



TOWN OF BRISTOL, RHODE ISLAND

TECHNICAL REVIEW COMMITTEE

Technical Review Committee Agenda

Wednesday, September 04, 2024 at 10:00 AM

**Community Development Office Conference Room, 235 High Street,
1st Floor, Bristol, RI 02809**

A. Pledge of Allegiance

B. New Business

B1. TRC To review and provide recommendations to the Planning Board on the Major Land Development: Modified Master Plan and Preliminary Plan Phase and Unified Development Review - Application for an Adaptive Re-use/Unified Development of the former Oliver School. Proposal to convert the former school into 11 apartments. Property located at **151 State Street**, Assessor's Plat 18, Lot 42, Zone: Residential R-6. Owner/Applicant: State Street 151, LLC, President: Louis Cabral, 304 Church Pond Drive, Tiverton, RI 02878. Applicant proposes 2 deed restricted affordable units and 3 were approved as part of the Master Plan approval. Zoning dimensional variances required for size of off-street parking spaces, parking lot and aisle width, and for off-street parking spaces within 10 feet of the front lot line. Waiver also requested from Regulation checklist Item E26 - submission of a photometric plan since only on-site building lighting is proposed

C. Adjourn

Date: August 29, 2024

By: mbw

DRAWING ISSUE:

☐ CONCEPT

☐ CUSTOMER APPROVAL

☒ PERMITTING

☐ CONSTRUCTION

☐ AS-BUILT

☐ OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

DEVELOPMENT PLAN REVIEW

FOR

151 STATE STREET

PLAT 18 LOT 42

IN

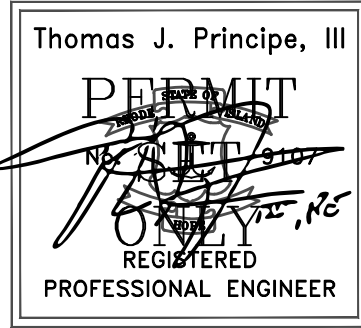
BRISTOL, RHODE ISLAND

OWNER / APPLICANT

LOUIS A. CABRAL

304 CHURCH POND ROAD

TIVERTON, RHODE ISLAND 02878



PREPARED BY:

PRINCIPE COMPANY, INC.

ENGINEERING DIVISION

27 SAKONNET RIDGE DRIVE

TIVERTON, RHODE ISLAND 02878

401.816.5385

INFO@PRINCIPEENGINEERING.COM

WWW.PRINCIPEENGINEERING.COM

APRIL 19, 2024

REVISED: AUGUST 7, 2024

REVISED: AUGUST 22, 2024

PROJECT DATA:

PLAT: 18 LOT: 42

EXISTING:

LOT AREA : 13,668 SF, 0.31 ACRES

EXISTING BUILDING: 5,533 SF

EXISTING IMPERVIOUS SURFACE: 7,176 SF

EXISTING PERVIOUS SURFACE: 959 SF

EXISTING BUILDING COVERAGE: 40.48%

TOTAL EXISTING IMPERVIOUS COVERAGE: 92.98%

(BUILDING + IMPERVIOUS SURFACE AREA)

PROPOSED:

EXISTING BUILDING (TO REMAIN): 5,533 SF

PROPOSED IMPERVIOUS SURFACE (EXISTING TO REMAIN + PROPOSED): 4,778 SF

PROPOSED PERVIOUS SURFACE (EXISTING TO REMAIN + PROPOSED): 3,315 SF

PROPOSED BUILDING COVERAGE: 40.48% (UNCHANGED)

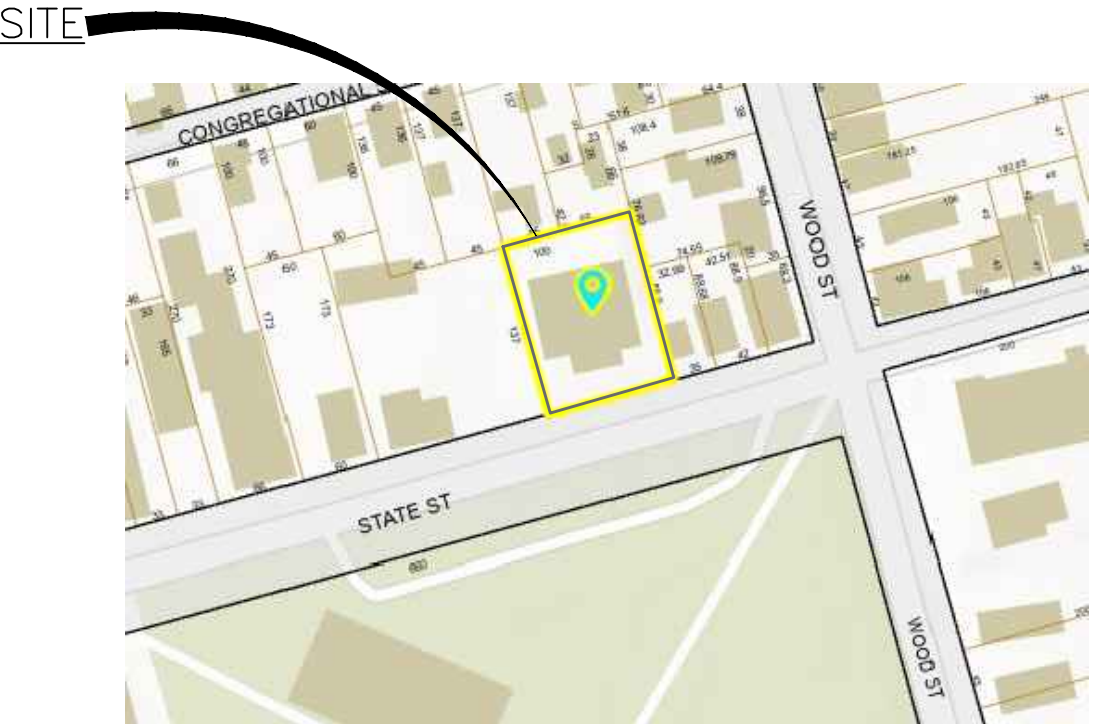
TOTAL PROPOSED IMPERVIOUS COVERAGE: 75.44% (2,398 SF DECREASE FROM EXISTING)

(BUILDING + IMPERVIOUS SURFACE AREA)

STREET INDEX:

STATE STREET

(PUBLIC)



LOCUS MAP

SCALE: NOT TO SCALE

LIST OF DRAWINGS

- 1) TITLE SHEET
- 2) EXISTING CONDITIONS PLAN (PRINCIPE COMPANY SURVEY)
- 3) EXISTING PARKING LAYOUT
- 4) SITE LAYOUT PLAN
- 5) DRAINAGE & GRADING PLAN
- 6) EROSION & SEDIMENT CONTROL PLAN
- 7) LANDSCAPE PLAN
- 8) CONSTRUCTION DETAILS
- 9) CONSTRUCTION DETAILS

PLAN REFERENCE

- 1.) EXISTING CONDITIONS TAKEN FROM PLAN ENTITLED "EXISTING CONDITIONS PLAN FOR ASSESSOR'S PLAT 18 LOT 42 151 STATE STREET IN BRISTOL, RHODE ISLAND"
- PREPARED BY: PRINCIPE COMPANY, SURVEYING DIVISION
- 2.) PROPOSED LANDSCAPING PLANS PREPARED BY: SUNFLOWER DESIGNS
- 7 BARBARA DRIVE
- BRISTOL, RI
- 401-525-0634

PLAN NOTES

- 1) PER GIS DATA, THERE ARE NO WETLANDS OR WETLAND BUFFERS ON THE SUBJECT PROPERTY
- 2) THERE ARE NO HISTORIC CEMETERIES LOCATED ON OR IMMEDIATELY ADJACENT TO THE SUBJECT PROPERTY

FEMA FLOOD NOTE:

ZONE X – AREA OF MINIMAL FLOOD HAZARD

FLOOD MAP: 44001C0014H

EFFECTIVE DATE: 7/7/2014

SOIL NOTE:

NP – NEWPORT-URBAN LAND COMPLEX

UD – UDORTHERENTS – URBAN LAND COMPLEX

FROM NRCS WEB SOIL SURVEY

REQUIRED PARKING

BASED ON RI ADAPTIVE REUSE HOUSING BILL (EFFECTIVE DATE JANUARY 1, 2024), ONE PARKING SPACE PER DWELLING UNIT IS REQUIRED

FOR 11 DWELLING UNITS:

11 PARKING SPACES REQUIRED

11 PARKING SPACES PROVIDED (±1,880 SF TOTAL PARKING AREA) (INCLUDING 1 VAN ACCESSIBLE PARKING SPACE)

VARIANCE NOTE

- 1.) PER BRISTOL CODE OF ORDINANCES SEC 28-251(2): FOR STANDARD PARKING SPACES, MIN. WIDTH IS 10' AND MIN. LENGTH IS 18' WITH A MIN. AISLE WIDTH OF 24' FOR 90° PARKING SPACES – 16' LENGTH PROVIDED AT REAR PROPERTY LINE TO ALLOW 24' AISLE FOR 6 SPACES. <24' AISLE PROVIDED FOR 3 SPACES WHERE IMPACTED BY THE EXISTING PROTRUDING BASEMENT BULKHEAD
- 2.) PER BRISTOL CODE OF ORDINANCES SEC 28-251(3): NO PARKING SPACE SHALL BE LESS THAN 10' FROM ANY FRONT LOT LINE – 2 PARKING SPACES ARE PROPOSED WITHIN 10' OF THE FRONT LOT LINE, WHICH IS A REDUCTION FROM THE 4 EXISTING PARKING SPACES LOCATED WITHIN THE FRONT SETBACK.



THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR-00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATIONS FOR PROFESSIONAL LAND SURVEYORS NOVEMBER 25, 2015 AS FOLLOWS:

TYPE OF SURVEY: LIMITED CONTENT BOUNDARY SURVEY
MEASUREMENT SPECIFICATION: CLASS 1 STANDARD/CLASS 3 TOPO

PURPOSE OF SURVEY: EXISTING CONDITIONS

BY: Stephen T. Long
STEPHEN T. LONG, PLS NO. 1930

DATE: 4-22-24

GENERAL NOTES:

1. THE LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE LATEST AVAILABLE INFORMATION. THE UTILITY LOCATIONS ARE APPROXIMATE AND MAY NOT BE ALL INCLUSIVE. THE CONTRACTOR SHALL CHECK AND VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, BOTH OVERHEAD AND UNDERGROUND, AND "DIG-SAFE" MUST BE NOTIFIED PRIOR TO COMMENCING ANY CONSTRUCTION OPERATIONS. RESTORATION AND REPAIR OF DAMAGE TO EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST THE OWNER. NO EXCAVATION SHALL COMMENCE UNTIL ALL INVOLVED UTILITY COMPANIES AND/OR TOWN WHOSE FACILITIES MIGHT BE AFFECTED BY ANY WORK TO BE PERFORMED BY THE CONTRACTOR ARE NOTIFIED AT LEAST 72 HOURS IN ADVANCE.
2. THE ELEVATIONS SHOWN ON THIS PLAN REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. THE HORIZONTAL LOCATIONS AS SHOWN ON THIS PLAN REFERENCE THE NORTH AMERICAN DATUM OF 1983 (NAD83).
4. THIS SITE LIES WITHIN ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON THE FIRM MAP FOR THE TOWN OF BRISTOL, RI, MAP NUMBER 44001C0014HJ WITH AN EFFECTIVE DATE OF JULY 7, 2014.

REFERENCES

1. A PLAN ENTITLED "SURVEY OF SCHOOL LANDS LYING ON STATE, WOOD, AND BRADFORD STREETS" WHICH IS LOCATED IN THE BRISTOL LAND EVIDENCE RECORDS IN DEED BOOK 37 PAGE 460 AND PLAT BOOK 4 PAGE 28.

LEGEND

A.P.	ASSESSOR'S PLAT
N/F	NOW OR FORMERLY
□ GB/DH	GRANITE BOUND/DRILL HOLE
● IP	IRON PIN
⊙ DH	DRILL HOLE
Ⓢ	SEWER MANHOLE
□	CATCH BASIN
Ⓢ	DRAIN MANHOLE
⊙	UNKNOWN MANHOLE
⚡	HYDRANT
⚗	SIAMESE CONNECTION
⊗	FIRE DEPT. SHUT OFF
W G	WATER GATE
⊗	GAS GATE
Ⓢ	ELECTRIC METER
✳	LIGHT POLE
⊙	UTILITY POLE
C.O.	CLEANOUT
FP	FLAG POLE

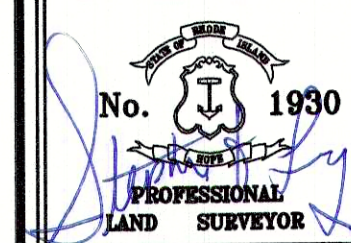
OWNER / APPLICANT:
LOUIS A. CABRAL
304 CHURCH POND ROAD
TIVERTON, RI 02878

ZONING CRITERIA

ZONE: R-6 (MULTI-UNIT DEVELOPMENT)	
ZONING DISTRICT	R-6
MINIMUM LOT AREA	6,000 SQ. FT.
MINIMUM LOT WIDTH	100'
MINIMUM LOT FRONTAGE	60'
MINIMUM FRONT YARD SETBACK	***
MINIMUM SIDE YARD SETBACK	10'
MINIMUM REAR YARD SETBACK	20'
MAXIMUM LOT BUILDING COVERAGE	30%
MAXIMUM BUILDING HEIGHT	35'

*** FRONT YARD SETBACK IS THE AVERAGE SETBACK OF THE BLOCK OR 20', WHICHEVER IS LESS. SEE BRISTOL ZONING ORDINANCE ARTICLE IV, SECTION 28-111 TABLE B

STEPHEN T. LONG



REVISIONS

[illegible]

PRINCIPE COMPANY, INC.
SURVEYING DIVISION



27 SAKONNET RIDGE DRIVE
TIVERTON, RI 02878
401.816.5385
SURVEY@PRINCIPEENGINEER
PRINCIPEENGINEERING.COM

EXISTING CONDITIONS PLAN

for
AP 18 LOT 42
151 STATE STREET
in
BRISTOL, RHODE ISLAND

SCALE: 1"=20'

SHEET NO: 1 OF 1

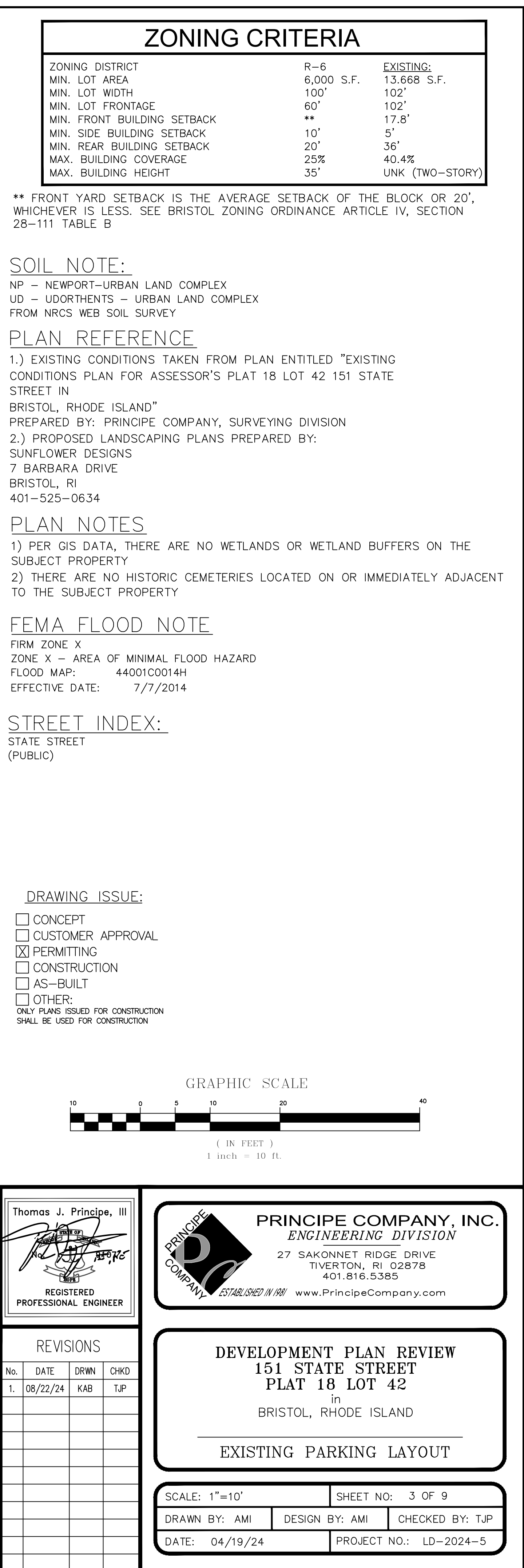
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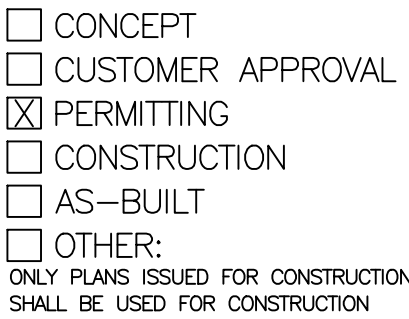
DESIGN BY:

CHECKED BY: STL

DATE: 03/27/2024

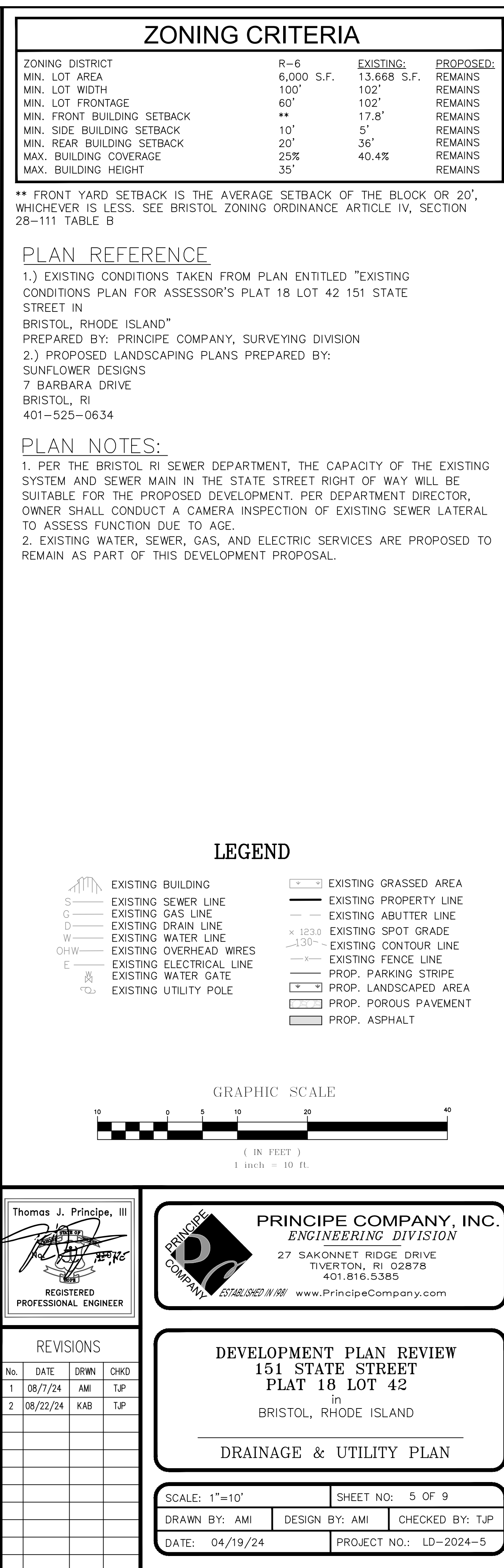
PROJECT NO.:	LD-2024-5
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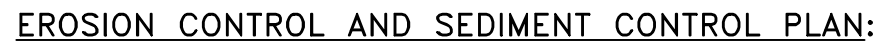




PROJECT NO.: LD-2024-5

OWNER / APPLICANT
LOUIS A. CABRAL
OLIVER SCHOOL
04 CHURCH POND ROAD
TON, RHODE ISLAND 02878





1. PRIOR TO THE COMMENCEMENT OF ANY CLEARING, GRUBBING, DEMOLITION OR EARTHWORK ACTIVITY, TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE PLANS ARE TO BE INSTALLED BY THE CONTRACTOR.
2. CONSTRUCTION ACCESS STABILIZATION ENTRANCE PADS ARE TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF SITE GRUBBING OR EARTHWORK ACTIVITY.
3. EXISTING CATCH BASINS ARE TO BE PROTECTED WITH STRAW BALES AND/OR SILT SACS PRIOR TO THE START OF SITE GRUBBING, EARTHWORK OR UNDERGROUND UTILITY AND DRAINAGE INFRASTRUCTURE INSTALLATION TO SERVE THE DEVELOPMENT SITE.
4. THE PROJECT CONSTRUCTION SEQUENCE, TO THE EXTENT PRACTICAL, SHOULD REQUIRE THE INSTALLATION OF DOWN GRADE AND OFF SITE STORM DRAINAGE SYSTEM IMPROVEMENTS BEFORE THE START OF SITE GRUBBING AND EARTHWORK ACTIVITY.
5. TEMPORARY SITE SLOPE TREATMENTS FOR SOIL STABILIZATION SHALL CONSIST OF STRAW, FIBER MULCH, RIP RAP OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, AND EXCLOSUR OR EQUAL PRODUCTS). THESE AND OTHER ACCEPTABLE MEASURES SHALL BE INCORPORATED INTO THE SITE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
6. CONSTRUCTION SITES ARE DYNAMIC, THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND OR MOVEMENT AND MAINTENANCE OF EROSION CONTROLS, SOIL STABILIZATION AND SEDIMENT CONTROL MEASURES AS NEEDED TO MAXIMIZE THE INTENT OF THE PLAN FOR ALL SITE CONDITIONS THROUGHTOUT THE CONSTRUCTION PERIOD.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERIODIC INSPECTION, MAINTENANCE, REPAIR, AND REPLACEMENT OF EROSION CONTROLS, SOIL STABILIZATION AND SEDIMENT CONTROL DEVICES UNTIL AN ACCEPTABLE PERMANENT VEGETATIVE GROWTH IS ESTABLISHED. THE CONTRACTOR SHALL MAINTAIN A DETAILED LOG OF ALL EROSION CONTROL INSPECTIONS, COMPLAINTS RELATED TO EROSION OR SEDIMENT, AND CORRECTIVE REMEDIAL MEASURES TAKEN THROUGHTOUT THE COURSE OF THE PROJECT CONSTRUCTION.
8. SOIL EROSION AND SEDIMENT CONTROL IS NOT LIMITED TO DAMAGES CAUSED BY WATER BUT ALSO INCLUDES EROSION AND SEDIMENT RESULTING FROM WINDS. MEASURES, SUCH AS TEMPORARY GROUND COVERS, WATER AND CALCIUM APPLICATIONS ARE TO BE UNDERTAKEN AS NEEDED TO MINIMIZE WIND RELATED SOIL AND DUST CONTROL.
9. STOCK PILES OF EARTH MATERIALS SHALL NOT BE LOCATED NEAR WATERWAYS OR WETLANDS. STOCK PILES SHALL HAVE SIDE SLOPES NO GREATER THAN THIRTY PERCENT (30%). STOCK PILES SHALL BE SURROUNDED ON THE DOWN GRADIENT OF THE EXISTING GROUND SURFACE BY STRAW BALES OR SILT FENCE. THE STOCK PILES SHALL ALSO BE SEEDED OR STABILIZED IN SOME MANNER TO PREVENT SOIL EROSION.
10. THE SMALLEST POSSIBLE SITE AREAS SHALL BE DISTURBED OR EXPOSED AT ONE TIME AND DENUDEED SLOPES OR WORK AREAS SHALL NOT BE LEFT EXPOSED FOR EXCESSIVE PERIODS OF TIME, SUCH AS INACTIVE PERIODS OR SITE WORK SHUT DOWNS.
11. TO THE EXTENT POSSIBLE, ALL DISTURBED AREAS MUST BE SEEDED OR STABILIZED WITHIN THE CONSTRUCTION SEASON. STABILIZATION OF ONE FORM OR ANOTHER SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
12. EXPOSED STEEP OR LONG SLOPES SHOULD BE TREATED WITH "CRIMPING" OR "TACKING" TO REDUCE EROSION AND SEDIMENT AND TO TACK DOWN SEEDING OR MULCH APPLICATIONS.
13. IF CONCRETE IS TO BE USED ON SITE, THE CONTRACTOR MUST ESTABLISH AND MAINTAIN SPECIFIC WASHOUT AREAS FOR THE CONCRETE TRUCKS WITH APPROPRIATE PROTECTION CONTROLS.
14. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING COLLECTION AND STORAGE LOCATIONS ON-SITE FOR ALL CONSTRUCTION DEBRIS AND TRASH SO THAT THIS MATERIAL DOES NOT BECOME A NEIGHBORHOOD NUISANCE.
15. EXISTING TREES AND VEGETATION WILL BE RETAINED WHENEVER FEASIBLE.
16. SITE SOIL EROSION AND SOIL STABILIZATION AND SEDIMENT CONTROLS MUST CONFORM TO ALL REQUIREMENTS OF THE APPLICABLE LOCAL COMMUNITY ORDINANCES AND STATE REGULATIONS.

PLAN REFERENCE

- 1.) EXISTING CONDITIONS TAKEN FROM PLAN ENTITLED
"EXISTING CONDITIONS PLAN FOR ASSESSOR'S PLAT 18
LOT 42 151 STATE STREET IN
BRISTOL, RHODE ISLAND"
PREPARED BY: PRINCIPLE COMPANY, SURVEYING DIVISION
2.) PROPOSED LANDSCAPING PLANS PREPARED BY:
SUNFLOWER DESIGNS
7 BARBARA DRIVE
BRISTOL, RI
401-525-0634

LEGEND

	EXISTING BUILDING		EXISTING GRASSED AREA
	EXISTING SEWER LINE		EXISTING PROPERTY LINE
	EXISTING GAS LINE		EXISTING ABUTTER LINE
	EXISTING DRAIN LINE		EXISTING SPOT GRADE
	EXISTING WATER LINE		EXISTING CONTOUR LINE
	EXISTING OVERHEAD WIRES		EXISTING FENCE LINE
	EXISTING ELECTRICAL LINE		PROP. PARKING STRIPE
	EXISTING WATER GATE		PROP. LANDSCAPED AREA
	EXISTING UTILITY POLE		PROP. POROUS PAVEMENT
			PROP. ASPHALT
			LIMIT OF DISTURBANCE

DRAWING ISSUE:

- ☐ CONCEPT
☐ CUSTOMER APPROVAL
☒ PERMITTING
☐ CONSTRUCTION
☐ AS-BUILT
☐ OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

STREET INDEX:
STATE STREET
(PUBLIC)

OWNER / APPLICANT
LOUIS A. CABRAL
OLIVER SCHOOL
304 CHURCH POND ROAD
TIVERTON, RHODE ISLAND 02878

ORDER OF PROCEDURE:

1. PRIOR TO ANY CLEARING AND GRUBBING OR ANY ROUGH GRADING, TEMPORARY STRAW BALES AND SANDBAGS SHALL BE PLACED OUTSIDE THE LIMITS OF CONSTRUCTION AS PER THE PLANS (I.E. ALONG ROADWAYS, STREAM BANKS, CRITICAL AREAS, ETC.).
2. ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES SHALL BE PERIODICALLY MAINTAINED AS PER THE RESPECTIVE PROGRAMS FOR TEMPORARY CONTROL.
3. IF WORK PROGRESS IS TO BE INTERRUPTED AT ANY TIME, REFERENCE EROSION AND SEDIMENTATION PROGRAMS FOR TEMPORARY CONTROL.
4. TEMPORARY STRAW BALES AND SANDBAGS ALONG AND AT THE ENDS OF ROADWAYS MAY ALSO BE REMOVED AFTER FINAL SOIL STABILIZATION HAS BEEN ACHIEVED AND APPROVED.
5. STRAW BALES LOCATED AT DRAINAGE OUTLETS MUST REMAIN UNTIL SUCH TIME THAT A DESIRABLE STAND OF GRASS OR COVER HAS BEEN ESTABLISHED AND THE PROJECT RECEIVES A FAVORABLE APPROVAL FOR FINAL ACCEPTANCE FROM THE ENGINEER.

SOIL STABILIZATION PROGRAM

1. DENUDED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON.
2. ALL DISTURBED SLOPES, EITHER NEWLY CREATED OR EXPOSED PRIOR TO OCTOBER 15, SHALL BE SEEDED OR PROTECTED BY THAT DATE, FOR ANY WORK COMPLETED DURING EACH CONSTRUCTION YEAR.
3. THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH R.I. STD SPECIFICATION M 18.
4. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
5. THE DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING PERMANENT SEEDING MIXTURES:
 - A. MOWED AREA (ALL FLATS OR SLOPES LESS THAN 3:1)

<u>MIXTURE:</u>	<u>% BY WEIGHT:</u>
RED FESCUE	75
KENTUCKY BLUEGRASS	15
COLONIAL BENTGRASS	5
PERENNIAL RYEGRASS	5
<u>TOTAL:</u>	<u>100 lbs/Ac.</u>
 - B. UNMOWED AREA OR INFREQUENTLY MOWED (ALL SLOPES GREATER THAN 3:1)

<u>MIXTURE:</u>	<u>% BY WEIGHT:</u>
RED FESCUE	75
COLONIAL BENTGRASS	5
PERENNIAL RYEGRASS	5
BIRDFOOT TREFOIL	15
<u>TOTAL:</u>	<u>100 lbs/Ac.</u>
6. TEMPORARY TREATMENTS SHALL CONSIST OF A STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS) THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
7. STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 3,000 - 4,000 lbs/Ac.
8. ALL HAYBALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. IF NEEDED, TEMPORARY SEEDING CAN HELP MINIMIZE THE EROSION. A TEMPORARY SEEDING GUIDE MUST BE INCLUDED AS A REFERENCE. THE FOLLOWING SPECIES ARE RECOMMENDED:

<u>MIXTURE:</u>	<u>lbs./1,000 S.F.</u>
ANNUAL RYEGRASS	1.0 - 1.5
PERENNIAL RYEGRASS	1.0 - 1.5
SUDAN GRASS	0.7 - 1.0
MILLET	0.7 - 1.0
WINTER RYE	3.0
OATS	0.5 - 5.0
WEeping COVER GRASS	0.5 - 5.0

9. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE.
10. ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH THE R.I.D.P.W. STD SPECIFICATIONS SECTION 202.
11. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 15 DAYS OF FINAL GRADING.
12. STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS, THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 30% AND STOCKPILES SHALL ALSO BE SEEDED AND/OR STABILIZED.
13. ON BOTH STEEP AND LONG SLOPES CONSIDERATION SHALL BE GIVEN TO "CRIMPING" OR "TRACKING" TO TACK DOWN MULCH APPLICATIONS.
14. REFERENCE THE SEDIMENTATION CONTROL PROGRAM AND ORDER OF PROCEDURE FOR PROPER COORDINATION
15. THE DRAINAGE SYSTEM SHALL RECEIVE ONE FINAL CLEANING PRIOR TO ACCEPTANCE TO THE OVERALL PROJECT BY THE OWNER. SEDIMENTS SHALL BE DISPOSED OF IN A PROPER MANNER.

ZONING CRITERIA

ZONING DISTRICT	R-6	EXISTING:	PROPOSED:
MIN. LOT AREA	6,000 S.F.	13,668 S.F.	REMAINS
MIN. LOT WIDTH	100'	102'	REMAINS
MIN. LOT FRONTAGE	60'	102'	REMAINS
MIN. FRONT BUILDING SETBACK	**	17.8'	REMAINS
MIN. SIDE BUILDING SETBACK	10'	5'	REMAINS
MIN. REAR BUILDING SETBACK	20'	36'	REMAINS
MAX. BUILDING COVERAGE	25%	40.4%	REMAINS
MAX. BUILDING HEIGHT	35'		REMAINS

** FRONT YARD SETBACK IS THE AVERAGE SETBACK OF THE BLOCK OR 20', WHICHEVER IS LESS. SEE BRISTOL ZONING ORDINANCE ARTICLE IV, SECTION 28-111 TABLE B

GRAPHIC SCALE



(IN FEET)
1 inch = 10 ft.

