SITE ENGINEERING REPORT

Shelton Plaza
265 Bridgeport Avenue & 3 Cots Street
Shelton, CT

Prepared For

265 Bridgeport Avenue LLC
c/o Brian McMahon, Redniss & Mead, Inc.

Prepared by

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Narrative

Project Description:

The applicant, 265 Bridgeport Avenue LLC, is the contract purchaser of two adjacent properties located at 265 Bridgeport Avenue & 3 Cots Street, in Shelton, CT, is seeking approval to construct a 2-story commercial/retail building. The project also includes construction of new surface parking, gas pumps, landscaping, grading and associated utilities. The properties total 1.41± acres within the RBD zoning district. Reference is made to site drawings prepared by this office, dated October 14, 2021.

Existing Conditions:

The parcels are currently developed with two single family residences, a detached garage, and associated driveways. The northern portion of the existing site is undeveloped. Site elevations range from elevation 212 ± on the west side of the property to elevation 182 ± along the east side. The site has slopes ranging from 1-30%.

Drainage Patterns & Conveyance Systems

Runoff from the site drains to the east into the storm conveyance system within Bridgeport Avenue. There is an existing 36" outlet pipe located within the property connecting into the stormwater conveyance system within Bridgeport Avenue. Refer to Appendix A for existing and proposed on-site drainage basin maps.

Proposed Conditions:

The proposed improvements disturb 49,868± SF of the property and will increase impervious coverage by **24,366**± SF when compared to existing site conditions. The additional coverage will increase the volume and peak rates of stormwater runoff without proper on-site mitigation. To comply with Standard (6), this project must provide at least 1" of the Water Quality Volume (WQV) via best management practices (BMP's).

It is proposed to construct a new on-site stormwater collection system. This system will comprise of catch basins, manholes, an oil grit separator and an infiltration system, all of which overflow into the existing 36" pipe which discharges into the existing conveyance system withing Bridgeport Avenue. The portion of the site that will remain undeveloped sheet flows onto Bridgeport Avenue.

All drainage systems have been designed for Type III, 24-hour storm events. The 24-hour design storm rainfall amounts, and distributions were obtained from the latest NOAA Atlas 14 Point Precipitation Frequency Estimates and storm distributions.

Proposed Stormwater Treatment Practices

The design approach chosen to satisfy the design criteria in Stormwater Ordinance #854 standard (6) is to provide the required water quality volume (1" WQV) via infiltration BMP's. This has been accomplished by proposing subsurface infiltration system consisting of 22 – 4 foot tall Retain-It units located within the east portion of the parking lot. Stormwater runoff from the proposed building and parking lot will be captured and treated in the subsurface infiltration system which will then overflow through an 18" pipe connected to a meter structure. The meter structure will then meter the flow at or below existing peak flow rates before discharging into the existing outlet pipe within the property which ultimately discharges to the stormwater system within Bridgeport Avenue.

As the system is set within the fill envelope, free draining fill having a hydrologic group classification of B or greater will installed a minimum of 10 feet around the perimeter of the system.

An Oil Grit Separator (Contech CDS2020-5-C) is proposed to treat a majority of the stormwater runoff from the proposed parking lot prior to discharging into the infiltration system.

A summary of the Water Quality required and provided by the stormwater practices is provided below:

Water Quality Summary Table					
Drainage Area ID	Total Area (SF)	Impervious Area	% Impervious	WQV (CF)	Retention Volume Provided
DB-1	45,790	34,229	75%	2,758	2,846
DB-2	17,127	-	0%	71	-
Total	62,917	34,229	54%	2,829	2,846

Note: drainage basins include approximately 1,657 SF of offsite area tributary to the project site.

Hydrologic Analysis of Peak Rates of Runoff

Hydrologic models have been prepared utilizing the SCS Runoff Curve Number Method from NRCS TR-55 to analyze the pre- and post-development rainfall runoff rates and volumes. Watershed areas, curve numbers (CN), and times of concentration (TC) were calculated for each contributing watershed. The pre-development drainage basin boundaries and the post-development drainage basin boundaries are shown in Appendix A. The results of the HydroCad model used to analyze the pre- and post-development watershed conditions are presented in Appendix B.

A comparison of the pre- and post-development peak discharge rates is provided in the table below.

Peak Flow Rate Comparison (cfs)				
Event	Existing	Proposed	Change	% Change
1-Year	2.58	2.01	-0.57	-22.1%
2-Year	3.51	3.43	-0.08	-2.3%
5-Year	5.07	4.52	-0.55	-10.8%
10-Year	6.37	5.45	-0.92	-14.4%
25-Year	8.16	6.92	-1.24	-15.2%
50-Year	9.50	8.13	-1.37	-14.4%

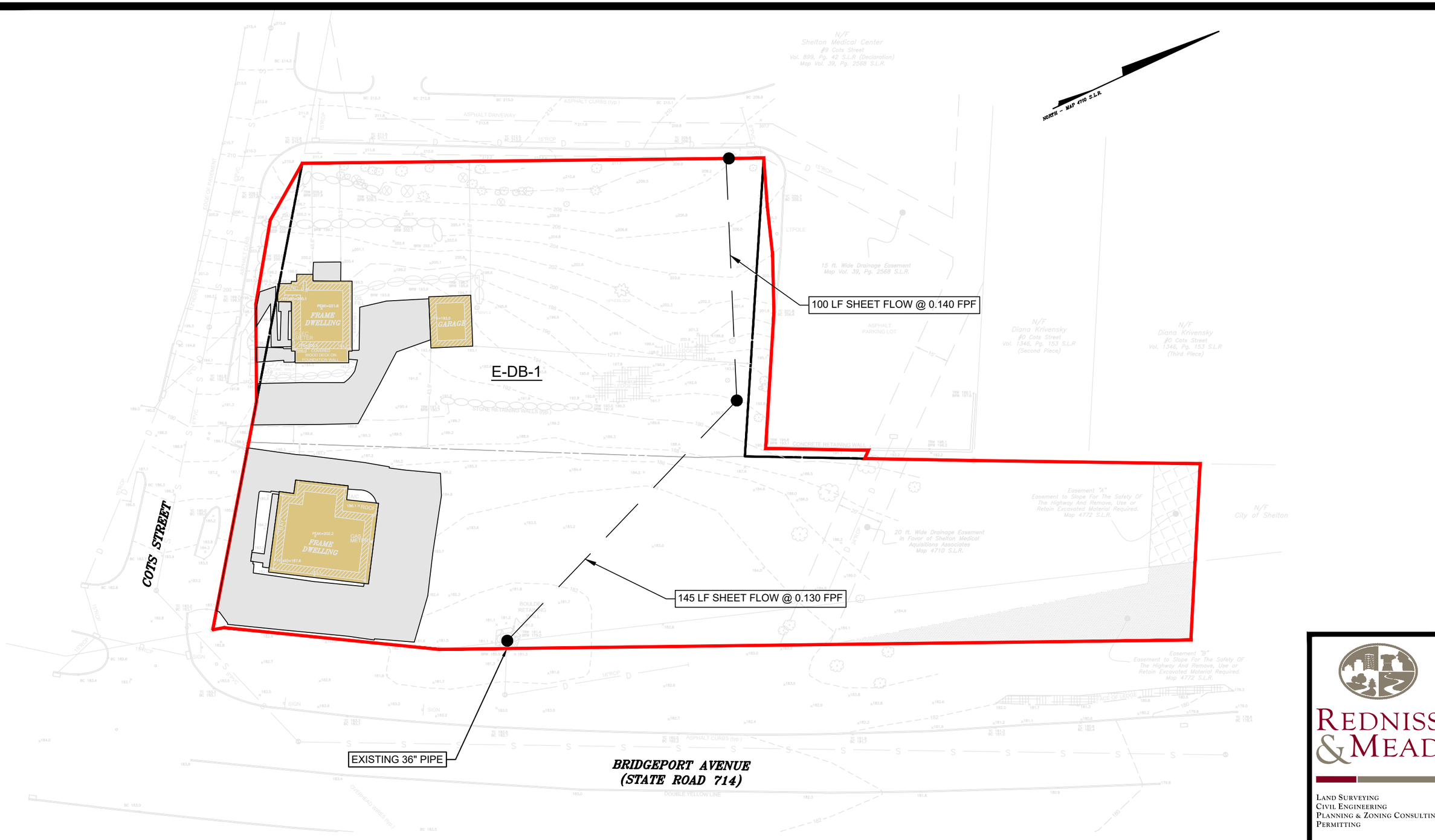
Comparison of the peak discharge rates for pre- and post-development watershed conditions demonstrates that the peak rate of runoff from the proposed development will be decreased. Therefore, the proposed development will not adversely impact the downstream or adjacent properties or receiving water bodies or courses.

