

WESTWOOD PLANNING BOARD APPLICATION FOR HEARING

Town Of Westwood
Planning Department

APR 21 2016

RECEIVED

1. Requested Approval(s):
TO EXPAND PARKING AREA

2. Brief Narrative of Proposal:
THE PROJECT CONSISTS OF EXPANDING EXISTING PARKING FROM NINE TO THIRTEEN SPACES WITH REQUIRED DRAINAGE + SIGNAGE FOR SAME.

2016 APR 21 P 2:45

3. Address/Location of Property Subject to Hearing:
1054 HIGH STREET

4. Assessor's Map and Parcel Number(s): MAP 20 PARCEL 108

5. Size of Parcel: 54,188 S.F.

6. Name of Applicant:
(THE TOBIN SCHOOL) JACLYN C. BENNETT

7. Applicant's Mailing Address:
1054 HIGH STREET
WESTWOOD, MA

8. Applicant's Telephone: (H) _____ (W) _____

9. Applicant's E-Mail Address: _____

10. Applicant is: Owner ___ Tenant ___ Licensee ___ Prospective Purchaser ___ Other ___

11. Name of Property Owner(s):
(THE TOBIN SCHOOL) MARK AND MARY BETH TOBIN

12. Property Owner's Mailing Address:
PO BOX 59
NATICK, MA 01760

13. Deed Recorded in:
a. County Registry of Deeds, Book 25926 Page 135
b. Registry District of the Land Court, Certificate Number _____
Page _____ Book _____

14. Has any Application ever been filed with the Planning Board regarding this Property?

Yes, When? _____
 No

15. Has the Lot been surveyed by a Registered Land Surveyor?

Yes, When? _____
 No

The Applicant hereby requests a public hearing before the Westwood Planning Board and consents to pay for the cost of all legal advertisements required by the Zoning Bylaw and/or Planning Board Rules and Regulations, which will be billed directly to the Applicant by the newspaper at a later date. The Applicant also consents to pay for all costs required pursuant to applicable sections of the Westwood Zoning Bylaw and/or Planning Board Rules and Regulations, unless expressly waived by the Planning Board, including all project review fees, inspection fees, and costs associated transcription, in addition to all other fees, expenses and costs in connection with the Planning Board's review and evaluation of this Application.

Signed: Jaclyn Bennett
Applicant (or Agent) Signature
JACLYN C. BENNETT
Printed Name of Applicant

Signed: Mary Beth Claus Tobin
Property Owner(s) of Record Signature(s)
MARY BETH TOBIN
Printed Name(s) of Property Owner(s) of Record

Date: 4/21/16

Payments Received: Application Fee: \$ 750 -
Project Review Fees: \$ -0 -
(if applicable)
Inspection Fees: \$ -0 -
(if applicable)
Other Fees: \$ -0 -
(if applicable)

VTP

ASSOCIATES

INC.

LAND SURVEYORS-CIVIL ENGINEERS
MORTGAGE INSPECTION
SPECIALISTS

132 ADAMS STREET
2ND FLOOR, SUITE 3
NEWTON, MA 02458

April 20, 2016

Abigail McCabe
Town Planner
Planning Department
Environmental Impact and Design Review (EIDR)
50 Carby Street
Westwood, Massachusetts 02090

Subject: 1054 High Street Westwood, MA
VTP Project# 210199

Dear Mrs McCabe:

PROJECT SUMMARY

The site is currently occupied with a 1.5-story wood building, a one car garage, a paved parking lot with 9 spaces, a sport field and a play area. We are proposing the extension of the parking lot to accommodate 13 parking spaces in total, a new walkway, a bike rack, and a new on site drainage infiltration system. The drainage infiltration design consists of an eight (10) concrete chambers (Galleys) system connected to a catch basin at the front of the parking lot. The infiltration system was designed to infiltrate the 100-year storm.

WAIVERS REQUIRED FROM THE SUBMITTAL REQUIREMENTS

Sec. 7.3.6.2	Exterior Lighting Plan
Sec. 7.3.6.3	Traffic Study
Sec. 7.3.6.4	Drawings/Renderings (N/A)
Sec. 7.3.6.7	Model

ENVIRONMENTAL IMPACT AND DESIGN STANDARDS

Sec. 7.3.7.1 Preservation of Landscape

The proposed area to be regrade is the approximately 2,900 square feet with a fill of 0 to 1 foot. The landscape changes will be minor.

Sec. 7.3.7.2 Relation of Building to Environment

Not Applicable.

Sec. 7.3.7.3 Open Space

Not Applicable

Sec. 7.3.7.4 Circulation, Traffic Impact and Alternative Means of Transportation

The proposed site will present an improvement of the vehicular/pedestrian circulation with the addition of signs for the traffic flow, a new walkway, and a parking area for bicycle to encourage alternative mean of transportation.

Sec. 7.3.7.5 Storm Drainage and Erosion Control

See the "Stormwater Report dated January 27, 2016" prepared by VTP associates Inc for the stormwater management analysis. We provided erosion and sediment control with wattles along the area of work and siltsack install to the existing catch basing, in order to prevent any negative impact during construction.

Sec. 7.3.7.6 Advertising Features

Not Applicable

Sec. 7.3.7.7 special Features

Not Applicable

Sec. 7.3.7.8 Safety

Not Applicable

Sec. 7.3.7.9 Heritage

Not Applicable

Sec. 7.3.7.10 Microclimate

Not Applicable

Sec. 7.3.7.11 Energy Efficiency

Not Applicable

Sec. 7.3.7.12 Detrimental Effects

Not Applicable

Sec. 7.3.7.13 Nearby Properties

Not Applicable

Sec. 7.3.7.14 Specific Standards for High and Washington Street

Not Applicable

Sec. 7.3.7.15 Air Quality
Not Applicable

Sec. 7.3.7.15 Air Quality
Not Applicable

Sec. 7.3.7.16 Plants and Animals
Not Applicable

Sec. 7.3.7.17 Vibration
Not Applicable

Sec. 7.3.7.18 Electrical Disturbances
Not Applicable

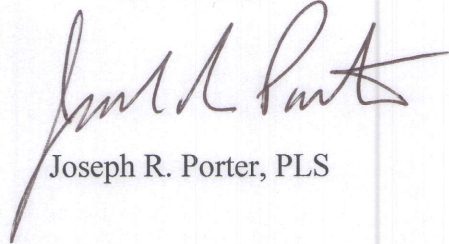
Sec. 7.3.7.19 Historic and Archaeological Sites
Not Applicable

Sec. 7.3.7.20 Solid Waste
Not Applicable

Sec. 7.3.7.21 Water Quality
Not Applicable

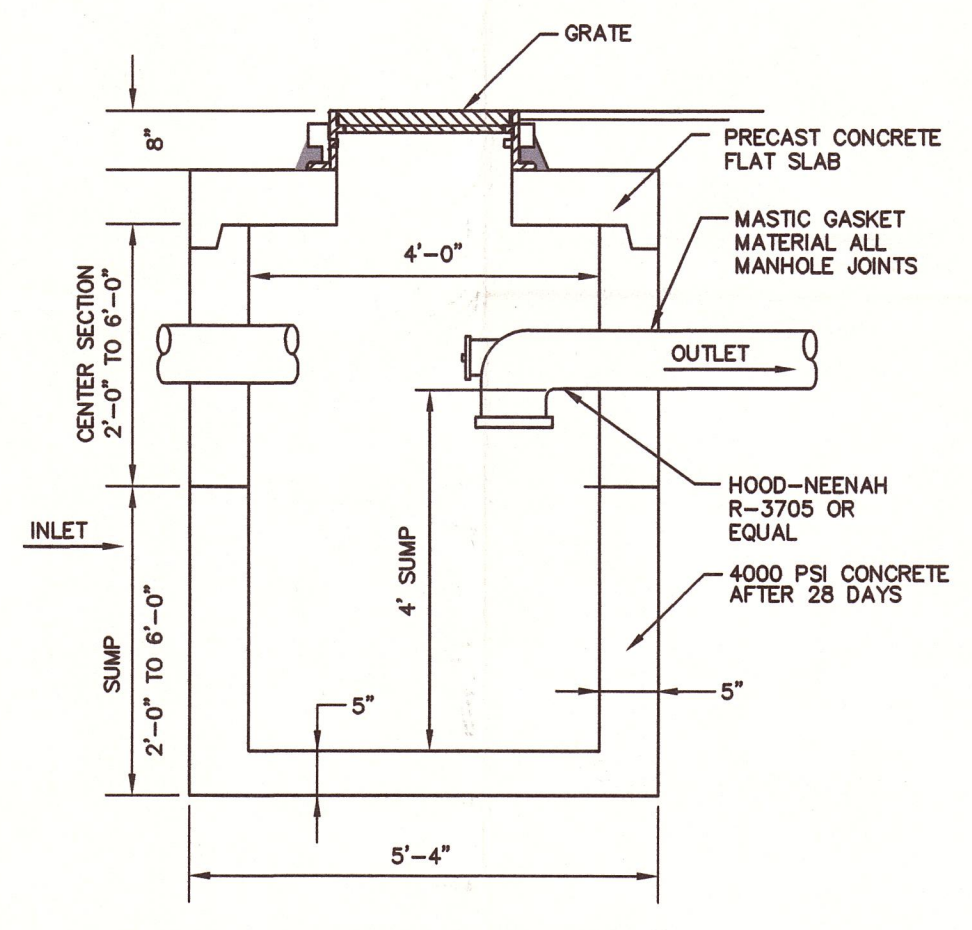
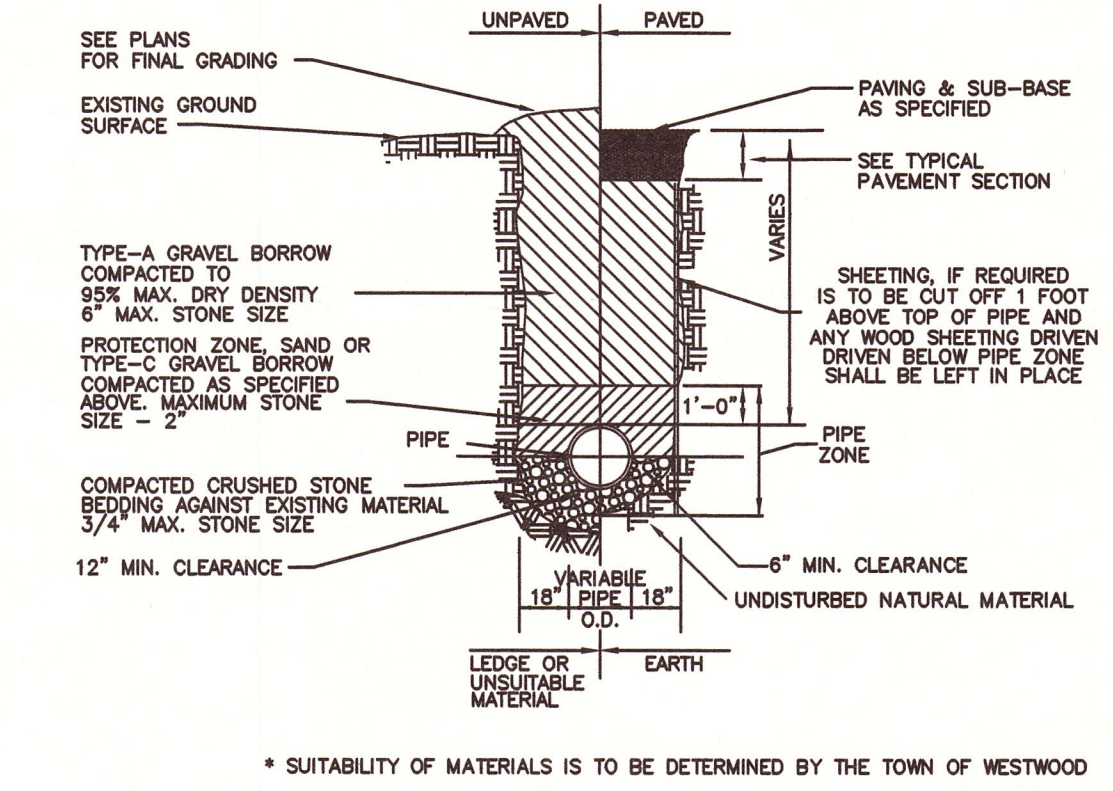
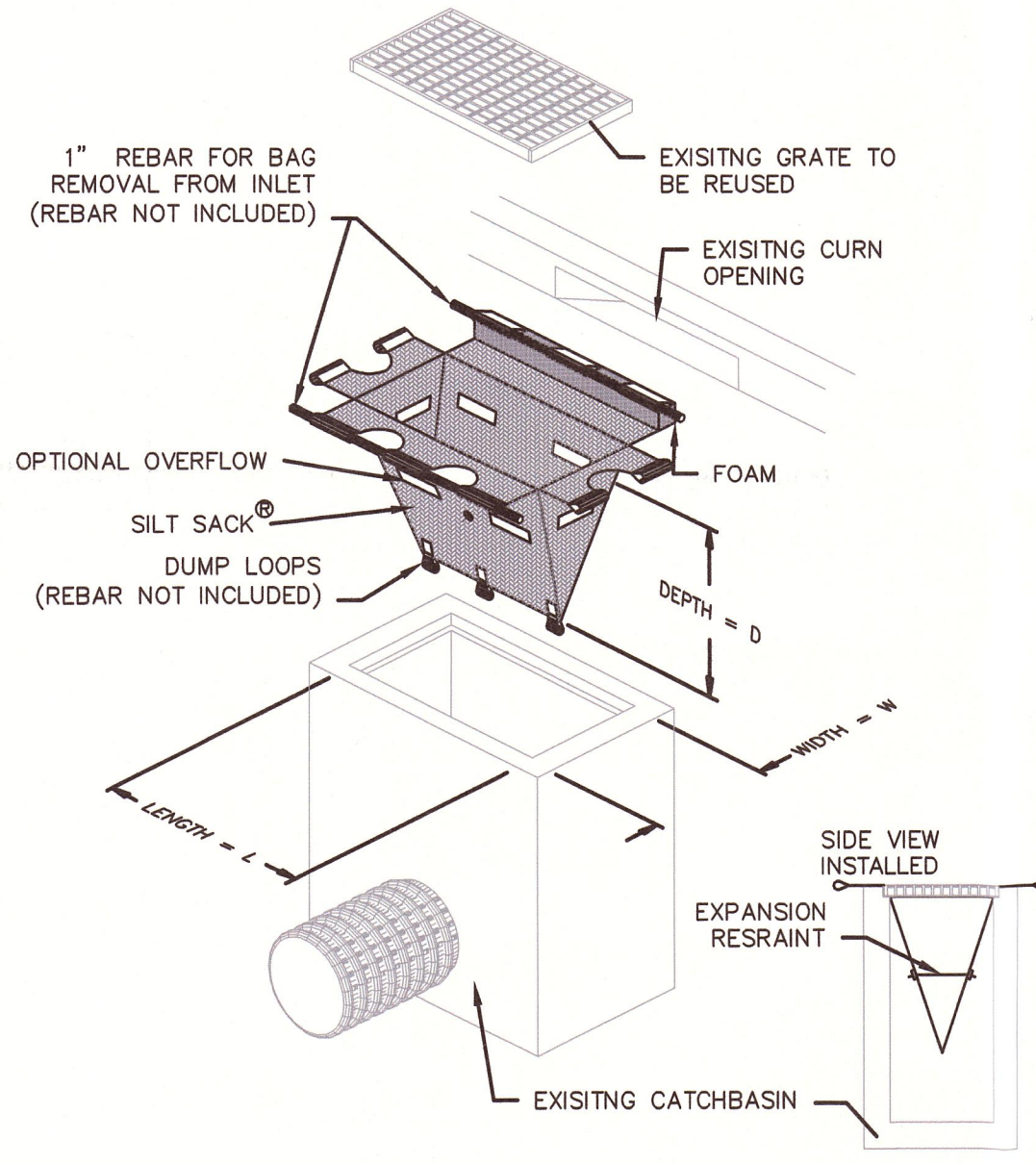
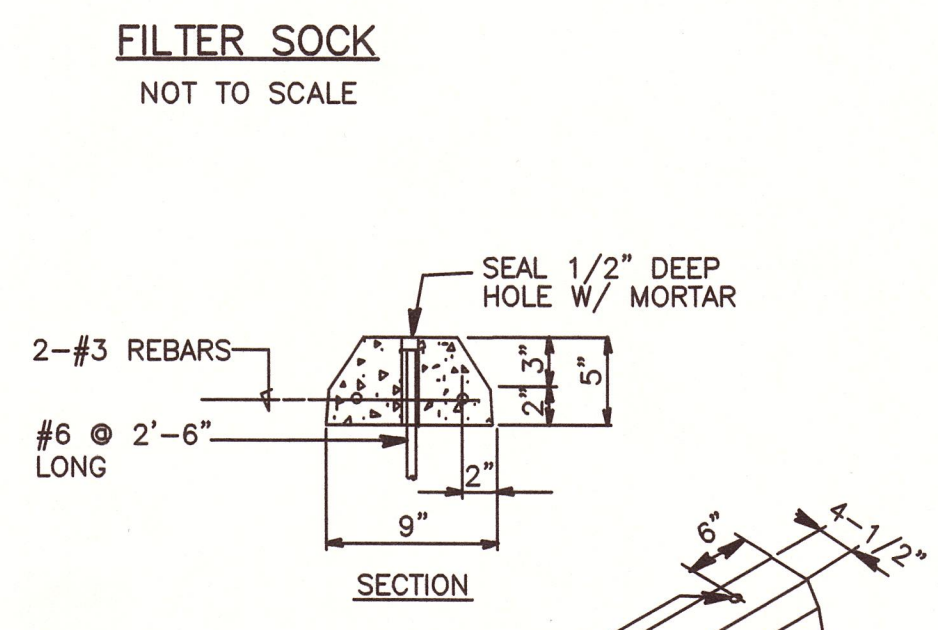
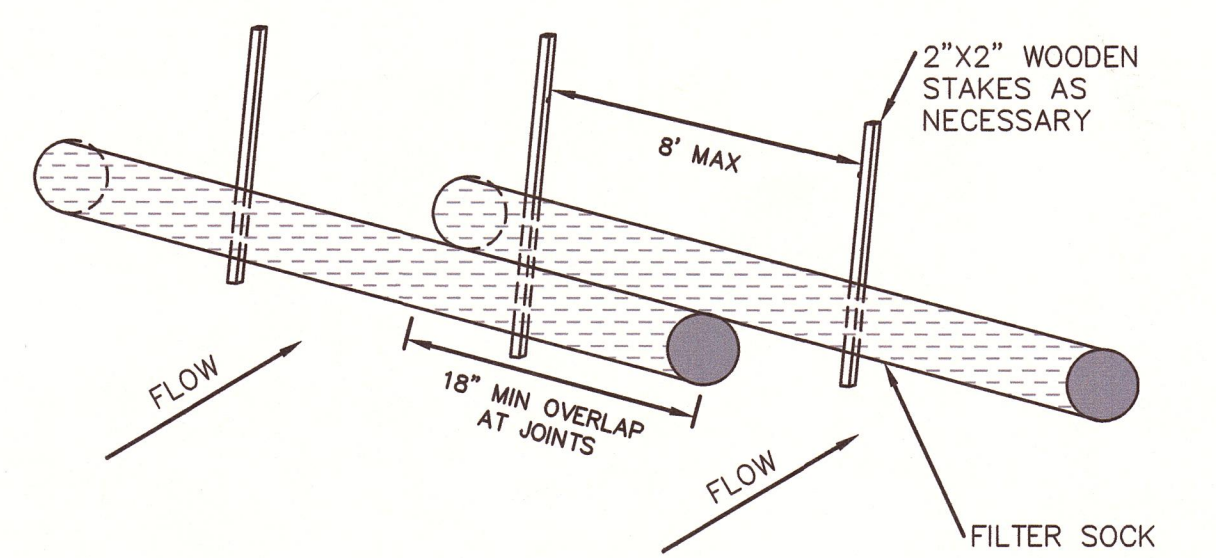
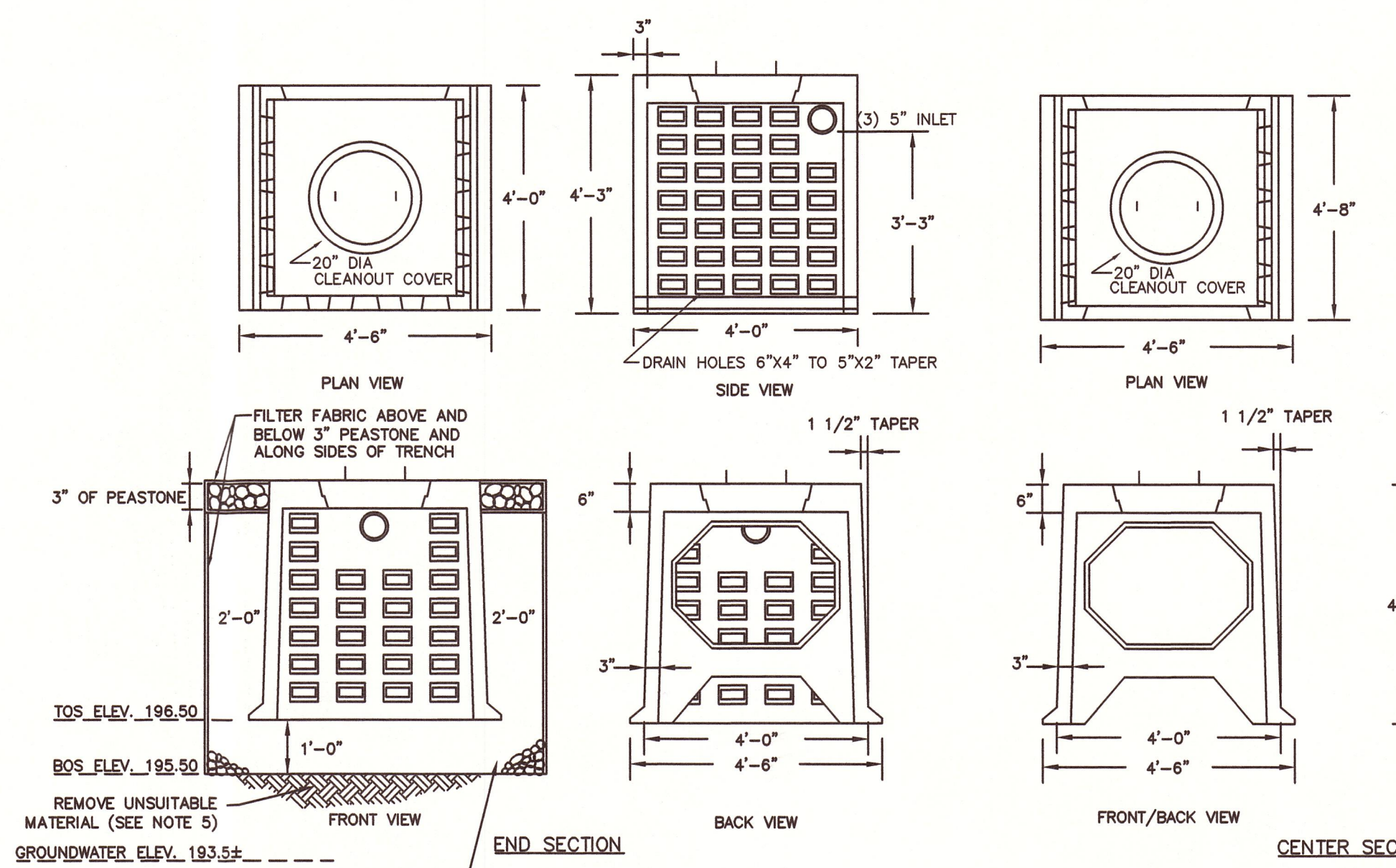
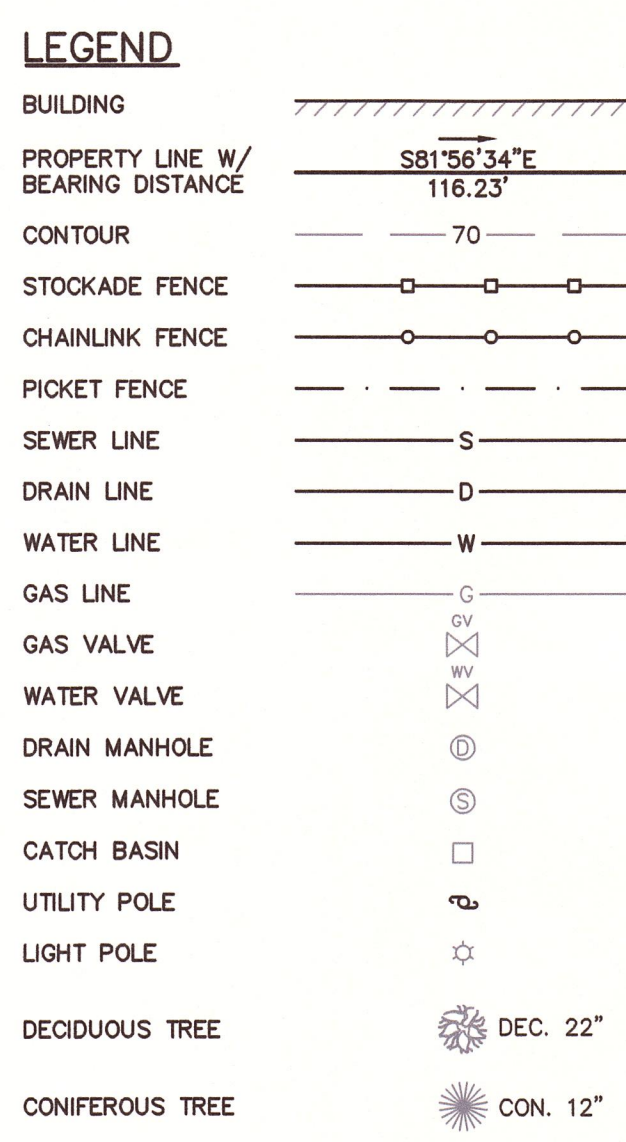
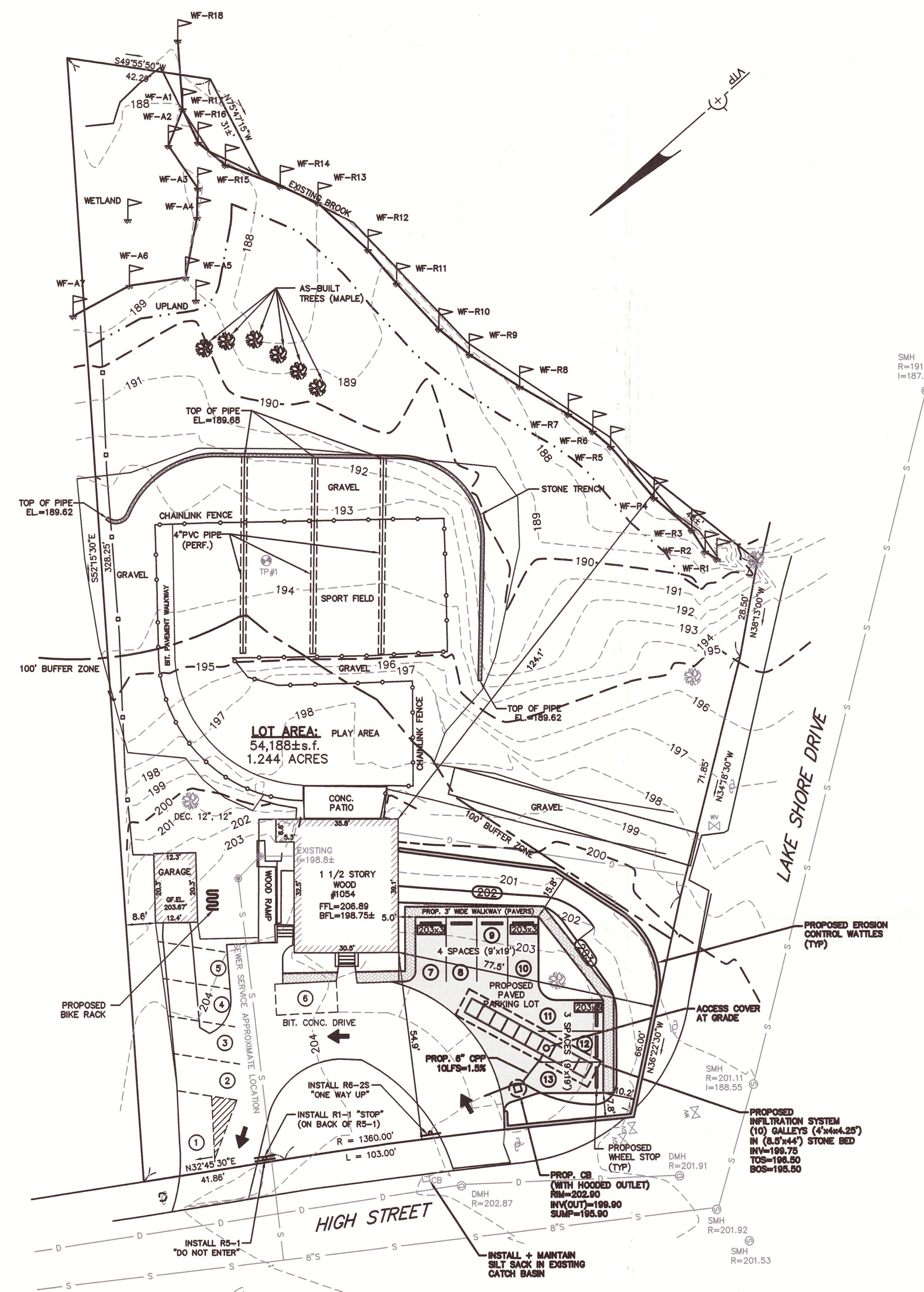
If you need further information or have any questions please do not hesitate to contact us.

