CAVANARO CONSULTING

• Land Use Planning
• Civil Engineering
• Construction Permitting

March 23, 2016

Mr. John G. Radcliffe
Chairman
New Bedford Conservation Commission
New Bedford City Hall
133 William Street
New Bedford, MA 02744

RE: **Response to Review Comments Dated 3/15/16**
Northcoast Seafood addition
43 Blackmer Street
New Bedford, MA 02745

Dear Chairman Radcliffe:

The purpose of this correspondence is to respond to the review comments submitted for the project at 43 Blackmer Street by Mr. Scott Turner, P.E. from Nitsch Engineering, Inc. dated 3/15/16.

The following response and brief description of each major comment is offered for your review and consideration:

Comments by Nitsch Engineering, Submitted to New Bedford Conservation Commission, dated 3/15/16

General

1. *The site is a mix of new development and redevelopment. The site includes an increase in impervious surface of 16,449 square feet. The "new development" portions of the site need to meet the Stormwater Management Guidelines fully while any redeveloped areas need to meet the Guidelines to the maximum extent practicable.*

The "new development" portion of the project meets the stormwater management guidelines fully and the redeveloped portion is met to the maximum extent practicable.

2. *An Erosion and Sedimentation Control Plan has not been submitted for the project. Erosion controls, consisting of silt fence and haybales, are shown on the landscape plan. We recommend that construction entrances be added to the plans as well as construction entrance details. We also recommend some type of filter fabric or silt sock be added to all of the catch basins.*

The landscape plan has been updated to show construction entrances and additional construction notes. Also a haybale erosion control is shown on detail sheet DTI to be placed at all catch basin locations.

3. *The submitted Illicit Discharge statement should be signed.*

The illicit discharge statement will be signed on the final submittal.

Tel: 781-659-8187 ° Fax: 781-659-8186 ° 687 Main Street ° PO Box 5175 ° Norwell, MA 02061

3. *The submitted Illicit Discharge statement should be signed.*

The illicit discharge statement will be signed on the final submittal.

4. *The Applicant should confirm with the Department of Public Infrastructure that the existing drainage system in Blackmer Street is sized appropriately to handle an increase in peak flows. The existing drainage system is subject to tidal influence, and it is unclear how the tides impact the drainage system or its ability to accept additional flow.*

The recharge system has been redesigned and the stormwater modeling was revised to have only one design control point at the end of Blackmer Street. The revised model reflects stormwater conditions more accurately as drainage from the site conveys to the new design control point.

If a condition exists where the existing offsite drainage system is subject to tidal flow and periodically backs up during extreme high tides and storm events this condition will not be exacerbated by the proposed improvements.

5. *It does not appear that soil testing was performed on the site. Soil testing should be performed to determine seasonal high groundwater elevations, as well as the infiltrative capacity of the soil.*

Borings ware taken for the existing building which was constructed in 2003 in the same area where the infiltration system is proposed. Groundwater was found at a depth of 3.5-4.0 feet below ground surface throughout the site. Thus, the groundwater elevation is at approximately elevation 1.5 – 2.0' NAVD. This elevation also corresponds to the approximate mean high tide for this area. Therefore a groundwater elevation of 2.0 NAVD was conservatively used for the stormwater modeling. The borings also indicated a depth of fill of approximately 2.0 feet below the surface and fine-coarse sand below that horizon. It is recommended that any fill or organic material be removed and replaced with clean gravel prior to installation of the infiltration system, a note has been added to the detail sheet for the installation of the infiltration field. The soil was modeled for an infiltration rate of 2.41 In./Hr., which we believe is still a conservative rate for this type of soil.

6. *The determination of seasonal high groundwater and soil infiltration rates will determine whether the proposed underground infiltration system is designed appropriately. Per the Stormwater Management Guidelines, there should be two feet of separation between seasonal high groundwater and the bottom of the infiltration system.*

Groundwater was determined from borings performed in 2003 and 2.0 feet of separation is proposed at the bottom of the infiltration system.

7. *The Applicant used a soil infiltration rate of .09 inches/hour when sizing the underground infiltration system. This rate appears conservative, but without soil testing results we cannot comment on the accuracy of using this rate.*

The borings show a fine –coarse sand substrate, therefore an infiltration rate was changed to 2.41 in/hr.

8. *Pipe sizing calculations should be submitted.*

All pipes were modeled in the Hydro CAD program.

9. *Stormceptor sizing calculations should be submitted.*

The existing pavement on the new site is approximately 26,569 square feet, the total proposed pavement is 53,152 square feet, with a net gain of 26,583 square feet. Therefore, the stormceptor was designed for the 26,583 s.f. (0.61 acres) increase in pavement. According to the Stormwater Fact Sheet provided by the Massachusetts Strategic Envirotechnology Partnership in 2003, the Stormceptor Model STC 1200 removes 77% of the TSS for a coverage of 0.7 acres. Therefore, the Stormceptor Model STC 1200 in conjunction with additional pretreatment achieves greater than 80% TSS removal as shown on the TSS worksheet.

10. Total Suspended Solids Calculations were not submitted.

A total suspended solids worksheet is included in this submittial

11. *The project design includes two catch basins located at the end of the loading dock connected by a trench drain. We would recommend a trench drain only connected to a drain manhole, provided the Stormceptor has been sized to treat 80% of total suspended solids.*

Both catch basins at either end of the trench drain have been eliminated and a drain manhole with 4 foot sump and hood has been added to the downstream end of the trench for treatment.

12. *Some of the proposed drainage structures are lacking invert information, including the drain manhole that connects the roof drain to the underground infiltration system. We recommend the appropriate inverts be added to the plans to ensure the project is constructed properly. The catch basin located in the truck parking area also needs invert elevations.*

Inverts and rim elevations have been added to all drainage structures.

13. *Based on the Grading and Layout Plan, it appears that the flow to the catch basin located in the northern parking area will be receiving substantially more flow. The Applicant should confirm that the piping leading from this catch basin can accommodate the additional flow from the new driveway.*

The existing 18" RCP pipe leading from the catch basin in the rear parking lot has been modeled and has capacity to accommodate the additional flow.

14. *The Applicant should review the geometry of the piping that is shown entering and exiting the Stormceptor.*

The Stormceptor has been relocated to the last manhole onsite, this will ensure only one inlet for treatment into the unit. The other 10" inlet is from the infiltration basin and does not need treatment.

15. *It is unclear whether the site is Land Use with Higher Potential Pollutant Loads (LUHPPL). The Guidelines define LUHPPL's as sites that have exterior fleet storage, as well as parking lots that generate over 1,000 vehicle trips per day. It appears there is some truck storage on the site.*

With the proposed addition the site will not generate 1,000 vehicle trips per day. The total trips generated will be less than 300. Only 1 or 2 trucks are parked overnight, which does not constitute "exterior fleet storage".

We appreciate Mr. Turner's thoughtful review and look forward to presenting this project to you and the Board at our scheduled hearing on 4/5/16.

Sincerely,

CAVANARO CONSULTING, INC.

Brendan Sullivan, P.E., P.L.S.
Project Manager

Enclosure

Cc: B. Jones
S. Turner
File 15109

STORMWATER REPORT

for

Proposed Industrial Addition, Parking and Associated Improvements

at

43 Blackmer Street
New Bedford, MA 02744

Applicant:

North Coast Seafood
5 Dry Dock Avenue
Boston, MA 02210

Owner:

Fargo Realty Trust and Blackmer Street Realty LLC
5 Dry Dock Avenue
Boston, MA 02210

Prepared by:

CAVANARO CONSULTING, INC.
687 MAIN STREET
NORWELL, MASSACHUSETTS 02061

Revised March 24, 2016

STORMWATER DRAINAGE CALCULATIONS

1.0 METHODOLOGY

The adequacy of drainage structures and their ability to function properly must be analyzed to minimize detrimental stormwater effects. The impacts of stormwater are mitigated through several mechanisms such as infiltration, transportation and evaporation. The remaining runoff can be quantified through developed and accepted methods. By determining the characteristics of site specific stormwater conditions, mitigating efforts can be taken to avoid stormwater damage by constructing control devices. Designing and analyzing these mechanisms requires the acquisition of site data through observations, computer modeling the watershed, and the interpretation and application of the calculated values.

2.0 OVERVIEW

We have analyzed the existing structures on the site utilizing the HydroCad Storm water modeling program. Storm rainfall, run-off curve numbers, and other site characteristics are input into the program. The results of calculations are output into tables and graphs for each area and control structure. The complete calculations are presented in this report.

3.0 DESIGN STORMS

We have computed storm water run-off calculations for the proposed subdivision site, for a 2, 10, 25, and 100 year, 24-hour storm events. This results in a 3.2", 4.6", 5.6", and a 6.8" rain event, respectively for each storm event.

4.0 EXISTING DRAINAGE AREAS

The existing site is currently divided into two drainage areas, one design control point flows to Blackmer Street in the front, design control point No. 2 flows to the rear.

5.0 PROPOSED DRAINAGE AREAS

The proposed infiltration system and stormwater control devices will provide adequate treatment, peak rate runoff control. The 30' x 50' infiltration field will consist of crushed stone and 36 Stormtech infiltration chambers. Catch basins are proposed with deep sumps and hoods. A stormceptor is proposed for treatment for all new pavement prior to being discharged into the existing drainage system in the street. The proposed rear runoff will be captured by the existing drainage system onsite.