Conclusion

Based on the above information, the proposed improvements will not adversely impact adjacent or downstream properties, City-owned or state-owned drainage facilities.

Appendix A

Existing On-Site Drainage Basin Map
Proposed On-Site Drainage Basin Map



EXISTING DRAINAGE BASIN MAP

265 BRIDGEPORT AVENUE & 3 COTS STREET

SHELTON, CT

REDNISS & MEAD

LAND SURVEYING
CIVIL ENGINEERING
PLANNING & ZONING CONSULTING
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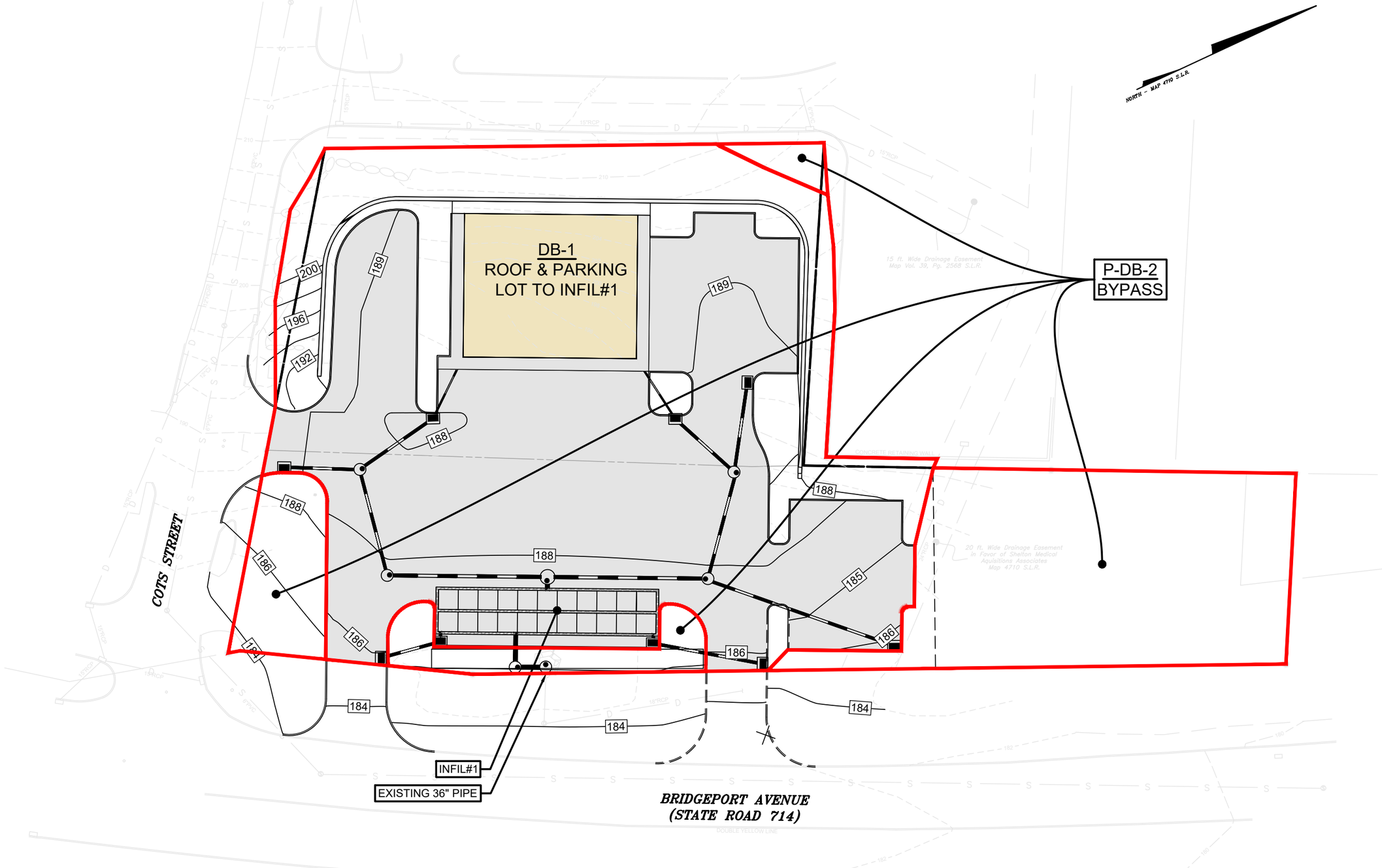
COMM. NO.:	DATE:
10332	10/19/2021
	SCALE: 1"=40'



PROPOSED DRAINAGE BASIN MAP

265 BRIDGEPORT AVENUE & 3 COTS STREET

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COMM. NO.:	DATE:
10332	10/19/2021
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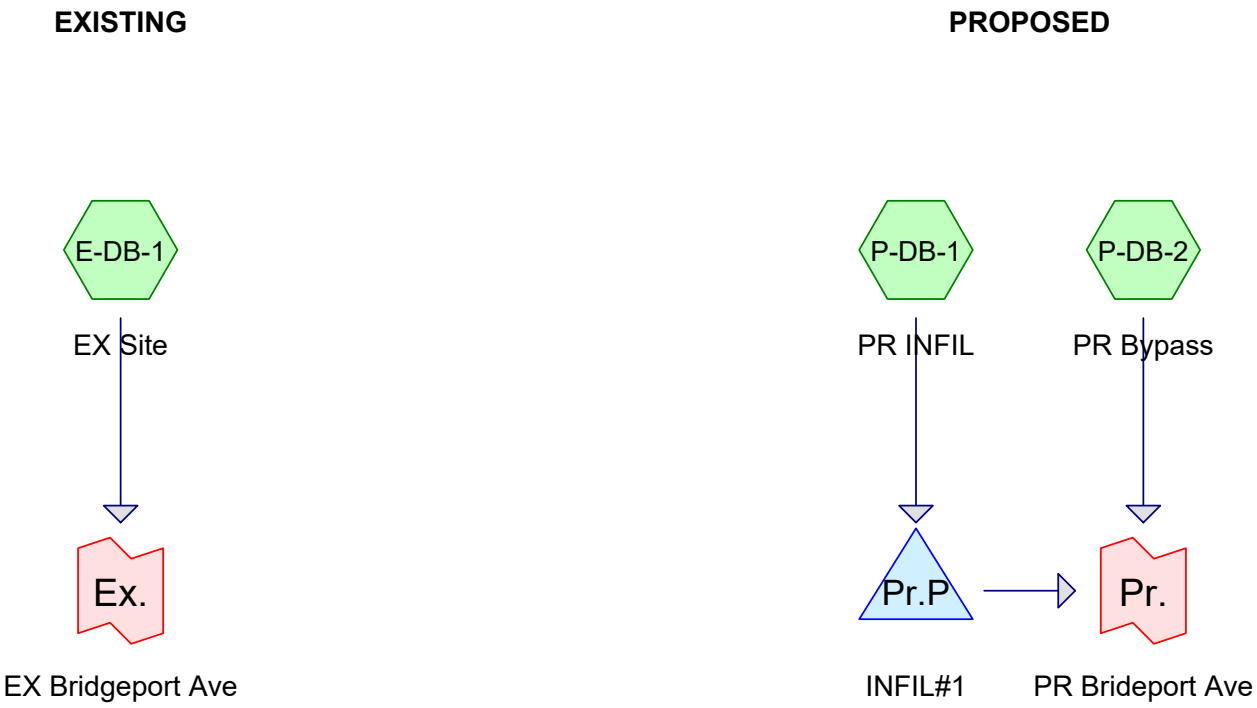
Appendix B