Thomas J. Principe, III



REGISTERED
PROFESSIONAL ENGINEER



PRINCIPE COMPANY, INC.
ENGINEERING DIVISION

27 SAKONNET RIDGE DRIVE
TIVERTON, RI 02878
401.816.5385

ESTABLISHED IN 1981 www.PrincipeCompany.com

[illegible]

DEVELOPMENT PLAN REVIEW
151 STATE STREET
PLAT 18 LOT 42
in
BRISTOL, RHODE ISLAND

EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=10'		SHEET NO: 6 OF 9	
DRAWN BY: AMI		DESIGN BY: AMI	CHECKED BY: TJP
DATE: 04/19/24		PROJECT NO.: LD-2024-5	



1. THE NORMAL ACCEPTABLE SEASONABLE SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.

2. TOP SOIL FOR PERMANENT OR LONG TERM TEMPORARY SEEDING SHOULD HAVE A SANDY LOAM TEXTURE, RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS. TOP SOIL SHALL CONFORM WITH RHODE ISLAND SPECIFICATIONS M18.01.

3. THE DESIGN SEED MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEEDDED SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT	SEEDING DATE
CREEPING RED FESCUE	70	
ASTORIA BENTGRASS	5	APRIL 1 - JUNE 15
BIRDFOOT TREFOIL	15	AUG. 15 - OCT. 15
PERENNIAL RYE GRASS	10	

APPLICATION RATE - 100 LBS PER ACRE

SEED MIX SHALL BE INOCULATED WITHIN 24 - HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULATION FOR EACH SEED VARIETY. ALTERNATE SEED TYPES DUE TO SITE SPECIFIC CONDITIONS AND SOILS ARE ACCEPTABLE WITH THE ENGINEER'S APPROVAL.

4. IN TOPSOIL SEEDING AREAS, THE CONTRACTOR WILL LIME AND FERTILIZE AS REQUIRED TO COMPLIMENT OR UPGRADE SOIL CONDITIONS.

5. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY PERMANENT VEGETATIVE COVER AREAS THAT DO NOT DEVELOP OR WHICH ERODE WITHIN A ONE (1) YEAR PERIOD.

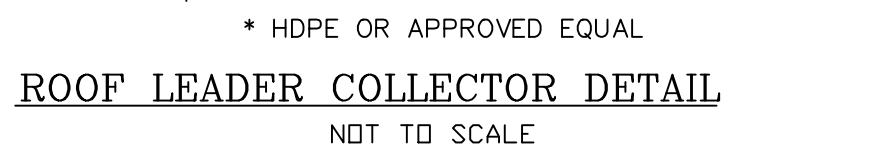
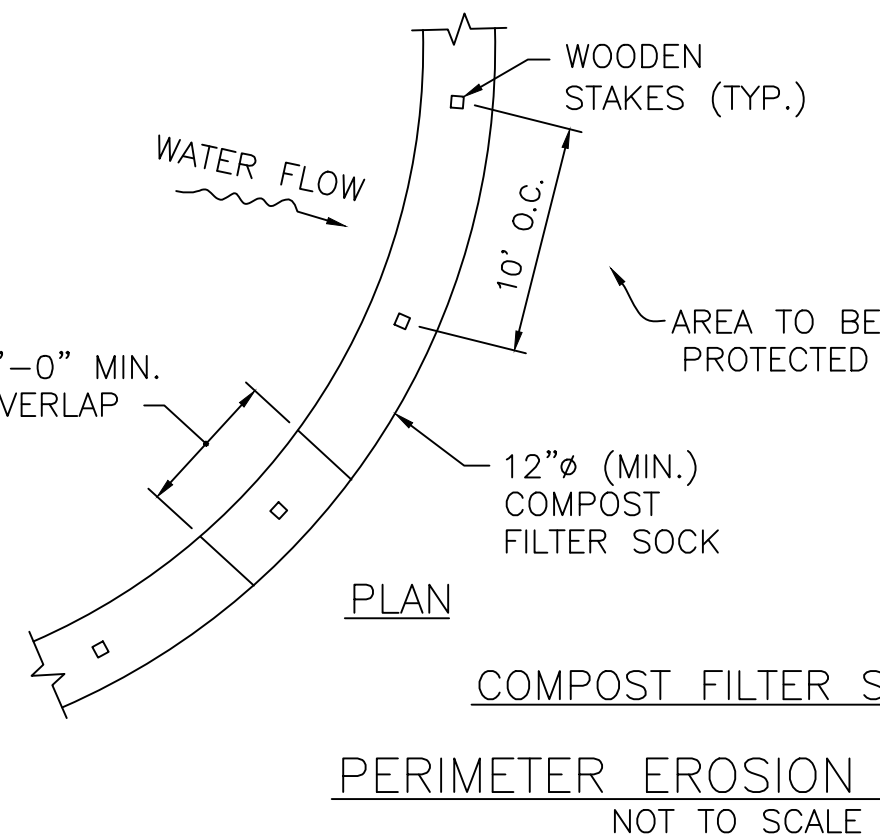
1. RIP RAP SPLASH PADS SHALL BE INSTALLED AT THE OUTLETS FOR ALL CULVERTS DISCHARGING INTO A WATERWAY.
2. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL ENTERING THE WETLANDS.
3. ALL DISTURBED AREAS SUBJECT TO EROSION TENDENCIES WHETHER THEY BE NEWLY FILLED OR EXCAVATED SHALL BE SEEDED AND PROTECTED WITH A FIBER MULCH.
4. DURING CONSTRUCTION, THE CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING STORMS AND PERIODS OF RAINFALL.
5. SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROMPTLY AFTER EACH RAINFALL.
6. CARE SHOULD BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (BOTH TEMPORARY AND PERMANENT) OR PROPOSED WATERCOURSES OR THOSE AREAS SUBJECTED TO STORM WATER FLOW.
7. ADDITIONAL STRAW BALES OF COMPOST FILTER SOCK SHALL BE LOCATED AS CONDITIONS WARRANT.
8. ALL SEDIMENTS SHALL BE REMOVED FROM THE DRAINAGE AND INFILTRATION FACILITIES AS SCHEDULED FOR EACH FACILITY (SEE INFILTRATION BASIN MAINTENANCE, THIS SHEET).
9. REFERENCE THE "RI, SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE U.S. DEPT. OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1989, AS A GUIDE.



The diagram illustrates a cross-section of a pavement system designed for infiltration. It consists of several distinct layers, each with specific material and thickness requirements:

- Pervious pavement:** The top layer, 4-6" (10 - 15 cm) of porous asphalt.
- Optional Choker Course:** 4"-8" (10 - 20 cm) thickness of ¾" crushed stone.
- Filter Course:** 8" - 12" (20 - 30 cm) minimum thickness of subbase (i.e., AASHTO M-6 or ASTM C-33).
- Filter Blanket:** Intermediate setting bed: 3" (8 cm) thickness of ¾" (1 cm) pea gravel.
- Reservoir Course:** 4" (10 cm) minimum thickness of ¾" (2 cm) crushed stone for frost protection. 4-6" (10-15 cm) diameter perforated subdrains with 2" cover.
- Optional Liner:** For land uses where infiltration is undesirable (e.g., hazardous materials handling, sole-source aquifer protection).
- Native materials:** The bottom layer of the system.

Arrows indicate the flow of water from the pervious pavement through the various layers into the subdrains or directly into the native materials below the liner.



- A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority.
- Areas where infiltrating permeable pavement practices are proposed shall not serve as a temporary sediment control device during site construction phase.
- Permeable paving surfaces require regular vacuum sweeping or hosing (minimum every three months or as recommended by manufacturer) to keep the surface from clogging. Maintenance frequency needs may be more or less depending on the traffic volume at the site.
- Minimize use of sand and salt in winter months.
- Do not repave or res seal with impermeable materials.
- The Erosion and Sediment Control (ESC) Plan shall specify at a minimum:
 - how sediment will be prevented from entering the pavement area;
 - a construction sequence;
 - drainage management; and
 - vegetative stabilization.



1. ALL MATERIAL TO MEET REQUIREMENTS OF SECTION 206 OF RI STANDARD SPECIFICATIONS.
2. COMPOST MATERIAL MUST BE ACCEPTED BY THE ENGINEER PRIOR TO PLACEMENT.

1. RAMP RUNS SHALL HAVE A RUNNING SLOPE NOT TO EXCEED 1:12
2. CROSS SLOPE OF RAMP RUNS AND LANDINGS NOT EXCEED 1:48.
3. THE CLEAR WIDTH OF A RAMP RUN SHALL BE 36 INCHES MINIMUM.
4. THE RISE FOR ANY RAMP SHALL BE A MAXIMUM OF 30 INCHES.
5. RAMPS SHALL HAVE LANDING AT THE BOTTOM AND TOP OF EACH RUN.
6. CLEAR WIDTH OF LANDING SHALL BE AT LEAST AS WIDE AS THE WIDEST RAMP RUN LEADING TOE THE LANDING.
7. LANDING LENGTH SHALL BE 60 INCHES MINIMUM CLEAR.
8. RAMPS THAT CHANGE DIRECTION AT LANDING SHALL HAVE A 60 INCH MINIMUM BY 60 INCHES MINIMUM LANDING.



1. ALL REQUIRED SITE IMPROVEMENTS SHALL BE INSPECTED BY THE TOWN ENGINEER TO ENSURE SATISFACTORY COMPLETION. IN NO CASE SHALL THE INSTALLATION OF ANY IMPROVEMENTS BE STARTED UNTIL PRIOR NOTIFICATION IS GIVEN TO THE TOWN ENGINEER. AT LEAST A 48-HOUR NOTICE SHALL BE GIVEN TO THE TOWN ENGINEER PRIOR TO ANY CHARGE OF CONSTRUCTION. A FINAL INSPECTION OF ALL SITE IMPROVEMENTS, UTILITIES AND GRADING WILL BE MADE TO DETERMINE WHETHER THE WORK IS SATISFACTORY AND IN SUBSTANTIAL AGREEMENT WITH THE APPROVED FINAL CONSTRUCTION DRAWING AND THE TOWN SPECIFICATIONS.
2. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES AS SHOWN OR NOT SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 48-HOURS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 48 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
4. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY, BUT NOT LIMITED TO, THE STATE OF RHODE ISLAND, THE FEDERAL GOVERNMENT, THE TOWN OF WARREN AND ALL INDIVIDUAL UTILITY COMPANIES PRIOR TO COMMENCING ANY WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS.
7. ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATTER WHICH COULD POLLUTE ANY DOWN STREAM WATERCOURSE.
9. FILL MATERIAL SHALL BE COMPACTED IN ONE FOOT (MAXIMUM) LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR TEST).



Thomas J. Principe, III
 State of Rhode Island
 No. 1052
 REGISTERED
 PROFESSIONAL ENGINEER

PRINCIPE
COMPANY

PRINCIPE COMPANY, INC.
ENGINEERING DIVISION
 27 SAKONNET RIDGE DRIVE
 TIVERTON, RI 02878
 401-816-5385
 ESTABLISHED IN 1961 www.PrincipeCompany.com

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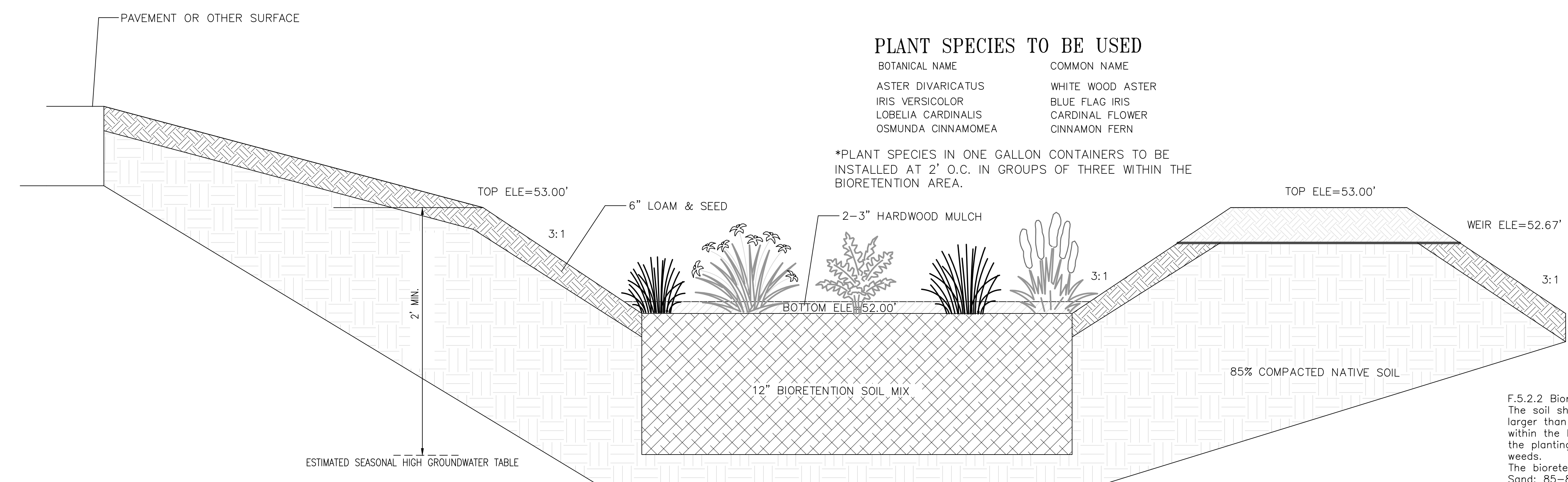
DEVELOPMENT PLAN REVIEW
151 STATE STREET
PLAT 18 LOT 42
in
BRISTOL, RHODE ISLAND

CONSTRUCTION DETAILS

SCALE: AS NOTED		SHEET NO: 8 OF 9	
DRAWN BY: AMI	DESIGN BY: AMI	CHECKED BY: TJP	
DATE: 04/19/24		PROJECT NO.: LD-2024-5	

☐ CONCEPT
☐ CUSTOMER APPROVAL
☒ PERMITTING
☐ CONSTRUCTION
☐ AS-BUILT
☐ OTHER: _____
 ONLY PLANS ISSUED FOR CONSTRUCTION
 SHALL BE USED FOR CONSTRUCTION

C:\Users\admin\Principle Engineering\Dropbox\Land Development\2024\LD-2024-5-151 State Street\Oliver School\Bristol\Lou Cabral\Current Working Drawings and PDFs\LD-2024-5-151 STATE STREET_BRISTOL_DPR_REV 1 - Copy.dwg, DWG To PDF.pc3



PLANT SPECIES TO BE USED

BOTANICAL NAME	COMMON NAME
ASTER DIVARICATUS	WHITE WOOD ASTER
IRIS VERSICOLOR	BLUE FLAG IRIS
LOBELIA CARDINALIS	CARDINAL FLOWER
OSMUNDA CINNAMOMEA	CINNAMON FERN

*PLANT SPECIES IN ONE GALLON CONTAINERS TO BE INSTALLED AT 2' O.C. IN GROUPS OF THREE WITHIN THE BIORETENTION AREA.

BMP REQUIRED MAINTENANCE:

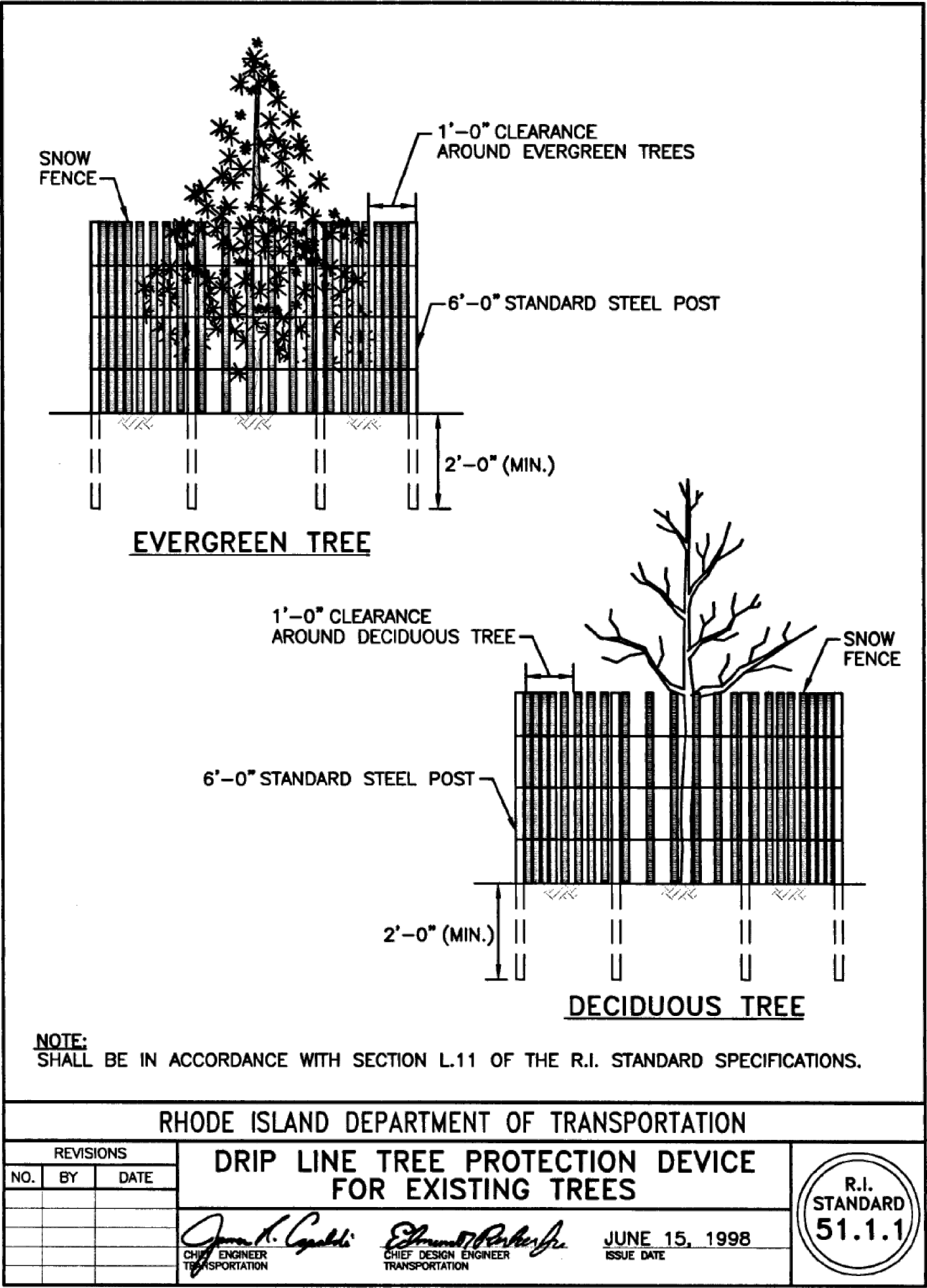
- MONTHLY:**
- INSPECT AND REMOVE ANY TRASH
 - REMOVE ANY INVASIVE SPECIES PLANTS
- ANNUALLY:**
- MULCH- SPRING, AS NEEDED
 - REPLACE ANY DEAD VEGETATION-SPRING
 - REMOVE DEAD VEGETATION-FALL OR SPRING
 - PRUNE-SPRING
- AS NEEDED:**
- REPLACE SOIL MEDIA AND PLANTS WHEN PONDING DOES NOT SUBSIDE WITHIN 72 HRS (CAREFUL MAINTENANCE SHOULD PROLONG THIS REQUIREMENT)
- *ALL PLANT MATERIAL SHALL BE WATERED AND MAINTAINED BY THE OWNER TO ASSURE THAT SUITABLE GROWTH HAS BEEN ESTABLISHED.

F.5.2.3 Mulch Layer Specifications.
A finely shredded, well-aged organic hardwood mulch is the preferred accepted mulch; a finely shredded, well-aged organic dark pine mulch may be accepted on a case-by case basis. Bark dust mulches and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6-12 months) for acceptance. Mix approximately 1/2 the specified mulch layer into the planting soil to a depth of approximately 4 inches to help foster a highly organic surface layer.

F.5.2.2 Bioretention Soil
The soil should be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances should be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The bioretention soil should be free of noxious weeds.
The bioretention system shall utilize planting soil having a composition as follows:
Sand: 85-88%
Soil fines: 8 to 12% (no more than 2% clay)
Organic Matter*: 3 to 5%
*Note: For bioretention applications with a soil depth of less than 4 feet, add 20% (by volume) of well aged (3 months), well aerated, leaf compost (or approved equivalent) to the above planting soil mixture. Where soil fines content is less than 12%, add a corresponding % of leaf compost.
A textural analysis is required to ensure the bioretention soil meets the specification listed above. The bioretention soil should also be tested for the following criteria:
pH range 5.2 - 7.0
magnesium not to exceed 32 ppm
phosphorus P205 not to exceed 69 ppm
potassium K20 not to exceed 78 ppm
soluble salts not to exceed 500 ppm

RAIN GARDEN/BIORETENTION AREA DETAIL
NOT TO SCALE

- NOTES:
- BIORETENTION AREA TO BE PROTECTED FROM CONSTRUCTION TO PREVENT COMPACTION AND SURROUNDED BY COMPOST FILTER SOCK UNTIL UPSLOPE AREAS ARE STABILIZED.
 - BIORETENTION DESIGN AND INSTALLATION SHALL CONFORM TO THE STATE OF RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL (LATEST REVISION).



Thomas J. Principe, III
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No.	DATE	DRWN	CHKD
1	08/7/24	AMI	TJP
2	08/22/24	KAB	TJP

DEVELOPMENT PLAN REVIEW
151 STATE STREET
PLAT 18 LOT 42
in
BRISTOL, RHODE ISLAND

CONSTRUCTION DETAILS

SCALE: AS NOTED	SHEET NO: 9 OF 9	
DRAWN BY: AMI	DESIGN BY: AMI	CHECKED BY: TJP
DATE: 04/19/24	PROJECT NO.: LD-2024-5	

- DRAWING ISSUE:
- ☐ CONCEPT
 - ☐ CUSTOMER APPROVAL
 - ☒ PERMITTING
 - ☐ CONSTRUCTION
 - ☐ AS-BUILT
 - ☐ OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

To: Diane Williamson
From: State Street 151 LLC
Date: August 26, 2024
Re: Affordable Unit Proposal

Under the new RI State Law, effective January 1, 2024, adaptive reuse projects for residential use, such as State Street 151 LLC's (Oliver School) project, are required to incorporate a 20% affordability component into the project scope. In return for zoning and development flexibility, Developers are encouraged to activate and create housing units from otherwise obsolete buildings to meet the State's housing crises.

In the case of the Oliver School building, for every five (5) residential units constructed, one (1) residential unit needs to be designated and meet the requirements established in the new law. The intent is to have a portion of the market rate unit revenues fill the revenue gap and subsidize the affordable component of the project. State Street 151 LLC proposes constructing eleven (11) units in all, two (2) of which will be designated low to moderate income and meet the 20% affordability component, as required.

A discussion point has arisen because the project exceeds the unit percentage threshold by 2/10th of a percent (2.2) or one (1) unit and is therefore may be subject to a third affordable unit, even though there are no other market rate units in the project to generate the additional revenue needed to subsidize a third affordable unit.

The Oliver School Building project is a relatively small residential conversion of a historic building with constrained space and challenging conditions. It does not have the financial flexibility to absorb a third affordable unit. Doing so would place a great deal of financial strain on the eight (8) market rate units to support three (3) affordable units in meeting all the obligations the project will have to carry. In essence, the third affordable unit would create a project affordability component of 27%, far more than the new law requires.

In lieu of a third, stand alone, affordable unit, State Street LLC proposes constructing a two-bedroom American with Disabilities Act compliant unit to be applied as one of the two (2) affordable units required. Plans submitted show van parking space, ramp and lift accessibility, with interior design of the unit meeting ADA requirements.

State Street 151 LLC would appreciate serious consideration of this unit affordability proposal as it achieves many project goals, housing and community needs and, hopefully, provides long-term financial sustainability.

Bioretention Operation, Maintenance, and Management Inspection Checklist

Project:

Location:

Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Annual, After Major Storms)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Annual, After Major Storms)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 10 inches		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Semi-annually)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual, after Major Storms)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual, After Major Storms)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

☐ Sale☐ Refinance

REQUEST FOR CERTIFICATE
SECTION 44-7-11
GENERAL LAWS OF RHODE ISLAND

Item B1.

Date: 8/26/2024 Requested by: COMMUNITY DEVELOPMENT
Address: _____

Taxpayer Name: CABRAL, LOUIS A Account #: 33-0030-00
Address: 151 STATE ST Prev. Acct # _____
Plat: 018 Lot: 0042 Unit: 000 MV Acct # _____

BALANCE OUTSTANDING

Year	Original Tax	Exemption (if any)	Tax	Signature date Interest & Fees	Per Diem	Total Due (taxes, interest & fees)
2024	\$ 14,414.26		\$10,810.68			10,810.68
2023						PAID IN FULL

Motor Vehicle/Excise Tax

2021						
2020						

Supplemental billing may occur after December 31st assessment date (ex. Construction or subdivision)

Motor Vehicle billed 1 year in arrears subject to receive a bill next year

Sewer use fee of N/A are included in principal above. Current unit rate : N/A

Sewer Assessment; Year assessed : N/A Remaining balance: N/A

**** Sewer Assessment may be paid annually at \$302.98 for 20 years ****

Prior year(s) deferred taxes (RIGL 44-3-20.2) are not included on this form. Refer to land evidence records.

Contact the Bristol County Water Authority (401) 245-2022 for water use and/or installation.

Tax Sale Information:

Tax sales are held annually. Any property with previous year's taxes due at that time is subject to effect from said action

Other Information:

Interest figures are valid as of the signature date below. The per diem rate is entered above.

PLEASE CALL TO GET CURRENT INTEREST & PENALTIES PRIOR TO CLOSING

Assessment information--An owner of property assessed December 31 would receive a bill in July representing taxes for the calendar year. The bill would be payable in installments in accordance with Rhode Island General Laws and the Town's Resolution to Levy.

THIS IS TO CERTIFY THAT THE ABOVE IS TRUE AND CORRECT, SAID CERTIFICATION IS GIVEN IN ACCORDANCE WITH SECTION 44-7-11 OF THE GENERAL LAWS OF RHODE ISLAND, 1956, AS OF THIS 26 DAY OF August 2024

Please Note: the information presented above is subject to provisions ro RIGL 44-5-13.

Fee \$ 25.00

Town of Bristol
10 Court St
Bristol, RI 02809



Prepared By:

Louisa Hubbard

Approved By:

[Signature]

Water Availability Request	
Applicant Information	Date: <u>8/26/2024</u> Property Owner Signature: <u>Louis A Cabral</u> Owner (please print): <u>LOUIS A CABRAL</u> Corporate Title (if not an individual): <u>STATE STREET 151 LLC</u> Address: <u>304 CHURCH POND DR. TIVERTON RI 02878</u> Phone: <u>774-578-5878</u> Email: <u>lcabral@cabralgrp.com</u> Contractor: _____ Email: _____
	Preliminary request is hereby made for a confirmation that public water is available from BCWA to service this property: Town: <u>BRISTOL</u> Location: <u>151 STATE ST.</u> Address/Plot and Lot: <u>A.P. 18 LOT 42</u> ☒ Residential* ☐ Commercial* Building Footprint: <u>5,070 s/f</u> Occupancy: <u>11 RESI UNITS</u> Estimated Water Use: _____ *Site Plan Must Be Attached to All Applications
	Action by the Bristol County Water Authority ☒ Water Available ☐ Water Not Available Approximate Static Pressure: <u>54 psi</u> Conditions: _____ If connection to BCWA is desired, you must: ☐ Submit Application for Main Extension Form and Engineering Plans for Review ☒ Submit Application for New Water Service Installation and Fee
	Date of Review: <u>8/27/24</u> BCWA Engineer: <u>Colin O'Hara</u>

RESPONSES TO TOWN OF BRISTOL COMMENTS
151 STATE STREET; BRISTOL, RI
AUGUST 26, 2024

COMMENT #1: The civil engineering plans need to be signed by Thomas Principe as the designing engineer.

RESPONSE #1: Plans have been signed.

COMMENT #2: The proposed storm water management infrastructure needs to be designed by a registered professional engineer - the plans reference the landscape plan for that detail

RESPONSE #2: Stormwater has been designed and stamped by a RPE.

COMMENT #3: The dimension of the driveway at the curb cut needs to be indicated.

RESPONSE #3: Dimension has been added.

COMMENT #4: The proposed grading plan needs to include the grading for the rain garden.

RESPONSE #4: Proposed grading for the site, including the rain garden, has been shown.

COMMENT #5: There is an existing drain on the plan on the west side of the front of the building. What is the status of that drain?

RESPONSE #5: It is unknown where this drain discharges, but it is proposed to be removed & disposed of/disconnected.

COMMENT #6: There is a note on Sheet 4 Site Layout Plan that the bluestone walkways have a detail but no detail is shown.

RESPONSE #6: A detail has been added.

COMMENT #7: The Landscape Plan needs to be prepared and signed and stamped by a Registered Landscape Architect. Any civil plans that reference the Sunflower Design landscape plan needs to be amended to reflect the Landscape Architect's Plan.

RESPONSE #7: The landscape plan has been designed and stamped by Principe's RLA. References to Sunflower Design have been removed.

COMMENT #8: There needs to be a written signed statement indicating the variances needed. There also needs to be a written signed statement if no waivers or modifications are requested from the subdivision and development review regulations.

RESPONSE #8: TO BE PROVIDED BY APPLICANT'S ATTORNEY.

COMMENT #9: There were verbal reports at the TRC meeting; however, we require a written statement from the Bristol County Water Authority indicating that the water service is available to serve the proposed re-development and a written statement from the Bristol Water Pollution Control facility that the plan has been reviewed and the sewer has the capacity for the re-development.

RESPONSE #9: TO BE PROVIDED BY APPLICANT.

COMMENT #10: Drainage calculations need to be provided by a registered professional engineer including an Operations and Maintenance Plan manual for the system.

RESPONSE #10: Drainage calculations and an O&M have been provided and stamped by a RPE.

COMMENT #11: Tax Certificate that all taxes are current.

RESPONSE #11: TO BE PROVIDED BY APPLICANT.

COMMENT #12: Draft deed of easement for the transformer location and draft affordable housing deed restriction (we can provide a copy of the affordable housing deed restriction) and it is noted that a monitoring agreement will also be needed with the East Bay CDC or other approved monitoring agent.

RESPONSE #12: TO BE PROVIDED BY APPLICANT/APPLICANT'S ATTORNEY.

COMMENT #13: A photometric plan for any proposed outside lighting.

RESPONSE #13: It is Principe's understanding that non-building-mounted lighting is NOT proposed. Therefore, the architect will provide documentation that the proposed lighting will meet the Town's requirements and will be dark-sky compliant. A note has been added to the plan and a waiver from providing a photometric plan at this time is requested.

COMMENT #14: Application Fee for the Preliminary Phase of \$2,750

RESPONSE #14: TO BE PROVIDED BY APPLICANT.

COMMENT #15: Reimbursement of the Public Hearing notice -- we will provide the amount.

RESPONSE #15: TO BE PROVIDED BY APPLICANT.

COMMENT #16: Reimbursement of the Peer Engineering Review as previously noted.

RESPONSE #16: TO BE PROVIDED BY APPLICANT.



DRAINAGE SUMMARY
August 26, 2024

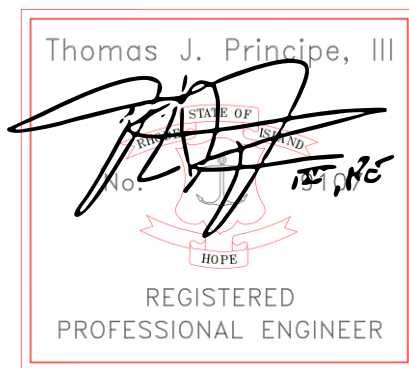
**AP 18, Lot 42
151 State Street
Bristol, RI 02809**

Prepared For:

Louis Cabral
304 Church Pond Road
Tiverton, RI 02878

Prepared By:

Principe Engineering, Inc.
27 Sakonnet Ridge Drive
Tiverton, Rhode Island



This stormwater management analysis and accompanying HydroCAD design calculations were prepared in support of the redevelopment of 151 State Street, Bristol, Rhode Island.

The existing site contains an existing historic school building (Oliver School) with paved access, parking, and associated utilities. The majority of the existing site is paved (approximately 93%), with a small portion of lawn to the rear. The mapped soil beneath the site is NP (Newport urban land complex - hydrologic group C designation) according to the USDA Soil Survey. Currently, most of the site stormwater flows west and south towards State Street, although a small portion flows to the rear of the lot. Neither portion of the property contains any stormwater controls or treatment.

The proposed development consists of retaining the existing building and re-organizing the parking to reduce the number of spaces that front on State Street, reducing the overall amount of pavement on the site, and minimal re-grading. There is an existing curb line along the western property line that is proposed to be retained, as this curbing assists in directing flows towards State Street rather than towards the abutter. The parking that is proposed to be located in the rear where the existing lawn area is present will be permeable pavement. The roof currently discharges to the existing pavement areas via downspouts. The majority of these downspouts will continue to discharge to the pavement areas, with the exception being two of the front downspouts discharging into a rain garden/bioretention area in the southwest corner where pavement will be removed and the area re-graded. Another downspout on the east side of the building will need to be redirected due to a proposed ADA ramp, and will be directed into a landscaped area in the side yard.

