

January 14, 2019

Eva Schweber
Planner
City of Plattsburgh
41 City Hall Place
Plattsburgh, NY 12901

RE: Racine Project
3 Circle Grove

Dear Ms. Schweber,

In response to the GPI comments dated January 2, 2019, our office has made revisions to the site plan and have provided a response to each of the comments below.

Retaining Wall Comments:

- 1 – 3. Per agreement with the City of Plattsburgh Planning Board, the specifications, dimensions, design, etc for the cast-in-place retaining walls are outside of the scope of review for this project.
4. See attached additional calculation, confirming the prior submitted hand data.
5. Slope was considered, please see attached calculations for the block wall.

Grading and Stormwater Comments:

1. Additional contours and spot grades have been added to the site plan. A shallow yard swale is being proposed off of the south face of the house to promote drainage away from the house.
2. Acknowledged.
3. The homeowner, Michael Racine will be responsible for maintaining the stormwater emitter in the south corner of his property. This has been noted on the site plan.

4. The infiltration rate was derived from an on-site test pit performed by Aaron Ovios, P.E. in the fall of 2017. Infiltration rates between 4 and 6 inches per hour were observed, but the design utilizes a large FOS (3 to 4) to ensure no impacts to the downstream neighbors.
5. The HydroCAD model has been updated with a 40% void ratio within the stone trench and a single 6" perforated pipe underdrain. The 10-yr storm event yields a slightly less runoff rate pre to post. See the attached HydroCAD analysis.
6. The tree row near the block retaining wall has been moved to the top of bank along the 193-contour as recommended.
7. The NYSDOT Standard Specifications in the driveway section detail have been updated accordingly.

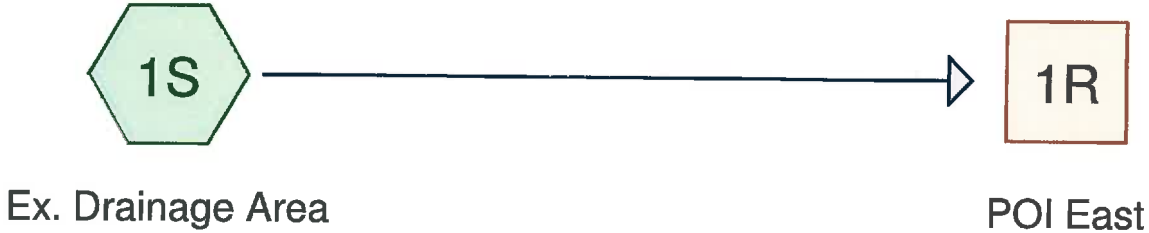
If you have any further questions, please feel free to contact our office.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David J. Gabrault". The signature is written in a cursive, flowing style.

David J. Gabrault
Robert M Sutherland PC

Existing Site



Racine Hydro

Prepared by Hewlett-Packard Company

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.259	74	>75% Grass cover, Good, HSG C (1S)
0.259	74	TOTAL AREA

Racine Hydro

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Soil Listing (selected nodes)

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

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.259	0.000	0.000	0.259	>75% Grass cover, Good	1S
0.000	0.000	0.259	0.000	0.000	0.259	TOTAL AREA	

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Existing Site
Type II 24-hr 10yr Rainfall=3.40"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Ex. Drainage Area

Runoff Area=11,275 sf 0.00% Impervious Runoff Depth=1.17"
Tc=6.0 min CN=74 Runoff=0.52 cfs 0.025 af

Reach 1R: POI East

Inflow=0.52 cfs 0.025 af
Outflow=0.52 cfs 0.025 af

Total Runoff Area = 0.259 ac Runoff Volume = 0.025 af Average Runoff Depth = 1.17"
100.00% Pervious = 0.259 ac 0.00% Impervious = 0.000 ac

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Existing Site
Type II 24-hr 10yr Rainfall=3.40"
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Summary for Subcatchment 1S: Ex. Drainage Area

Runoff = 0.52 cfs @ 11.98 hrs, Volume= 0.025 af, Depth= 1.17"

