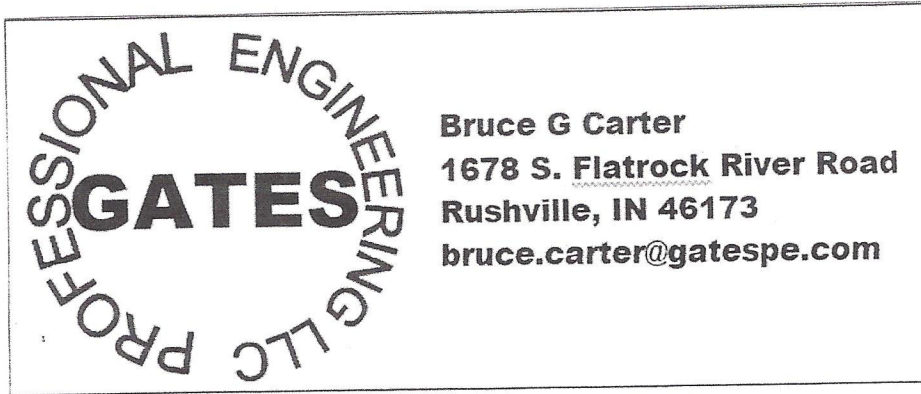


DRAINAGE REPORT

ROYAL LIMO

2938 S. RONALD REAGAN PARKWAY
INDIANAPOLIS, IN 46231



July 29, 2019

Drainage Report
 Royal Limo
 2938 S. Ronald Reagan Parkway
 Indianapolis, IN 46231

Project Scope:

The existing site consists of a single building and two small sheds with surrounding concrete walk and asphalt pavement. The existing paved parking lot drains to an existing swale along the south side of the site and discharges to the existing woods at the southwest corner of the site.

In the proposed condition, a new building of 4,968 square feet and pavement of 7,981 square feet (totaling 12,949 square feet or 0.30 acres) are being built on the site. The drainage patterns will remain the same with the proposed drainage entering the southern swale and discharging to the southwest corner of the site. It is my professional opinion that the small increase of impervious area to the site (less than 0.5 acre) and small increase of discharge from the site is negligible considering the entire 2.87 acre site. The area southwest of the site is wooded with no structures and slightly beyond that is a new detention pond. Below is a summary of the existing and proposed discharge rates for the site.

Design Parameters:

The project is designed utilizing the Hendricks County Stormwater Technical Standards. To carry out the design, the HydroCAD V10.00 was used. The 10 and 100 years storms were analyzed for this design/drainage report.

Analysis:

Refer to the table below for the stormwater release rates from the dry detention.

Storm Event	Existing Release Rates (cfs)	Proposed Release Rates (cfs)	Percentage Increased
10-Year	14.37	16.27	13.2%
100-Year	27.65	29.86	8.0%

**PROFESSIONAL ENGINEERING
GATES
PROFESSIONAL ENGINEERING LLC**

Bruce G Carter
1678 S. Flatrock River Road
Rushville, IN 46173
bruce.carter@gatespe.com

Soil Type Discussion:

From the Soil Maps, Brookston silty clay loam, Crosby silt loam, Miami clay loam, and Shoals silt loam exist on the site. This soil type was considered while modeling the project and the Web Soil Survey can be found in the Appendix of this report.

Flood Plain Discussion:

According to FEMA Flood Map Panel 18063C0277D, dated September 25, 2009, the site of the project is located outside of the Special Flood Hazard Zone "X".

Summary:

The proposed project is in accordance with the Hendricks County Stormwater Technical Standards and provides no impact to the downstream properties. We are seeking approval of this drainage report to further this project.

Should you have any questions, please contact me at 765.932.3237.

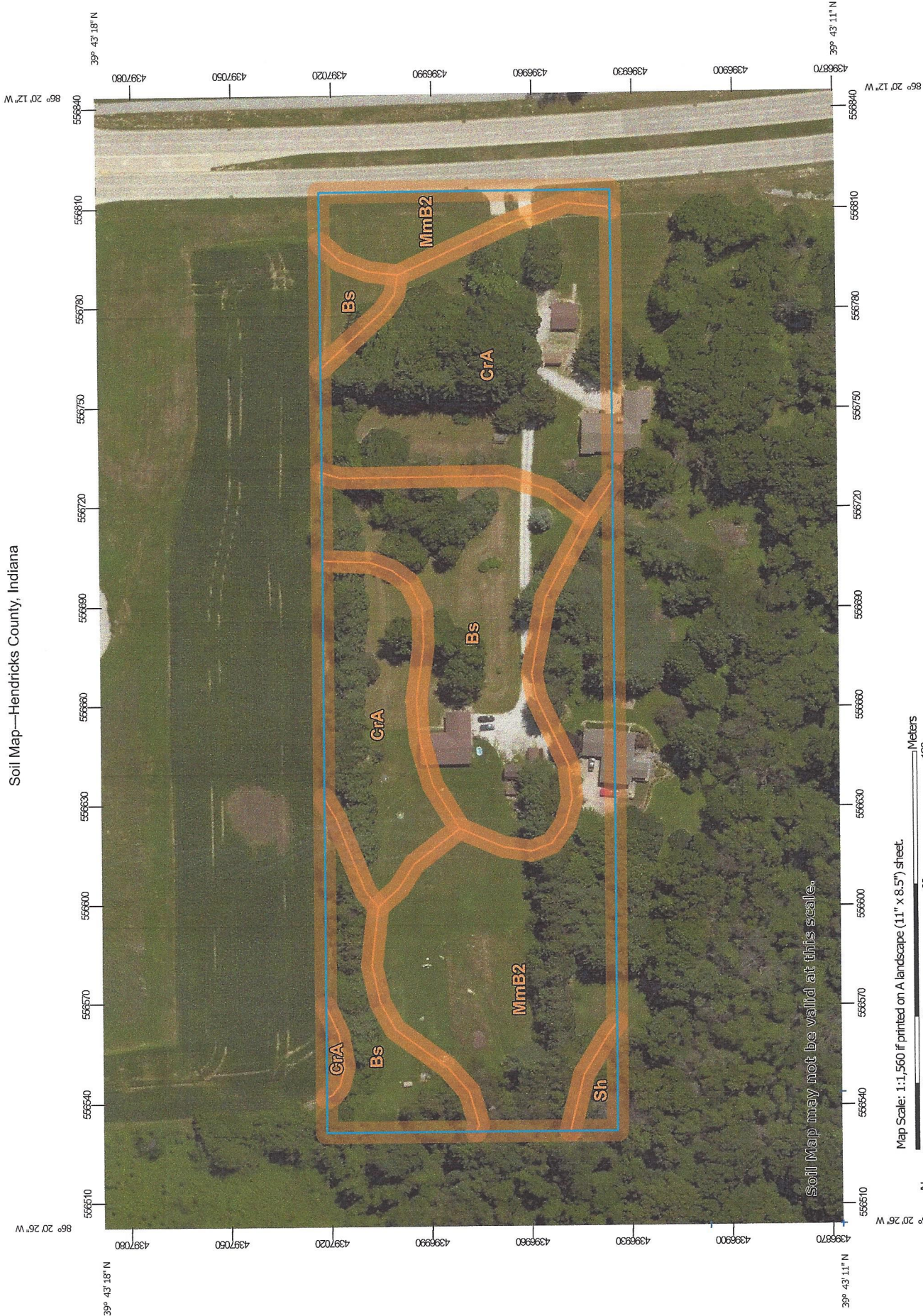
Sincerely



Bruce G. Carter PE, IN 10000464

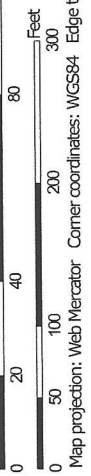


Soil Map—Hendricks County, Indiana



Soil Map may not be valid at this scale.

Map Scale: 1:1,560 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84



Natural Resources
Conservation Service

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Hendricks County, Indiana
 Survey Area Data: Version 22, Sep 7, 2018

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

Date(s) aerial images were photographed: Jun 27, 2014—Aug 28, 2014

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

MAP LEGEND

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bs	Brookston silty clay loam, 0 to 2 percent slopes	1.8	30.1%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	2.2	35.6%
MmB2	Miami silt loam, 2 to 6 percent slopes, eroded	2.0	33.0%
Sh	Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	0.1	1.2%
Totals for Area of Interest		6.1	100.0%

National Flood Hazard Layer FIRMette



39°43'28.16"N

86°20'39.50"W



86°20'2.04"W

USGS The National Map: ©Orthoimagery. Data refreshed April, 2019.

39°43'0.49"N

1:6,000

Feet

2,000

1,500

1,000

500

0

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS



OTHER AREAS OF FLOOD HAZARD



OTHER AREAS



GENERAL STRUCTURES



CROSS SECTIONS WITH 1% ANNUAL CHANCE WATER SURFACE ELEVATION



OTHER FEATURES



MAP PANELS



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



OTHER FEATURES



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/12/2019 at 10:18:25 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



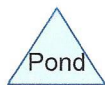
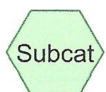
6

Events for Subcatchment 1S: Existing

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
10-YR.0.5 HR	1.64	0.00	0.000	0.00
10-YR.12HR	3.61	14.37	0.411	1.72
10-YR.1HR	2.09	0.00	0.000	0.00
10-YR.24HR	4.18	11.28	0.484	2.02
10-YR.2HR	2.46	0.00	0.000	0.00
10-YR.3HR	2.63	0.00	0.000	0.00
10-YR.6HR	3.15	0.38	0.031	0.13
100-YR.0.5HR	2.33	0.00	0.000	0.00
100-YR.12HR	5.50	27.65	0.781	3.26
100-YR.1HR	3.11	0.00	0.000	0.00
100-YR.24HR	6.05	19.34	0.852	3.56
100-YR.2HR	3.78	0.00	0.000	0.00
100-YR.3HR	4.11	0.00	0.000	0.00
100-YR.6HR	4.96	0.68	0.055	0.23



Existing



Routing Diagram for Royal Limo
Prepared by Gates Professional Engineering, LLC, Printed 7/29/2019
HydroCAD® 10.00-22 s/n 00818 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.137	74	>75% Grass cover, Good, HSG C (1S)
0.683	98	Paved parking, HSG C (1S)
0.051	98	Roofs, HSG C (1S)

Royal Limo

Prepared by Gates Professional Engineering, LLC
HydroCAD® 10.00-22 s/n 00818 © 2018 HydroCAD Software Solutions LLC

Printed 7/29/2019
Page 3

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.870	HSG C	1S
0.000	HSG D	
0.000	Other	