The stormwater design calculations focus on demonstrating the proposed site adequately handles the intensity from the 1, 10, 25, and 100-year storm events while providing some water quality treatment and recharge that is not currently provided. As a result, the post-development flow rates to the design points referenced above have been reduced below the pre-development flows.

The site has been divided into two subwatershed for the pre-development conditions (rear and road), and three sub-watersheds for the post development conditions (road, post, and uncontrolled).

Below is a summary of the HydroCAD analysis comparing pre-development and post-development flow rates for the project at the project design point:

	<u>151 STATE STREET</u>			
	1-YEAR	10-YEAR	25-YEAR	100-YEAR
PRE-STATE	0.72 cfs	1.33 cfs	1.66 cfs	2.37 cfs
POST STATE	0.58cfs	1.28 cfs	1.61 cfs	2.33 cfs
PRE-REAR	0.05 cfs	0.14 cfs	0.18 cfs	0.28 cfs
POST-REAR	0.01 cfs	0.01 cfs	0.02 cfs	0.02 cfs

While incorporating the measures described above and taking advantage of the natural slopes and contours of the site, the project is able to achieve a decrease in stormwater runoff rate and volume toward the analyzed design points for all storm events. Thus, typical post-development impacts to downstream properties and water resource areas have been effectively mitigated.

APPENDICES

- A. HydroCAD 1.2” Water Quality Volume Calculations
- B. HydroCAD 1, 10, 25, & 100-year Storm Calculations
- C. Watershed Maps



**LONG TERM OPERATION AND
MAINTENANCE PLAN
August 26, 2024**

**OLIVER SCHOOL
AP 18, LOT 42
151 STATE STREET
BRISTOL, RI**

Prepared For:

Louis Cabral
304 Church Pond Road
Tiverton, RI 02878

Prepared By:

Principe Engineering, Inc.
27 Sakonnet Ridge Drive
Tiverton, Rhode Island

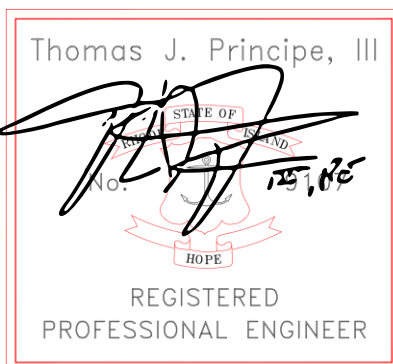


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Snow Disposal	Page 3
Rain Garden/Bioretenention Basin	Page 4
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In order to minimize the stormwater management system deterioration, the owner shall adhere to the following Operation and Maintenance Plan as well as any additional requirements pertaining to inspection and maintenance measures for this site provided in Appendices E and G of the Rhode Island Stormwater Design and Installation Standards Manual.

Pavement Sweeping

Pavement sweeping shall be conducted on a quarterly basis. Some debris collected from parking lots may be regulated as a hazardous waste. For these cases, debris must be disposed of in accordance with appropriate practice and applicable regulatory standards. Appendix A of the *Rules and Regulations for Composting Facilities and Solid Waste Management Facilities*, which is entitled "Management of Street Sweepings in Rhode Island," shall be reviewed. For further information, contact the DEM Office of Waste Management.

De-icing and Salt Storage

De-icing and sanding operations are often necessary for safety during winter storms; however, the materials used create water quality problems. Use deicing chemicals and sand judiciously. The information in Table G-1 from Appendix G of the RISDISM shall be utilized when selecting a deicer.

Permeable Paving

A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority to ensure the following: Areas where infiltrating permeable pavement practices shall never serve as a sediment control device during site construction phase. Great care must be taken to prevent the permeable pavement area from compaction. Permeable paving surfaces require regular vacuum sweeping or hosing (minimum every three months or as recommended by manufacturer) to keep the surface from clogging. Maintenance frequency needs may be more or less depending on the traffic volume at the site. The use of sand and salt shall be minimized during the winter months. Permeable pavement areas shall not be repaved or resealed with impermeable materials. The permeable pavement area shall be inspected annually for deterioration or spalling.

Snow Disposal

Improper snow disposal can be a threat to public health and the environment. Disposal shall consider site selection, site preparation and maintenance, and emergency snow disposal locations and procedures. On this site, due to the limited area, all snow will be required to be removed and disposed of off-site in accordance with state and local regulations. Refer to DEM's Snow Disposal Policy for more details on these topics.

Rain Garden/Bioretention Basin

A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority to ensure the following: Silt/sediment shall be removed from the filter bed when the accumulation exceeds one inch. When the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner at an approved and permitted location.

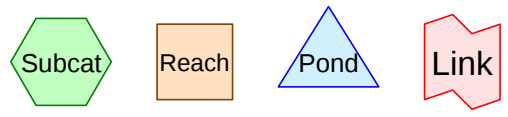
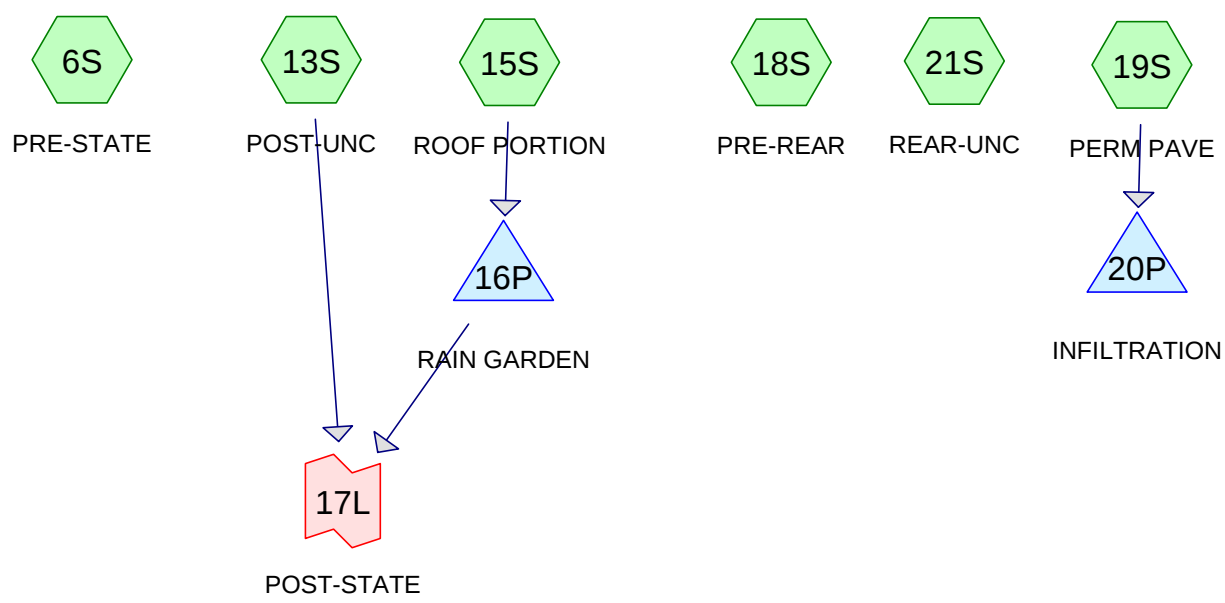
General Maintenance Notes

For unique installations in extremely tight sites or redevelopment/infill projects where pretreatment strips have been downsized, enhanced maintenance shall be required through more frequent inspections, more frequent sediment removal, and enhanced landscape maintenance.

During the six months immediately after construction, filter practices shall be inspected following at least the first two precipitation events of at least 1.0 inch to ensure that the systems are functioning properly. Thereafter, inspections shall be conducted on an annual basis and after storm events of greater than or equal the 1- year, 24-hour Type III precipitation event.

APPENDIX:

- A. Checklists (Bioretention & Permeable Pavement)
- B. Maintenance Agreement
- C. BMP Location Plan



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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type III 24-hr		Default	24.00	1	2.70	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.90	2
3	25-yr	Type III 24-hr		Default	24.00	1	6.10	2
4	100-yr	Type III 24-hr		Default	24.00	1	8.70	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.065	74	>75% Grass cover, Good, HSG C (13S, 15S, 18S)
0.312	98	Paved parking, HSG C (6S, 13S, 18S, 19S, 21S)
0.254	98	Roofs, HSG C (6S, 13S, 15S)
0.631	96	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.631	HSG C	6S, 13S, 15S, 18S, 19S, 21S
0.000	HSG D	
0.000	Other	
0.631		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.065	0.000	0.000	0.065	>75% Grass cover, Good	13S, 15S, 18S
0.000	0.000	0.312	0.000	0.000	0.312	Paved parking	6S, 13S, 18S, 19S, 21S
0.000	0.000	0.254	0.000	0.000	0.254	Roofs	6S, 13S, 15S
0.000	0.000	0.631	0.000	0.000	0.631	TOTAL AREA	

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Type III 24-hr 1-yr Rainfall=2.70"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: PRE-STATE	Runoff Area=12,106 sf 100.00% Impervious Runoff Depth>2.47" Tc=6.0 min CN=98 Runoff=0.72 cfs 0.057 af
Subcatchment 13S: POST-UNC	Runoff Area=10,527 sf 86.29% Impervious Runoff Depth>2.16" Tc=6.0 min CN=95 Runoff=0.58 cfs 0.043 af
Subcatchment 15S: ROOF PORTION	Runoff Area=1,579 sf 77.71% Impervious Runoff Depth>1.97" Tc=6.0 min CN=93 Runoff=0.08 cfs 0.006 af
Subcatchment 18S: PRE-REAR	Runoff Area=1,646 sf 36.63% Impervious Runoff Depth>1.21" Tc=6.0 min CN=83 Runoff=0.05 cfs 0.004 af
Subcatchment 19S: PERM PAVE	Runoff Area=1,520 sf 100.00% Impervious Runoff Depth>2.47" Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af
Subcatchment 21S: REAR-UNC	Runoff Area=126 sf 100.00% Impervious Runoff Depth>2.47" Tc=6.0 min CN=98 Runoff=0.01 cfs 0.001 af
Pond 16P: RAIN GARDEN	Peak Elev=52.71' Storage=89 cf Inflow=0.08 cfs 0.006 af Discarded=0.00 cfs 0.002 af Primary=0.06 cfs 0.002 af Outflow=0.06 cfs 0.004 af
Pond 20P: INFILTRATION	Peak Elev=53.15' Storage=78 cf Inflow=0.09 cfs 0.007 af Outflow=0.02 cfs 0.007 af
Link 17L: POST-STATE	Inflow=0.58 cfs 0.046 af Primary=0.58 cfs 0.046 af

Total Runoff Area = 0.631 ac Runoff Volume = 0.118 af Average Runoff Depth = 2.24"
10.32% Pervious = 0.065 ac 89.68% Impervious = 0.566 ac

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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 6S: PRE-STATE

Runoff = 0.72 cfs @ 12.08 hrs, Volume= 0.057 af, Depth> 2.47"
 Routed to nonexistent node 2P

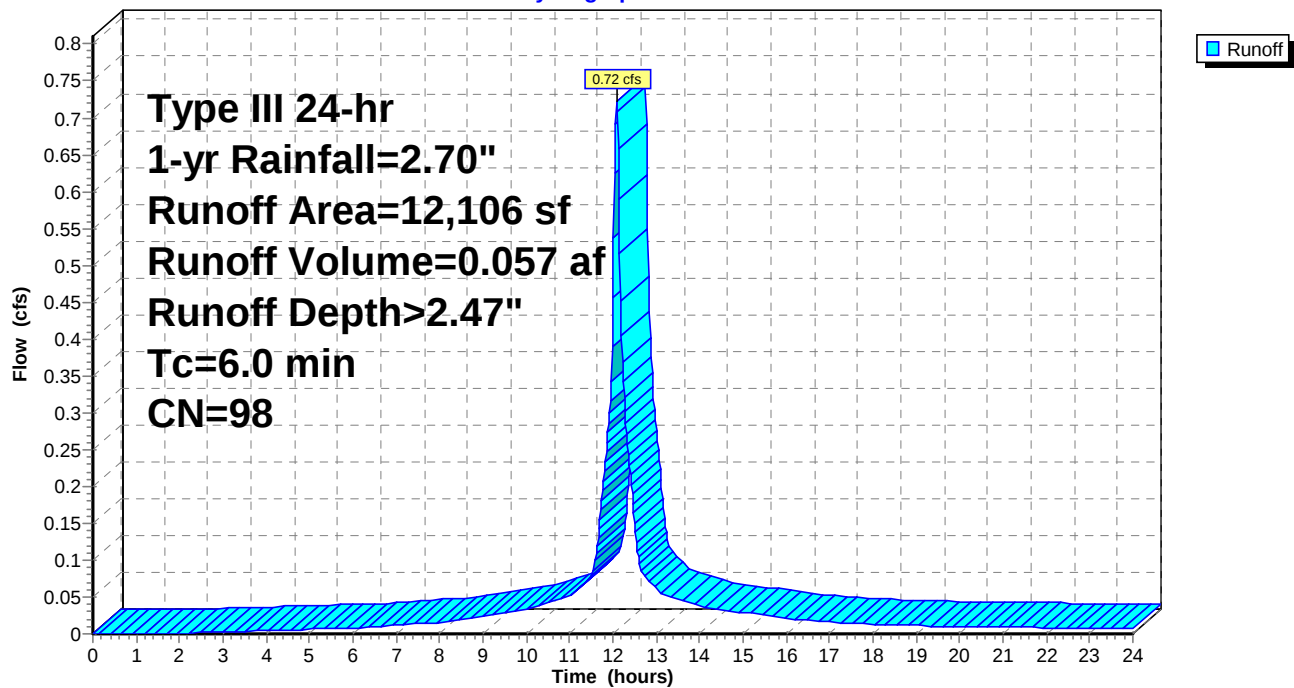
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 1-yr Rainfall=2.70"

Area (sf)	CN	Description
5,533	98	Roofs, HSG C
6,573	98	Paved parking, HSG C
12,106	98	Weighted Average
12,106	98	100.00% Impervious Area

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

Subcatchment 6S: PRE-STATE

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 13S: POST-UNC

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.043 af, Depth> 2.16"
 Routed to Link 17L : POST-STATE

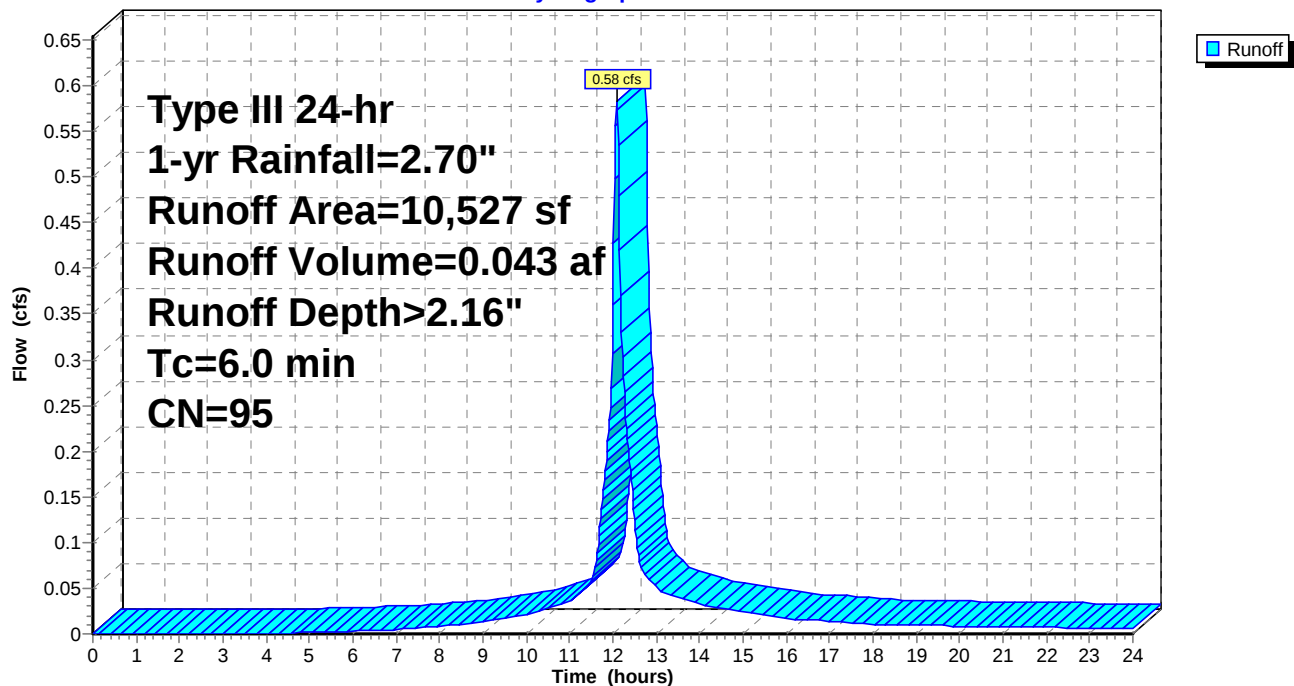
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 1-yr Rainfall=2.70"

Area (sf)	CN	Description
4,306	98	Roofs, HSG C
1,443	74	>75% Grass cover, Good, HSG C
4,778	98	Paved parking, HSG C
10,527	95	Weighted Average
1,443	74	13.71% Pervious Area
9,084	98	86.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 1

Subcatchment 13S: POST-UNC

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 15S: ROOF PORTION

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 1.97"
 Routed to Pond 16P : RAIN GARDEN

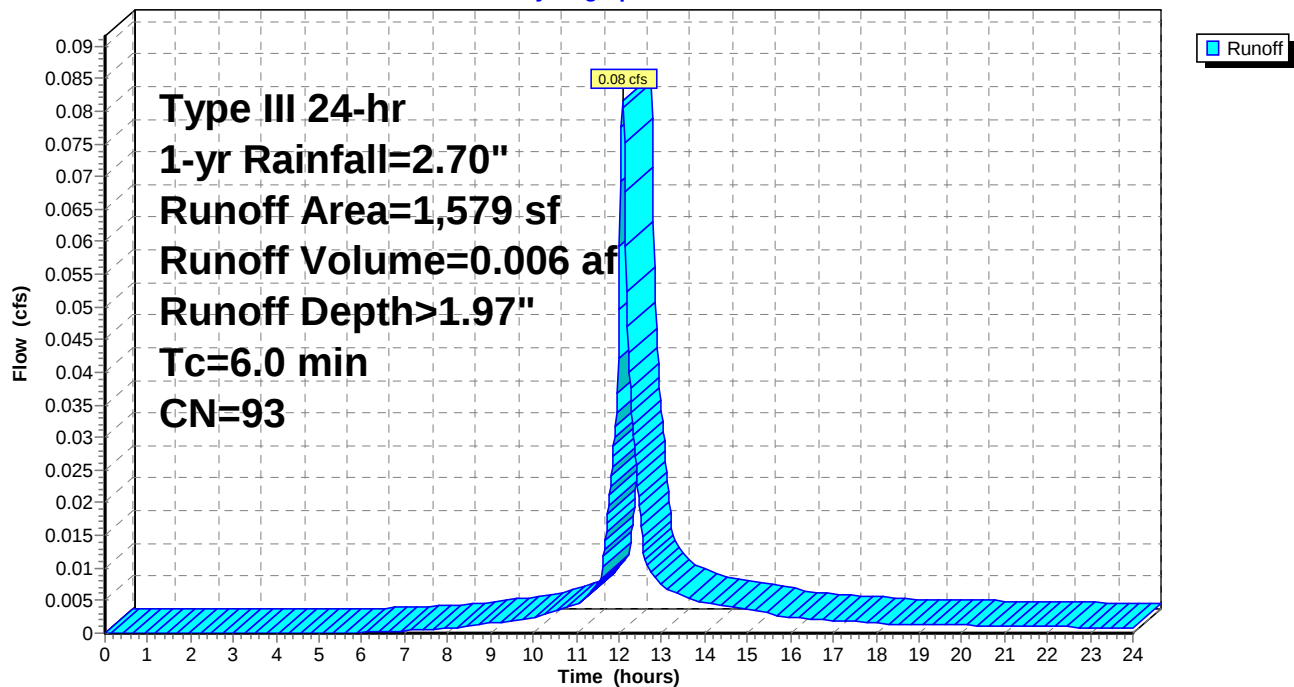
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 1-yr Rainfall=2.70"

Area (sf)	CN	Description
1,227	98	Roofs, HSG C
352	74	>75% Grass cover, Good, HSG C
1,579	93	Weighted Average
352	74	22.29% Pervious Area
1,227	98	77.71% Impervious Area

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

Subcatchment 15S: ROOF PORTION

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.70"

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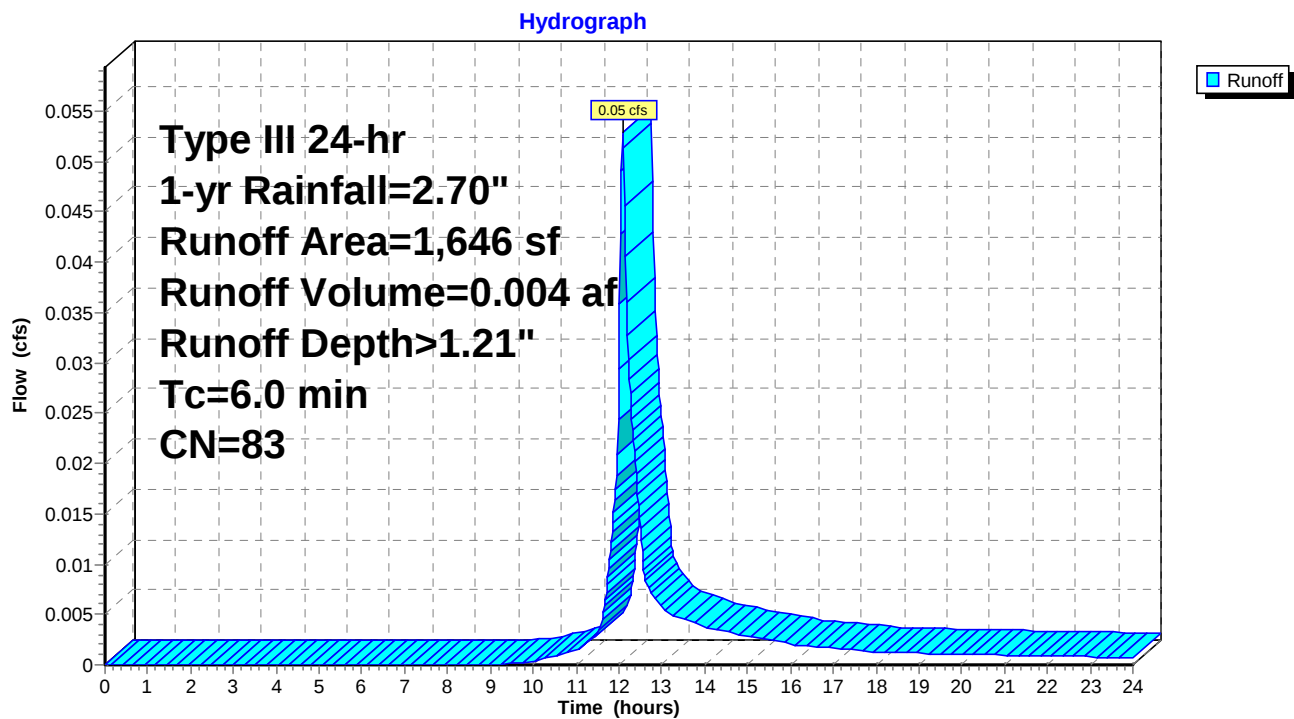
Summary for Subcatchment 18S: PRE-REAR

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-yr Rainfall=2.70"

Area (sf)	CN	Description
1,043	74	>75% Grass cover, Good, HSG C
603	98	Paved parking, HSG C
1,646	83	Weighted Average
1,043	74	63.37% Pervious Area
603	98	36.63% Impervious Area

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

Subcatchment 18S: PRE-REAR

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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 19S: PERM PAVE

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af, Depth> 2.47"
 Routed to Pond 20P : INFILTRATION

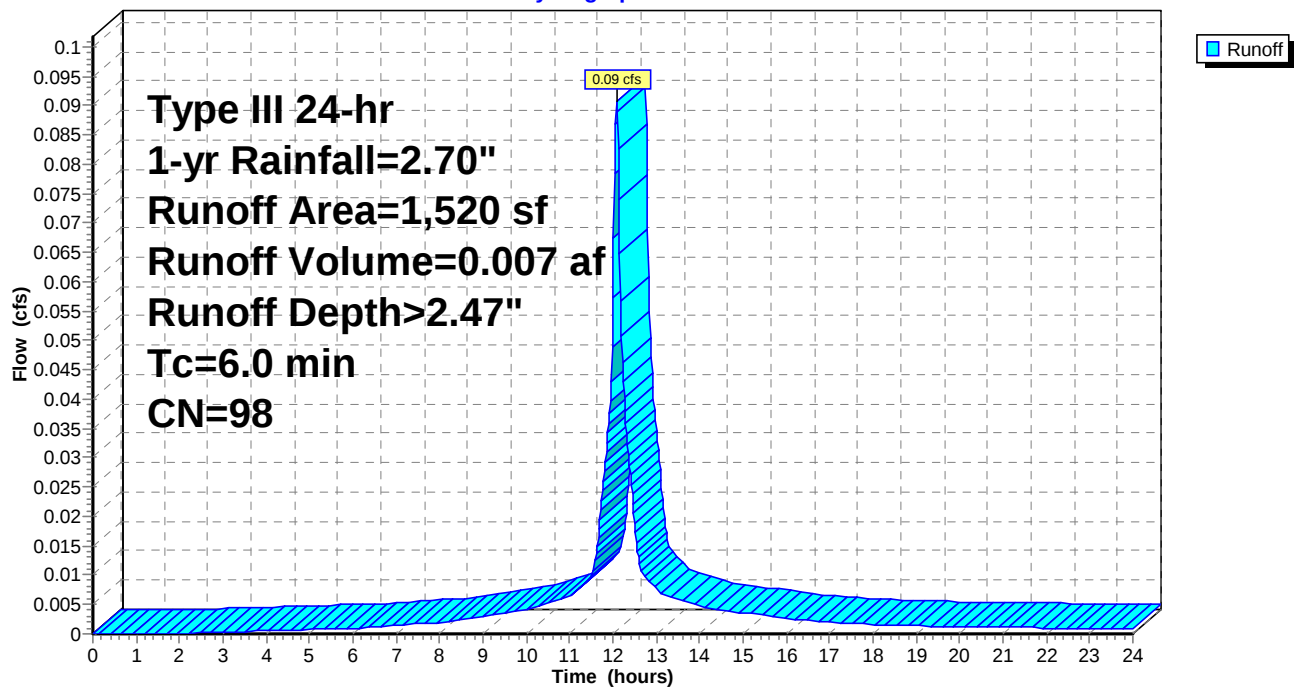
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 1-yr Rainfall=2.70"

Area (sf)	CN	Description
1,520	98	Paved parking, HSG C
1,520	98	100.00% Impervious Area

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

Subcatchment 19S: PERM PAVE

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 21S: REAR-UNC

Runoff = 0.01 cfs @ 12.08 hrs, Volume= 0.001 af, Depth> 2.47"

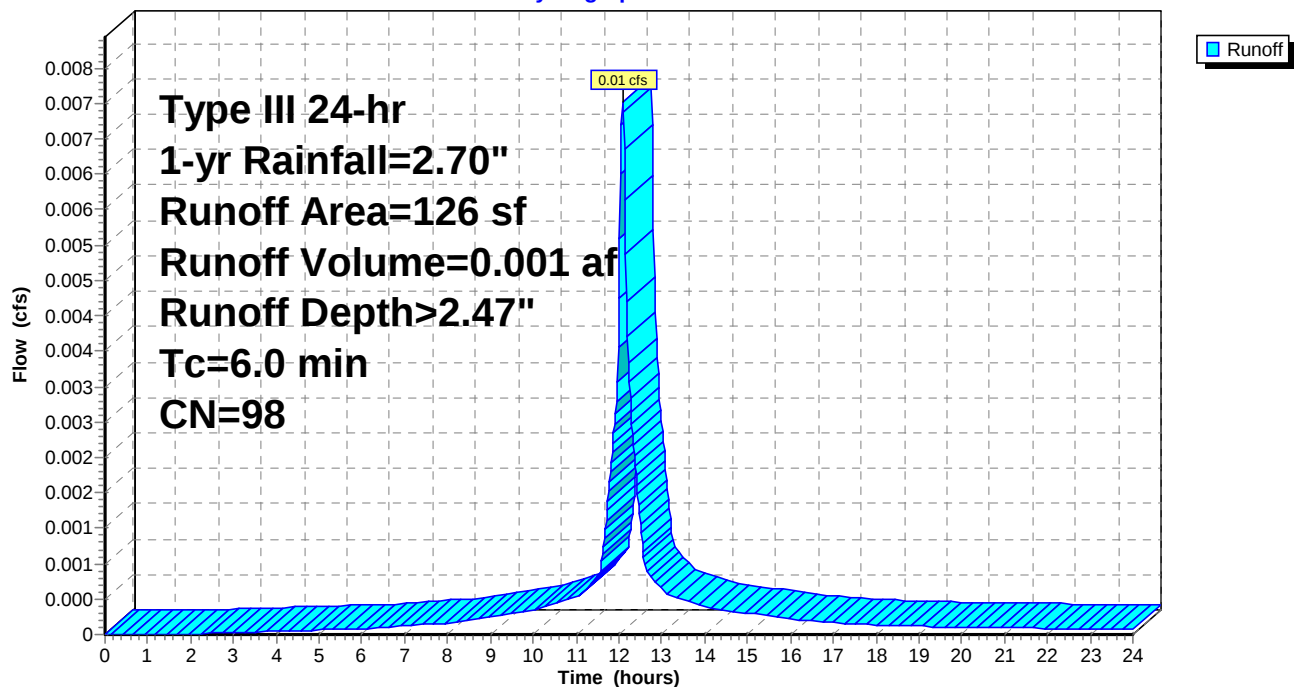
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-yr Rainfall=2.70"

Area (sf)	CN	Description
126	98	Paved parking, HSG C
126	98	100.00% Impervious Area

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

Subcatchment 21S: REAR-UNC

Hydrograph



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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Pond 16P: RAIN GARDEN

Inflow Area = 0.036 ac, 77.71% Impervious, Inflow Depth > 1.97" for 1-yr event
 Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af
 Outflow = 0.06 cfs @ 12.17 hrs, Volume= 0.004 af, Atten= 27%, Lag= 4.8 min
 Discarded = 0.00 cfs @ 12.17 hrs, Volume= 0.002 af
 Primary = 0.06 cfs @ 12.17 hrs, Volume= 0.002 af
 Routed to Link 17L : POST-STATE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 52.71' @ 12.17 hrs Surf.Area= 172 sf Storage= 89 cf

Plug-Flow detention time= 172.8 min calculated for 0.004 af (75% of inflow)
 Center-of-Mass det. time= 87.3 min (885.4 - 798.1)

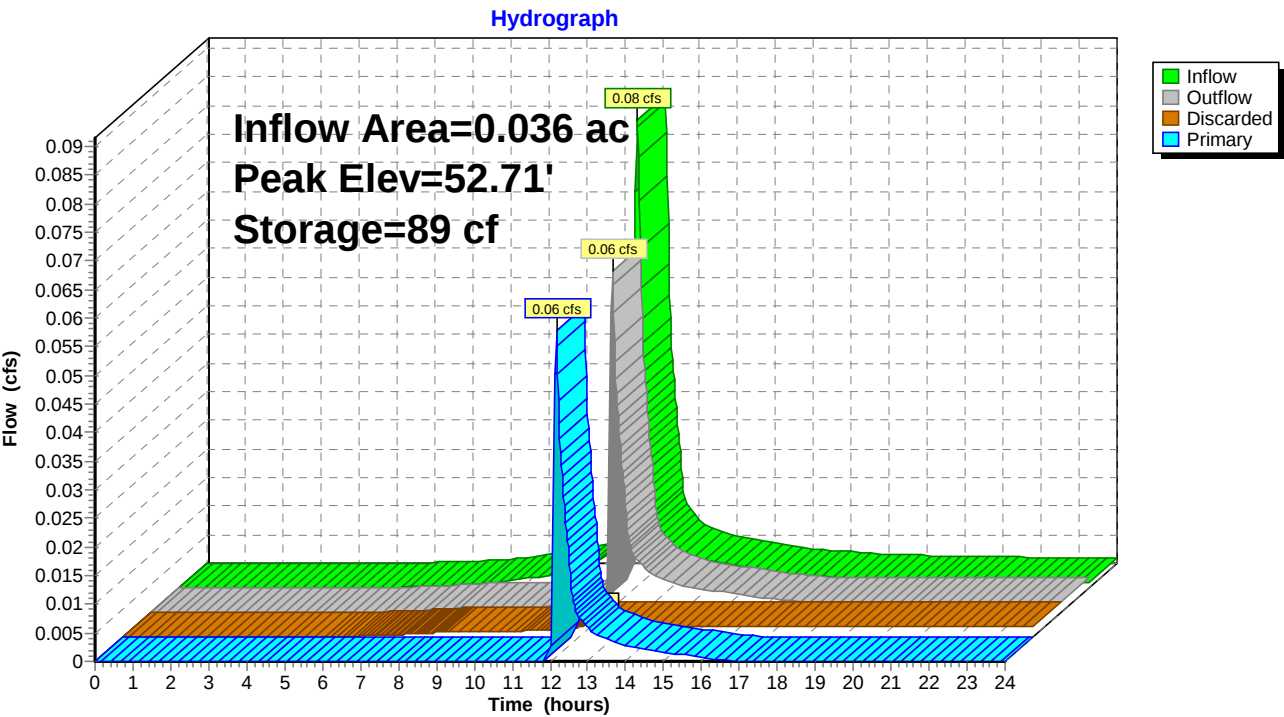
Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	145 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	79	0	0
53.00	211	145	145

