STORMWATER MANAGEMENT REPORT

FOR THE PROPOSED REDEVELOPMENT OF

MCDONALD'S
1050 N. BROADWAY
WICHITA, KS

JULY 29, 2011

OZARK CIVIL ENGINEERING PROJECT #08.0844

BENTONVILLE
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Ozark Civil Engineering Inc.

Stormwater Management Report

Redevelopment of the existing McDonald's
Located at N. Broadway & E. 10th St. N.
Wichita, Sedgwick County, KS
Ozark Project # 08.0844

PROJECT DESCRIPTION

The following is the Stormwater Management Report for the proposed redevelopment project area of 1.046 acres. The project consist of a proposed 4,106 square feet new restaurant for McDonald's Corporation. The site consist of an existing McDonald's with existing parking field. The cover sheet of the construction drawings by Ozark Civil Engineering presents a vicinity map of the site and the surrounding area.

No Stormwater Management (SWM) facilities have been designed for this project since the proposed project will contain more pervious areas than the existing store. Runoff from the parking areas will release at a rate less than the Pre-developed release rate into the existing drainage flow directly west and east of the restaurant (N. Broadway for west drainage areas and N. Topeka for east drainage areas). All of the McDonald's has been accounted for in the stormwater runoff calculations.

Water quality runoff was also calculated for the project. It was determined to reduce the impervious pavement by 20% to met the City's stormwater requirements. In order to meet this requirement, 10 parking spaces in the eastern drainage basin are proposed as pervious pavers. Surface drainage from the parking stalls will drainage vertically into open graded stone below the pavers and then into sand layers approximately 8 feet below existing grades.

PRE-DEVELOPED CONDITIONS

The project site has an overall area of 1.046 acres. The site has a high point of 1306.5 MSL for the building and about half way through the site. A low point of 1304 MSL exist on both the western and eastern boundaries. In the Pre-developed state, the project site consists of an existing McDonald's restaurant with associated parking lot. All

drainage is surface flow with half of the site flowing to the west in the existing street drainage system of N. Broadway Ave. The east half of the site flows to N. Topeka into the existing street drainage system. Flow is then routed through the City's street drainage system and onto the drainage canal along Interstate 135.

Area*	Surface	Size	Description
West Drainage	Impervious	.429 acres	Building, sidewalk and parking lot.
	Pervious	.062 acres	Grass and landscaping.
East Drainage	Impervious	.471 acres	Building, sidewalk and parking lot.
	Pervious	.084 acres	Grass and landscaping.
	Total:	1.046 acres	

** See Attached Figure 1 in Appendix A for Pre-developed Areas*

FEMA Flood Plains

The Federal Emergency Management Agency (FEMA) provides flood maps that indicate 100-year and 500-year flood plains. According to the Firm Map, the subject property lies in Zone X consist of areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood. The subject projects lies within the Mississippi River Basin and the Arkansas River provides drainage from the region. Project is not within a watershed district.

Wetlands

Per the national wetlands inventory maps, no federal wetlands exist on or near the subject property.

Surface Water

Per visual inspections, no surface waters exist on the subject property to be disturbed.

Runoff Calculations Requirements for Existing Conditions

The following run-off calculations were accomplished for the Pre-developed areas. The Pre-developed area drains to the west and east boundary as shown in Appendix A, Figure 1.

The runoff calculations and routing were completed using the Unit Hydrograph (SCS) Method offered by HydroCAD 9.10. This method considers land use, time of travel for runoff, rainfall storm events for this particular area, and the size of the area to determine the storm water runoff.

The rainfall amounts will vary based on the design storm and on the region of interest. The area is also analyzed to determine its current land use and a SCS runoff curve

number is then generated for the site. Next, the time of concentration and travel time of the runoff from the most hydraulically remote point of the drainage area to the outlet point is determined and all these items are used in the calculation of the Pre-developed runoff.

Soil Classification

Information published by the Soil Conservation Service mapping service for Sedgwick County indicates that soils found on-site are Eudora-Urban land complex (rarely flooded). See Appendix B for Soil Conservation mapped soils. Eudora-Urban is not a hydric soil. HSG B.

SCS Runoff Curve Number

The SCS Runoff Curve Number is based on land use for the area and the percent of the area with that type of use. For example, pavement has a runoff curve number of 98 as it is almost entirely made of impervious area. The runoff curve number also takes the type of soil into account. The runoff weighted Curve Number used for the project site for the west basin area was 93 and 92 for the east basin. Both have good drainage characteristics and are part of the HSG B.

Time of Concentration

The time of concentration is the time for runoff to travel from the hydraulically most distant point of the drainage area to a point of interest within the drainage area. The time of concentration is based on the SCS TR-55 method that defines three types of travel paths: Sheet flow for a maximum of 300 ft; Shallow concentrated flow after 150 feet and / or channel flow in ditches or pipes. The time of concentration was calculated for the pre-developed area and determined to be 5 minutes.

Runoff Calculations (Pre Developed)

Calculations were accomplished for the storm events. The results are as follows:

Pre Developed Runoff Results (cfs)

	Drainage Area Location	
Storm Events	West	East
2	2.28	2.51
5	3.03	3.36
10	3.62	4.04
25	4.21	4.71
50	4.87	5.46
100	5.46	6.12

POST-DEVELOPED CONDITIONS

The project site has an overall area of 1.046 acres. The site has a high point of 1306.5 MSL around the building pad and a low point of 1304 MSL along N. Broadway Ave. and N. Topeka. In the Post-developed state, the project site consists of new, larger McDonald's restaurant with a slightly modified parking lot area. All drainage is surface flow with the site flowing to the west and east boundary into N. Broadway Ave. and N. Topeka respectively. The following table lists these areas:

Area*	Surface	Size	Description
West Drainage	Impervious	.406 acres	Building, sidewalk and parking lot.
	Pervious	.088 acres	Grass and landscaping.
East Drainage	Impervious	.424 acres	Building, sidewalk and parking lot.
	Pervious	.128 acres	Grass and landscaping.
	Total:	1.046 acres	

** See Attached Figure 2 in Appendix A for Post-developed Areas*

Runoff Calculations (Post-developed & Water Quality Volume)

In the developed state, runoff from the building and parking lot will be routed to the same street drainage systems in Broadway and Topeka. Majority of flow will be surface from paved surfaces.

For the water quality volume, the site impervious area was reduced by 20% to avoid adding storm drainage piping. The impervious area for the existing site is 39,665 SF and is reduced to 31,732 SF in the final developed condition. Approximately 10 parking spaces are proposed to be constructed of pervious pavers that will help meet the 20% reduction in pervious surface. Surface water from the parking stalls to percolate into the subsurface sandy soils via a 12 inch vertical pipe. Sandy soil layer is approximately 8 feet below the existing surface elevations. Open graded stone will provide free flow from the surface to the subsurface. See Appendix C for the project's Operation and Maintenance Manual for details and long term maintenance.

SCS Runoff Curve Number

Weighted SCS runoff Curve numbers were used to compute the stormwater runoff for the developed conditions. The runoff weighted Curve Number used for the project site for the west basin area was 91 and 89 for the east basin. Both have good drainage characteristics and are part of the HSG B.

Time of Concentration

The time of concentration used in the developed condition was calculated for each area and is generally a conservative 5 minutes for the remote drainage routing.

Post-developed Runoff

Calculations were accomplished for the storm events. The results are as follows:

Post Developed Runoff Results (cfs)

	Drainage Area Location	
Storm Events	West	East
2	2.18	2.30
5	2.94	3.15
10	3.54	3.83
25	4.14	4.50
50	4.81	5.26
100	5.41	5.93

SWM FACILITIES SIZING and ROUTING

No storm water detention is necessary as the runoff in the post developed condition is less than the pre-developed condition. The attached calculations through HydroCAD show that runoff falls below Pre-developed release rates from the project site.

Release Rate Comparison Table (cfs)

	Drainage Area Location	
Storm Events	West (pre/post)	East (pre/post)
2	2.28/2.18	2.51/2.30
5	3.03/2.94	3.36/3.15
10	3.62/3.54	4.04/3.83
25	4.21/4.14	4.71/4.50
50	4.87/4.81	5.46/5.26
100	5.46/5.41	6.12/5.93

Conclusions:

Based on the provided data and calculation assumptions, the proposed discharge will not exceed the Pre-developed release rates into the receiving system for the storm events.

The design, analysis, and their applicability as presented herein is based on and limited by the historical weather data. This development with recommended improvements, if constructed per the site development plans and specifications prepared by Ozark Civil Engineering, Inc, is deemed not to increase existing endangerment to life or property in the surrounding area.

Respectfully submitted,

Scott P. McGee, P.E., CPESC
Regional Vice President

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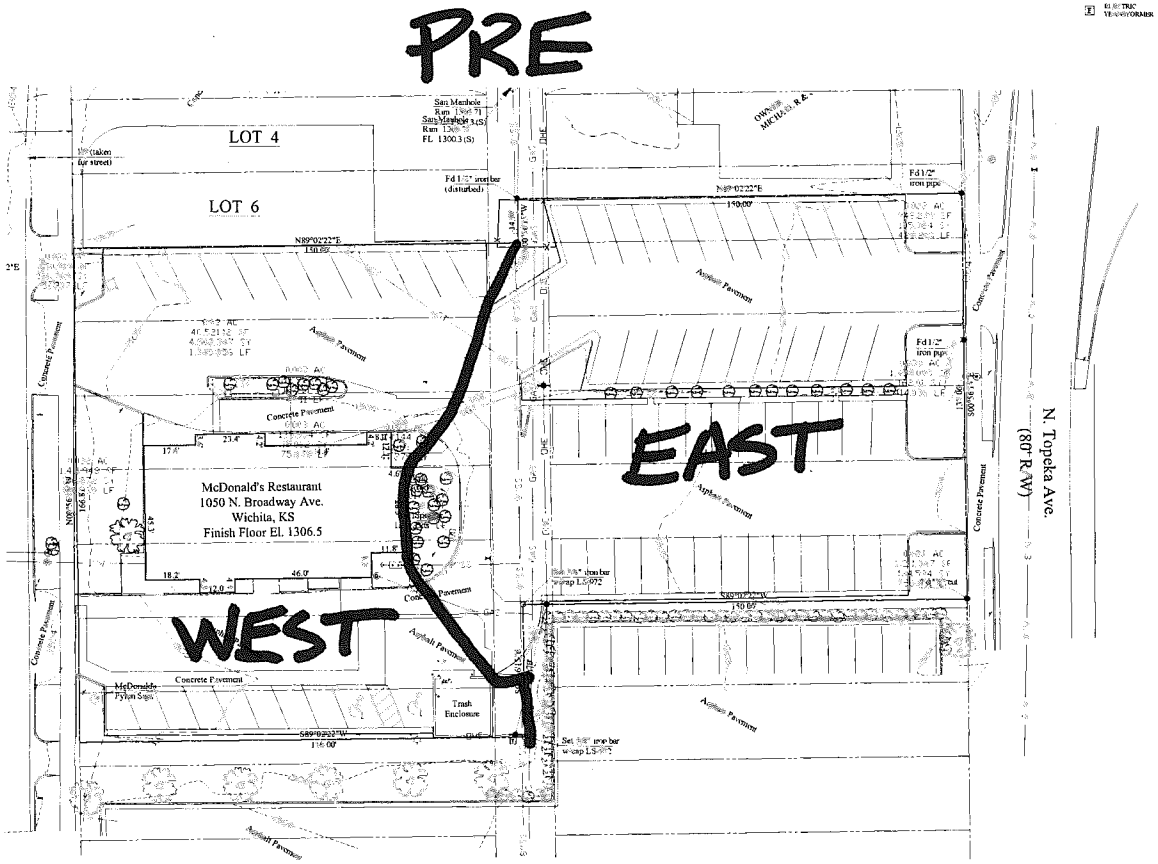
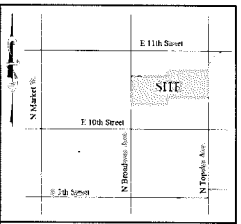
APPENDIX A



LEGEND

- FOUND BOUNDARY MONUMENT AS NOTED
- SET BOUNDARY MONUMENT AS NOTED
- POWER POLE W/ GUY
- SANITARY MANHOLE
- LIGHT POLE
- SIGN
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- GAS VALVE
- GAS METER
- ELECTRIC TRANSFORMER
- PROPERTY LINE
- SS — SANITARY SEWER
- T — TELEPHONE LINE
- OHT — OVERHEAD TELEPHONE
- G — GAS LINE
- W — WATER LINE
- OHE — OVERHEAD ELECTRIC LINE
- UGE — UNDERGROUND ELECTRIC
- FENCE
- STORM MANHOLE
- STREET CENTERLINE
- (M) MEASURED DISTANCE
- (D) DEED OR DESCRIBED DISTANCE
- (P) PLAT DISTANCE

0 20 30 40
SCALE IN FEET



VICINITY MAP
NOT TO SCALE

LAT: 37°42'08" N
LONG: 97°20'06" W

NOTES:

FIRM NOTE:
By graphic scaling only this property is located within Flood Zone "X" (areas determined to be outside 500-year floodplain as determined from the National Flood Insurance Program, Flood Insurance Rate Map, Map No. 20173C0391E, Effective Date February 2, 2007

UTILITY NOTE:
This survey reflects above ground indications of utilities and information available from utility companies. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.

GENERAL NOTES:

SURVEY IS VALID ONLY IF PRINT HAS ORIGINAL SEAL AND SIGNATURE OF SURVEYOR PRESENT

THIS SURVEY MEETS CURRENT MINIMUM STANDARDS FOR BOUNDARY SURVEYS IN THE STATE OF KANSAS

PURSUANT TO ANY ENVIRONMENTAL CONDITIONS WERE NOT OBSERVED OR CONSIDERED AS A PART OF THIS SURVEY

CITY OF WICHITA
SEDGWICK COUNTY
KANSAS
SITE ID: 15-0009

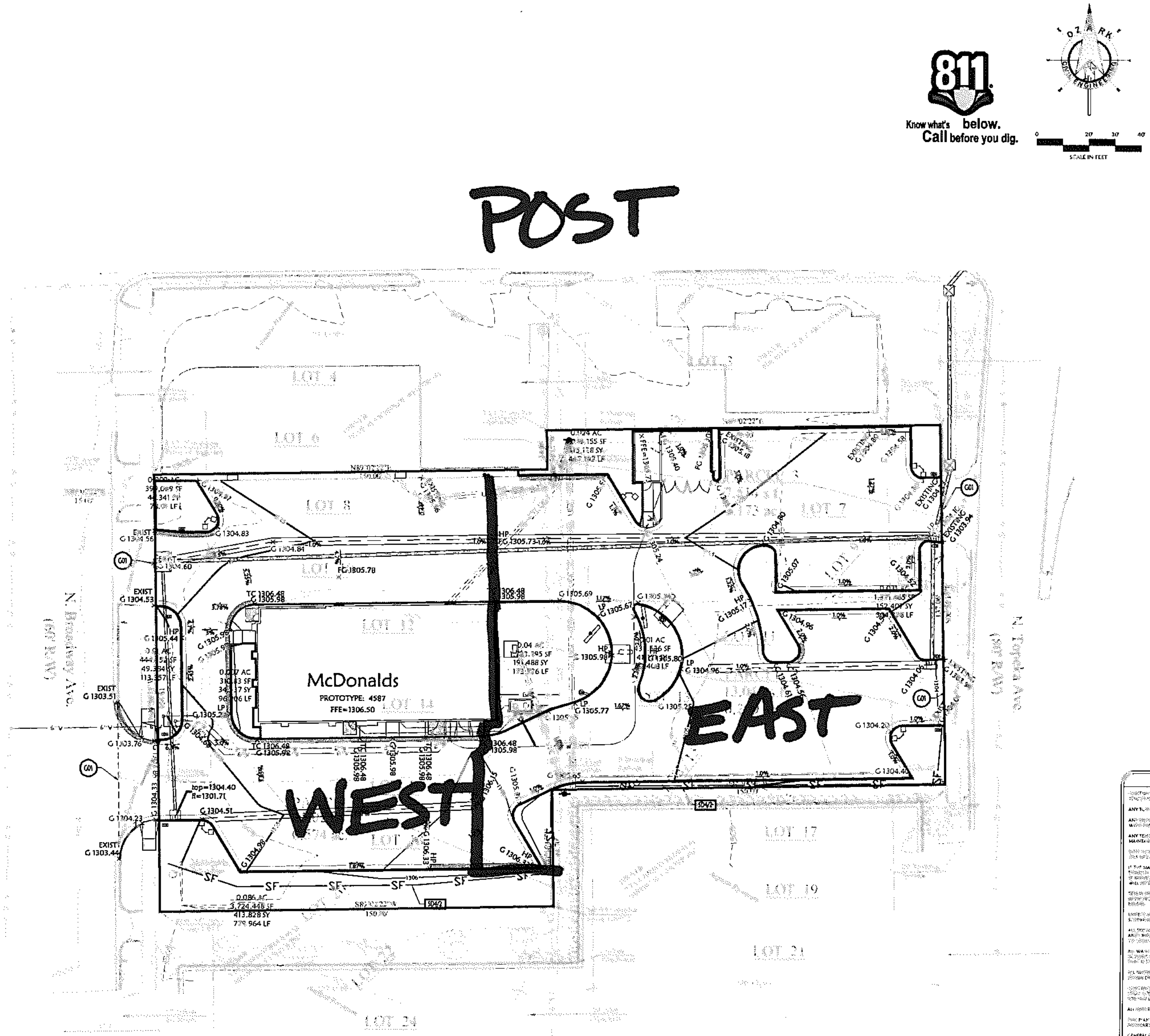
ALTA/ACSM LAND TITLE SURVEY FOR McDONALD'S CORPORATION

CODE OF LAST REVISION:

Ozark Civil Engineering Inc.
Bentonville • Kansas City

DATE OF FIELD SURVEY - FEBRUARY 18-19, 2011	
SCALE: 1"=20'	
DRAWN BY: RD	
FIELD CREW: INDIAN CREEK	DRAWING NO: 110229
CHECKED BY: RLD	SHEET 1 OF 1

PRE DEVELOPED 39912 SF OF IMPERVIOUS AREA
POST DEVELOPED 78 SF OF IMPERVIOUS AREA



Know what's **below.** Call before you dig.

GRADING PROPOSED FEATURES

- BOUNDARY LINE
- RIGHT OF WAY LINE
- EASEMENT LINE
- CONCRETE CURB AND GUTTER
- FENCE
- GUARD RAIL
- RETAINING WALL
- SANITARY SEWER SERVICE
- WATER SERVICE
- UNDERGROUND ELECTRIC SERVICE
- UNDERGROUND TELEPHONE SERVICE
- OVERHEAD ELECTRIC SERVICE
- OVERHEAD TELEPHONE SERVICE
- FIBER OPTIC CABLE SERVICE
- GAS SERVICE
- SPOT ELEVATIONS:
- RIP-RAP (SEE EROSION PLANS FOR SIZE)
- SANITARY SEWER MANHOLE
- FIRE HYDRANT WITH GUARD POSTS
- UTILITY POLE
- WATER LINE TEE, BEND, VALVE, AND PLUG

GRADING NOTES & DETAILS

- SD4/2 TEMPORARY SILT FENCE
- G01 MATCH EXISTING PAVING

GRADING AND DRAINAGE NOTES:

ALL DRAINAGE STRUCTURES SHALL BE PRECAST.

EROSION CONTROL GENERAL NOTES:

STREET ADDRESS	
1050 N. BROADWAY	
CITY	STATE
WICHITA	KS
COUNTY	REGIONAL DWG. NO
SEDGWICK	15-0009

GRADING AND EROSION CONTROL PLAN

DATE	DESCRIPTION	BY

Ozark Civil Engineering Inc.
Bentonville • Kansas City

McDonald's®

OFFICE	KANSAS CITY
ADDRESS	11000 MASTIN BLVD, STE. 400, OVERLAND PARK, KS 66210

STATUS	DATE	BY
PRELIMINARY:	-/-/-	-
PLAN CHECKED:		-
AS-BUILT:	-	-
JOB NO:	08-0844	

C-5

C:\My Box Files\McDonald's Projects\08-0844 Wichita McD Broadway Ave and Topeka Ave\dwg\Project\2-Final\Drainage\08-0844 Post DA.dwg Aug 02, 2011 - 10:41AM

APPENDIX B


97° 20' 8"
97° 20' 3"
646730
646740
646750
646760
646770
646780
646790
646800
646810
646820
646830
37° 42' 8"
37° 42' 6"
4174100
4174090
4174080
4174070
4174060
4174050
4174040
6252
Map Scale: 1:522 if printed on A size (8.5" x 11") sheet.
N
Meters
0 5 10 20 30
Feet
0 25 50 100 150

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

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
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:522 if printed on A size (8.5" × 11") sheet.

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

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

Soil Survey Area: Sedgwick County, Kansas
Survey Area Data: Version 7, Nov 30, 2010

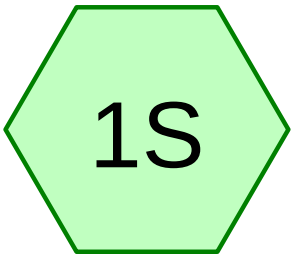
Date(s) aerial images were photographed: 6/20/2006

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

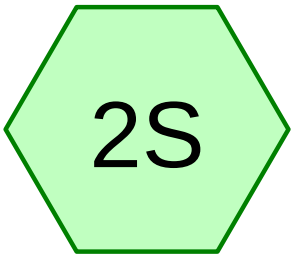
Map Unit Legend

Sedgwick County, Kansas (KS173)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
6252	Urban land-Elandco complex, 0 to 1 percent slopes	1.1	100.0%
Totals for Area of Interest		**1.1**	**100.0%**

APPENDIX C



Pre Dev West



Pre Dev East

Subcat Reach Pond Link

Drainage Diagram for 08.0844 Pre Drainage Analysis
Prepared by Microsoft, Printed 8/1/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.146	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.900	98	Paved parking, HSG B (1S, 2S)
1.046	93	**TOTAL AREA**

Soil Listing (all nodes)

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

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Dev West Runoff Area=0.491 ac 87.37% Impervious Runoff Depth=2.73"
Tc=5.0 min CN=93 Runoff=2.28 cfs 0.112 af

Subcatchment 2S: Pre Dev East Runoff Area=0.555 ac 84.86% Impervious Runoff Depth=2.64"
Tc=5.0 min CN=92 Runoff=2.51 cfs 0.122 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.234 af Average Runoff Depth = 2.68"
13.96% Pervious = 0.146 ac 86.04% Impervious = 0.900 ac

Summary for Subcatchment 1S: Pre Dev West

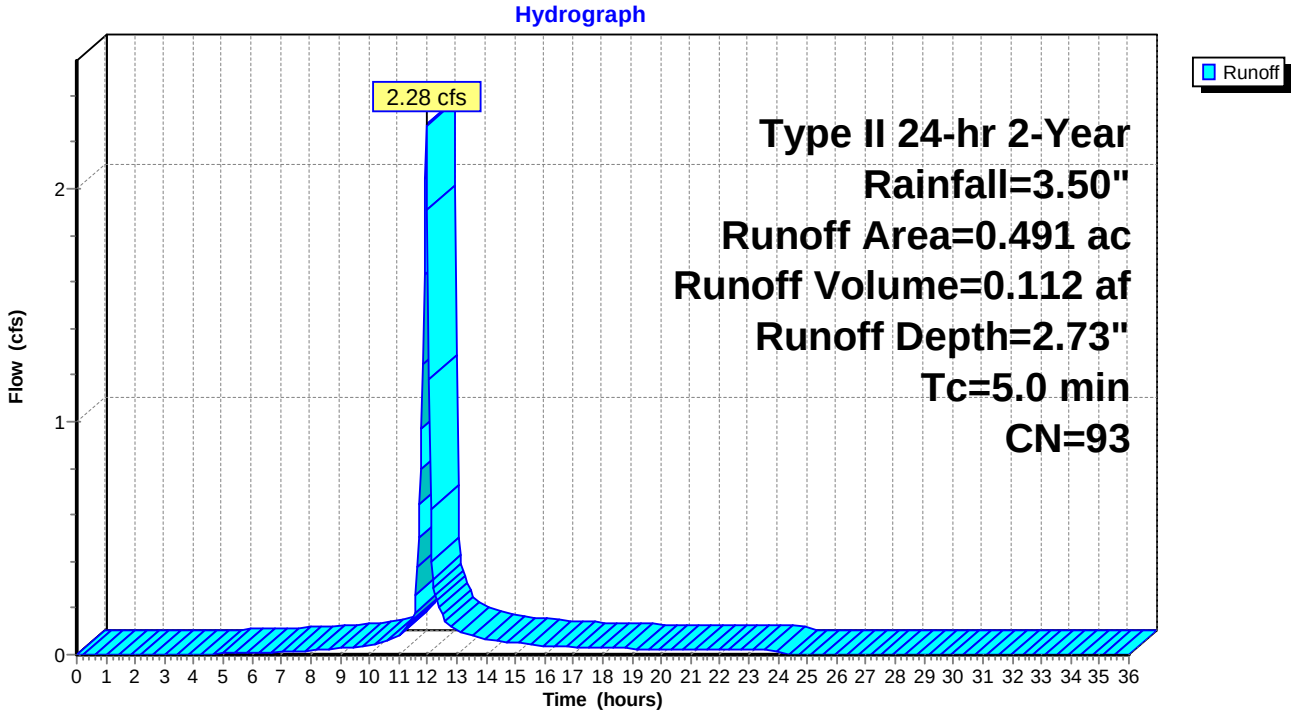
Runoff = 2.28 cfs @ 11.96 hrs, Volume= 0.112 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 2-Year Rainfall=3.50"

Area (ac)	CN	Description
0.062	61	>75% Grass cover, Good, HSG B
0.429	98	Paved parking, HSG B
0.491	93	Weighted Average
0.062		12.63% Pervious Area
0.429		87.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 1S: Pre Dev West