HydroCAD Report



Subcat Reach Pond Link

Routing Diagram for 10332 Hydrocad (2021-10-18)
Prepared by Microsoft, Printed 10/19/2021

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>1.41"
Flow Length=250' Tc=6.9 min CN=83 Runoff=2.58 cfs 7,389 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>2.27"
Tc=5.0 min CN=93 Runoff=3.29 cfs 8,646 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>1.23"
Tc=5.0 min CN=80 Runoff=0.67 cfs 1,749 cf

Pond Pr.P: INFIL#1 Peak Elev=183.69' Storage=3,564 cf Inflow=3.29 cfs 8,646 cf
Outflow=1.63 cfs 5,807 cf

Link Ex.: EX Bridgeport Ave Inflow=2.58 cfs 7,389 cf
Primary=2.58 cfs 7,389 cf

Link Pr.: PR Brideport Ave Inflow=2.01 cfs 7,556 cf
Primary=2.01 cfs 7,556 cf

Total Runoff Area = 125,834 sf Runoff Volume = 17,784 cf Average Runoff Depth = 1.70"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>1.94"
Flow Length=250' Tc=6.9 min CN=83 Runoff=3.51 cfs 10,194 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>2.89"
Tc=5.0 min CN=93 Runoff=4.06 cfs 11,041 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>1.73"
Tc=5.0 min CN=80 Runoff=0.94 cfs 2,468 cf

Pond Pr.P: INFIL#1 Peak Elev=184.00' Storage=3,941 cf Inflow=4.06 cfs 11,041 cf
Outflow=2.67 cfs 8,188 cf

Link Ex.: EX Bridgeport Ave Inflow=3.51 cfs 10,194 cf
Primary=3.51 cfs 10,194 cf

Link Pr.: PR Brideport Ave Inflow=3.43 cfs 10,656 cf
Primary=3.43 cfs 10,656 cf

Total Runoff Area = 125,834 sf Runoff Volume = 23,703 cf Average Runoff Depth = 2.26"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>2.88"
Flow Length=250' Tc=6.9 min CN=83 Runoff=5.07 cfs 15,077 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>3.94"
Tc=5.0 min CN=93 Runoff=5.31 cfs 15,028 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>2.62"
Tc=5.0 min CN=80 Runoff=1.40 cfs 3,740 cf

Pond Pr.P: INFIL#1 Peak Elev=184.30' Storage=4,317 cf Inflow=5.31 cfs 15,028 cf
Outflow=3.40 cfs 12,154 cf

Link Ex.: EX Bridgeport Ave Inflow=5.07 cfs 15,077 cf
Primary=5.07 cfs 15,077 cf

Link Pr.: PR Brideport Ave Inflow=4.52 cfs 15,893 cf
Primary=4.52 cfs 15,893 cf

Total Runoff Area = 125,834 sf Runoff Volume = 33,845 cf Average Runoff Depth = 3.23"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>3.68"
Flow Length=250' Tc=6.9 min CN=83 Runoff=6.37 cfs 19,301 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>4.81"
Tc=5.0 min CN=93 Runoff=6.32 cfs 18,369 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>3.40"
Tc=5.0 min CN=80 Runoff=1.79 cfs 4,852 cf

Pond Pr.P: INFIL#1 Peak Elev=184.53' Storage=4,595 cf Inflow=6.32 cfs 18,369 cf
Outflow=4.07 cfs 15,476 cf

Link Ex.: EX Bridgeport Ave Inflow=6.37 cfs 19,301 cf
Primary=6.37 cfs 19,301 cf

Link Pr.: PR Brideport Ave Inflow=5.45 cfs 20,328 cf
Primary=5.45 cfs 20,328 cf

Total Runoff Area = 125,834 sf Runoff Volume = 42,522 cf Average Runoff Depth = 4.06"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>4.81"
Flow Length=250' Tc=6.9 min CN=83 Runoff=8.16 cfs 25,240 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>6.02"
Tc=5.0 min CN=93 Runoff=7.70 cfs 22,968 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>4.50"
Tc=5.0 min CN=80 Runoff=2.32 cfs 6,428 cf

Pond Pr.P: INFIL#1 Peak Elev=184.80' Storage=4,942 cf Inflow=7.70 cfs 22,968 cf
Outflow=5.10 cfs 20,056 cf

Link Ex.: EX Bridgeport Ave Inflow=8.16 cfs 25,240 cf
Primary=8.16 cfs 25,240 cf

Link Pr.: PR Brideport Ave Inflow=6.92 cfs 26,484 cf
Primary=6.92 cfs 26,484 cf

Total Runoff Area = 125,834 sf Runoff Volume = 54,636 cf Average Runoff Depth = 5.21"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Summary for Subcatchment E-DB-1: EX Site

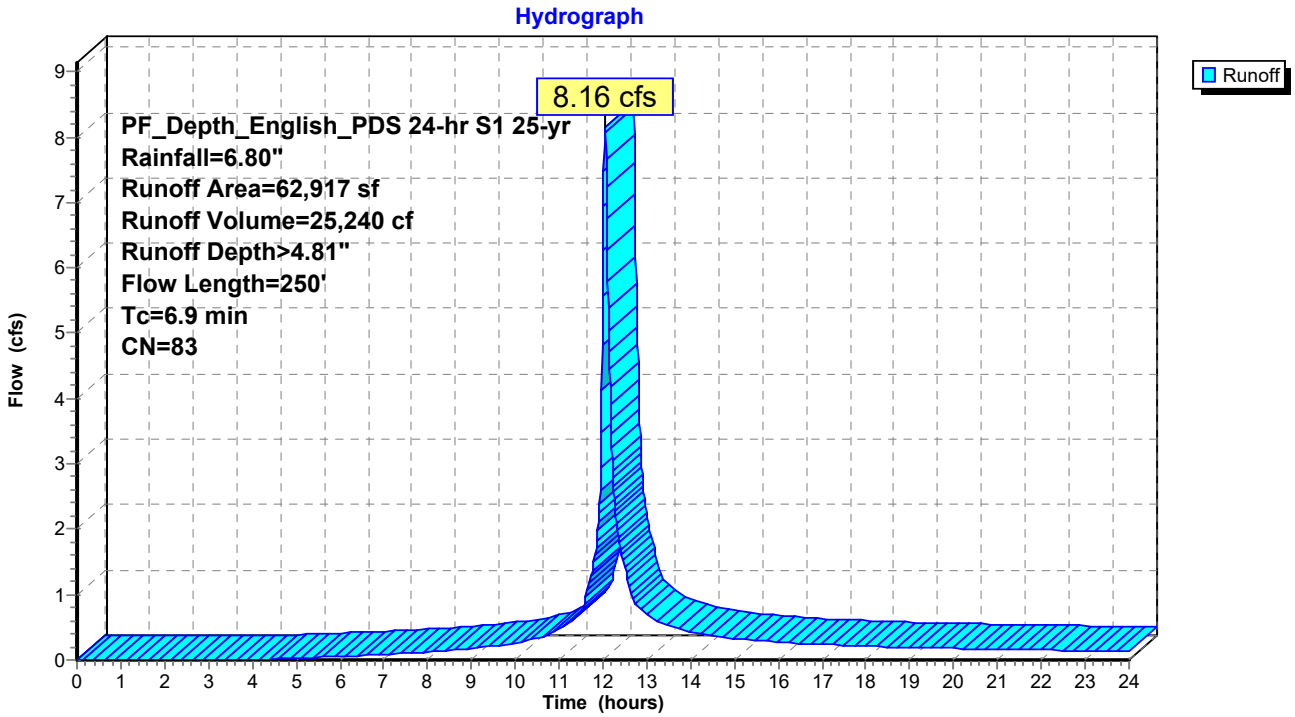
Runoff = 8.16 cfs @ 12.05 hrs, Volume= 25,240 cf, Depth> 4.81"
Routed to Link Ex. : EX Bridgeport Ave