Summary for Subcatchment 1S: Existing

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

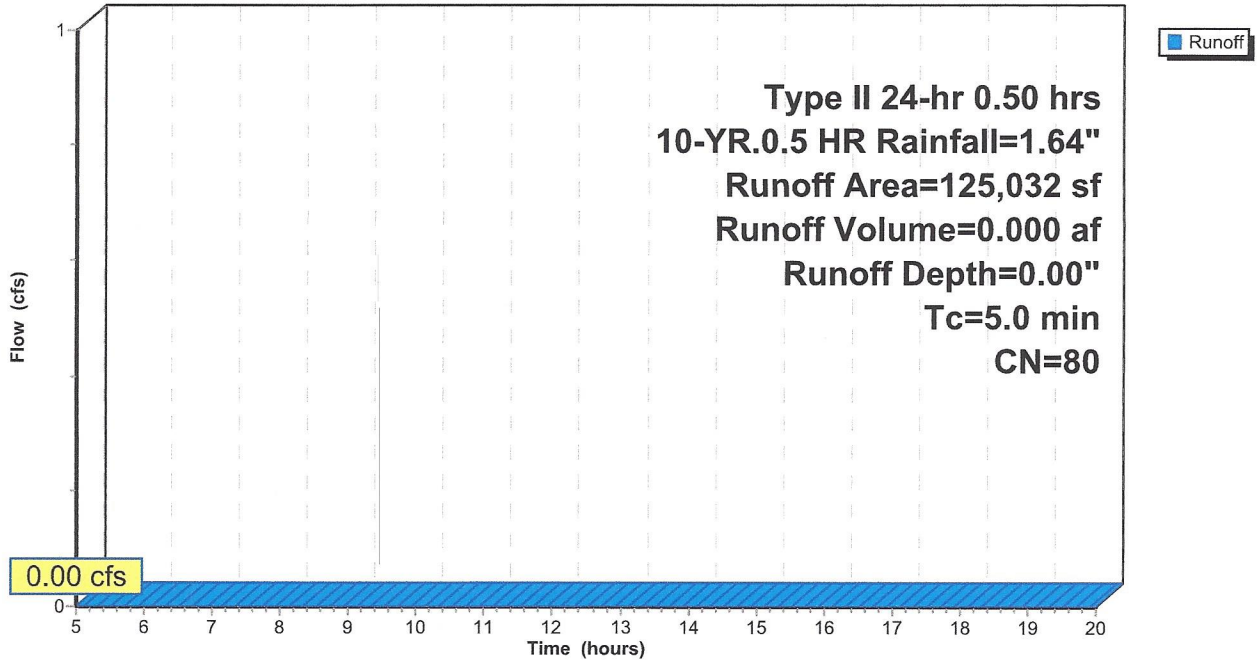
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 0.50 hrs 10-YR.0.5 HR Rainfall=1.64"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing

Hydrograph



Summary for Subcatchment 1S: Existing

Runoff = 14.37 cfs @ 6.01 hrs, Volume= 0.411 af, Depth> 1.72"

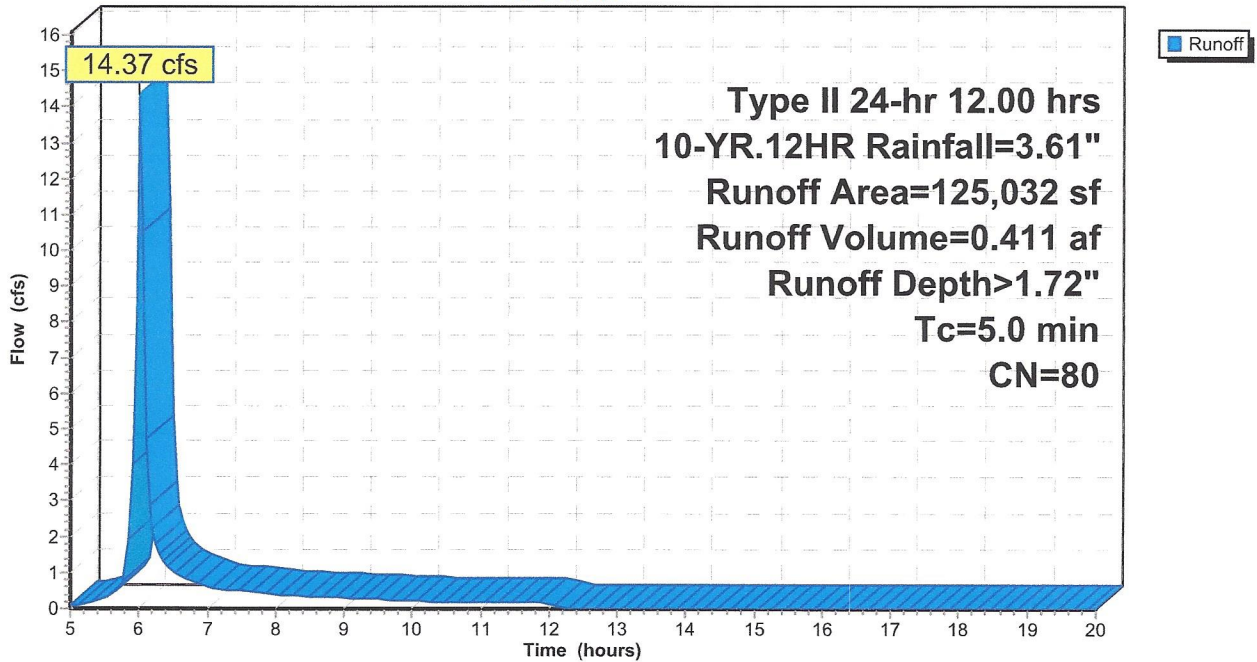
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 12.00 hrs 10-YR.12HR Rainfall=3.61"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing

Hydrograph



Summary for Subcatchment 1S: Existing

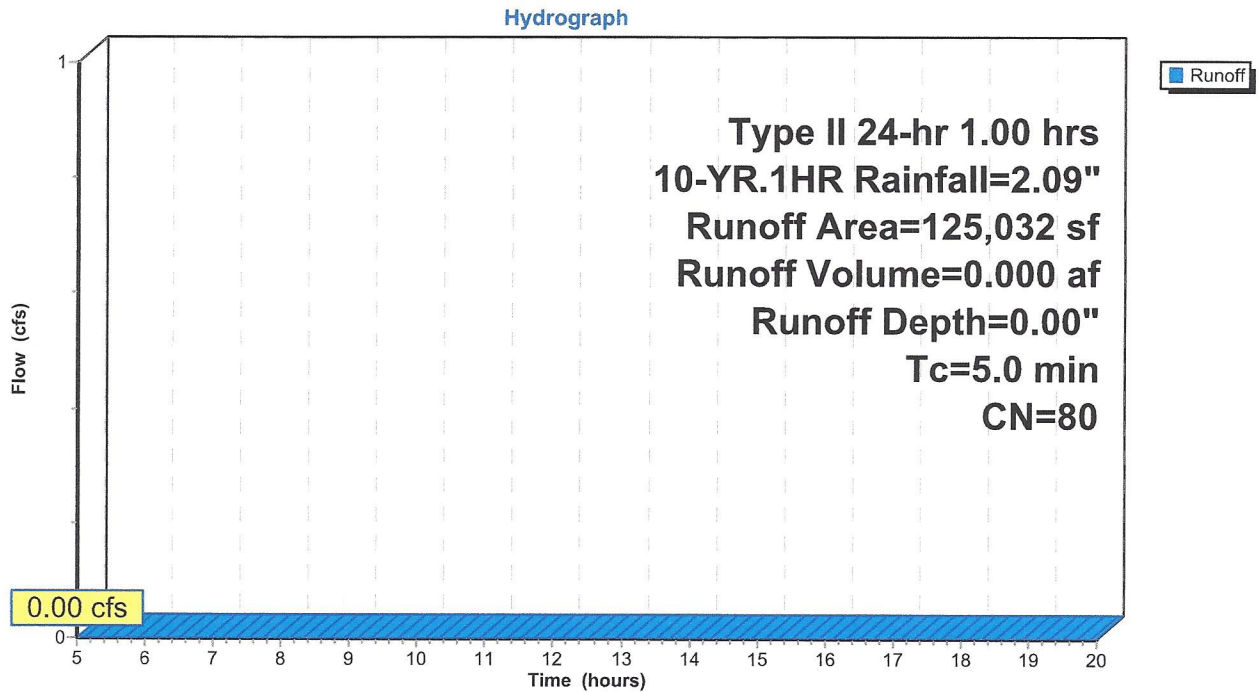
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1.00 hrs 10-YR.1HR Rainfall=2.09"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

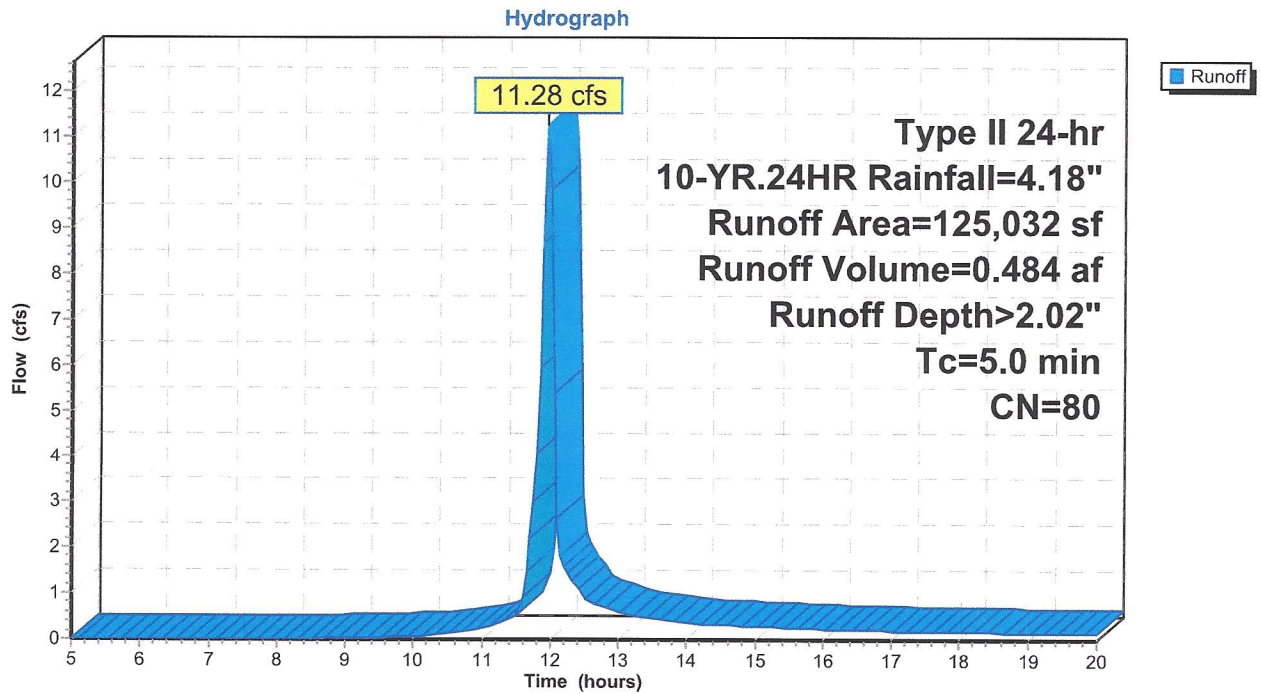
Runoff = 11.28 cfs @ 11.96 hrs, Volume= 0.484 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-YR.24HR Rainfall=4.18"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

