Stormwater Report
Collinsville Landing

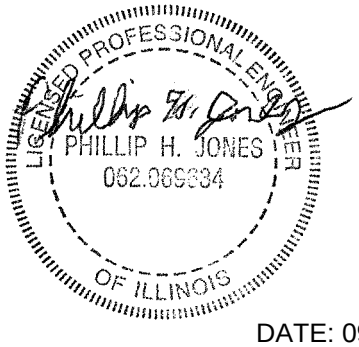
Prepared for:

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Project information:

Collinsville Landing
IL-157 & Ramada Boulevard
Collinsville, IL
Oates Project Number: 220122.002

Final Report
September 2025



DATE: 09/24/2025
EXP. 11/30/2025

OATES ASSOCIATES

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1. Project Summary

Collinsville Landing is a proposed mixed-use development for five commercial buildings, including fast-food restaurants, and a medical-dental office building. The project is located east of IL-157 across from the I-55/70 northbound on/off ramps and Collinsville Crossing in Collinsville, IL, which is in Madison County. The project site includes 5 lots and new roadway ROW totaling ±5.5-acres (Parcel ID's: 13-1-21-29-15-401-020, 13-1-21-29-15-401-19, 13-1-21-29-15-401-003, 13-2-21-29-15-401-004, 13-2-21-29-15-401-005, 13-2-21-29-15-401-030, 13-2-21-29-15-401-005.001, 13-2-21-29-15-401-006, 13-2-21-29-15-401-007, 13-2-21-29-15-401-008, 13-2-21-29-15-401-009, 13-2-21-29-15-401-010, 13-2-21-29-15-401-011, 13-2-21-29-15-401-012). Lot 5 includes the construction of a new 2,370 sq ft fast food restaurant with a drive-through. Lot 1 includes the construction of a new 5,190 sq ft fast food restaurant with drive-through. Lots 2, 3 and 4 include the construction of 3 new buildings: One 1,025 sq ft fast-food restaurant with a drive-through, one 3,530 sq ft medical-dental office building, and one 3,870 sq ft restaurant. The project will also include roadway improvements, paved parking, lot entrances, access aisles and underground stormwater detention. This report summarizes pre- and post-developed conditions and improvements for stormwater infrastructure associated with this project.

2. Existing Conditions



Figure 1 - Existing Conditions (2022)

The proposed site is located on the east side of IL-157/ North Bluff Road, bordered by McDonalds to the north and a residential neighborhood to the south and east. A location map is provided in **Attachment A**. The ±5.5-acre existing site consists of several parcels, including wooded areas, residential structures, and previously developed areas. The impacted watershed totals 3.28 acres of impervious and 13.12 acres of greenspace. The proposed Lot 5 will be placed on the wooded space on the north side of the site. The current residential structures and previously developed area will be demolished with Lot 1 being placed in the center of the site and Lots 2, 3 and 4 being placed at the south of the site.

Figure 1 shows the current existing condition. The site drains to the west storm sewer and into a drainage ditch running north/south along IL-157, where additional storm sewer collects the runoff. The drainage ditch then drains under IL-157 and splits to the north and south into two unnamed tributaries of Canteen Creek. Existing drainage area maps have been included in **Attachment B**.

Table 1 – Existing Drainage Areas

Drainage Area	EX. Area (Acres)	Impervious Area (Acres)	Outlet Location
A	2.15	0.79	City Storm (Ostle)
B	9.96	0.82	City Storm (Ramada)
C	4.30	1.67	IDOT Storm

The site is not within the 100-year FEMA regulatory floodplain. The site is in Zone X – Area of Minimal Flood Hazard based on Preliminary FEMA Panels 17119C0342D included in **Attachment D**.

The site does not contain any wetlands or regulated waterways. A National Wetlands Inventory map has been included in **Attachment E.**

The soils at the north of the site are of soils type "B/D", and the soils at the east, south, and west of the site are of soils type "B" per the Natural Resources Conservation Series (NRCS). A soils map and related definitions have been included in **Attachment F**.

3. Proposed Conditions

The development will include 5 lots in the proposed condition. The impacted watershed will consist of 6.36 acres of impervious roof/pavement area and approximately 10.06 acres of green space. One underground detention basin will be constructed for each lot, with a total of 3 new basins for the site.

The overall increase in impervious area is approximately 3.08 acres. Most of the increase in runoff from the additional impervious area will be controlled by the proposed detention basin outlets and reduced to approximately the pre-development flow rates. The flow by-passing the detention basins is accounted for and deducted from the allowable detention basin release rate.

The City of Collinsville has two separate storm systems that will be utilized by the site. The system to the South along Ostle Ln., and the system to the North along Ramada Blvd. The system on Ostle Ln. will receive an additional 1.81 acres of drainage with a net increase of 1.40 acres of impervious area. The system on Ramada Blvd. will receive a decrease of 0.07 total acres of drainage with a net increase of 1.91 acres of impervious area. The increase in runoff attributed to the additional impervious area was accounted for in the detention design for all 3 lots.

Approximately 2.43 acres will drain directly to the west to the storm systems on IDOT ROW, which is an overall reduction of 1.87 acres. Overall, the amount of impervious areas draining directly onto IDOT ROW is being reduced by 0.23 acres. This area bypasses the detention basins and is accounted for in total runoff differentials.

Table 2 – Proposed Drainage Areas

Drainage Area	PR. Area (Acres)	Impervious Area (Acres)	Outlet Location
A1, A2, A3, C1.1	3.96	2.19	City Storm (Ostle)
B1.1, B1.2, B2, C1.2	10.03	2.73	City Storm (Ramada)
C1.3, C2	2.43	1.44	IDOT Storm

Proposed drainage area maps have been included in **Attachment B**.

4. Detention Design

All hydrologic models were created using HydroCAD 7.10, Huff Rainfall Distributions, and rainfall depths from the ISWS Bulletin 75 "Precipitation Frequency Study for Illinois", Table 13 for Section 8 (Southwest). The existing site was modeled to determine the existing flow rates for a range of storm events. These flow rates were used as the allowable outflow rates for each outlet location. The site was split into two main systems, denoted as System A (South to Ostle) and System B (North to Ramada).

For System A (South to Ostle), modeling was completed for a range of events. The 0.5-hour duration was determined to be the peak storm duration. **Table 3** summarizes the pre- and post-development flow rates for System A (South to Ostle). The post-development outflow includes both the basin outflow and any runoff from the site and upstream of the site that bypasses the detention basin.

The peak runoff from the site is controlled by the detention basins such that the discharge from post-develop runoff is less than runoff from the pre-developed condition for the 2-, 5-, 10-, 25-, 50, and 100-yr 0.5-hour and 24-hour storm events. **Table 4** summarizes the flow through the proposed basin outlet structures.

The proposed detention design for System A (South to Ostle) consists of 1 underground detention system that will be located under the parking lot. The detention outlet structure is located on the south side of the basin and discharges to the existing 18" storm sewer along Ostle Dr. This outlet structure includes a 4-inch diameter orifice for low-flow at the base of the structure. Above the orifice is a 3-inch-wide slot that opens up to a 9-inch-wide V-shaped weir that extends vertically into a rectangle. This configuration allows for the orifice to control smaller storm events and the wider weir to control larger storm events, including the 100-year storms.

Each detention basin was also checked for the clogged low-flow outlet condition. **Table 5** summarizes the flow through the System A basin in the 100-yr clogged condition.

Table 3 Summary of Site Flow Rates - Underground Detention System A (South to Ostle)						
Event	Duration	Existing Condition (Area A+C1) (cfs)	Post Development			
			By-Pass (Area A+C1.3) (cfs)	Detention (Area C1.1)		Total to Outlet A (IDOT Storm Sewer via Ostle)
				Qin (cfs)	Qout (cfs)	
2 - year	0.5-hr	8.50	7.70	6.58	0.05	7.70
	1-hr	8.22	6.80	5.24	0.28	6.80
	2-hr	6.46	5.08	3.68	0.38	5.08
	3-hr	5.16	3.99	2.83	0.40	3.99
	24-hr	1.55	1.08	0.61	0.44	1.47
5 - year	0.5-hr	13.52	11.48	9.01	0.27	11.48
	24-hr	2.03	1.39	0.76	0.54	1.88
10 - year	0.5-hr	18.00	14.79	11.05	0.38	14.79
	24-hr	2.42	1.65	0.89	0.62	2.20
25 - year	0.5-hr	25.06	19.98	14.08	0.50	19.98
	24-hr	2.98	2.01	1.07	0.89	2.75
50 - year	0.5-hr	31.18	24.37	16.60	0.58	24.38
	24-hr	3.43	2.31	1.22	1.12	3.33
100 - year	0.5-hr	37.55	28.90	19.14	0.69	28.92
	1-hr	31.14	22.92	14.46	1.85	23.15
	2-hr	22.16	15.97	9.75	2.38	16.29
	3-hr	17.11	12.24	7.35	2.16	12.60
	24-hr	3.88	2.60	1.36	1.30	3.86

Table 4 - Detention Basin Flow Rates and Storage System A (South to Ostle)					
Event	Duration	Qin (cfs)	Qout (cfs)	HWE	Storage (CF)
2 - year	0.5-hr	6.58	0.05	443.39	5,706
	1-hr	5.24	0.28	443.86	7,579
	2-hr	3.68	0.38	444.25	9,104
	3-hr	2.83	0.40	444.34	9,453
	24-hr	0.61	0.44	444.53	10,193
5 - year	0.5-hr	9.01	0.27	443.84	7,492
	24-hr	0.76	0.54	445.08	12,327
10 - year	0.5-hr	11.05	0.38	444.23	9,017
	24-hr	0.89	0.62	445.58	14,157
25 - year	0.5-hr	14.08	0.50	444.82	11,326
	24-hr	1.07	0.89	446.10	16,030
50 - year	0.5-hr	16.60	0.58	445.33	13,242
	24-hr	1.22	1.12	446.30	16,683
100 - year	0.5-hr	19.14	0.69	445.86	15,159
	1-hr	14.46	1.85	446.72	18,077
	2-hr	9.75	2.38	446.95	18,774
	3-hr	7.35	2.16	446.86	18,513
	24-hr	1.36	1.30	446.42	17,119
Maximum				446.95	18,774
100-year Max Clogged				447.25	15,943
Maximum Available				449.00	23,916

Table 5 - Summary of Site Flow Rates - Detention Basin Clogged Condition								
Event	Duration	Existing Condition (Area A+C1) (cfs)	Post Development				HWE	Storage (CF)
			By-Pass (Area A+C1.3) (cfs)	Detention (Area C1.1) Qin (cfs)	Detention (Area C1.1) Qout (cfs)	Total Leaving Site to South (cfs)		
100 - year	0.5-hr	37.55	28.90	19.14	0.18	28.90	446.09	15,943
	1-hr	31.14	22.92	14.46	1.78	22.92	447.03	19,036
	2-hr	22.16	15.97	9.75	2.41	15.97	447.25	19,689
	3-hr	17.11	12.24	7.35	2.18	12.24	447.17	19,471
	24-hr	3.88	2.60	1.36	1.36	3.96	446.85	18,469
						Maximum	447.25	19,689
						Maximum Available	449.00	23,916

For System B (North to Ramada), modeling was completed for a range of events. The 1-hour duration was determined to be the peak storm duration. **Table 6** summarizes the pre- and post-development flow rates for System B (North to Ramada). The post-development outflow includes both the basin outflow and any runoff from the site and upstream of the site that bypasses the detention basin.

The peak runoff from the site is controlled by the detention basins such that the discharge from post-develop runoff is less than run off from the pre-develop condition for the 2-, 5-, 10-, 25-, 50, and 100-yr 1-hour and 24-hour storm events. **Table 7** summarizes the flow through the proposed basin outlet structures.

The proposed detention design for System B (North to Ramada) consists of 2 underground detention systems that will be located under the parking lot for Lot 5 and Lot 1. The detention at Lot 5 has an outlet structure located on the west side of the basin and discharges to the existing storm 12" sewer along Ramada Blvd. This outlet structure includes a vertical 6-inch diameter perforated standpipe with a 2-inch horizontal orifice at the top for low-flow storms. Above the orifice is a 4-foot-wide weir that extends vertically.

The detention at Lot 1 has an outlet structure located on the north side of the basin and discharges to the existing 12" storm sewer along Ramada Blvd. This outlet structure includes a vertical 6-inch diameter perforated standpipe with a 6-inch horizontal orifice at the top for low-flow storms. Above the orifice is a 4-foot-wide weir that extends vertically. This configuration allows for the perforated standpipes to control smaller storm events and the wider weir to control larger storm events, including the 100-year storms.

In each underground detention basin, the maximum HWE in the basin allows for more than 1 foot of free board to the maximum storage elevation of the basin. The proposed FFE of the adjacent proposed building is more than 1 foot above the maximum available storage elevation.

Each detention basin was also checked for the clogged low-flow outlet condition. **Table 8** summarizes the flow through the System B basin in the 100-yr clogged condition.

Table 6 - Summary of Site Flow Rates - Underground Detention								
Event	Duration	Existing Condition (Area B) (cfs)	Post Development					
			By-Pass (Area B1.1+B2) (cfs)	Detention (C1.2)		Detention (Area B1.2)		Total to Outlet B (IDOT Storm Sewer via Ramada)
				Qin (cfs)	Qout (cfs)	Qin (cfs)	Qout (cfs)	
2 - year	0.5-hr	6.67	6.01	5.49	0.00	1.81	0.04	6.02
	1-hr	7.53	6.74	4.21	0.02	1.53	0.08	6.75
	2-hr	7.35	6.43	2.89	0.05	1.11	0.12	6.46
	3-hr	6.28	5.44	2.20	0.09	0.87	0.13	5.48
	24-hr	2.31	1.92	0.43	0.22	0.21	0.15	2.20
5 - year	1-hr	12.51	10.96	5.52	0.06	2.15	0.13	11.01
	24-hr	3.12	2.58	0.53	0.35	0.27	0.21	3.02
10 - year	1-hr	17.18	14.88	6.61	0.13	2.68	0.20	14.95
	24-hr	3.79	3.12	0.62	0.46	0.32	0.25	3.70
25 - year	1-hr	24.41	20.90	8.18	0.26	3.46	0.28	21.02
	24-hr	4.76	3.90	0.74	0.59	0.39	0.32	4.71
50 - year	1-hr	30.89	26.26	9.48	0.43	4.12	0.38	26.43
	24-hr	5.56	4.54	0.85	0.68	0.44	0.38	5.50
100 - year	0.5-hr	36.93	31.53	14.48	0.28	6.12	0.30	31.70
	1-hr	37.33	31.57	10.71	0.60	4.76	0.71	31.81
	2-hr	30.32	25.40	7.10	0.85	3.27	1.05	25.73
	3-hr	24.26	20.26	5.30	1.02	2.49	0.93	20.62
	24-hr	6.33	5.16	0.94	0.82	0.50	0.46	6.29

Table 7 - Detention Basin Flow Rates and Storage

Event	Detention (C1.2)					Detention (Area B1.2)				
	Duration	Qin (cfs)	Qout (cfs)	HWE	Storage (CF)	Duration	Qin (cfs)	Qout (cfs)	HWE	Storage (CF)
2 - year	0.5-hr	5.49	0.00	446.41	4,661	0.5-hr	1.81	0.04	453.63	1,612
	1-hr	4.21	0.02	446.73	6,273	1-hr	1.53	0.08	453.98	2,265
	2-hr	2.89	0.05	447.04	8,059	2-hr	1.11	0.12	454.31	2,831
	3-hr	2.20	0.09	447.17	8,843	3-hr	0.87	0.13	454.39	3,006
	24-hr	0.43	0.22	447.57	11,064	24-hr	0.21	0.15	454.58	3,311
5 - year	1-hr	5.52	0.06	447.05	8,102	1-hr	2.15	0.13	454.43	3,049
	24-hr	0.53	0.35	447.83	12,458	24-hr	0.27	0.21	454.95	3,964
10 - year	1-hr	6.61	0.13	447.31	9,583	1-hr	2.68	0.20	454.82	3,703
	24-hr	0.62	0.46	448.01	13,416	24-hr	0.32	0.25	455.25	4,400
25 - year	1-hr	8.18	0.26	447.67	11,587	1-hr	3.46	0.28	455.41	4,661
	24-hr	0.74	0.59	448.25	14,593	24-hr	0.39	0.32	455.66	5,009
50 - year	1-hr	9.48	0.43	447.98	13,199	1-hr	4.12	0.38	455.97	5,401
	24-hr	0.85	0.68	448.46	15,594	24-hr	0.44	0.38	456.00	5,445
100 - year	0.5-hr	14.48	0.28	447.69	11,718	0.5-hr	6.12	0.30	455.56	4,879
	1-hr	10.71	0.60	448.26	14,636	1-hr	4.76	0.71	456.55	5,968
	2-hr	7.10	0.85	448.66	16,466	2-hr	3.27	1.05	456.61	6,011
	3-hr	5.30	1.02	448.69	16,596	3-hr	2.49	0.93	456.59	6,011
	24-hr	0.94	0.82	448.65	16,466	24-hr	0.50	0.46	456.22	5,663
Maximum				448.69	16,596				456.61	6,011
100-year Max Clogged				448.86	15,594				456.71	6,098
Maximum Available				449.75	19,990				456.75	6,369

Table 8 - Summary of Site Flow Rates - Detention Basin Clogged Condition

				Post Development								
Event	Duration	Existing Condition (Area (cfs)	By-Pass (Area B1.1+B2) (cfs)	Detention (Area C1.2)				Detention (Area B1.2)				Total Leaving Site to South
				Qin (cfs)	Qout (cfs)	HWE	Storage (CF)	Qin (cfs)	Qout (cfs)	HWE	Storage (CF)	
100 - year	0.5-hr	36.93	31.25	14.37	3.36	447.06	8,233	6.15	0.00	455.86	5,271	33.83
	1-hr	37.33	31.28	10.63	3.53	447.12	8,538	4.83	1.16	456.70	6,098	34.31
	2-hr	30.32	25.17	7.05	3.56	447.13	8,581	3.34	1.25	456.71	6,098	28.34
	3-hr	24.26	20.08	5.26	3.31	447.05	8,146	2.55	1.30	456.71	6,098	23.07
	24-hr	6.33	5.11	0.94	0.93	446.47	4,792	0.52	0.52	456.62	6,011	6.57
				Maximum		447.13	8,581			456.71	6,098	
				Maximum Available		449.75	19,990			456.75	6,369	

5. Storm Sewer Design

Storm sewer design flows were calculated using the Rational method to determine the stormwater flow to each storm sewer inlet. A 25-year storm event was used to size the storm sewer. The HGL for the 100-year storm was also checked and designed to prevent the HGL from surcharging the rim elevations throughout the storm sewer system. Inlet capacity for each inlet draining to detention basins was checked to verify that inlets are

adequately sized to drain the 100-year storm. Lot 1 has a bypass of 0.62cfs and Lots 2, 3 and 4 have a combined bypass of 0.75cfs in the 100-year storm. These bypass totals were accounted for by over detaining rainfall to ensure no increase in total runoff would occur for any drainage area. Storm sewer flows and capacities were analyzed and designed using Hydraflow Storm Sewers Extension for Autodesk Civil 3D. The Hydraflow reports can be found in **Appendix J**.

6. Water Quality

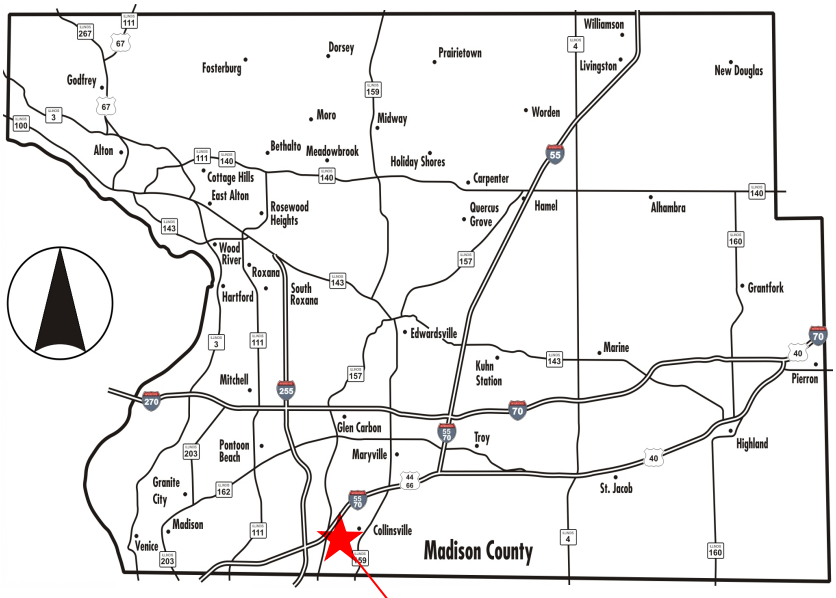
Water quality treatment is provided to minimize adverse surface and groundwater quality impacts off-site. The first inch of runoff from the new impervious area of development on the site is the required metric to calculate the water quality control storage volume. Water quality calculations are included in **Attachment K**. Much of the site and new impervious area drains to one of the 3 underground detention systems. In each of these areas, the Water Quality volume is met and exceeded to account for the total project area, including areas that bypass the detention rock beds. A total volume of 18,870 ft^3 is provided below the storage basins and within the isolator rows, whereas the required treatment storage volume is 11,681 ft^3.

Attachment A
Project Location Map



PARCEL INFORMATION

Parcel #'s
13-1-21-29-15-401-003,
13-2-21-29-15-401-005.001,
13-2-21-29-15-401-004,
13-2-21-29-15-401-005,
13-2-21-29-15-401-006,
13-2-21-29-15-401-007,
13-2-21-29-15-401-008,
13-2-21-29-15-401-009,
13-2-21-29-15-401-010,
13-2-21-29-15-401-011,
13-2-21-29-15-401-012,
13-2-21-29-15-401-013,
13-2-21-29-15-401-030



Project Location Map

PROJECT LOCATION

OATES ASSOCIATES

Attachment B
Drainage Area Maps

N

C2

DRAINAGE AREA C2
0.67 AC
IMPERVIOUS 0.30 AC
TC (2-YR) = 8.9 MIN
TC (100-YR) = 6.4 MIN

OVERLAND FLOW
L: 100 FT
S: 0.023 FT/FT

SCF UNPAVED
L: 99 FT
S: 0.007 FT/FT

NO INFORMATION
ON EX STRUCTURE

B2

DRAINAGE AREA B2
1.05 AC
IMPERVIOUS 0.50 AC
TC (2-YR) = 5.3 MIN
TC (100-YR) = 5.0 MIN

CHANNEL FLOW (ASSUMED 15" RCP)
L: 83 FT
S: 0.01 FT/FT (ASSUMED SLOPE)

SCF - PAVED
L: 123FT
S: 0.046 FT/FT

SCF UNPAVED
L: 103 FT
S: 0.568 FT/FT

OVERLAND FLOW
L: 100 FT
S: 0.376FT/FT

CHANNEL FLOW (18" CMP)
L: 87 FT
S: 0.01 FT/FT

486.40
481.48
552.01
472.93
552.01
477.27
480.84
481.24
484.00
481.98
517.66

B1

DRAINAGE AREA B1
8.92 AC
IMPERVIOUS 0.32 AC
TC (2-YR) = 12.5 MIN
TC (100-YR) = 10.0 MIN

SCF UNPAVED
L: 1270 FT
S: 0.092 FT/FT

C1

DRAINAGE AREA C1
3.63 AC
IMPERVIOUS 1.37 AC
TC (2-YR) = 6.1 MIN
TC (100-YR) = 5.0 MIN

SCF - PAVED
L: 180 FT
S: 0.052 FT/FT

SCF - UNPAVED
L: 297 FT
S: 0.062 FT/FT

OVERLAND FLOW
L: 100 FT
S: 0.128 FT/FT

OVERLAND FLOW
L: 44 FT
S: 0.136 FT/FT

SCF - PAVED
L: 88 FT
S: 0.084 FT/FT

OVERLAND FLOW
L: 75 FT
S: 0.123 FT/FT

A3

A2

A1

DRAINAGE AREA A1
1.63 AC
IMPERVIOUS 0.47 AC
TC (2-YR) = 5.7 MIN
TC (100-YR) = 5.0 MIN

DRAINAGE AREA A3
0.29 AC
IMPERVIOUS 0.19 AC
TC (2-YR) = 5.0 MIN
TC (100-YR) = 5.0 MIN

DRAINAGE AREA A2
0.23 AC
IMPERVIOUS 0.13 AC
TC (2-YR) = 5.0 MIN
TC (100-YR) = 5.0 MIN

SCF - UNPAVED
L: 288 FT
S: 0.152 FT/FT

SCF - PAVED
L: 40 FT
S: 0.073 FT/FT

SCF - UNPAVED
L: 50 FT
S: 0.098 FT/FT

SCF - PAVED
L: 34 FT
S: 0.097 FT/FT

OVERLAND FLOW
L: 72 FT
S: 0.098 FT/FT

OVERLAND FLOW
L: 100 FT
S: 0.067 FT/FT

NOT FOR CONSTRUCTION
07 / 01 / 2025 - 100% DESIGN DEVELOPMENT PLANS

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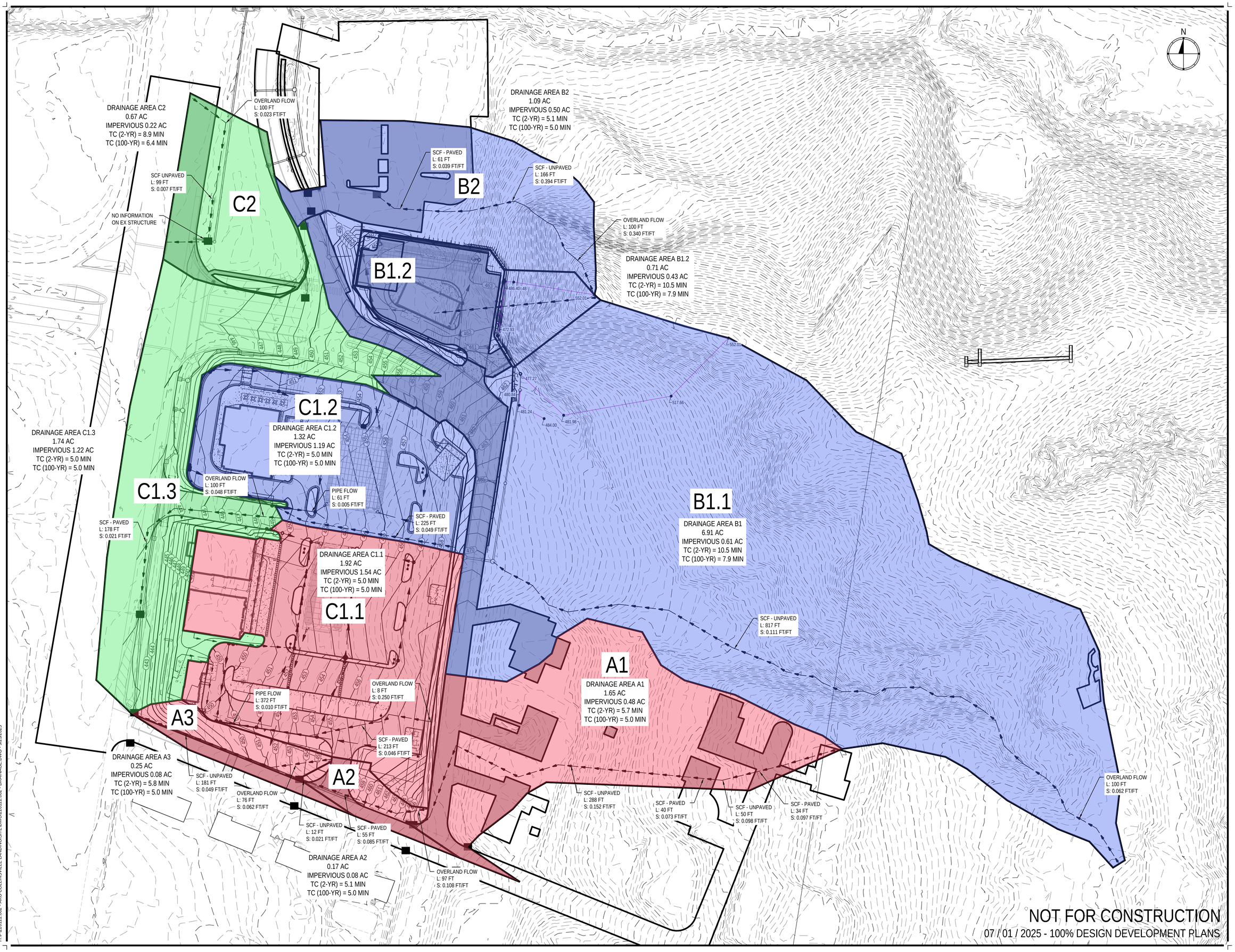
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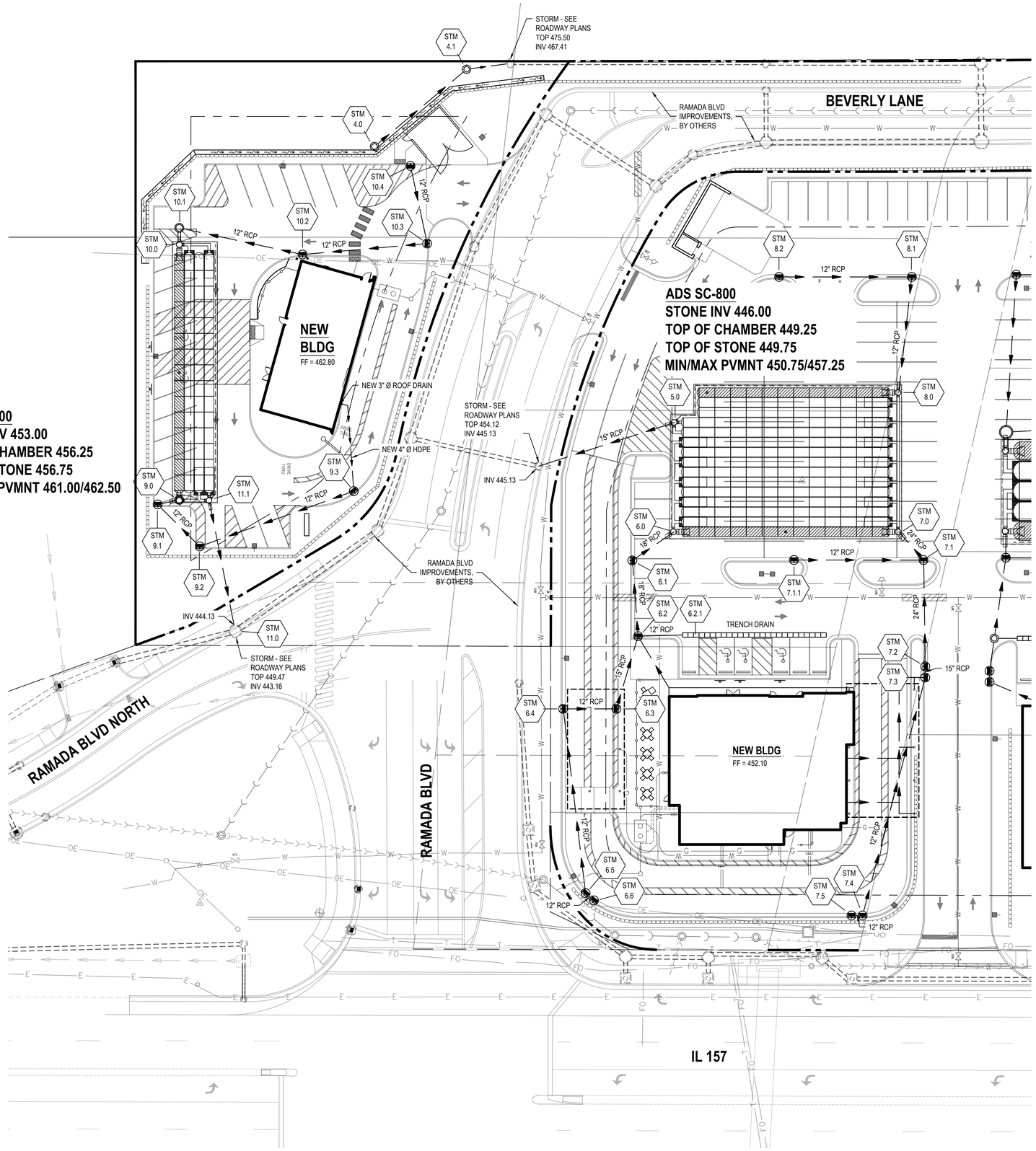
PROJECT NO.:
220122.002

DATE:
07/01/2025

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Attachment C
Drainage Plans



NOTE:

UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS. THEIR LOCATIONS MUST BE CONSIDERED TO BE APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS NOT PRESENTLY KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO.

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DRAINAGE PLAN

PHILLIP H. JONES
062-069634
LICENSED PROFESSIONAL ENGINEER
OF
STATE OF ILLINOIS

EXP. 11/30/2025

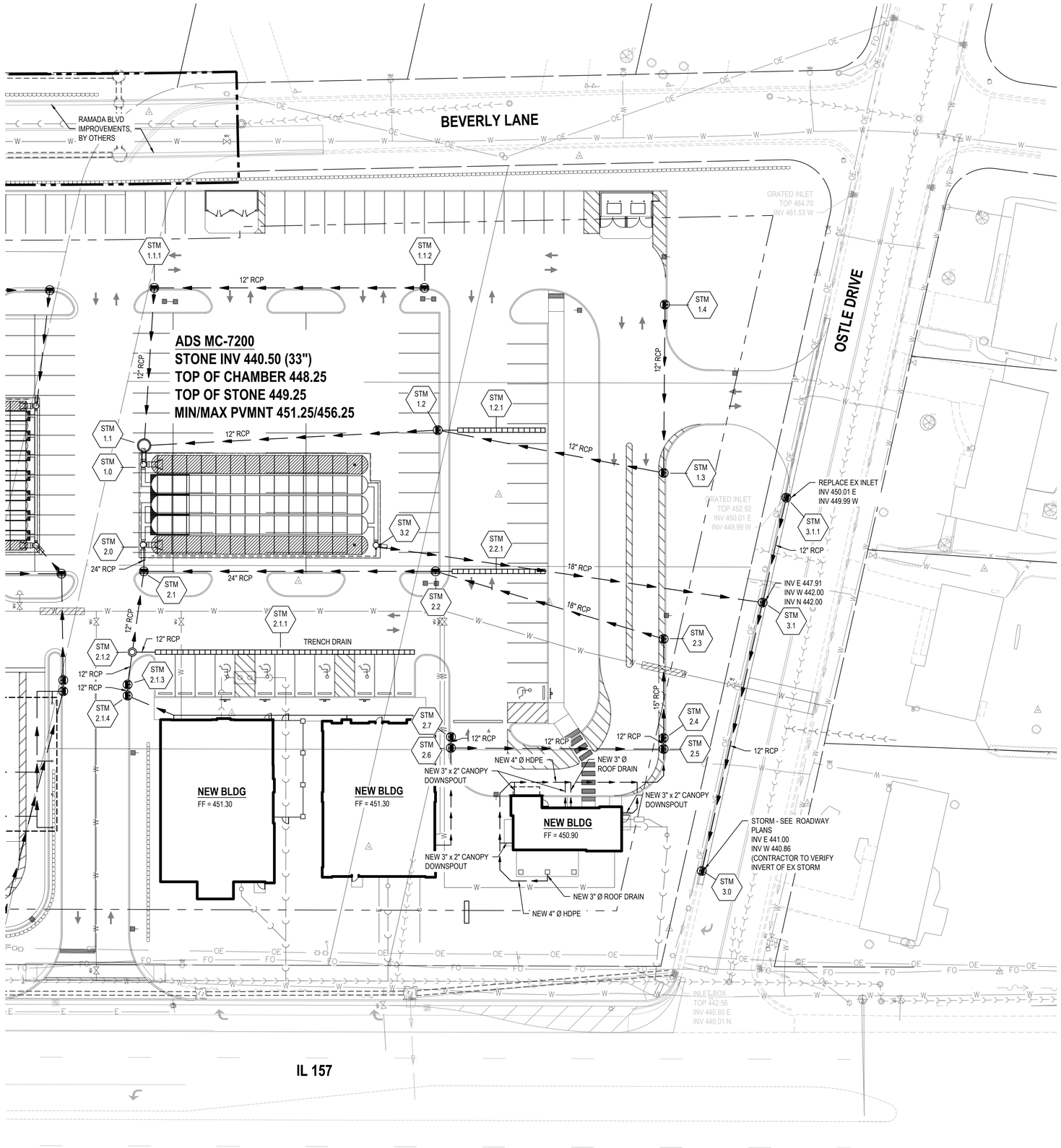
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0 20' 40'
GRAPHIC SCALE
1"=20'

NOTE:

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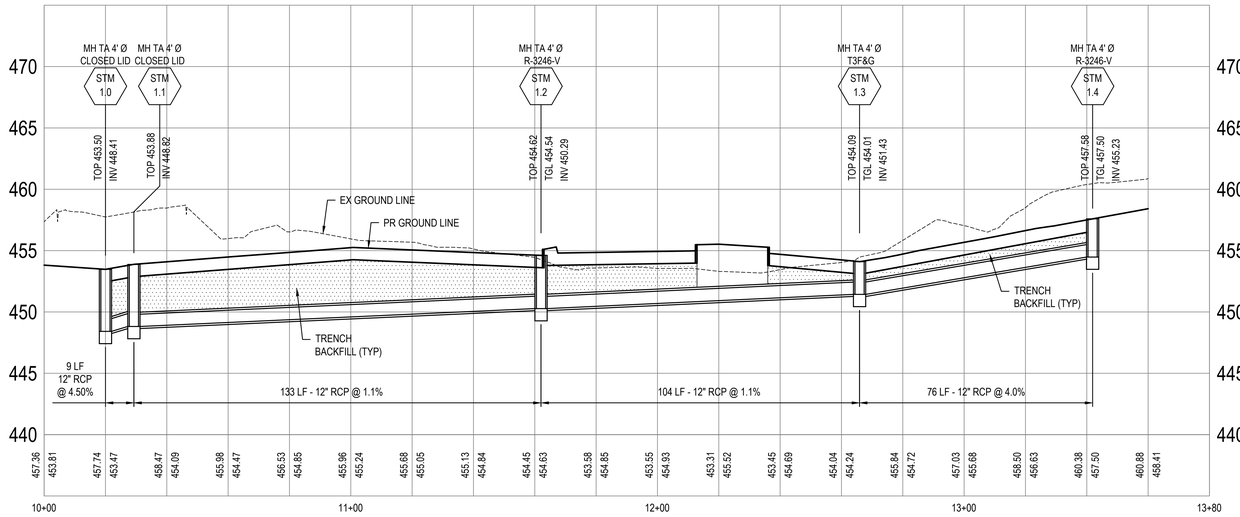
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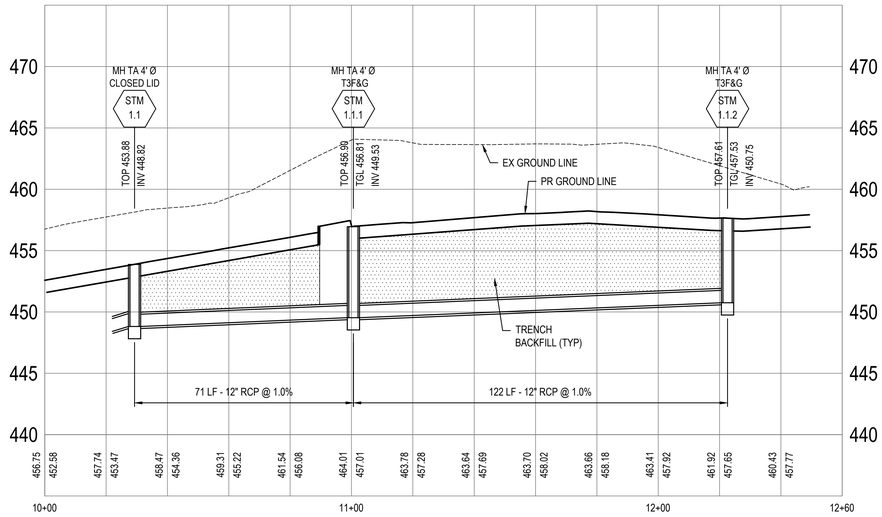
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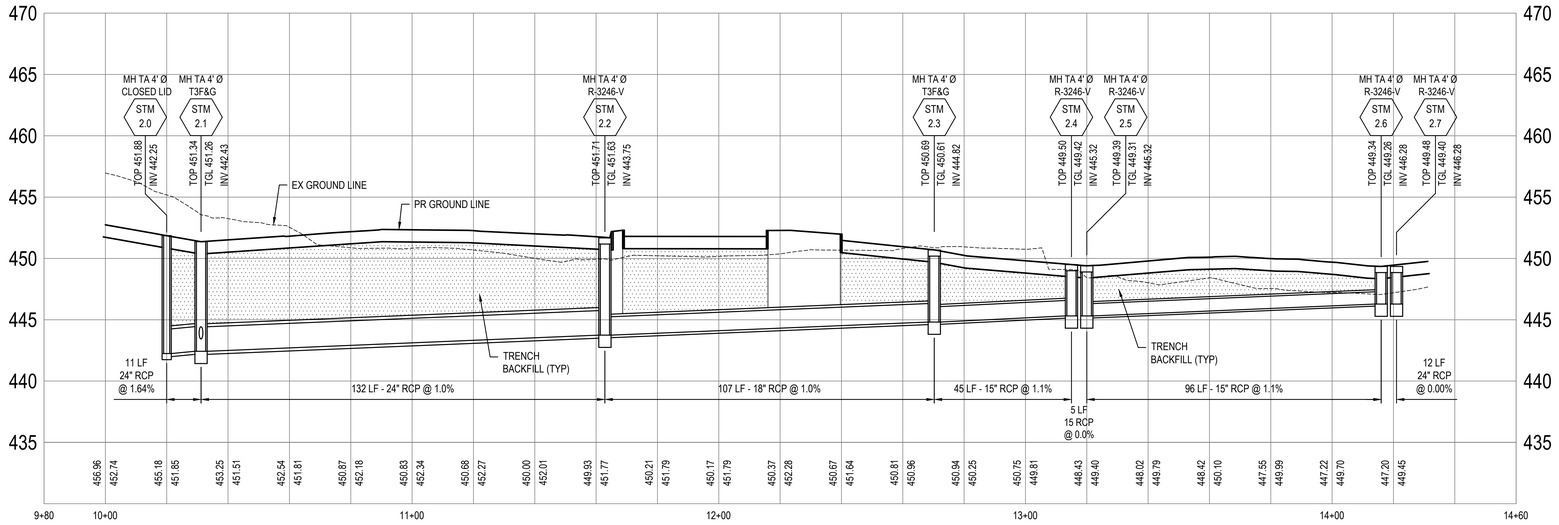
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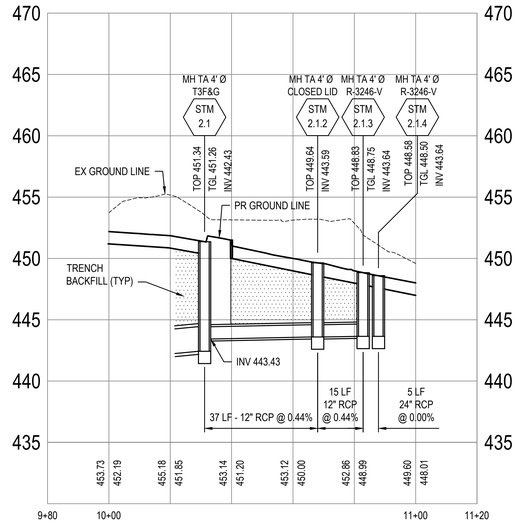
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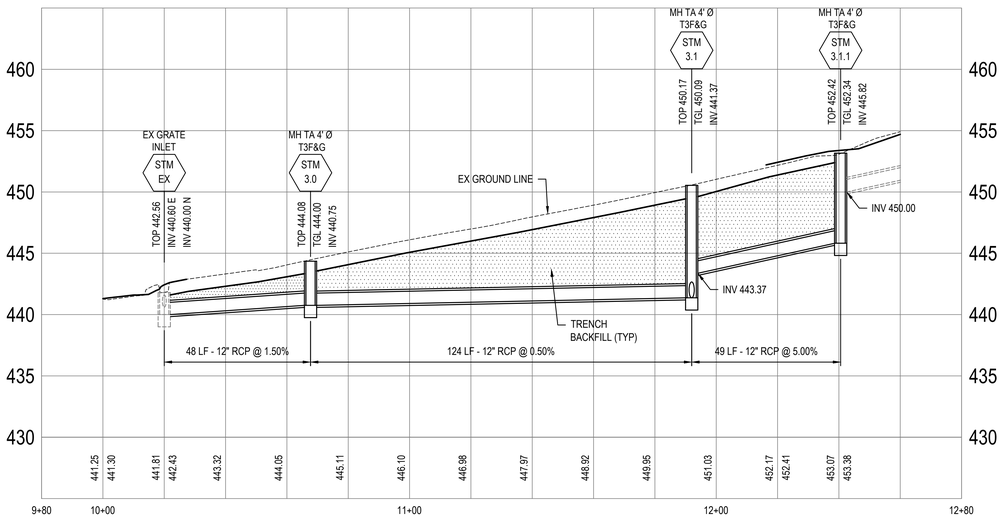
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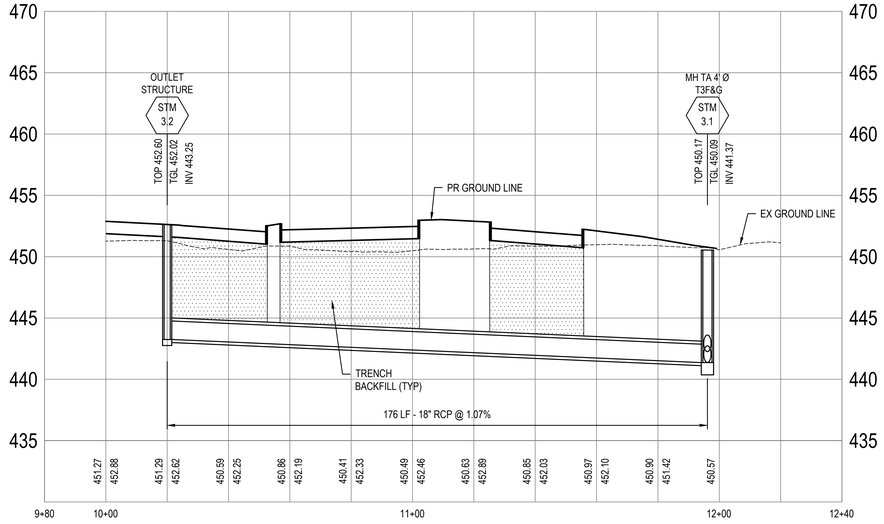












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STORM SEWER PROFILES

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PROJECT NO.: 220122.002

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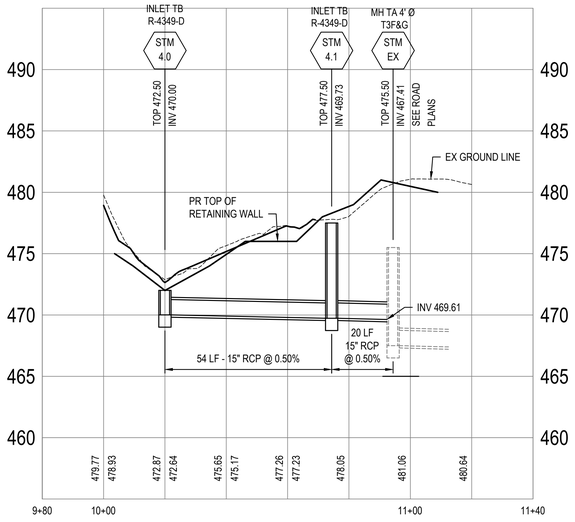
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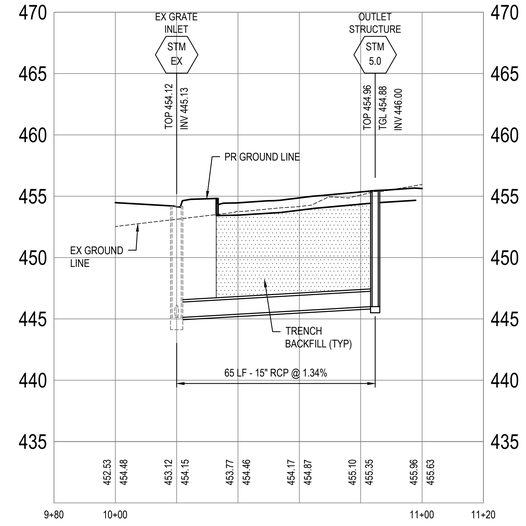
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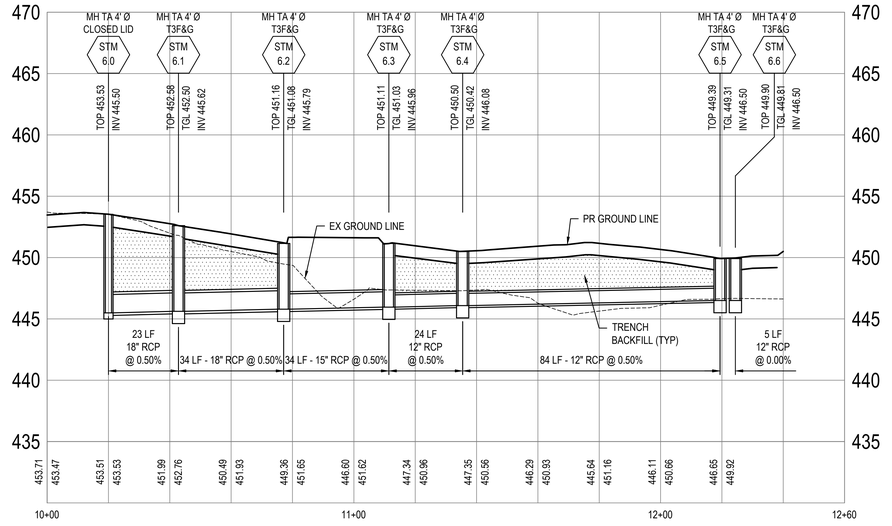
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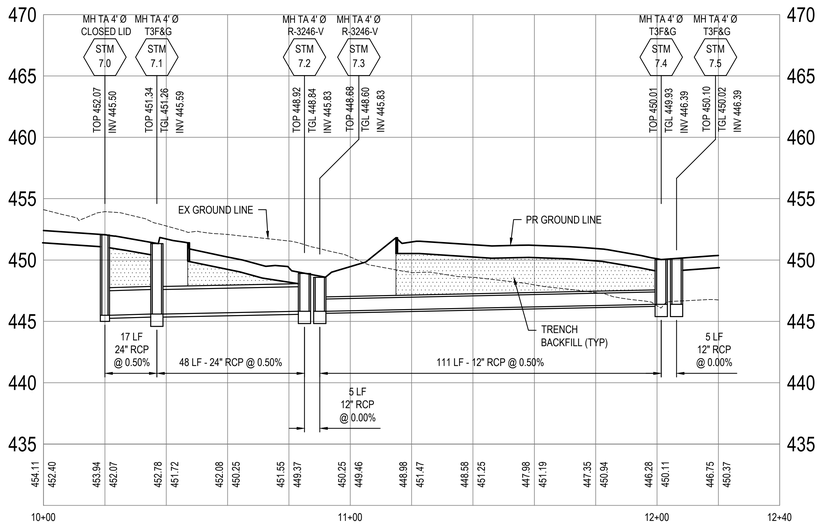
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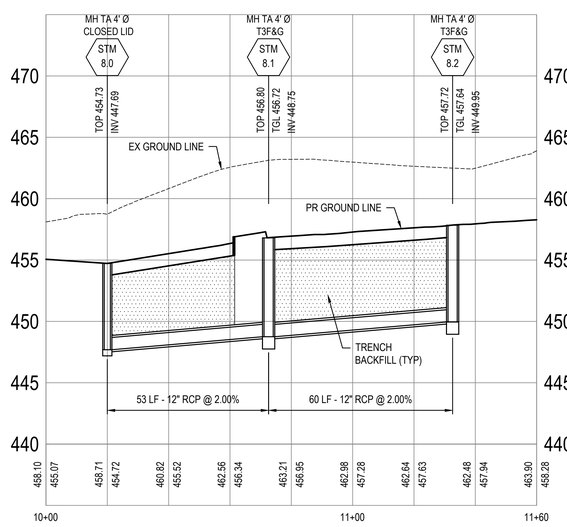
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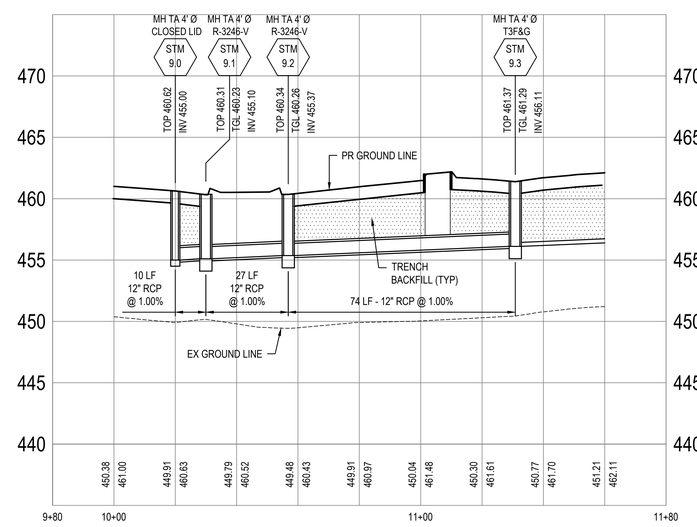


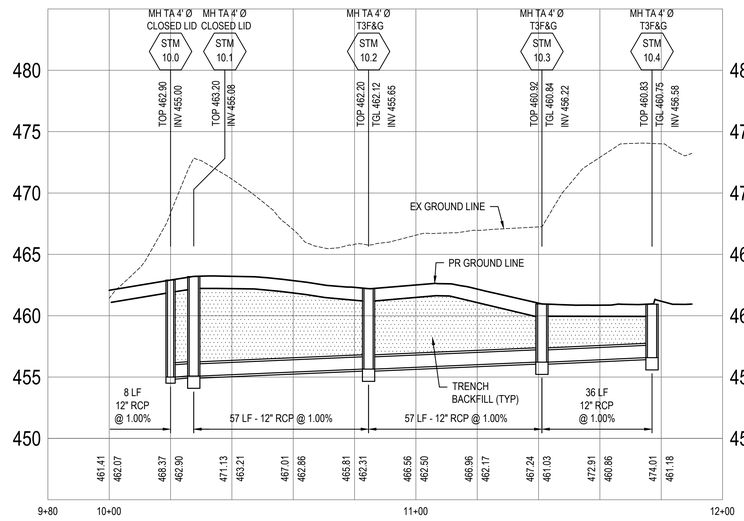


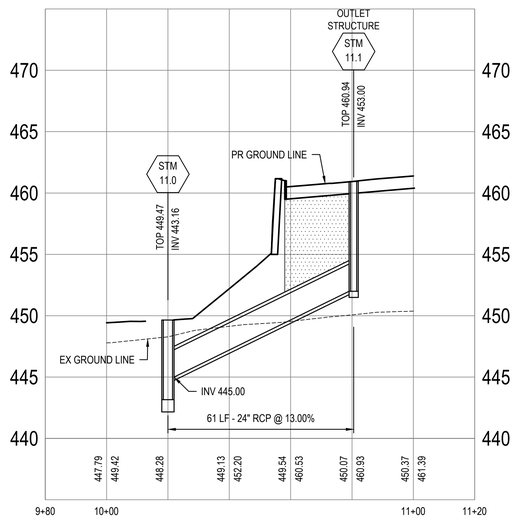












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STORM SEWER PROFILES

PHILLIP H. JONES
062-069634
LICENSED PROFESSIONAL ENGINEER
OF
STATE OF ILLINOIS
EXP. 11/30/2025

PROJECT NO.: 220122.002

DATE: 09/24/2025

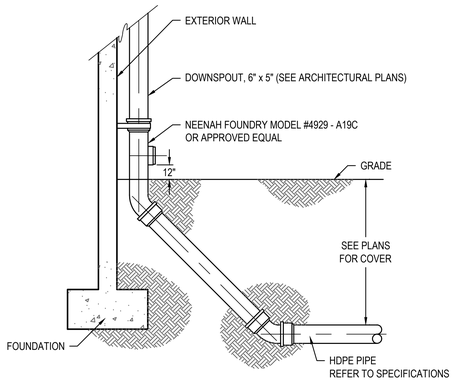
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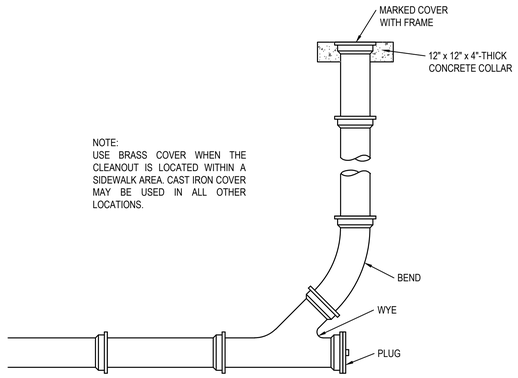
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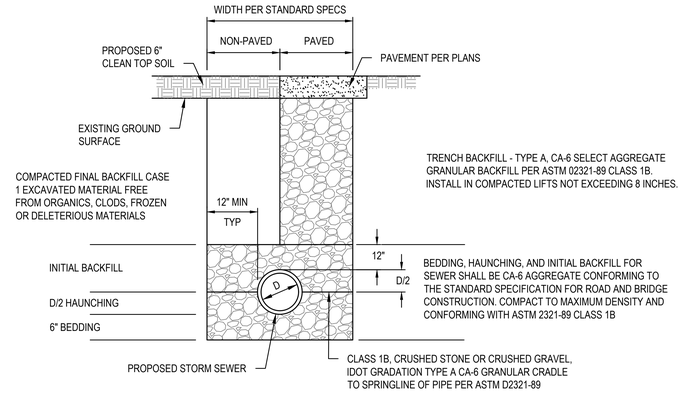
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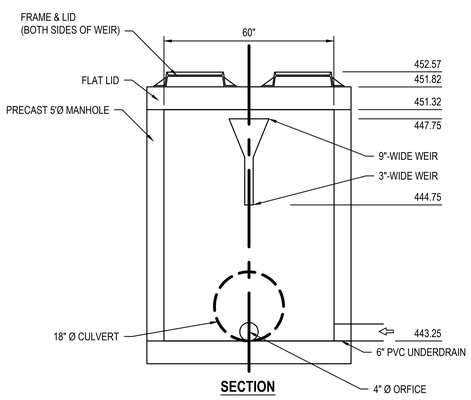
1 DOWNSPOUT SHOE DETAIL
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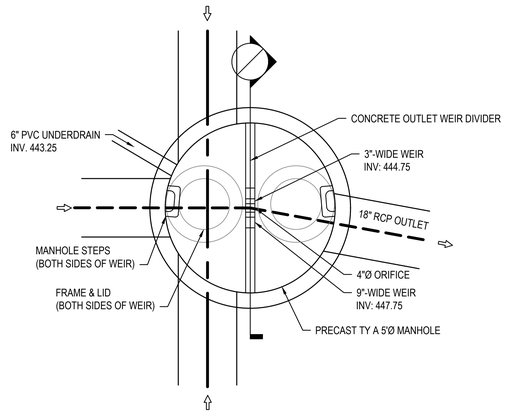
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3 STORM SEWER INSTALLATION DETAIL
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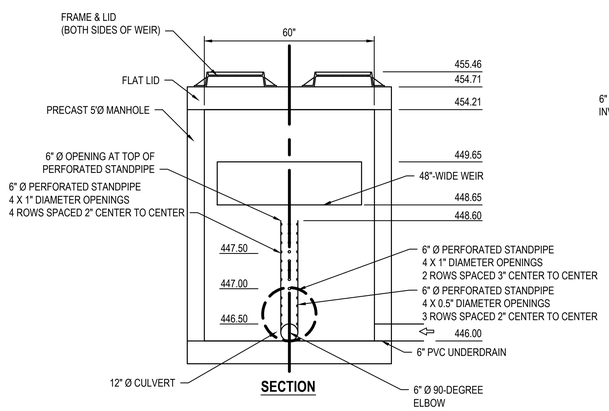


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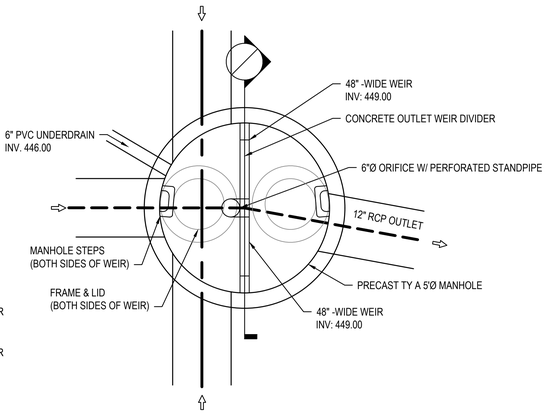


PLAN

4 OUTLET STRUCTURE 3.2 DETAIL
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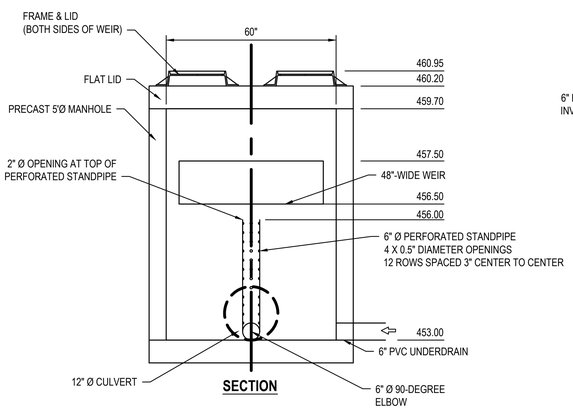


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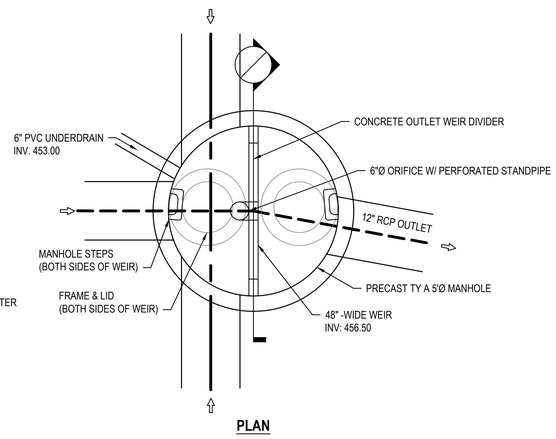


PLAN

5 OUTLET STRUCTURE 5.0 DETAIL
SCALE: NO SCALE



SECTION



PLAN

6 OUTLET STRUCTURE 11.1 DETAIL
SCALE: NO SCALE

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DRAINAGE PLAN DETAILS

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LICENSED PROFESSIONAL ENGINEER
OF
STATE OF ILLINOIS
EXP. 11/30/2025

PROJECT NO.: 220122.002

DATE: 09/24/2025

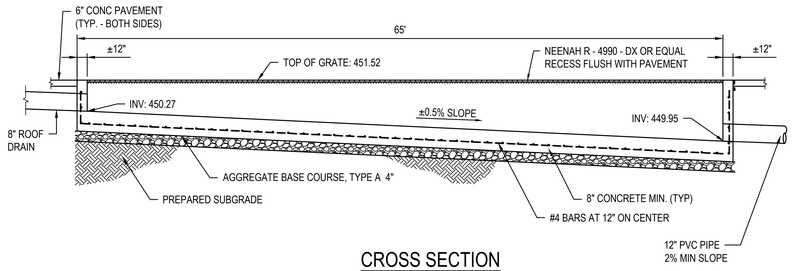
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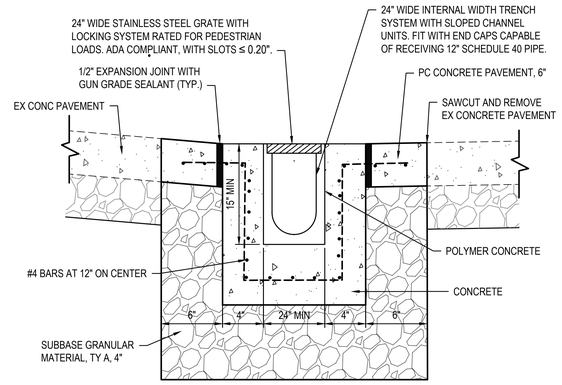
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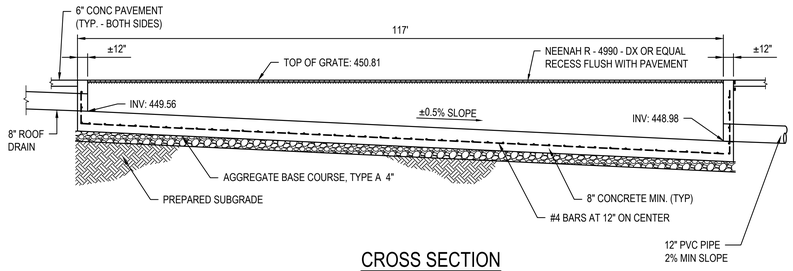
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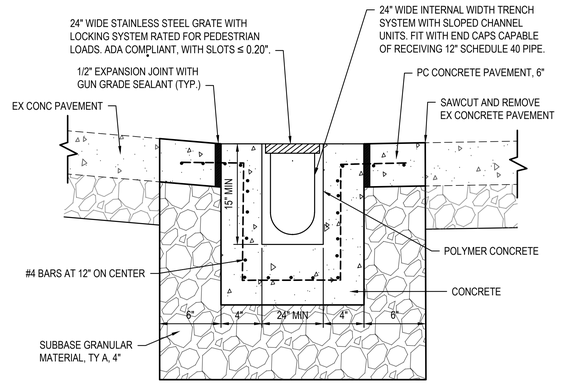
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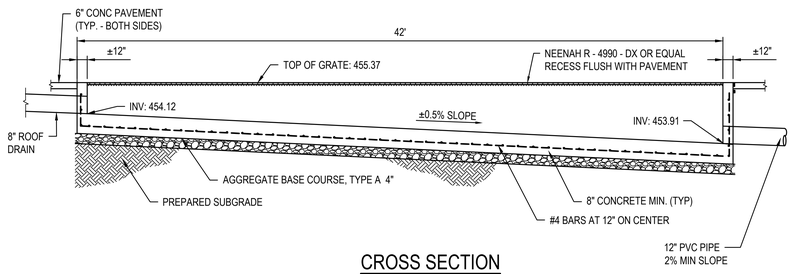
1 TRENCH DRAIN DETAIL
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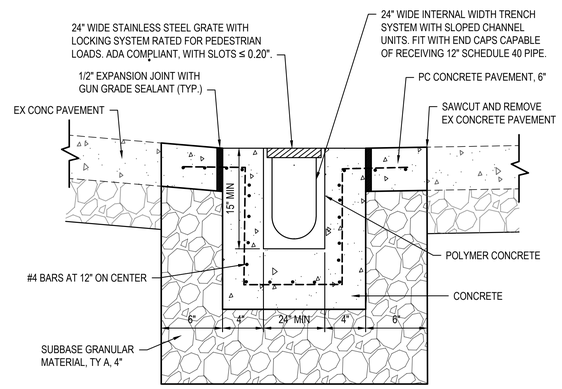
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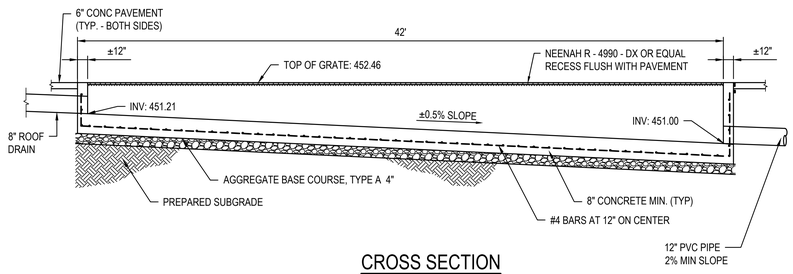
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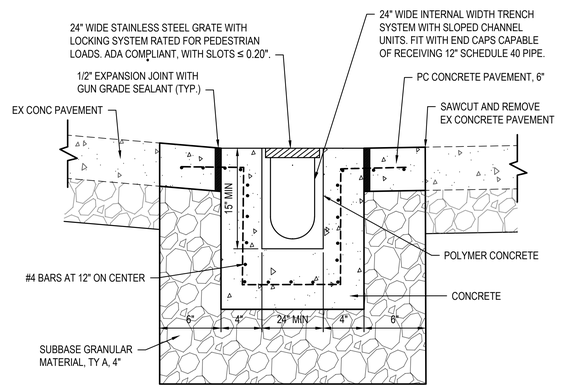
CROSS SECTION



3 TRENCH DRAIN DETAIL
SCALE: NO SCALE



CROSS SECTION



4 TRENCH DRAIN DETAIL
SCALE: NO SCALE

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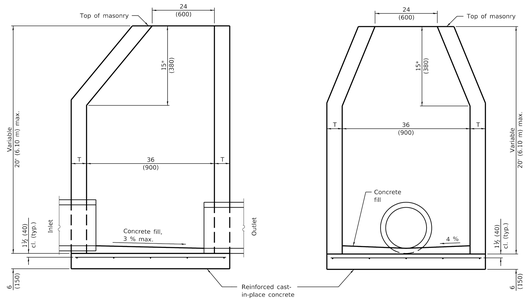
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062-069634
LICENSED
PROFESSIONAL
ENGINEER
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PROJECT NO.: 220122.002
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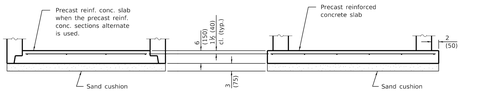
* For precast reinforced concrete sections, this dimension may vary from the dimension given to plus 6 (150).



ELEVATION - ECCENTRIC

ELEVATION - CONCENTRIC

ALTERNATE MATERIALS FOR WALLS	T (mm.)
Concrete Masonry Unit	5 (125)
Brick Masonry	8 (200)
Precast Reinforced Concrete Section	3 (75)
Cast-in-Place Concrete	6 (150)



ALTERNATE BOTTOM SLAB

GENERAL NOTES

Bottom slabs shall be reinforced with a minimum of 0.20 sq. in./ft. (420 sq. mm/m) in both directions with a maximum spacing of 12 (300).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

See Standard 602601 for optional Precast Reinforced Concrete Flat Slab Top.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2011
ENGINEER OF POLICY AND PROCEDURES

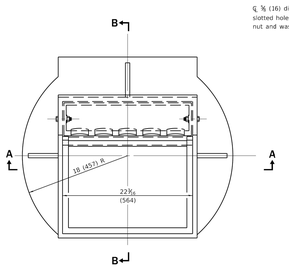
APPROVED January 1, 2011
ENGINEER OF DESIGN AND ENVIRONMENT

D-04-11 (D0502)

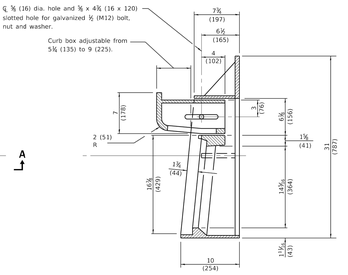
DATE	REVISIONS
1-1-11	Detailed rein. in slabs.
	Added max. limit to height.
	Revised general notes.
1-1-09	Switched units to
	English (metric).

INLET - TYPE B

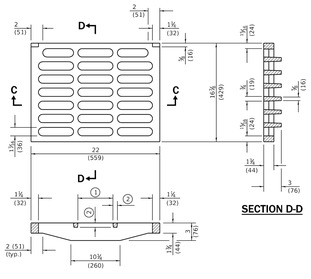
STANDARD 602306-03



CAST FRAME



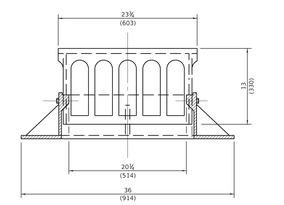
SECTION B-B



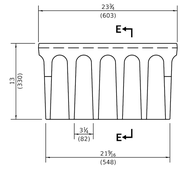
SECTION D-D

SECTION C-C

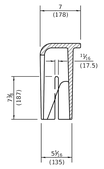
1 = 6 (152) typ.
2 = ⅜ (19) typ.



SECTION A-A



ALTERNATE CURB BOX



SECTION E-E

CAST GRATE

SEE INSET BELOW FOR ADJUSTING CURB BOX

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2015
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2015
ENGINEER OF DESIGN AND ENVIRONMENT

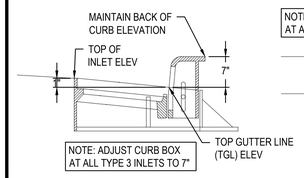
D-04-11 (D0502)

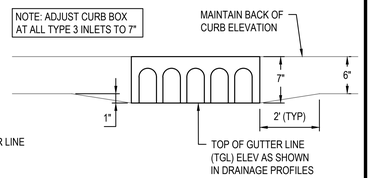
DATE	REVISIONS
1-1-15	Revised dimenstions of
	frame and alternate curb
	box.
1-1-09	Switched units to
	English (metric).

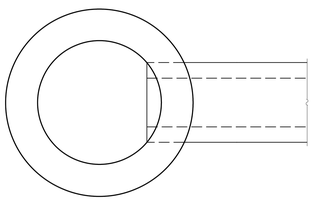
FRAME AND GRATE TYPE 3

STANDARD 604006-05

NOTE: STEPS ARE REQUIRED AT ALL INLETS AND MANHOLES GREATER THAN THREE FEET IN DEPTH.

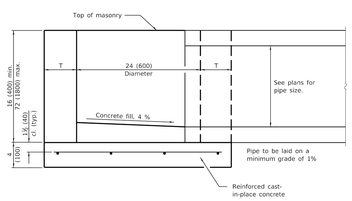




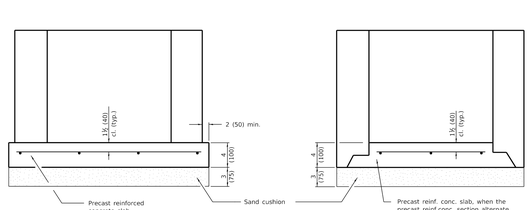


PLAN

ALTERNATE MATERIALS FOR WALLS	T
BRICK MASONRY	8 (200)
CAST-IN-PLACE CONCRETE	6 (150)
CONCRETE MASONRY UNIT	5 (125)
PRECAST REINFORCED CONCRETE SECTION	3 (75)



ELEVATION



ALTERNATE METHODS

GENERAL NOTES

Bottom slabs shall be reinforced with a minimum of 0.24 sq. in./ft. (510 sq. mm/m) in both directions with a maximum spacing of 10 (250).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2014
ENGINEER OF POLICY AND PROCEDURES

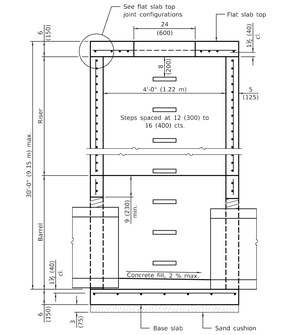
APPROVED January 1, 2014
ENGINEER OF DESIGN AND ENVIRONMENT

D-04-11 (D0502)

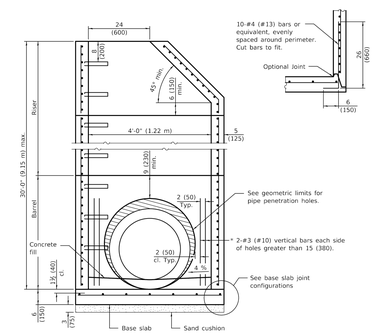
DATE	REVISIONS
1-1-14	Increased height to
	72 (1800) maximum.
1-1-11	Detailed rein. in slabs.
	Added max. limit to height.
	Added general notes.

INLET - TYPE A

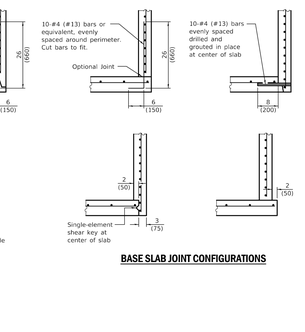
STANDARD 602301-04



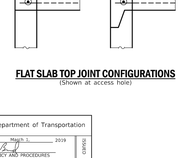
SECTION PARALLEL TO PIPE
(Without conical top riser)



SECTION PERPENDICULAR TO PIPE
(With conical top riser)



BASE SLAB JOINT CONFIGURATIONS

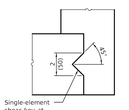


FLAT SLAB TOP JOINT CONFIGURATIONS
(Shown at access hole)

* As an alternate, the barrel wall reinforcement may be reduced to riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

1. A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 24 (600).
2. A minimum 12 (300) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
6. Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.



SHEAR KEY GEOMETRY
(Reinforcement not shown for clarity)

GENERAL NOTES

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations, except as noted.

See Standard 602701 for details of manhole steps.

All dimensions are in inches (millimeters) unless otherwise noted.

Illinois Department of Transportation

PASSED March 1, 2019
ENGINEER OF POLICY AND PROCEDURES

APPROVED March 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT

D-04-11 (D0502)

DATE	REVISIONS
3-1-19	Moved wall reinforcement from
	inside face to middle.
1-1-19	Expanded / refined reinforcement
	options. Increased manhole depths.

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER

(Sheet 1 of 2)

STANDARD 602401-06

NOT FOR CONSTRUCTION

09 / 24 / 2025 - 100% DESIGN DEVELOPMENT PLANS

REVISIONS:

NO.:	DATE:	REMARKS:

100 Lanter Court, Suite 1
Collinsville, IL 62234
618.345.2200
www.oatesassociates.com
Collinsville St. Louis Belleville St. Charles
ILLINOIS DESIGN FIRM LICENSE NO - 184.005115

OATES ASSOCIATES

AKG - COLLINSVILLE LANDING

DRAINAGE PLAN DETAILS

PHILLIP H. JONES
062-069634
LICENSED PROFESSIONAL ENGINEER
OF
STATE OF ILLINOIS
EXP. 11/30/2025

PROJECT NO.: 220122.002

DATE: 09/24/2025

SHEET NO.: C4.7

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H:\P\220122.002 - AKG COLLINSVILLE LANDING\SITE\DWG\220122.002 - DETAILS.DWG - 9/25/2025

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	CRAIG DAHLGREN 314-296-1595 CRAIG.DAHLGREN@ADSPIPE.COM
ADS SALES REP:	BRIAN SNELSON 618-593-6135 BRIAN.SNELSON@ADSPIPE.COM
PROJECT NO:	S476256

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR WEBSITE

COLLINSVILLE LANDING

COLLINSVILLE, IL

SC-800 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-800.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 700 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
10. MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
11. ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-800 SYSTEM

1. STORMTECH SC-800 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 3" (75 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-800 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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MC-7200 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-7200.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
10. MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
11. ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

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IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-7200 CHAMBER SYSTEM

1. STORMTECH MC-7200 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE MC-7200 CHAMBER".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE MC-7200 CHAMBER".
2. THE USE OF EQUIPMENT OVER MC-7200 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE MC-7200 CHAMBER".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH INSTALLATION GUIDE MC-7200 CHAMBER".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT (BED A)

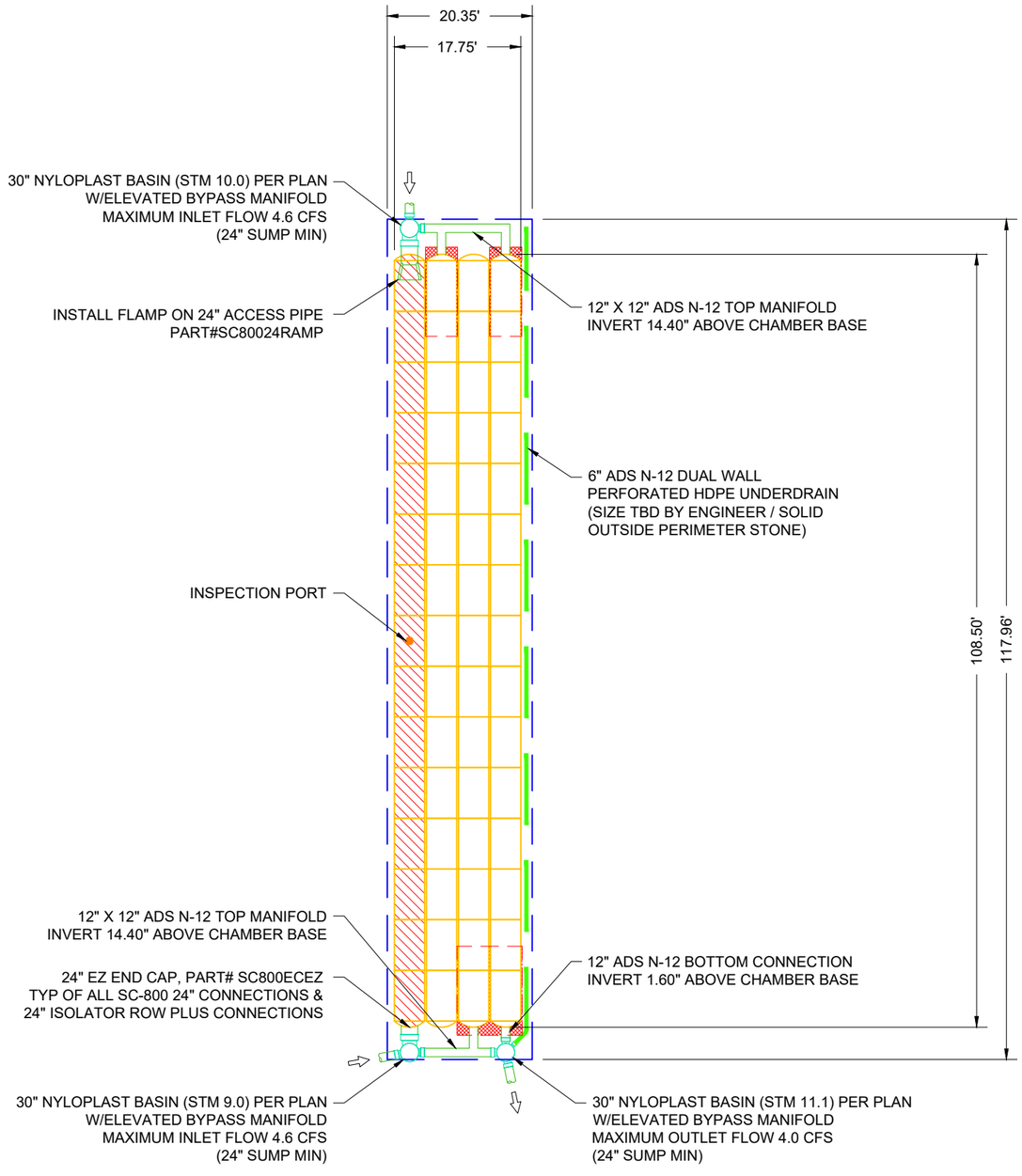
60	STORMTECH SC-800 CHAMBERS
8	STORMTECH SC-800 END CAPS
6	STONE ABOVE (in)
6	STONE BELOW (in)
40	% STONE VOID
5,439	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
2400	SYSTEM AREA (ft²)
277	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS (BED A)

464.25	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
458.00	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
457.50	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
457.50	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
457.50	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
456.75	TOP OF STONE
456.25	TOP OF SC-800 CHAMBER
454.70	12" TOP MANIFOLD INVERT
453.69	24" ISOLATOR ROW PLUS CONNECTION INVERT
453.63	12" BOTTOM CONNECTION INVERT
453.50	BOTTOM OF SC-800 CHAMBER
453.00	UNDERDRAIN INVERT
453.00	BOTTOM OF STONE

NOTES

- STRUCTURES SHOWN ON THIS DESIGN ARE NOT INTENDED FOR MANWAY ACCESS. INSPECTION AND MAINTENANCE OF THE SYSTEM VIA THESE STRUCTURES IS RECOMMENDED TO BE COMPLETED WITH REMOTE CONTROLLED EQUIPMENT, OR ADHERE TO GUIDANCE BY PROFESSIONAL MAINTENANCE COMPANY.



ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 12.5' OF ADSPLUS625 WOVEN GEOTEXTILE
OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET
FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

COLLINSVILLE LANDING
COLLINSVILLE, IL

DATE: 08-05-25 | DRAWN: SLS | CHECKED: XXX
PROJECT #: S476256

DATE	DWN	CHK

THE ENGINEER OF RECORD ('EOR') OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE EOR'S PRIOR APPROVAL. EOR SHALL REVIEW THIS DRAWING PRIOR TO BIDDING AND/OR CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECT'S ENGINEER OF RECORD. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

StormTech®
Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADS

40'
20'
0

PROPOSED LAYOUT (BED B)

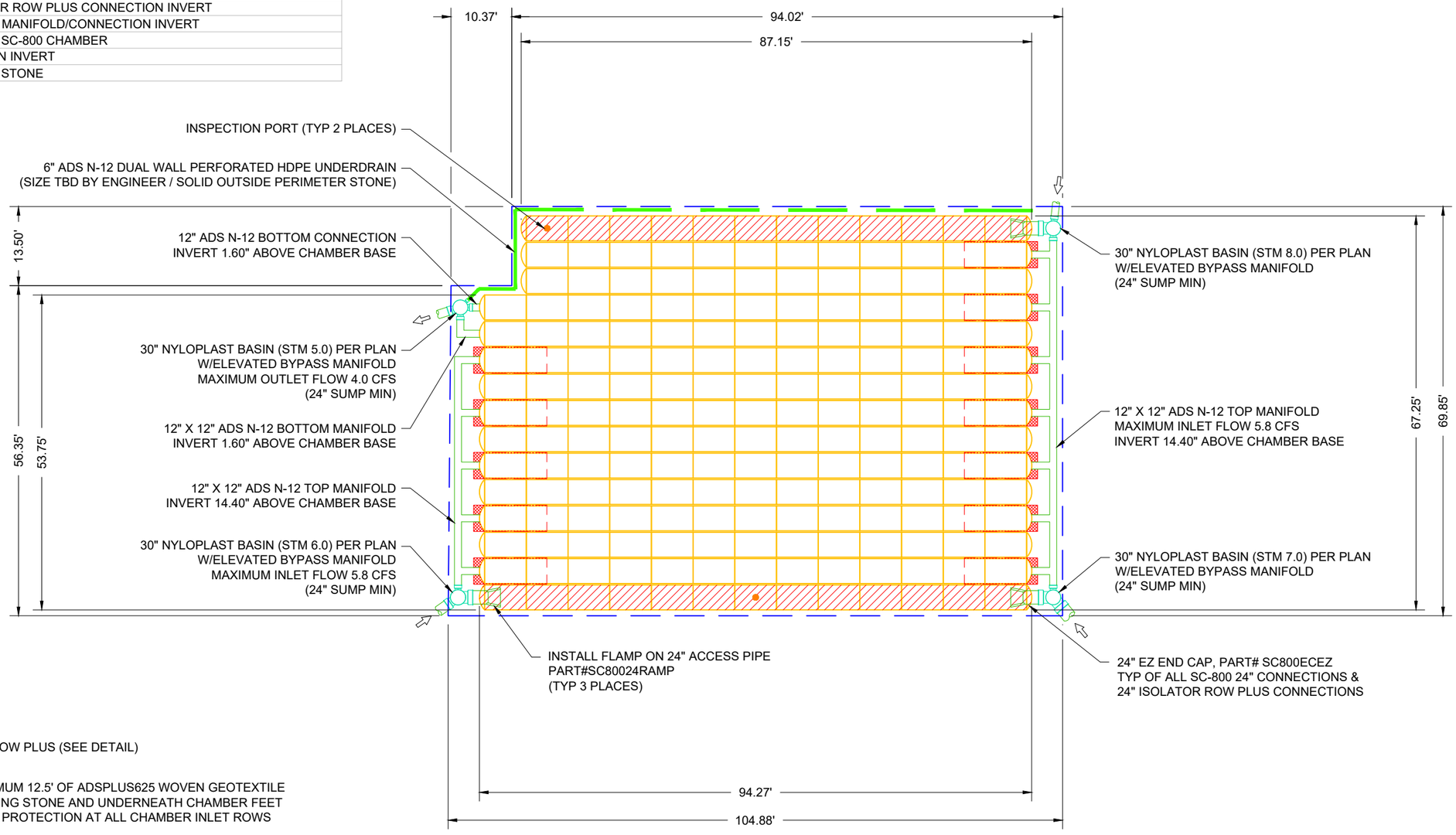
192	STORMTECH SC-800 CHAMBERS
30	STORMTECH SC-800 END CAPS
6	STONE ABOVE (in)
6	STONE BELOW (in)
40	% STONE VOID
16,640	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
7165	SYSTEM AREA (ft²)
349	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS (BED B)

457.25	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
451.00	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
450.50	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
450.50	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
450.50	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
449.75	TOP OF STONE
449.25	TOP OF SC-800 CHAMBER
447.70	12" TOP MANIFOLD INVERT
446.69	24" ISOLATOR ROW PLUS CONNECTION INVERT
446.63	12" BOTTOM MANIFOLD/CONNECTION INVERT
446.50	BOTTOM OF SC-800 CHAMBER
446.00	UNDERDRAIN INVERT
446.00	BOTTOM OF STONE

NOTES

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ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 12.5' OF ADSPLUS625 WOVEN GEOTEXTILE
OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET
FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

COLLINSVILLE LANDING
COLLINSVILLE, IL
DATE: 08-05-25
DRAWN: SLS
PROJECT #: S476256
CHECKED: XXX

DATE	DWN	CHK

StormTech®
Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADS

0 20' 40'

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECT'S ENGINEER OF RECORD ("EOR") OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE EOR'S PRIOR APPROVAL. EOR SHALL REVIEW THIS DRAWING PRIOR TO BIDDING AND/OR CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

PROPOSED LAYOUT (BED C)

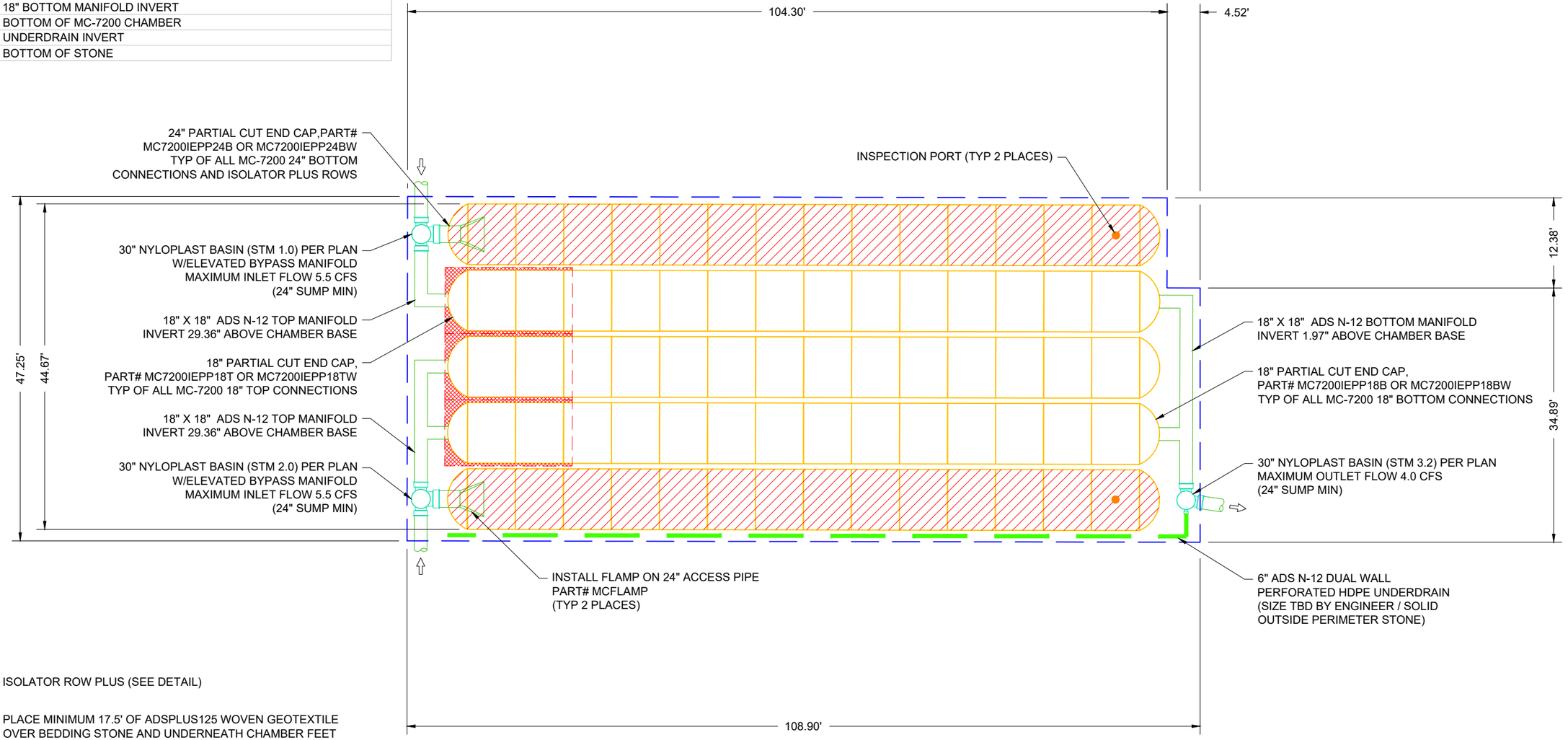
70	STORMTECH MC-7200 CHAMBERS
10	STORMTECH MC-7200 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
21,363	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
5088	SYSTEM AREA (ft²)
312	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS (BED C)

455.00	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
450.50	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
450.00	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
450.00	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
450.00	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
449.00	TOP OF STONE
448.00	TOP OF MC-7200 CHAMBER
445.45	18" TOP MANIFOLD INVERT
443.19	24" ISOLATOR ROW PLUS CONNECTION INVERT
443.16	18" BOTTOM MANIFOLD INVERT
443.00	BOTTOM OF MC-7200 CHAMBER
442.25	UNDERDRAIN INVERT
442.25	BOTTOM OF STONE

NOTES

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ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 17.5' OF ADSPLUS125 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

COLLINSVILLE LANDING
COLLINSVILLE, IL

DATE: 08-05-25 | DRAWN: SLS | CHECKED: XXX
PROJECT #: S476256

DATE	DWN	CHK

StormTech® Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

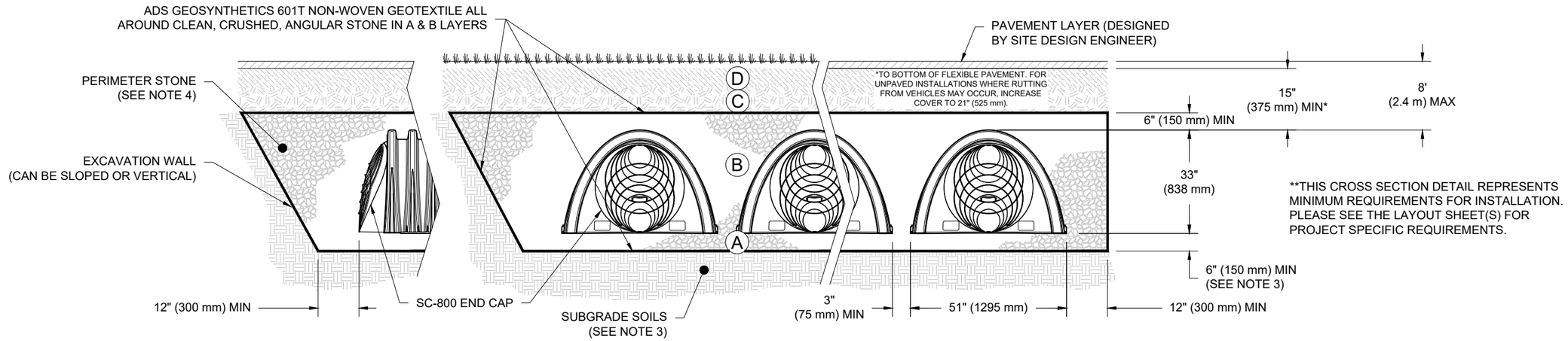
30'
15'
0

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ACCEPTABLE FILL MATERIALS: STORMTECH SC-800 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 15" (375 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-800 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2" (50 mm).
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 700 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

COLLINSVILLE LANDING
COLLINSVILLE, IL
DATE: 08-05-25 DRAWN: SLS
PROJECT #: S476256 CHECKED: XXX

DATE	DWN	CHK

StormTech® Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

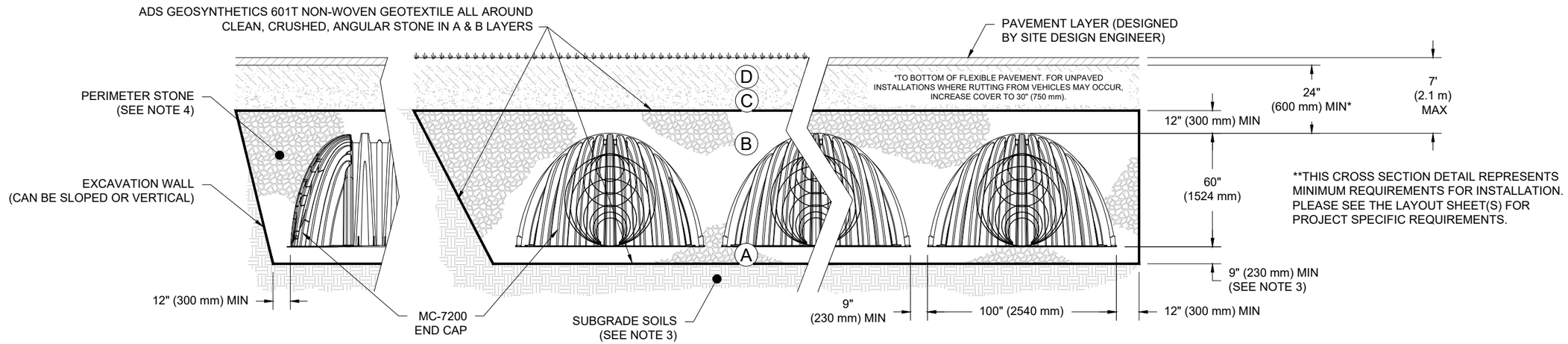
ADS

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ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3" (75 mm).
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

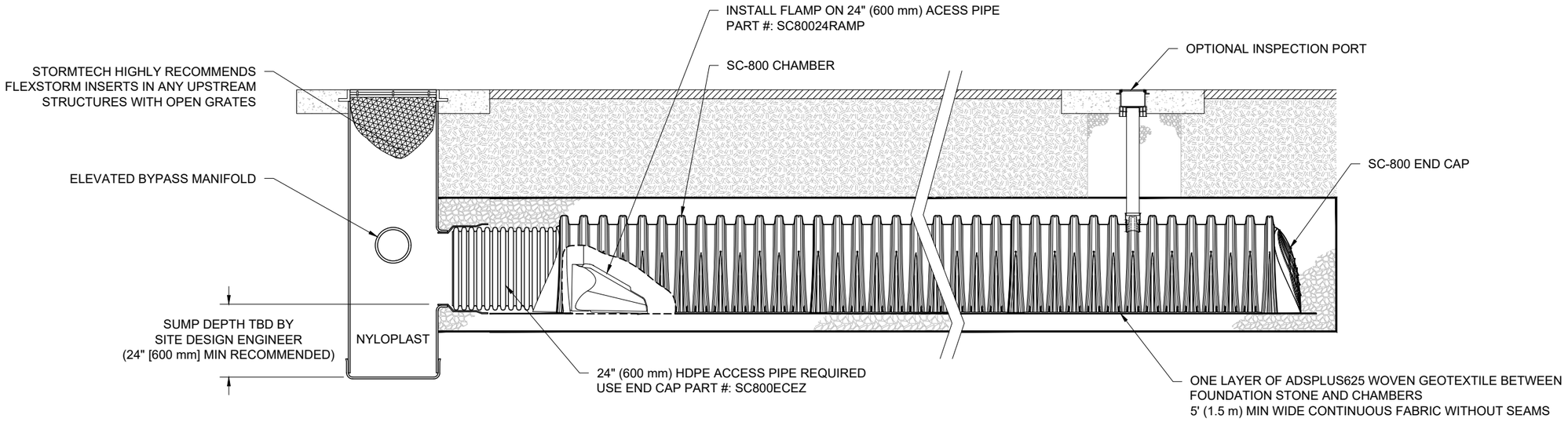
COLLINSVILLE LANDING
COLLINSVILLE, IL
DATE: 08-05-25 DRAWN: SLS
PROJECT #: S476256 CHECKED: XXX

DATE	DWN	CHK

StormTech® Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS/STORMTECH UNDER THE DIRECTION OF THE PROJECT'S ENGINEER OF RECORD ('EOR') OR OTHER PROJECT REPRESENTATIVE. THIS DRAWING IS NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION WITHOUT THE EOR'S PRIOR APPROVAL. EOR SHALL REVIEW THIS DRAWING PRIOR TO BIDDING AND/OR CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE EOR TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.



SC-800 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

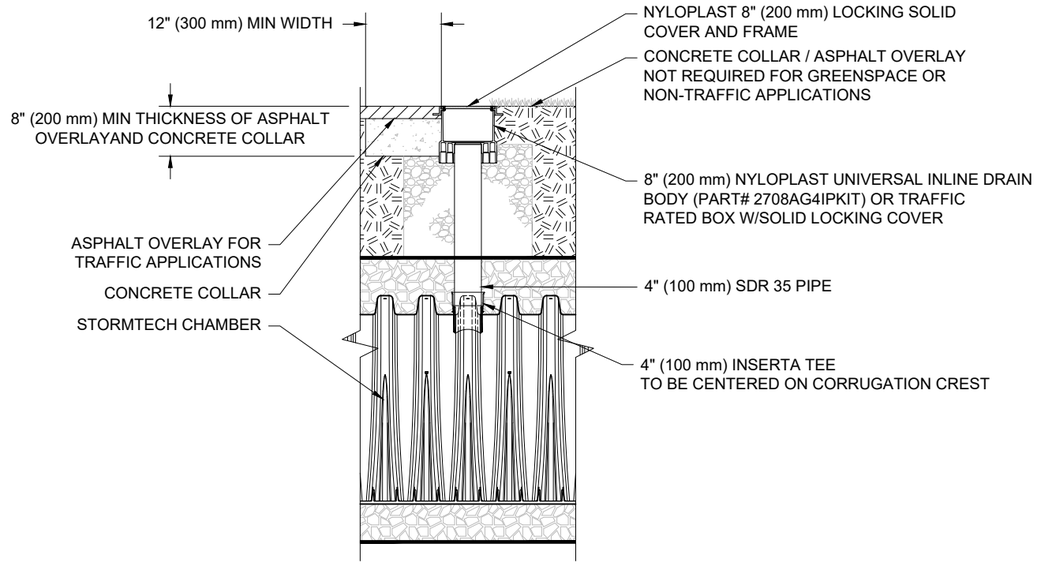
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" PVC INSPECTION PORT DETAIL
(SC SERIES CHAMBER)
NTS

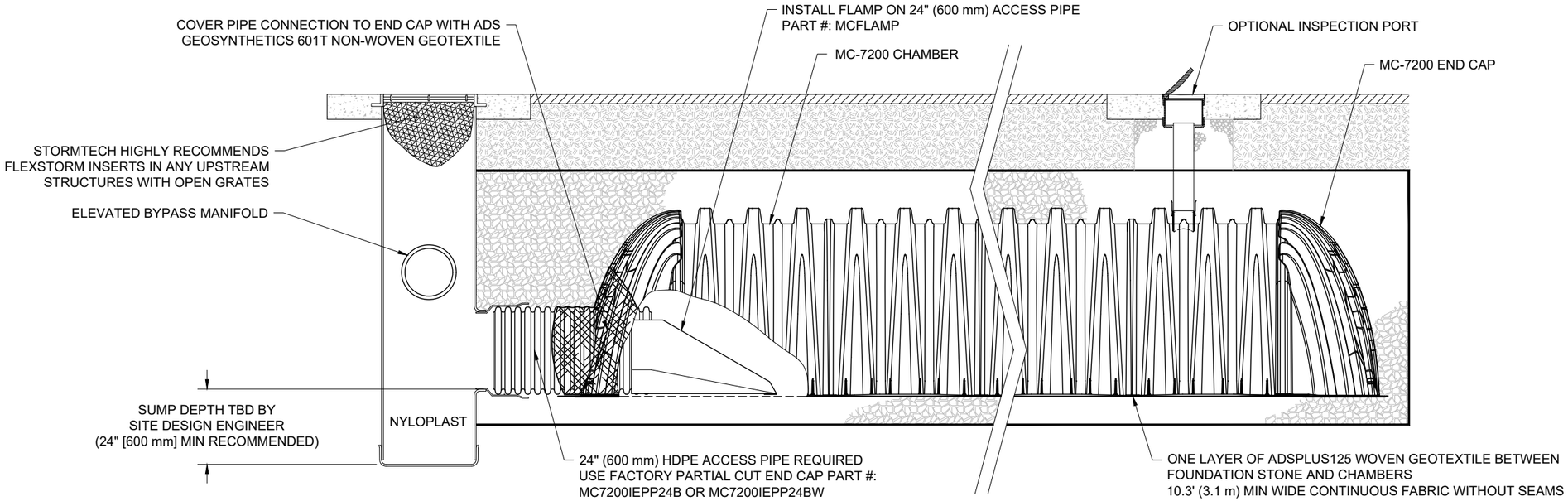
COLLINSVILLE LANDING
COLLINSVILLE, IL
DATE: 08-05-25 DRAWN: SLS
PROJECT #: S476256 CHECKED: XXX

DATE	DWN	CHK

StormTech® Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

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MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

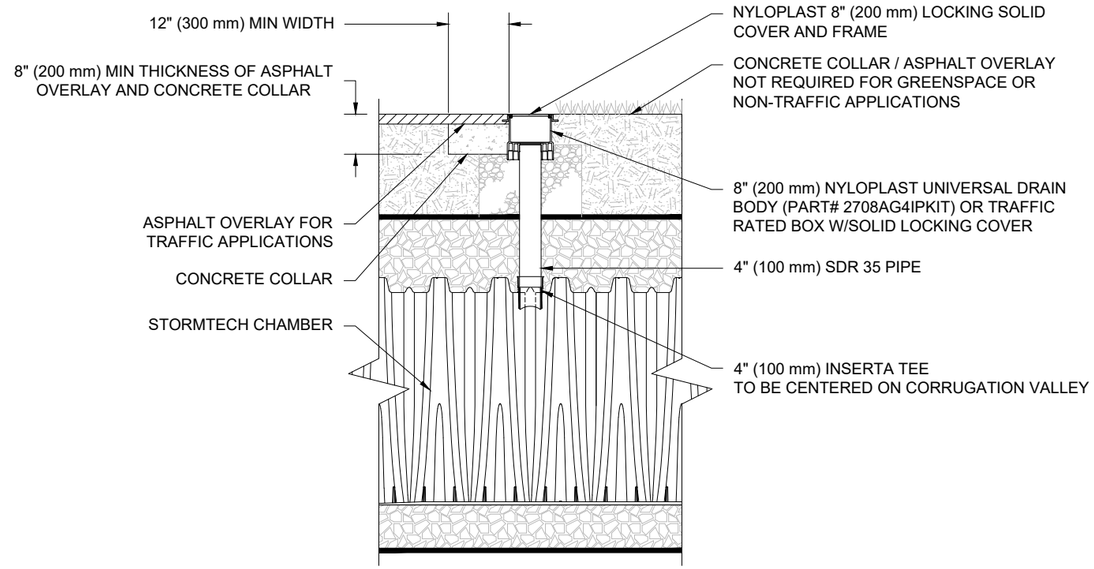
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

4" PVC INSPECTION PORT DETAIL
(MC SERIES CHAMBER)
NTS

COLLINSVILLE LANDING
COLLINSVILLE, IL

DATE: 08-05-25 | DRAWN: SLS | PROJECT #: S476256 | CHECKED: XXX

DATE	DWN	CHK

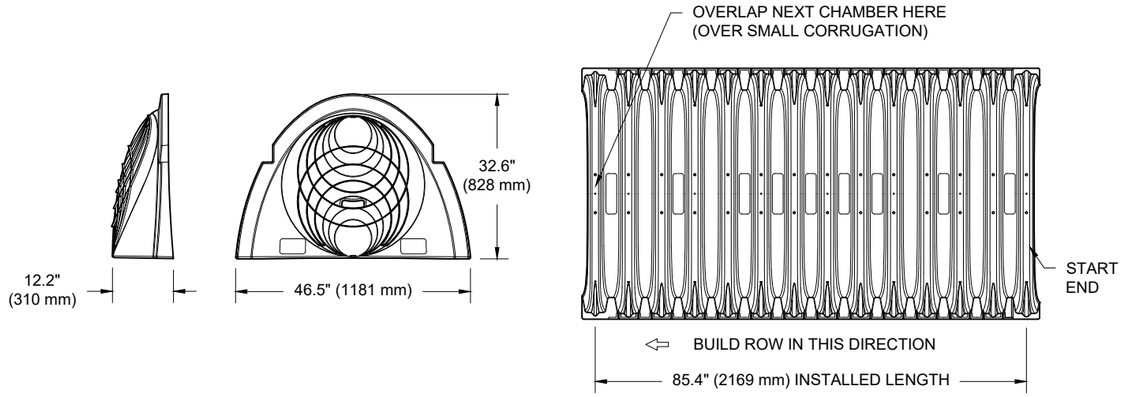
StormTech® Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

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SC-800 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 33.0" X 85.4"	(1295 mm X 838 mm X 2169 mm)
CHAMBER STORAGE	50.6 CUBIC FEET	(1.43 m³)
MINIMUM INSTALLED STORAGE*	78.4 CUBIC FEET	(2.22 m³)
WEIGHT	81.8 lbs.	(37.1 kg)

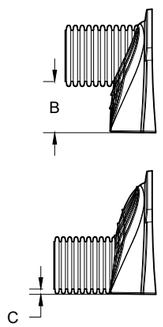
NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	46.5" X 32.6" X 10.5"	(1181 mm X 828 mm X 267 mm)
END CAP STORAGE	3.4 CUBIC FEET	(0.09 m³)
MINIMUM INSTALLED STORAGE**	14.7 CUBIC FEET	(0.42 m³)
WEIGHT	15.7 lbs.	(7.1 kg)

* ASSUMES 6" (150 mm) STONE ABOVE AND BELOW CHAMBER, 3" (75 mm) BETWEEN CHAMBERS
**ASSUMES 6" (150 mm) STONE ABOVE AND BELOW END CAPS, 3" (75 mm) BETWEEN ROWS, 12" (300 mm) BEYOND END CAPS

PRE-CORED HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "BPC"
PRE-CORED HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "TPC"

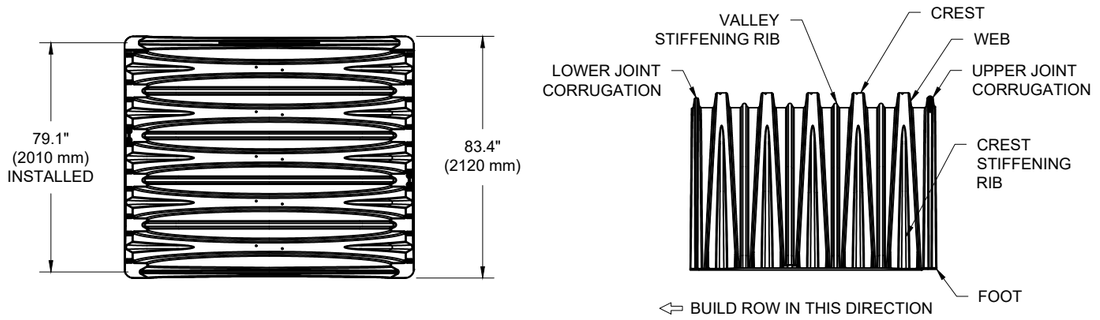
PART #	STUB	B	C
SC800EPE06TPC	6" (150 mm)	21.4" (544 mm)	---
SC800EPE06BPC		---	0.9" (23 mm)
SC800EPE08TPC	8" (200 mm)	19.2" (488 mm)	---
SC800EPE08BPC		---	1.0" (25 mm)
SC800EPE10TPC	10" (250 mm)	17.0" (432 mm)	---
SC800EPE10BPC		---	1.2" (30 mm)
SC800EPE12TPC	12" (300 mm)	14.4" (366 mm)	---
SC800EPE12BPC		---	1.6" (41 mm)
SC800EPE15TPC	15" (375 mm)	11.3" (287 mm)	---
SC800EPE15BPC		---	1.7" (43 mm)
SC800EPE18TPC	18" (450 mm)	8.0" (203 mm)	---
SC800EPE18BPC		---	2.0" (51 mm)
SC800ECEZ	24" (600 mm)	---	2.3" (58 mm)



NOTE: ALL DIMENSIONS ARE NOMINAL

MC-7200 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

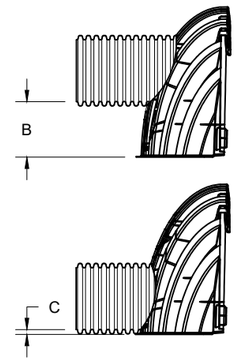
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B		---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B		---	1.70" (43 mm)
MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

COLLINSVILLE LANDING
COLLINSVILLE, IL
DATE: 08-05-25 DRAWN: SLS CHECKED: XXX
PROJECT #: S476256

DATE	DWN	CHK

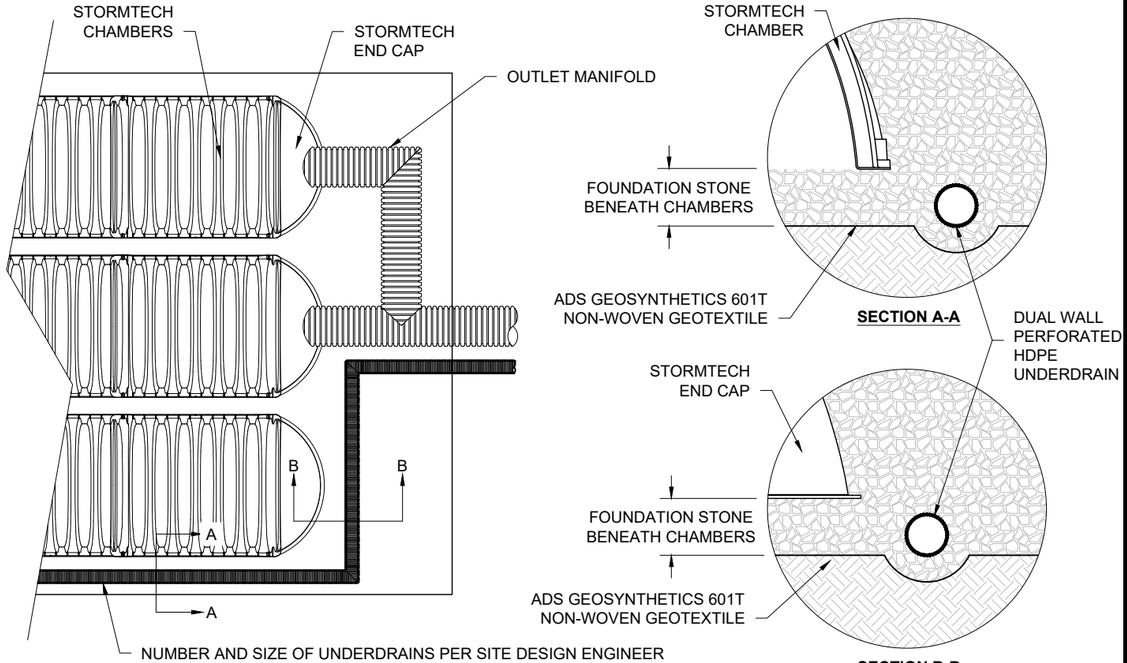
StormTech® Chamber System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

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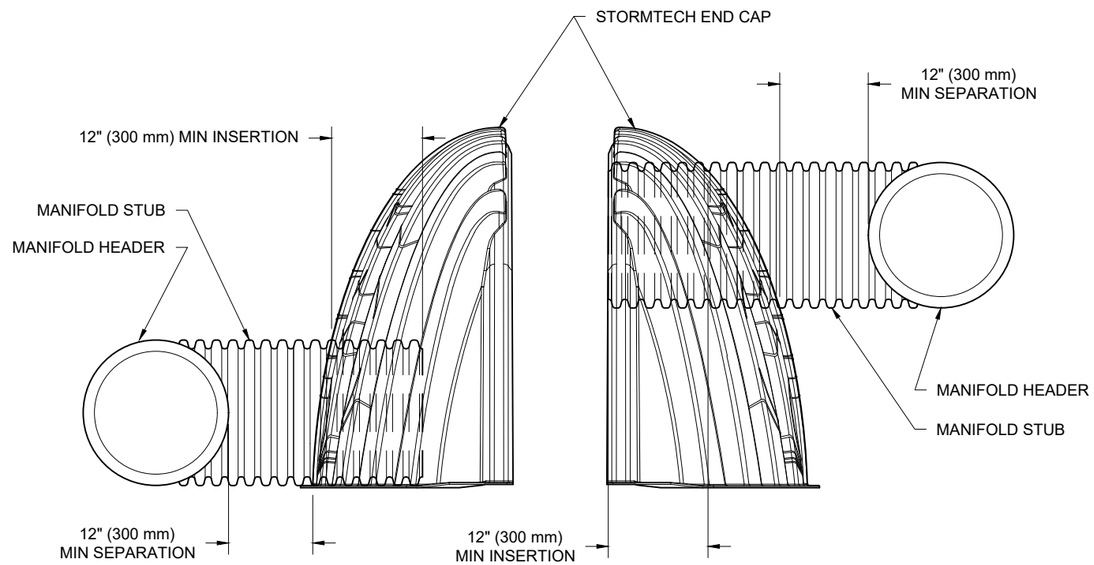
UNDERDRAIN DETAIL

NTS



MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

COLLINSVILLE LANDING
COLLINSVILLE, IL

DATE: 08-05-25 | DRAWN: SLS | CHECKED: XXX
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DATE	DWN	CHK

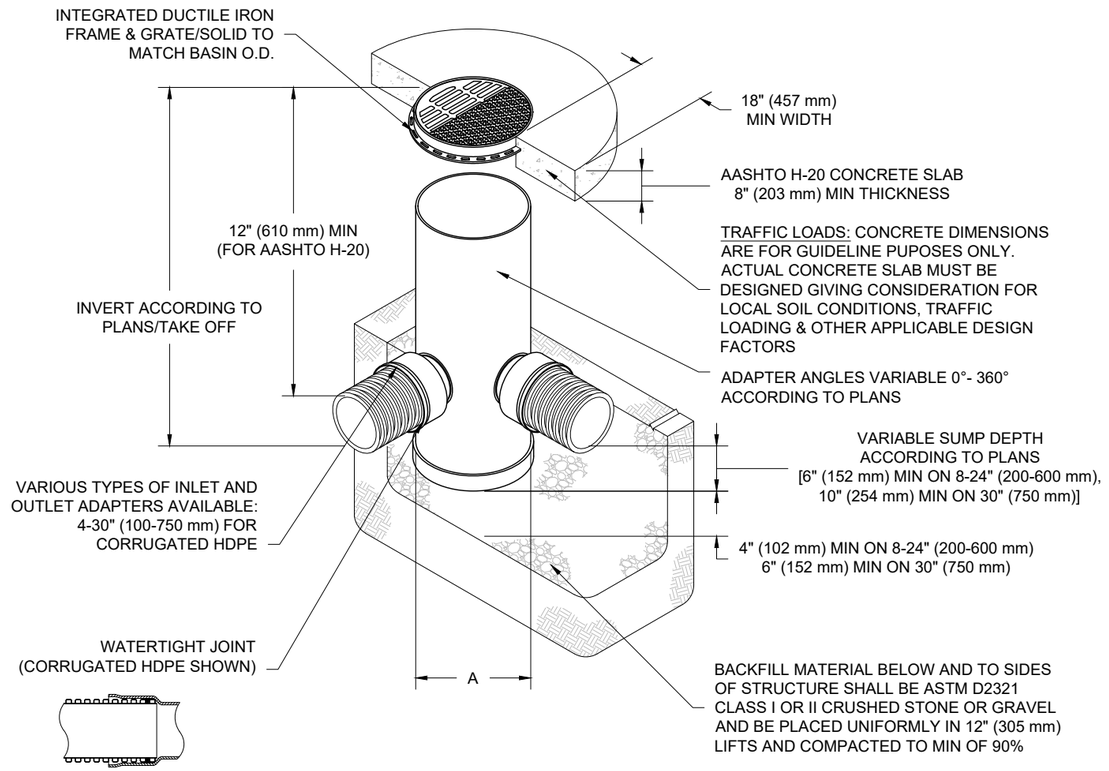
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NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

COLLINSVILLE LANDING

COLLINSVILLE, IL

DATE: 08-05-25 DRAWN: SLS

PROJECT #: S476256 CHECKED: XXX

DATE	DWN	CHK

Nyloplast®

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADS

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BED A

BED B

BED C

ADS SC-800
STONE INV 446.00
TOP OF CHAMBER 449.25
TOP OF STONE 449.75
MIN/MAX PVMNT 450.75/457.25

ADS MC-7200
STONE INV 442.25
TOP OF CHAMBER 448.00
TOP OF STONE 449.00
MIN/MAX PVMNT 451.00/456.00

BEVERLY LANE

RAMADA BLVD IMPROVEMENTS, BY OTHERS

RAMADA BLVD NORTH

NEW BLDG
FF = 462.80

NEW BLDG
FF = 452.10

NEW BLDG
FF = 451.30

NEW BLDG
FF = 451.30

TRENCH DRAIN

TRENCH DRAIN

NEW 3" Ø ROOF DRAIN

NEW 4" Ø HDPE

NEW 3" x 2" CANOPY DOWNSPOUT

OUTLET INV 445.00

OUTLET INV 445.50

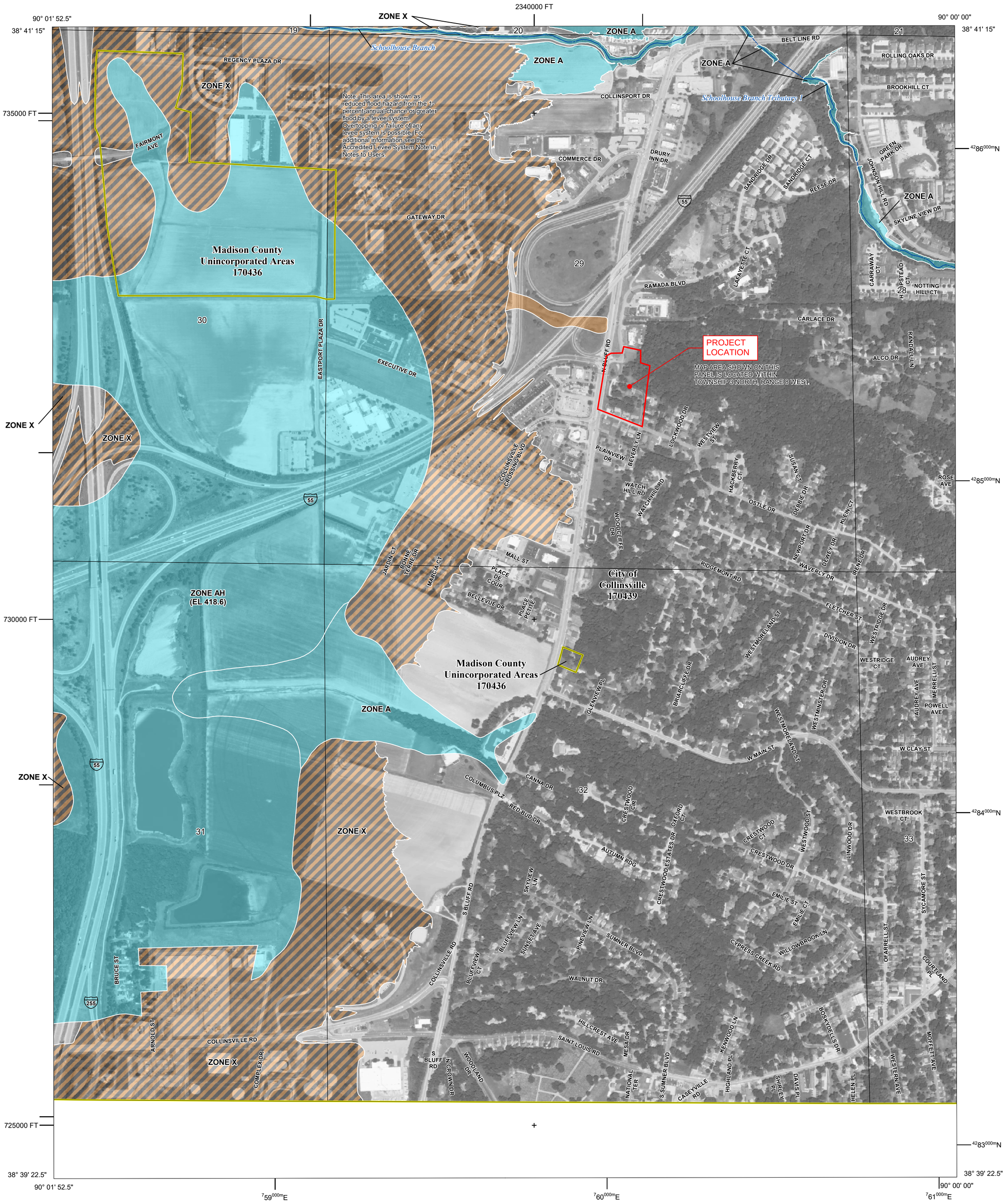
INV 445.13

INV 444.13

STM 4.1
STM 4.0
STM 10.4
STM 10.1
STM 10.2
STM 10.3
STM 10.0
STM 9.0
STM 9.3
STM 11.1
STM 9.1
STM 9.2
STM 11.0
STM 8.2
STM 8.1
STM 1.1.1
STM 1.1.2
STM 5.0
STM 8.0
STM 1.1
STM 1.0
STM 1.2
STM 6.0
STM 7.0
STM 7.1
STM 2.0
STM 3.2
STM 6.1
STM 7.1.1
STM 2.1
STM 2.2
STM 6.2
STM 6.2.1
STM 2.1.1
STM 7.2
STM 7.3
STM 2.1.2
STM 2.1.3
STM 2.1.4
STM 6.4
STM 6.3
STM 2.7
STM 2.6

12" RCP
8" RCP
15" RCP
18" RCP
24" RCP

Attachment D
FEMA Map



FLOOD HAZARD INFORMATION

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

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN — Areas of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- E 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 — Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on the FIRM was derived from multiple sources. Transportation line data and municipal boundaries were provided by the Madison County Information Systems Department. Water features including HUC-8 boundaries, water features, and water lines were provided by the United States Geological Survey (USGS) as a part of their National Hydrography Dataset. Aerial imagery was providedby the United States Department of Agriculture (USDA). Source data for levees were provided by the United States Army Corps of Engineers (USACE). Source data for the Professional Land Survey System (PLSS) and the county political boundary were provided by the Illinois State Geological Survey (ISGS).

ACCREDITED LEVEE SYSTEM: Check with your local community to obtain more information on the levee system(s) shown as providing flood hazard reduction on this panel. To mitigate flood hazards in residual risk areas, property owners and residents are encouraged to review the community's emergency preparedness plan and to consider flood insurance and floodproofing, or other risk reduction measures. For more information on flood insurance, interested parties should visit www.fema.gov/flood-insurance.

SCALE

N

Map Projection:
NAD 1983 StatePlane Illinois West FIPS 1202 Feet;
Western Hemisphere; Vertical Datum: NAD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR

* PANEL NOT PRINTED



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

MADISON COUNTY, ILLINOIS
And Incorporated Areas

PANEL 342 OF 440

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLLINSVILLE, CITY OF	170439	0342	D
MADISON COUNTY	170436	0342	D

PRELIMINARY
8/10/2022

VERSION NUMBER
2.6.5.0

MAP NUMBER
17119C0342D

EFFECTIVE DATE

Attachment E
Wetlands Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

Collinsville Landing



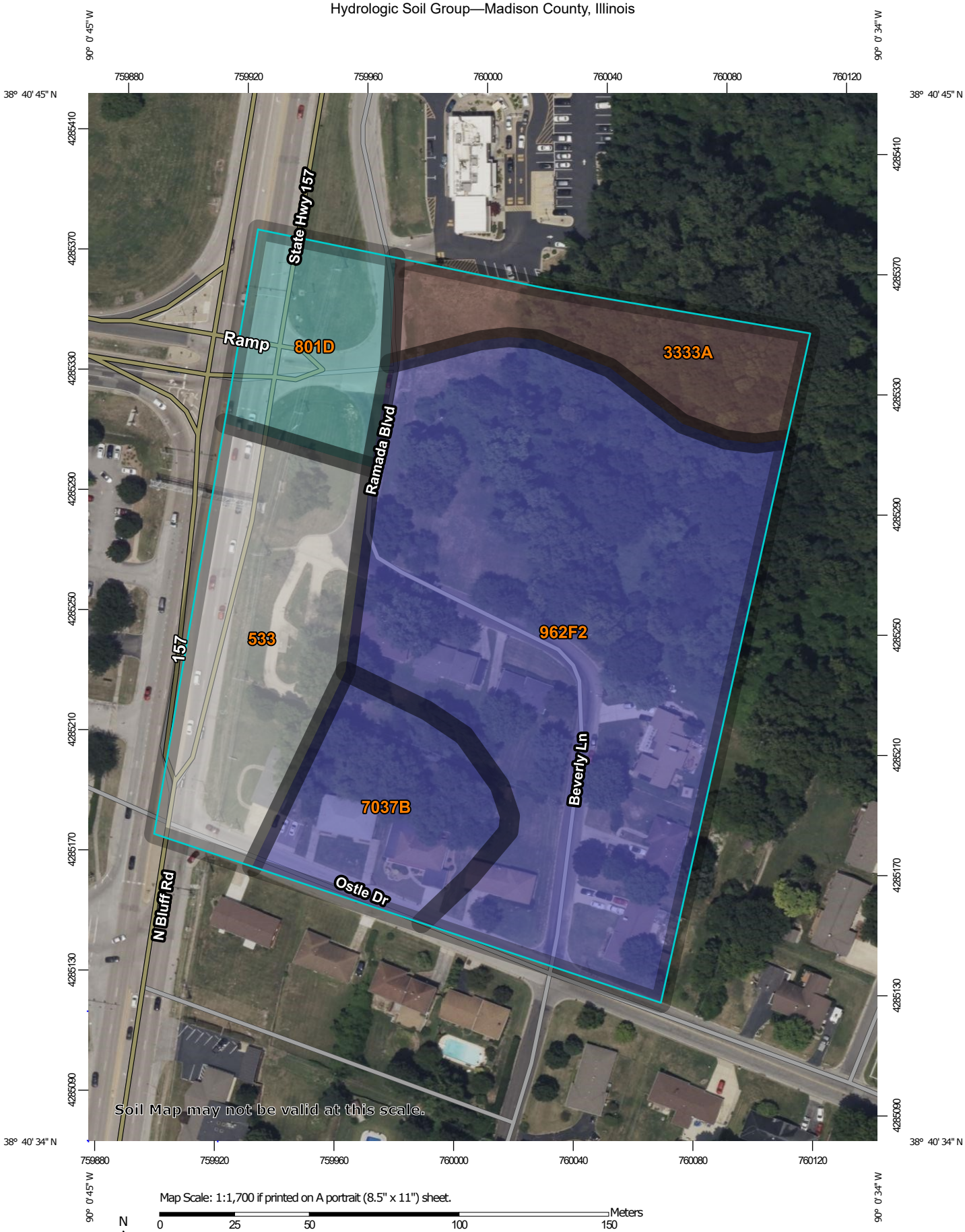
February 15, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Attachment F
Soils Map



Map Scale: 1:1,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Madison County, Illinois
Survey Area Data: Version 19, Aug 21, 2024

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

Date(s) aerial images were photographed: Jul 22, 2022—Aug 25, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
533	Urban land		1.7	17.0%
801D	Orthents, silty, steep	C	0.8	8.6%
962F2	Sylvan-Bold silt loams, 18 to 35 percent slopes, eroded	B	5.2	53.3%
3333A	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	B/D	1.0	10.0%
7037B	Worthen silt loam, 2 to 5 percent slopes, rarely flooded	B	1.1	11.1%
Totals for Area of Interest			**9.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

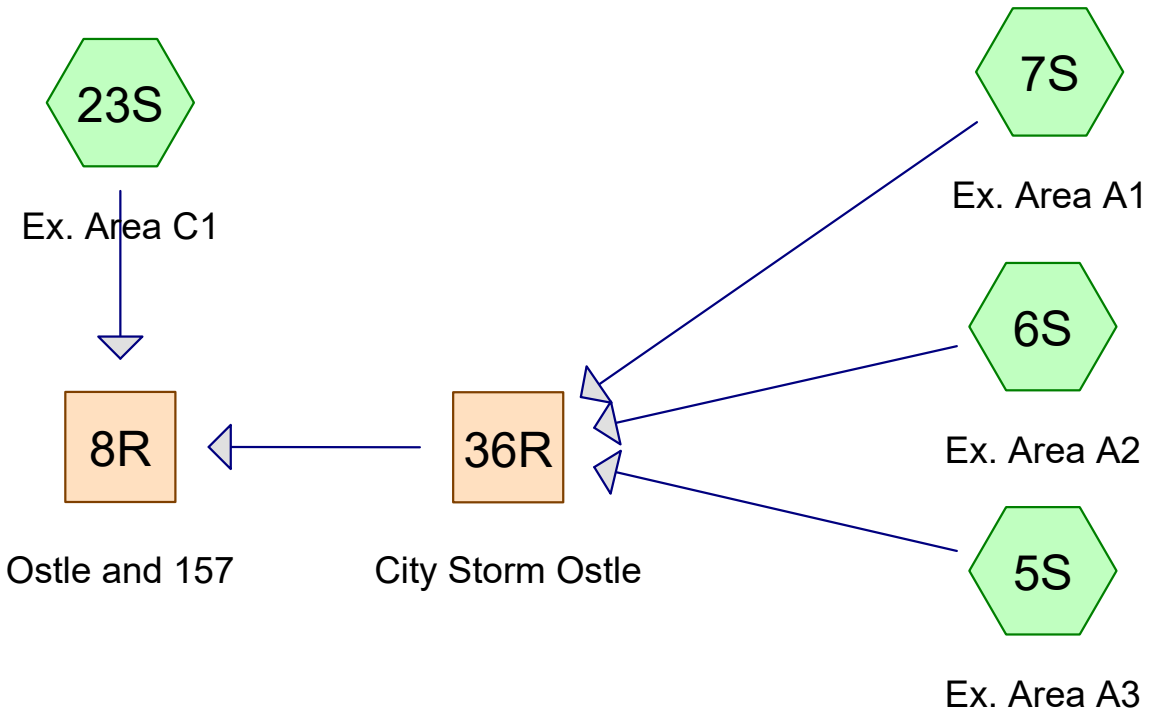
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment G
Existing Condition HydroCAD Report



Subcat Reach Pond Link

Routing Diagram for 220122.002_Collinsville Landing_Final Plans_Test
Prepared by Oates Associates, Inc, Printed 9/23/2025
HydroCAD® 10.20-6a s/n 03470 © 2024 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.620	79	50-75% Grass cover, Fair, HSG C (5S, 6S, 7S, 23S)
2.160	98	Paved parking, HSG C (5S, 6S, 7S, 23S)
5.780	**86**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment5S: Ex. Area A3 Runoff Area=0.290 ac 65.52% Impervious Runoff Depth=0.64"
Flow Length=224' Tc=5.0 min CN=91 Runoff=0.74 cfs 0.015 af

Subcatchment6S: Ex. Area A2 Runoff Area=0.230 ac 56.52% Impervious Runoff Depth=0.58"
Tc=5.0 min CN=90 Runoff=0.53 cfs 0.011 af

Subcatchment7S: Ex. Area A1 Runoff Area=1.630 ac 28.83% Impervious Runoff Depth=0.34"
Flow Length=484' Tc=5.0 min CN=84 Runoff=1.96 cfs 0.046 af

Subcatchment23S: Ex. Area C1 Runoff Area=3.630 ac 37.74% Impervious Runoff Depth=0.41"
Flow Length=397' Tc=5.5 min CN=86 Runoff=5.33 cfs 0.123 af

Reach 8R: Ostle and 157 Inflow=8.50 cfs 0.196 af
Outflow=8.50 cfs 0.196 af

Reach 36R: City Storm Ostle Inflow=3.21 cfs 0.072 af
Outflow=3.21 cfs 0.072 af

Total Runoff Area = 5.780 ac Runoff Volume = 0.196 af Average Runoff Depth = 0.41"
62.63% Pervious = 3.620 ac 37.37% Impervious = 2.160 ac

Summary for Subcatchment 5S: Ex. Area A3

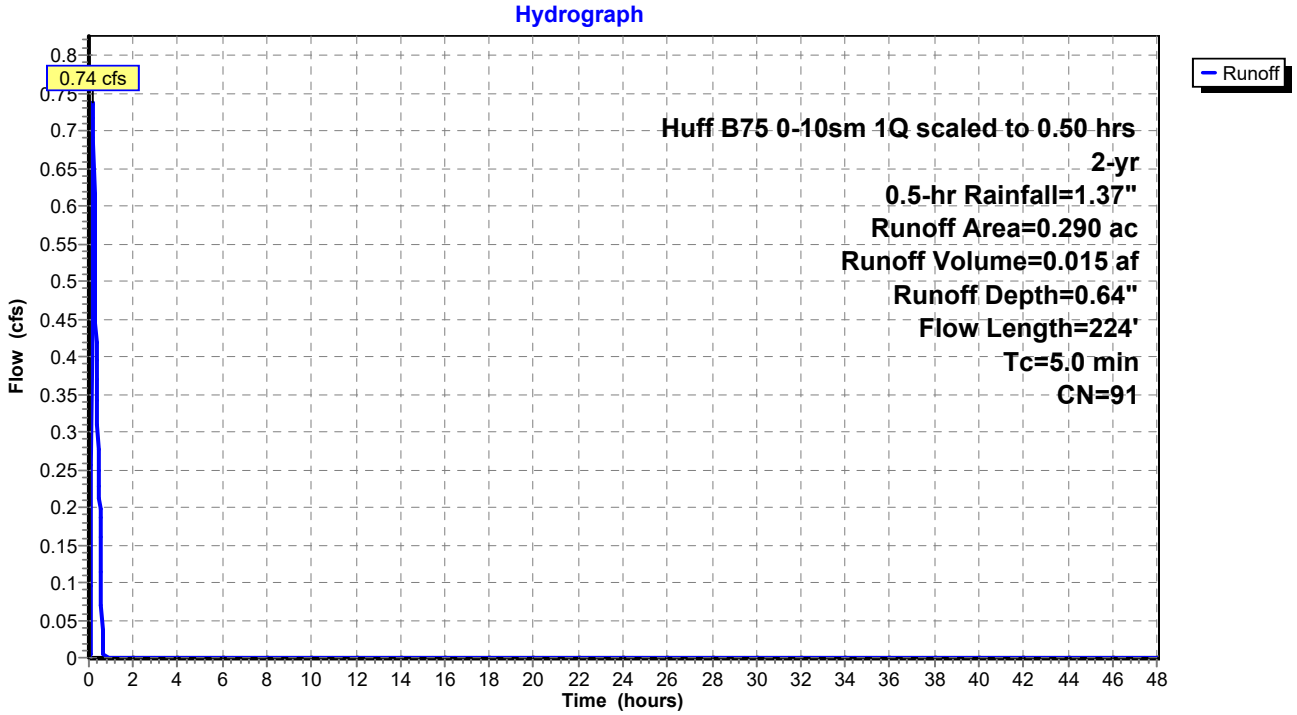
Runoff = 0.74 cfs @ 0.20 hrs, Volume= 0.015 af, Depth= 0.64"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.190	98	Paved parking, HSG C
0.290	91	Weighted Average
0.100		34.48% Pervious Area
0.190		65.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 5S: Ex. Area A3



Summary for Subcatchment 6S: Ex. Area A2

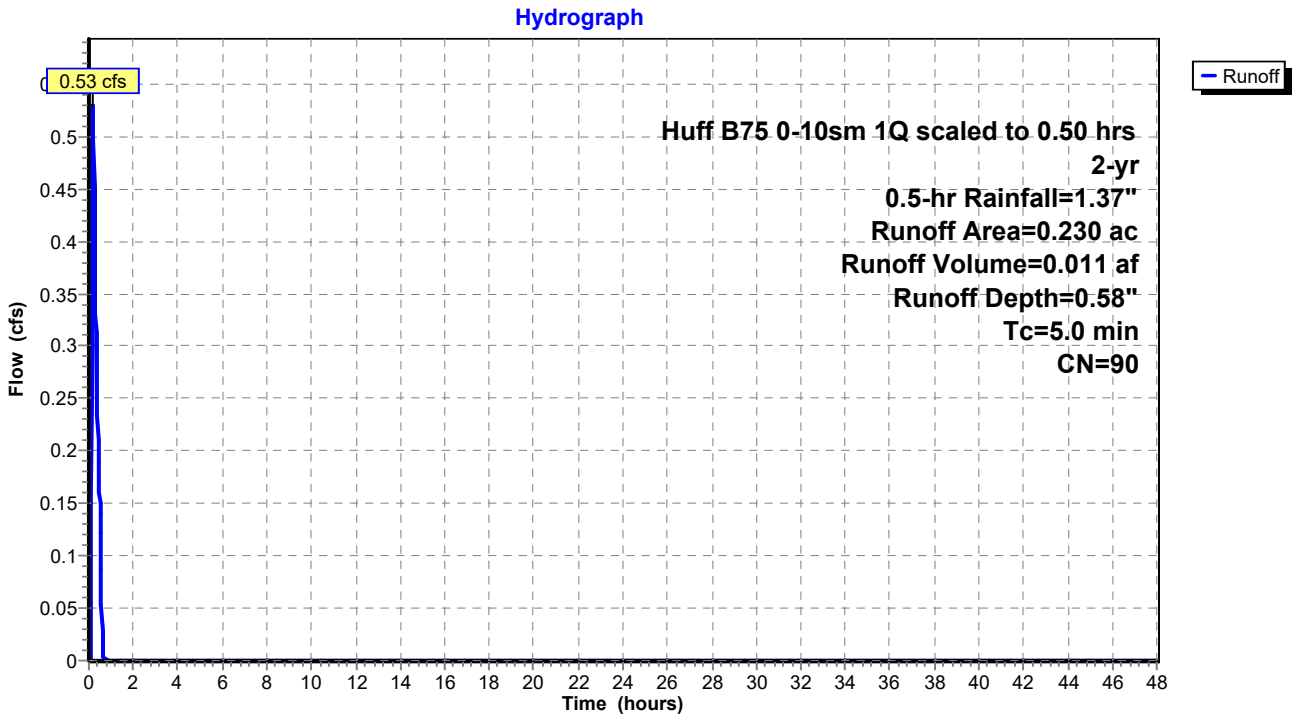
Runoff = 0.53 cfs @ 0.20 hrs, Volume= 0.011 af, Depth= 0.58"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.130	98	Paved parking, HSG C
0.230	90	Weighted Average
0.100		43.48% Pervious Area
0.130		56.52% Impervious Area

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

Subcatchment 6S: Ex. Area A2



Summary for Subcatchment 7S: Ex. Area A1

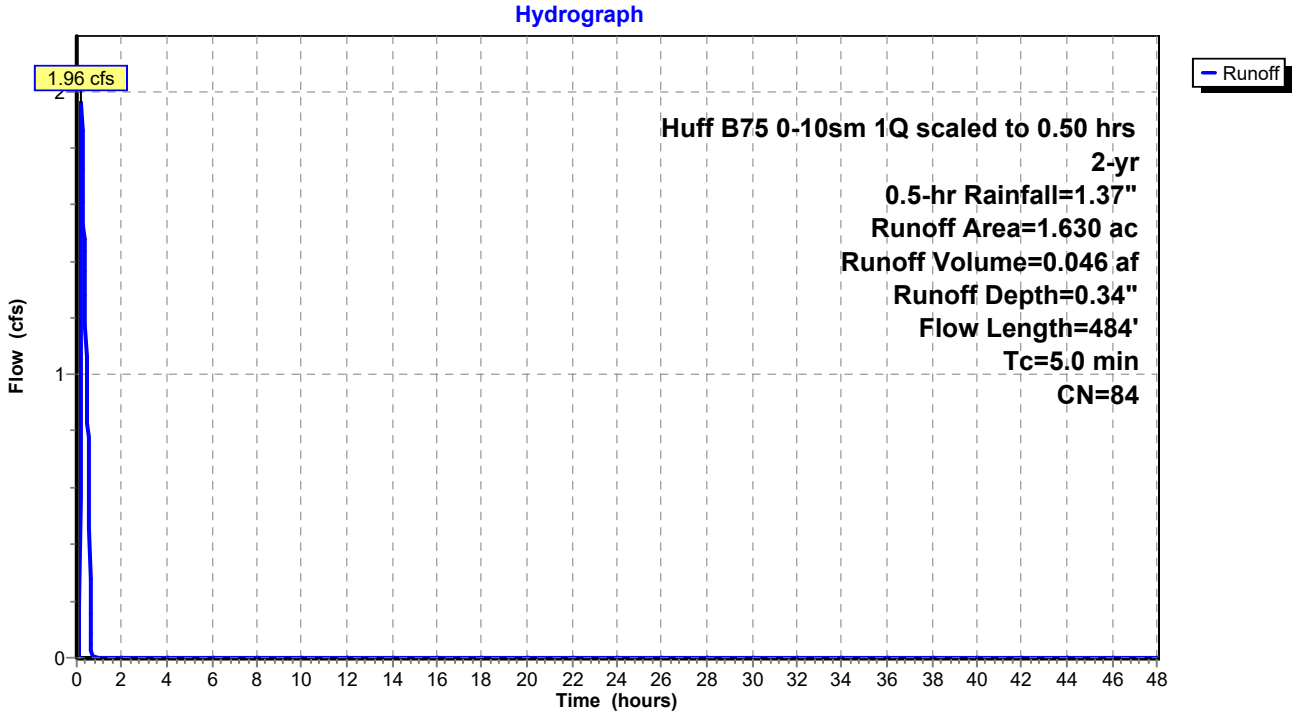
Runoff = 1.96 cfs @ 0.22 hrs, Volume= 0.046 af, Depth= 0.34"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
1.160	79	50-75% Grass cover, Fair, HSG C
0.470	98	Paved parking, HSG C
1.630	84	Weighted Average
1.160		71.17% Pervious Area
0.470		28.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: Ex. Area A1



Summary for Subcatchment 23S: Ex. Area C1

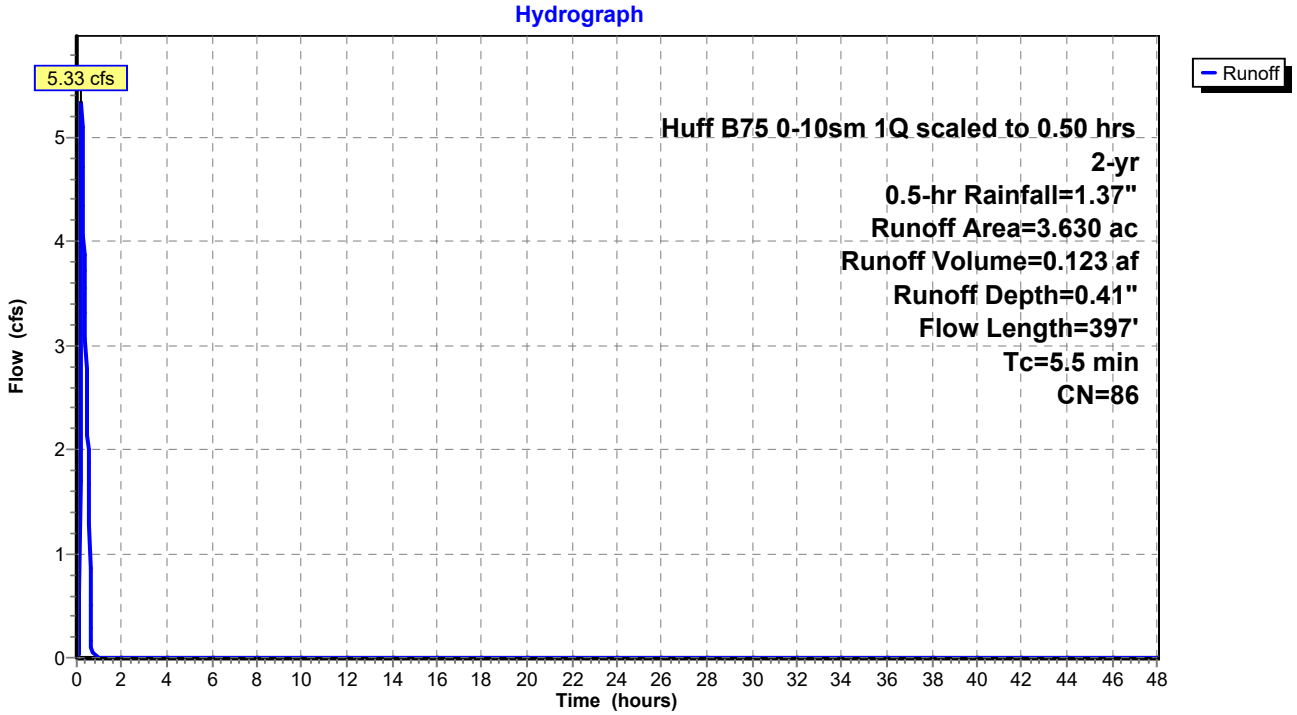
Runoff = 5.33 cfs @ 0.22 hrs, Volume= 0.123 af, Depth= 0.41"
Routed to Reach 8R : Ostle and 157

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
1.370	98	Paved parking, HSG C
2.260	79	50-75% Grass cover, Fair, HSG C
3.630	86	Weighted Average
2.260		62.26% Pervious Area
1.370		37.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1280	0.38		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
1.2	297	0.0620	4.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
5.5	397	Total			

Subcatchment 23S: Ex. Area C1

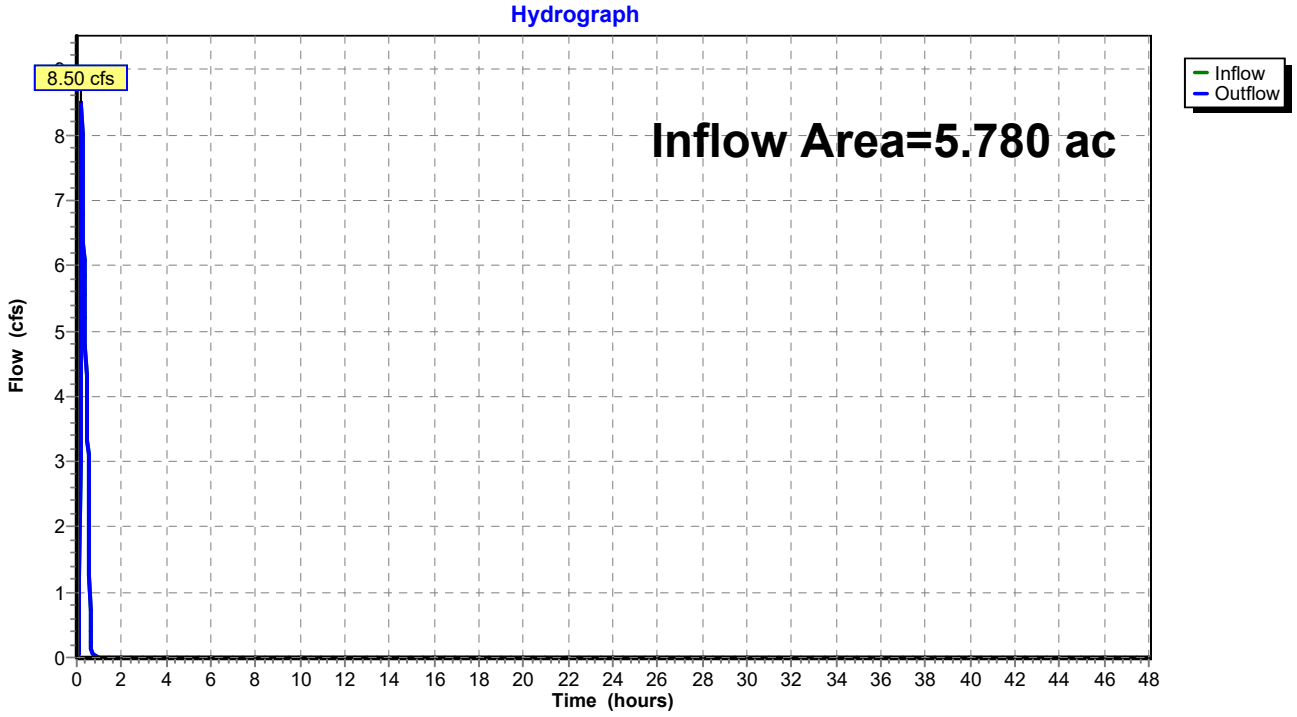


Summary for Reach 8R: Ostle and 157

Inflow Area = 5.780 ac, 37.37% Impervious, Inflow Depth = 0.41" for 2-yr, 0.5-hr event
Inflow = 8.50 cfs @ 0.22 hrs, Volume= 0.196 af
Outflow = 8.50 cfs @ 0.22 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 8R: Ostle and 157

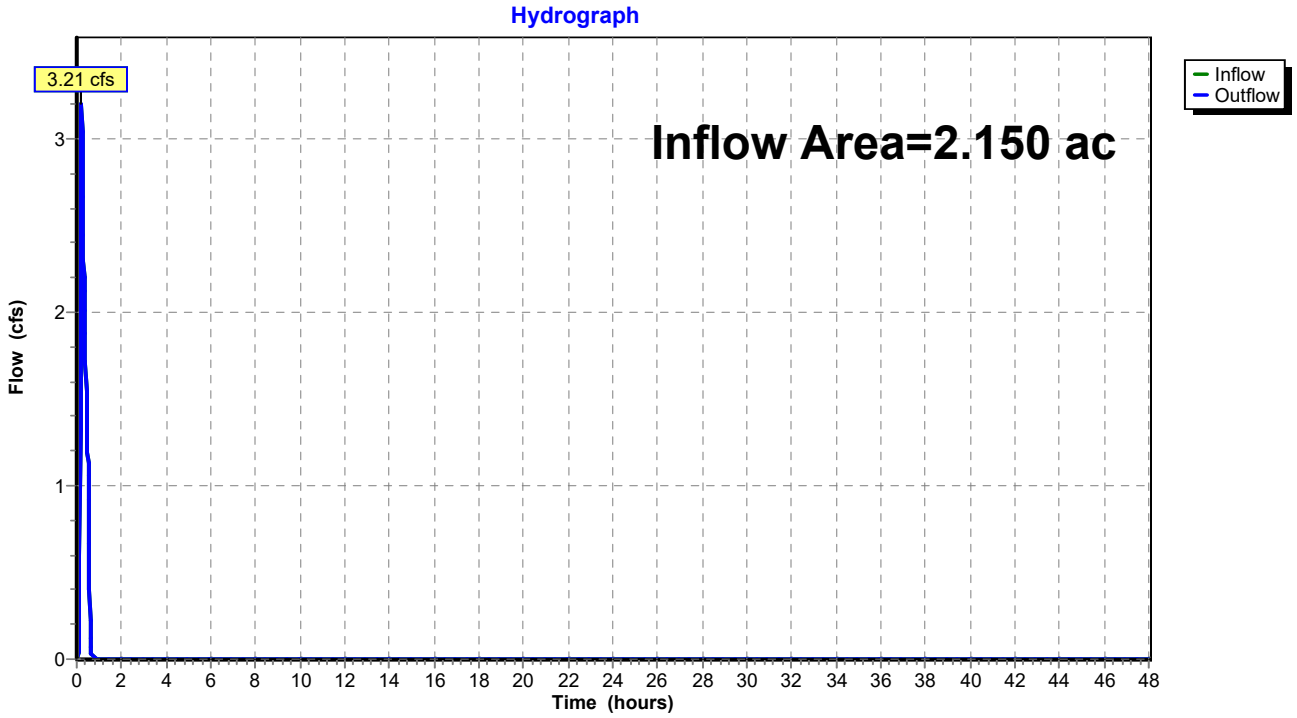


Summary for Reach 36R: City Storm Ostle

Inflow Area = 2.150 ac, 36.74% Impervious, Inflow Depth = 0.40" for 2-yr, 0.5-hr event
Inflow = 3.21 cfs @ 0.21 hrs, Volume= 0.072 af
Outflow = 3.21 cfs @ 0.21 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 8R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 36R: City Storm Ostle



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment5S: Ex. Area A3 Runoff Area=0.290 ac 65.52% Impervious Runoff Depth=2.72"
Flow Length=224' Tc=5.0 min CN=91 Runoff=0.09 cfs 0.066 af

Subcatchment6S: Ex. Area A2 Runoff Area=0.230 ac 56.52% Impervious Runoff Depth=2.63"
Tc=5.0 min CN=90 Runoff=0.07 cfs 0.050 af

Subcatchment7S: Ex. Area A1 Runoff Area=1.630 ac 28.83% Impervious Runoff Depth=2.10"
Flow Length=484' Tc=5.0 min CN=84 Runoff=0.42 cfs 0.285 af

Subcatchment23S: Ex. Area C1 Runoff Area=3.630 ac 37.74% Impervious Runoff Depth=2.27"
Flow Length=397' Tc=5.5 min CN=86 Runoff=0.98 cfs 0.686 af

Reach 8R: Ostle and 157 Inflow=1.55 cfs 1.087 af
Outflow=1.55 cfs 1.087 af

Reach 36R: City Storm Ostle Inflow=0.57 cfs 0.401 af
Outflow=0.57 cfs 0.401 af

Total Runoff Area = 5.780 ac Runoff Volume = 1.087 af Average Runoff Depth = 2.26"
62.63% Pervious = 3.620 ac 37.37% Impervious = 2.160 ac

Summary for Subcatchment 5S: Ex. Area A3

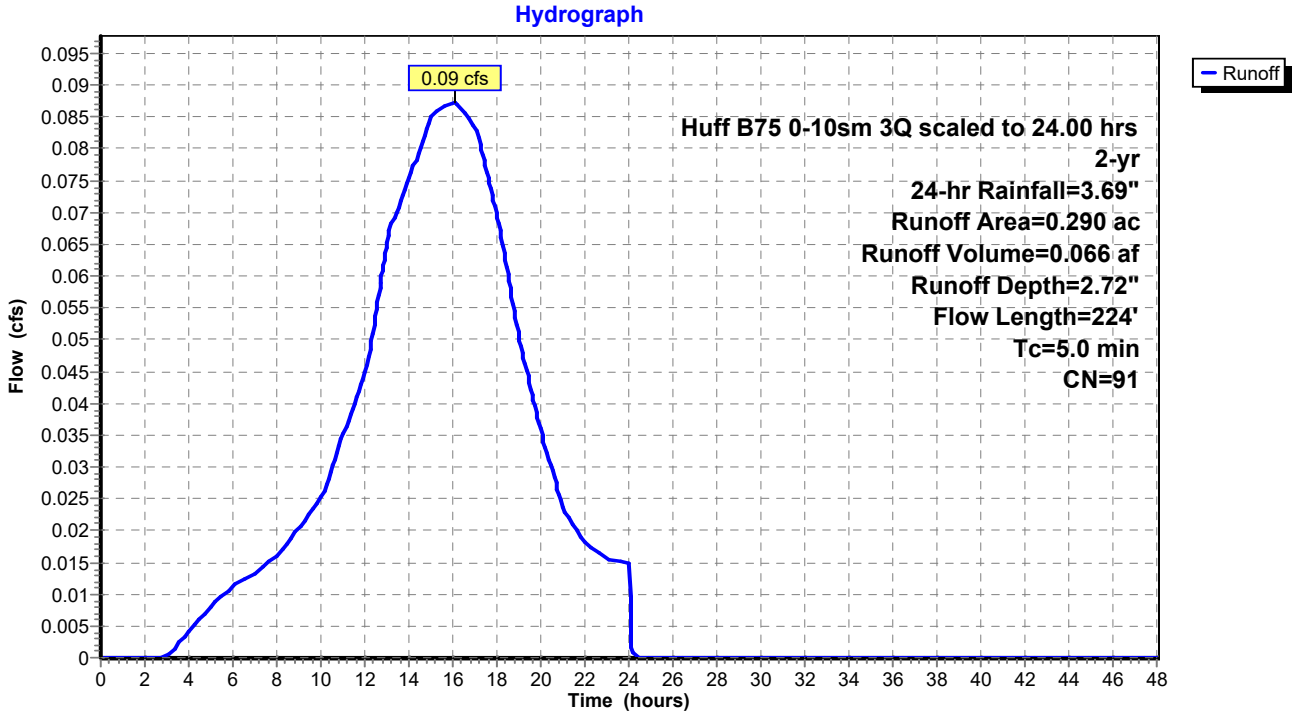
Runoff = 0.09 cfs @ 16.05 hrs, Volume= 0.066 af, Depth= 2.72"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.190	98	Paved parking, HSG C
0.290	91	Weighted Average
0.100		34.48% Pervious Area
0.190		65.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 5S: Ex. Area A3



Summary for Subcatchment 6S: Ex. Area A2

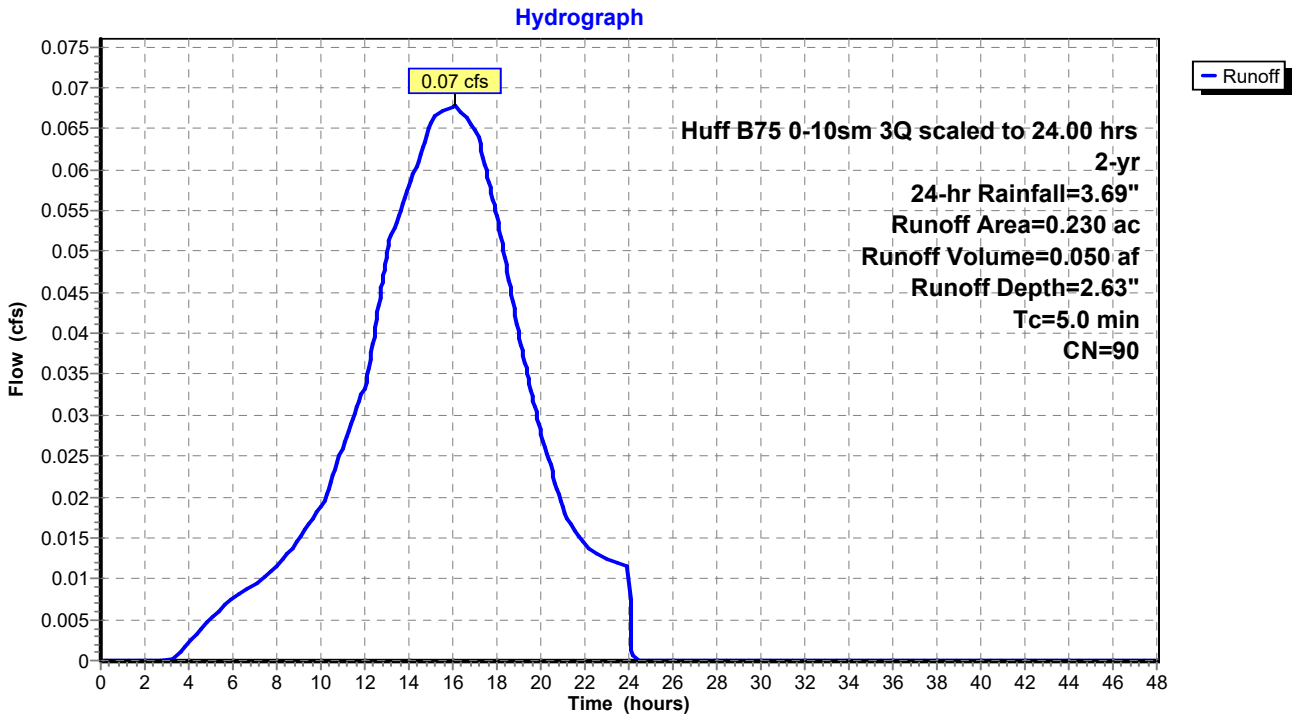
Runoff = 0.07 cfs @ 16.06 hrs, Volume= 0.050 af, Depth= 2.63"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.130	98	Paved parking, HSG C
0.230	90	Weighted Average
0.100		43.48% Pervious Area
0.130		56.52% Impervious Area

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

Subcatchment 6S: Ex. Area A2



Summary for Subcatchment 7S: Ex. Area A1

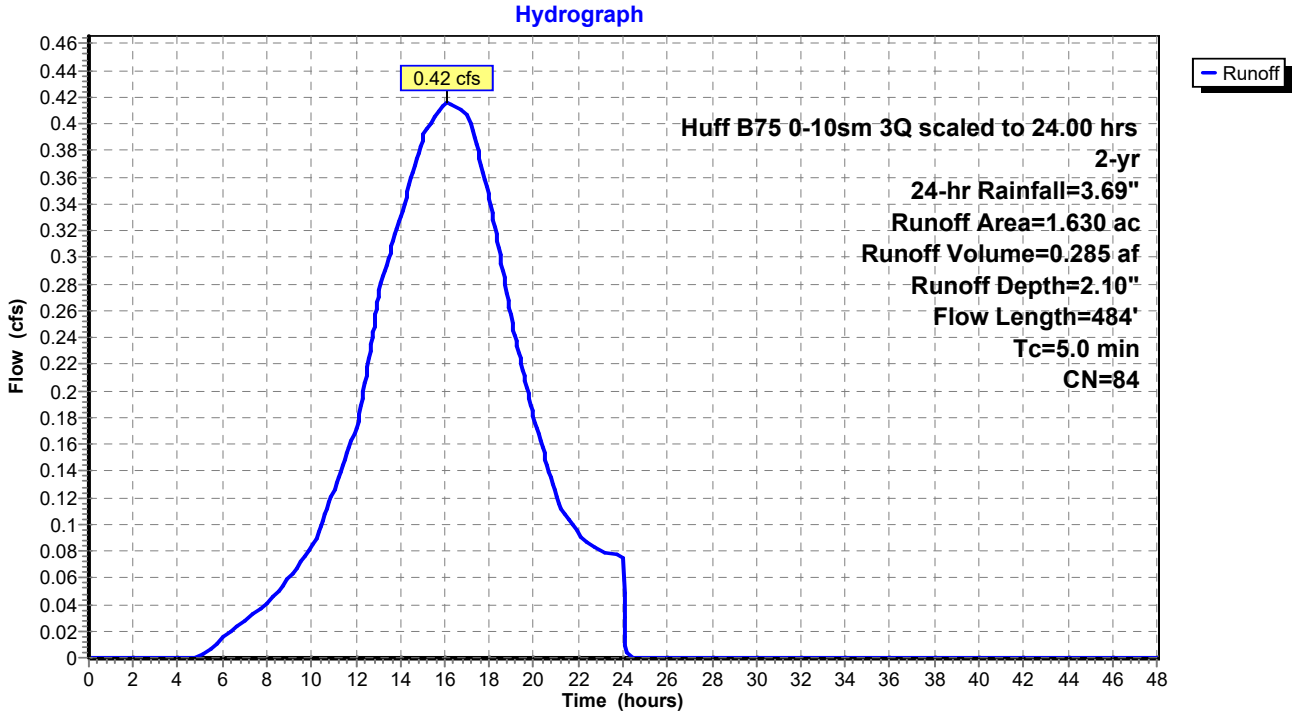
Runoff = 0.42 cfs @ 16.10 hrs, Volume= 0.285 af, Depth= 2.10"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
1.160	79	50-75% Grass cover, Fair, HSG C
0.470	98	Paved parking, HSG C
1.630	84	Weighted Average
1.160		71.17% Pervious Area
0.470		28.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: Ex. Area A1