Drainage Analysis

Design Control Point #1 (End of Blackmer Street)

Storm	Existing Conditions (DCE1) Flow	Post-development (DCP1) Flow
2–Year-24Hour (3.20")	10.60 cfs	10.43 cfs
10–Year-24Hour (4.60")	16.71 cfs	15.87 cfs
25–Year-24Hour (5.60")	21.06 cfs	19.77 cfs
100–Year-24Hour (6.80")	26.39 cfs	24.46 cfs

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location: 43 Blackmer Street, New Bedford, MA

TSS Removal Calculation Worksheet

A BMP[1]	B TSS Removal Rate[1]	C Starting TSS Load*	D Amount Removed (B*C)	E Remaining Load (C-D)
Street sweeping	0.05	**1.00**	0.05	0.95
Deep sump catch basin	0.25	0.95	0.24	0.71
Stormceptor Model ST 900	0.77	0.71	0.55	0.16
			84%	

Total TSS Removal = 84%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 15109

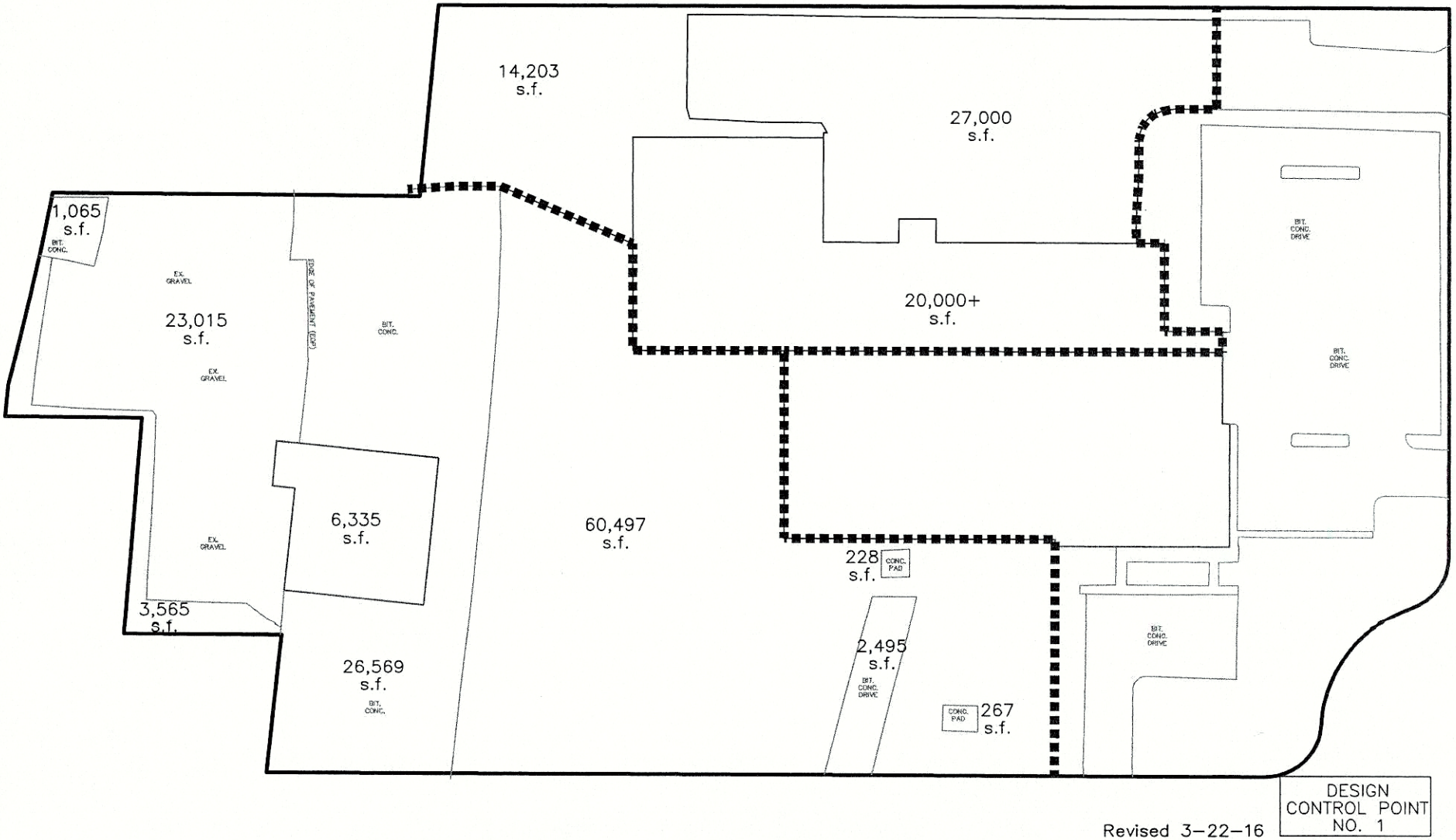
Prepared By: BPS

Date: 3/22/16

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1



Revised 3–22–16

Existing Subcatchmemt Area Plan

DRAWING NO.

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

PREPARED FOR:
NORTH COAST SEAFOOD
5 DRY DOCK
BOSTON, MA 02210

PROJECT NO. : 15109
DATE : 2/10/16
DRAWN BY : BPS
CHECKED BY : JCC

ESA

SHEET NO. 1 OF 1
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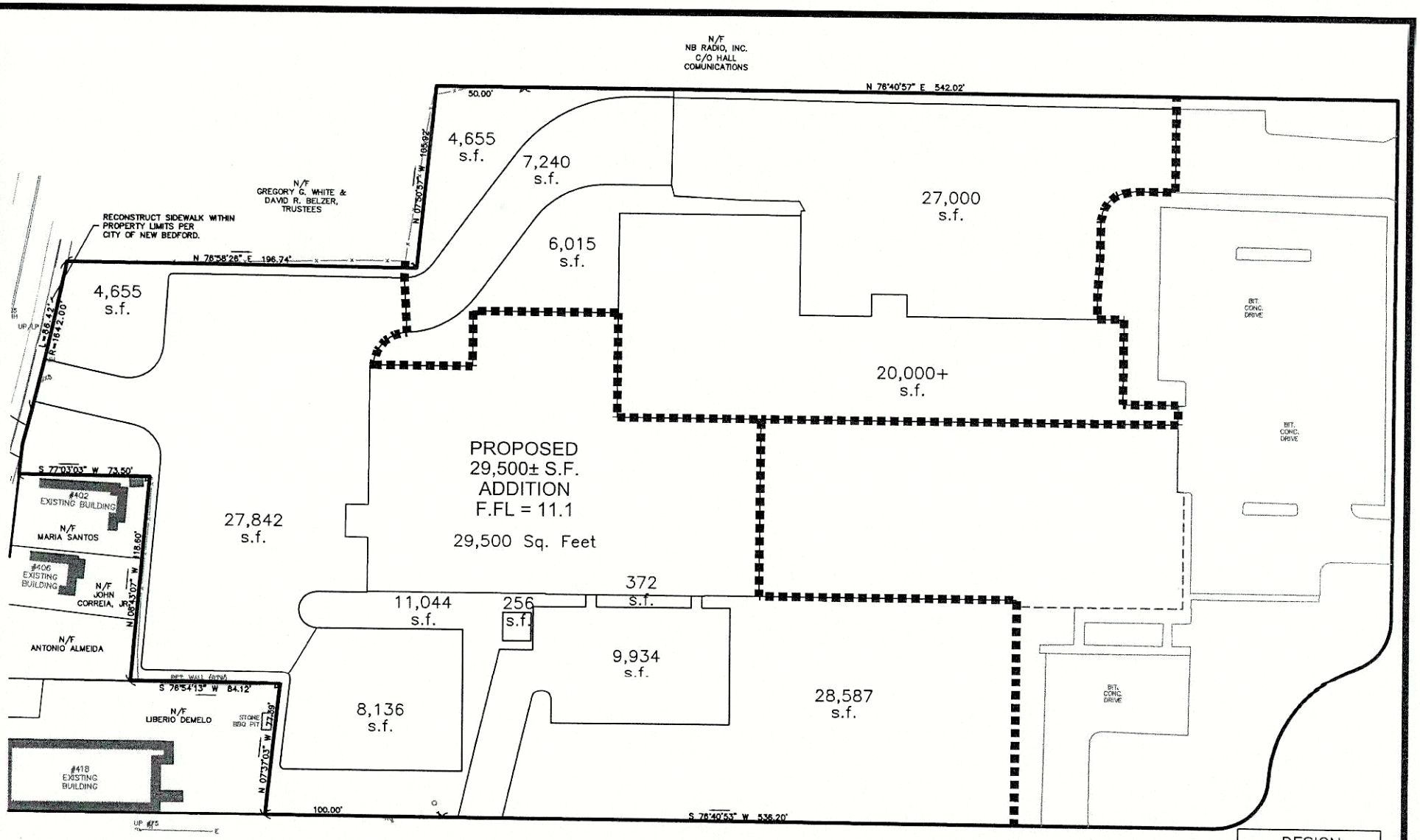

DESIGN CONTROL POINT NO. 1

Revised 3-22-16

Proposed Subcatchmemt Area Plan

DRAWING NO.

PSA

CAVANARO CONSULTING
687 MAIN STREET
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PHONE: 781.659.8187
FAX: 781.659.8186

PREPARED FOR:
NORTH COAST SEAFOOD
5 DRY DOCK
BOSTON, MA 02210

PROJECT NO. : 15109
DATE : 2/10/16
DRAWN BY : BPS
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SHEET NO. 1 OF 1
FILENAME:
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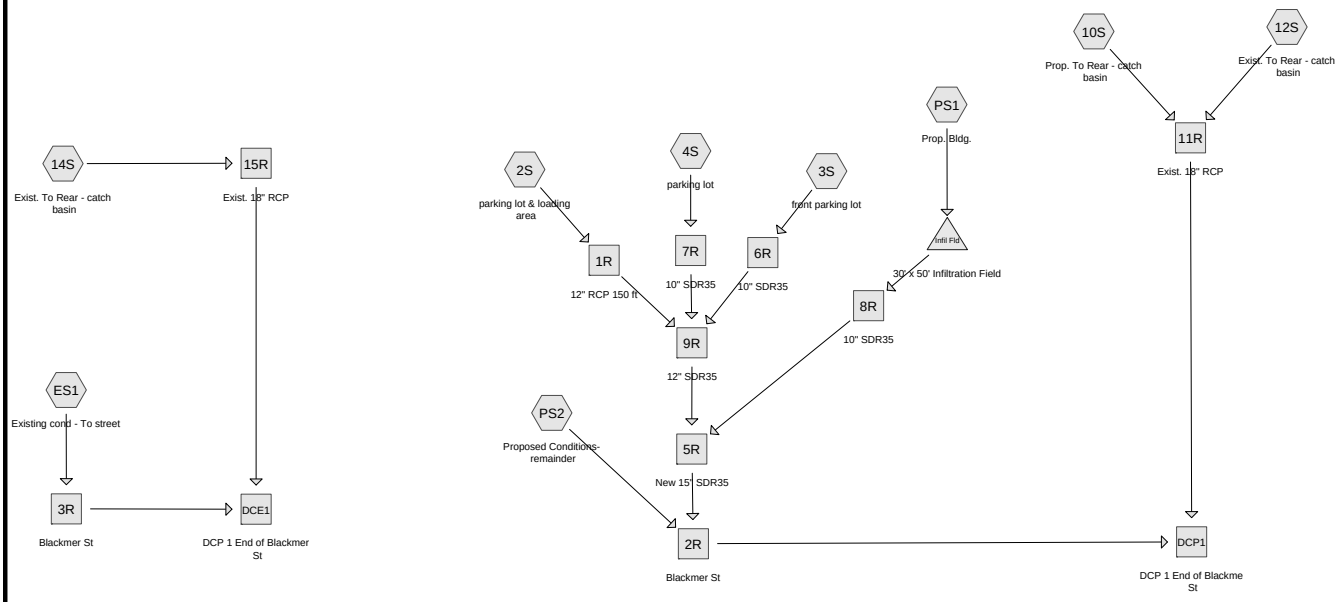