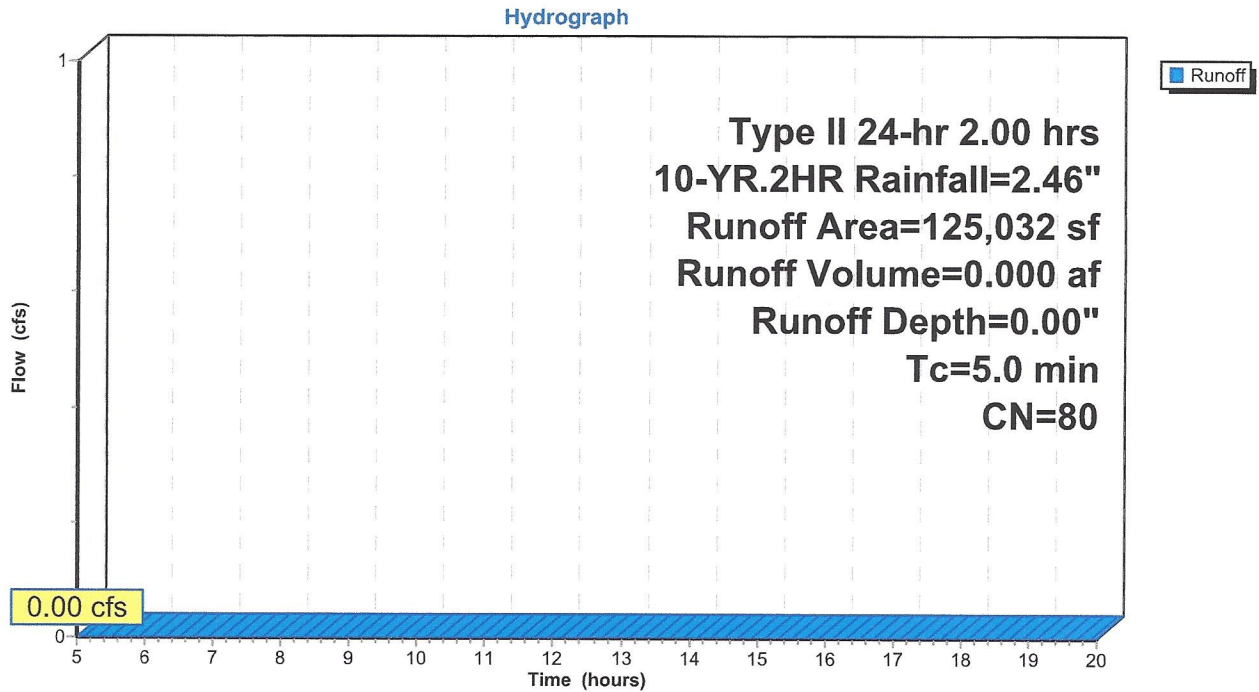
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2.00 hrs 10-YR.2HR Rainfall=2.46"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

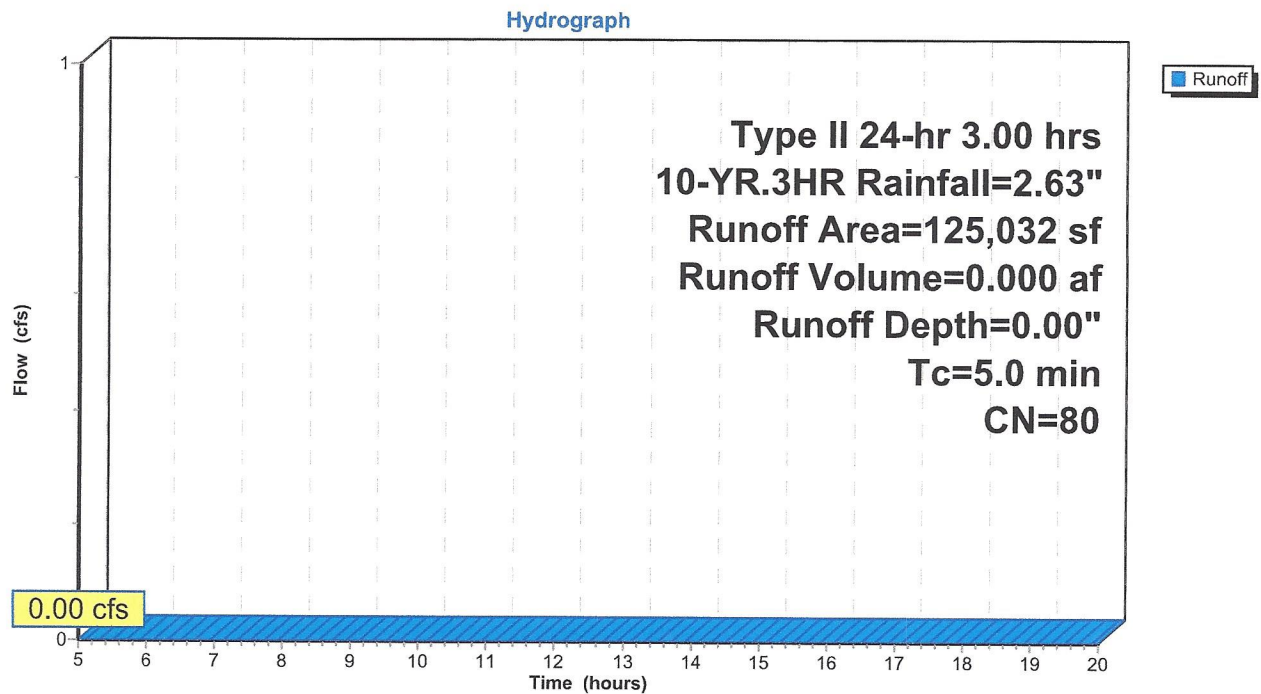
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 3.00 hrs 10-YR.3HR Rainfall=2.63"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

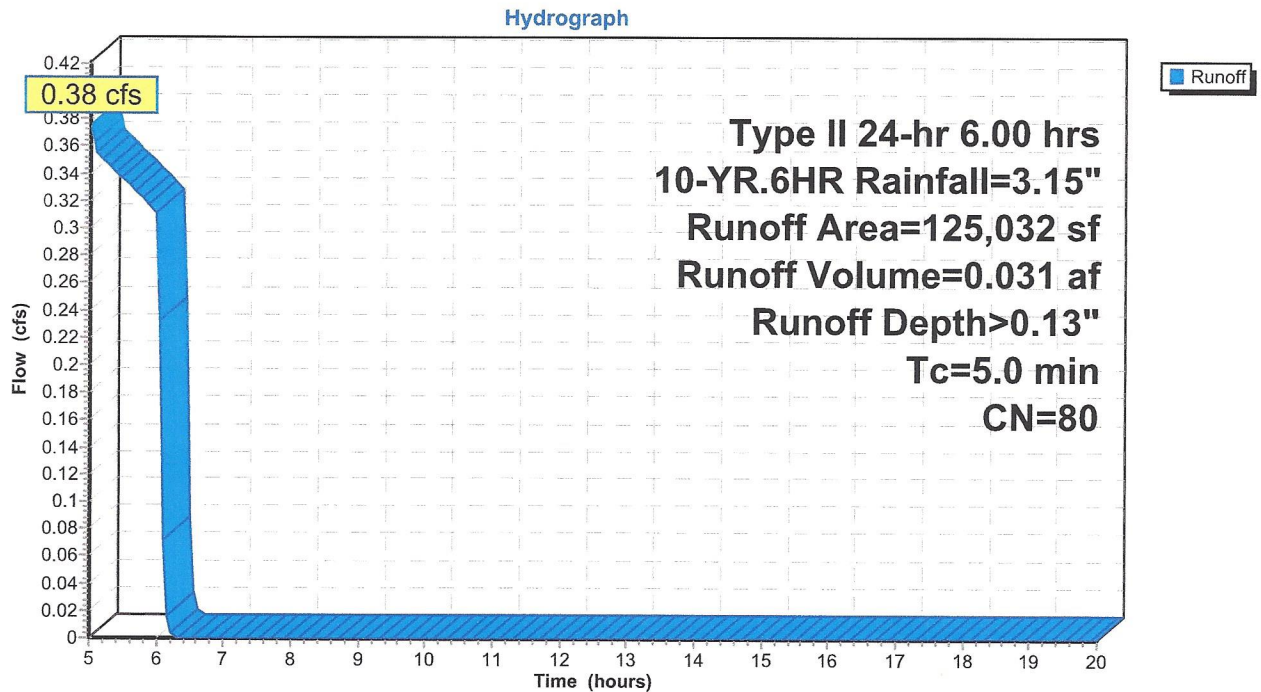
Runoff = 0.38 cfs @ 5.00 hrs, Volume= 0.031 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 6.00 hrs 10-YR.6HR Rainfall=3.15"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

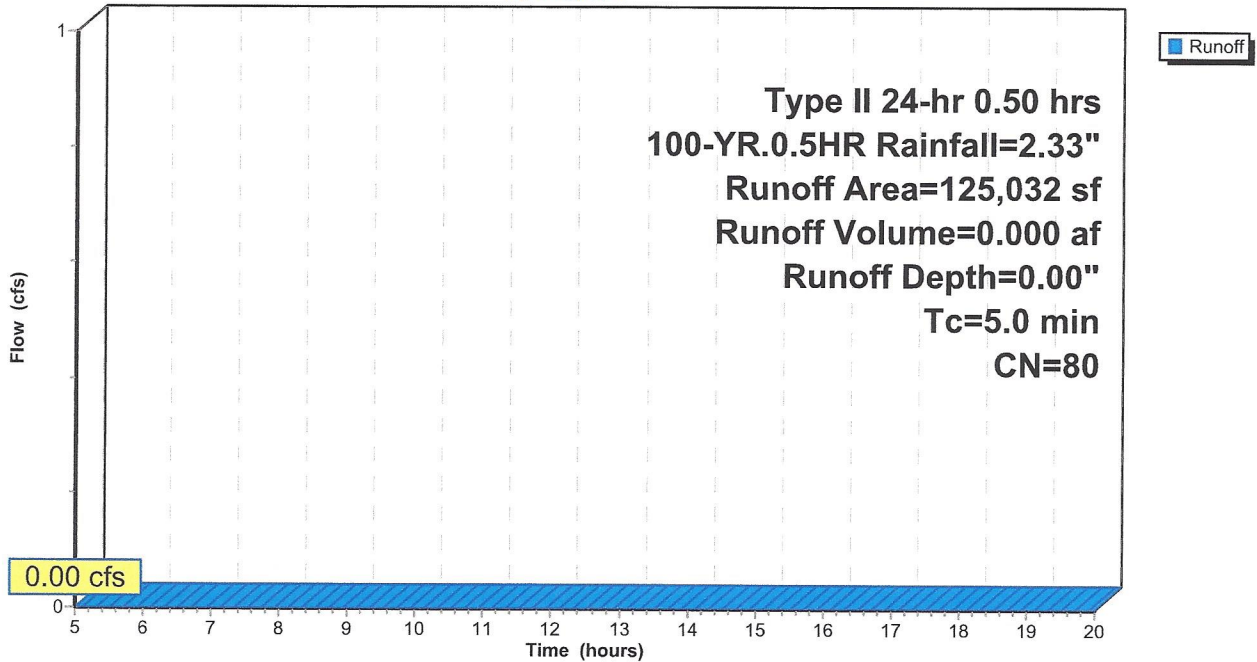
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 0.50 hrs 100-YR.0.5HR Rainfall=2.33"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing

Hydrograph



Summary for Subcatchment 1S: Existing

Runoff = 27.65 cfs @ 6.00 hrs, Volume= 0.781 af, Depth> 3.26"