Summary for Subcatchment 23S: Ex. Area C1

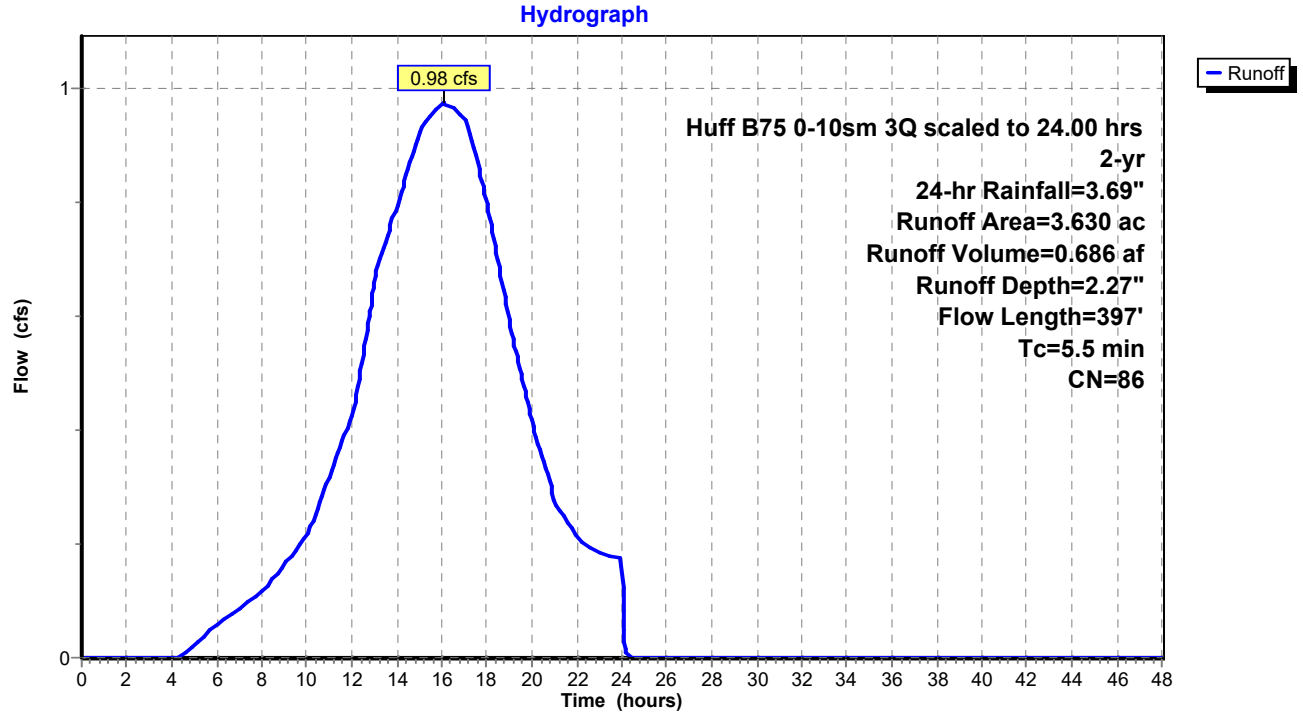
Runoff = 0.98 cfs @ 16.10 hrs, Volume= 0.686 af, Depth= 2.27"
Routed to Reach 8R : Ostle and 157

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
1.370	98	Paved parking, HSG C
2.260	79	50-75% Grass cover, Fair, HSG C
3.630	86	Weighted Average
2.260		62.26% Pervious Area
1.370		37.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1280	0.38		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
1.2	297	0.0620	4.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
5.5	397	Total			

Subcatchment 23S: Ex. Area C1

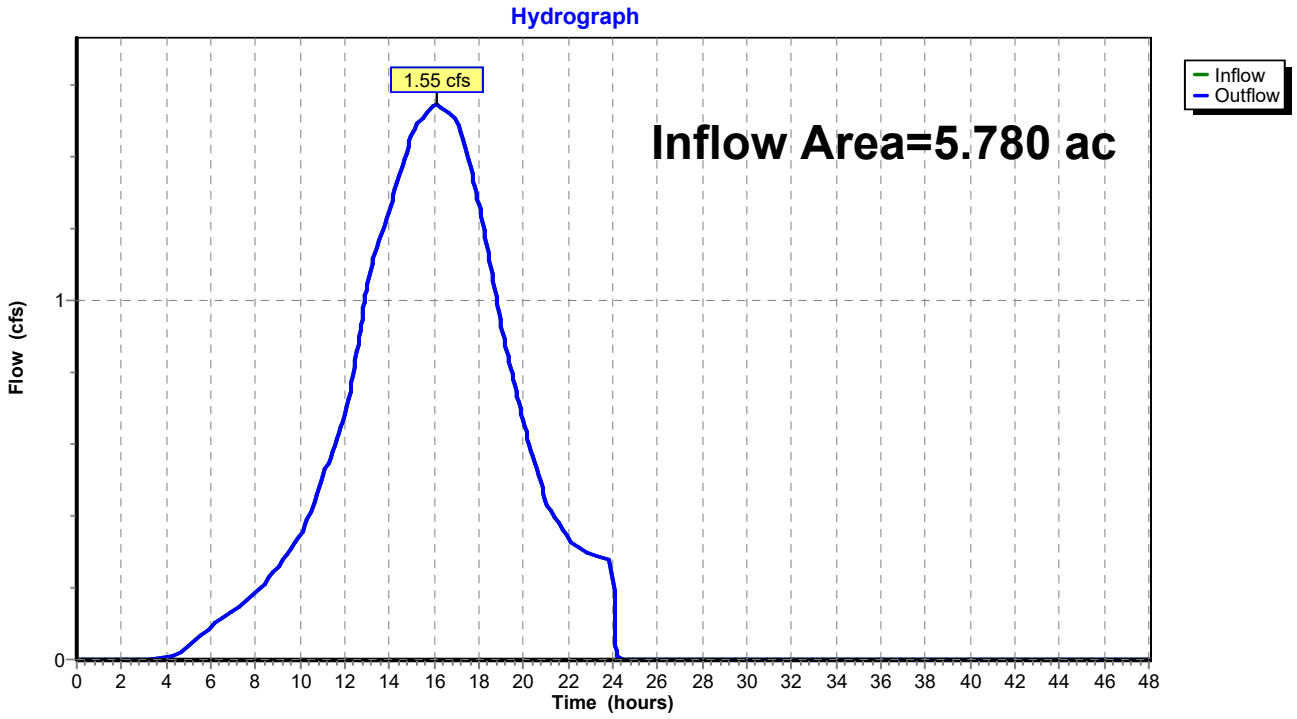


Summary for Reach 8R: Ostle and 157

Inflow Area = 5.780 ac, 37.37% Impervious, Inflow Depth = 2.26" for 2-yr, 24-hr event
Inflow = 1.55 cfs @ 16.09 hrs, Volume= 1.087 af
Outflow = 1.55 cfs @ 16.09 hrs, Volume= 1.087 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 8R: Ostle and 157

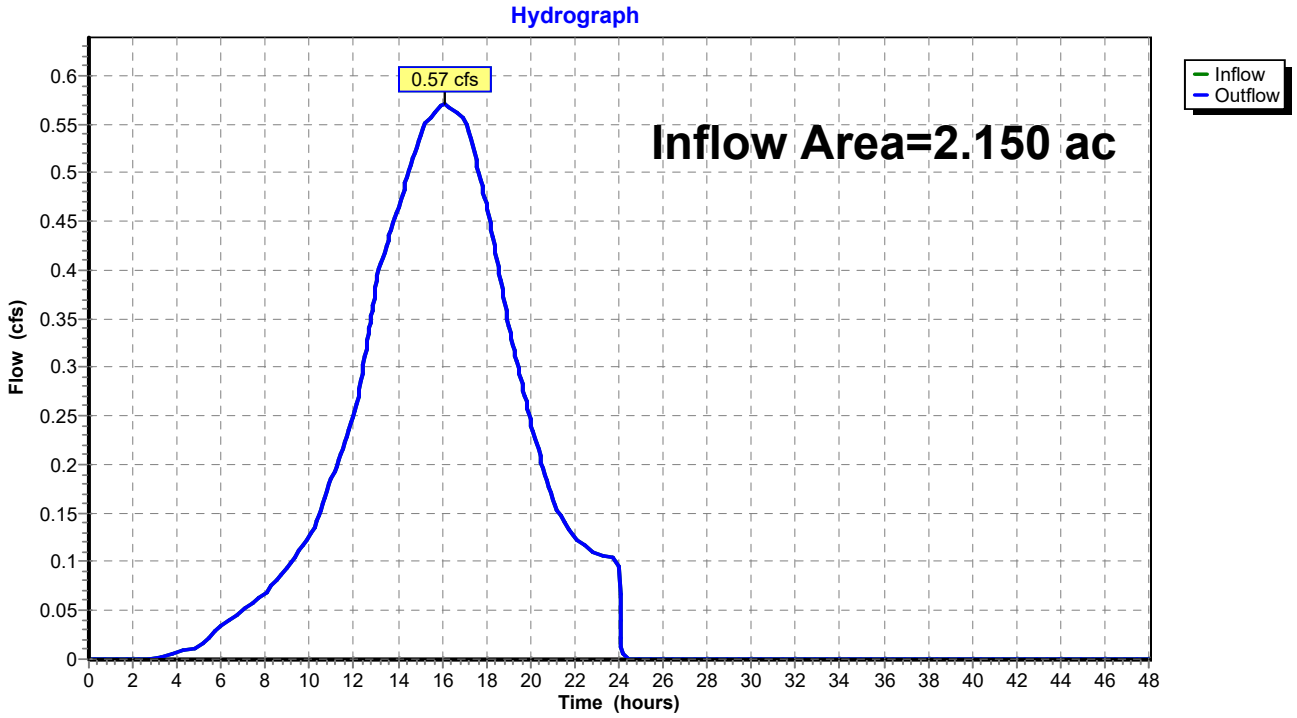


Summary for Reach 36R: City Storm Ostle

Inflow Area = 2.150 ac, 36.74% Impervious, Inflow Depth = 2.24" for 2-yr, 24-hr event
Inflow = 0.57 cfs @ 16.09 hrs, Volume= 0.401 af
Outflow = 0.57 cfs @ 16.09 hrs, Volume= 0.401 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 8R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 36R: City Storm Ostle



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment5S: Ex. Area A3 Runoff Area=0.290 ac 65.52% Impervious Runoff Depth=2.02"
Flow Length=224' Tc=5.0 min CN=91 Runoff=2.50 cfs 0.049 af

Subcatchment6S: Ex. Area A2 Runoff Area=0.230 ac 56.52% Impervious Runoff Depth=1.94"
Tc=5.0 min CN=90 Runoff=1.89 cfs 0.037 af

Subcatchment7S: Ex. Area A1 Runoff Area=1.630 ac 28.83% Impervious Runoff Depth=1.48"
Flow Length=484' Tc=5.0 min CN=84 Runoff=9.74 cfs 0.200 af

Subcatchment23S: Ex. Area C1 Runoff Area=3.630 ac 37.74% Impervious Runoff Depth=1.62"
Flow Length=397' Tc=5.5 min CN=86 Runoff=23.54 cfs 0.490 af

Reach 8R: Ostle and 157 Inflow=37.55 cfs 0.776 af
Outflow=37.55 cfs 0.776 af

Reach 36R: City Storm Ostle Inflow=14.10 cfs 0.286 af
Outflow=14.10 cfs 0.286 af

Total Runoff Area = 5.780 ac Runoff Volume = 0.776 af Average Runoff Depth = 1.61"
62.63% Pervious = 3.620 ac 37.37% Impervious = 2.160 ac

Summary for Subcatchment 5S: Ex. Area A3

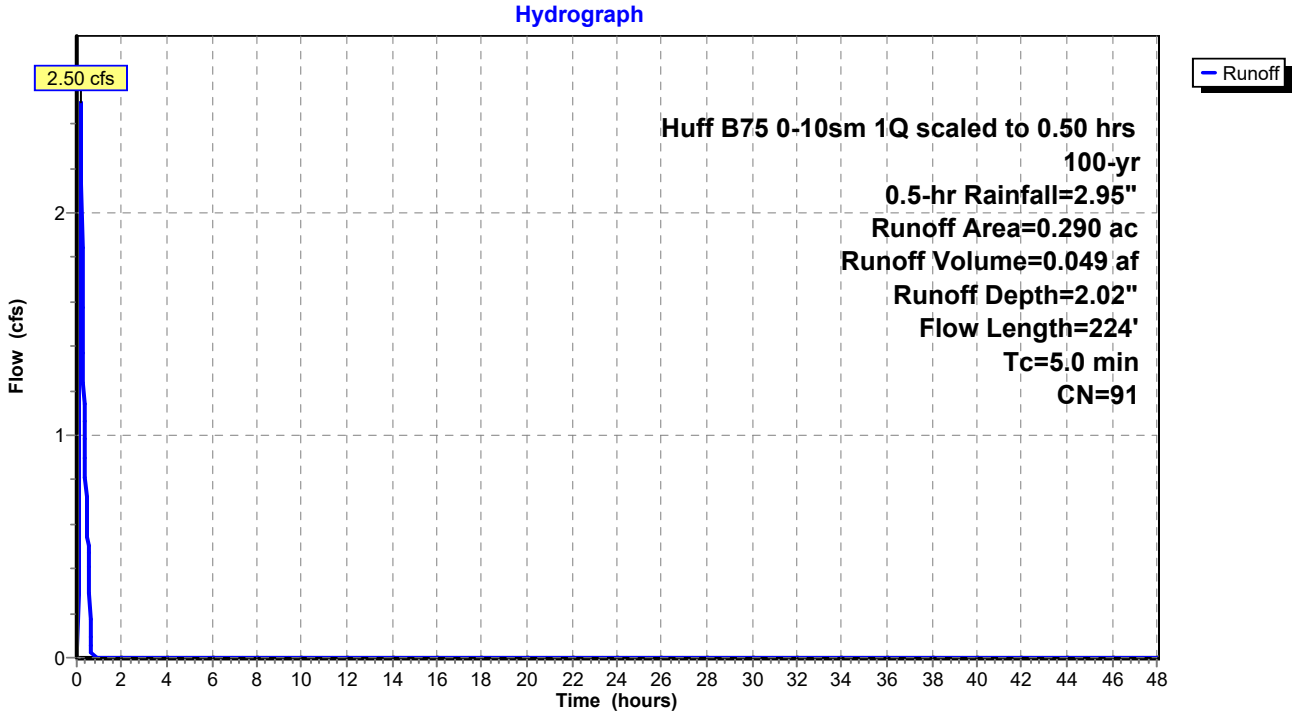
Runoff = 2.50 cfs @ 0.18 hrs, Volume= 0.049 af, Depth= 2.02"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.190	98	Paved parking, HSG C
0.290	91	Weighted Average
0.100		34.48% Pervious Area
0.190		65.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 5S: Ex. Area A3



Summary for Subcatchment 6S: Ex. Area A2

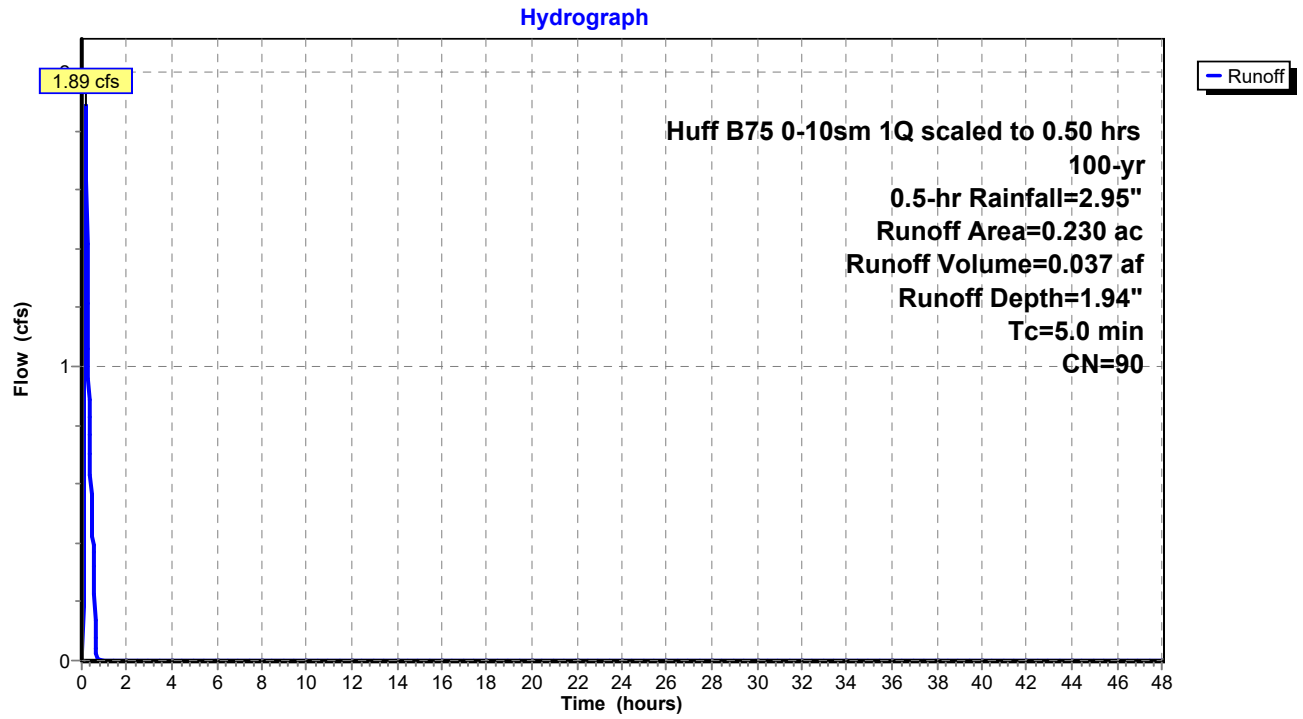
Runoff = 1.89 cfs @ 0.18 hrs, Volume= 0.037 af, Depth= 1.94"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.130	98	Paved parking, HSG C
0.230	90	Weighted Average
0.100		43.48% Pervious Area
0.130		56.52% Impervious Area

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

Subcatchment 6S: Ex. Area A2



Summary for Subcatchment 7S: Ex. Area A1

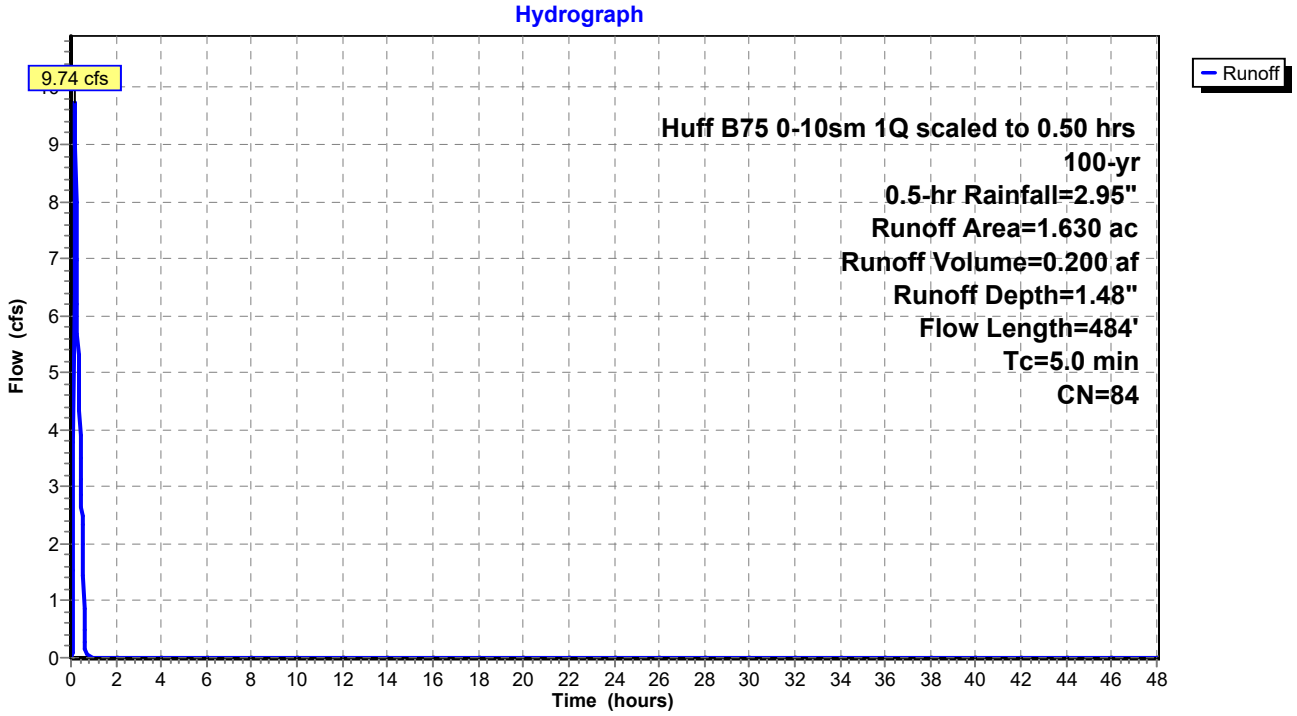
Runoff = 9.74 cfs @ 0.19 hrs, Volume= 0.200 af, Depth= 1.48"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.160	79	50-75% Grass cover, Fair, HSG C
0.470	98	Paved parking, HSG C
1.630	84	Weighted Average
1.160		71.17% Pervious Area
0.470		28.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: Ex. Area A1



Summary for Subcatchment 23S: Ex. Area C1

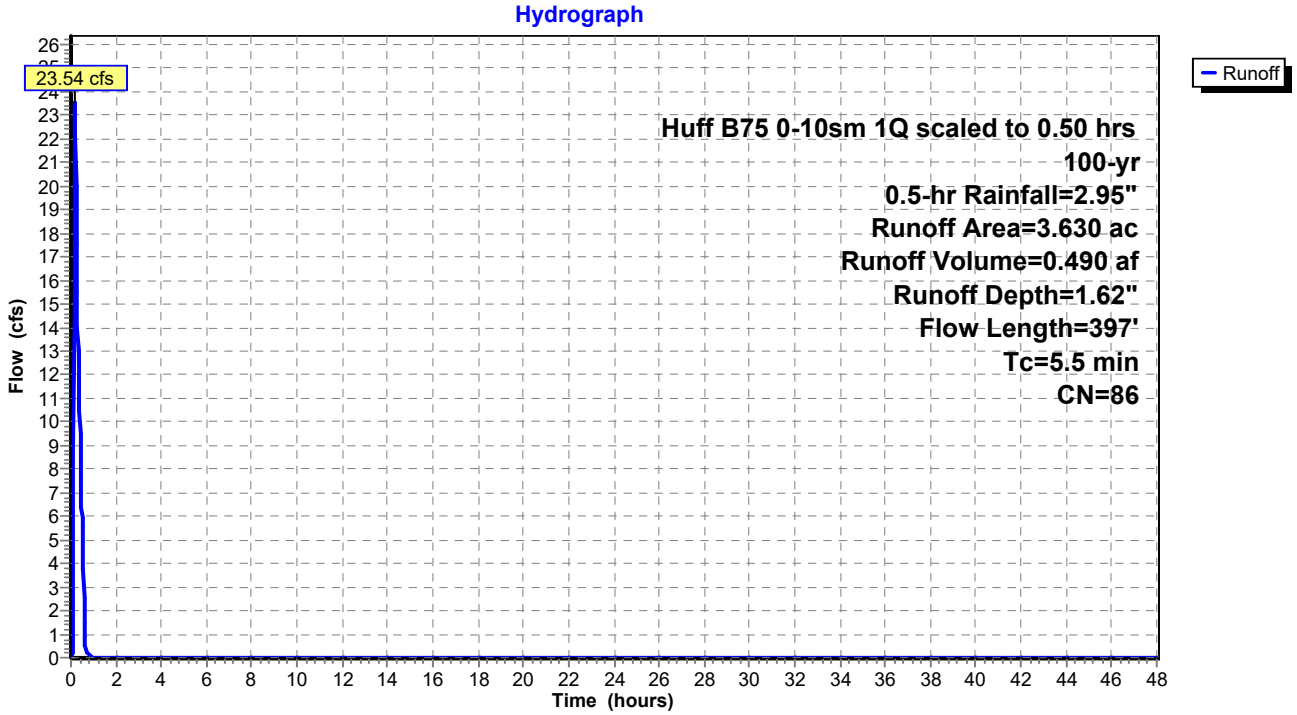
Runoff = 23.54 cfs @ 0.20 hrs, Volume= 0.490 af, Depth= 1.62"
Routed to Reach 8R : Ostle and 157

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.370	98	Paved parking, HSG C
2.260	79	50-75% Grass cover, Fair, HSG C
3.630	86	Weighted Average
2.260		62.26% Pervious Area
1.370		37.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1280	0.38		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
1.2	297	0.0620	4.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
5.5	397	Total			

Subcatchment 23S: Ex. Area C1

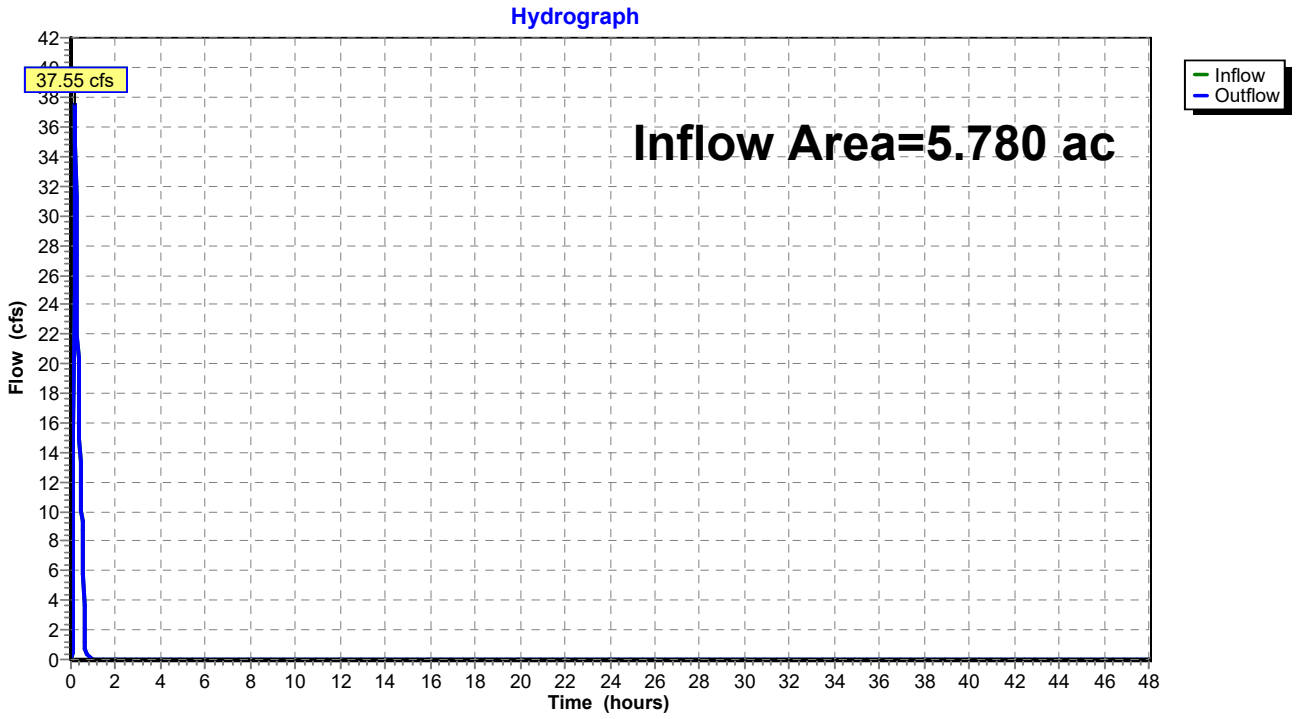


Summary for Reach 8R: Ostle and 157

Inflow Area = 5.780 ac, 37.37% Impervious, Inflow Depth = 1.61" for 100-yr, 0.5-hr event
Inflow = 37.55 cfs @ 0.19 hrs, Volume= 0.776 af
Outflow = 37.55 cfs @ 0.19 hrs, Volume= 0.776 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 8R: Ostle and 157

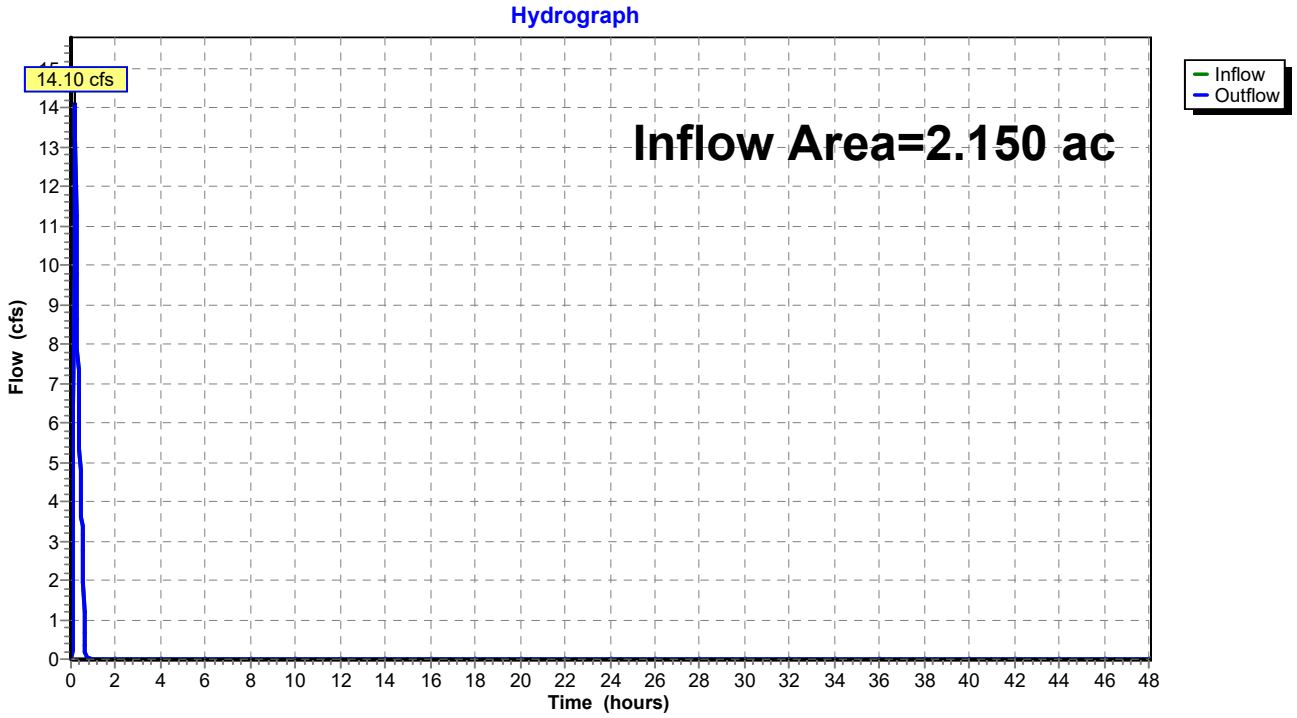


Summary for Reach 36R: City Storm Ostle

Inflow Area = 2.150 ac, 36.74% Impervious, Inflow Depth = 1.60" for 100-yr, 0.5-hr event
Inflow = 14.10 cfs @ 0.19 hrs, Volume= 0.286 af
Outflow = 14.10 cfs @ 0.19 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 8R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 36R: City Storm Ostle



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment5S: Ex. Area A3 Runoff Area=0.290 ac 65.52% Impervious Runoff Depth=6.88"
Flow Length=224' Tc=5.0 min CN=91 Runoff=0.20 cfs 0.166 af

Subcatchment6S: Ex. Area A2 Runoff Area=0.230 ac 56.52% Impervious Runoff Depth=6.77"
Tc=5.0 min CN=90 Runoff=0.16 cfs 0.130 af

Subcatchment7S: Ex. Area A1 Runoff Area=1.630 ac 28.83% Impervious Runoff Depth=6.06"
Flow Length=484' Tc=5.0 min CN=84 Runoff=1.08 cfs 0.823 af

Subcatchment23S: Ex. Area C1 Runoff Area=3.630 ac 37.74% Impervious Runoff Depth=6.29"
Flow Length=397' Tc=5.5 min CN=86 Runoff=2.44 cfs 1.904 af

Reach 8R: Ostle and 157 Inflow=3.88 cfs 3.022 af
Outflow=3.88 cfs 3.022 af

Reach 36R: City Storm Ostle Inflow=1.44 cfs 1.119 af
Outflow=1.44 cfs 1.119 af

Total Runoff Area = 5.780 ac Runoff Volume = 3.022 af Average Runoff Depth = 6.27"
62.63% Pervious = 3.620 ac 37.37% Impervious = 2.160 ac

Summary for Subcatchment 5S: Ex. Area A3

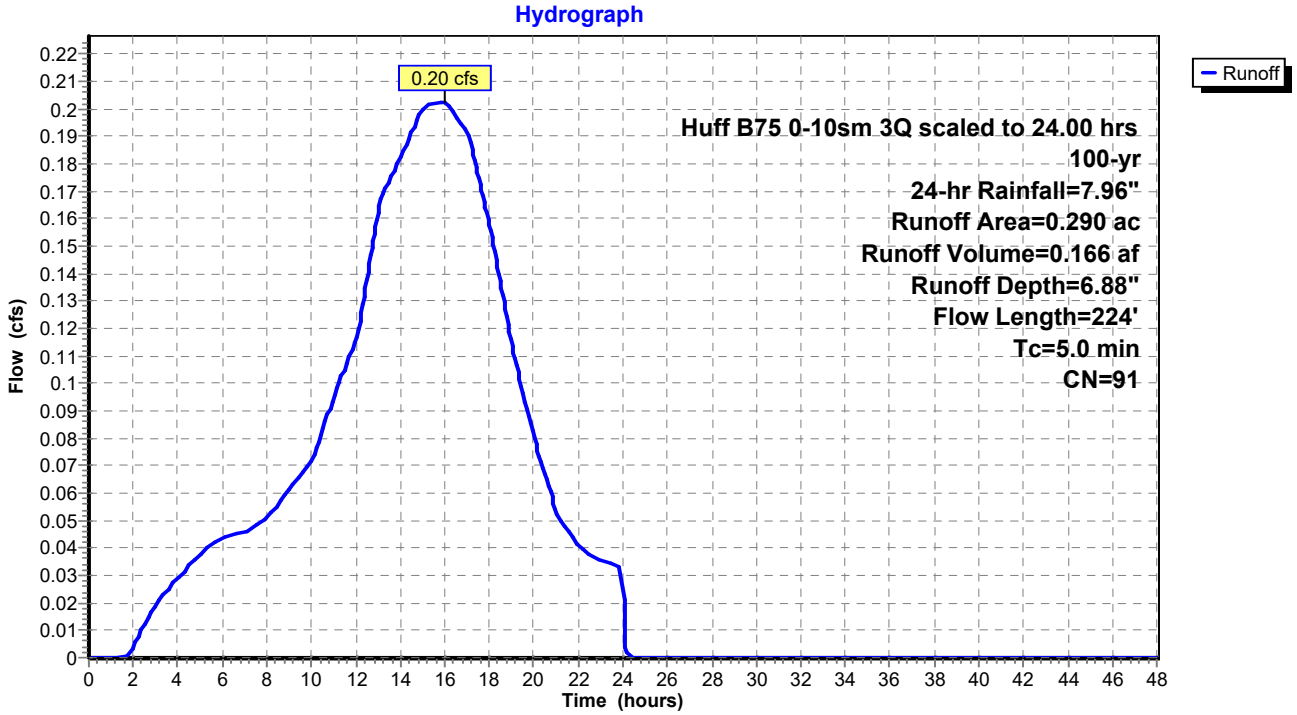
Runoff = 0.20 cfs @ 16.01 hrs, Volume= 0.166 af, Depth= 6.88"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.190	98	Paved parking, HSG C
0.290	91	Weighted Average
0.100		34.48% Pervious Area
0.190		65.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 5S: Ex. Area A3



Summary for Subcatchment 6S: Ex. Area A2

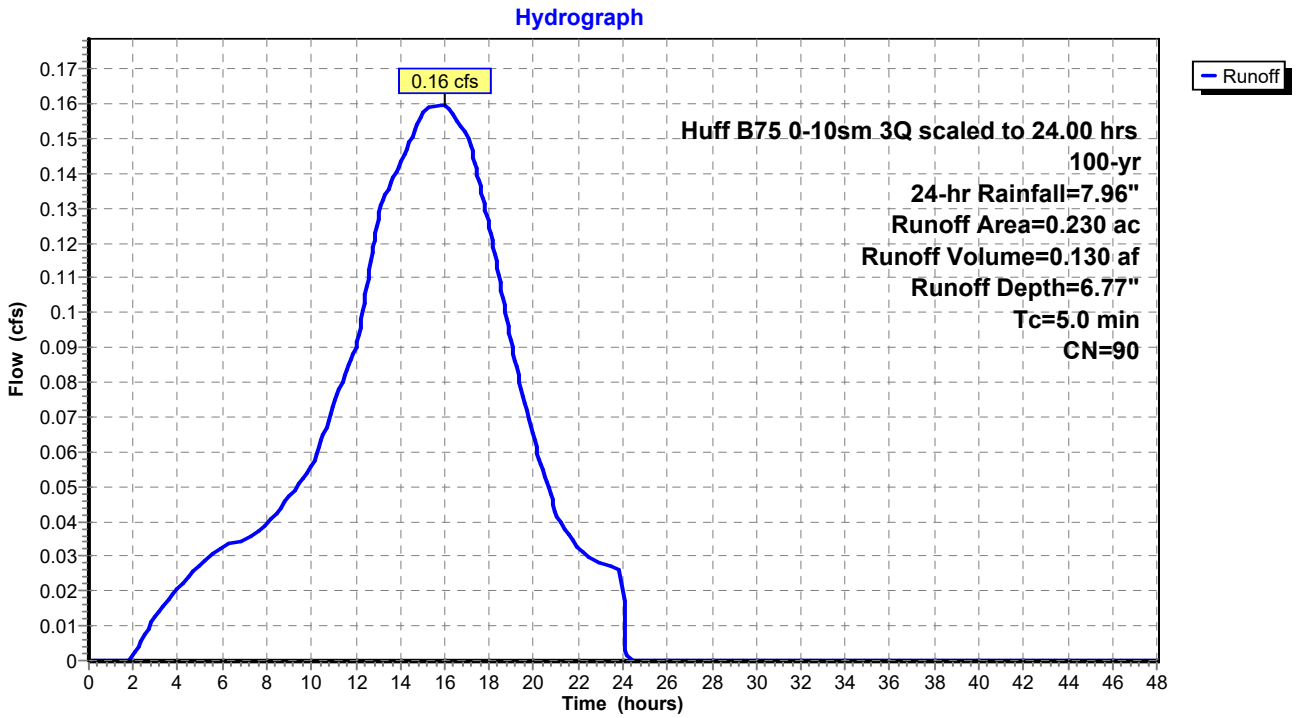
Runoff = 0.16 cfs @ 16.01 hrs, Volume= 0.130 af, Depth= 6.77"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.100	79	50-75% Grass cover, Fair, HSG C
0.130	98	Paved parking, HSG C
0.230	90	Weighted Average
0.100		43.48% Pervious Area
0.130		56.52% Impervious Area

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

Subcatchment 6S: Ex. Area A2



Summary for Subcatchment 7S: Ex. Area A1

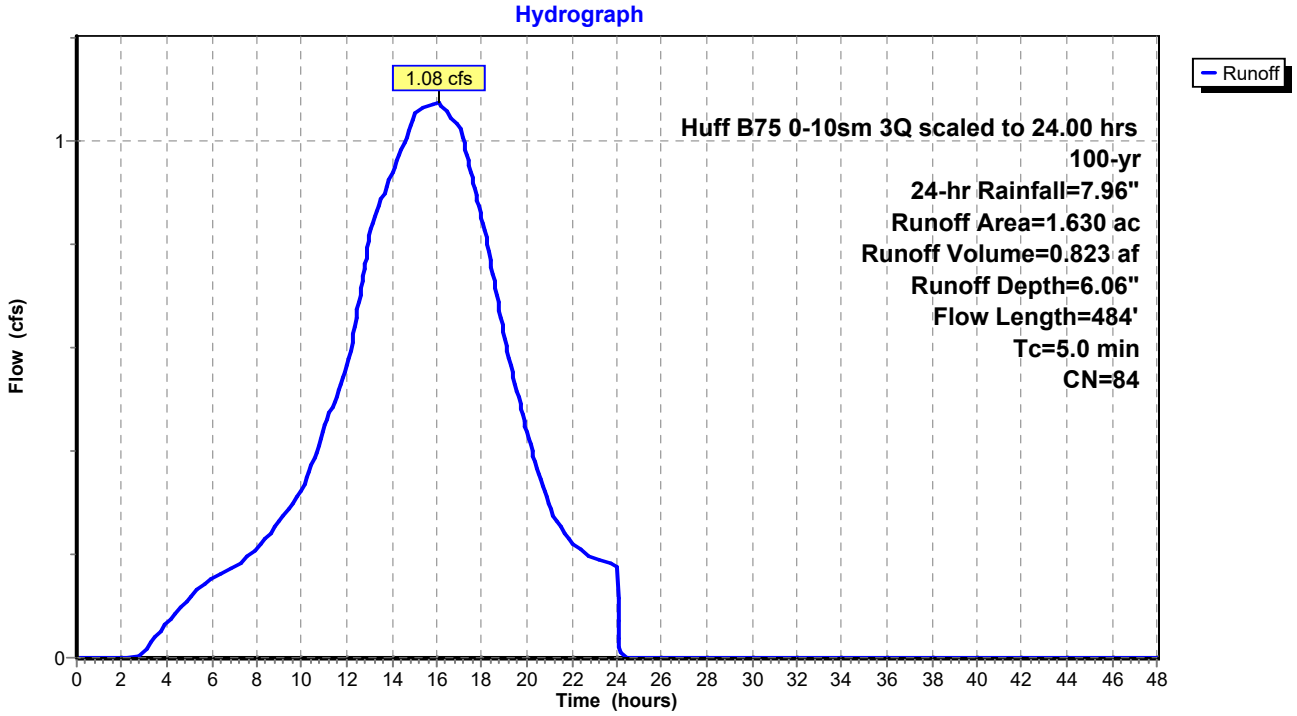
Runoff = 1.08 cfs @ 16.05 hrs, Volume= 0.823 af, Depth= 6.06"
Routed to Reach 36R : City Storm Ostle

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.160	79	50-75% Grass cover, Fair, HSG C
0.470	98	Paved parking, HSG C
1.630	84	Weighted Average
1.160		71.17% Pervious Area
0.470		28.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: Ex. Area A1



Summary for Subcatchment 23S: Ex. Area C1

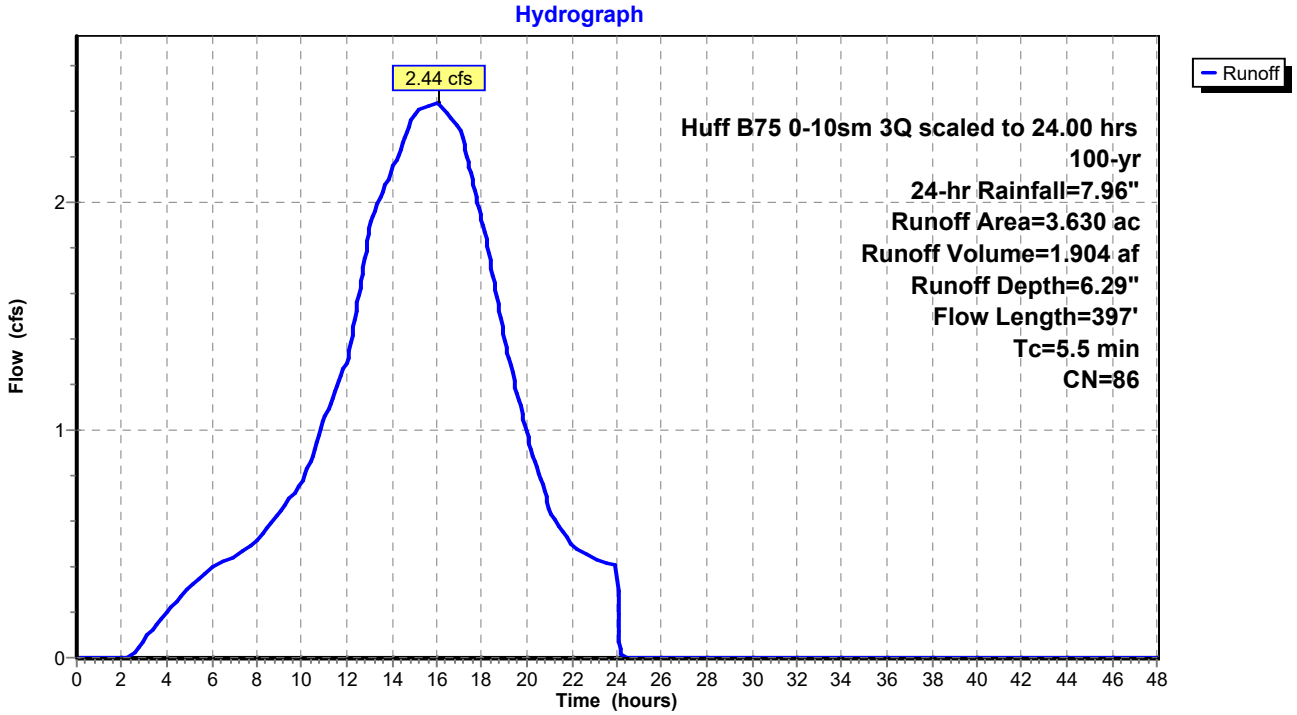
Runoff = 2.44 cfs @ 16.06 hrs, Volume= 1.904 af, Depth= 6.29"
Routed to Reach 8R : Ostle and 157

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.370	98	Paved parking, HSG C
2.260	79	50-75% Grass cover, Fair, HSG C
3.630	86	Weighted Average
2.260		62.26% Pervious Area
1.370		37.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.1280	0.38		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
1.2	297	0.0620	4.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
5.5	397	Total			

Subcatchment 23S: Ex. Area C1

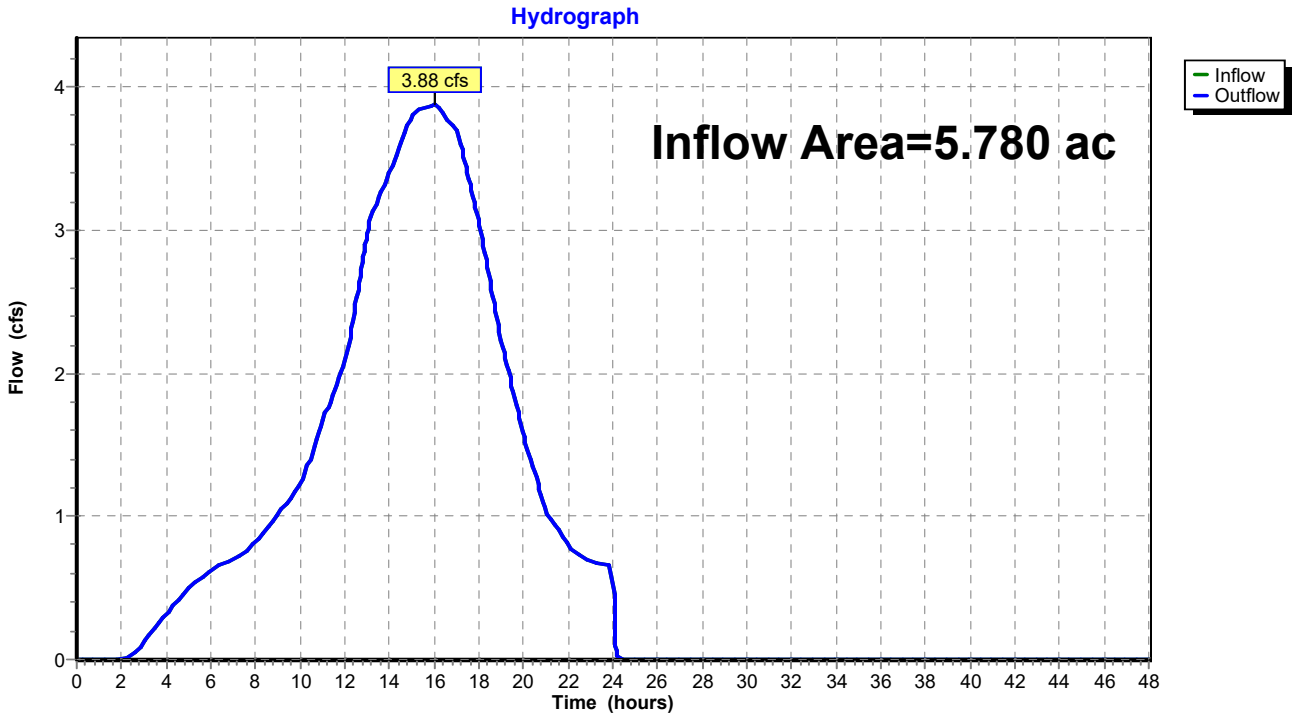


Summary for Reach 8R: Ostle and 157

Inflow Area = 5.780 ac, 37.37% Impervious, Inflow Depth = 6.27" for 100-yr, 24-hr event
Inflow = 3.88 cfs @ 16.05 hrs, Volume= 3.022 af
Outflow = 3.88 cfs @ 16.05 hrs, Volume= 3.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 8R: Ostle and 157

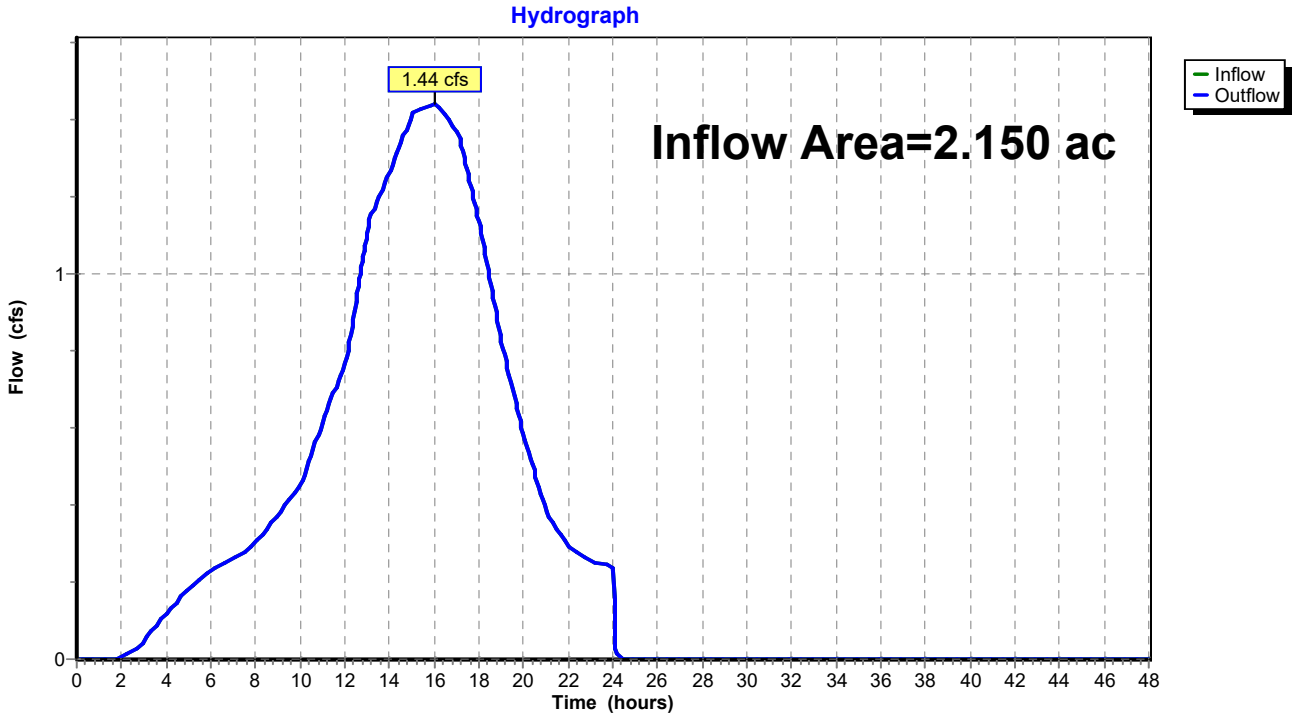


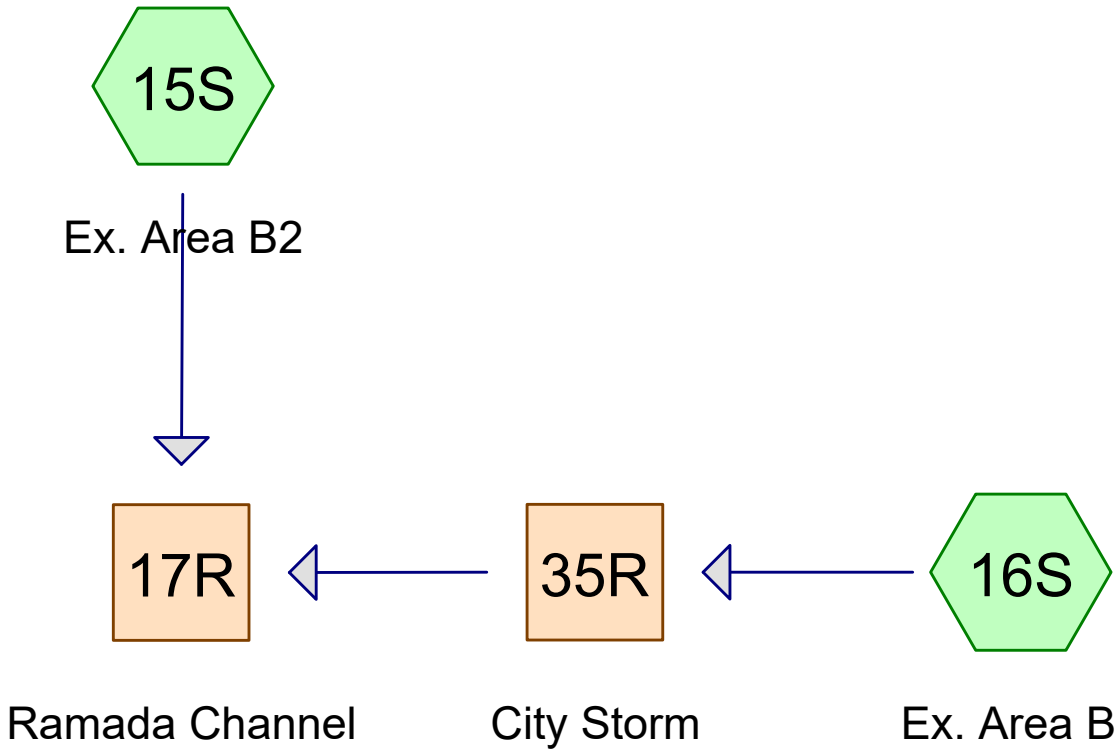
Summary for Reach 36R: City Storm Ostle

Inflow Area = 2.150 ac, 36.74% Impervious, Inflow Depth = 6.24" for 100-yr, 24-hr event
Inflow = 1.44 cfs @ 16.04 hrs, Volume= 1.119 af
Outflow = 1.44 cfs @ 16.04 hrs, Volume= 1.119 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 8R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 36R: City Storm Ostle





Subcat Reach Pond Link

Routing Diagram for 220122.002_Collinsville Landing_Final Plans_Test
Prepared by Oates Associates, Inc, Printed 9/23/2025
HydroCAD® 10.20-6a s/n 03470 © 2024 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.130	79	50-75% Grass cover, Fair, HSG C (15S, 16S)
0.820	98	Paved parking, HSG C (15S, 16S)
9.950	**81**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment15S: Ex. Area B2 Runoff Area=1.040 ac 48.08% Impervious Runoff Depth=0.75"
Flow Length=409' Tc=5.0 min CN=88 Runoff=1.77 cfs 0.065 af

Subcatchment16S: Ex. Area B1 Runoff Area=8.910 ac 3.59% Impervious Runoff Depth=0.41"
Flow Length=1,457' Tc=10.4 min CN=80 Runoff=6.32 cfs 0.301 af

Reach 17R: Ramada Channel Inflow=7.53 cfs 0.366 af
Outflow=7.53 cfs 0.366 af

Reach 35R: City Storm Inflow=6.32 cfs 0.301 af
Outflow=6.32 cfs 0.301 af

Total Runoff Area = 9.950 ac Runoff Volume = 0.366 af Average Runoff Depth = 0.44"
91.76% Pervious = 9.130 ac 8.24% Impervious = 0.820 ac

Summary for Subcatchment 15S: Ex. Area B2

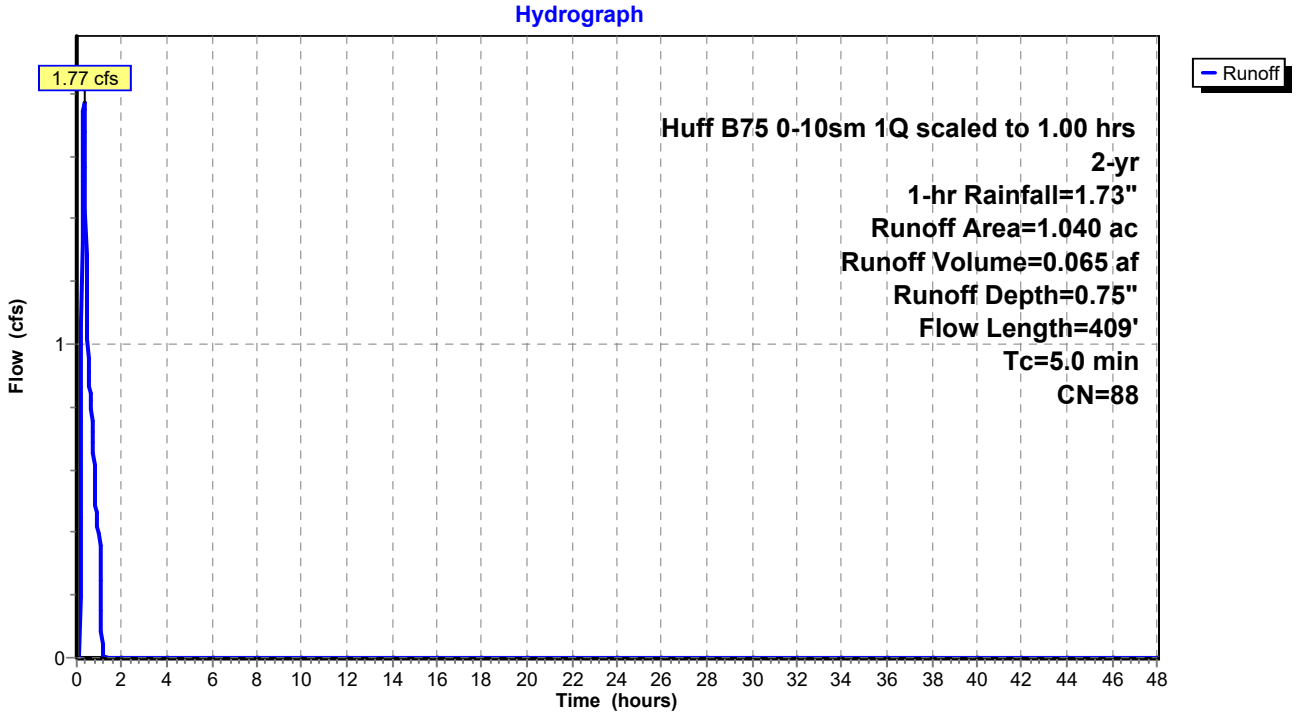
Runoff = 1.77 cfs @ 0.32 hrs, Volume= 0.065 af, Depth= 0.75"
Routed to Reach 17R : Ramada Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 2-yr, 1-hr Rainfall=1.73"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.540	79	50-75% Grass cover, Fair, HSG C
1.040	88	Weighted Average
0.540		51.92% Pervious Area
0.500		48.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 15S: Ex. Area B2



Summary for Subcatchment 16S: Ex. Area B1

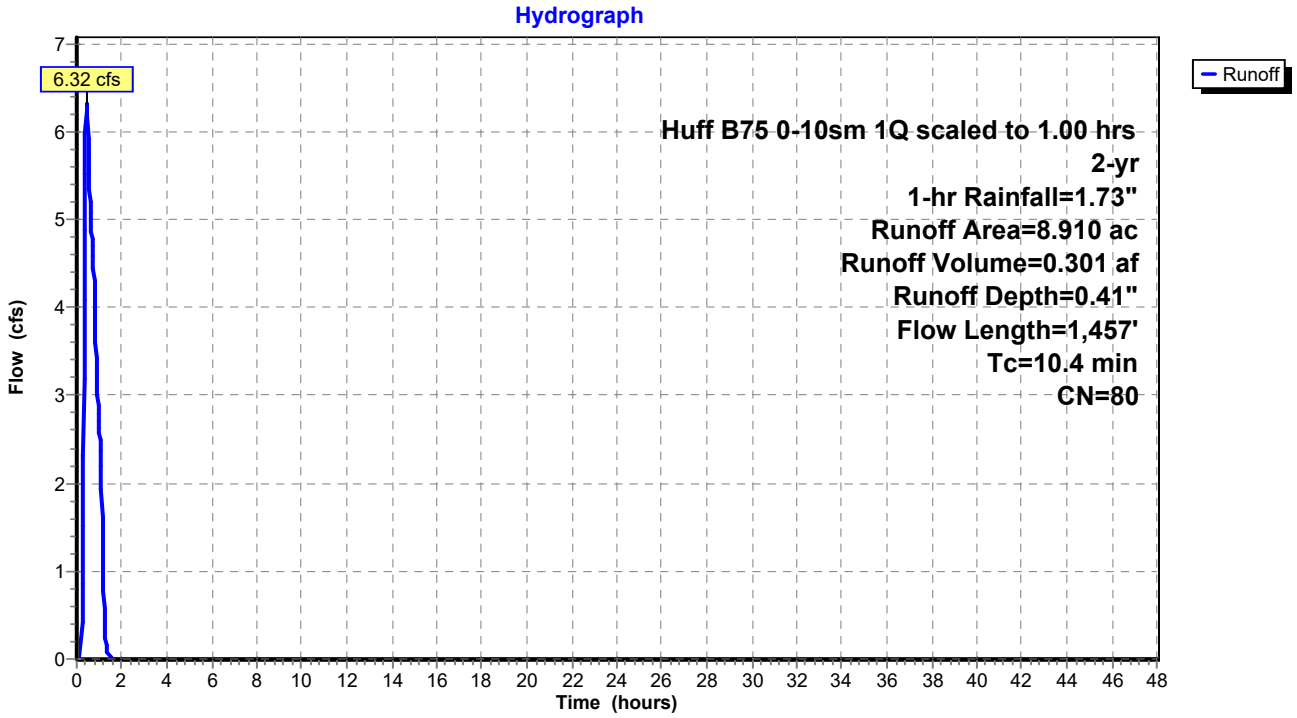
Runoff = 6.32 cfs @ 0.44 hrs, Volume= 0.301 af, Depth= 0.41"
Routed to Reach 35R : City Storm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 2-yr, 1-hr Rainfall=1.73"

Area (ac)	CN	Description
8.590	79	50-75% Grass cover, Fair, HSG C
0.320	98	Paved parking, HSG C
8.910	80	Weighted Average
8.590		96.41% Pervious Area
0.320		3.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 16S: Ex. Area B1

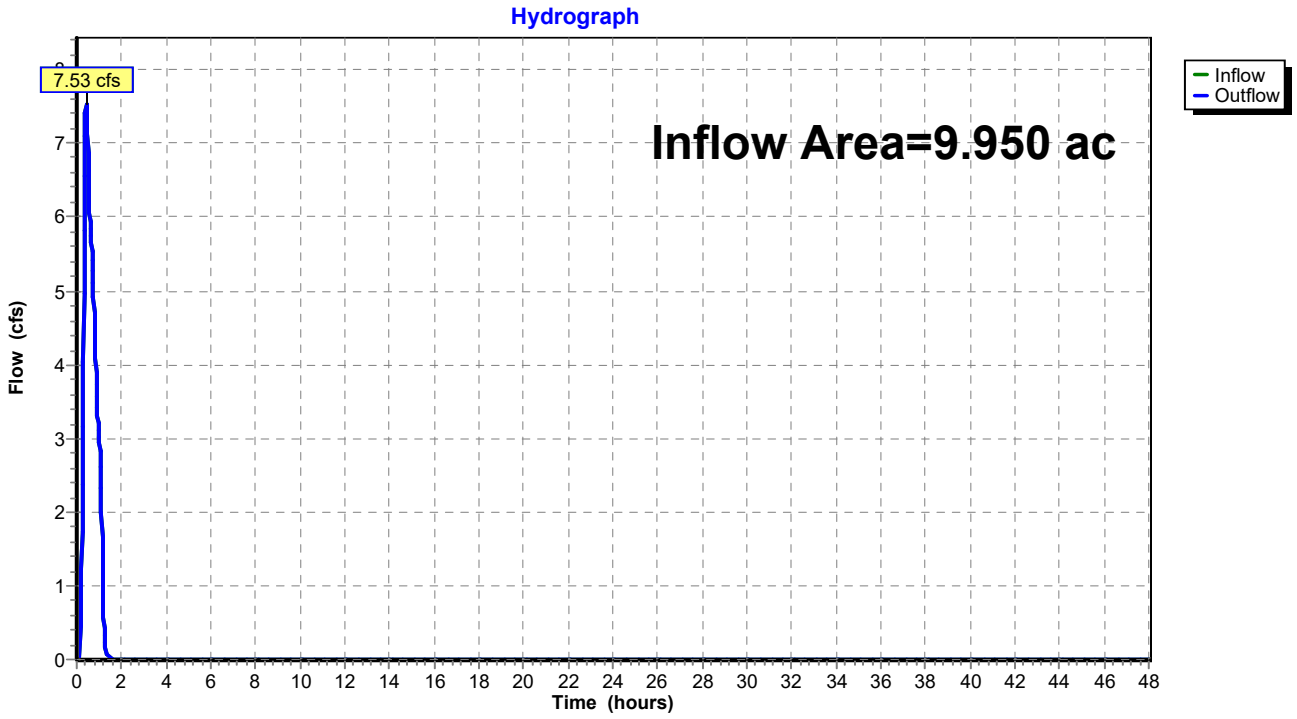


Summary for Reach 17R: Ramada Channel

Inflow Area = 9.950 ac, 8.24% Impervious, Inflow Depth = 0.44" for 2-yr, 1-hr event
Inflow = 7.53 cfs @ 0.43 hrs, Volume= 0.366 af
Outflow = 7.53 cfs @ 0.43 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 17R: Ramada Channel

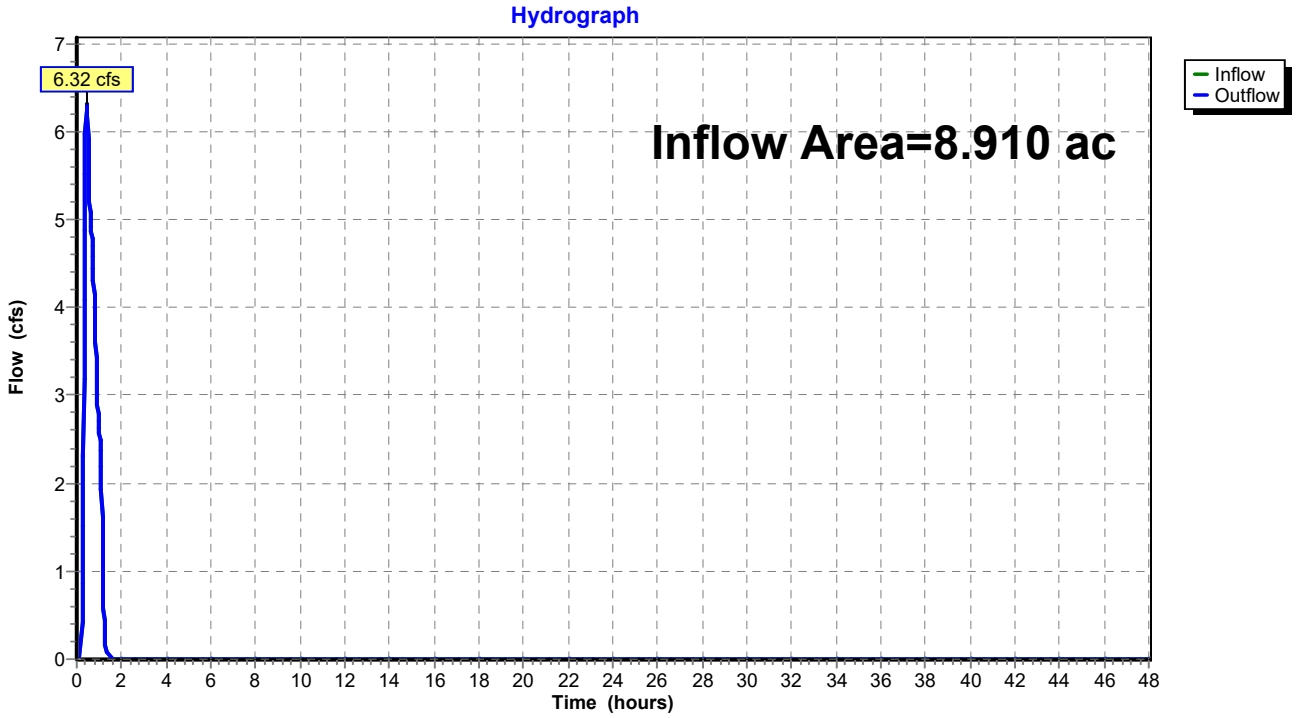


Summary for Reach 35R: City Storm

Inflow Area = 8.910 ac, 3.59% Impervious, Inflow Depth = 0.41" for 2-yr, 1-hr event
Inflow = 6.32 cfs @ 0.44 hrs, Volume= 0.301 af
Outflow = 6.32 cfs @ 0.44 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 17R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 35R: City Storm



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment15S: Ex. Area B2 Runoff Area=1.040 ac 48.08% Impervious Runoff Depth=2.44"
Flow Length=409' Tc=5.0 min CN=88 Runoff=0.29 cfs 0.212 af

Subcatchment16S: Ex. Area B1 Runoff Area=8.910 ac 3.59% Impervious Runoff Depth=1.79"
Flow Length=1,457' Tc=10.4 min CN=80 Runoff=2.02 cfs 1.328 af

Reach 17R: Ramada Channel Inflow=2.31 cfs 1.540 af
Outflow=2.31 cfs 1.540 af

Reach 35R: City Storm Inflow=2.02 cfs 1.328 af
Outflow=2.02 cfs 1.328 af

Total Runoff Area = 9.950 ac Runoff Volume = 1.540 af Average Runoff Depth = 1.86"
91.76% Pervious = 9.130 ac 8.24% Impervious = 0.820 ac

Summary for Subcatchment 15S: Ex. Area B2

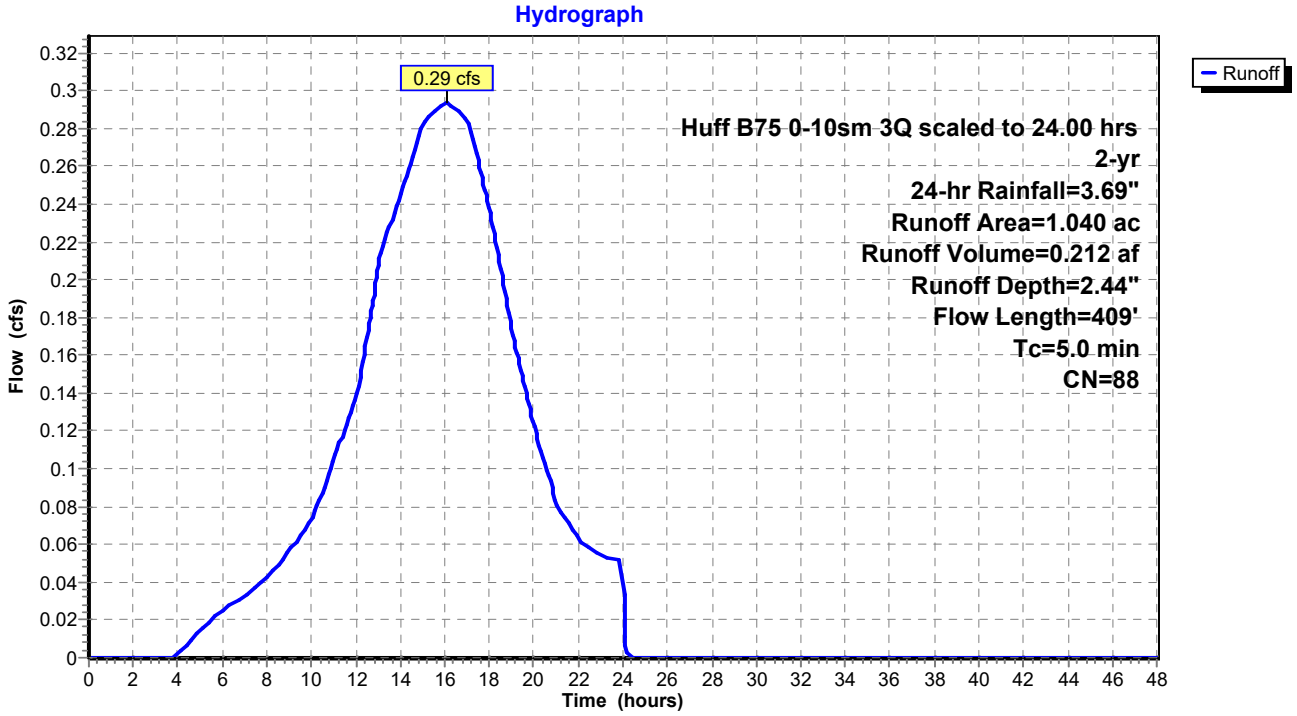
Runoff = 0.29 cfs @ 16.07 hrs, Volume= 0.212 af, Depth= 2.44"
Routed to Reach 17R : Ramada Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.540	79	50-75% Grass cover, Fair, HSG C
1.040	88	Weighted Average
0.540		51.92% Pervious Area
0.500		48.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 15S: Ex. Area B2



Summary for Subcatchment 16S: Ex. Area B1

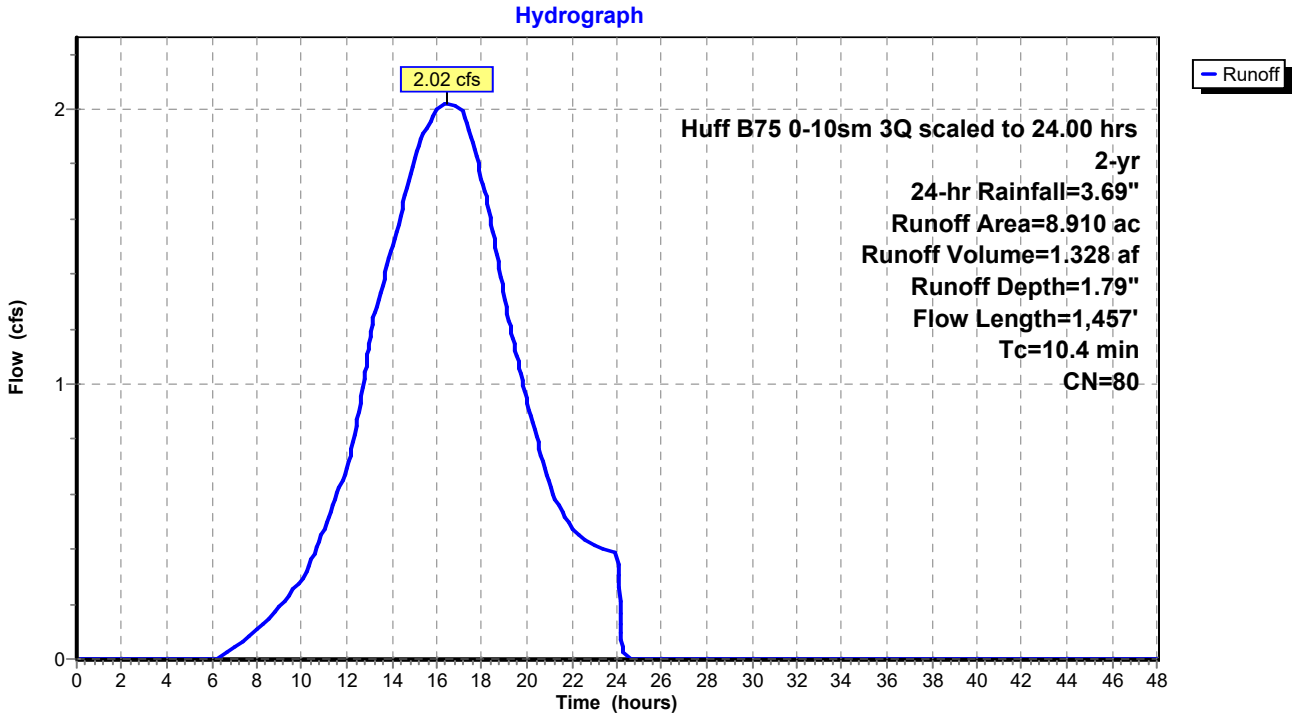
Runoff = 2.02 cfs @ 16.41 hrs, Volume= 1.328 af, Depth= 1.79"
Routed to Reach 35R : City Storm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
8.590	79	50-75% Grass cover, Fair, HSG C
0.320	98	Paved parking, HSG C
8.910	80	Weighted Average
8.590		96.41% Pervious Area
0.320		3.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 16S: Ex. Area B1

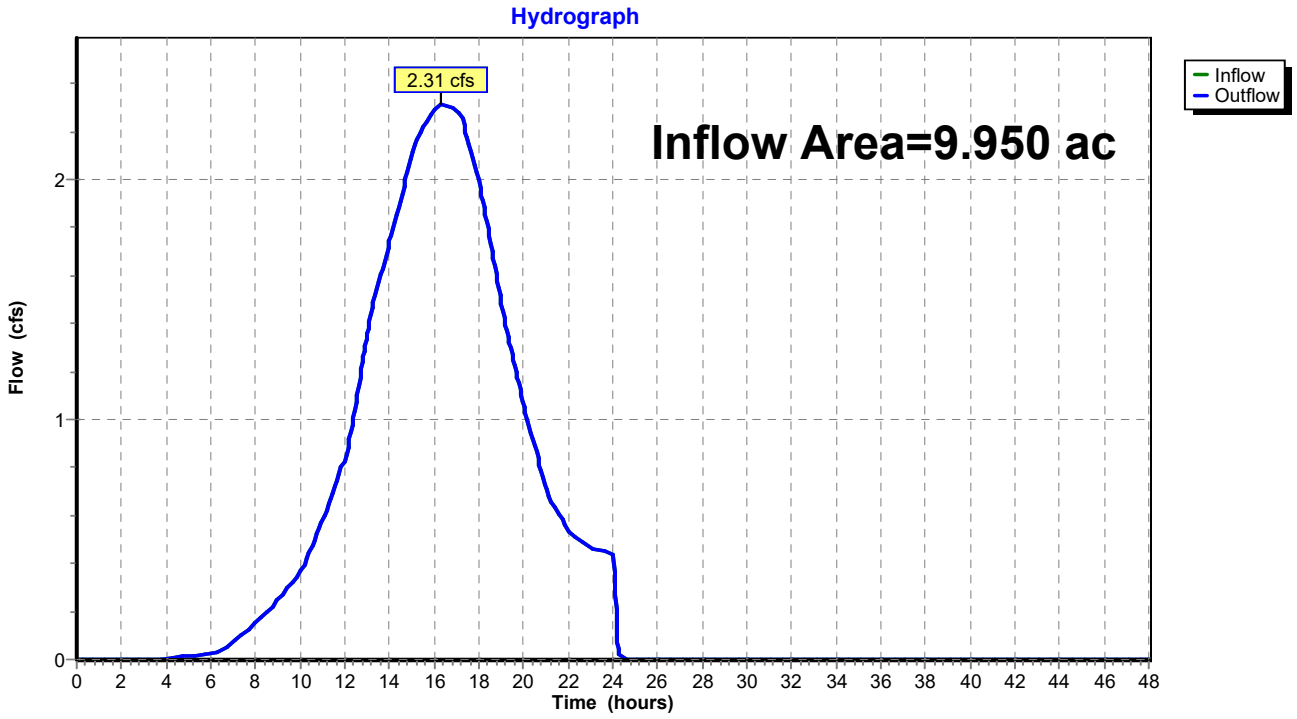


Summary for Reach 17R: Ramada Channel

Inflow Area = 9.950 ac, 8.24% Impervious, Inflow Depth = 1.86" for 2-yr, 24-hr event
Inflow = 2.31 cfs @ 16.28 hrs, Volume= 1.540 af
Outflow = 2.31 cfs @ 16.28 hrs, Volume= 1.540 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 17R: Ramada Channel

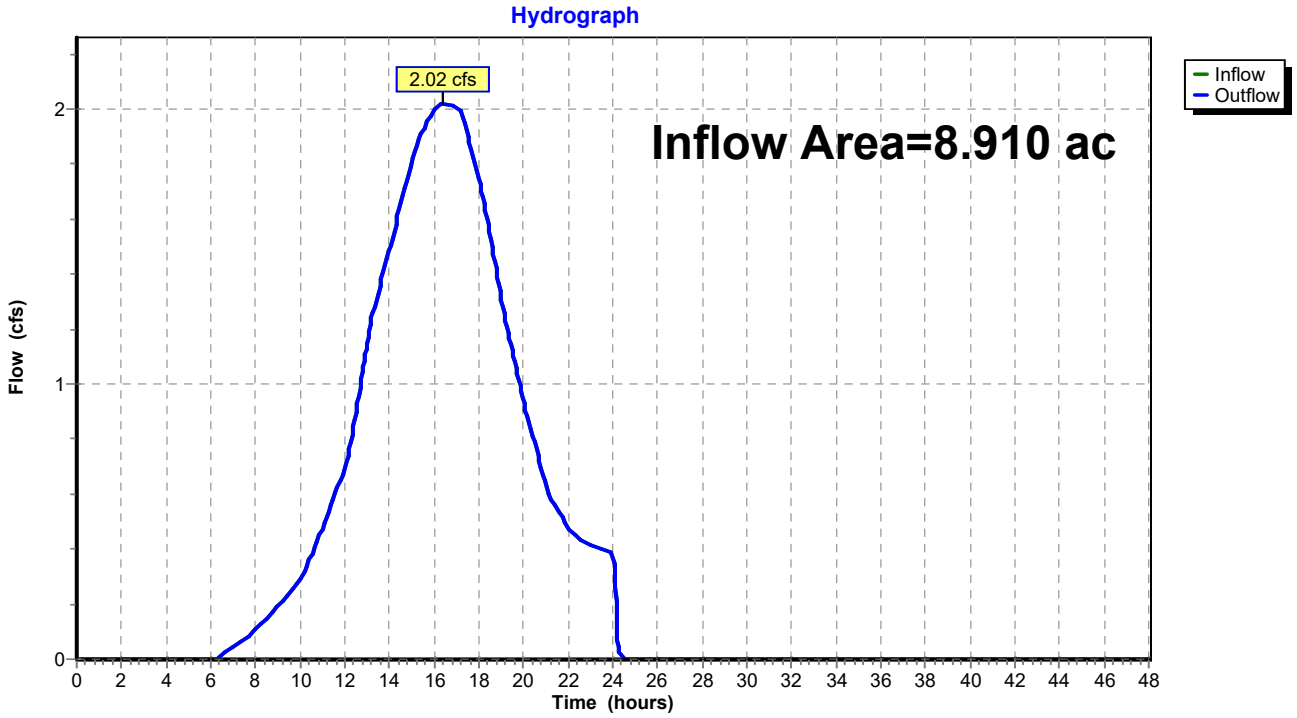


Summary for Reach 35R: City Storm

Inflow Area = 8.910 ac, 3.59% Impervious, Inflow Depth = 1.79" for 2-yr, 24-hr event
Inflow = 2.02 cfs @ 16.41 hrs, Volume= 1.328 af
Outflow = 2.02 cfs @ 16.41 hrs, Volume= 1.328 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 17R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 35R: City Storm



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment15S: Ex. Area B2 Runoff Area=1.040 ac 48.08% Impervious Runoff Depth=2.49"
Flow Length=409' Tc=5.0 min CN=88 Runoff=6.17 cfs 0.216 af

Subcatchment16S: Ex. Area B1 Runoff Area=8.910 ac 3.59% Impervious Runoff Depth=1.83"
Flow Length=1,457' Tc=10.4 min CN=80 Runoff=32.66 cfs 1.358 af