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=6.80"

	Area (sf)	CN	Description
	52,938	80	>75% Grass cover, Good, HSG D
*	9,979	98	Impervious
	62,917	83	Weighted Average
	52,938		84.14% Pervious Area
	9,979		15.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.1400	0.26		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.4	150	0.1300	5.80		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.9	250	Total			

Subcatchment E-DB-1: EX Site



Summary for Subcatchment P-DB-1: PR INFIL

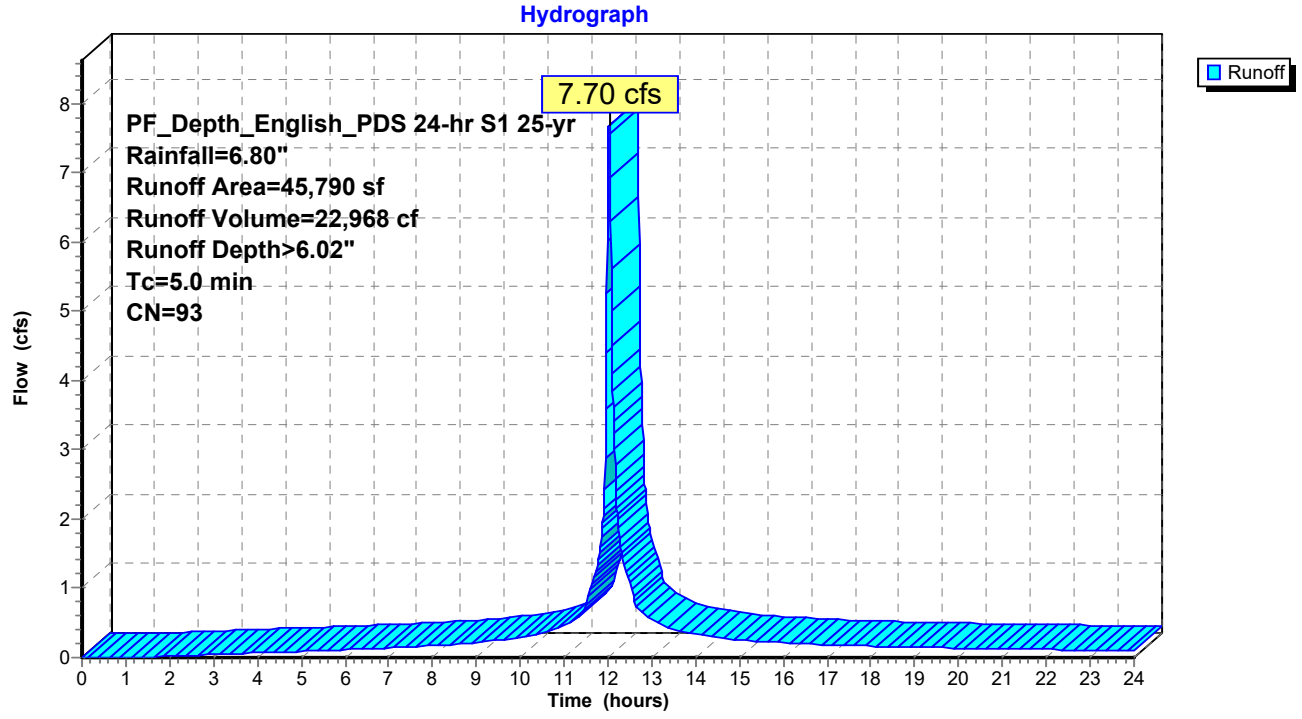
Runoff = 7.70 cfs @ 12.03 hrs, Volume= 22,968 cf, Depth> 6.02"
Routed to Pond Pr.P : INFIL#1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=6.80"

	Area (sf)	CN	Description
	11,561	80	>75% Grass cover, Good, HSG D
*	34,229	98	Impervious
	45,790	93	Weighted Average
	11,561		25.25% Pervious Area
	34,229		74.75% Impervious Area

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

Subcatchment P-DB-1: PR INFIL



Summary for Subcatchment P-DB-2: PR Bypass

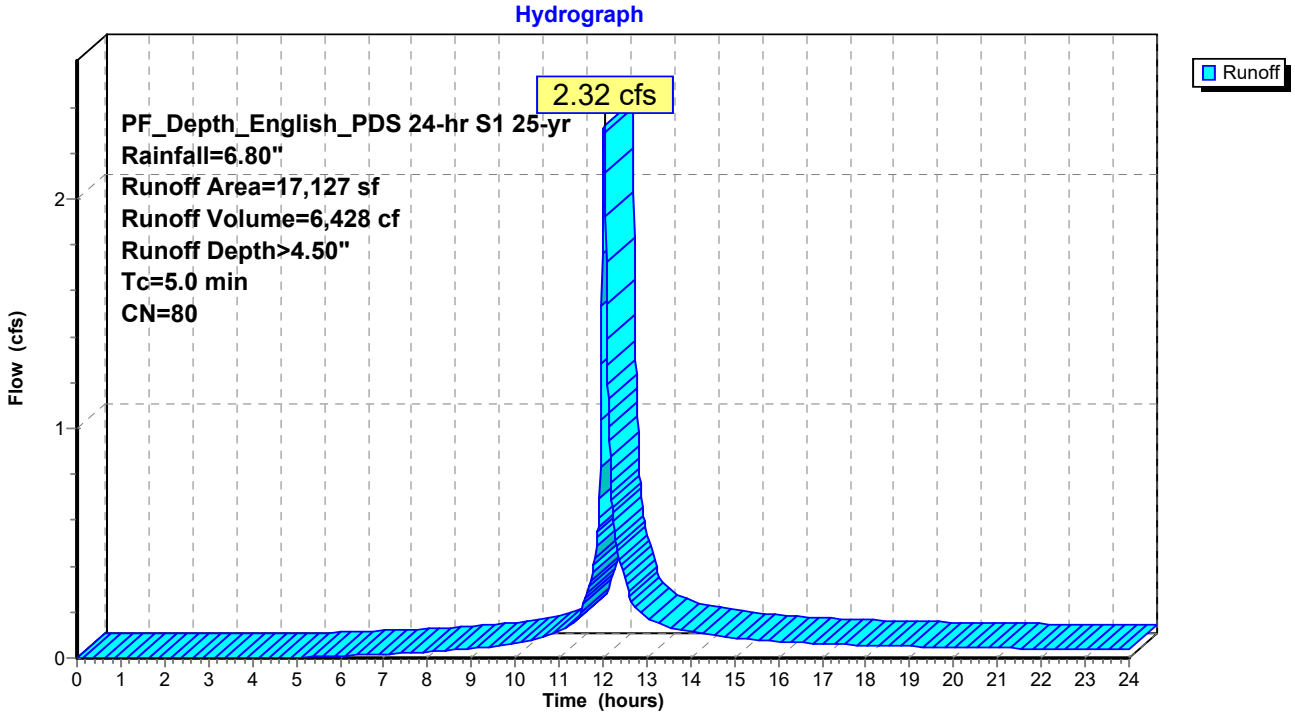
Runoff = 2.32 cfs @ 12.03 hrs, Volume= 6,428 cf, Depth> 4.50"
Routed to Link Pr. : PR Brideport Ave