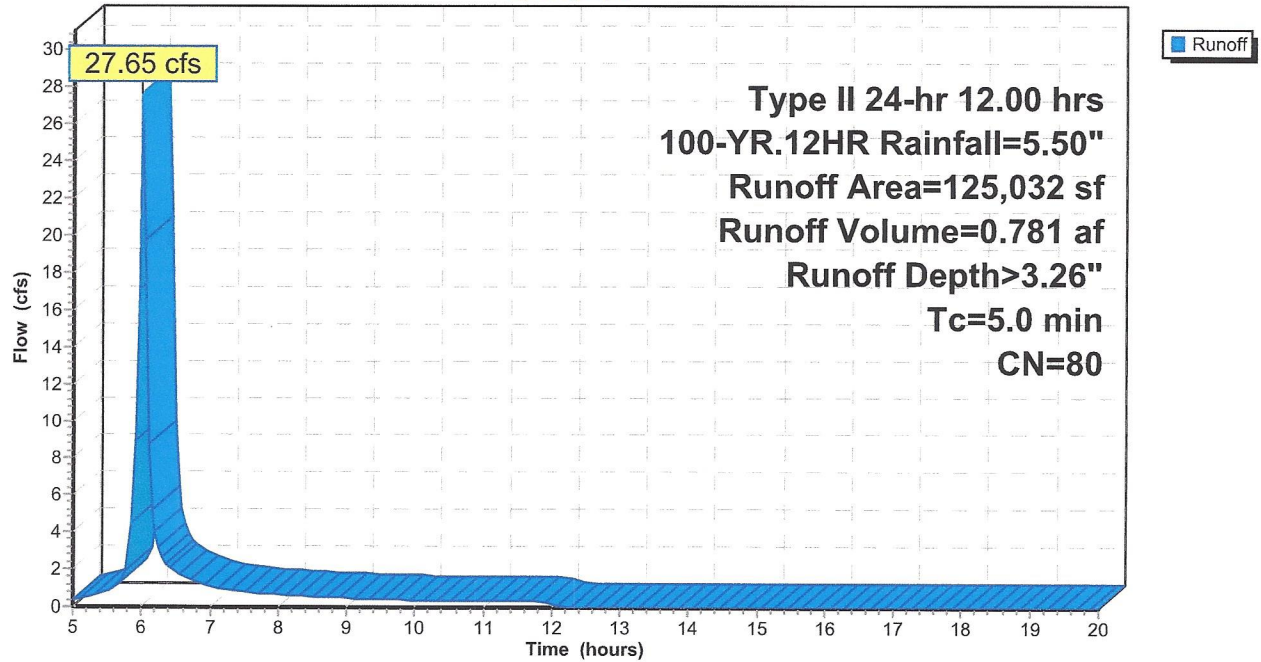
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 12.00 hrs 100-YR.12HR Rainfall=5.50"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing

Hydrograph



Summary for Subcatchment 1S: Existing

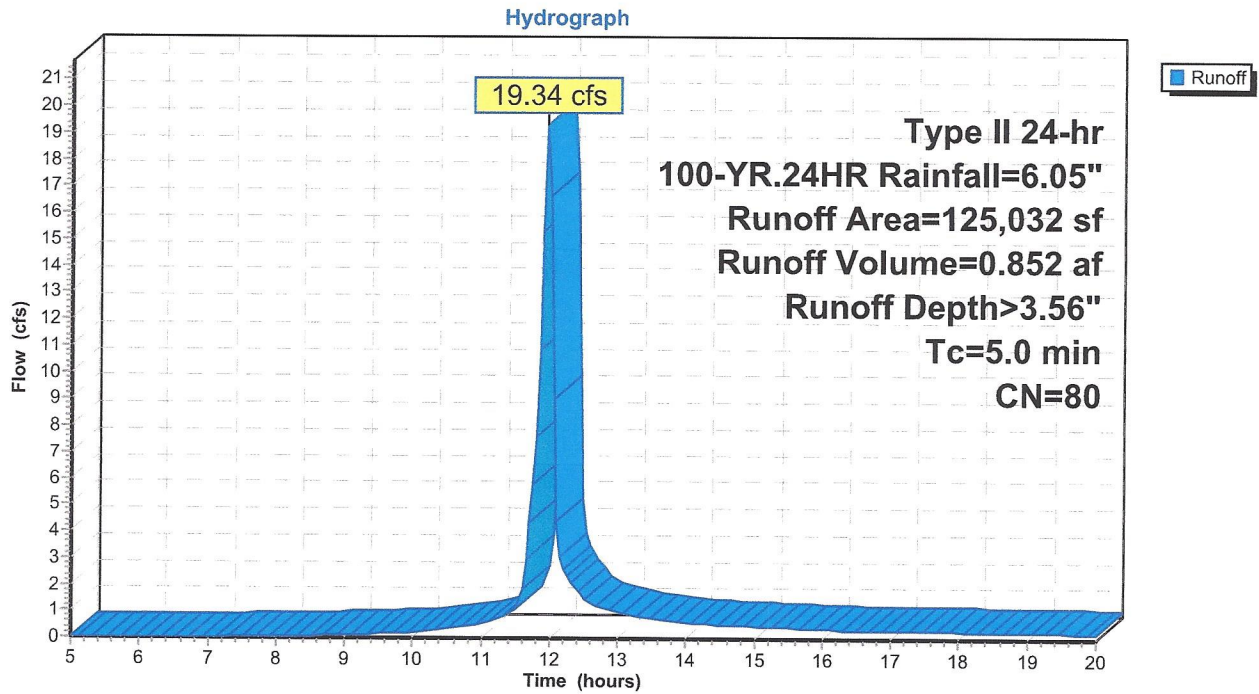
Runoff = 19.34 cfs @ 11.95 hrs, Volume= 0.852 af, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-YR.24HR Rainfall=6.05"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

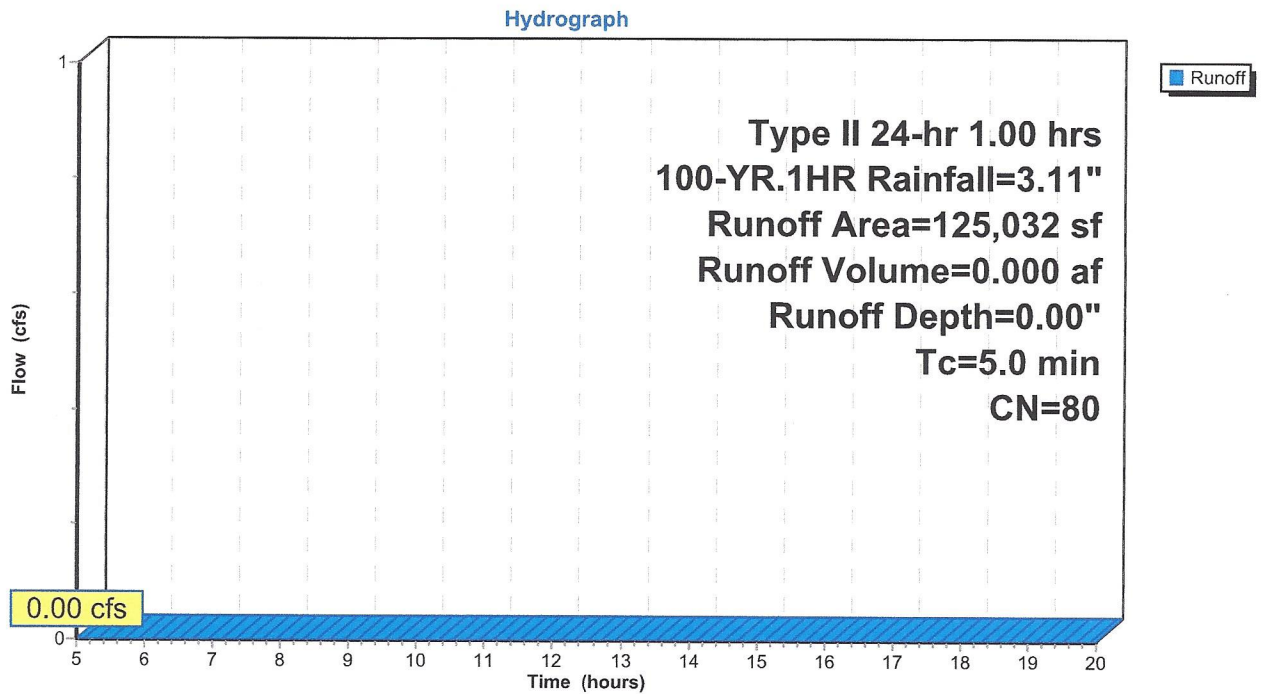
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1.00 hrs 100-YR.1HR Rainfall=3.11"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

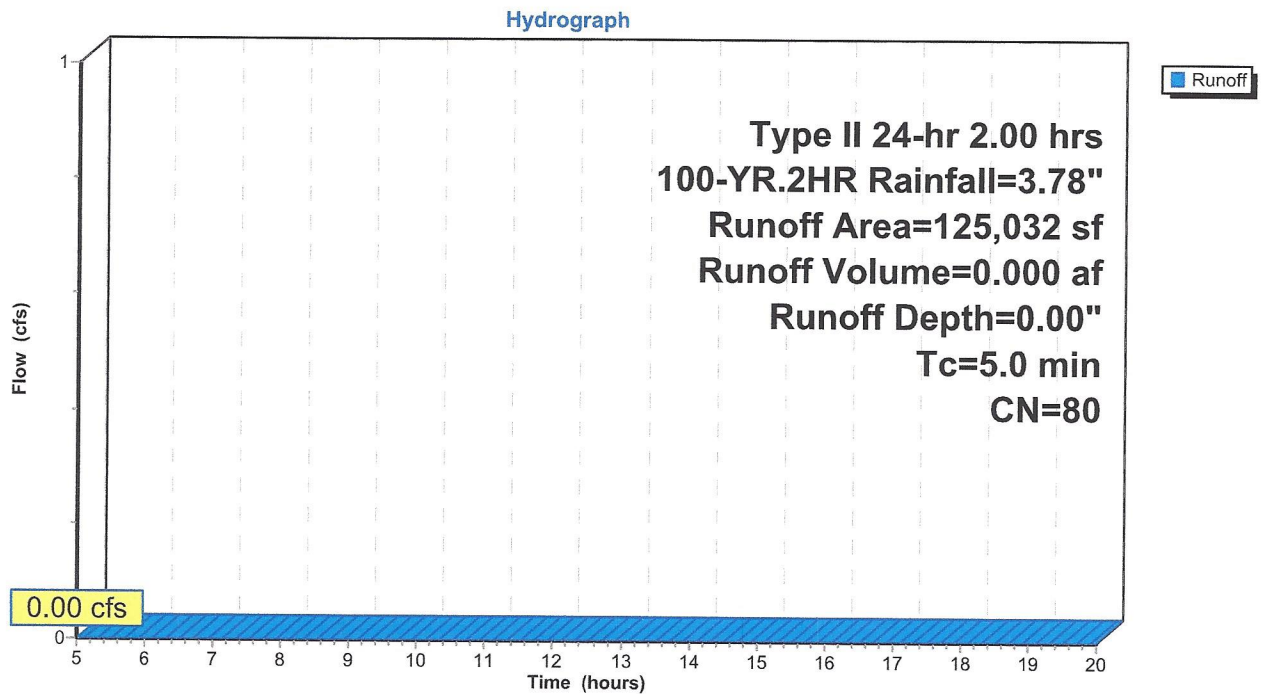
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2.00 hrs 100-YR.2HR Rainfall=3.78"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