Subcat Reach Pond Link

Routing Diagram for Blackmer Stret NB Rev 3-24-16.
Prepared by Microsoft, Printed 3/23/2016

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: parking lot & loading Runoff Area=27,842 sf 100.00% Impervious Runoff Depth=2.97"
Tc=5.0 min CN=98 Runoff=2.00 cfs 0.158 af

Subcatchment 3S: front parking lot Runoff Area=9,934 sf 100.00% Impervious Runoff Depth=2.97"
Tc=5.0 min CN=98 Runoff=0.71 cfs 0.056 af

Subcatchment 4S: parking lot Runoff Area=8,136 sf 100.00% Impervious Runoff Depth=2.97"
Tc=5.0 min CN=98 Runoff=0.58 cfs 0.046 af

Subcatchment 10S: Prop. To Rear - catch Runoff Area=17,910 sf 40.42% Impervious Runoff Depth=1.91"
Tc=5.0 min CN=87 Runoff=0.92 cfs 0.066 af

Subcatchment 12S: Exist. To Rear - catch Runoff Area=47,000 sf 100.00% Impervious Runoff Depth=2.97"
Tc=5.0 min CN=98 Runoff=3.37 cfs 0.267 af

Subcatchment 14S: Exist. To Rear - catch Runoff Area=61,200 sf 76.80% Impervious Runoff Depth=2.54"
Tc=5.0 min CN=94 Runoff=4.04 cfs 0.298 af

Subcatchment ES1: Existing cond - To Runoff Area=124,036 sf 29.80% Impervious Runoff Depth=2.00"
Tc=5.0 min CN=88 Runoff=6.64 cfs 0.474 af

Subcatchment PS1: Prop. Bldg. Runoff Area=29,500 sf 100.00% Impervious Runoff Depth=2.97"
Tc=5.0 min CN=98 Runoff=2.12 cfs 0.167 af

Subcatchment PS2: Proposed Conditions- Runoff Area=44,914 sf 0.57% Impervious Runoff Depth=1.40"
Tc=5.0 min CN=80 Runoff=1.68 cfs 0.120 af

Reach 1R: 12" RCP 150 ft Avg. Flow Depth=0.45' Max Vel=5.84 fps Inflow=2.00 cfs 0.158 af
12.0" Round Pipe n=0.011 L=150.0' S=0.0133 '/' Capacity=4.86 cfs Outflow=1.95 cfs 0.158 af

Reach 2R: Blackmer St Inflow=6.23 cfs 0.463 af
Outflow=6.23 cfs 0.463 af

Reach 3R: Blackmer St Inflow=6.64 cfs 0.474 af
Outflow=6.64 cfs 0.474 af

Reach 5R: New 15" SDR35 Avg. Flow Depth=0.60' Max Vel=7.96 fps Inflow=4.58 cfs 0.342 af
15.0" Round Pipe n=0.009 L=35.0' S=0.0114 '/' Capacity=9.98 cfs Outflow=4.57 cfs 0.342 af

Reach 6R: 10" SDR35 Avg. Flow Depth=0.28' Max Vel=4.32 fps Inflow=0.71 cfs 0.056 af
10.0" Round Pipe n=0.011 L=165.0' S=0.0121 '/' Capacity=2.85 cfs Outflow=0.69 cfs 0.056 af

Reach 7R: 10" SDR35 Avg. Flow Depth=0.15' Max Vel=8.63 fps Inflow=0.58 cfs 0.046 af
10.0" Round Pipe n=0.011 L=10.0' S=0.1000 '/' Capacity=8.19 cfs Outflow=0.58 cfs 0.046 af

Reach 8R: 10" SDR35 Avg. Flow Depth=0.35' Max Vel=6.92 fps Inflow=1.53 cfs 0.081 af
10.0" Round Pipe n=0.009 L=200.0' S=0.0165 '/' Capacity=4.07 cfs Outflow=1.52 cfs 0.081 af

Reach 9R: 12" SDR35 Avg. Flow Depth=0.46' Max Vel=8.97 fps Inflow=3.21 cfs 0.261 af
12.0" Round Pipe n=0.011 L=10.0' S=0.0300 '/' Capacity=7.29 cfs Outflow=3.21 cfs 0.261 af

Reach 11R: Exist. 18" RCP Avg. Flow Depth=0.66' Max Vel=5.69 fps Inflow=4.30 cfs 0.332 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=4.22 cfs 0.332 af

Reach 15R: Exist. 18" RCP Avg. Flow Depth=0.64' Max Vel=5.60 fps Inflow=4.04 cfs 0.298 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=3.97 cfs 0.298 af

Reach DCE1: DCP 1 End of Blackmer St Inflow=10.60 cfs 0.772 af
Outflow=10.60 cfs 0.772 af

Reach DCP1: DCP 1 End of Blackme St Inflow=10.43 cfs 0.795 af
Outflow=10.43 cfs 0.795 af

Pond Infil Fld: 30' x 50' Infiltration Field Peak Elev=5.17' Storage=922 cf Inflow=2.12 cfs 0.167 af
Discarded=0.11 cfs 0.086 af Primary=1.53 cfs 0.081 af Outflow=1.64 cfs 0.167 af

Summary for Subcatchment 2S: parking lot & loading area

Runoff = 2.00 cfs @ 12.07 hrs, Volume= 0.158 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	27,842	98	Parknig lot
	27,842		100.00% Impervious Area

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

Summary for Subcatchment 3S: front parking lot

Runoff = 0.71 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	9,934	98	Parknig lot
	9,934		100.00% Impervious Area

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

Summary for Subcatchment 4S: parking lot

Runoff = 0.58 cfs @ 12.07 hrs, Volume= 0.046 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	8,136	98	Parknig lot
	8,136		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. To Rear - catch basin

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
7,240	98	Paved parking, HSG D
6,015	80	>75% Grass cover, Good, HSG D
4,655	80	>75% Grass cover, Good, HSG D
17,910	87	Weighted Average
10,670		59.58% Pervious Area
7,240		40.42% Impervious Area

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

Summary for Subcatchment 12S: Exist. To Rear - catch basin

Runoff = 3.37 cfs @ 12.07 hrs, Volume= 0.267 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Exisitng Roof
	47,000	98	Weighted Average
	47,000		100.00% Impervious Area

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

Summary for Subcatchment 14S: Exist. To Rear - catch basin

Runoff = 4.04 cfs @ 12.07 hrs, Volume= 0.298 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Existing Roof
	14,200	80	>75% Grass cover, Good, HSG D
	61,200	94	Weighted Average
	14,200		23.20% Pervious Area
	47,000		76.80% Impervious Area

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

Summary for Subcatchment ES1: Existing cond - To street

Runoff = 6.64 cfs @ 12.08 hrs, Volume= 0.474 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
	23,015	96	Gravel surface, HSG D
*	26,569	98	Bit. Conc.
*	1,065	98	Bit. conc.
*	6,335	98	Exist. Bldg
	60,497	80	>75% Grass cover, Good, HSG D
*	2,495	98	pvmnt
*	495	98	Conc. Pad
	3,565	80	>75% Grass cover, Good, HSG D
	124,036	88	Weighted Average
	87,077		70.20% Pervious Area
	36,959		29.80% Impervious Area

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

Summary for Subcatchment PS1: Prop. Bldg.

Runoff = 2.12 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
29,500	98	Roofs, HSG D
29,500		100.00% Impervious Area

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

Summary for Subcatchment PS2: Proposed Conditions- remainder

Runoff = 1.68 cfs @ 12.08 hrs, Volume= 0.120 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
*	256	98	Conc. pad
	28,587	80	>75% Grass cover, Good, HSG D
	11,044	80	>75% Grass cover, Good, HSG D
	4,655	80	>75% Grass cover, Good, HSG D
	372	80	>75% Grass cover, Good, HSG D
	44,914	80	Weighted Average
	44,658		99.43% Pervious Area
	256		0.57% Impervious Area

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

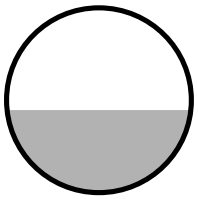
Summary for Reach 1R: 12" RCP 150 ft

Inflow Area = 0.639 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 2.00 cfs @ 12.07 hrs, Volume= 0.158 af
Outflow = 1.95 cfs @ 12.09 hrs, Volume= 0.158 af, Atten= 2%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.84 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 1.3 min

Peak Storage= 51 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.86 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 150.0' Slope= 0.0133 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



Summary for Reach 2R: Blackmer St

Inflow Area = 2.762 ac, 62.89% Impervious, Inflow Depth = 2.01" for 2 Year Event event
Inflow = 6.23 cfs @ 12.10 hrs, Volume= 0.463 af
Outflow = 6.23 cfs @ 12.10 hrs, Volume= 0.463 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Blackmer St

Inflow Area = 2.847 ac, 29.80% Impervious, Inflow Depth = 2.00" for 2 Year Event event
Inflow = 6.64 cfs @ 12.08 hrs, Volume= 0.474 af
Outflow = 6.64 cfs @ 12.08 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

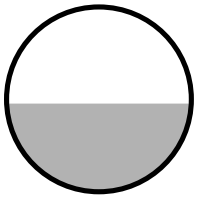
Summary for Reach 5R: New 15" SDR35

Inflow Area = 1.731 ac,100.00% Impervious, Inflow Depth = 2.37" for 2 Year Event event
Inflow = 4.58 cfs @ 12.10 hrs, Volume= 0.342 af
Outflow = 4.57 cfs @ 12.10 hrs, Volume= 0.342 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.96 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.48 fps, Avg. Travel Time= 0.2 min