Hydrograph for Subcatchment 1S: Pre Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.01	0.00	0.00
0.80	0.03	0.00	0.00
1.20	0.04	0.00	0.00
1.60	0.06	0.00	0.00
2.00	0.08	0.00	0.00
2.40	0.09	0.00	0.00
2.80	0.11	0.00	0.00
3.20	0.13	0.00	0.00
3.60	0.15	0.00	0.00
4.00	0.17	0.00	0.00
4.40	0.19	0.00	0.00
4.80	0.21	0.00	0.00
5.20	0.23	0.01	0.00
5.60	0.26	0.01	0.01
6.00	0.28	0.02	0.01
6.40	0.31	0.03	0.01
6.80	0.33	0.04	0.01
7.20	0.36	0.05	0.01
7.60	0.39	0.06	0.02
8.00	0.42	0.07	0.02
8.40	0.45	0.09	0.02
8.80	0.49	0.11	0.03
9.20	0.54	0.13	0.03
9.60	0.58	0.16	0.03
10.00	0.63	0.19	0.04
10.40	0.70	0.23	0.05
10.80	0.77	0.28	0.07
11.20	0.88	0.36	0.11
11.60	1.07	0.51	**0.26**
12.00	2.32	1.61	**1.91**
12.40	2.54	1.82	0.21
12.80	2.66	1.93	0.12
13.20	2.74	2.01	0.09
13.60	2.81	2.08	0.08
14.00	2.87	2.13	0.06
14.40	2.92	2.18	0.06
14.80	2.97	2.22	0.05
15.20	3.01	2.26	0.05
15.60	3.05	2.30	0.04
16.00	3.08	2.33	0.04
16.40	3.11	2.36	0.04
16.80	3.14	2.39	0.04
17.20	3.17	2.42	0.03
17.60	3.20	2.44	0.03
18.00	3.22	2.47	0.03
18.40	3.25	2.49	0.03
18.80	3.27	2.51	0.03
19.20	3.29	2.54	0.03
19.60	3.31	2.55	0.02
20.00	3.33	2.57	0.02
20.40	3.35	2.59	0.02
20.80	3.37	2.61	0.02
21.20	3.39	2.62	0.02
21.60	3.40	2.64	0.02
22.00	3.42	2.66	0.02
22.40	3.44	2.67	0.02
22.80	3.45	2.69	0.02
23.20	3.47	2.70	0.02
23.60	3.48	2.72	0.02
24.00	**3.50**	**2.73**	0.02
24.40	3.50	2.73	0.00
24.80	3.50	2.73	0.00
25.20	3.50	2.73	0.00
25.60	3.50	2.73	0.00
26.00	3.50	2.73	0.00
26.40	3.50	2.73	0.00
26.80	3.50	2.73	0.00
27.20	3.50	2.73	0.00
27.60	3.50	2.73	0.00
28.00	3.50	2.73	0.00
28.40	3.50	2.73	0.00
28.80	3.50	2.73	0.00
29.20	3.50	2.73	0.00
29.60	3.50	2.73	0.00
30.00	3.50	2.73	0.00
30.40	3.50	2.73	0.00
30.80	3.50	2.73	0.00
31.20	3.50	2.73	0.00
31.60	3.50	2.73	0.00
32.00	3.50	2.73	0.00
32.40	3.50	2.73	0.00
32.80	3.50	2.73	0.00
33.20	3.50	2.73	0.00
33.60	3.50	2.73	0.00
34.00	3.50	2.73	0.00
34.40	3.50	2.73	0.00
34.80	3.50	2.73	0.00
35.20	3.50	2.73	0.00
35.60	3.50	2.73	0.00
36.00	3.50	2.73	0.00

Summary for Subcatchment 2S: Pre Dev East

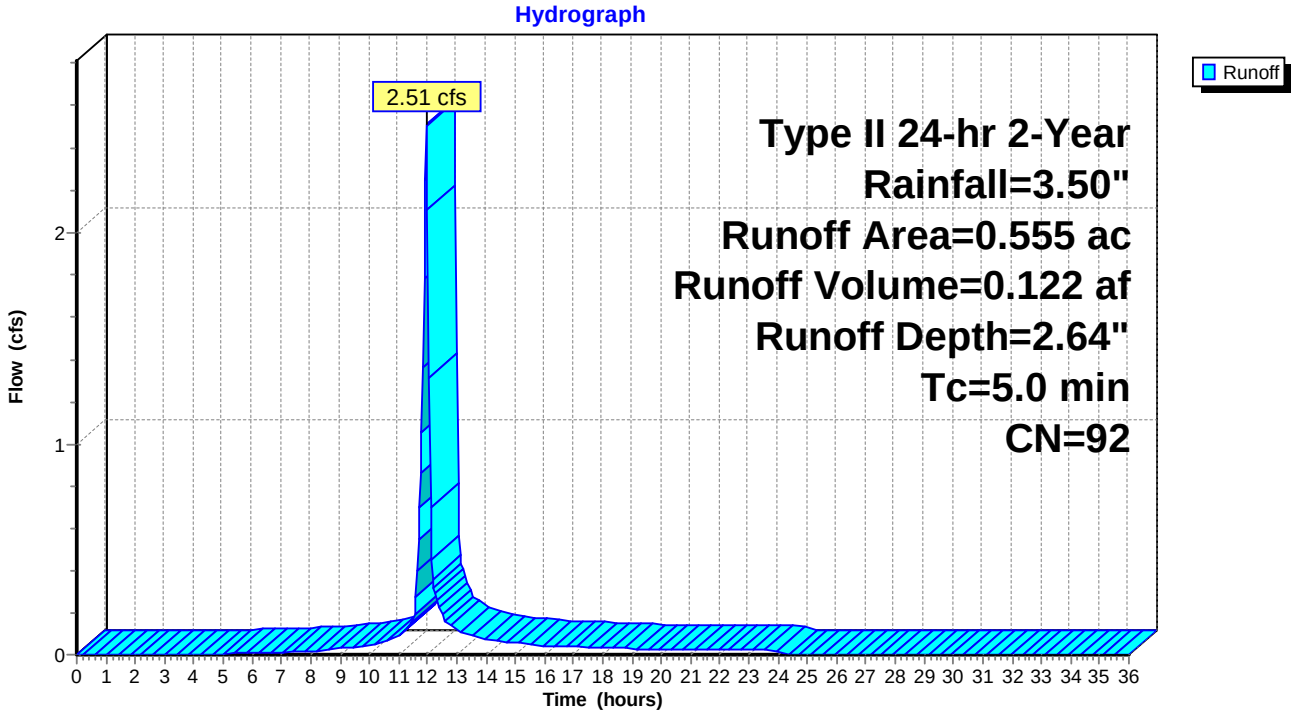
Runoff = 2.51 cfs @ 11.96 hrs, Volume= 0.122 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 2-Year Rainfall=3.50"

Area (ac)	CN	Description
0.084	61	>75% Grass cover, Good, HSG B
0.471	98	Paved parking, HSG B
0.555	92	Weighted Average
0.084		15.14% Pervious Area
0.471		84.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 2S: Pre Dev East



Hydrograph for Subcatchment 2S: Pre Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.01	0.00	0.00
0.80	0.03	0.00	0.00
1.20	0.04	0.00	0.00
1.60	0.06	0.00	0.00
2.00	0.08	0.00	0.00
2.40	0.09	0.00	0.00
2.80	0.11	0.00	0.00
3.20	0.13	0.00	0.00
3.60	0.15	0.00	0.00
4.00	0.17	0.00	0.00
4.40	0.19	0.00	0.00
4.80	0.21	0.00	0.00
5.20	0.23	0.00	0.00
5.60	0.26	0.01	0.01
6.00	0.28	0.01	0.01
6.40	0.31	0.02	0.01
6.80	0.33	0.02	0.01
7.20	0.36	0.03	0.01
7.60	0.39	0.04	0.01
8.00	0.42	0.05	0.02
8.40	0.45	0.07	0.02
8.80	0.49	0.09	0.03
9.20	0.54	0.11	0.03
9.60	0.58	0.13	0.03
10.00	0.63	0.16	0.04
10.40	0.70	0.20	0.06
10.80	0.77	0.25	0.08
11.20	0.88	0.32	0.11
11.60	1.07	0.46	**0.28**
12.00	2.32	1.53	**2.11**
12.40	2.54	1.73	0.23
12.80	2.66	1.84	0.14
13.20	2.74	1.92	0.11
13.60	2.81	1.98	0.09
14.00	2.87	2.04	0.07
14.40	2.92	2.09	0.06
14.80	2.97	2.13	0.06
15.20	3.01	2.17	0.05
15.60	3.05	2.20	0.05
16.00	3.08	2.24	0.04
16.40	3.11	2.27	0.04
16.80	3.14	2.30	0.04
17.20	3.17	2.32	0.04
17.60	3.20	2.35	0.04
18.00	3.22	2.37	0.03
18.40	3.25	2.40	0.03
18.80	3.27	2.42	0.03
19.20	3.29	2.44	0.03
19.60	3.31	2.46	0.03
20.00	3.33	2.48	0.02
20.40	3.35	2.49	0.02
20.80	3.37	2.51	0.02
21.20	3.39	2.53	0.02
21.60	3.40	2.54	0.02
22.00	3.42	2.56	0.02
22.40	3.44	2.58	0.02
22.80	3.45	2.59	0.02
23.20	3.47	2.61	0.02
23.60	3.48	2.62	0.02
24.00	**3.50**	**2.64**	0.02
24.40	3.50	2.64	0.00
24.80	3.50	2.64	0.00
25.20	3.50	2.64	0.00
25.60	3.50	2.64	0.00
26.00	3.50	2.64	0.00
26.40	3.50	2.64	0.00
26.80	3.50	2.64	0.00
27.20	3.50	2.64	0.00
27.60	3.50	2.64	0.00
28.00	3.50	2.64	0.00
28.40	3.50	2.64	0.00
28.80	3.50	2.64	0.00
29.20	3.50	2.64	0.00
29.60	3.50	2.64	0.00
30.00	3.50	2.64	0.00
30.40	3.50	2.64	0.00
30.80	3.50	2.64	0.00
31.20	3.50	2.64	0.00
31.60	3.50	2.64	0.00
32.00	3.50	2.64	0.00
32.40	3.50	2.64	0.00
32.80	3.50	2.64	0.00
33.20	3.50	2.64	0.00
33.60	3.50	2.64	0.00
34.00	3.50	2.64	0.00
34.40	3.50	2.64	0.00
34.80	3.50	2.64	0.00
35.20	3.50	2.64	0.00
35.60	3.50	2.64	0.00
36.00	3.50	2.64	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Dev West Runoff Area=0.491 ac 87.37% Impervious Runoff Depth=3.71"
Tc=5.0 min CN=93 Runoff=3.03 cfs 0.152 af

Subcatchment 2S: Pre Dev East Runoff Area=0.555 ac 84.86% Impervious Runoff Depth=3.60"
Tc=5.0 min CN=92 Runoff=3.36 cfs 0.167 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.318 af Average Runoff Depth = 3.65"
13.96% Pervious = 0.146 ac 86.04% Impervious = 0.900 ac

Summary for Subcatchment 1S: Pre Dev West

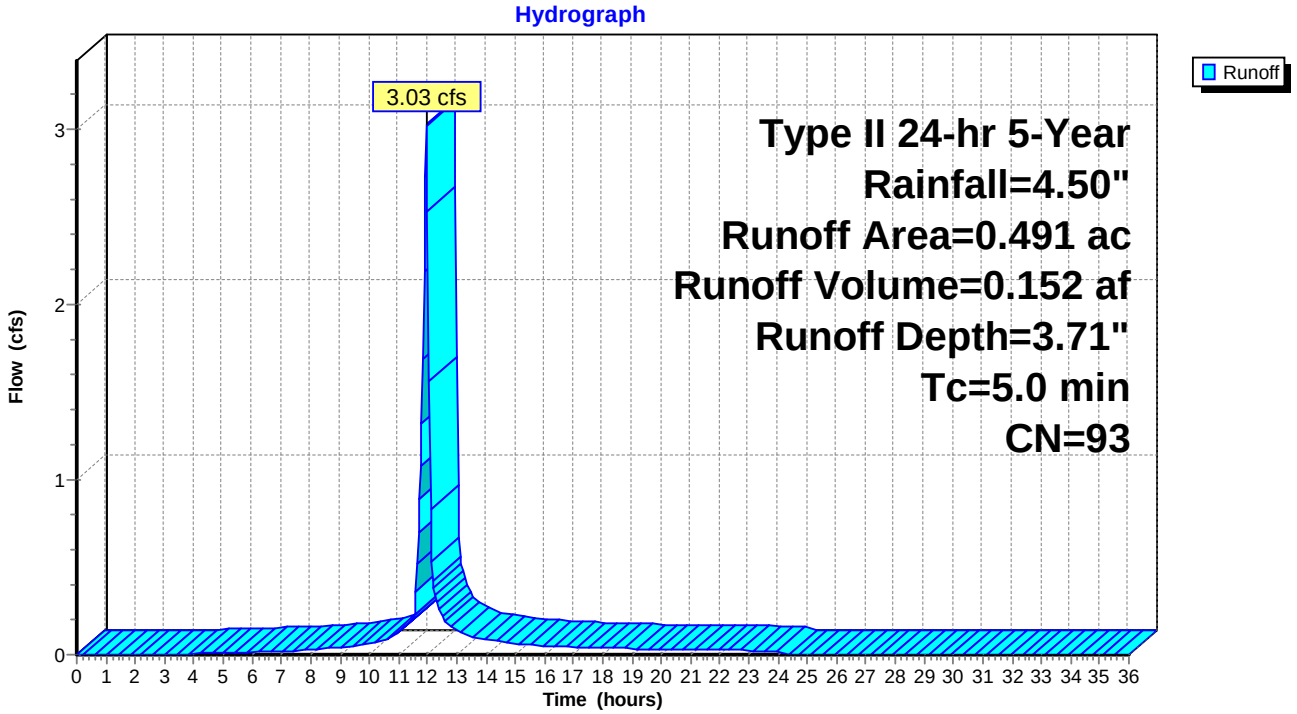
Runoff = 3.03 cfs @ 11.95 hrs, Volume= 0.152 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 5-Year Rainfall=4.50"

Area (ac)	CN	Description
0.062	61	>75% Grass cover, Good, HSG B
0.429	98	Paved parking, HSG B
0.491	93	Weighted Average
0.062		12.63% Pervious Area
0.429		87.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 1S: Pre Dev West



Hydrograph for Subcatchment 1S: Pre Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.04	0.00	0.00
1.20	0.06	0.00	0.00
1.60	0.08	0.00	0.00
2.00	0.10	0.00	0.00
2.40	0.12	0.00	0.00
2.80	0.14	0.00	0.00
3.20	0.17	0.00	0.00
3.60	0.19	0.00	0.00
4.00	0.22	0.01	0.00
4.40	0.24	0.01	0.01
4.80	0.27	0.02	0.01
5.20	0.30	0.02	0.01
5.60	0.33	0.03	0.01
6.00	0.36	0.05	0.02
6.40	0.39	0.06	0.02
6.80	0.43	0.07	0.02
7.20	0.46	0.09	0.02
7.60	0.50	0.11	0.02
8.00	0.54	0.13	0.03
8.40	0.58	0.16	0.03
8.80	0.63	0.19	0.04
9.20	0.69	0.23	0.05
9.60	0.75	0.26	0.05
10.00	0.81	0.31	0.06
10.40	0.90	0.37	0.08
10.80	1.00	0.45	0.10
11.20	1.13	0.55	0.15
11.60	1.38	0.76	**0.36**
12.00	2.98	2.24	**2.53**
12.40	3.26	2.51	0.27
12.80	3.41	2.65	0.16
13.20	3.53	2.76	0.12
13.60	3.62	2.85	0.10
14.00	3.69	2.92	0.08
14.40	3.75	2.98	0.08
14.80	3.81	3.04	0.07
15.20	3.87	3.09	0.06
15.60	3.92	3.14	0.06
16.00	3.96	3.18	0.05
16.40	4.00	3.22	0.05
16.80	4.04	3.26	0.05
17.20	4.08	3.29	0.04
17.60	4.11	3.33	0.04
18.00	4.14	3.36	0.04
18.40	4.18	3.39	0.04
18.80	4.21	3.42	0.04
19.20	4.23	3.45	0.03
19.60	4.26	3.47	0.03
20.00	4.28	3.50	0.03
20.40	4.31	3.52	0.03
20.80	4.33	3.54	0.03
21.20	4.35	3.56	0.03
21.60	4.37	3.59	0.03
22.00	4.40	3.61	0.03
22.40	4.42	3.63	0.03
22.80	4.44	3.65	0.03
23.20	4.46	3.67	0.02
23.60	4.48	3.69	0.02
24.00	**4.50**	**3.71**	0.02
24.40	4.50	3.71	0.00
24.80	4.50	3.71	0.00
25.20	4.50	3.71	0.00
25.60	4.50	3.71	0.00
26.00	4.50	3.71	0.00
26.40	4.50	3.71	0.00
26.80	4.50	3.71	0.00
27.20	4.50	3.71	0.00
27.60	4.50	3.71	0.00
28.00	4.50	3.71	0.00
28.40	4.50	3.71	0.00
28.80	4.50	3.71	0.00
29.20	4.50	3.71	0.00
29.60	4.50	3.71	0.00
30.00	4.50	3.71	0.00
30.40	4.50	3.71	0.00
30.80	4.50	3.71	0.00
31.20	4.50	3.71	0.00
31.60	4.50	3.71	0.00
32.00	4.50	3.71	0.00
32.40	4.50	3.71	0.00
32.80	4.50	3.71	0.00
33.20	4.50	3.71	0.00
33.60	4.50	3.71	0.00
34.00	4.50	3.71	0.00
34.40	4.50	3.71	0.00
34.80	4.50	3.71	0.00
35.20	4.50	3.71	0.00
35.60	4.50	3.71	0.00
36.00	4.50	3.71	0.00

Summary for Subcatchment 2S: Pre Dev East

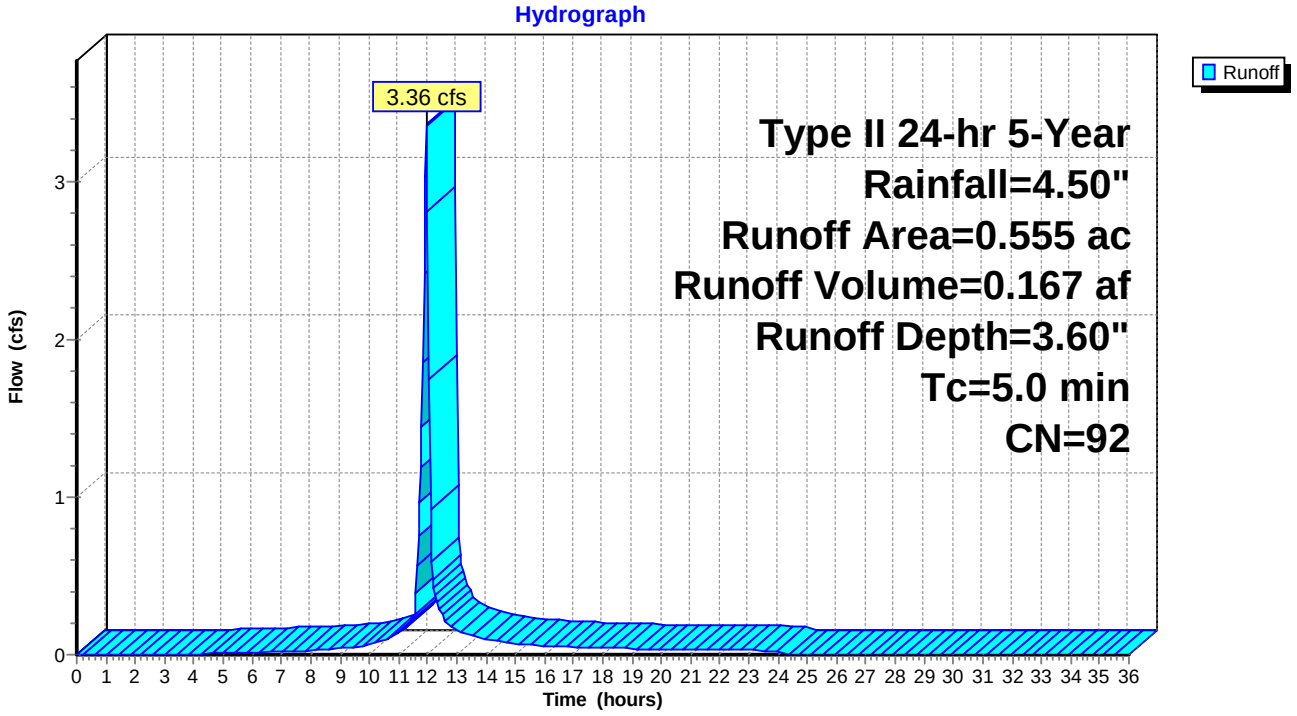
Runoff = 3.36 cfs @ 11.96 hrs, Volume= 0.167 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 5-Year Rainfall=4.50"

Area (ac)	CN	Description
0.084	61	>75% Grass cover, Good, HSG B
0.471	98	Paved parking, HSG B
0.555	92	Weighted Average
0.084		15.14% Pervious Area
0.471		84.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 2S: Pre Dev East



Hydrograph for Subcatchment 2S: Pre Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.04	0.00	0.00
1.20	0.06	0.00	0.00
1.60	0.08	0.00	0.00
2.00	0.10	0.00	0.00
2.40	0.12	0.00	0.00
2.80	0.14	0.00	0.00
3.20	0.17	0.00	0.00
3.60	0.19	0.00	0.00
4.00	0.22	0.00	0.00
4.40	0.24	0.00	0.00
4.80	0.27	0.01	0.01
5.20	0.30	0.02	0.01
5.60	0.33	0.02	0.01
6.00	0.36	0.03	0.01
6.40	0.39	0.04	0.02
6.80	0.43	0.06	0.02
7.20	0.46	0.07	0.02
7.60	0.50	0.09	0.02
8.00	0.54	0.11	0.03
8.40	0.58	0.13	0.03
8.80	0.63	0.16	0.04
9.20	0.69	0.19	0.05
9.60	0.75	0.23	0.05
10.00	0.81	0.27	0.06
10.40	0.90	0.33	0.08
10.80	1.00	0.40	0.11
11.20	1.13	0.50	0.16
11.60	1.38	0.70	**0.39**
12.00	2.98	2.15	**2.81**
12.40	3.26	2.41	0.31
12.80	3.41	2.55	0.18
13.20	3.53	2.66	0.14
13.60	3.62	2.75	0.11
14.00	3.69	2.82	0.09
14.40	3.75	2.88	0.08
14.80	3.81	2.94	0.08
15.20	3.87	2.99	0.07
15.60	3.92	3.04	0.06
16.00	3.96	3.08	0.06
16.40	4.00	3.12	0.05
16.80	4.04	3.16	0.05
17.20	4.08	3.19	0.05
17.60	4.11	3.23	0.05
18.00	4.14	3.26	0.04
18.40	4.18	3.29	0.04
18.80	4.21	3.32	0.04
19.20	4.23	3.34	0.04
19.60	4.26	3.37	0.03
20.00	4.28	3.39	0.03
20.40	4.31	3.41	0.03
20.80	4.33	3.44	0.03
21.20	4.35	3.46	0.03
21.60	4.37	3.48	0.03
22.00	4.40	3.50	0.03
22.40	4.42	3.52	0.03
22.80	4.44	3.54	0.03
23.20	4.46	3.56	0.03
23.60	4.48	3.58	0.03
24.00	**4.50**	**3.60**	0.03
24.40	4.50	3.60	0.00
24.80	4.50	3.60	0.00
25.20	4.50	3.60	0.00
25.60	4.50	3.60	0.00
26.00	4.50	3.60	0.00
26.40	4.50	3.60	0.00
26.80	4.50	3.60	0.00
27.20	4.50	3.60	0.00
27.60	4.50	3.60	0.00
28.00	4.50	3.60	0.00
28.40	4.50	3.60	0.00
28.80	4.50	3.60	0.00
29.20	4.50	3.60	0.00
29.60	4.50	3.60	0.00
30.00	4.50	3.60	0.00
30.40	4.50	3.60	0.00
30.80	4.50	3.60	0.00
31.20	4.50	3.60	0.00
31.60	4.50	3.60	0.00
32.00	4.50	3.60	0.00
32.40	4.50	3.60	0.00
32.80	4.50	3.60	0.00
33.20	4.50	3.60	0.00
33.60	4.50	3.60	0.00
34.00	4.50	3.60	0.00
34.40	4.50	3.60	0.00
34.80	4.50	3.60	0.00
35.20	4.50	3.60	0.00
35.60	4.50	3.60	0.00
36.00	4.50	3.60	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Dev West Runoff Area=0.491 ac 87.37% Impervious Runoff Depth=4.49"
Tc=5.0 min CN=93 Runoff=3.62 cfs 0.184 af

Subcatchment 2S: Pre Dev East Runoff Area=0.555 ac 84.86% Impervious Runoff Depth=4.38"
Tc=5.0 min CN=92 Runoff=4.04 cfs 0.203 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.387 af Average Runoff Depth = 4.43"
13.96% Pervious = 0.146 ac 86.04% Impervious = 0.900 ac

Summary for Subcatchment 1S: Pre Dev West

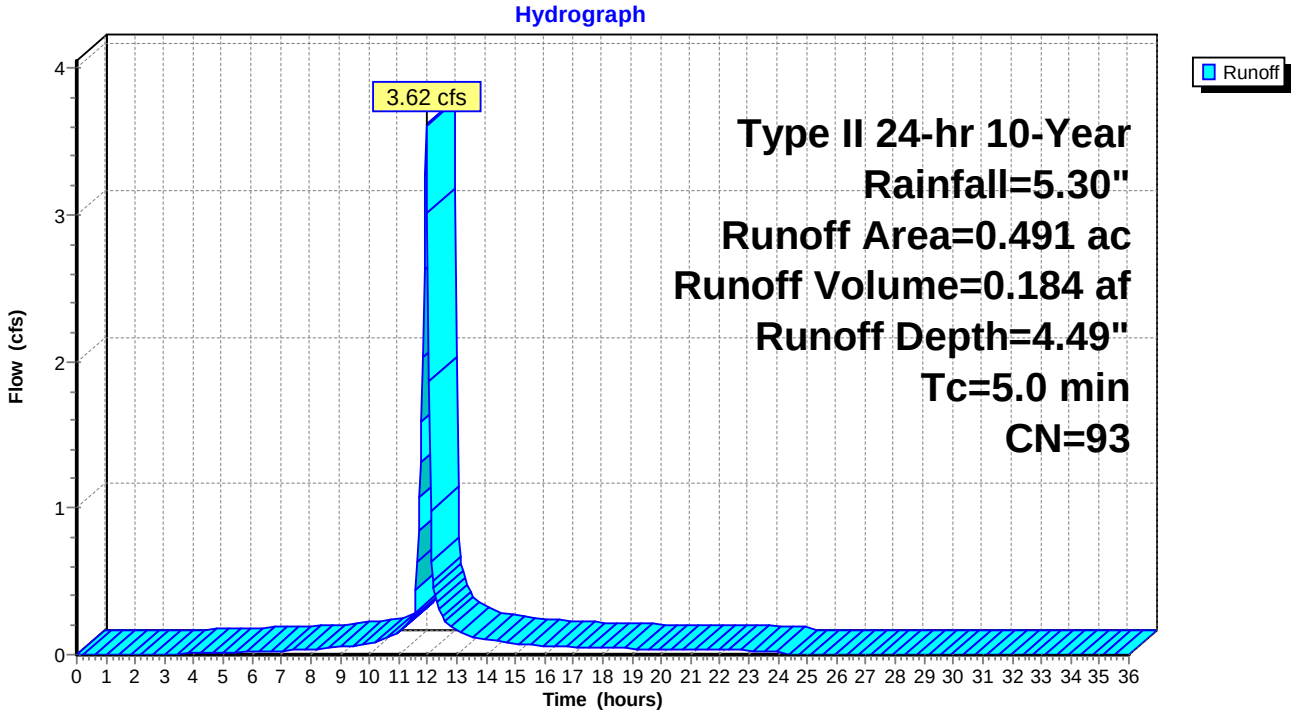
Runoff = 3.62 cfs @ 11.95 hrs, Volume= 0.184 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Year Rainfall=5.30"