Reach 17R: Ramada Channel Inflow=37.33 cfs 1.574 af
Outflow=37.33 cfs 1.574 af

Reach 35R: City Storm Inflow=32.66 cfs 1.358 af
Outflow=32.66 cfs 1.358 af

Total Runoff Area = 9.950 ac Runoff Volume = 1.574 af Average Runoff Depth = 1.90"
91.76% Pervious = 9.130 ac 8.24% Impervious = 0.820 ac

Summary for Subcatchment 15S: Ex. Area B2

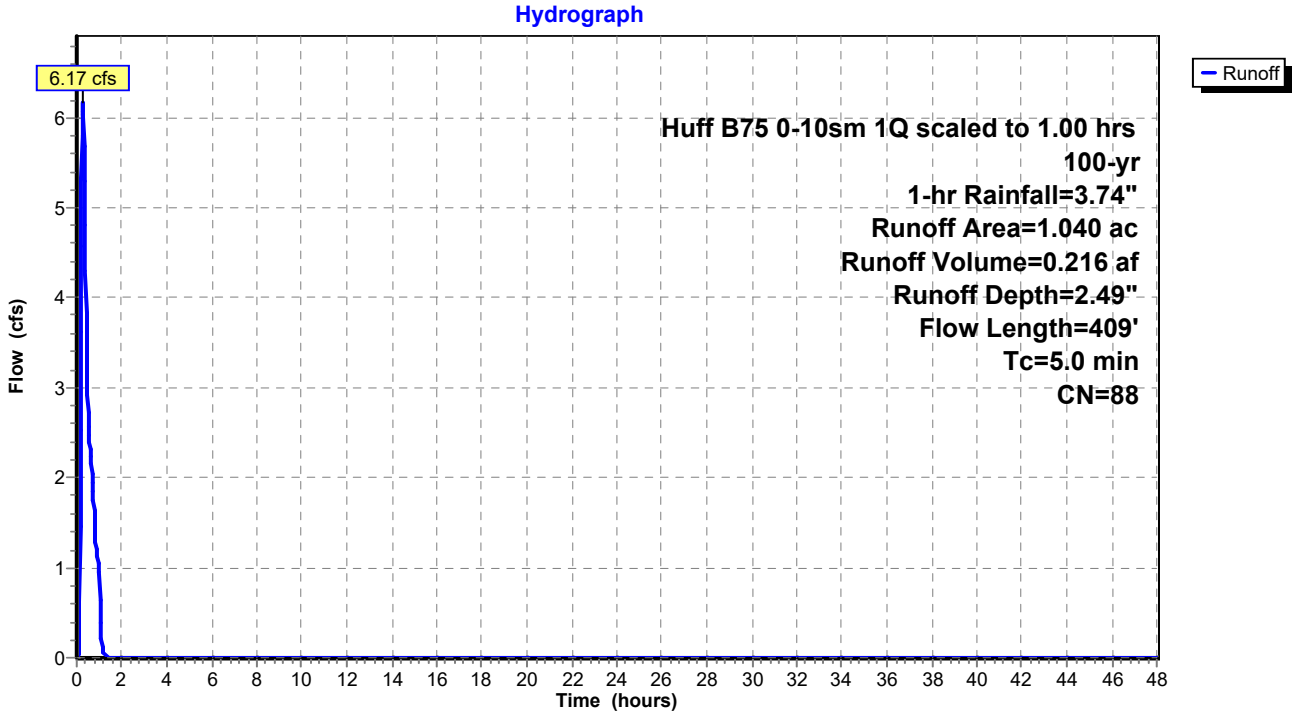
Runoff = 6.17 cfs @ 0.28 hrs, Volume= 0.216 af, Depth= 2.49"
Routed to Reach 17R : Ramada Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.540	79	50-75% Grass cover, Fair, HSG C
1.040	88	Weighted Average
0.540		51.92% Pervious Area
0.500		48.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 15S: Ex. Area B2



Summary for Subcatchment 16S: Ex. Area B1

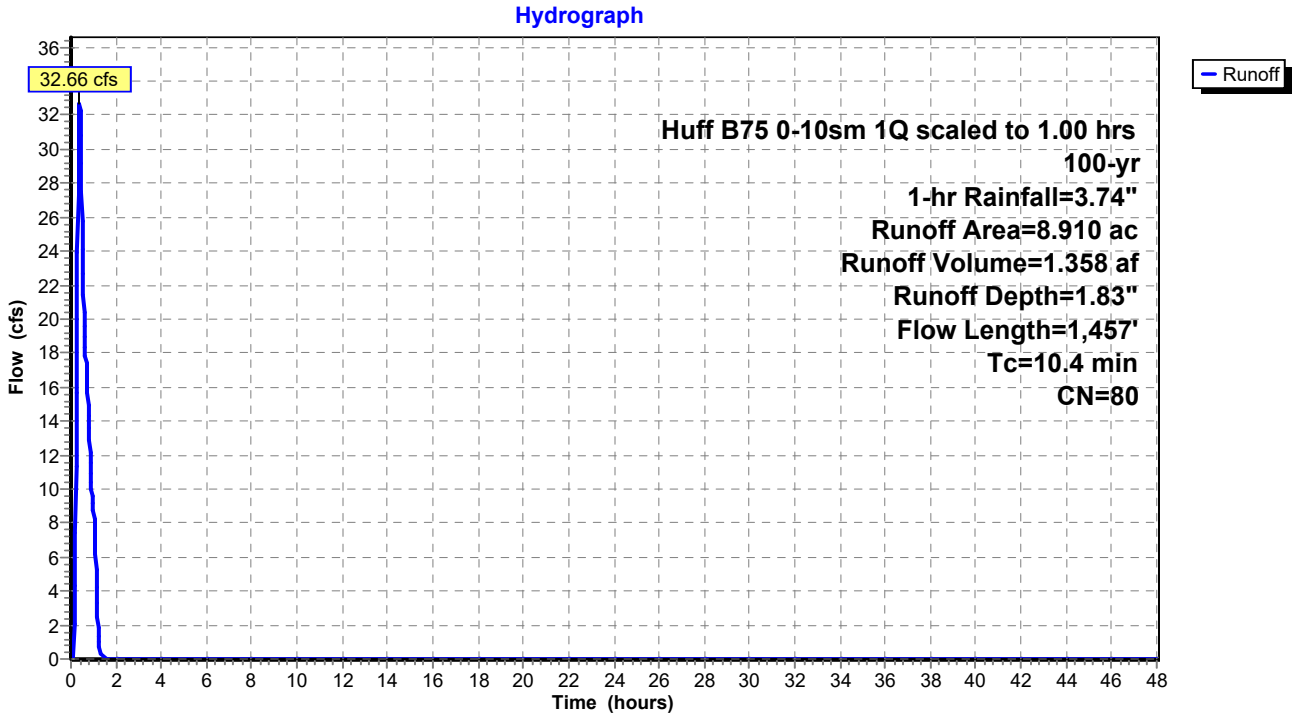
Runoff = 32.66 cfs @ 0.39 hrs, Volume= 1.358 af, Depth= 1.83"
Routed to Reach 35R : City Storm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
8.590	79	50-75% Grass cover, Fair, HSG C
0.320	98	Paved parking, HSG C
8.910	80	Weighted Average
8.590		96.41% Pervious Area
0.320		3.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 16S: Ex. Area B1

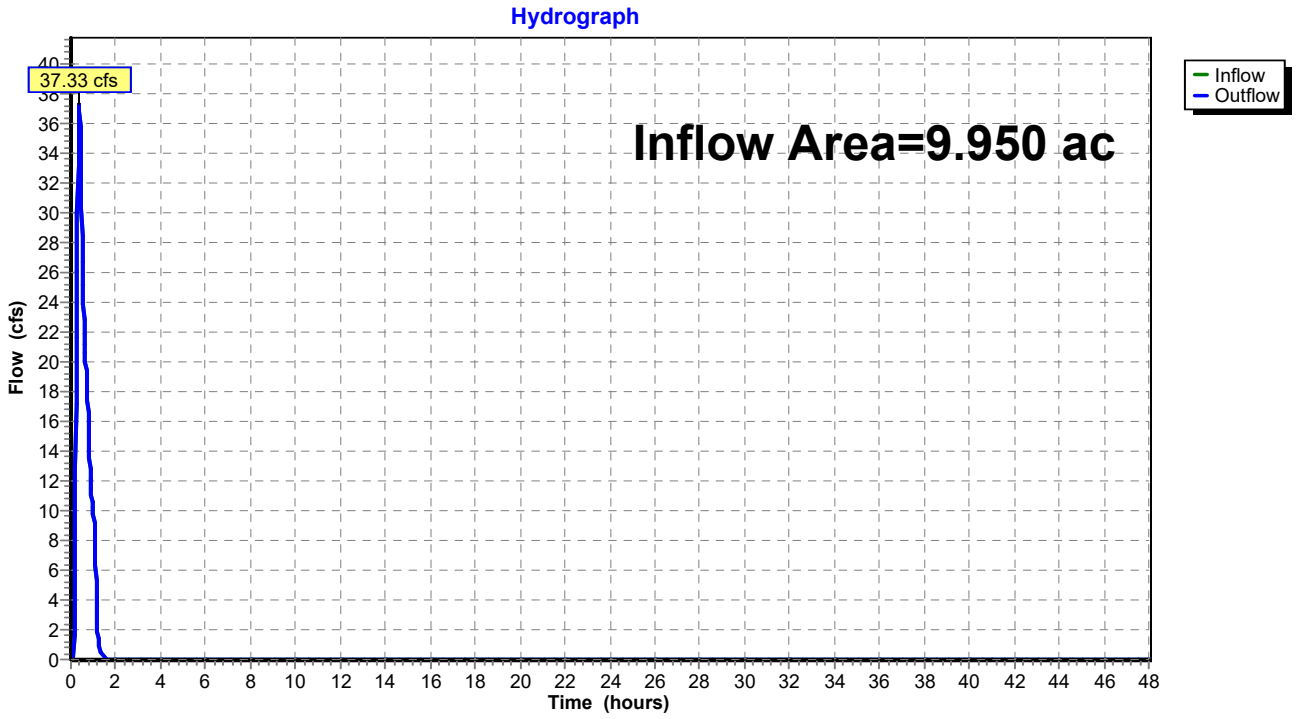


Summary for Reach 17R: Ramada Channel

Inflow Area = 9.950 ac, 8.24% Impervious, Inflow Depth = 1.90" for 100-yr, 1-hr event
Inflow = 37.33 cfs @ 0.38 hrs, Volume= 1.574 af
Outflow = 37.33 cfs @ 0.38 hrs, Volume= 1.574 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 17R: Ramada Channel

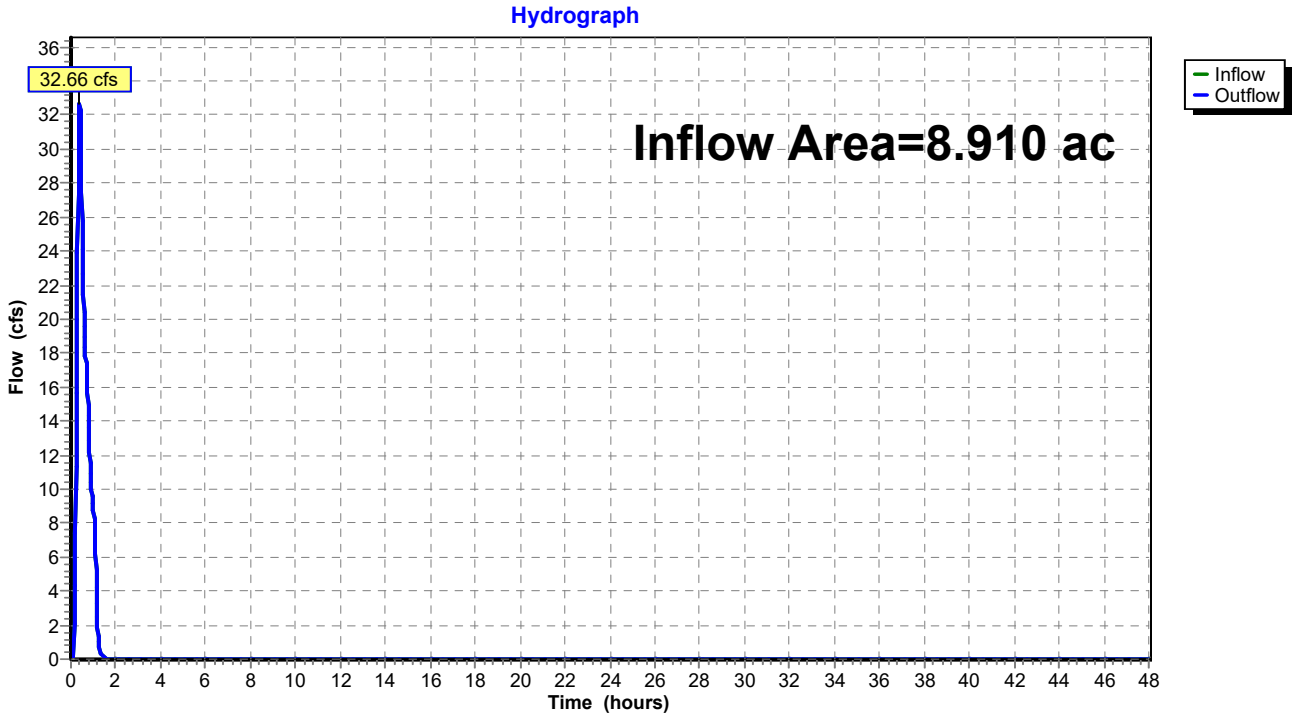


Summary for Reach 35R: City Storm

Inflow Area = 8.910 ac, 3.59% Impervious, Inflow Depth = 1.83" for 100-yr, 1-hr event
Inflow = 32.66 cfs @ 0.39 hrs, Volume= 1.358 af
Outflow = 32.66 cfs @ 0.39 hrs, Volume= 1.358 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 17R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 35R: City Storm



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment15S: Ex. Area B2 Runoff Area=1.040 ac 48.08% Impervious Runoff Depth=6.53"
Flow Length=409' Tc=5.0 min CN=88 Runoff=0.71 cfs 0.566 af

Subcatchment16S: Ex. Area B1 Runoff Area=8.910 ac 3.59% Impervious Runoff Depth=5.59"
Flow Length=1,457' Tc=10.4 min CN=80 Runoff=5.62 cfs 4.149 af

Reach 17R: Ramada Channel Inflow=6.33 cfs 4.715 af
Outflow=6.33 cfs 4.715 af

Reach 35R: City Storm Inflow=5.62 cfs 4.149 af
Outflow=5.62 cfs 4.149 af

Total Runoff Area = 9.950 ac Runoff Volume = 4.715 af Average Runoff Depth = 5.69"
91.76% Pervious = 9.130 ac 8.24% Impervious = 0.820 ac

Summary for Subcatchment 15S: Ex. Area B2

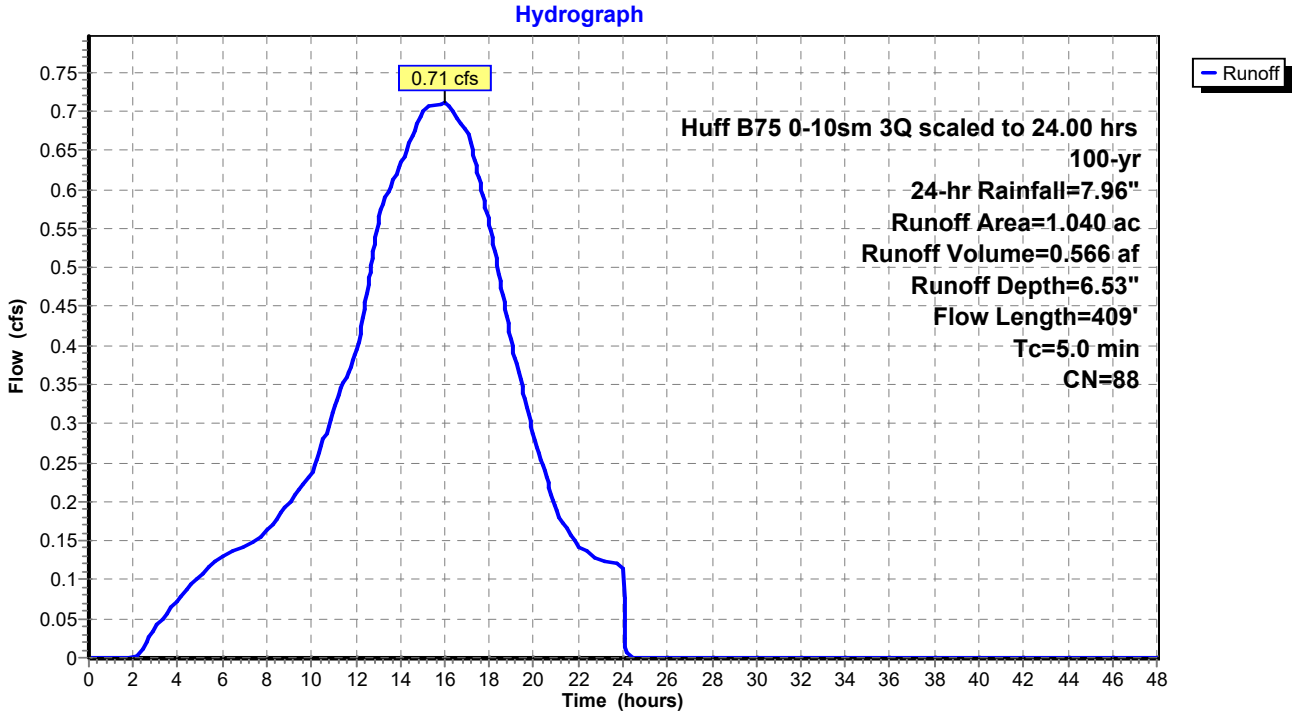
Runoff = 0.71 cfs @ 16.03 hrs, Volume= 0.566 af, Depth= 6.53"
Routed to Reach 17R : Ramada Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.540	79	50-75% Grass cover, Fair, HSG C
1.040	88	Weighted Average
0.540		51.92% Pervious Area
0.500		48.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 15S: Ex. Area B2



Summary for Subcatchment 16S: Ex. Area B1

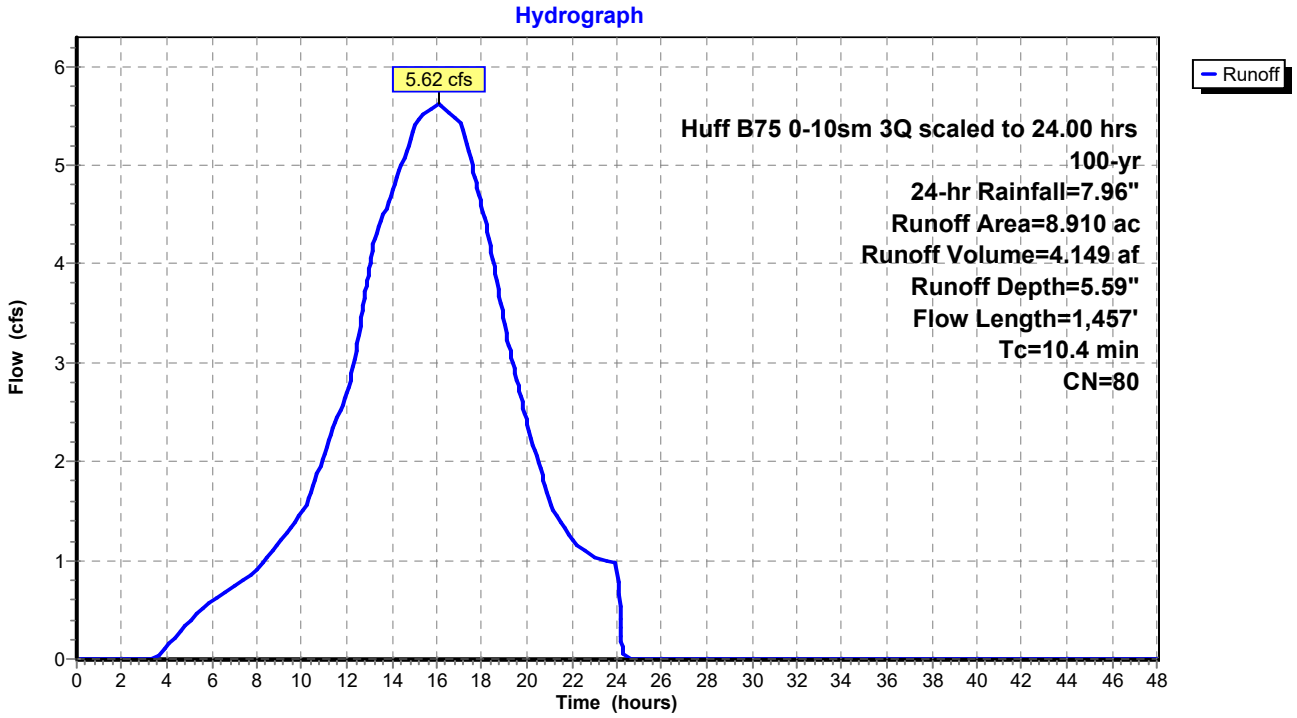
Runoff = 5.62 cfs @ 16.12 hrs, Volume= 4.149 af, Depth= 5.59"
Routed to Reach 35R : City Storm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
8.590	79	50-75% Grass cover, Fair, HSG C
0.320	98	Paved parking, HSG C
8.910	80	Weighted Average
8.590		96.41% Pervious Area
0.320		3.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 16S: Ex. Area B1

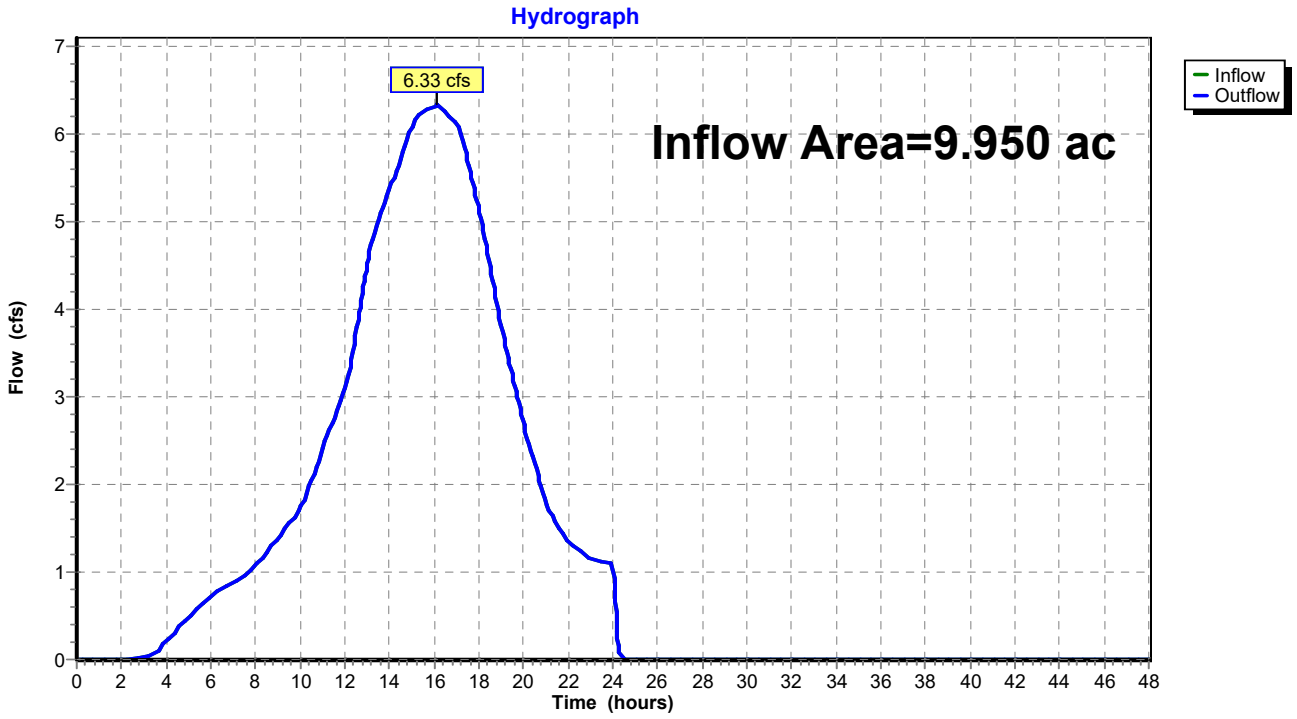


Summary for Reach 17R: Ramada Channel

Inflow Area = 9.950 ac, 8.24% Impervious, Inflow Depth = 5.69" for 100-yr, 24-hr event
Inflow = 6.33 cfs @ 16.11 hrs, Volume= 4.715 af
Outflow = 6.33 cfs @ 16.11 hrs, Volume= 4.715 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 17R: Ramada Channel

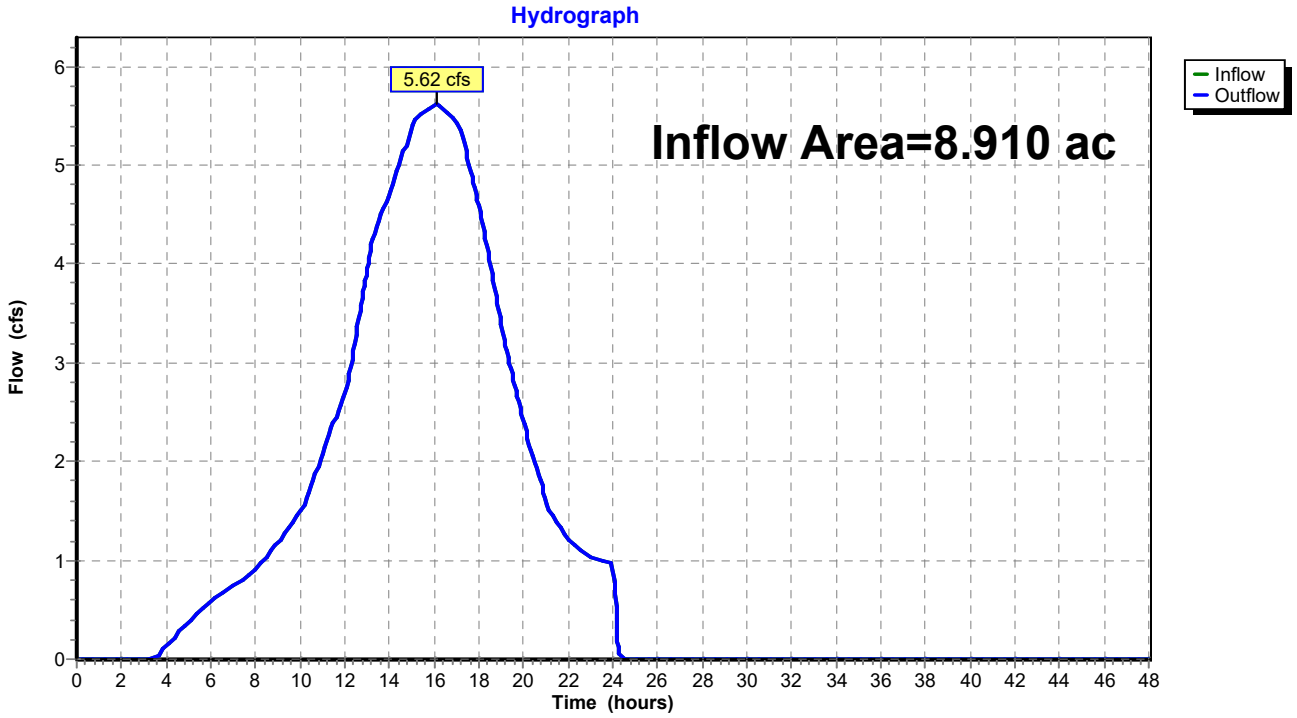


Summary for Reach 35R: City Storm

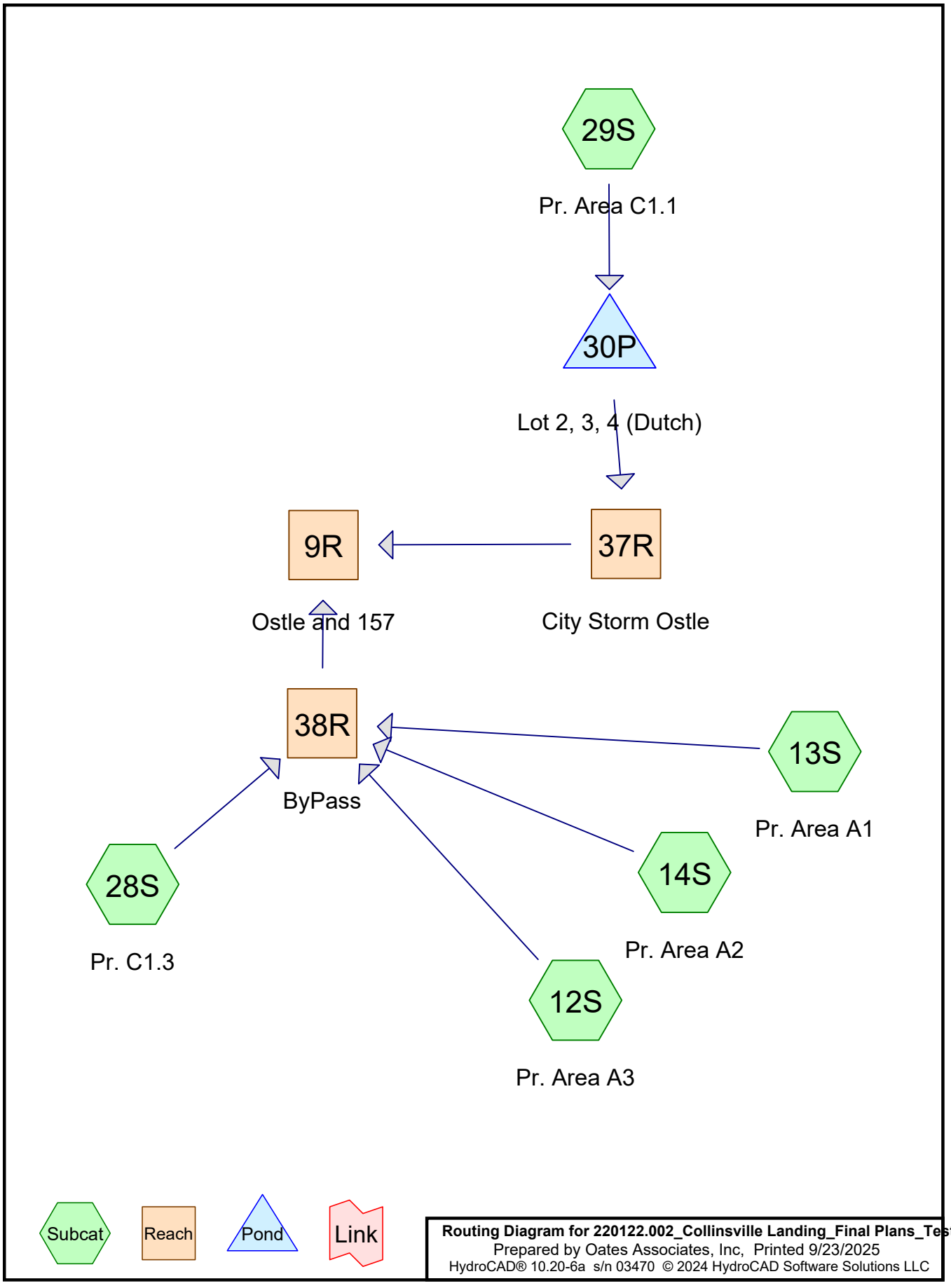
Inflow Area = 8.910 ac, 3.59% Impervious, Inflow Depth = 5.59" for 100-yr, 24-hr event
Inflow = 5.62 cfs @ 16.12 hrs, Volume= 4.149 af
Outflow = 5.62 cfs @ 16.12 hrs, Volume= 4.149 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 17R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 35R: City Storm



Attachment H
Proposed Condition HydroCAD Report



Routing Diagram for 220122.002_Collinsville Landing_Final Plans_Test
Prepared by Oates Associates, Inc, Printed 9/23/2025
HydroCAD® 10.20-6a s/n 03470 © 2024 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.330	79	50-75% Grass cover, Fair, HSG C (12S, 13S, 14S, 28S, 29S)
3.400	98	Paved parking, HSG C (12S, 13S, 14S, 28S, 29S)
5.730	**90**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment12S: Pr. Area A3 Runoff Area=0.250 ac 32.00% Impervious Runoff Depth=0.37"
Flow Length=484' Tc=5.0 min CN=85 Runoff=0.34 cfs 0.008 af

Subcatchment13S: Pr. Area A1 Runoff Area=1.650 ac 29.09% Impervious Runoff Depth=0.37"
Tc=5.0 min CN=85 Runoff=2.22 cfs 0.051 af

Subcatchment14S: Pr. Area A2 Runoff Area=0.170 ac 47.06% Impervious Runoff Depth=0.49"
Flow Length=224' Tc=5.0 min CN=88 Runoff=0.32 cfs 0.007 af

Subcatchment28S: Pr. C1.3 Runoff Area=1.740 ac 70.11% Impervious Runoff Depth=0.69"
Tc=5.0 min CN=92 Runoff=4.89 cfs 0.100 af

Subcatchment29S: Pr. Area C1.1 Runoff Area=1.920 ac 80.21% Impervious Runoff Depth=0.82"
Tc=5.0 min CN=94 Runoff=6.58 cfs 0.131 af

Reach 9R: Ostle and 157 Inflow=7.70 cfs 0.180 af
Outflow=7.70 cfs 0.180 af

Reach 37R: City Storm Ostle Inflow=0.05 cfs 0.014 af
Outflow=0.05 cfs 0.014 af

Reach 38R: ByPass Inflow=7.70 cfs 0.166 af
Outflow=7.70 cfs 0.166 af

Pond 30P: Lot 2, 3, 4 (Dutch) Peak Elev=443.39' Storage=0.131 af Inflow=6.58 cfs 0.131 af
Outflow=0.05 cfs 0.014 af

Total Runoff Area = 5.730 ac Runoff Volume = 0.298 af Average Runoff Depth = 0.62"
40.66% Pervious = 2.330 ac 59.34% Impervious = 3.400 ac

Summary for Subcatchment 12S: Pr. Area A3

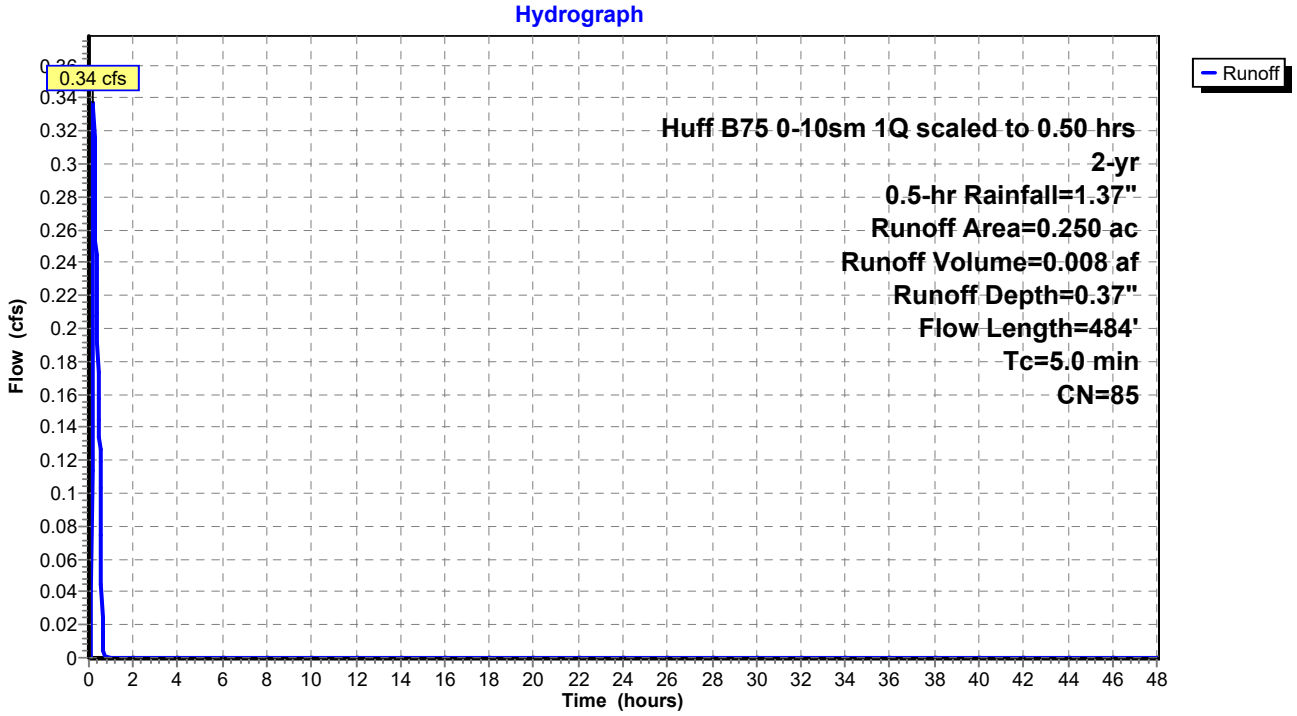
Runoff = 0.34 cfs @ 0.21 hrs, Volume= 0.008 af, Depth= 0.37"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
0.170	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.250	85	Weighted Average
0.170		68.00% Pervious Area
0.080		32.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: Pr. Area A3



Summary for Subcatchment 13S: Pr. Area A1

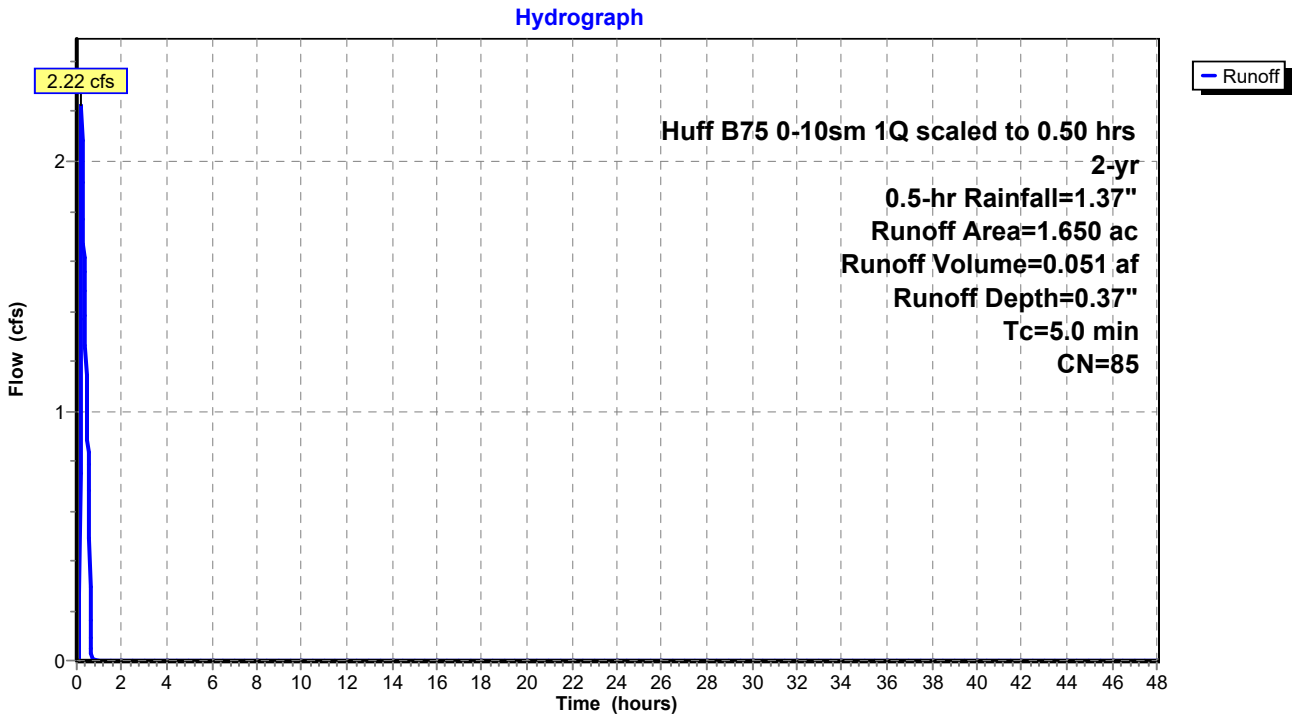
Runoff = 2.22 cfs @ 0.21 hrs, Volume= 0.051 af, Depth= 0.37"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
1.170	79	50-75% Grass cover, Fair, HSG C
0.480	98	Paved parking, HSG C
1.650	85	Weighted Average
1.170		70.91% Pervious Area
0.480		29.09% Impervious Area

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

Subcatchment 13S: Pr. Area A1



Summary for Subcatchment 14S: Pr. Area A2

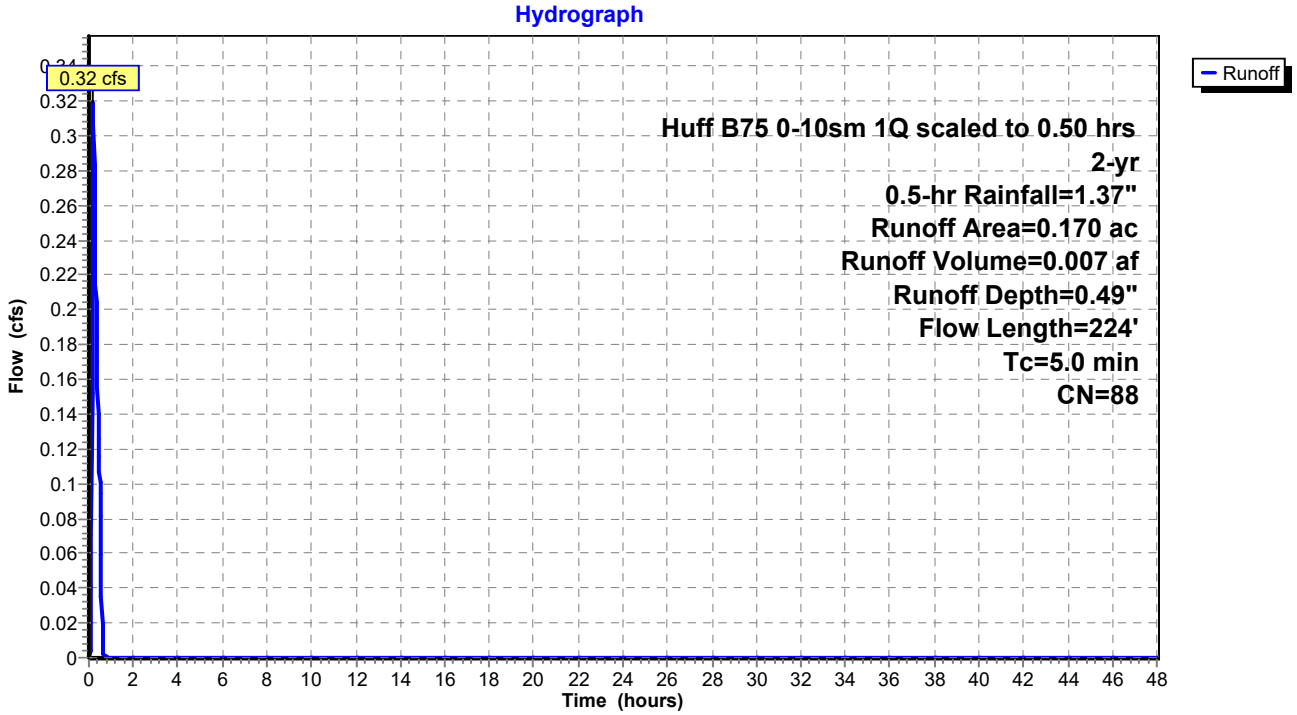
Runoff = 0.32 cfs @ 0.20 hrs, Volume= 0.007 af, Depth= 0.49"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
0.090	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.170	88	Weighted Average
0.090		52.94% Pervious Area
0.080		47.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: Pr. Area A2



Summary for Subcatchment 28S: Pr. C1.3

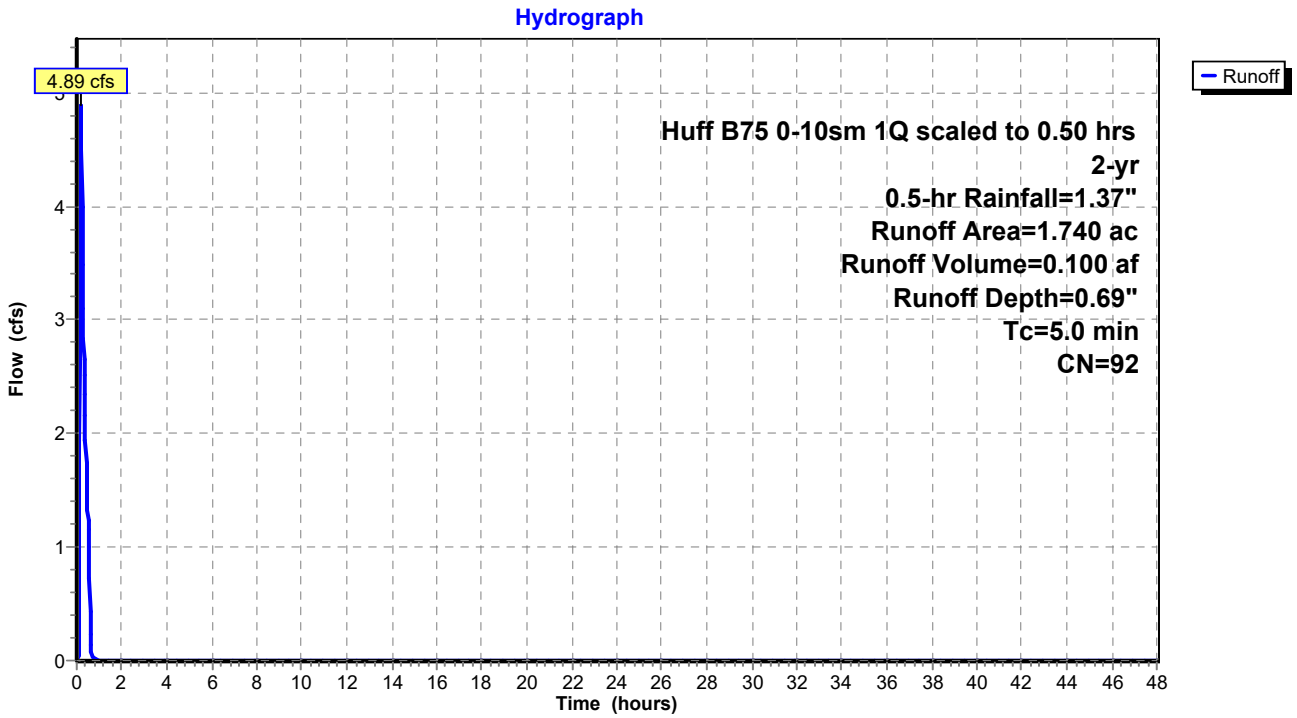
Runoff = 4.89 cfs @ 0.19 hrs, Volume= 0.100 af, Depth= 0.69"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
1.220	98	Paved parking, HSG C
0.520	79	50-75% Grass cover, Fair, HSG C
1.740	92	Weighted Average
0.520		29.89% Pervious Area
1.220		70.11% Impervious Area

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

Subcatchment 28S: Pr. C1.3



Summary for Subcatchment 29S: Pr. Area C1.1

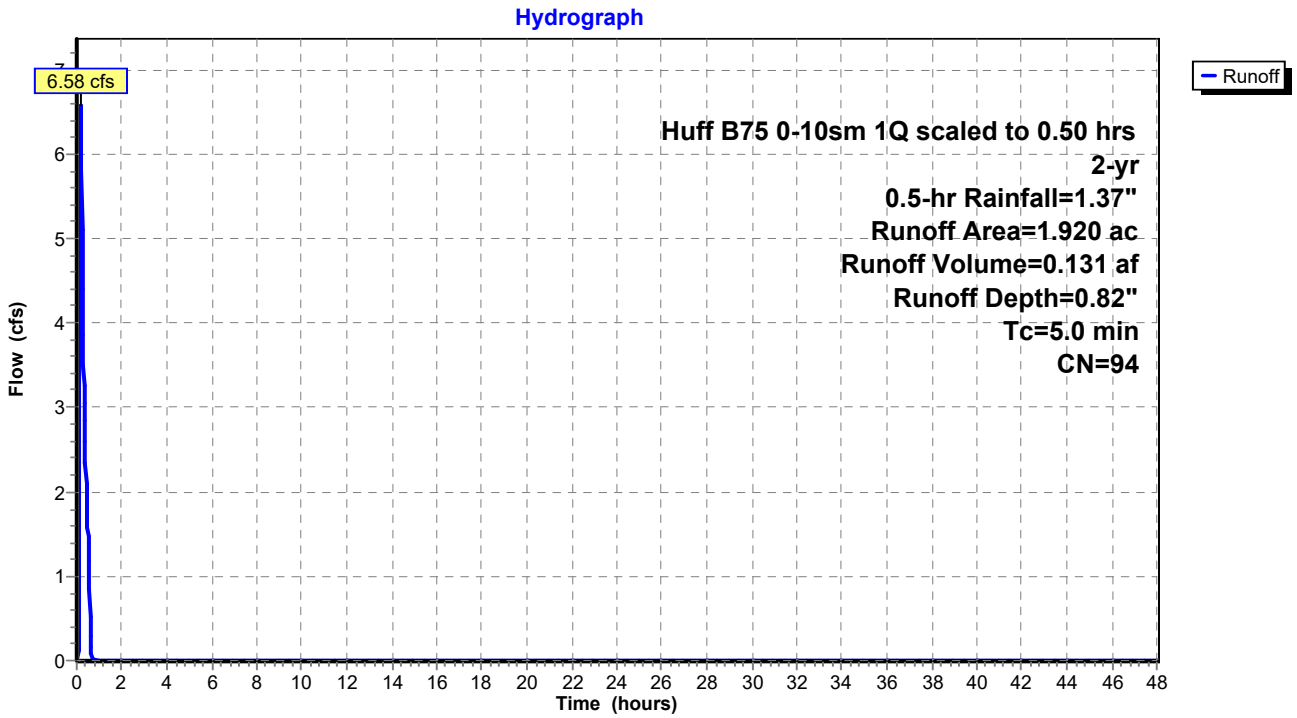
Runoff = 6.58 cfs @ 0.19 hrs, Volume= 0.131 af, Depth= 0.82"
Routed to Pond 30P : Lot 2, 3, 4 (Dutch)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 2-yr, 0.5-hr Rainfall=1.37"

Area (ac)	CN	Description
1.540	98	Paved parking, HSG C
0.380	79	50-75% Grass cover, Fair, HSG C
1.920	94	Weighted Average
0.380		19.79% Pervious Area
1.540		80.21% Impervious Area

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

Subcatchment 29S: Pr. Area C1.1

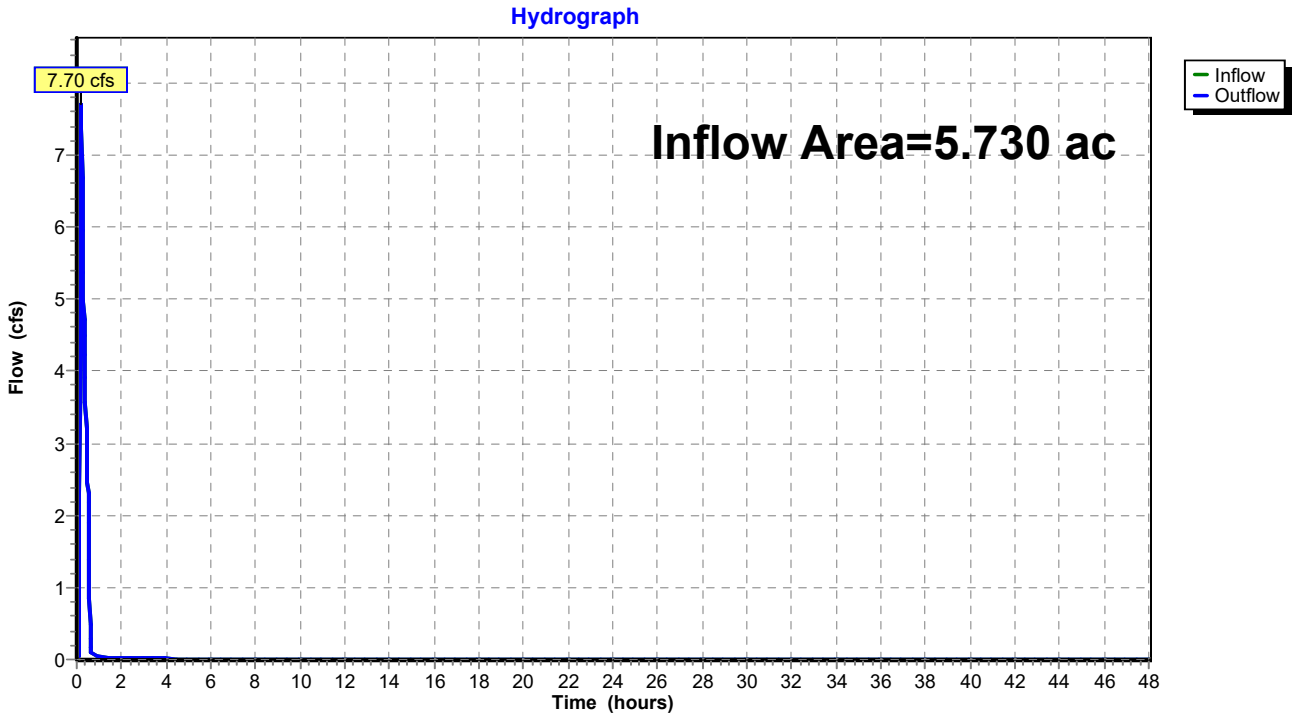


Summary for Reach 9R: Ostle and 157

Inflow Area = 5.730 ac, 59.34% Impervious, Inflow Depth = 0.38" for 2-yr, 0.5-hr event
Inflow = 7.70 cfs @ 0.20 hrs, Volume= 0.180 af
Outflow = 7.70 cfs @ 0.20 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 9R: Ostle and 157

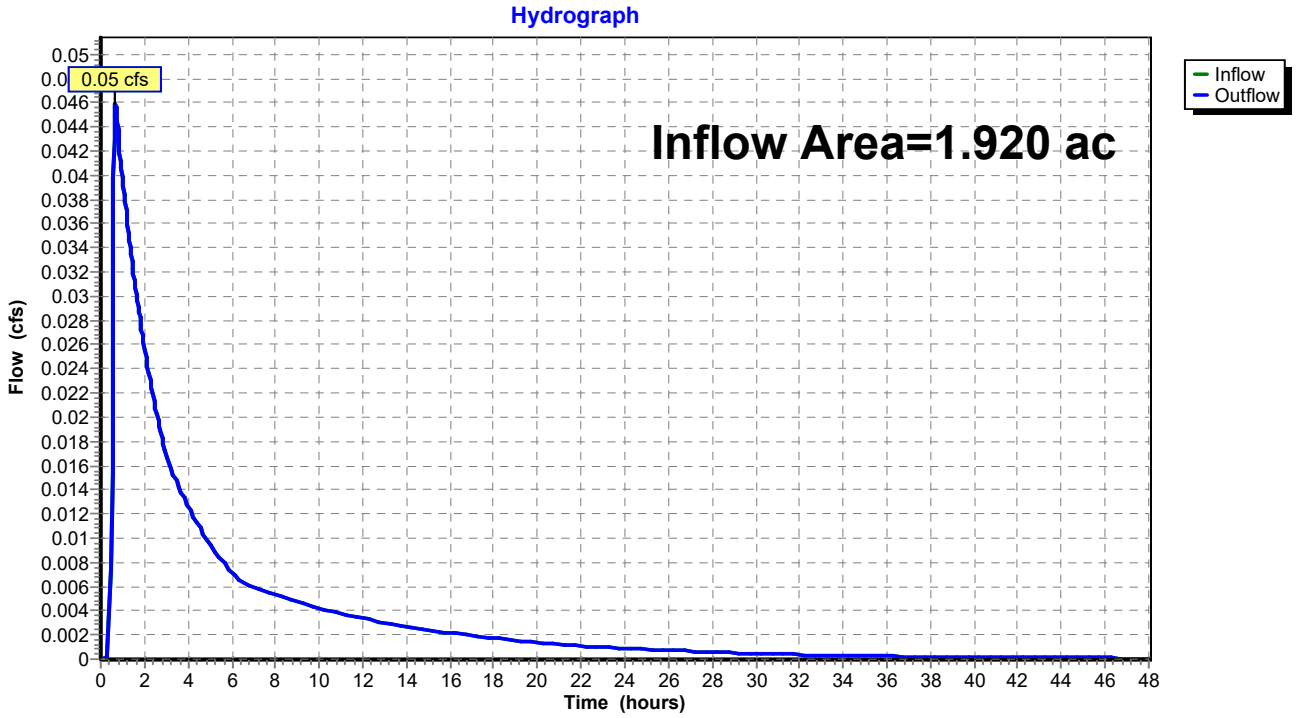


Summary for Reach 37R: City Storm Ostle

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth > 0.09" for 2-yr, 0.5-hr event
Inflow = 0.05 cfs @ 0.66 hrs, Volume= 0.014 af
Outflow = 0.05 cfs @ 0.66 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 37R: City Storm Ostle

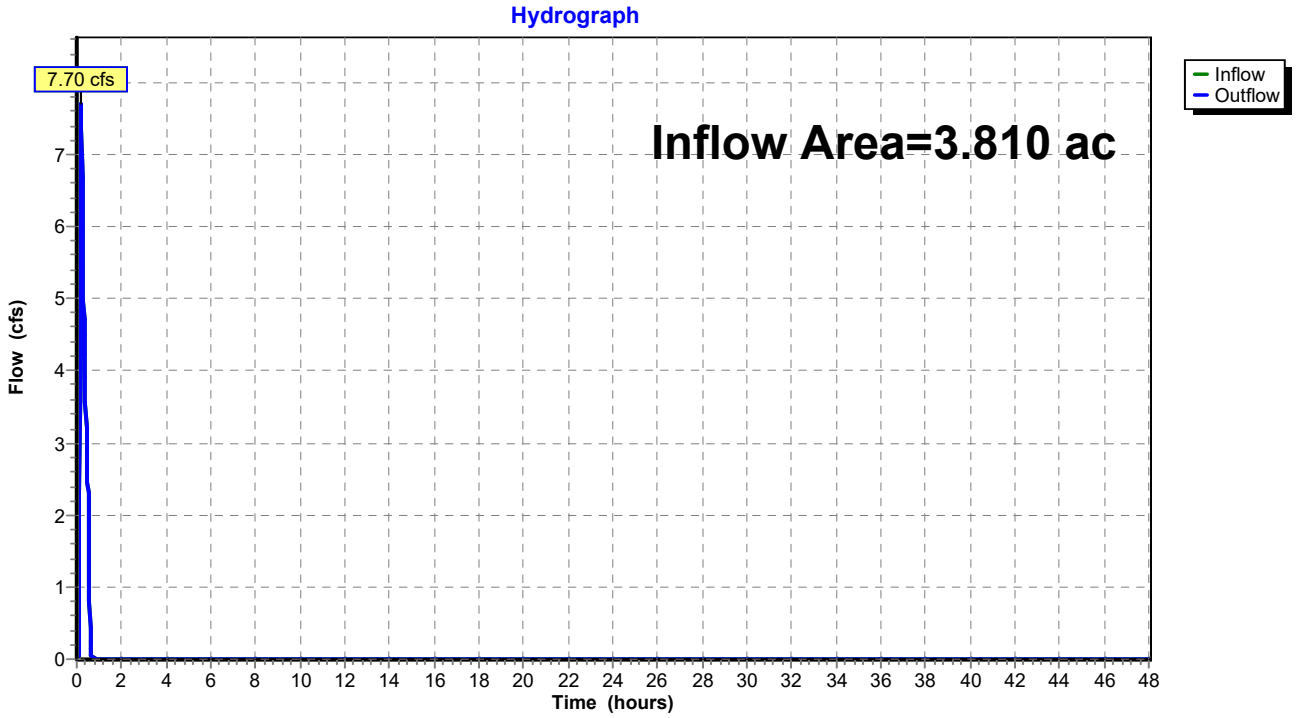


Summary for Reach 38R: ByPass

Inflow Area = 3.810 ac, 48.82% Impervious, Inflow Depth = 0.52" for 2-yr, 0.5-hr event
Inflow = 7.70 cfs @ 0.20 hrs, Volume= 0.166 af
Outflow = 7.70 cfs @ 0.20 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 38R: ByPass



Summary for Pond 30P: Lot 2, 3, 4 (Dutch)

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 0.82" for 2-yr, 0.5-hr event
Inflow = 6.58 cfs @ 0.19 hrs, Volume= 0.131 af
Outflow = 0.05 cfs @ 0.66 hrs, Volume= 0.014 af, Atten= 99%, Lag= 28.6 min
Primary = 0.05 cfs @ 0.66 hrs, Volume= 0.014 af
Routed to Reach 37R : City Storm Ostle

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 443.39' @ 0.66 hrs Surf.Area= 0.107 ac Storage= 0.131 af

Plug-Flow detention time= 395.7 min calculated for 0.014 af (10% of inflow)
Center-of-Mass det. time= 386.2 min (402.9 - 16.7)

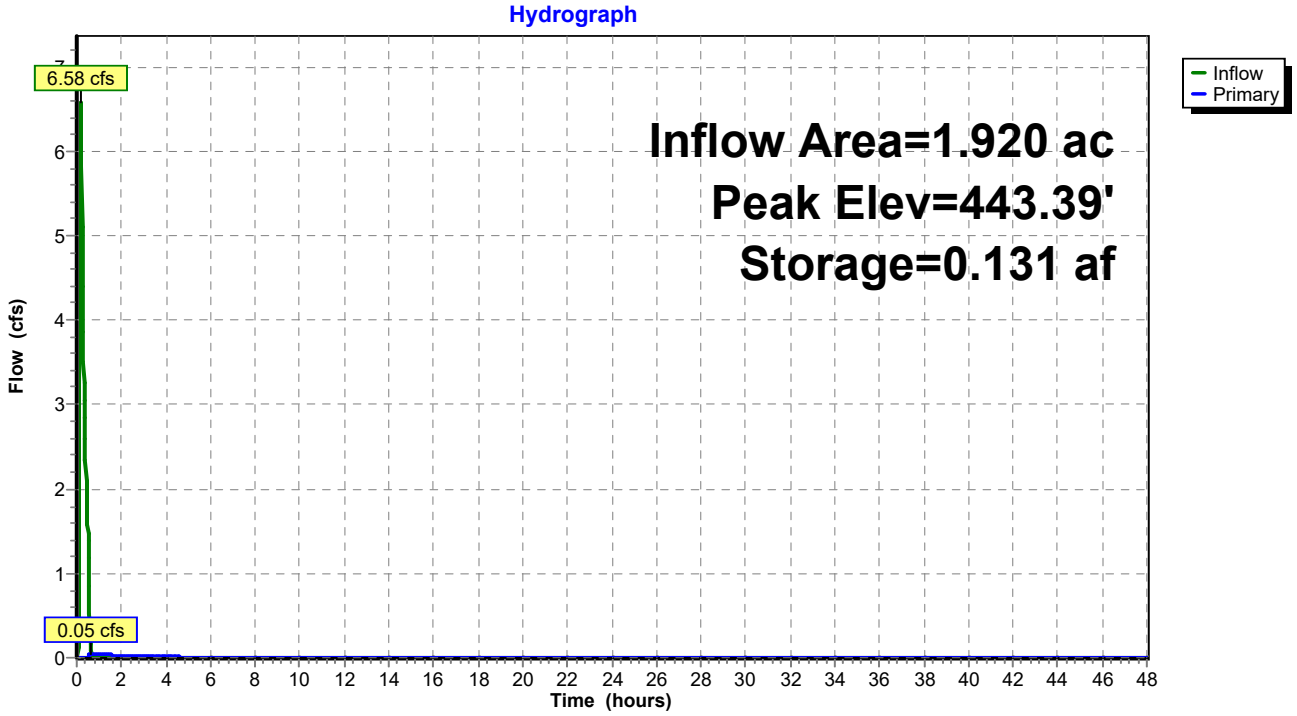
Volume	Invert	Avail.Storage	Storage Description
#1A	440.50'	0.257 af	**46.67'W x 99.75'L x 8.75'H Field A** 0.935 af Overall - 0.292 af Embedded = 0.643 af x 40.0% Voids
#2A	443.25'	0.292 af	**ADS_StormTech MC-7200 +Cap** x 70 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 70 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.549 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 3	445.75'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 1.00 3.00 Width (feet) 0.25 0.75
#2	Device 3	443.25'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	443.25'	**18.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.25' / 442.25' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=0.05 cfs @ 0.66 hrs HW=443.39' (Free Discharge)
└**3=Culvert** (Passes 0.05 cfs of 0.12 cfs potential flow)
  ├**1=Custom Weir** (Controls 0.00 cfs)
  └**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.28 fps)

Pond 30P: Lot 2, 3, 4 (Dutch)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment12S: Pr. Area A3 Runoff Area=0.250 ac 32.00% Impervious Runoff Depth=2.18"
Flow Length=484' Tc=5.0 min CN=85 Runoff=0.07 cfs 0.045 af

Subcatchment13S: Pr. Area A1 Runoff Area=1.650 ac 29.09% Impervious Runoff Depth=2.18"
Tc=5.0 min CN=85 Runoff=0.43 cfs 0.300 af

Subcatchment14S: Pr. Area A2 Runoff Area=0.170 ac 47.06% Impervious Runoff Depth=2.44"
Flow Length=224' Tc=5.0 min CN=88 Runoff=0.05 cfs 0.035 af

Subcatchment28S: Pr. C1.3 Runoff Area=1.740 ac 70.11% Impervious Runoff Depth=2.82"
Tc=5.0 min CN=92 Runoff=0.53 cfs 0.409 af

Subcatchment29S: Pr. Area C1.1 Runoff Area=1.920 ac 80.21% Impervious Runoff Depth=3.02"
Tc=5.0 min CN=94 Runoff=0.61 cfs 0.483 af

Reach 9R: Ostle and 157 Inflow=1.47 cfs 1.154 af
Outflow=1.47 cfs 1.154 af

Reach 37R: City Storm Ostle Inflow=0.44 cfs 0.365 af
Outflow=0.44 cfs 0.365 af

Reach 38R: ByPass Inflow=1.08 cfs 0.789 af
Outflow=1.08 cfs 0.789 af

Pond 30P: Lot 2, 3, 4 (Dutch) Peak Elev=444.53' Storage=0.234 af Inflow=0.61 cfs 0.483 af
Outflow=0.44 cfs 0.365 af

Total Runoff Area = 5.730 ac Runoff Volume = 1.272 af Average Runoff Depth = 2.66"
40.66% Pervious = 2.330 ac 59.34% Impervious = 3.400 ac

Summary for Subcatchment 12S: Pr. Area A3

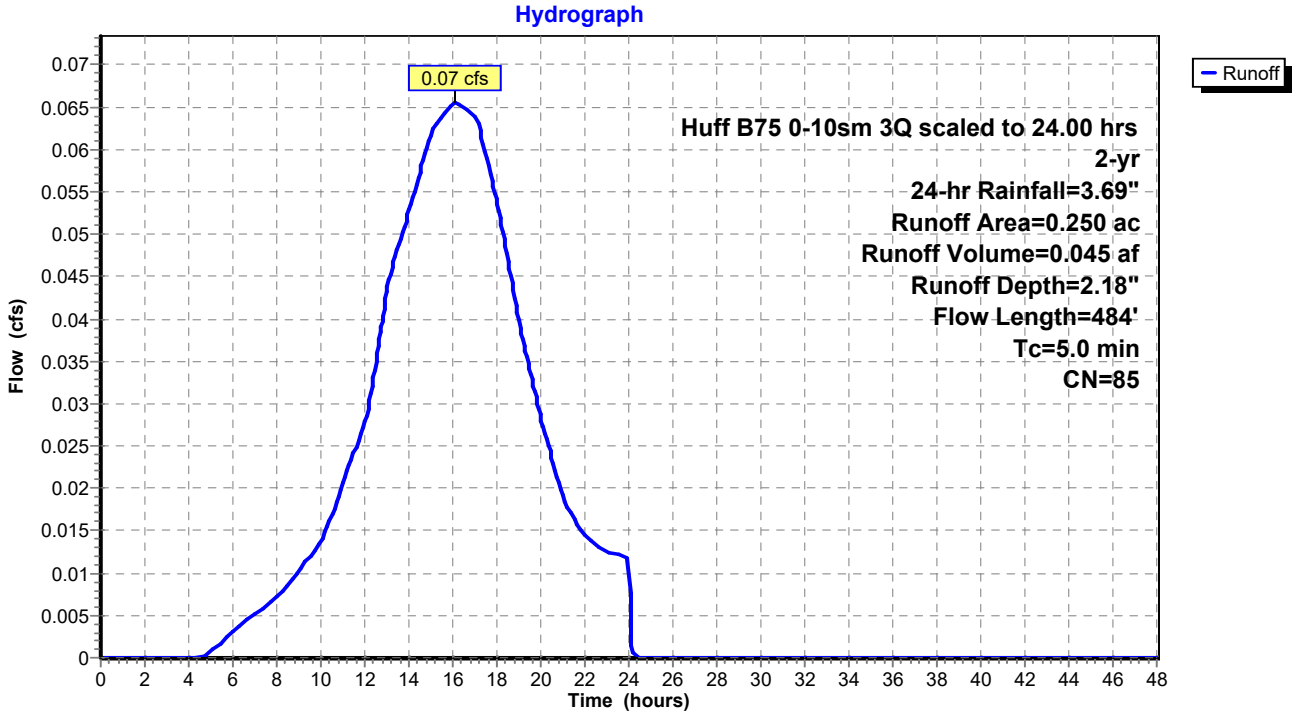
Runoff = 0.07 cfs @ 16.09 hrs, Volume= 0.045 af, Depth= 2.18"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.170	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.250	85	Weighted Average
0.170		68.00% Pervious Area
0.080		32.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: Pr. Area A3



Summary for Subcatchment 13S: Pr. Area A1

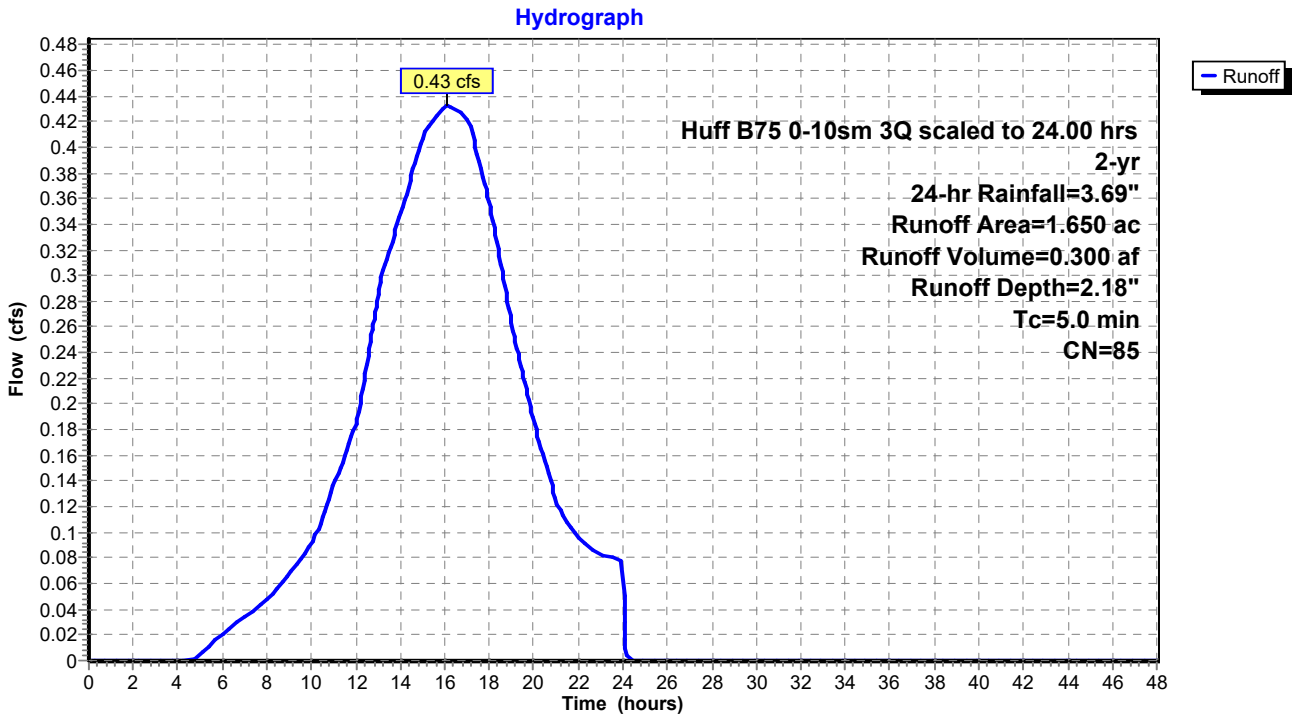
Runoff = 0.43 cfs @ 16.09 hrs, Volume= 0.300 af, Depth= 2.18"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
1.170	79	50-75% Grass cover, Fair, HSG C
0.480	98	Paved parking, HSG C
1.650	85	Weighted Average
1.170		70.91% Pervious Area
0.480		29.09% Impervious Area

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

Subcatchment 13S: Pr. Area A1



Summary for Subcatchment 14S: Pr. Area A2

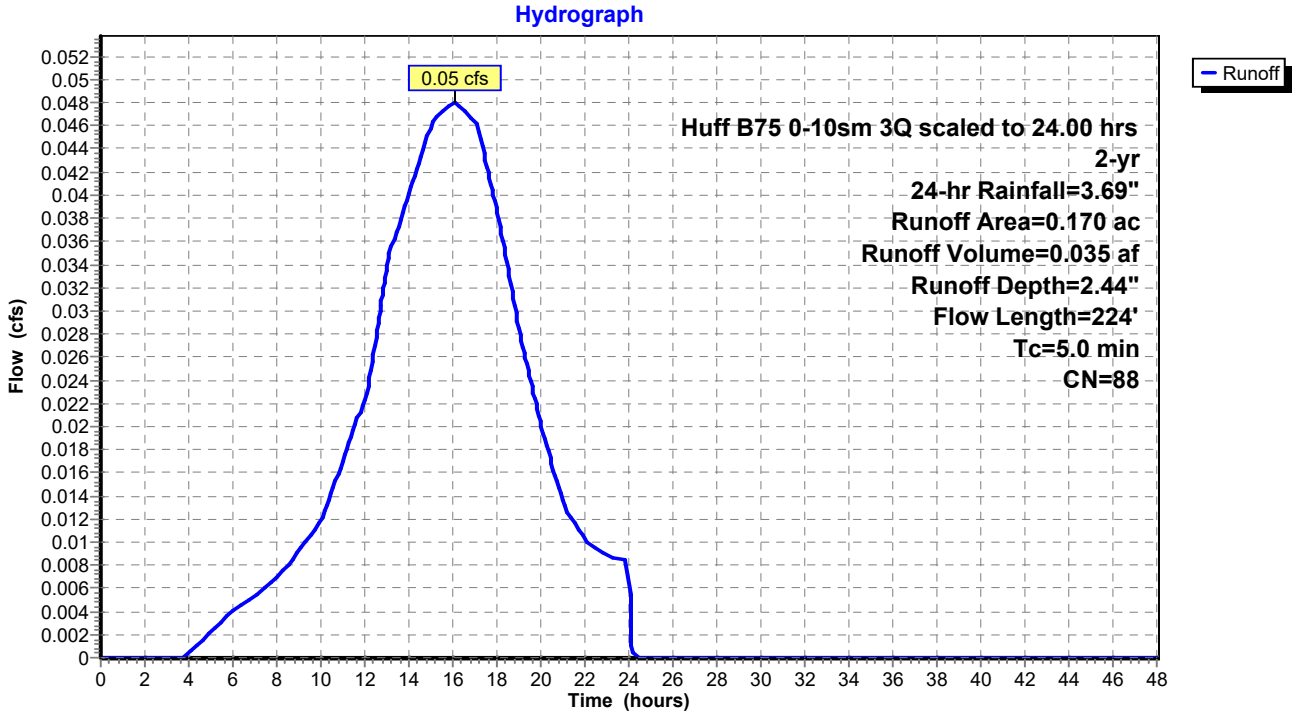
Runoff = 0.05 cfs @ 16.07 hrs, Volume= 0.035 af, Depth= 2.44"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.090	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.170	88	Weighted Average
0.090		52.94% Pervious Area
0.080		47.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: Pr. Area A2



Summary for Subcatchment 28S: Pr. C1.3

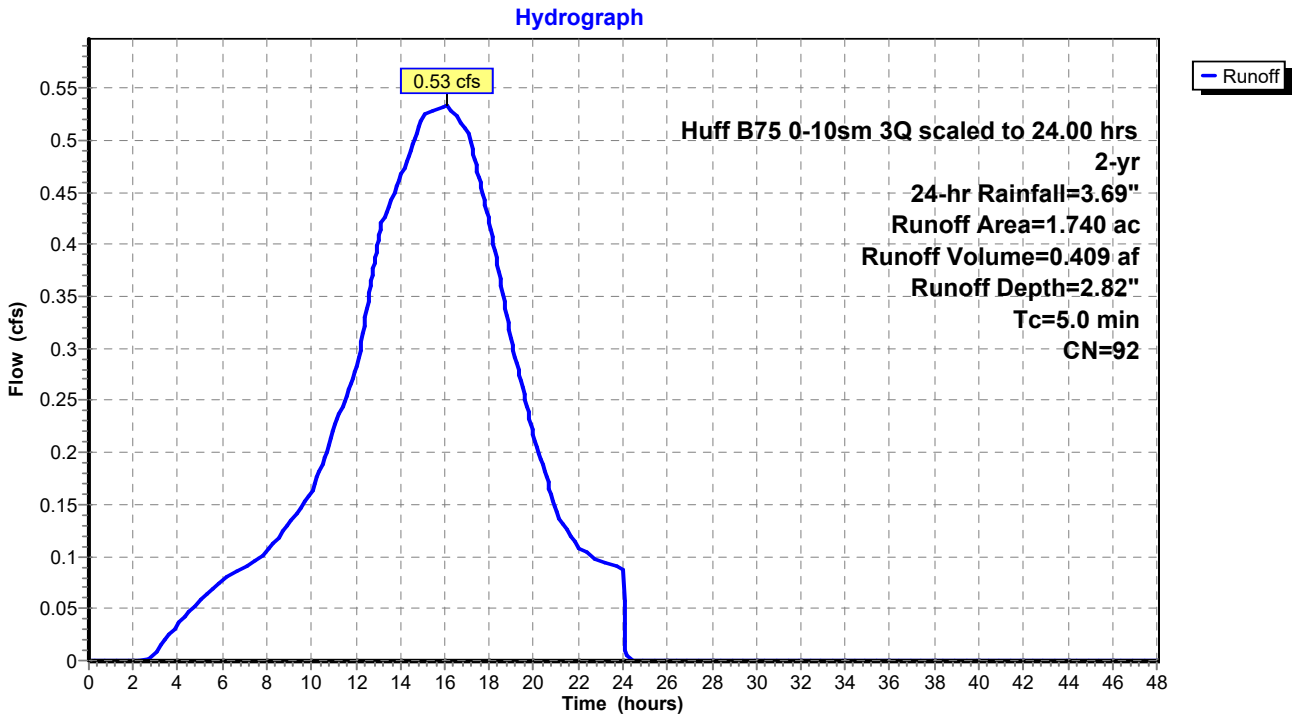
Runoff = 0.53 cfs @ 16.05 hrs, Volume= 0.409 af, Depth= 2.82"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
1.220	98	Paved parking, HSG C
0.520	79	50-75% Grass cover, Fair, HSG C
1.740	92	Weighted Average
0.520		29.89% Pervious Area
1.220		70.11% Impervious Area

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

Subcatchment 28S: Pr. C1.3



Summary for Subcatchment 29S: Pr. Area C1.1

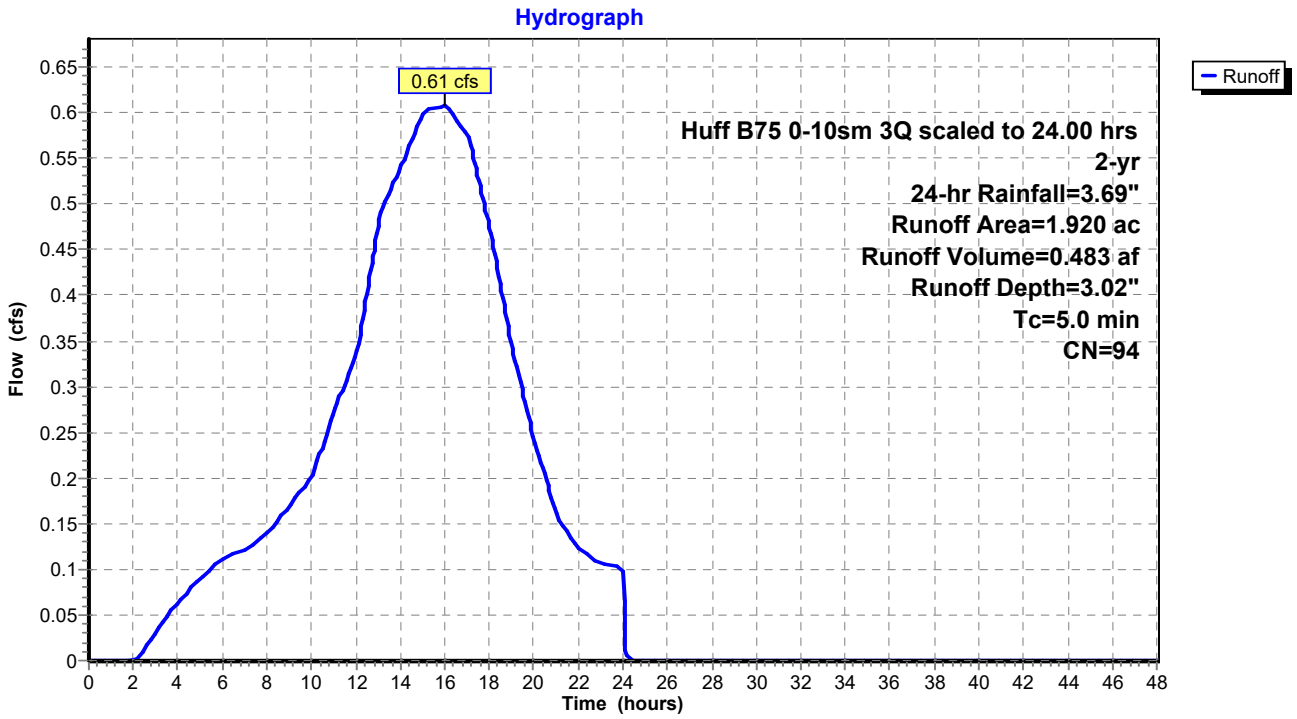
Runoff = 0.61 cfs @ 16.03 hrs, Volume= 0.483 af, Depth= 3.02"
Routed to Pond 30P : Lot 2, 3, 4 (Dutch)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
1.540	98	Paved parking, HSG C
0.380	79	50-75% Grass cover, Fair, HSG C
1.920	94	Weighted Average
0.380		19.79% Pervious Area
1.540		80.21% Impervious Area

