PL202400061
PL2024-61

PIG ATE MY PIZZA

Bloomington, Minnesota

STORMWATER MANAGEMENT REPORT

City Review

ARC24021

MAY 1, 2024

Élan DESIGN LAB

Élan Design Lab, Inc.
Flour Exchange Building
310 4th Ave S
Suite 1006
Mpls, MN 55415

10700 Bloomington Ferry Rd
Bloomington, Minnesota
05/01/2024

Introduction & Project Overview

The proposed project consists of the northeast corner of the existing retail center located at 10700 Bloomington Ferry Rd. The 3,200 square foot building was previously a gas station and is being converted to a restaurant with a 1,291 square foot addition, an outdoor dining patio and a play area. The overall retail center is 4.559 acres, 0.412 acres are within the construction limits, and the redevelopment results in 0.162 acres of disturbed/reconstructed impervious surface. A portion of the parking/drive lot will be milled and overlaid with slight grade adjustment for ADA compliance at accessible stalls. Overall, the impervious area within the observed drainage area will be reduced from 2.342 acres to 2.300 acres, this is illustrated in the Existing & Proposed Drainage maps included for reference in the attachments of the report.

Information

Owner/Developer	Pig Ate My Pizza		
Site Address	10700 Bloomington Ferry Rd, Bloomington, MN 55438		
Site PID #	3111621420070		
Rainfall Intensity	2 yr. – 24 hr.	10 yr. – 24 hr.	100 yr. – 24 hr.
	2.85	4.24	7.44

Regulatory Requirements

The primary regulatory agency for this redevelopment is Riley-Purgatory-Bluff Creek Watershed District (RPBCWD). Since the project doesn't increase the amount of impervious or disturb over 50% of the parcel, the primary requirement for stormwater management is to provide abstraction of 1.1 in of the disturbed impervious surface. RPBCWD also requires a chloride management plan for any land disturbing activity. The disturbed area doesn't exceed 1 acre, so a SWPPP is not required.

Soils

The soils onsite are categorized as Kasota silty clay loam per the USDA Web Soil Survey. It is categorized as HSG C, but in the profile description it is likely to be underlaid by sand & coarse sands. A geotechnical investigation is pending to confirm soil and groundwater conditions are conducive to infiltration.

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Bloomington, Minnesota
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Design Overview

The site area is split into three subcatchments as illustrated in the drainage maps. 1E and 1P represent the central area including the building and surrounding area. 2E and 2P are on the outskirts of the site and run off to the adjacent streets, Landau Circle and Bloomington Ferry Rd. 3E and 3P are the large parking area in the center of the plat south of the building. 4E and 4P make up the southernmost end of the parking area. To manage the required abstraction of 1.1 inches of runoff from the 0.162 acres of disturbed/reconstructed impervious area, a small underground infiltration basin is proposed. The basin will be two rows of 20 ft long 3 ft diameter corrugated metal pipe with a 3' diameter 9' long connecting header. The system will be installed over a 6" bed of stone with 30" of stone on each side, 12" of stone on one end, 24" on the other end, and 6" of stone cover over the pipe. The volume the system must provide is 647 cubic ft or 0.015, as calculated below.

$$\left(0.162\ acres * 43{,}560 \frac{square\ ft}{acre}\right) * \left(1.1in * \frac{1ft}{12in}\right) = 647\ cubic\ ft$$

This underground system will be connected to the existing manhole located in the corner of the parking area just west of the building. This manhole is the primary outfall of subcatchment 1, and is also directly downstream from subcatchment 3 and 4. The pretreatment chamber will fill up first to settle out solids. Then water will drain into the infiltration basin and begin infiltrating, after reaching capacity water will back up to the existing manhole and proceed through the existing 18" PVC as it did in existing conditions. The basin provides approximately 700 cubic ft of storage below 818.1 feet. The underground infiltration basin design storage table is provided in the attachments of this report.

The basin must draw down within 48 hours of the end of a 24 hour storm event. Currently this is modeled with an infiltration rate of 0.45 inches/hr. Assuming a 14' by 26' rock bed infiltration area, the drawdown time of a full basin is calculated as 51.3 hours below.

$$\frac{700\ cubic\ ft}{(14ft * 26ft)} * \frac{1hr}{\left(0.45in * \frac{1ft}{12in}\right)} = 51.3\ hours$$

This is just shy of the required 48 hours, but at the 48 hour mark it is reasonable to assume the basin chambers will be empty and the only remaining water will be within the 6" rock bed and will be infiltrated by 52 hours. This drawdown time calculation is also pending the confirmation of soil and groundwater conditions.

Drawdown time needs to be 48 hours, adjust design to meet requirement

Provide soil boring from within proposed stormwater BMP to confirm proposed infiltration rate and 3 feet of separation from groundwater.

Stormwater infiltration BMP must not mobilize contaminants in soil or groundwater. Given past history of site as a gas station address any known contaminants and prevent mobilizing contaminants with stormwater infiltration. See the Minnesota Stormwater manual for guidance on infiltration BMP's on contaminated sites.

Conclusion

The stormwater management system for the proposed redevelopment at 10700 Bloomington Ferry Rd appears to meet the regulatory requirements of RPBCWD. If you have any questions or need additional information regarding this report, please feel free to contact me at sjohnston@elanlab.com. The chloride management plan required by RPBCWD is pending and will be provided with future submissions.

Attachments

- Existing Drainage Map
- Proposed Drainage Map
- Proposed HydroCAD Report
- Underground Infiltration Storage Table
- Chloride Management Plan – Pending
- Operations and Maintenance Manual - Pending
- Geotechnical Report - Pending

Stormwater management for site must also demonstrate compliance with water quality standards (60% TP removal and 90% TSS removal) and decrease runoff rate from existing.