Area (ac)	CN	Description
0.062	61	>75% Grass cover, Good, HSG B
0.429	98	Paved parking, HSG B
0.491	93	Weighted Average
0.062		12.63% Pervious Area
0.429		87.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 1S: Pre Dev West



Hydrograph for Subcatchment 1S: Pre Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.04	0.00	0.00
1.20	0.07	0.00	0.00
1.60	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.40	0.14	0.00	0.00
2.80	0.17	0.00	0.00
3.20	0.20	0.00	0.00
3.60	0.23	0.01	0.01
4.00	0.25	0.01	0.01
4.40	0.28	0.02	0.01
4.80	0.32	0.03	0.01
5.20	0.35	0.04	0.02
5.60	0.39	0.06	0.02
6.00	0.42	0.07	0.02
6.40	0.46	0.09	0.02
6.80	0.50	0.11	0.03
7.20	0.55	0.14	0.03
7.60	0.59	0.16	0.03
8.00	0.64	0.19	0.04
8.40	0.69	0.22	0.04
8.80	0.75	0.26	0.05
9.20	0.81	0.31	0.06
9.60	0.88	0.36	0.06
10.00	0.96	0.42	0.08
10.40	1.05	0.49	0.10
10.80	1.17	0.59	0.13
11.20	1.33	0.72	0.19
11.60	1.63	0.98	**0.44**
12.00	3.51	2.75	**3.02**
12.40	3.84	3.07	0.32
12.80	4.02	3.24	0.19
13.20	4.15	3.37	0.15
13.60	4.26	3.47	0.12
14.00	4.35	3.56	0.10
14.40	4.42	3.63	0.09
14.80	4.49	3.70	0.08
15.20	4.55	3.76	0.07
15.60	4.61	3.82	0.07
16.00	4.66	3.87	0.06
16.40	4.71	3.92	0.06
16.80	4.76	3.96	0.05
17.20	4.80	4.00	0.05
17.60	4.84	4.04	0.05
18.00	4.88	4.08	0.05
18.40	4.92	4.12	0.04
18.80	4.95	4.15	0.04
19.20	4.99	4.18	0.04
19.60	5.02	4.21	0.04
20.00	5.05	4.24	0.03
20.40	5.07	4.27	0.03
20.80	5.10	4.30	0.03
21.20	5.13	4.32	0.03
21.60	5.15	4.35	0.03
22.00	5.18	4.37	0.03
22.40	5.20	4.40	0.03
22.80	5.23	4.42	0.03
23.20	5.25	4.45	0.03
23.60	5.28	4.47	0.03
24.00	**5.30**	**4.49**	0.03
24.40	5.30	4.49	0.00
24.80	5.30	4.49	0.00
25.20	5.30	4.49	0.00
25.60	5.30	4.49	0.00
26.00	5.30	4.49	0.00
26.40	5.30	4.49	0.00
26.80	5.30	4.49	0.00
27.20	5.30	4.49	0.00
27.60	5.30	4.49	0.00
28.00	5.30	4.49	0.00
28.40	5.30	4.49	0.00
28.80	5.30	4.49	0.00
29.20	5.30	4.49	0.00
29.60	5.30	4.49	0.00
30.00	5.30	4.49	0.00
30.40	5.30	4.49	0.00
30.80	5.30	4.49	0.00
31.20	5.30	4.49	0.00
31.60	5.30	4.49	0.00
32.00	5.30	4.49	0.00
32.40	5.30	4.49	0.00
32.80	5.30	4.49	0.00
33.20	5.30	4.49	0.00
33.60	5.30	4.49	0.00
34.00	5.30	4.49	0.00
34.40	5.30	4.49	0.00
34.80	5.30	4.49	0.00
35.20	5.30	4.49	0.00
35.60	5.30	4.49	0.00
36.00	5.30	4.49	0.00

Summary for Subcatchment 2S: Pre Dev East

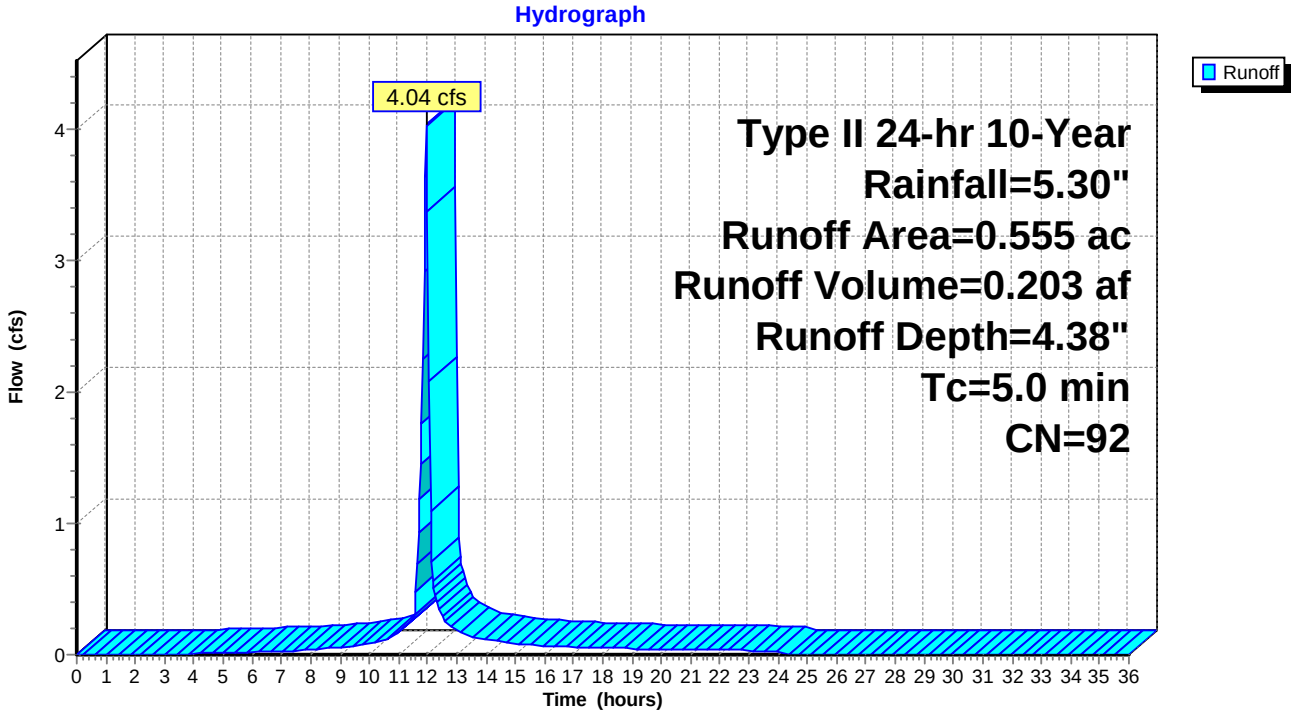
Runoff = 4.04 cfs @ 11.95 hrs, Volume= 0.203 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Year Rainfall=5.30"

Area (ac)	CN	Description
0.084	61	>75% Grass cover, Good, HSG B
0.471	98	Paved parking, HSG B
0.555	92	Weighted Average
0.084		15.14% Pervious Area
0.471		84.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 2S: Pre Dev East



Hydrograph for Subcatchment 2S: Pre Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.04	0.00	0.00
1.20	0.07	0.00	0.00
1.60	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.40	0.14	0.00	0.00
2.80	0.17	0.00	0.00
3.20	0.20	0.00	0.00
3.60	0.23	0.00	0.00
4.00	0.25	0.01	0.01
4.40	0.28	0.01	0.01
4.80	0.32	0.02	0.01
5.20	0.35	0.03	0.01
5.60	0.39	0.04	0.02
6.00	0.42	0.06	0.02
6.40	0.46	0.07	0.02
6.80	0.50	0.09	0.03
7.20	0.55	0.11	0.03
7.60	0.59	0.13	0.03
8.00	0.64	0.16	0.04
8.40	0.69	0.19	0.04
8.80	0.75	0.23	0.05
9.20	0.81	0.27	0.06
9.60	0.88	0.32	0.07
10.00	0.96	0.37	0.08
10.40	1.05	0.44	0.11
10.80	1.17	0.53	0.14
11.20	1.33	0.66	0.20
11.60	1.63	0.91	**0.48**
12.00	3.51	2.65	**3.37**
12.40	3.84	2.97	0.36
12.80	4.02	3.14	0.22
13.20	4.15	3.27	0.17
13.60	4.26	3.37	0.13
14.00	4.35	3.45	0.11
14.40	4.42	3.53	0.10
14.80	4.49	3.59	0.09
15.20	4.55	3.66	0.08
15.60	4.61	3.71	0.08
16.00	4.66	3.76	0.07
16.40	4.71	3.81	0.06
16.80	4.76	3.85	0.06
17.20	4.80	3.89	0.06
17.60	4.84	3.94	0.06
18.00	4.88	3.97	0.05
18.40	4.92	4.01	0.05
18.80	4.95	4.04	0.05
19.20	4.99	4.08	0.04
19.60	5.02	4.11	0.04
20.00	5.05	4.13	0.04
20.40	5.07	4.16	0.04
20.80	5.10	4.19	0.04
21.20	5.13	4.21	0.04
21.60	5.15	4.24	0.04
22.00	5.18	4.26	0.03
22.40	5.20	4.29	0.03
22.80	5.23	4.31	0.03
23.20	5.25	4.34	0.03
23.60	5.28	4.36	0.03
24.00	**5.30**	**4.38**	0.03
24.40	5.30	4.38	0.00
24.80	5.30	4.38	0.00
25.20	5.30	4.38	0.00
25.60	5.30	4.38	0.00
26.00	5.30	4.38	0.00
26.40	5.30	4.38	0.00
26.80	5.30	4.38	0.00
27.20	5.30	4.38	0.00
27.60	5.30	4.38	0.00
28.00	5.30	4.38	0.00
28.40	5.30	4.38	0.00
28.80	5.30	4.38	0.00
29.20	5.30	4.38	0.00
29.60	5.30	4.38	0.00
30.00	5.30	4.38	0.00
30.40	5.30	4.38	0.00
30.80	5.30	4.38	0.00
31.20	5.30	4.38	0.00
31.60	5.30	4.38	0.00
32.00	5.30	4.38	0.00
32.40	5.30	4.38	0.00
32.80	5.30	4.38	0.00
33.20	5.30	4.38	0.00
33.60	5.30	4.38	0.00
34.00	5.30	4.38	0.00
34.40	5.30	4.38	0.00
34.80	5.30	4.38	0.00
35.20	5.30	4.38	0.00
35.60	5.30	4.38	0.00
36.00	5.30	4.38	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Dev West Runoff Area=0.491 ac 87.37% Impervious Runoff Depth=5.28"
Tc=5.0 min CN=93 Runoff=4.21 cfs 0.216 af

Subcatchment 2S: Pre Dev East Runoff Area=0.555 ac 84.86% Impervious Runoff Depth=5.17"
Tc=5.0 min CN=92 Runoff=4.71 cfs 0.239 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.455 af Average Runoff Depth = 5.22"
13.96% Pervious = 0.146 ac 86.04% Impervious = 0.900 ac

Summary for Subcatchment 1S: Pre Dev West

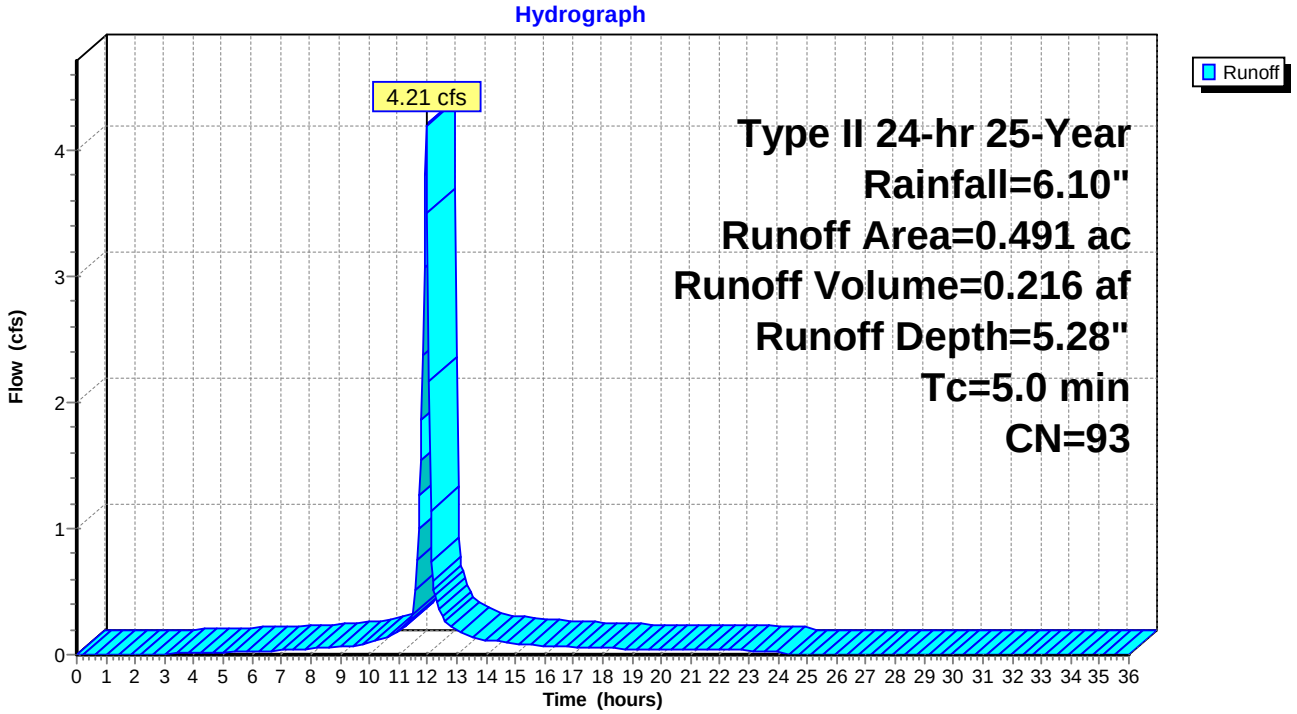
Runoff = 4.21 cfs @ 11.95 hrs, Volume= 0.216 af, Depth= 5.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 25-Year Rainfall=6.10"

Area (ac)	CN	Description
0.062	61	>75% Grass cover, Good, HSG B
0.429	98	Paved parking, HSG B
0.491	93	Weighted Average
0.062		12.63% Pervious Area
0.429		87.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 1S: Pre Dev West



Hydrograph for Subcatchment 1S: Pre Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.05	0.00	0.00
1.20	0.08	0.00	0.00
1.60	0.11	0.00	0.00
2.00	0.13	0.00	0.00
2.40	0.16	0.00	0.00
2.80	0.19	0.00	0.00
3.20	0.23	0.01	0.01
3.60	0.26	0.01	0.01
4.00	0.29	0.02	0.01
4.40	0.33	0.03	0.01
4.80	0.37	0.05	0.02
5.20	0.40	0.06	0.02
5.60	0.45	0.08	0.02
6.00	0.49	0.10	0.03
6.40	0.53	0.13	0.03
6.80	0.58	0.16	0.03
7.20	0.63	0.19	0.04
7.60	0.68	0.22	0.04
8.00	0.73	0.25	0.04
8.40	0.79	0.29	0.05
8.80	0.86	0.34	0.06
9.20	0.94	0.40	0.07
9.60	1.01	0.46	0.08
10.00	1.10	0.53	0.09
10.40	1.21	0.62	0.12
10.80	1.35	0.74	0.16
11.20	1.53	0.90	0.22
11.60	1.87	1.20	**0.52**
12.00	4.04	3.26	**3.50**
12.40	4.42	3.63	0.38
12.80	4.63	3.83	0.22
13.20	4.78	3.98	0.17
13.60	4.90	4.10	0.14
14.00	5.00	4.20	0.11
14.40	5.09	4.29	0.10
14.80	5.17	4.36	0.09
15.20	5.24	4.44	0.09
15.60	5.31	4.50	0.08
16.00	5.37	4.56	0.07
16.40	5.42	4.61	0.07
16.80	5.48	4.67	0.06
17.20	5.53	4.71	0.06
17.60	5.57	4.76	0.06
18.00	5.62	4.81	0.05
18.40	5.66	4.85	0.05
18.80	5.70	4.89	0.05
19.20	5.74	4.92	0.05
19.60	5.77	4.96	0.04
20.00	5.81	4.99	0.04
20.40	5.84	5.02	0.04
20.80	5.87	5.05	0.04
21.20	5.90	5.08	0.04
21.60	5.93	5.11	0.04
22.00	5.96	5.14	0.04
22.40	5.99	5.17	0.04
22.80	6.02	5.20	0.03
23.20	6.05	5.23	0.03
23.60	6.07	5.25	0.03
24.00	**6.10**	**5.28**	0.03
24.40	6.10	5.28	0.00
24.80	6.10	5.28	0.00
25.20	6.10	5.28	0.00
25.60	6.10	5.28	0.00
26.00	6.10	5.28	0.00
26.40	6.10	5.28	0.00
26.80	6.10	5.28	0.00
27.20	6.10	5.28	0.00
27.60	6.10	5.28	0.00
28.00	6.10	5.28	0.00
28.40	6.10	5.28	0.00
28.80	6.10	5.28	0.00
29.20	6.10	5.28	0.00
29.60	6.10	5.28	0.00
30.00	6.10	5.28	0.00
30.40	6.10	5.28	0.00
30.80	6.10	5.28	0.00
31.20	6.10	5.28	0.00
31.60	6.10	5.28	0.00
32.00	6.10	5.28	0.00
32.40	6.10	5.28	0.00
32.80	6.10	5.28	0.00
33.20	6.10	5.28	0.00
33.60	6.10	5.28	0.00
34.00	6.10	5.28	0.00
34.40	6.10	5.28	0.00
34.80	6.10	5.28	0.00
35.20	6.10	5.28	0.00
35.60	6.10	5.28	0.00
36.00	6.10	5.28	0.00

Summary for Subcatchment 2S: Pre Dev East

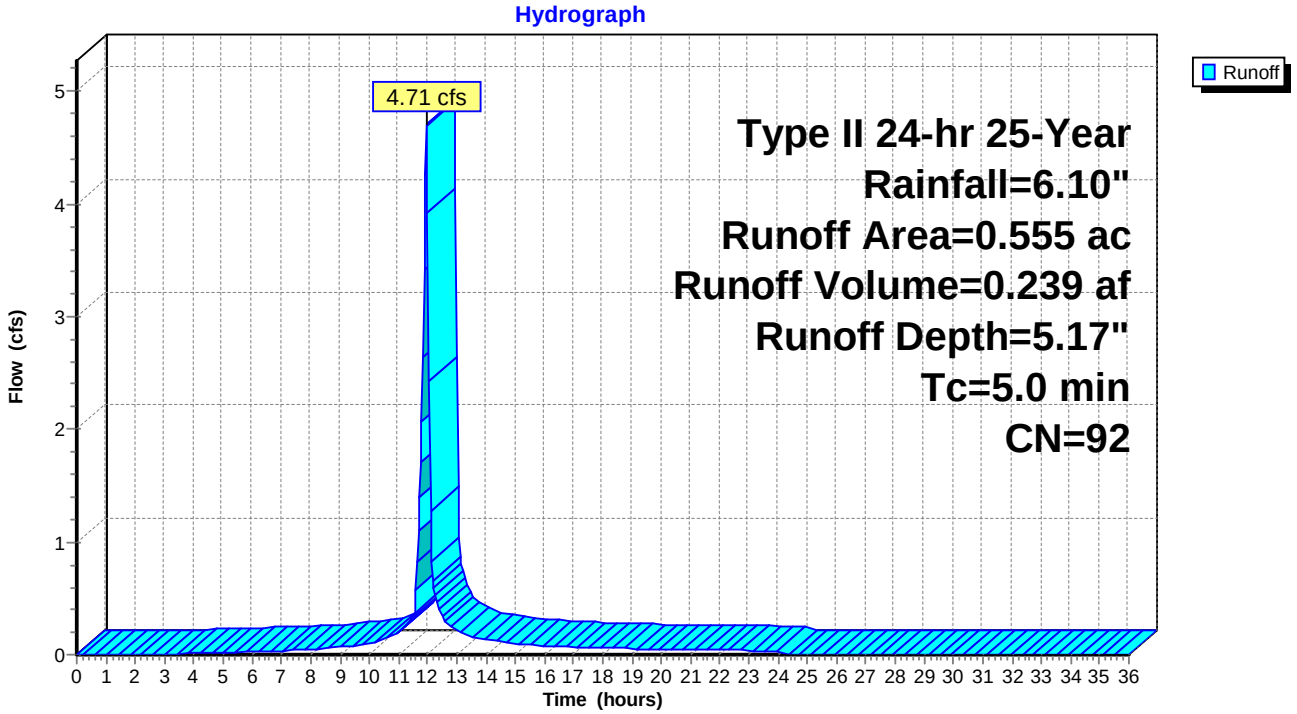
Runoff = 4.71 cfs @ 11.95 hrs, Volume= 0.239 af, Depth= 5.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 25-Year Rainfall=6.10"

Area (ac)	CN	Description
0.084	61	>75% Grass cover, Good, HSG B
0.471	98	Paved parking, HSG B
0.555	92	Weighted Average
0.084		15.14% Pervious Area
0.471		84.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 2S: Pre Dev East



Hydrograph for Subcatchment 2S: Pre Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	21.20	5.90	4.97	0.04
0.40	0.02	0.00	0.00	21.60	5.93	5.00	0.04
0.80	0.05	0.00	0.00	22.00	5.96	5.03	0.04
1.20	0.08	0.00	0.00	22.40	5.99	5.06	0.04
1.60	0.11	0.00	0.00	22.80	6.02	5.09	0.04
2.00	0.13	0.00	0.00	23.20	6.05	5.11	0.04
2.40	0.16	0.00	0.00	23.60	6.07	5.14	0.04
2.80	0.19	0.00	0.00	24.00	**6.10**	**5.17**	0.04
3.20	0.23	0.00	0.00	24.40	6.10	5.17	0.00
3.60	0.26	0.01	0.01	24.80	6.10	5.17	0.00
4.00	0.29	0.01	0.01	25.20	6.10	5.17	0.00
4.40	0.33	0.02	0.01	25.60	6.10	5.17	0.00
4.80	0.37	0.03	0.02	26.00	6.10	5.17	0.00
5.20	0.40	0.05	0.02	26.40	6.10	5.17	0.00
5.60	0.45	0.06	0.02	26.80	6.10	5.17	0.00
6.00	0.49	0.08	0.03	27.20	6.10	5.17	0.00
6.40	0.53	0.10	0.03	27.60	6.10	5.17	0.00
6.80	0.58	0.13	0.04	28.00	6.10	5.17	0.00
7.20	0.63	0.16	0.04	28.40	6.10	5.17	0.00
7.60	0.68	0.19	0.04	28.80	6.10	5.17	0.00
8.00	0.73	0.22	0.05	29.20	6.10	5.17	0.00
8.40	0.79	0.26	0.06	29.60	6.10	5.17	0.00
8.80	0.86	0.30	0.07	30.00	6.10	5.17	0.00
9.20	0.94	0.36	0.08	30.40	6.10	5.17	0.00
9.60	1.01	0.41	0.08	30.80	6.10	5.17	0.00
10.00	1.10	0.48	0.10	31.20	6.10	5.17	0.00
10.40	1.21	0.57	0.13	31.60	6.10	5.17	0.00
10.80	1.35	0.68	0.17	32.00	6.10	5.17	0.00
11.20	1.53	0.83	0.24	32.40	6.10	5.17	0.00
11.60	1.87	1.12	**0.57**	32.80	6.10	5.17	0.00
12.00	4.04	3.16	**3.92**	33.20	6.10	5.17	0.00
12.40	4.42	3.53	0.42	33.60	6.10	5.17	0.00
12.80	4.63	3.73	0.25	34.00	6.10	5.17	0.00
13.20	4.78	3.87	0.19	34.40	6.10	5.17	0.00
13.60	4.90	3.99	0.16	34.80	6.10	5.17	0.00
14.00	5.00	4.09	0.13	35.20	6.10	5.17	0.00
14.40	5.09	4.18	0.12	35.60	6.10	5.17	0.00
14.80	5.17	4.25	0.11	36.00	6.10	5.17	0.00
15.20	5.24	4.33	0.10				
15.60	5.31	4.39	0.09				
16.00	5.37	4.45	0.08				
16.40	5.42	4.50	0.07				
16.80	5.48	4.55	0.07				
17.20	5.53	4.60	0.07				
17.60	5.57	4.65	0.06				
18.00	5.62	4.69	0.06				
18.40	5.66	4.74	0.06				
18.80	5.70	4.78	0.05				
19.20	5.74	4.81	0.05				
19.60	5.77	4.85	0.05				
20.00	5.81	4.88	0.04				
20.40	5.84	4.91	0.04				
20.80	5.87	4.94	0.04				

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Dev West Runoff Area=0.491 ac 87.37% Impervious Runoff Depth=6.17"
Tc=5.0 min CN=93 Runoff=4.87 cfs 0.253 af

Subcatchment 2S: Pre Dev East Runoff Area=0.555 ac 84.86% Impervious Runoff Depth=6.05"
Tc=5.0 min CN=92 Runoff=5.46 cfs 0.280 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.533 af Average Runoff Depth = 6.11"
13.96% Pervious = 0.146 ac 86.04% Impervious = 0.900 ac

Summary for Subcatchment 1S: Pre Dev West

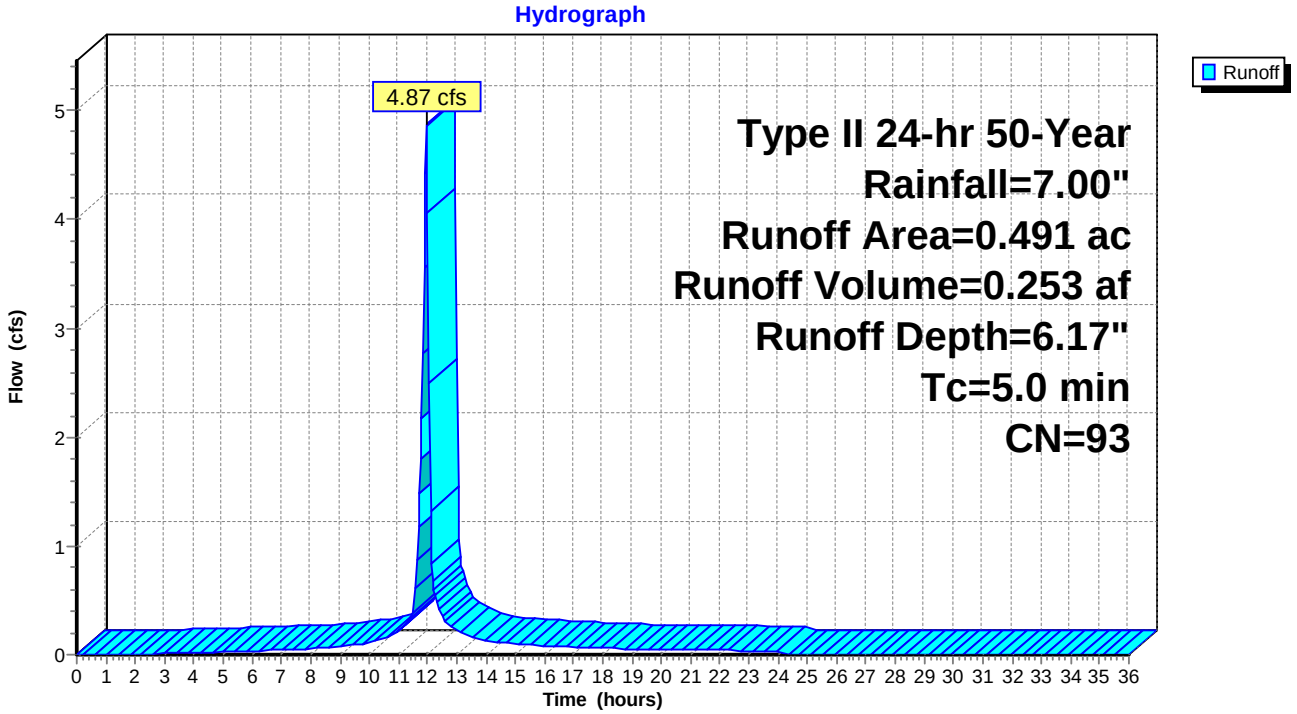
Runoff = 4.87 cfs @ 11.95 hrs, Volume= 0.253 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 50-Year Rainfall=7.00"