Very truly yours
VTP Associates, Inc.



Joseph R. Porter, PLS

© 2016 VTP ASSOCIATES, INC.



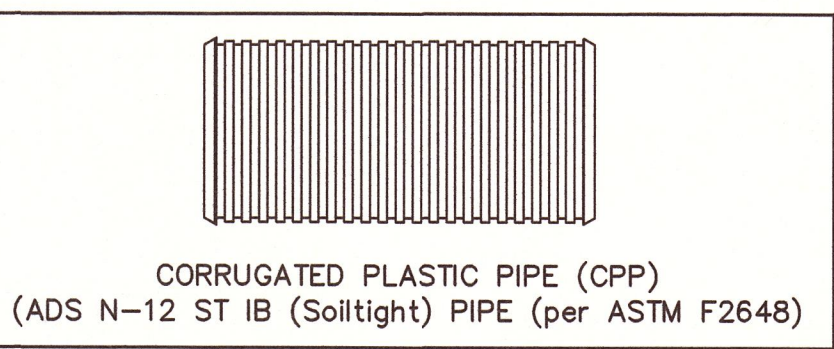
PRECAST CONCRETE WHEEL STOP

NOT TO SCALE

NUMBER	WIDTH	HEIGHT
R1-1	30"	30"
R5-1*	24"	24"
R6-2S	18"	24"

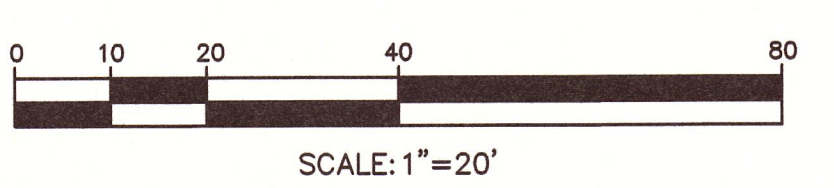
PARKING CALCULATIONS

1 PER EMPLOYEE	6 EMPLOYEE x 1 = 6 SPACES
2 PER CLASSROOM	2 CLASSROOM x 2 = 4 PAGES
TOTAL REQUIRED SPACES = 10 SPACES	
EXISTING SPACES = 9 SPACES	
SPACES PROVIDED = 13 SPACES	



DIG SAFE

EXCAVATORS
 BEFORE YOU DIG CONTACT THE DIG SAFE CENTER TO PREVENT DAMAGE TO TELEPHONE, GAS OR ELECTRIC UNDERGROUND FACILITIES OF MEMBER UTILITIES. CALL TOLL FREE 1-888-DIG-SAFE. MASSACHUSETTS STATE LAW REQUIRES NOTIFICATION AT LEAST THREE BUSINESS DAYS BEFORE YOU START DIGGING OPERATIONS. IN AN EMERGENCY, CALL IMMEDIATELY.



UTILITY NOTES:

THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE ENGINEERING DIVISION AND SCHEDULING AN APPOINTMENT 48 HOURS PRIOR TO THE DATE WHEN THE UTILITIES WILL BE MADE AVAILABLE FOR AN INSPECTION OF WATER SERVICES. SEWER SERVICE AND DRAINAGE SYSTEM INSTALLATION. THE UTILITY IN QUESTION SHALL BE FULLY EXPOSED FOR THE INSPECTOR TO VIEW. BACK FILLING SHALL ONLY TAKE PLACE WHEN THE CITY INSPECTOR HAS GIVEN THEIR APPROVAL.

No excavation is allowed within any City right-of-way between November 15th and April 15th. If an emergency exists or there are extenuating circumstances, Applicant may seek permission for such work from the Town DPW Commissioner via the town Engineer. If permission is granted, special construction standards will be applied. Applicant or Applicant's representative must contact the Town of Westwood Engineering Department prior to start of work for clarification.

As of March 1, 2009, all trench excavation contractors shall comply with Massachusetts General Laws Chapter 92A, Trench Excavation Safety Requirements, to protect the general public from unauthorized access to unattended trenches. Trench Excavation Permit required. This applies to all trenches on public and private property.

The Applicant will have to apply for Street Opening, Utility Connection and Trench Permits as well as an Install Curb & Sidewalk Permit with the DPW prior to start of work.

Approval of this plan by the Town of Westwood Engineering Division implies that the plan meets the minimal design standards of the Town of Westwood. However, the Engineering Division makes no representations and assumes no responsibility for the design(s) in terms of suitability for the particular site conditions or of the functionality or performance of any items constructed in accordance with the design(s). The Town of Westwood assumes no liabilities for design assumption, errors or omissions by the Engineer of Record.

TESTPIT LOG

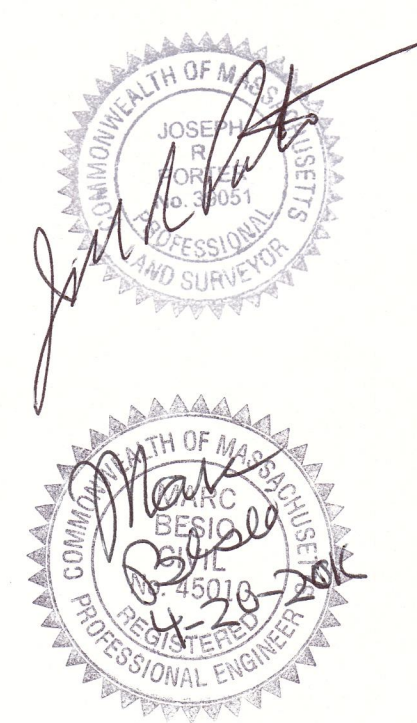
TESTPIT #1
0-8" TOPSOIL
8-22" SUBSOIL
22-68" FINE SAND
68-114" WITH COBBLES
114-144" SILTY LOAM
144-168" WITH COBBLES

WAIVERS FROM THE SUBMITTAL REQUIREMENTS

SEC. 7.3.6.2 EXTERIOR LIGHTING PLAN
SEC. 7.3.6.3 TRAFFIC STUDY
SEC. 7.3.6.4 DRAWINGS/RENDERINGS (N/A)
SEC. 7.3.6.7 MODEL

NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THIS PLAN. PRIOR TO ANY CONSTRUCTION, THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BEFORE PROCEEDING WITH THE WORK.
- THE LOCATION OF ALL UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASE ON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER GATES, ETC. AND GOVERNMENT AGENCIES.



TOPOGRAPHIC SITE PLAN

WESTWOOD, MASSACHUSETTS
 SHOWING PROPOSED CONDITIONS AT
 #1054 HIGH STREET

SCALE: 1in.=20ft. DATE: JANUARY 27, 2016
 REVISED: APRIL 18, 2016

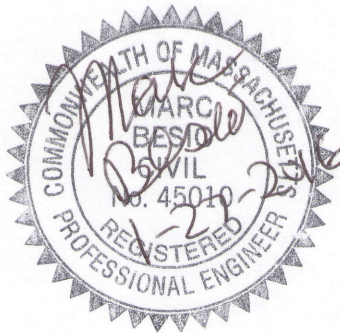
PROJECT: 210199

VTP ASSOCIATES INC.

LAND SURVEYORS - CIVIL ENGINEERS, 132
 ADAMS STREET 2ND FLOOR SUITE 3
 NEWTON, MA 02458
 (617) 332-8271

SHEET 1 OF 1

**STORMWATER REPORT
1054 HIGH STREET
WESTWOOD, MASSACHUSETTS**



January 27, 2016

Prepared by:
Nestor R. Martinez

Reviewed by:
Marc Besio, PE, SIT

VTP Associates, Inc.
132 Adams Street
2nd Floor, Suite 3
Newton Massachusetts 02465
1-617-332-8271
Job # 210199

INTRODUCTION

VTP Associates has performed a stormwater management analysis to evaluate the post-development impacts created by the proposed parking lot at #1054 High Street in Westwood, Massachusetts. The project will include a new paved seven spaces paved parking lot, and an associated stormwater management system.

VTP Associates analyzed the hydrology for the drainage areas impacted by the proposed work utilizing the Soil Conservation Service's (SCS) Runoff Curve Number (CN) methodology. VTP Associates used the HydroCAD computer modeling system in conjunction with the SCS's methods to determine the peak rate of runoff for the 2, 10, 25 and 100-year storm events.

VTP Associates proposes the use of best management practices (BMPs) as defined by the Massachusetts Department of Environmental Protection (MA DEP) for stormwater management onsite to protect downstream receiving waters from adverse water quality impacts due to stormwater runoff. Mitigating the rate and quality of stormwater runoff from the project site will also help to lessen the environmental impact of the proposed development.

METHODOLOGY

Hydrology and Hydraulics

VTP Associates analyzed the survey base plan and conducted a site visit to determine the existing drainage flow patterns onsite. The existing conditions survey, in conjunction with aerial photography, and site visits were used to determine existing surface coverage areas for the site. VTP Associates determined that a majority of the pre-developed surface cover for the study area is pervious cover. Initial soil research was determined using the Natural Resources Conservation Service (NRCS) soil survey maps for Norfolk and Suffolk Counties, Massachusetts via Web Soil Survey 1.1. According to the soil survey, the soil on the site consists of the following:

626B: Merrimac – Urban land complex

Soil borings were conducted and determined that the site consists of a moderately low silty loam. Based upon these findings, VTP Associates used a Hydrologic soil group 'C' for its drainage calculations. The soil boring information has been included within this report. As per the Mass DEP Stormwater Hydrology Handbook for Conservation Commissions, VTP used a design infiltration rate of 0.27in/hr for 'C' soils.

For each subcatchment area, VTP Associates determined drainage flow path lengths, surface cover type and slopes for sheet and shallow concentrated flow. The information was used to calculate the time of concentration (Tc) for each subcatchment areas. Where applicable, a minimum Tc of 5 minutes was used; the minimum value for highly developed, small catchment areas. SCS Runoff Curve Numbers were selected by using the cover type and hydrologic soil group of each area. The peak runoff rates for the 2, 10, 25 and 100-year storm events were then determined by inputting the weighted CN, Tc, drainage areas, and drainage system information into the HydroCAD storm water modeling system computer program. The storm events were based on the 24-hour duration storm with a SCS Type III storm distribution curve.

Storm Event

VTP Associates used Massachusetts rainfall data maps from Technical Paper 40, Rainfall Frequency Atlas of the United States and the Town of Westwood's Requirements for On-Site Drainage to estimate the rainfall depth for the 2, 10, 25 and 100-year storms. The rainfall depths for the 24-hour storm events used are as follows:

<u>Storm Event</u>	<u>24-Hour Rainfall Depth (inches)</u>
2-year	3.1
10-year	4.5
25-year	5.3
100-year	6.5

HYDROLOGICAL ANALYSIS

Pre-Development Conditions

The existing site consists of a one and half story wood house, a driveways and parking area, and landscaped areas. Approximately 5,917 square feet (10.9%) of the site is impervious cover. The site is bound by residential building to the northeast and south, wetland to the southeast, Lakeshore Drive to the southwest and High Street to the northwest.

VTP Associates compiled the existing drainage areas from an existing conditions survey prepared by VTP Associates. Additionally, VTP Associates conducted site visits to evaluate the existing onsite drainage patterns and watershed divides from the existing conditions survey. At present, stormwater runoffs from the existing study area drain to High Street (northwest) (E1), Southwest abutter (Wetland) (E2) and Lake Shore Drive (southwest) (E3). The pre-development drainage areas are shown on “Figure 1: Pre-Development Drainage Areas.”