Certification

I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Stephen M. Johnston

Registration # 18914

May 1, 2024

PL202400061
PL2024-61

DRAINAGE AREA SUMMARY

PERVIOUS AREA
0.600 AC

IMPERVIOUS AREA
2.342 AC

2.942 TOTAL AREA

2E TO STREET
0.238 AC
PERVIOUS 0.158 AC
IMPERVIOUS 0.080 AC

3E PARKING
1.215 AC
PERVIOUS 0.075 AC
IMPERVIOUS 1.140 AC

4E SOUTH PARKING
1.195 AC
PERVIOUS 0.359 AC
IMPERVIOUS 0.836 AC

1E BUILDING
0.294 AC
PERVIOUS 0.008 AC
IMPERVIOUS 0.286 AC

BLOOMINGTON FERRY ROAD

LANDAU CIRCLE

EXISTING BUILDING

50 150
SCALE IN FEET

HINDU SOCIETY OF MINNESOTA
LEARNING CENTER
MAPLE GROVE, MINNESOTA
GEN24003

EXISTING DRAINAGE MAP
05/01/2024

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BLOOMINGTON FERRY ROAD

LANDAU CIRCLE

2P TO STREET
0.288 AC
PERVIOUS 0.194 AC
IMPERVIOUS 0.094 AC

3P PARKING
1.201 AC
PERVIOUS 0.073 AC
IMPERVIOUS 1.128 AC

4P SOUTH PARKING
1.195 AC
PERVIOUS 0.359 AC
IMPERVIOUS 0.836 AC

1P BUILDING
0.258 AC
PERVIOUS 0.016 AC
IMPERVIOUS 0.242 AC

UNDERGROUND
INFILTRATION

EXISTING BUILDING

DRAINAGE AREA SUMMARY

PERVIOUS AREA
0.642 AC

IMPERVIOUS AREA
2.300 AC

2.942 TOTAL AREA

DISTURBED / RECONSTRUCTED
IMPERVIOUS AREA
0.162 AC

50 150
SCALE IN FEET

HINDU SOCIETY OF MINNESOTA
LEARNING CENTER
MAPLE GROVE, MINNESOTA
GEN24003

PROPOSED DRAINAGE MAP
05/01/2024

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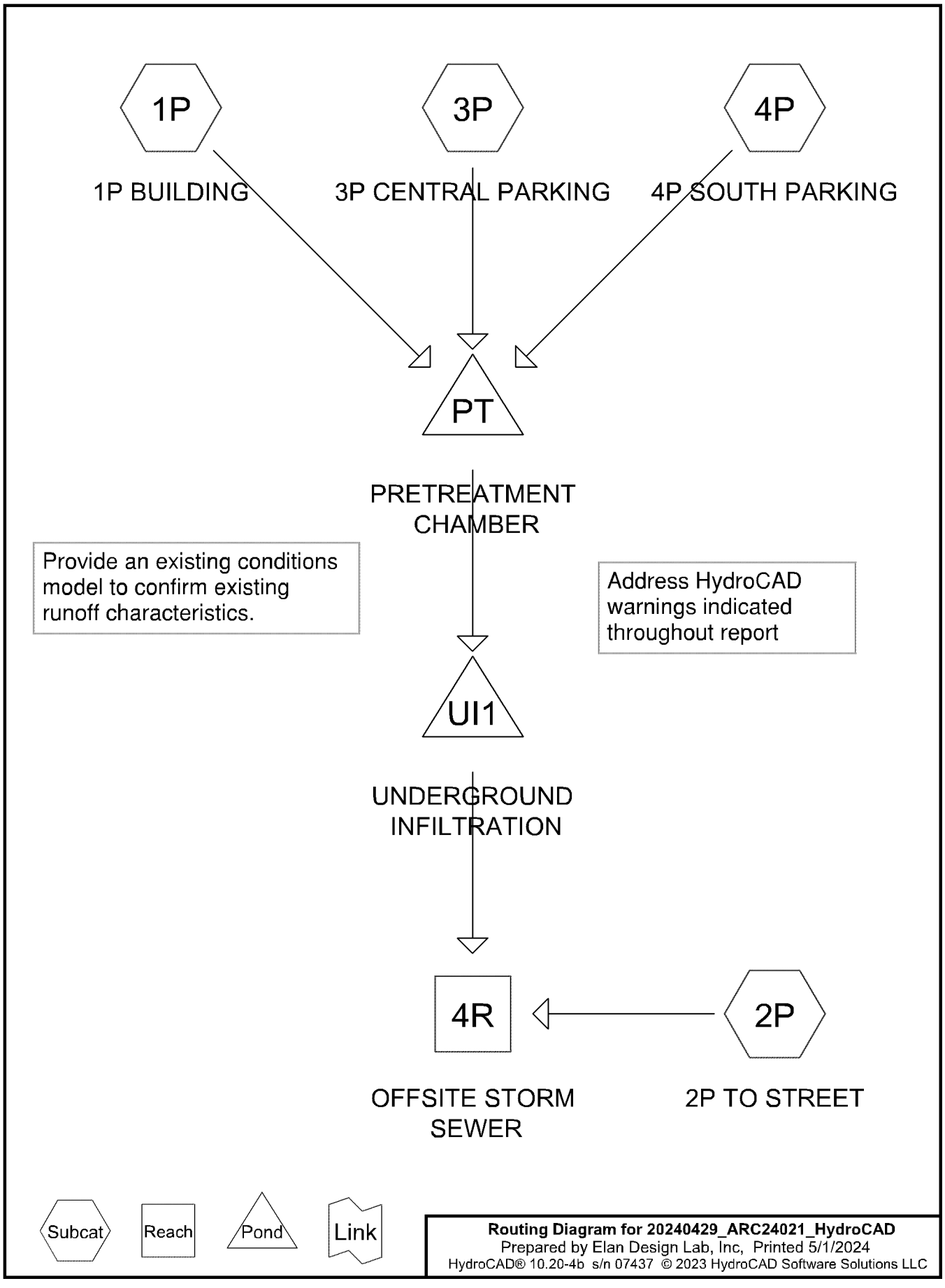