Area (ac)	CN	Description
0.062	61	>75% Grass cover, Good, HSG B
0.429	98	Paved parking, HSG B
0.491	93	Weighted Average
0.062		12.63% Pervious Area
0.429		87.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 1S: Pre Dev West



Hydrograph for Subcatchment 1S: Pre Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.09	0.00	0.00
1.60	0.12	0.00	0.00
2.00	0.15	0.00	0.00
2.40	0.19	0.00	0.00
2.80	0.22	0.01	0.01
3.20	0.26	0.01	0.01
3.60	0.30	0.02	0.01
4.00	0.34	0.04	0.02
4.40	0.38	0.05	0.02
4.80	0.42	0.07	0.02
5.20	0.46	0.09	0.03
5.60	0.51	0.12	0.03
6.00	0.56	0.14	0.04
6.40	0.61	0.18	0.04
6.80	0.67	0.21	0.04
7.20	0.72	0.25	0.05
7.60	0.78	0.29	0.05
8.00	0.84	0.33	0.05
8.40	0.91	0.38	0.07
8.80	0.99	0.44	0.08
9.20	1.07	0.51	0.09
9.60	1.16	0.58	0.09
10.00	1.27	0.67	0.11
10.40	1.39	0.77	0.14
10.80	1.55	0.91	0.18
11.20	1.76	1.10	0.26
11.60	2.15	1.45	**0.61**
12.00	4.64	3.85	**4.05**
12.40	5.08	4.27	0.43
12.80	5.31	4.50	0.26
13.20	5.49	4.68	0.20
13.60	5.63	4.81	0.16
14.00	5.74	4.93	0.13
14.40	5.84	5.02	0.12
14.80	5.93	5.12	0.11
15.20	6.02	5.20	0.10
15.60	6.09	5.27	0.09
16.00	6.16	5.34	0.08
16.40	6.22	5.40	0.08
16.80	6.28	5.46	0.07
17.20	6.34	5.52	0.07
17.60	6.40	5.57	0.07
18.00	6.45	5.62	0.06
18.40	6.50	5.67	0.06
18.80	6.54	5.72	0.06
19.20	6.59	5.76	0.05
19.60	6.63	5.80	0.05
20.00	6.66	5.84	0.05
20.40	6.70	5.87	0.04
20.80	6.74	5.91	0.04
21.20	6.77	5.94	0.04
21.60	6.81	5.98	0.04
22.00	6.84	6.01	0.04
22.40	6.87	6.04	0.04
22.80	6.91	6.08	0.04
23.20	6.94	6.11	0.04
23.60	6.97	6.14	0.04
24.00	**7.00**	**6.17**	0.04
24.40	7.00	6.17	0.00
24.80	7.00	6.17	0.00
25.20	7.00	6.17	0.00
25.60	7.00	6.17	0.00
26.00	7.00	6.17	0.00
26.40	7.00	6.17	0.00
26.80	7.00	6.17	0.00
27.20	7.00	6.17	0.00
27.60	7.00	6.17	0.00
28.00	7.00	6.17	0.00
28.40	7.00	6.17	0.00
28.80	7.00	6.17	0.00
29.20	7.00	6.17	0.00
29.60	7.00	6.17	0.00
30.00	7.00	6.17	0.00
30.40	7.00	6.17	0.00
30.80	7.00	6.17	0.00
31.20	7.00	6.17	0.00
31.60	7.00	6.17	0.00
32.00	7.00	6.17	0.00
32.40	7.00	6.17	0.00
32.80	7.00	6.17	0.00
33.20	7.00	6.17	0.00
33.60	7.00	6.17	0.00
34.00	7.00	6.17	0.00
34.40	7.00	6.17	0.00
34.80	7.00	6.17	0.00
35.20	7.00	6.17	0.00
35.60	7.00	6.17	0.00
36.00	7.00	6.17	0.00

Summary for Subcatchment 2S: Pre Dev East

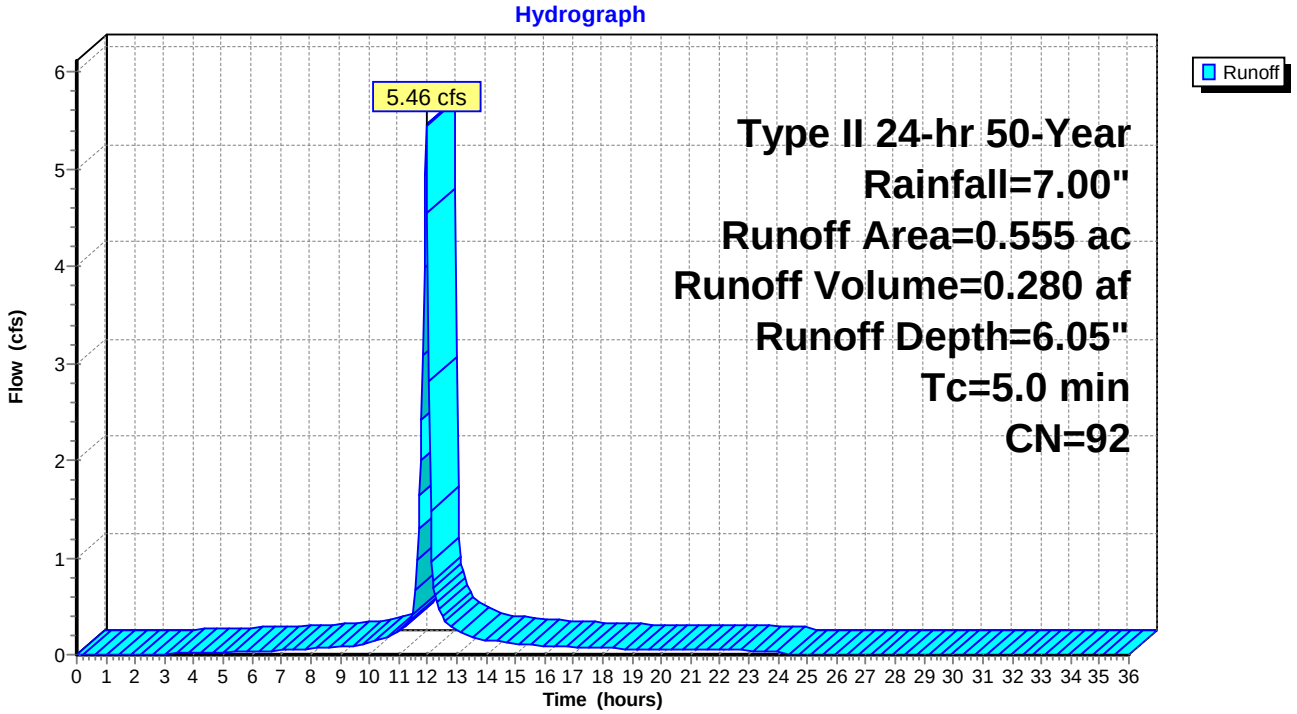
Runoff = 5.46 cfs @ 11.95 hrs, Volume= 0.280 af, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 50-Year Rainfall=7.00"

Area (ac)	CN	Description
0.084	61	>75% Grass cover, Good, HSG B
0.471	98	Paved parking, HSG B
0.555	92	Weighted Average
0.084		15.14% Pervious Area
0.471		84.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 2S: Pre Dev East



Hydrograph for Subcatchment 2S: Pre Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.09	0.00	0.00
1.60	0.12	0.00	0.00
2.00	0.15	0.00	0.00
2.40	0.19	0.00	0.00
2.80	0.22	0.00	0.00
3.20	0.26	0.01	0.01
3.60	0.30	0.02	0.01
4.00	0.34	0.03	0.02
4.40	0.38	0.04	0.02
4.80	0.42	0.05	0.02
5.20	0.46	0.07	0.03
5.60	0.51	0.09	0.03
6.00	0.56	0.12	0.04
6.40	0.61	0.15	0.04
6.80	0.67	0.18	0.04
7.20	0.72	0.21	0.05
7.60	0.78	0.25	0.05
8.00	0.84	0.29	0.06
8.40	0.91	0.34	0.07
8.80	0.99	0.39	0.08
9.20	1.07	0.46	0.09
9.60	1.16	0.53	0.10
10.00	1.27	0.61	0.12
10.40	1.39	0.71	0.15
10.80	1.55	0.84	0.20
11.20	1.76	1.02	0.29
11.60	2.15	1.37	**0.67**
12.00	4.64	3.74	**4.54**
12.40	5.08	4.16	0.49
12.80	5.31	4.39	0.29
13.20	5.49	4.56	0.22
13.60	5.63	4.70	0.18
14.00	5.74	4.81	0.15
14.40	5.84	4.91	0.13
14.80	5.93	5.00	0.12
15.20	6.02	5.08	0.11
15.60	6.09	5.16	0.10
16.00	6.16	5.23	0.09
16.40	6.22	5.29	0.09
16.80	6.28	5.35	0.08
17.20	6.34	5.40	0.08
17.60	6.40	5.46	0.07
18.00	6.45	5.51	0.07
18.40	6.50	5.56	0.07
18.80	6.54	5.60	0.06
19.20	6.59	5.65	0.06
19.60	6.63	5.69	0.05
20.00	6.66	5.72	0.05
20.40	6.70	5.76	0.05
20.80	6.74	5.79	0.05
21.20	6.77	5.83	0.05
21.60	6.81	5.86	0.05
22.00	6.84	5.90	0.05
22.40	6.87	5.93	0.05
22.80	6.91	5.96	0.04
23.20	6.94	5.99	0.04
23.60	6.97	6.02	0.04
24.00	**7.00**	**6.05**	0.04
24.40	7.00	6.05	0.00
24.80	7.00	6.05	0.00
25.20	7.00	6.05	0.00
25.60	7.00	6.05	0.00
26.00	7.00	6.05	0.00
26.40	7.00	6.05	0.00
26.80	7.00	6.05	0.00
27.20	7.00	6.05	0.00
27.60	7.00	6.05	0.00
28.00	7.00	6.05	0.00
28.40	7.00	6.05	0.00
28.80	7.00	6.05	0.00
29.20	7.00	6.05	0.00
29.60	7.00	6.05	0.00
30.00	7.00	6.05	0.00
30.40	7.00	6.05	0.00
30.80	7.00	6.05	0.00
31.20	7.00	6.05	0.00
31.60	7.00	6.05	0.00
32.00	7.00	6.05	0.00
32.40	7.00	6.05	0.00
32.80	7.00	6.05	0.00
33.20	7.00	6.05	0.00
33.60	7.00	6.05	0.00
34.00	7.00	6.05	0.00
34.40	7.00	6.05	0.00
34.80	7.00	6.05	0.00
35.20	7.00	6.05	0.00
35.60	7.00	6.05	0.00
36.00	7.00	6.05	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Dev West Runoff Area=0.491 ac 87.37% Impervious Runoff Depth=6.96"
Tc=5.0 min CN=93 Runoff=5.46 cfs 0.285 af

Subcatchment 2S: Pre Dev East Runoff Area=0.555 ac 84.86% Impervious Runoff Depth=6.85"
Tc=5.0 min CN=92 Runoff=6.12 cfs 0.317 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.602 af Average Runoff Depth = 6.90"
13.96% Pervious = 0.146 ac 86.04% Impervious = 0.900 ac

Summary for Subcatchment 1S: Pre Dev West

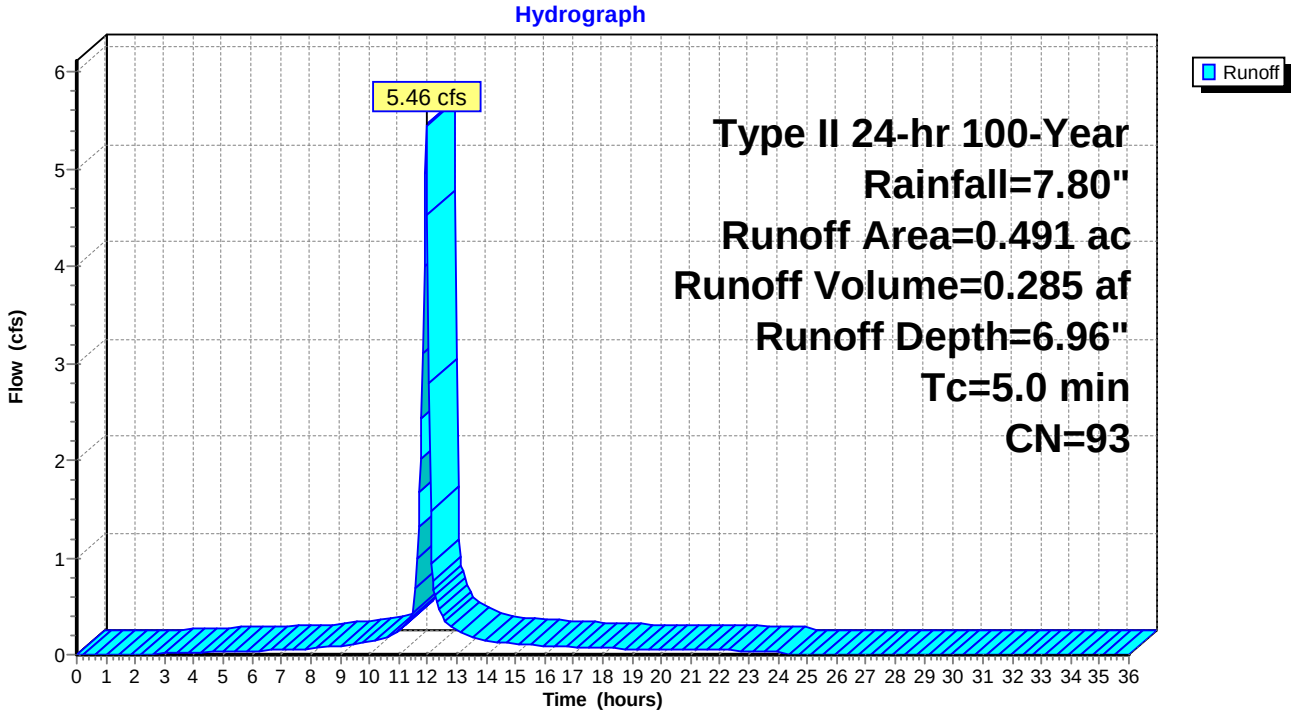
Runoff = 5.46 cfs @ 11.95 hrs, Volume= 0.285 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Year Rainfall=7.80"

Area (ac)	CN	Description
0.062	61	>75% Grass cover, Good, HSG B
0.429	98	Paved parking, HSG B
0.491	93	Weighted Average
0.062		12.63% Pervious Area
0.429		87.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 1S: Pre Dev West



Hydrograph for Subcatchment 1S: Pre Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.10	0.00	0.00
1.60	0.13	0.00	0.00
2.00	0.17	0.00	0.00
2.40	0.21	0.00	0.01
2.80	0.25	0.01	0.01
3.20	0.29	0.02	0.01
3.60	0.33	0.04	0.02
4.00	0.37	0.05	0.02
4.40	0.42	0.07	0.03
4.80	0.47	0.09	0.03
5.20	0.52	0.12	0.03
5.60	0.57	0.15	0.04
6.00	0.62	0.18	0.04
6.40	0.68	0.22	0.05
6.80	0.74	0.26	0.05
7.20	0.80	0.30	0.06
7.60	0.87	0.35	0.06
8.00	0.94	0.40	0.06
8.40	1.01	0.46	0.08
8.80	1.10	0.53	0.09
9.20	1.20	0.61	0.10
9.60	1.30	0.69	0.11
10.00	1.41	0.79	0.13
10.40	1.55	0.91	0.16
10.80	1.73	1.07	0.21
11.20	1.96	1.28	0.29
11.60	2.39	1.68	**0.69**
12.00	5.17	4.37	**4.53**
12.40	5.66	4.84	0.48
12.80	5.92	5.10	0.29
13.20	6.11	5.29	0.22
13.60	6.27	5.45	0.18
14.00	6.40	5.57	0.15
14.40	6.51	5.68	0.13
14.80	6.61	5.78	0.12
15.20	6.70	5.88	0.11
15.60	6.79	5.96	0.10
16.00	6.86	6.04	0.09
16.40	6.93	6.11	0.08
16.80	7.00	6.17	0.08
17.20	7.07	6.24	0.08
17.60	7.13	6.30	0.07
18.00	7.18	6.35	0.07
18.40	7.24	6.41	0.07
18.80	7.29	6.46	0.06
19.20	7.34	6.51	0.06
19.60	7.38	6.55	0.05
20.00	7.43	6.59	0.05
20.40	7.47	6.63	0.05
20.80	7.51	6.67	0.05
21.20	7.54	6.71	0.05
21.60	7.58	6.75	0.05
22.00	7.62	6.79	0.05
22.40	7.66	6.82	0.05
22.80	7.69	6.86	0.04
23.20	7.73	6.89	0.04
23.60	7.77	6.93	0.04
24.00	**7.80**	**6.96**	0.04
24.40	7.80	6.96	0.00
24.80	7.80	6.96	0.00
25.20	7.80	6.96	0.00
25.60	7.80	6.96	0.00
26.00	7.80	6.96	0.00
26.40	7.80	6.96	0.00
26.80	7.80	6.96	0.00
27.20	7.80	6.96	0.00
27.60	7.80	6.96	0.00
28.00	7.80	6.96	0.00
28.40	7.80	6.96	0.00
28.80	7.80	6.96	0.00
29.20	7.80	6.96	0.00
29.60	7.80	6.96	0.00
30.00	7.80	6.96	0.00
30.40	7.80	6.96	0.00
30.80	7.80	6.96	0.00
31.20	7.80	6.96	0.00
31.60	7.80	6.96	0.00
32.00	7.80	6.96	0.00
32.40	7.80	6.96	0.00
32.80	7.80	6.96	0.00
33.20	7.80	6.96	0.00
33.60	7.80	6.96	0.00
34.00	7.80	6.96	0.00
34.40	7.80	6.96	0.00
34.80	7.80	6.96	0.00
35.20	7.80	6.96	0.00
35.60	7.80	6.96	0.00
36.00	7.80	6.96	0.00

Summary for Subcatchment 2S: Pre Dev East

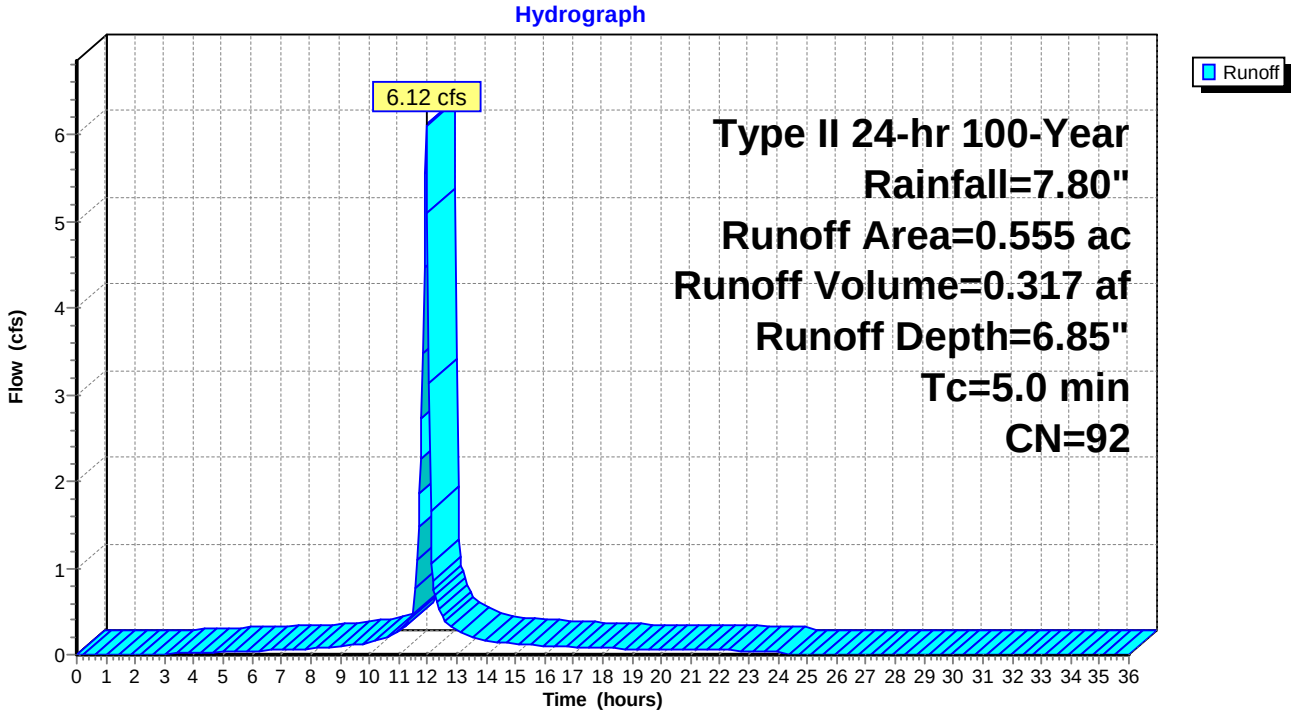
Runoff = 6.12 cfs @ 11.95 hrs, Volume= 0.317 af, Depth= 6.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Year Rainfall=7.80"

Area (ac)	CN	Description
0.084	61	>75% Grass cover, Good, HSG B
0.471	98	Paved parking, HSG B
0.555	92	Weighted Average
0.084		15.14% Pervious Area
0.471		84.86% Impervious Area

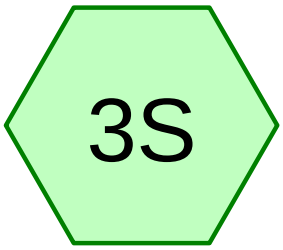
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 2S: Pre Dev East

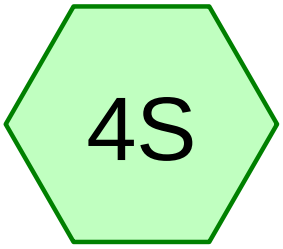


Hydrograph for Subcatchment 2S: Pre Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.10	0.00	0.00
1.60	0.13	0.00	0.00
2.00	0.17	0.00	0.00
2.40	0.21	0.00	0.00
2.80	0.25	0.01	0.01
3.20	0.29	0.01	0.01
3.60	0.33	0.02	0.02
4.00	0.37	0.04	0.02
4.40	0.42	0.05	0.02
4.80	0.47	0.07	0.03
5.20	0.52	0.10	0.03
5.60	0.57	0.12	0.04
6.00	0.62	0.15	0.04
6.40	0.68	0.19	0.05
6.80	0.74	0.22	0.05
7.20	0.80	0.26	0.06
7.60	0.87	0.31	0.06
8.00	0.94	0.36	0.07
8.40	1.01	0.41	0.08
8.80	1.10	0.48	0.10
9.20	1.20	0.55	0.11
9.60	1.30	0.63	0.11
10.00	1.41	0.73	0.14
10.40	1.55	0.84	0.18
10.80	1.73	1.00	0.23
11.20	1.96	1.20	0.33
11.60	2.39	1.59	**0.76**
12.00	5.17	4.26	**5.09**
12.40	5.66	4.73	0.55
12.80	5.92	4.99	0.32
13.20	6.11	5.18	0.25
13.60	6.27	5.33	0.20
14.00	6.40	5.46	0.17
14.40	6.51	5.57	0.15
14.80	6.61	5.67	0.14
15.20	6.70	5.76	0.13
15.60	6.79	5.85	0.11
16.00	6.86	5.92	0.10
16.40	6.93	5.99	0.10
16.80	7.00	6.06	0.09
17.20	7.07	6.12	0.09
17.60	7.13	6.18	0.08
18.00	7.18	6.24	0.08
18.40	7.24	6.29	0.07
18.80	7.29	6.34	0.07
19.20	7.34	6.39	0.07
19.60	7.38	6.43	0.06
20.00	7.43	6.48	0.06
20.40	7.47	6.52	0.06
20.80	7.51	6.55	0.05
21.20	7.54	6.59	0.05
21.60	7.58	6.63	0.05
22.00	7.62	6.67	0.05
22.40	7.66	6.70	0.05
22.80	7.69	6.74	0.05
23.20	7.73	6.78	0.05
23.60	7.77	6.81	0.05
24.00	**7.80**	**6.85**	0.05
24.40	7.80	6.85	0.00
24.80	7.80	6.85	0.00
25.20	7.80	6.85	0.00
25.60	7.80	6.85	0.00
26.00	7.80	6.85	0.00
26.40	7.80	6.85	0.00
26.80	7.80	6.85	0.00
27.20	7.80	6.85	0.00
27.60	7.80	6.85	0.00
28.00	7.80	6.85	0.00
28.40	7.80	6.85	0.00
28.80	7.80	6.85	0.00
29.20	7.80	6.85	0.00
29.60	7.80	6.85	0.00
30.00	7.80	6.85	0.00
30.40	7.80	6.85	0.00
30.80	7.80	6.85	0.00
31.20	7.80	6.85	0.00
31.60	7.80	6.85	0.00
32.00	7.80	6.85	0.00
32.40	7.80	6.85	0.00
32.80	7.80	6.85	0.00
33.20	7.80	6.85	0.00
33.60	7.80	6.85	0.00
34.00	7.80	6.85	0.00
34.40	7.80	6.85	0.00
34.80	7.80	6.85	0.00
35.20	7.80	6.85	0.00
35.60	7.80	6.85	0.00
36.00	7.80	6.85	0.00



Post Dev West



Post Dev East

Subcat Reach Pond Link

Drainage Diagram for 08.0844 Post Drainage Analysis
Prepared by Microsoft, Printed 8/1/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.216	61	>75% Grass cover, Good, HSG B (3S, 4S)
0.830	98	Paved parking, HSG B (3S, 4S)
1.046	90	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.046	HSG B	3S, 4S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.046		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Post Dev West Runoff Area=0.494 ac 82.19% Impervious Runoff Depth=2.54"
Tc=5.0 min CN=91 Runoff=2.18 cfs 0.105 af