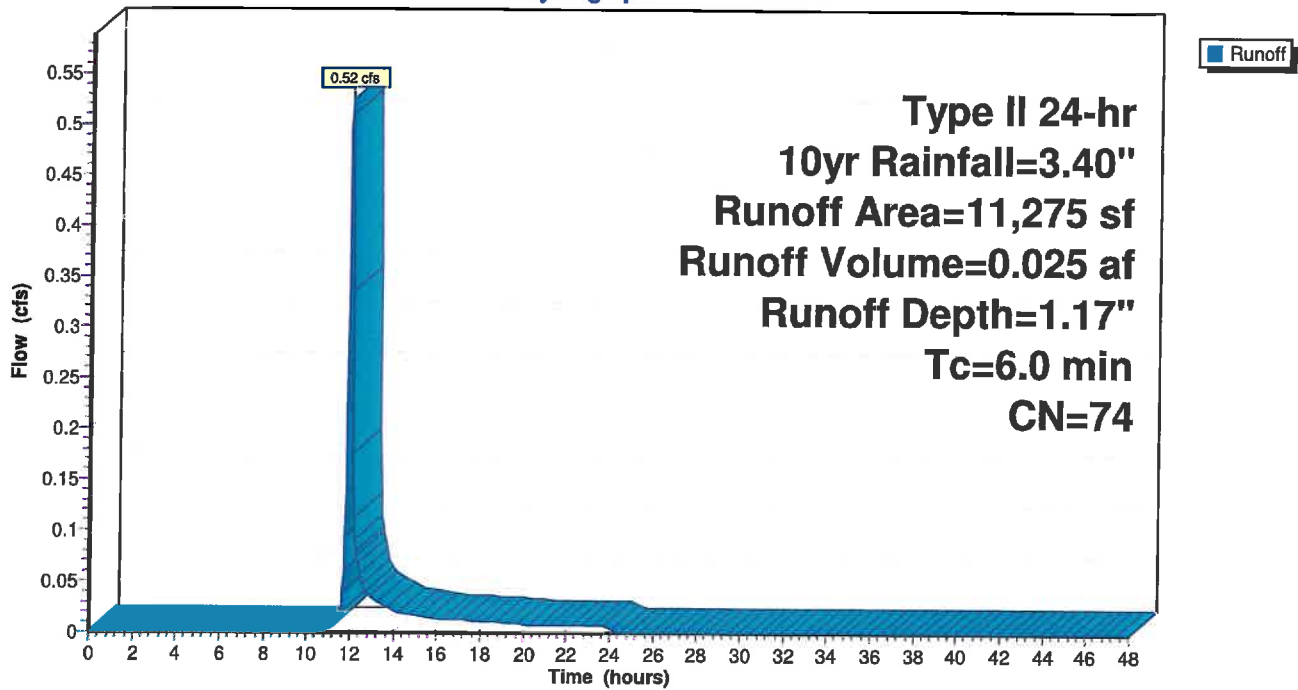
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.40"

Area (sf)	CN	Description
11,275	74	>75% Grass cover, Good, HSG C
11,275		100.00% Pervious Area

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

Subcatchment 1S: Ex. Drainage Area

Hydrograph



Racine Hydro

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Existing Site
Type II 24-hr 10yr Rainfall=3.40"

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Summary for Reach 1R: POI East

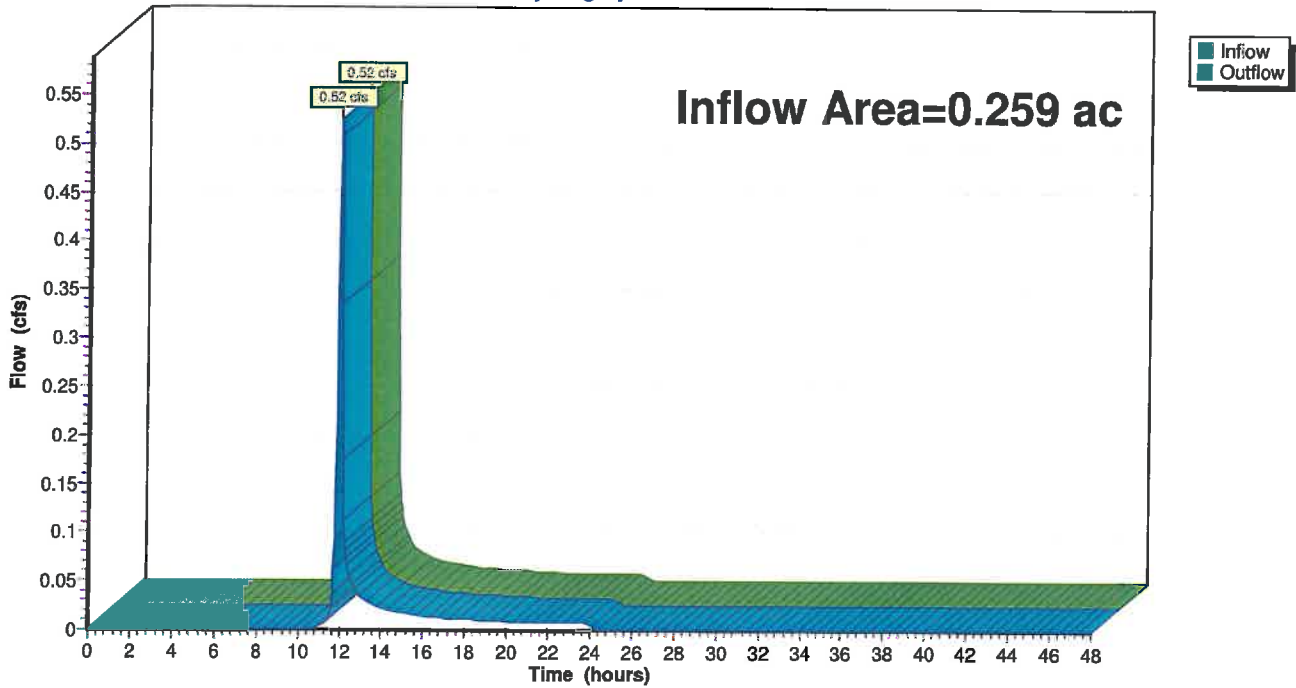
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.259 ac, 0.00% Impervious, Inflow Depth = 1.17" for 10yr event
Inflow = 0.52 cfs @ 11.98 hrs, Volume= 0.025 af
Outflow = 0.52 cfs @ 11.98 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