1P
3P
4P
1P BUILDING
3P CENTRAL PARKING
4P SOUTH PARKING
PT
PRETREATMENT CHAMBER
Provide an existing conditions model to confirm existing runoff characteristics.
Address HydroCAD warnings indicated throughout report
UI1
UNDERGROUND INFILTRATION
4R
2P
OFFSITE STORM SEWER
2P TO STREET
Subcat
Reach
Pond
Link
Routing Diagram for 20240429_ARC24021_HydroCAD
Prepared by Elan Design Lab, Inc, Printed 5/1/2024
HydroCAD® 10.20-4b s/n 07437 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR 24 HR	MSE 24-hr	3	Default	24.00	1	2.85	2
2	10 YR 24 HR	MSE 24-hr	3	Default	24.00	1	4.24	2
3	100 YR 24 HR	MSE 24-hr	3	Default	24.00	1	7.44	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.642	61	>75% Grass cover, Good, HSG B (1P, 2P, 3P, 4P)
2.300	98	Paved parking, HSG B (1P, 2P, 3P, 4P)
2.942	**90**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.942	HSG B	1P, 2P, 3P, 4P
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.942		**TOTAL AREA**

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	0.642	0.000	0.000	0.000	0.642	>75% Grass cover, Good	1P, 2P, 3P, 4P
0.000	2.300	0.000	0.000	0.000	2.300	Paved parking	1P, 2P, 3P, 4P
0.000	**2.942**	**0.000**	**0.000**	**0.000**	**2.942**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	UI1	818.10	816.60	80.0	0.0187	0.010	0.0	18.0	0.0	

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1P: 1P BUILDING Runoff Area=0.258 ac 93.80% Impervious Runoff Depth=2.40"
Tc=5.0 min CN=96 Runoff=1.04 cfs 0.052 af

Subcatchment2P: 2P TO STREET Runoff Area=0.288 ac 32.64% Impervious Runoff Depth=0.77"
Tc=5.0 min CN=73 Runoff=0.39 cfs 0.018 af

Subcatchment3P: 3P CENTRAL PARKING Runoff Area=1.201 ac 93.92% Impervious Runoff Depth=2.40"
Tc=5.0 min CN=96 Runoff=4.84 cfs 0.241 af

Subcatchment4P: 4P SOUTH PARKING Runoff Area=1.195 ac 69.96% Impervious Runoff Depth=1.61"
Tc=5.0 min CN=87 Runoff=3.52 cfs 0.160 af

Reach 4R: OFFSITE STORM SEWER Inflow=9.78 cfs 0.447 af
Outflow=9.78 cfs 0.447 af

Pond PT: PRETREATMENTCHAMBER Peak Elev=820.58' Storage=0.001 af Inflow=9.40 cfs 0.453 af
Outflow=9.40 cfs 0.452 af

Pond UI1: UNDERGROUNDINFILTRATION Peak Elev=820.06' Storage=0.018 af Inflow=9.40 cfs 0.453 af
Discarded=0.01 cfs 0.024 af Primary=9.40 cfs 0.428 af Outflow=9.40 cfs 0.453 af

Total Runoff Area = 2.942 ac Runoff Volume = 0.471 af Average Runoff Depth = 1.92"
21.82% Pervious = 0.642 ac 78.18% Impervious = 2.300 ac

Summary for Subcatchment 1P: 1P BUILDING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.04 cfs @ 12.11 hrs, Volume= 0.052 af, Depth= 2.40"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 YR 24 HR Rainfall=2.85"

Area (ac)	CN	Description
0.016	61	>75% Grass cover, Good, HSG B
0.242	98	Paved parking, HSG B
0.258	96	Weighted Average
0.016		6.20% Pervious Area
0.242		93.80% Impervious Area

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

Summary for Subcatchment 2P: 2P TO STREET

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.39 cfs @ 12.13 hrs, Volume= 0.018 af, Depth= 0.77"
Routed to Reach 4R : OFFSITE STORM SEWER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 YR 24 HR Rainfall=2.85"

Area (ac)	CN	Description
0.194	61	>75% Grass cover, Good, HSG B
0.094	98	Paved parking, HSG B
0.288	73	Weighted Average
0.194		67.36% Pervious Area
0.094		32.64% Impervious Area

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

Summary for Subcatchment 3P: 3P CENTRAL PARKING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 4.84 cfs @ 12.11 hrs, Volume= 0.241 af, Depth= 2.40"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 YR 24 HR Rainfall=2.85"

Area (ac)	CN	Description
0.073	61	>75% Grass cover, Good, HSG B
1.128	98	Paved parking, HSG B
1.201	96	Weighted Average
0.073		6.08% Pervious Area
1.128		93.92% Impervious Area

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

Summary for Subcatchment 4P: 4P SOUTH PARKING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.52 cfs @ 12.12 hrs, Volume= 0.160 af, Depth= 1.61"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 YR 24 HR Rainfall=2.85"

Area (ac)	CN	Description
0.359	61	>75% Grass cover, Good, HSG B
0.836	98	Paved parking, HSG B
1.195	87	Weighted Average
0.359		30.04% Pervious Area
0.836		69.96% Impervious Area