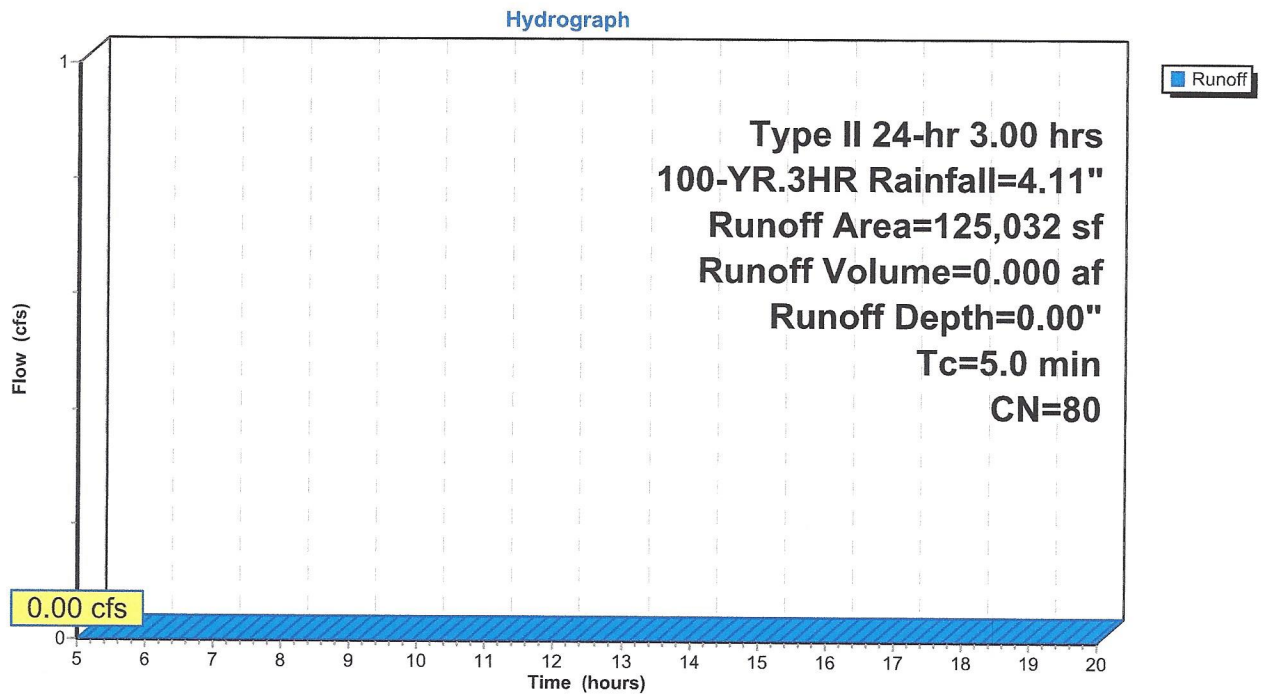
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Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 3.00 hrs 100-YR.3HR Rainfall=4.11"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

Runoff = 0.68 cfs @ 5.00 hrs, Volume= 0.055 af, Depth> 0.23"

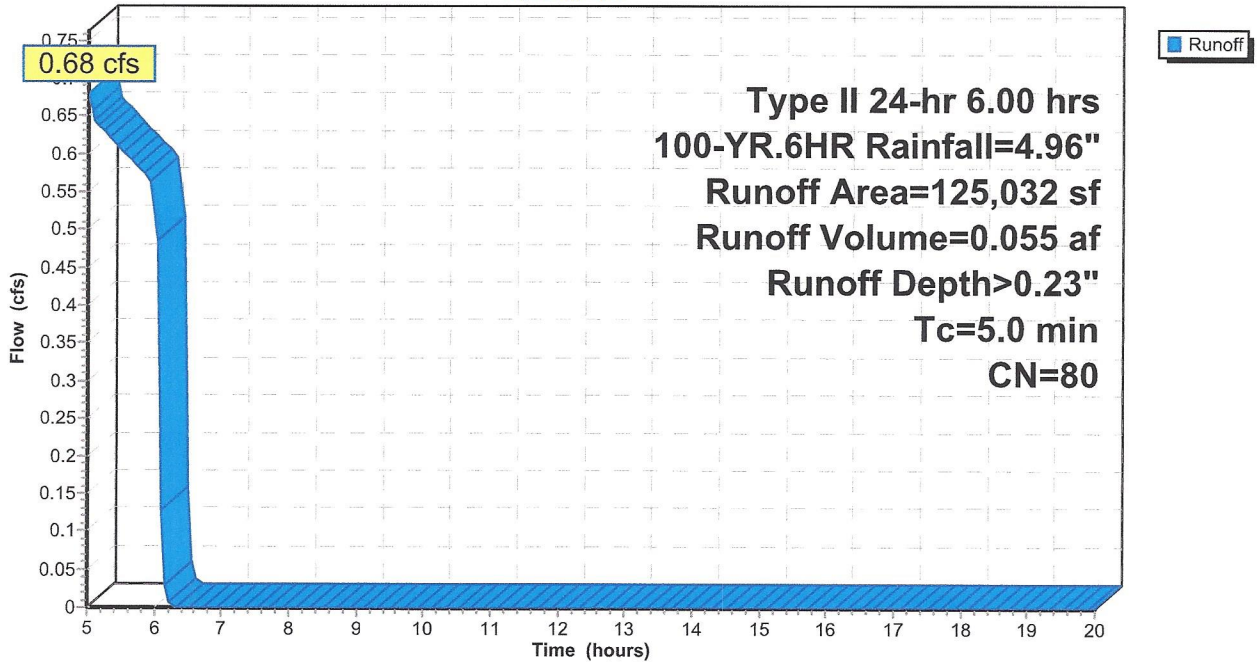
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 6.00 hrs 100-YR.6HR Rainfall=4.96"

Area (sf)	CN	Description
2,202	98	Roofs, HSG C
29,757	98	Paved parking, HSG C
93,073	74	>75% Grass cover, Good, HSG C
125,032	80	Weighted Average
93,073		74.44% Pervious Area
31,959		25.56% Impervious Area

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

Subcatchment 1S: Existing

Hydrograph

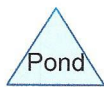
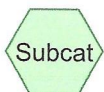


Events for Subcatchment 2S: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
10-YR.0.5 HR	1.64	0.00	0.000	0.00
10-YR.12HR	3.61	16.27	0.462	1.93
10-YR.1HR	2.09	0.00	0.000	0.00
10-YR.24HR	4.18	12.47	0.542	2.27
10-YR.2HR	2.46	0.00	0.000	0.00
10-YR.3HR	2.63	0.00	0.000	0.00
10-YR.6HR	3.15	0.40	0.033	0.14
100-YR.0.5HR	2.33	0.00	0.000	0.00
100-YR.12HR	5.50	29.86	0.841	3.52
100-YR.1HR	3.11	0.00	0.000	0.00
100-YR.24HR	6.05	20.63	0.924	3.86
100-YR.2HR	3.78	0.00	0.000	0.00
100-YR.3HR	4.11	0.00	0.000	0.00
100-YR.6HR	4.96	0.71	0.057	0.24



Proposed



Routing Diagram for Royal Limo
Prepared by Gates Professional Engineering, LLC, Printed 7/29/2019
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.839	74	>75% Grass cover, Good, HSG C (2S)
0.866	98	Paved parking, HSG C (2S)
0.165	98	Roofs, HSG C (2S)

Royal Limo

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.870	HSG C	2S
0.000	HSG D	
0.000	Other	

Summary for Subcatchment 2S: Proposed

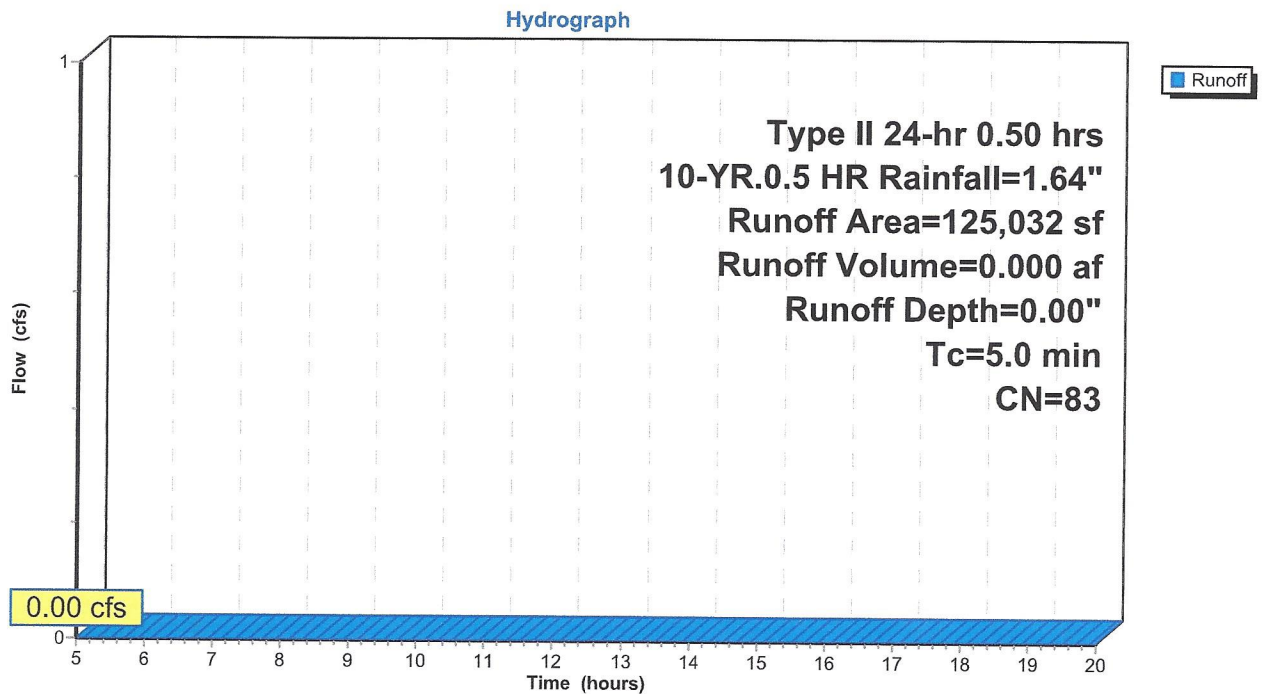
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 0.50 hrs 10-YR.0.5 HR Rainfall=1.64"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

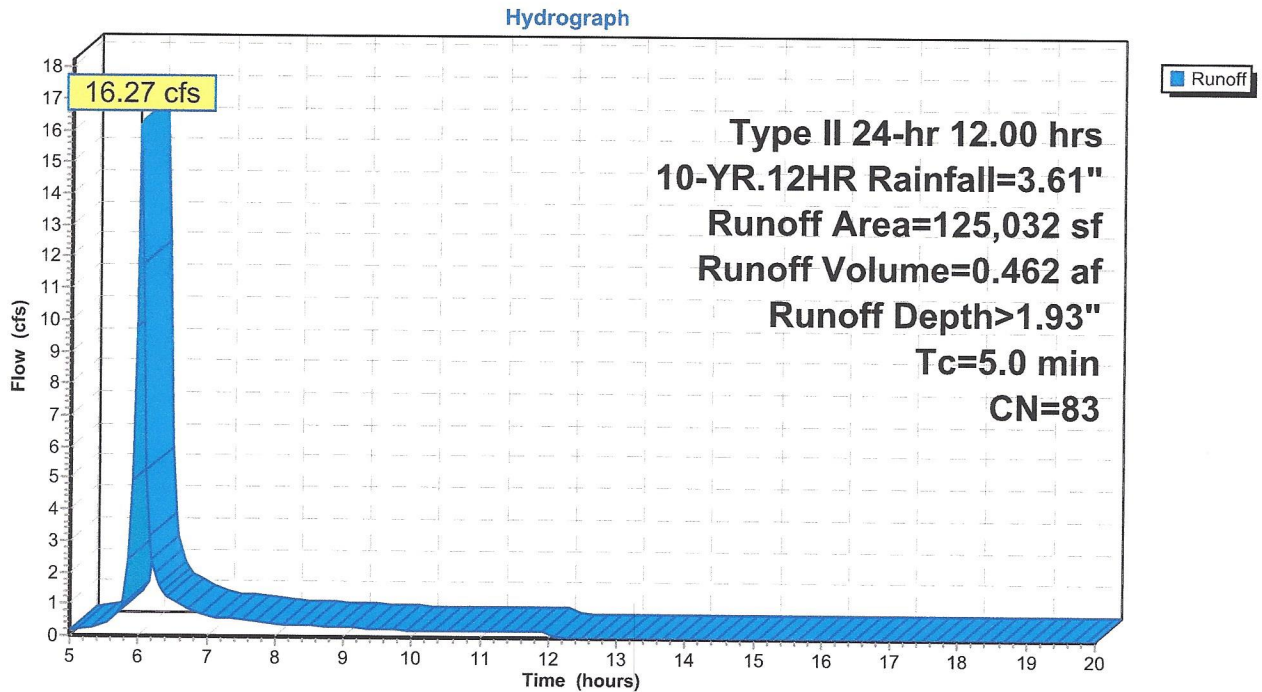
Runoff = 16.27 cfs @ 6.00 hrs, Volume= 0.462 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 12.00 hrs 10-YR.12HR Rainfall=3.61"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