Device	Routing	Invert	Outlet Devices
#1	Discarded	52.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	52.67'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 12.17 hrs HW=52.71' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.06 cfs @ 12.17 hrs HW=52.71' (Free Discharge)
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.06 cfs @ 0.51 fps)

Pond 16P: RAIN GARDEN



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Type III 24-hr 1-yr Rainfall=2.70"

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Summary for Pond 20P: INFILTRATION

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth > 2.47" for 1-yr event
 Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af
 Outflow = 0.02 cfs @ 11.76 hrs, Volume= 0.007 af, Atten= 81%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 11.76 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 53.15' @ 12.52 hrs Surf.Area= 1,520 sf Storage= 78 cf

Plug-Flow detention time= 25.2 min calculated for 0.007 af (100% of inflow)
 Center-of-Mass det. time= 24.7 min (784.3 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,520 cf Overall x 33.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,520	0	0
54.00	1,520	1,520	1,520

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.00'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.02 cfs @ 11.76 hrs HW=53.01' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

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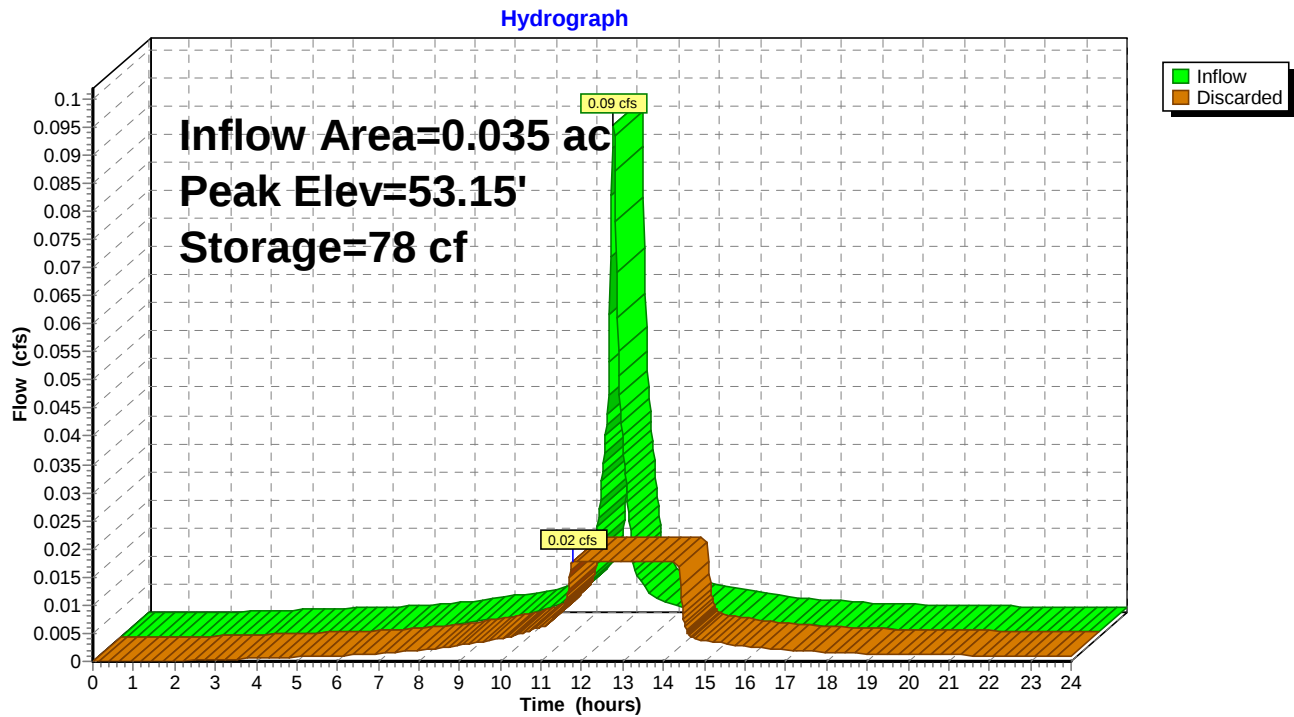
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Type III 24-hr 1-yr Rainfall=2.70"

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Pond 20P: INFILTRATION

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Type III 24-hr 1-yr Rainfall=2.70"

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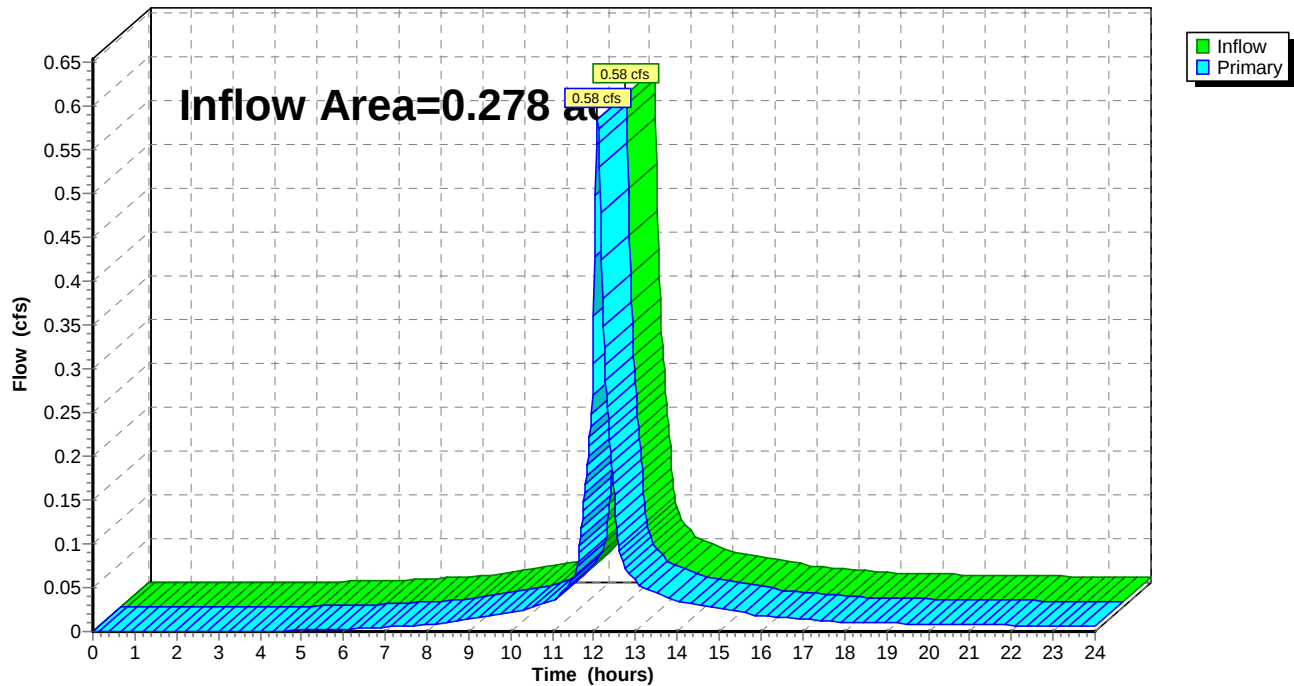
Summary for Link 17L: POST-STATE

Inflow Area = 0.278 ac, 85.17% Impervious, Inflow Depth > 1.97" for 1-yr event
 Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.046 af
 Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 17L: POST-STATE

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Type III 24-hr 10-yr Rainfall=4.90"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: PRE-STATE	Runoff Area=12,106 sf 100.00% Impervious Runoff Depth>4.66" Tc=6.0 min CN=98 Runoff=1.33 cfs 0.108 af
Subcatchment 13S: POST-UNC	Runoff Area=10,527 sf 86.29% Impervious Runoff Depth>4.32" Tc=6.0 min CN=95 Runoff=1.12 cfs 0.087 af
Subcatchment 15S: ROOF PORTION	Runoff Area=1,579 sf 77.71% Impervious Runoff Depth>4.10" Tc=6.0 min CN=93 Runoff=0.16 cfs 0.012 af
Subcatchment 18S: PRE-REAR	Runoff Area=1,646 sf 36.63% Impervious Runoff Depth>3.08" Tc=6.0 min CN=83 Runoff=0.14 cfs 0.010 af
Subcatchment 19S: PERM PAVE	Runoff Area=1,520 sf 100.00% Impervious Runoff Depth>4.66" Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af
Subcatchment 21S: REAR-UNC	Runoff Area=126 sf 100.00% Impervious Runoff Depth>4.66" Tc=6.0 min CN=98 Runoff=0.01 cfs 0.001 af
Pond 16P: RAIN GARDEN	Peak Elev=52.74' Storage=95 cf Inflow=0.16 cfs 0.012 af Discarded=0.00 cfs 0.003 af Primary=0.16 cfs 0.008 af Outflow=0.16 cfs 0.011 af
Pond 20P: INFILTRATION	Peak Elev=53.38' Storage=192 cf Inflow=0.17 cfs 0.014 af Outflow=0.02 cfs 0.014 af
Link 17L: POST-STATE	Inflow=1.28 cfs 0.095 af Primary=1.28 cfs 0.095 af

Total Runoff Area = 0.631 ac Runoff Volume = 0.232 af Average Runoff Depth = 4.40"
10.32% Pervious = 0.065 ac 89.68% Impervious = 0.566 ac

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Type III 24-hr 10-yr Rainfall=4.90"

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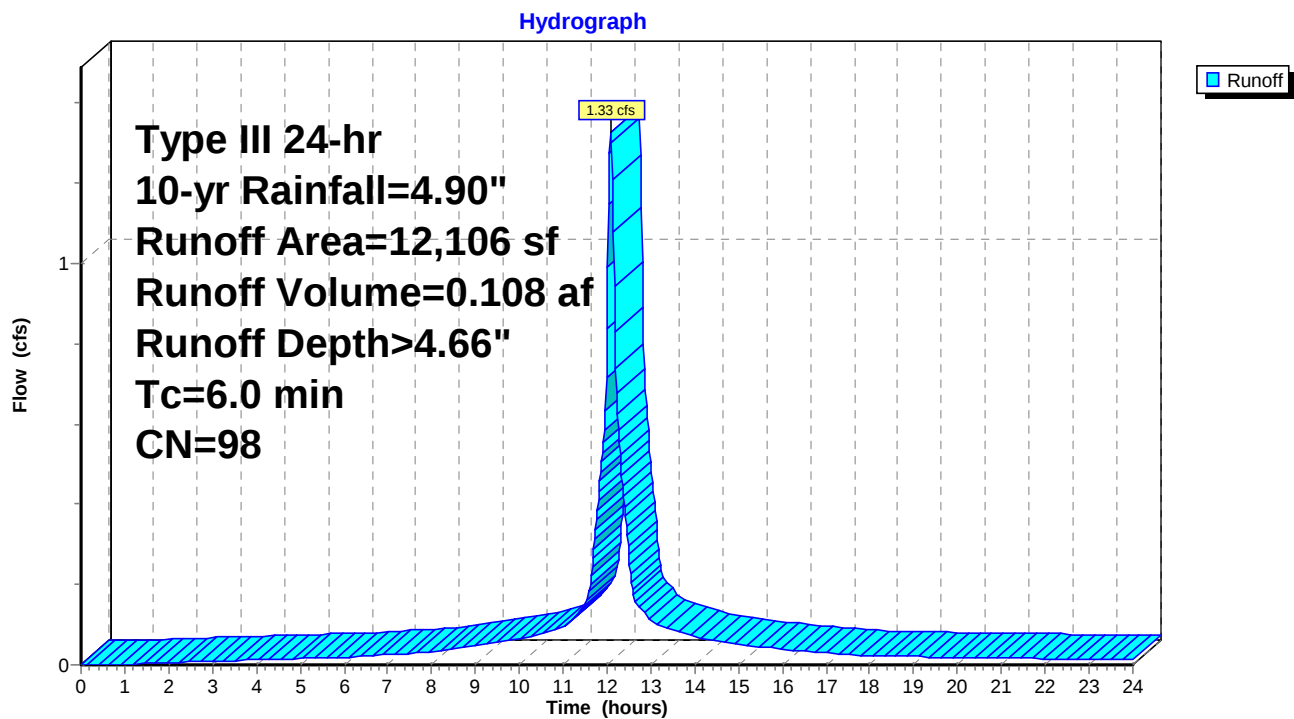
Summary for Subcatchment 6S: PRE-STATE

Runoff = 1.33 cfs @ 12.08 hrs, Volume= 0.108 af, Depth> 4.66"
 Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
5,533	98	Roofs, HSG C
6,573	98	Paved parking, HSG C
12,106	98	Weighted Average
12,106	98	100.00% Impervious Area

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

Subcatchment 6S: PRE-STATE

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Type III 24-hr 10-yr Rainfall=4.90"

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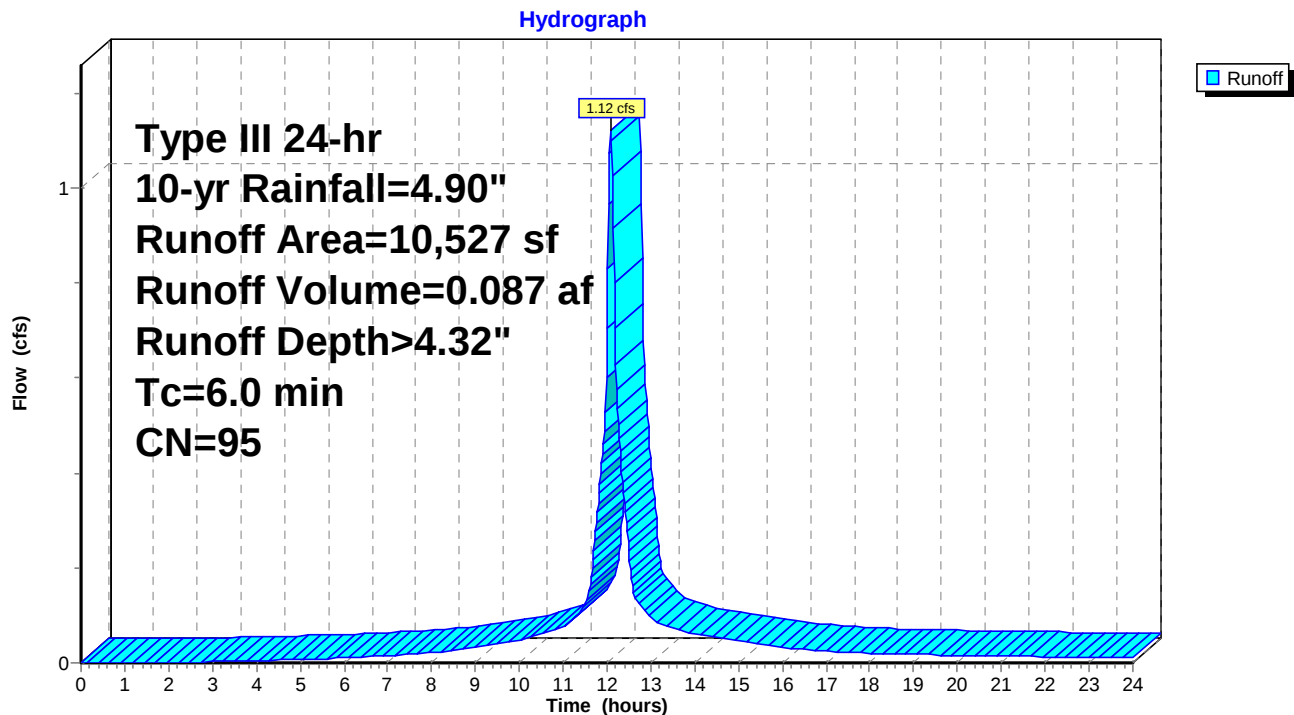
Summary for Subcatchment 13S: POST-UNC

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 4.32"
 Routed to Link 17L : POST-STATE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
4,306	98	Roofs, HSG C
1,443	74	>75% Grass cover, Good, HSG C
4,778	98	Paved parking, HSG C
10,527	95	Weighted Average
1,443	74	13.71% Pervious Area
9,084	98	86.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 1

Subcatchment 13S: POST-UNC

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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 15S: ROOF PORTION

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.012 af, Depth> 4.10"
 Routed to Pond 16P : RAIN GARDEN

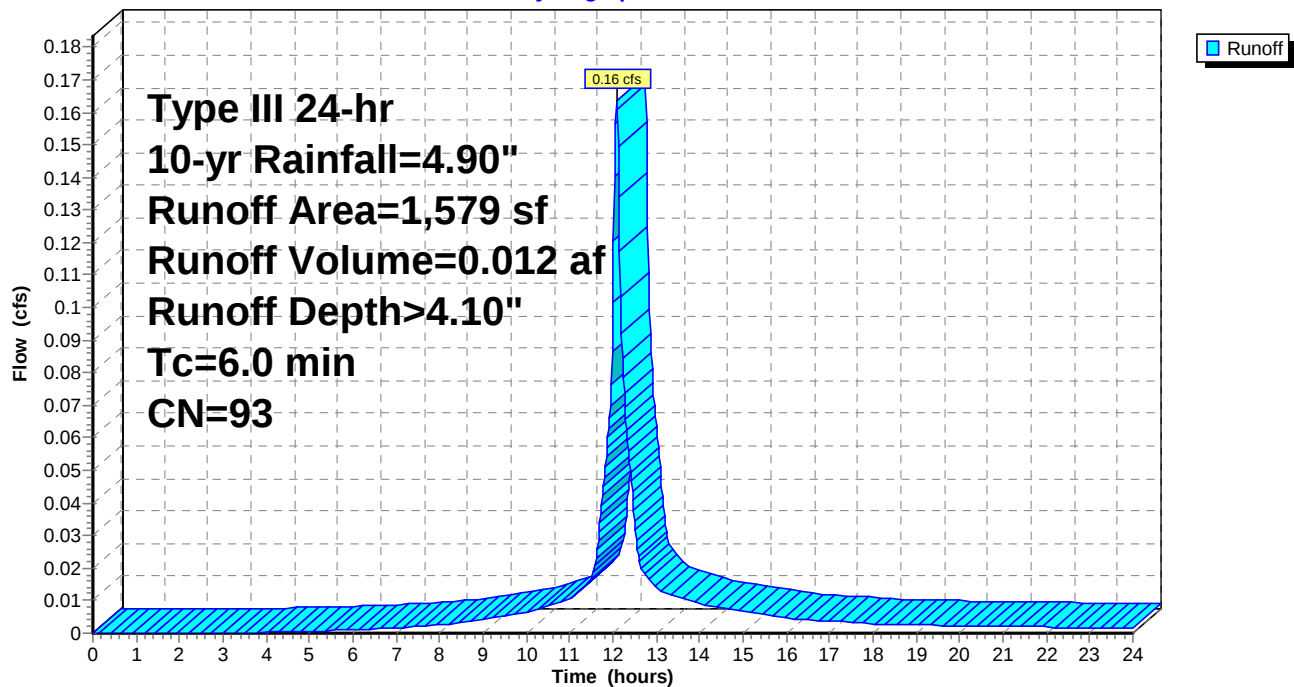
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
1,227	98	Roofs, HSG C
352	74	>75% Grass cover, Good, HSG C
1,579	93	Weighted Average
352	74	22.29% Pervious Area
1,227	98	77.71% Impervious Area

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

Subcatchment 15S: ROOF PORTION

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 18S: PRE-REAR

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 3.08"

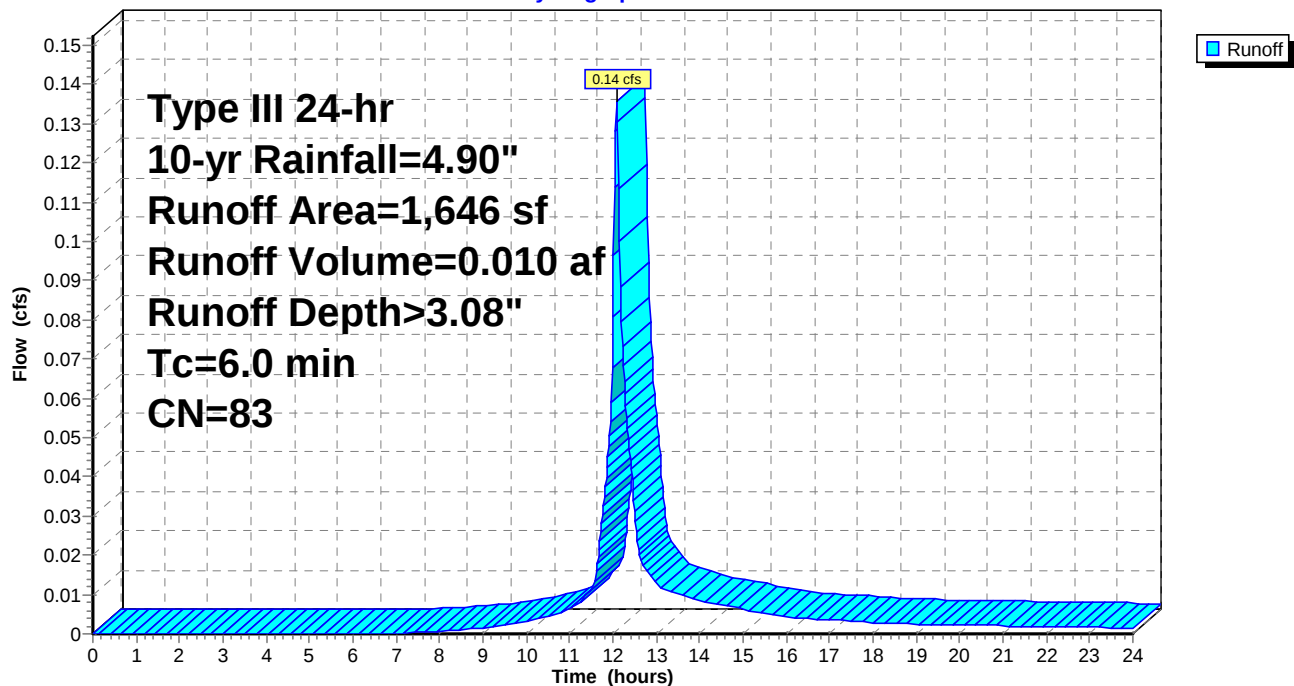
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
1,043	74	>75% Grass cover, Good, HSG C
603	98	Paved parking, HSG C
1,646	83	Weighted Average
1,043	74	63.37% Pervious Area
603	98	36.63% Impervious Area

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

Subcatchment 18S: PRE-REAR

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 19S: PERM PAVE

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.014 af, Depth> 4.66"
 Routed to Pond 20P : INFILTRATION

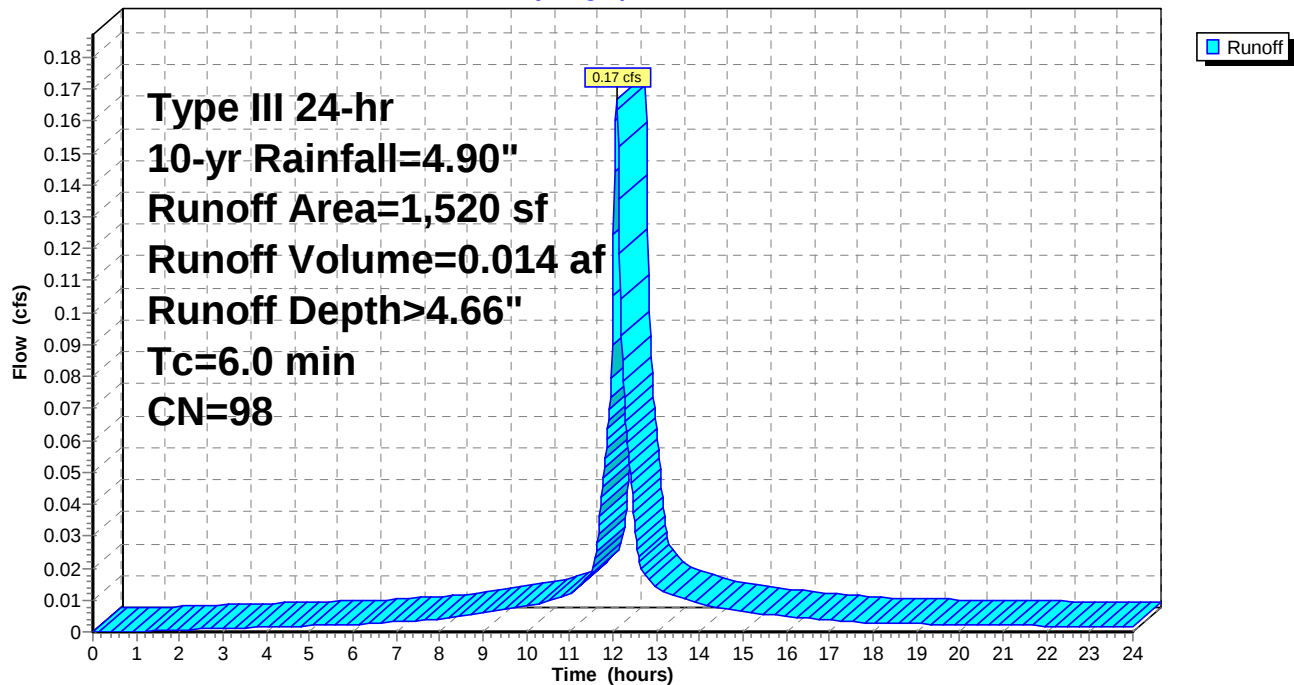
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
1,520	98	Paved parking, HSG C
1,520	98	100.00% Impervious Area

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

Subcatchment 19S: PERM PAVE

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 21S: REAR-UNC

Runoff = 0.01 cfs @ 12.08 hrs, Volume= 0.001 af, Depth> 4.66"

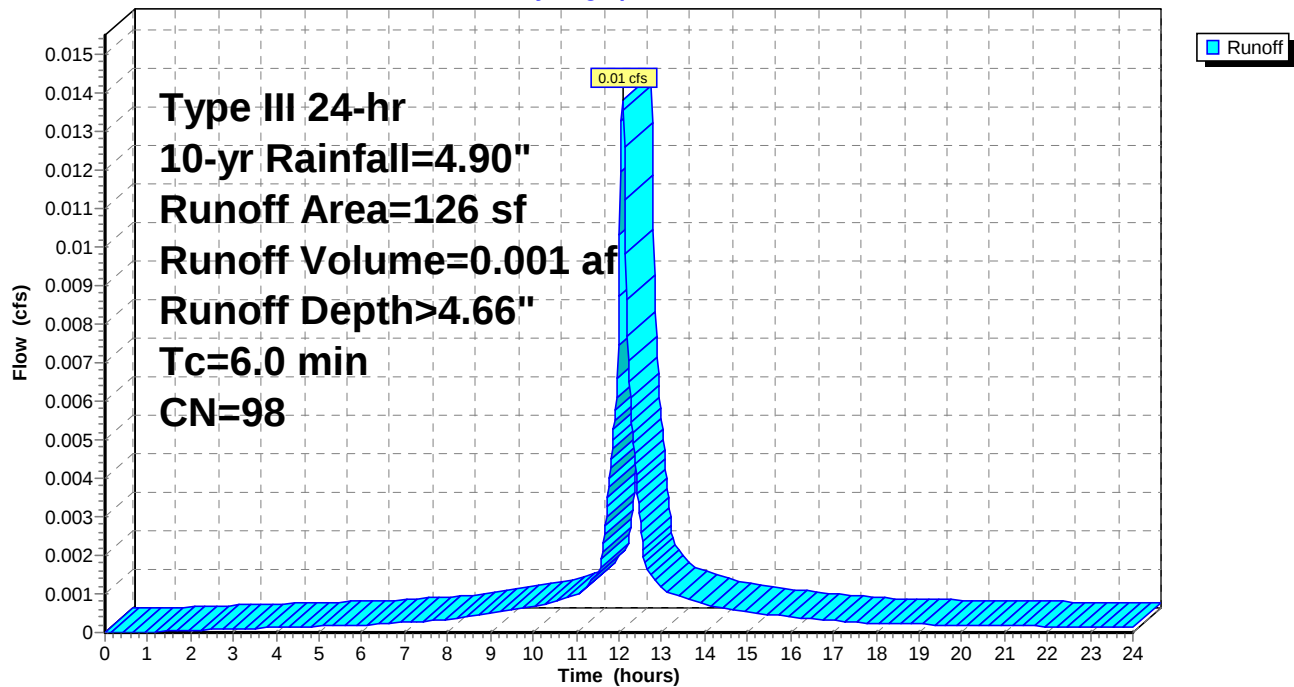
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
126	98	Paved parking, HSG C
126	98	100.00% Impervious Area

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

Subcatchment 21S: REAR-UNC

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 16P: RAIN GARDEN

Inflow Area = 0.036 ac, 77.71% Impervious, Inflow Depth > 4.10" for 10-yr event
 Inflow = 0.16 cfs @ 12.08 hrs, Volume= 0.012 af
 Outflow = 0.16 cfs @ 12.10 hrs, Volume= 0.011 af, Atten= 2%, Lag= 0.9 min
 Discarded = 0.00 cfs @ 12.10 hrs, Volume= 0.003 af
 Primary = 0.16 cfs @ 12.10 hrs, Volume= 0.008 af
 Routed to Link 17L : POST-STATE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 52.74' @ 12.10 hrs Surf.Area= 177 sf Storage= 95 cf

Plug-Flow detention time= 97.7 min calculated for 0.011 af (85% of inflow)
 Center-of-Mass det. time= 34.3 min (812.6 - 778.3)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	145 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

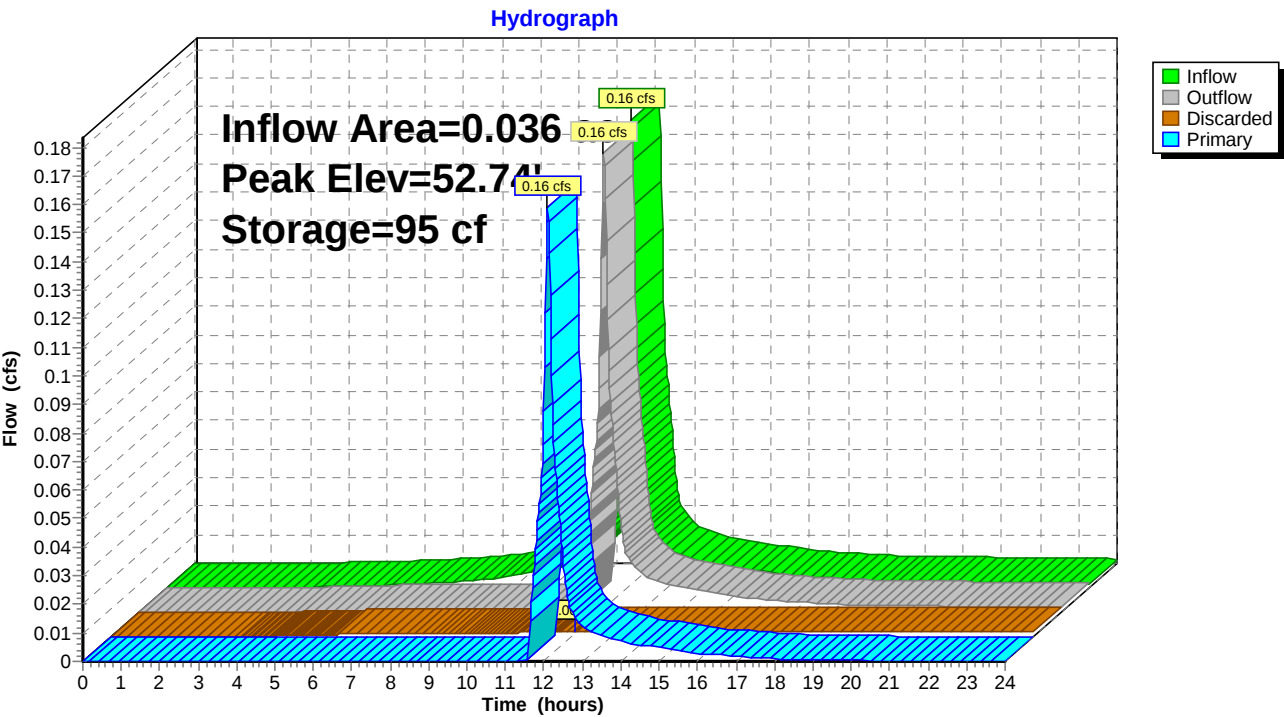
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	79	0	0
53.00	211	145	145