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

Subcatchment 29S: Pr. Area C1.1

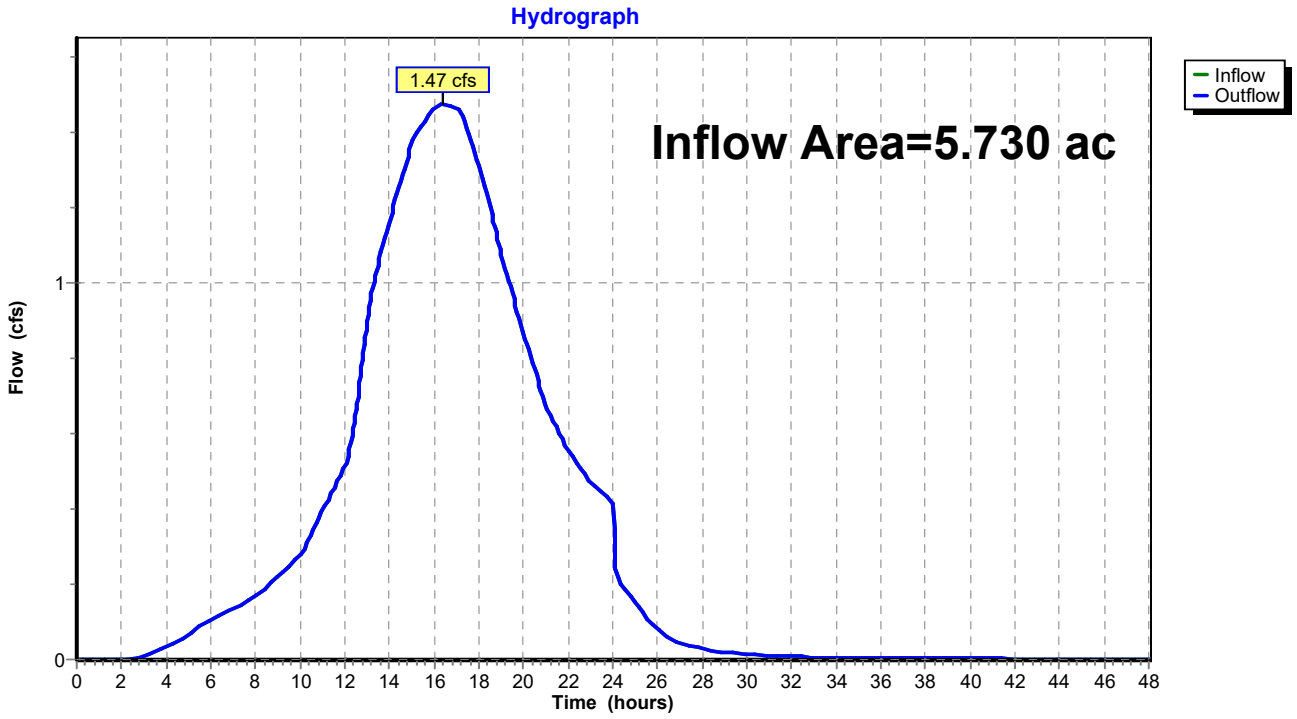


Summary for Reach 9R: Ostle and 157

Inflow Area = 5.730 ac, 59.34% Impervious, Inflow Depth > 2.42" for 2-yr, 24-hr event
Inflow = 1.47 cfs @ 16.40 hrs, Volume= 1.154 af
Outflow = 1.47 cfs @ 16.40 hrs, Volume= 1.154 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 9R: Ostle and 157

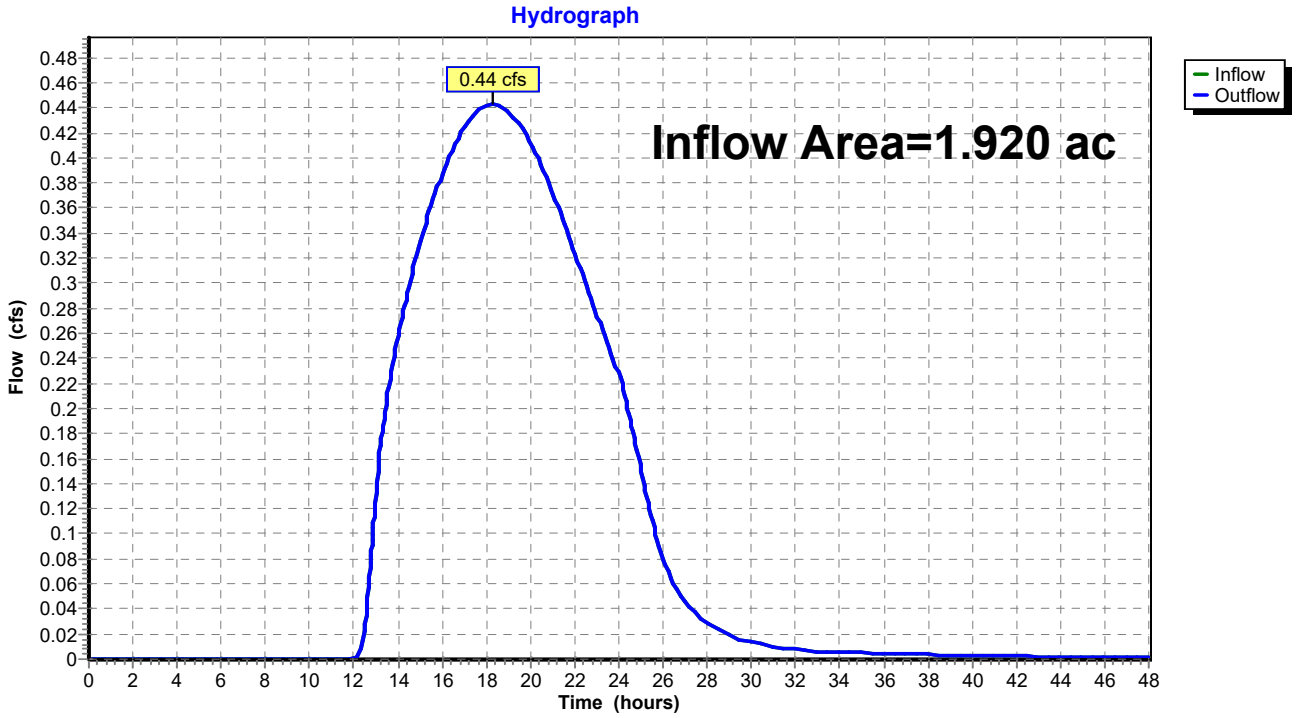


Summary for Reach 37R: City Storm Ostle

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth > 2.28" for 2-yr, 24-hr event
Inflow = 0.44 cfs @ 18.27 hrs, Volume= 0.365 af
Outflow = 0.44 cfs @ 18.27 hrs, Volume= 0.365 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 37R: City Storm Ostle

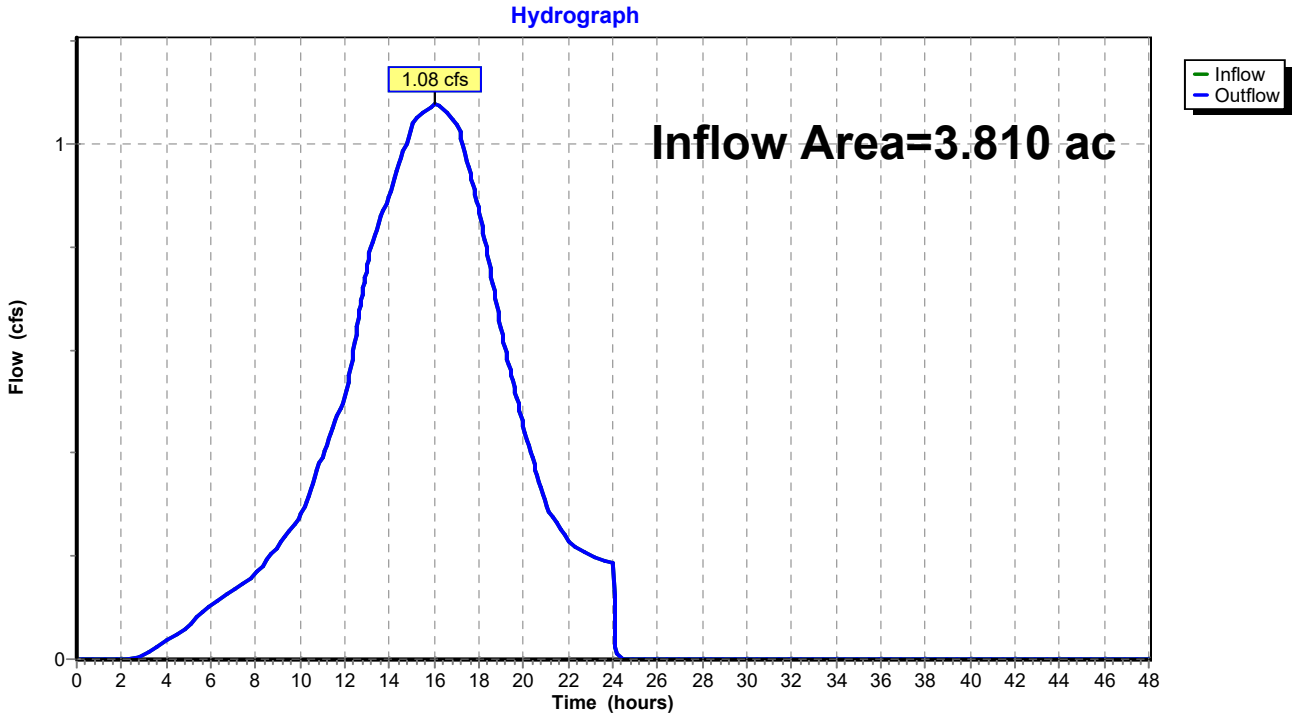


Summary for Reach 38R: ByPass

Inflow Area = 3.810 ac, 48.82% Impervious, Inflow Depth = 2.48" for 2-yr, 24-hr event
Inflow = 1.08 cfs @ 16.07 hrs, Volume= 0.789 af
Outflow = 1.08 cfs @ 16.07 hrs, Volume= 0.789 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 38R: ByPass



Summary for Pond 30P: Lot 2, 3, 4 (Dutch)

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 3.02" for 2-yr, 24-hr event
Inflow = 0.61 cfs @ 16.03 hrs, Volume= 0.483 af
Outflow = 0.44 cfs @ 18.27 hrs, Volume= 0.365 af, Atten= 27%, Lag= 134.6 min
Primary = 0.44 cfs @ 18.27 hrs, Volume= 0.365 af
Routed to Reach 37R : City Storm Ostle

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 444.53' @ 18.27 hrs Surf.Area= 0.107 ac Storage= 0.234 af

Plug-Flow detention time= 383.6 min calculated for 0.365 af (75% of inflow)
Center-of-Mass det. time= 283.9 min (1,168.7 - 884.8)

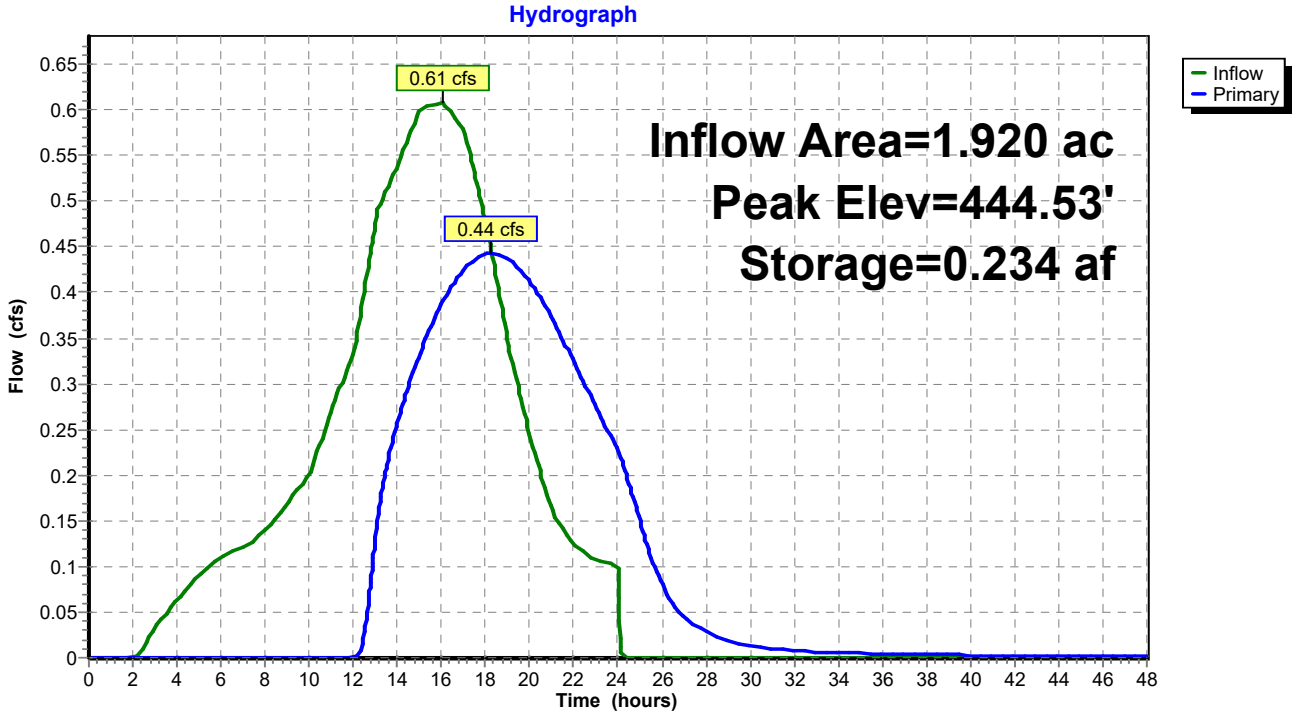
Volume	Invert	Avail.Storage	Storage Description
#1A	440.50'	0.257 af	**46.67'W x 99.75'L x 8.75'H Field A** 0.935 af Overall - 0.292 af Embedded = 0.643 af x 40.0% Voids
#2A	443.25'	0.292 af	**ADS_StormTech MC-7200 +Cap** x 70 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 70 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.549 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 3	445.75'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 1.00 3.00 Width (feet) 0.25 0.75
#2	Device 3	443.25'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	443.25'	**18.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.25' / 442.25' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=0.44 cfs @ 18.27 hrs HW=444.53' (Free Discharge)
└**3=Culvert** (Passes 0.44 cfs of 7.26 cfs potential flow)
  ├**1=Custom Weir** (Controls 0.00 cfs)
  └**2=Orifice/Grate** (Orifice Controls 0.44 cfs @ 5.08 fps)

Pond 30P: Lot 2, 3, 4 (Dutch)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment12S: Pr. Area A3 Runoff Area=0.250 ac 32.00% Impervious Runoff Depth=1.55"
Flow Length=484' Tc=5.0 min CN=85 Runoff=1.58 cfs 0.032 af

Subcatchment13S: Pr. Area A1 Runoff Area=1.650 ac 29.09% Impervious Runoff Depth=1.55"
Tc=5.0 min CN=85 Runoff=10.41 cfs 0.213 af

Subcatchment14S: Pr. Area A2 Runoff Area=0.170 ac 47.06% Impervious Runoff Depth=1.77"
Flow Length=224' Tc=5.0 min CN=88 Runoff=1.26 cfs 0.025 af

Subcatchment28S: Pr. C1.3 Runoff Area=1.740 ac 70.11% Impervious Runoff Depth=2.11"
Tc=5.0 min CN=92 Runoff=15.75 cfs 0.307 af

Subcatchment29S: Pr. Area C1.1 Runoff Area=1.920 ac 80.21% Impervious Runoff Depth=2.30"
Tc=5.0 min CN=94 Runoff=19.14 cfs 0.368 af

Reach 9R: Ostle and 157 Inflow=28.92 cfs 0.827 af
Outflow=28.92 cfs 0.827 af

Reach 37R: City Storm Ostle Inflow=0.69 cfs 0.251 af
Outflow=0.69 cfs 0.251 af

Reach 38R: ByPass Inflow=28.90 cfs 0.576 af
Outflow=28.90 cfs 0.576 af

Pond 30P: Lot 2, 3, 4 (Dutch) Peak Elev=445.86' Storage=0.348 af Inflow=19.14 cfs 0.368 af
Outflow=0.69 cfs 0.251 af

Total Runoff Area = 5.730 ac Runoff Volume = 0.945 af Average Runoff Depth = 1.98"
40.66% Pervious = 2.330 ac 59.34% Impervious = 3.400 ac

Summary for Subcatchment 12S: Pr. Area A3

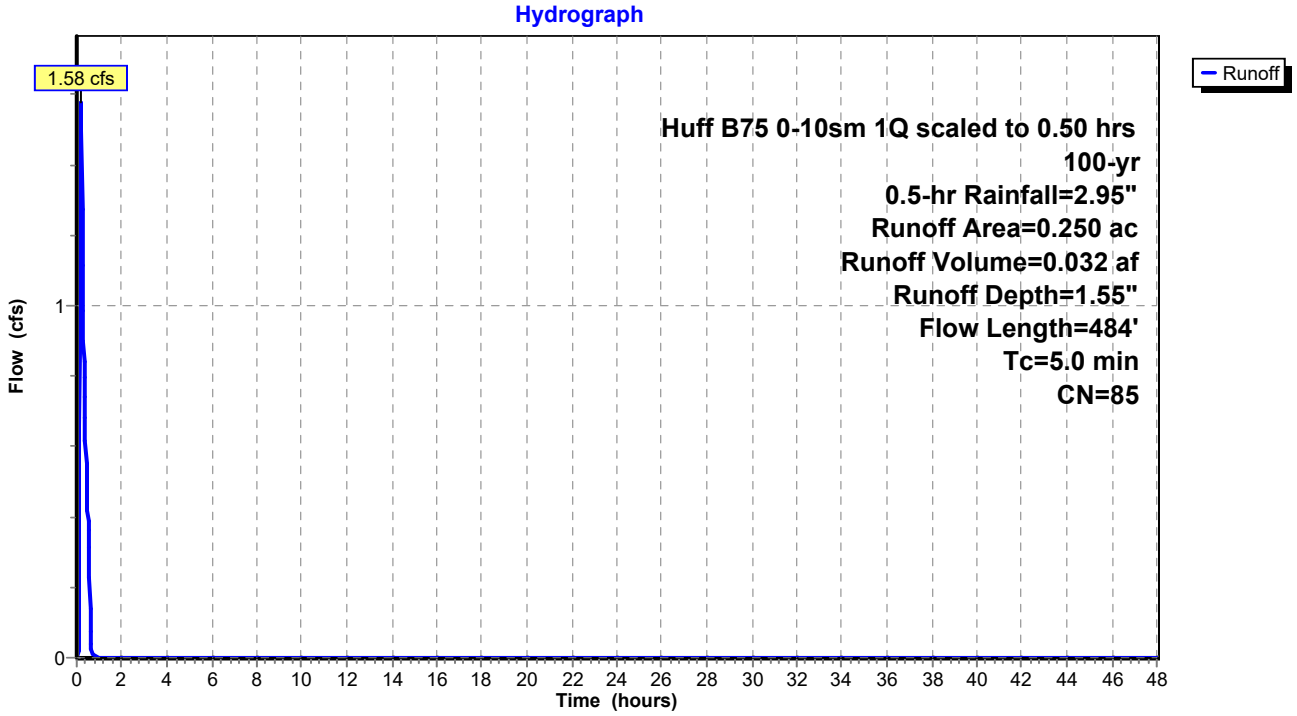
Runoff = 1.58 cfs @ 0.19 hrs, Volume= 0.032 af, Depth= 1.55"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
0.170	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.250	85	Weighted Average
0.170		68.00% Pervious Area
0.080		32.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: Pr. Area A3



Summary for Subcatchment 13S: Pr. Area A1

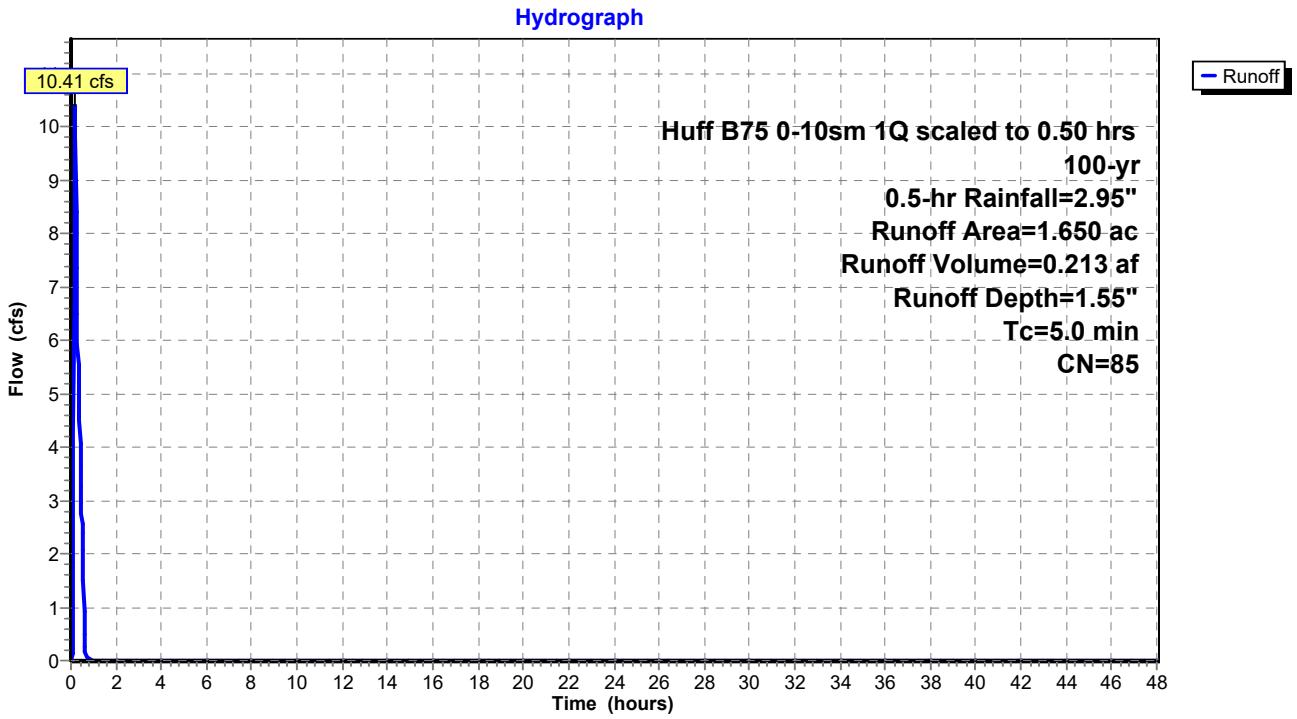
Runoff = 10.41 cfs @ 0.19 hrs, Volume= 0.213 af, Depth= 1.55"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.170	79	50-75% Grass cover, Fair, HSG C
0.480	98	Paved parking, HSG C
1.650	85	Weighted Average
1.170		70.91% Pervious Area
0.480		29.09% Impervious Area

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

Subcatchment 13S: Pr. Area A1



Summary for Subcatchment 14S: Pr. Area A2

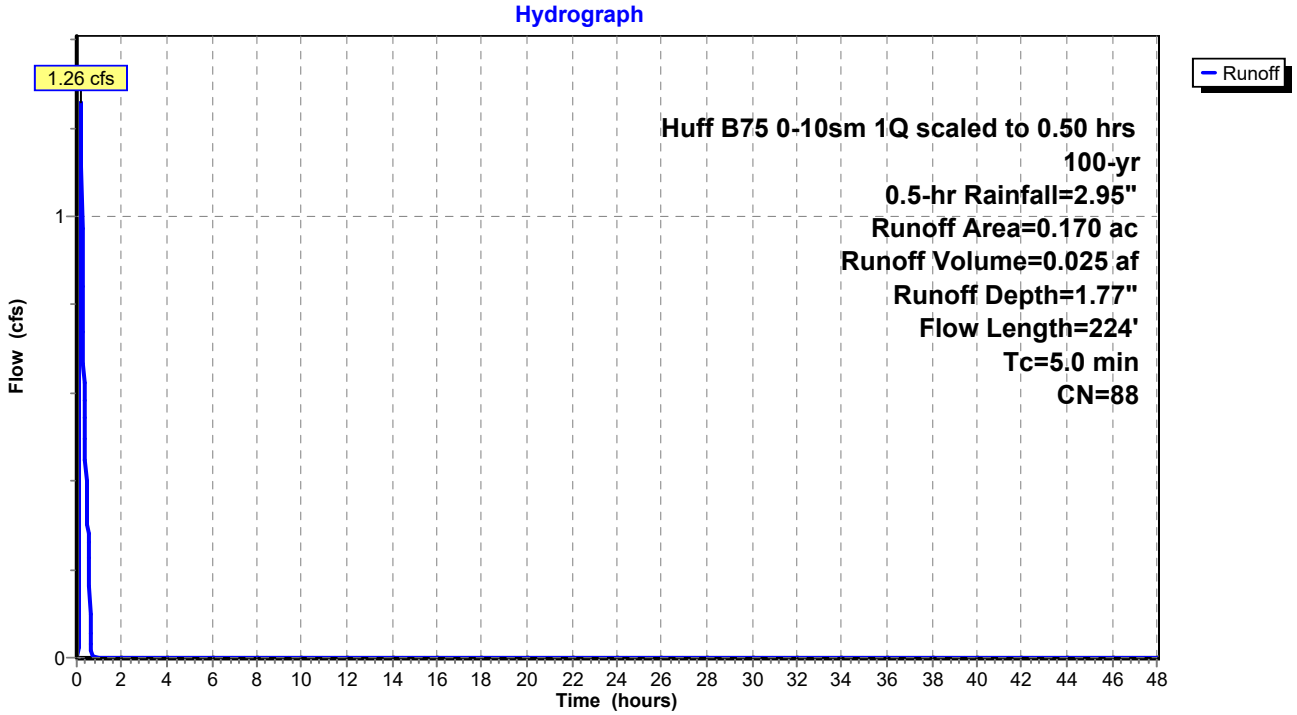
Runoff = 1.26 cfs @ 0.19 hrs, Volume= 0.025 af, Depth= 1.77"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
0.090	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.170	88	Weighted Average
0.090		52.94% Pervious Area
0.080		47.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: Pr. Area A2



Summary for Subcatchment 28S: Pr. C1.3

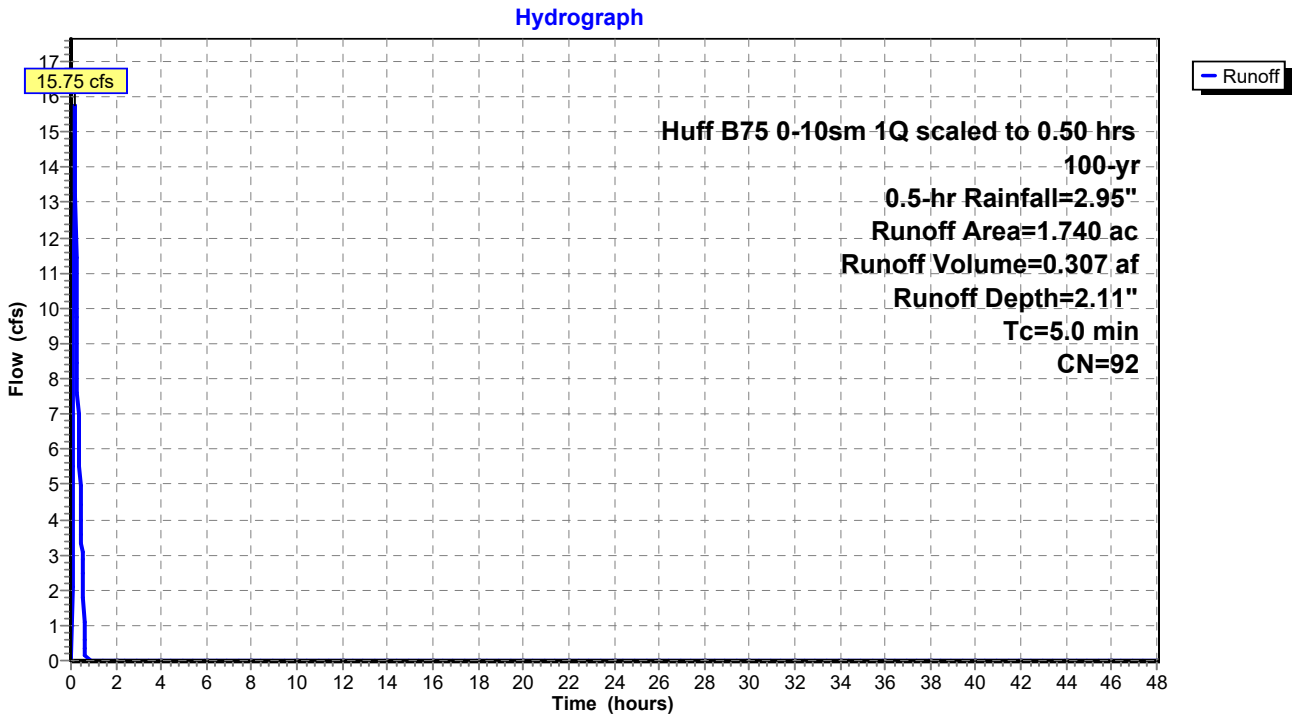
Runoff = 15.75 cfs @ 0.18 hrs, Volume= 0.307 af, Depth= 2.11"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.220	98	Paved parking, HSG C
0.520	79	50-75% Grass cover, Fair, HSG C
1.740	92	Weighted Average
0.520		29.89% Pervious Area
1.220		70.11% Impervious Area

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

Subcatchment 28S: Pr. C1.3



Summary for Subcatchment 29S: Pr. Area C1.1

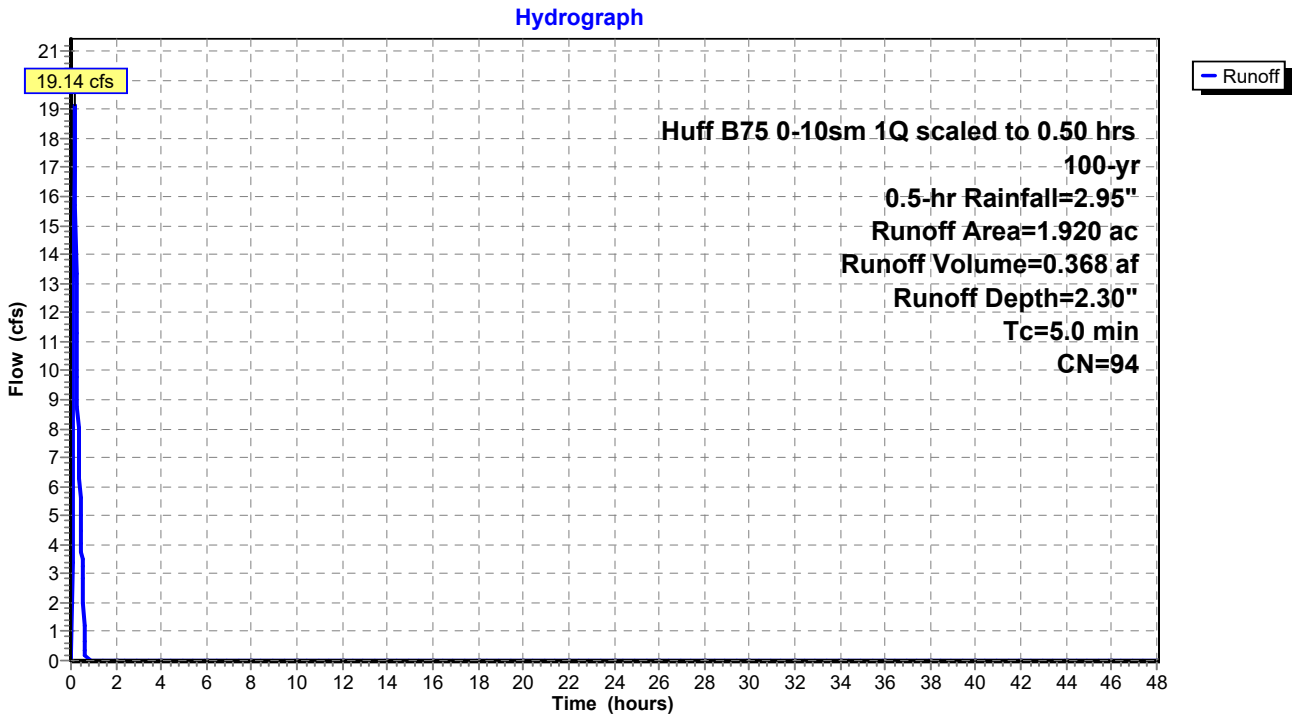
Runoff = 19.14 cfs @ 0.17 hrs, Volume= 0.368 af, Depth= 2.30"
Routed to Pond 30P : Lot 2, 3, 4 (Dutch)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.540	98	Paved parking, HSG C
0.380	79	50-75% Grass cover, Fair, HSG C
1.920	94	Weighted Average
0.380		19.79% Pervious Area
1.540		80.21% Impervious Area

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

Subcatchment 29S: Pr. Area C1.1

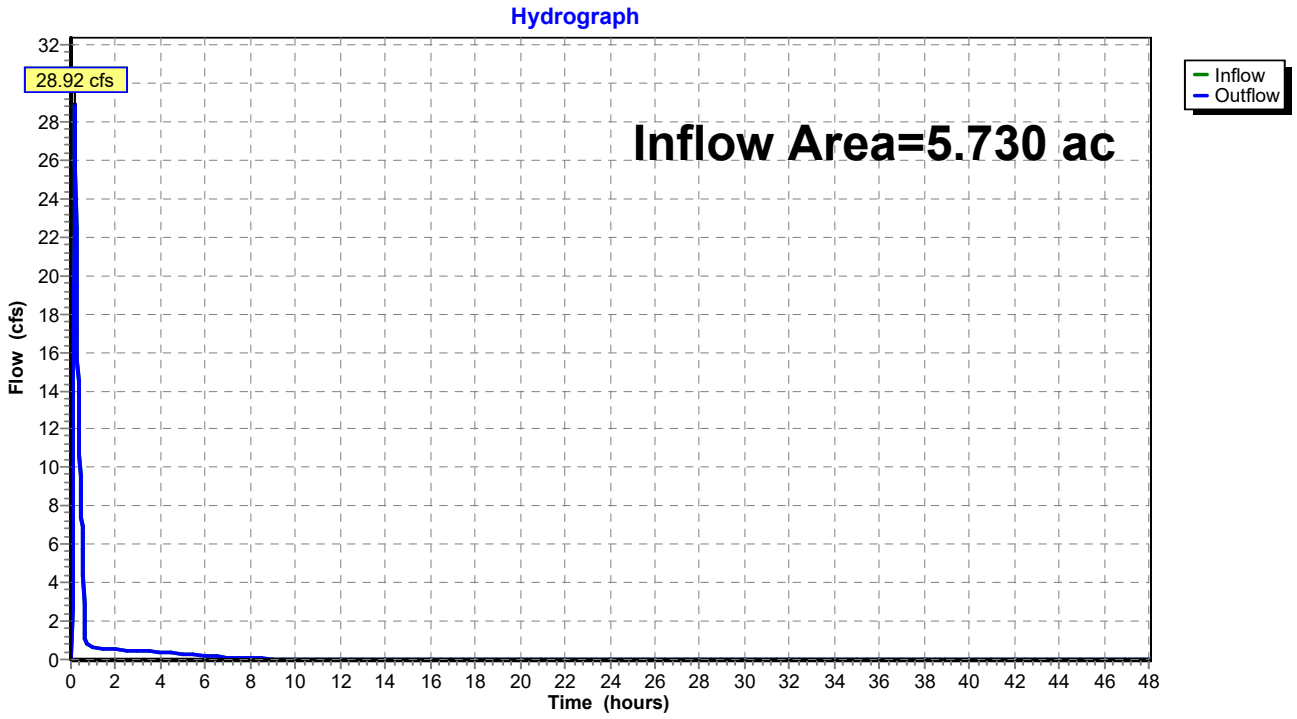


Summary for Reach 9R: Ostle and 157

Inflow Area = 5.730 ac, 59.34% Impervious, Inflow Depth = 1.73" for 100-yr, 0.5-hr event
Inflow = 28.92 cfs @ 0.19 hrs, Volume= 0.827 af
Outflow = 28.92 cfs @ 0.19 hrs, Volume= 0.827 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 9R: Ostle and 157

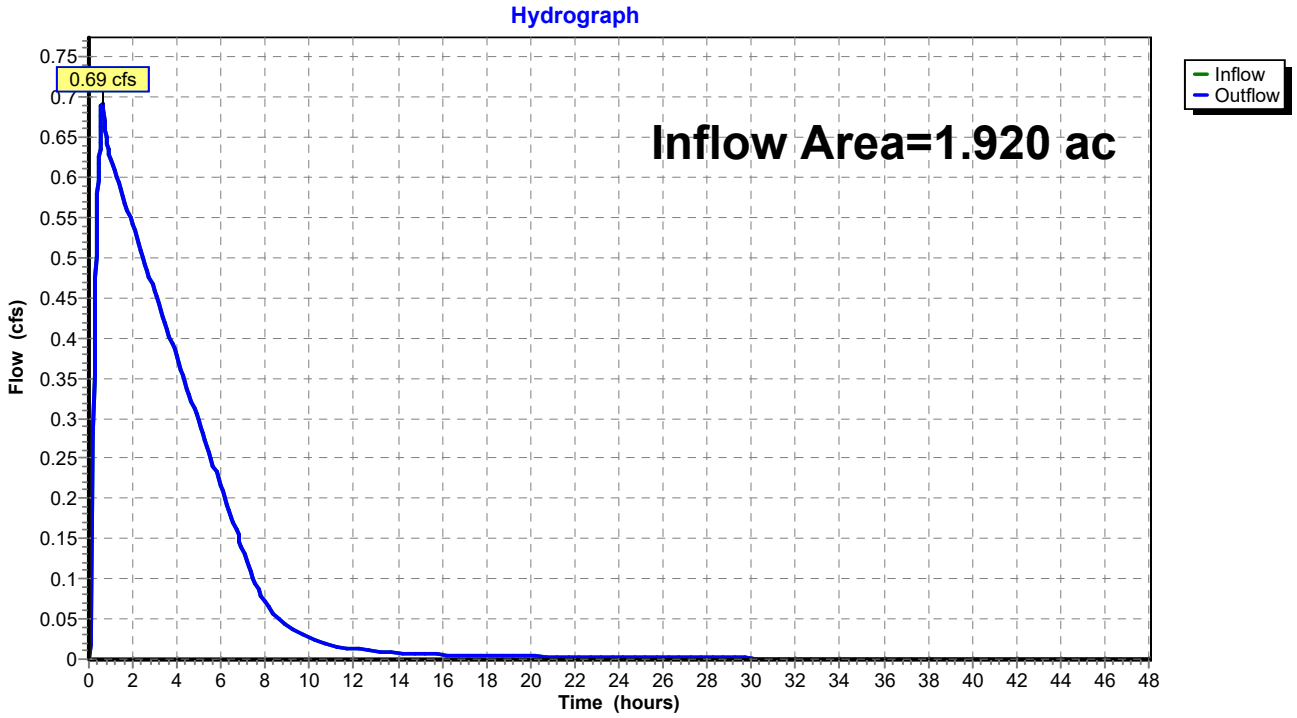


Summary for Reach 37R: City Storm Ostle

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth > 1.57" for 100-yr, 0.5-hr event
Inflow = 0.69 cfs @ 0.60 hrs, Volume= 0.251 af
Outflow = 0.69 cfs @ 0.60 hrs, Volume= 0.251 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 37R: City Storm Ostle

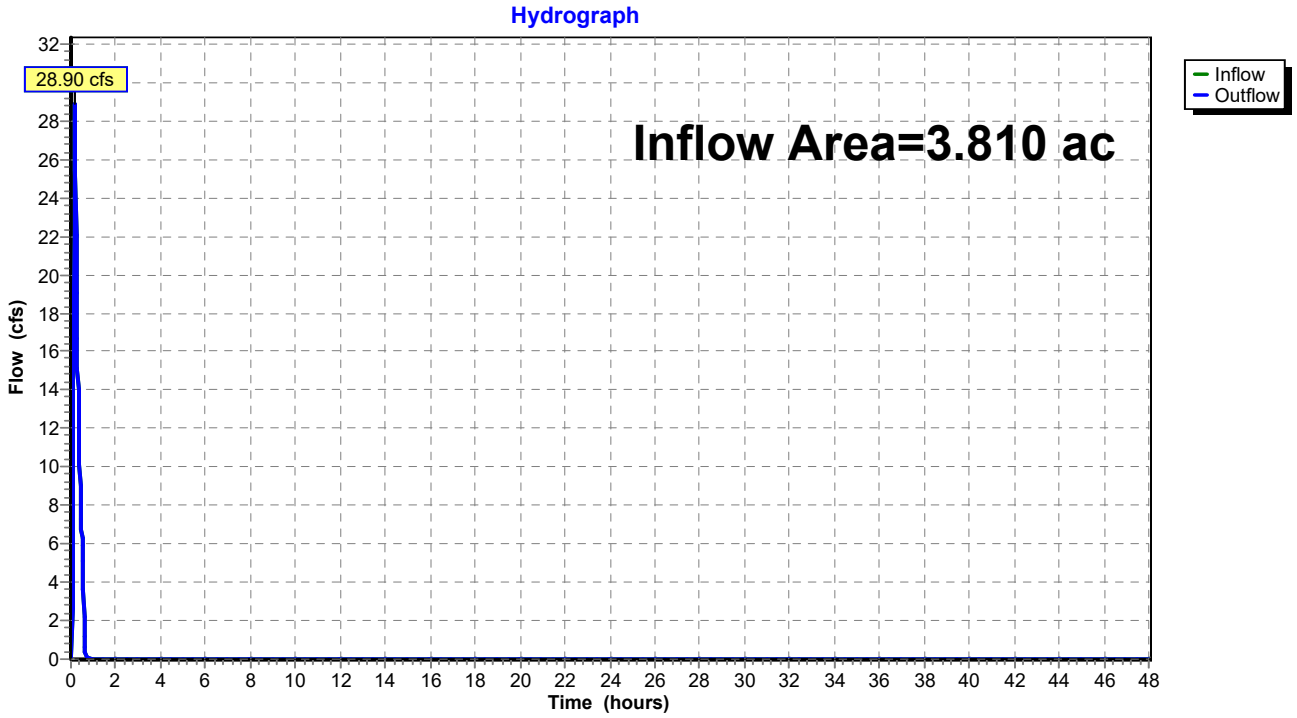


Summary for Reach 38R: ByPass

Inflow Area = 3.810 ac, 48.82% Impervious, Inflow Depth = 1.82" for 100-yr, 0.5-hr event
Inflow = 28.90 cfs @ 0.18 hrs, Volume= 0.576 af
Outflow = 28.90 cfs @ 0.18 hrs, Volume= 0.576 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 38R: ByPass



Summary for Pond 30P: Lot 2, 3, 4 (Dutch)

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 2.30" for 100-yr, 0.5-hr event
Inflow = 19.14 cfs @ 0.17 hrs, Volume= 0.368 af
Outflow = 0.69 cfs @ 0.60 hrs, Volume= 0.251 af, Atten= 96%, Lag= 25.7 min
Primary = 0.69 cfs @ 0.60 hrs, Volume= 0.251 af
Routed to Reach 37R : City Storm Ostle

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 445.86' @ 0.60 hrs Surf.Area= 0.107 ac Storage= 0.348 af

Plug-Flow detention time= 212.2 min calculated for 0.251 af (68% of inflow)
Center-of-Mass det. time= 207.9 min (223.4 - 15.5)

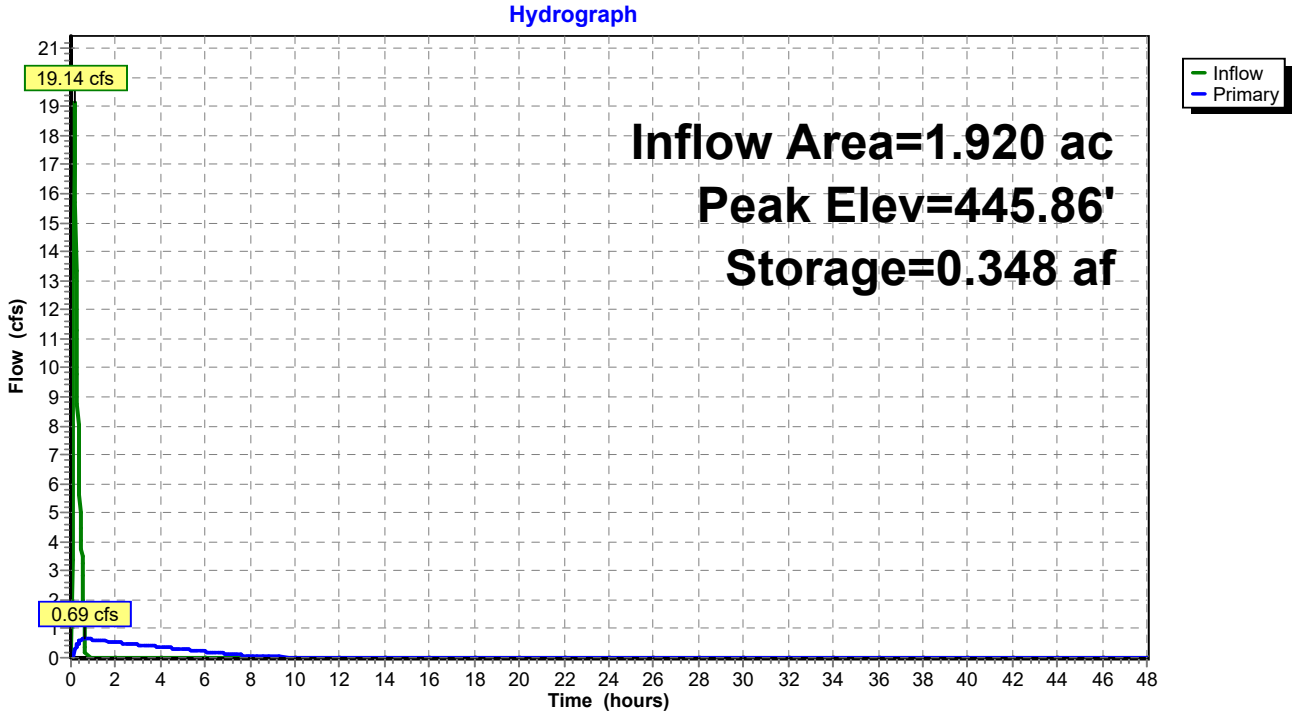
Volume	Invert	Avail.Storage	Storage Description
#1A	440.50'	0.257 af	**46.67'W x 99.75'L x 8.75'H Field A** 0.935 af Overall - 0.292 af Embedded = 0.643 af x 40.0% Voids
#2A	443.25'	0.292 af	**ADS_StormTech MC-7200 +Cap** x 70 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 70 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.549 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 3	445.75'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 1.00 3.00 Width (feet) 0.25 0.75
#2	Device 3	443.25'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	443.25'	**18.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.25' / 442.25' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=0.69 cfs @ 0.60 hrs HW=445.86' (Free Discharge)
└**3=Culvert** (Passes 0.69 cfs of 13.01 cfs potential flow)
  ├**1=Custom Weir** (Weir Controls 0.03 cfs @ 1.09 fps)
  └**2=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.53 fps)

Pond 30P: Lot 2, 3, 4 (Dutch)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment12S: Pr. Area A3 Runoff Area=0.250 ac 32.00% Impervious Runoff Depth=6.17"
Flow Length=484' Tc=5.0 min CN=85 Runoff=0.17 cfs 0.129 af

Subcatchment13S: Pr. Area A1 Runoff Area=1.650 ac 29.09% Impervious Runoff Depth=6.17"
Tc=5.0 min CN=85 Runoff=1.10 cfs 0.849 af

Subcatchment14S: Pr. Area A2 Runoff Area=0.170 ac 47.06% Impervious Runoff Depth=6.53"
Flow Length=224' Tc=5.0 min CN=88 Runoff=0.12 cfs 0.092 af

Subcatchment28S: Pr. C1.3 Runoff Area=1.740 ac 70.11% Impervious Runoff Depth=7.00"
Tc=5.0 min CN=92 Runoff=1.22 cfs 1.016 af

Subcatchment29S: Pr. Area C1.1 Runoff Area=1.920 ac 80.21% Impervious Runoff Depth=7.24"
Tc=5.0 min CN=94 Runoff=1.36 cfs 1.159 af

Reach 9R: Ostle and 157 Inflow=3.86 cfs 3.126 af
Outflow=3.86 cfs 3.126 af

Reach 37R: City Storm Ostle Inflow=1.30 cfs 1.040 af
Outflow=1.30 cfs 1.040 af

Reach 38R: ByPass Inflow=2.60 cfs 2.086 af
Outflow=2.60 cfs 2.086 af

Pond 30P: Lot 2, 3, 4 (Dutch) Peak Elev=446.42' Storage=0.393 af Inflow=1.36 cfs 1.159 af
Outflow=1.30 cfs 1.040 af

Total Runoff Area = 5.730 ac Runoff Volume = 3.244 af Average Runoff Depth = 6.79"
40.66% Pervious = 2.330 ac 59.34% Impervious = 3.400 ac

Summary for Subcatchment 12S: Pr. Area A3

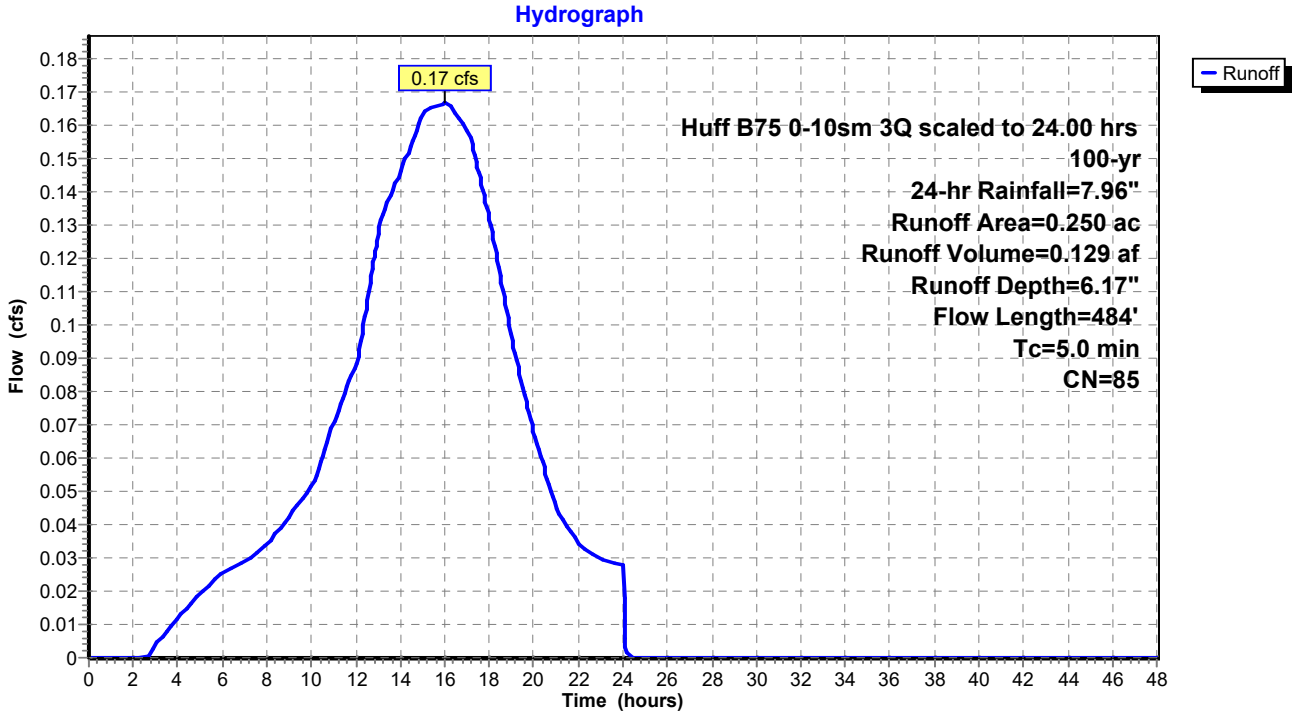
Runoff = 0.17 cfs @ 16.04 hrs, Volume= 0.129 af, Depth= 6.17"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.170	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.250	85	Weighted Average
0.170		68.00% Pervious Area
0.080		32.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: Pr. Area A3



Summary for Subcatchment 13S: Pr. Area A1

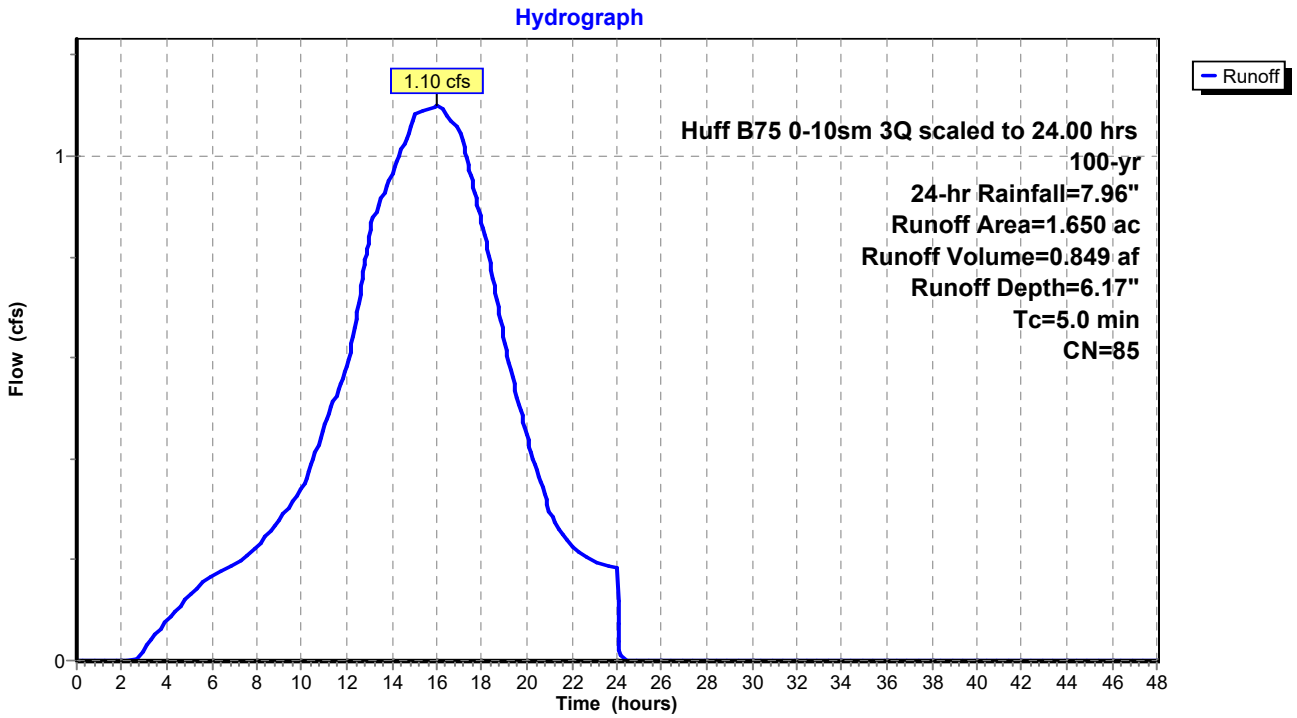
Runoff = 1.10 cfs @ 16.04 hrs, Volume= 0.849 af, Depth= 6.17"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.170	79	50-75% Grass cover, Fair, HSG C
0.480	98	Paved parking, HSG C
1.650	85	Weighted Average
1.170		70.91% Pervious Area
0.480		29.09% Impervious Area

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

Subcatchment 13S: Pr. Area A1



Summary for Subcatchment 14S: Pr. Area A2

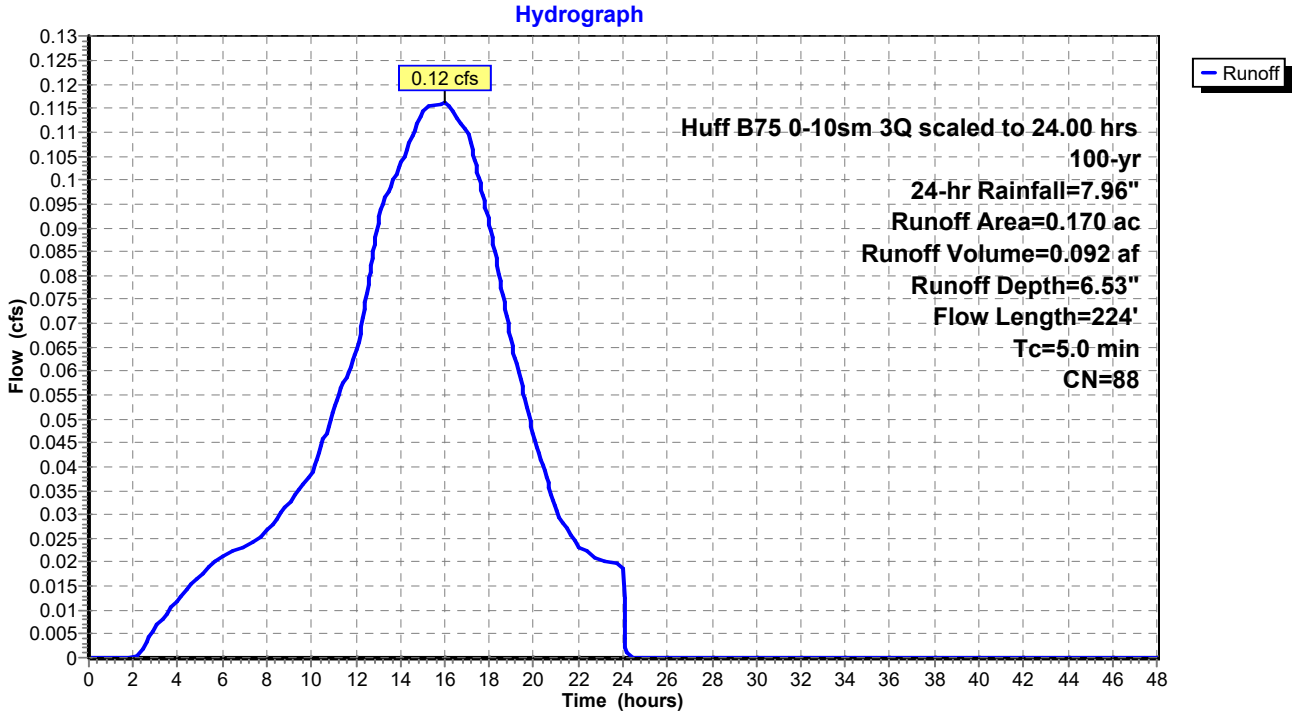
Runoff = 0.12 cfs @ 16.03 hrs, Volume= 0.092 af, Depth= 6.53"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.090	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.170	88	Weighted Average
0.090		52.94% Pervious Area
0.080		47.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: Pr. Area A2



Summary for Subcatchment 28S: Pr. C1.3

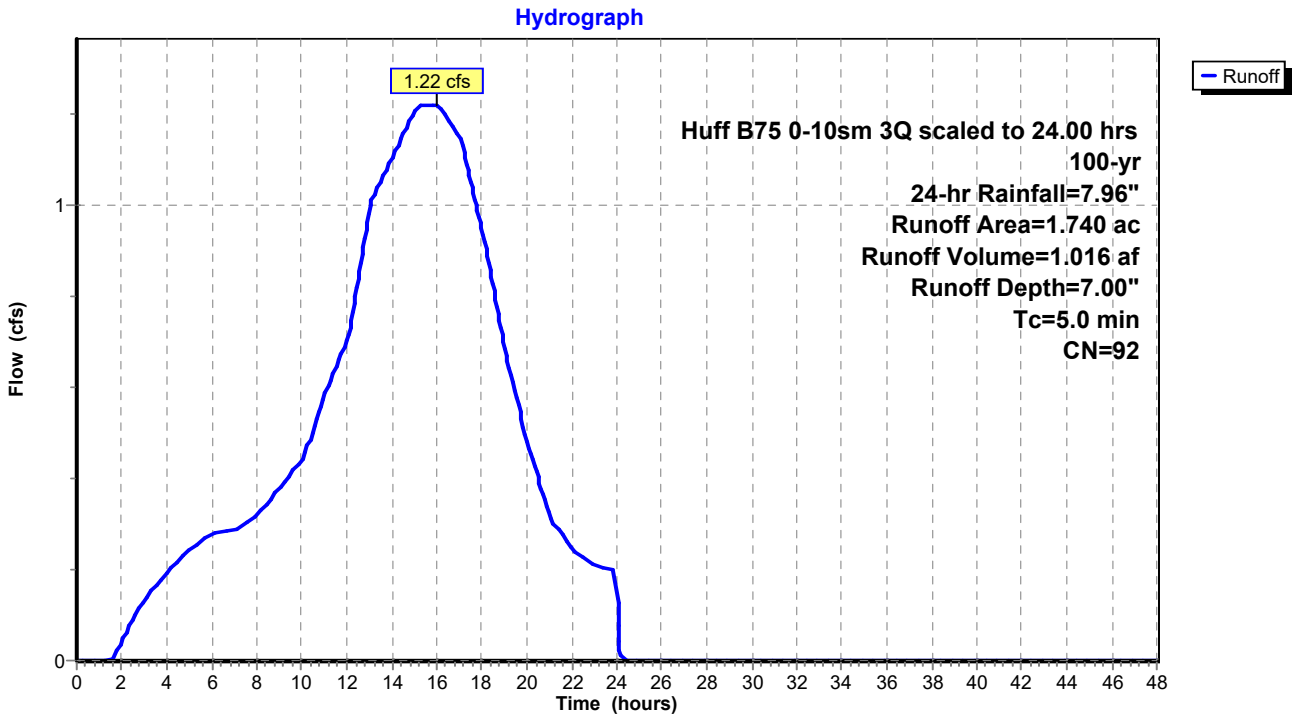
Runoff = 1.22 cfs @ 16.00 hrs, Volume= 1.016 af, Depth= 7.00"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.220	98	Paved parking, HSG C
0.520	79	50-75% Grass cover, Fair, HSG C
1.740	92	Weighted Average
0.520		29.89% Pervious Area
1.220		70.11% Impervious Area

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

Subcatchment 28S: Pr. C1.3



Summary for Subcatchment 29S: Pr. Area C1.1

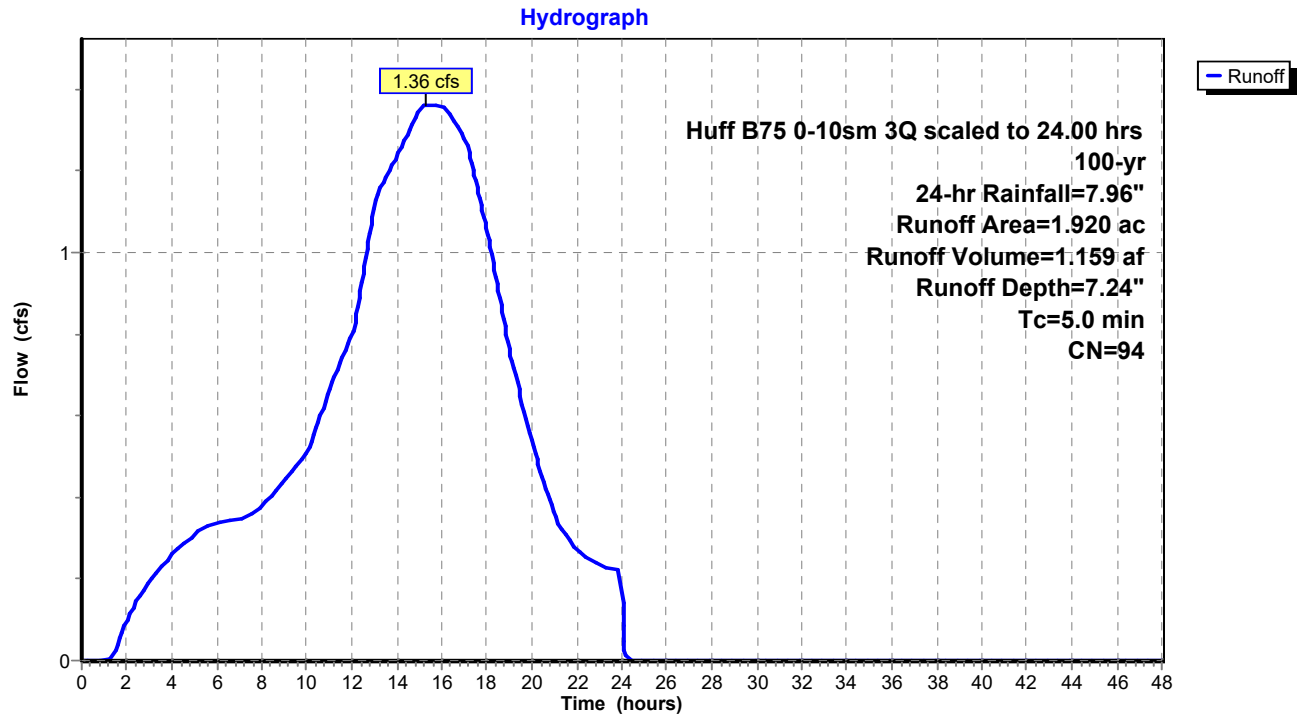
Runoff = 1.36 cfs @ 15.30 hrs, Volume= 1.159 af, Depth= 7.24"
Routed to Pond 30P : Lot 2, 3, 4 (Dutch)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.540	98	Paved parking, HSG C
0.380	79	50-75% Grass cover, Fair, HSG C
1.920	94	Weighted Average
0.380		19.79% Pervious Area
1.540		80.21% Impervious Area

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

Subcatchment 29S: Pr. Area C1.1

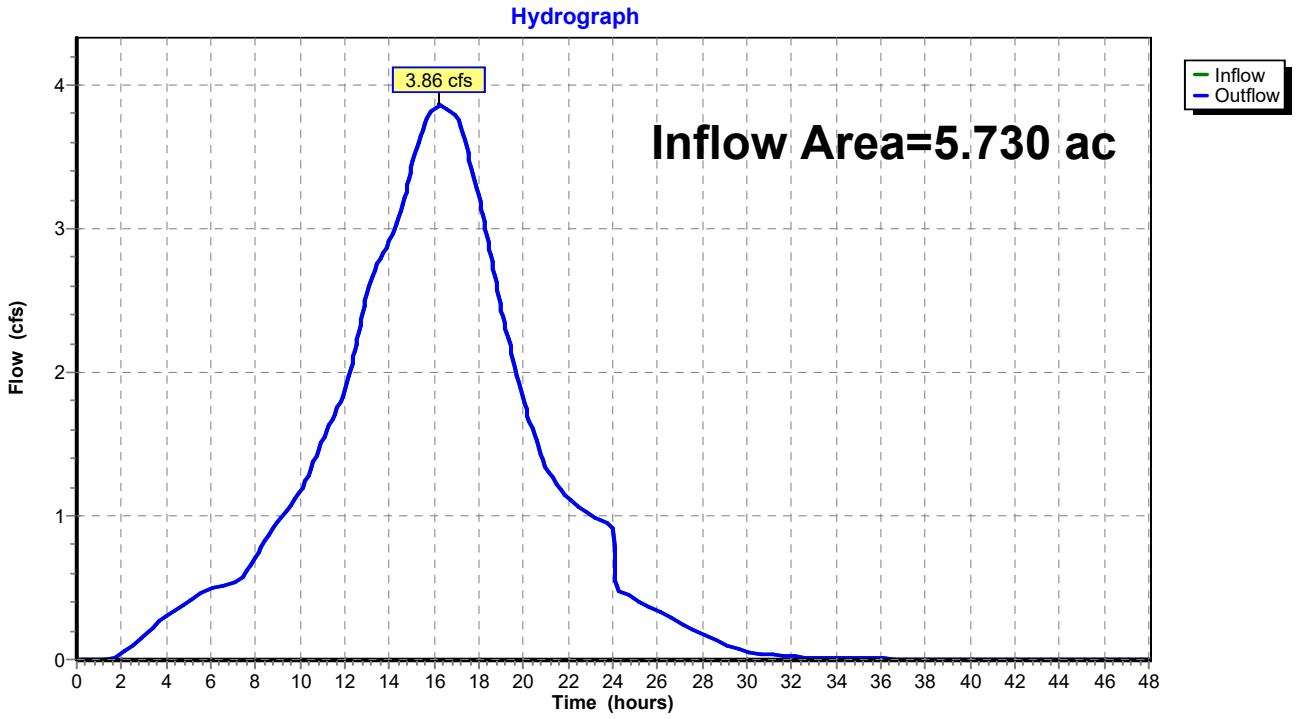


Summary for Reach 9R: Ostle and 157

Inflow Area = 5.730 ac, 59.34% Impervious, Inflow Depth > 6.55" for 100-yr, 24-hr event
Inflow = 3.86 cfs @ 16.18 hrs, Volume= 3.126 af
Outflow = 3.86 cfs @ 16.18 hrs, Volume= 3.126 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 9R: Ostle and 157

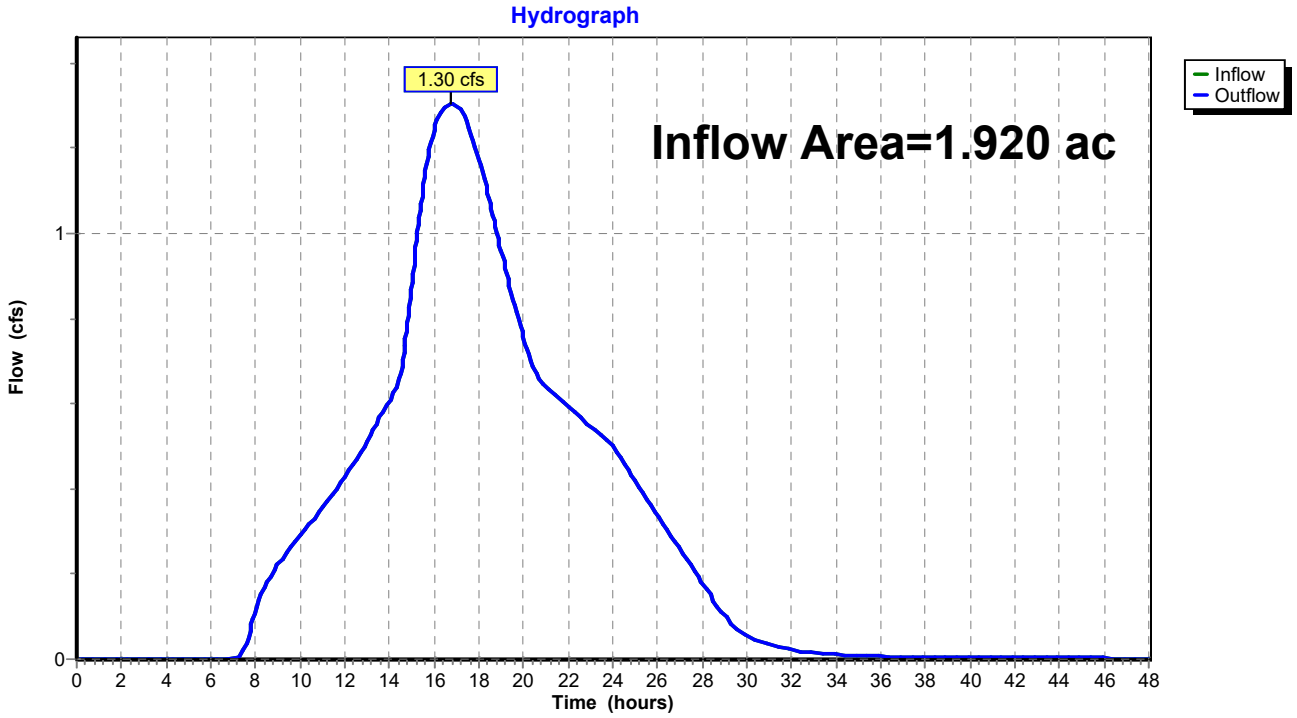


Summary for Reach 37R: City Storm Ostle

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth > 6.50" for 100-yr, 24-hr event
Inflow = 1.30 cfs @ 16.75 hrs, Volume= 1.040 af
Outflow = 1.30 cfs @ 16.75 hrs, Volume= 1.040 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 37R: City Storm Ostle

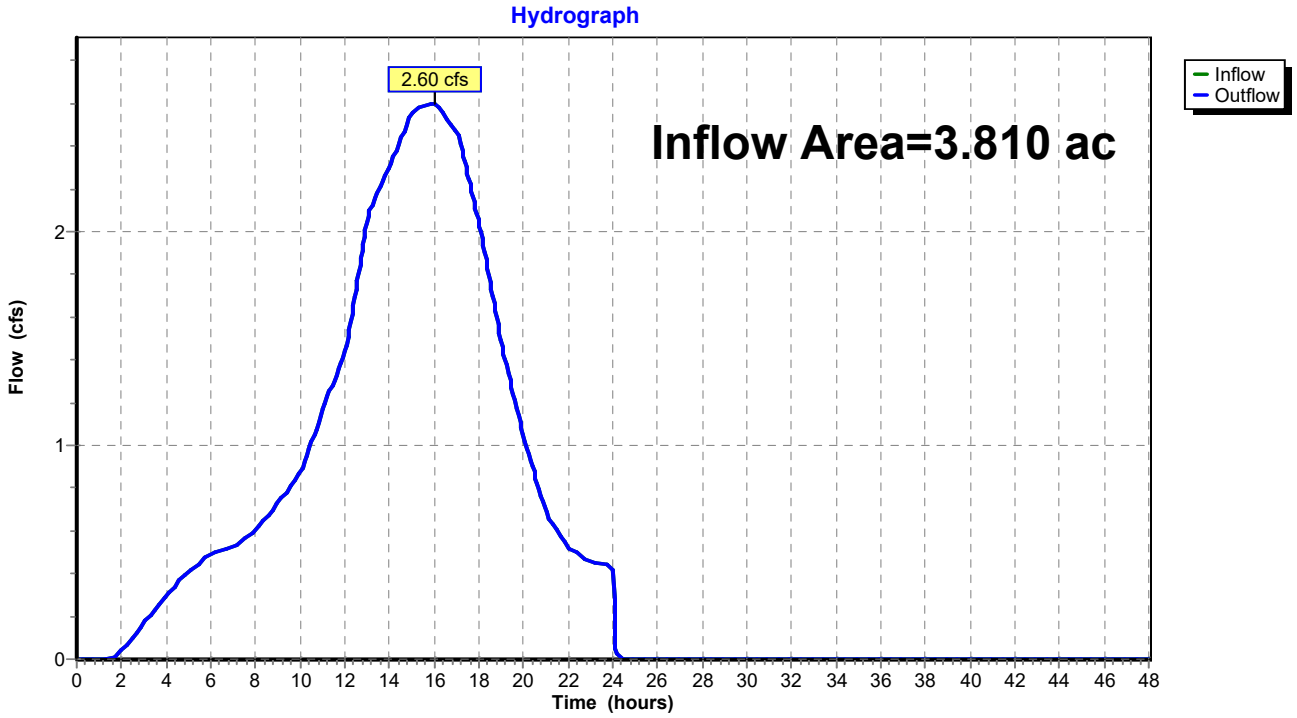


Summary for Reach 38R: ByPass

Inflow Area = 3.810 ac, 48.82% Impervious, Inflow Depth = 6.57" for 100-yr, 24-hr event
Inflow = 2.60 cfs @ 16.03 hrs, Volume= 2.086 af
Outflow = 2.60 cfs @ 16.03 hrs, Volume= 2.086 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 38R: ByPass



Summary for Pond 30P: Lot 2, 3, 4 (Dutch)

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 7.24" for 100-yr, 24-hr event
Inflow = 1.36 cfs @ 15.30 hrs, Volume= 1.159 af
Outflow = 1.30 cfs @ 16.75 hrs, Volume= 1.040 af, Atten= 4%, Lag= 87.0 min
Primary = 1.30 cfs @ 16.75 hrs, Volume= 1.040 af
Routed to Reach 37R : City Storm Ostle

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 446.42' @ 16.75 hrs Surf.Area= 0.107 ac Storage= 0.393 af

Plug-Flow detention time= 301.7 min calculated for 1.040 af (90% of inflow)
Center-of-Mass det. time= 251.6 min (1,101.5 - 849.9)

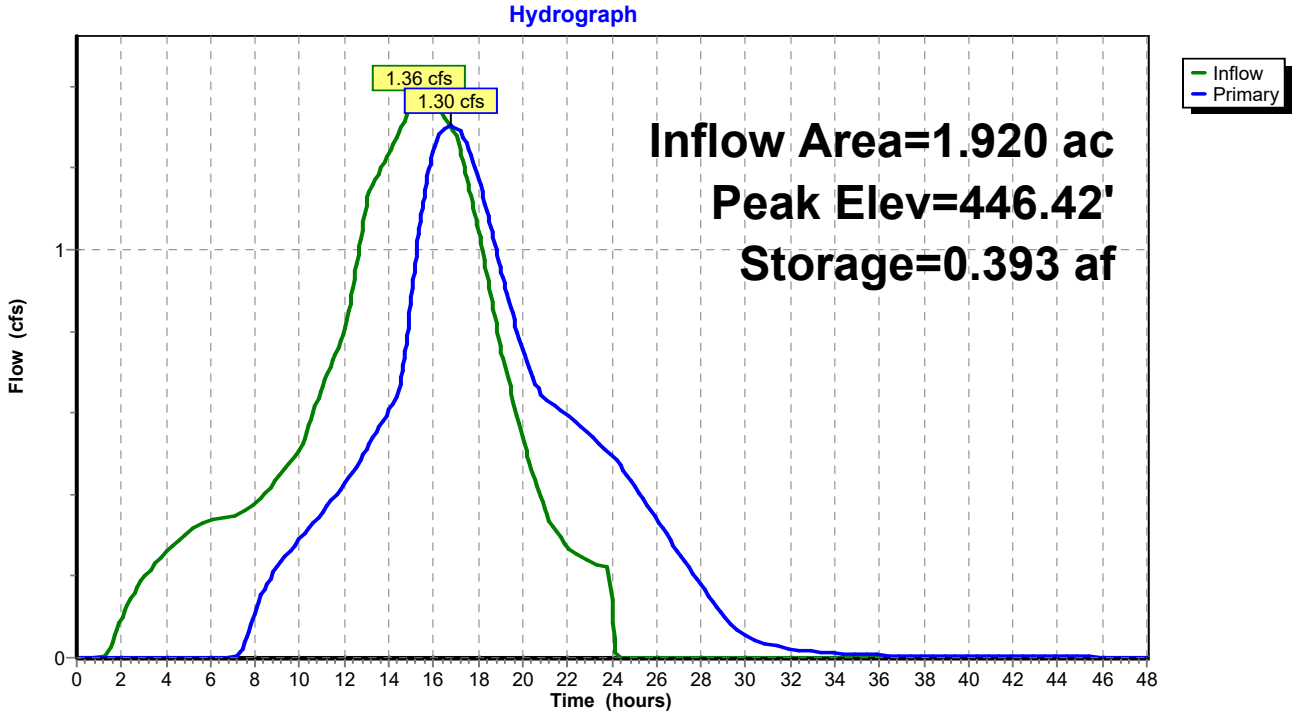
Volume	Invert	Avail.Storage	Storage Description
#1A	440.50'	0.257 af	**46.67'W x 99.75'L x 8.75'H Field A** 0.935 af Overall - 0.292 af Embedded = 0.643 af x 40.0% Voids
#2A	443.25'	0.292 af	**ADS_StormTech MC-7200 +Cap** x 70 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 70 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.549 af	Total Available Storage

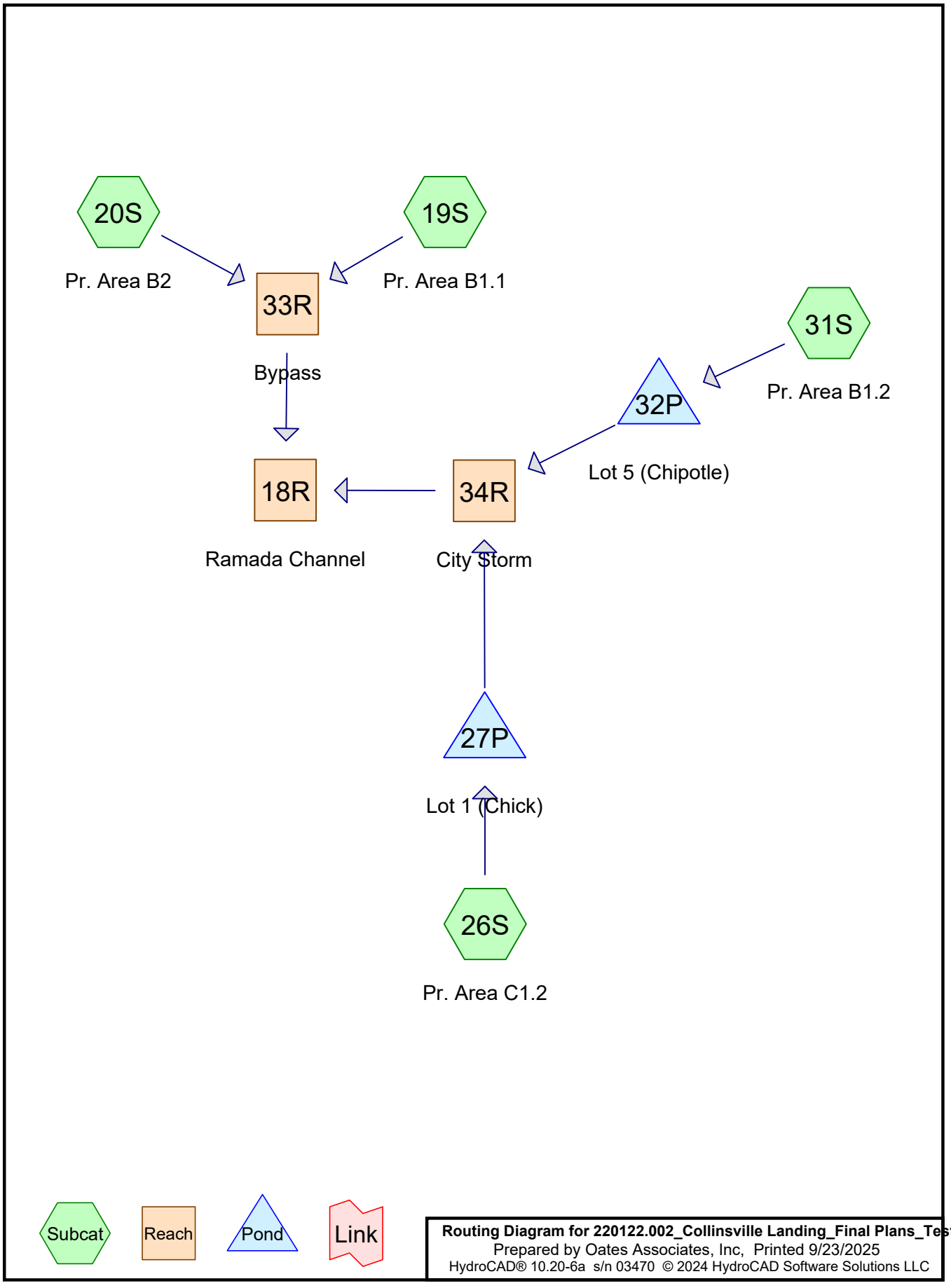
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 3	445.75'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 1.00 3.00 Width (feet) 0.25 0.75
#2	Device 3	443.25'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	443.25'	**18.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.25' / 442.25' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=1.30 cfs @ 16.75 hrs HW=446.42' (Free Discharge)
└**3=Culvert** (Passes 1.30 cfs of 14.64 cfs potential flow)
  ├**1=Custom Weir** (Weir Controls 0.57 cfs @ 2.55 fps)
  └**2=Orifice/Grate** (Orifice Controls 0.73 cfs @ 8.35 fps)

Pond 30P: Lot 2, 3, 4 (Dutch)





Routing Diagram for 220122.002_Collinsville Landing_Final Plans_Test
Prepared by Oates Associates, Inc, Printed 9/23/2025
HydroCAD® 10.20-6a s/n 03470 © 2024 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.300	79	50-75% Grass cover, Fair, HSG C (19S, 20S, 26S, 31S)
2.730	98	Paved parking, HSG C (19S, 20S, 26S, 31S)
10.030	**84**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment19S: Pr. Area B1.1 Runoff Area=6.910 ac 8.83% Impervious Runoff Depth=0.44"
Flow Length=1,457' Tc=10.4 min CN=81 Runoff=5.42 cfs 0.254 af

Subcatchment20S: Pr. Area B2 Runoff Area=1.090 ac 45.87% Impervious Runoff Depth=0.75"
Flow Length=409' Tc=5.0 min CN=88 Runoff=1.86 cfs 0.068 af

Subcatchment26S: Pr. Area C1.2 Runoff Area=1.320 ac 90.15% Impervious Runoff Depth=1.31"
Tc=5.0 min CN=96 Runoff=4.21 cfs 0.145 af

Subcatchment31S: Pr. Area B1.2 Runoff Area=0.710 ac 60.56% Impervious Runoff Depth=0.93"
Tc=5.0 min CN=91 Runoff=1.53 cfs 0.055 af

Reach 18R: Ramada Channel Inflow=6.75 cfs 0.385 af
Outflow=6.75 cfs 0.385 af

Reach 33R: Bypass Inflow=6.74 cfs 0.322 af
Outflow=6.74 cfs 0.322 af

Reach 34R: City Storm Inflow=0.09 cfs 0.063 af
Outflow=0.09 cfs 0.063 af

Pond 27P: Lot 1 (Chick) Peak Elev=446.73' Storage=0.144 af Inflow=4.21 cfs 0.145 af
Outflow=0.02 cfs 0.028 af