Peak Storage= 20 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.98 cfs

15.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 35.0' Slope= 0.0114 '/'
Inlet Invert= 0.40', Outlet Invert= 0.00'



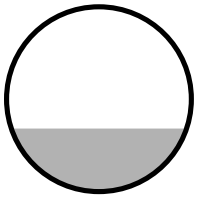
Summary for Reach 6R: 10" SDR35

Inflow Area = 0.228 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 0.71 cfs @ 12.07 hrs, Volume= 0.056 af
Outflow = 0.69 cfs @ 12.09 hrs, Volume= 0.056 af, Atten= 3%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.32 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 1.9 min

Peak Storage= 27 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.85 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 165.0' Slope= 0.0121 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



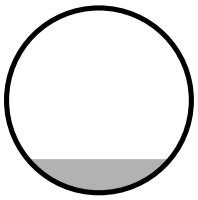
Summary for Reach 7R: 10" SDR35

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.046 af
Outflow = 0.58 cfs @ 12.07 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.63 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.83 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 8.19 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.1000 '/'
Inlet Invert= 2.00', Outlet Invert= 1.00'



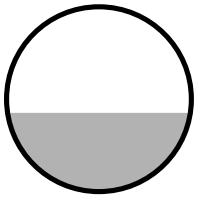
Summary for Reach 8R: 10" SDR35

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 1.44" for 2 Year Event event
Inflow = 1.53 cfs @ 12.14 hrs, Volume= 0.081 af
Outflow = 1.52 cfs @ 12.15 hrs, Volume= 0.081 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.92 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 2.6 min

Peak Storage= 44 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 4.07 cfs

10.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 200.0' Slope= 0.0165 '/'
Inlet Invert= 4.00', Outlet Invert= 0.70'



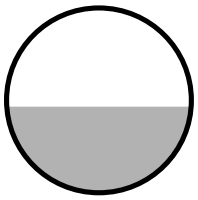
Summary for Reach 9R: 12" SDR35

Inflow Area = 1.054 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 3.21 cfs @ 12.08 hrs, Volume= 0.261 af
Outflow = 3.21 cfs @ 12.09 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.97 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.01 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.29 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 1.00', Outlet Invert= 0.70'



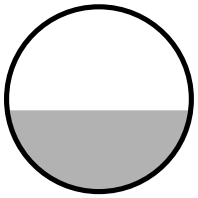
Summary for Reach 11R: Exist. 18" RCP

Inflow Area = 1.490 ac, 83.56% Impervious, Inflow Depth = 2.68" for 2 Year Event event
Inflow = 4.30 cfs @ 12.07 hrs, Volume= 0.332 af
Outflow = 4.22 cfs @ 12.08 hrs, Volume= 0.332 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.69 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 0.9 min

Peak Storage= 75 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



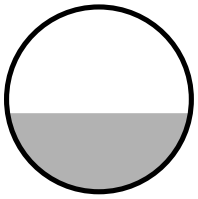
Summary for Reach 15R: Exist. 18" RCP

Inflow Area = 1.405 ac, 76.80% Impervious, Inflow Depth = 2.54" for 2 Year Event event
Inflow = 4.04 cfs @ 12.07 hrs, Volume= 0.298 af
Outflow = 3.97 cfs @ 12.08 hrs, Volume= 0.298 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.60 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.87 fps, Avg. Travel Time= 0.9 min

Peak Storage= 71 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



Summary for Reach DCE1: DCP 1 End of Blackmer St

Inflow Area = 4.252 ac, 45.33% Impervious, Inflow Depth = 2.18" for 2 Year Event event
Inflow = 10.60 cfs @ 12.08 hrs, Volume= 0.772 af
Outflow = 10.60 cfs @ 12.08 hrs, Volume= 0.772 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach DCP1: DCP 1 End of Blackme St

Inflow Area = 4.252 ac, 70.13% Impervious, Inflow Depth = 2.24" for 2 Year Event event
Inflow = 10.43 cfs @ 12.09 hrs, Volume= 0.795 af
Outflow = 10.43 cfs @ 12.09 hrs, Volume= 0.795 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Pond Infil Fld: 30' x 50' Infiltration Field

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 2.12 cfs @ 12.07 hrs, Volume= 0.167 af
Outflow = 1.64 cfs @ 12.14 hrs, Volume= 0.167 af, Atten= 23%, Lag= 4.1 min
Discarded = 0.11 cfs @ 12.14 hrs, Volume= 0.086 af
Primary = 1.53 cfs @ 12.14 hrs, Volume= 0.081 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 5.17' @ 12.14 hrs Surf.Area= 1,500 sf Storage= 922 cf

Plug-Flow detention time= 10.0 min calculated for 0.167 af (100% of inflow)
Center-of-Mass det. time= 9.9 min (765.4 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	1,288 cf	**Custom Stage Data (Irregular)**Listed below 3,750 cf Overall - 531 cf Embedded = 3,219 cf x 40.0% Voids
#2	4.50'	531 cf	**StormTech RC-310** x 36 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
		1,818 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
4.00	1,500	160.0	0	0	1,500
6.50	1,500	160.0	3,750	3,750	1,900

Device	Routing	Invert	Outlet Devices
#1	Discarded	4.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	4.85'	**5.0" Horiz. Orifice/Grate X 3.00** C= 0.600
#3	Primary	4.00'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.11 cfs @ 12.14 hrs HW=5.16' (Free Discharge)
└**1=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=1.52 cfs @ 12.14 hrs HW=5.16' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 1.10 cfs @ 2.68 fps)
└**3=Orifice/Grate** (Orifice Controls 0.42 cfs @ 4.80 fps)

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: parking lot & loading Runoff Area=27,842 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=2.89 cfs 0.232 af

Subcatchment 3S: front parking lot Runoff Area=9,934 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=1.03 cfs 0.083 af

Subcatchment 4S: parking lot Runoff Area=8,136 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=0.85 cfs 0.068 af

Subcatchment 10S: Prop. To Rear - catch Runoff Area=17,910 sf 40.42% Impervious Runoff Depth=3.19"
Tc=5.0 min CN=87 Runoff=1.53 cfs 0.109 af

Subcatchment 12S: Exist. To Rear - catch Runoff Area=47,000 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=4.88 cfs 0.392 af

Subcatchment 14S: Exist. To Rear - catch Runoff Area=61,200 sf 76.80% Impervious Runoff Depth=3.91"
Tc=5.0 min CN=94 Runoff=6.06 cfs 0.458 af

Subcatchment ES1: Existing cond - To Runoff Area=124,036 sf 29.80% Impervious Runoff Depth=3.29"
Tc=5.0 min CN=88 Runoff=10.84 cfs 0.781 af

Subcatchment PS1: Prop. Bldg. Runoff Area=29,500 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=3.06 cfs 0.246 af

Subcatchment PS2: Proposed Conditions- Runoff Area=44,914 sf 0.57% Impervious Runoff Depth=2.55"
Tc=5.0 min CN=80 Runoff=3.08 cfs 0.219 af

Reach 1R: 12" RCP 150 ft Avg. Flow Depth=0.55' Max Vel=6.41 fps Inflow=2.89 cfs 0.232 af
12.0" Round Pipe n=0.011 L=150.0' S=0.0133 '/' Capacity=4.86 cfs Outflow=2.83 cfs 0.232 af

Reach 2R: Blackmer St Inflow=9.59 cfs 0.741 af
Outflow=9.59 cfs 0.741 af

Reach 3R: Blackmer St Inflow=10.84 cfs 0.781 af
Outflow=10.84 cfs 0.781 af

Reach 5R: New 15" SDR35 Avg. Flow Depth=0.74' Max Vel=8.67 fps Inflow=6.55 cfs 0.522 af
15.0" Round Pipe n=0.009 L=35.0' S=0.0114 '/' Capacity=9.98 cfs Outflow=6.54 cfs 0.522 af

Reach 6R: 10" SDR35 Avg. Flow Depth=0.35' Max Vel=4.77 fps Inflow=1.03 cfs 0.083 af
10.0" Round Pipe n=0.011 L=165.0' S=0.0121 '/' Capacity=2.85 cfs Outflow=1.00 cfs 0.083 af

Reach 7R: 10" SDR35 Avg. Flow Depth=0.18' Max Vel=9.62 fps Inflow=0.85 cfs 0.068 af
10.0" Round Pipe n=0.011 L=10.0' S=0.1000 '/' Capacity=8.19 cfs Outflow=0.84 cfs 0.068 af

Reach 8R: 10" SDR35 Avg. Flow Depth=0.43' Max Vel=7.56 fps Inflow=2.14 cfs 0.139 af
10.0" Round Pipe n=0.009 L=200.0' S=0.0165 '/' Capacity=4.07 cfs Outflow=2.13 cfs 0.139 af

Reach 9R: 12" SDR35 Avg. Flow Depth=0.58' Max Vel=9.82 fps Inflow=4.66 cfs 0.383 af
12.0" Round Pipe n=0.011 L=10.0' S=0.0300 '/' Capacity=7.29 cfs Outflow=4.66 cfs 0.383 af

Reach 11R: Exist. 18" RCP Avg. Flow Depth=0.83' Max Vel=6.30 fps Inflow=6.41 cfs 0.502 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=6.30 cfs 0.502 af

Reach 15R: Exist. 18" RCP Avg. Flow Depth=0.80' Max Vel=6.21 fps Inflow=6.06 cfs 0.458 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=5.96 cfs 0.458 af

Reach DCE1: DCP 1 End of Blackmer St Inflow=16.71 cfs 1.239 af
Outflow=16.71 cfs 1.239 af

Reach DCP1: DCP 1 End of Blackme St Inflow=15.87 cfs 1.242 af
Outflow=15.87 cfs 1.242 af

Pond Infil Fld: 30' x 50' Infiltration Field Peak Elev=5.55' Storage=1,233 cf Inflow=3.06 cfs 0.246 af
Discarded=0.12 cfs 0.108 af Primary=2.14 cfs 0.139 af Outflow=2.26 cfs 0.246 af

Summary for Subcatchment 2S: parking lot & loading area

Runoff = 2.89 cfs @ 12.07 hrs, Volume= 0.232 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	27,842	98	Parknig lot
	27,842		100.00% Impervious Area