Subcatchment 4S: Post Dev East Runoff Area=0.552 ac 76.81% Impervious Runoff Depth=2.36"
Tc=5.0 min CN=89 Runoff=2.30 cfs 0.108 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.213 af Average Runoff Depth = 2.44"
20.65% Pervious = 0.216 ac 79.35% Impervious = 0.830 ac

Summary for Subcatchment 3S: Post Dev West

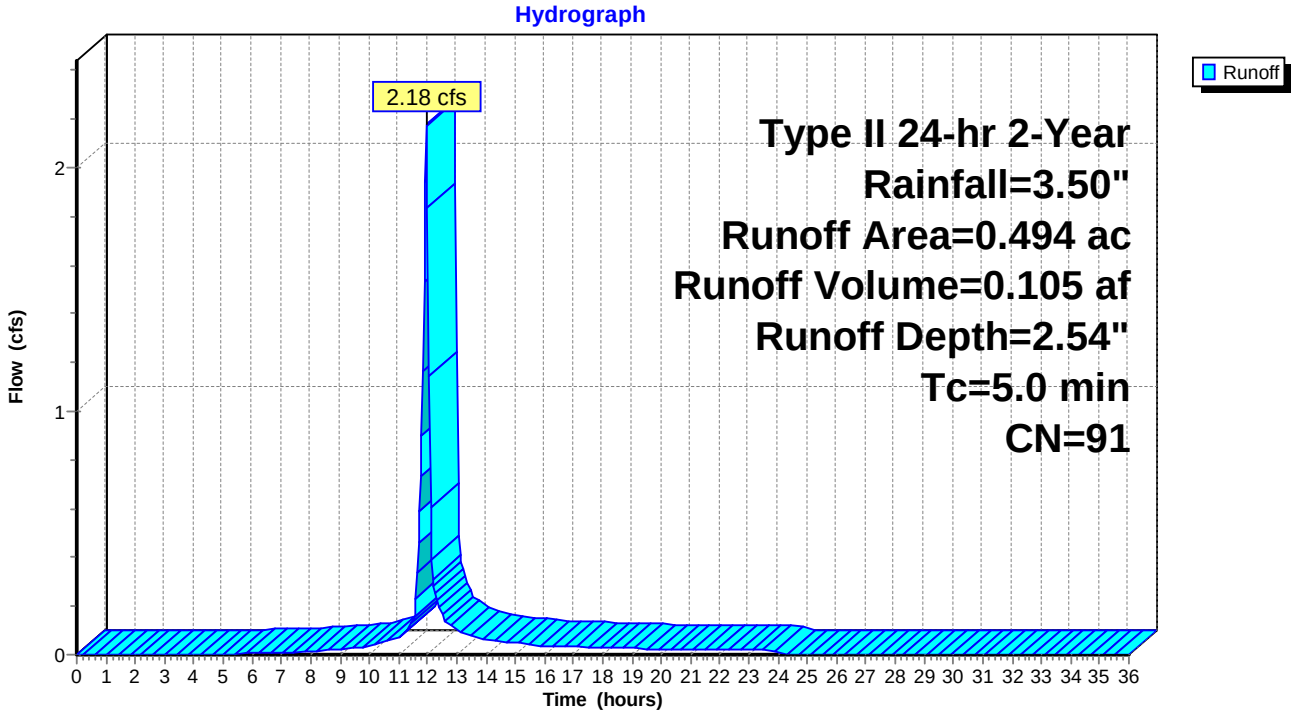
Runoff = 2.18 cfs @ 11.96 hrs, Volume= 0.105 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 2-Year Rainfall=3.50"

Area (ac)	CN	Description
0.088	61	>75% Grass cover, Good, HSG B
0.406	98	Paved parking, HSG B
0.494	91	Weighted Average
0.088		17.81% Pervious Area
0.406		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 3S: Post Dev West



Hydrograph for Subcatchment 3S: Post Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	21.20	3.39	2.43	0.02
0.40	0.01	0.00	0.00	21.60	3.40	2.45	0.02
0.80	0.03	0.00	0.00	22.00	3.42	2.46	0.02
1.20	0.04	0.00	0.00	22.40	3.44	2.48	0.02
1.60	0.06	0.00	0.00	22.80	3.45	2.50	0.02
2.00	0.08	0.00	0.00	23.20	3.47	2.51	0.02
2.40	0.09	0.00	0.00	23.60	3.48	2.53	0.02
2.80	0.11	0.00	0.00	24.00	**3.50**	**2.54**	0.02
3.20	0.13	0.00	0.00	24.40	3.50	2.54	0.00
3.60	0.15	0.00	0.00	24.80	3.50	2.54	0.00
4.00	0.17	0.00	0.00	25.20	3.50	2.54	0.00
4.40	0.19	0.00	0.00	25.60	3.50	2.54	0.00
4.80	0.21	0.00	0.00	26.00	3.50	2.54	0.00
5.20	0.23	0.00	0.00	26.40	3.50	2.54	0.00
5.60	0.26	0.00	0.00	26.80	3.50	2.54	0.00
6.00	0.28	0.01	0.00	27.20	3.50	2.54	0.00
6.40	0.31	0.01	0.01	27.60	3.50	2.54	0.00
6.80	0.33	0.02	0.01	28.00	3.50	2.54	0.00
7.20	0.36	0.02	0.01	28.40	3.50	2.54	0.00
7.60	0.39	0.03	0.01	28.80	3.50	2.54	0.00
8.00	0.42	0.04	0.01	29.20	3.50	2.54	0.00
8.40	0.45	0.05	0.02	29.60	3.50	2.54	0.00
8.80	0.49	0.07	0.02	30.00	3.50	2.54	0.00
9.20	0.54	0.09	0.02	30.40	3.50	2.54	0.00
9.60	0.58	0.11	0.03	30.80	3.50	2.54	0.00
10.00	0.63	0.13	0.03	31.20	3.50	2.54	0.00
10.40	0.70	0.17	0.05	31.60	3.50	2.54	0.00
10.80	0.77	0.21	0.06	32.00	3.50	2.54	0.00
11.20	0.88	0.28	0.09	32.40	3.50	2.54	0.00
11.60	1.07	0.41	**0.23**	32.80	3.50	2.54	0.00
12.00	2.32	1.45	**1.84**	33.20	3.50	2.54	0.00
12.40	2.54	1.65	0.20	33.60	3.50	2.54	0.00
12.80	2.66	1.75	0.12	34.00	3.50	2.54	0.00
13.20	2.74	1.83	0.09	34.40	3.50	2.54	0.00
13.60	2.81	1.90	0.08	34.80	3.50	2.54	0.00
14.00	2.87	1.95	0.06	35.20	3.50	2.54	0.00
14.40	2.92	2.00	0.06	35.60	3.50	2.54	0.00
14.80	2.97	2.04	0.05	36.00	3.50	2.54	0.00
15.20	3.01	2.08	0.05				
15.60	3.05	2.11	0.04				
16.00	3.08	2.15	0.04				
16.40	3.11	2.18	0.04				
16.80	3.14	2.20	0.03				
17.20	3.17	2.23	0.03				
17.60	3.20	2.26	0.03				
18.00	3.22	2.28	0.03				
18.40	3.25	2.30	0.03				
18.80	3.27	2.33	0.03				
19.20	3.29	2.35	0.02				
19.60	3.31	2.36	0.02				
20.00	3.33	2.38	0.02				
20.40	3.35	2.40	0.02				
20.80	3.37	2.42	0.02				

Summary for Subcatchment 4S: Post Dev East

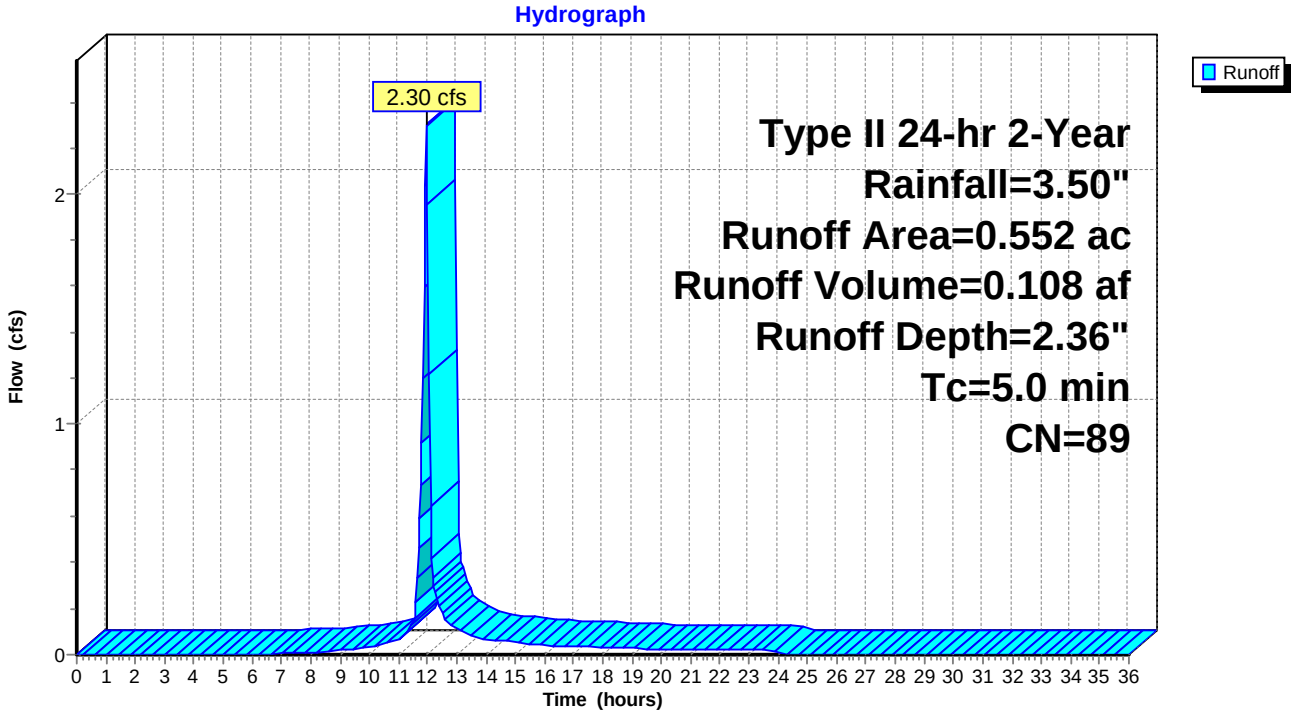
Runoff = 2.30 cfs @ 11.96 hrs, Volume= 0.108 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 2-Year Rainfall=3.50"

Area (ac)	CN	Description
0.128	61	>75% Grass cover, Good, HSG B
0.424	98	Paved parking, HSG B
0.552	89	Weighted Average
0.128		23.19% Pervious Area
0.424		76.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 4S: Post Dev East



Hydrograph for Subcatchment 4S: Post Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	21.20	3.39	2.25	0.02
0.40	0.01	0.00	0.00	21.60	3.40	2.27	0.02
0.80	0.03	0.00	0.00	22.00	3.42	2.28	0.02
1.20	0.04	0.00	0.00	22.40	3.44	2.30	0.02
1.60	0.06	0.00	0.00	22.80	3.45	2.31	0.02
2.00	0.08	0.00	0.00	23.20	3.47	2.33	0.02
2.40	0.09	0.00	0.00	23.60	3.48	2.34	0.02
2.80	0.11	0.00	0.00	24.00	**3.50**	**2.36**	0.02
3.20	0.13	0.00	0.00	24.40	3.50	2.36	0.00
3.60	0.15	0.00	0.00	24.80	3.50	2.36	0.00
4.00	0.17	0.00	0.00	25.20	3.50	2.36	0.00
4.40	0.19	0.00	0.00	25.60	3.50	2.36	0.00
4.80	0.21	0.00	0.00	26.00	3.50	2.36	0.00
5.20	0.23	0.00	0.00	26.40	3.50	2.36	0.00
5.60	0.26	0.00	0.00	26.80	3.50	2.36	0.00
6.00	0.28	0.00	0.00	27.20	3.50	2.36	0.00
6.40	0.31	0.00	0.00	27.60	3.50	2.36	0.00
6.80	0.33	0.01	0.00	28.00	3.50	2.36	0.00
7.20	0.36	0.01	0.01	28.40	3.50	2.36	0.00
7.60	0.39	0.01	0.01	28.80	3.50	2.36	0.00
8.00	0.42	0.02	0.01	29.20	3.50	2.36	0.00
8.40	0.45	0.03	0.01	29.60	3.50	2.36	0.00
8.80	0.49	0.04	0.02	30.00	3.50	2.36	0.00
9.20	0.54	0.06	0.02	30.40	3.50	2.36	0.00
9.60	0.58	0.07	0.02	30.80	3.50	2.36	0.00
10.00	0.63	0.09	0.03	31.20	3.50	2.36	0.00
10.40	0.70	0.12	0.04	31.60	3.50	2.36	0.00
10.80	0.77	0.16	0.06	32.00	3.50	2.36	0.00
11.20	0.88	0.21	0.09	32.40	3.50	2.36	0.00
11.60	1.07	0.33	**0.23**	32.80	3.50	2.36	0.00
12.00	2.32	1.30	**1.95**	33.20	3.50	2.36	0.00
12.40	2.54	1.49	0.22	33.60	3.50	2.36	0.00
12.80	2.66	1.59	0.13	34.00	3.50	2.36	0.00
13.20	2.74	1.67	0.10	34.40	3.50	2.36	0.00
13.60	2.81	1.73	0.08	34.80	3.50	2.36	0.00
14.00	2.87	1.78	0.07	35.20	3.50	2.36	0.00
14.40	2.92	1.83	0.06	35.60	3.50	2.36	0.00
14.80	2.97	1.87	0.06	36.00	3.50	2.36	0.00
15.20	3.01	1.91	0.05				
15.60	3.05	1.94	0.05				
16.00	3.08	1.97	0.04				
16.40	3.11	2.00	0.04				
16.80	3.14	2.03	0.04				
17.20	3.17	2.05	0.04				
17.60	3.20	2.08	0.03				
18.00	3.22	2.10	0.03				
18.40	3.25	2.13	0.03				
18.80	3.27	2.15	0.03				
19.20	3.29	2.17	0.03				
19.60	3.31	2.19	0.03				
20.00	3.33	2.20	0.02				
20.40	3.35	2.22	0.02				
20.80	3.37	2.24	0.02				

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Post Dev West Runoff Area=0.494 ac 82.19% Impervious Runoff Depth=3.50"
Tc=5.0 min CN=91 Runoff=2.94 cfs 0.144 af

Subcatchment 4S: Post Dev East Runoff Area=0.552 ac 76.81% Impervious Runoff Depth=3.30"
Tc=5.0 min CN=89 Runoff=3.15 cfs 0.152 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.296 af Average Runoff Depth = 3.39"
20.65% Pervious = 0.216 ac 79.35% Impervious = 0.830 ac

Summary for Subcatchment 3S: Post Dev West

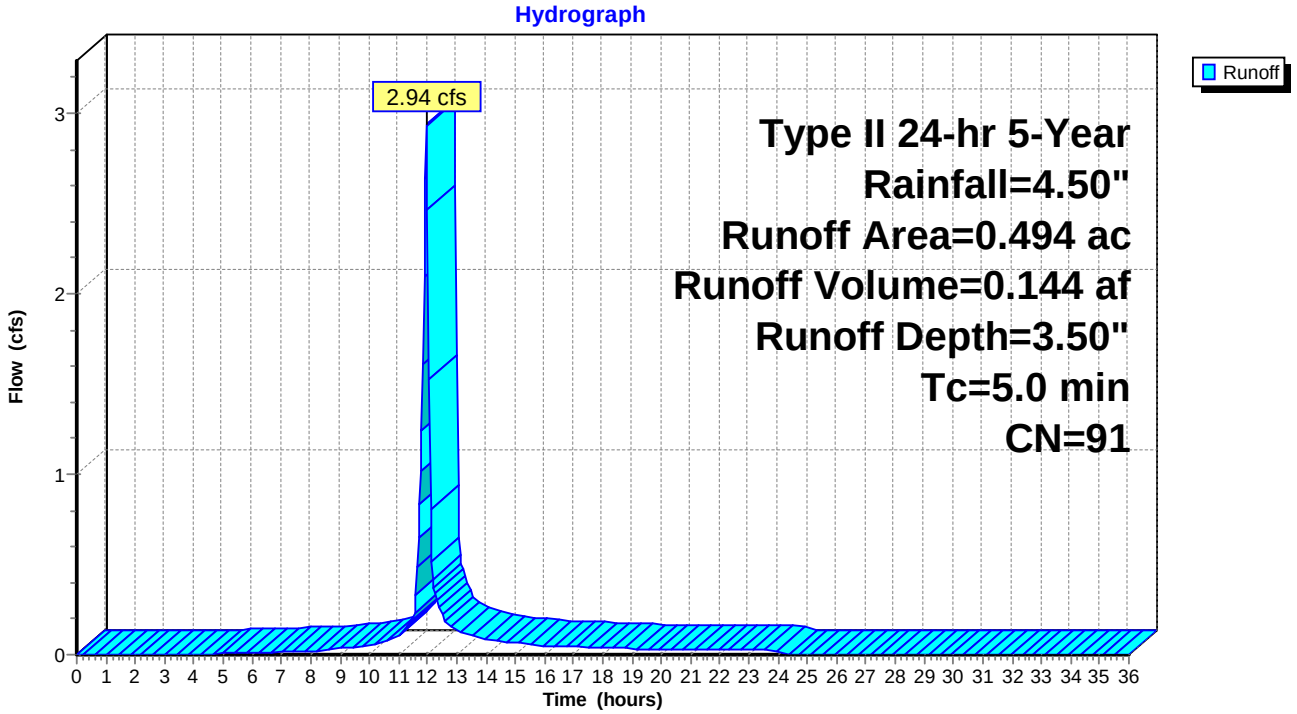
Runoff = 2.94 cfs @ 11.96 hrs, Volume= 0.144 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 5-Year Rainfall=4.50"

Area (ac)	CN	Description
0.088	61	>75% Grass cover, Good, HSG B
0.406	98	Paved parking, HSG B
0.494	91	Weighted Average
0.088		17.81% Pervious Area
0.406		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 3S: Post Dev West



Hydrograph for Subcatchment 3S: Post Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	21.20	4.35	3.36	0.03
0.40	0.02	0.00	0.00	21.60	4.37	3.38	0.03
0.80	0.04	0.00	0.00	22.00	4.40	3.40	0.03
1.20	0.06	0.00	0.00	22.40	4.42	3.42	0.03
1.60	0.08	0.00	0.00	22.80	4.44	3.44	0.03
2.00	0.10	0.00	0.00	23.20	4.46	3.46	0.02
2.40	0.12	0.00	0.00	23.60	4.48	3.48	0.02
2.80	0.14	0.00	0.00	24.00	**4.50**	**3.50**	0.02
3.20	0.17	0.00	0.00	24.40	4.50	3.50	0.00
3.60	0.19	0.00	0.00	24.80	4.50	3.50	0.00
4.00	0.22	0.00	0.00	25.20	4.50	3.50	0.00
4.40	0.24	0.00	0.00	25.60	4.50	3.50	0.00
4.80	0.27	0.00	0.00	26.00	4.50	3.50	0.00
5.20	0.30	0.01	0.01	26.40	4.50	3.50	0.00
5.60	0.33	0.02	0.01	26.80	4.50	3.50	0.00
6.00	0.36	0.02	0.01	27.20	4.50	3.50	0.00
6.40	0.39	0.03	0.01	27.60	4.50	3.50	0.00
6.80	0.43	0.04	0.01	28.00	4.50	3.50	0.00
7.20	0.46	0.06	0.02	28.40	4.50	3.50	0.00
7.60	0.50	0.07	0.02	28.80	4.50	3.50	0.00
8.00	0.54	0.09	0.02	29.20	4.50	3.50	0.00
8.40	0.58	0.11	0.03	29.60	4.50	3.50	0.00
8.80	0.63	0.13	0.03	30.00	4.50	3.50	0.00
9.20	0.69	0.16	0.04	30.40	4.50	3.50	0.00
9.60	0.75	0.20	0.04	30.80	4.50	3.50	0.00
10.00	0.81	0.24	0.05	31.20	4.50	3.50	0.00
10.40	0.90	0.29	0.07	31.60	4.50	3.50	0.00
10.80	1.00	0.36	0.09	32.00	4.50	3.50	0.00
11.20	1.13	0.45	0.14	32.40	4.50	3.50	0.00
11.60	1.38	0.64	**0.33**	32.80	4.50	3.50	0.00
12.00	2.98	2.06	**2.46**	33.20	4.50	3.50	0.00
12.40	3.26	2.32	0.27	33.60	4.50	3.50	0.00
12.80	3.41	2.46	0.16	34.00	4.50	3.50	0.00
13.20	3.53	2.57	0.12	34.40	4.50	3.50	0.00
13.60	3.62	2.65	0.10	34.80	4.50	3.50	0.00
14.00	3.69	2.72	0.08	35.20	4.50	3.50	0.00
14.40	3.75	2.78	0.07	35.60	4.50	3.50	0.00
14.80	3.81	2.84	0.07	36.00	4.50	3.50	0.00
15.20	3.87	2.89	0.06				
15.60	3.92	2.94	0.06				
16.00	3.96	2.98	0.05				
16.40	4.00	3.02	0.05				
16.80	4.04	3.05	0.05				
17.20	4.08	3.09	0.04				
17.60	4.11	3.12	0.04				
18.00	4.14	3.16	0.04				
18.40	4.18	3.19	0.04				
18.80	4.21	3.21	0.03				
19.20	4.23	3.24	0.03				
19.60	4.26	3.27	0.03				
20.00	4.28	3.29	0.03				
20.40	4.31	3.31	0.03				
20.80	4.33	3.33	0.03				

Summary for Subcatchment 4S: Post Dev East

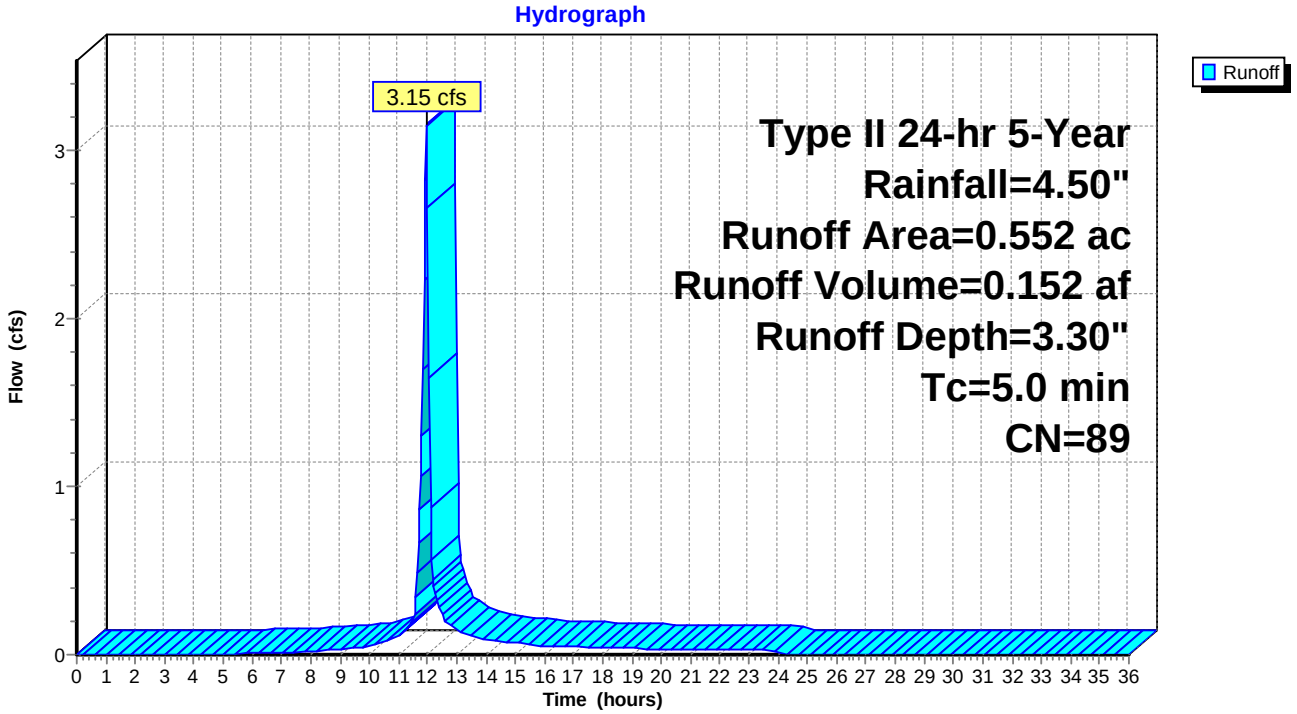
Runoff = 3.15 cfs @ 11.96 hrs, Volume= 0.152 af, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 5-Year Rainfall=4.50"

Area (ac)	CN	Description
0.128	61	>75% Grass cover, Good, HSG B
0.424	98	Paved parking, HSG B
0.552	89	Weighted Average
0.128		23.19% Pervious Area
0.424		76.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 4S: Post Dev East



Hydrograph for Subcatchment 4S: Post Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.04	0.00	0.00
1.20	0.06	0.00	0.00
1.60	0.08	0.00	0.00
2.00	0.10	0.00	0.00
2.40	0.12	0.00	0.00
2.80	0.14	0.00	0.00
3.20	0.17	0.00	0.00
3.60	0.19	0.00	0.00
4.00	0.22	0.00	0.00
4.40	0.24	0.00	0.00
4.80	0.27	0.00	0.00
5.20	0.30	0.00	0.00
5.60	0.33	0.00	0.00
6.00	0.36	0.01	0.01
6.40	0.39	0.02	0.01
6.80	0.43	0.02	0.01
7.20	0.46	0.03	0.01
7.60	0.50	0.04	0.02
8.00	0.54	0.06	0.02
8.40	0.58	0.07	0.02
8.80	0.63	0.09	0.03
9.20	0.69	0.12	0.04
9.60	0.75	0.14	0.04
10.00	0.81	0.18	0.05
10.40	0.90	0.22	0.07
10.80	1.00	0.28	0.09
11.20	1.13	0.37	0.14
11.60	1.38	0.54	**0.34**
12.00	2.98	1.88	**2.65**
12.40	3.26	2.14	0.29
12.80	3.41	2.28	0.17
13.20	3.53	2.38	0.13
13.60	3.62	2.46	0.11
14.00	3.69	2.53	0.09
14.40	3.75	2.59	0.08
14.80	3.81	2.65	0.07
15.20	3.87	2.70	0.07
15.60	3.92	2.74	0.06
16.00	3.96	2.79	0.06
16.40	4.00	2.82	0.05
16.80	4.04	2.86	0.05
17.20	4.08	2.89	0.05
17.60	4.11	2.93	0.05
18.00	4.14	2.96	0.04
18.40	4.18	2.99	0.04
18.80	4.21	3.02	0.04
19.20	4.23	3.04	0.04
19.60	4.26	3.07	0.03
20.00	4.28	3.09	0.03
20.40	4.31	3.11	0.03
20.80	4.33	3.13	0.03
21.20	4.35	3.16	0.03
21.60	4.37	3.18	0.03
22.00	4.40	3.20	0.03
22.40	4.42	3.22	0.03
22.80	4.44	3.24	0.03
23.20	4.46	3.26	0.03
23.60	4.48	3.28	0.03
24.00	**4.50**	**3.30**	0.03
24.40	4.50	3.30	0.00
24.80	4.50	3.30	0.00
25.20	4.50	3.30	0.00
25.60	4.50	3.30	0.00
26.00	4.50	3.30	0.00
26.40	4.50	3.30	0.00
26.80	4.50	3.30	0.00
27.20	4.50	3.30	0.00
27.60	4.50	3.30	0.00
28.00	4.50	3.30	0.00
28.40	4.50	3.30	0.00
28.80	4.50	3.30	0.00
29.20	4.50	3.30	0.00
29.60	4.50	3.30	0.00
30.00	4.50	3.30	0.00
30.40	4.50	3.30	0.00
30.80	4.50	3.30	0.00
31.20	4.50	3.30	0.00
31.60	4.50	3.30	0.00
32.00	4.50	3.30	0.00
32.40	4.50	3.30	0.00
32.80	4.50	3.30	0.00
33.20	4.50	3.30	0.00
33.60	4.50	3.30	0.00
34.00	4.50	3.30	0.00
34.40	4.50	3.30	0.00
34.80	4.50	3.30	0.00
35.20	4.50	3.30	0.00
35.60	4.50	3.30	0.00
36.00	4.50	3.30	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Post Dev West Runoff Area=0.494 ac 82.19% Impervious Runoff Depth=4.27"
Tc=5.0 min CN=91 Runoff=3.54 cfs 0.176 af