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

Summary for Reach 4R: OFFSITE STORM SEWER

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

Inflow Area = 2.942 ac, 78.18% Impervious, Inflow Depth = 1.82" for 2 YR 24 HR event
Inflow = 9.78 cfs @ 12.11 hrs, Volume= 0.447 af
Outflow = 9.78 cfs @ 12.11 hrs, Volume= 0.447 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3

Summary for Pond PT: PRETREATMENT CHAMBER

[93] Warning: Storage range exceeded by 2.48'

Inflow Area = 2.654 ac, 83.12% Impervious, Inflow Depth = 2.05" for 2 YR 24 HR event
Inflow = 9.40 cfs @ 12.11 hrs, Volume= 0.453 af
Outflow = 9.40 cfs @ 12.11 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min
Primary = 9.40 cfs @ 12.11 hrs, Volume= 0.453 af
Routed to Pond UI1 : UNDERGROUND INFILTRATION

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 820.58' @ 12.11 hrs Storage= 0.001 af

Plug-Flow detention time= 3.0 min calculated for 0.452 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (780.8 - 778.6)

Volume	Invert	Avail.Storage	Storage Description
#1	815.60'	0.001 af	**30.0" Round Pipe Storage** L= 5.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	816.85'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.25 Width (feet) 2.50 2.49 2.46 2.42 2.36 2.29 2.19 2.07 1.92 1.73 1.50 1.19 0.70 0.00
#2	Primary	816.85'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	815.85'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	816.10'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#5	Primary	816.35'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#6	Primary	816.60'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.05 cfs @ 12.11 hrs HW=820.46' TW=819.98' (Dynamic Tailwater)
- **1=Custom Weir/Orifice** (Orifice Controls 8.32 cfs @ 3.41 fps)
- **2=Orifice/Grate** (Orifice Controls 0.66 cfs @ 3.34 fps)
- **3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 3.34 fps)
- **4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 3.34 fps)
- **5=Orifice/Grate** (Orifice Controls 0.02 cfs @ 3.34 fps)
- **6=Orifice/Grate** (Orifice Controls 0.02 cfs @ 3.34 fps)

Summary for Pond UI1: UNDERGROUND INFILTRATION

[93] Warning: Storage range exceeded by 1.46'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[80] Warning: Exceeded Pond PT by 0.12' @ 24.10 hrs (4.56 cfs 1.551 af)

Inflow Area = 2.654 ac, 83.12% Impervious, Inflow Depth = 2.05" for 2 YR 24 HR event
Inflow = 9.40 cfs @ 12.11 hrs, Volume= 0.453 af
Outflow = 9.40 cfs @ 12.11 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.024 af
Primary = 9.40 cfs @ 12.11 hrs, Volume= 0.428 af
Routed to Reach 4R : OFFSITE STORM SEWER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 820.06' @ 12.11 hrs Surf.Area= 0.008 ac Storage= 0.018 af

Plug-Flow detention time= 85.8 min calculated for 0.452 af (100% of inflow)
Center-of-Mass det. time= 86.5 min (867.4 - 780.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	814.60'	0.010 af	**14.00'W x 26.00'L x 4.00'H Field A** 0.033 af Overall - 0.008 af Embedded = 0.025 af x 40.0% Voids
#2A	815.10'	0.008 af	**CMP Round 36** x 2 Inside #1 Effective Size= 36.0"W x 36.0"H => 7.07 sf x 20.00'L = 141.4 cf Overall Size= 36.0"W x 36.0"H x 20.00'L 2 Chambers in 2 Rows 9.00' Header x 7.07 sf x 1 = 63.6 cf Inside
		0.018 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	818.10'	**18.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 818.10' / 816.60' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Discarded	814.60'	**0.450 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'

Discarded OutFlow Max=0.01 cfs @ 12.11 hrs HW=819.98' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=9.05 cfs @ 12.11 hrs HW=819.98' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 9.05 cfs @ 5.12 fps)

Pond UI1: UNDERGROUND INFILTRATION - Chamber Wizard Field A

Chamber Model = CMP Round 36 (Round Corrugated Metal Pipe)
Effective Size= 36.0"W x 36.0"H => 7.07 sf x 20.00'L = 141.4 cf
Overall Size= 36.0"W x 36.0"H x 20.00'L

36.0" Wide + 36.0" Spacing = 72.0" C-C Row Spacing

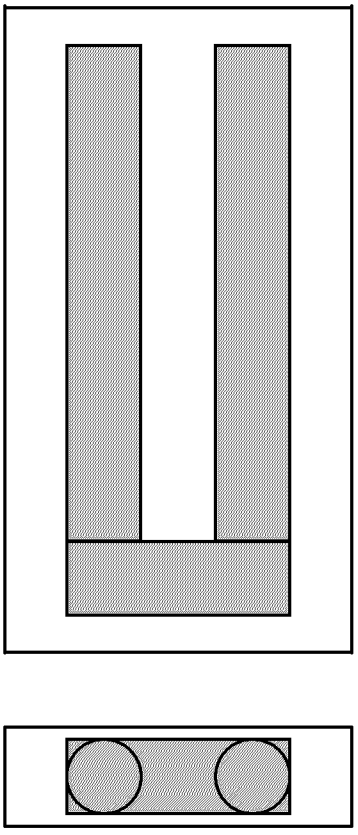
1 Chambers/Row x 20.00' Long +3.00' Header x 1 = 23.00' Row Length +18.0" End Stone x 2 = 26.00' Base Length
2 Rows x 36.0" Wide + 36.0" Spacing x 1 + 30.0" Side Stone x 2 = 14.00' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