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

Summary for Subcatchment 3S: front parking lot

Runoff = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	9,934	98	Parknig lot
	9,934		100.00% Impervious Area

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

Summary for Subcatchment 4S: parking lot

Runoff = 0.85 cfs @ 12.07 hrs, Volume= 0.068 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	8,136	98	Parknig lot
	8,136		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. To Rear - catch basin

Runoff = 1.53 cfs @ 12.07 hrs, Volume= 0.109 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
7,240	98	Paved parking, HSG D
6,015	80	>75% Grass cover, Good, HSG D
4,655	80	>75% Grass cover, Good, HSG D
17,910	87	Weighted Average
10,670		59.58% Pervious Area
7,240		40.42% Impervious Area

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

Summary for Subcatchment 12S: Exist. To Rear - catch basin

Runoff = 4.88 cfs @ 12.07 hrs, Volume= 0.392 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Exisitng Roof
	47,000	98	Weighted Average
	47,000		100.00% Impervious Area

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

Summary for Subcatchment 14S: Exist. To Rear - catch basin

Runoff = 6.06 cfs @ 12.07 hrs, Volume= 0.458 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Existing Roof
	14,200	80	>75% Grass cover, Good, HSG D
	61,200	94	Weighted Average
	14,200		23.20% Pervious Area
	47,000		76.80% Impervious Area

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

Summary for Subcatchment ES1: Existing cond - To street

Runoff = 10.84 cfs @ 12.07 hrs, Volume= 0.781 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
	23,015	96	Gravel surface, HSG D
*	26,569	98	Bit. Conc.
*	1,065	98	Bit. conc.
*	6,335	98	Exist. Bldg
	60,497	80	>75% Grass cover, Good, HSG D
*	2,495	98	pvmnt
*	495	98	Conc. Pad
	3,565	80	>75% Grass cover, Good, HSG D
	124,036	88	Weighted Average
	87,077		70.20% Pervious Area
	36,959		29.80% Impervious Area

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

Summary for Subcatchment PS1: Prop. Bldg.

Runoff = 3.06 cfs @ 12.07 hrs, Volume= 0.246 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
29,500	98	Roofs, HSG D
29,500		100.00% Impervious Area

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

Summary for Subcatchment PS2: Proposed Conditions- remainder

Runoff = 3.08 cfs @ 12.08 hrs, Volume= 0.219 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
*	256	98	Conc. pad
	28,587	80	>75% Grass cover, Good, HSG D
	11,044	80	>75% Grass cover, Good, HSG D
	4,655	80	>75% Grass cover, Good, HSG D
	372	80	>75% Grass cover, Good, HSG D
	44,914	80	Weighted Average
	44,658		99.43% Pervious Area
	256		0.57% Impervious Area

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

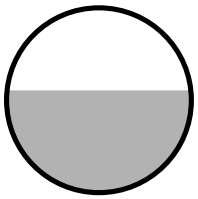
Summary for Reach 1R: 12" RCP 150 ft

Inflow Area = 0.639 ac,100.00% Impervious, Inflow Depth = 4.36" for 10 Year Event event
Inflow = 2.89 cfs @ 12.07 hrs, Volume= 0.232 af
Outflow = 2.83 cfs @ 12.08 hrs, Volume= 0.232 af, Atten= 2%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.41 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 1.1 min

Peak Storage= 67 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.86 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 150.0' Slope= 0.0133 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



Summary for Reach 2R: Blackmer St

Inflow Area = 2.762 ac, 62.89% Impervious, Inflow Depth = 3.22" for 10 Year Event event
Inflow = 9.59 cfs @ 12.09 hrs, Volume= 0.741 af
Outflow = 9.59 cfs @ 12.09 hrs, Volume= 0.741 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Blackmer St

Inflow Area = 2.847 ac, 29.80% Impervious, Inflow Depth = 3.29" for 10 Year Event event
Inflow = 10.84 cfs @ 12.07 hrs, Volume= 0.781 af
Outflow = 10.84 cfs @ 12.07 hrs, Volume= 0.781 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

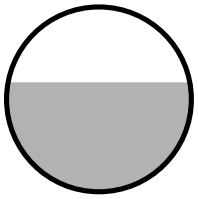
Summary for Reach 5R: New 15" SDR35

Inflow Area = 1.731 ac,100.00% Impervious, Inflow Depth = 3.62" for 10 Year Event event
Inflow = 6.55 cfs @ 12.09 hrs, Volume= 0.522 af
Outflow = 6.54 cfs @ 12.10 hrs, Volume= 0.522 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.80 fps, Avg. Travel Time= 0.2 min

Peak Storage= 26 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.98 cfs

15.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 35.0' Slope= 0.0114 '/'
Inlet Invert= 0.40', Outlet Invert= 0.00'



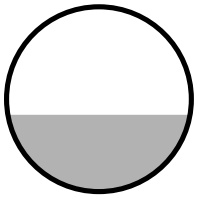
Summary for Reach 6R: 10" SDR35

Inflow Area = 0.228 ac,100.00% Impervious, Inflow Depth = 4.36" for 10 Year Event event
Inflow = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af
Outflow = 1.00 cfs @ 12.09 hrs, Volume= 0.083 af, Atten= 3%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.77 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 1.7 min

Peak Storage= 35 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.85 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 165.0' Slope= 0.0121 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



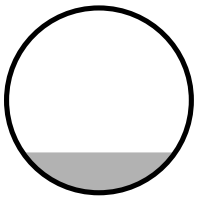
Summary for Reach 7R: 10" SDR35

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth = 4.36" for 10 Year Event event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.068 af
Outflow = 0.84 cfs @ 12.07 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.62 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.17 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 8.19 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.1000 '/'
Inlet Invert= 2.00', Outlet Invert= 1.00'



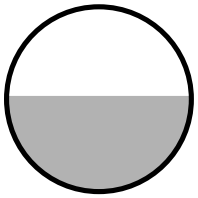
Summary for Reach 8R: 10" SDR35

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 2.46" for 10 Year Event event
Inflow = 2.14 cfs @ 12.15 hrs, Volume= 0.139 af
Outflow = 2.13 cfs @ 12.16 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.56 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 2.1 min

Peak Storage= 57 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 4.07 cfs

10.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 200.0' Slope= 0.0165 '/'
Inlet Invert= 4.00', Outlet Invert= 0.70'



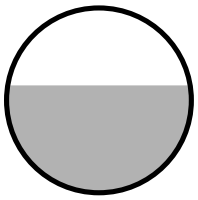
Summary for Reach 9R: 12" SDR35

Inflow Area = 1.054 ac,100.00% Impervious, Inflow Depth = 4.36" for 10 Year Event event
Inflow = 4.66 cfs @ 12.08 hrs, Volume= 0.383 af
Outflow = 4.66 cfs @ 12.08 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.82 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.37 fps, Avg. Travel Time= 0.0 min

Peak Storage= 5 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.29 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 1.00', Outlet Invert= 0.70'



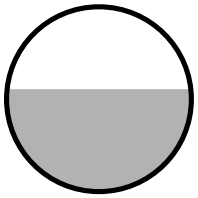
Summary for Reach 11R: Exist. 18" RCP

Inflow Area = 1.490 ac, 83.56% Impervious, Inflow Depth = 4.04" for 10 Year Event event
Inflow = 6.41 cfs @ 12.07 hrs, Volume= 0.502 af
Outflow = 6.30 cfs @ 12.08 hrs, Volume= 0.502 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.30 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.11 fps, Avg. Travel Time= 0.8 min

Peak Storage= 100 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



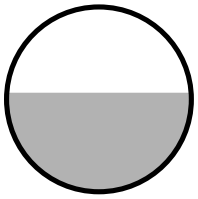
Summary for Reach 15R: Exist. 18" RCP

Inflow Area = 1.405 ac, 76.80% Impervious, Inflow Depth = 3.91" for 10 Year Event event
Inflow = 6.06 cfs @ 12.07 hrs, Volume= 0.458 af
Outflow = 5.96 cfs @ 12.08 hrs, Volume= 0.458 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.21 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 0.8 min

Peak Storage= 96 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



Summary for Reach DCE1: DCP 1 End of Blackmer St

Inflow Area = 4.252 ac, 45.33% Impervious, Inflow Depth = 3.50" for 10 Year Event event
Inflow = 16.71 cfs @ 12.08 hrs, Volume= 1.239 af
Outflow = 16.71 cfs @ 12.08 hrs, Volume= 1.239 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach DCP1: DCP 1 End of Blackme St

Inflow Area = 4.252 ac, 70.13% Impervious, Inflow Depth = 3.51" for 10 Year Event event
Inflow = 15.87 cfs @ 12.09 hrs, Volume= 1.242 af
Outflow = 15.87 cfs @ 12.09 hrs, Volume= 1.242 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Pond Infil Fld: 30' x 50' Infiltration Field

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 4.36" for 10 Year Event event
Inflow = 3.06 cfs @ 12.07 hrs, Volume= 0.246 af
Outflow = 2.26 cfs @ 12.15 hrs, Volume= 0.246 af, Atten= 26%, Lag= 4.6 min
Discarded = 0.12 cfs @ 12.15 hrs, Volume= 0.108 af
Primary = 2.14 cfs @ 12.15 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 5.55' @ 12.15 hrs Surf.Area= 1,500 sf Storage= 1,233 cf

Plug-Flow detention time= 10.2 min calculated for 0.246 af (100% of inflow)
Center-of-Mass det. time= 10.2 min (758.7 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	1,288 cf	**Custom Stage Data (Irregular)**Listed below 3,750 cf Overall - 531 cf Embedded = 3,219 cf x 40.0% Voids
#2	4.50'	531 cf	**StormTech RC-310** x 36 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
		1,818 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
4.00	1,500	160.0	0	0	1,500
6.50	1,500	160.0	3,750	3,750	1,900

Device	Routing	Invert	Outlet Devices
#1	Discarded	4.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	4.85'	**5.0" Horiz. Orifice/Grate X 3.00** C= 0.600
#3	Primary	4.00'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.12 cfs @ 12.15 hrs HW=5.55' (Free Discharge)
└**1=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=2.14 cfs @ 12.15 hrs HW=5.55' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 1.64 cfs @ 4.02 fps)
└**3=Orifice/Grate** (Orifice Controls 0.49 cfs @ 5.65 fps)