Pond 32P: Lot 5 (Chipotle) Peak Elev=453.98' Storage=0.052 af Inflow=1.53 cfs 0.055 af
Outflow=0.08 cfs 0.034 af

Total Runoff Area = 10.030 ac Runoff Volume = 0.522 af Average Runoff Depth = 0.62"
72.78% Pervious = 7.300 ac 27.22% Impervious = 2.730 ac

Summary for Subcatchment 19S: Pr. Area B1.1

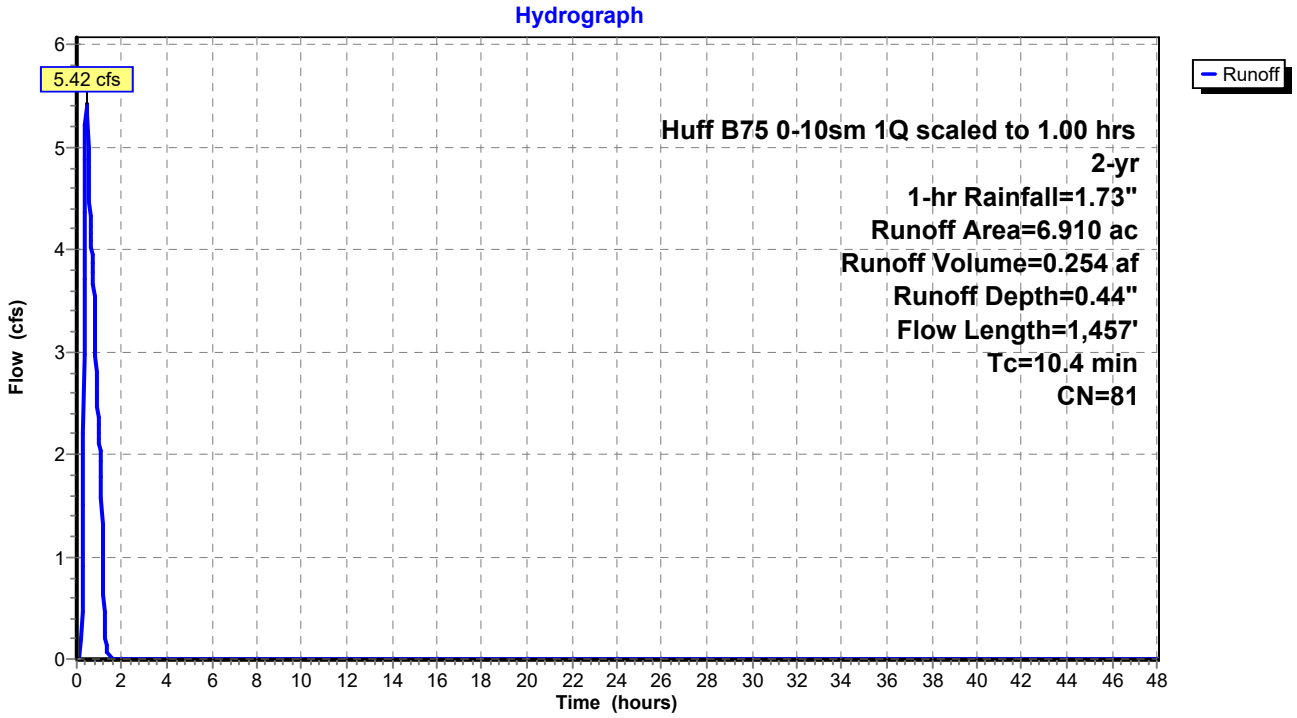
Runoff = 5.42 cfs @ 0.44 hrs, Volume= 0.254 af, Depth= 0.44"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 2-yr, 1-hr Rainfall=1.73"

Area (ac)	CN	Description
6.300	79	50-75% Grass cover, Fair, HSG C
0.610	98	Paved parking, HSG C
6.910	81	Weighted Average
6.300		91.17% Pervious Area
0.610		8.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 19S: Pr. Area B1.1



Summary for Subcatchment 20S: Pr. Area B2

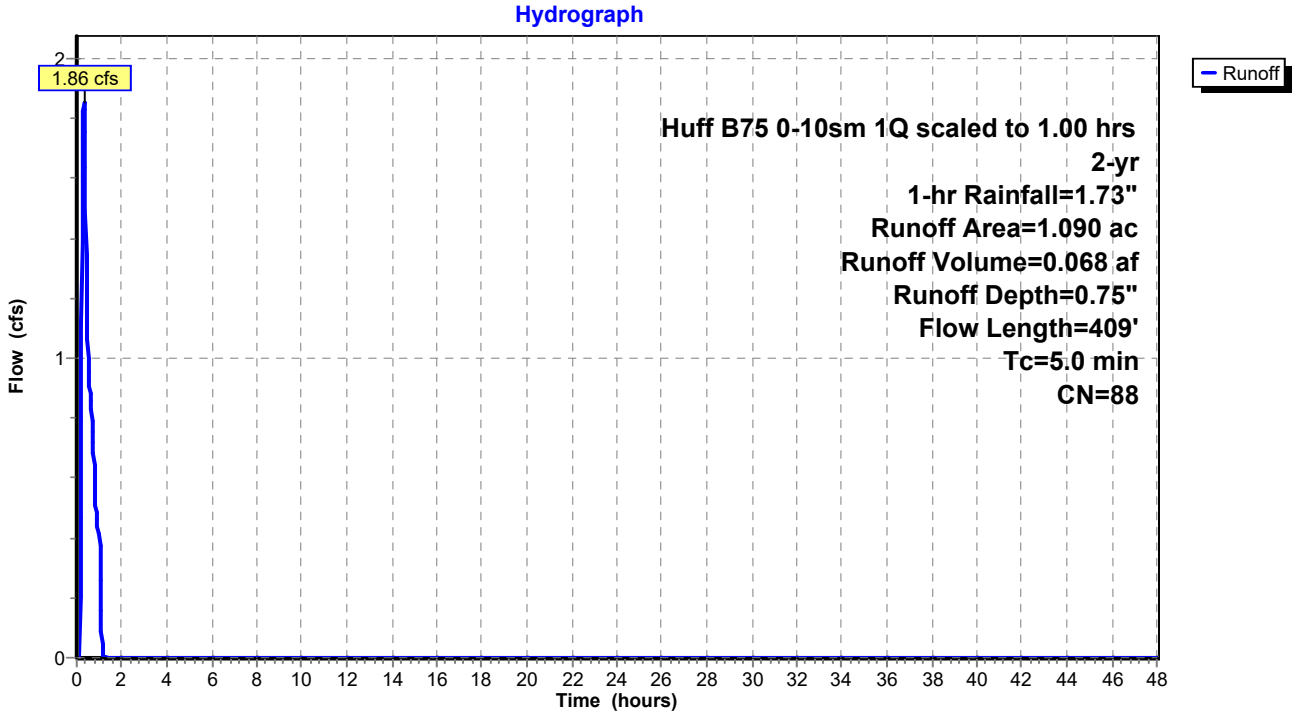
Runoff = 1.86 cfs @ 0.32 hrs, Volume= 0.068 af, Depth= 0.75"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 2-yr, 1-hr Rainfall=1.73"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.590	79	50-75% Grass cover, Fair, HSG C
1.090	88	Weighted Average
0.590		54.13% Pervious Area
0.500		45.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 20S: Pr. Area B2



Summary for Subcatchment 26S: Pr. Area C1.2

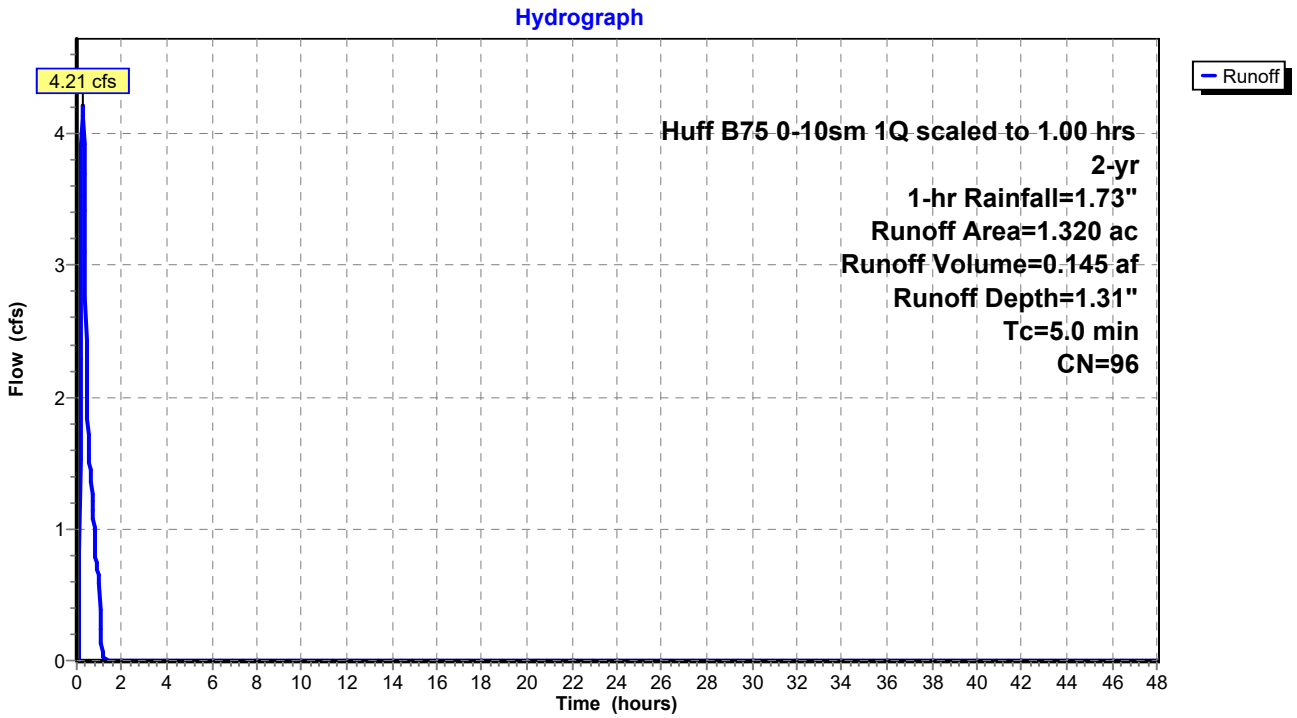
Runoff = 4.21 cfs @ 0.27 hrs, Volume= 0.145 af, Depth= 1.31"
Routed to Pond 27P : Lot 1 (Chick)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 2-yr, 1-hr Rainfall=1.73"

Area (ac)	CN	Description
1.190	98	Paved parking, HSG C
0.130	79	50-75% Grass cover, Fair, HSG C
1.320	96	Weighted Average
0.130		9.85% Pervious Area
1.190		90.15% Impervious Area

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

Subcatchment 26S: Pr. Area C1.2



Summary for Subcatchment 31S: Pr. Area B1.2

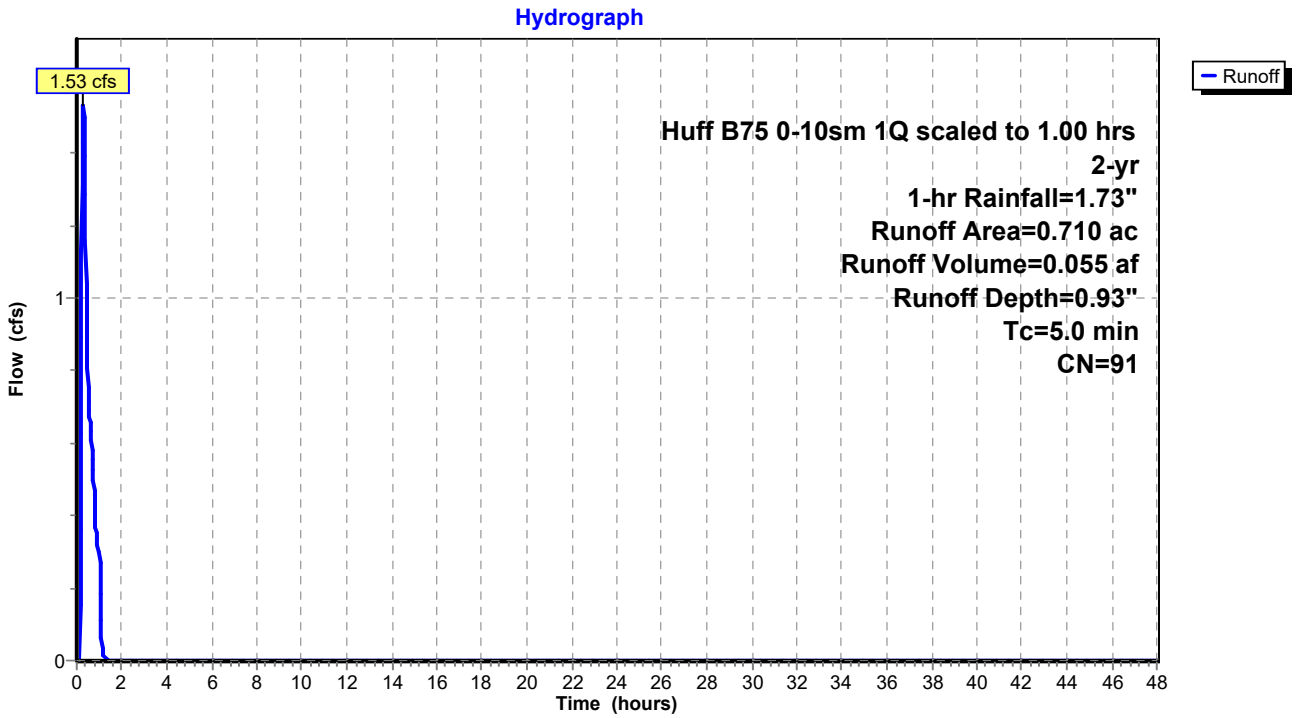
Runoff = 1.53 cfs @ 0.31 hrs, Volume= 0.055 af, Depth= 0.93"
Routed to Pond 32P : Lot 5 (Chipotle)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 2-yr, 1-hr Rainfall=1.73"

Area (ac)	CN	Description
0.280	79	50-75% Grass cover, Fair, HSG C
0.430	98	Paved parking, HSG C
0.710	91	Weighted Average
0.280		39.44% Pervious Area
0.430		60.56% Impervious Area

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

Subcatchment 31S: Pr. Area B1.2

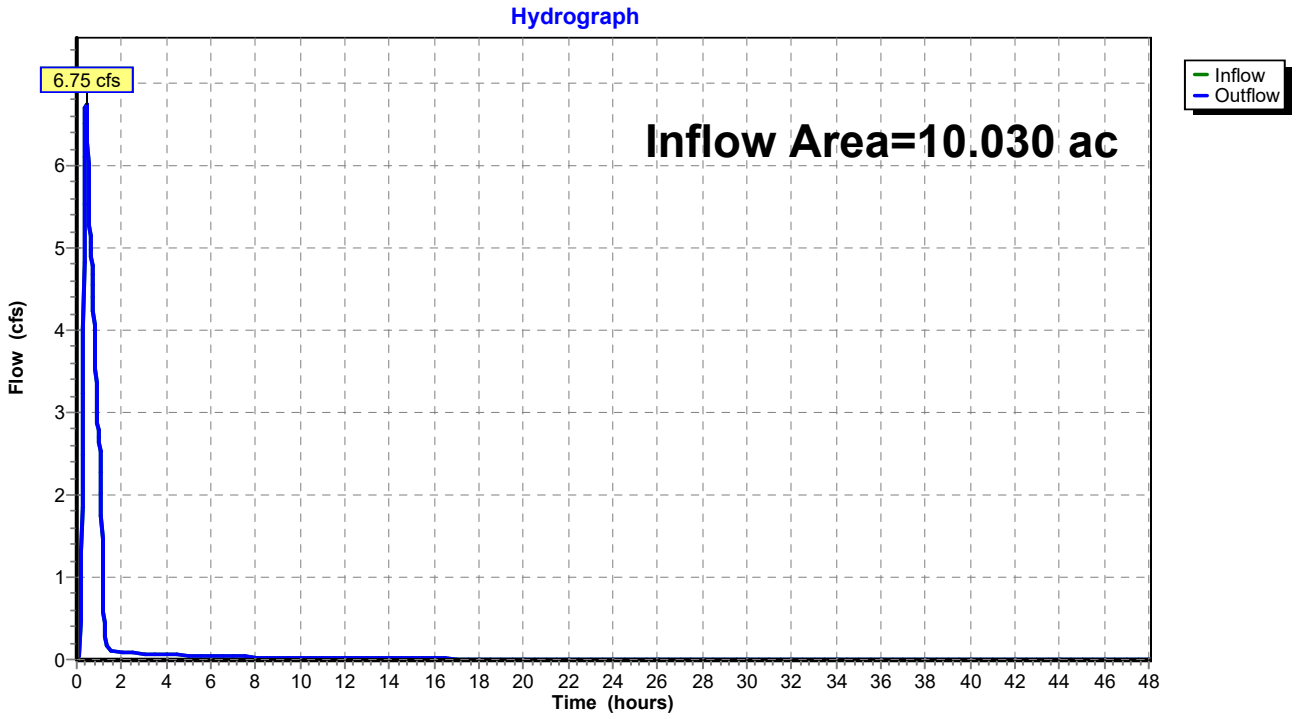


Summary for Reach 18R: Ramada Channel

Inflow Area = 10.030 ac, 27.22% Impervious, Inflow Depth > 0.46" for 2-yr, 1-hr event
Inflow = 6.75 cfs @ 0.42 hrs, Volume= 0.385 af
Outflow = 6.75 cfs @ 0.42 hrs, Volume= 0.385 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 18R: Ramada Channel

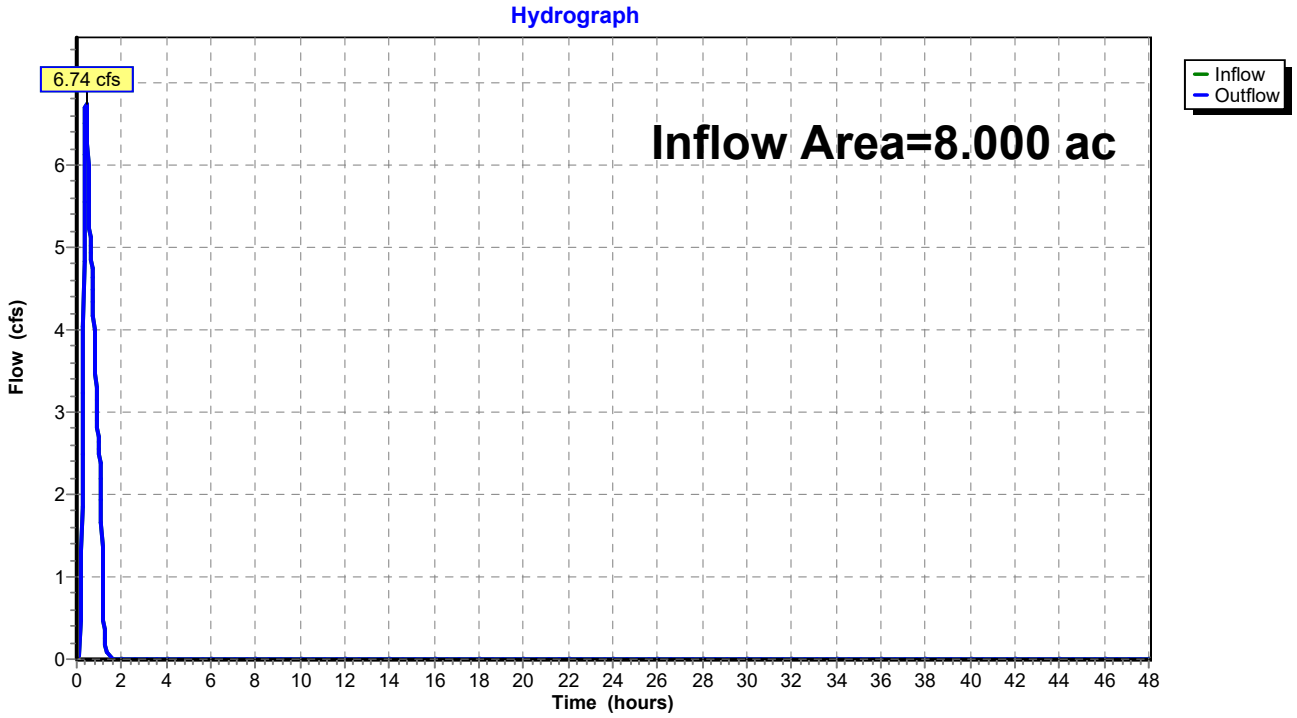


Summary for Reach 33R: Bypass

Inflow Area = 8.000 ac, 13.87% Impervious, Inflow Depth = 0.48" for 2-yr, 1-hr event
Inflow = 6.74 cfs @ 0.41 hrs, Volume= 0.322 af
Outflow = 6.74 cfs @ 0.41 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 33R: Bypass

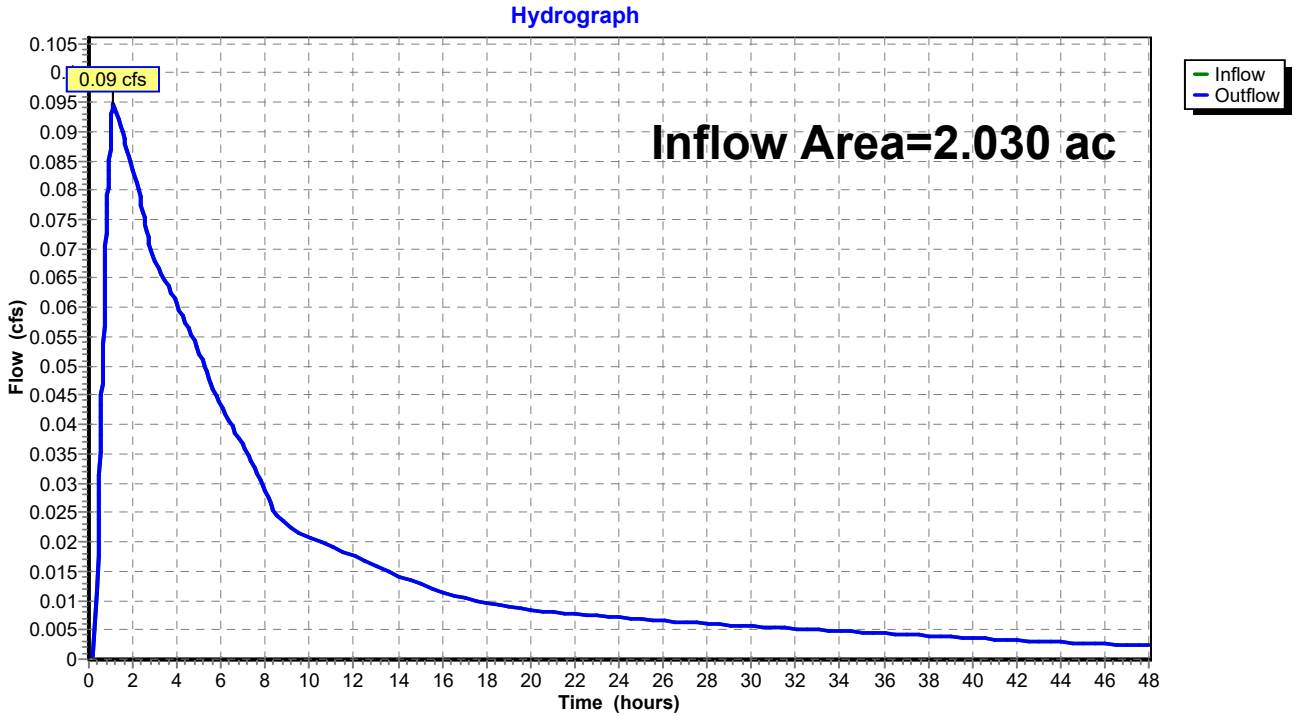


Summary for Reach 34R: City Storm

Inflow Area = 2.030 ac, 79.80% Impervious, Inflow Depth > 0.37" for 2-yr, 1-hr event
Inflow = 0.09 cfs @ 1.11 hrs, Volume= 0.063 af
Outflow = 0.09 cfs @ 1.11 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 34R: City Storm



Summary for Pond 27P: Lot 1 (Chick)

Inflow Area = 1.320 ac, 90.15% Impervious, Inflow Depth = 1.31" for 2-yr, 1-hr event
Inflow = 4.21 cfs @ 0.27 hrs, Volume= 0.145 af
Outflow = 0.02 cfs @ 1.17 hrs, Volume= 0.028 af, Atten= 100%, Lag= 54.2 min
Primary = 0.02 cfs @ 1.17 hrs, Volume= 0.028 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 446.73' @ 1.17 hrs Surf.Area= 0.161 ac Storage= 0.144 af

Plug-Flow detention time= 1,058.4 min calculated for 0.028 af (20% of inflow)
Center-of-Mass det. time= 1,043.0 min (1,069.7 - 26.7)

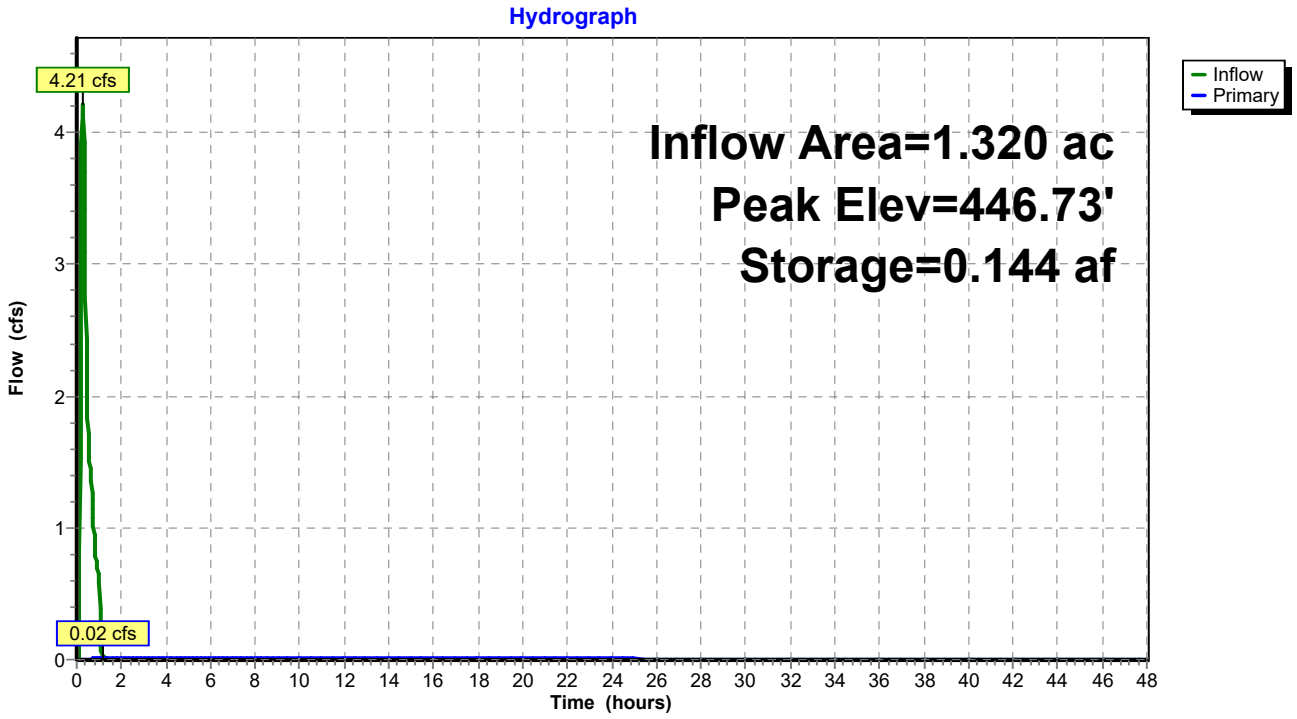
Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.230 af	**72.75'W x 96.28'L x 5.00'H Field A** 0.804 af Overall - 0.229 af Embedded = 0.575 af x 40.0% Voids
#2A	446.50'	0.229 af	**ADS_StormTech SC-800 +Cap** x 195 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 195 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		0.459 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	446.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 446.00' / 445.13' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	448.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.50'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 3 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	447.00'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#5	Device 1	447.50'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 4 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#6	Device 1	448.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.02 cfs @ 1.17 hrs HW=446.73' (Free Discharge)
└─**1=Culvert** (Passes 0.02 cfs of 2.00 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.61 fps)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 27P: Lot 1 (Chick)



Summary for Pond 32P: Lot 5 (Chipotle)

Inflow Area = 0.710 ac, 60.56% Impervious, Inflow Depth = 0.93" for 2-yr, 1-hr event
Inflow = 1.53 cfs @ 0.31 hrs, Volume= 0.055 af
Outflow = 0.08 cfs @ 1.09 hrs, Volume= 0.034 af, Atten= 95%, Lag= 47.4 min
Primary = 0.08 cfs @ 1.09 hrs, Volume= 0.034 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 453.98' @ 1.09 hrs Surf.Area= 0.052 ac Storage= 0.052 af

Plug-Flow detention time= 277.4 min calculated for 0.034 af (62% of inflow)
Center-of-Mass det. time= 268.6 min (298.0 - 29.5)

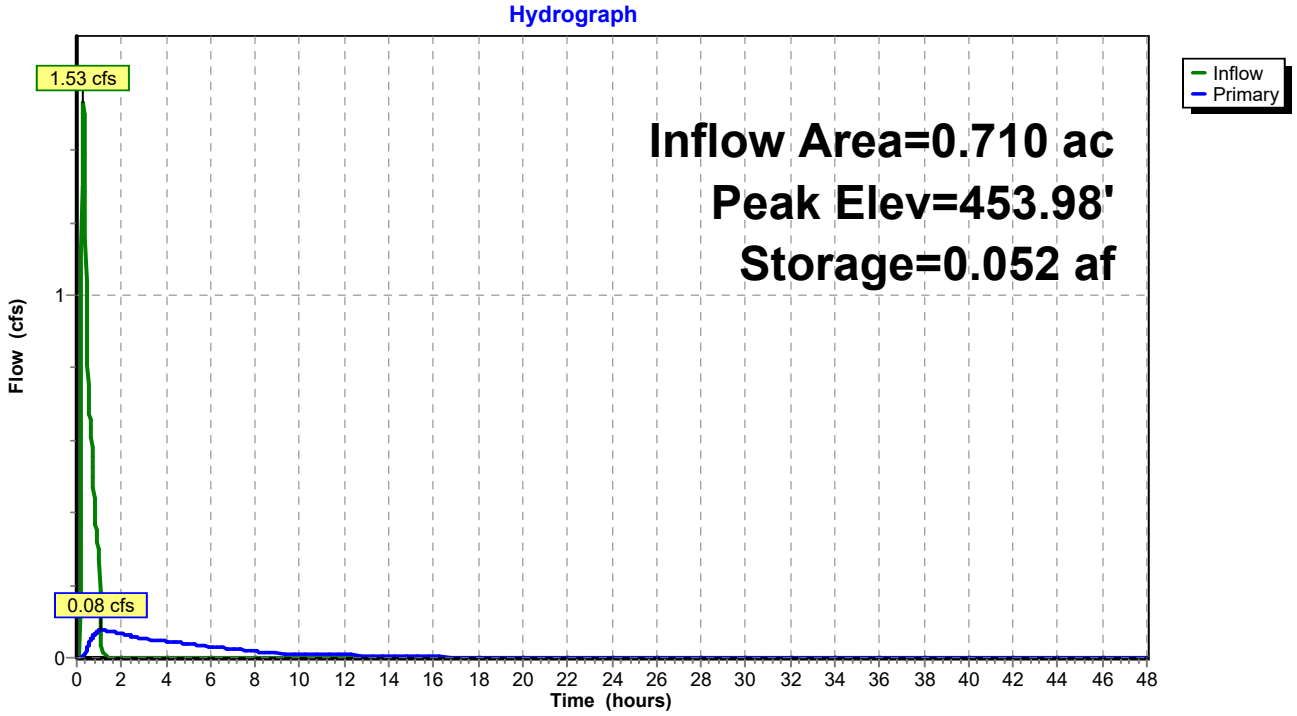
Volume	Invert	Avail.Storage	Storage Description
#1A	452.00'	0.071 af	**20.50'W x 110.52'L x 4.75'H Field A** 0.247 af Overall - 0.070 af Embedded = 0.177 af x 40.0% Voids
#2A	453.50'	0.070 af	**ADS_StormTech SC-800 +Cap** x 60 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 60 Chambers in 4 Rows Cap Storage= 3.4 cf x 2 x 4 rows = 27.4 cf
		0.141 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 453.00' / 452.50' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	456.00'	**2.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.00'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	456.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.08 cfs @ 1.09 hrs HW=453.98' (Free Discharge)
└**1=Culvert** (Passes 0.08 cfs of 2.49 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.56 fps)
  └**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 32P: Lot 5 (Chipotle)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment19S: Pr. Area B1.1 Runoff Area=6.910 ac 8.83% Impervious Runoff Depth=1.86"
Flow Length=1,457' Tc=10.4 min CN=81 Runoff=1.62 cfs 1.073 af

Subcatchment20S: Pr. Area B2 Runoff Area=1.090 ac 45.87% Impervious Runoff Depth=2.44"
Flow Length=409' Tc=5.0 min CN=88 Runoff=0.31 cfs 0.222 af

Subcatchment26S: Pr. Area C1.2 Runoff Area=1.320 ac 90.15% Impervious Runoff Depth=3.23"
Tc=5.0 min CN=96 Runoff=0.43 cfs 0.356 af

Subcatchment31S: Pr. Area B1.2 Runoff Area=0.710 ac 60.56% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=91 Runoff=0.21 cfs 0.161 af

Reach 18R: Ramada Channel Inflow=2.20 cfs 1.649 af
Outflow=2.20 cfs 1.649 af

Reach 33R: Bypass Inflow=1.92 cfs 1.295 af
Outflow=1.92 cfs 1.295 af

Reach 34R: City Storm Inflow=0.37 cfs 0.354 af
Outflow=0.37 cfs 0.354 af

Pond 27P: Lot 1 (Chick) Peak Elev=447.57' Storage=0.254 af Inflow=0.43 cfs 0.356 af
Outflow=0.22 cfs 0.214 af

Pond 32P: Lot 5 (Chipotle) Peak Elev=454.58' Storage=0.076 af Inflow=0.21 cfs 0.161 af
Outflow=0.15 cfs 0.140 af

Total Runoff Area = 10.030 ac Runoff Volume = 1.812 af Average Runoff Depth = 2.17"
72.78% Pervious = 7.300 ac 27.22% Impervious = 2.730 ac

Summary for Subcatchment 19S: Pr. Area B1.1

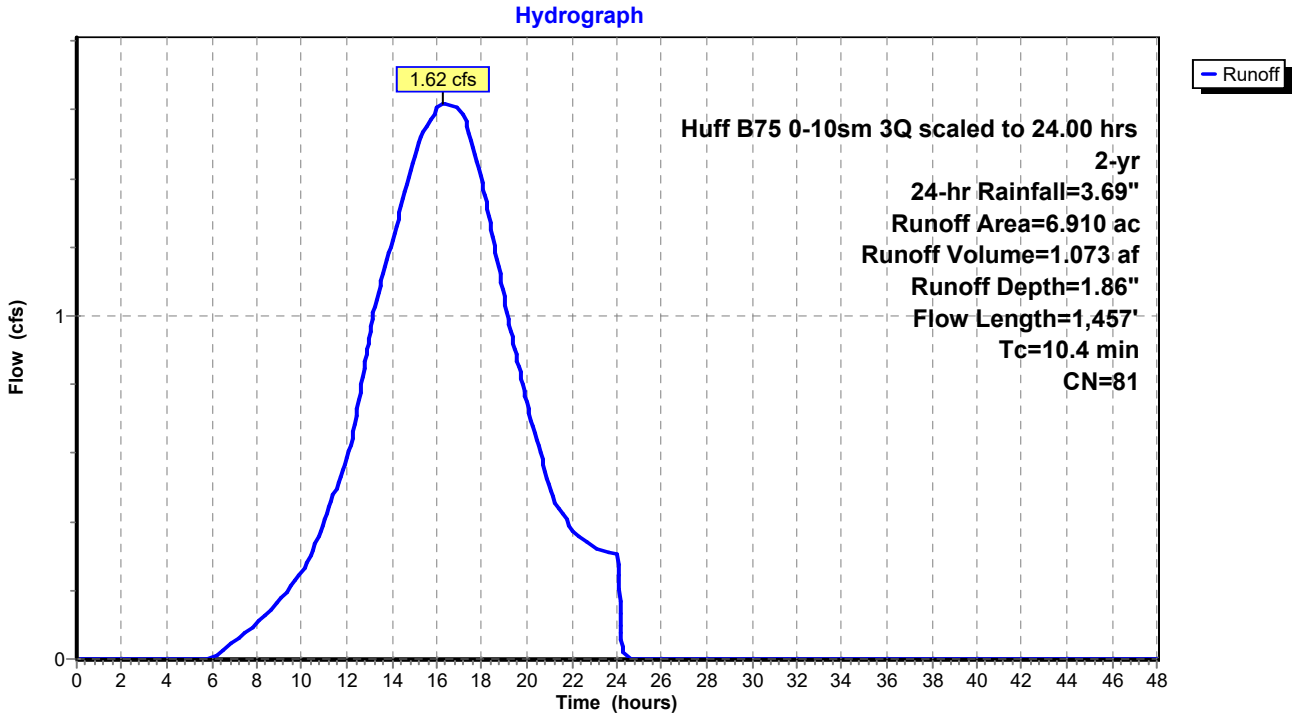
Runoff = 1.62 cfs @ 16.28 hrs, Volume= 1.073 af, Depth= 1.86"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
6.300	79	50-75% Grass cover, Fair, HSG C
0.610	98	Paved parking, HSG C
6.910	81	Weighted Average
6.300		91.17% Pervious Area
0.610		8.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 19S: Pr. Area B1.1



Summary for Subcatchment 20S: Pr. Area B2

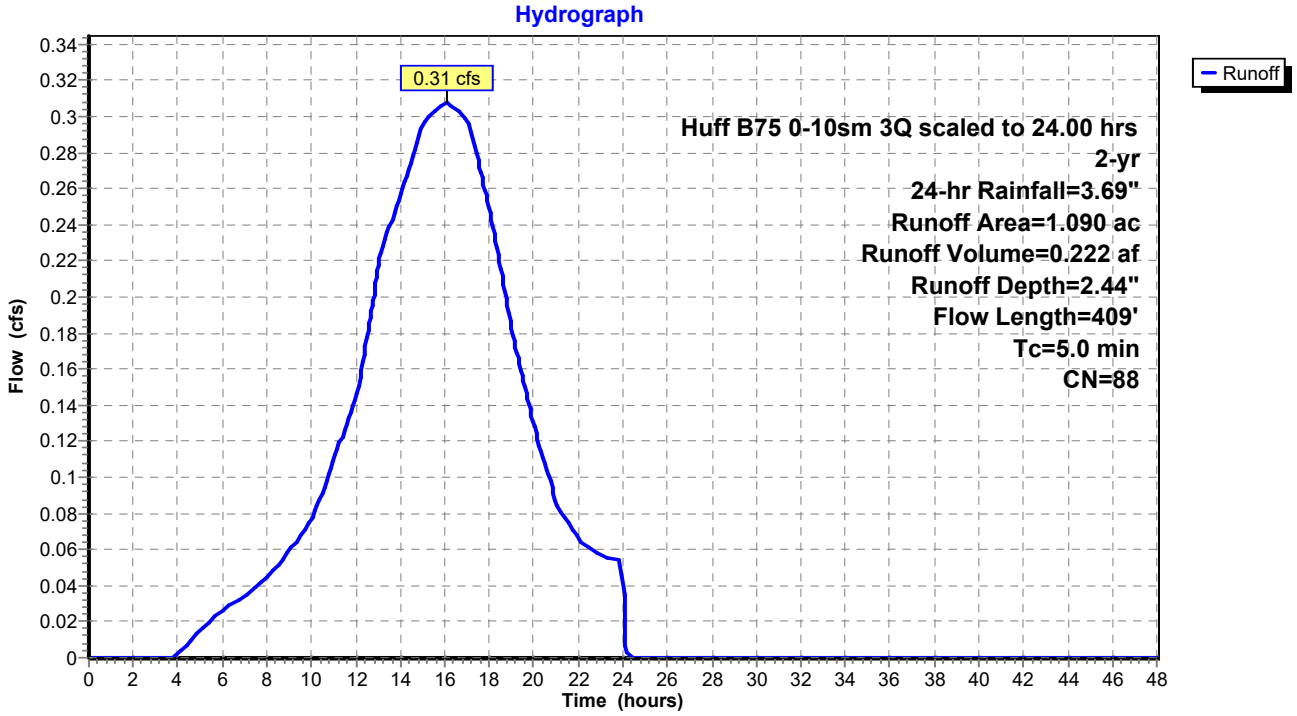
Runoff = 0.31 cfs @ 16.07 hrs, Volume= 0.222 af, Depth= 2.44"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.590	79	50-75% Grass cover, Fair, HSG C
1.090	88	Weighted Average
0.590		54.13% Pervious Area
0.500		45.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 20S: Pr. Area B2



Summary for Subcatchment 26S: Pr. Area C1.2

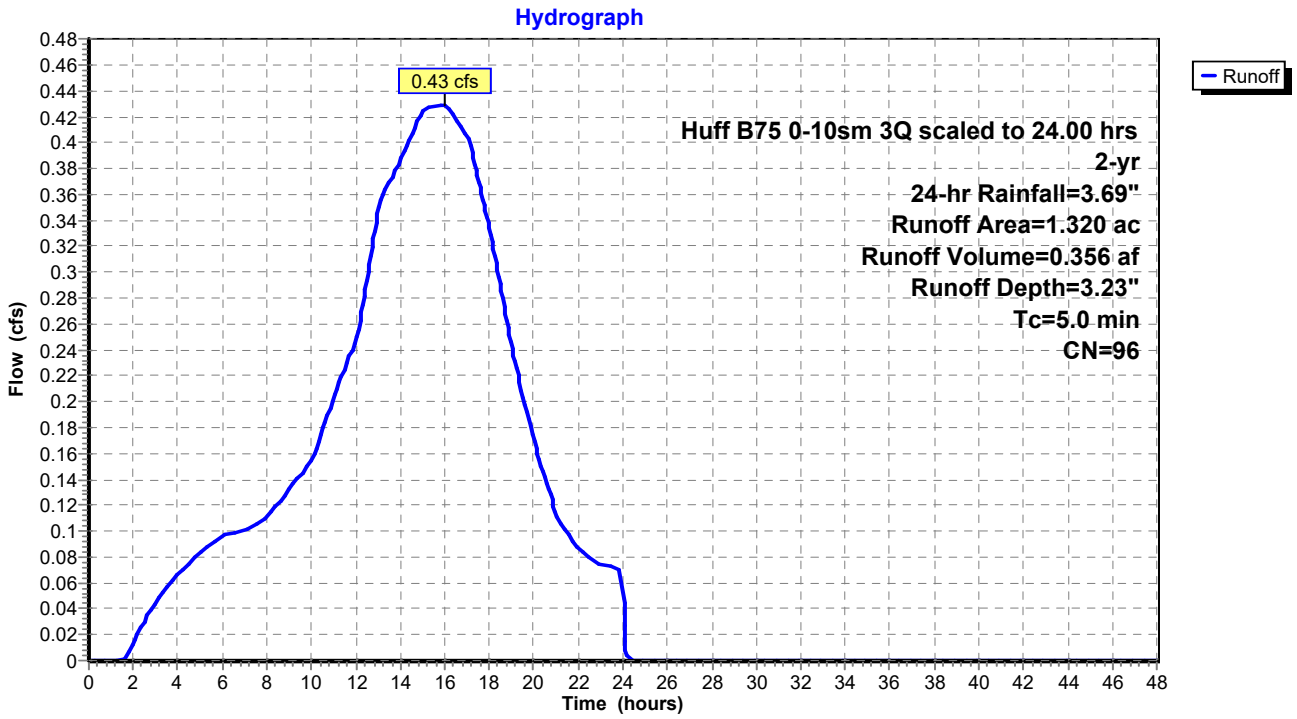
Runoff = 0.43 cfs @ 16.00 hrs, Volume= 0.356 af, Depth= 3.23"
Routed to Pond 27P : Lot 1 (Chick)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
1.190	98	Paved parking, HSG C
0.130	79	50-75% Grass cover, Fair, HSG C
1.320	96	Weighted Average
0.130		9.85% Pervious Area
1.190		90.15% Impervious Area

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

Subcatchment 26S: Pr. Area C1.2



Summary for Subcatchment 31S: Pr. Area B1.2

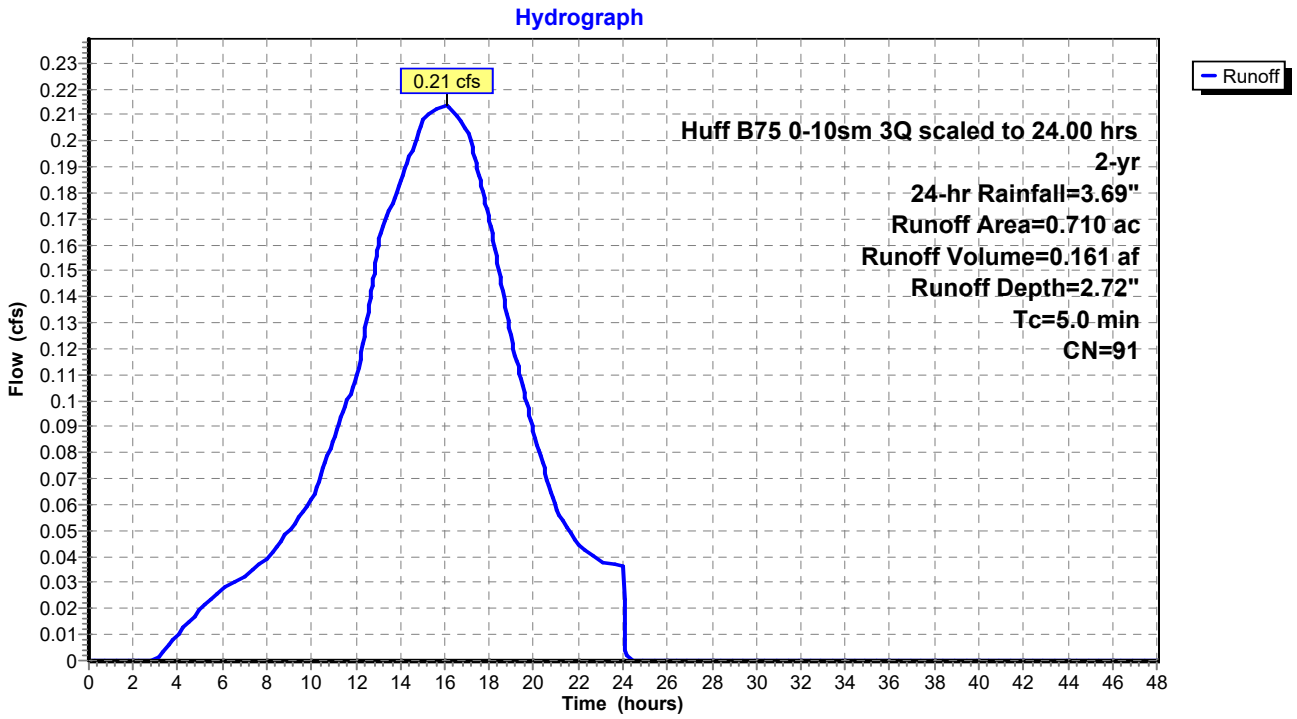
Runoff = 0.21 cfs @ 16.05 hrs, Volume= 0.161 af, Depth= 2.72"
Routed to Pond 32P : Lot 5 (Chipotle)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-yr, 24-hr Rainfall=3.69"

Area (ac)	CN	Description
0.280	79	50-75% Grass cover, Fair, HSG C
0.430	98	Paved parking, HSG C
0.710	91	Weighted Average
0.280		39.44% Pervious Area
0.430		60.56% Impervious Area

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

Subcatchment 31S: Pr. Area B1.2

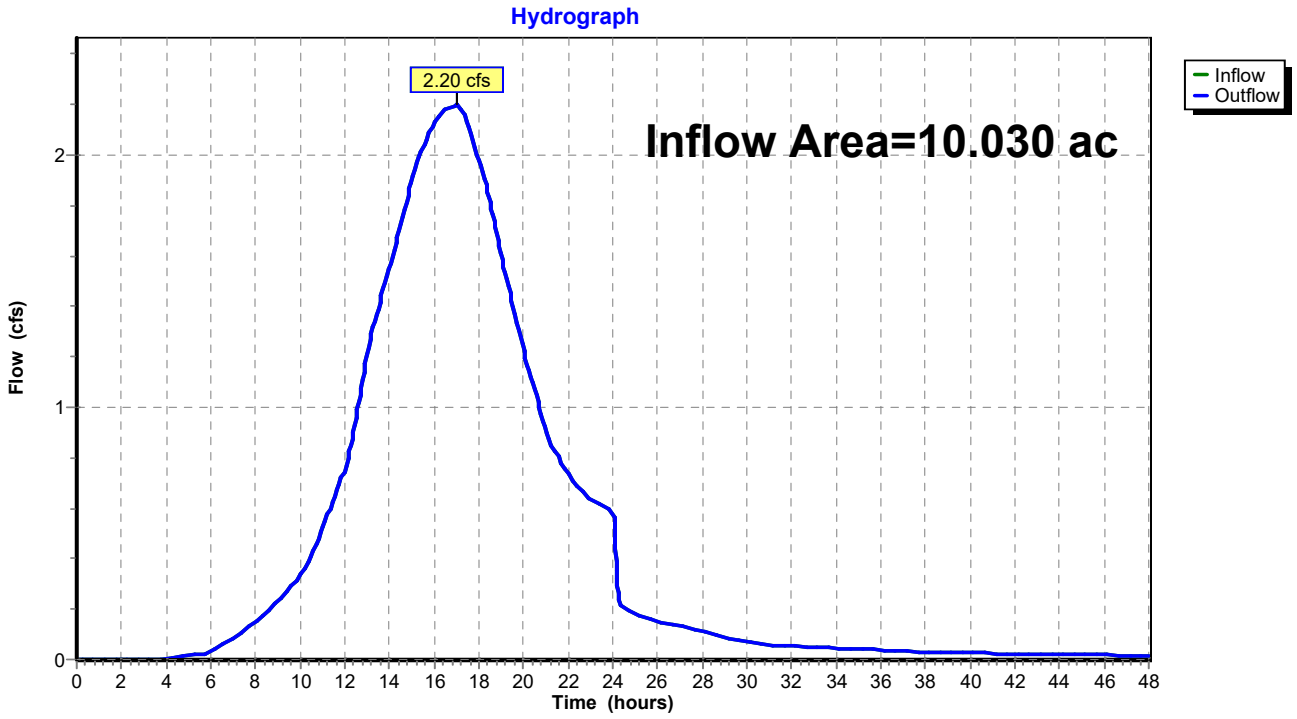


Summary for Reach 18R: Ramada Channel

Inflow Area = 10.030 ac, 27.22% Impervious, Inflow Depth > 1.97" for 2-yr, 24-hr event
Inflow = 2.20 cfs @ 17.04 hrs, Volume= 1.649 af
Outflow = 2.20 cfs @ 17.04 hrs, Volume= 1.649 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 18R: Ramada Channel

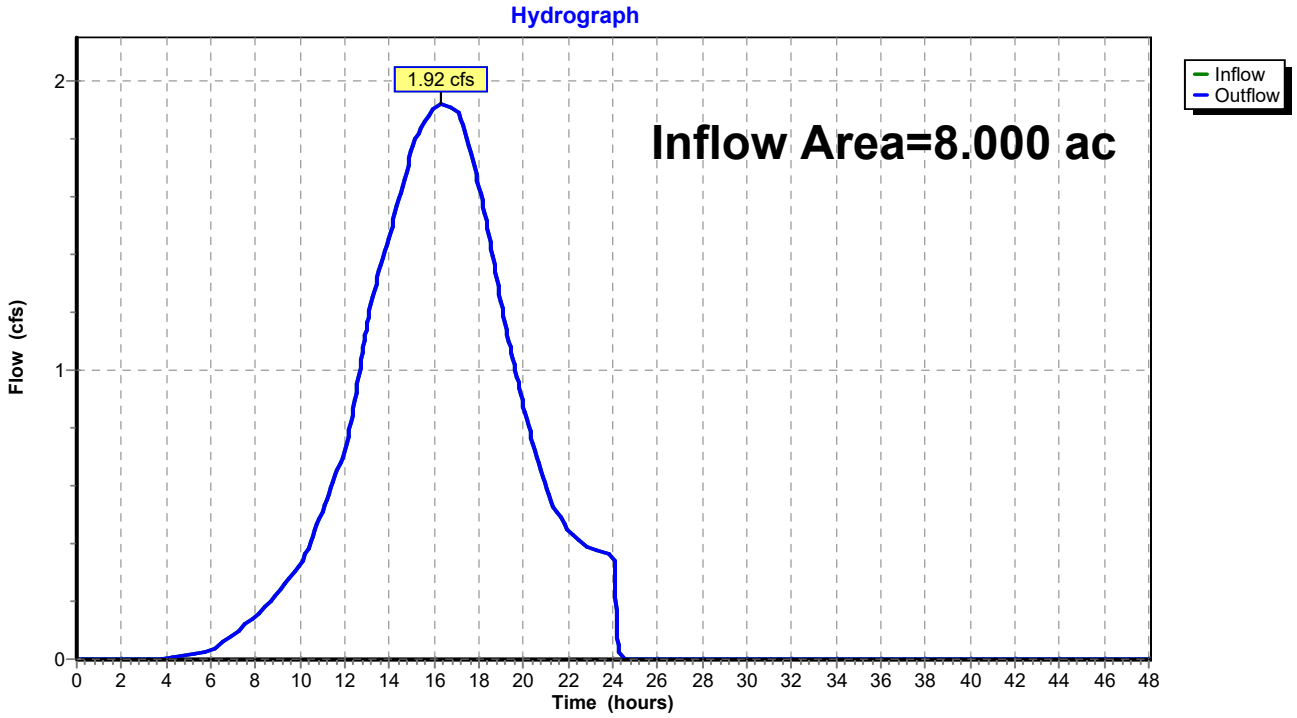


Summary for Reach 33R: Bypass

Inflow Area = 8.000 ac, 13.87% Impervious, Inflow Depth = 1.94" for 2-yr, 24-hr event
Inflow = 1.92 cfs @ 16.26 hrs, Volume= 1.295 af
Outflow = 1.92 cfs @ 16.26 hrs, Volume= 1.295 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 33R: Bypass

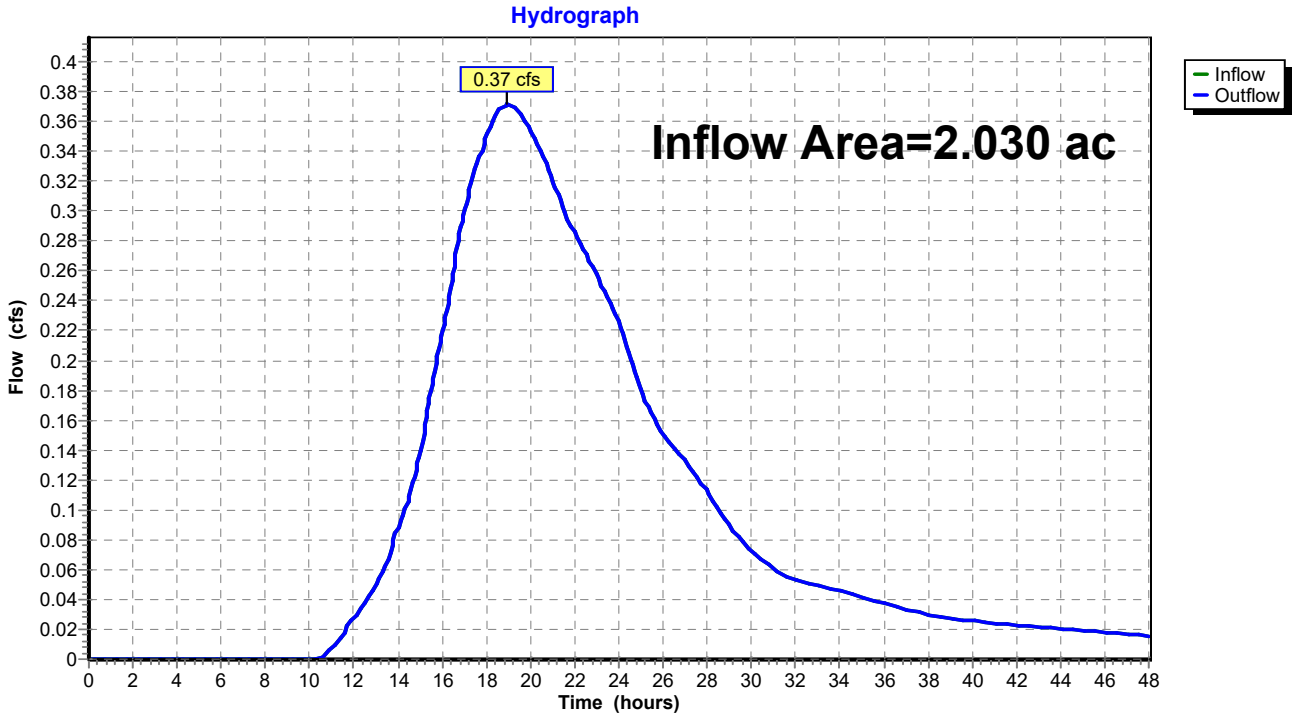


Summary for Reach 34R: City Storm

Inflow Area = 2.030 ac, 79.80% Impervious, Inflow Depth > 2.09" for 2-yr, 24-hr event
Inflow = 0.37 cfs @ 18.97 hrs, Volume= 0.354 af
Outflow = 0.37 cfs @ 18.97 hrs, Volume= 0.354 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 34R: City Storm



Summary for Pond 27P: Lot 1 (Chick)

Inflow Area = 1.320 ac, 90.15% Impervious, Inflow Depth = 3.23" for 2-yr, 24-hr event
Inflow = 0.43 cfs @ 16.00 hrs, Volume= 0.356 af
Outflow = 0.22 cfs @ 19.26 hrs, Volume= 0.214 af, Atten= 48%, Lag= 195.4 min
Primary = 0.22 cfs @ 19.26 hrs, Volume= 0.214 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 447.57' @ 19.26 hrs Surf.Area= 0.161 ac Storage= 0.254 af

Plug-Flow detention time= 768.0 min calculated for 0.214 af (60% of inflow)
Center-of-Mass det. time= 600.8 min (1,464.6 - 863.8)

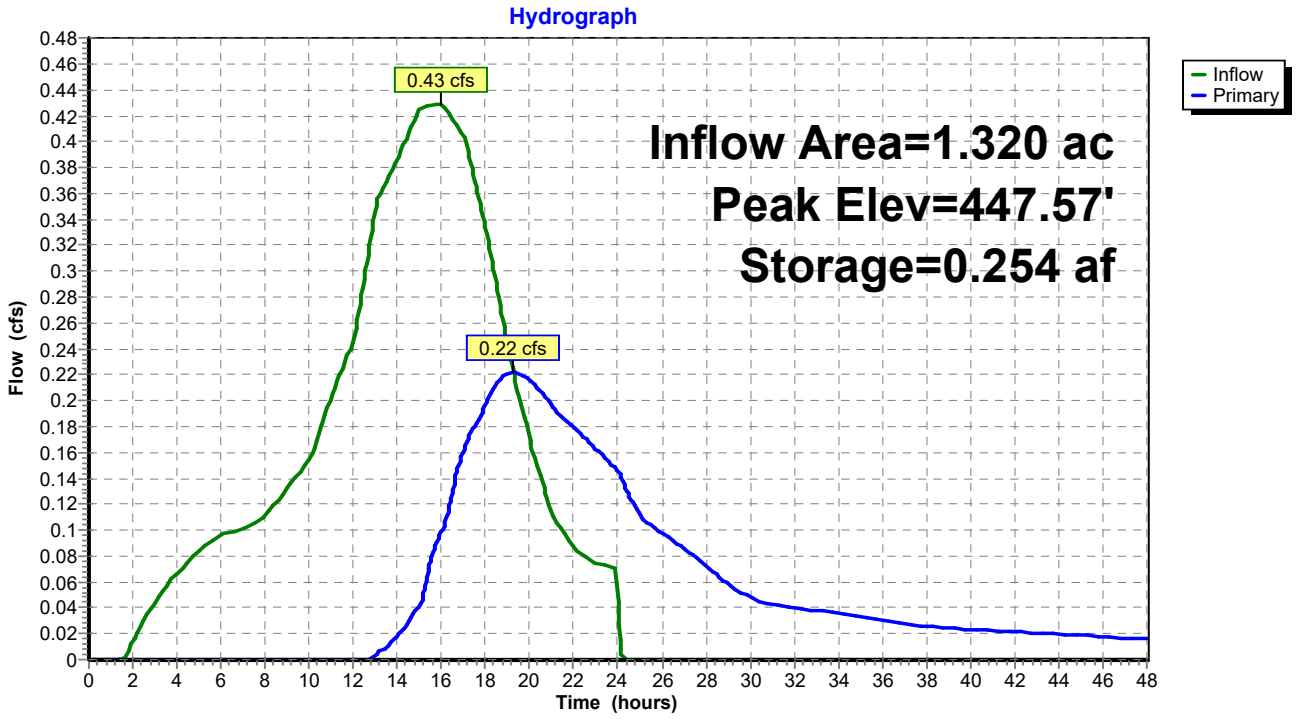
Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.230 af	**72.75'W x 96.28'L x 5.00'H Field A** 0.804 af Overall - 0.229 af Embedded = 0.575 af x 40.0% Voids
#2A	446.50'	0.229 af	**ADS_StormTech SC-800 +Cap** x 195 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 195 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		0.459 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	446.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 446.00' / 445.13' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	448.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.50'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 3 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	447.00'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#5	Device 1	447.50'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 4 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#6	Device 1	448.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.22 cfs @ 19.26 hrs HW=447.57' (Free Discharge)
└─**1=Culvert** (Passes 0.22 cfs of 4.07 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Orifice Controls 0.07 cfs @ 4.51 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 3.02 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 0.02 cfs @ 0.90 fps)
  └─**6=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 27P: Lot 1 (Chick)



Summary for Pond 32P: Lot 5 (Chipotle)

Inflow Area = 0.710 ac, 60.56% Impervious, Inflow Depth = 2.72" for 2-yr, 24-hr event
Inflow = 0.21 cfs @ 16.05 hrs, Volume= 0.161 af
Outflow = 0.15 cfs @ 18.37 hrs, Volume= 0.140 af, Atten= 28%, Lag= 139.2 min
Primary = 0.15 cfs @ 18.37 hrs, Volume= 0.140 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 454.58' @ 18.37 hrs Surf.Area= 0.052 ac Storage= 0.076 af

Plug-Flow detention time= 385.9 min calculated for 0.140 af (87% of inflow)
Center-of-Mass det. time= 331.4 min (1,242.1 - 910.7)

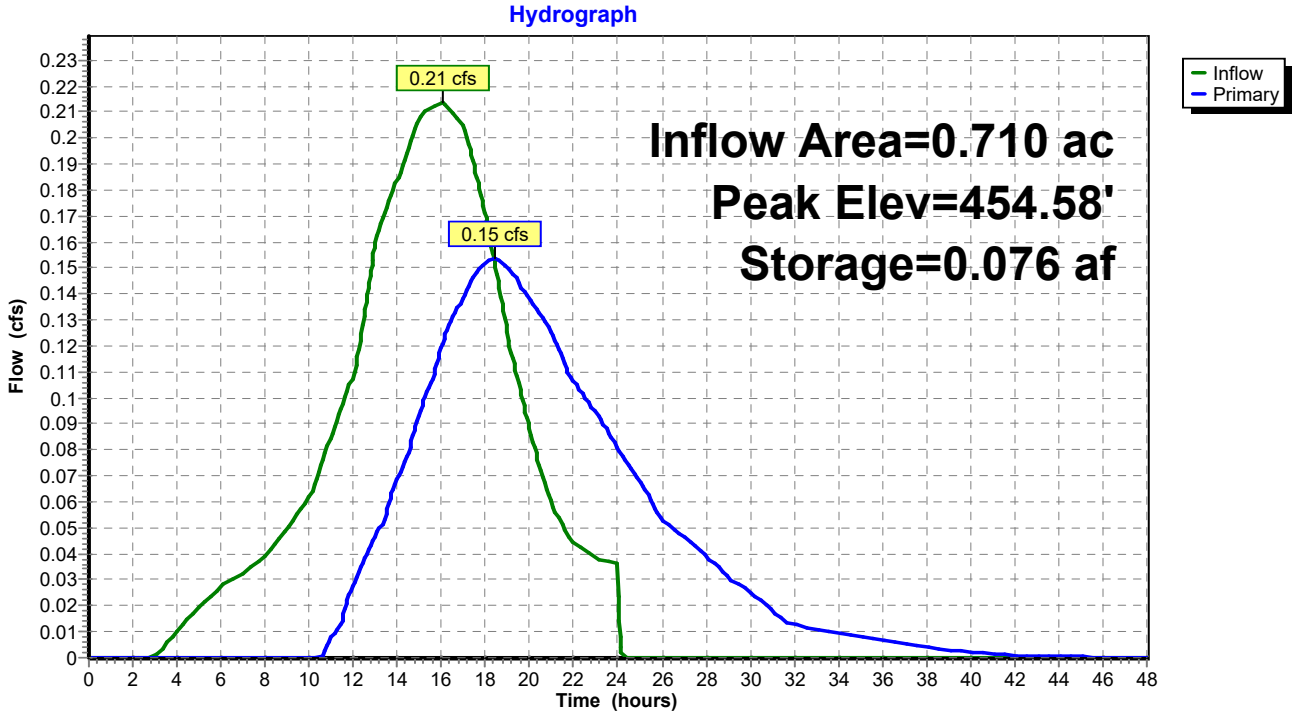
Volume	Invert	Avail.Storage	Storage Description
#1A	452.00'	0.071 af	**20.50'W x 110.52'L x 4.75'H Field A** 0.247 af Overall - 0.070 af Embedded = 0.177 af x 40.0% Voids
#2A	453.50'	0.070 af	**ADS_StormTech SC-800 +Cap** x 60 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 60 Chambers in 4 Rows Cap Storage= 3.4 cf x 2 x 4 rows = 27.4 cf
		0.141 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 453.00' / 452.50' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	456.00'	**2.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.00'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	456.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.15 cfs @ 18.37 hrs HW=454.58' (Free Discharge)
└**1=Culvert** (Passes 0.15 cfs of 3.52 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Orifice Controls 0.15 cfs @ 4.02 fps)
  └**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 32P: Lot 5 (Chipotle)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment19S: Pr. Area B1.1 Runoff Area=6.910 ac 8.83% Impervious Runoff Depth=1.90"
Flow Length=1,457' Tc=10.4 min CN=81 Runoff=26.56 cfs 1.097 af

Subcatchment20S: Pr. Area B2 Runoff Area=1.090 ac 45.87% Impervious Runoff Depth=2.49"
Flow Length=409' Tc=5.0 min CN=88 Runoff=6.47 cfs 0.226 af

Subcatchment26S: Pr. Area C1.2 Runoff Area=1.320 ac 90.15% Impervious Runoff Depth=3.28"
Tc=5.0 min CN=96 Runoff=10.71 cfs 0.361 af

Subcatchment31S: Pr. Area B1.2 Runoff Area=0.710 ac 60.56% Impervious Runoff Depth=2.77"
Tc=5.0 min CN=91 Runoff=4.76 cfs 0.164 af

Reach 18R: Ramada Channel Inflow=31.81 cfs 1.700 af
Outflow=31.81 cfs 1.700 af

Reach 33R: Bypass Inflow=31.57 cfs 1.323 af
Outflow=31.57 cfs 1.323 af

Reach 34R: City Storm Inflow=1.30 cfs 0.377 af
Outflow=1.30 cfs 0.377 af

Pond 27P: Lot 1 (Chick) Peak Elev=448.26' Storage=0.336 af Inflow=10.71 cfs 0.361 af
Outflow=0.60 cfs 0.234 af

Pond 32P: Lot 5 (Chipotle) Peak Elev=456.55' Storage=0.137 af Inflow=4.76 cfs 0.164 af
Outflow=0.71 cfs 0.143 af

Total Runoff Area = 10.030 ac Runoff Volume = 1.848 af Average Runoff Depth = 2.21"
72.78% Pervious = 7.300 ac 27.22% Impervious = 2.730 ac

Summary for Subcatchment 19S: Pr. Area B1.1

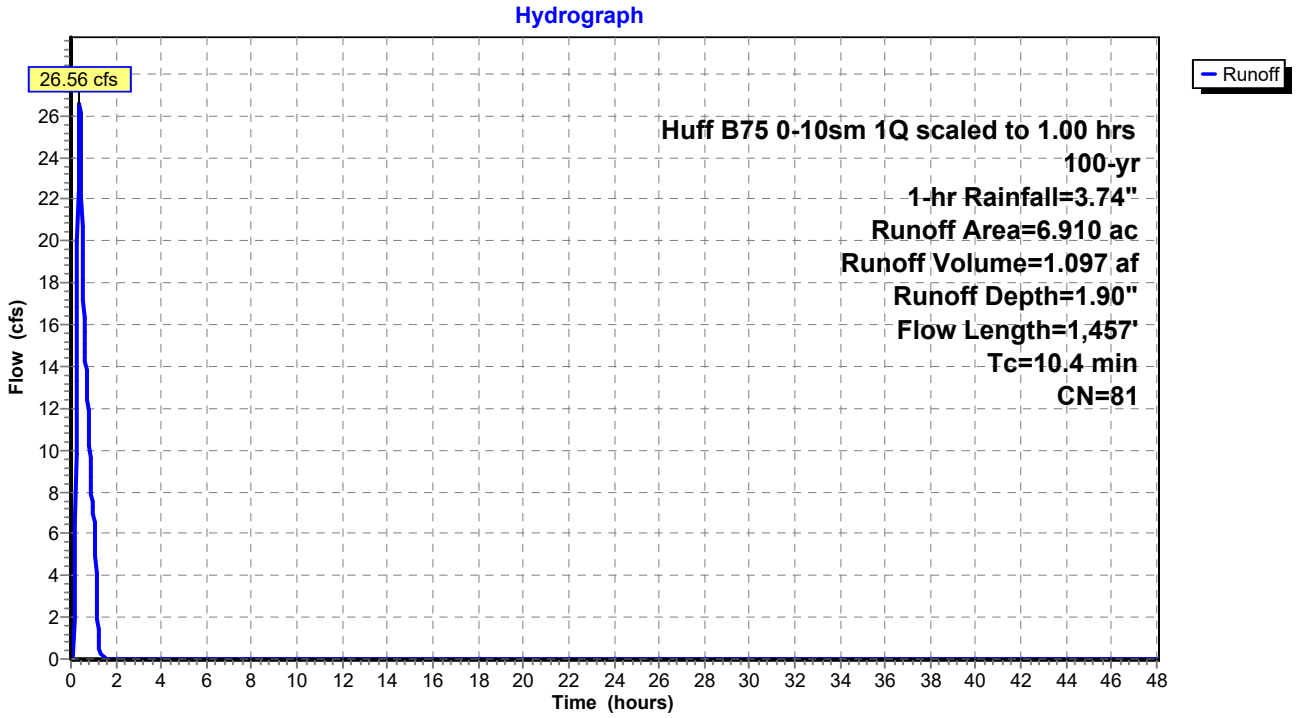
Runoff = 26.56 cfs @ 0.39 hrs, Volume= 1.097 af, Depth= 1.90"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
6.300	79	50-75% Grass cover, Fair, HSG C
0.610	98	Paved parking, HSG C
6.910	81	Weighted Average
6.300		91.17% Pervious Area
0.610		8.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 19S: Pr. Area B1.1



Summary for Subcatchment 20S: Pr. Area B2

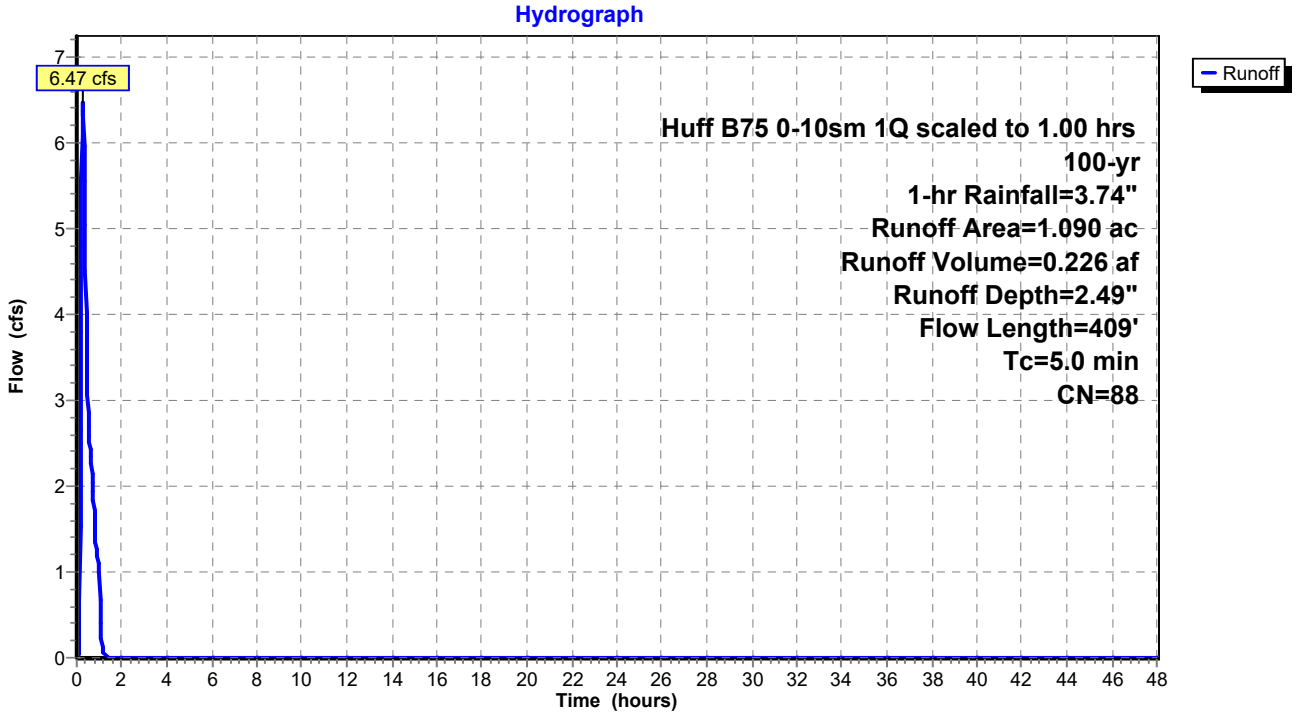
Runoff = 6.47 cfs @ 0.28 hrs, Volume= 0.226 af, Depth= 2.49"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.590	79	50-75% Grass cover, Fair, HSG C
1.090	88	Weighted Average
0.590		54.13% Pervious Area
0.500		45.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 20S: Pr. Area B2



Summary for Subcatchment 26S: Pr. Area C1.2

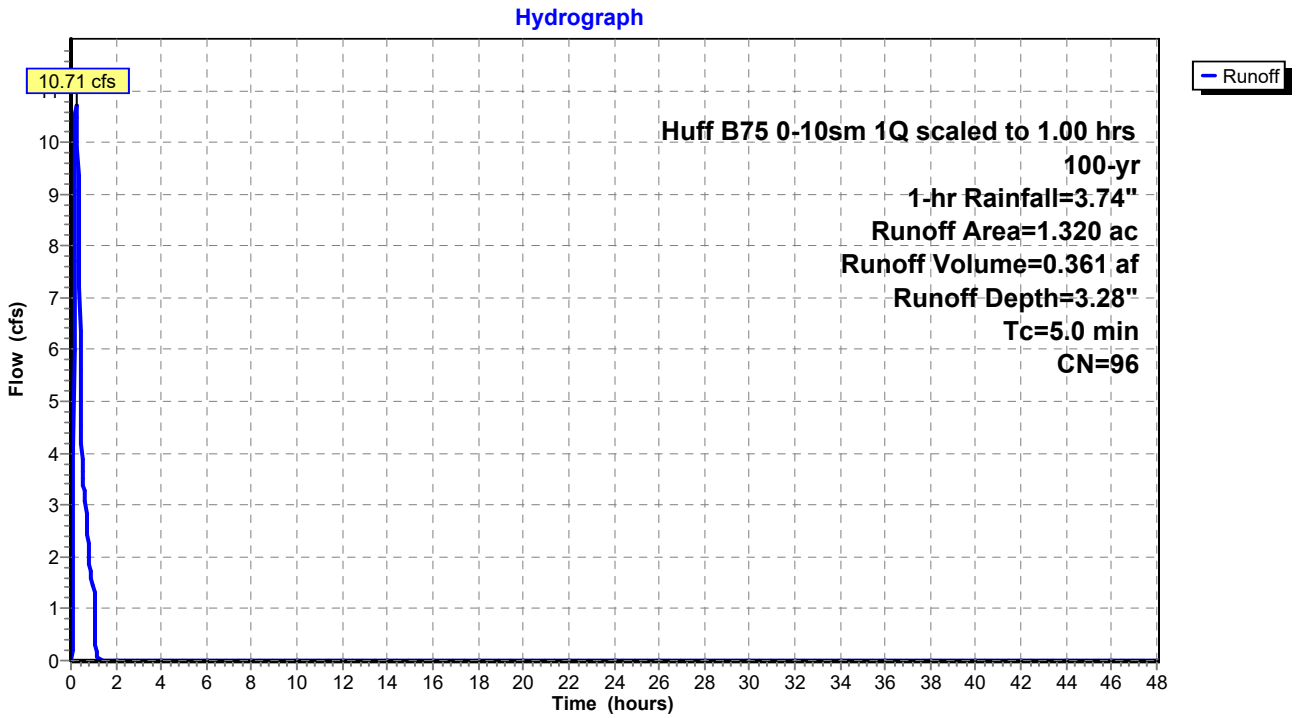
Runoff = 10.71 cfs @ 0.24 hrs, Volume= 0.361 af, Depth= 3.28"
Routed to Pond 27P : Lot 1 (Chick)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
1.190	98	Paved parking, HSG C
0.130	79	50-75% Grass cover, Fair, HSG C
1.320	96	Weighted Average
0.130		9.85% Pervious Area
1.190		90.15% Impervious Area

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

Subcatchment 26S: Pr. Area C1.2



Summary for Subcatchment 31S: Pr. Area B1.2

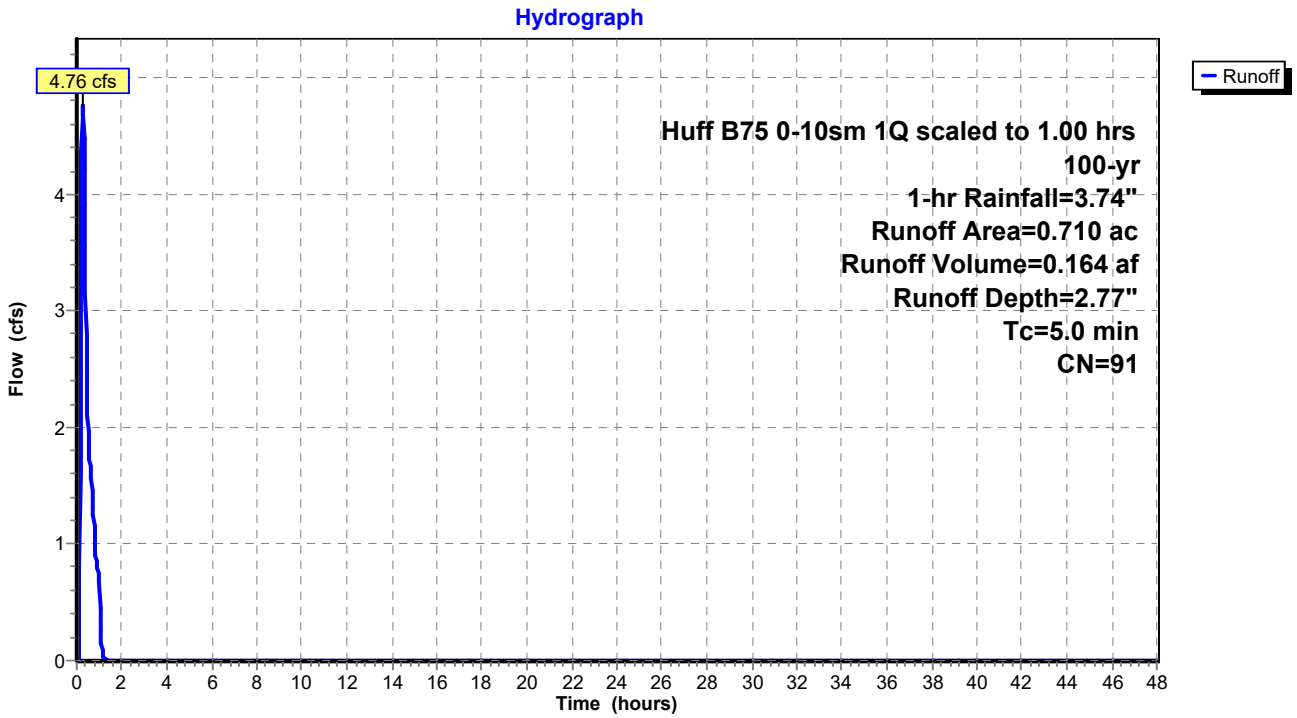
Runoff = 4.76 cfs @ 0.27 hrs, Volume= 0.164 af, Depth= 2.77"
Routed to Pond 32P : Lot 5 (Chipotle)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
0.280	79	50-75% Grass cover, Fair, HSG C
0.430	98	Paved parking, HSG C
0.710	91	Weighted Average
0.280		39.44% Pervious Area
0.430		60.56% Impervious Area

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

Subcatchment 31S: Pr. Area B1.2

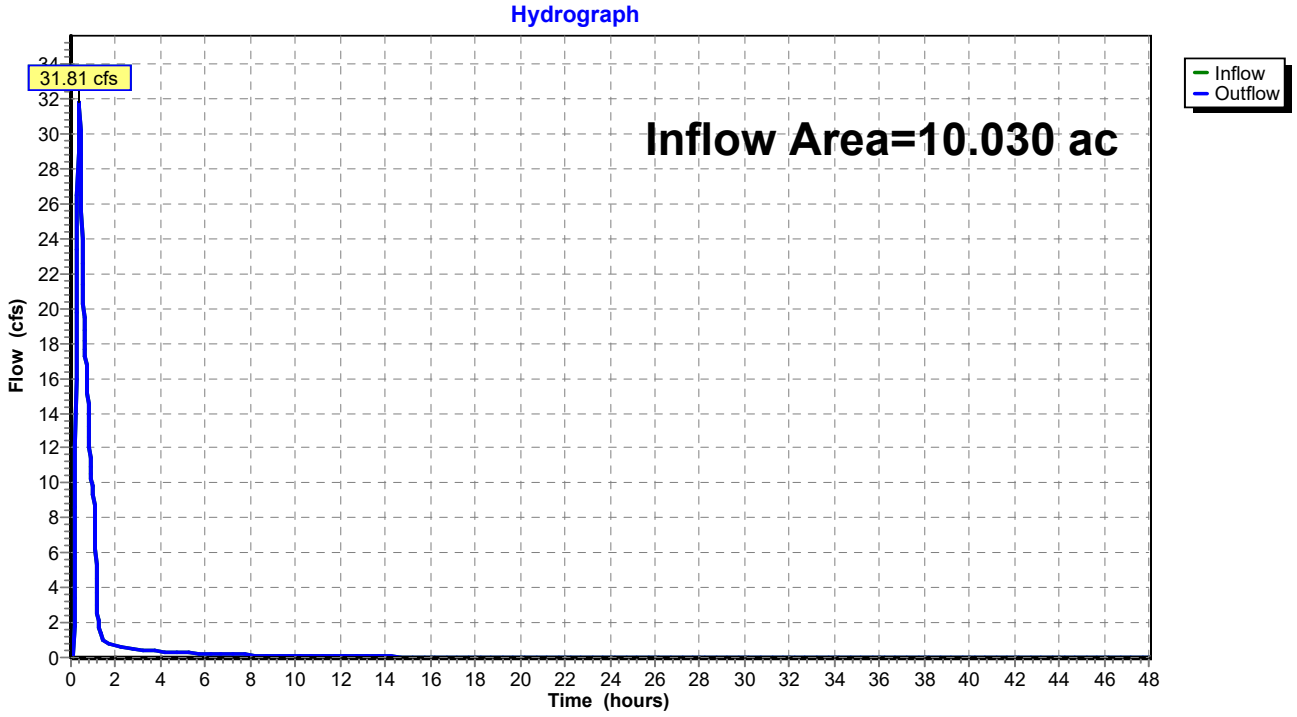


Summary for Reach 18R: Ramada Channel

Inflow Area = 10.030 ac, 27.22% Impervious, Inflow Depth > 2.03" for 100-yr, 1-hr event
Inflow = 31.81 cfs @ 0.38 hrs, Volume= 1.700 af
Outflow = 31.81 cfs @ 0.38 hrs, Volume= 1.700 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 18R: Ramada Channel