Device	Routing	Invert	Outlet Devices
#1	Discarded	52.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	52.67'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=52.74' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.16 cfs @ 12.10 hrs HW=52.74' (Free Discharge)
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.73 fps)

Pond 16P: RAIN GARDEN



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 20P: INFILTRATION

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth > 4.66" for 10-yr event
 Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.014 af
 Outflow = 0.02 cfs @ 11.52 hrs, Volume= 0.014 af, Atten= 89%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 11.52 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 53.38' @ 12.77 hrs Surf.Area= 1,520 sf Storage= 192 cf

Plug-Flow detention time= 72.3 min calculated for 0.014 af (100% of inflow)
 Center-of-Mass det. time= 71.8 min (819.6 - 747.8)

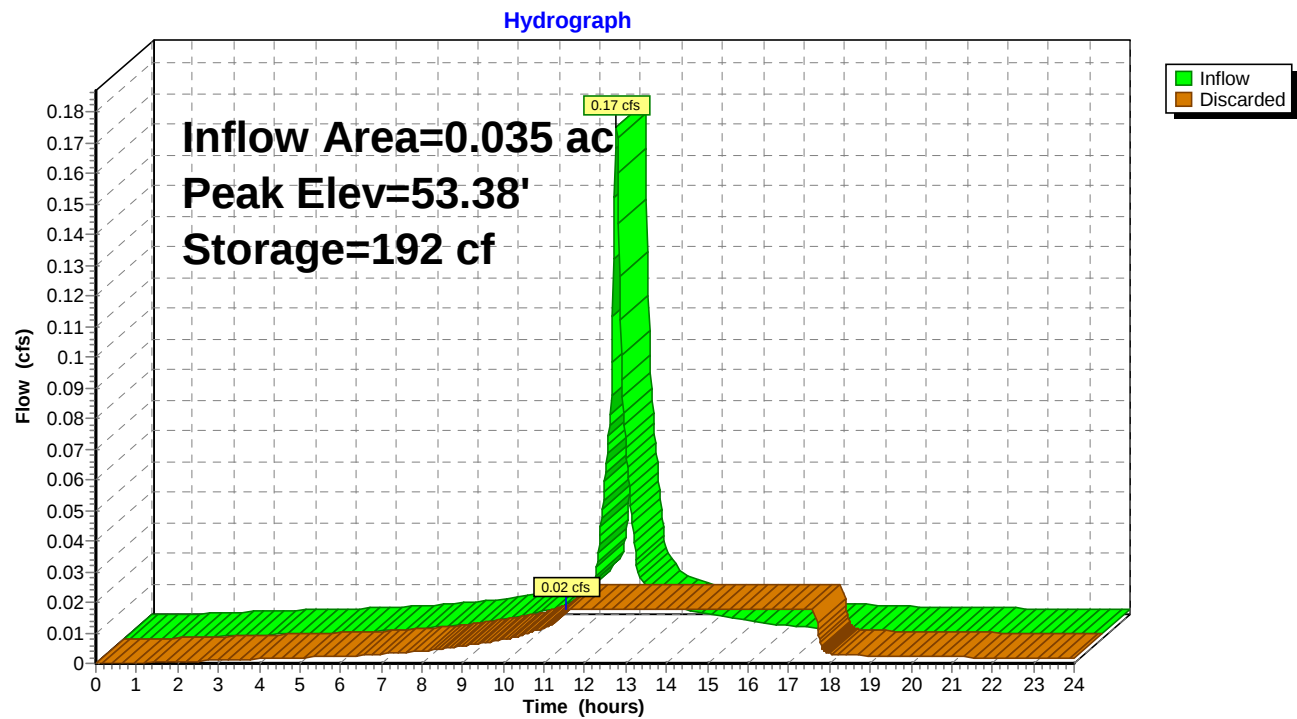
Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,520 cf Overall x 33.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,520	0	0
54.00	1,520	1,520	1,520

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.00'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.02 cfs @ 11.52 hrs HW=53.01' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 20P: INFILTRATION



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Type III 24-hr 10-yr Rainfall=4.90"

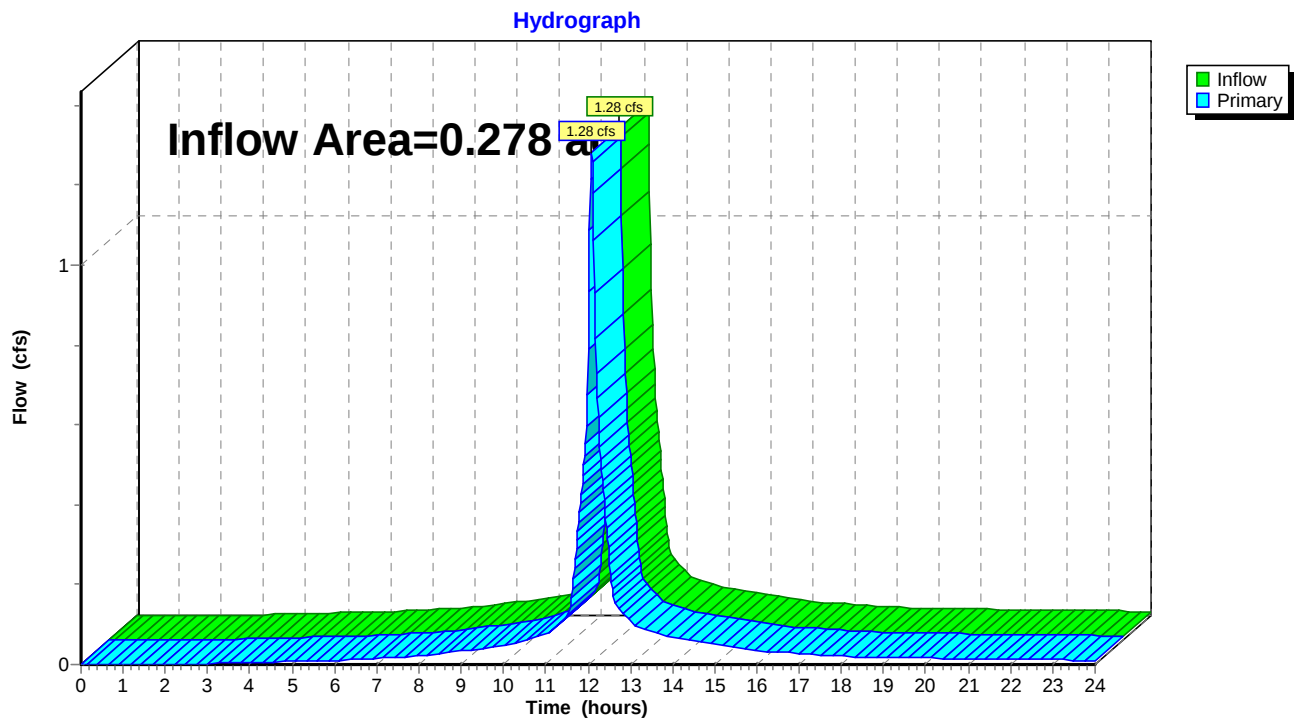
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Summary for Link 17L: POST-STATE

Inflow Area = 0.278 ac, 85.17% Impervious, Inflow Depth > 4.09" for 10-yr event
 Inflow = 1.28 cfs @ 12.09 hrs, Volume= 0.095 af
 Primary = 1.28 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 17L: POST-STATE

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Type III 24-hr 25-yr Rainfall=6.10"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: PRE-STATE	Runoff Area=12,106 sf 100.00% Impervious Runoff Depth>5.86" Tc=6.0 min CN=98 Runoff=1.66 cfs 0.136 af
Subcatchment 13S: POST-UNC	Runoff Area=10,527 sf 86.29% Impervious Runoff Depth>5.51" Tc=6.0 min CN=95 Runoff=1.41 cfs 0.111 af
Subcatchment 15S: ROOF PORTION	Runoff Area=1,579 sf 77.71% Impervious Runoff Depth>5.28" Tc=6.0 min CN=93 Runoff=0.21 cfs 0.016 af
Subcatchment 18S: PRE-REAR	Runoff Area=1,646 sf 36.63% Impervious Runoff Depth>4.18" Tc=6.0 min CN=83 Runoff=0.18 cfs 0.013 af
Subcatchment 19S: PERM PAVE	Runoff Area=1,520 sf 100.00% Impervious Runoff Depth>5.86" Tc=6.0 min CN=98 Runoff=0.21 cfs 0.017 af
Subcatchment 21S: REAR-UNC	Runoff Area=126 sf 100.00% Impervious Runoff Depth>5.86" Tc=6.0 min CN=98 Runoff=0.02 cfs 0.001 af
Pond 16P: RAIN GARDEN	Peak Elev=52.76' Storage=97 cf Inflow=0.21 cfs 0.016 af Discarded=0.00 cfs 0.003 af Primary=0.20 cfs 0.011 af Outflow=0.20 cfs 0.014 af
Pond 20P: INFILTRATION	Peak Elev=53.52' Storage=263 cf Inflow=0.21 cfs 0.017 af Outflow=0.02 cfs 0.017 af
Link 17L: POST-STATE	Inflow=1.61 cfs 0.122 af Primary=1.61 cfs 0.122 af

Total Runoff Area = 0.631 ac Runoff Volume = 0.294 af Average Runoff Depth = 5.59"
10.32% Pervious = 0.065 ac 89.68% Impervious = 0.566 ac

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Type III 24-hr 25-yr Rainfall=6.10"

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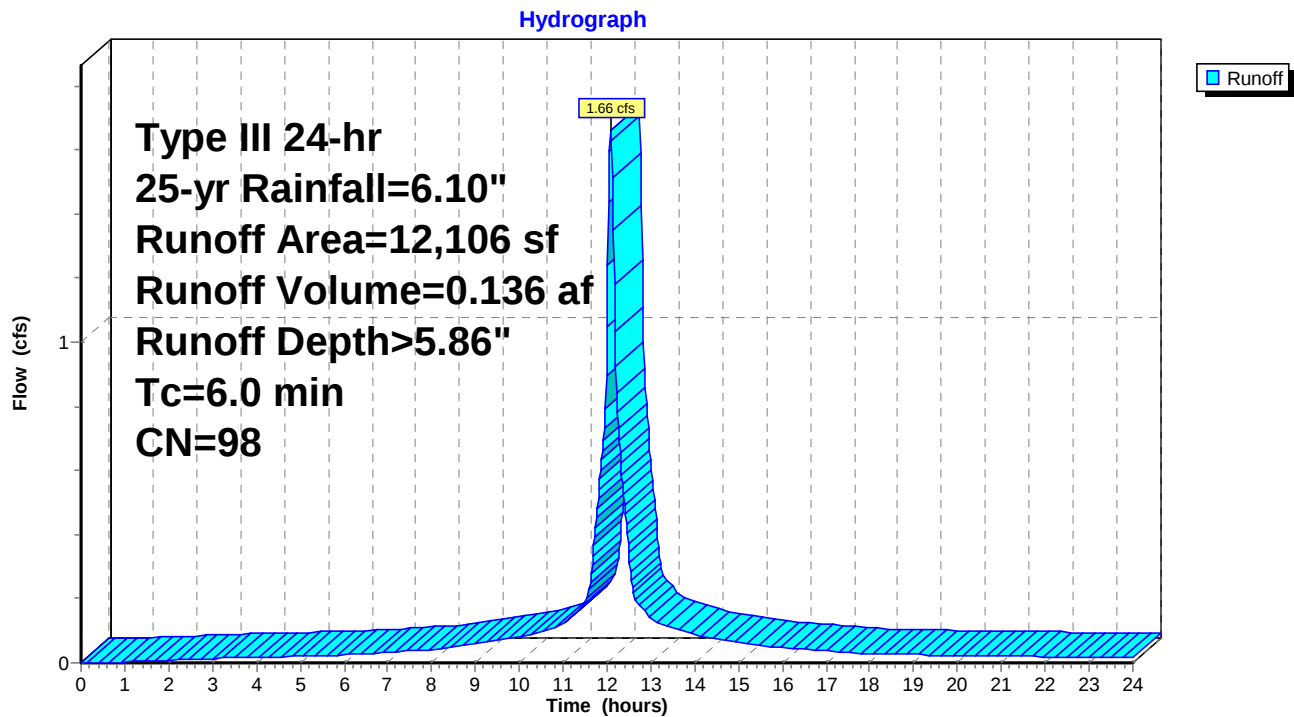
Summary for Subcatchment 6S: PRE-STATE

Runoff = 1.66 cfs @ 12.08 hrs, Volume= 0.136 af, Depth> 5.86"
 Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-yr Rainfall=6.10"

Area (sf)	CN	Description
5,533	98	Roofs, HSG C
6,573	98	Paved parking, HSG C
12,106	98	Weighted Average
12,106	98	100.00% Impervious Area

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

Subcatchment 6S: PRE-STATE

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Type III 24-hr 25-yr Rainfall=6.10"

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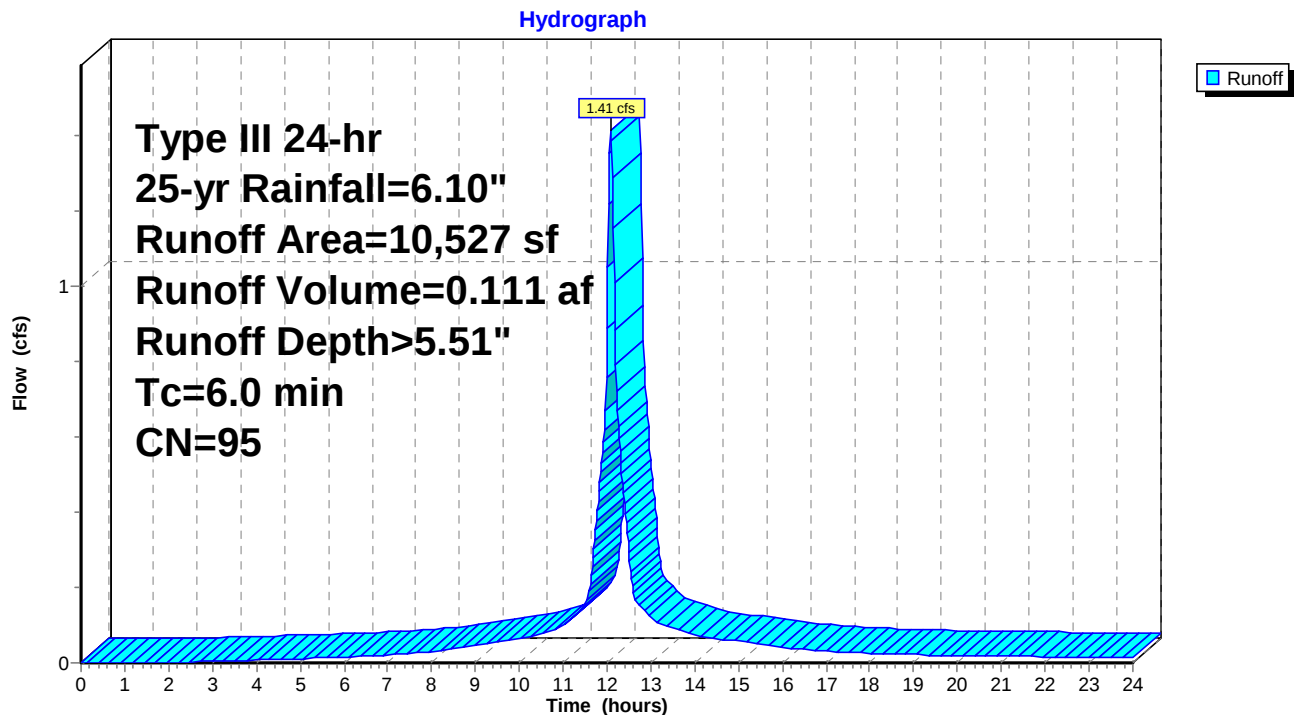
Summary for Subcatchment 13S: POST-UNC

Runoff = 1.41 cfs @ 12.08 hrs, Volume= 0.111 af, Depth> 5.51"
 Routed to Link 17L : POST-STATE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-yr Rainfall=6.10"

Area (sf)	CN	Description
4,306	98	Roofs, HSG C
1,443	74	>75% Grass cover, Good, HSG C
4,778	98	Paved parking, HSG C
10,527	95	Weighted Average
1,443	74	13.71% Pervious Area
9,084	98	86.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 1

Subcatchment 13S: POST-UNC

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Type III 24-hr 25-yr Rainfall=6.10"

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Summary for Subcatchment 15S: ROOF PORTION

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.016 af, Depth> 5.28"
 Routed to Pond 16P : RAIN GARDEN

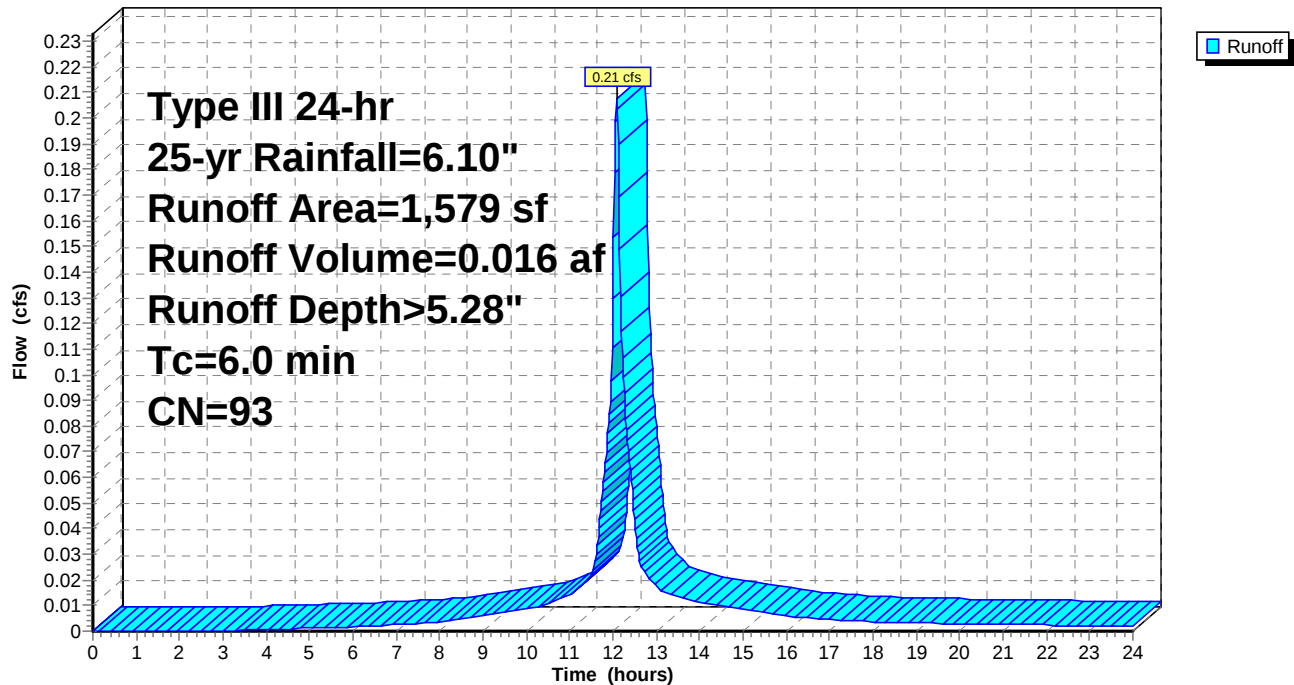
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-yr Rainfall=6.10"

Area (sf)	CN	Description
1,227	98	Roofs, HSG C
352	74	>75% Grass cover, Good, HSG C
1,579	93	Weighted Average
352	74	22.29% Pervious Area
1,227	98	77.71% Impervious Area

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

Subcatchment 15S: ROOF PORTION

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.10"

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Summary for Subcatchment 18S: PRE-REAR

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 4.18"

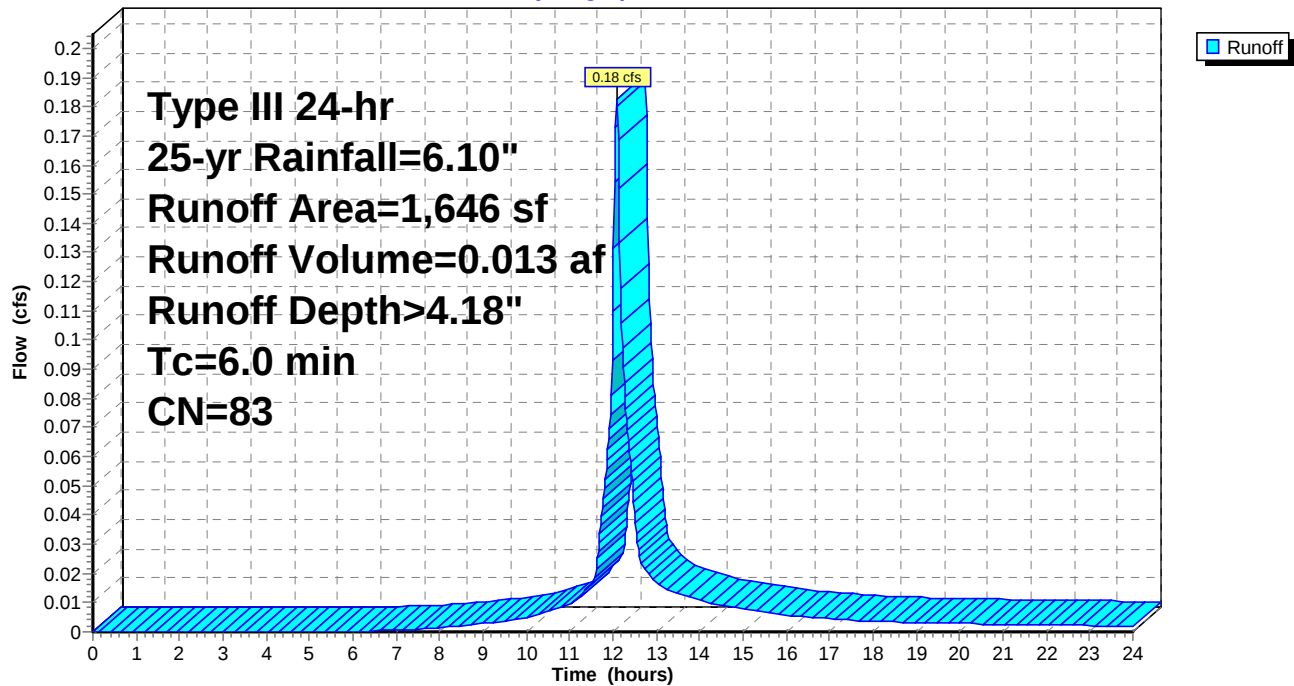
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-yr Rainfall=6.10"

Area (sf)	CN	Description
1,043	74	>75% Grass cover, Good, HSG C
603	98	Paved parking, HSG C
1,646	83	Weighted Average
1,043	74	63.37% Pervious Area
603	98	36.63% Impervious Area

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

Subcatchment 18S: PRE-REAR

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.10"

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Summary for Subcatchment 19S: PERM PAVE

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 5.86"
 Routed to Pond 20P : INFILTRATION

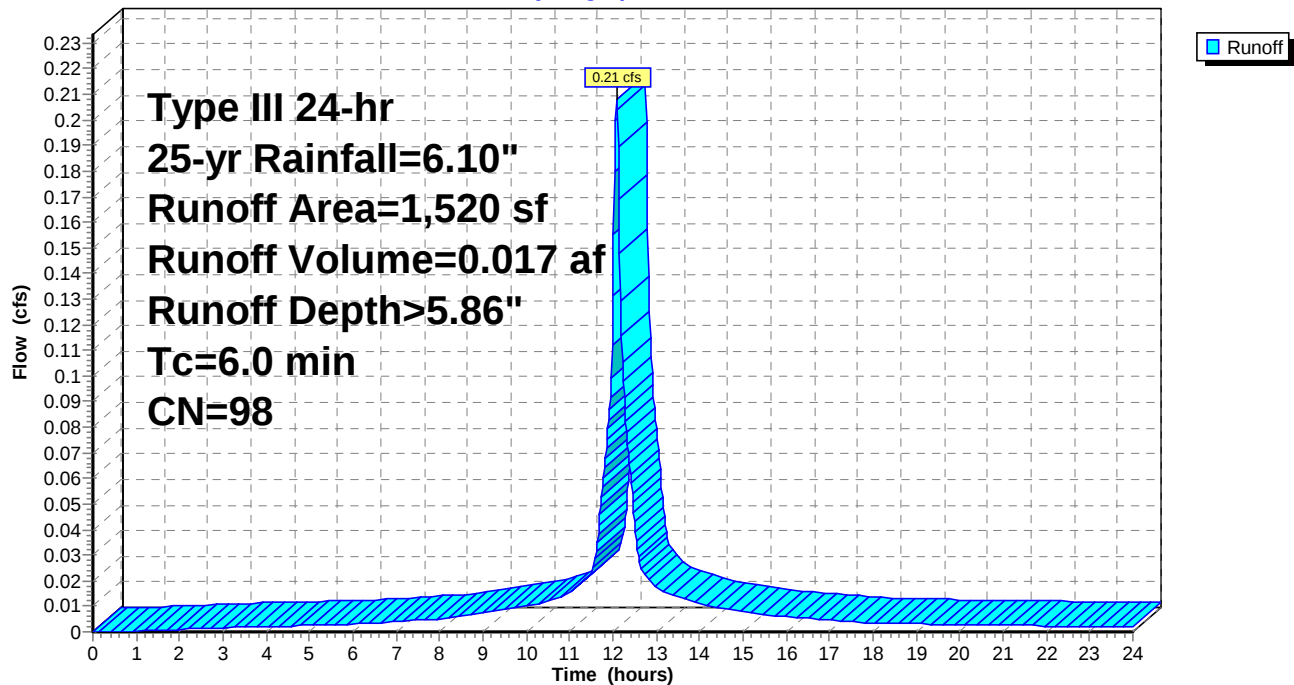
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-yr Rainfall=6.10"

Area (sf)	CN	Description
1,520	98	Paved parking, HSG C
1,520	98	100.00% Impervious Area

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

Subcatchment 19S: PERM PAVE

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.10"

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Summary for Subcatchment 21S: REAR-UNC

Runoff = 0.02 cfs @ 12.08 hrs, Volume= 0.001 af, Depth> 5.86"

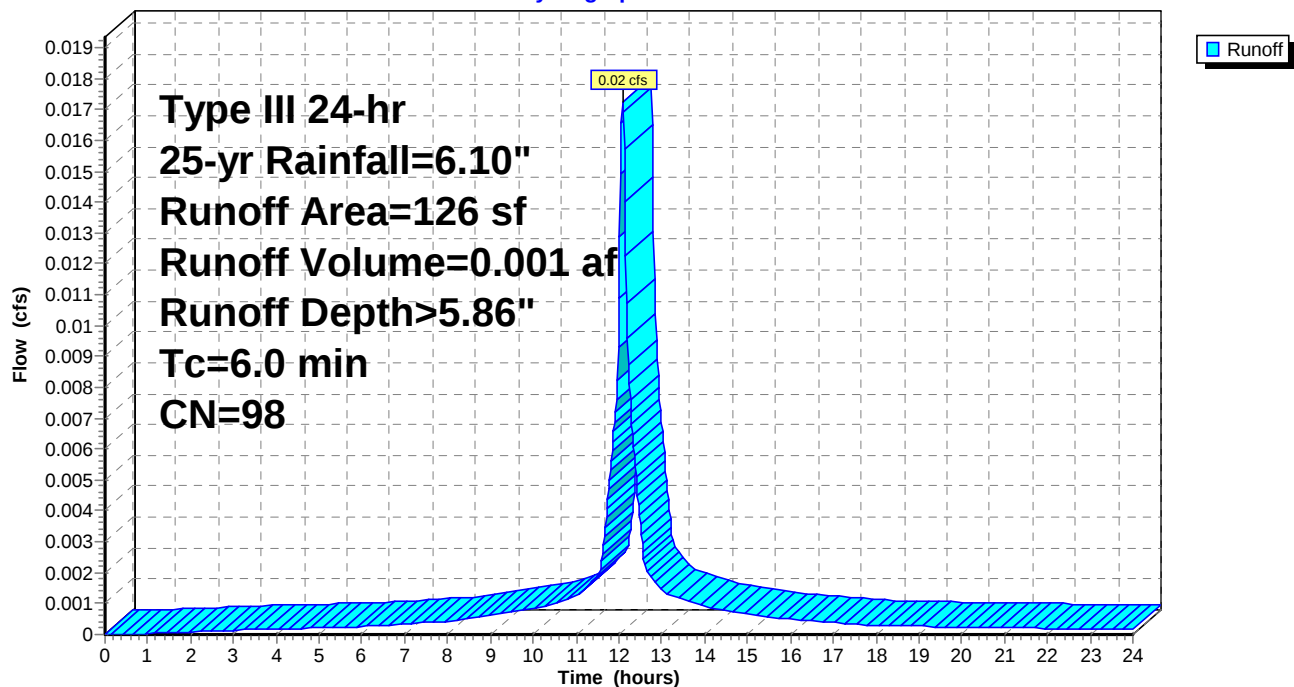
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-yr Rainfall=6.10"

Area (sf)	CN	Description
126	98	Paved parking, HSG C
126	98	100.00% Impervious Area

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

Subcatchment 21S: REAR-UNC

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.10"

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Summary for Pond 16P: RAIN GARDEN

Inflow Area = 0.036 ac, 77.71% Impervious, Inflow Depth > 5.28" for 25-yr event
 Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.016 af
 Outflow = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Atten= 2%, Lag= 0.9 min
 Discarded = 0.00 cfs @ 12.10 hrs, Volume= 0.003 af
 Primary = 0.20 cfs @ 12.10 hrs, Volume= 0.011 af
 Routed to Link 17L : POST-STATE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 52.76' @ 12.10 hrs Surf.Area= 179 sf Storage= 97 cf

Plug-Flow detention time= 85.0 min calculated for 0.014 af (88% of inflow)
 Center-of-Mass det. time= 30.2 min (802.2 - 772.0)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	145 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

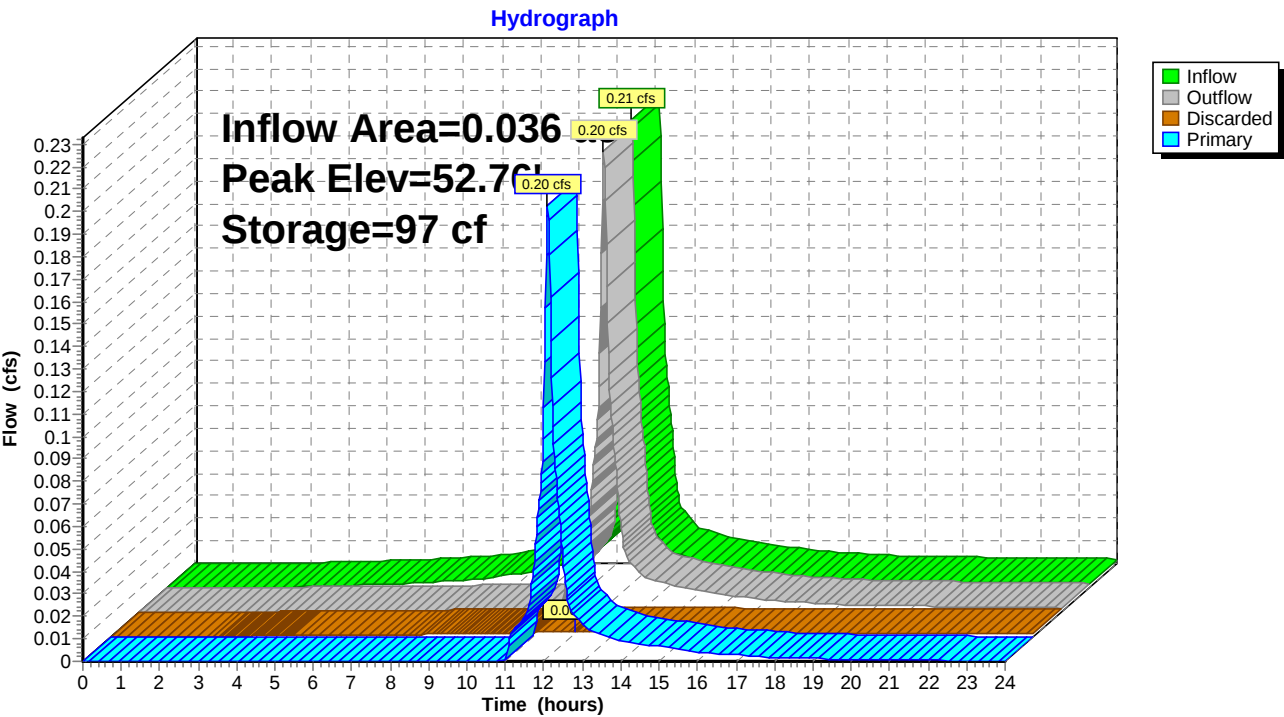
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	79	0	0
53.00	211	145	145