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: parking lot & loading Runoff Area=27,842 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=3.53 cfs 0.286 af

Subcatchment 3S: front parking lot Runoff Area=9,934 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=1.26 cfs 0.102 af

Subcatchment 4S: parking lot Runoff Area=8,136 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=1.03 cfs 0.083 af

Subcatchment 10S: Prop. To Rear - catch Runoff Area=17,910 sf 40.42% Impervious Runoff Depth=4.14"
Tc=5.0 min CN=87 Runoff=1.96 cfs 0.142 af

Subcatchment 12S: Exist. To Rear - catch Runoff Area=47,000 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=5.96 cfs 0.482 af

Subcatchment 14S: Exist. To Rear - catch Runoff Area=61,200 sf 76.80% Impervious Runoff Depth=4.90"
Tc=5.0 min CN=94 Runoff=7.50 cfs 0.574 af

Subcatchment ES1: Existing cond - To Runoff Area=124,036 sf 29.80% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=88 Runoff=13.82 cfs 1.006 af

Subcatchment PS1: Prop. Bldg. Runoff Area=29,500 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=3.74 cfs 0.303 af

Subcatchment PS2: Proposed Conditions- Runoff Area=44,914 sf 0.57% Impervious Runoff Depth=3.42"
Tc=5.0 min CN=80 Runoff=4.13 cfs 0.294 af

Reach 1R: 12" RCP 150 ft Avg. Flow Depth=0.63' Max Vel=6.70 fps Inflow=3.53 cfs 0.286 af
12.0" Round Pipe n=0.011 L=150.0' S=0.0133 '/' Capacity=4.86 cfs Outflow=3.45 cfs 0.286 af

Reach 2R: Blackmer St Inflow=12.01 cfs 0.947 af
Outflow=12.01 cfs 0.947 af

Reach 3R: Blackmer St Inflow=13.82 cfs 1.006 af
Outflow=13.82 cfs 1.006 af

Reach 5R: New 15" SDR35 Avg. Flow Depth=0.84' Max Vel=9.03 fps Inflow=7.95 cfs 0.653 af
15.0" Round Pipe n=0.009 L=35.0' S=0.0114 '/' Capacity=9.98 cfs Outflow=7.94 cfs 0.653 af

Reach 6R: 10" SDR35 Avg. Flow Depth=0.39' Max Vel=5.03 fps Inflow=1.26 cfs 0.102 af
10.0" Round Pipe n=0.011 L=165.0' S=0.0121 '/' Capacity=2.85 cfs Outflow=1.22 cfs 0.102 af

Reach 7R: 10" SDR35 Avg. Flow Depth=0.20' Max Vel=10.19 fps Inflow=1.03 cfs 0.083 af
10.0" Round Pipe n=0.011 L=10.0' S=0.1000 '/' Capacity=8.19 cfs Outflow=1.03 cfs 0.083 af

Reach 8R: 10" SDR35 Avg. Flow Depth=0.48' Max Vel=7.90 fps Inflow=2.59 cfs 0.182 af
10.0" Round Pipe n=0.009 L=200.0' S=0.0165 '/' Capacity=4.07 cfs Outflow=2.57 cfs 0.182 af

Reach 9R: 12" SDR35 Avg. Flow Depth=0.66' Max Vel=10.24 fps Inflow=5.69 cfs 0.471 af
12.0" Round Pipe n=0.011 L=10.0' S=0.0300 '/' Capacity=7.29 cfs Outflow=5.68 cfs 0.471 af

Reach 11R: Exist. 18" RCP Avg. Flow Depth=0.95' Max Vel=6.60 fps Inflow=7.91 cfs 0.624 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=7.78 cfs 0.624 af

Reach 15R: Exist. 18" RCP Avg. Flow Depth=0.92' Max Vel=6.53 fps Inflow=7.50 cfs 0.574 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=7.37 cfs 0.574 af

Reach DCE1: DCP 1 End of Blackmer St Inflow=21.06 cfs 1.580 af
Outflow=21.06 cfs 1.580 af

Reach DCP1: DCP 1 End of Blackme St Inflow=19.77 cfs 1.571 af
Outflow=19.77 cfs 1.571 af

Pond Infil Fld: 30' x 50' Infiltration Field Peak Elev=5.91' Storage=1,466 cf Inflow=3.74 cfs 0.303 af
Discarded=0.12 cfs 0.121 af Primary=2.59 cfs 0.182 af Outflow=2.71 cfs 0.303 af

Summary for Subcatchment 2S: parking lot & loading area

Runoff = 3.53 cfs @ 12.07 hrs, Volume= 0.286 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	27,842	98	Parknig lot
	27,842		100.00% Impervious Area

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

Summary for Subcatchment 3S: front parking lot

Runoff = 1.26 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	9,934	98	Parknig lot
	9,934		100.00% Impervious Area

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

Summary for Subcatchment 4S: parking lot

Runoff = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	8,136	98	Parknig lot
	8,136		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. To Rear - catch basin

Runoff = 1.96 cfs @ 12.07 hrs, Volume= 0.142 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
7,240	98	Paved parking, HSG D
6,015	80	>75% Grass cover, Good, HSG D
4,655	80	>75% Grass cover, Good, HSG D
17,910	87	Weighted Average
10,670		59.58% Pervious Area
7,240		40.42% Impervious Area

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

Summary for Subcatchment 12S: Exist. To Rear - catch basin

Runoff = 5.96 cfs @ 12.07 hrs, Volume= 0.482 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Exisitng Roof
	47,000	98	Weighted Average
	47,000		100.00% Impervious Area

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

Summary for Subcatchment 14S: Exist. To Rear - catch basin

Runoff = 7.50 cfs @ 12.07 hrs, Volume= 0.574 af, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Existing Roof
	14,200	80	>75% Grass cover, Good, HSG D
	61,200	94	Weighted Average
	14,200		23.20% Pervious Area
	47,000		76.80% Impervious Area

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

Summary for Subcatchment ES1: Existing cond - To street

Runoff = 13.82 cfs @ 12.07 hrs, Volume= 1.006 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
	23,015	96	Gravel surface, HSG D
*	26,569	98	Bit. Conc.
*	1,065	98	Bit. conc.
*	6,335	98	Exist. Bldg
	60,497	80	>75% Grass cover, Good, HSG D
*	2,495	98	pvmnt
*	495	98	Conc. Pad
	3,565	80	>75% Grass cover, Good, HSG D
	124,036	88	Weighted Average
	87,077		70.20% Pervious Area
	36,959		29.80% Impervious Area

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

Summary for Subcatchment PS1: Prop. Bldg.

Runoff = 3.74 cfs @ 12.07 hrs, Volume= 0.303 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
29,500	98	Roofs, HSG D
29,500		100.00% Impervious Area

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

Summary for Subcatchment PS2: Proposed Conditions- remainder

Runoff = 4.13 cfs @ 12.08 hrs, Volume= 0.294 af, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
*	256	98	Conc. pad
	28,587	80	>75% Grass cover, Good, HSG D
	11,044	80	>75% Grass cover, Good, HSG D
	4,655	80	>75% Grass cover, Good, HSG D
	372	80	>75% Grass cover, Good, HSG D
	44,914	80	Weighted Average
	44,658		99.43% Pervious Area
	256		0.57% Impervious Area

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

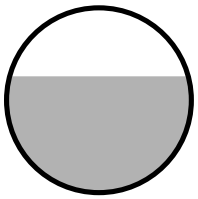
Summary for Reach 1R: 12" RCP 150 ft

Inflow Area = 0.639 ac,100.00% Impervious, Inflow Depth = 5.36" for 25 Year Event event
Inflow = 3.53 cfs @ 12.07 hrs, Volume= 0.286 af
Outflow = 3.45 cfs @ 12.08 hrs, Volume= 0.286 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.70 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 1.1 min

Peak Storage= 78 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.86 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 150.0' Slope= 0.0133 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



Summary for Reach 2R: Blackmer St

Inflow Area = 2.762 ac, 62.89% Impervious, Inflow Depth = 4.11" for 25 Year Event event
Inflow = 12.01 cfs @ 12.09 hrs, Volume= 0.947 af
Outflow = 12.01 cfs @ 12.09 hrs, Volume= 0.947 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Blackmer St

Inflow Area = 2.847 ac, 29.80% Impervious, Inflow Depth = 4.24" for 25 Year Event event
Inflow = 13.82 cfs @ 12.07 hrs, Volume= 1.006 af
Outflow = 13.82 cfs @ 12.07 hrs, Volume= 1.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

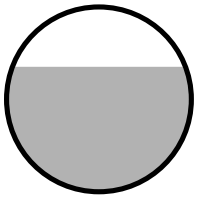
Summary for Reach 5R: New 15" SDR35

Inflow Area = 1.731 ac,100.00% Impervious, Inflow Depth = 4.53" for 25 Year Event event
Inflow = 7.95 cfs @ 12.10 hrs, Volume= 0.653 af
Outflow = 7.94 cfs @ 12.10 hrs, Volume= 0.653 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.03 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.00 fps, Avg. Travel Time= 0.2 min

Peak Storage= 31 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.98 cfs

15.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 35.0' Slope= 0.0114 '/'
Inlet Invert= 0.40', Outlet Invert= 0.00'



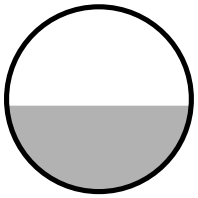
Summary for Reach 6R: 10" SDR35

Inflow Area = 0.228 ac,100.00% Impervious, Inflow Depth = 5.36" for 25 Year Event event
Inflow = 1.26 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.22 cfs @ 12.09 hrs, Volume= 0.102 af, Atten= 3%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.03 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.69 fps, Avg. Travel Time= 1.6 min

Peak Storage= 41 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.85 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 165.0' Slope= 0.0121 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



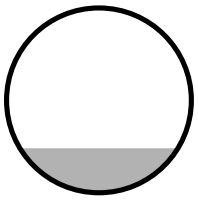
Summary for Reach 7R: 10" SDR35

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth = 5.36" for 25 Year Event event
Inflow = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af
Outflow = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.19 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.37 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 8.19 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.1000 '/'
Inlet Invert= 2.00', Outlet Invert= 1.00'