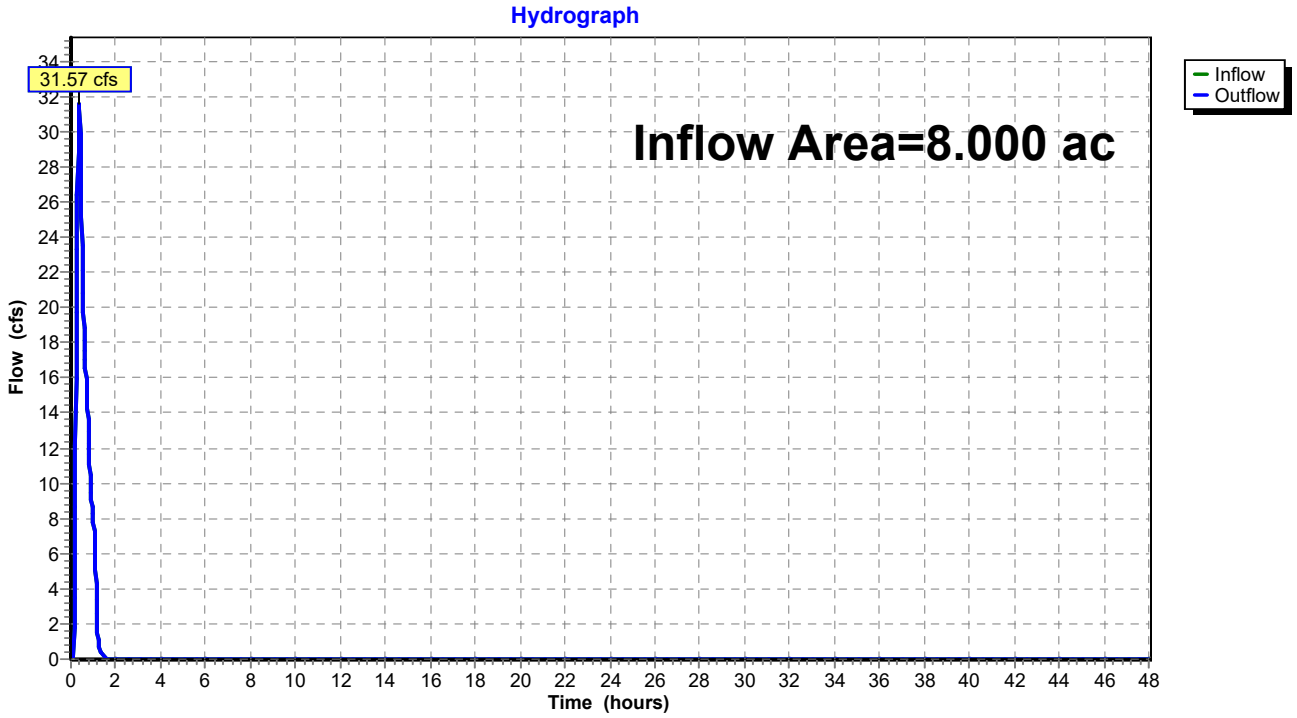


Summary for Reach 33R: Bypass

Inflow Area = 8.000 ac, 13.87% Impervious, Inflow Depth = 1.98" for 100-yr, 1-hr event
Inflow = 31.57 cfs @ 0.37 hrs, Volume= 1.323 af
Outflow = 31.57 cfs @ 0.37 hrs, Volume= 1.323 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 33R: Bypass

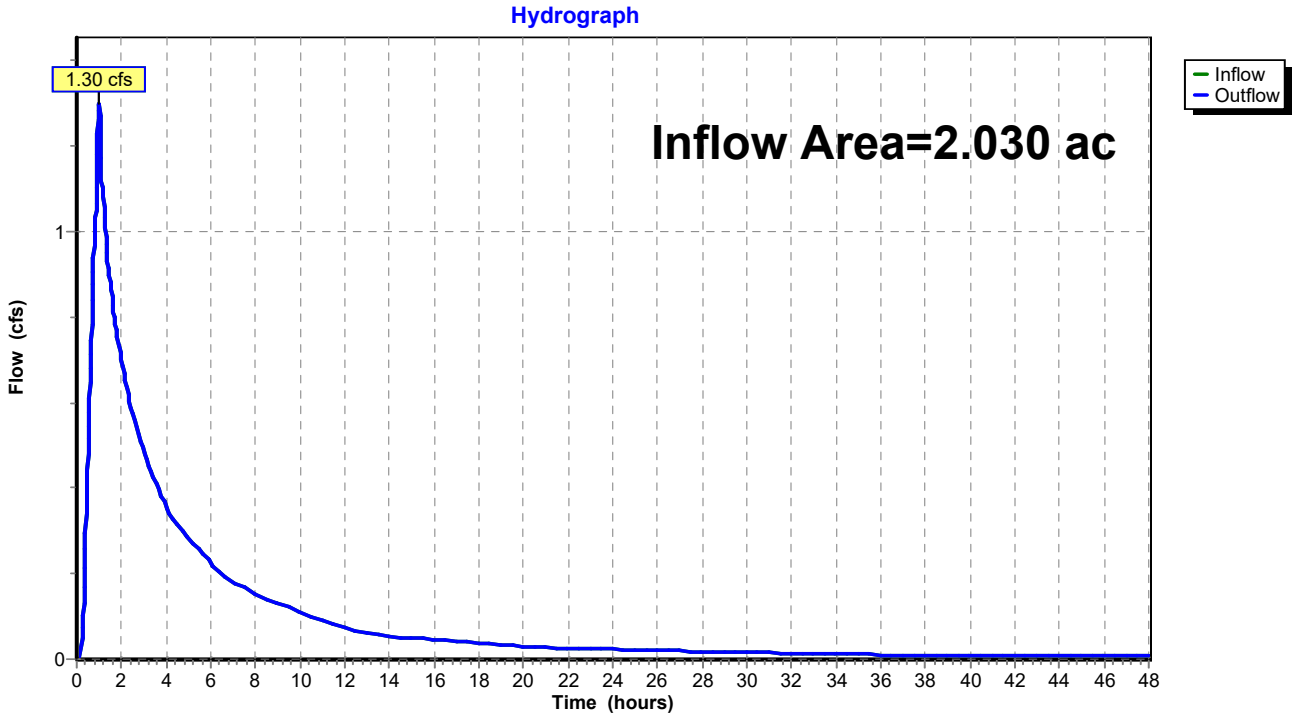


Summary for Reach 34R: City Storm

Inflow Area = 2.030 ac, 79.80% Impervious, Inflow Depth > 2.23" for 100-yr, 1-hr event
Inflow = 1.30 cfs @ 1.02 hrs, Volume= 0.377 af
Outflow = 1.30 cfs @ 1.02 hrs, Volume= 0.377 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 34R: City Storm



Summary for Pond 27P: Lot 1 (Chick)

Inflow Area = 1.320 ac, 90.15% Impervious, Inflow Depth = 3.28" for 100-yr, 1-hr event
Inflow = 10.71 cfs @ 0.24 hrs, Volume= 0.361 af
Outflow = 0.60 cfs @ 1.08 hrs, Volume= 0.234 af, Atten= 94%, Lag= 50.1 min
Primary = 0.60 cfs @ 1.08 hrs, Volume= 0.234 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 448.26' @ 1.08 hrs Surf.Area= 0.161 ac Storage= 0.336 af

Plug-Flow detention time= 505.8 min calculated for 0.234 af (65% of inflow)
Center-of-Mass det. time= 497.9 min (523.1 - 25.2)

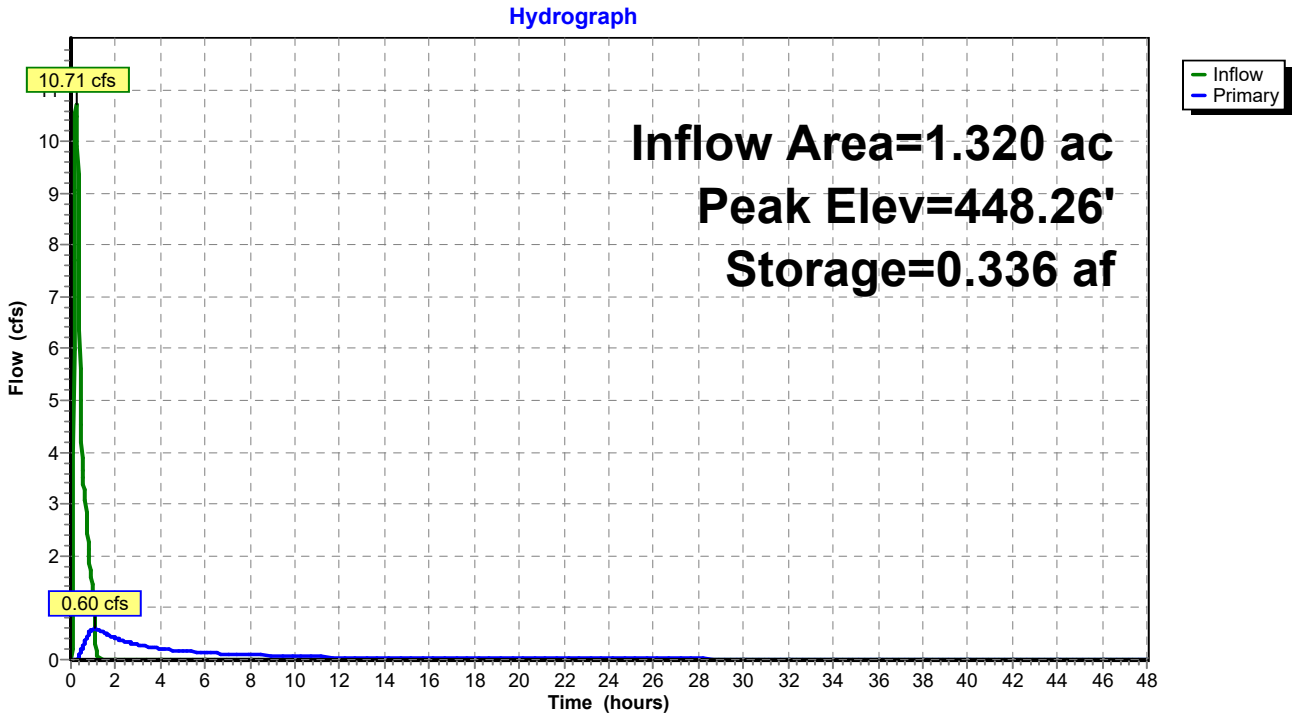
Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.230 af	**72.75'W x 96.28'L x 5.00'H Field A** 0.804 af Overall - 0.229 af Embedded = 0.575 af x 40.0% Voids
#2A	446.50'	0.229 af	**ADS_StormTech SC-800 +Cap** x 195 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 195 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		0.459 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	446.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 446.00' / 445.13' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	448.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.50'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 3 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	447.00'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#5	Device 1	447.50'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 4 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#6	Device 1	448.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.60 cfs @ 1.08 hrs HW=448.26' (Free Discharge)
└─**1=Culvert** (Passes 0.60 cfs of 4.95 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Orifice Controls 0.10 cfs @ 6.03 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.22 cfs @ 5.02 fps)
  ├─**5=Orifice/Grate** (Orifice Controls 0.28 cfs @ 3.22 fps)
  └─**6=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 27P: Lot 1 (Chick)



Summary for Pond 32P: Lot 5 (Chipotle)

Inflow Area = 0.710 ac, 60.56% Impervious, Inflow Depth = 2.77" for 100-yr, 1-hr event
Inflow = 4.76 cfs @ 0.27 hrs, Volume= 0.164 af
Outflow = 0.71 cfs @ 1.01 hrs, Volume= 0.143 af, Atten= 85%, Lag= 44.5 min
Primary = 0.71 cfs @ 1.01 hrs, Volume= 0.143 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 456.55' @ 1.01 hrs Surf.Area= 0.052 ac Storage= 0.137 af

Plug-Flow detention time= 234.2 min calculated for 0.143 af (87% of inflow)
Center-of-Mass det. time= 230.8 min (257.7 - 27.0)

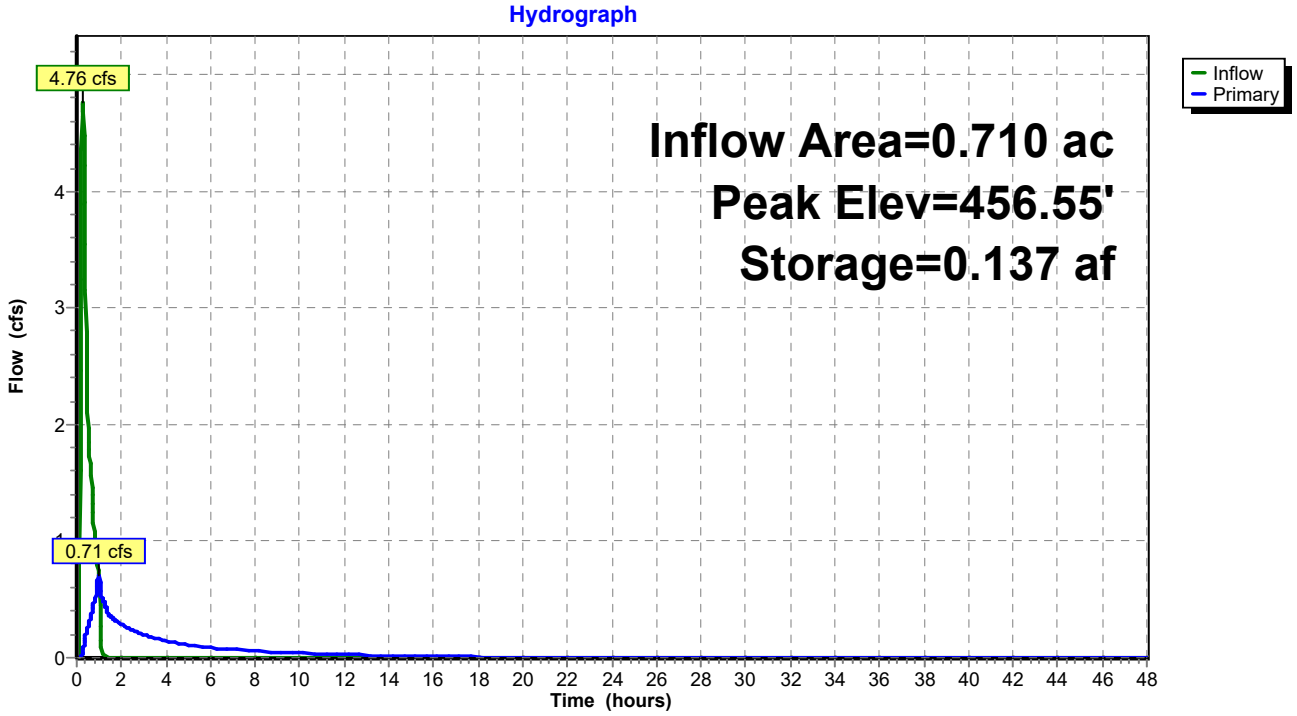
Volume	Invert	Avail.Storage	Storage Description
#1A	452.00'	0.071 af	**20.50'W x 110.52'L x 4.75'H Field A** 0.247 af Overall - 0.070 af Embedded = 0.177 af x 40.0% Voids
#2A	453.50'	0.070 af	**ADS_StormTech SC-800 +Cap** x 60 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 60 Chambers in 4 Rows Cap Storage= 3.4 cf x 2 x 4 rows = 27.4 cf
		0.141 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 453.00' / 452.50' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	456.00'	**2.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.00'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	456.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.69 cfs @ 1.01 hrs HW=456.55' (Free Discharge)
└**1=Culvert** (Passes 0.69 cfs of 5.93 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.58 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.45 cfs @ 6.92 fps)
  └**4=Custom Weir/Orifice** (Weir Controls 0.16 cfs @ 0.76 fps)

Pond 32P: Lot 5 (Chipotle)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment19S: Pr. Area B1.1 Runoff Area=6.910 ac 8.83% Impervious Runoff Depth=5.70"
Flow Length=1,457' Tc=10.4 min CN=81 Runoff=4.41 cfs 3.285 af

Subcatchment20S: Pr. Area B2 Runoff Area=1.090 ac 45.87% Impervious Runoff Depth=6.53"
Flow Length=409' Tc=5.0 min CN=88 Runoff=0.75 cfs 0.593 af

Subcatchment26S: Pr. Area C1.2 Runoff Area=1.320 ac 90.15% Impervious Runoff Depth=7.48"
Tc=5.0 min CN=96 Runoff=0.94 cfs 0.823 af

Subcatchment31S: Pr. Area B1.2 Runoff Area=0.710 ac 60.56% Impervious Runoff Depth=6.88"
Tc=5.0 min CN=91 Runoff=0.50 cfs 0.407 af

Reach 18R: Ramada Channel Inflow=6.29 cfs 4.941 af
Outflow=6.29 cfs 4.941 af

Reach 33R: Bypass Inflow=5.16 cfs 3.878 af
Outflow=5.16 cfs 3.878 af

Reach 34R: City Storm Inflow=1.27 cfs 1.064 af
Outflow=1.27 cfs 1.064 af

Pond 27P: Lot 1 (Chick) Peak Elev=448.65' Storage=0.378 af Inflow=0.94 cfs 0.823 af
Outflow=0.82 cfs 0.677 af

Pond 32P: Lot 5 (Chipotle) Peak Elev=456.22' Storage=0.130 af Inflow=0.50 cfs 0.407 af
Outflow=0.46 cfs 0.386 af

Total Runoff Area = 10.030 ac Runoff Volume = 5.108 af Average Runoff Depth = 6.11"
72.78% Pervious = 7.300 ac 27.22% Impervious = 2.730 ac

Summary for Subcatchment 19S: Pr. Area B1.1

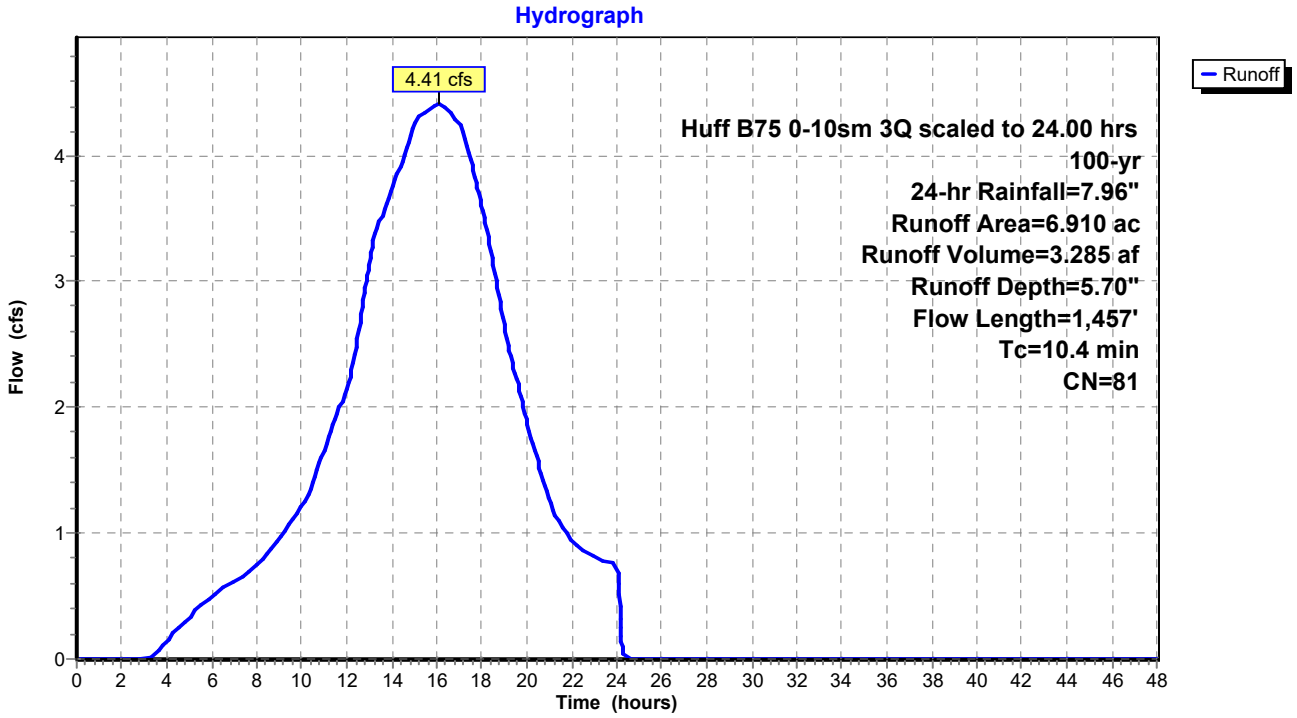
Runoff = 4.41 cfs @ 16.12 hrs, Volume= 3.285 af, Depth= 5.70"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
6.300	79	50-75% Grass cover, Fair, HSG C
0.610	98	Paved parking, HSG C
6.910	81	Weighted Average
6.300		91.17% Pervious Area
0.610		8.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 19S: Pr. Area B1.1



Summary for Subcatchment 20S: Pr. Area B2

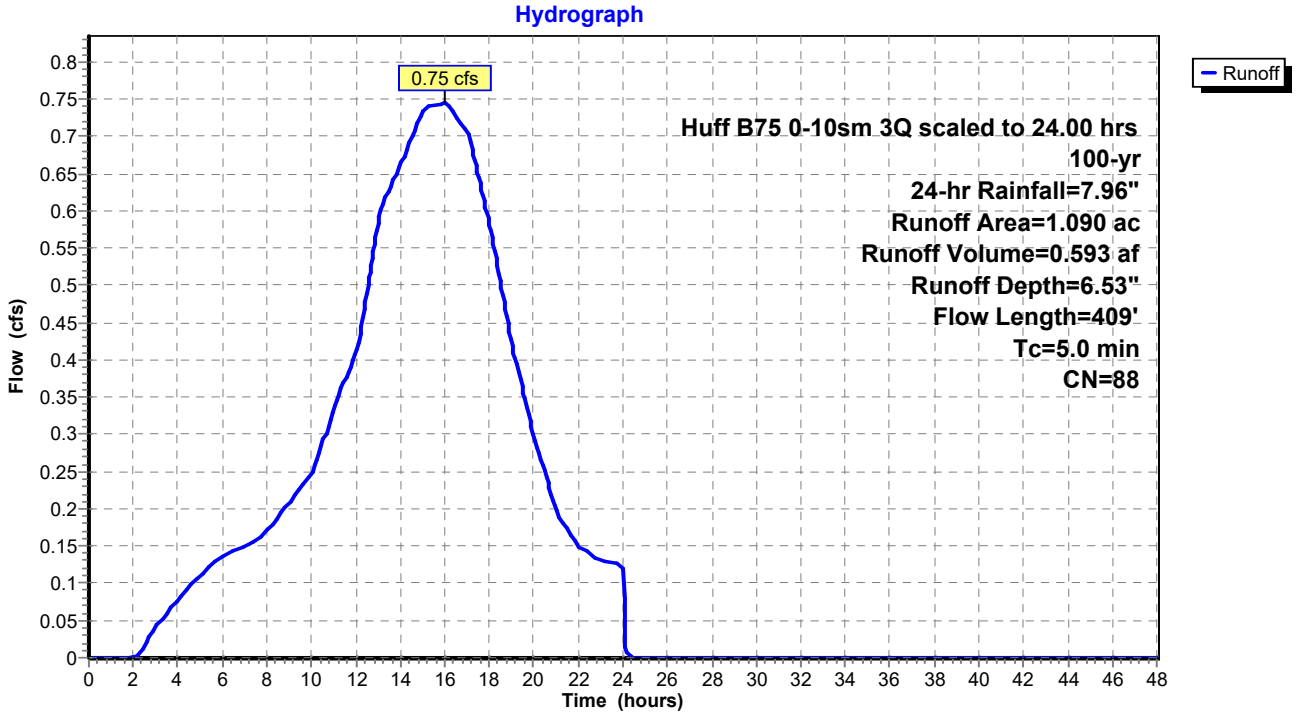
Runoff = 0.75 cfs @ 16.03 hrs, Volume= 0.593 af, Depth= 6.53"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.590	79	50-75% Grass cover, Fair, HSG C
1.090	88	Weighted Average
0.590		54.13% Pervious Area
0.500		45.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 20S: Pr. Area B2



Summary for Subcatchment 26S: Pr. Area C1.2

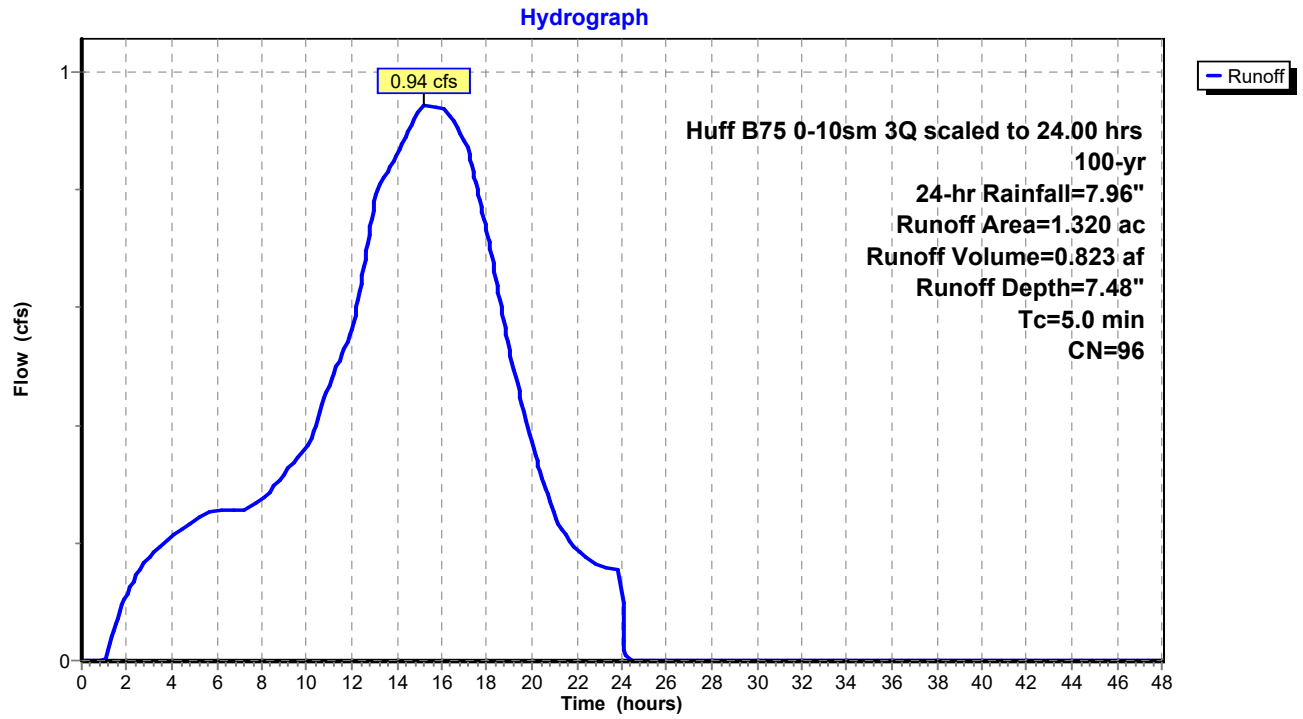
Runoff = 0.94 cfs @ 15.20 hrs, Volume= 0.823 af, Depth= 7.48"
Routed to Pond 27P : Lot 1 (Chick)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.190	98	Paved parking, HSG C
0.130	79	50-75% Grass cover, Fair, HSG C
1.320	96	Weighted Average
0.130		9.85% Pervious Area
1.190		90.15% Impervious Area

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

Subcatchment 26S: Pr. Area C1.2



Summary for Subcatchment 31S: Pr. Area B1.2

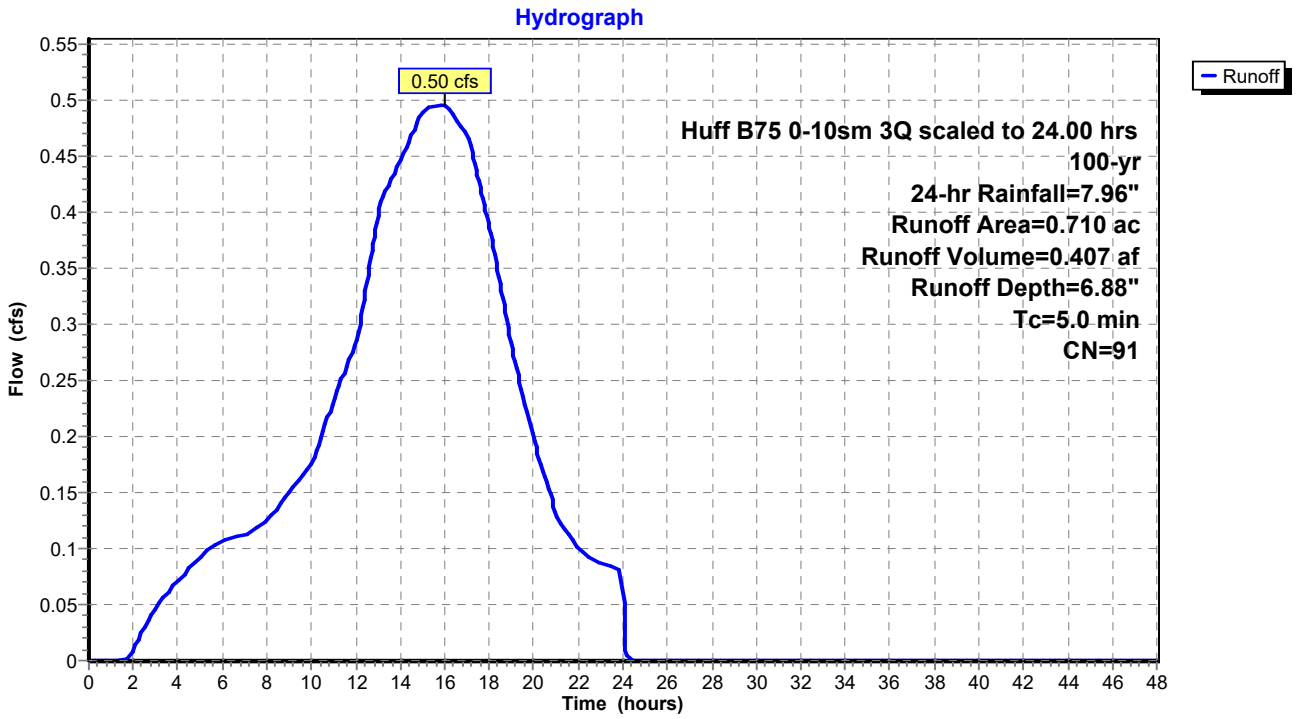
Runoff = 0.50 cfs @ 16.01 hrs, Volume= 0.407 af, Depth= 6.88"
Routed to Pond 32P : Lot 5 (Chipotle)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.280	79	50-75% Grass cover, Fair, HSG C
0.430	98	Paved parking, HSG C
0.710	91	Weighted Average
0.280		39.44% Pervious Area
0.430		60.56% Impervious Area

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

Subcatchment 31S: Pr. Area B1.2

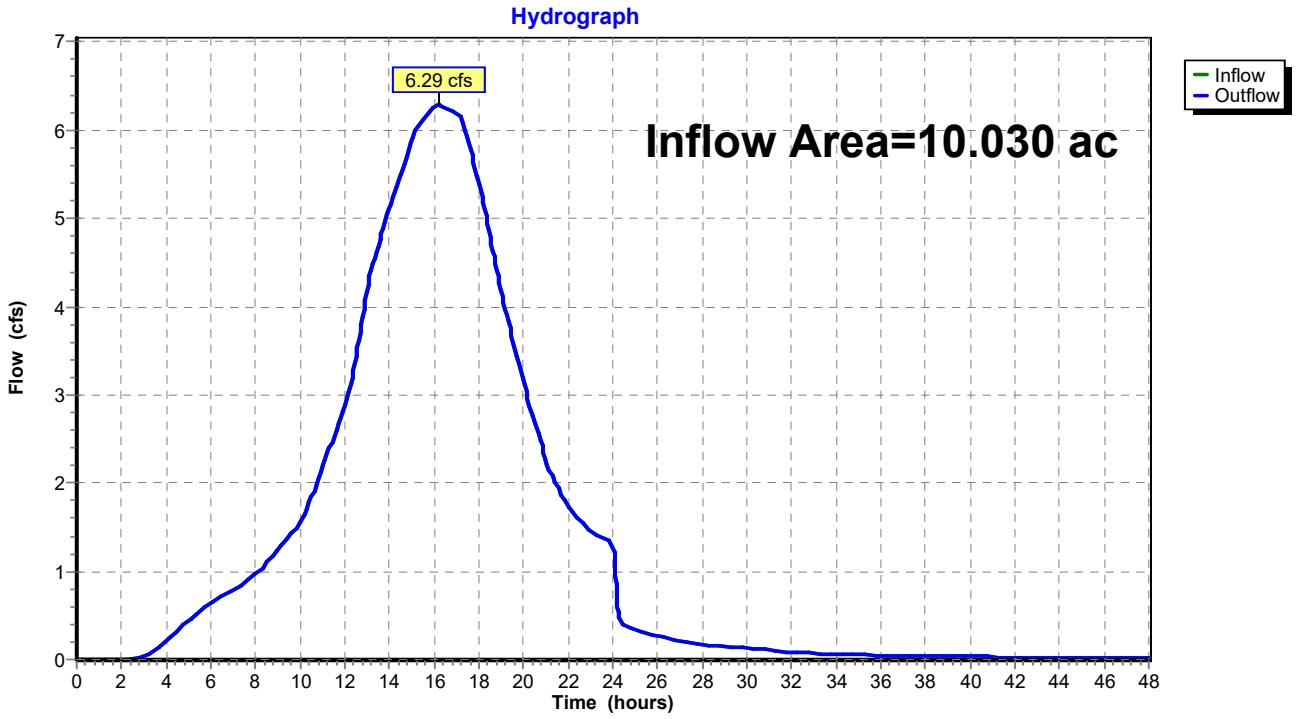


Summary for Reach 18R: Ramada Channel

Inflow Area = 10.030 ac, 27.22% Impervious, Inflow Depth > 5.91" for 100-yr, 24-hr event
Inflow = 6.29 cfs @ 16.16 hrs, Volume= 4.941 af
Outflow = 6.29 cfs @ 16.16 hrs, Volume= 4.941 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 18R: Ramada Channel

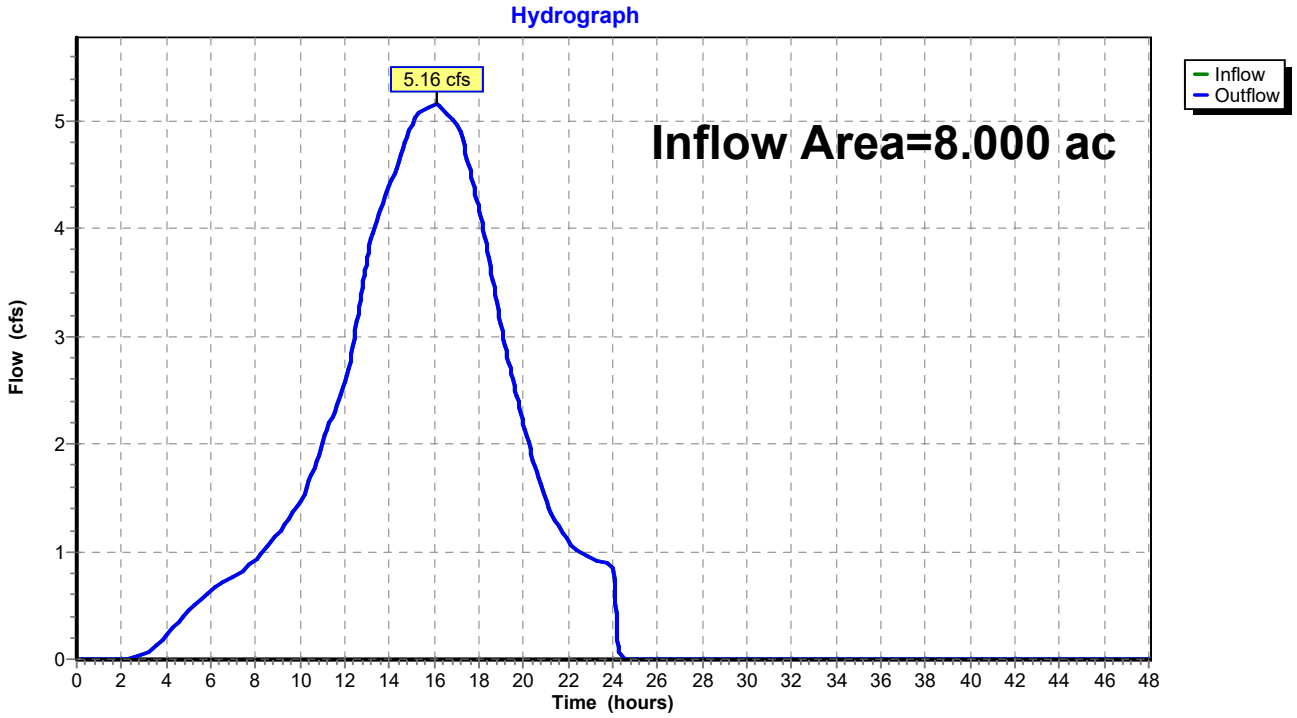


Summary for Reach 33R: Bypass

Inflow Area = 8.000 ac, 13.87% Impervious, Inflow Depth = 5.82" for 100-yr, 24-hr event
Inflow = 5.16 cfs @ 16.11 hrs, Volume= 3.878 af
Outflow = 5.16 cfs @ 16.11 hrs, Volume= 3.878 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 33R: Bypass

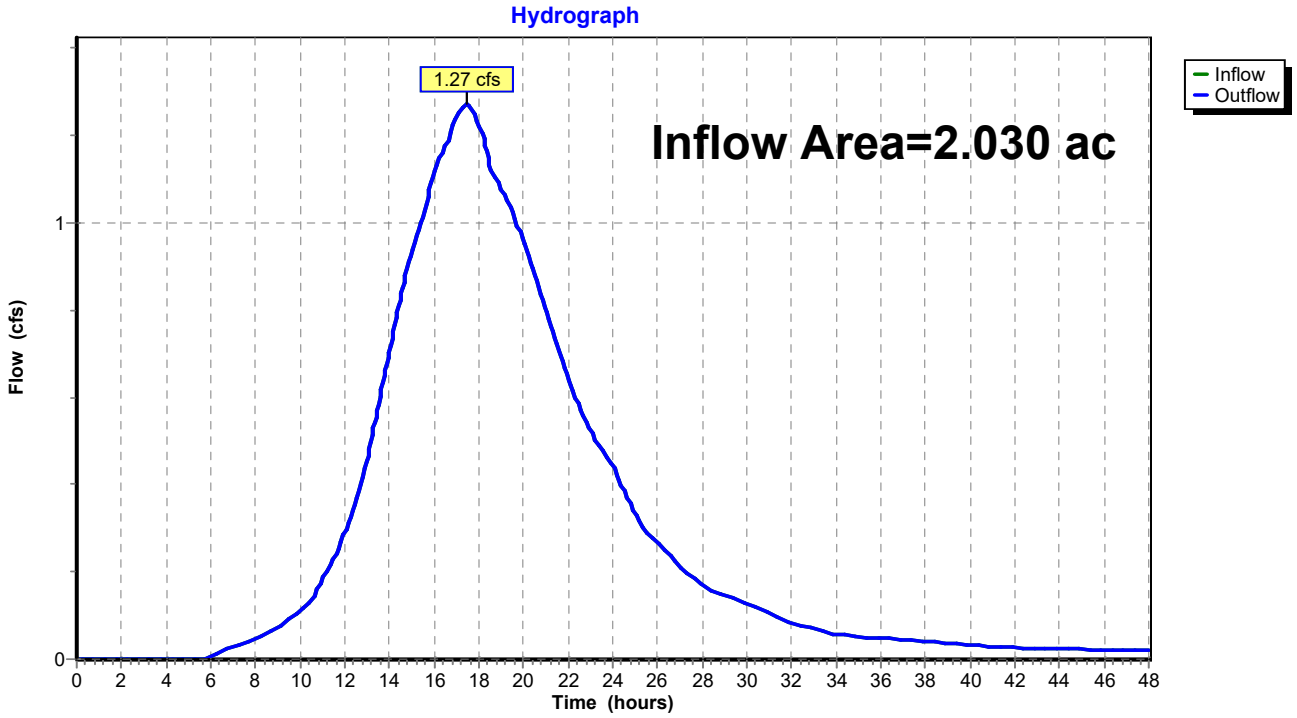


Summary for Reach 34R: City Storm

Inflow Area = 2.030 ac, 79.80% Impervious, Inflow Depth > 6.29" for 100-yr, 24-hr event
Inflow = 1.27 cfs @ 17.43 hrs, Volume= 1.064 af
Outflow = 1.27 cfs @ 17.43 hrs, Volume= 1.064 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 34R: City Storm



Summary for Pond 27P: Lot 1 (Chick)

Inflow Area = 1.320 ac, 90.15% Impervious, Inflow Depth = 7.48" for 100-yr, 24-hr event
Inflow = 0.94 cfs @ 15.20 hrs, Volume= 0.823 af
Outflow = 0.82 cfs @ 17.47 hrs, Volume= 0.677 af, Atten= 13%, Lag= 136.3 min
Primary = 0.82 cfs @ 17.47 hrs, Volume= 0.677 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 448.65' @ 17.47 hrs Surf.Area= 0.161 ac Storage= 0.378 af

Plug-Flow detention time= 460.6 min calculated for 0.677 af (82% of inflow)
Center-of-Mass det. time= 378.3 min (1,214.4 - 836.1)

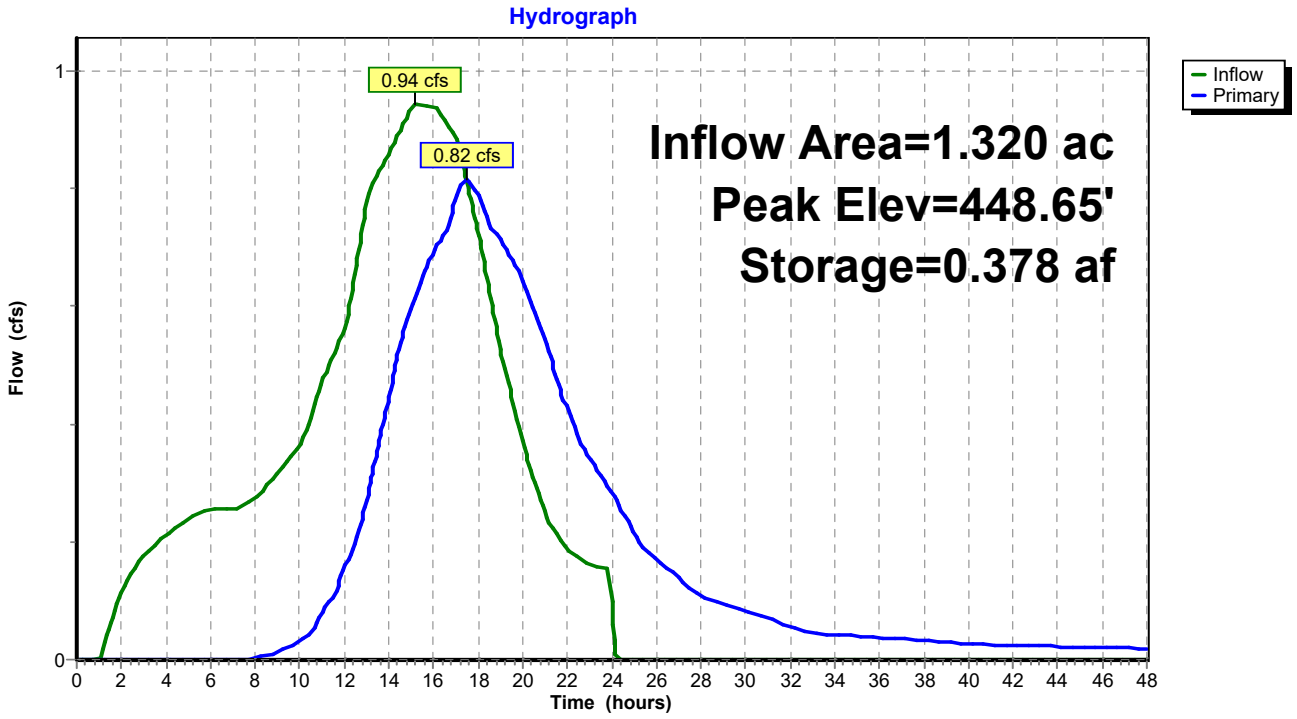
Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.230 af	**72.75'W x 96.28'L x 5.00'H Field A** 0.804 af Overall - 0.229 af Embedded = 0.575 af x 40.0% Voids
#2A	446.50'	0.229 af	**ADS_StormTech SC-800 +Cap** x 195 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 195 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		0.459 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	446.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 446.00' / 445.13' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	448.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.50'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 3 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	447.00'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 2 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#5	Device 1	447.50'	**1.0" Vert. Orifice/Grate X 4.00 columns** X 4 rows with 2.0" cc spacing C= 0.600 Limited to weir flow at low heads
#6	Device 1	448.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.81 cfs @ 17.47 hrs HW=448.65' (Free Discharge)
└**1=Culvert** (Passes 0.81 cfs of 5.39 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 0.06 cfs @ 0.74 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.11 cfs @ 6.74 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.26 cfs @ 5.86 fps)
  ├**5=Orifice/Grate** (Orifice Controls 0.39 cfs @ 4.44 fps)
  └**6=Custom Weir/Orifice** (Weir Controls 0.00 cfs @ 0.14 fps)

Pond 27P: Lot 1 (Chick)



Summary for Pond 32P: Lot 5 (Chipotle)

Inflow Area = 0.710 ac, 60.56% Impervious, Inflow Depth = 6.88" for 100-yr, 24-hr event
Inflow = 0.50 cfs @ 16.01 hrs, Volume= 0.407 af
Outflow = 0.46 cfs @ 17.13 hrs, Volume= 0.386 af, Atten= 7%, Lag= 67.4 min
Primary = 0.46 cfs @ 17.13 hrs, Volume= 0.386 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 456.22' @ 17.13 hrs Surf.Area= 0.052 ac Storage= 0.130 af

Plug-Flow detention time= 281.5 min calculated for 0.386 af (95% of inflow)
Center-of-Mass det. time= 255.0 min (1,123.1 - 868.1)

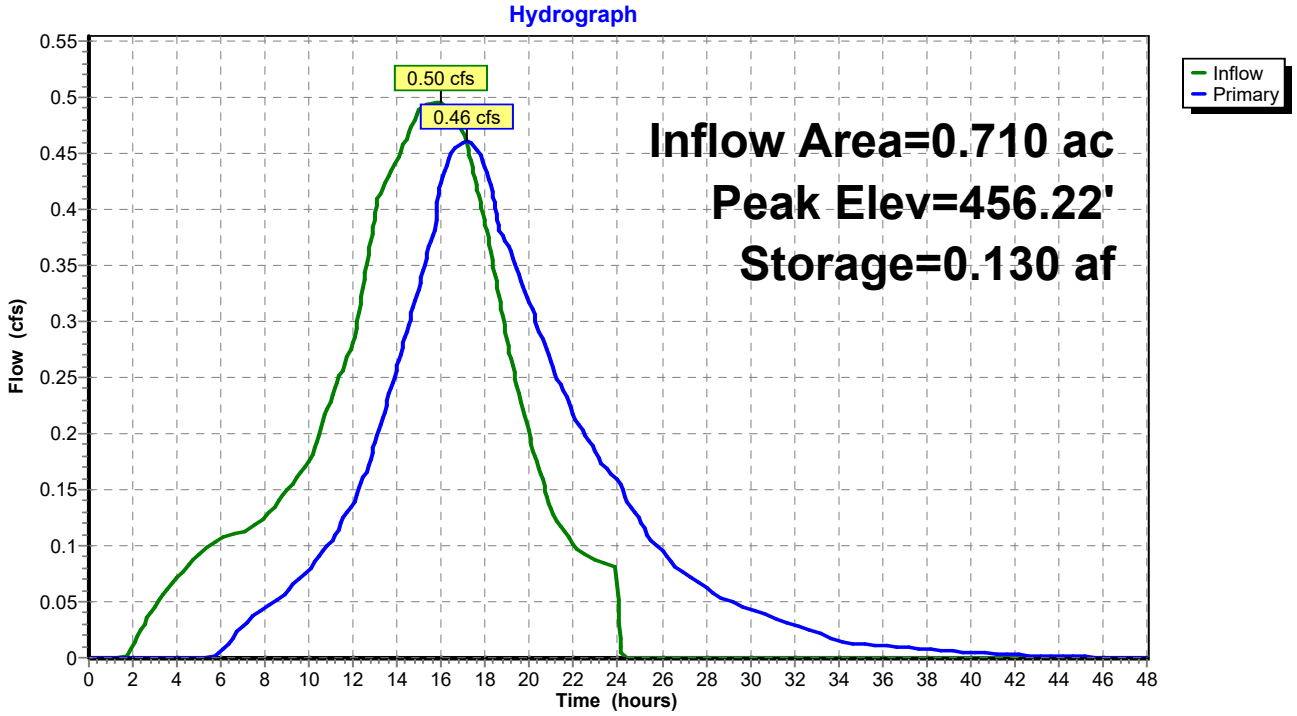
Volume	Invert	Avail.Storage	Storage Description
#1A	452.00'	0.071 af	**20.50'W x 110.52'L x 4.75'H Field A** 0.247 af Overall - 0.070 af Embedded = 0.177 af x 40.0% Voids
#2A	453.50'	0.070 af	**ADS_StormTech SC-800 +Cap** x 60 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 60 Chambers in 4 Rows Cap Storage= 3.4 cf x 2 x 4 rows = 27.4 cf
		0.141 af	Total Available Storage

Storage Group A created with Chamber Wizard

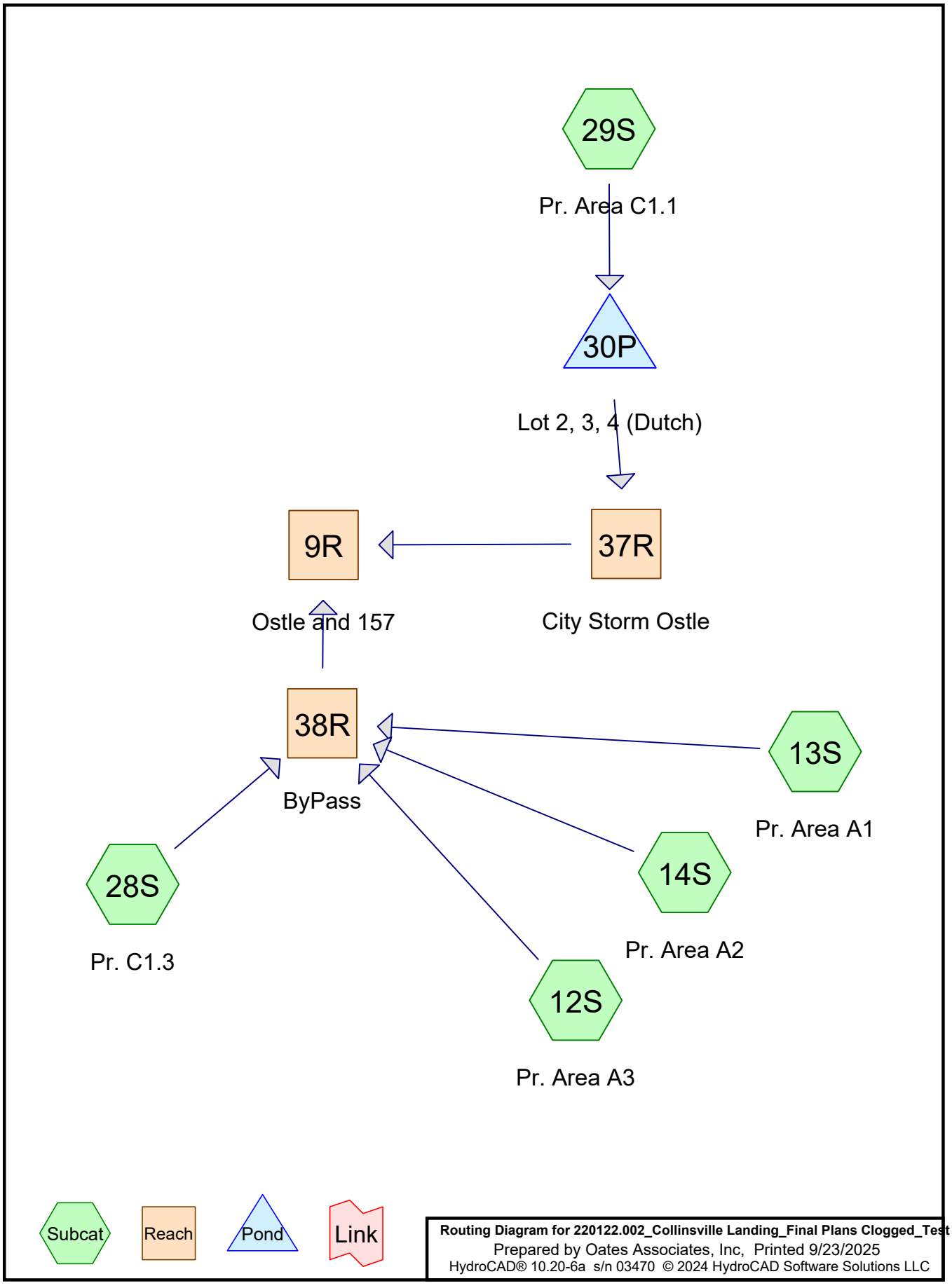
Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 453.00' / 452.50' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	456.00'	**2.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	453.00'	**0.5" Vert. Orifice/Grate X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600 Limited to weir flow at low heads
#4	Device 1	456.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.46 cfs @ 17.13 hrs HW=456.22' (Free Discharge)
└─**1=Culvert** (Passes 0.46 cfs of 5.60 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.27 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.41 cfs @ 6.29 fps)
  └─**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 32P: Lot 5 (Chipotle)



Attachment I
Proposed Clogged Low-Flow Condition
HydroCAD Report



Routing Diagram for 220122.002_Collinsville Landing_Final Plans Clogged_Test
Prepared by Oates Associates, Inc, Printed 9/23/2025
HydroCAD® 10.20-6a s/n 03470 © 2024 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.330	79	50-75% Grass cover, Fair, HSG C (12S, 13S, 14S, 28S, 29S)
3.400	98	Paved parking, HSG C (12S, 13S, 14S, 28S, 29S)
5.730	**90**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment12S: Pr. Area A3 Runoff Area=0.250 ac 32.00% Impervious Runoff Depth=1.55"
Flow Length=484' Tc=5.0 min CN=85 Runoff=1.58 cfs 0.032 af

Subcatchment13S: Pr. Area A1 Runoff Area=1.650 ac 29.09% Impervious Runoff Depth=1.55"
Tc=5.0 min CN=85 Runoff=10.41 cfs 0.213 af

Subcatchment14S: Pr. Area A2 Runoff Area=0.170 ac 47.06% Impervious Runoff Depth=1.77"
Flow Length=224' Tc=5.0 min CN=88 Runoff=1.26 cfs 0.025 af

Subcatchment28S: Pr. C1.3 Runoff Area=1.740 ac 70.11% Impervious Runoff Depth=2.11"
Tc=5.0 min CN=92 Runoff=15.75 cfs 0.307 af

Subcatchment29S: Pr. Area C1.1 Runoff Area=1.920 ac 80.21% Impervious Runoff Depth=2.30"
Tc=5.0 min CN=94 Runoff=19.14 cfs 0.368 af

Reach 9R: Ostle and 157 Inflow=28.90 cfs 0.606 af
Outflow=28.90 cfs 0.606 af

Reach 37R: City Storm Ostle Inflow=0.18 cfs 0.029 af
Outflow=0.18 cfs 0.029 af

Reach 38R: ByPass Inflow=28.90 cfs 0.576 af
Outflow=28.90 cfs 0.576 af

Pond 30P: Lot 2, 3, 4 (Dutch) Peak Elev=446.09' Storage=0.366 af Inflow=19.14 cfs 0.368 af
Outflow=0.18 cfs 0.029 af

Total Runoff Area = 5.730 ac Runoff Volume = 0.945 af Average Runoff Depth = 1.98"
40.66% Pervious = 2.330 ac 59.34% Impervious = 3.400 ac

Summary for Subcatchment 12S: Pr. Area A3

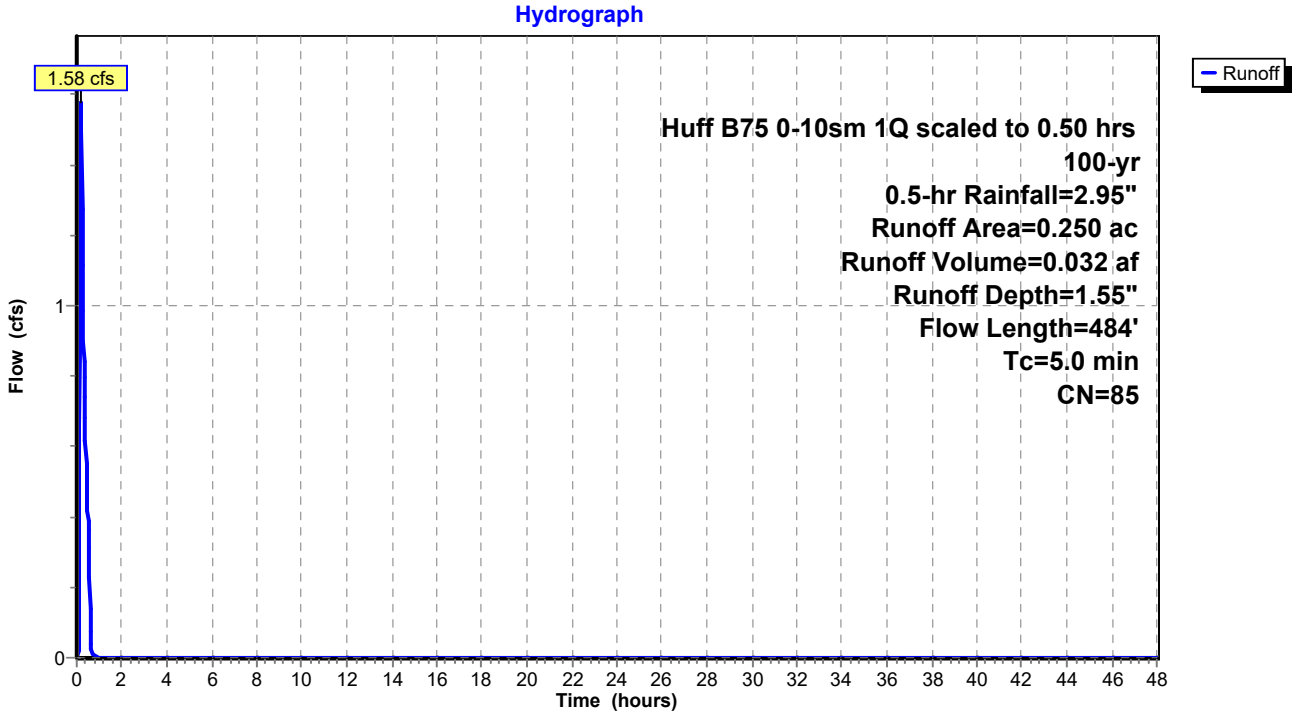
Runoff = 1.58 cfs @ 0.19 hrs, Volume= 0.032 af, Depth= 1.55"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
0.170	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.250	85	Weighted Average
0.170		68.00% Pervious Area
0.080		32.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: Pr. Area A3



Summary for Subcatchment 13S: Pr. Area A1

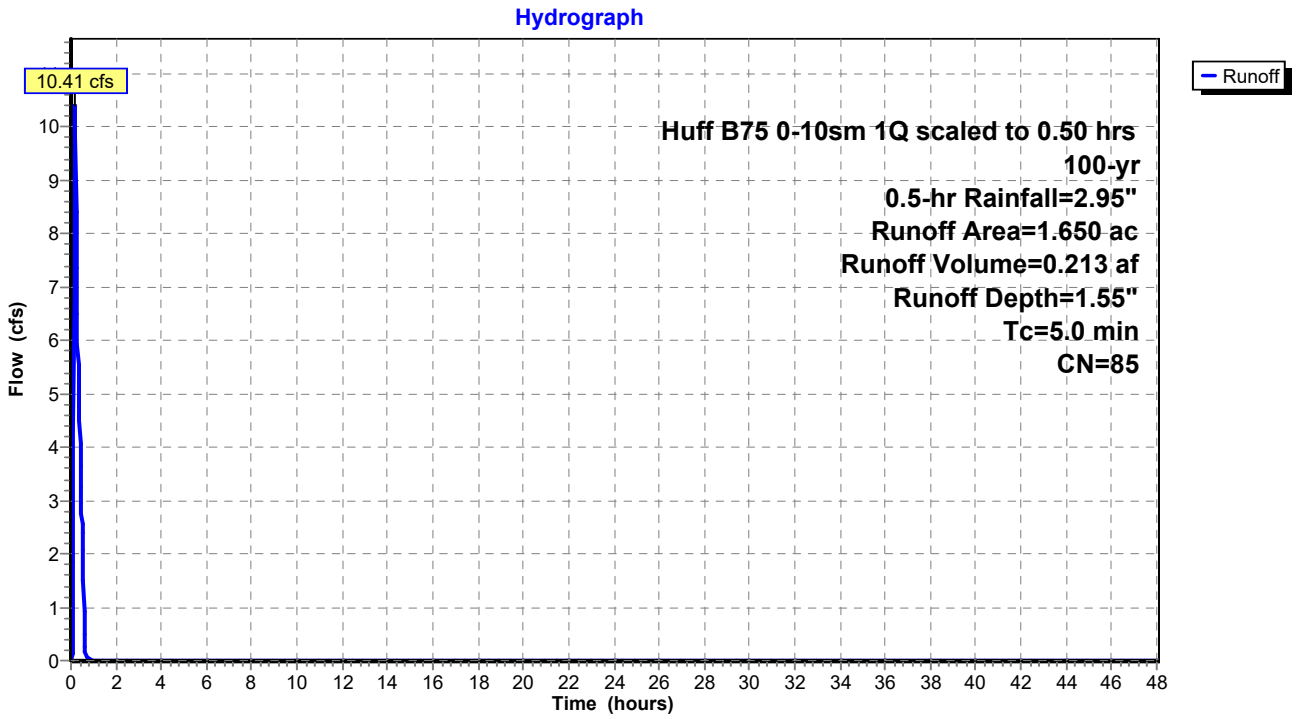
Runoff = 10.41 cfs @ 0.19 hrs, Volume= 0.213 af, Depth= 1.55"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.170	79	50-75% Grass cover, Fair, HSG C
0.480	98	Paved parking, HSG C
1.650	85	Weighted Average
1.170		70.91% Pervious Area
0.480		29.09% Impervious Area

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

Subcatchment 13S: Pr. Area A1



Summary for Subcatchment 14S: Pr. Area A2

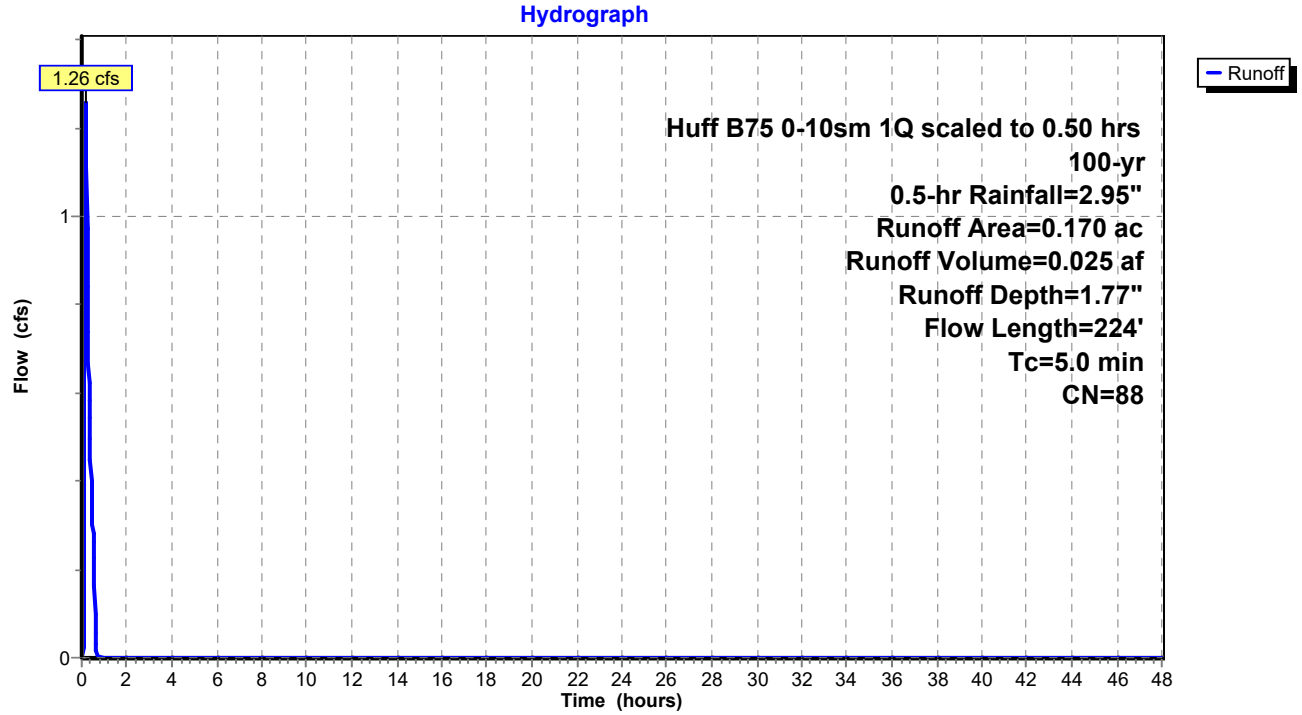
Runoff = 1.26 cfs @ 0.19 hrs, Volume= 0.025 af, Depth= 1.77"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
0.090	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.170	88	Weighted Average
0.090		52.94% Pervious Area
0.080		47.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: Pr. Area A2



Summary for Subcatchment 28S: Pr. C1.3

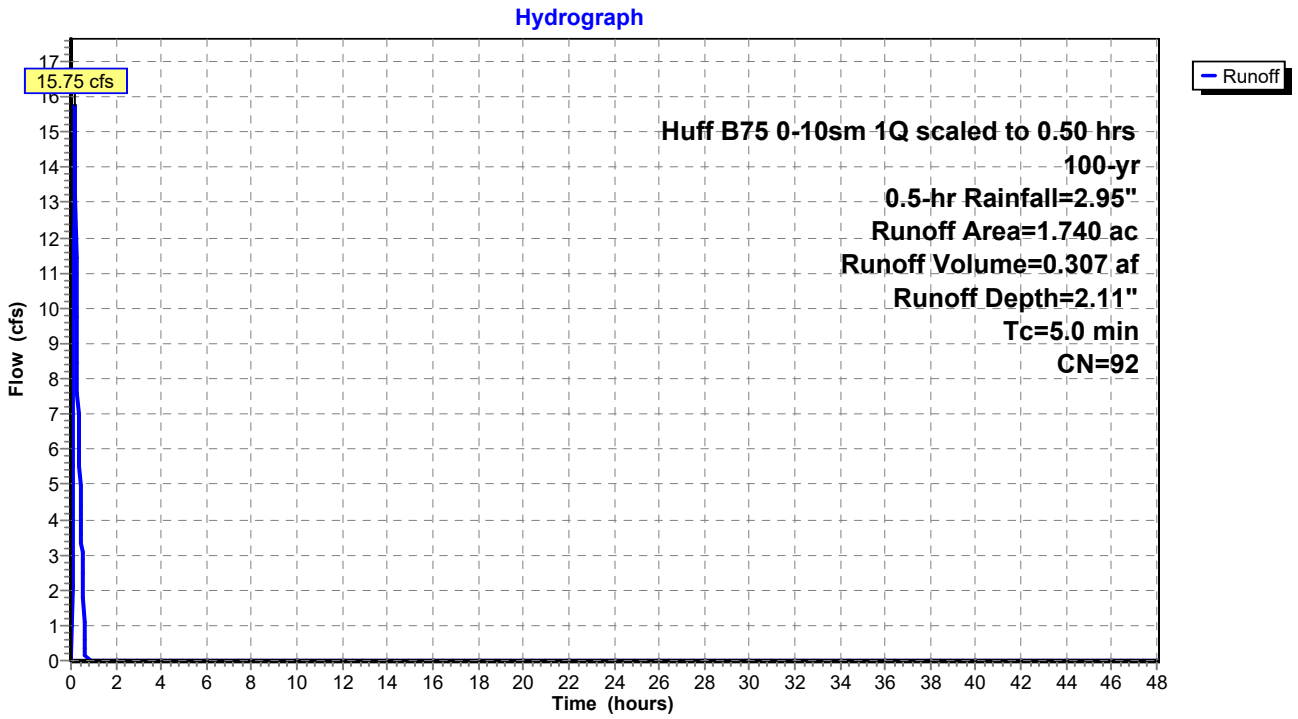
Runoff = 15.75 cfs @ 0.18 hrs, Volume= 0.307 af, Depth= 2.11"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.220	98	Paved parking, HSG C
0.520	79	50-75% Grass cover, Fair, HSG C
1.740	92	Weighted Average
0.520		29.89% Pervious Area
1.220		70.11% Impervious Area

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

Subcatchment 28S: Pr. C1.3



Summary for Subcatchment 29S: Pr. Area C1.1

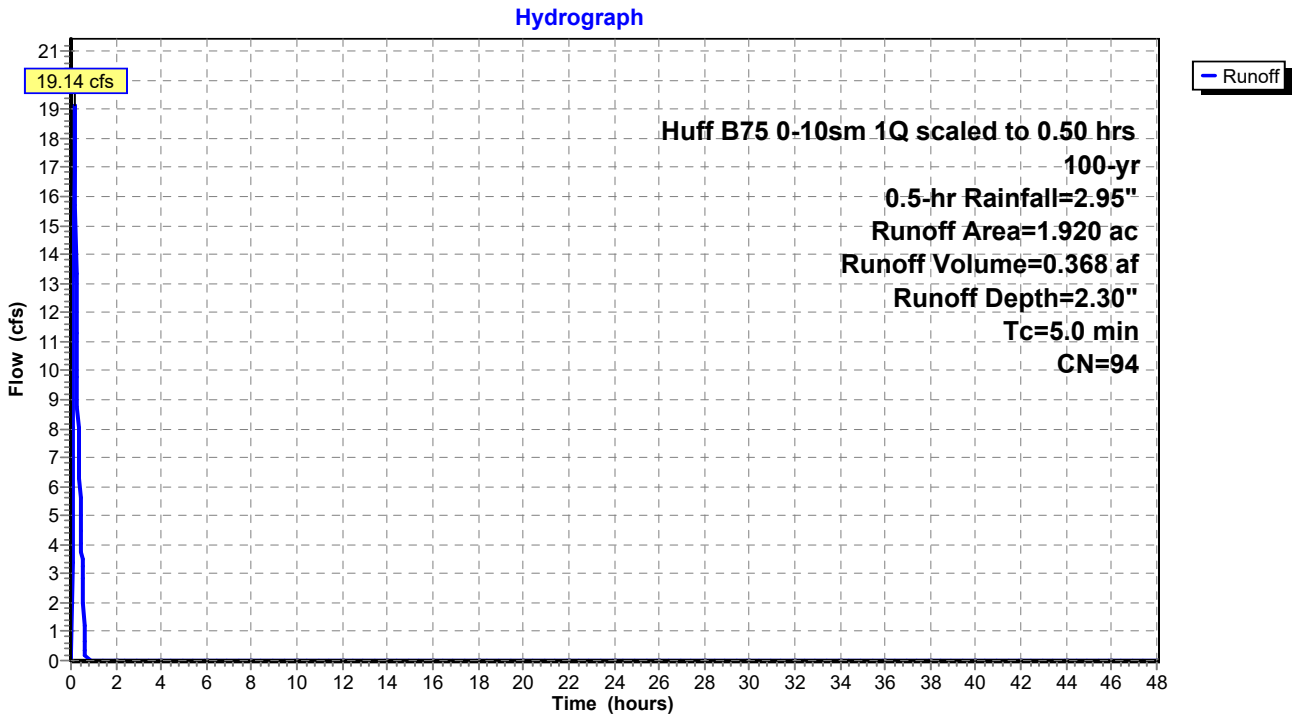
Runoff = 19.14 cfs @ 0.17 hrs, Volume= 0.368 af, Depth= 2.30"
Routed to Pond 30P : Lot 2, 3, 4 (Dutch)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 0.50 hrs 100-yr, 0.5-hr Rainfall=2.95"

Area (ac)	CN	Description
1.540	98	Paved parking, HSG C
0.380	79	50-75% Grass cover, Fair, HSG C
1.920	94	Weighted Average
0.380		19.79% Pervious Area
1.540		80.21% Impervious Area

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

Subcatchment 29S: Pr. Area C1.1

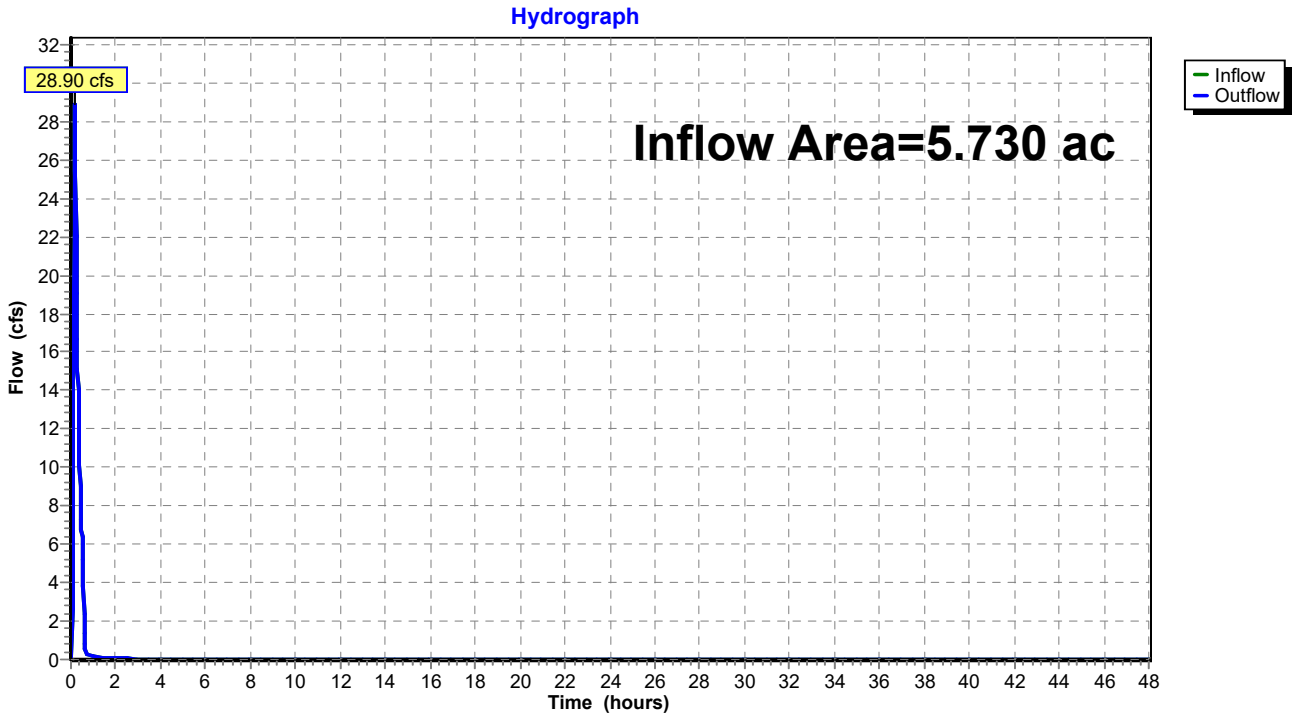


Summary for Reach 9R: Ostle and 157

Inflow Area = 5.730 ac, 59.34% Impervious, Inflow Depth = 1.27" for 100-yr, 0.5-hr event
Inflow = 28.90 cfs @ 0.18 hrs, Volume= 0.606 af
Outflow = 28.90 cfs @ 0.18 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 9R: Ostle and 157

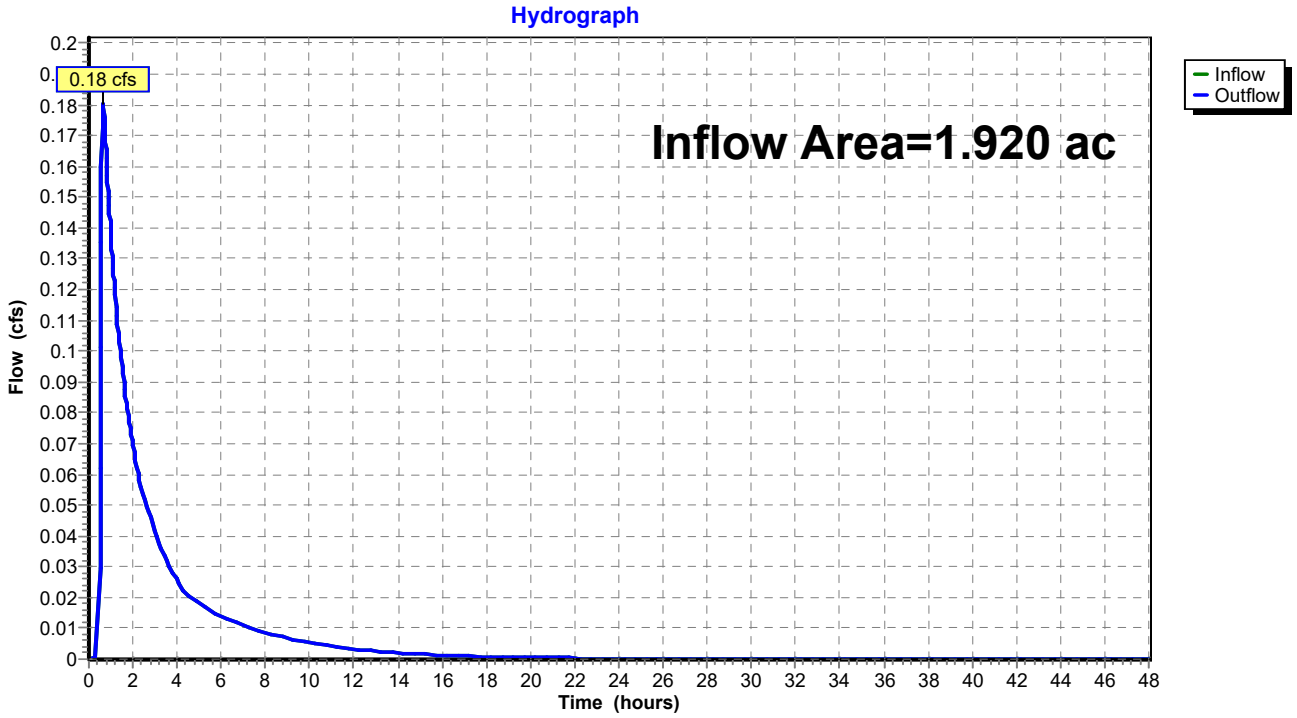


Summary for Reach 37R: City Storm Ostle

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 0.18" for 100-yr, 0.5-hr event
Inflow = 0.18 cfs @ 0.65 hrs, Volume= 0.029 af
Outflow = 0.18 cfs @ 0.65 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 37R: City Storm Ostle

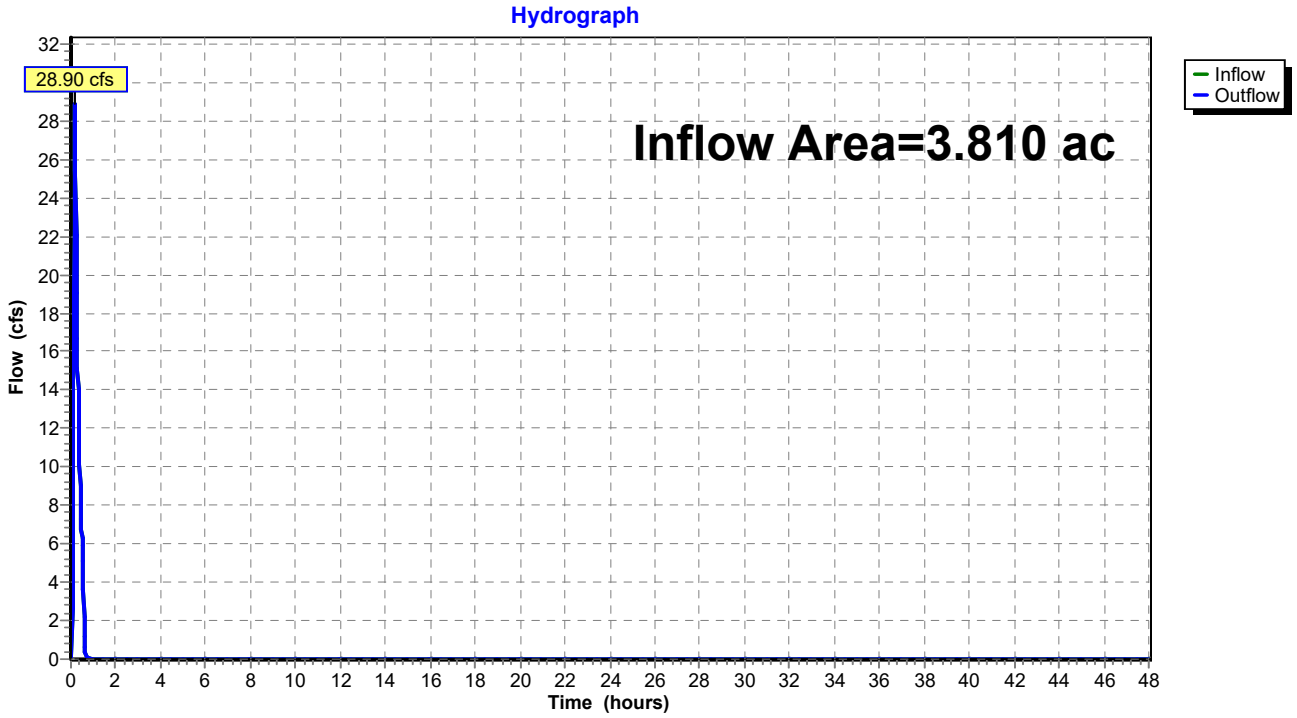


Summary for Reach 38R: ByPass

Inflow Area = 3.810 ac, 48.82% Impervious, Inflow Depth = 1.82" for 100-yr, 0.5-hr event
Inflow = 28.90 cfs @ 0.18 hrs, Volume= 0.576 af
Outflow = 28.90 cfs @ 0.18 hrs, Volume= 0.576 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 38R: ByPass



Summary for Pond 30P: Lot 2, 3, 4 (Dutch)