2 Chambers x 141.4 cf + 9.00' Header x 7.07 sf = 346.4 cf Chamber Storage

1,456.0 cf Field - 346.4 cf Chambers = 1,109.6 cf Stone x 40.0% Voids = 443.9 cf Stone Storage

Chamber Storage + Stone Storage = 790.2 cf = 0.018 af
Overall Storage Efficiency = 54.3%
Overall System Size = 26.00' x 14.00' x 4.00'

2 Chambers
53.9 cy Field
41.1 cy Stone



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1P: 1P BUILDING Runoff Area=0.258 ac 93.80% Impervious Runoff Depth=3.78"
Tc=5.0 min CN=96 Runoff=1.59 cfs 0.081 af

Subcatchment2P: 2P TO STREET Runoff Area=0.288 ac 32.64% Impervious Runoff Depth=1.70"
Tc=5.0 min CN=73 Runoff=0.90 cfs 0.041 af

Subcatchment3P: 3P CENTRAL PARKING Runoff Area=1.201 ac 93.92% Impervious Runoff Depth=3.78"
Tc=5.0 min CN=96 Runoff=7.40 cfs 0.378 af

Subcatchment4P: 4P SOUTH PARKING Runoff Area=1.195 ac 69.96% Impervious Runoff Depth=2.86"
Tc=5.0 min CN=87 Runoff=6.12 cfs 0.285 af

Reach 4R: OFFSITE STORM SEWER Inflow=16.00 cfs 0.760 af
Outflow=16.00 cfs 0.760 af

Pond PT: PRETREATMENTCHAMBER Peak Elev=823.31' Storage=0.001 af Inflow=15.11 cfs 0.744 af
Outflow=15.11 cfs 0.744 af

Pond UI1: UNDERGROUNDINFILTRATION Peak Elev=821.98' Storage=0.018 af Inflow=15.11 cfs 0.744 af
Discarded=0.01 cfs 0.025 af Primary=15.10 cfs 0.719 af Outflow=15.11 cfs 0.744 af

Total Runoff Area = 2.942 ac Runoff Volume = 0.785 af Average Runoff Depth = 3.20"
21.82% Pervious = 0.642 ac 78.18% Impervious = 2.300 ac

Summary for Subcatchment 1P: 1P BUILDING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.59 cfs @ 12.11 hrs, Volume= 0.081 af, Depth= 3.78"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 YR 24 HR Rainfall=4.24"

Area (ac)	CN	Description
0.016	61	>75% Grass cover, Good, HSG B
0.242	98	Paved parking, HSG B
0.258	96	Weighted Average
0.016		6.20% Pervious Area
0.242		93.80% Impervious Area

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

Summary for Subcatchment 2P: 2P TO STREET

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.90 cfs @ 12.12 hrs, Volume= 0.041 af, Depth= 1.70"
Routed to Reach 4R : OFFSITE STORM SEWER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 YR 24 HR Rainfall=4.24"

Area (ac)	CN	Description
0.194	61	>75% Grass cover, Good, HSG B
0.094	98	Paved parking, HSG B
0.288	73	Weighted Average
0.194		67.36% Pervious Area
0.094		32.64% Impervious Area

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

Summary for Subcatchment 3P: 3P CENTRAL PARKING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 7.40 cfs @ 12.11 hrs, Volume= 0.378 af, Depth= 3.78"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 YR 24 HR Rainfall=4.24"

Area (ac)	CN	Description
0.073	61	>75% Grass cover, Good, HSG B
1.128	98	Paved parking, HSG B
1.201	96	Weighted Average
0.073		6.08% Pervious Area
1.128		93.92% Impervious Area

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

Summary for Subcatchment 4P: 4P SOUTH PARKING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.12 cfs @ 12.12 hrs, Volume= 0.285 af, Depth= 2.86"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 YR 24 HR Rainfall=4.24"

Area (ac)	CN	Description
0.359	61	>75% Grass cover, Good, HSG B
0.836	98	Paved parking, HSG B
1.195	87	Weighted Average
0.359		30.04% Pervious Area
0.836		69.96% Impervious Area

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

Summary for Reach 4R: OFFSITE STORM SEWER

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

Inflow Area = 2.942 ac, 78.18% Impervious, Inflow Depth = 3.10" for 10 YR 24 HR event
Inflow = 16.00 cfs @ 12.11 hrs, Volume= 0.760 af
Outflow = 16.00 cfs @ 12.11 hrs, Volume= 0.760 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3

Summary for Pond PT: PRETREATMENT CHAMBER

[93] Warning: Storage range exceeded by 5.21'
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

Inflow Area = 2.654 ac, 83.12% Impervious, Inflow Depth = 3.36" for 10 YR 24 HR event
Inflow = 15.11 cfs @ 12.11 hrs, Volume= 0.744 af
Outflow = 15.11 cfs @ 12.11 hrs, Volume= 0.744 af, Atten= 0%, Lag= 0.0 min
Primary = 15.11 cfs @ 12.11 hrs, Volume= 0.744 af
Routed to Pond UI1 : UNDERGROUND INFILTRATION

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 823.31' @ 12.11 hrs Storage= 0.001 af

Plug-Flow detention time= 0.9 min calculated for 0.743 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (771.5 - 770.1)