Device	Routing	Invert	Outlet Devices
#1	Discarded	52.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	52.67'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=52.76' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.20 cfs @ 12.10 hrs HW=52.76' (Free Discharge)
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.20 cfs @ 0.79 fps)

Pond 16P: RAIN GARDEN



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Type III 24-hr 25-yr Rainfall=6.10"

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Summary for Pond 20P: INFILTRATION

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth > 5.86" for 25-yr event
 Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
 Outflow = 0.02 cfs @ 11.28 hrs, Volume= 0.017 af, Atten= 92%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 11.28 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 53.52' @ 12.99 hrs Surf.Area= 1,520 sf Storage= 263 cf

Plug-Flow detention time= 105.4 min calculated for 0.017 af (100% of inflow)

Center-of-Mass det. time= 104.8 min (849.2 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,520 cf Overall x 33.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,520	0	0
54.00	1,520	1,520	1,520

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.00'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.02 cfs @ 11.28 hrs HW=53.01' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

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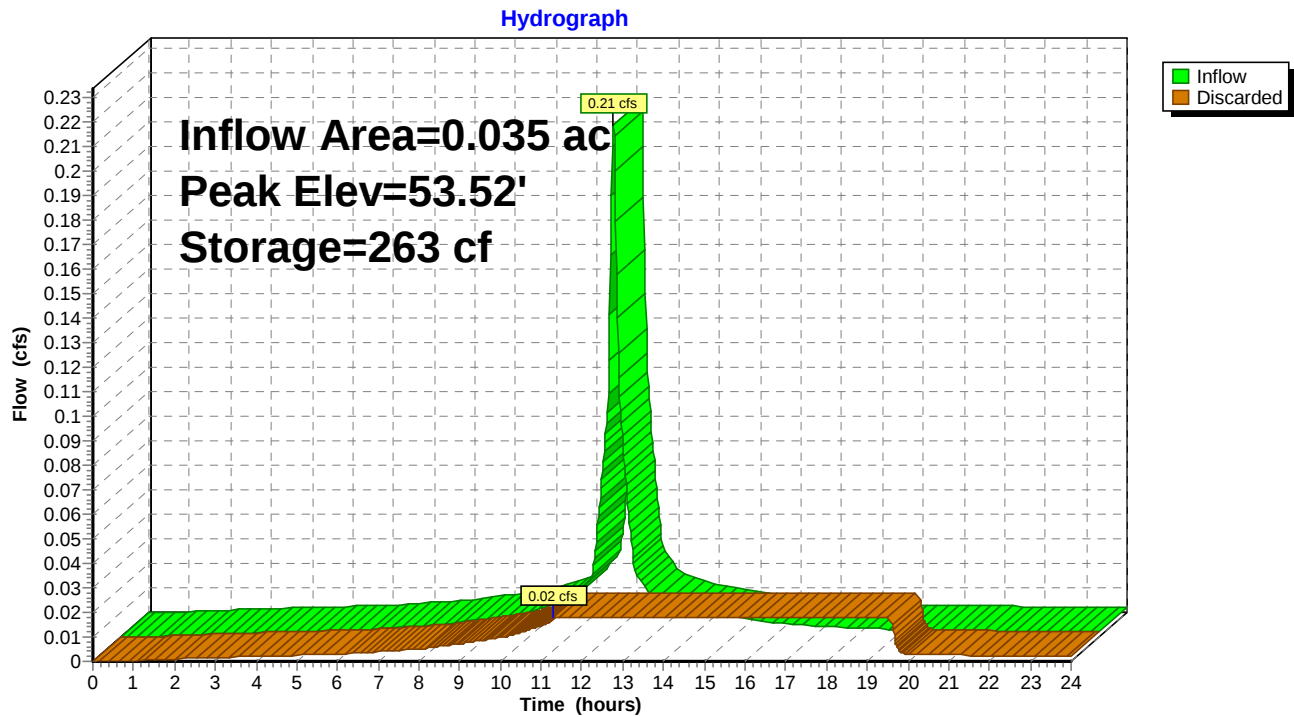
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Type III 24-hr 25-yr Rainfall=6.10"

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Pond 20P: INFILTRATION

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Type III 24-hr 25-yr Rainfall=6.10"

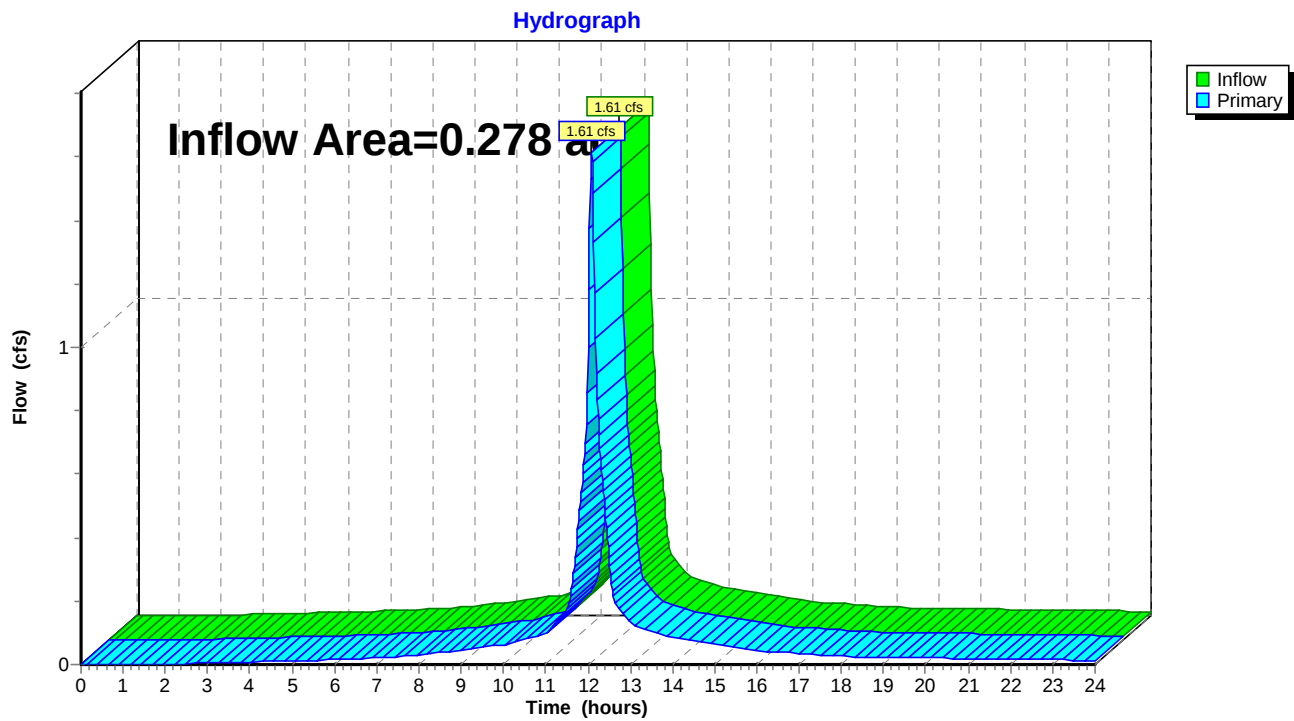
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Summary for Link 17L: POST-STATE

Inflow Area = 0.278 ac, 85.17% Impervious, Inflow Depth > 5.27" for 25-yr event
 Inflow = 1.61 cfs @ 12.09 hrs, Volume= 0.122 af
 Primary = 1.61 cfs @ 12.09 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 17L: POST-STATE

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Type III 24-hr 100-yr Rainfall=8.70"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: PRE-STATE	Runoff Area=12,106 sf 100.00% Impervious Runoff Depth>8.45" Tc=6.0 min CN=98 Runoff=2.37 cfs 0.196 af
Subcatchment 13S: POST-UNC	Runoff Area=10,527 sf 86.29% Impervious Runoff Depth>8.09" Tc=6.0 min CN=95 Runoff=2.04 cfs 0.163 af
Subcatchment 15S: ROOF PORTION	Runoff Area=1,579 sf 77.71% Impervious Runoff Depth>7.85" Tc=6.0 min CN=93 Runoff=0.30 cfs 0.024 af
Subcatchment 18S: PRE-REAR	Runoff Area=1,646 sf 36.63% Impervious Runoff Depth>6.64" Tc=6.0 min CN=83 Runoff=0.28 cfs 0.021 af
Subcatchment 19S: PERM PAVE	Runoff Area=1,520 sf 100.00% Impervious Runoff Depth>8.45" Tc=6.0 min CN=98 Runoff=0.30 cfs 0.025 af
Subcatchment 21S: REAR-UNC	Runoff Area=126 sf 100.00% Impervious Runoff Depth>8.45" Tc=6.0 min CN=98 Runoff=0.02 cfs 0.002 af
Pond 16P: RAIN GARDEN	Peak Elev=52.78' Storage=102 cf Inflow=0.30 cfs 0.024 af Discarded=0.00 cfs 0.003 af Primary=0.30 cfs 0.019 af Outflow=0.30 cfs 0.022 af
Pond 20P: INFILTRATION	Peak Elev=53.87' Storage=438 cf Inflow=0.30 cfs 0.025 af Outflow=0.02 cfs 0.024 af
Link 17L: POST-STATE	Inflow=2.33 cfs 0.182 af Primary=2.33 cfs 0.182 af

Total Runoff Area = 0.631 ac Runoff Volume = 0.430 af Average Runoff Depth = 8.17"
10.32% Pervious = 0.065 ac 89.68% Impervious = 0.566 ac

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Type III 24-hr 100-yr Rainfall=8.70"

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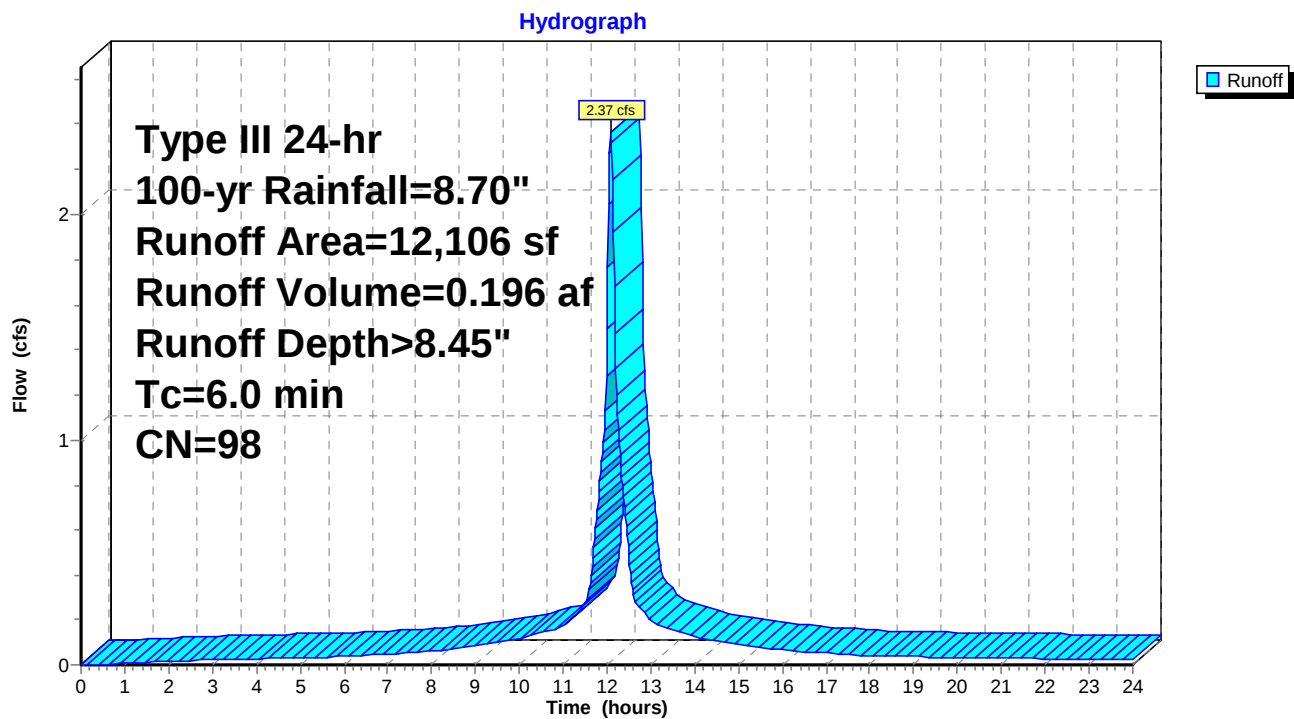
Summary for Subcatchment 6S: PRE-STATE

Runoff = 2.37 cfs @ 12.08 hrs, Volume= 0.196 af, Depth> 8.45"
 Routed to nonexistent node 2P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
5,533	98	Roofs, HSG C
6,573	98	Paved parking, HSG C
12,106	98	Weighted Average
12,106	98	100.00% Impervious Area

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

Subcatchment 6S: PRE-STATE

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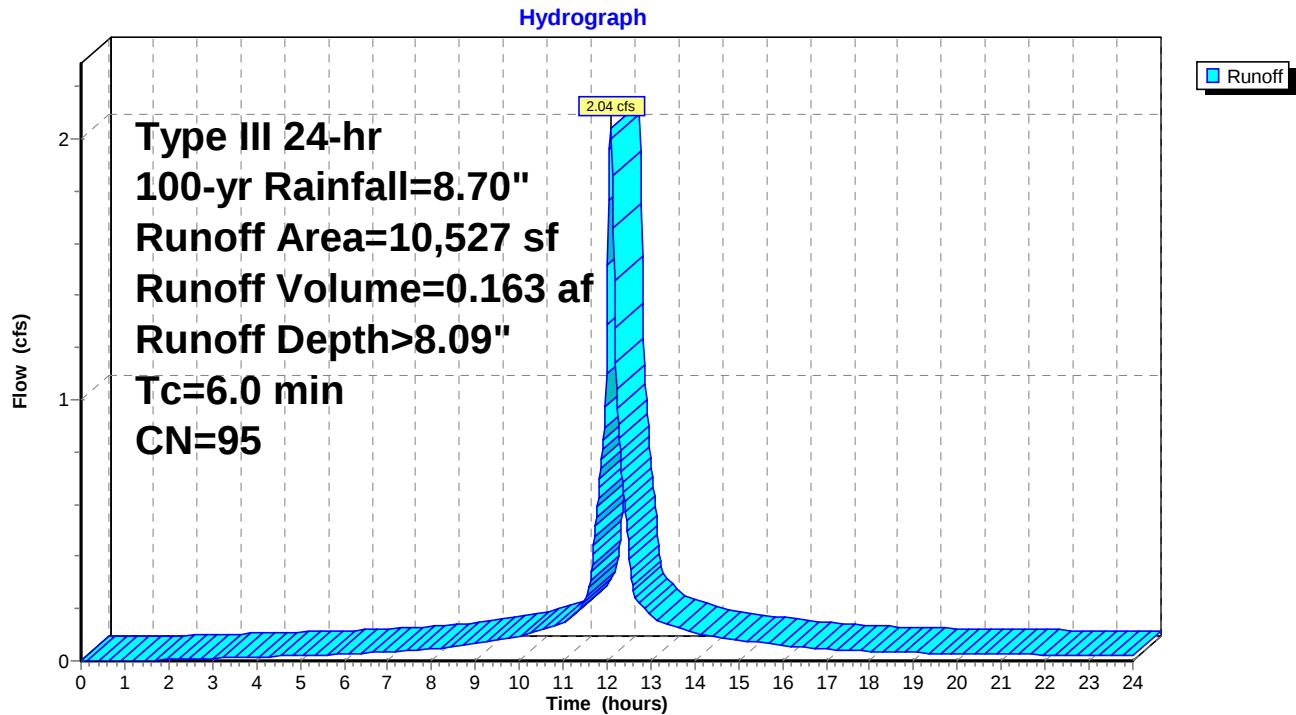
Summary for Subcatchment 13S: POST-UNC

Runoff = 2.04 cfs @ 12.08 hrs, Volume= 0.163 af, Depth> 8.09"
 Routed to Link 17L : POST-STATE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
4,306	98	Roofs, HSG C
1,443	74	>75% Grass cover, Good, HSG C
4,778	98	Paved parking, HSG C
10,527	95	Weighted Average
1,443	74	13.71% Pervious Area
9,084	98	86.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 1

Subcatchment 13S: POST-UNC

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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 15S: ROOF PORTION

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 7.85"
 Routed to Pond 16P : RAIN GARDEN

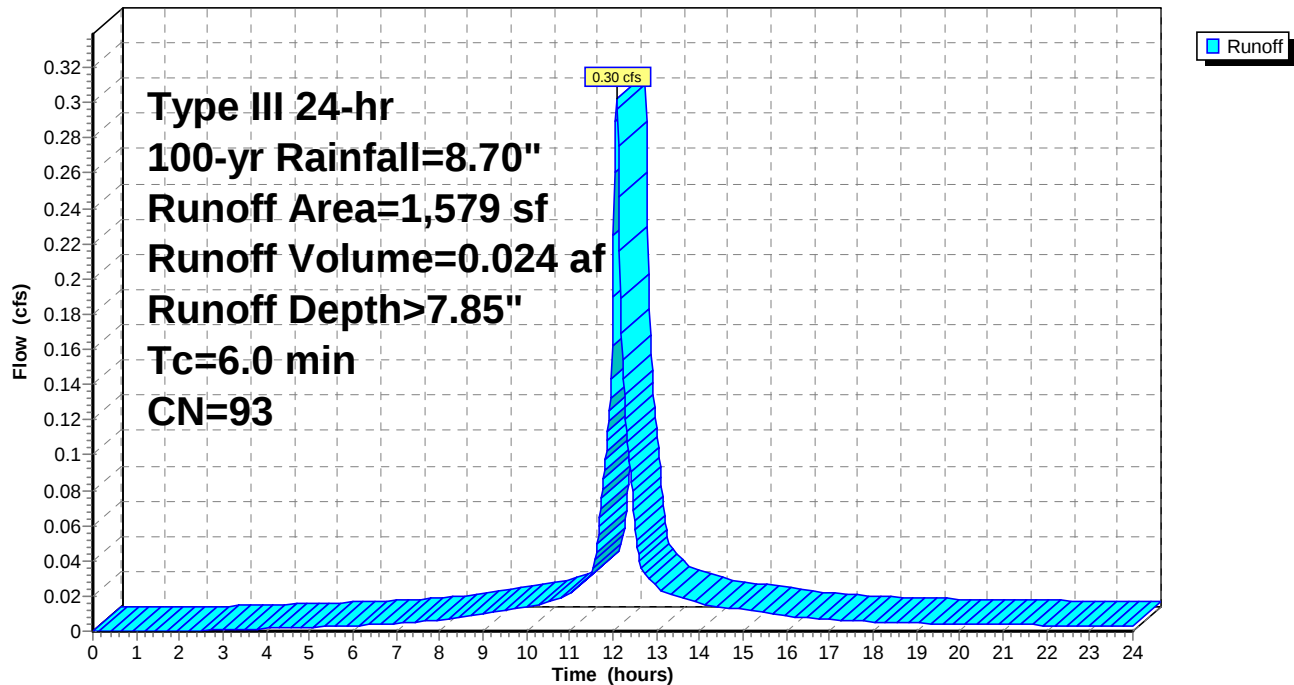
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
1,227	98	Roofs, HSG C
352	74	>75% Grass cover, Good, HSG C
1,579	93	Weighted Average
352	74	22.29% Pervious Area
1,227	98	77.71% Impervious Area

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

Subcatchment 15S: ROOF PORTION

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 18S: PRE-REAR

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af, Depth> 6.64"

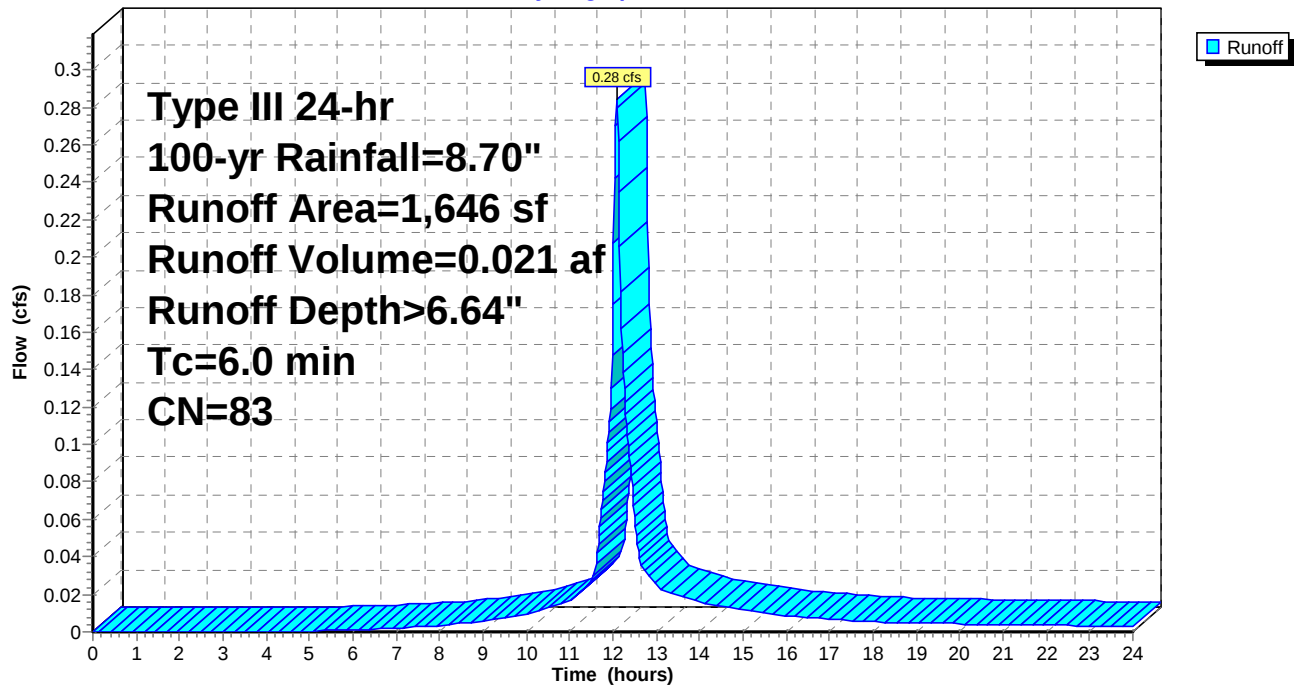
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
1,043	74	>75% Grass cover, Good, HSG C
603	98	Paved parking, HSG C
1,646	83	Weighted Average
1,043	74	63.37% Pervious Area
603	98	36.63% Impervious Area

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

Subcatchment 18S: PRE-REAR

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 19S: PERM PAVE

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 8.45"
 Routed to Pond 20P : INFILTRATION

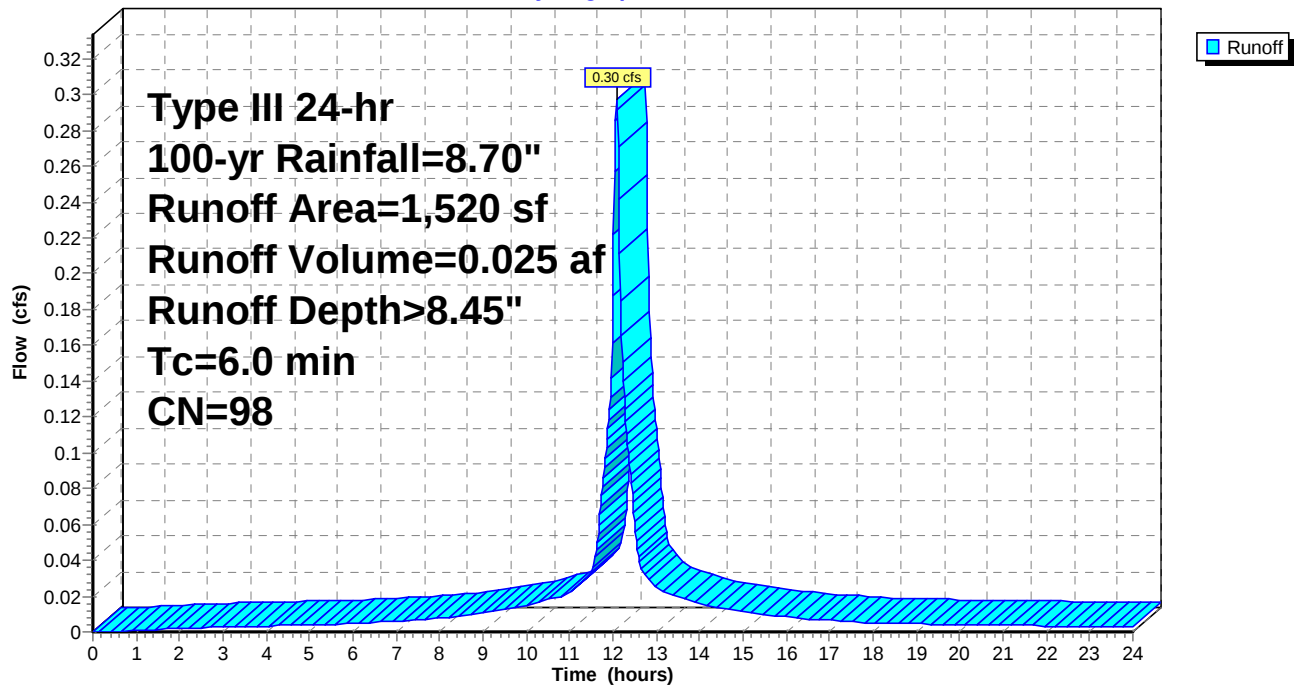
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
1,520	98	Paved parking, HSG C
1,520	98	100.00% Impervious Area

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

Subcatchment 19S: PERM PAVE

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 21S: REAR-UNC

Runoff = 0.02 cfs @ 12.08 hrs, Volume= 0.002 af, Depth> 8.45"

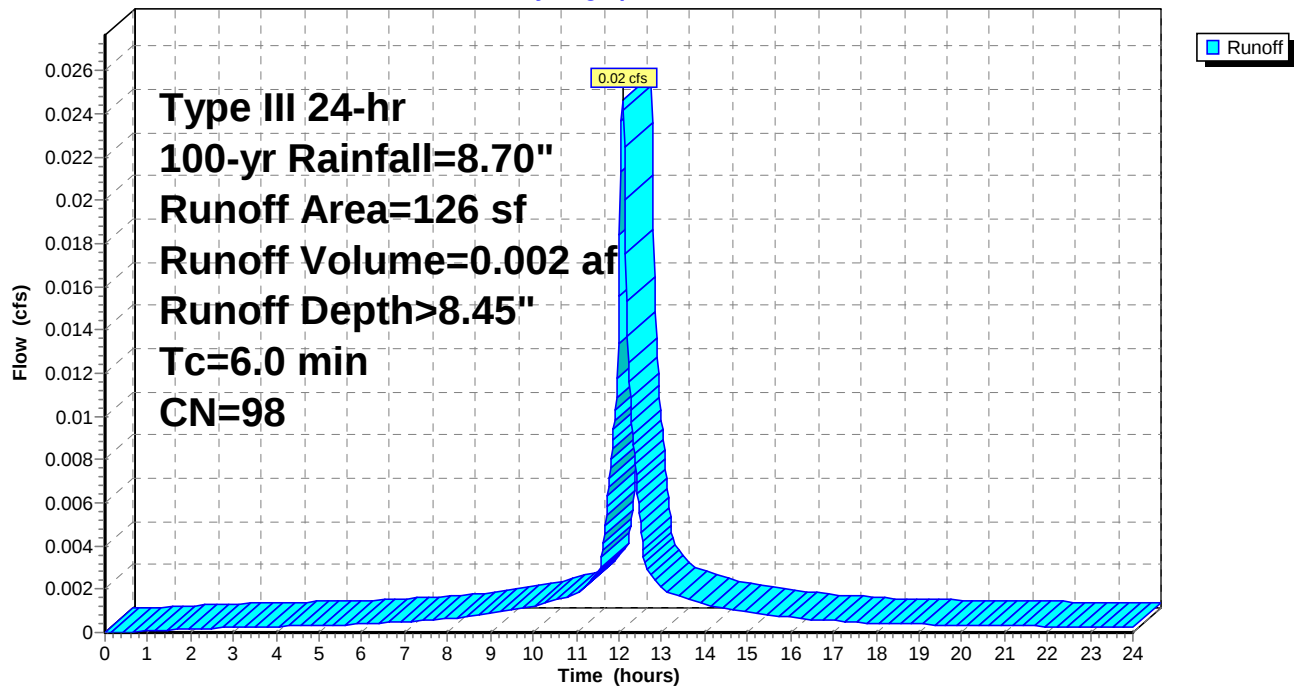
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
126	98	Paved parking, HSG C
126	98	100.00% Impervious Area

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

Subcatchment 21S: REAR-UNC

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 16P: RAIN GARDEN

Inflow Area = 0.036 ac, 77.71% Impervious, Inflow Depth > 7.85" for 100-yr event
 Inflow = 0.30 cfs @ 12.08 hrs, Volume= 0.024 af
 Outflow = 0.30 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 1%, Lag= 0.8 min
 Discarded = 0.00 cfs @ 12.10 hrs, Volume= 0.003 af
 Primary = 0.30 cfs @ 12.10 hrs, Volume= 0.019 af
 Routed to Link 17L : POST-STATE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 52.78' @ 12.10 hrs Surf.Area= 182 sf Storage= 102 cf

Plug-Flow detention time= 68.3 min calculated for 0.022 af (92% of inflow)
 Center-of-Mass det. time= 26.9 min (789.6 - 762.8)

Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	145 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

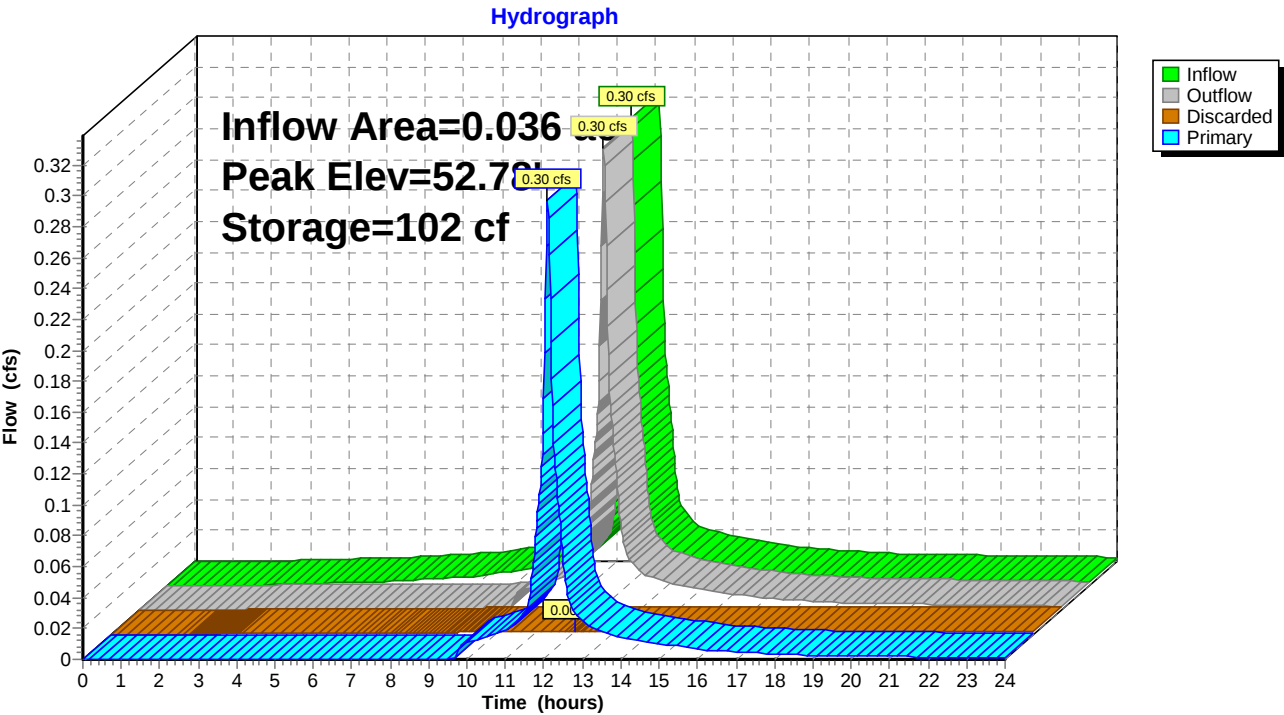
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	79	0	0
53.00	211	145	145