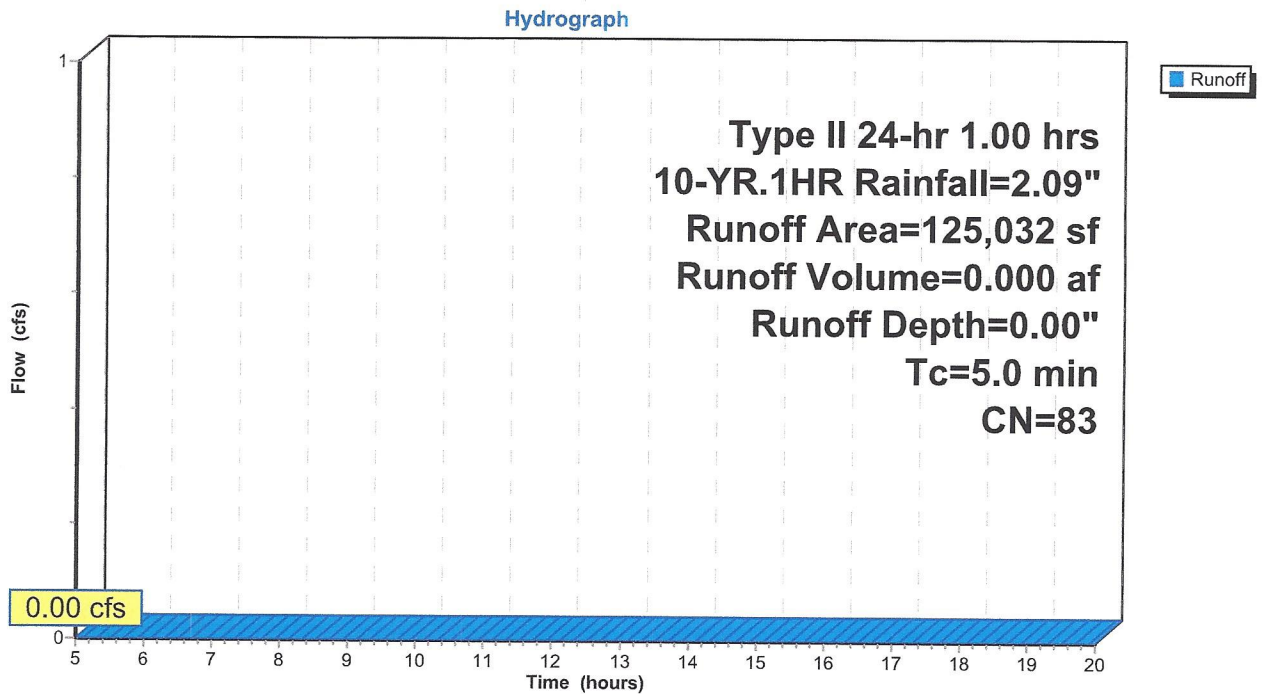
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1.00 hrs 10-YR.1HR Rainfall=2.09"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

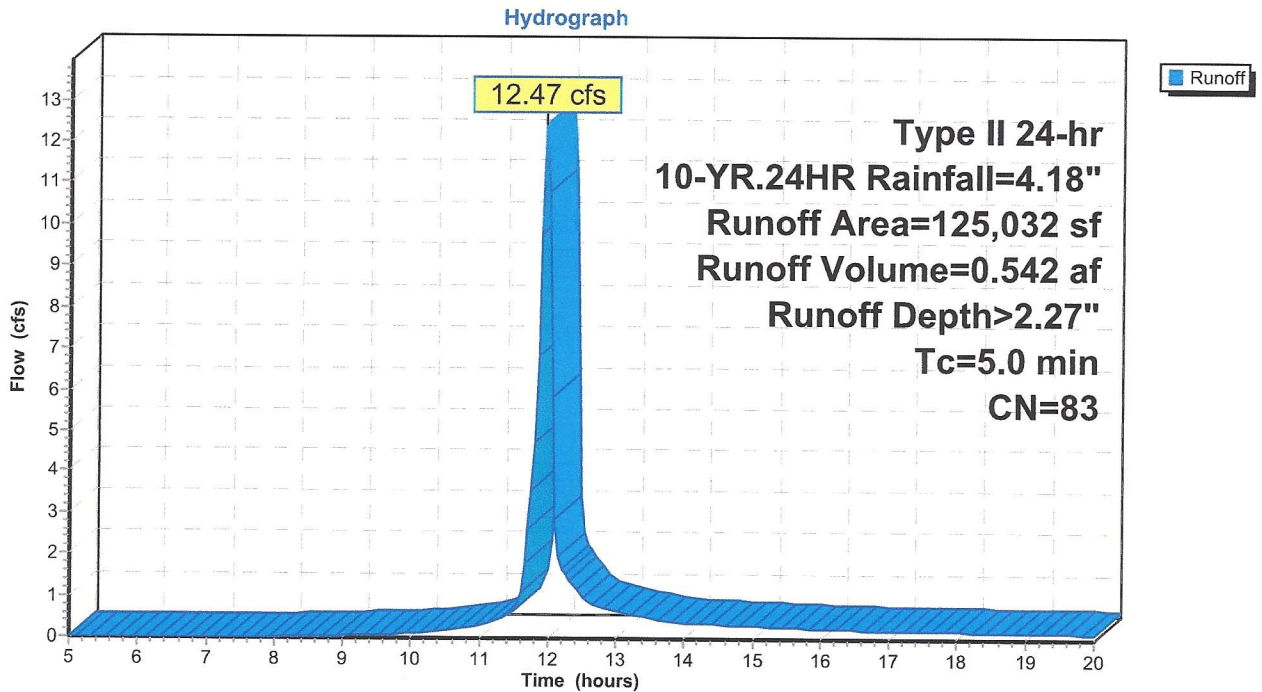
Runoff = 12.47 cfs @ 11.96 hrs, Volume= 0.542 af, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-YR.24HR Rainfall=4.18"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

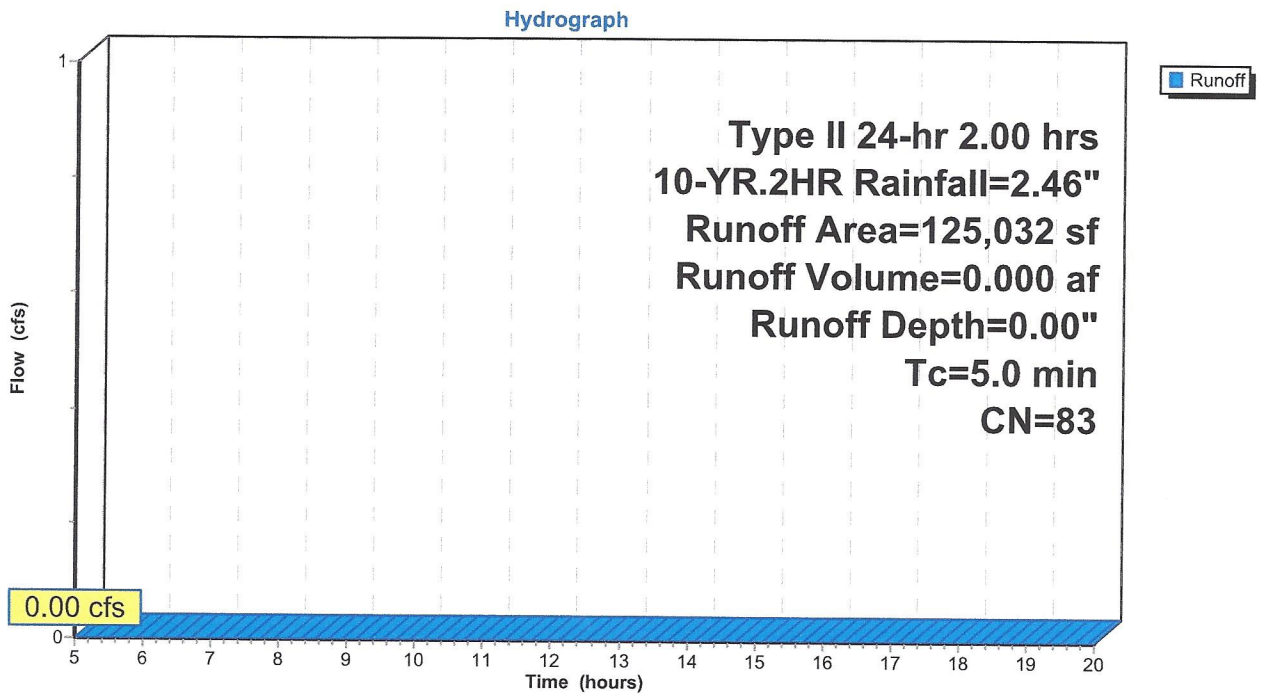
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2.00 hrs 10-YR.2HR Rainfall=2.46"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

