of the building or facility, but also in terms of the site and its surrounding area. Consultations shall be made with such city departments and neighborhood groups as are considered necessary and appropriate.

(4) Upon its approval of the initial design concept and prior to recommending that the project proceed to the detailed design phase and to the preparation of construction drawings, the design review committee shall file with the clerk of the board of aldermen its approved site plan including building floor plans and architectural schematics, along with a formal petition for site plan approval in accordance with the procedure outlined in

section 30-23 of these Revised Ordinances. The design review committee shall not be required to pay a filing fee for purposes of this section.

(5) At the earliest opportunity, the board of aldermen shall for the purposes of this section assign that petition for public hearing before its committee dealing with matters of public buildings and this committee shall hold a public hearing. Due notice of such public hearing shall be given to the abutters of the proposed building or facility and to the abutters of such abutters. The committee shall deliberate and negotiate such changes to the site plan and affix such restrictions and conditions as are in the public interest, and it shall make its report to the board of aldermen within forty-five (45) days following the public hearing.

(6) The site plan, including building floor plans and architectural schematics, as formally approved by the board of aldermen and the mayor (and in the case of school buildings, by the school committee) shall become part of the final set of project plans and construction drawings, and they shall not be changed or altered in any manner without first being resubmitted to the design review committee and to the board of aldermen in accordance with steps (3), (4) and (5) above. The board of aldermen may waive a public hearing on a previously approved site plan if in its judgment the changes proposed are not of sufficient scope as to warrant a public hearing.

(b) The board of aldermen shall not approve an appropriation of any funds for preparation of detailed construction drawings for a project applicable under this section until the requirements of (a)(1) through (a)(6) above have been satisfied.

(c) The executive department shall not formally submit a project applicable under this section to competitive construction bid unless the requirements of (a)(1) through (a)(6) have been satisfied.

(d) The requirements of this section that are not otherwise required by law or by the charter may be waived in whole or in part by a two-thirds (2/3) vote of those members of the board of aldermen present and voting. (Rev. Ords. 1973, § 2-365; Ord. No. 8, 8-12-74; Ord. No. 102, § 4, 12-15-75; Ord. No. V-195, 9-22-98)