Device	Routing	Invert	Outlet Devices
#1	Discarded	52.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	52.67'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=52.78' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.30 cfs @ 12.10 hrs HW=52.78' (Free Discharge)
 ↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 0.89 fps)

Pond 16P: RAIN GARDEN



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 20P: INFILTRATION

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth > 8.45" for 100-yr event
 Inflow = 0.30 cfs @ 12.08 hrs, Volume= 0.025 af
 Outflow = 0.02 cfs @ 10.56 hrs, Volume= 0.024 af, Atten= 94%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 10.56 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 53.87' @ 13.74 hrs Surf.Area= 1,520 sf Storage= 438 cf

Plug-Flow detention time= 195.0 min calculated for 0.024 af (98% of inflow)
 Center-of-Mass det. time= 185.1 min (924.7 - 739.7)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,520 cf Overall x 33.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,520	0	0
54.00	1,520	1,520	1,520

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.00'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.02 cfs @ 10.56 hrs HW=53.01' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

151 STATE

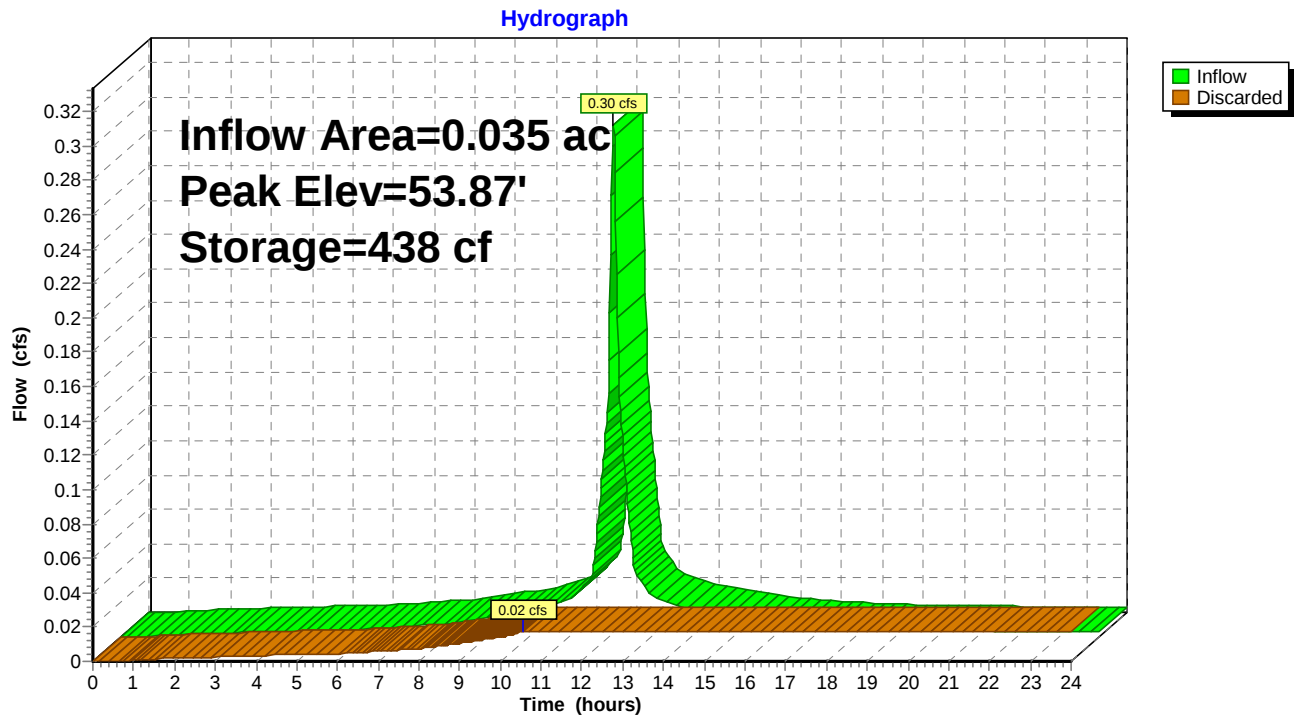
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Pond 20P: INFILTRATION

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Type III 24-hr 100-yr Rainfall=8.70"

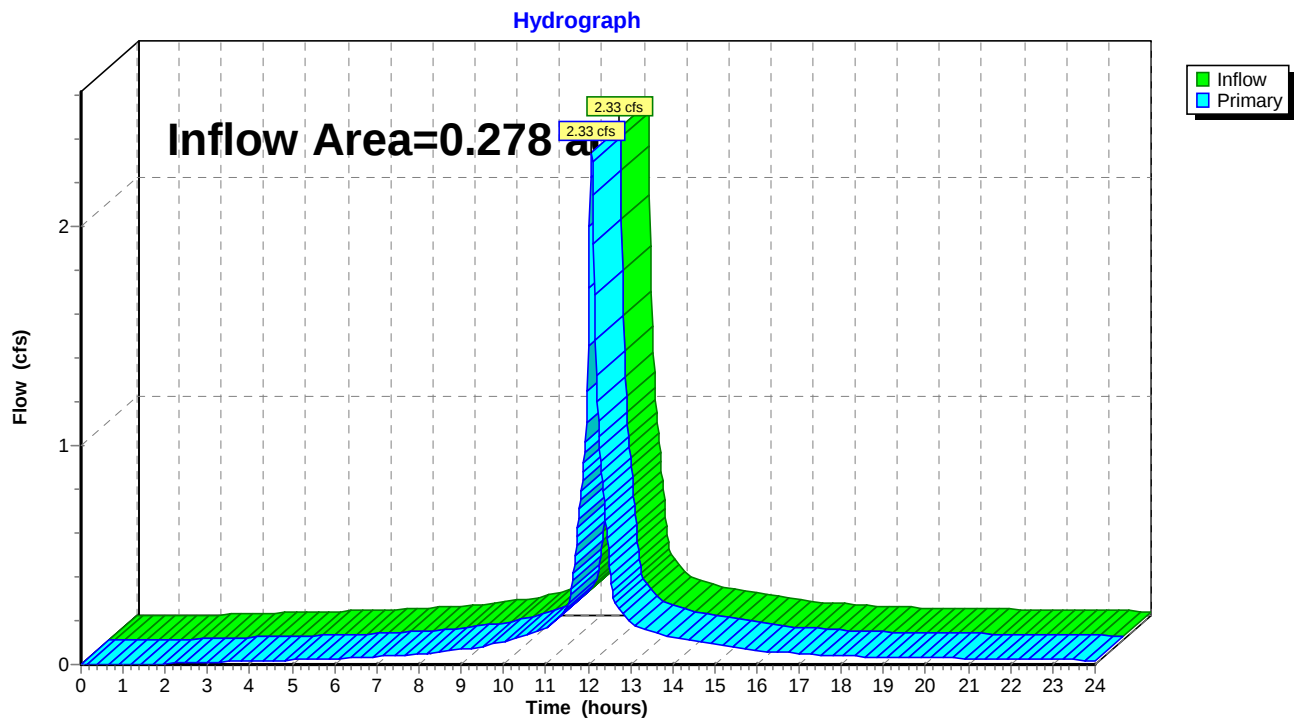
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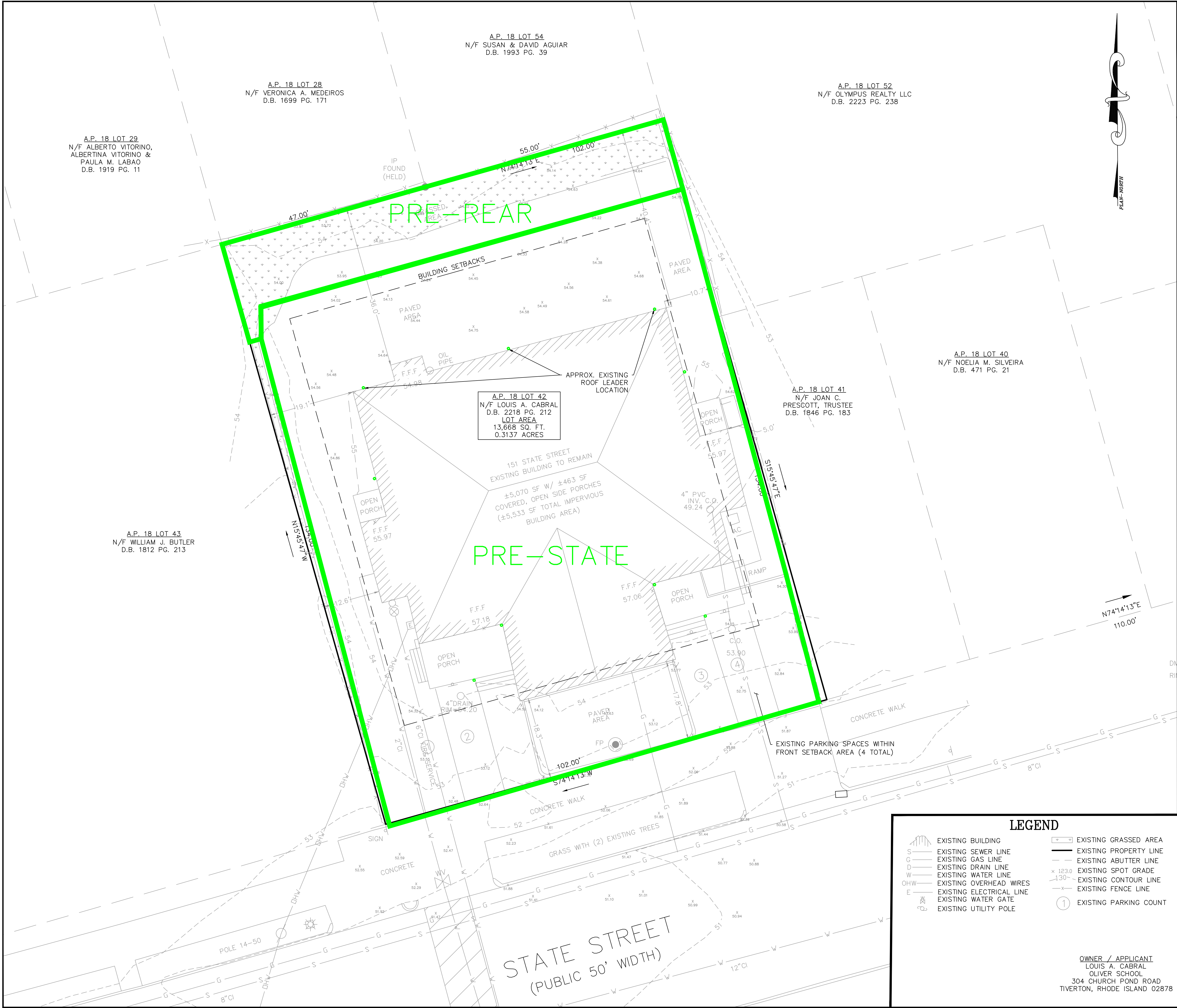
Summary for Link 17L: POST-STATE

Inflow Area = 0.278 ac, 85.17% Impervious, Inflow Depth > 7.85" for 100-yr event
 Inflow = 2.33 cfs @ 12.09 hrs, Volume= 0.182 af
 Primary = 2.33 cfs @ 12.09 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 17L: POST-STATE

C:\Users\admin\Principe Engineering\Dropbox\Land Development\2024\LD-2024-5-151 State Street Oliver School Bristol Lou Cabral\Current Working Drawings and PDFs\LD-2024-5-151 STATE STREET BRISTOL DPR_REV 1 - Copy.dwg, DWG To PDF.pc3



SOIL NOTE:

NP – NEWPORT-URBAN LAND COMPLEX
UD – UDORTHERNTS – URBAN LAND COMPLEX
FROM NRCS WEB SOIL SURVEY

PLAN REFERENCE

- 1.) EXISTING CONDITIONS TAKEN FROM PLAN ENTITLED "EXISTING CONDITIONS PLAN FOR ASSESSOR'S PLAT 18 LOT 42 151 STATE STREET IN BRISTOL, RHODE ISLAND"
PREPARED BY: PRINCIPLE COMPANY, SURVEYING DIVISION
- 2.) PROPOSED LANDSCAPING PLANS PREPARED BY:
SUNFLOWER DESIGNS
7 BARBARA DRIVE
BRISTOL, RI
401-525-0634

PLAN NOTES

- 1) PER GIS DATA, THERE ARE NO WETLANDS OR WETLAND BUFFERS ON THE SUBJECT PROPERTY
- 2) THERE ARE NO HISTORIC CEMETERIES LOCATED ON OR IMMEDIATELY ADJACENT TO THE SUBJECT PROPERTY

FEMA FLOOD NOTE

FIRM ZONE X
ZONE X – AREA OF MINIMAL FLOOD HAZARD
FLOOD MAP: 44001C0014H
EFFECTIVE DATE: 7/7/2014

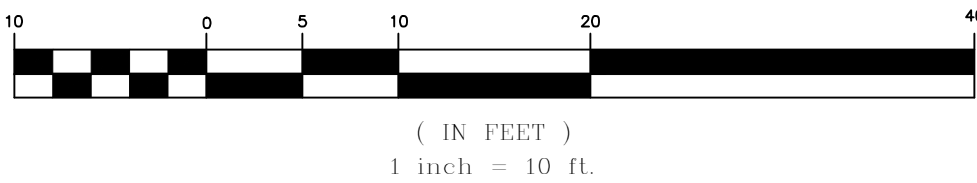
STREET INDEX:

STATE STREET
(PUBLIC)

DRAWING ISSUE:

- ☐ CONCEPT
 - ☐ CUSTOMER APPROVAL
 - ☒ PERMITTING
 - ☐ CONSTRUCTION
 - ☐ AS-BUILT
 - ☐ OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION
SHALL BE USED FOR CONSTRUCTION

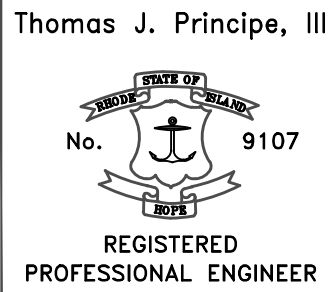
GRAPHIC SCALE



LEGEND

- EXISTING BUILDING
- S EXISTING SEWER LINE
- G EXISTING GAS LINE
- D EXISTING DRAIN LINE
- W EXISTING WATER LINE
- OHW EXISTING OVERHEAD WIRES
- E EXISTING ELECTRICAL LINE
- EXISTING WATER GATE
- EXISTING UTILITY POLE
- EXISTING GRASSED AREA
- EXISTING PROPERTY LINE
- EXISTING ABUTTER LINE
- EXISTING SPOT GRADE
- EXISTING CONTOUR LINE
- EXISTING FENCE LINE
- EXISTING PARKING COUNT

OWNER / APPLICANT
LOUIS A. CABRAL
OLIVER SCHOOL
304 CHURCH POND ROAD
TIVERTON, RHODE ISLAND 02878



PRINCIPLE COMPANY, INC.
ENGINEERING DIVISION
27 SAKONNET RIDGE DRIVE
TIVERTON, RI 02878
401.816.5385
www.PrincipeCompany.com

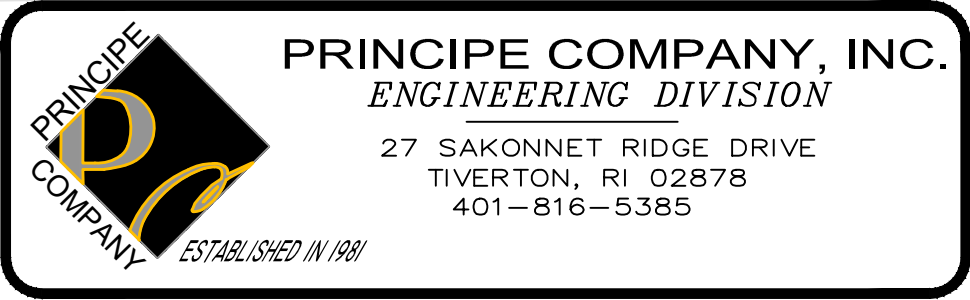
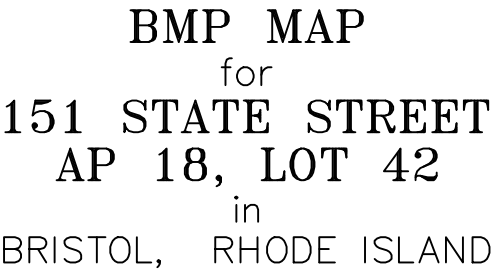
REVISIONS

No.	DATE	DRWN	CHKD

DEVELOPMENT PLAN REVIEW
151 STATE STREET
PLAT 18 LOT 42
in
BRISTOL, RHODE ISLAND

PRE-WATERSHED MAP

SCALE: 1"=10'		SHEET NO: 1 OF 2	
DRAWN BY: KAB	DESIGN BY: KAB		CHECKED BY: TJP
DATE: 08/22/24		PROJECT NO.: LD-2024-5	



Permeable Pavement Operation, Maintenance, and Management Inspection Checklist

Project:

Location:

Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Sediment and Debris Cleanout (3 Months or Manufacturer's Recommendation)		
Contributing area free of sediment and debris		
Contributing area stabilized and mown, with grass clippings removed		
Surface free of sediment and debris (e.g., mulch, leaves, trash, etc.)		
No signs of clogging (e.g., standing water)		
Surface does not require vacuuming		
2. Dewatering (Monthly)		
Permeable pavement dewateres between storms		
3. Underdrain Outfall, if present (Annual)		
No evidence of erosion		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Surface Repairs (Annual)		
Surface has not been sealed		
No evidence of surface deterioration or spalling		
Surface (top and base course) does not need to be replaced		

Comments:

Actions to be Taken:

Sample Stormwater Facility Maintenance Agreement

THIS AGREEMENT, made and entered into this ____ day of _____, 20____, by and between (Insert Full Name of Owner)

_____, hereinafter called the "Landowner", and the [Local Jurisdiction], hereinafter called the "[Town/City]".

WITNESSETH, that WHEREAS, the Landowner is the owner of certain real property described as (Tax Map/Parcel Identification Number) _____ as recorded by deed in the land records of [Local Jurisdiction] Deed Book _____ Page _____, hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on and develop the property; and WHEREAS, the Site Plan/Subdivision Plan known as _____, (Name of Plan/Development) hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the [Town/City], provides for detention of stormwater within the confines of the property; and

WHEREAS, the [Town/City] and the Landowner, its successors and assigns, including any homeowners association, agree that the health, safety, and welfare of the residents of [Local Jurisdiction] require that on-site stormwater management facilities be constructed and maintained on the Property; and

WHEREAS, the [Town/City] requires that on-site stormwater management facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns, including any homeowners association.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The on-site stormwater management facilities shall be constructed by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the Plan.
2. The Landowner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater management facilities in accordance with the required Operation and Maintenance Plan. This includes all pipes, channels or other conveyances built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions. The Stormwater Best Management Practices Operation, Maintenance and Management Checklists are to be used to establish what good working condition is acceptable to the [Town/City].

-
3. The Landowner, its successors and assigns, shall inspect the stormwater management facility and submit an inspection report annually. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, basin areas, access roads, etc. Deficiencies shall be noted in the inspection report.
 4. The Landowner, its successors and assigns, hereby grant permission to the [Town/City], its authorized agents and employees, to enter upon the Property and to inspect the stormwater management facilities whenever the [Town/City] deems necessary. The purpose of inspection is to follow-up on reported deficiencies and/or to respond to citizen complaints. The [Town/City] shall provide the Landowner, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.
 5. In the event the Landowner, its successors and assigns, fails to maintain the stormwater management facilities in good working condition acceptable to the [Town/City], the [Town/City] may enter upon the Property and take whatever steps necessary to correct deficiencies identified in the inspection report and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow the [Town/City] to erect any structure of permanent nature on the land of the Landowner outside of the easement for the stormwater management facilities. It is expressly understood and agreed that the [Town/City] is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the [Town/City].
 6. The Landowner, its successors and assigns, will perform the work necessary to keep these facilities in good working order as appropriate. In the event a maintenance schedule for the stormwater management facilities (including sediment removal) is outlined on the approved plans, the schedule will be followed.
 7. In the event the [Town/City] pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner, its successors and assigns, shall reimburse the [Town/City] upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the [Town/City] hereunder.
 8. This Agreement imposes no liability of any kind whatsoever on the [Town/City] and the Landowner agrees to hold the [Town/City] harmless from any liability in the event the stormwater management facilities fail to operate properly.
 9. This Agreement shall be recorded among the land records of [Local Jurisdiction] and shall constitute a covenant running with the land, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, including any homeowners association.

WITNESS the following signatures and seals:

Company/Corporation/Partnership Name (Seal)

By: _____

(Type Name and Title)

The foregoing Agreement was acknowledged before me this ____ day of
_____, 20____, by

_____.

NOTARY PUBLIC

My Commission Expires: _____

By: _____

(Type Name and Title)

The foregoing Agreement was acknowledged before me this ____ day of
_____, 20____, by

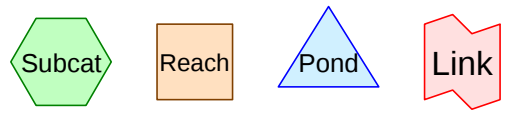
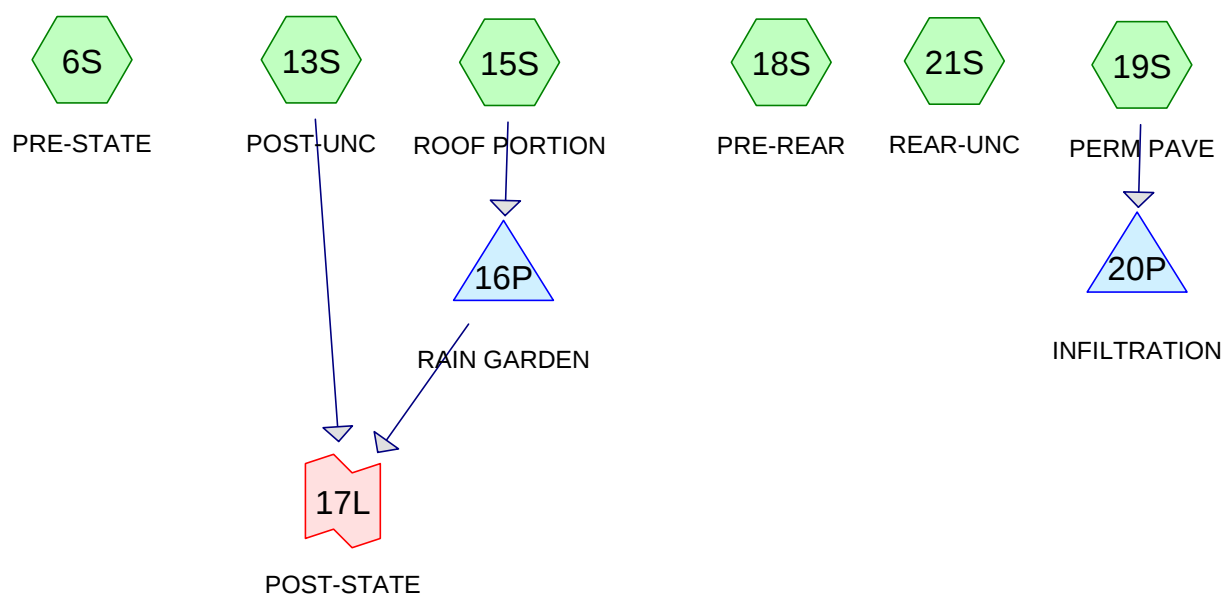
_____.

NOTARY PUBLIC

My Commission Expires: _____

Approved as to Form:

[Town/City] Attorney Date



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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.065	74	>75% Grass cover, Good, HSG C (13S, 15S, 18S)
0.312	98	Paved parking, HSG C (6S, 13S, 18S, 19S, 21S)
0.254	98	Roofs, HSG C (6S, 13S, 15S)
0.631	96	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.631	HSG C	6S, 13S, 15S, 18S, 19S, 21S
0.000	HSG D	
0.000	Other	
0.631		TOTAL AREA

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.065	0.000	0.000	0.065	>75% Grass cover, Good	13S, 15S, 18S
0.000	0.000	0.312	0.000	0.000	0.312	Paved parking	6S, 13S, 18S, 19S, 21S
0.000	0.000	0.254	0.000	0.000	0.254	Roofs	6S, 13S, 15S
0.000	0.000	0.631	0.000	0.000	0.631	TOTAL AREA	

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Type III 24-hr WQV Rainfall=1.20"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
 Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: PRE-STATE	Runoff Area=12,106 sf 100.00% Impervious Runoff Depth>0.98" Tc=6.0 min CN=0/98 Runoff=0.30 cfs 0.023 af
Subcatchment 13S: POST-UNC	Runoff Area=10,527 sf 86.29% Impervious Runoff Depth>0.86" Tc=6.0 min CN=74/98 Runoff=0.23 cfs 0.017 af
Subcatchment 15S: ROOF PORTION	Runoff Area=1,579 sf 77.71% Impervious Runoff Depth>0.78" Tc=6.0 min CN=74/98 Runoff=0.03 cfs 0.002 af
Subcatchment 18S: PRE-REAR	Runoff Area=1,646 sf 36.63% Impervious Runoff Depth>0.40" Tc=6.0 min CN=74/98 Runoff=0.02 cfs 0.001 af
Subcatchment 19S: PERM PAVE	Runoff Area=1,520 sf 100.00% Impervious Runoff Depth>0.98" Tc=6.0 min CN=0/98 Runoff=0.04 cfs 0.003 af
Subcatchment 21S: REAR-UNC	Runoff Area=126 sf 100.00% Impervious Runoff Depth>0.98" Tc=6.0 min CN=0/98 Runoff=0.00 cfs 0.000 af
Pond 16P: RAIN GARDEN	Peak Elev=52.47' Storage=52 cf Inflow=0.03 cfs 0.002 af Discarded=0.00 cfs 0.002 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.002 af
Pond 20P: INFILTRATION	Peak Elev=53.03' Storage=15 cf Inflow=0.04 cfs 0.003 af Outflow=0.02 cfs 0.003 af
Link 17L: POST-STATE	Inflow=0.23 cfs 0.017 af Primary=0.23 cfs 0.017 af

Total Runoff Area = 0.631 ac Runoff Volume = 0.047 af Average Runoff Depth = 0.89"
10.32% Pervious = 0.065 ac 89.68% Impervious = 0.566 ac

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Type III 24-hr WQV Rainfall=1.20"

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Summary for Subcatchment 6S: PRE-STATE

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.023 af, Depth> 0.98"
 Routed to nonexistent node 2P

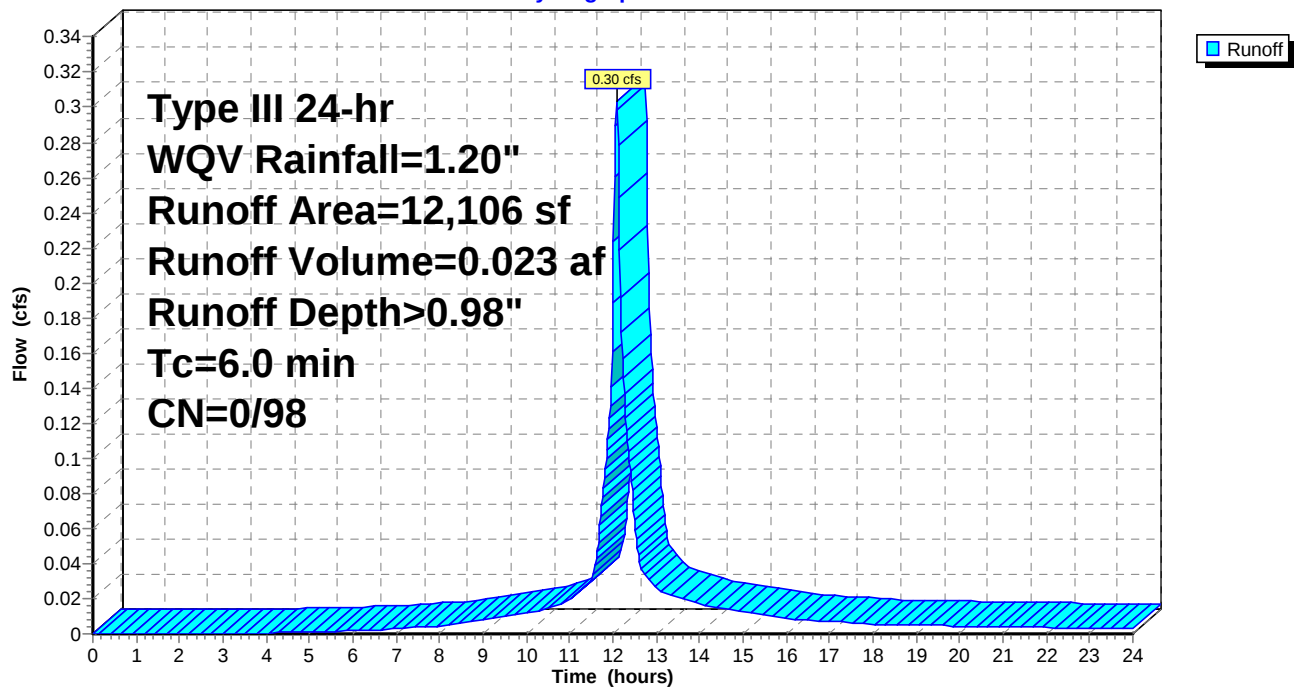
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-24.00 hrs, dt= 0.02 hr
 Type III 24-hr WQV Rainfall=1.20"

Area (sf)	CN	Description
5,533	98	Roofs, HSG C
6,573	98	Paved parking, HSG C
12,106	98	Weighted Average
12,106	98	100.00% Impervious Area

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

Subcatchment 6S: PRE-STATE

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Type III 24-hr WQV Rainfall=1.20"

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Summary for Subcatchment 13S: POST-UNC

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 0.86"
 Routed to Link 17L : POST-STATE

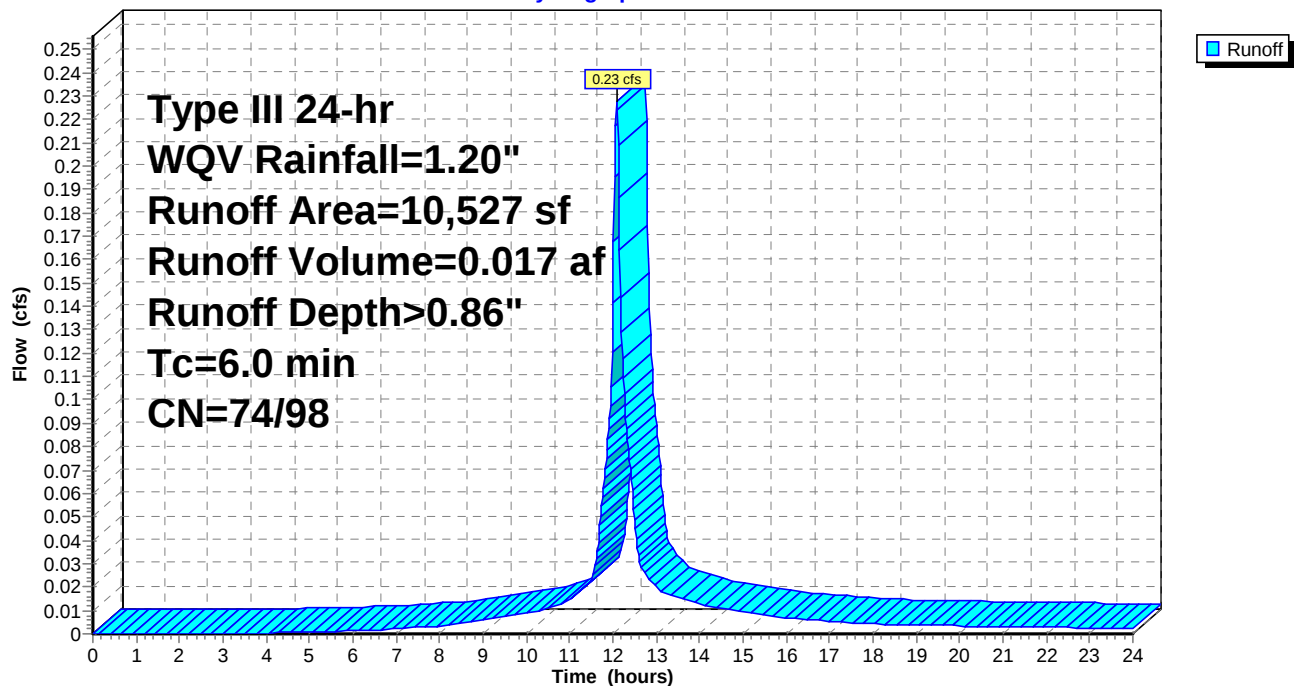
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-24.00 hrs, dt= 0.02 hr
 Type III 24-hr WQV Rainfall=1.20"