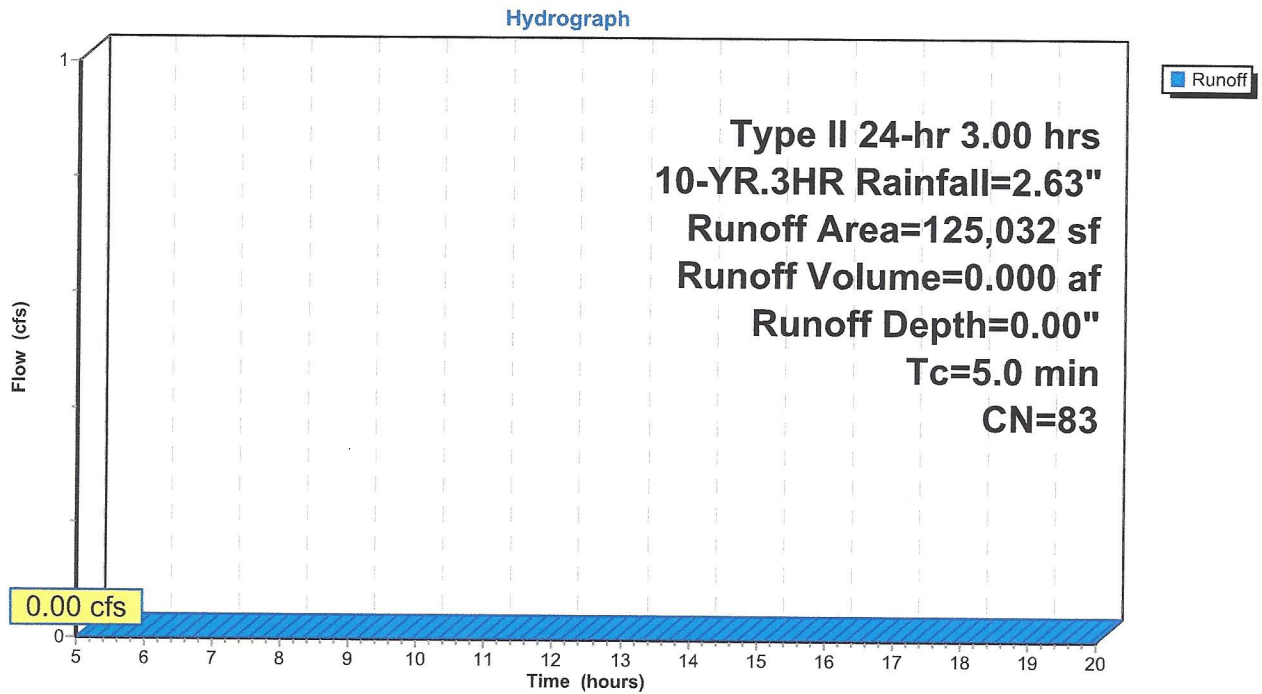
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 3.00 hrs 10-YR.3HR Rainfall=2.63"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

Runoff = 0.40 cfs @ 5.00 hrs, Volume= 0.033 af, Depth> 0.14"

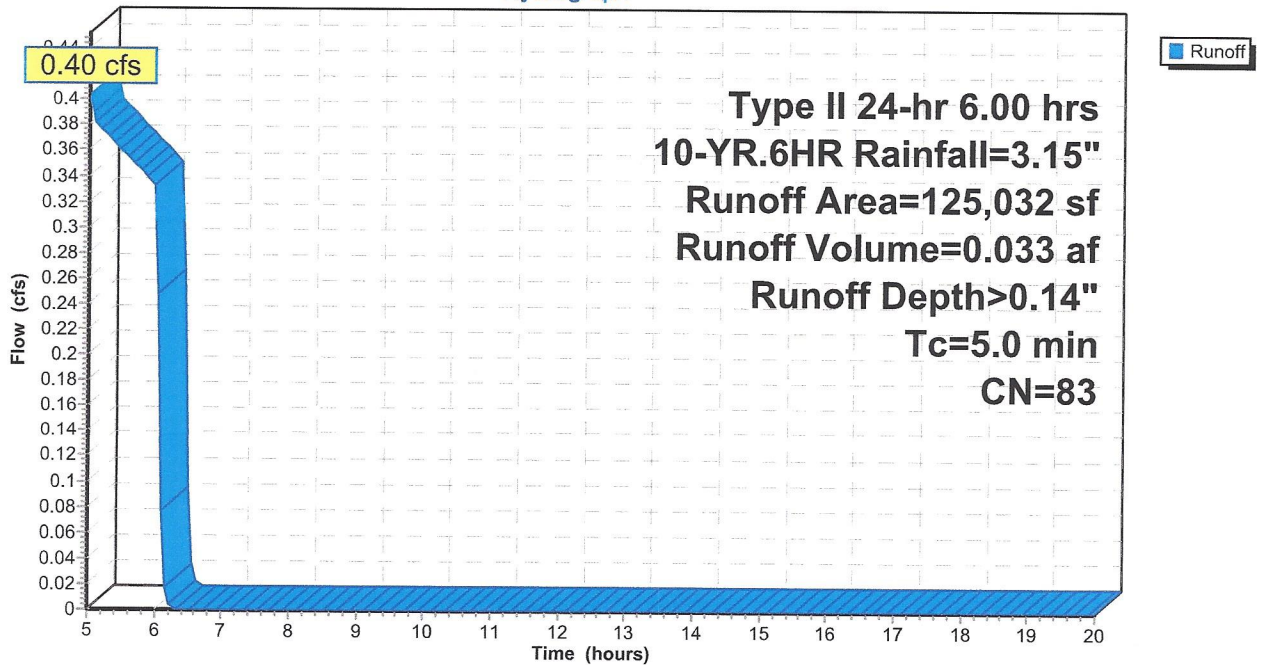
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 6.00 hrs 10-YR.6HR Rainfall=3.15"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed

Hydrograph



Summary for Subcatchment 2S: Proposed

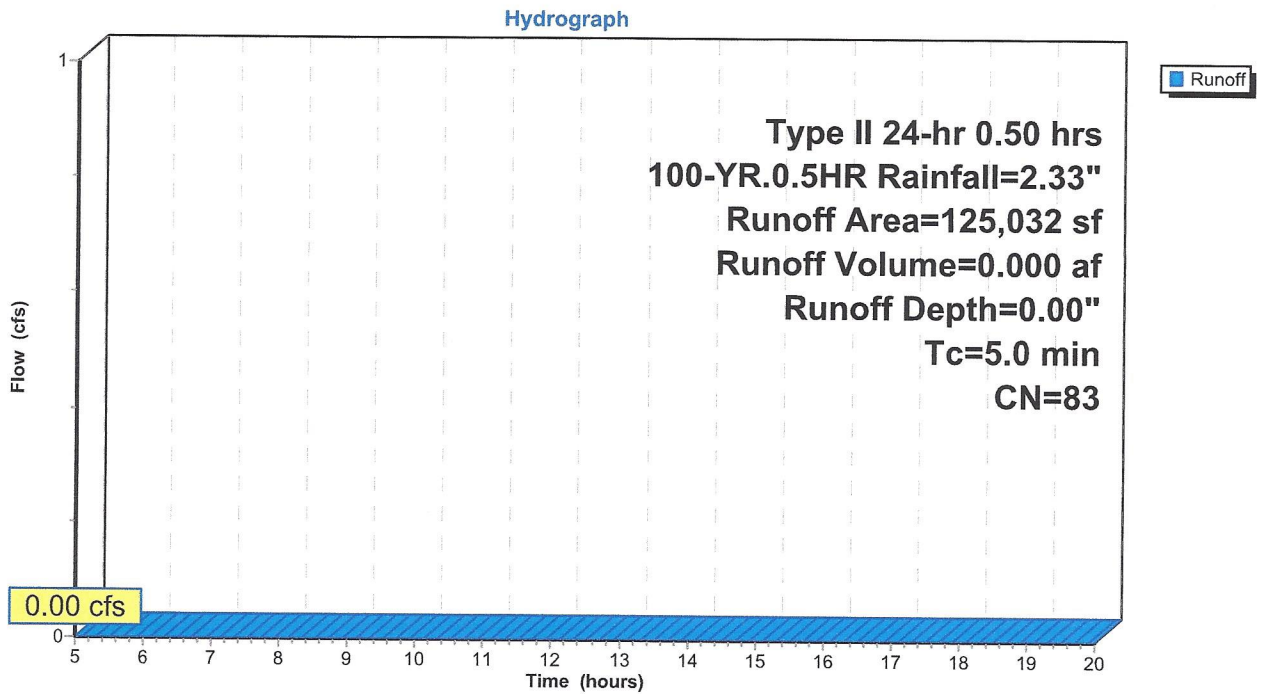
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 0.50 hrs 100-YR.0.5HR Rainfall=2.33"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

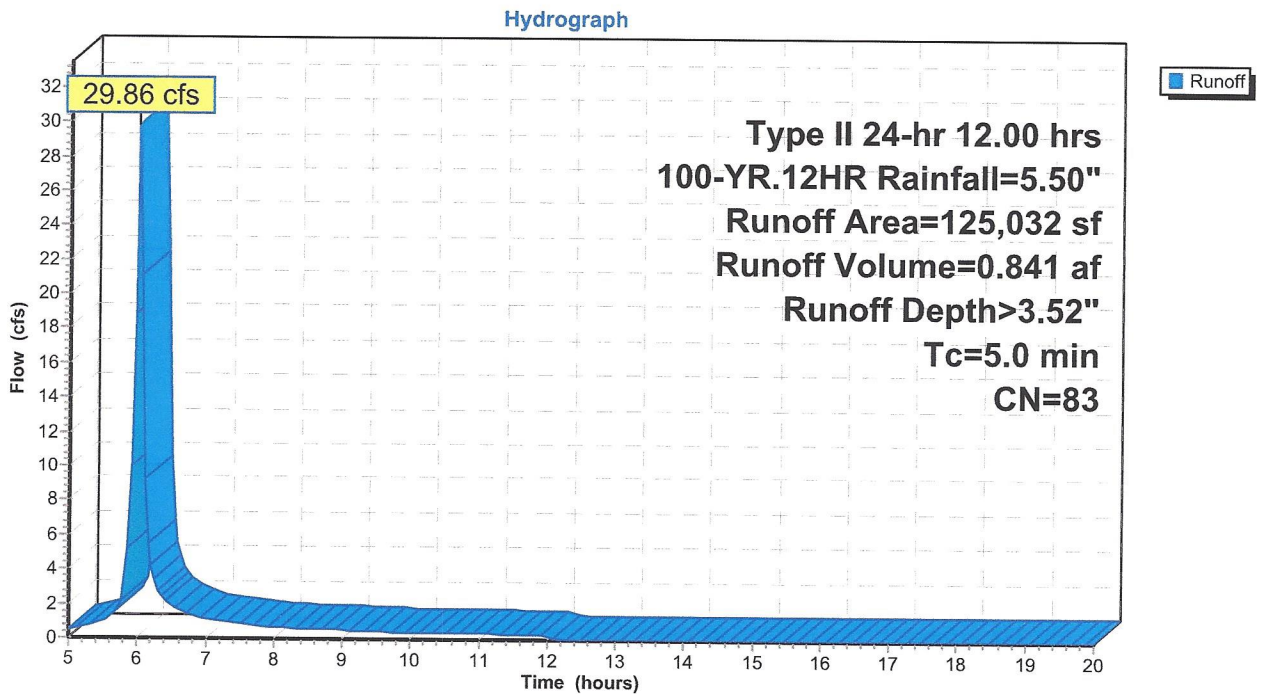
Runoff = 29.86 cfs @ 6.00 hrs, Volume= 0.841 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 12.00 hrs 100-YR.12HR Rainfall=5.50"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