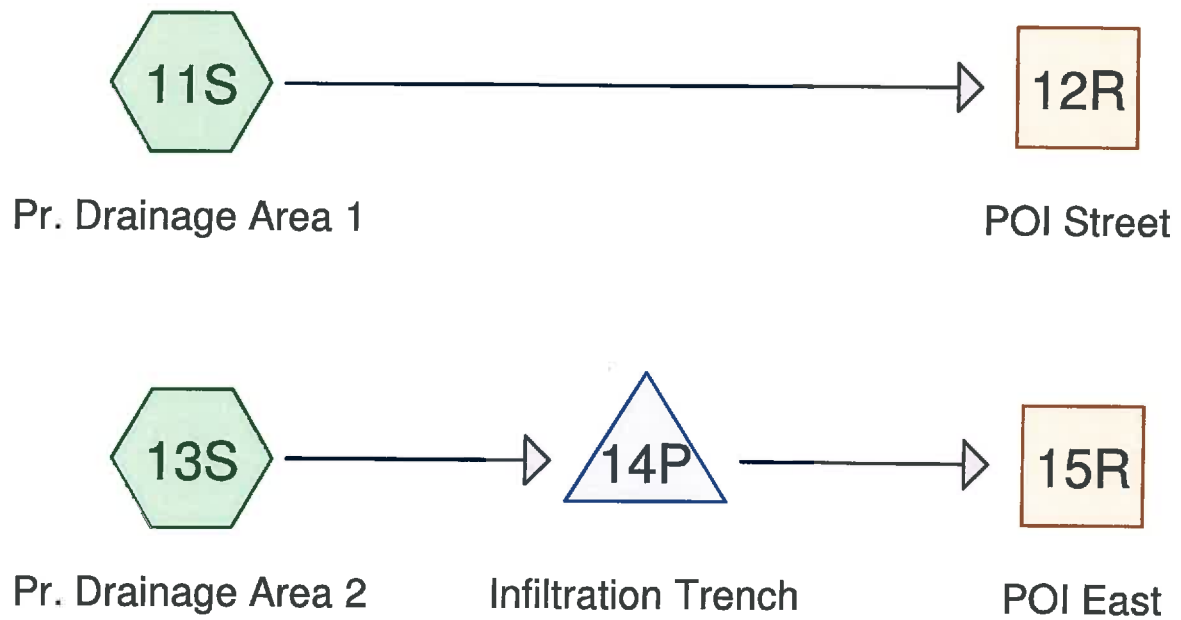
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 1R: POI East

Hydrograph



Proposed Site



Racine Hydro

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.180	74	>75% Grass cover, Good, HSG C (11S, 13S)
0.079	98	Paved parking, HSG C (11S, 13S)
0.259	81	TOTAL AREA

Racine Hydro

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.259	HSG C	11S, 13S
0.000	HSG D	
0.000	Other	
0.259		TOTAL AREA

Racine Hydro

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Proposed Site

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.180	0.000	0.000	0.180	>75% Grass cover, Good	11S, 13S
0.000	0.000	0.079	0.000	0.000	0.079	Paved parking	11S, 13S
0.000	0.000	0.259	0.000	0.000	0.259	TOTAL AREA	

Racine Hydro

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Proposed Site

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	14P	186.00	186.00	130.0	0.0000	0.010	6.0	0.0	0.0

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Proposed Site
Type II 24-hr 10yr Rainfall=3.40"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 11S: Pr. Drainage Area 1 Runoff Area=3,523 sf 24.27% Impervious Runoff Depth=1.56"
Tc=6.0 min CN=80 Runoff=0.22 cfs 0.010 af

Subcatchment 13S: Pr. Drainage Area 2 Runoff Area=7,752 sf 33.22% Impervious Runoff Depth=1.70"
Tc=6.0 min CN=82 Runoff=0.52 cfs 0.025 af

Reach 12R: POI Street Inflow=0.22 cfs 0.010 af
Outflow=0.22 cfs 0.010 af

Reach 15R: POI East Inflow=0.48 cfs 0.020 af
Outflow=0.48 cfs 0.020 af

Pond 14P: Infiltration Trench Peak Elev=187.24' Storage=0.001 af Inflow=0.52 cfs 0.025 af
Discarded=0.00 cfs 0.005 af Primary=0.48 cfs 0.020 af Outflow=0.48 cfs 0.025 af

Total Runoff Area = 0.259 ac Runoff Volume = 0.036 af Average Runoff Depth = 1.66"
69.58% Pervious = 0.180 ac 30.42% Impervious = 0.079 ac