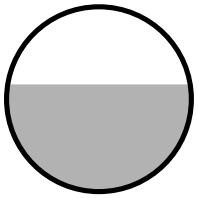
Summary for Reach 8R: 10" SDR35

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 3.23" for 25 Year Event event
Inflow = 2.59 cfs @ 12.15 hrs, Volume= 0.182 af
Outflow = 2.57 cfs @ 12.16 hrs, Volume= 0.182 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.90 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 1.9 min

Peak Storage= 66 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 4.07 cfs

10.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 200.0' Slope= 0.0165 '/'
Inlet Invert= 4.00', Outlet Invert= 0.70'



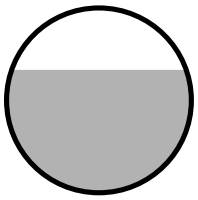
Summary for Reach 9R: 12" SDR35

Inflow Area = 1.054 ac,100.00% Impervious, Inflow Depth = 5.36" for 25 Year Event event
Inflow = 5.69 cfs @ 12.08 hrs, Volume= 0.471 af
Outflow = 5.68 cfs @ 12.08 hrs, Volume= 0.471 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.24 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.58 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.29 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 1.00', Outlet Invert= 0.70'



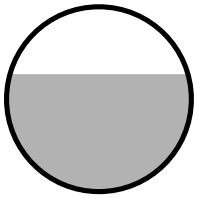
Summary for Reach 11R: Exist. 18" RCP

Inflow Area = 1.490 ac, 83.56% Impervious, Inflow Depth = 5.02" for 25 Year Event event
Inflow = 7.91 cfs @ 12.07 hrs, Volume= 0.624 af
Outflow = 7.78 cfs @ 12.08 hrs, Volume= 0.624 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.60 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.7 min

Peak Storage= 118 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.95'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



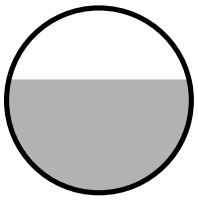
Summary for Reach 15R: Exist. 18" RCP

Inflow Area = 1.405 ac, 76.80% Impervious, Inflow Depth = 4.90" for 25 Year Event event
Inflow = 7.50 cfs @ 12.07 hrs, Volume= 0.574 af
Outflow = 7.37 cfs @ 12.08 hrs, Volume= 0.574 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.53 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 0.7 min

Peak Storage= 113 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



Summary for Reach DCE1: DCP 1 End of Blackmer St

Inflow Area = 4.252 ac, 45.33% Impervious, Inflow Depth = 4.46" for 25 Year Event event
Inflow = 21.06 cfs @ 12.08 hrs, Volume= 1.580 af
Outflow = 21.06 cfs @ 12.08 hrs, Volume= 1.580 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach DCP1: DCP 1 End of Blackme St

Inflow Area = 4.252 ac, 70.13% Impervious, Inflow Depth = 4.43" for 25 Year Event event
Inflow = 19.77 cfs @ 12.09 hrs, Volume= 1.571 af
Outflow = 19.77 cfs @ 12.09 hrs, Volume= 1.571 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Pond Infil Fld: 30' x 50' Infiltration Field

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 5.36" for 25 Year Event event
Inflow = 3.74 cfs @ 12.07 hrs, Volume= 0.303 af
Outflow = 2.71 cfs @ 12.15 hrs, Volume= 0.303 af, Atten= 28%, Lag= 4.8 min
Discarded = 0.12 cfs @ 12.15 hrs, Volume= 0.121 af
Primary = 2.59 cfs @ 12.15 hrs, Volume= 0.182 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 5.91' @ 12.15 hrs Surf.Area= 1,500 sf Storage= 1,466 cf

Plug-Flow detention time= 10.4 min calculated for 0.302 af (100% of inflow)
Center-of-Mass det. time= 10.4 min (755.6 - 745.3)

Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	1,288 cf	**Custom Stage Data (Irregular)**Listed below 3,750 cf Overall - 531 cf Embedded = 3,219 cf x 40.0% Voids
#2	4.50'	531 cf	**StormTech RC-310** x 36 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
		1,818 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
4.00	1,500	160.0	0	0	1,500
6.50	1,500	160.0	3,750	3,750	1,900

Device	Routing	Invert	Outlet Devices
#1	Discarded	4.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	4.85'	**5.0" Horiz. Orifice/Grate X 3.00** C= 0.600
#3	Primary	4.00'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.12 cfs @ 12.15 hrs HW=5.91' (Free Discharge)
└**1=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=2.59 cfs @ 12.15 hrs HW=5.91' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 2.03 cfs @ 4.96 fps)
└**3=Orifice/Grate** (Orifice Controls 0.56 cfs @ 6.36 fps)

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: parking lot & loading Runoff Area=27,842 sf 100.00% Impervious Runoff Depth=6.56"
Tc=5.0 min CN=98 Runoff=4.29 cfs 0.349 af

Subcatchment 3S: front parking lot Runoff Area=9,934 sf 100.00% Impervious Runoff Depth=6.56"
Tc=5.0 min CN=98 Runoff=1.53 cfs 0.125 af

Subcatchment 4S: parking lot Runoff Area=8,136 sf 100.00% Impervious Runoff Depth=6.56"
Tc=5.0 min CN=98 Runoff=1.25 cfs 0.102 af

Subcatchment 10S: Prop. To Rear - catch Runoff Area=17,910 sf 40.42% Impervious Runoff Depth=5.29"
Tc=5.0 min CN=87 Runoff=2.47 cfs 0.181 af

Subcatchment 12S: Exist. To Rear - catch Runoff Area=47,000 sf 100.00% Impervious Runoff Depth=6.56"
Tc=5.0 min CN=98 Runoff=7.24 cfs 0.590 af

Subcatchment 14S: Exist. To Rear - catch Runoff Area=61,200 sf 76.80% Impervious Runoff Depth=6.09"
Tc=5.0 min CN=94 Runoff=9.21 cfs 0.713 af

Subcatchment ES1: Existing cond - To Runoff Area=124,036 sf 29.80% Impervious Runoff Depth=5.40"
Tc=5.0 min CN=88 Runoff=17.38 cfs 1.281 af

Subcatchment PS1: Prop. Bldg. Runoff Area=29,500 sf 100.00% Impervious Runoff Depth=6.56"
Tc=5.0 min CN=98 Runoff=4.55 cfs 0.370 af

Subcatchment PS2: Proposed Conditions- Runoff Area=44,914 sf 0.57% Impervious Runoff Depth=4.51"
Tc=5.0 min CN=80 Runoff=5.44 cfs 0.388 af

Reach 1R: 12" RCP 150 ft Avg. Flow Depth=0.72' Max Vel=6.95 fps Inflow=4.29 cfs 0.349 af
12.0" Round Pipe n=0.011 L=150.0' S=0.0133 '/' Capacity=4.86 cfs Outflow=4.20 cfs 0.349 af

Reach 2R: Blackmer St Inflow=14.93 cfs 1.200 af
Outflow=14.93 cfs 1.200 af

Reach 3R: Blackmer St Inflow=17.38 cfs 1.281 af
Outflow=17.38 cfs 1.281 af

Reach 5R: New 15" SDR35 Avg. Flow Depth=0.99' Max Vel=9.26 fps Inflow=9.63 cfs 0.813 af
15.0" Round Pipe n=0.009 L=35.0' S=0.0114 '/' Capacity=9.98 cfs Outflow=9.61 cfs 0.813 af

Reach 6R: 10" SDR35 Avg. Flow Depth=0.43' Max Vel=5.28 fps Inflow=1.53 cfs 0.125 af
10.0" Round Pipe n=0.011 L=165.0' S=0.0121 '/' Capacity=2.85 cfs Outflow=1.49 cfs 0.125 af

Reach 7R: 10" SDR35 Avg. Flow Depth=0.22' Max Vel=10.78 fps Inflow=1.25 cfs 0.102 af
10.0" Round Pipe n=0.011 L=10.0' S=0.1000 '/' Capacity=8.19 cfs Outflow=1.25 cfs 0.102 af

Reach 8R: 10" SDR35 Avg. Flow Depth=0.54' Max Vel=8.20 fps Inflow=3.09 cfs 0.237 af
10.0" Round Pipe n=0.009 L=200.0' S=0.0165 '/' Capacity=4.07 cfs Outflow=3.07 cfs 0.237 af

Reach 9R: 12" SDR35 Avg. Flow Depth=0.78' Max Vel=10.55 fps Inflow=6.92 cfs 0.576 af
12.0" Round Pipe n=0.011 L=10.0' S=0.0300 '/' Capacity=7.29 cfs Outflow=6.92 cfs 0.576 af

Reach 11R: Exist. 18" RCP Avg. Flow Depth=1.11' Max Vel=6.85 fps Inflow=9.71 cfs 0.771 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=9.55 cfs 0.771 af

Reach 15R: Exist. 18" RCP Avg. Flow Depth=1.06' Max Vel=6.80 fps Inflow=9.21 cfs 0.713 af
18.0" Round Pipe n=0.011 L=100.0' S=0.0075 '/' Capacity=10.75 cfs Outflow=9.05 cfs 0.713 af

Reach DCE1: DCP 1 End of Blackmer St Inflow=26.39 cfs 1.994 af
Outflow=26.39 cfs 1.994 af

Reach DCP1: DCP 1 End of Blackme St Inflow=24.46 cfs 1.971 af
Outflow=24.46 cfs 1.971 af

Pond Infil Fld: 30' x 50' Infiltration Field Peak Elev=6.41' Storage=1,762 cf Inflow=4.55 cfs 0.370 af
Discarded=0.13 cfs 0.134 af Primary=3.09 cfs 0.237 af Outflow=3.22 cfs 0.370 af

Summary for Subcatchment 2S: parking lot & loading area

Runoff = 4.29 cfs @ 12.07 hrs, Volume= 0.349 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	27,842	98	Parknig lot
	27,842		100.00% Impervious Area

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

Summary for Subcatchment 3S: front parking lot

Runoff = 1.53 cfs @ 12.07 hrs, Volume= 0.125 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	9,934	98	Parknig lot
	9,934		100.00% Impervious Area

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

Summary for Subcatchment 4S: parking lot

Runoff = 1.25 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	8,136	98	Parknig lot
	8,136		100.00% Impervious Area