Volume	Invert	Avail.Storage	Storage Description
#1	815.60'	0.001 af	**30.0" Round Pipe Storage** L= 5.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	816.85'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.25 Width (feet) 2.50 2.49 2.46 2.42 2.36 2.29 2.19 2.07 1.92 1.73 1.50 1.19 0.70 0.00
#2	Primary	816.85'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	815.85'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	816.10'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#5	Primary	816.35'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#6	Primary	816.60'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.57 cfs @ 12.11 hrs HW=823.03' TW=821.78' (Dynamic Tailwater)
- **1=Custom Weir/Orifice** (Orifice Controls 13.40 cfs @ 5.49 fps)
- **2=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.38 fps)
- **3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.38 fps)
- **4=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.38 fps)
- **5=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.38 fps)
- **6=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.38 fps)

Summary for Pond UI1: UNDERGROUND INFILTRATION

[93] Warning: Storage range exceeded by 3.38'
[80] Warning: Exceeded Pond PT by 0.27' @ 24.15 hrs (6.67 cfs 2.368 af)

Inflow Area = 2.654 ac, 83.12% Impervious, Inflow Depth = 3.36" for 10 YR 24 HR event
Inflow = 15.11 cfs @ 12.11 hrs, Volume= 0.744 af
Outflow = 15.11 cfs @ 12.11 hrs, Volume= 0.744 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.025 af
Primary = 15.10 cfs @ 12.11 hrs, Volume= 0.719 af
Routed to Reach 4R : OFFSITE STORM SEWER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 821.98' @ 12.11 hrs Surf.Area= 0.008 ac Storage= 0.018 af

Plug-Flow detention time= 54.3 min calculated for 0.743 af (100% of inflow)
Center-of-Mass det. time= 55.1 min (826.7 - 771.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	814.60'	0.010 af	**14.00'W x 26.00'L x 4.00'H Field A** 0.033 af Overall - 0.008 af Embedded = 0.025 af x 40.0% Voids
#2A	815.10'	0.008 af	**CMP Round 36** x 2 Inside #1 Effective Size= 36.0"W x 36.0"H => 7.07 sf x 20.00'L = 141.4 cf Overall Size= 36.0"W x 36.0"H x 20.00'L 2 Chambers in 2 Rows 9.00' Header x 7.07 sf x 1 = 63.6 cf Inside
		0.018 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	818.10'	**18.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 818.10' / 816.60' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Discarded	814.60'	**0.450 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'

Discarded OutFlow Max=0.01 cfs @ 12.11 hrs HW=821.79' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=14.56 cfs @ 12.11 hrs HW=821.78' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 14.56 cfs @ 8.24 fps)

Pond UI1: UNDERGROUND INFILTRATION - Chamber Wizard Field A

Chamber Model = CMP Round 36 (Round Corrugated Metal Pipe)
Effective Size= 36.0"W x 36.0"H => 7.07 sf x 20.00'L = 141.4 cf
Overall Size= 36.0"W x 36.0"H x 20.00'L

36.0" Wide + 36.0" Spacing = 72.0" C-C Row Spacing

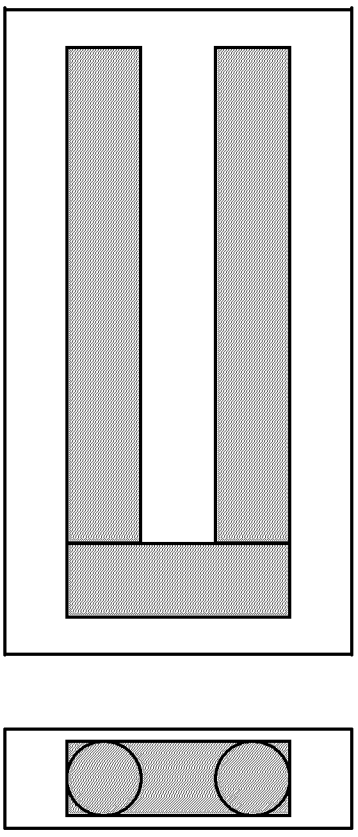
1 Chambers/Row x 20.00' Long +3.00' Header x 1 = 23.00' Row Length +18.0" End Stone x 2 = 26.00' Base Length
2 Rows x 36.0" Wide + 36.0" Spacing x 1 + 30.0" Side Stone x 2 = 14.00' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

2 Chambers x 141.4 cf + 9.00' Header x 7.07 sf = 346.4 cf Chamber Storage

1,456.0 cf Field - 346.4 cf Chambers = 1,109.6 cf Stone x 40.0% Voids = 443.9 cf Stone Storage

Chamber Storage + Stone Storage = 790.2 cf = 0.018 af
Overall Storage Efficiency = 54.3%
Overall System Size = 26.00' x 14.00' x 4.00'

2 Chambers
53.9 cy Field
41.1 cy Stone



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1P: 1P BUILDING Runoff Area=0.258 ac 93.80% Impervious Runoff Depth=6.96"
Tc=5.0 min CN=96 Runoff=2.84 cfs 0.150 af

Subcatchment2P: 2P TO STREET Runoff Area=0.288 ac 32.64% Impervious Runoff Depth=4.32"
Tc=5.0 min CN=73 Runoff=2.27 cfs 0.104 af

Subcatchment3P: 3P CENTRAL PARKING Runoff Area=1.201 ac 93.92% Impervious Runoff Depth=6.96"
Tc=5.0 min CN=96 Runoff=13.22 cfs 0.697 af

Subcatchment4P: 4P SOUTH PARKING Runoff Area=1.195 ac 69.96% Impervious Runoff Depth=5.91"
Tc=5.0 min CN=87 Runoff=12.13 cfs 0.588 af

Reach 4R: OFFSITE STORM SEWER Inflow=30.43 cfs 1.513 af
Outflow=30.43 cfs 1.513 af

Pond PT: PRETREATMENTCHAMBER Peak Elev=834.39' Storage=0.001 af Inflow=28.18 cfs 1.435 af
Outflow=28.19 cfs 1.435 af