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
PF_Depth_English_PDS 24-hr S1 25-yr Rainfall=6.80"

Area (sf)	CN	Description
17,127	80	>75% Grass cover, Good, HSG D
17,127		100.00% Pervious Area

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

Subcatchment P-DB-2: PR Bypass



Summary for Pond Pr.P: INFIL#1

Inflow Area = 45,790 sf, 74.75% Impervious, Inflow Depth > 6.02" for 25-yr event
Inflow = 7.70 cfs @ 12.03 hrs, Volume= 22,968 cf
Outflow = 5.10 cfs @ 12.08 hrs, Volume= 20,056 cf, Atten= 34%, Lag= 3.2 min
Primary = 5.10 cfs @ 12.08 hrs, Volume= 20,056 cf
Routed to Link Pr. : PR Brideport Ave

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 184.80' @ 12.08 hrs Surf.Area= 1,434 sf Storage= 4,942 cf

Plug-Flow detention time= 127.9 min calculated for 20,048 cf (87% of inflow)
Center-of-Mass det. time= 60.5 min (832.2 - 771.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	180.50'	282 cf	**16.00'W x 88.00'L x 5.17'H Field A** 7,275 cf Overall - 6,571 cf Embedded = 704 cf x 40.0% Voids
#2A	181.00'	4,884 cf	**retain_it retain_it 4.0'** x 22 Inside #1 Inside= 84.0"W x 48.0"H => 28.87 sf x 8.00'L = 230.9 cf Outside= 96.0"W x 56.0"H => 37.33 sf x 8.00'L = 298.7 cf 2 Rows adjusted for 196.3 cf perimeter wall
#3	183.70'	55 cf	**12.0" Round Pipe Storage** L= 70.0' S= 0.0300 '/'
		5,221 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	184.25'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	184.90'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	183.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.10 cfs @ 12.08 hrs HW=184.80' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.78 cfs @ 2.53 fps)
- **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Orifice Controls 4.32 cfs @ 5.50 fps)

Pond Pr.P: INFIL#1 - Chamber Wizard Field A

Chamber Model = retain_it retain_it 4.0' (retain-it®)
Inside= 84.0"W x 48.0"H => 28.87 sf x 8.00'L = 230.9 cf
Outside= 96.0"W x 56.0"H => 37.33 sf x 8.00'L = 298.7 cf
2 Rows adjusted for 196.3 cf perimeter wall

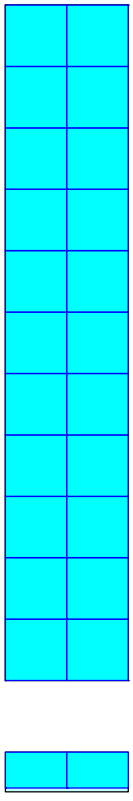
11 Chambers/Row x 8.00' Long = 88.00' Row Length
2 Rows x 96.0" Wide = 16.00' Base Width
6.0" Stone Base + 56.0" Chamber Height = 5.17' Field Height

7.5 cf Sidewall x 11 x 2 + 7.5 cf Endwall x 2 x 2 = 196.3 cf Perimeter Wall
22 Chambers x 230.9 cf - 196.3 cf Perimeter wall = 4,884.4 cf Chamber Storage
22 Chambers x 298.7 cf = 6,570.7 cf Displacement

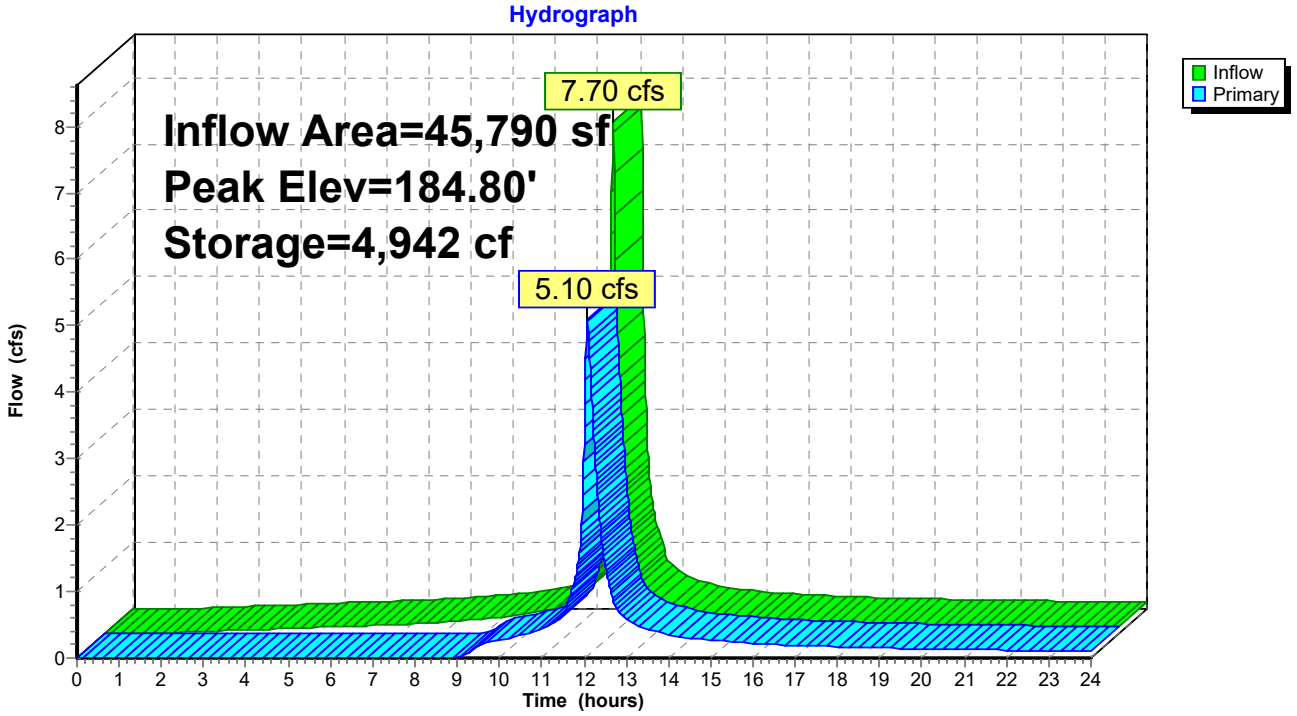
7,274.7 cf Field - 6,570.7 cf Chambers = 704.0 cf Stone x 40.0% Voids = 281.6 cf Stone Storage