Summary for Subcatchment 11S: Pr. Drainage Area 1

Runoff = 0.22 cfs @ 11.97 hrs, Volume= 0.010 af, Depth= 1.56"

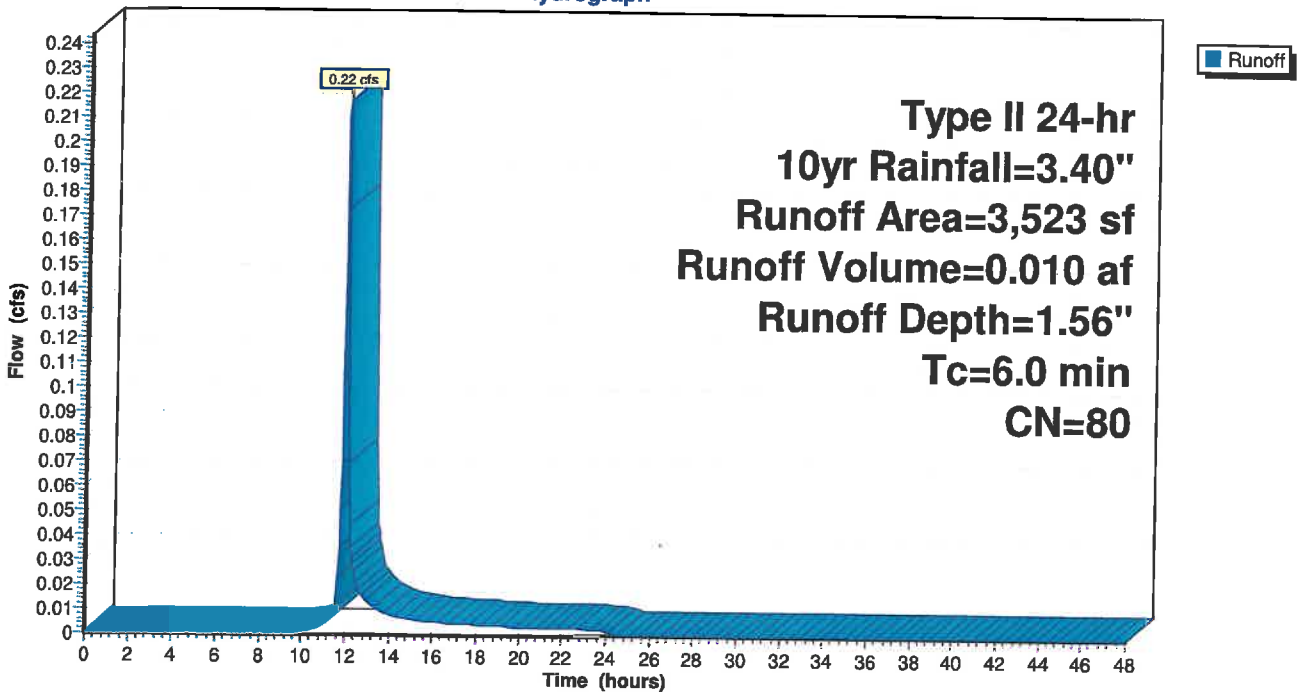
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.40"

Area (sf)	CN	Description
2,668	74	>75% Grass cover, Good, HSG C
855	98	Paved parking, HSG C
3,523	80	Weighted Average
2,668		75.73% Pervious Area
855		24.27% Impervious Area

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

Subcatchment 11S: Pr. Drainage Area 1

Hydrograph



Racine Hydro

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Proposed Site
Type II 24-hr 10yr Rainfall=3.40"

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Summary for Subcatchment 13S: Pr. Drainage Area 2

Runoff = 0.52 cfs @ 11.97 hrs, Volume= 0.025 af, Depth= 1.70"