Subcatchment 4S: Post Dev East Runoff Area=0.552 ac 76.81% Impervious Runoff Depth=4.06"
Tc=5.0 min CN=89 Runoff=3.83 cfs 0.187 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.363 af Average Runoff Depth = 4.16"
20.65% Pervious = 0.216 ac 79.35% Impervious = 0.830 ac

Summary for Subcatchment 3S: Post Dev West

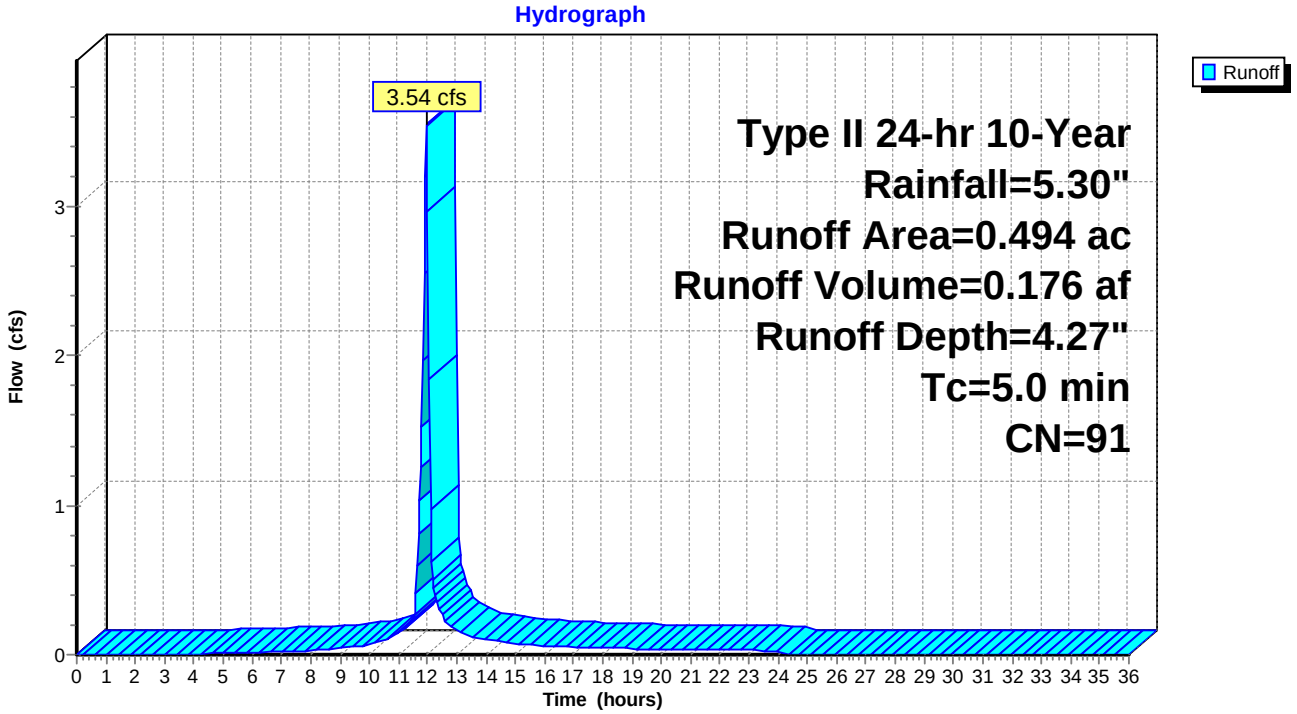
Runoff = 3.54 cfs @ 11.95 hrs, Volume= 0.176 af, Depth= 4.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Year Rainfall=5.30"

Area (ac)	CN	Description
0.088	61	>75% Grass cover, Good, HSG B
0.406	98	Paved parking, HSG B
0.494	91	Weighted Average
0.088		17.81% Pervious Area
0.406		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 3S: Post Dev West



Hydrograph for Subcatchment 3S: Post Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	21.20	5.13	4.10	0.03
0.40	0.02	0.00	0.00	21.60	5.15	4.13	0.03
0.80	0.04	0.00	0.00	22.00	5.18	4.16	0.03
1.20	0.07	0.00	0.00	22.40	5.20	4.18	0.03
1.60	0.09	0.00	0.00	22.80	5.23	4.20	0.03
2.00	0.12	0.00	0.00	23.20	5.25	4.23	0.03
2.40	0.14	0.00	0.00	23.60	5.28	4.25	0.03
2.80	0.17	0.00	0.00	24.00	**5.30**	**4.27**	0.03
3.20	0.20	0.00	0.00	24.40	5.30	4.27	0.00
3.60	0.23	0.00	0.00	24.80	5.30	4.27	0.00
4.00	0.25	0.00	0.00	25.20	5.30	4.27	0.00
4.40	0.28	0.01	0.01	25.60	5.30	4.27	0.00
4.80	0.32	0.01	0.01	26.00	5.30	4.27	0.00
5.20	0.35	0.02	0.01	26.40	5.30	4.27	0.00
5.60	0.39	0.03	0.01	26.80	5.30	4.27	0.00
6.00	0.42	0.04	0.02	27.20	5.30	4.27	0.00
6.40	0.46	0.06	0.02	27.60	5.30	4.27	0.00
6.80	0.50	0.07	0.02	28.00	5.30	4.27	0.00
7.20	0.55	0.09	0.02	28.40	5.30	4.27	0.00
7.60	0.59	0.11	0.03	28.80	5.30	4.27	0.00
8.00	0.64	0.13	0.03	29.20	5.30	4.27	0.00
8.40	0.69	0.16	0.04	29.60	5.30	4.27	0.00
8.80	0.75	0.20	0.04	30.00	5.30	4.27	0.00
9.20	0.81	0.24	0.05	30.40	5.30	4.27	0.00
9.60	0.88	0.28	0.06	30.80	5.30	4.27	0.00
10.00	0.96	0.33	0.07	31.20	5.30	4.27	0.00
10.40	1.05	0.40	0.09	31.60	5.30	4.27	0.00
10.80	1.17	0.48	0.12	32.00	5.30	4.27	0.00
11.20	1.33	0.61	0.17	32.40	5.30	4.27	0.00
11.60	1.63	0.84	**0.41**	32.80	5.30	4.27	0.00
12.00	3.51	2.55	**2.96**	33.20	5.30	4.27	0.00
12.40	3.84	2.87	0.32	33.60	5.30	4.27	0.00
12.80	4.02	3.04	0.19	34.00	5.30	4.27	0.00
13.20	4.15	3.16	0.15	34.40	5.30	4.27	0.00
13.60	4.26	3.27	0.12	34.80	5.30	4.27	0.00
14.00	4.35	3.35	0.10	35.20	5.30	4.27	0.00
14.40	4.42	3.42	0.09	35.60	5.30	4.27	0.00
14.80	4.49	3.49	0.08	36.00	5.30	4.27	0.00
15.20	4.55	3.55	0.07				
15.60	4.61	3.61	0.07				
16.00	4.66	3.66	0.06				
16.40	4.71	3.70	0.06				
16.80	4.76	3.75	0.05				
17.20	4.80	3.79	0.05				
17.60	4.84	3.83	0.05				
18.00	4.88	3.87	0.05				
18.40	4.92	3.90	0.04				
18.80	4.95	3.94	0.04				
19.20	4.99	3.97	0.04				
19.60	5.02	4.00	0.04				
20.00	5.05	4.03	0.03				
20.40	5.07	4.05	0.03				
20.80	5.10	4.08	0.03				

Summary for Subcatchment 4S: Post Dev East

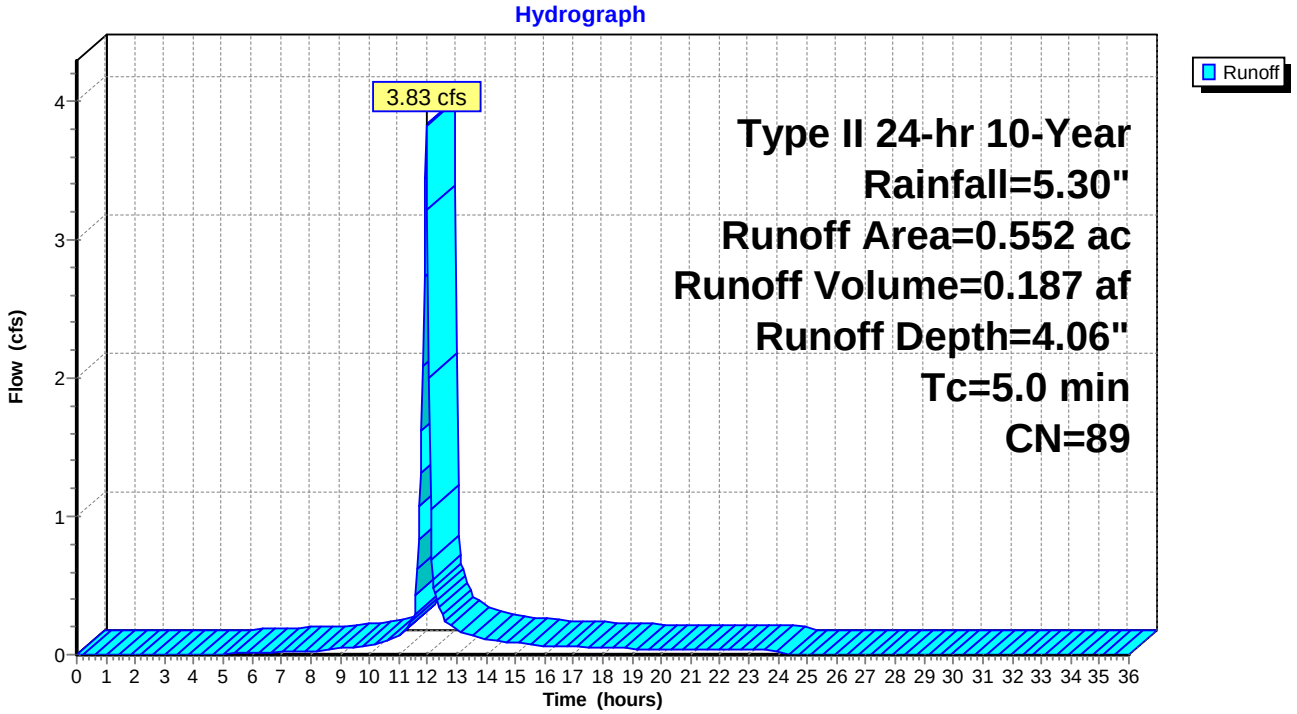
Runoff = 3.83 cfs @ 11.96 hrs, Volume= 0.187 af, Depth= 4.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 10-Year Rainfall=5.30"

Area (ac)	CN	Description
0.128	61	>75% Grass cover, Good, HSG B
0.424	98	Paved parking, HSG B
0.552	89	Weighted Average
0.128		23.19% Pervious Area
0.424		76.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 4S: Post Dev East



Hydrograph for Subcatchment 4S: Post Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.04	0.00	0.00
1.20	0.07	0.00	0.00
1.60	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.40	0.14	0.00	0.00
2.80	0.17	0.00	0.00
3.20	0.20	0.00	0.00
3.60	0.23	0.00	0.00
4.00	0.25	0.00	0.00
4.40	0.28	0.00	0.00
4.80	0.32	0.00	0.00
5.20	0.35	0.01	0.01
5.60	0.39	0.01	0.01
6.00	0.42	0.02	0.01
6.40	0.46	0.03	0.01
6.80	0.50	0.04	0.02
7.20	0.55	0.06	0.02
7.60	0.59	0.07	0.02
8.00	0.64	0.09	0.03
8.40	0.69	0.12	0.03
8.80	0.75	0.14	0.04
9.20	0.81	0.18	0.05
9.60	0.88	0.22	0.05
10.00	0.96	0.26	0.07
10.40	1.05	0.32	0.09
10.80	1.17	0.40	0.12
11.20	1.33	0.51	0.17
11.60	1.63	0.73	**0.43**
12.00	3.51	2.37	**3.21**
12.40	3.84	2.68	0.35
12.80	4.02	2.84	0.21
13.20	4.15	2.97	0.16
13.60	4.26	3.07	0.13
14.00	4.35	3.15	0.11
14.40	4.42	3.22	0.10
14.80	4.49	3.29	0.09
15.20	4.55	3.35	0.08
15.60	4.61	3.40	0.07
16.00	4.66	3.45	0.07
16.40	4.71	3.50	0.06
16.80	4.76	3.54	0.06
17.20	4.80	3.58	0.06
17.60	4.84	3.62	0.05
18.00	4.88	3.66	0.05
18.40	4.92	3.69	0.05
18.80	4.95	3.73	0.05
19.20	4.99	3.76	0.04
19.60	5.02	3.79	0.04
20.00	5.05	3.82	0.04
20.40	5.07	3.84	0.04
20.80	5.10	3.87	0.04
21.20	5.13	3.89	0.04
21.60	5.15	3.92	0.03
22.00	5.18	3.94	0.03
22.40	5.20	3.97	0.03
22.80	5.23	3.99	0.03
23.20	5.25	4.01	0.03
23.60	5.28	4.04	0.03
24.00	**5.30**	**4.06**	0.03
24.40	5.30	4.06	0.00
24.80	5.30	4.06	0.00
25.20	5.30	4.06	0.00
25.60	5.30	4.06	0.00
26.00	5.30	4.06	0.00
26.40	5.30	4.06	0.00
26.80	5.30	4.06	0.00
27.20	5.30	4.06	0.00
27.60	5.30	4.06	0.00
28.00	5.30	4.06	0.00
28.40	5.30	4.06	0.00
28.80	5.30	4.06	0.00
29.20	5.30	4.06	0.00
29.60	5.30	4.06	0.00
30.00	5.30	4.06	0.00
30.40	5.30	4.06	0.00
30.80	5.30	4.06	0.00
31.20	5.30	4.06	0.00
31.60	5.30	4.06	0.00
32.00	5.30	4.06	0.00
32.40	5.30	4.06	0.00
32.80	5.30	4.06	0.00
33.20	5.30	4.06	0.00
33.60	5.30	4.06	0.00
34.00	5.30	4.06	0.00
34.40	5.30	4.06	0.00
34.80	5.30	4.06	0.00
35.20	5.30	4.06	0.00
35.60	5.30	4.06	0.00
36.00	5.30	4.06	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Post Dev West Runoff Area=0.494 ac 82.19% Impervious Runoff Depth=5.06"
Tc=5.0 min CN=91 Runoff=4.14 cfs 0.208 af

Subcatchment 4S: Post Dev East Runoff Area=0.552 ac 76.81% Impervious Runoff Depth=4.83"
Tc=5.0 min CN=89 Runoff=4.50 cfs 0.222 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.430 af Average Runoff Depth = 4.94"
20.65% Pervious = 0.216 ac 79.35% Impervious = 0.830 ac

Summary for Subcatchment 3S: Post Dev West

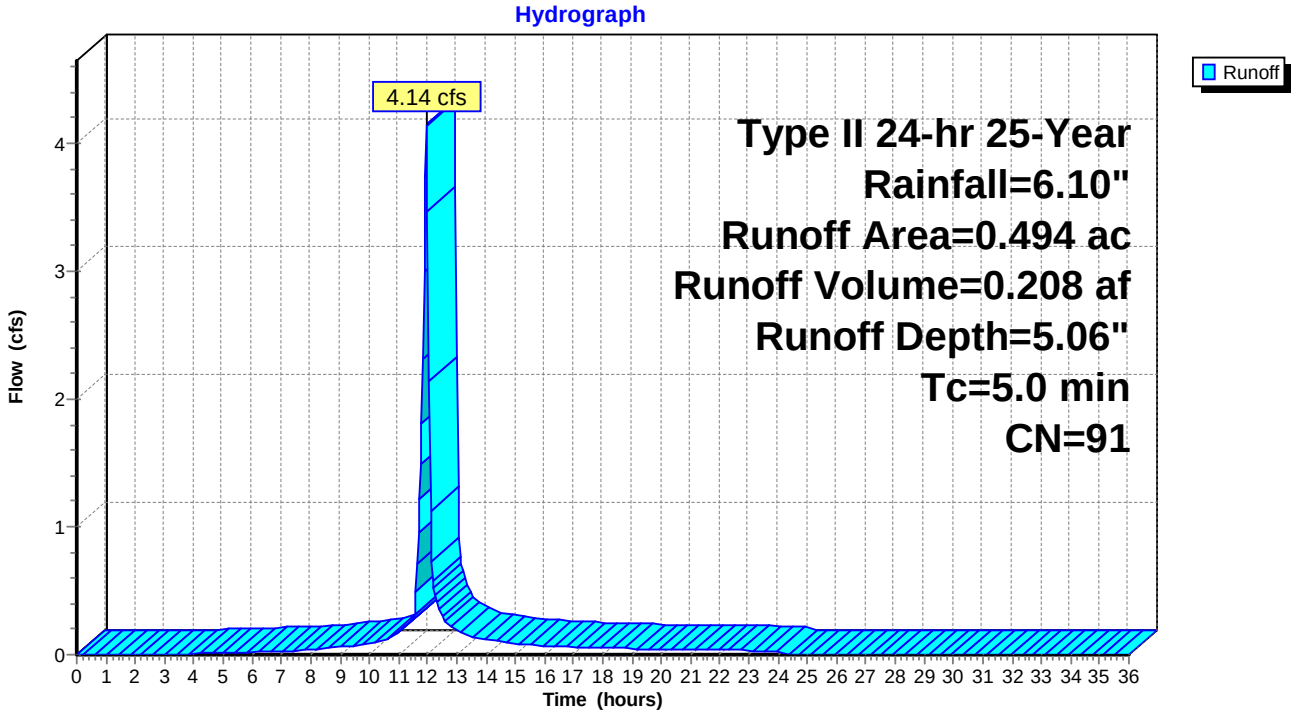
Runoff = 4.14 cfs @ 11.95 hrs, Volume= 0.208 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 25-Year Rainfall=6.10"

Area (ac)	CN	Description
0.088	61	>75% Grass cover, Good, HSG B
0.406	98	Paved parking, HSG B
0.494	91	Weighted Average
0.088		17.81% Pervious Area
0.406		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 3S: Post Dev West



Hydrograph for Subcatchment 3S: Post Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.02	0.00	0.00
0.80	0.05	0.00	0.00
1.20	0.08	0.00	0.00
1.60	0.11	0.00	0.00
2.00	0.13	0.00	0.00
2.40	0.16	0.00	0.00
2.80	0.19	0.00	0.00
3.20	0.23	0.00	0.00
3.60	0.26	0.00	0.00
4.00	0.29	0.01	0.01
4.40	0.33	0.02	0.01
4.80	0.37	0.02	0.01
5.20	0.40	0.04	0.02
5.60	0.45	0.05	0.02
6.00	0.49	0.07	0.02
6.40	0.53	0.08	0.02
6.80	0.58	0.11	0.03
7.20	0.63	0.13	0.03
7.60	0.68	0.16	0.03
8.00	0.73	0.19	0.04
8.40	0.79	0.22	0.05
8.80	0.86	0.26	0.06
9.20	0.94	0.32	0.06
9.60	1.01	0.37	0.07
10.00	1.10	0.43	0.09
10.40	1.21	0.51	0.11
10.80	1.35	0.62	0.14
11.20	1.53	0.77	0.21
11.60	1.87	1.05	**0.49**
12.00	4.04	3.06	**3.45**
12.40	4.42	3.42	0.37
12.80	4.63	3.62	0.22
13.20	4.78	3.77	0.17
13.60	4.90	3.89	0.14
14.00	5.00	3.98	0.11
14.40	5.09	4.07	0.10
14.80	5.17	4.15	0.09
15.20	5.24	4.22	0.09
15.60	5.31	4.28	0.08
16.00	5.37	4.34	0.07
16.40	5.42	4.39	0.07
16.80	5.48	4.44	0.06
17.20	5.53	4.49	0.06
17.60	5.57	4.54	0.06
18.00	5.62	4.58	0.05
18.40	5.66	4.63	0.05
18.80	5.70	4.66	0.05
19.20	5.74	4.70	0.05
19.60	5.77	4.74	0.04
20.00	5.81	4.77	0.04
20.40	5.84	4.80	0.04
20.80	5.87	4.83	0.04
21.20	5.90	4.86	0.04
21.60	5.93	4.89	0.04
22.00	5.96	4.92	0.04
22.40	5.99	4.95	0.04
22.80	6.02	4.97	0.03
23.20	6.05	5.00	0.03
23.60	6.07	5.03	0.03
24.00	**6.10**	**5.06**	0.03
24.40	6.10	5.06	0.00
24.80	6.10	5.06	0.00
25.20	6.10	5.06	0.00
25.60	6.10	5.06	0.00
26.00	6.10	5.06	0.00
26.40	6.10	5.06	0.00
26.80	6.10	5.06	0.00
27.20	6.10	5.06	0.00
27.60	6.10	5.06	0.00
28.00	6.10	5.06	0.00
28.40	6.10	5.06	0.00
28.80	6.10	5.06	0.00
29.20	6.10	5.06	0.00
29.60	6.10	5.06	0.00
30.00	6.10	5.06	0.00
30.40	6.10	5.06	0.00
30.80	6.10	5.06	0.00
31.20	6.10	5.06	0.00
31.60	6.10	5.06	0.00
32.00	6.10	5.06	0.00
32.40	6.10	5.06	0.00
32.80	6.10	5.06	0.00
33.20	6.10	5.06	0.00
33.60	6.10	5.06	0.00
34.00	6.10	5.06	0.00
34.40	6.10	5.06	0.00
34.80	6.10	5.06	0.00
35.20	6.10	5.06	0.00
35.60	6.10	5.06	0.00
36.00	6.10	5.06	0.00

Summary for Subcatchment 4S: Post Dev East

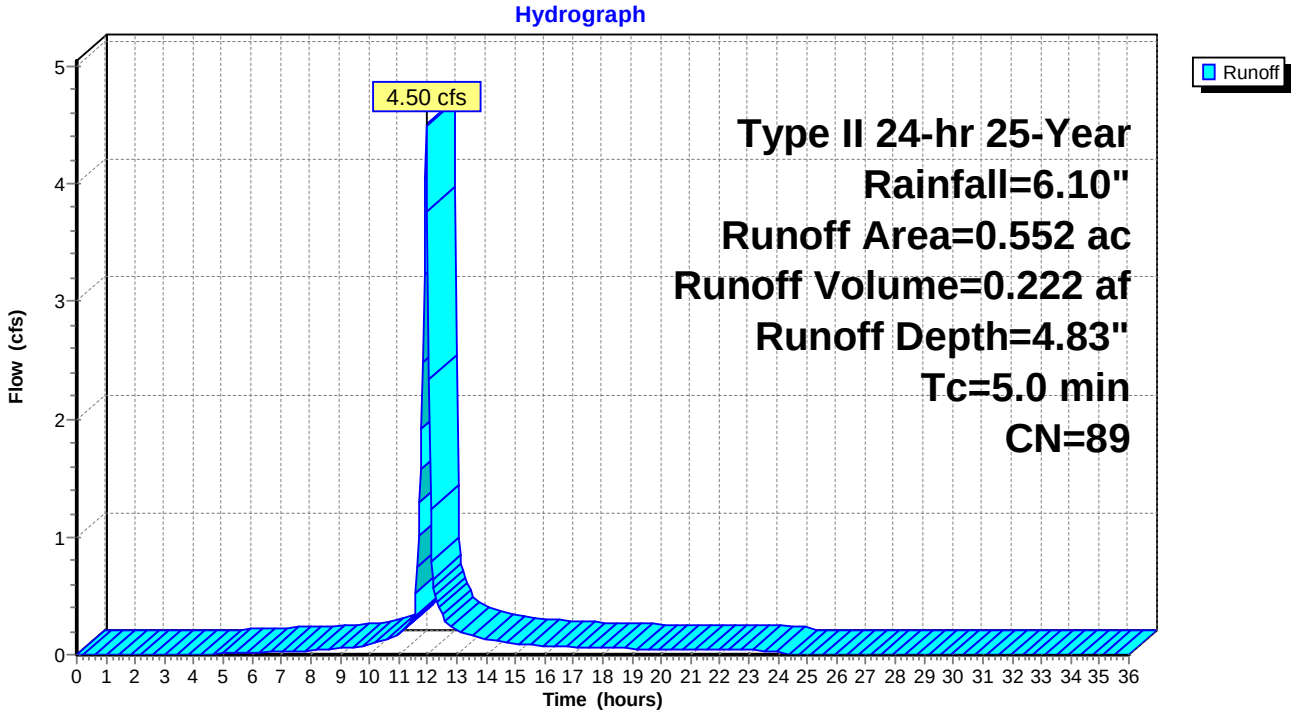
Runoff = 4.50 cfs @ 11.96 hrs, Volume= 0.222 af, Depth= 4.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 25-Year Rainfall=6.10"

Area (ac)	CN	Description
0.128	61	>75% Grass cover, Good, HSG B
0.424	98	Paved parking, HSG B
0.552	89	Weighted Average
0.128		23.19% Pervious Area
0.424		76.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 4S: Post Dev East