Chamber Storage + Stone Storage = 5,166.0 cf = 0.119 af
Overall Storage Efficiency = 71.0%
Overall System Size = 88.00' x 16.00' x 5.17'

22 Chambers
269.4 cy Field
26.1 cy Stone



Pond Pr.P: INFIL#1



Stage-Area-Storage for Pond Pr.P: INFIL#1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
180.50	0	181.02	306	181.54	941
180.51	6	181.03	318	181.55	953
180.52	11	181.04	330	181.56	965
180.53	17	181.05	343	181.57	978
180.54	23	181.06	355	181.58	990
180.55	28	181.07	367	181.59	1,002
180.56	34	181.08	379	181.60	1,014
180.57	39	181.09	391	181.61	1,026
180.58	45	181.10	404	181.62	1,039
180.59	51	181.11	416	181.63	1,051
180.60	56	181.12	428	181.64	1,063
180.61	62	181.13	440	181.65	1,075
180.62	68	181.14	453	181.66	1,088
180.63	73	181.15	465	181.67	1,100
180.64	79	181.16	477	181.68	1,112
180.65	84	181.17	489	181.69	1,124
180.66	90	181.18	501	181.70	1,136
180.67	96	181.19	514	181.71	1,149
180.68	101	181.20	526	181.72	1,161
180.69	107	181.21	538	181.73	1,173
180.70	113	181.22	550	181.74	1,185
180.71	118	181.23	562	181.75	1,197
180.72	124	181.24	575	181.76	1,210
180.73	130	181.25	587	181.77	1,222
180.74	135	181.26	599	181.78	1,234
180.75	141	181.27	611	181.79	1,246
180.76	146	181.28	624	181.80	1,258
180.77	152	181.29	636	181.81	1,271
180.78	158	181.30	648	181.82	1,283
180.79	163	181.31	660	181.83	1,295
180.80	169	181.32	672	181.84	1,307
180.81	175	181.33	685	181.85	1,320
180.82	180	181.34	697	181.86	1,332
180.83	186	181.35	709	181.87	1,344
180.84	191	181.36	721	181.88	1,356
180.85	197	181.37	733	181.89	1,368
180.86	203	181.38	746	181.90	1,381
180.87	208	181.39	758	181.91	1,393
180.88	214	181.40	770	181.92	1,405
180.89	220	181.41	782	181.93	1,417
180.90	225	181.42	794	181.94	1,429
180.91	231	181.43	807	181.95	1,442
180.92	237	181.44	819	181.96	1,454
180.93	242	181.45	831	181.97	1,466
180.94	248	181.46	843	181.98	1,478
180.95	253	181.47	856	181.99	1,490
180.96	259	181.48	868	182.00	1,503
180.97	265	181.49	880	182.01	1,515
180.98	270	181.50	892	182.02	1,527
180.99	276	181.51	904	182.03	1,539
181.00	282	181.52	917	182.04	1,552
181.01	294	181.53	929	182.05	1,564

Stage-Area-Storage for Pond Pr.P: INFIL#1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
182.06	1,576	182.58	2,211	183.10	2,846
182.07	1,588	182.59	2,223	183.11	2,858
182.08	1,600	182.60	2,235	183.12	2,870
182.09	1,613	182.61	2,248	183.13	2,883
182.10	1,625	182.62	2,260	183.14	2,895
182.11	1,637	182.63	2,272	183.15	2,907
182.12	1,649	182.64	2,284	183.16	2,919
182.13	1,661	182.65	2,296	183.17	2,931
182.14	1,674	182.66	2,309	183.18	2,944
182.15	1,686	182.67	2,321	183.19	2,956
182.16	1,698	182.68	2,333	183.20	2,968
182.17	1,710	182.69	2,345	183.21	2,980
182.18	1,722	182.70	2,357	183.22	2,992
182.19	1,735	182.71	2,370	183.23	3,005
182.20	1,747	182.72	2,382	183.24	3,017
182.21	1,759	182.73	2,394	183.25	3,029
182.22	1,771	182.74	2,406	183.26	3,041
182.23	1,784	182.75	2,419	183.27	3,053
182.24	1,796	182.76	2,431	183.28	3,066
182.25	1,808	182.77	2,443	183.29	3,078
182.26	1,820	182.78	2,455	183.30	3,090
182.27	1,832	182.79	2,467	183.31	3,102
182.28	1,845	182.80	2,480	183.32	3,115
182.29	1,857	182.81	2,492	183.33	3,127
182.30	1,869	182.82	2,504	183.34	3,139
182.31	1,881	182.83	2,516	183.35	3,151
182.32	1,893	182.84	2,528	183.36	3,163
182.33	1,906	182.85	2,541	183.37	3,176
182.34	1,918	182.86	2,553	183.38	3,188
182.35	1,930	182.87	2,565	183.39	3,200
182.36	1,942	182.88	2,577	183.40	3,212
182.37	1,955	182.89	2,589	183.41	3,224
182.38	1,967	182.90	2,602	183.42	3,237
182.39	1,979	182.91	2,614	183.43	3,249
182.40	1,991	182.92	2,626	183.44	3,261
182.41	2,003	182.93	2,638	183.45	3,273
182.42	2,016	182.94	2,651	183.46	3,285
182.43	2,028	182.95	2,663	183.47	3,298
182.44	2,040	182.96	2,675	183.48	3,310
182.45	2,052	182.97	2,687	183.49	3,322
182.46	2,064	182.98	2,699	183.50	3,334
182.47	2,077	182.99	2,712	183.51	3,347
182.48	2,089	183.00	2,724	183.52	3,359
182.49	2,101	183.01	2,736	183.53	3,371
182.50	2,113	183.02	2,748	183.54	3,383
182.51	2,125	183.03	2,760	183.55	3,395
182.52	2,138	183.04	2,773	183.56	3,408
182.53	2,150	183.05	2,785	183.57	3,420
182.54	2,162	183.06	2,797	183.58	3,432
182.55	2,174	183.07	2,809	183.59	3,444
182.56	2,187	183.08	2,821	183.60	3,456
182.57	2,199	183.09	2,834	183.61	3,469