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

Summary for Subcatchment 10S: Prop. To Rear - catch basin

Runoff = 2.47 cfs @ 12.07 hrs, Volume= 0.181 af, Depth= 5.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
7,240	98	Paved parking, HSG D
6,015	80	>75% Grass cover, Good, HSG D
4,655	80	>75% Grass cover, Good, HSG D
17,910	87	Weighted Average
10,670		59.58% Pervious Area
7,240		40.42% Impervious Area

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

Summary for Subcatchment 12S: Exist. To Rear - catch basin

Runoff = 7.24 cfs @ 12.07 hrs, Volume= 0.590 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Exisitng Roof
	47,000	98	Weighted Average
	47,000		100.00% Impervious Area

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

Summary for Subcatchment 14S: Exist. To Rear - catch basin

Runoff = 9.21 cfs @ 12.07 hrs, Volume= 0.713 af, Depth= 6.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
	27,000	98	Paved parking, HSG D
*	20,000	98	Existing Roof
	14,200	80	>75% Grass cover, Good, HSG D
	61,200	94	Weighted Average
	14,200		23.20% Pervious Area
	47,000		76.80% Impervious Area

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

Summary for Subcatchment ES1: Existing cond - To street

Runoff = 17.38 cfs @ 12.07 hrs, Volume= 1.281 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
	23,015	96	Gravel surface, HSG D
*	26,569	98	Bit. Conc.
*	1,065	98	Bit. conc.
*	6,335	98	Exist. Bldg
	60,497	80	>75% Grass cover, Good, HSG D
*	2,495	98	pvmnt
*	495	98	Conc. Pad
	3,565	80	>75% Grass cover, Good, HSG D
	124,036	88	Weighted Average
	87,077		70.20% Pervious Area
	36,959		29.80% Impervious Area

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

Summary for Subcatchment PS1: Prop. Bldg.

Runoff = 4.55 cfs @ 12.07 hrs, Volume= 0.370 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
29,500	98	Roofs, HSG D
29,500		100.00% Impervious Area

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

Summary for Subcatchment PS2: Proposed Conditions- remainder

Runoff = 5.44 cfs @ 12.07 hrs, Volume= 0.388 af, Depth= 4.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
	0	98	Paved parking, HSG D
*	256	98	Conc. pad
	28,587	80	>75% Grass cover, Good, HSG D
	11,044	80	>75% Grass cover, Good, HSG D
	4,655	80	>75% Grass cover, Good, HSG D
	372	80	>75% Grass cover, Good, HSG D
	44,914	80	Weighted Average
	44,658		99.43% Pervious Area
	256		0.57% Impervious Area

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

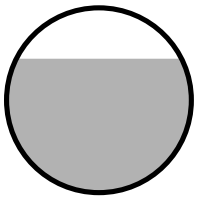
Summary for Reach 1R: 12" RCP 150 ft

Inflow Area = 0.639 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 4.29 cfs @ 12.07 hrs, Volume= 0.349 af
Outflow = 4.20 cfs @ 12.08 hrs, Volume= 0.349 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.95 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.47 fps, Avg. Travel Time= 1.0 min

Peak Storage= 91 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.86 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 150.0' Slope= 0.0133 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



Summary for Reach 2R: Blackmer St

Inflow Area = 2.762 ac, 62.89% Impervious, Inflow Depth = 5.21" for 100 Year Event event
Inflow = 14.93 cfs @ 12.09 hrs, Volume= 1.200 af
Outflow = 14.93 cfs @ 12.09 hrs, Volume= 1.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Blackmer St

Inflow Area = 2.847 ac, 29.80% Impervious, Inflow Depth = 5.40" for 100 Year Event event
Inflow = 17.38 cfs @ 12.07 hrs, Volume= 1.281 af
Outflow = 17.38 cfs @ 12.07 hrs, Volume= 1.281 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

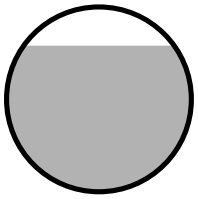
Summary for Reach 5R: New 15" SDR35

Inflow Area = 1.731 ac,100.00% Impervious, Inflow Depth = 5.63" for 100 Year Event event
Inflow = 9.63 cfs @ 12.09 hrs, Volume= 0.813 af
Outflow = 9.61 cfs @ 12.10 hrs, Volume= 0.813 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.26 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.21 fps, Avg. Travel Time= 0.2 min

Peak Storage= 36 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.99'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.98 cfs

15.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 35.0' Slope= 0.0114 '/'
Inlet Invert= 0.40', Outlet Invert= 0.00'



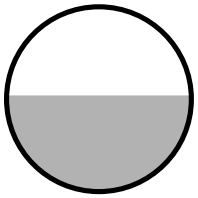
Summary for Reach 6R: 10" SDR35

Inflow Area = 0.228 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 1.53 cfs @ 12.07 hrs, Volume= 0.125 af
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 0.125 af, Atten= 3%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.28 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.80 fps, Avg. Travel Time= 1.5 min

Peak Storage= 47 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.85 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 165.0' Slope= 0.0121 '/'
Inlet Invert= 3.00', Outlet Invert= 1.00'



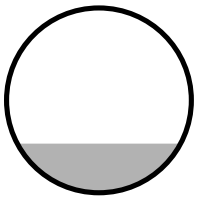
Summary for Reach 7R: 10" SDR35

Inflow Area = 0.187 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 1.25 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.25 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.78 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.58 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 8.19 cfs

10.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.1000 '/'
Inlet Invert= 2.00', Outlet Invert= 1.00'



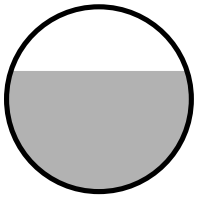
Summary for Reach 8R: 10" SDR35

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 4.19" for 100 Year Event event
Inflow = 3.09 cfs @ 12.15 hrs, Volume= 0.237 af
Outflow = 3.07 cfs @ 12.17 hrs, Volume= 0.237 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.20 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 1.7 min

Peak Storage= 75 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 4.07 cfs

10.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 200.0' Slope= 0.0165 '/'
Inlet Invert= 4.00', Outlet Invert= 0.70'



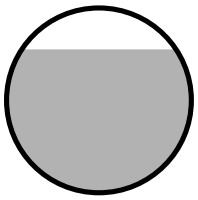
Summary for Reach 9R: 12" SDR35

Inflow Area = 1.054 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 6.92 cfs @ 12.08 hrs, Volume= 0.576 af
Outflow = 6.92 cfs @ 12.08 hrs, Volume= 0.576 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.55 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.81 fps, Avg. Travel Time= 0.0 min

Peak Storage= 7 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.29 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 1.00', Outlet Invert= 0.70'



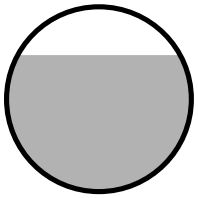
Summary for Reach 11R: Exist. 18" RCP

Inflow Area = 1.490 ac, 83.56% Impervious, Inflow Depth = 6.21" for 100 Year Event event
Inflow = 9.71 cfs @ 12.07 hrs, Volume= 0.771 af
Outflow = 9.55 cfs @ 12.08 hrs, Volume= 0.771 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.85 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 0.7 min

Peak Storage= 140 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.11'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



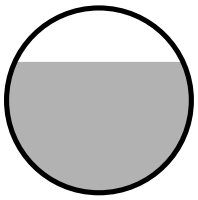
Summary for Reach 15R: Exist. 18" RCP

Inflow Area = 1.405 ac, 76.80% Impervious, Inflow Depth = 6.09" for 100 Year Event event
Inflow = 9.21 cfs @ 12.07 hrs, Volume= 0.713 af
Outflow = 9.05 cfs @ 12.08 hrs, Volume= 0.713 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.80 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.37 fps, Avg. Travel Time= 0.7 min

Peak Storage= 134 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.75 cfs

18.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 100.0' Slope= 0.0075 '/'
Inlet Invert= 1.75', Outlet Invert= 1.00'



Summary for Reach DCE1: DCP 1 End of Blackmer St

Inflow Area = 4.252 ac, 45.33% Impervious, Inflow Depth = 5.63" for 100 Year Event event
Inflow = 26.39 cfs @ 12.07 hrs, Volume= 1.994 af
Outflow = 26.39 cfs @ 12.07 hrs, Volume= 1.994 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Reach DCP1: DCP 1 End of Blackme St

Inflow Area = 4.252 ac, 70.13% Impervious, Inflow Depth = 5.56" for 100 Year Event event
Inflow = 24.46 cfs @ 12.08 hrs, Volume= 1.971 af
Outflow = 24.46 cfs @ 12.08 hrs, Volume= 1.971 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Summary for Pond Infil Fld: 30' x 50' Infiltration Field

Inflow Area = 0.677 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 4.55 cfs @ 12.07 hrs, Volume= 0.370 af
Outflow = 3.22 cfs @ 12.15 hrs, Volume= 0.370 af, Atten= 29%, Lag= 5.0 min
Discarded = 0.13 cfs @ 12.15 hrs, Volume= 0.134 af
Primary = 3.09 cfs @ 12.15 hrs, Volume= 0.237 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 6.41' @ 12.15 hrs Surf.Area= 1,500 sf Storage= 1,762 cf

Plug-Flow detention time= 10.7 min calculated for 0.370 af (100% of inflow)
Center-of-Mass det. time= 10.7 min (753.1 - 742.4)

Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	1,288 cf	**Custom Stage Data (Irregular)**Listed below 3,750 cf Overall - 531 cf Embedded = 3,219 cf x 40.0% Voids
#2	4.50'	531 cf	**StormTech RC-310** x 36 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
		1,818 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
4.00	1,500	160.0	0	0	1,500
6.50	1,500	160.0	3,750	3,750	1,900

Device	Routing	Invert	Outlet Devices
#1	Discarded	4.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	4.85'	**5.0" Horiz. Orifice/Grate X 3.00** C= 0.600
#3	Primary	4.00'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.13 cfs @ 12.15 hrs HW=6.40' (Free Discharge)
└**1=Exfiltration** (Controls 0.13 cfs)

Primary OutFlow Max=3.08 cfs @ 12.15 hrs HW=6.40' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 2.45 cfs @ 5.99 fps)
└**3=Orifice/Grate** (Orifice Controls 0.63 cfs @ 7.19 fps)