Post Development Conditions

The proposed project includes the construction of a new seven spaces paved parking lot and associated drainage improvements. As a result, the proposed site will have approximately 7,823 s.f. of impervious cover (14.4%). The same overall area was analyzed for the proposed conditions as the pre-development conditions and is shown on “Figure 2: Post-Development Drainage Areas.” Similar to pre-development conditions, the stormwater runoff flows in the same direction. The same design point was used as in the pre-development conditions.

The new parking lot will have approximately 1,906 square feet of impervious. The parking lot runoff (PD) will be collected by a catch basin and discharge into onsite infiltration system (INF). The intent of the proposed stormwater management system is to infiltrate stormwater runoff of the proposed parking lot. The infiltration system was designed to infiltrate the 100-year storm and help mitigate proposed peak rates of runoff to less than existing conditions. The drainage areas can be seen on “Figure 2: Post-Development Drainage Areas.”

VTP Associates analyzed the pre- and post-development site conditions to determine the peak rates of runoff at the design points. By incorporating the stormwater management features discussed above, the peak rates of runoff in the post-development condition is to be better than pre-development levels. Pre-development peak runoff rates vs. post-development peak runoff rates for the 2, 10, 25, and 100-year storm events are presented in Table 1 below.

Table 1, Pre-development vs. Post-Development Peak Rate of Runoff

Design Point #1 – High Street (Northwest)

<i>STORM EVENT (DESIGN POINT)</i>	<i>PRE-DEVELOPMENT PEAK RATE OF RUNOFF (CFS)</i>	<i>POST-DEVELOPMENT PEAK RATE OF RUNOFF (CFS)</i>	<i>PRE-DEVELOPMENT VOLUME RATE OF RUNOFF (AF)</i>	<i>POST-DEVELOPMENT VOLUME RATE OF RUNOFF (AF)</i>
2-YEAR	0.30	0.27	0.021	0.019
10-YEAR	0.51	0.44	0.036	0.031
25-YEAR	0.64	0.54	0.044	0.038
100-YEAR	0.82	0.69	0.058	0.049

Design Point #2 – Southwest Abutter (Wetland)

<i>STORM EVENT (DESIGN POINT)</i>	<i>PRE-DEVELOPMENT PEAK RATE OF RUNOFF (CFS)</i>	<i>POST-DEVELOPMENT PEAK RATE OF RUNOFF (CFS)</i>	<i>PRE-DEVELOPMENT VOLUME RATE OF RUNOFF (AF)</i>	<i>POST-DEVELOPMENT VOLUME RATE OF RUNOFF (AF)</i>
2-YEAR	1.23	1.21	0.086	0.084
10-YEAR	2.35	2.31	0.161	0.159
25-YEAR	3.03	2.98	0.208	0.204
100-YEAR	4.07	4.00	0.280	0.276

Design Point #3 – Lake Shore Drive (Southwest)

<i>STORM EVENT (DESIGN POINT)</i>	<i>PRE-DEVELOPMENT PEAK RATE OF RUNOFF (CFS)</i>	<i>POST-DEVELOPMENT PEAK RATE OF RUNOFF (CFS)</i>	<i>PRE-DEVELOPMENT VOLUME RATE OF RUNOFF (AF)</i>	<i>POST-DEVELOPMENT VOLUME RATE OF RUNOFF (AF)</i>
2-YEAR	0.07	0.06	0.005	0.004
10-YEAR	0.14	0.13	0.009	0.009
25-YEAR	0.18	0.17	0.012	0.012
100-YEAR	0.25	0.24	0.017	0.016

CONCLUSION

The post-development peak rate of runoff is expected to be less than or equal to pre-development levels for the 2, 10, 25 and 100-year storm events. Although there is increased impervious coverage on the site as a result of the proposed redevelopment, the addition of the underground infiltration systems controls the post-development runoff to pre-development levels or better.

ENCLOSURES

- Soil Boring
- NRCS Soil Map
- Pre-Development Drainage Areas (Figure 1)
- Post-Development Drainage Areas (Figure 2)
- Pre & Post Development HydroCAD Calculations

TESTPIT LOG

TESTPIT #1

0-8" TOPSOIL

8-22" SUBSOIL

22-68" FINE SAND
WITH COBBLES

68-114" SILTY LOAM
WITH COBBLES

WATER @ 114"

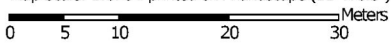
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NO REFUSAL

Custom Soil Resource Report Soil Map







































Map Scale: 1:670 if printed on A landscape (11" x 8.5") sheet.



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



MAP LEGEND

- Area of Interest (AOI)**
-  Area of Interest (AOI)
- Soils**
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features
- Water Features**
-  Streams and Canals
- Transportation**
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
- Background**
-  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
 Survey Area Data: Version 11, Sep 28, 2015

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

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

Map Unit Legend

Norfolk and Suffolk Counties, Massachusetts (MA616)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	1.0	100.0%
Totals for Area of Interest		1.0	100.0%

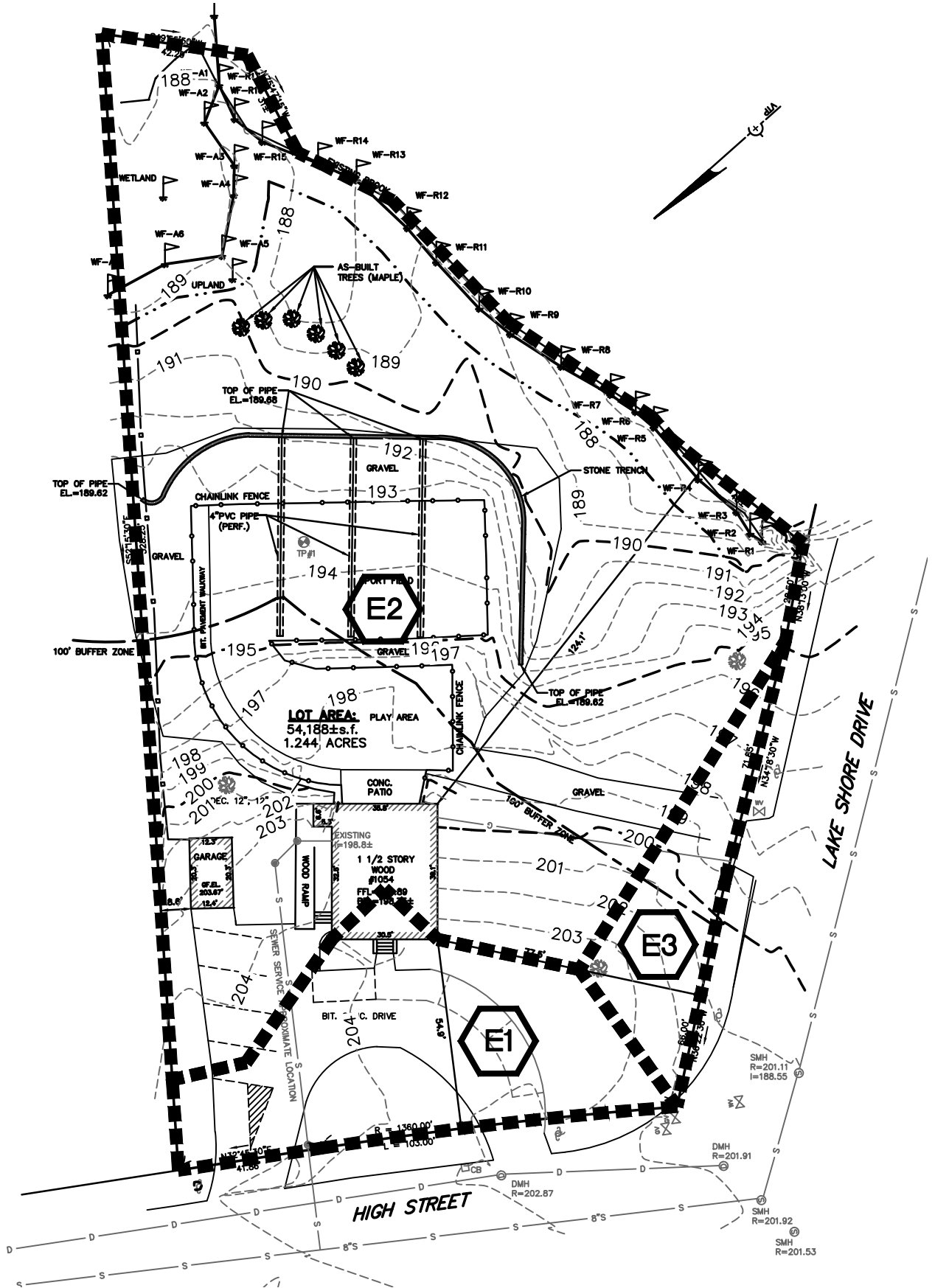
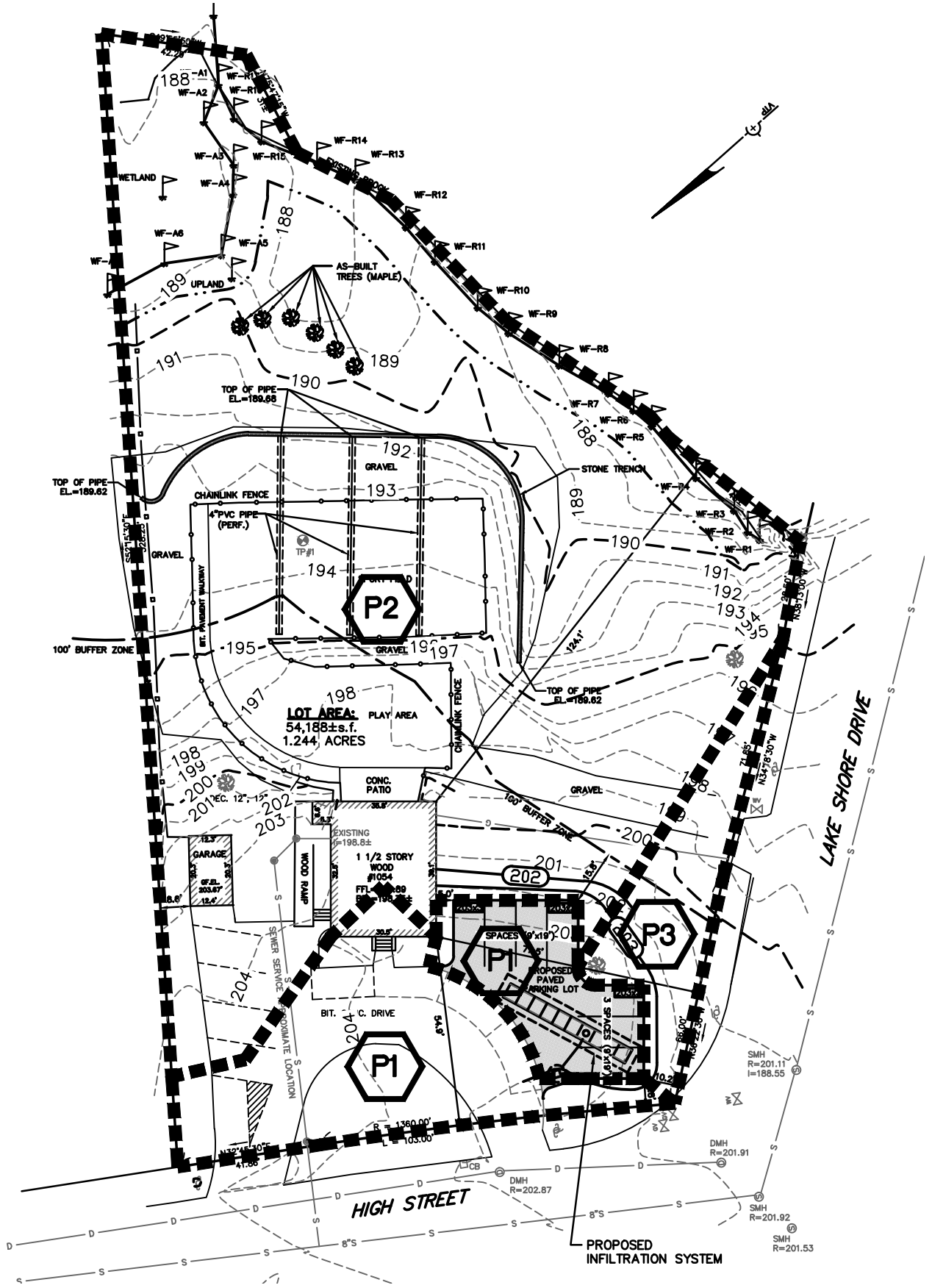


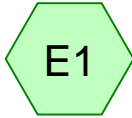
FIGURE 1:
 PRE-DEVELOPMENT DRAINAGE AREAS
 #1054 HIGH STREET



SCALE: 1 in. = 40 ft.
 DATE: JANUARY 27, 2016

FIGURE 2:
 POST-DEVELOPMENT DRAINAGE AREAS
 #1054 HIGH STREET

**PRE-DEVELOPMENT
CONDITIONS**



High Street (Northwest)



Southeast Abutter
(Wetland)

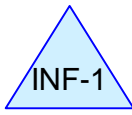


Lake Shore Drive
(Southwest)

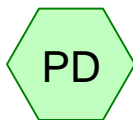
**POST-DEVELOPMENT
CONDITIONS**



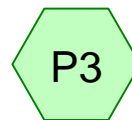
Southeast Abutter



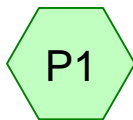
Inf. System #1 Galleys



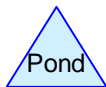
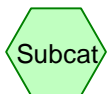
Prop. Parking Lot



Lake Shore Drive
(Southwest)



High Street (Northwest)



Routing Diagram for 210199, 1054 High Street Westwood, MA
Prepared by VTP associates, inc., Printed 1/27/2016
HydroCAD® 10.00-15 s/n 08174 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment E1: High Street (Northwest)

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 1.75"

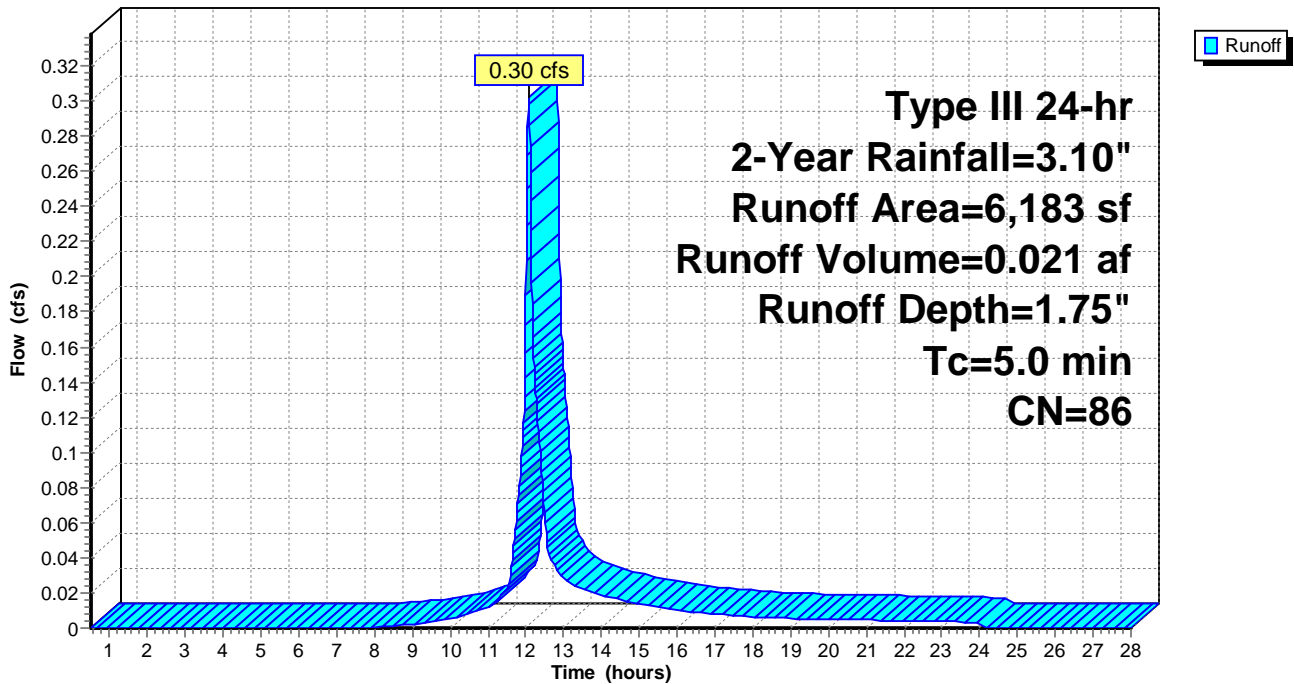
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,800	98	Driveway (portion)
* 52	98	Walks
3,109	74	>75% Grass cover, Good, HSG C
6,183	86	Weighted Average
3,109		50.28% Pervious Area
3,074		49.72% Impervious Area

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

Subcatchment E1: High Street (Northwest)

Hydrograph



Summary for Subcatchment E2: Southeast Abutter (Wetland)

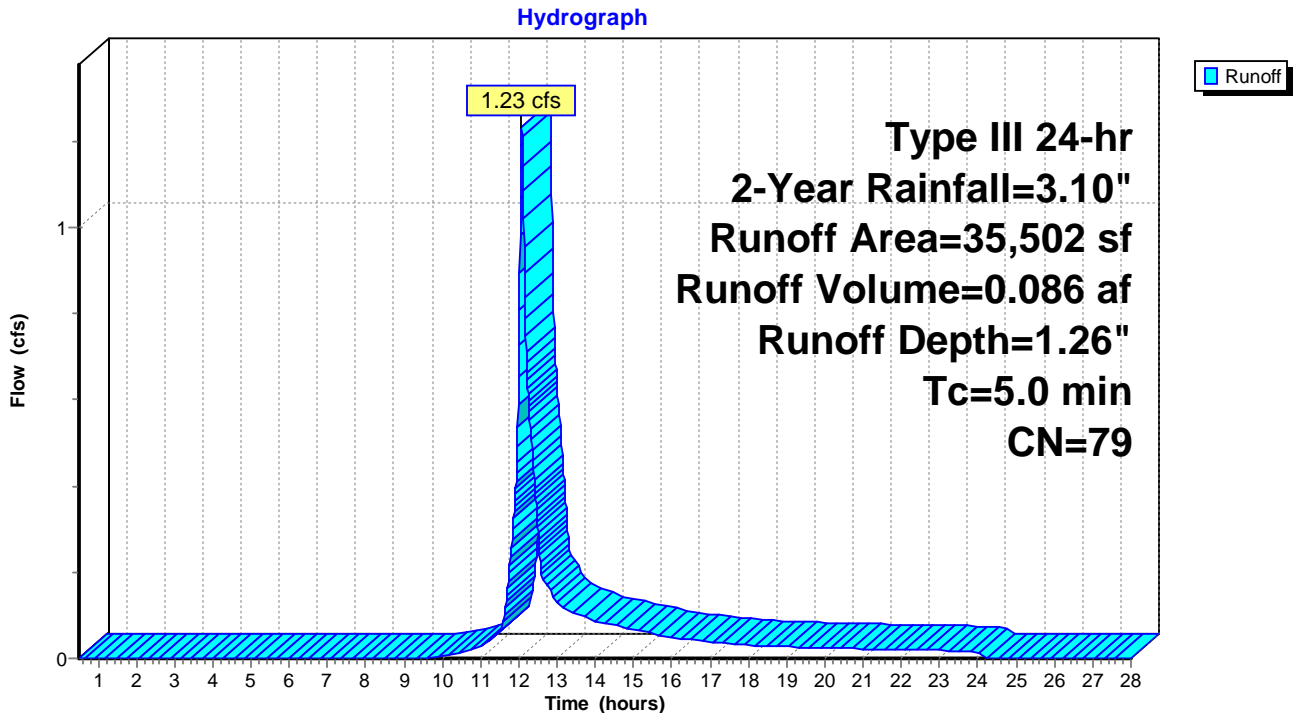
Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.086 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 1,228	98	Roof (portion)
* 250	98	Roof Garage
* 229	98	Walks
* 1,104	98	Driveway (portion)
* 32	98	Ret. Wall
6,339	89	Gravel roads, HSG C
26,320	74	>75% Grass cover, Good, HSG C
35,502	79	Weighted Average
32,659		91.99% Pervious Area
2,843		8.01% Impervious Area

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

Subcatchment E2: Southeast Abutter (Wetland)



Summary for Subcatchment E3: Lake Shore Drive (Southwest)

Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.005 af, Depth= 1.03"