Stage-Area-Storage for Pond Pr.P: INFIL#1 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
183.62	3,481	184.14	4,118	184.66	4,763
183.63	3,493	184.15	4,130	184.67	4,775
183.64	3,505	184.16	4,143	184.68	4,788
183.65	3,518	184.17	4,155	184.69	4,800
183.66	3,530	184.18	4,167	184.70	4,813
183.67	3,542	184.19	4,180	184.71	4,825
183.68	3,554	184.20	4,192	184.72	4,838
183.69	3,566	184.21	4,204	184.73	4,850
183.70	3,579	184.22	4,217	184.74	4,863
183.71	3,591	184.23	4,229	184.75	4,875
183.72	3,603	184.24	4,241	184.76	4,888
183.73	3,615	184.25	4,254	184.77	4,900
183.74	3,627	184.26	4,266	184.78	4,913
183.75	3,640	184.27	4,278	184.79	4,925
183.76	3,652	184.28	4,291	184.80	4,937
183.77	3,664	184.29	4,303	184.81	4,950
183.78	3,676	184.30	4,315	184.82	4,962
183.79	3,689	184.31	4,328	184.83	4,975
183.80	3,701	184.32	4,340	184.84	4,987
183.81	3,713	184.33	4,353	184.85	5,000
183.82	3,725	184.34	4,365	184.86	5,012
183.83	3,737	184.35	4,377	184.87	5,025
183.84	3,750	184.36	4,390	184.88	5,037
183.85	3,762	184.37	4,402	184.89	5,050
183.86	3,774	184.38	4,415	184.90	5,062
183.87	3,786	184.39	4,427	184.91	5,075
183.88	3,799	184.40	4,439	184.92	5,087
183.89	3,811	184.41	4,452	184.93	5,100
183.90	3,823	184.42	4,464	184.94	5,112
183.91	3,835	184.43	4,477	184.95	5,125
183.92	3,848	184.44	4,489	184.96	5,137
183.93	3,860	184.45	4,501	184.97	5,150
183.94	3,872	184.46	4,514	184.98	5,162
183.95	3,884	184.47	4,526	184.99	5,174
183.96	3,897	184.48	4,539	185.00	5,187
183.97	3,909	184.49	4,551	185.01	5,187
183.98	3,921	184.50	4,564	185.02	5,187
183.99	3,933	184.51	4,576	185.03	5,188
184.00	3,946	184.52	4,588	185.04	5,188
184.01	3,958	184.53	4,601	185.05	5,188
184.02	3,970	184.54	4,613	185.06	5,188
184.03	3,983	184.55	4,626	185.07	5,189
184.04	3,995	184.56	4,638	185.08	5,189
184.05	4,007	184.57	4,651	185.09	5,189
184.06	4,019	184.58	4,663	185.10	5,190
184.07	4,032	184.59	4,676	185.11	5,190
184.08	4,044	184.60	4,688	185.12	5,190
184.09	4,056	184.61	4,701	185.13	5,190
184.10	4,069	184.62	4,713	185.14	5,191
184.11	4,081	184.63	4,725	185.15	5,191
184.12	4,093	184.64	4,738	185.16	5,191
184.13	4,106	184.65	4,750	185.17	5,191

Stage-Area-Storage for Pond Pr.P: INFIL#1 (continued)

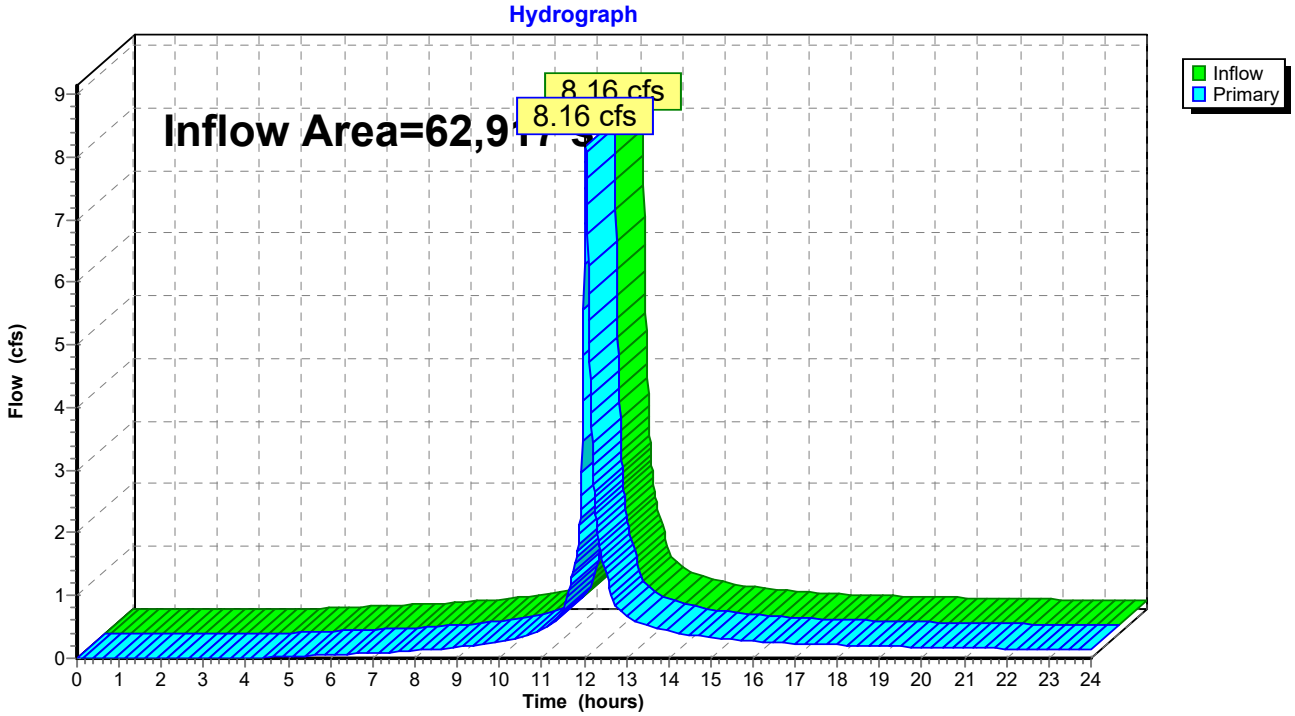
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
185.18	5,192	185.70	5,205	186.22	5,217
185.19	5,192	185.71	5,206	186.23	5,217
185.20	5,192	185.72	5,206	186.24	5,217
185.21	5,192	185.73	5,206	186.25	5,217
185.22	5,193	185.74	5,206	186.26	5,218
185.23	5,193	185.75	5,207	186.27	5,218
185.24	5,193	185.76	5,207	186.28	5,218
185.25	5,193	185.77	5,207	186.29	5,218
185.26	5,194	185.78	5,207	186.30	5,218
185.27	5,194	185.79	5,208	186.31	5,218
185.28	5,194	185.80	5,208	186.32	5,218
185.29	5,195	185.81	5,208	186.33	5,219
185.30	5,195	185.82	5,208	186.34	5,219
185.31	5,195	185.83	5,209	186.35	5,219
185.32	5,195	185.84	5,209	186.36	5,219
185.33	5,196	185.85	5,209	186.37	5,219
185.34	5,196	185.86	5,209	186.38	5,219
185.35	5,196	185.87	5,210	186.39	5,219
185.36	5,196	185.88	5,210	186.40	5,219
185.37	5,197	185.89	5,210	186.41	5,219
185.38	5,197	185.90	5,210	186.42	5,220
185.39	5,197	185.91	5,211	186.43	5,220
185.40	5,197	185.92	5,211	186.44	5,220
185.41	5,198	185.93	5,211	186.45	5,220
185.42	5,198	185.94	5,211	186.46	5,220
185.43	5,198	185.95	5,212	186.47	5,220
185.44	5,198	185.96	5,212	186.48	5,220
185.45	5,199	185.97	5,212	186.49	5,220
185.46	5,199	185.98	5,212	186.50	5,220
185.47	5,199	185.99	5,213	186.51	5,220
185.48	5,199	186.00	5,213	186.52	5,220
185.49	5,200	186.01	5,213	186.53	5,220
185.50	5,200	186.02	5,213	186.54	5,220
185.51	5,200	186.03	5,213	186.55	5,220
185.52	5,201	186.04	5,214	186.56	5,220
185.53	5,201	186.05	5,214	186.57	5,221
185.54	5,201	186.06	5,214	186.58	5,221
185.55	5,201	186.07	5,214	186.59	5,221
185.56	5,202	186.08	5,215	186.60	5,221
185.57	5,202	186.09	5,215	186.61	5,221
185.58	5,202	186.10	5,215	186.62	5,221
185.59	5,202	186.11	5,215	186.63	5,221
185.60	5,203	186.12	5,215	186.64	5,221
185.61	5,203	186.13	5,215	186.65	5,221
185.62	5,203	186.14	5,216	186.66	5,221
185.63	5,203	186.15	5,216	186.67	5,221
185.64	5,204	186.16	5,216	186.68	5,221
185.65	5,204	186.17	5,216	186.69	5,221
185.66	5,204	186.18	5,216	186.70	5,221
185.67	5,204	186.19	5,217	186.71	5,221
185.68	5,205	186.20	5,217	186.72	5,221
185.69	5,205	186.21	5,217	186.73	5,221