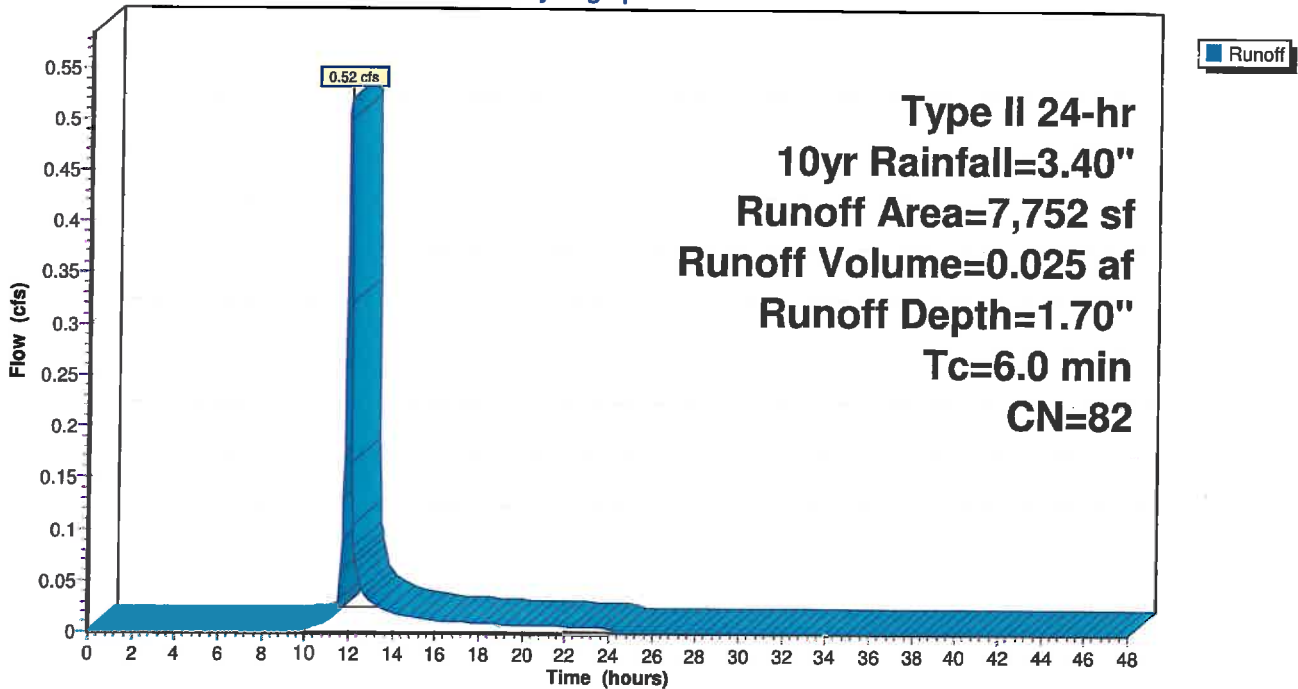
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.40"

Area (sf)	CN	Description
5,177	74	>75% Grass cover, Good, HSG C
2,575	98	Paved parking, HSG C
7,752	82	Weighted Average
5,177		66.78% Pervious Area
2,575		33.22% Impervious Area

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

Subcatchment 13S: Pr. Drainage Area 2

Hydrograph



Summary for Reach 12R: POI Street

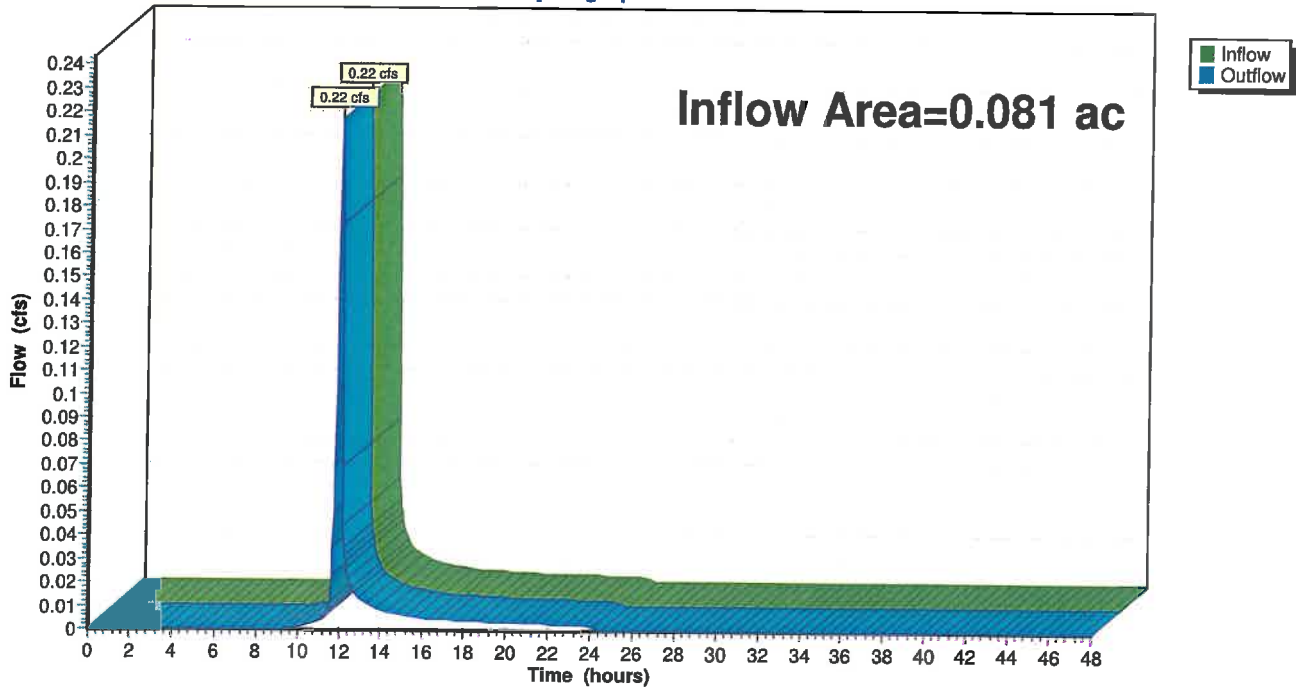
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.081 ac, 24.27% Impervious, Inflow Depth = 1.56" for 10yr event
Inflow = 0.22 cfs @ 11.97 hrs, Volume= 0.010 af
Outflow = 0.22 cfs @ 11.97 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 12R: POI Street