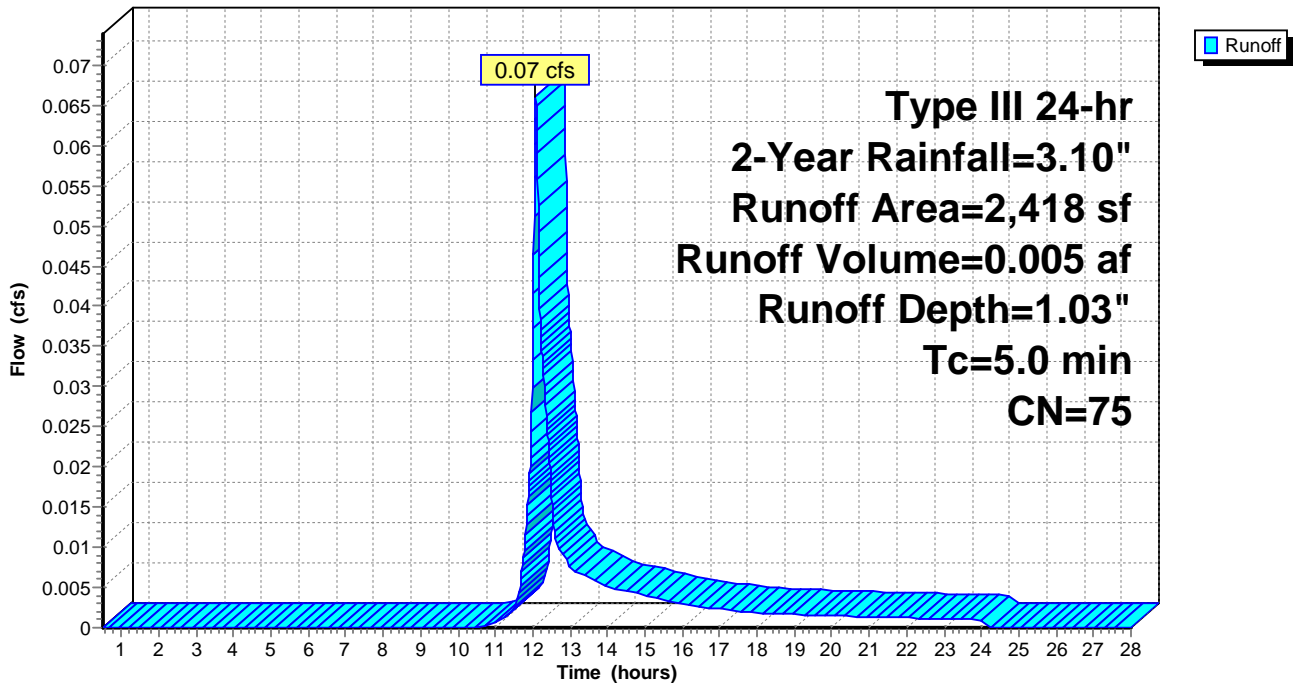
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,292	74	>75% Grass cover, Good, HSG C
2,418	75	Weighted Average
2,418		100.00% Pervious Area

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

Subcatchment E3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment P1: High Street (Northwest)

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.019 af, Depth= 1.99"

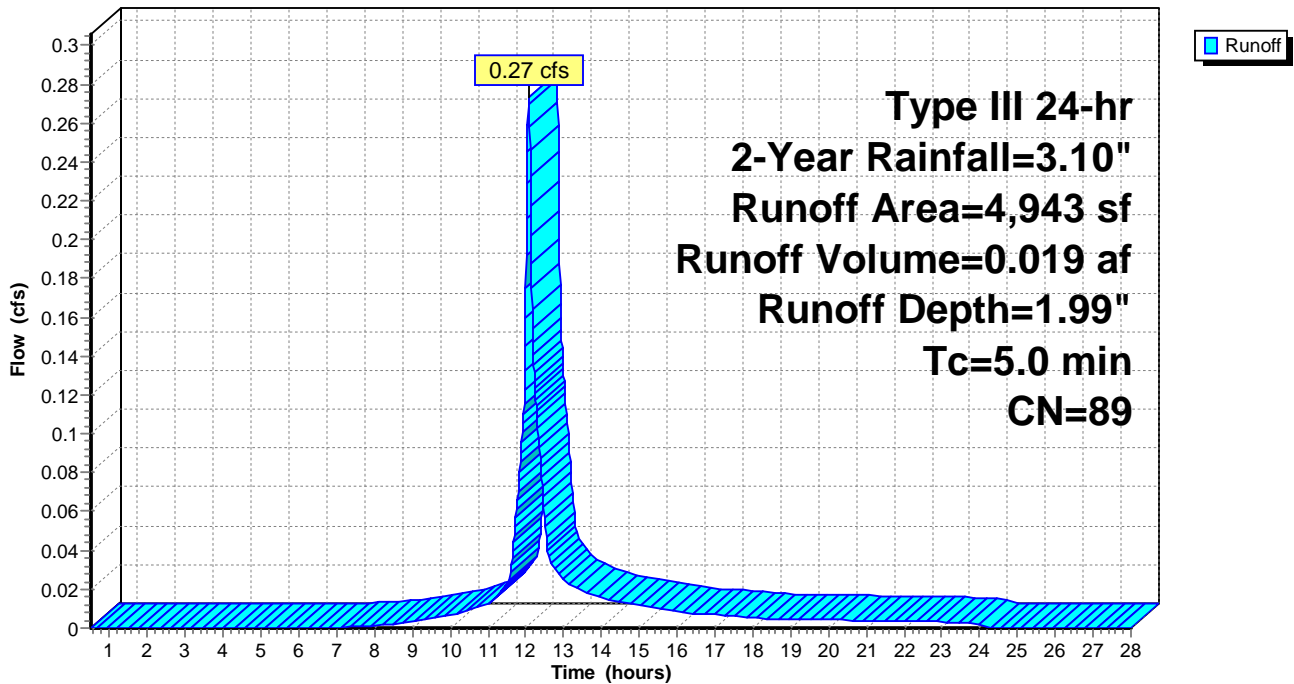
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,820	98	Driveway (portion)
* 52	98	Walks
1,849	74	>75% Grass cover, Good, HSG C
4,943	89	Weighted Average
1,849		37.41% Pervious Area
3,094		62.59% Impervious Area

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

Subcatchment P1: High Street (Northwest)

Hydrograph



Summary for Subcatchment P2: Southeast Abutter

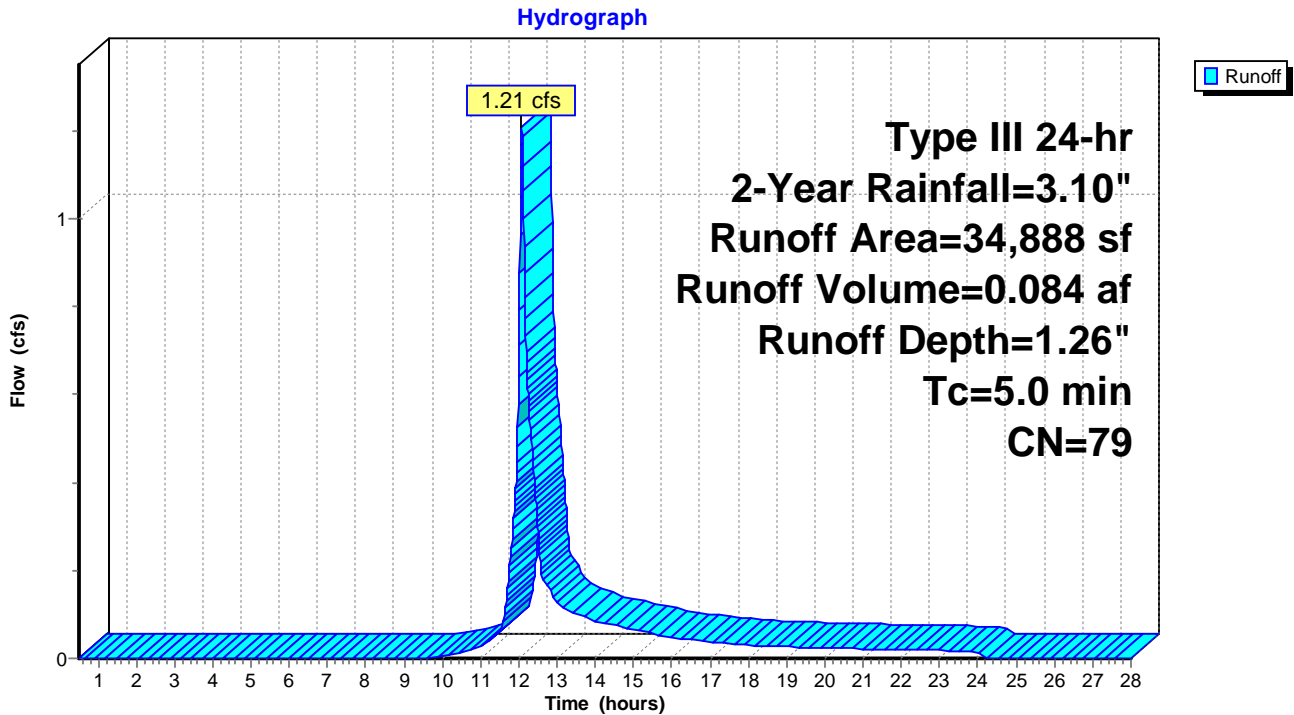
Runoff = 1.21 cfs @ 12.08 hrs, Volume= 0.084 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	1,228	98	Roof (portion)
*	250	98	Roof Garage
*	229	98	Walks
*	1,104	98	Driveway (portion)
*	32	98	Ret. Wall
	6,339	89	Gravel roads, HSG C
	25,706	74	>75% Grass cover, Good, HSG C
	34,888	79	Weighted Average
	32,045		91.85% Pervious Area
	2,843		8.15% Impervious Area

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

Subcatchment P2: Southeast Abutter



Summary for Subcatchment P3: Lake Shore Drive (Southwest)

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 1.03"

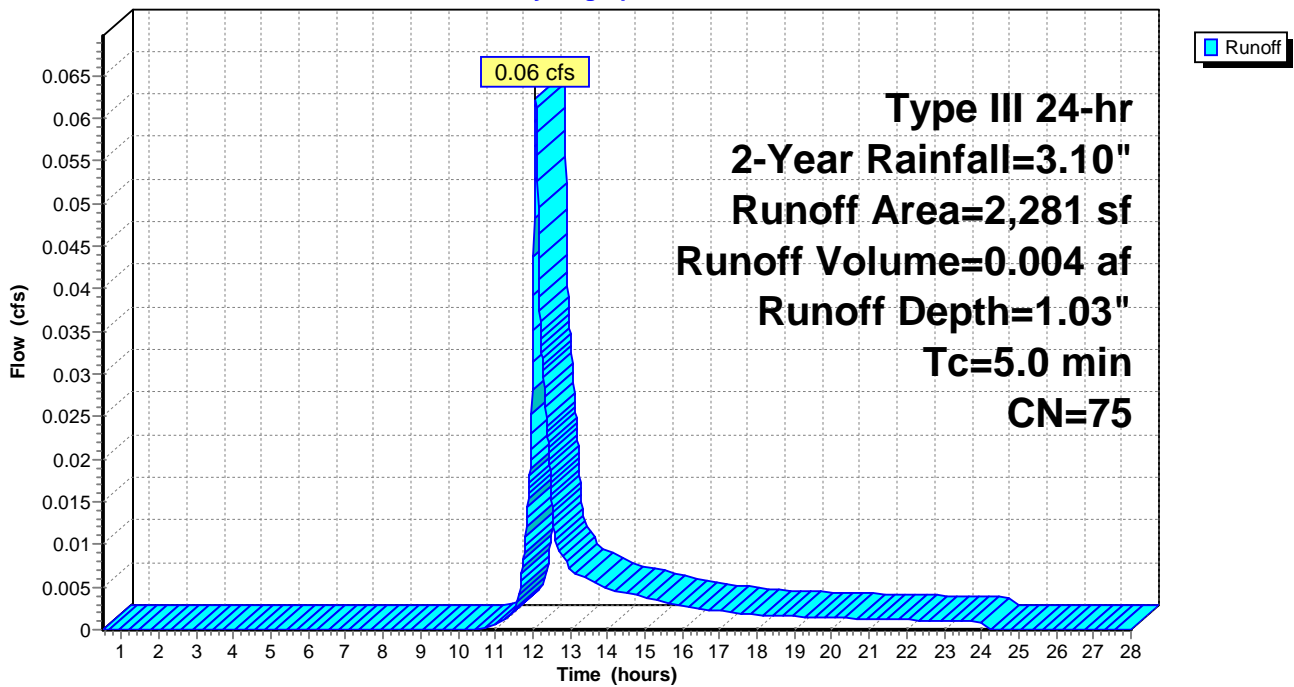
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,155	74	>75% Grass cover, Good, HSG C
2,281	75	Weighted Average
2,281		100.00% Pervious Area

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

Subcatchment P3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment PD: Prop. Parking Lot

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 0.010 af, Depth= 2.55"

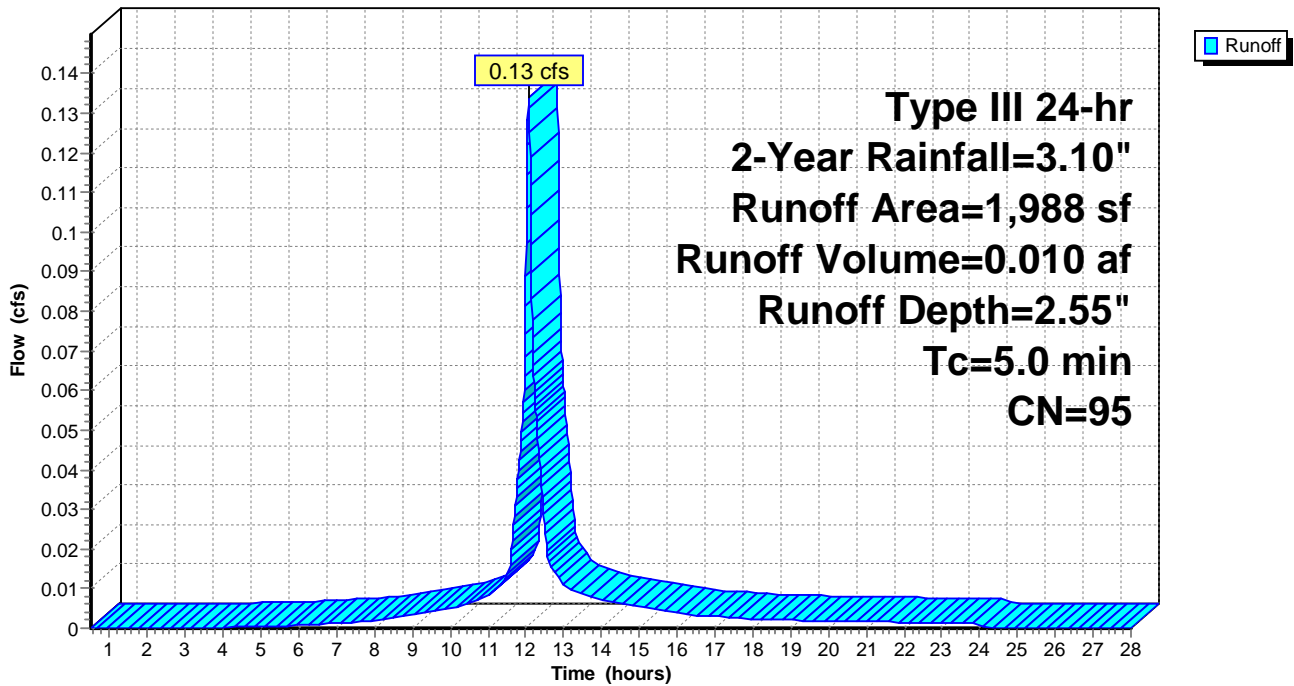
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	1,886	98	Paved Parking Lot
	102	39	>75% Grass cover, Good, HSG A
	1,988	95	Weighted Average
	102		5.13% Pervious Area
	1,886		94.87% Impervious Area

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

Subcatchment PD: Prop. Parking Lot

Hydrograph



Summary for Pond INF-1: Inf. System #1 Galleys

Inflow Area = 0.046 ac, 94.87% Impervious, Inflow Depth = 2.55" for 2-Year event
 Inflow = 0.13 cfs @ 12.07 hrs, Volume= 0.010 af
 Outflow = 0.00 cfs @ 9.69 hrs, Volume= 0.004 af, Atten= 98%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 9.69 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Peak Elev= 197.42' @ 17.91 hrs Surf.Area= 0.009 ac Storage= 0.007 af

Plug-Flow detention time= 381.9 min calculated for 0.004 af (43% of inflow)
 Center-of-Mass det. time= 256.1 min (1,037.1 - 781.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	195.50'	0.009 af	8.50'W x 44.00'L x 5.25'H Field A 0.045 af Overall - 0.014 af Embedded = 0.031 af x 30.0% Voids
#2A	196.50'	0.011 af	Galley 4x4x4.25 x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf
		0.020 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.50'	0.270 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 9.69 hrs HW=195.55' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Pond INF-1: Inf. System #1 Galleys - Chamber Wizard Field A

Chamber Model = Galley 4x4x4.25 (Concrete Galley, Shea LE-EGH, LE-CGH or equivalent)

Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf

Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf

10 Chambers/Row x 4.00' Long = 40.00' Row Length +24.0" End Stone x 2 = 44.00' Base Length

1 Rows x 54.0" Wide + 24.0" Side Stone x 2 = 8.50' Base Width

12.0" Base + 51.0" Chamber Height = 5.25' Field Height

10 Chambers x 46.4 cf = 463.8 cf Chamber Storage

10 Chambers x 62.3 cf = 623.3 cf Displacement

1,963.5 cf Field - 623.3 cf Chambers = 1,340.2 cf Stone x 30.0% Voids = 402.1 cf Stone Storage

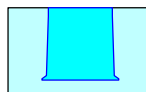
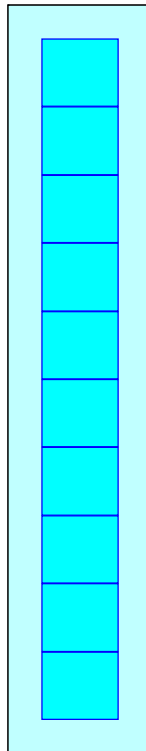
Chamber Storage + Stone Storage = 865.9 cf = 0.020 af

Overall Storage Efficiency = 44.1%

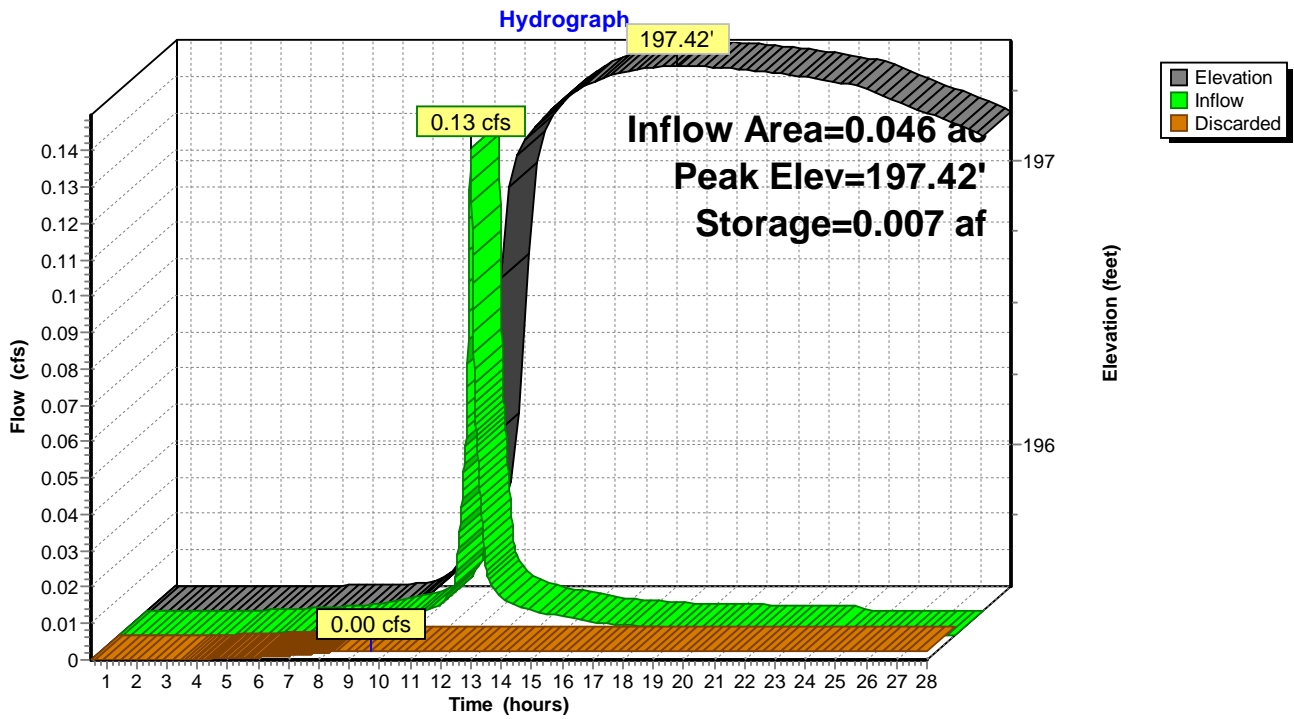
10 Chambers

72.7 cy Field

49.6 cy Stone



Pond INF-1: Inf. System #1 Galleys



Summary for Subcatchment E1: High Street (Northwest)