Hydrograph for Subcatchment 4S: Post Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	21.20	5.90	4.64	0.04
0.40	0.02	0.00	0.00	21.60	5.93	4.67	0.04
0.80	0.05	0.00	0.00	22.00	5.96	4.70	0.04
1.20	0.08	0.00	0.00	22.40	5.99	4.72	0.04
1.60	0.11	0.00	0.00	22.80	6.02	4.75	0.04
2.00	0.13	0.00	0.00	23.20	6.05	4.78	0.04
2.40	0.16	0.00	0.00	23.60	6.07	4.81	0.04
2.80	0.19	0.00	0.00	24.00	**6.10**	**4.83**	0.04
3.20	0.23	0.00	0.00	24.40	6.10	4.83	0.00
3.60	0.26	0.00	0.00	24.80	6.10	4.83	0.00
4.00	0.29	0.00	0.00	25.20	6.10	4.83	0.00
4.40	0.33	0.00	0.01	25.60	6.10	4.83	0.00
4.80	0.37	0.01	0.01	26.00	6.10	4.83	0.00
5.20	0.40	0.02	0.01	26.40	6.10	4.83	0.00
5.60	0.45	0.03	0.01	26.80	6.10	4.83	0.00
6.00	0.49	0.04	0.02	27.20	6.10	4.83	0.00
6.40	0.53	0.05	0.02	27.60	6.10	4.83	0.00
6.80	0.58	0.07	0.02	28.00	6.10	4.83	0.00
7.20	0.63	0.09	0.03	28.40	6.10	4.83	0.00
7.60	0.68	0.11	0.03	28.80	6.10	4.83	0.00
8.00	0.73	0.14	0.04	29.20	6.10	4.83	0.00
8.40	0.79	0.17	0.04	29.60	6.10	4.83	0.00
8.80	0.86	0.20	0.05	30.00	6.10	4.83	0.00
9.20	0.94	0.25	0.06	30.40	6.10	4.83	0.00
9.60	1.01	0.29	0.07	30.80	6.10	4.83	0.00
10.00	1.10	0.35	0.08	31.20	6.10	4.83	0.00
10.40	1.21	0.42	0.11	31.60	6.10	4.83	0.00
10.80	1.35	0.52	0.15	32.00	6.10	4.83	0.00
11.20	1.53	0.66	0.21	32.40	6.10	4.83	0.00
11.60	1.87	0.92	**0.52**	32.80	6.10	4.83	0.00
12.00	4.04	2.86	**3.77**	33.20	6.10	4.83	0.00
12.40	4.42	3.22	0.41	33.60	6.10	4.83	0.00
12.80	4.63	3.42	0.24	34.00	6.10	4.83	0.00
13.20	4.78	3.56	0.19	34.40	6.10	4.83	0.00
13.60	4.90	3.68	0.15	34.80	6.10	4.83	0.00
14.00	5.00	3.77	0.13	35.20	6.10	4.83	0.00
14.40	5.09	3.86	0.11	35.60	6.10	4.83	0.00
14.80	5.17	3.93	0.10	36.00	6.10	4.83	0.00
15.20	5.24	4.00	0.10				
15.60	5.31	4.07	0.09				
16.00	5.37	4.13	0.08				
16.40	5.42	4.18	0.07				
16.80	5.48	4.23	0.07				
17.20	5.53	4.28	0.07				
17.60	5.57	4.32	0.06				
18.00	5.62	4.37	0.06				
18.40	5.66	4.41	0.06				
18.80	5.70	4.45	0.05				
19.20	5.74	4.48	0.05				
19.60	5.77	4.52	0.05				
20.00	5.81	4.55	0.04				
20.40	5.84	4.58	0.04				
20.80	5.87	4.61	0.04				

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Post Dev West Runoff Area=0.494 ac 82.19% Impervious Runoff Depth=5.94"
Tc=5.0 min CN=91 Runoff=4.81 cfs 0.244 af

Subcatchment 4S: Post Dev East Runoff Area=0.552 ac 76.81% Impervious Runoff Depth=5.71"
Tc=5.0 min CN=89 Runoff=5.26 cfs 0.263 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.507 af Average Runoff Depth = 5.82"
20.65% Pervious = 0.216 ac 79.35% Impervious = 0.830 ac

Summary for Subcatchment 3S: Post Dev West

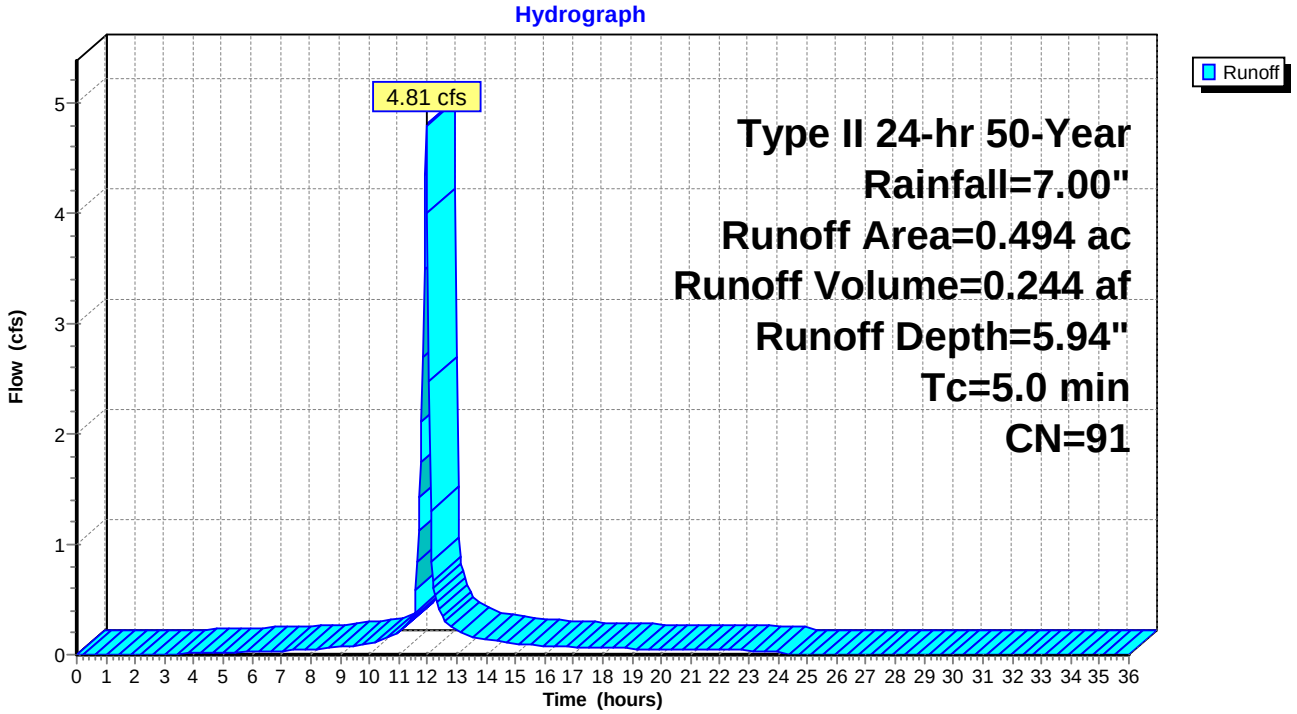
Runoff = 4.81 cfs @ 11.95 hrs, Volume= 0.244 af, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 50-Year Rainfall=7.00"

Area (ac)	CN	Description
0.088	61	>75% Grass cover, Good, HSG B
0.406	98	Paved parking, HSG B
0.494	91	Weighted Average
0.088		17.81% Pervious Area
0.406		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 3S: Post Dev West



Hydrograph for Subcatchment 3S: Post Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.09	0.00	0.00
1.60	0.12	0.00	0.00
2.00	0.15	0.00	0.00
2.40	0.19	0.00	0.00
2.80	0.22	0.00	0.00
3.20	0.26	0.00	0.00
3.60	0.30	0.01	0.01
4.00	0.34	0.02	0.01
4.40	0.38	0.03	0.01
4.80	0.42	0.04	0.02
5.20	0.46	0.06	0.02
5.60	0.51	0.08	0.02
6.00	0.56	0.10	0.03
6.40	0.61	0.12	0.03
6.80	0.67	0.15	0.04
7.20	0.72	0.18	0.04
7.60	0.78	0.22	0.04
8.00	0.84	0.25	0.05
8.40	0.91	0.30	0.06
8.80	0.99	0.35	0.07
9.20	1.07	0.41	0.08
9.60	1.16	0.48	0.08
10.00	1.27	0.56	0.10
10.40	1.39	0.65	0.13
10.80	1.55	0.78	0.17
11.20	1.76	0.96	0.25
11.60	2.15	1.29	**0.58**
12.00	4.64	3.63	**4.01**
12.40	5.08	4.06	0.43
12.80	5.31	4.28	0.26
13.20	5.49	4.45	0.20
13.60	5.63	4.59	0.16
14.00	5.74	4.70	0.13
14.40	5.84	4.80	0.12
14.80	5.93	4.89	0.11
15.20	6.02	4.97	0.10
15.60	6.09	5.05	0.09
16.00	6.16	5.11	0.08
16.40	6.22	5.18	0.08
16.80	6.28	5.23	0.07
17.20	6.34	5.29	0.07
17.60	6.40	5.34	0.07
18.00	6.45	5.40	0.06
18.40	6.50	5.44	0.06
18.80	6.54	5.49	0.06
19.20	6.59	5.53	0.05
19.60	6.63	5.57	0.05
20.00	6.66	5.61	0.05
20.40	6.70	5.64	0.04
20.80	6.74	5.68	0.04
21.20	6.77	5.71	0.04
21.60	6.81	5.75	0.04
22.00	6.84	5.78	0.04
22.40	6.87	5.81	0.04
22.80	6.91	5.85	0.04
23.20	6.94	5.88	0.04
23.60	6.97	5.91	0.04
24.00	**7.00**	**5.94**	0.04
24.40	7.00	5.94	0.00
24.80	7.00	5.94	0.00
25.20	7.00	5.94	0.00
25.60	7.00	5.94	0.00
26.00	7.00	5.94	0.00
26.40	7.00	5.94	0.00
26.80	7.00	5.94	0.00
27.20	7.00	5.94	0.00
27.60	7.00	5.94	0.00
28.00	7.00	5.94	0.00
28.40	7.00	5.94	0.00
28.80	7.00	5.94	0.00
29.20	7.00	5.94	0.00
29.60	7.00	5.94	0.00
30.00	7.00	5.94	0.00
30.40	7.00	5.94	0.00
30.80	7.00	5.94	0.00
31.20	7.00	5.94	0.00
31.60	7.00	5.94	0.00
32.00	7.00	5.94	0.00
32.40	7.00	5.94	0.00
32.80	7.00	5.94	0.00
33.20	7.00	5.94	0.00
33.60	7.00	5.94	0.00
34.00	7.00	5.94	0.00
34.40	7.00	5.94	0.00
34.80	7.00	5.94	0.00
35.20	7.00	5.94	0.00
35.60	7.00	5.94	0.00
36.00	7.00	5.94	0.00

Summary for Subcatchment 4S: Post Dev East

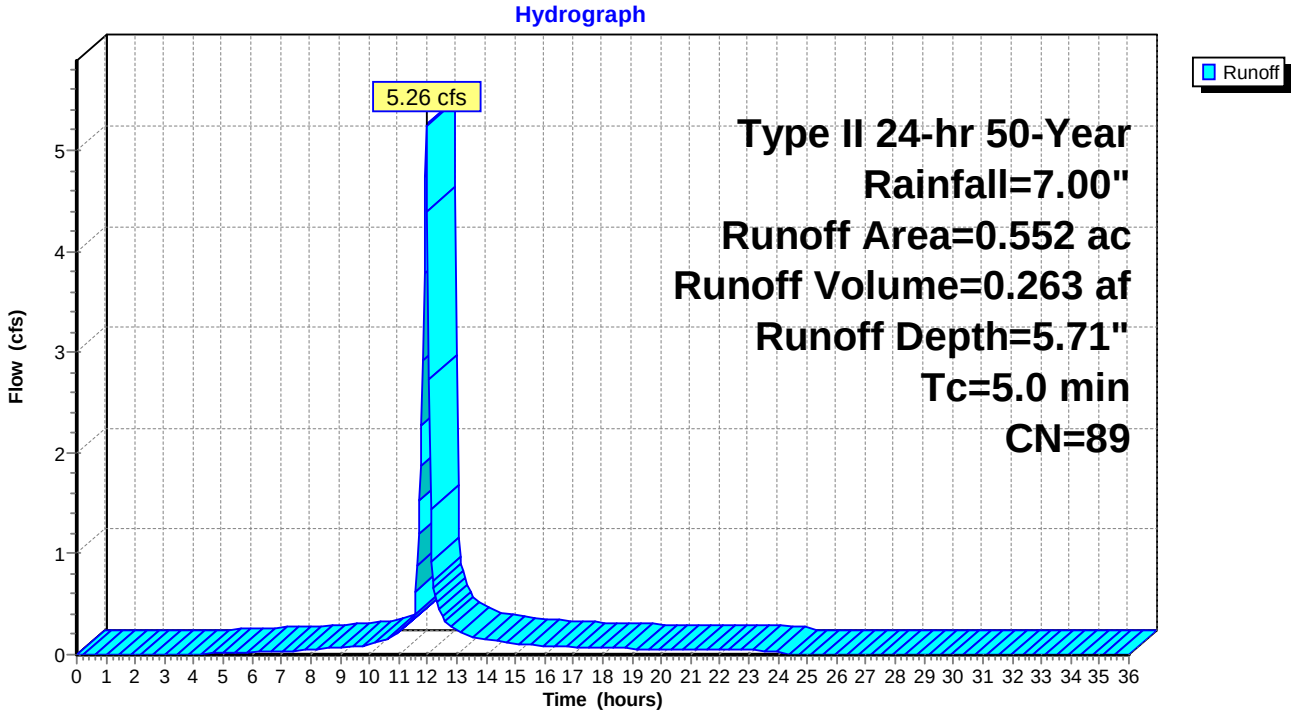
Runoff = 5.26 cfs @ 11.95 hrs, Volume= 0.263 af, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 50-Year Rainfall=7.00"

Area (ac)	CN	Description
0.128	61	>75% Grass cover, Good, HSG B
0.424	98	Paved parking, HSG B
0.552	89	Weighted Average
0.128		23.19% Pervious Area
0.424		76.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 4S: Post Dev East



Hydrograph for Subcatchment 4S: Post Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.09	0.00	0.00
1.60	0.12	0.00	0.00
2.00	0.15	0.00	0.00
2.40	0.19	0.00	0.00
2.80	0.22	0.00	0.00
3.20	0.26	0.00	0.00
3.60	0.30	0.00	0.00
4.00	0.34	0.01	0.01
4.40	0.38	0.01	0.01
4.80	0.42	0.02	0.01
5.20	0.46	0.03	0.02
5.60	0.51	0.05	0.02
6.00	0.56	0.06	0.02
6.40	0.61	0.08	0.03
6.80	0.67	0.11	0.03
7.20	0.72	0.13	0.04
7.60	0.78	0.16	0.04
8.00	0.84	0.19	0.05
8.40	0.91	0.23	0.06
8.80	0.99	0.28	0.07
9.20	1.07	0.33	0.08
9.60	1.16	0.39	0.08
10.00	1.27	0.46	0.10
10.40	1.39	0.55	0.13
10.80	1.55	0.67	0.18
11.20	1.76	0.83	0.26
11.60	2.15	1.15	**0.62**
12.00	4.64	3.43	**4.39**
12.40	5.08	3.84	0.48
12.80	5.31	4.07	0.28
13.20	5.49	4.24	0.22
13.60	5.63	4.37	0.18
14.00	5.74	4.48	0.15
14.40	5.84	4.58	0.13
14.80	5.93	4.67	0.12
15.20	6.02	4.75	0.11
15.60	6.09	4.82	0.10
16.00	6.16	4.89	0.09
16.40	6.22	4.95	0.08
16.80	6.28	5.01	0.08
17.20	6.34	5.07	0.08
17.60	6.40	5.12	0.07
18.00	6.45	5.17	0.07
18.40	6.50	5.22	0.07
18.80	6.54	5.26	0.06
19.20	6.59	5.30	0.06
19.60	6.63	5.34	0.05
20.00	6.66	5.38	0.05
20.40	6.70	5.42	0.05
20.80	6.74	5.45	0.05
21.20	6.77	5.48	0.05
21.60	6.81	5.52	0.05
22.00	6.84	5.55	0.05
22.40	6.87	5.58	0.04
22.80	6.91	5.62	0.04
23.20	6.94	5.65	0.04
23.60	6.97	5.68	0.04
24.00	**7.00**	**5.71**	0.04
24.40	7.00	5.71	0.00
24.80	7.00	5.71	0.00
25.20	7.00	5.71	0.00
25.60	7.00	5.71	0.00
26.00	7.00	5.71	0.00
26.40	7.00	5.71	0.00
26.80	7.00	5.71	0.00
27.20	7.00	5.71	0.00
27.60	7.00	5.71	0.00
28.00	7.00	5.71	0.00
28.40	7.00	5.71	0.00
28.80	7.00	5.71	0.00
29.20	7.00	5.71	0.00
29.60	7.00	5.71	0.00
30.00	7.00	5.71	0.00
30.40	7.00	5.71	0.00
30.80	7.00	5.71	0.00
31.20	7.00	5.71	0.00
31.60	7.00	5.71	0.00
32.00	7.00	5.71	0.00
32.40	7.00	5.71	0.00
32.80	7.00	5.71	0.00
33.20	7.00	5.71	0.00
33.60	7.00	5.71	0.00
34.00	7.00	5.71	0.00
34.40	7.00	5.71	0.00
34.80	7.00	5.71	0.00
35.20	7.00	5.71	0.00
35.60	7.00	5.71	0.00
36.00	7.00	5.71	0.00

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Post Dev West Runoff Area=0.494 ac 82.19% Impervious Runoff Depth=6.73"
Tc=5.0 min CN=91 Runoff=5.41 cfs 0.277 af

Subcatchment 4S: Post Dev East Runoff Area=0.552 ac 76.81% Impervious Runoff Depth=6.49"
Tc=5.0 min CN=89 Runoff=5.93 cfs 0.299 af

Total Runoff Area = 1.046 ac Runoff Volume = 0.576 af Average Runoff Depth = 6.60"
20.65% Pervious = 0.216 ac 79.35% Impervious = 0.830 ac

Summary for Subcatchment 3S: Post Dev West

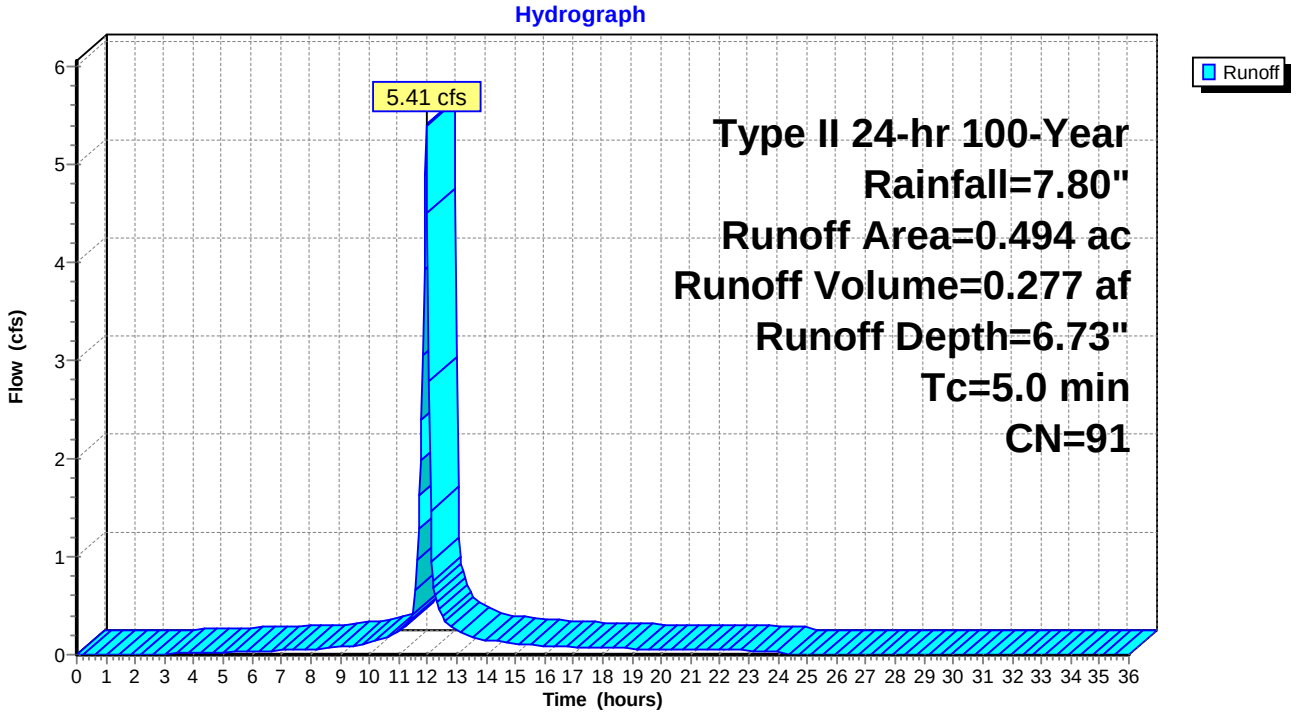
Runoff = 5.41 cfs @ 11.95 hrs, Volume= 0.277 af, Depth= 6.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Year Rainfall=7.80"

Area (ac)	CN	Description
0.088	61	>75% Grass cover, Good, HSG B
0.406	98	Paved parking, HSG B
0.494	91	Weighted Average
0.088		17.81% Pervious Area
0.406		82.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 3S: Post Dev West



Hydrograph for Subcatchment 3S: Post Dev West

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.10	0.00	0.00
1.60	0.13	0.00	0.00
2.00	0.17	0.00	0.00
2.40	0.21	0.00	0.00
2.80	0.25	0.00	0.00
3.20	0.29	0.01	0.01
3.60	0.33	0.02	0.01
4.00	0.37	0.03	0.01
4.40	0.42	0.04	0.02
4.80	0.47	0.06	0.02
5.20	0.52	0.08	0.03
5.60	0.57	0.10	0.03
6.00	0.62	0.13	0.03
6.40	0.68	0.16	0.04
6.80	0.74	0.19	0.04
7.20	0.80	0.23	0.05
7.60	0.87	0.27	0.05
8.00	0.94	0.32	0.06
8.40	1.01	0.37	0.07
8.80	1.10	0.43	0.08
9.20	1.20	0.50	0.09
9.60	1.30	0.58	0.10
10.00	1.41	0.67	0.12
10.40	1.55	0.78	0.15
10.80	1.73	0.93	0.20
11.20	1.96	1.13	0.28
11.60	2.39	1.51	**0.66**
12.00	5.17	4.15	**4.50**
12.40	5.66	4.62	0.48
12.80	5.92	4.88	0.29
13.20	6.11	5.07	0.22
13.60	6.27	5.22	0.18
14.00	6.40	5.35	0.15
14.40	6.51	5.45	0.13
14.80	6.61	5.55	0.12
15.20	6.70	5.65	0.11
15.60	6.79	5.73	0.10
16.00	6.86	5.80	0.09
16.40	6.93	5.87	0.08
16.80	7.00	5.94	0.08
17.20	7.07	6.00	0.08
17.60	7.13	6.06	0.07
18.00	7.18	6.12	0.07
18.40	7.24	6.17	0.07
18.80	7.29	6.22	0.06
19.20	7.34	6.27	0.06
19.60	7.38	6.32	0.05
20.00	7.43	6.36	0.05
20.40	7.47	6.40	0.05
20.80	7.51	6.44	0.05
21.20	7.54	6.48	0.05
21.60	7.58	6.51	0.05
22.00	7.62	6.55	0.05
22.40	7.66	6.59	0.05
22.80	7.69	6.62	0.04
23.20	7.73	6.66	0.04
23.60	7.77	6.69	0.04
24.00	**7.80**	**6.73**	0.04
24.40	7.80	6.73	0.00
24.80	7.80	6.73	0.00
25.20	7.80	6.73	0.00
25.60	7.80	6.73	0.00
26.00	7.80	6.73	0.00
26.40	7.80	6.73	0.00
26.80	7.80	6.73	0.00
27.20	7.80	6.73	0.00
27.60	7.80	6.73	0.00
28.00	7.80	6.73	0.00
28.40	7.80	6.73	0.00
28.80	7.80	6.73	0.00
29.20	7.80	6.73	0.00
29.60	7.80	6.73	0.00
30.00	7.80	6.73	0.00
30.40	7.80	6.73	0.00
30.80	7.80	6.73	0.00
31.20	7.80	6.73	0.00
31.60	7.80	6.73	0.00
32.00	7.80	6.73	0.00
32.40	7.80	6.73	0.00
32.80	7.80	6.73	0.00
33.20	7.80	6.73	0.00
33.60	7.80	6.73	0.00
34.00	7.80	6.73	0.00
34.40	7.80	6.73	0.00
34.80	7.80	6.73	0.00
35.20	7.80	6.73	0.00
35.60	7.80	6.73	0.00
36.00	7.80	6.73	0.00

Summary for Subcatchment 4S: Post Dev East

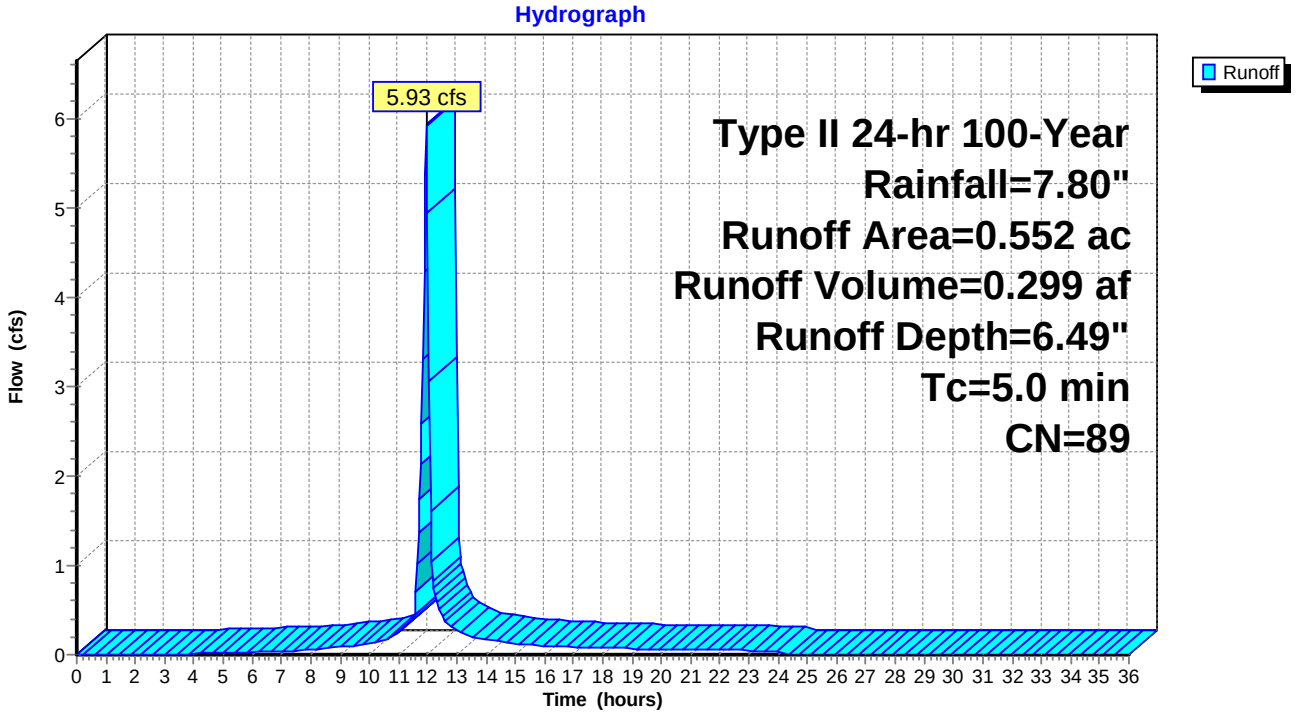
Runoff = 5.93 cfs @ 11.95 hrs, Volume= 0.299 af, Depth= 6.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type II 24-hr 100-Year Rainfall=7.80"