Hydrograph



Summary for Reach 15R: POI East

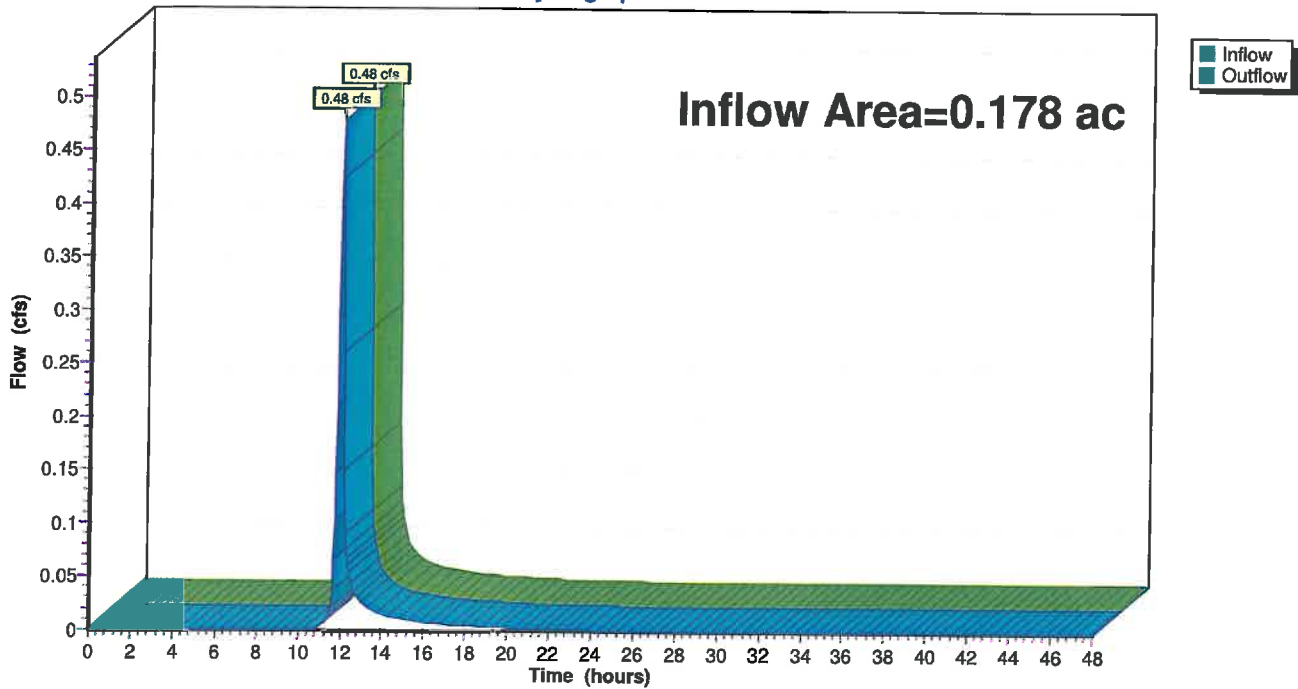
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.178 ac, 33.22% Impervious, Inflow Depth = 1.33" for 10yr event
Inflow = 0.48 cfs @ 12.00 hrs, Volume= 0.020 af
Outflow = 0.48 cfs @ 12.00 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Reach 15R: POI East

Hydrograph



Racine Hydro

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Proposed Site
Type II 24-hr 10yr Rainfall=3.40"

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Summary for Pond 14P: Infiltration Trench

Inflow Area = 0.178 ac, 33.22% Impervious, Inflow Depth = 1.70" for 10yr event
 Inflow = 0.52 cfs @ 11.97 hrs, Volume= 0.025 af
 Outflow = 0.48 cfs @ 12.00 hrs, Volume= 0.025 af, Atten= 7%, Lag= 1.7 min
 Discarded = 0.00 cfs @ 10.45 hrs, Volume= 0.005 af
 Primary = 0.48 cfs @ 12.00 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 187.24' @ 12.00 hrs Surf.Area= 0.003 ac Storage= 0.001 af

Plug-Flow detention time= 5.1 min calculated for 0.025 af (100% of inflow)
 Center-of-Mass det. time= 5.1 min (835.3 - 830.2)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	0.004 af	12.0" W x 36.0" H Box Stone&Pipe Storage L= 130.0' 0.009 af Overall x 40.0% Voids