Runoff = 0.51 cfs @ 12.07 hrs, Volume= 0.036 af, Depth= 3.00"

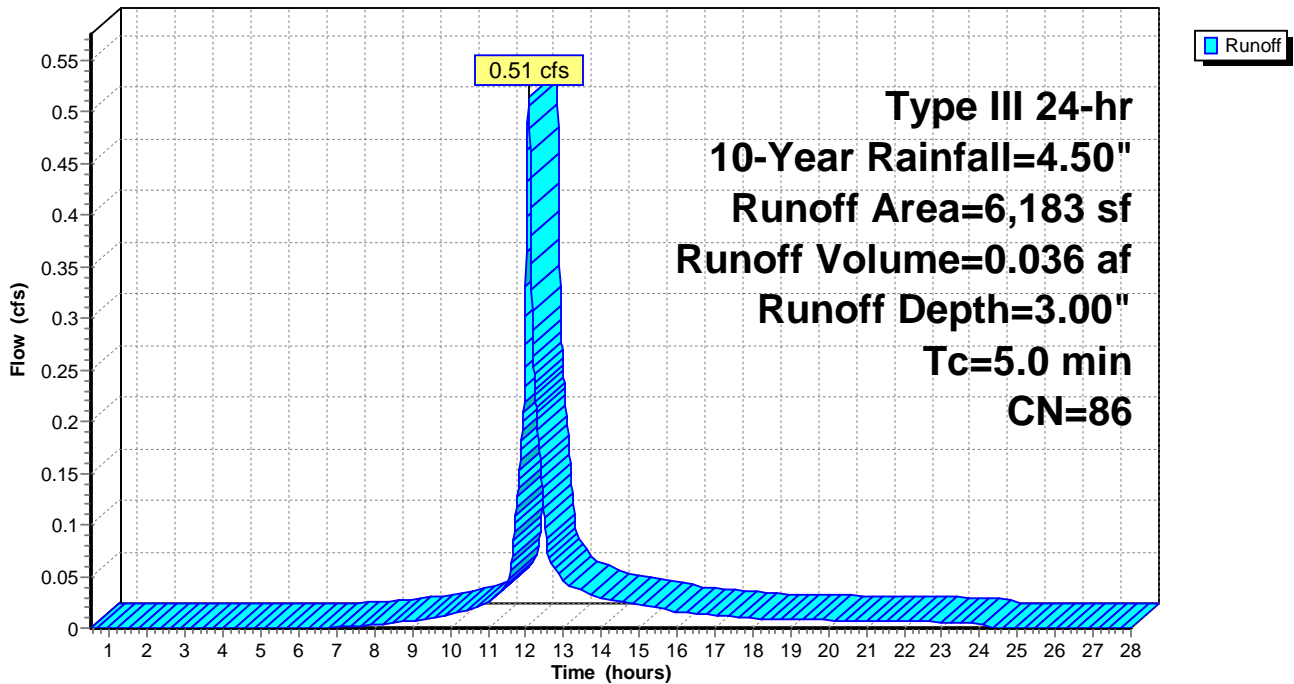
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,800	98	Driveway (portion)
* 52	98	Walks
3,109	74	>75% Grass cover, Good, HSG C
6,183	86	Weighted Average
3,109		50.28% Pervious Area
3,074		49.72% Impervious Area

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

Subcatchment E1: High Street (Northwest)

Hydrograph



Summary for Subcatchment E2: Southeast Abutter (Wetland)

Runoff = 2.35 cfs @ 12.08 hrs, Volume= 0.161 af, Depth= 2.38"

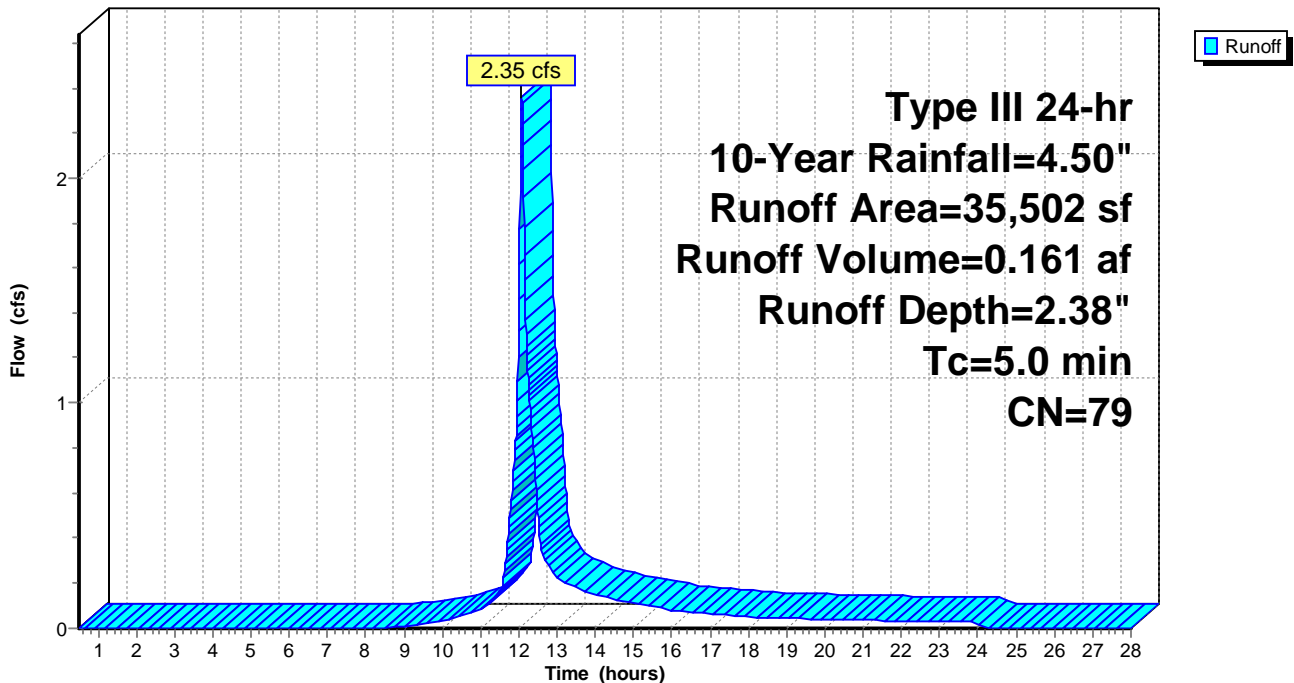
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

	Area (sf)	CN	Description
*	1,228	98	Roof (portion)
*	250	98	Roof Garage
*	229	98	Walks
*	1,104	98	Driveway (portion)
*	32	98	Ret. Wall
	6,339	89	Gravel roads, HSG C
	26,320	74	>75% Grass cover, Good, HSG C
	35,502	79	Weighted Average
	32,659		91.99% Pervious Area
	2,843		8.01% Impervious Area

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

Subcatchment E2: Southeast Abutter (Wetland)

Hydrograph



Summary for Subcatchment E3: Lake Shore Drive (Southwest)

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.009 af, Depth= 2.05"

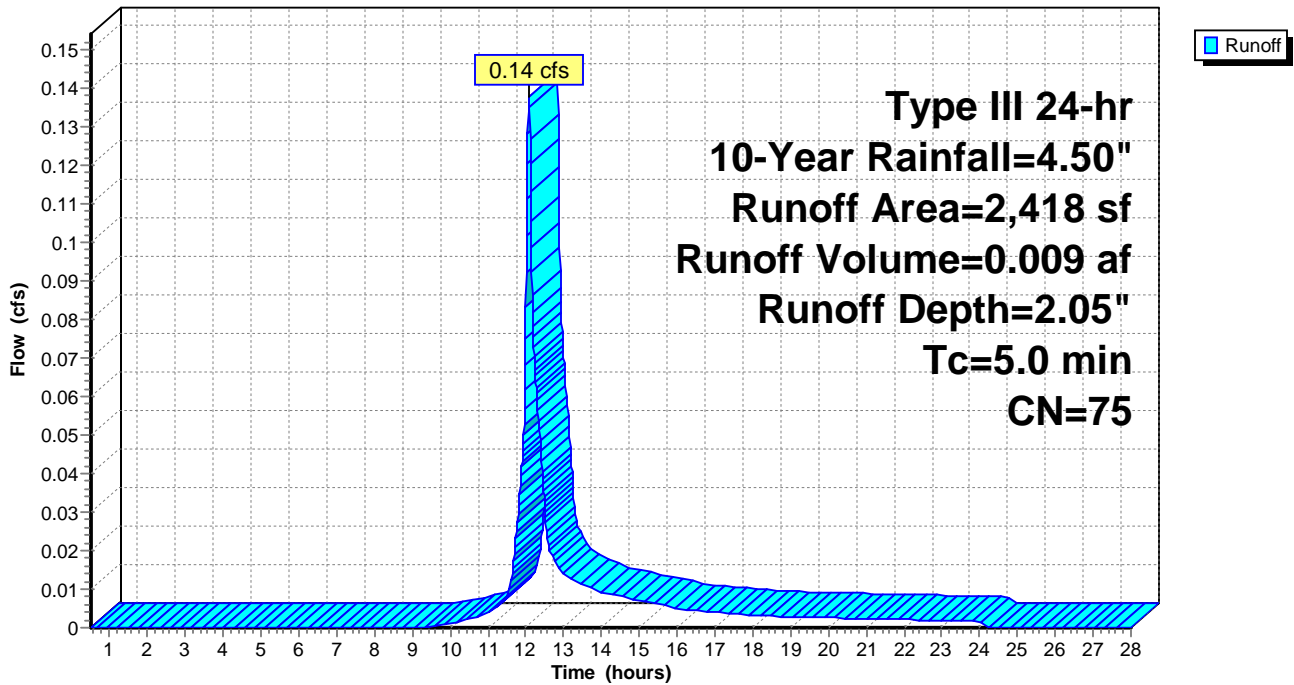
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,292	74	>75% Grass cover, Good, HSG C
2,418	75	Weighted Average
2,418		100.00% Pervious Area

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

Subcatchment E3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment P1: High Street (Northwest)

Runoff = 0.44 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 3.30"

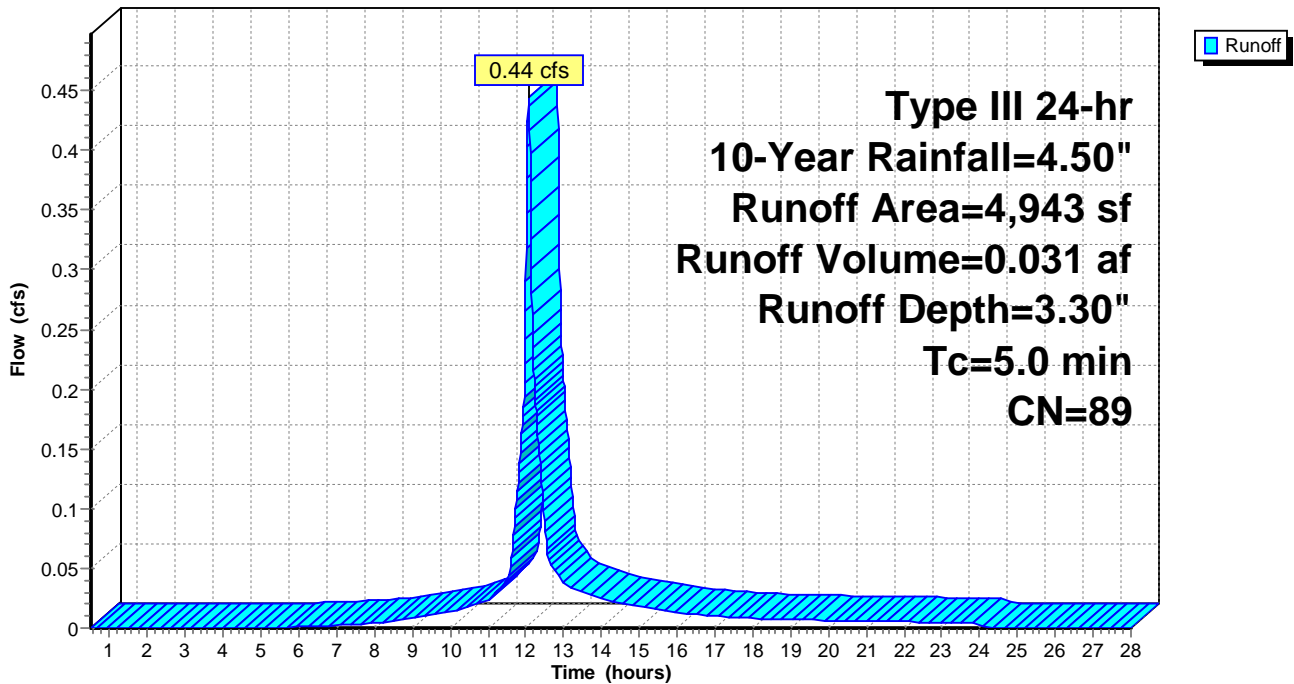
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,820	98	Driveway (portion)
* 52	98	Walks
1,849	74	>75% Grass cover, Good, HSG C
4,943	89	Weighted Average
1,849		37.41% Pervious Area
3,094		62.59% Impervious Area

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

Subcatchment P1: High Street (Northwest)

Hydrograph



Summary for Subcatchment P2: Southeast Abutter

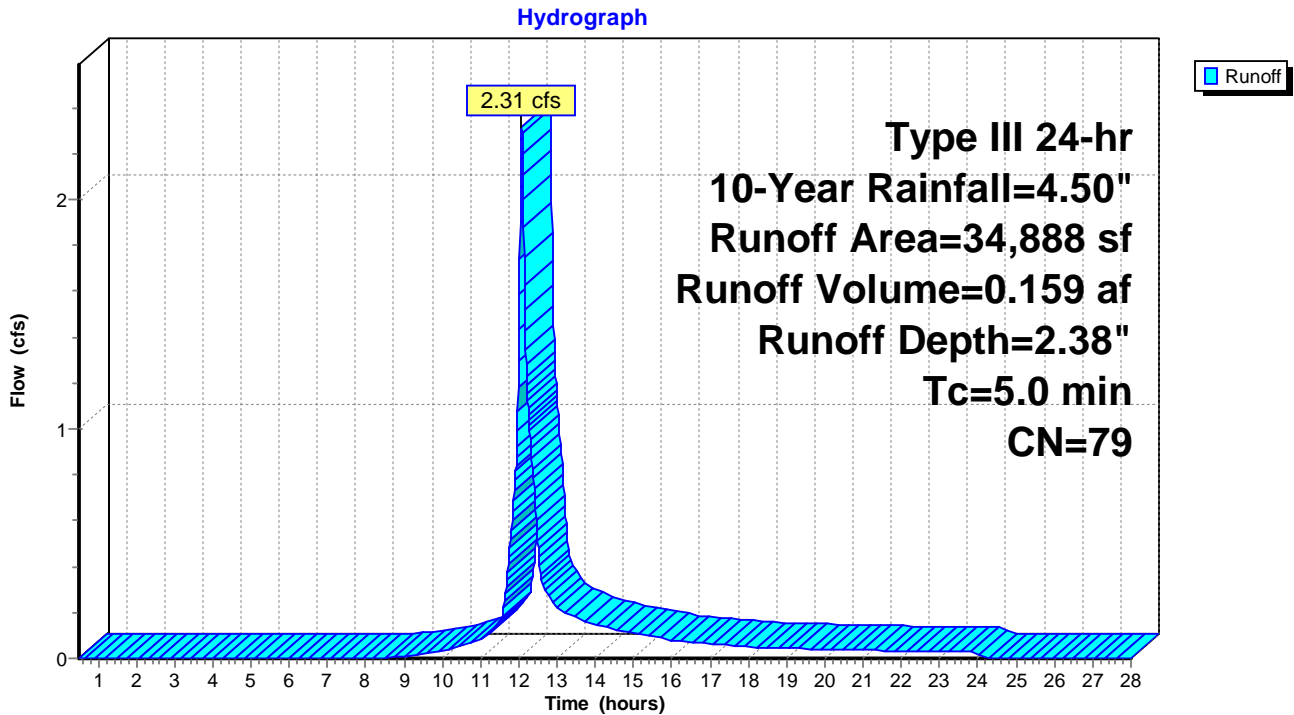
Runoff = 2.31 cfs @ 12.08 hrs, Volume= 0.159 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
* 1,228	98	Roof (portion)
* 250	98	Roof Garage
* 229	98	Walks
* 1,104	98	Driveway (portion)
* 32	98	Ret. Wall
6,339	89	Gravel roads, HSG C
25,706	74	>75% Grass cover, Good, HSG C
34,888	79	Weighted Average
32,045		91.85% Pervious Area
2,843		8.15% Impervious Area

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

Subcatchment P2: Southeast Abutter



Summary for Subcatchment P3: Lake Shore Drive (Southwest)

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 0.009 af, Depth= 2.05"

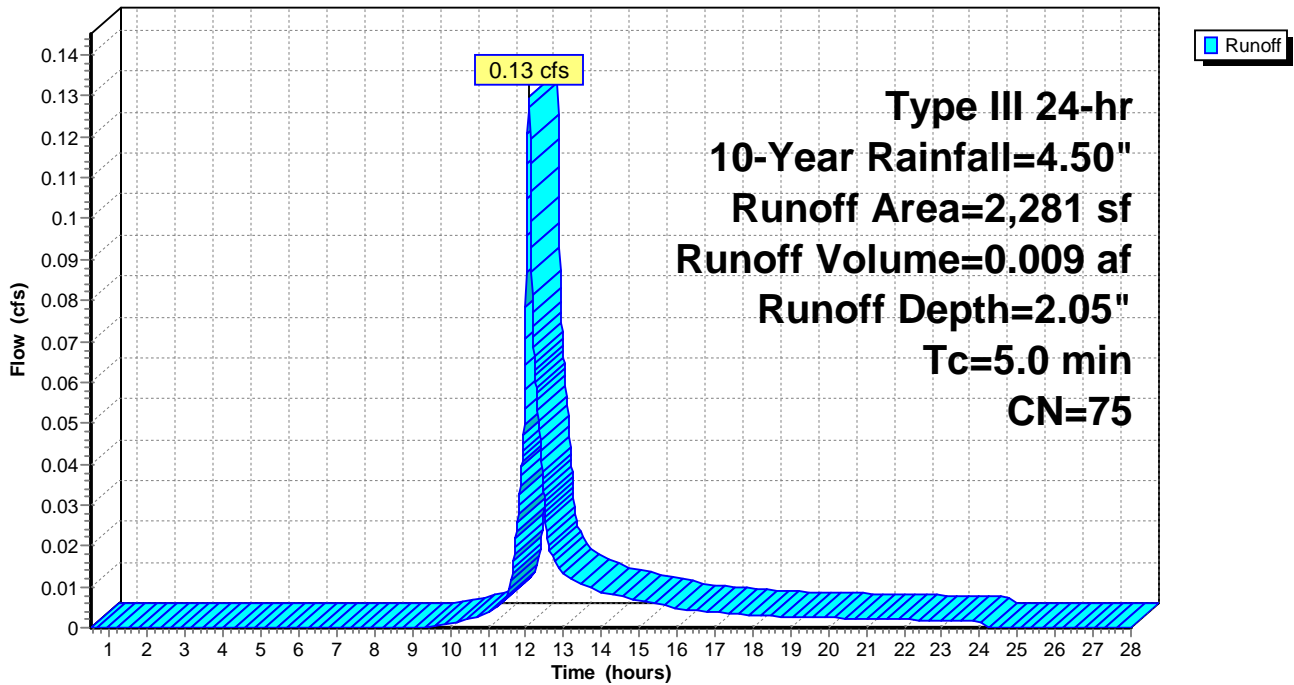
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,155	74	>75% Grass cover, Good, HSG C
2,281	75	Weighted Average
2,281		100.00% Pervious Area

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

Subcatchment P3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment PD: Prop. Parking Lot

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af, Depth= 3.92"