Summary for Link Ex.: EX Bridgeport Ave

Inflow Area = 62,917 sf, 15.86% Impervious, Inflow Depth > 4.81" for 25-yr event
Inflow = 8.16 cfs @ 12.05 hrs, Volume= 25,240 cf
Primary = 8.16 cfs @ 12.05 hrs, Volume= 25,240 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Ex.: EX Bridgeport Ave

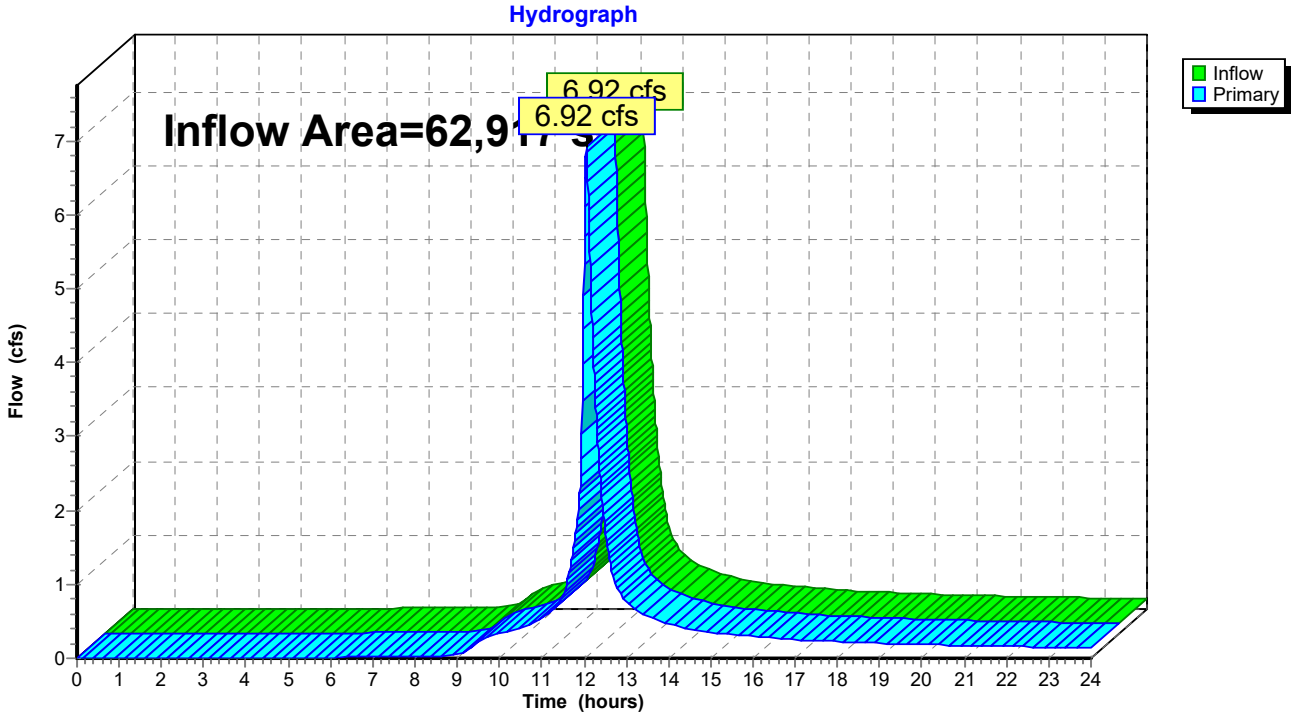


Summary for Link Pr.: PR Brideport Ave

Inflow Area = 62,917 sf, 54.40% Impervious, Inflow Depth > 5.05" for 25-yr event
Inflow = 6.92 cfs @ 12.05 hrs, Volume= 26,484 cf
Primary = 6.92 cfs @ 12.05 hrs, Volume= 26,484 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link Pr.: PR Brideport Ave



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>5.66"
Flow Length=250' Tc=6.9 min CN=83 Runoff=9.50 cfs 29,695 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>6.91"
Tc=5.0 min CN=93 Runoff=8.73 cfs 26,371 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>5.34"
Tc=5.0 min CN=80 Runoff=2.73 cfs 7,617 cf

Pond Pr.P: INFIL#1 Peak Elev=184.99' Storage=5,180 cf Inflow=8.73 cfs 26,371 cf
Outflow=6.08 cfs 23,446 cf

Link Ex.: EX Bridgeport Ave Inflow=9.50 cfs 29,695 cf
Primary=9.50 cfs 29,695 cf

Link Pr.: PR Brideport Ave Inflow=8.13 cfs 31,063 cf
Primary=8.13 cfs 31,063 cf

Total Runoff Area = 125,834 sf Runoff Volume = 63,683 cf Average Runoff Depth = 6.07"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-DB-1: EX Site Runoff Area=62,917 sf 15.86% Impervious Runoff Depth>6.60"
Flow Length=250' Tc=6.9 min CN=83 Runoff=10.90 cfs 34,598 cf

Subcatchment P-DB-1: PR INFIL Runoff Area=45,790 sf 74.75% Impervious Runoff Depth>7.88"
Tc=5.0 min CN=93 Runoff=9.81 cfs 30,082 cf

Subcatchment P-DB-2: PR Bypass Runoff Area=17,127 sf 0.00% Impervious Runoff Depth>6.26"
Tc=5.0 min CN=80 Runoff=3.15 cfs 8,930 cf

Pond Pr.P: INFIL#1 Peak Elev=185.39' Storage=5,197 cf Inflow=9.81 cfs 30,082 cf
Outflow=10.92 cfs 27,216 cf

Link Ex.: EX Bridgeport Ave Inflow=10.90 cfs 34,598 cf
Primary=10.90 cfs 34,598 cf

Link Pr.: PR Brideport Ave Inflow=13.94 cfs 36,145 cf
Primary=13.94 cfs 36,145 cf

Total Runoff Area = 125,834 sf Runoff Volume = 73,610 cf Average Runoff Depth = 7.02"
64.87% Pervious = 81,626 sf 35.13% Impervious = 44,208 sf

Appendix C

Water Quality Volume Calculations
BMP Volume Calculations

Water Quality Volume Calculations

Project: *265 Bridgeport Avenue & 3 Cots Street*	**Project #:** *10332*	**Date:** *10/19/2021*
Location: *Shelton, CT*	**By:** *EWM*	**Checked:** *BPM*

Proposed Conditions

Area*=	1.406	acres
Impervious Area=	0.786	acres[d]
I=	0.559	[a]
R=	0.553	[b]
WQV=	0.065	ac. ft. [c]

** Area of Parcels - does not include offsite areas tributary to site*

WQV=	**2,822.4**	**ft.^{3}**
WQV Provided =	**2,846.0**	**ft.^{3}**

[a] I=Percent Impervious Coverage

[b] R=0.05+0.009(I); Volumetric runoff Coefficient, Equation taken from 2004 Connecticut Stormwater Quality Manual section 7.4.1

[c] WQV=(1"xRxA)/12; Water Quality Volume, Equation taken from 2004 Connecticut Stormwater Quality Manual section 7.4.1

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