Pond UI1: UNDERGROUNDINFILTRATION Peak Elev=829.74' Storage=0.018 af Inflow=28.19 cfs 1.435 af
Discarded=0.01 cfs 0.026 af Primary=28.16 cfs 1.409 af Outflow=28.17 cfs 1.435 af

Total Runoff Area = 2.942 ac Runoff Volume = 1.538 af Average Runoff Depth = 6.27"
21.82% Pervious = 0.642 ac 78.18% Impervious = 2.300 ac

Summary for Subcatchment 1P: 1P BUILDING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.84 cfs @ 12.11 hrs, Volume= 0.150 af, Depth= 6.96"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 YR 24 HR Rainfall=7.44"

Area (ac)	CN	Description
0.016	61	>75% Grass cover, Good, HSG B
0.242	98	Paved parking, HSG B
0.258	96	Weighted Average
0.016		6.20% Pervious Area
0.242		93.80% Impervious Area

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

Summary for Subcatchment 2P: 2P TO STREET

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.27 cfs @ 12.12 hrs, Volume= 0.104 af, Depth= 4.32"
Routed to Reach 4R : OFFSITE STORM SEWER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 YR 24 HR Rainfall=7.44"

Area (ac)	CN	Description
0.194	61	>75% Grass cover, Good, HSG B
0.094	98	Paved parking, HSG B
0.288	73	Weighted Average
0.194		67.36% Pervious Area
0.094		32.64% Impervious Area

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

Summary for Subcatchment 3P: 3P CENTRAL PARKING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 13.22 cfs @ 12.11 hrs, Volume= 0.697 af, Depth= 6.96"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 YR 24 HR Rainfall=7.44"

Area (ac)	CN	Description
0.073	61	>75% Grass cover, Good, HSG B
1.128	98	Paved parking, HSG B
1.201	96	Weighted Average
0.073		6.08% Pervious Area
1.128		93.92% Impervious Area

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

Summary for Subcatchment 4P: 4P SOUTH PARKING

[49] Hint: Tc<2dt may require smaller dt

Runoff = 12.13 cfs @ 12.11 hrs, Volume= 0.588 af, Depth= 5.91"
Routed to Pond PT : PRETREATMENT CHAMBER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 YR 24 HR Rainfall=7.44"

Area (ac)	CN	Description
0.359	61	>75% Grass cover, Good, HSG B
0.836	98	Paved parking, HSG B
1.195	87	Weighted Average
0.359		30.04% Pervious Area
0.836		69.96% Impervious Area

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

Summary for Reach 4R: OFFSITE STORM SEWER

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

Inflow Area = 2.942 ac, 78.18% Impervious, Inflow Depth = 6.17" for 100 YR 24 HR event
Inflow = 30.43 cfs @ 12.11 hrs, Volume= 1.513 af
Outflow = 30.43 cfs @ 12.11 hrs, Volume= 1.513 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3

Summary for Pond PT: PRETREATMENT CHAMBER

[93] Warning: Storage range exceeded by 16.29'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 2.654 ac, 83.12% Impervious, Inflow Depth = 6.49" for 100 YR 24 HR event
Inflow = 28.18 cfs @ 12.11 hrs, Volume= 1.435 af
Outflow = 28.19 cfs @ 12.11 hrs, Volume= 1.435 af, Atten= 0%, Lag= 0.0 min
Primary = 28.19 cfs @ 12.11 hrs, Volume= 1.435 af
Routed to Pond UI1 : UNDERGROUND INFILTRATION

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 834.39' @ 12.11 hrs Storage= 0.001 af

Plug-Flow detention time= 1.5 min calculated for 1.435 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (760.0 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1	815.60'	0.001 af	**30.0" Round Pipe Storage** L= 5.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	816.85'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.25 Width (feet) 2.50 2.49 2.46 2.42 2.36 2.29 2.19 2.07 1.92 1.73 1.50 1.19 0.70 0.00
#2	Primary	816.85'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	815.85'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	816.10'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#5	Primary	816.35'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#6	Primary	816.60'	**0.5" Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=27.24 cfs @ 12.11 hrs HW=833.45' TW=829.08' (Dynamic Tailwater)
- **1=Custom Weir/Orifice** (Orifice Controls 25.04 cfs @ 10.27 fps)
- **2=Orifice/Grate** (Orifice Controls 1.98 cfs @ 10.06 fps)
- **3=Orifice/Grate** (Orifice Controls 0.05 cfs @ 10.06 fps)
- **4=Orifice/Grate** (Orifice Controls 0.05 cfs @ 10.06 fps)
- **5=Orifice/Grate** (Orifice Controls 0.05 cfs @ 10.06 fps)
- **6=Orifice/Grate** (Orifice Controls 0.05 cfs @ 10.06 fps)

Summary for Pond UI1: UNDERGROUND INFILTRATION

[93] Warning: Storage range exceeded by 11.14'
[80] Warning: Exceeded Pond PT by 0.10' @ 24.25 hrs (4.06 cfs 1.971 af)

Inflow Area = 2.654 ac, 83.12% Impervious, Inflow Depth = 6.49" for 100 YR 24 HR event
Inflow = 28.19 cfs @ 12.11 hrs, Volume= 1.435 af
Outflow = 28.17 cfs @ 12.11 hrs, Volume= 1.435 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.026 af
Primary = 28.16 cfs @ 12.11 hrs, Volume= 1.409 af
Routed to Reach 4R : OFFSITE STORM SEWER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 829.74' @ 12.11 hrs Surf.Area= 0.008 ac Storage= 0.018 af