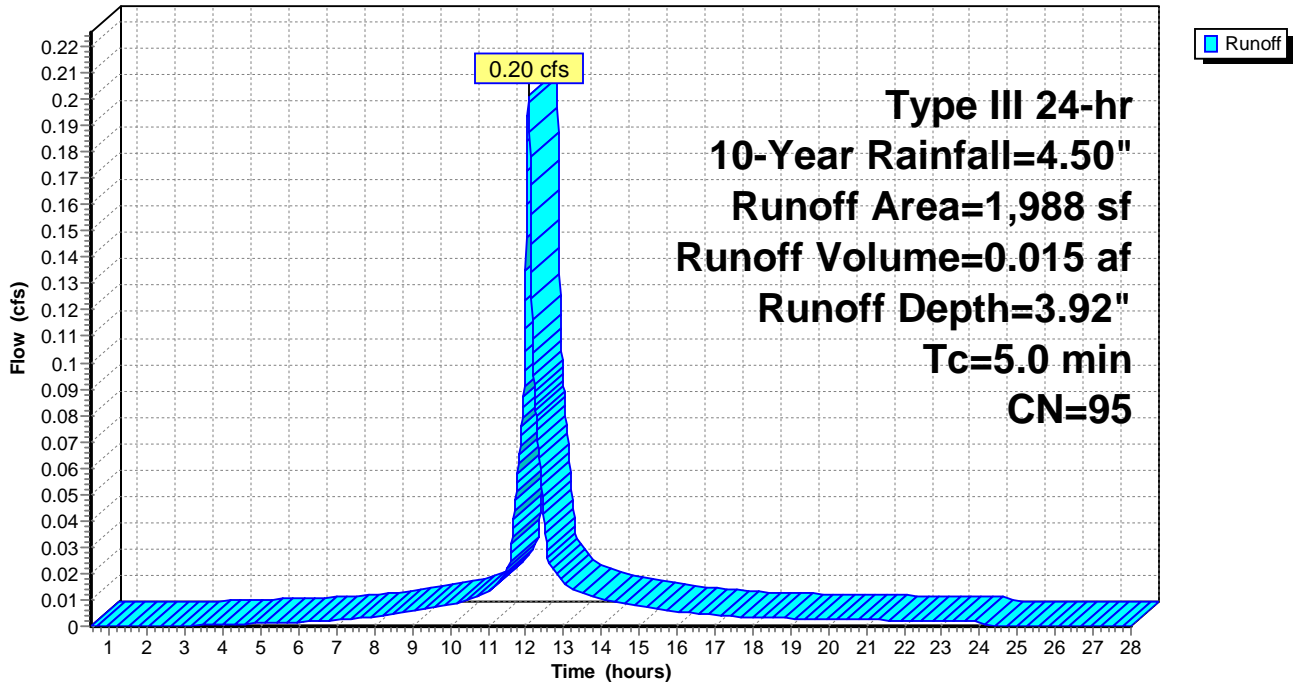
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.50"

	Area (sf)	CN	Description
*	1,886	98	Paved Parking Lot
	102	39	>75% Grass cover, Good, HSG A
	1,988	95	Weighted Average
	102		5.13% Pervious Area
	1,886		94.87% Impervious Area

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

Subcatchment PD: Prop. Parking Lot

Hydrograph



Summary for Pond INF-1: Inf. System #1 Galleys

Inflow Area = 0.046 ac, 94.87% Impervious, Inflow Depth = 3.92" for 10-Year event
 Inflow = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af
 Outflow = 0.00 cfs @ 8.39 hrs, Volume= 0.004 af, Atten= 99%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 8.39 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Peak Elev= 198.47' @ 21.48 hrs Surf.Area= 0.009 ac Storage= 0.011 af

Plug-Flow detention time= 385.2 min calculated for 0.004 af (30% of inflow)
 Center-of-Mass det. time= 219.3 min (989.4 - 770.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	195.50'	0.009 af	8.50'W x 44.00'L x 5.25'H Field A 0.045 af Overall - 0.014 af Embedded = 0.031 af x 30.0% Voids
#2A	196.50'	0.011 af	Galley 4x4x4.25 x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf
		0.020 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.50'	0.270 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 8.39 hrs HW=195.55' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Pond INF-1: Inf. System #1 Galleys - Chamber Wizard Field A

Chamber Model = Galley 4x4x4.25 (Concrete Galley, Shea LE-EGH, LE-CGH or equivalent)

Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf

Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf

10 Chambers/Row x 4.00' Long = 40.00' Row Length +24.0" End Stone x 2 = 44.00' Base Length

1 Rows x 54.0" Wide + 24.0" Side Stone x 2 = 8.50' Base Width

12.0" Base + 51.0" Chamber Height = 5.25' Field Height

10 Chambers x 46.4 cf = 463.8 cf Chamber Storage

10 Chambers x 62.3 cf = 623.3 cf Displacement

1,963.5 cf Field - 623.3 cf Chambers = 1,340.2 cf Stone x 30.0% Voids = 402.1 cf Stone Storage

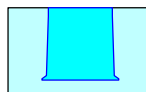
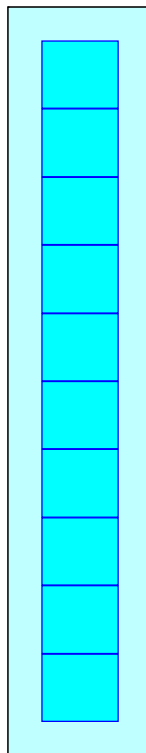
Chamber Storage + Stone Storage = 865.9 cf = 0.020 af

Overall Storage Efficiency = 44.1%

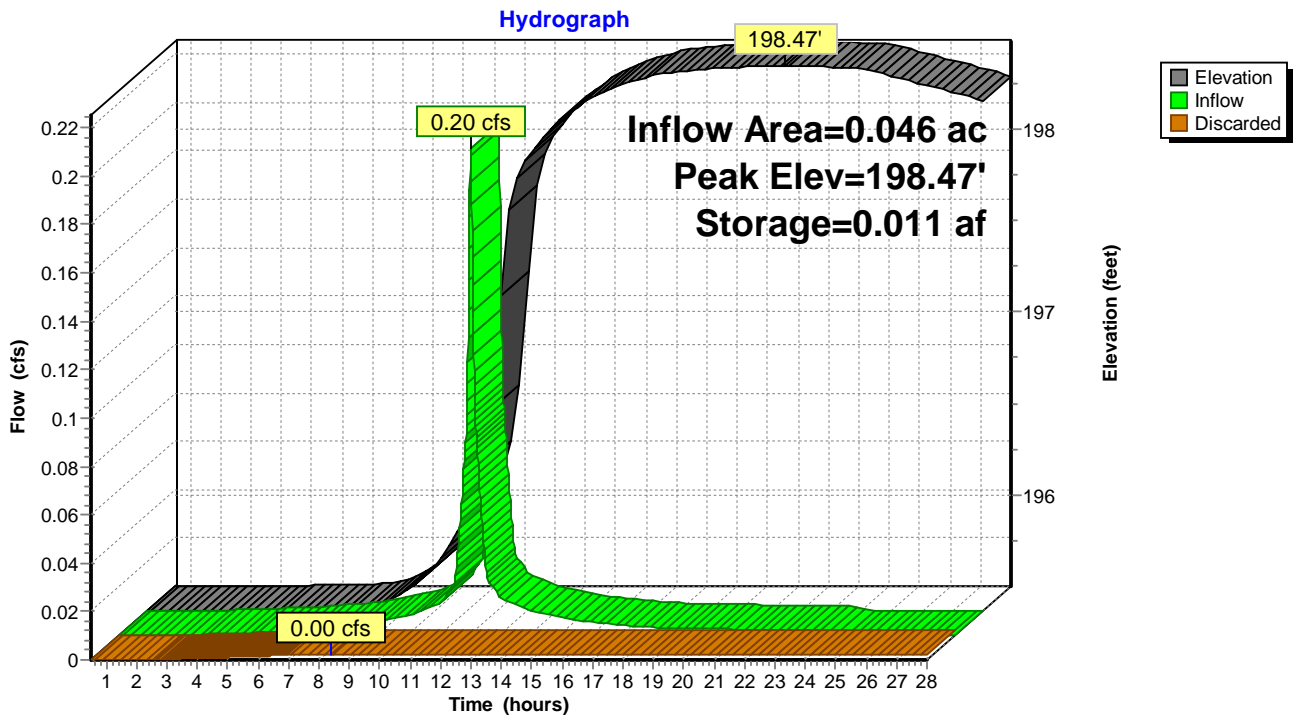
10 Chambers

72.7 cy Field

49.6 cy Stone



Pond INF-1: Inf. System #1 Galleys



Summary for Subcatchment E1: High Street (Northwest)

Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.044 af, Depth= 3.75"

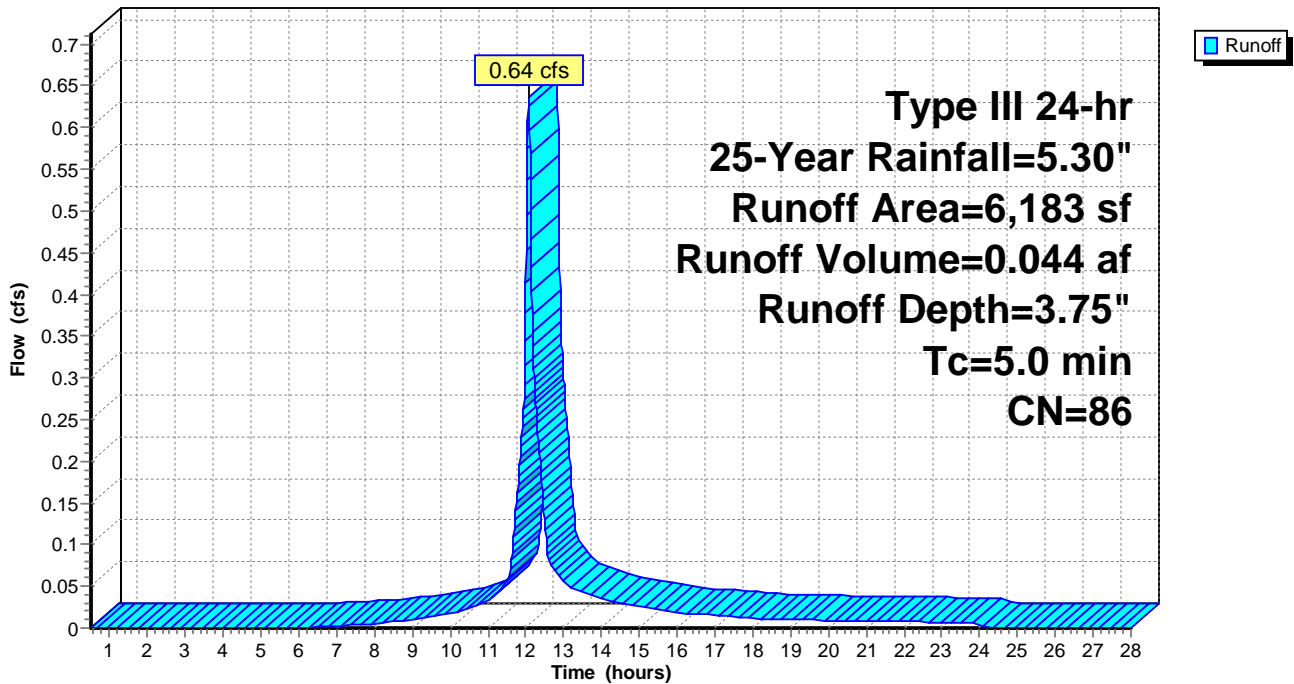
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,800	98	Driveway (portion)
* 52	98	Walks
3,109	74	>75% Grass cover, Good, HSG C
6,183	86	Weighted Average
3,109		50.28% Pervious Area
3,074		49.72% Impervious Area

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

Subcatchment E1: High Street (Northwest)

Hydrograph



Summary for Subcatchment E2: Southeast Abutter (Wetland)

Runoff = 3.03 cfs @ 12.07 hrs, Volume= 0.208 af, Depth= 3.06"

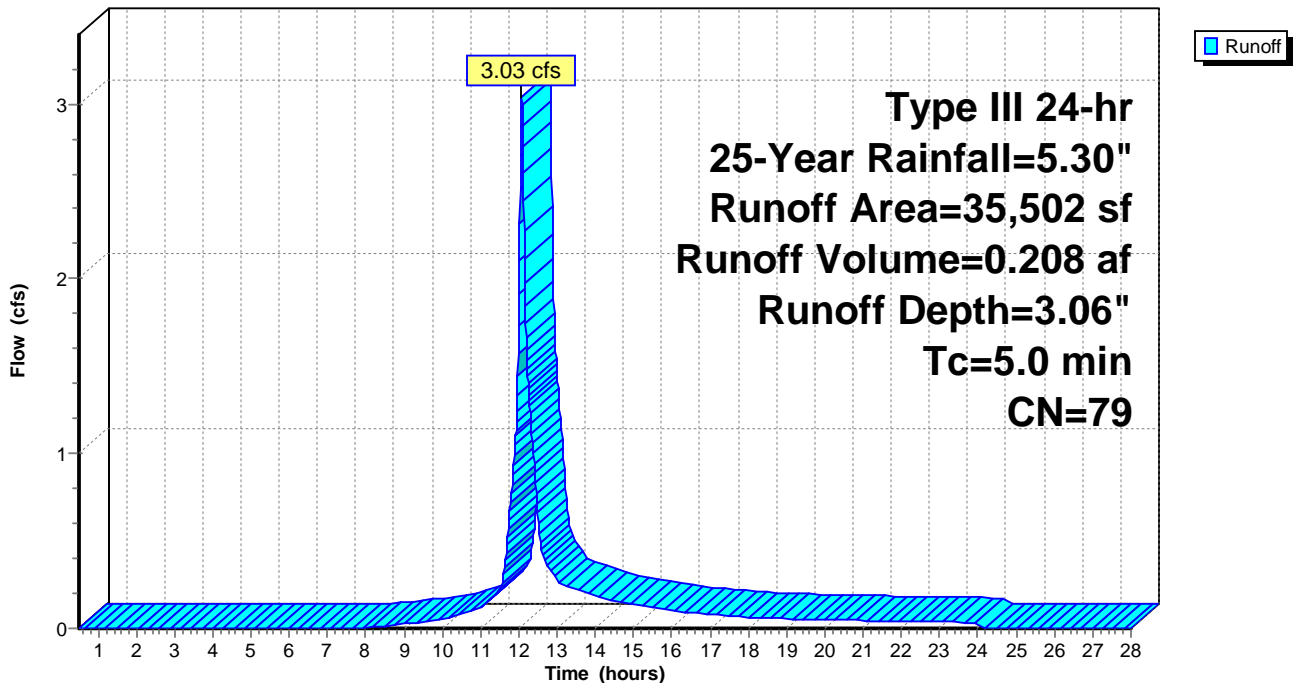
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
* 1,228	98	Roof (portion)
* 250	98	Roof Garage
* 229	98	Walks
* 1,104	98	Driveway (portion)
* 32	98	Ret. Wall
6,339	89	Gravel roads, HSG C
26,320	74	>75% Grass cover, Good, HSG C
35,502	79	Weighted Average
32,659		91.99% Pervious Area
2,843		8.01% Impervious Area

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

Subcatchment E2: Southeast Abutter (Wetland)

Hydrograph



Summary for Subcatchment E3: Lake Shore Drive (Southwest)

Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 2.69"

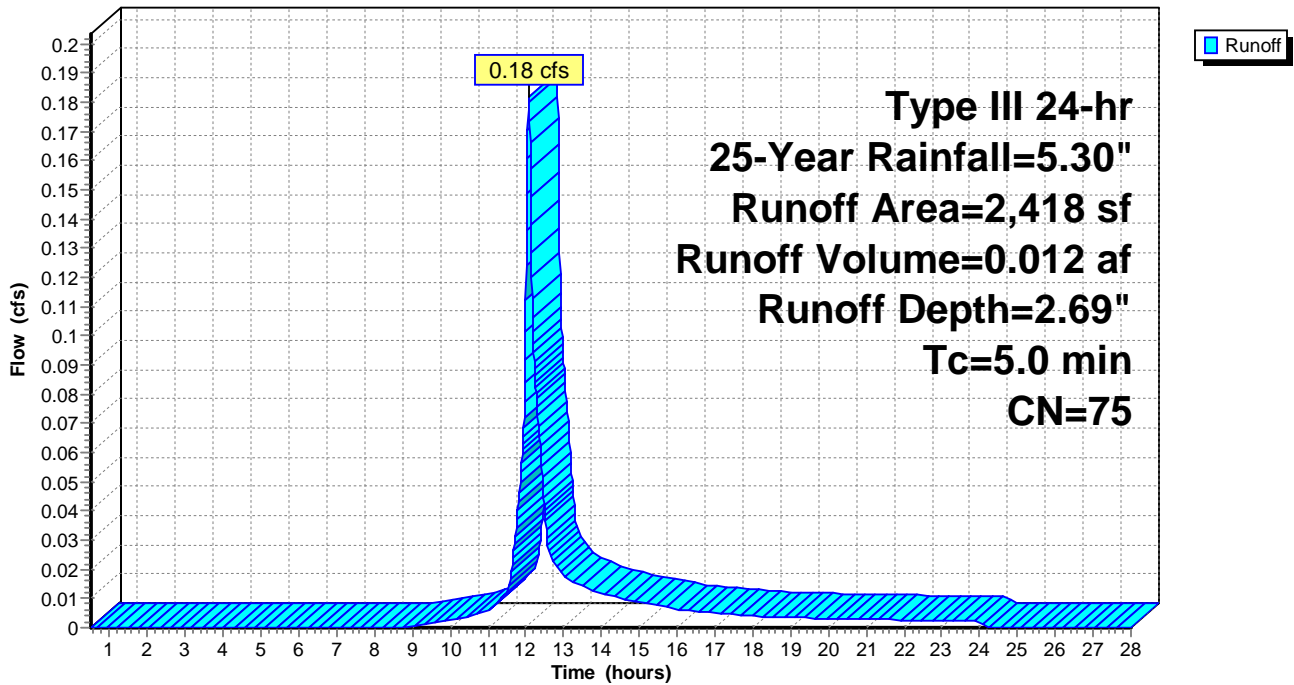
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,292	74	>75% Grass cover, Good, HSG C
2,418	75	Weighted Average
2,418		100.00% Pervious Area

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

Subcatchment E3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment P1: High Street (Northwest)

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 0.038 af, Depth= 4.06"

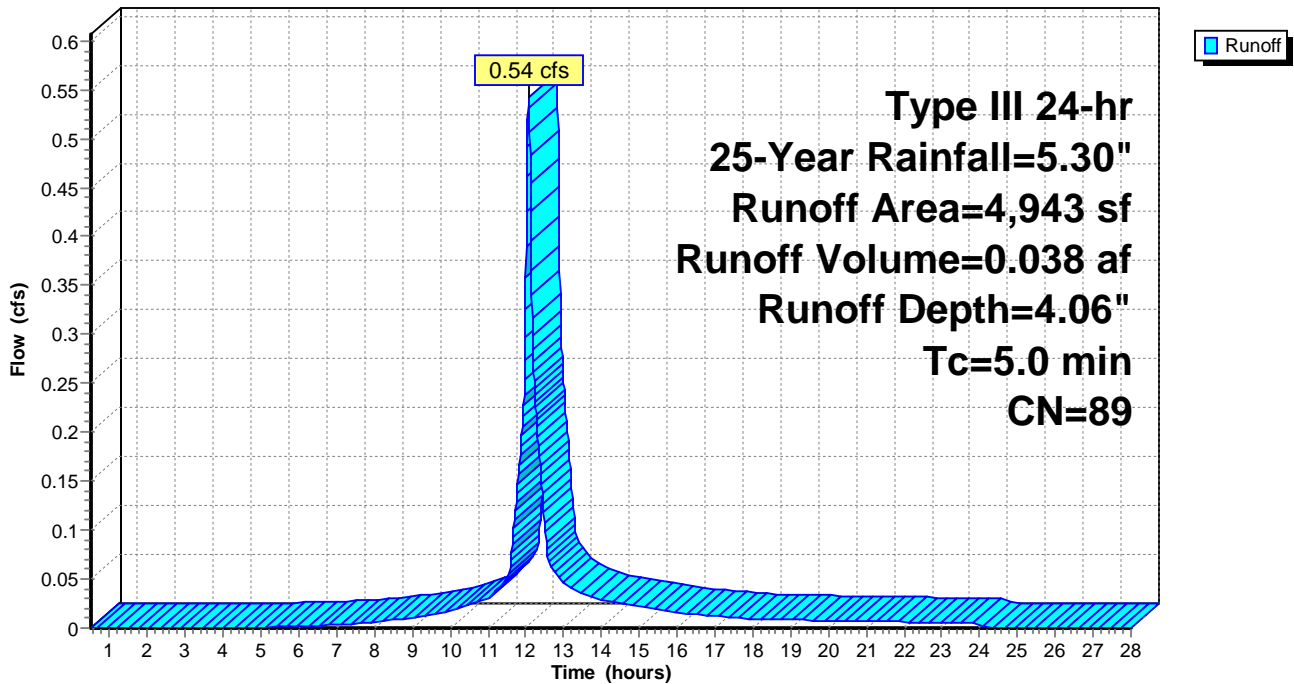
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,820	98	Driveway (portion)
* 52	98	Walks
1,849	74	>75% Grass cover, Good, HSG C
4,943	89	Weighted Average
1,849		37.41% Pervious Area
3,094		62.59% Impervious Area