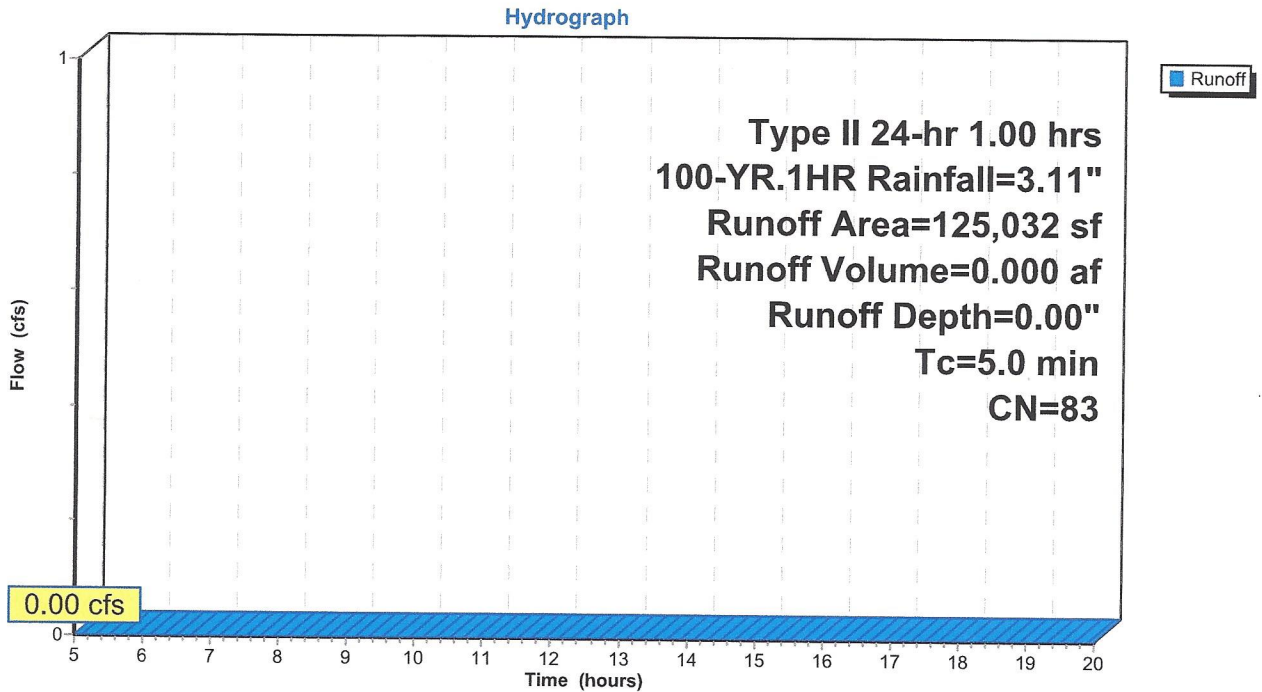
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1.00 hrs 100-YR.1HR Rainfall=3.11"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Royal Limo

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Type II 24-hr 100-YR.24HR Rainfall=6.05"

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Summary for Subcatchment 2S: Proposed

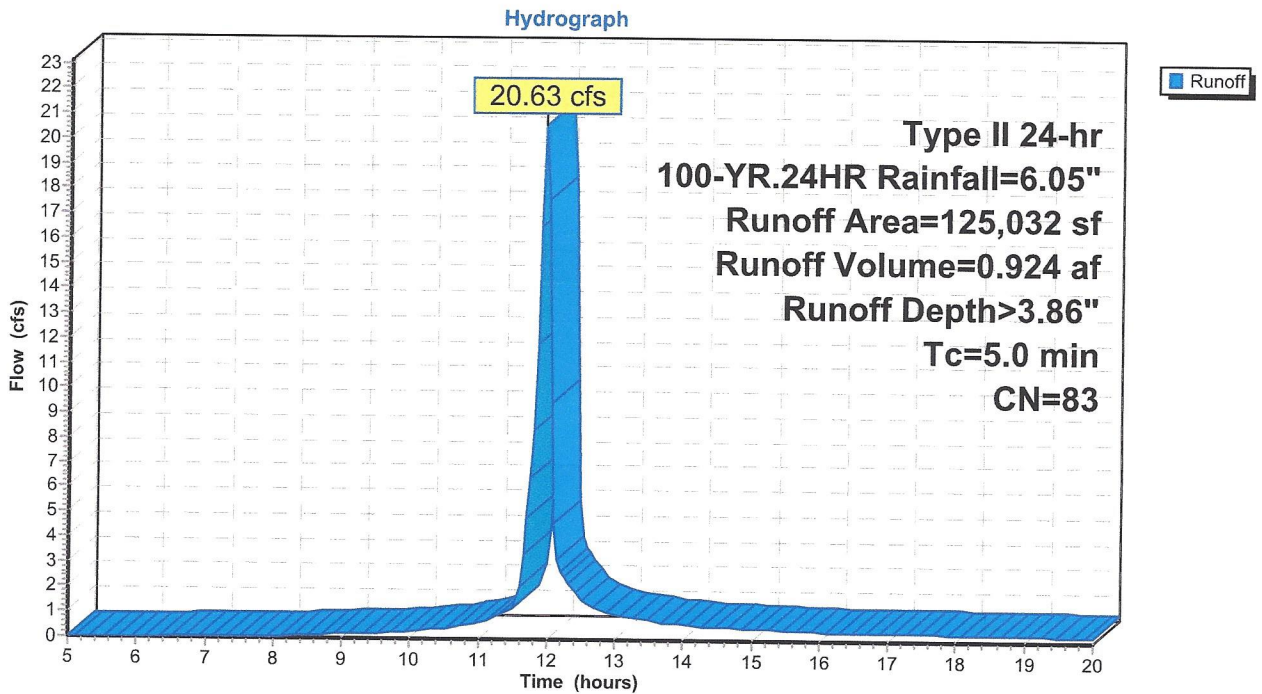
Runoff = 20.63 cfs @ 11.95 hrs, Volume= 0.924 af, Depth> 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR.24HR Rainfall=6.05"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

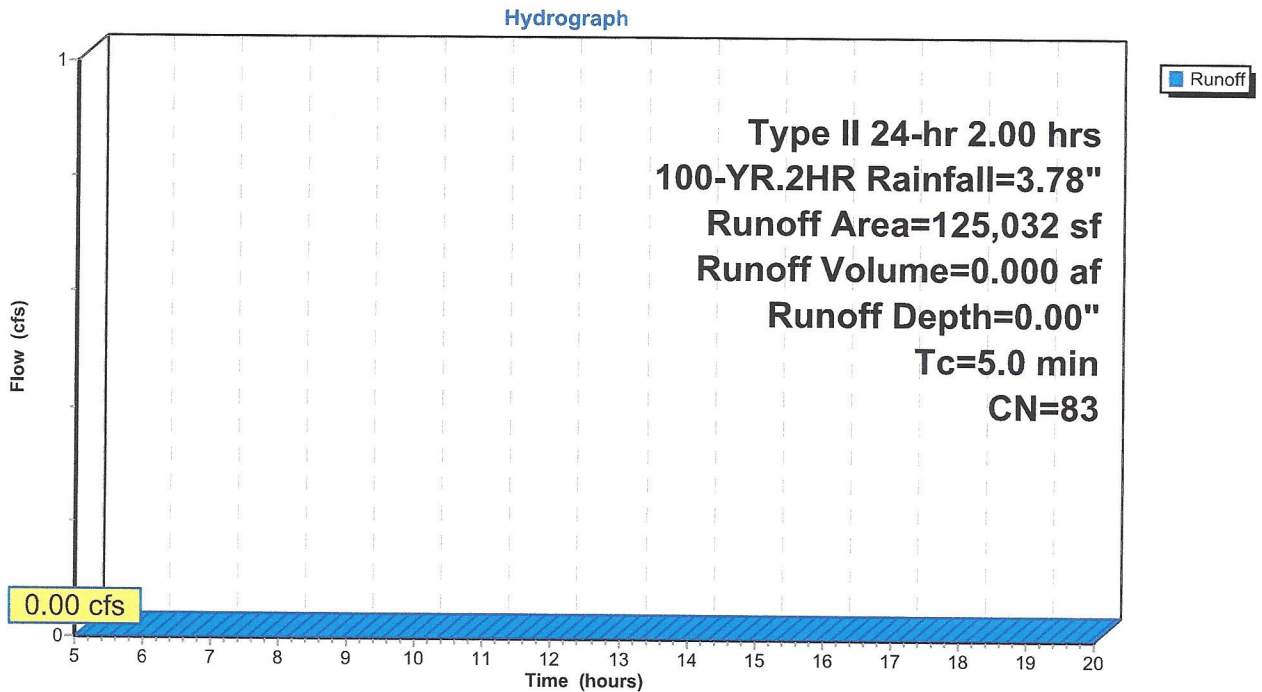
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2.00 hrs 100-YR.2HR Rainfall=3.78"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

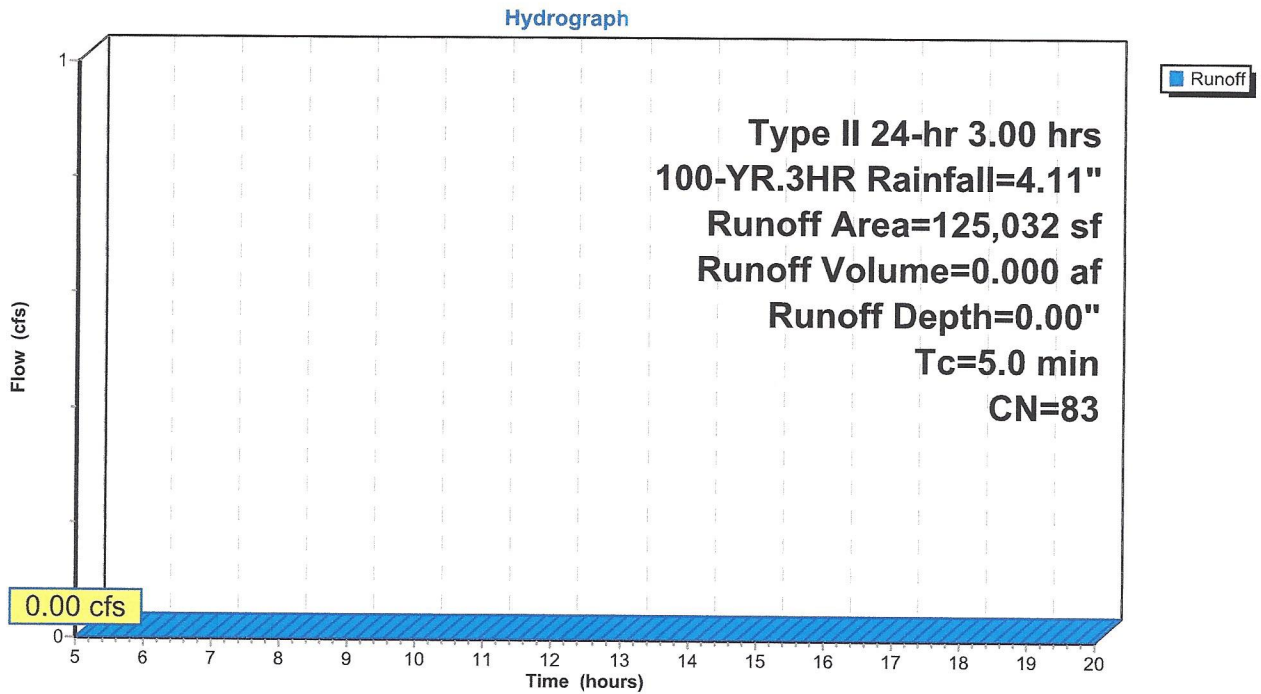
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 3.00 hrs 100-YR.3HR Rainfall=4.11"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed



Summary for Subcatchment 2S: Proposed

Runoff = 0.71 cfs @ 5.00 hrs, Volume= 0.057 af, Depth> 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 6.00 hrs 100-YR.6HR Rainfall=4.96"

Area (sf)	CN	Description
7,170	98	Roofs, HSG C
37,738	98	Paved parking, HSG C
80,124	74	>75% Grass cover, Good, HSG C
125,032	83	Weighted Average
80,124		64.08% Pervious Area
44,908		35.92% Impervious Area

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

Subcatchment 2S: Proposed