Plug-Flow detention time= 29.2 min calculated for 1.434 af (100% of inflow)
Center-of-Mass det. time= 30.3 min (790.3 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	814.60'	0.010 af	**14.00'W x 26.00'L x 4.00'H Field A** 0.033 af Overall - 0.008 af Embedded = 0.025 af x 40.0% Voids
#2A	815.10'	0.008 af	**CMP Round 36** x 2 Inside #1 Effective Size= 36.0"W x 36.0"H => 7.07 sf x 20.00'L = 141.4 cf Overall Size= 36.0"W x 36.0"H x 20.00'L 2 Chambers in 2 Rows 9.00' Header x 7.07 sf x 1 = 63.6 cf Inside
		0.018 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	818.10'	**18.0" Round Culvert** L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 818.10' / 816.60' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Discarded	814.60'	**0.450 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'

Discarded OutFlow Max=0.01 cfs @ 12.11 hrs HW=829.12' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=27.21 cfs @ 12.11 hrs HW=829.08' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 27.21 cfs @ 15.40 fps)

Pond UI1: UNDERGROUND INFILTRATION - Chamber Wizard Field A

Chamber Model = CMP Round 36 (Round Corrugated Metal Pipe)
Effective Size= 36.0"W x 36.0"H => 7.07 sf x 20.00'L = 141.4 cf
Overall Size= 36.0"W x 36.0"H x 20.00'L

36.0" Wide + 36.0" Spacing = 72.0" C-C Row Spacing

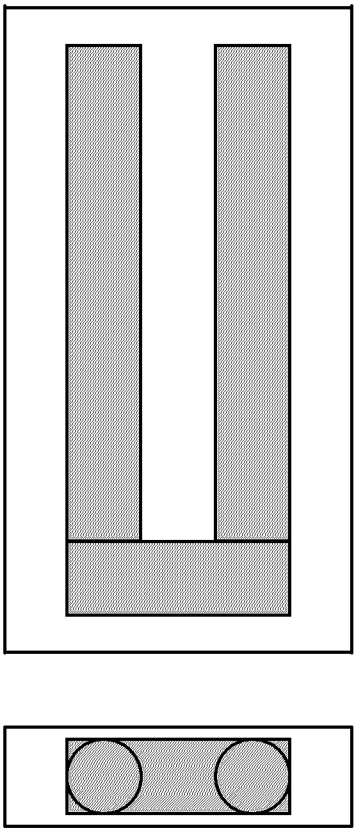
1 Chambers/Row x 20.00' Long +3.00' Header x 1 = 23.00' Row Length +18.0" End Stone x 2 = 26.00' Base Length
2 Rows x 36.0" Wide + 36.0" Spacing x 1 + 30.0" Side Stone x 2 = 14.00' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

2 Chambers x 141.4 cf + 9.00' Header x 7.07 sf = 346.4 cf Chamber Storage

1,456.0 cf Field - 346.4 cf Chambers = 1,109.6 cf Stone x 40.0% Voids = 443.9 cf Stone Storage

Chamber Storage + Stone Storage = 790.2 cf = 0.018 af
Overall Storage Efficiency = 54.3%
Overall System Size = 26.00' x 14.00' x 4.00'

2 Chambers
53.9 cy Field
41.1 cy Stone



Stage-Area-Storage for Pond UI1: UNDERGROUND INFILTRATION

Elevation (feet)	Surface (acres)	Storage (acre-feet)
814.60	**0.008**	0.000
814.80	0.008	0.001
815.00	0.008	0.001
815.20	0.008	0.002
815.40	0.008	0.003
815.60	0.008	0.004
815.80	0.008	0.005
816.00	0.008	0.006
816.20	0.008	0.007
816.40	0.008	0.008
816.60	0.008	0.009
816.80	0.008	0.010
817.00	0.008	0.011
817.20	0.008	0.012
817.40	0.008	0.013
817.60	0.008	0.014
817.80	0.008	0.015
818.00	0.008	0.016
818.20	0.008	0.017
818.40	0.008	0.017
818.60	0.008	**0.018**
818.80	0.008	**0.018**
819.00	0.008	0.018
819.20	0.008	0.018
819.40	0.008	0.018
819.60	0.008	0.018
819.80	0.008	0.018
820.00	0.008	0.018
820.20	0.008	0.018
820.40	0.008	0.018
820.60	0.008	0.018
820.80	0.008	0.018
821.00	0.008	0.018
821.20	0.008	0.018
821.40	0.008	0.018
821.60	0.008	0.018
821.80	0.008	0.018
822.00	0.008	0.018
822.20	0.008	0.018
822.40	0.008	0.018
822.60	0.008	0.018
822.80	0.008	0.018
823.00	0.008	0.018
823.20	0.008	0.018
823.40	0.008	0.018
823.60	0.008	0.018
823.80	0.008	0.018
824.00	0.008	0.018
824.20	0.008	0.018
824.40	0.008	0.018
824.60	0.008	0.018
824.80	0.008	0.018
825.00	0.008	0.018
825.20	0.008	0.018
825.40	0.008	0.018
825.60	0.008	0.018
825.80	0.008	0.018
826.00	0.008	0.018
826.20	0.008	0.018
826.40	0.008	0.018
826.60	0.008	0.018
826.80	0.008	0.018
827.00	0.008	0.018
827.20	0.008	0.018
827.40	0.008	0.018
827.60	0.008	0.018
827.80	0.008	0.018
828.00	0.008	0.018
828.20	0.008	0.018
828.40	0.008	0.018
828.60	0.008	0.018
828.80	0.008	0.018
829.00	0.008	0.018
829.20	0.008	0.018
829.40	0.008	0.018
829.60	0.008	0.018