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

Subcatchment P1: High Street (Northwest)

Hydrograph



Summary for Subcatchment P2: Southeast Abutter

Runoff = 2.98 cfs @ 12.07 hrs, Volume= 0.204 af, Depth= 3.06"

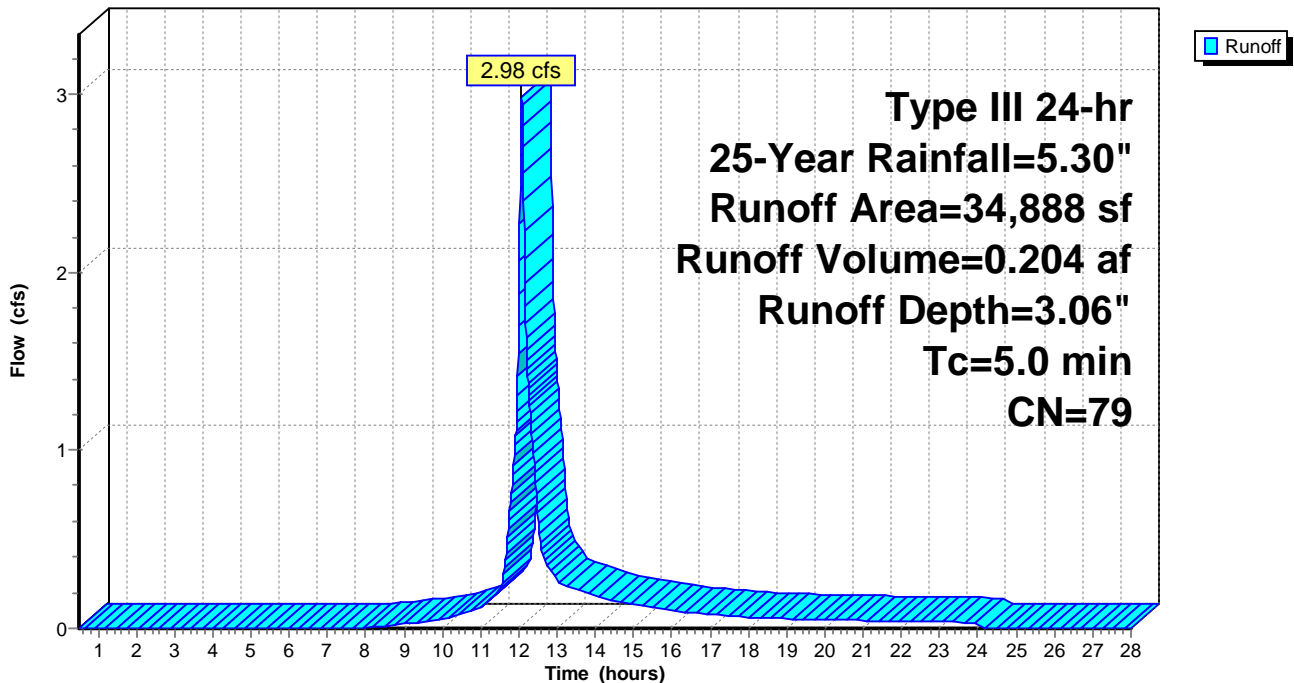
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

	Area (sf)	CN	Description
*	1,228	98	Roof (portion)
*	250	98	Roof Garage
*	229	98	Walks
*	1,104	98	Driveway (portion)
*	32	98	Ret. Wall
	6,339	89	Gravel roads, HSG C
	25,706	74	>75% Grass cover, Good, HSG C
	34,888	79	Weighted Average
	32,045		91.85% Pervious Area
	2,843		8.15% Impervious Area

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

Subcatchment P2: Southeast Abutter

Hydrograph



Summary for Subcatchment P3: Lake Shore Drive (Southwest)

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 2.69"

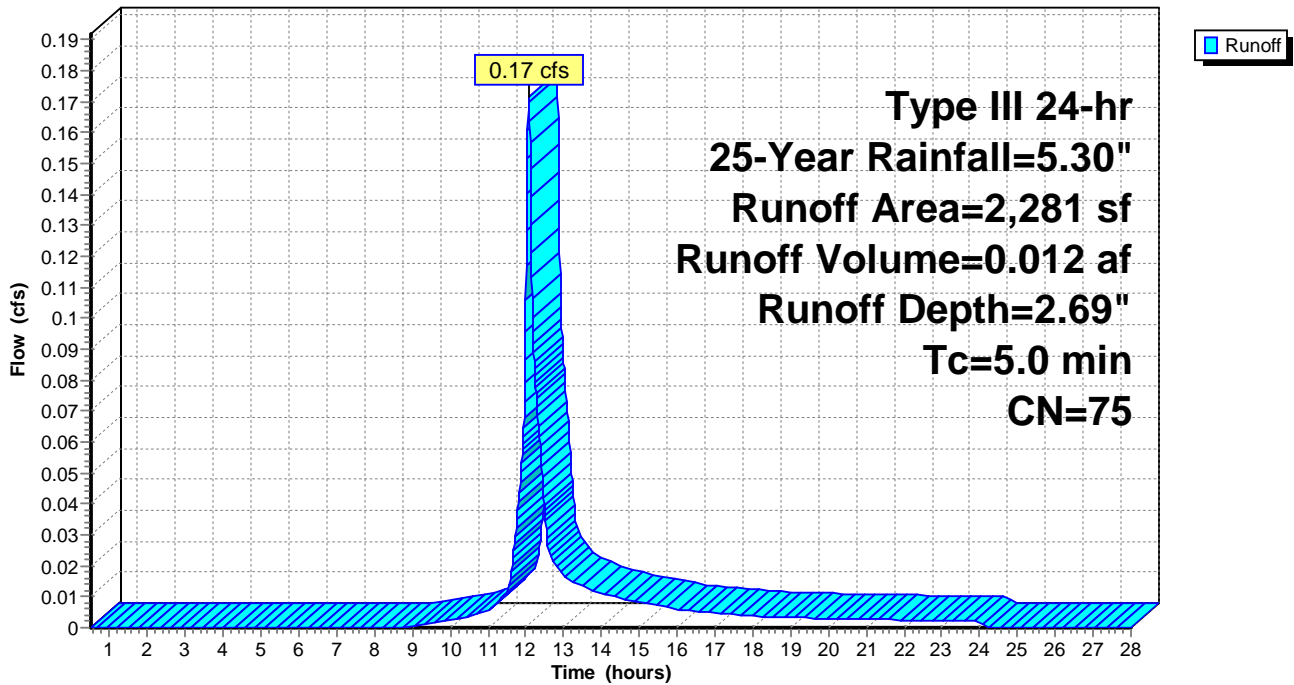
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,155	74	>75% Grass cover, Good, HSG C
2,281	75	Weighted Average
2,281		100.00% Pervious Area

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

Subcatchment P3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment PD: Prop. Parking Lot

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.018 af, Depth= 4.72"

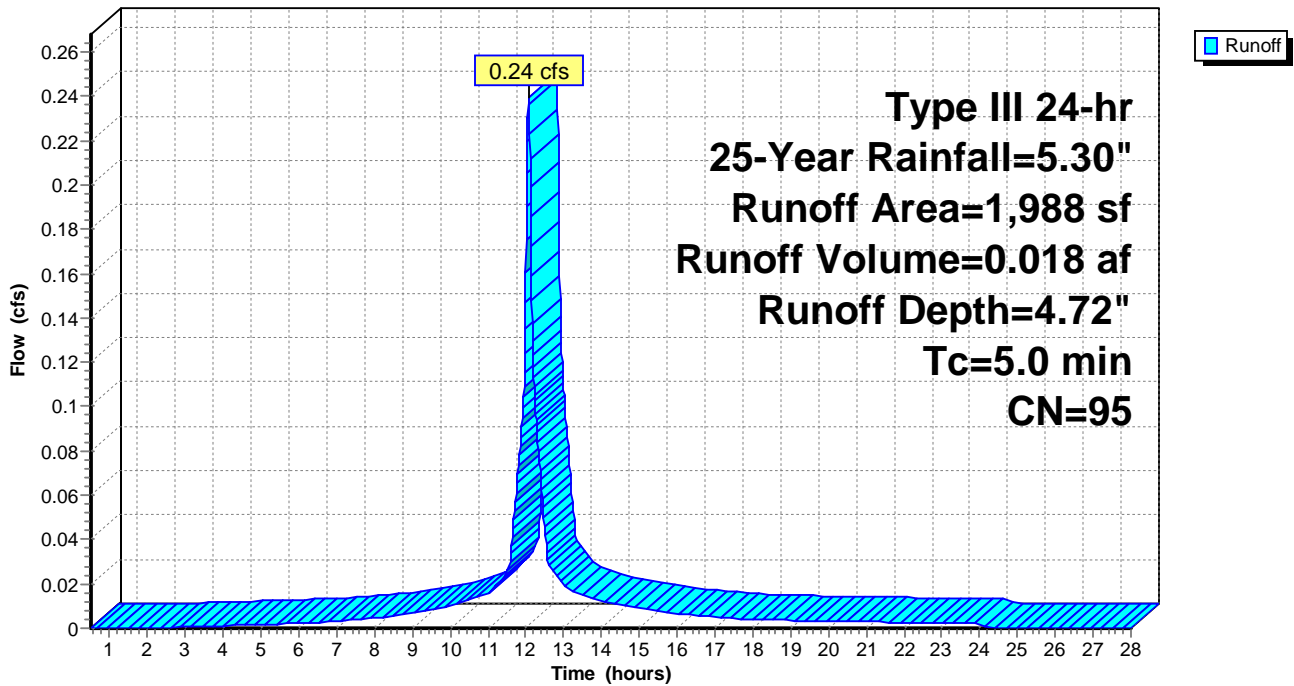
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-Year Rainfall=5.30"

	Area (sf)	CN	Description
*	1,886	98	Paved Parking Lot
	102	39	>75% Grass cover, Good, HSG A
	1,988	95	Weighted Average
	102		5.13% Pervious Area
	1,886		94.87% Impervious Area

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

Subcatchment PD: Prop. Parking Lot

Hydrograph



Summary for Pond INF-1: Inf. System #1 Galleys

Inflow Area = 0.046 ac, 94.87% Impervious, Inflow Depth = 4.72" for 25-Year event
 Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.018 af
 Outflow = 0.00 cfs @ 7.70 hrs, Volume= 0.005 af, Atten= 99%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 7.70 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Peak Elev= 199.12' @ 23.04 hrs Surf.Area= 0.009 ac Storage= 0.014 af

Plug-Flow detention time= 392.7 min calculated for 0.005 af (25% of inflow)
 Center-of-Mass det. time= 202.6 min (968.4 - 765.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	195.50'	0.009 af	8.50"W x 44.00'L x 5.25'H Field A 0.045 af Overall - 0.014 af Embedded = 0.031 af x 30.0% Voids
#2A	196.50'	0.011 af	Galley 4x4x4.25 x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf
		0.020 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.50'	0.270 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 7.70 hrs HW=195.55' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Pond INF-1: Inf. System #1 Galleys - Chamber Wizard Field A

Chamber Model = Galley 4x4x4.25 (Concrete Galley, Shea LE-EGH, LE-CGH or equivalent)

Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf

Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf

10 Chambers/Row x 4.00' Long = 40.00' Row Length +24.0" End Stone x 2 = 44.00' Base Length

1 Rows x 54.0" Wide + 24.0" Side Stone x 2 = 8.50' Base Width

12.0" Base + 51.0" Chamber Height = 5.25' Field Height

10 Chambers x 46.4 cf = 463.8 cf Chamber Storage

10 Chambers x 62.3 cf = 623.3 cf Displacement

1,963.5 cf Field - 623.3 cf Chambers = 1,340.2 cf Stone x 30.0% Voids = 402.1 cf Stone Storage

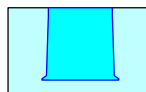
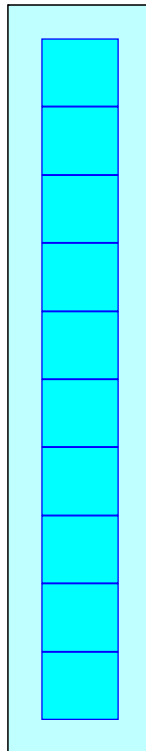
Chamber Storage + Stone Storage = 865.9 cf = 0.020 af

Overall Storage Efficiency = 44.1%

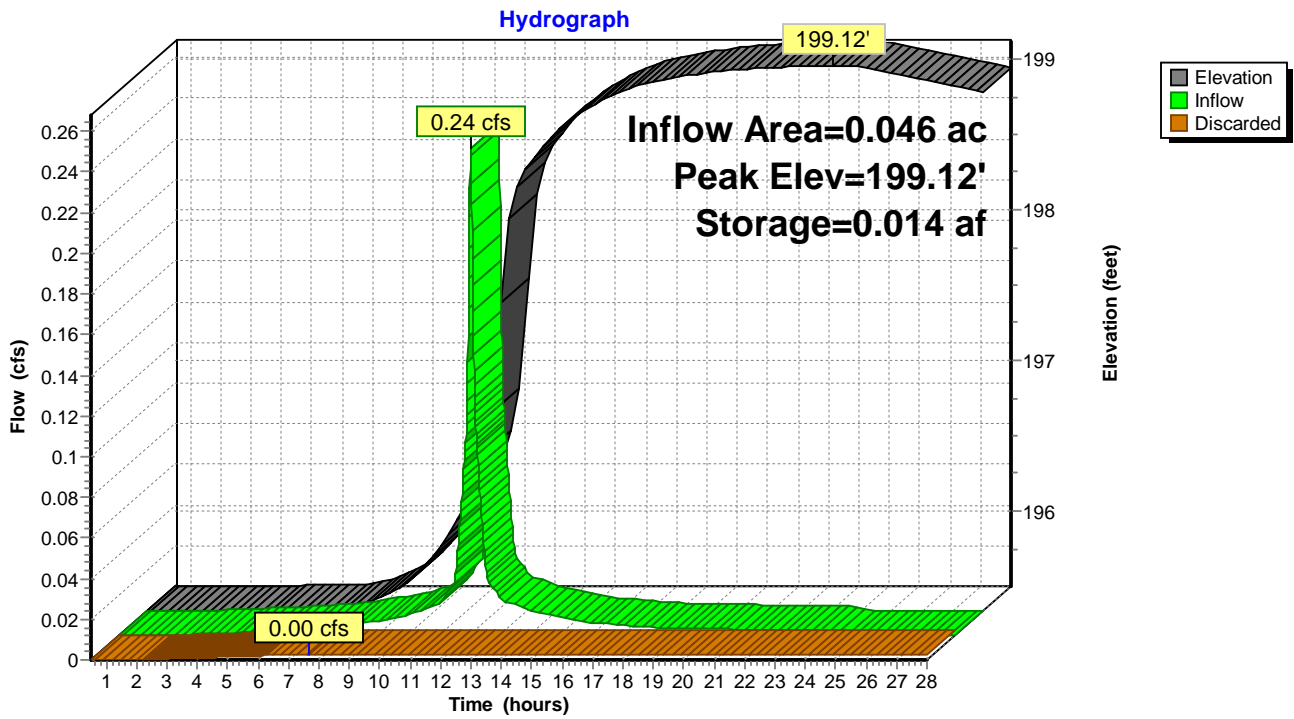
10 Chambers

72.7 cy Field

49.6 cy Stone



Pond INF-1: Inf. System #1 Galleys



Summary for Subcatchment E1: High Street (Northwest)

Runoff = 0.82 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 4.89"

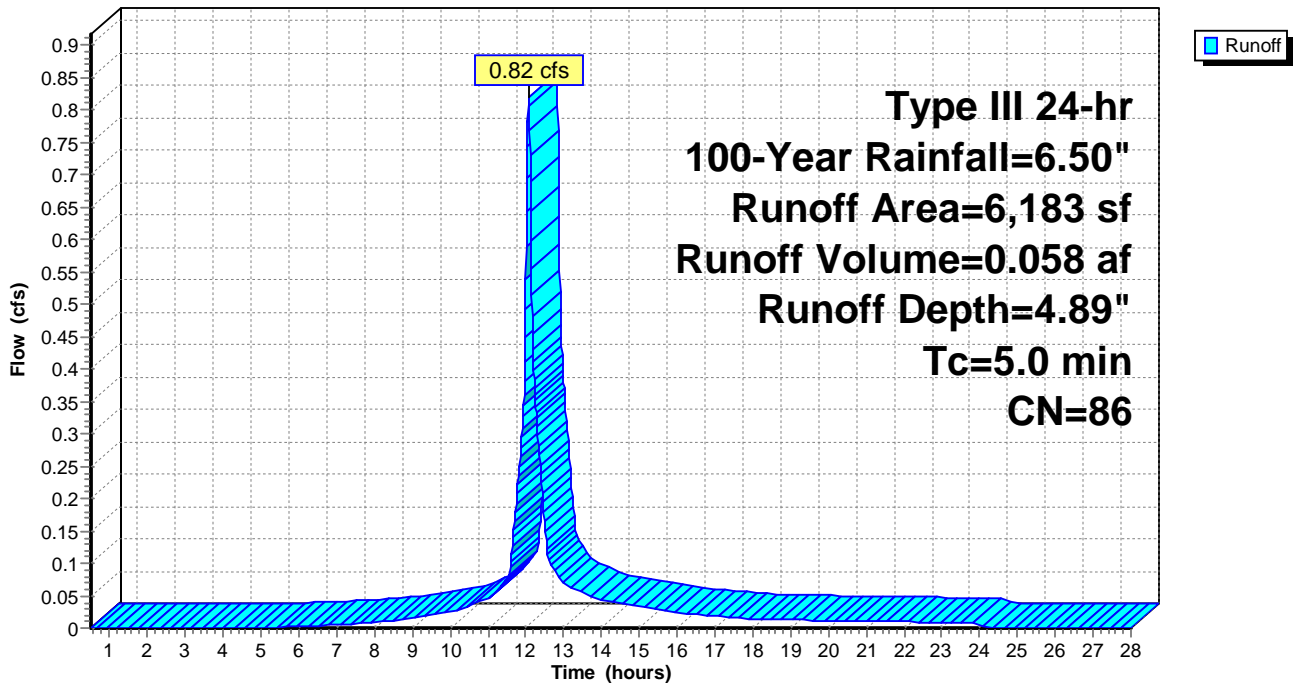
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,800	98	Driveway (portion)
* 52	98	Walks
3,109	74	>75% Grass cover, Good, HSG C
6,183	86	Weighted Average
3,109		50.28% Pervious Area
3,074		49.72% Impervious Area

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

Subcatchment E1: High Street (Northwest)

Hydrograph



Summary for Subcatchment E2: Southeast Abutter (Wetland)

Runoff = 4.07 cfs @ 12.07 hrs, Volume= 0.280 af, Depth= 4.13"