Area (ac)	CN	Description
0.128	61	>75% Grass cover, Good, HSG B
0.424	98	Paved parking, HSG B
0.552	89	Weighted Average
0.128		23.19% Pervious Area
0.424		76.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Building and pavement**

Subcatchment 4S: Post Dev East



Hydrograph for Subcatchment 4S: Post Dev East

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.40	0.03	0.00	0.00
0.80	0.06	0.00	0.00
1.20	0.10	0.00	0.00
1.60	0.13	0.00	0.00
2.00	0.17	0.00	0.00
2.40	0.21	0.00	0.00
2.80	0.25	0.00	0.00
3.20	0.29	0.00	0.00
3.60	0.33	0.01	0.01
4.00	0.37	0.01	0.01
4.40	0.42	0.02	0.01
4.80	0.47	0.03	0.02
5.20	0.52	0.05	0.02
5.60	0.57	0.07	0.03
6.00	0.62	0.09	0.03
6.40	0.68	0.11	0.04
6.80	0.74	0.14	0.04
7.20	0.80	0.17	0.05
7.60	0.87	0.21	0.05
8.00	0.94	0.25	0.06
8.40	1.01	0.29	0.07
8.80	1.10	0.35	0.08
9.20	1.20	0.41	0.09
9.60	1.30	0.48	0.10
10.00	1.41	0.56	0.12
10.40	1.55	0.67	0.16
10.80	1.73	0.81	0.21
11.20	1.96	1.00	0.30
11.60	2.39	1.36	**0.71**
12.00	5.17	3.94	**4.95**
12.40	5.66	4.40	0.53
12.80	5.92	4.66	0.32
13.20	6.11	4.84	0.24
13.60	6.27	5.00	0.20
14.00	6.40	5.12	0.16
14.40	6.51	5.23	0.15
14.80	6.61	5.33	0.13
15.20	6.70	5.42	0.12
15.60	6.79	5.50	0.11
16.00	6.86	5.58	0.10
16.40	6.93	5.64	0.09
16.80	7.00	5.71	0.09
17.20	7.07	5.77	0.09
17.60	7.13	5.83	0.08
18.00	7.18	5.89	0.08
18.40	7.24	5.94	0.07
18.80	7.29	5.99	0.07
19.20	7.34	6.04	0.06
19.60	7.38	6.08	0.06
20.00	7.43	6.12	0.06
20.40	7.47	6.16	0.05
20.80	7.51	6.20	0.05
21.20	7.54	6.24	0.05
21.60	7.58	6.28	0.05
22.00	7.62	6.31	0.05
22.40	7.66	6.35	0.05
22.80	7.69	6.39	0.05
23.20	7.73	6.42	0.05
23.60	7.77	6.46	0.05
24.00	**7.80**	**6.49**	0.05
24.40	7.80	6.49	0.00
24.80	7.80	6.49	0.00
25.20	7.80	6.49	0.00
25.60	7.80	6.49	0.00
26.00	7.80	6.49	0.00
26.40	7.80	6.49	0.00
26.80	7.80	6.49	0.00
27.20	7.80	6.49	0.00
27.60	7.80	6.49	0.00
28.00	7.80	6.49	0.00
28.40	7.80	6.49	0.00
28.80	7.80	6.49	0.00
29.20	7.80	6.49	0.00
29.60	7.80	6.49	0.00
30.00	7.80	6.49	0.00
30.40	7.80	6.49	0.00
30.80	7.80	6.49	0.00
31.20	7.80	6.49	0.00
31.60	7.80	6.49	0.00
32.00	7.80	6.49	0.00
32.40	7.80	6.49	0.00
32.80	7.80	6.49	0.00
33.20	7.80	6.49	0.00
33.60	7.80	6.49	0.00
34.00	7.80	6.49	0.00
34.40	7.80	6.49	0.00
34.80	7.80	6.49	0.00
35.20	7.80	6.49	0.00
35.60	7.80	6.49	0.00
36.00	7.80	6.49	0.00

Operations & Maintenance Manual

for the redeveloped
McDonald's Restaurant
1050 N. Broadway
Wichita, KS

Design Firm: Ozark Civil Engineering, Inc.
13200 Metcalf Ave., Suite 260
Overland Park, KS 66213
913-310-0470

Date: July 18, 2011

Purpose: Stormwater Department
Water Quality Guideline Submittal

The purposes of this manual is to provide guidelines for long term maintenance of best management practices development and constructed at the proposed McDonald's restaurant at 1050 N. Broadway in Wichita, KS.

Existing Conditions

The existing store consist of an operating restaurant and associated asphalt parking. The site is a little over 90% impervious with some landscape islands and side grass areas. All of the stormwater from the site is overland flow from the parking lot and into the public right of way storm systems.

Proposed Development

The proposed redevelopment of the restaurant and parking areas will bring the facilities to new current standards. With the construction of the new building, the parking areas will be modified to meet the new double drive through lanes and traffic configuration. The modifications create additional pervious areas and reduced the sites direct runoff rate. No detention system is required.

The water quality requirements adopted were addressed by reducing the impervious areas by 20% from the original site conditions. To achieve the overall reduction, some

areas of pervious pavers are being proposed. See the attached site plan for the location of the pavers in remote parking spaces. Below is a summary of the impervious area reductions:

	Impervious Area (SF)	80% (20% reduction) (SF)
Existing Site	39,665	31,732
Proposed Site	31,648	31,648

The proposed site reductions includes the use of 1,615 SF of pervious pavers to be located in 10 parking spaces on the east side of the project. The subgrade directly below the pavement is made of fat clays. A vertical pipe filled with open graded stone will be excavated to the sand layer that exists approximately 8 feet below the existing grades. This will allow for the water captured to percolate into the existing sand layers and minimize freezing conditions.

The open grades stone that is provided in between the pavers and directly below the pavers will provide an infiltration rate of 900 in/hr. The system will then drain into the vertical pipe that will be excavated to the silty sand and sand layer approximately 8 feet below the surface elevation. These layers will provide infiltration rate of approximately 2.1 in/hr. The water quality flow in the paver areas will be about 0.02 cfs for the .037 acres. The sandy soils will allow about 2.12 cfs/ac of infiltration which will far exceed this storm requirements. The vertical 12 inch pipe will flow over 35 cfs. The larger storm events will infiltrate the pervious pavers and will begin to fill the 1,297 cf of available storage in the 12" vertical pipe and the open graded subgrade. The 100 year storm event will require 827 cf of storage.

Maintenance of the pervious pavers will be the gentle sweeping of debris from the surface during normally scheduled parking lot cleanings. No vacuum source should be used on the pavers unless the removal of clogged drainage holes is necessary. Ponding water or slow seepage will indicated that sediment build up in the seep holes needs to be addressed by removal and replacement of the open graded stone. See the City's guidelines for maintenance of pervious pavers and a checklist to utilize.

Non-Structural BMP's	(1) Description of the Practice	(2) Performance and Management Requirements	(3) Inspection Frequency	(4) Inspection Personnel Qualification Requirement	(5) Inspection Action Required	(6) Submittal Requirements and Records Retention
Permanent Planting	Controls erosion by physically protecting bare soils from raindrop impact, overland flow, and wind. Plant root systems bind soil particles while the surface vegetation reduces the velocity of overland flow allowing suspended particles to be filtered out. See landscape plan for locations.	Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids (TSS) from stormwater runoff, with an average removal of 90 percent (USEPA, 1993)	Spring and Fall Inspections for dead or dying vegetation.	Must be thoroughly experienced in stormwater system maintenance and inspections and certified by the state in aquatic herbicide application. Must provide labor, tools, equipment and insurance and all other items needed to provide these services	Vegetation Management, Replanting and disposal of dead vegetation.	Inspections to include an assessment of the current condition, recommendation service (routine specific or non-routine) and suggested adjustments in frequency of inspection. Minimum records include date inspection or service was performed, detailed description of work, before and after photographic documentation.
Permanent Planting	Controls erosion by physically protecting bare soils from raindrop impact, overland flow, and wind. Plant root systems bind soil particles while the surface vegetation reduces the velocity of overland flow allowing suspended particles to be filtered out. See	Perennial vegetative cover from seeding has been shown to remove between 50 and 100 percent of total suspended solids (TSS) from stormwater runoff, with an average removal of 90 percent (USEPA, 1993)	Spring and Fall inspections for dead or dying vegetation.	Must be thoroughly experienced in stormwater system maintenance and inspections and certified by the state in aquatic herbicide application. Must provide labor, tools, equipment and insurance and all other items needed to provide these	Vegetation Management, Replanting and disposal of dead vegetation	Inspections to include an assessment of the current condition, recommended service (routine, specific or non-routine) and suggested adjustments in frequency of inspection. Minimum records include date inspection or service was performed, detailed description of work, before and after photographic documentation.

	landscape plan for locations.			services.		
Mulching	A temporary erosion control practice in which materials such as straw, hay, wood chips, wood fibers, or gravel are placed on exposed or recently planted soil surfaces. See landscape plan for locations	Soil loss reduction for different mulches ranges from 53 to 99 percent. Water velocity reductions range from 24 to 78 percent. Mulches must be anchored (such as organic binders) to resist wind and water displacement. Mulch binders should be applied at rates recommended by the manufacturers. Oil based binders are not permitted to be applied on Lowe's projects. Mulch should be reapplied in spring.	Periodically as conditions require (after wind and rain storms). Routine inspections should occur in Spring.	Must be thoroughly experienced in stormwater system maintenance and inspections and certified by the state in aquatic herbicide application. Must provide labor, tools, equipment and insurance and all other items needed to provide these services.	Erosion, loosened or removed material, re-mulch every spring as necessary to maintain coverage or more frequently as conditions require.	Inspections to include an assessment of the current condition, recommended service (routine, specific or non-routine) and suggested adjustments in frequency of inspection. Minimum records include date inspection or service was performed, detailed description of work, before and after photographic documentation.
Sod	Erosion control practice that involves laying a continuous cover of grass sod on exposed soils. See landscape plan for locations.	Watering is very important to maintain adequate moisture in the root zone and prevent dormancy. Maintenance activities should be carried out after vegetation is established. Maintenance includes mowing, litter removal, and spot	Frequently during first few weeks after installation, until sod is fully rooted. Annual inspections for dead or dying areas.	Must be thoroughly experienced in stormwater system maintenance and inspections and certified by the state in aquatic herbicide application. Must provide labor, tools, equipment and insurance	Vegetation management.	Inspections to include an assessment of the current condition, recommended service (routine, specific or non-routine) and suggested adjustments in frequency of inspection. Minimum records include date inspection or service was performed, detailed description of

		vegetation repair. Sod has been shown to remove up to 99 percent of total suspended solids (TSS).		and all other items needed to provide these services.		work, before and after photographic documentation.
Structural BMP's	(1) Description of the Practice	(2) Performance and Management Requirements	(3) Inspection Frequency	(4) Inspection Personnel Qualification Requirement	(5) Inspection Action Required	(6) Submittal Requirements And Records Retention
Concrete Swales	Used to convey stormwater runoff through a stable channel.	Maintenance activities should be carried out include litter removal, sediment sweeping.	Weekly with parking lot sweeping	Must provide labor, tools, equipment and insurance and all other items needed to provide these services.	Sediment accumulation, debris removal.	Inspections to include an assessment of the current condition, recommended service (routine, specific or non-routine).

Pervious Pavers	Used to allow water drainage into subgrade and percolate into sandy soils.	Routine parking lot sweeping with light brushing and no vacuum that will remove open graded areas. Removal of debris and check for clogged areas.	Weekly with parking lot sweeping	Must provide labor, tools, equipment and insurance and all other items needed to provide these services.	Sweeping and debris removal as necessary. If clogged weep holes occurs. Removal of open stone with a vacuum device and replacement of stone with similar specifications.	Inspections to include an assessment of the current condition, recommended service (routine, specific or non-routine).

(1) Describe BMP practice in narrative form by type and provide number of items/locations.
(2) Provide performance and design criteria such as specifications, expected life span and general nature of maintenance requirements. Identify the responsible party for providing inspections.
(3) List inspection frequency needed such as after each storm, weekly, monthly, quarterly, semi-annual, annual, or long term. Distinguish between required and desired inspections.
(4) List required qualifications of inspection personnel
(5) Describe specific inspection action required such as excess sediment, structural/mechanical, erosion, vegetation management, soil testing for fertility, etc…
(6) Indicate if and when inspection reports are to be submitted to local jurisdiction and if time period, if any, records are to be retained.

McDONALDS
1050 N. BROADWAY
WICHITA, KS
LOT 1, BLOCK 1
McDONALDS 3RD ADDITION

DATE OF O&M PLAN: JULY 20, 2011

DATE OF COMPLETION: OCT. 28, 2011

PREPARED BY: OZARK CIVIL ENGINEERING

13200 METCALF AVE., STE 260

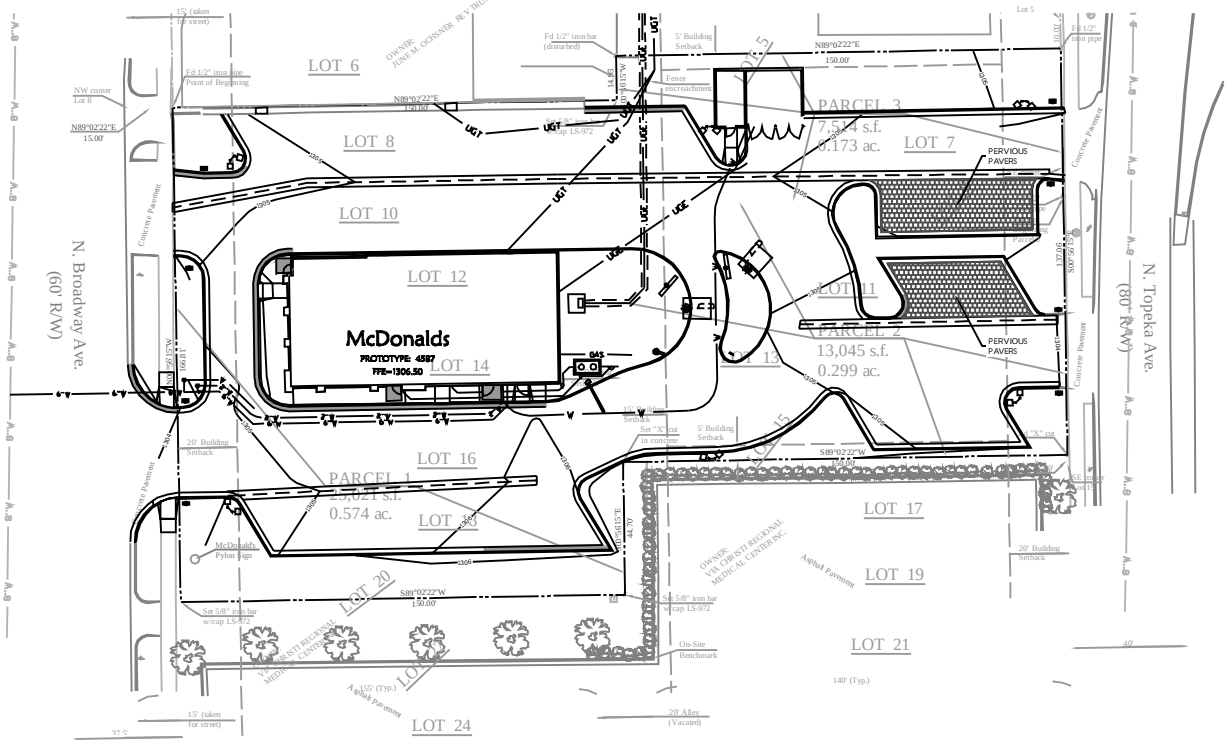
OVERLAND PARK, KS 66213

913-310-4070

811 Know what's below. Call before you dig.

SCALE IN FEET

INSPECTION ACTIVITIES	SUGGESTED SCHEDULE
• ENSURE THAT THE POROUS PAVEMENT SURFACE IS FREE OF SEDIMENT AND DEBRIS (E.G., MULCH, LEAVES, TRASH, ETC.). • ENSURE THAT THE CONTRIBUTING AREA UPSTREAM OF THE POROUS PAVEMENT SURFACE IS FREE OF SEDIMENT AND DEBRIS. • CHECK TO MAKE SURE THAT THE POROUS PAVEMENT DEWATERS BETWEEN STORMS. • INSPECT THE SURFACE FOR STRUCTURAL INTEGRITY. INSPECT FOR EVIDENCE OF DETERIORATION OR SPALLING.	• AS NEEDED • AS NEEDED • MONTHLY • ANNUALLY
MAINTENANCE ACTIVITIES	**SUGGESTED SCHEDULE**
• ENSURE THAT CONTRIBUTING AREA AND POROUS PAVEMENT SURFACE ARE CLEAR OF DEBRIS (E.G., MULCH, LEAVES, TRASH, ETC.). • ENSURE THAT THE CONTRIBUTING AND ADJACENT AREA IS STABILIZED AND MOWED, WITH CLIPPINGS REMOVED. • VACUUM SWEEP POROUS PAVEMENT SURFACE TO KEEP FREE OF SEDIMENT. • REPLACE THE POROUS PAVEMENT, INCLUDING THE TOP AND BASE COURSE, AS NEEDED.	• AS NEEDED, BASED ON INSPECTION • AS NEEDED, BASED ON INSPECTION • TYPICALLY THREE TO FOUR TIMES A YEAR • UPON FAILURE



STREET ADDRESS	1050 N. BROADWAY
CITY	WICHITA
STATE	KS
COUNTY	SEDGWICK
REGIONAL DWG. NO	15-0009

INSPECTION AND MAINTENANCE AND GUIDANCE SHEET

Ozark Civil Engineering Inc. Bentonville • Kansas City

McDonald's

KANSAS CITY OFFICE

STATUS	DATE	BY
PRELIMINARY:	-/-/--	-
PLAN CHECKED:		-
AS-BUILT:	-	-
JOB NO:	08-0844	

1-1

BY	DESCRIPTION	DATE

C:\My Box Files\McDonald's Projects\08-0844 Wichita KS McD Broadway Ave and Topeka Ave\drawings\Project\2 Final\08-0844DN2.dwg Jul 21, 2011 - 8:37AM

Summary for Subcatchment 1S: Drainage Area

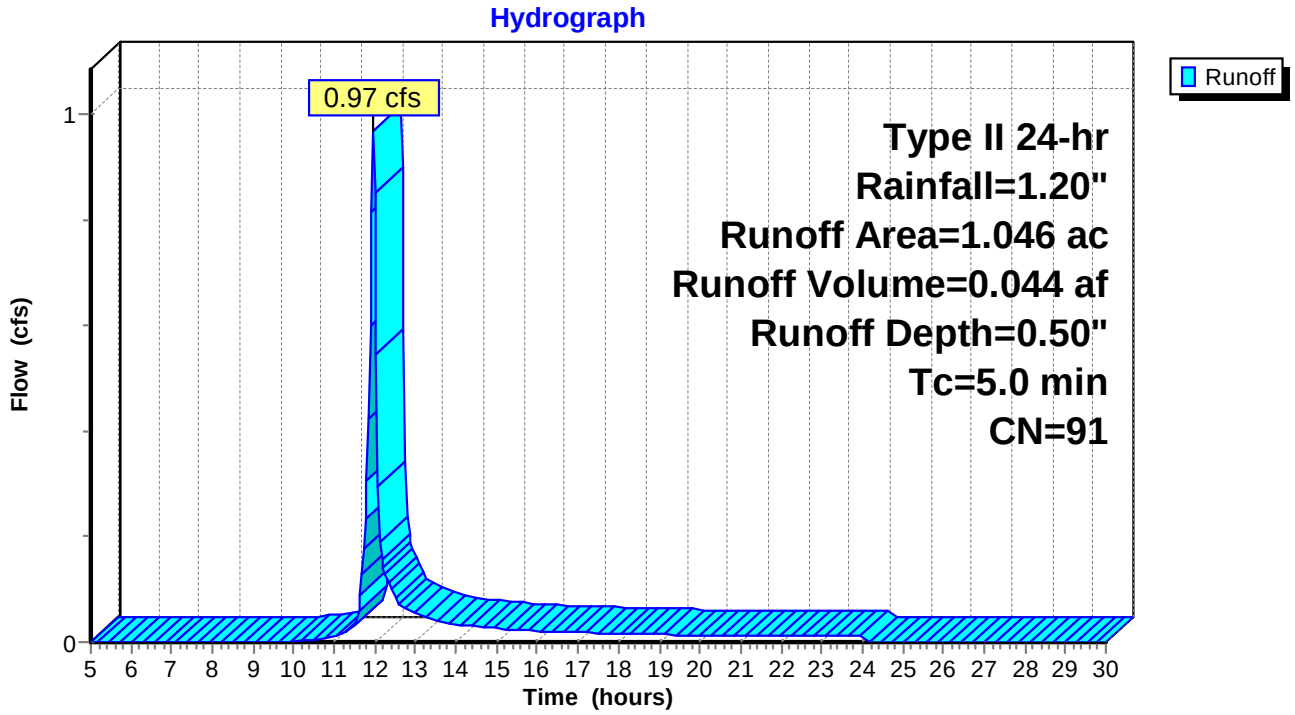
Runoff = 0.97 cfs @ 11.96 hrs, Volume= 0.044 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.04 hrs
Type II 24-hr Rainfall=1.20"

Area (ac)	CN	Description
0.850	98	Paved parking, HSG B
0.196	61	>75% Grass cover, Good, HSG B
1.046	91	Weighted Average
0.196		18.74% Pervious Area
0.850		81.26% Impervious Area

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

Subcatchment 1S: Drainage Area



POST CONSTRUCTION BMP ESTIMATED ANNUAL MAINTENANCE COST

PROJECT McDonald's (1050 N. Broadway)

LOCATION Wichita, KS

DATE 7/18/2011

Item		Estimated Monthly Cost		Estimated Annual Cost
Landscaping, mulch, grass	$	150.00	$	1,800.00
Parking lot sweeping	$	50.00	$	600.00
Pervious Pavers	$	50.00	$	600.00
Trash removal	$	100.00	$	1,200.00
Total	**$**	**350.00**	**$**	**4,200.00**

Wichita/Sedgwick County
Stormwater Facility Inspection & Maintenance Guidance
Porous Pavement Areas

Regular inspection and maintenance is critical to the effective operation of this stormwater management facility so that it can function as designed. In the City of Wichita and Sedgwick County, local regulations (City of Wichita Code Chapter 16.32 and Sedgwick County Resolution 196.10) require that property owners maintain all stormwater facilities on their properties to ensure they are fully functioning control stormwater runoff, and to document facility inspections and maintenance activities. This documentation must be kept by the property owner and must be made available to Stormwater Management staff upon their request.

This page provides guidance on inspection and maintenance activities that must be performed for porous pavement areas. Some facilities may have more, or less, frequent maintenance needs, depending upon a variety of factors including the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes in the land (e.g., development, landscaping, etc.) that drains to the facility.

Inspection Activities	**Suggested Schedule**
• **Ensure that the porous pavement surface is free of sediment and debris (e.g., mulch, leaves, trash, etc.).** • **Ensure that the contributing area upstream of the porous pavement surface is free of sediment and debris.**	**As needed**
• **Check to make sure that the porous pavement dewaters between storms.**	**Monthly**
• **Inspect the surface for structural integrity. Inspect for evidence of deterioration or spalling.**	**Annually**
Maintenance Activities	**Suggested Schedule**
• **Ensure that contributing area and porous pavement surface are clear of debris (e.g., mulch, leaves, trash, etc.).** • **Ensure that the contributing and adjacent area is stabilized and mowed, with clippings removed.**	**As needed, based on inspection**
• **Vacuum sweep porous pavement surface to keep free of sediment.**	**Typically three to four times a year**
• **Replace the porous pavement, including the top and base course, as needed.**	**Upon failure**

The inspection checklist that is presented on the next page is provided to guide and document inspection and maintenance activities. Please use this checklist or other form(s) of maintenance documentation when and where deemed necessary in order to ensure the long-term proper operation of the stormwater management facility.

For more information on the maintenance of your stormwater facility, please contact:
City of Wichita Stormwater Management, 455 N. Main 8th floor Wichita KS. 67202, (316) 268-4498
or Sedgwick County Stormwater Management, 1144 S. Seneca Wichita KS. 67213, (316) 383-7901

Wichita/Sedgwick County
Porous Pavement Area Inspection Checklist

Project Name: _____ Project #:_____

BMP Name/ID (as shown on the O&M Plan):_____

Refer to the Operations & Maintenance Plan for this property to get the information requested in this box. The Operations and Maintenance Plan for this property is recorded with the Sedgwick County Register of Deeds.

Property Owner Name: _____

Property Address: _____

Owner Phone #:_____ Owner Email Address:_____

Owner Change since last inspection? Y N

Inspection Date/Time:_____

Weather and Site Conditions (last rainfall date, dry/wet soil, etc.):_____

_____

Inspection Items	Condition*	Comments/Corrective Action
***Note - Condition should be marked as Satisfactory (S) or Unsatisfactory (U). An explanation of corrective actions must be provided for all items marked as Unsatisfactory. The completion date of any corrective actions taken must also be documented.**		
Inspect the porous pavement area.		
1. Are there signs that the pavement area is clogged (e.g., standing water)? **Yes = Unsatisfactory**		
2. Is there debris (mulch, trash) accumulation? **Yes = Unsatisfactory**		
3. Is there sediment accumulation? **Yes = Unsatisfactory**		
4. Is there standing water? **Yes = Unsatisfactory**		
5. Are there signs of erosion (washing away of soil) from underdrain? **Yes = Unsatisfactory**		
6. Is there exposed soil in the areas that drain to, or the areas adjacent to, the porous pavement area? **Yes = Unsatisfactory**		

Wichita/Sedgwick County
Porous Pavement Area Inspection Checklist

Inspection Items	Condition*	Comments/Corrective Action
7. Does stormwater runoff discharge from pavement area within 24 to 48 hours after the end of a storm event? **Yes = Satisfactory**		
8. Other (describe)?		
9. Other (describe)?		
Identify any potential hazards to humans or the environment.		
10. Have there been complaints from residents? **Yes = Unsatisfactory**		
11. Are there any other public hazards that should be noted? **Yes = Unsatisfactory**		

By signing my name below, I certify that the information submitted in this document (and all attachments) is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are penalties for knowingly submitting false information, including the possibility of regulatory violations and associated fines.

Inspected by (Name):_____

Inspected by (Signature):_____