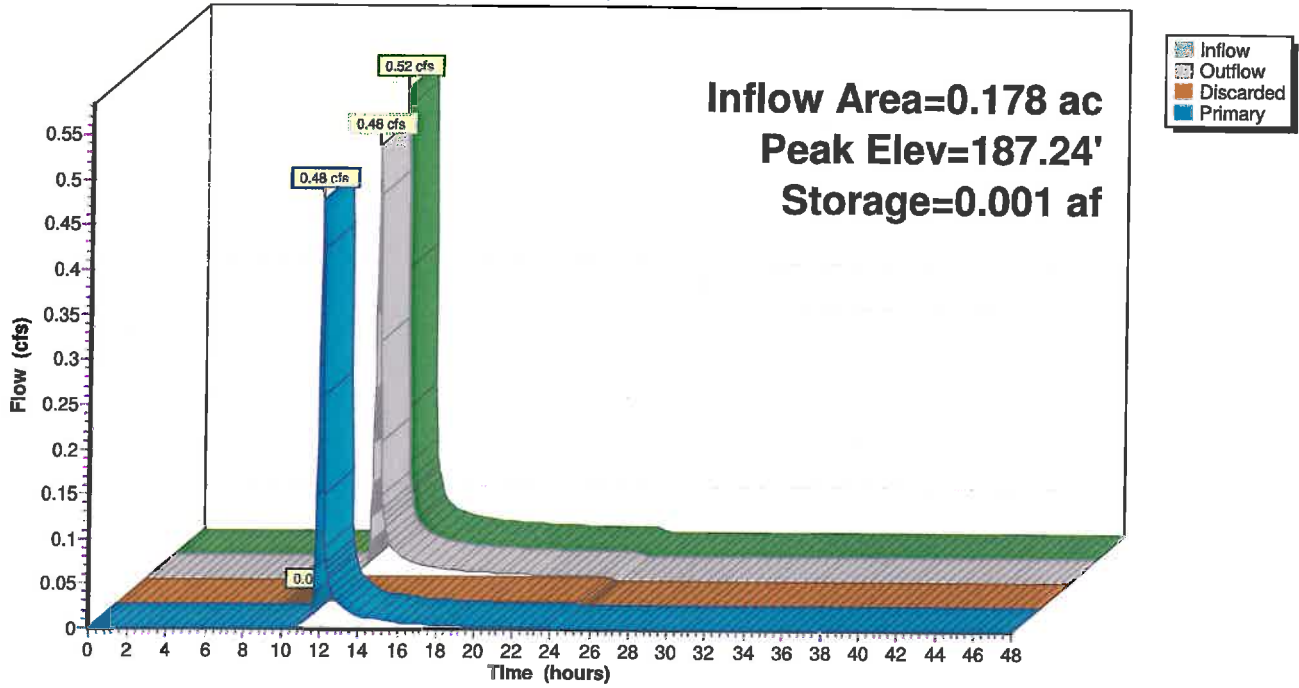
Device	Routing	Invert	Outlet Devices
#1	Discarded	186.00'	1.500 in/hr Exfiltration over Surface area
#2	Primary	186.00'	6.0" Round Underdrain L= 130.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 186.00' / 186.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.00 cfs @ 10.45 hrs HW=186.03' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.48 cfs @ 12.00 hrs HW=187.23' (Free Discharge)
 ↑2=Underdrain (Barrel Controls 0.48 cfs @ 2.43 fps)

Pond 14P: Infiltration Trench

Hydrograph



Cantilevered Retaining Wall

Lic. #: KW-06000663

ENERCALC, INC. 1983-2011, Build:6.2.10.00, Ver:6.2.00.0
Licensee: ROBERT M. SUTHERLAND, P.C.

Description: --None--

Criteria

Retained Height = 1.75 ft
 Wall height above soil = 0.00 ft
 Slope Behind Wall = 1.00 : 1
 Height of Soil over Toe = 0.00 in
 Water height over heel = 0.0 ft
 Vertical component of active
 Lateral soil pressure options:
 NOT USED for Soil Pressure.
 NOT USED for Sliding Resistance.
 NOT USED for Overturning Resistance.

Soil Data

Allow Soil Bearing = 3,000.0 psf
 Equivalent Fluid Pressure Method
 Heel Active Pressure = 45.0 psf/ft
 Toe Active Pressure = 30.0 psf/ft
 Passive Pressure = 389.0 psf/ft
 Soil Density, Heel = 110.00 pcf
 Soil Density, Toe = 0.00 pcf
 Friction Coeff btwn Ftg & Soil = 0.300
 Soil height to ignore
 for passive pressure = 0.00 in

Calculations per, ASCE 7-05

Design Summary

Wall Stability Ratios

Overturning = 10.01 OK
 Sliding = 2.16 OK
(Vertical Component NOT Used)
 Total Bearing Load = 600 lbs
 ...resultant ecc. = 1.20 in

 Soil Pressure @ Toe = 390 psf OK
 Soil Pressure @ Heel = 210 psf OK
 Allowable = 0 psf
 Soil Pressure Less Than Allowable
 ACI Factored @ Toe = 468 psf
 ACI Factored @ Heel = 252 psf
 Footing Shear @ Toe = 0.0 psi OK
 Footing Shear @ Heel = 0.0 psi OK
 Allowable = 88.7 psi
Sliding Calcs (Vertical Component NOT Used)
 Lateral Sliding Force = 89.1 lbs
 less 100% Passive Force = - 12.2 lbs
 less 100% Friction Force = - 180.0 lbs
 Added Force Req'd = 0.0 lbs OK
for 1.5 : 1 Stability = 0.0 lbs OK