Area (sf)	CN	Description
4,306	98	Roofs, HSG C
1,443	74	>75% Grass cover, Good, HSG C
4,778	98	Paved parking, HSG C
10,527	95	Weighted Average
1,443	74	13.71% Pervious Area
9,084	98	86.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 1

Subcatchment 13S: POST-UNC

Hydrograph



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Type III 24-hr WQV Rainfall=1.20"

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Summary for Subcatchment 15S: ROOF PORTION

Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Depth> 0.78"
 Routed to Pond 16P : RAIN GARDEN

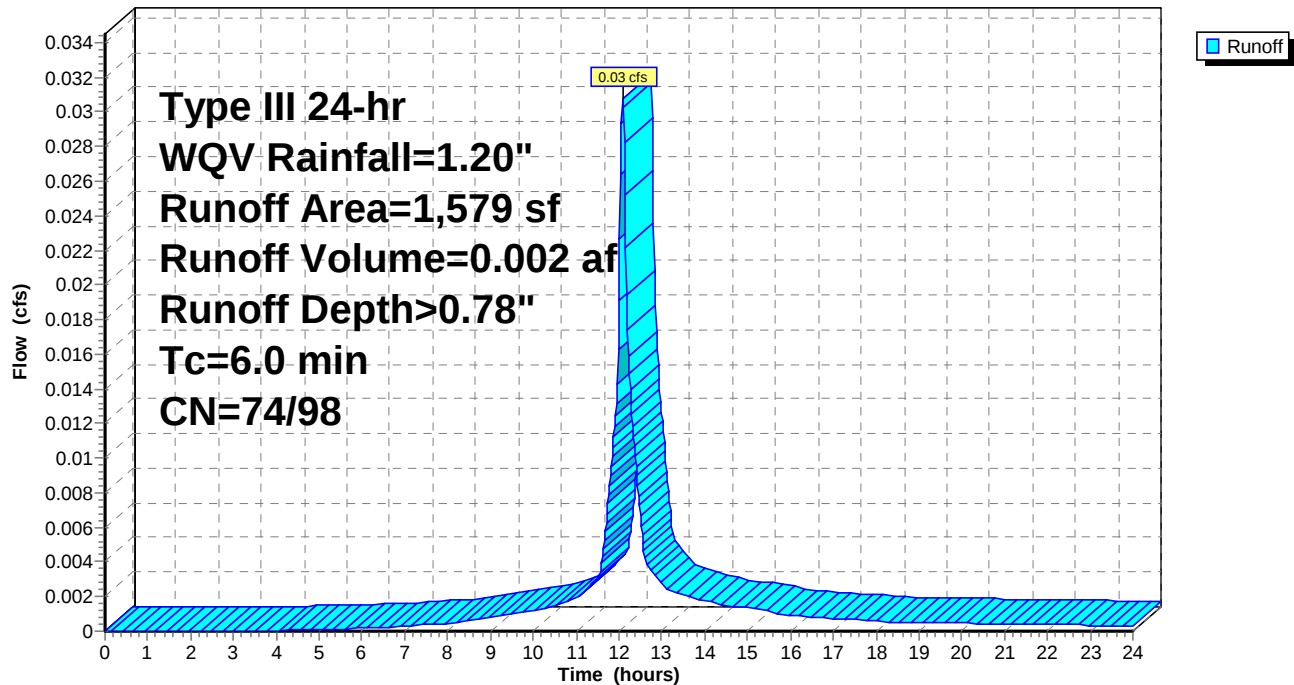
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-24.00 hrs, dt= 0.02 h
 Type III 24-hr WQV Rainfall=1.20"

Area (sf)	CN	Description
1,227	98	Roofs, HSG C
352	74	>75% Grass cover, Good, HSG C
1,579	93	Weighted Average
352	74	22.29% Pervious Area
1,227	98	77.71% Impervious Area

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

Subcatchment 15S: ROOF PORTION

Hydrograph



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Type III 24-hr WQV Rainfall=1.20"

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Summary for Subcatchment 18S: PRE-REAR

Runoff = 0.02 cfs @ 12.08 hrs, Volume= 0.001 af, Depth> 0.40"

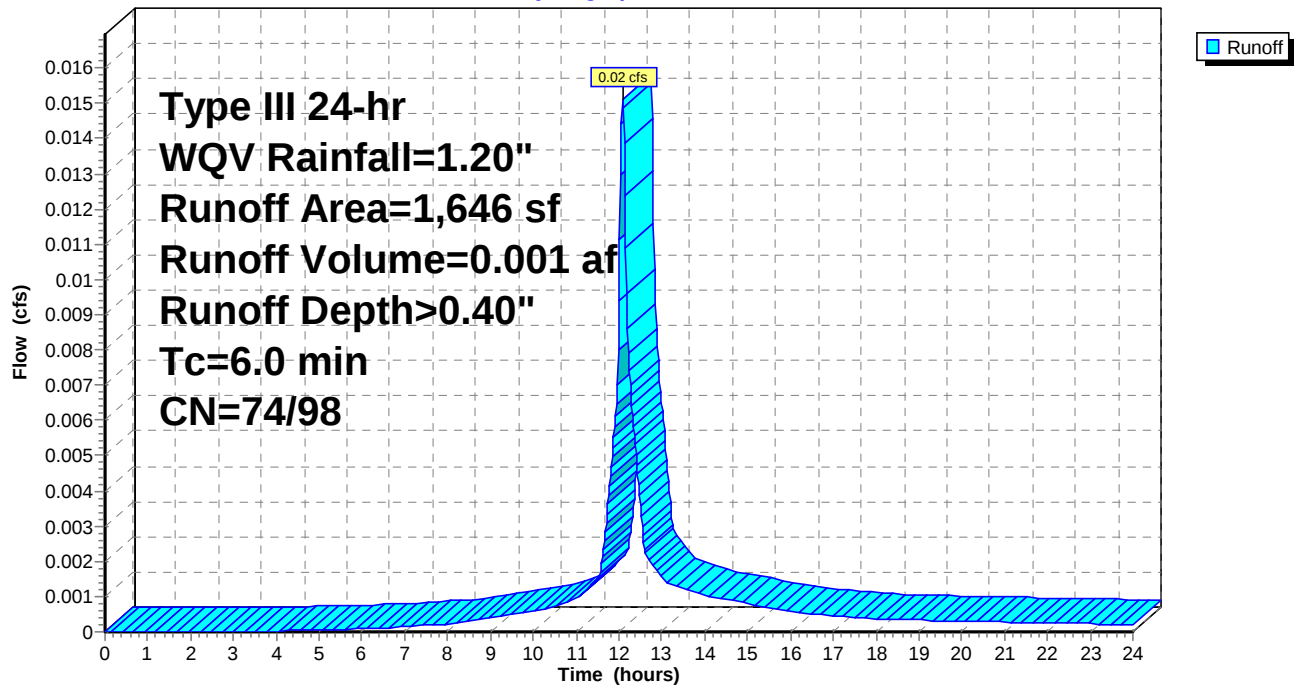
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-24.00 hrs, dt= 0.02 h
Type III 24-hr WQV Rainfall=1.20"

Area (sf)	CN	Description
1,043	74	>75% Grass cover, Good, HSG C
603	98	Paved parking, HSG C
1,646	83	Weighted Average
1,043	74	63.37% Pervious Area
603	98	36.63% Impervious Area

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

Subcatchment 18S: PRE-REAR

Hydrograph



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Type III 24-hr WQV Rainfall=1.20"

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Summary for Subcatchment 19S: PERM PAVE

Runoff = 0.04 cfs @ 12.08 hrs, Volume= 0.003 af, Depth> 0.98"
 Routed to Pond 20P : INFILTRATION

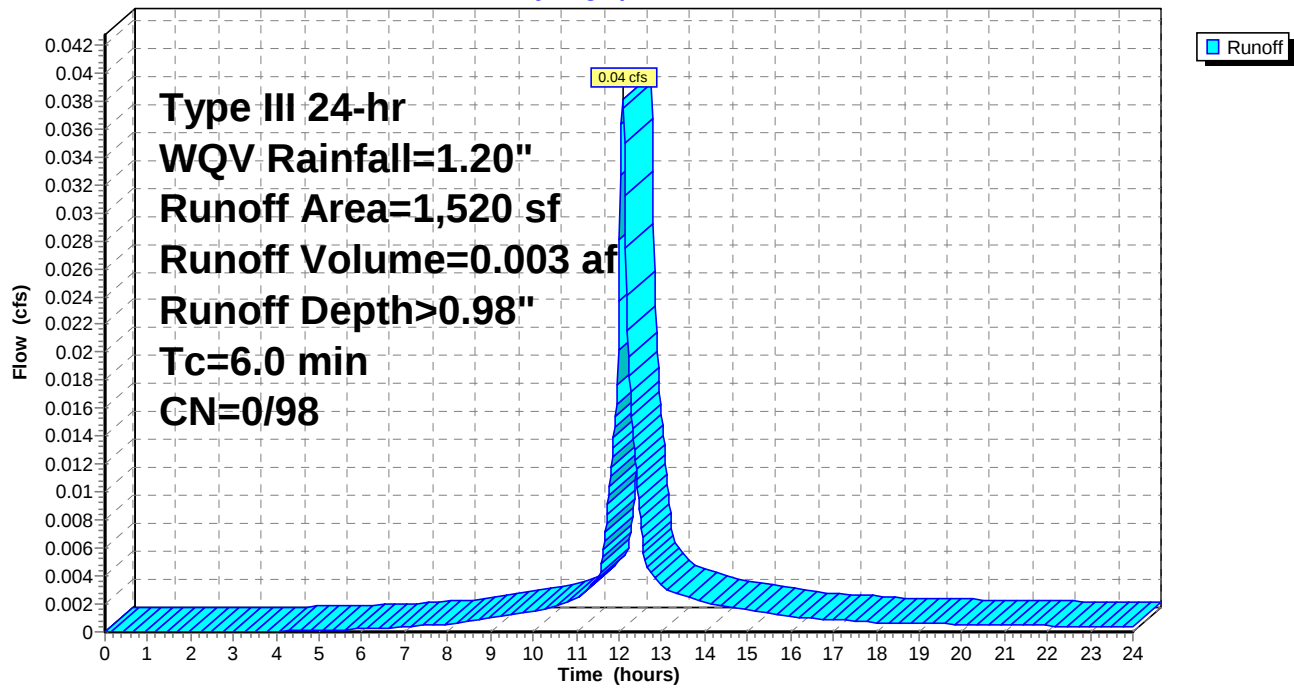
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-24.00 hrs, dt= 0.02 h
 Type III 24-hr WQV Rainfall=1.20"

Area (sf)	CN	Description
1,520	98	Paved parking, HSG C
1,520	98	100.00% Impervious Area

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

Subcatchment 19S: PERM PAVE

Hydrograph



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Type III 24-hr WQV Rainfall=1.20"

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Summary for Subcatchment 21S: REAR-UNC

Runoff = 0.00 cfs @ 12.08 hrs, Volume= 0.000 af, Depth> 0.98"

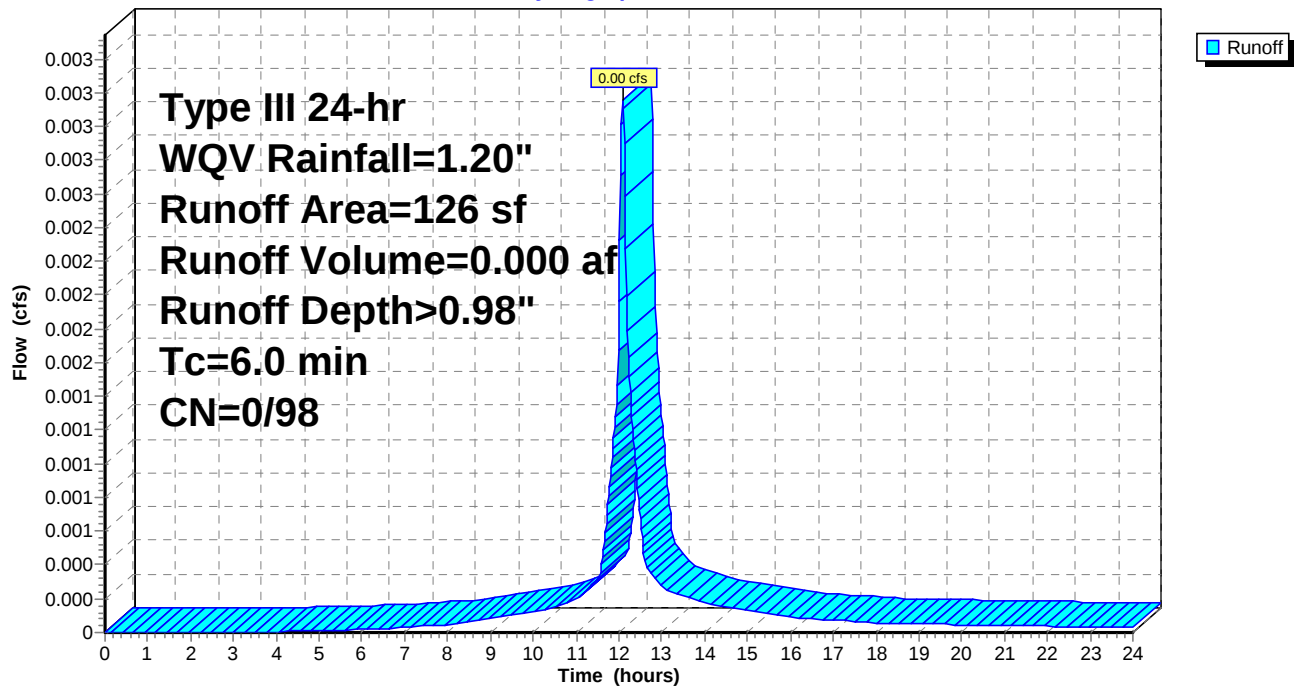
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-24.00 hrs, dt= 0.02 hr
Type III 24-hr WQV Rainfall=1.20"

Area (sf)	CN	Description
126	98	Paved parking, HSG C
126	98	100.00% Impervious Area

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

Subcatchment 21S: REAR-UNC

Hydrograph



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Type III 24-hr WQV Rainfall=1.20"

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Summary for Pond 16P: RAIN GARDEN

Inflow Area = 0.036 ac, 77.71% Impervious, Inflow Depth > 0.78" for WQV event
 Inflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af
 Outflow = 0.00 cfs @ 14.22 hrs, Volume= 0.002 af, Atten= 95%, Lag= 127.8 min
 Discarded = 0.00 cfs @ 14.22 hrs, Volume= 0.002 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routed to Link 17L : POST-STATE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 52.47' @ 14.22 hrs Surf.Area= 141 sf Storage= 52 cf

Plug-Flow detention time= 271.6 min calculated for 0.002 af (78% of inflow)

Center-of-Mass det. time= 191.2 min (976.3 - 785.1)

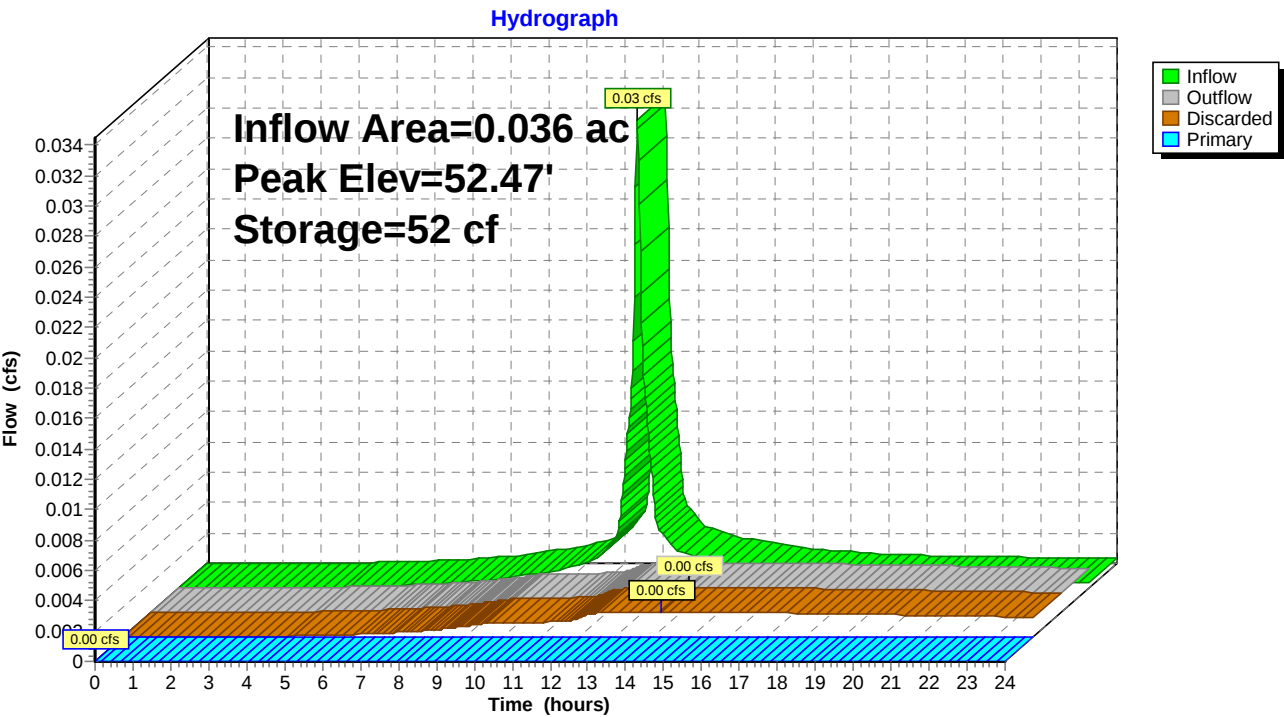
Volume	Invert	Avail.Storage	Storage Description
#1	52.00'	145 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.00	79	0	0
53.00	211	145	145

Device	Routing	Invert	Outlet Devices
#1	Discarded	52.00'	0.500 in/hr Exfiltration over Surface area
#2	Primary	52.67'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.00 cfs @ 14.22 hrs HW=52.47' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=52.00' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: RAIN GARDEN



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Type III 24-hr WQV Rainfall=1.20"

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Summary for Pond 20P: INFILTRATION

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth > 0.98" for WQV event
 Inflow = 0.04 cfs @ 12.08 hrs, Volume= 0.003 af
 Outflow = 0.02 cfs @ 12.02 hrs, Volume= 0.003 af, Atten= 54%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 12.02 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 53.03' @ 12.25 hrs Surf.Area= 1,520 sf Storage= 15 cf

Plug-Flow detention time= 6.7 min calculated for 0.003 af (100% of inflow)
 Center-of-Mass det. time= 6.1 min (787.6 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,520 cf Overall x 33.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,520	0	0
54.00	1,520	1,520	1,520

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.00'	0.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.02 cfs @ 12.02 hrs HW=53.01' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

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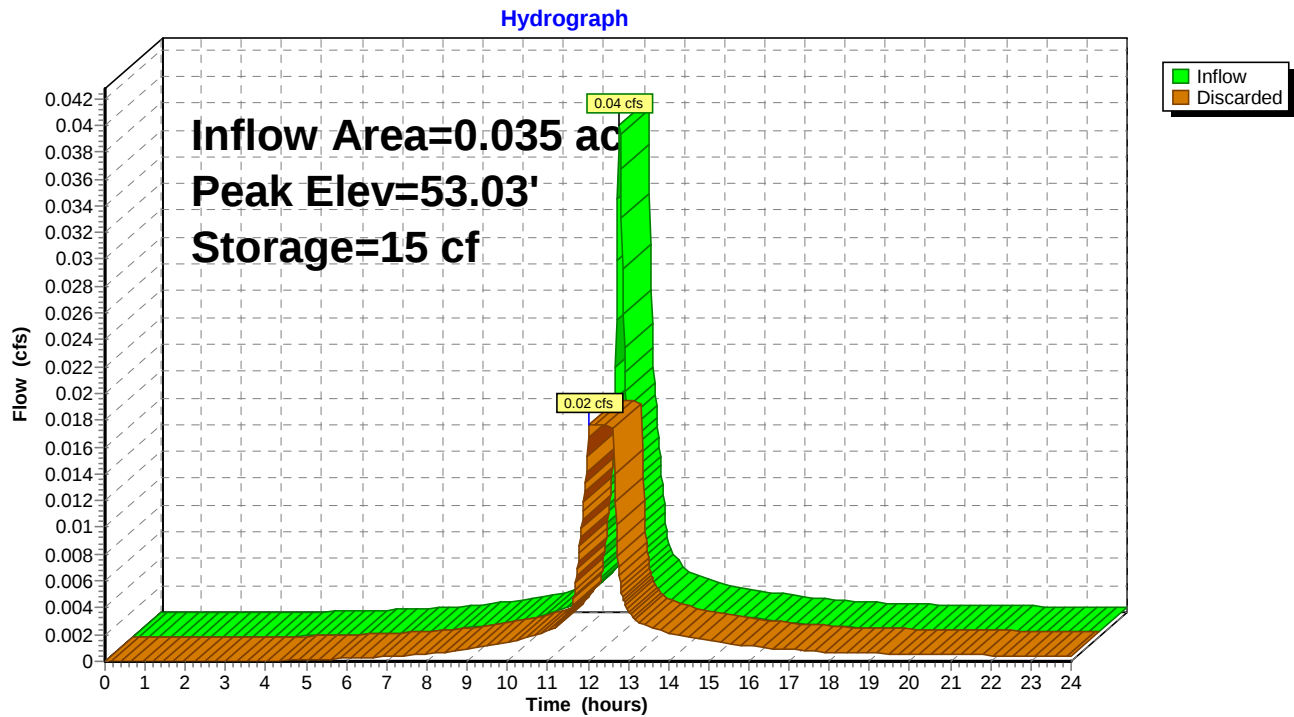
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Type III 24-hr WQV Rainfall=1.20"

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Pond 20P: INFILTRATION

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Type III 24-hr WQV Rainfall=1.20"

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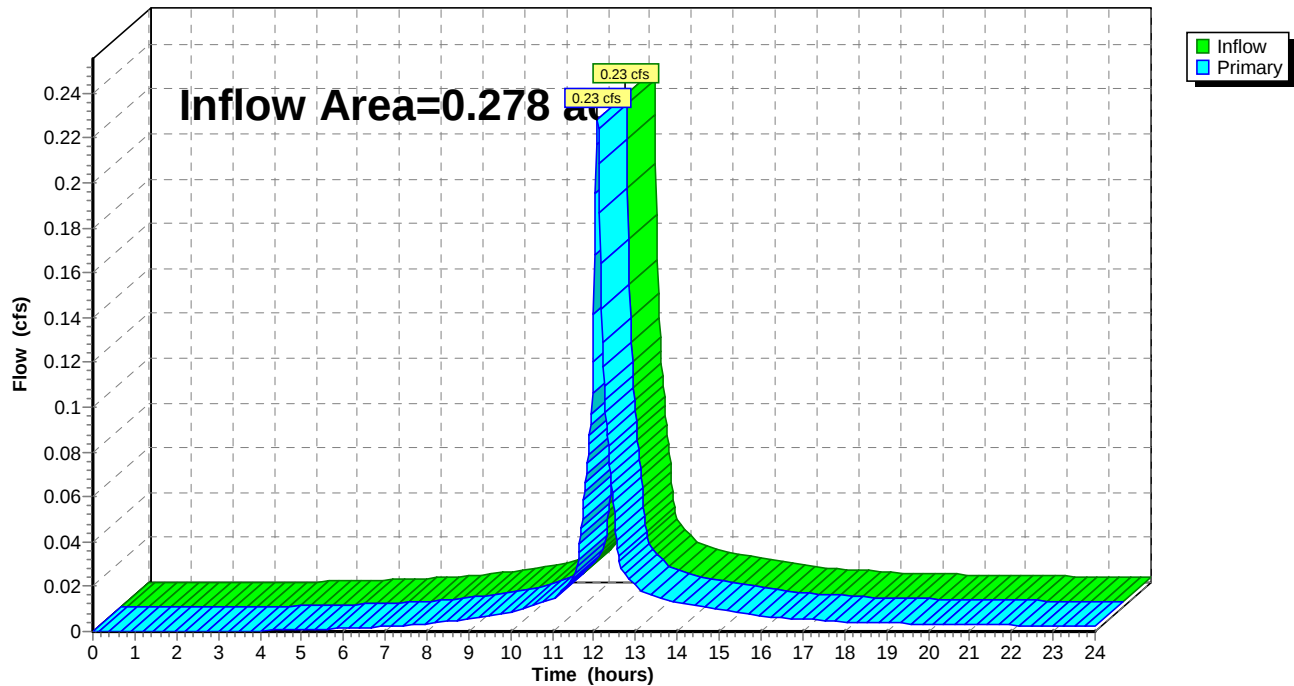
Summary for Link 17L: POST-STATE

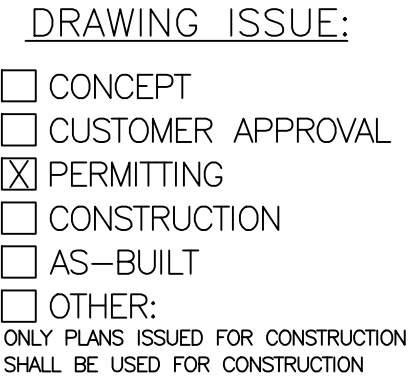
Inflow Area = 0.278 ac, 85.17% Impervious, Inflow Depth > 0.75" for WQV event
 Inflow = 0.23 cfs @ 12.08 hrs, Volume= 0.017 af
 Primary = 0.23 cfs @ 12.08 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link 17L: POST-STATE

Hydrograph



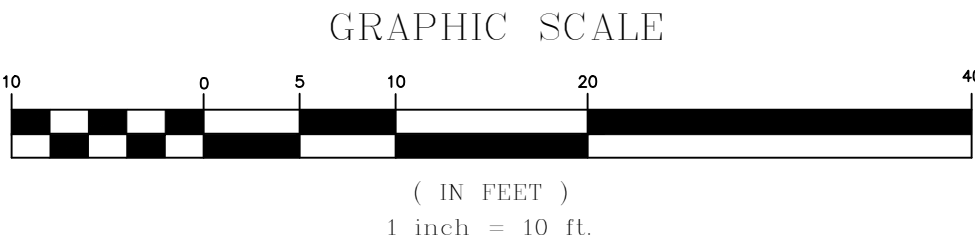


1.) EXISTING CONDITIONS TAKEN FROM PLAN ENTITLED "EXISTING
CONDITIONS PLAN FOR ASSESSOR'S PLAT 18 LOT 42 151 STATE
STREET IN
BRISTOL, RHODE ISLAND"
PREPARED BY: PRINCIPE COMPANY, SURVEYING DIVISION

2.) PROPOSED LANDSCAPING PLANS PREPARED BY:
SUNFLOWER DESIGNS
7 BARBARA DRIVE
BRISTOL, RI
401-525-0634

1. PER THE BRISTOL RIVER SEWER DEPARTMENT, THE CAPACITY OF THE EXISTING SYSTEM AND SEWER MAIN IN THE STATE STREET RIGHT OF WAY WILL BE SUITABLE FOR THE PROPOSED DEVELOPMENT. PER DEPARTMENT DIRECTOR, OWNER SHALL CONDUCT A CAMERA INSPECTION OF EXISTING SEWER LATERAL TO ASSESS FUNCTION DUE TO AGE.
2. EXISTING WATER, SEWER, GAS, AND ELECTRIC SERVICES ARE PROPOSED TO REMAIN AS PART OF THIS DEVELOPMENT PROPOSAL.

	EXISTING BUILDING		EXISTING GRASSED AREA
	EXISTING SEWER LINE		EXISTING PROPERTY LINE
	EXISTING GAS LINE		EXISTING ABUTTER LINE
	EXISTING DRAIN LINE		EXISTING SPOT GRADE
	EXISTING WATER LINE		EXISTING CONTOUR LINE
	EXISTING OVERHEAD WIRES		EXISTING FENCE LINE
	EXISTING ELECTRICAL LINE		PROP. PARKING STRIPE
	EXISTING WATER GATE		PROP. LANDSCAPED AREA
	EXISTING UTILITY POLE		PROP. POROUS PAVEMENT
			PROP. ASPHALT



PRINCIPE COMPANY, INC.
ENGINEERING DIVISION

27 SAKONNET RIDGE DRIVE
 TIVERTON, RI 02878
 401.816.5385

ESTABLISHED IN 1961 www.PrincipeCompany.com

DEVELOPMENT PLAN REVIEW
151 STATE STREET
PLAT 18 LOT 42
in
BRISTOL, RHODE ISLAND

POST WATERSHED MAP

SCALE: 1"=10'		SHEET NO: 2 OF 2	
DRAWN BY: AMI	DESIGN BY: AMI	CHECKED BY: TJP	
DATE: 04/19/24		PROJECT NO.: LD-2024-5	

<u>STREET INDEX:</u>	<u>OWNER / APPLICANT</u>
STATE STREET	LOUIS A. CABRAL
(PUBLIC)	OLIVER SCHOOL
	304 CHURCH POND ROAD
	TIVERTON, RHODE ISLAND 02878



**LONG TERM OPERATION AND
MAINTENANCE PLAN
August 26, 2024**

**OLIVER SCHOOL
AP 18, LOT 42
151 STATE STREET
BRISTOL, RI**

Prepared For:

Louis Cabral
304 Church Pond Road
Tiverton, RI 02878

Prepared By:

Principe Engineering, Inc.
27 Sakonnet Ridge Drive
Tiverton, Rhode Island

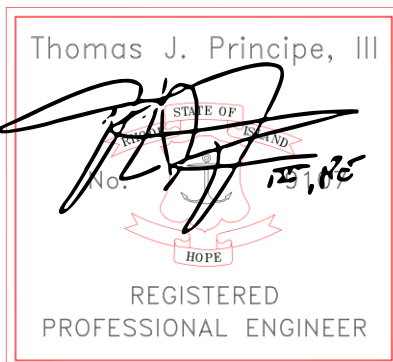


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De-icing and Salt Storage	Page 3
Permeable Pavement	Page 3
Snow Disposal	Page 3
Rain Garden/Bioretenention Basin	Page 4
Appendix:	Page 4

In order to minimize the stormwater management system deterioration, the owner shall adhere to the following Operation and Maintenance Plan as well as any additional requirements pertaining to inspection and maintenance measures for this site provided in Appendices E and G of the Rhode Island Stormwater Design and Installation Standards Manual.

Pavement Sweeping

Pavement sweeping shall be conducted on a quarterly basis. Some debris collected from parking lots may be regulated as a hazardous waste. For these cases, debris must be disposed of in accordance with appropriate practice and applicable regulatory standards. Appendix A of the *Rules and Regulations for Composting Facilities and Solid Waste Management Facilities*, which is entitled "Management of Street Sweepings in Rhode Island," shall be reviewed. For further information, contact the DEM Office of Waste Management.

De-icing and Salt Storage

De-icing and sanding operations are often necessary for safety during winter storms; however, the materials used create water quality problems. Use deicing chemicals and sand judiciously. The information in Table G-1 from Appendix G of the RISDISM shall be utilized when selecting a deicer.

Permeable Paving

A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority to ensure the following: Areas where infiltrating permeable pavement practices shall never serve as a sediment control device during site construction phase. Great care must be taken to prevent the permeable pavement area from compaction. Permeable paving surfaces require regular vacuum sweeping or hosing (minimum every three months or as recommended by manufacturer) to keep the surface from clogging. Maintenance frequency needs may be more or less depending on the traffic volume at the site. The use of sand and salt shall be minimized during the winter months. Permeable pavement areas shall not be repaved or resealed with impermeable materials. The permeable pavement area shall be inspected annually for deterioration or spalling.

Snow Disposal

Improper snow disposal can be a threat to public health and the environment. Disposal shall consider site selection, site preparation and maintenance, and emergency snow disposal locations and procedures. On this site, due to the limited area, all snow will be required to be removed and disposed of off-site in accordance with state and local regulations. Refer to DEM's Snow Disposal Policy for more details on these topics.

Rain Garden/Bioretention Basin

A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority to ensure the following: Silt/sediment shall be removed from the filter bed when the accumulation exceeds one inch. When the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner at an approved and permitted location.

General Maintenance Notes

For unique installations in extremely tight sites or redevelopment/infill projects where pretreatment strips have been downsized, enhanced maintenance shall be required through more frequent inspections, more frequent sediment removal, and enhanced landscape maintenance.

During the six months immediately after construction, filter practices shall be inspected following at least the first two precipitation events of at least 1.0 inch to ensure that the systems are functioning properly. Thereafter, inspections shall be conducted on an annual basis and after storm events of greater than or equal the 1- year, 24-hour Type III precipitation event.

APPENDIX:

- A. Checklists (Bioretention & Permeable Pavement)
- B. Maintenance Agreement
- C. BMP Location Plan