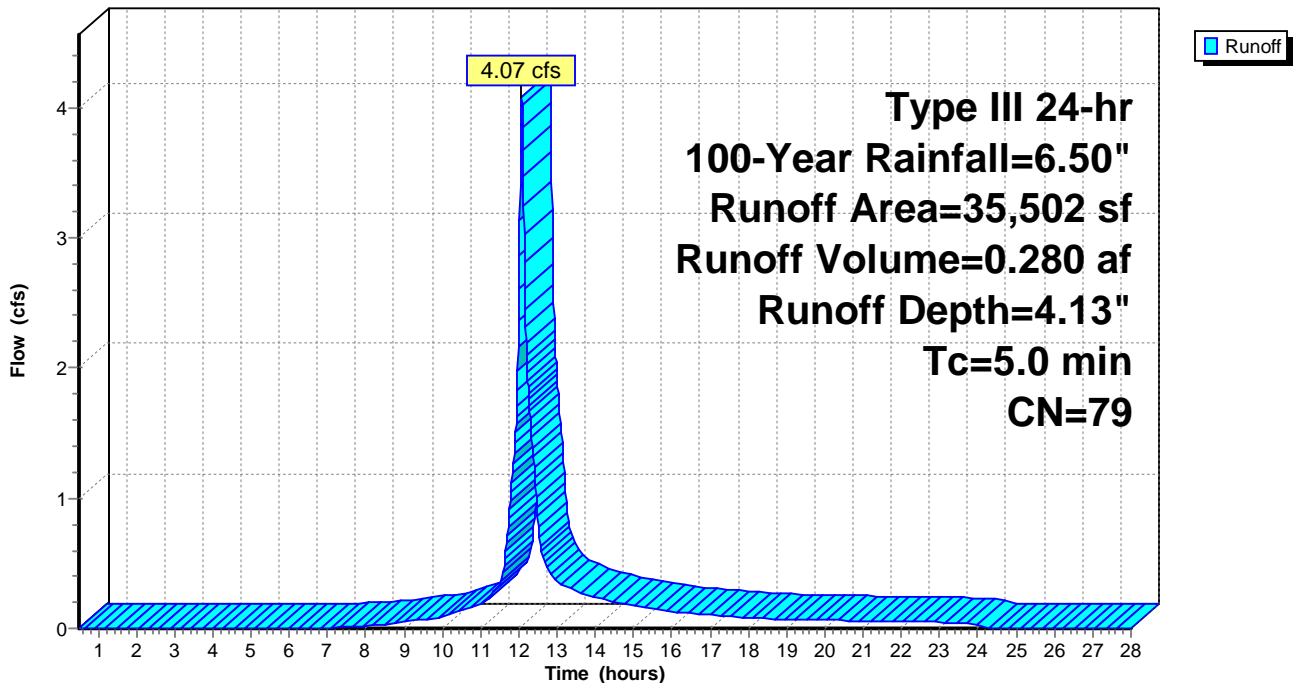
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,228	98	Roof (portion)
*	250	98	Roof Garage
*	229	98	Walks
*	1,104	98	Driveway (portion)
*	32	98	Ret. Wall
	6,339	89	Gravel roads, HSG C
	26,320	74	>75% Grass cover, Good, HSG C
	35,502	79	Weighted Average
	32,659		91.99% Pervious Area
	2,843		8.01% Impervious Area

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

Subcatchment E2: Southeast Abutter (Wetland)

Hydrograph



Summary for Subcatchment E3: Lake Shore Drive (Southwest)

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 3.71"

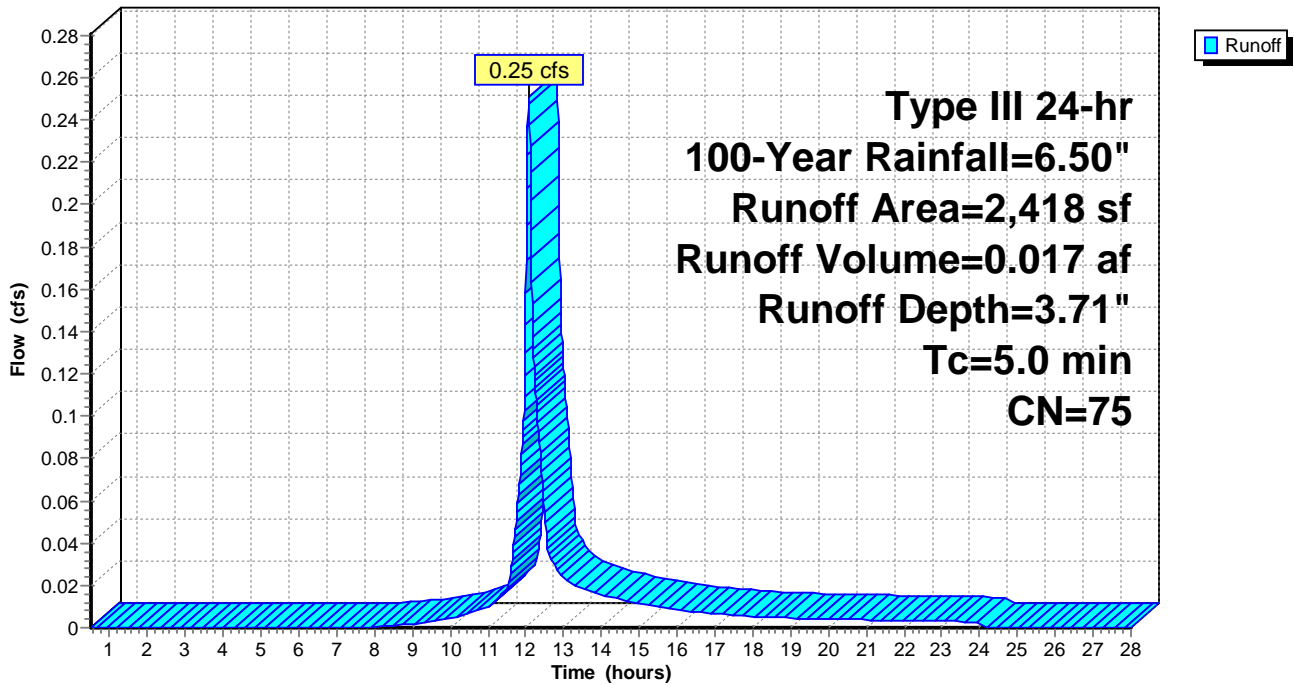
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,292	74	>75% Grass cover, Good, HSG C
2,418	75	Weighted Average
2,418		100.00% Pervious Area

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

Subcatchment E3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment P1: High Street (Northwest)

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 0.049 af, Depth= 5.22"

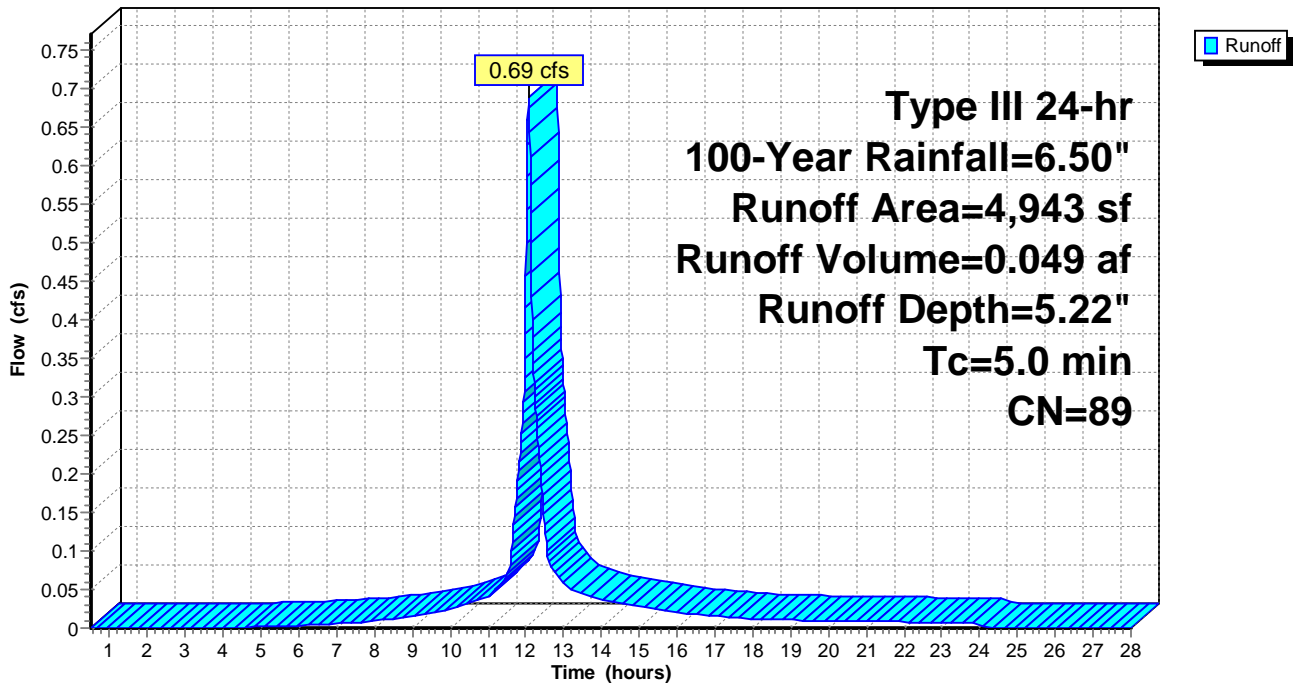
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
* 222	98	Roof (portion)
* 2,820	98	Driveway (portion)
* 52	98	Walks
1,849	74	>75% Grass cover, Good, HSG C
4,943	89	Weighted Average
1,849		37.41% Pervious Area
3,094		62.59% Impervious Area

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

Subcatchment P1: High Street (Northwest)

Hydrograph



Summary for Subcatchment P2: Southeast Abutter

Runoff = 4.00 cfs @ 12.07 hrs, Volume= 0.276 af, Depth= 4.13"

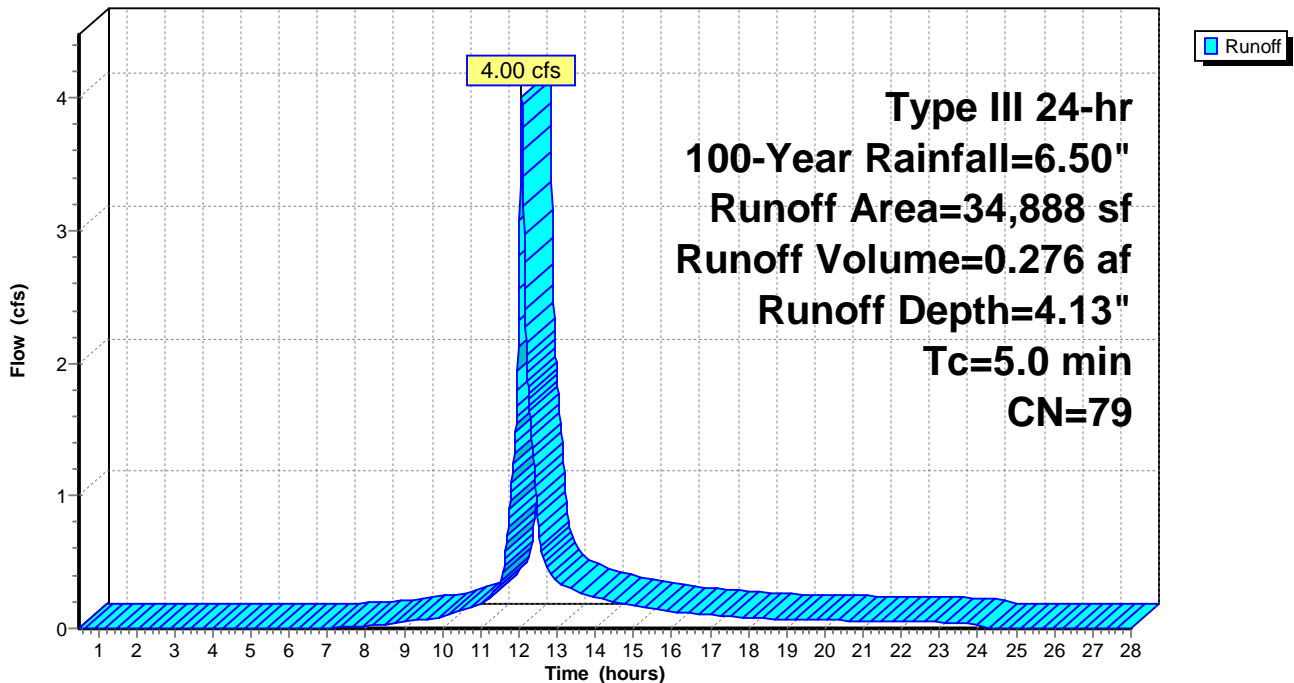
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
* 1,228	98	Roof (portion)
* 250	98	Roof Garage
* 229	98	Walks
* 1,104	98	Driveway (portion)
* 32	98	Ret. Wall
6,339	89	Gravel roads, HSG C
25,706	74	>75% Grass cover, Good, HSG C
34,888	79	Weighted Average
32,045		91.85% Pervious Area
2,843		8.15% Impervious Area

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

Subcatchment P2: Southeast Abutter

Hydrograph



Summary for Subcatchment P3: Lake Shore Drive (Southwest)

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.016 af, Depth= 3.71"

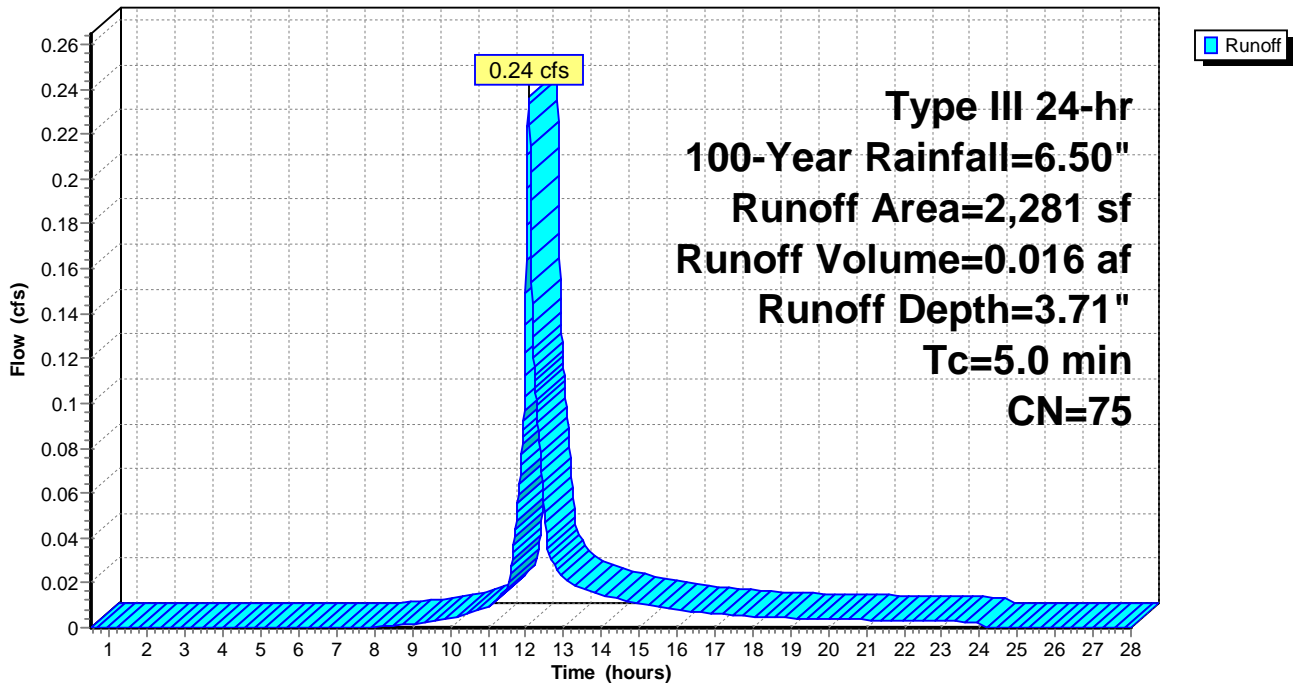
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
126	89	Gravel roads, HSG C
2,155	74	>75% Grass cover, Good, HSG C
2,281	75	Weighted Average
2,281		100.00% Pervious Area

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

Subcatchment P3: Lake Shore Drive (Southwest)

Hydrograph



Summary for Subcatchment PD: Prop. Parking Lot

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 5.91"

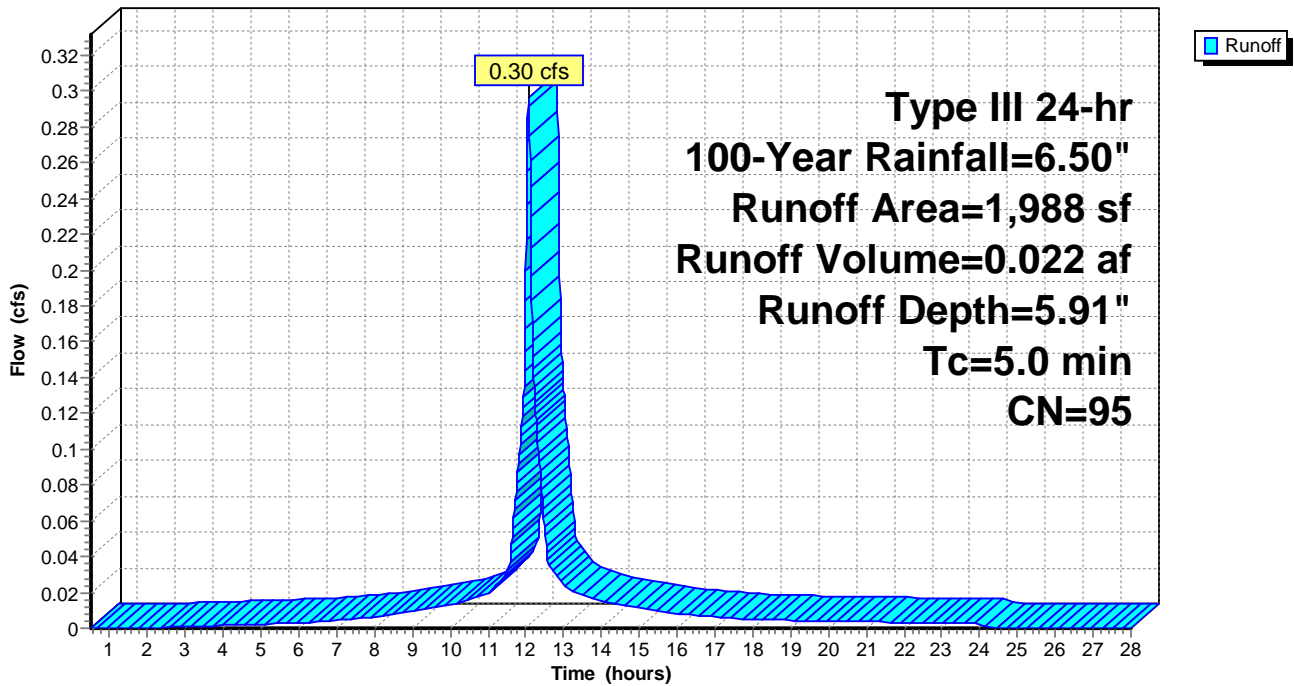
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=6.50"

	Area (sf)	CN	Description
*	1,886	98	Paved Parking Lot
	102	39	>75% Grass cover, Good, HSG A
	1,988	95	Weighted Average
	102		5.13% Pervious Area
	1,886		94.87% Impervious Area

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

Subcatchment PD: Prop. Parking Lot

Hydrograph



Summary for Pond INF-1: Inf. System #1 Galleys

Inflow Area = 0.046 ac, 94.87% Impervious, Inflow Depth = 5.91" for 100-Year event
 Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af
 Outflow = 0.00 cfs @ 6.79 hrs, Volume= 0.005 af, Atten= 99%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 6.79 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-28.00 hrs, dt= 0.01 hrs
 Peak Elev= 200.11' @ 24.03 hrs Surf.Area= 0.009 ac Storage= 0.018 af

Plug-Flow detention time= 407.4 min calculated for 0.005 af (21% of inflow)
 Center-of-Mass det. time= 182.6 min (943.4 - 760.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	195.50'	0.009 af	8.50"W x 44.00"L x 5.25"H Field A 0.045 af Overall - 0.014 af Embedded = 0.031 af x 30.0% Voids
#2A	196.50'	0.011 af	Galley 4x4x4.25 x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf
		0.020 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.50'	0.270 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 6.79 hrs HW=195.55' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Pond INF-1: Inf. System #1 Galleys - Chamber Wizard Field A

Chamber Model = Galley 4x4x4.25 (Concrete Galley, Shea LE-EGH, LE-CGH or equivalent)

Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf

Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf

10 Chambers/Row x 4.00' Long = 40.00' Row Length +24.0" End Stone x 2 = 44.00' Base Length

1 Rows x 54.0" Wide + 24.0" Side Stone x 2 = 8.50' Base Width

12.0" Base + 51.0" Chamber Height = 5.25' Field Height

10 Chambers x 46.4 cf = 463.8 cf Chamber Storage

10 Chambers x 62.3 cf = 623.3 cf Displacement

1,963.5 cf Field - 623.3 cf Chambers = 1,340.2 cf Stone x 30.0% Voids = 402.1 cf Stone Storage

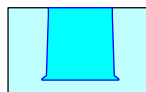
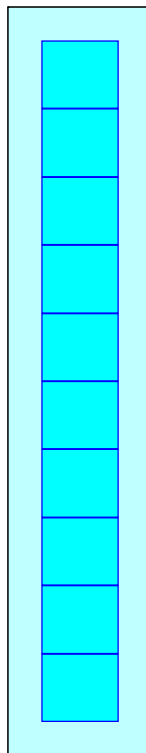
Chamber Storage + Stone Storage = 865.9 cf = 0.020 af

Overall Storage Efficiency = 44.1%

10 Chambers

72.7 cy Field

49.6 cy Stone



Pond INF-1: Inf. System #1 Galleys