Stem Construction

Design Height Above Ftg

	Top Stem	2nd	3rd	4th	Bottom
Bar Lap/Emb	Stem OK	Stem OK	Stem OK	Stem OK	Stem OK
ft =	0.00	0.00	0.00	0.00	0.00
Wall Material Above "Ht"	Concrete	Not Used	Not Used	Not Used	Not Used
Thickness	in = 24.00	8.00	8.00	8.00	8.00
Rebar Size	= # 5	# 5	# 5	# 5	# 5
Rebar Spacing	in = 32.00	32.00	32.00	32.00	32.00
Rebar Placed at	= Edge	Edge	Edge	Edge	Edge

Design Data

	Top Stem	2nd	3rd	4th	Bottom
fb/FB + fa/Fa	= 0.006	0.000	0.000	0.000	0.000
Total Force @ Section	lbs = 110.3	0.0	0.0	0.0	0.0
Moment....Actual	ft-l = 64.3	0.0	0.0	0.0	0.0
Moment....Allowable	ft-l = 11,555.6	0.0	0.0	0.0	0.0
Shear....Actual	psi = 0.4	0.0	0.0	0.0	0.0
Shear....Allowable	psi = 88.7	0.0	0.0	0.0	0.0
Wall Weight	psf = 300.0	0.0	0.0	0.0	0.0
Rebar Depth 'd'	in = 22.19	0.00	0.00	0.00	0.00
Lap splice if above	in = 19.78	0.00	0.00	0.00	0.00
Lap splice if below	in = 8.87	0.00	0.00	0.00	0.00
Hook embed into footing	in = 8.87	0.00	0.00	0.00	0.00

Concrete Data

f'c	psi = 3,500.0	2,000.0	2,000.0	2,000.0	2,000.0
Fy	psi = 60,000.0	60,000.0	60,000.0	60,000.0	60,000.0

Load Factors

Dead Load 1.200
 Live Load 1.600
 Earth, H 1.600
 Wind, W 1.600
 Seismic, E 1.000

Cantilevered Retaining Wall

ENERCALC, INC. 1983-2011, Build:6.2.10.00, Ver:6.2.00.0
Licensee : ROBERT M. SUTHERLAND, P.C.

Lic. #: KW-08000663
Description : -None-

Footing Dimensions & Strengths

Toe Width	=	0.00 ft
Heel Width	=	2.00
Total Footing Width	=	2.00
Footing Thickness	=	3.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft
f_c	=	3,500 psi
F_y	=	60,000 psi
Footing Concrete Density	=	150.00 pcf
Min. As %	=	0.0000
Cover @ Top	1.00	@ Btm.= 1.00 in

Footing Design Results

	Toe	Heel
Factored Pressure	= 468	252 psf
μ_u : Upward	= 0	0 ft-lb
μ_u : Downward	= 0	0 ft-lb
μ_u : Design	= 0	0 ft-lb
Actual 1-Way Shear	= 0.00	0.00 psi
Allow 1-Way Shear	= 0.00	0.00 psi
Toe Reinforcing	= None Spec'd	
Heel Reinforcing	= None Spec'd	
Key Reinforcing	= None Spec'd	

Other Acceptable Sizes & Spacings
 Toe: Not req'd, $\mu_u < S * Fr$
 Heel: Not req'd, $\mu_u < S * Fr$
 Key: No key defined

Summary of Overturning & Resisting Forces & Moments

ItemOVERTURNING.....		RESISTING.....		
	Force lbs	Distance ft	Moment ft-lb	Force lbs	Distance ft	Moment ft-lb
Heel Active Pressure	= 90.0	0.67	60.0			
Surcharge over Heel	=				2.00	
Toe Active Pressure	= -0.9	0.08	-0.1			
Surcharge Over Toe	=					
Adjacent Footing Load	=					
Added Lateral Load	=					
Load @ Stem Above Soil	=					
Total	= 89.1	O.T.M.	= 59.9			
Resisting/Overturning Ratio		=	10.01			
Vertical Loads used for Soil Pressure	=	600.0 lbs				
Vertical component of active pressure NOT used for soil pressure						
Soil Over Heel	=				2.00	
Sloped Soil Over Heel	=				2.00	
Surcharge Over Heel	=					
Adjacent Footing Load	=					
Axial Dead Load on Stem	=					
* Axial Live Load on Stem	=					
Soil Over Toe	=					
Surcharge Over Toe	=					
Stem Weight(s)	=			525.0	1.00	525.0
Earth @ Stem Transitions	=					
Footing Weight	=			75.0	1.00	75.0
Key Weight	=					
Vert. Component	=					
Total	=	600.0 lbs	R.M.	=		600.0

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