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 2.30" for 100-yr, 0.5-hr event
Inflow = 19.14 cfs @ 0.17 hrs, Volume= 0.368 af
Outflow = 0.18 cfs @ 0.65 hrs, Volume= 0.029 af, Atten= 99%, Lag= 28.4 min
Primary = 0.18 cfs @ 0.65 hrs, Volume= 0.029 af
Routed to Reach 37R : City Storm Ostle

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 446.09' @ 0.65 hrs Surf.Area= 0.107 ac Storage= 0.366 af

Plug-Flow detention time= 197.6 min calculated for 0.029 af (8% of inflow)
Center-of-Mass det. time= 187.9 min (203.4 - 15.5)

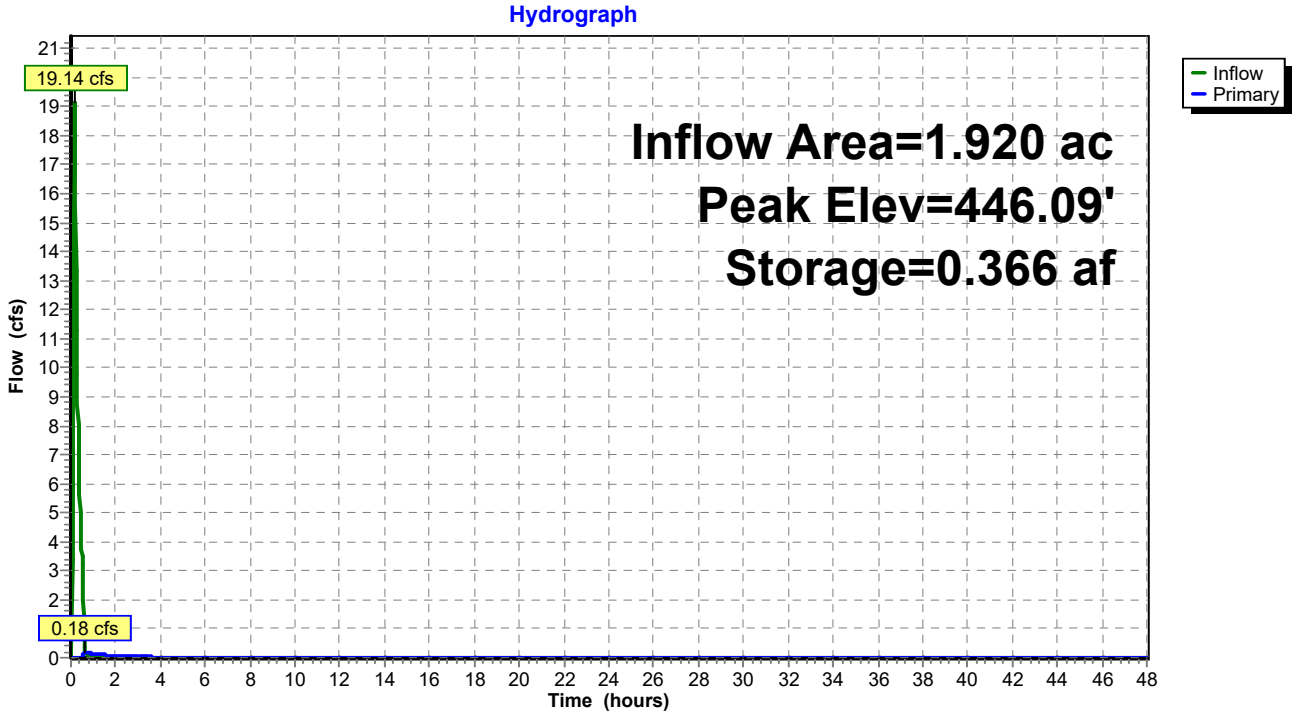
Volume	Invert	Avail.Storage	Storage Description
#1A	440.50'	0.257 af	**46.67'W x 99.75'L x 8.75'H Field A** 0.935 af Overall - 0.292 af Embedded = 0.643 af x 40.0% Voids
#2A	443.25'	0.292 af	**ADS_StormTech MC-7200 +Cap** x 70 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 70 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.549 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	445.75'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 1.00 3.00 Width (feet) 0.25 0.75
#2	Primary	443.25'	**18.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.25' / 442.25' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=0.18 cfs @ 0.65 hrs HW=446.09' (Free Discharge)
└**2=Culvert** (Passes 0.18 cfs of 13.68 cfs potential flow)
└**1=Custom Weir** (Weir Controls 0.18 cfs @ 1.84 fps)

Pond 30P: Lot 2, 3, 4 (Dutch)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment12S: Pr. Area A3	Runoff Area=0.250 ac 32.00% Impervious Runoff Depth=6.17" Flow Length=484' Tc=5.0 min CN=85 Runoff=0.17 cfs 0.129 af
Subcatchment13S: Pr. Area A1	Runoff Area=1.650 ac 29.09% Impervious Runoff Depth=6.17" Tc=5.0 min CN=85 Runoff=1.10 cfs 0.849 af
Subcatchment14S: Pr. Area A2	Runoff Area=0.170 ac 47.06% Impervious Runoff Depth=6.53" Flow Length=224' Tc=5.0 min CN=88 Runoff=0.12 cfs 0.092 af
Subcatchment28S: Pr. C1.3	Runoff Area=1.740 ac 70.11% Impervious Runoff Depth=7.00" Tc=5.0 min CN=92 Runoff=1.22 cfs 1.016 af
Subcatchment29S: Pr. Area C1.1	Runoff Area=1.920 ac 80.21% Impervious Runoff Depth=7.24" Tc=5.0 min CN=94 Runoff=1.36 cfs 1.159 af
Reach 9R: Ostle and 157	Inflow=3.96 cfs 2.905 af Outflow=3.96 cfs 2.905 af
Reach 37R: City Storm Ostle	Inflow=1.36 cfs 0.820 af Outflow=1.36 cfs 0.820 af
Reach 38R: ByPass	Inflow=2.60 cfs 2.086 af Outflow=2.60 cfs 2.086 af
Pond 30P: Lot 2, 3, 4 (Dutch)	Peak Elev=446.85' Storage=0.424 af Inflow=1.36 cfs 1.159 af Outflow=1.36 cfs 0.820 af

Total Runoff Area = 5.730 ac Runoff Volume = 3.244 af Average Runoff Depth = 6.79"
40.66% Pervious = 2.330 ac 59.34% Impervious = 3.400 ac

Summary for Subcatchment 12S: Pr. Area A3

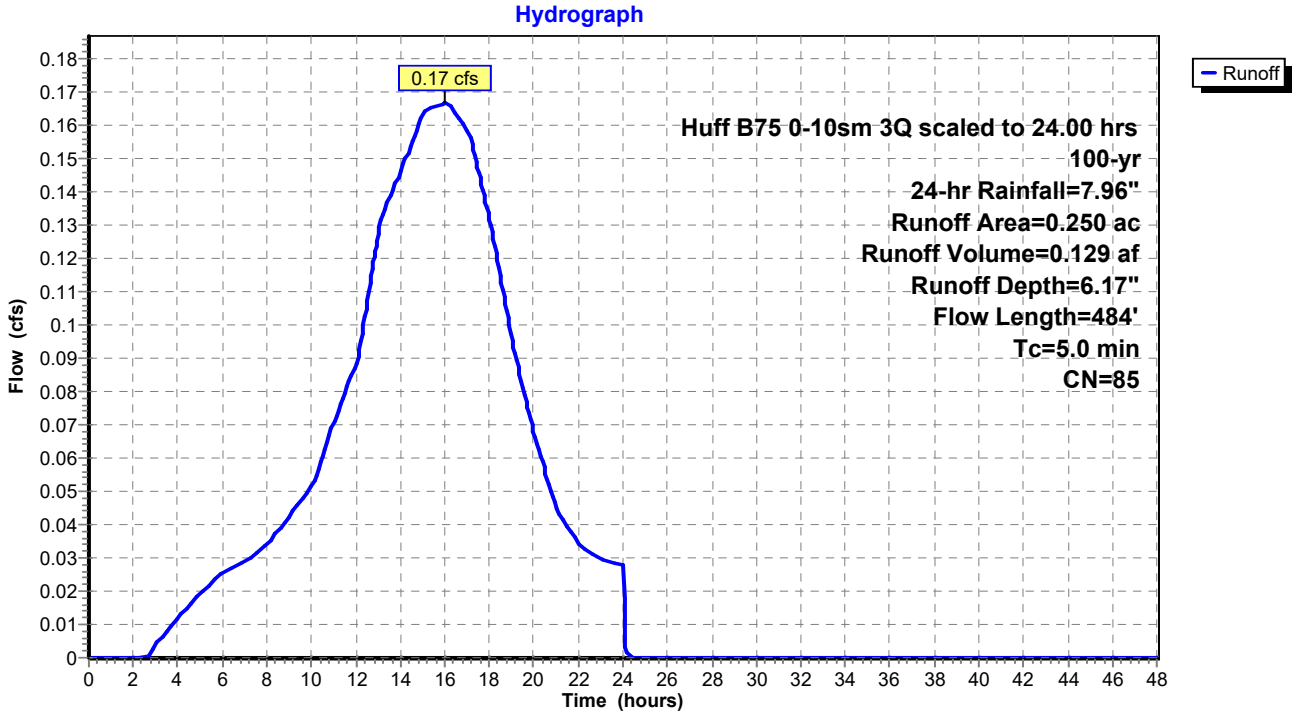
Runoff = 0.17 cfs @ 16.04 hrs, Volume= 0.129 af, Depth= 6.17"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.170	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.250	85	Weighted Average
0.170		68.00% Pervious Area
0.080		32.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	72	0.0980	0.32		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.1	34	0.0970	6.32		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.2	50	0.0980	5.04		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.1	40	0.0730	5.48		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.8	288	0.1520	6.28		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.9	484	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 12S: Pr. Area A3



Summary for Subcatchment 13S: Pr. Area A1

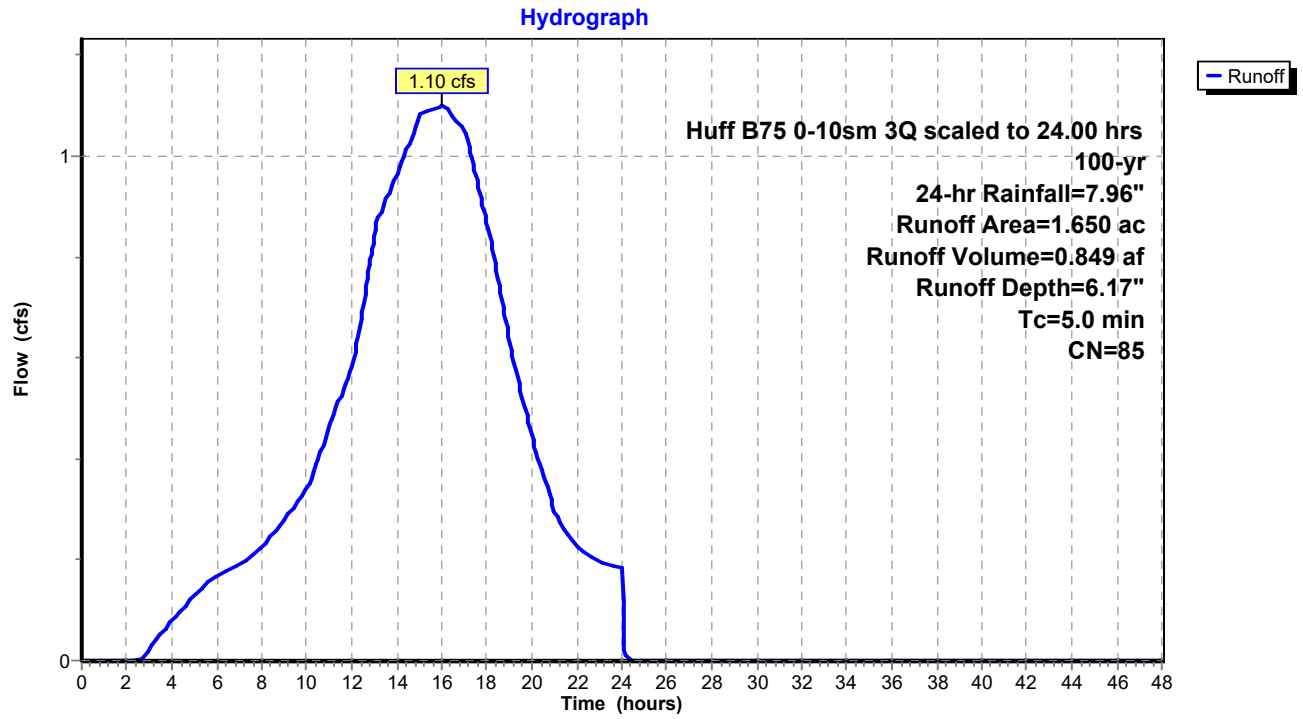
Runoff = 1.10 cfs @ 16.04 hrs, Volume= 0.849 af, Depth= 6.17"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.170	79	50-75% Grass cover, Fair, HSG C
0.480	98	Paved parking, HSG C
1.650	85	Weighted Average
1.170		70.91% Pervious Area
0.480		29.09% Impervious Area

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

Subcatchment 13S: Pr. Area A1



Summary for Subcatchment 14S: Pr. Area A2

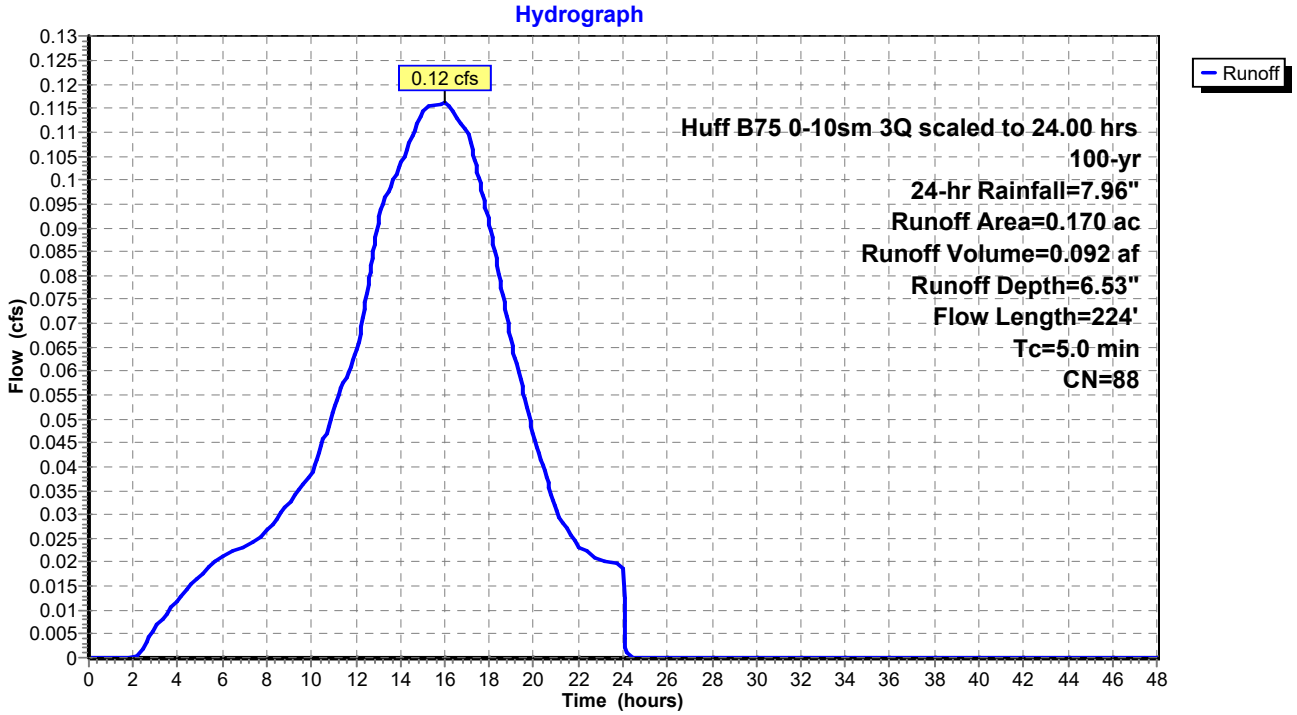
Runoff = 0.12 cfs @ 16.03 hrs, Volume= 0.092 af, Depth= 6.53"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.090	79	50-75% Grass cover, Fair, HSG C
0.080	98	Paved parking, HSG C
0.170	88	Weighted Average
0.090		52.94% Pervious Area
0.080		47.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	44	0.1360	0.33		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
0.6	180	0.0520	4.63		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.8	224	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 14S: Pr. Area A2



Summary for Subcatchment 28S: Pr. C1.3

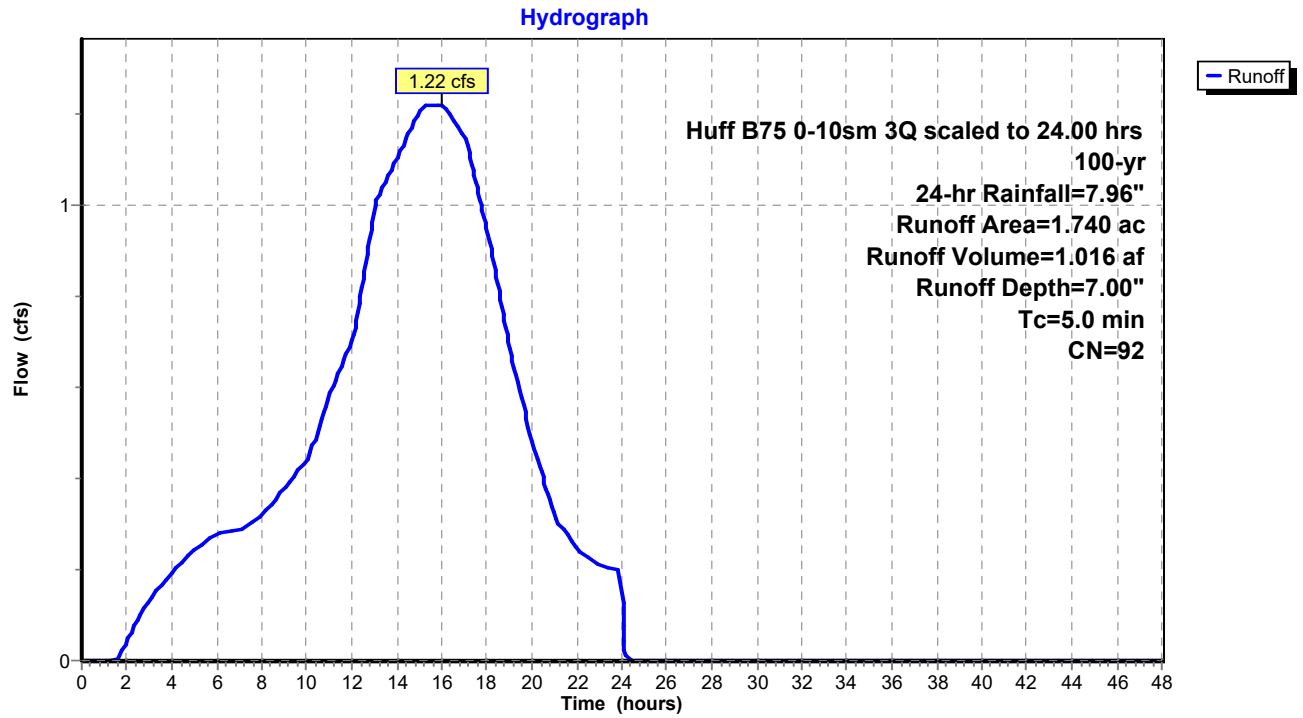
Runoff = 1.22 cfs @ 16.00 hrs, Volume= 1.016 af, Depth= 7.00"
Routed to Reach 38R : ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.220	98	Paved parking, HSG C
0.520	79	50-75% Grass cover, Fair, HSG C
1.740	92	Weighted Average
0.520		29.89% Pervious Area
1.220		70.11% Impervious Area

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

Subcatchment 28S: Pr. C1.3



Summary for Subcatchment 29S: Pr. Area C1.1

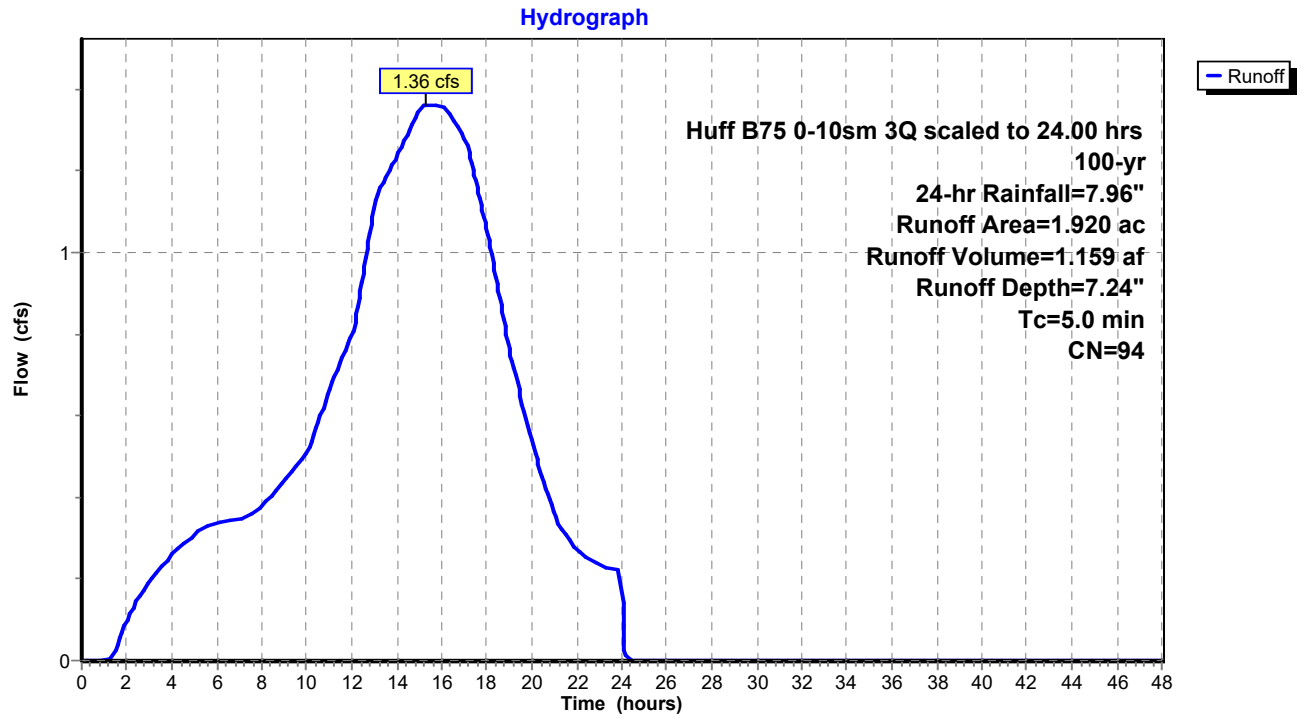
Runoff = 1.36 cfs @ 15.30 hrs, Volume= 1.159 af, Depth= 7.24"
Routed to Pond 30P : Lot 2, 3, 4 (Dutch)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.540	98	Paved parking, HSG C
0.380	79	50-75% Grass cover, Fair, HSG C
1.920	94	Weighted Average
0.380		19.79% Pervious Area
1.540		80.21% Impervious Area

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

Subcatchment 29S: Pr. Area C1.1

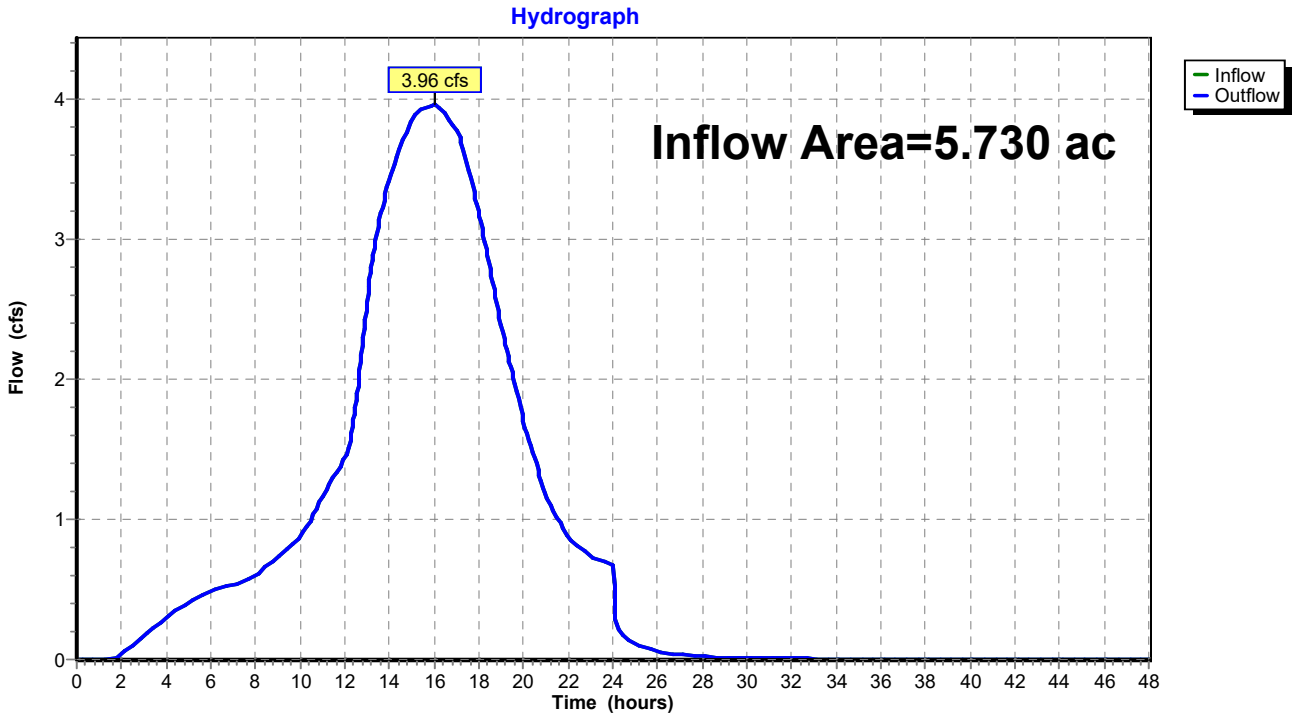


Summary for Reach 9R: Ostle and 157

Inflow Area = 5.730 ac, 59.34% Impervious, Inflow Depth = 6.08" for 100-yr, 24-hr event
Inflow = 3.96 cfs @ 16.04 hrs, Volume= 2.905 af
Outflow = 3.96 cfs @ 16.04 hrs, Volume= 2.905 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 9R: Ostle and 157

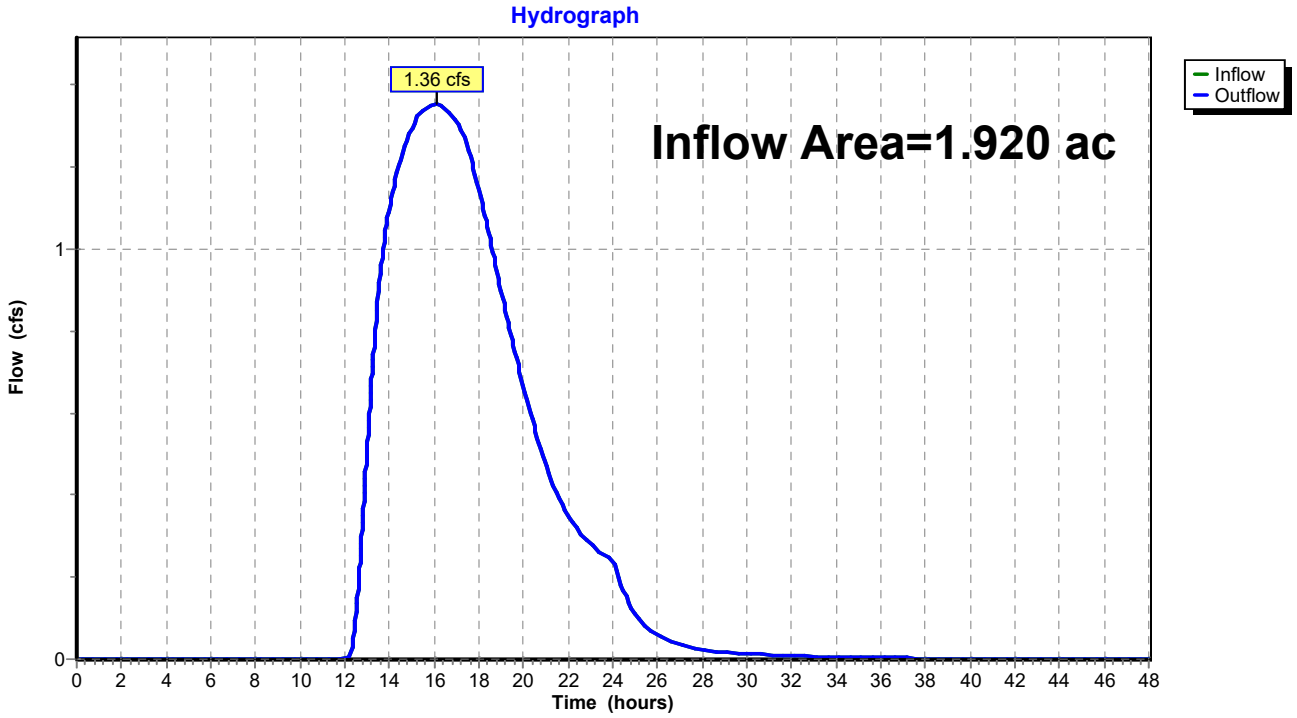


Summary for Reach 37R: City Storm Ostle

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth > 5.12" for 100-yr, 24-hr event
Inflow = 1.36 cfs @ 16.12 hrs, Volume= 0.820 af
Outflow = 1.36 cfs @ 16.12 hrs, Volume= 0.820 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 37R: City Storm Ostle

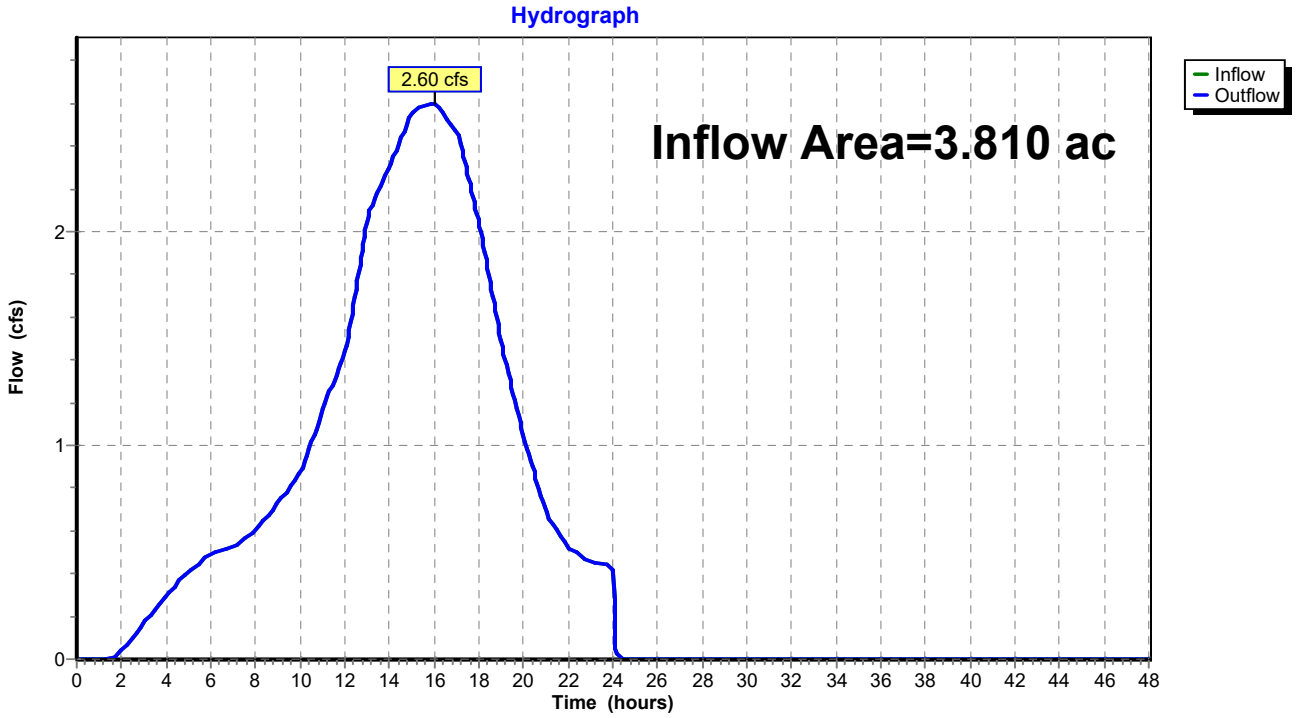


Summary for Reach 38R: ByPass

Inflow Area = 3.810 ac, 48.82% Impervious, Inflow Depth = 6.57" for 100-yr, 24-hr event
Inflow = 2.60 cfs @ 16.03 hrs, Volume= 2.086 af
Outflow = 2.60 cfs @ 16.03 hrs, Volume= 2.086 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 9R : Ostle and 157

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 38R: ByPass



Summary for Pond 30P: Lot 2, 3, 4 (Dutch)

Inflow Area = 1.920 ac, 80.21% Impervious, Inflow Depth = 7.24" for 100-yr, 24-hr event
Inflow = 1.36 cfs @ 15.30 hrs, Volume= 1.159 af
Outflow = 1.36 cfs @ 16.12 hrs, Volume= 0.820 af, Atten= 0%, Lag= 49.0 min
Primary = 1.36 cfs @ 16.12 hrs, Volume= 0.820 af
Routed to Reach 37R : City Storm Ostle

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 446.85' @ 16.12 hrs Surf.Area= 0.107 ac Storage= 0.424 af

Plug-Flow detention time= 332.3 min calculated for 0.819 af (71% of inflow)
Center-of-Mass det. time= 205.5 min (1,055.4 - 849.9)

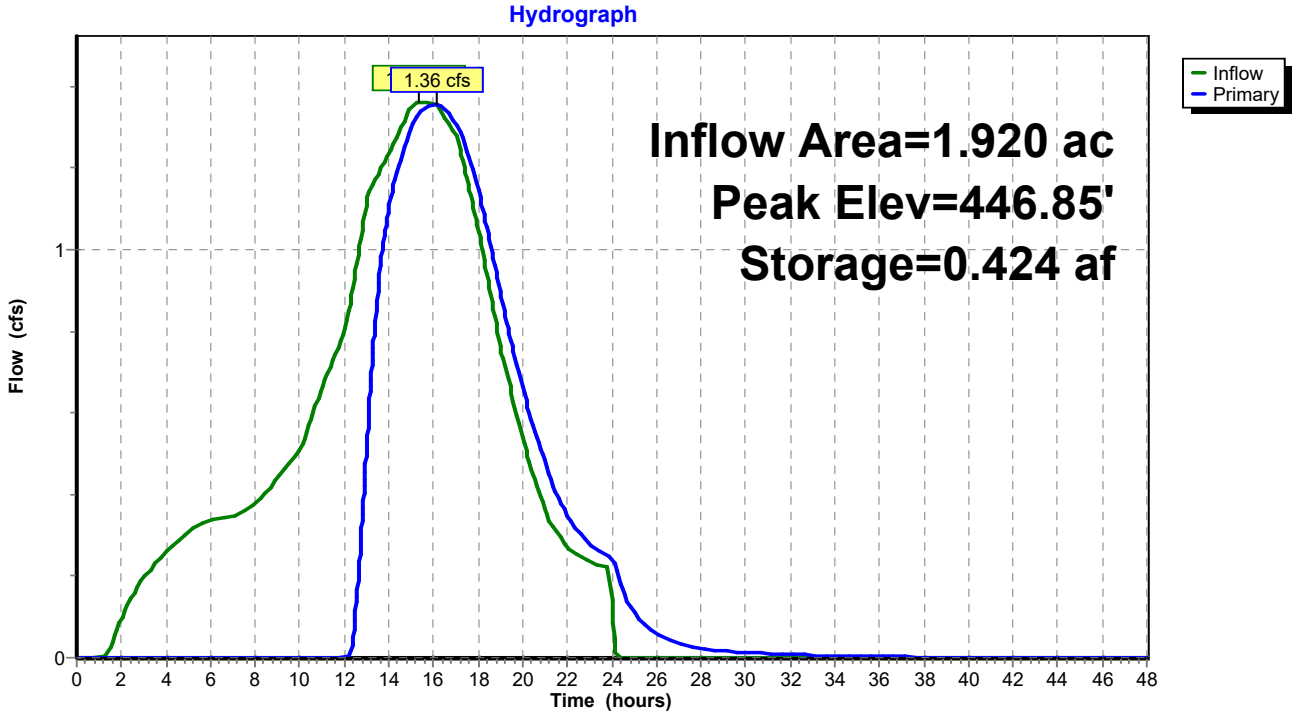
Volume	Invert	Avail.Storage	Storage Description
#1A	440.50'	0.257 af	**46.67'W x 99.75'L x 8.75'H Field A** 0.935 af Overall - 0.292 af Embedded = 0.643 af x 40.0% Voids
#2A	443.25'	0.292 af	**ADS_StormTech MC-7200 +Cap** x 70 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 70 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		0.549 af	Total Available Storage

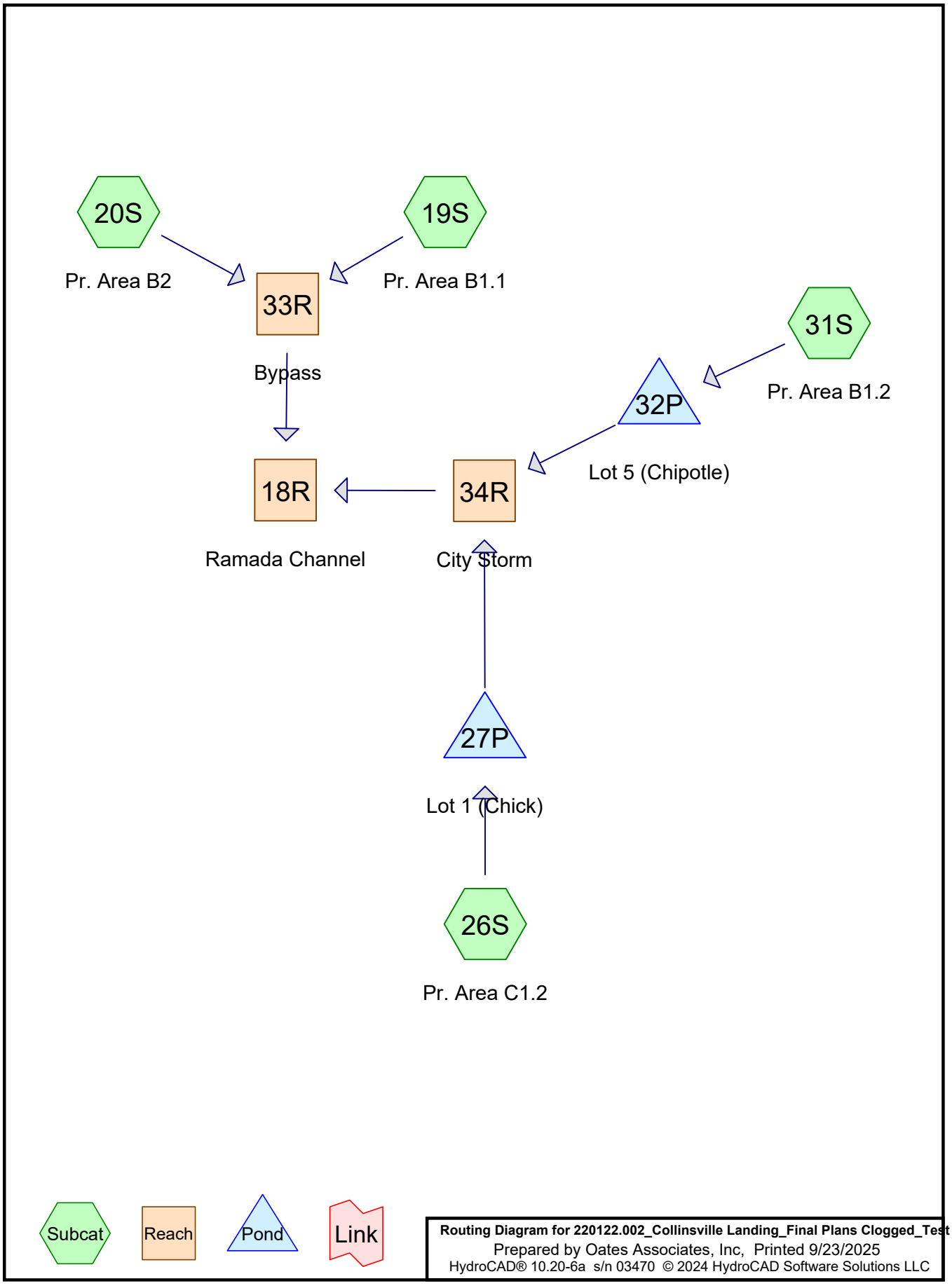
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	445.75'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 1.00 3.00 Width (feet) 0.25 0.75
#2	Primary	443.25'	**18.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.25' / 442.25' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=1.36 cfs @ 16.12 hrs HW=446.85' (Free Discharge)
└**2=Culvert** (Passes 1.36 cfs of 15.76 cfs potential flow)
└**1=Custom Weir** (Weir Controls 1.36 cfs @ 3.19 fps)

Pond 30P: Lot 2, 3, 4 (Dutch)





Routing Diagram for 220122.002_Collinsville Landing_Final Plans Clogged_Test

Prepared by Oates Associates, Inc, Printed 9/23/2025

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.300	79	50-75% Grass cover, Fair, HSG C (19S, 20S, 26S, 31S)
2.730	98	Paved parking, HSG C (19S, 20S, 26S, 31S)
10.030	**84**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment19S: Pr. Area B1.1 Runoff Area=6.910 ac 8.83% Impervious Runoff Depth=1.90"
Flow Length=1,457' Tc=10.4 min CN=81 Runoff=26.56 cfs 1.097 af

Subcatchment20S: Pr. Area B2 Runoff Area=1.090 ac 45.87% Impervious Runoff Depth=2.49"
Flow Length=409' Tc=5.0 min CN=88 Runoff=6.47 cfs 0.226 af

Subcatchment26S: Pr. Area C1.2 Runoff Area=1.320 ac 90.15% Impervious Runoff Depth=3.28"
Tc=5.0 min CN=96 Runoff=10.71 cfs 0.361 af

Subcatchment31S: Pr. Area B1.2 Runoff Area=0.710 ac 60.56% Impervious Runoff Depth=2.77"
Tc=5.0 min CN=91 Runoff=4.76 cfs 0.164 af

Reach 18R: Ramada Channel Inflow=31.57 cfs 1.351 af
Outflow=31.57 cfs 1.351 af

Reach 33R: Bypass Inflow=31.57 cfs 1.323 af
Outflow=31.57 cfs 1.323 af

Reach 34R: City Storm Inflow=1.05 cfs 0.028 af
Outflow=1.05 cfs 0.028 af

Pond 27P: Lot 1 (Chick) Peak Elev=448.49' Storage=0.361 af Inflow=10.71 cfs 0.361 af
Outflow=0.00 cfs 0.000 af

Pond 32P: Lot 5 (Chipotle) Peak Elev=456.69' Storage=0.140 af Inflow=4.76 cfs 0.164 af
Outflow=1.05 cfs 0.028 af

Total Runoff Area = 10.030 ac Runoff Volume = 1.848 af Average Runoff Depth = 2.21"
72.78% Pervious = 7.300 ac 27.22% Impervious = 2.730 ac

Summary for Subcatchment 19S: Pr. Area B1.1

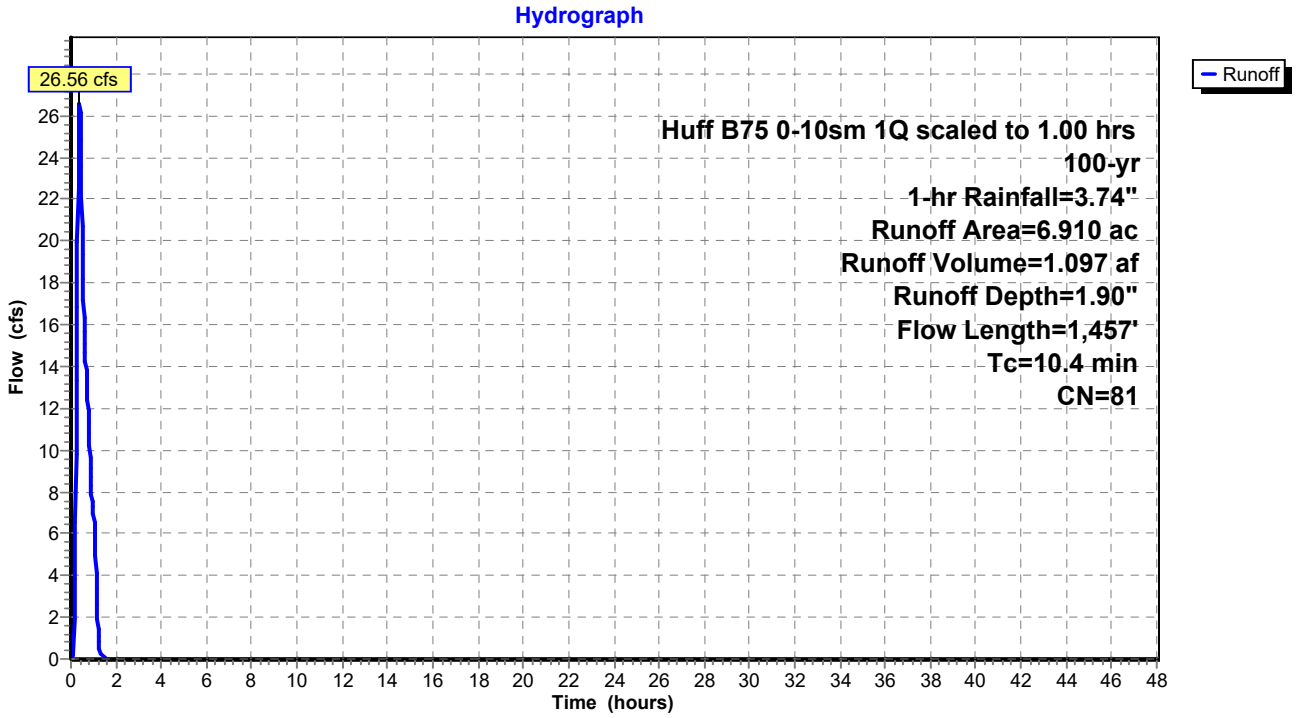
Runoff = 26.56 cfs @ 0.39 hrs, Volume= 1.097 af, Depth= 1.90"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
6.300	79	50-75% Grass cover, Fair, HSG C
0.610	98	Paved parking, HSG C
6.910	81	Weighted Average
6.300		91.17% Pervious Area
0.610		8.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 19S: Pr. Area B1.1



Summary for Subcatchment 20S: Pr. Area B2

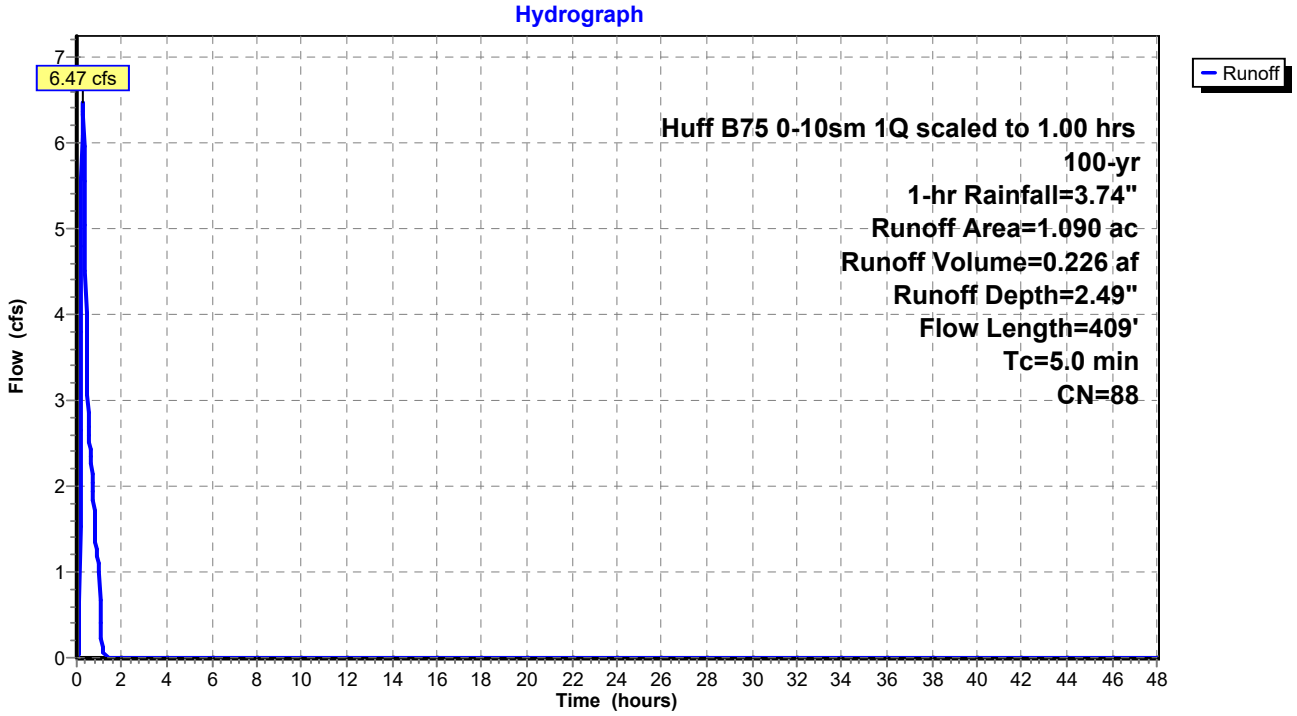
Runoff = 6.47 cfs @ 0.28 hrs, Volume= 0.226 af, Depth= 2.49"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.590	79	50-75% Grass cover, Fair, HSG C
1.090	88	Weighted Average
0.590		54.13% Pervious Area
0.500		45.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 20S: Pr. Area B2



Summary for Subcatchment 26S: Pr. Area C1.2

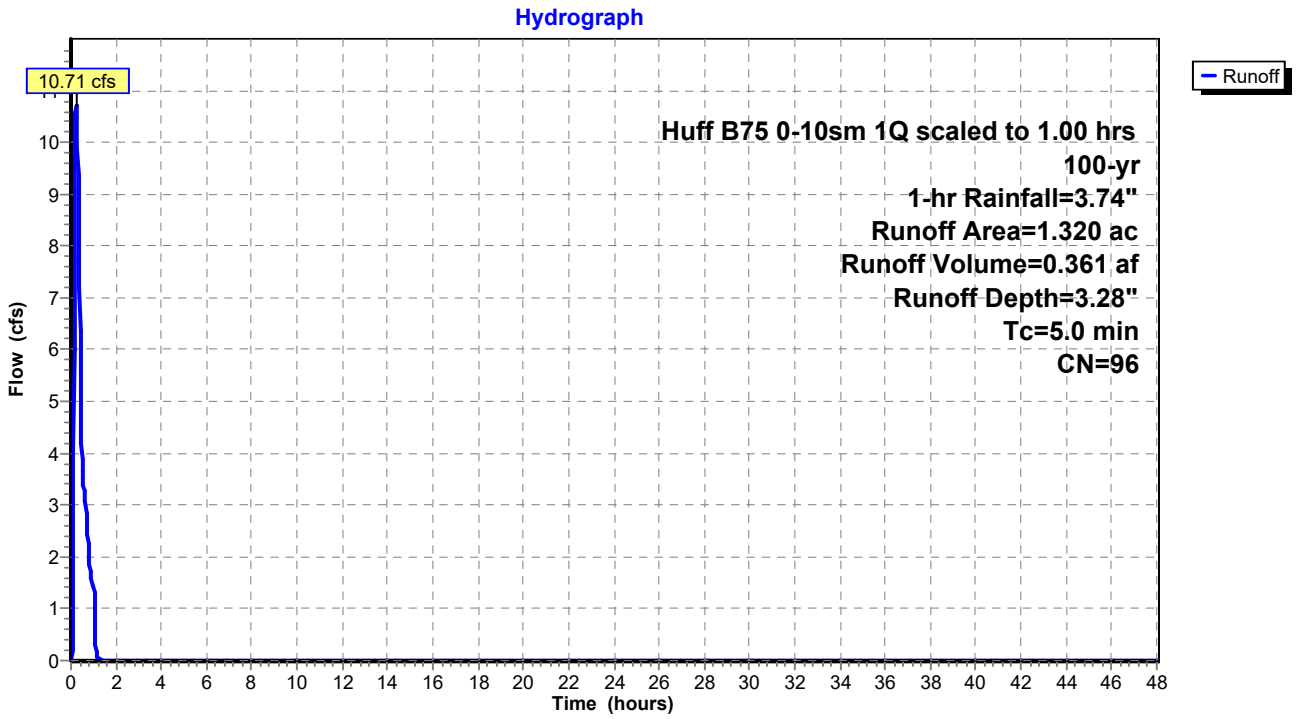
Runoff = 10.71 cfs @ 0.24 hrs, Volume= 0.361 af, Depth= 3.28"
Routed to Pond 27P : Lot 1 (Chick)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
1.190	98	Paved parking, HSG C
0.130	79	50-75% Grass cover, Fair, HSG C
1.320	96	Weighted Average
0.130		9.85% Pervious Area
1.190		90.15% Impervious Area

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

Subcatchment 26S: Pr. Area C1.2



Summary for Subcatchment 31S: Pr. Area B1.2

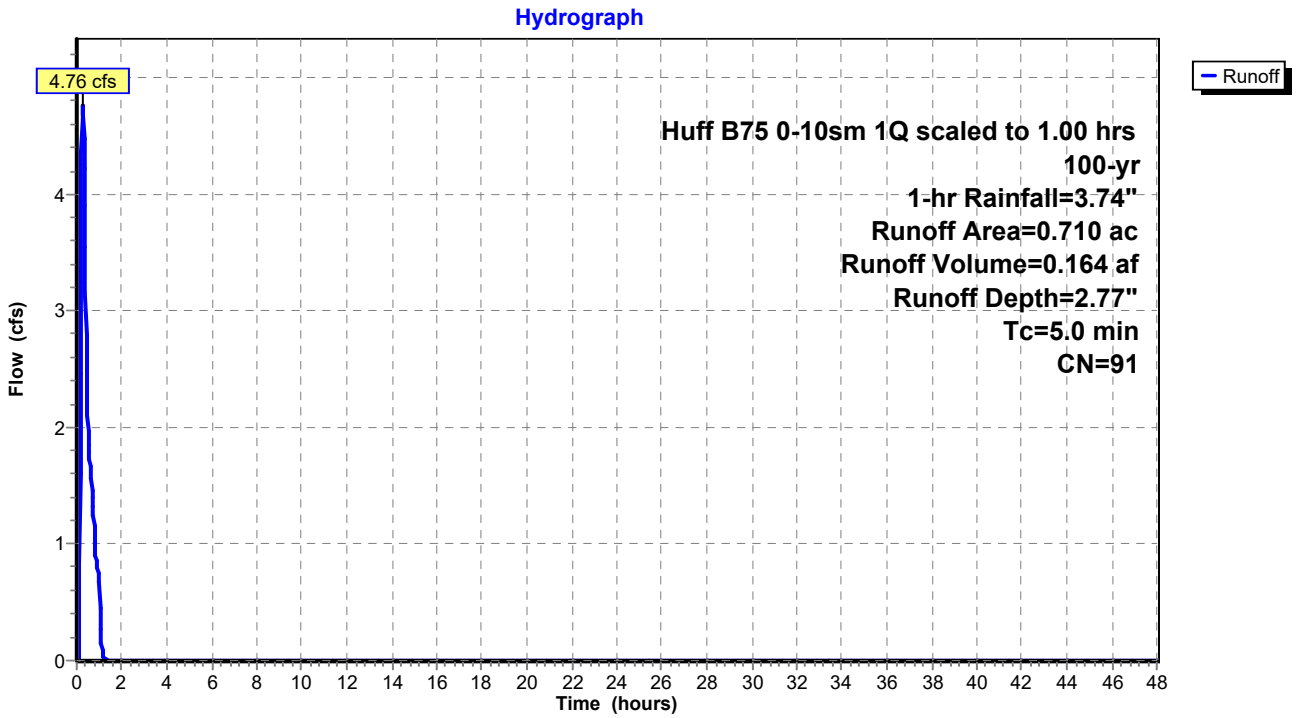
Runoff = 4.76 cfs @ 0.27 hrs, Volume= 0.164 af, Depth= 2.77"
Routed to Pond 32P : Lot 5 (Chipotle)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 1Q scaled to 1.00 hrs 100-yr, 1-hr Rainfall=3.74"

Area (ac)	CN	Description
0.280	79	50-75% Grass cover, Fair, HSG C
0.430	98	Paved parking, HSG C
0.710	91	Weighted Average
0.280		39.44% Pervious Area
0.430		60.56% Impervious Area

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

Subcatchment 31S: Pr. Area B1.2

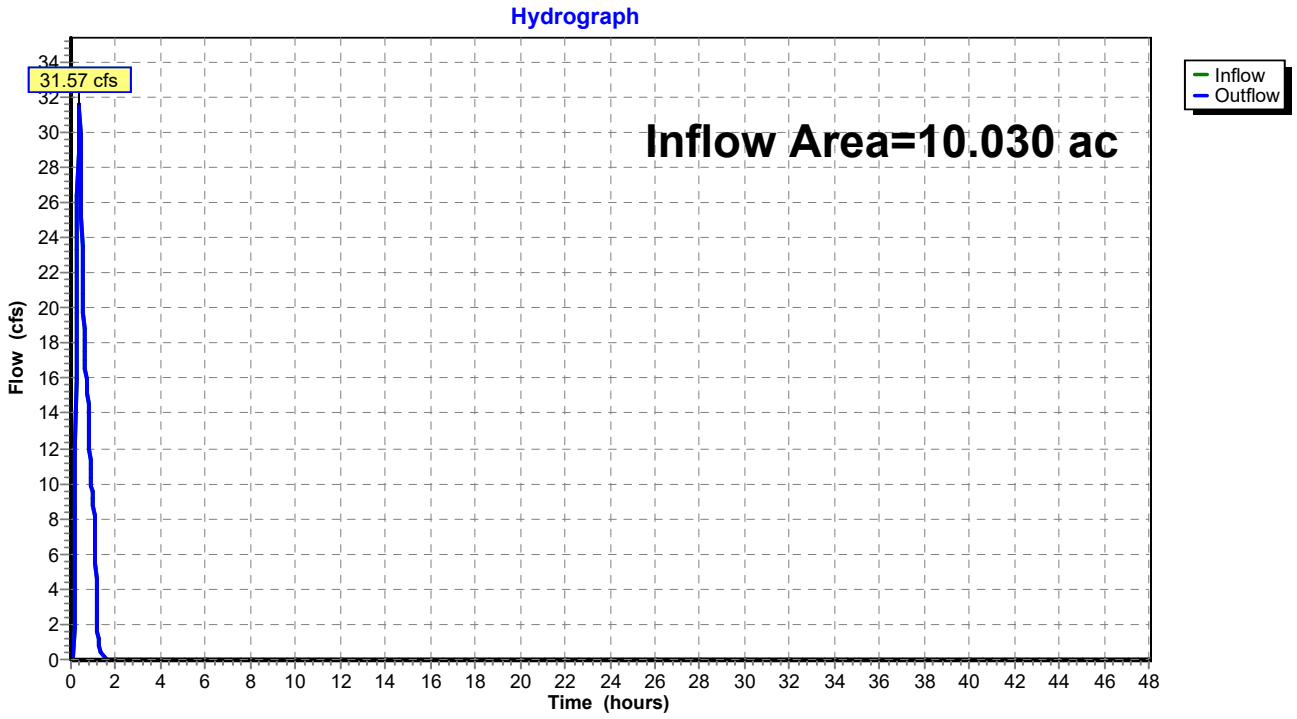


Summary for Reach 18R: Ramada Channel

Inflow Area = 10.030 ac, 27.22% Impervious, Inflow Depth = 1.62" for 100-yr, 1-hr event
Inflow = 31.57 cfs @ 0.37 hrs, Volume= 1.351 af
Outflow = 31.57 cfs @ 0.37 hrs, Volume= 1.351 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 18R: Ramada Channel

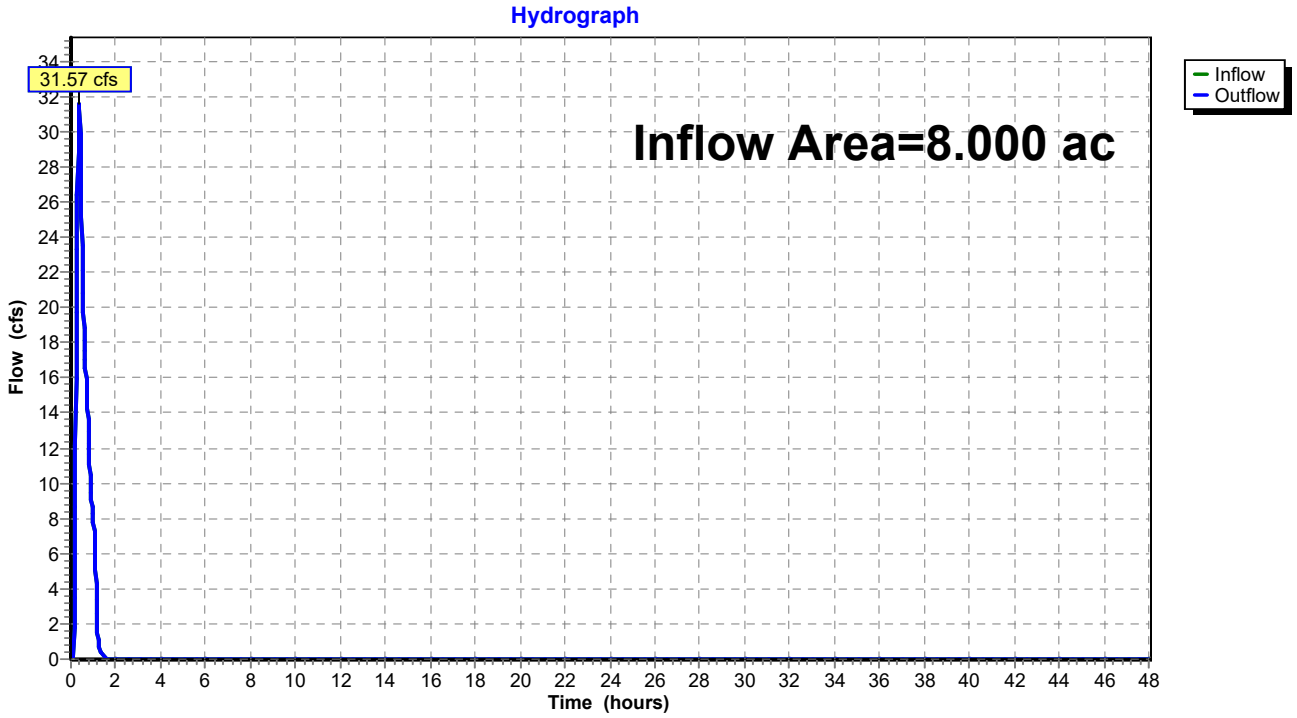


Summary for Reach 33R: Bypass

Inflow Area = 8.000 ac, 13.87% Impervious, Inflow Depth = 1.98" for 100-yr, 1-hr event
Inflow = 31.57 cfs @ 0.37 hrs, Volume= 1.323 af
Outflow = 31.57 cfs @ 0.37 hrs, Volume= 1.323 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

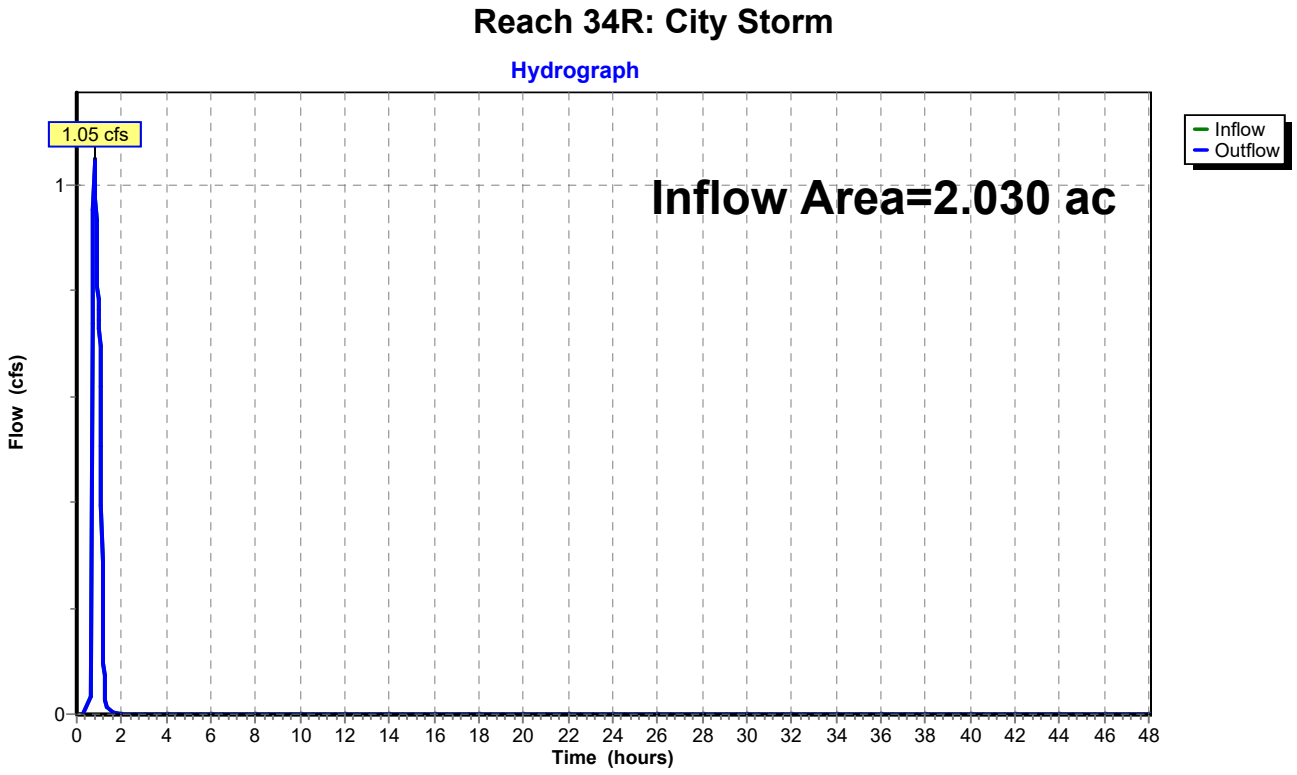
Reach 33R: Bypass



Summary for Reach 34R: City Storm

Inflow Area = 2.030 ac, 79.80% Impervious, Inflow Depth = 0.17" for 100-yr, 1-hr event
Inflow = 1.05 cfs @ 0.79 hrs, Volume= 0.028 af
Outflow = 1.05 cfs @ 0.79 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs



Summary for Pond 27P: Lot 1 (Chick)

Inflow Area = 1.320 ac, 90.15% Impervious, Inflow Depth = 3.28" for 100-yr, 1-hr event
Inflow = 10.71 cfs @ 0.24 hrs, Volume= 0.361 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 448.49' @ 1.30 hrs Surf.Area= 0.161 ac Storage= 0.361 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

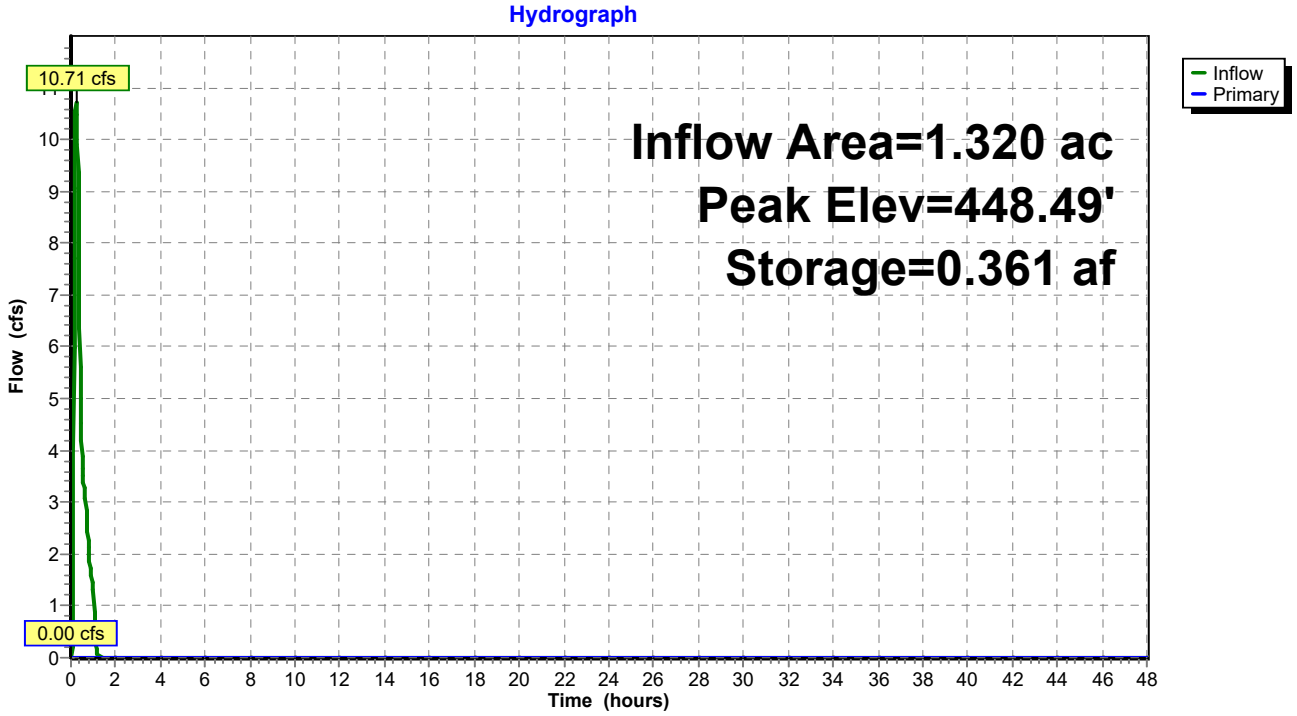
Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.230 af	**72.75'W x 96.28'L x 5.00'H Field A** 0.804 af Overall - 0.229 af Embedded = 0.575 af x 40.0% Voids
#2A	446.50'	0.229 af	**ADS_StormTech SC-800 +Cap** x 195 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 195 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		0.459 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	446.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 446.00' / 445.13' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	448.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=444.75' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)
↑—**2=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 27P: Lot 1 (Chick)



Summary for Pond 32P: Lot 5 (Chipotle)

Inflow Area = 0.710 ac, 60.56% Impervious, Inflow Depth = 2.77" for 100-yr, 1-hr event
Inflow = 4.76 cfs @ 0.27 hrs, Volume= 0.164 af
Outflow = 1.05 cfs @ 0.79 hrs, Volume= 0.028 af, Atten= 78%, Lag= 31.5 min
Primary = 1.05 cfs @ 0.79 hrs, Volume= 0.028 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 456.69' @ 0.79 hrs Surf.Area= 0.052 ac Storage= 0.140 af

Plug-Flow detention time= 44.6 min calculated for 0.028 af (17% of inflow)
Center-of-Mass det. time= 28.2 min (55.2 - 27.0)

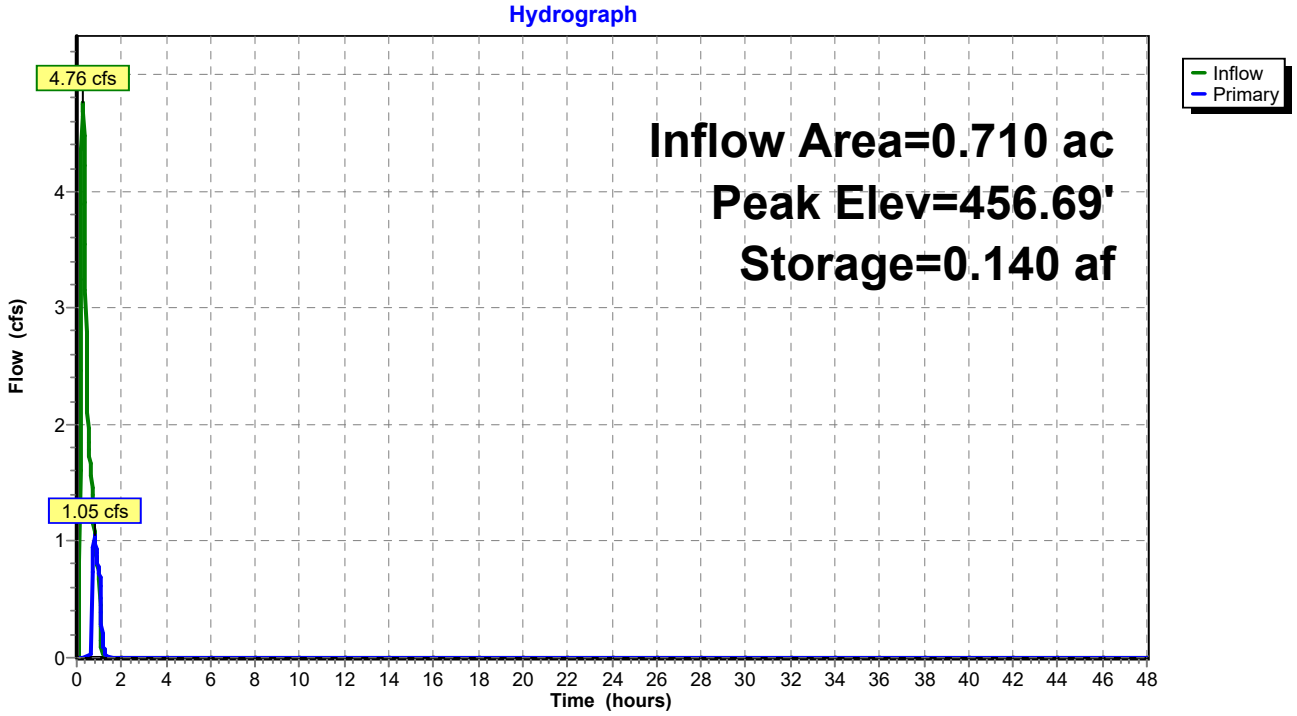
Volume	Invert	Avail.Storage	Storage Description
#1A	452.00'	0.071 af	**20.50'W x 110.52'L x 4.75'H Field A** 0.247 af Overall - 0.070 af Embedded = 0.177 af x 40.0% Voids
#2A	453.50'	0.070 af	**ADS_StormTech SC-800 +Cap** x 60 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 60 Chambers in 4 Rows Cap Storage= 3.4 cf x 2 x 4 rows = 27.4 cf
		0.141 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 453.00' / 452.50' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	456.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=1.04 cfs @ 0.79 hrs HW=456.68' (Free Discharge)
└**1=Culvert** (Passes 1.04 cfs of 6.06 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 1.04 cfs @ 1.41 fps)

Pond 32P: Lot 5 (Chipotle)



Time span=0.00-48.00 hrs, dt=0.02 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

Subcatchment19S: Pr. Area B1.1 Runoff Area=6.910 ac 8.83% Impervious Runoff Depth=5.70"
Flow Length=1,457' Tc=10.4 min CN=81 Runoff=4.41 cfs 3.285 af

Subcatchment20S: Pr. Area B2 Runoff Area=1.090 ac 45.87% Impervious Runoff Depth=6.53"
Flow Length=409' Tc=5.0 min CN=88 Runoff=0.75 cfs 0.593 af

Subcatchment26S: Pr. Area C1.2 Runoff Area=1.320 ac 90.15% Impervious Runoff Depth=7.48"
Tc=5.0 min CN=96 Runoff=0.94 cfs 0.823 af

Subcatchment31S: Pr. Area B1.2 Runoff Area=0.710 ac 60.56% Impervious Runoff Depth=6.88"
Tc=5.0 min CN=91 Runoff=0.50 cfs 0.407 af

Reach 18R: Ramada Channel Inflow=6.59 cfs 4.595 af
Outflow=6.59 cfs 4.595 af

Reach 33R: Bypass Inflow=5.16 cfs 3.878 af
Outflow=5.16 cfs 3.878 af

Reach 34R: City Storm Inflow=1.44 cfs 0.717 af
Outflow=1.44 cfs 0.717 af

Pond 27P: Lot 1 (Chick) Peak Elev=448.82' Storage=0.394 af Inflow=0.94 cfs 0.823 af
Outflow=0.94 cfs 0.445 af

Pond 32P: Lot 5 (Chipotle) Peak Elev=456.61' Storage=0.138 af Inflow=0.50 cfs 0.407 af
Outflow=0.50 cfs 0.272 af

Total Runoff Area = 10.030 ac Runoff Volume = 5.108 af Average Runoff Depth = 6.11"
72.78% Pervious = 7.300 ac 27.22% Impervious = 2.730 ac

Summary for Subcatchment 19S: Pr. Area B1.1

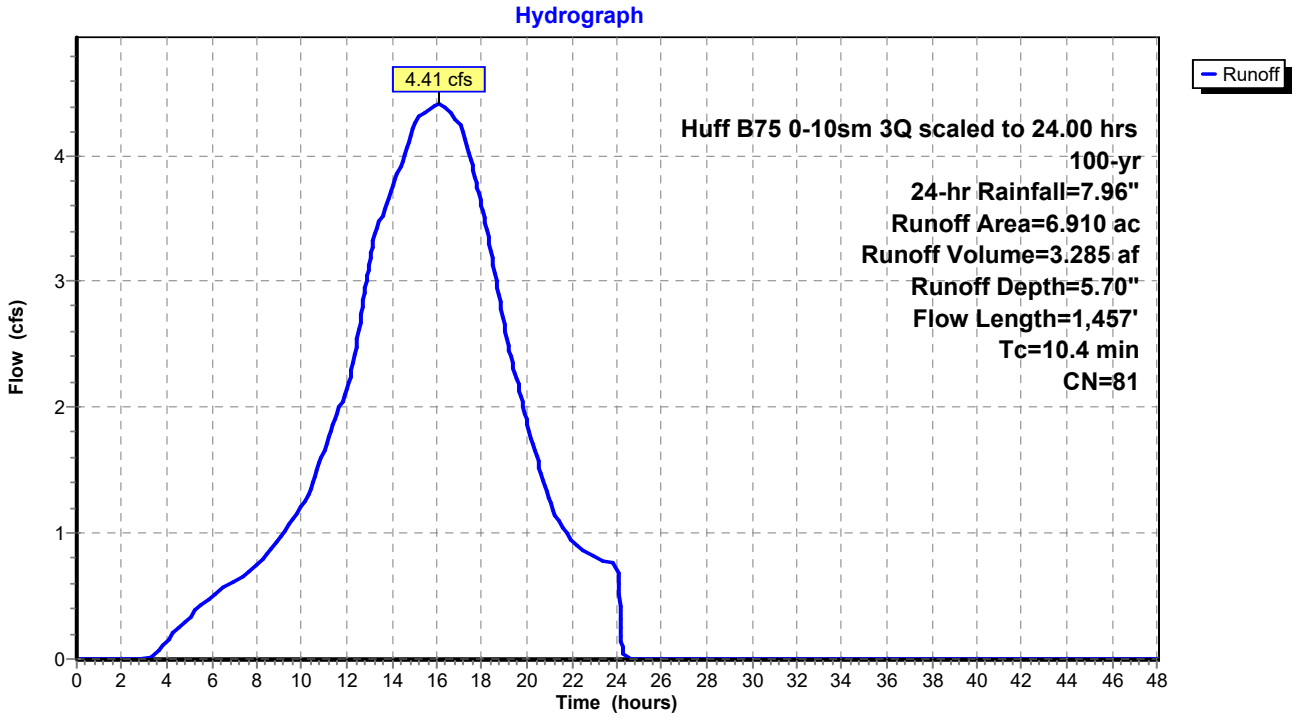
Runoff = 4.41 cfs @ 16.12 hrs, Volume= 3.285 af, Depth= 5.70"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
6.300	79	50-75% Grass cover, Fair, HSG C
0.610	98	Paved parking, HSG C
6.910	81	Weighted Average
6.300		91.17% Pervious Area
0.610		8.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0670	0.30		**Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 3.69"
4.3	1,270	0.0920	4.88		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	87	0.0100	3.09	5.46	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
10.4	1,457	Total			

Subcatchment 19S: Pr. Area B1.1



Summary for Subcatchment 20S: Pr. Area B2

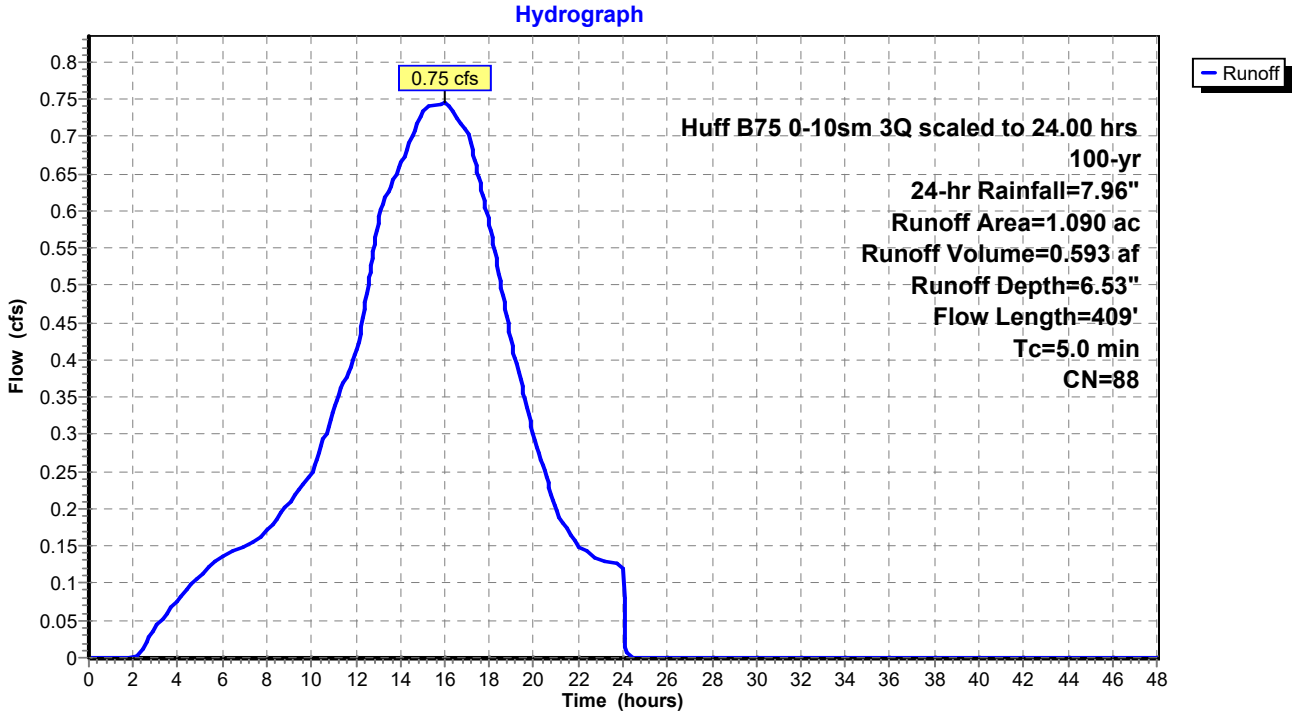
Runoff = 0.75 cfs @ 16.03 hrs, Volume= 0.593 af, Depth= 6.53"
Routed to Reach 33R : Bypass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG C
0.590	79	50-75% Grass cover, Fair, HSG C
1.090	88	Weighted Average
0.590		54.13% Pervious Area
0.500		45.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	100	0.3760	0.41		**Sheet Flow, Overland Flow** Grass: Dense n= 0.240 P2= 3.69"
0.1	103	0.5680	12.13		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.5	123	0.0460	4.35		**Shallow Concentrated Flow, SCF (Paved)** Paved Kv= 20.3 fps
0.3	83	0.0100	4.56	5.60	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
5.0	409	Total			

Subcatchment 20S: Pr. Area B2



Summary for Subcatchment 26S: Pr. Area C1.2

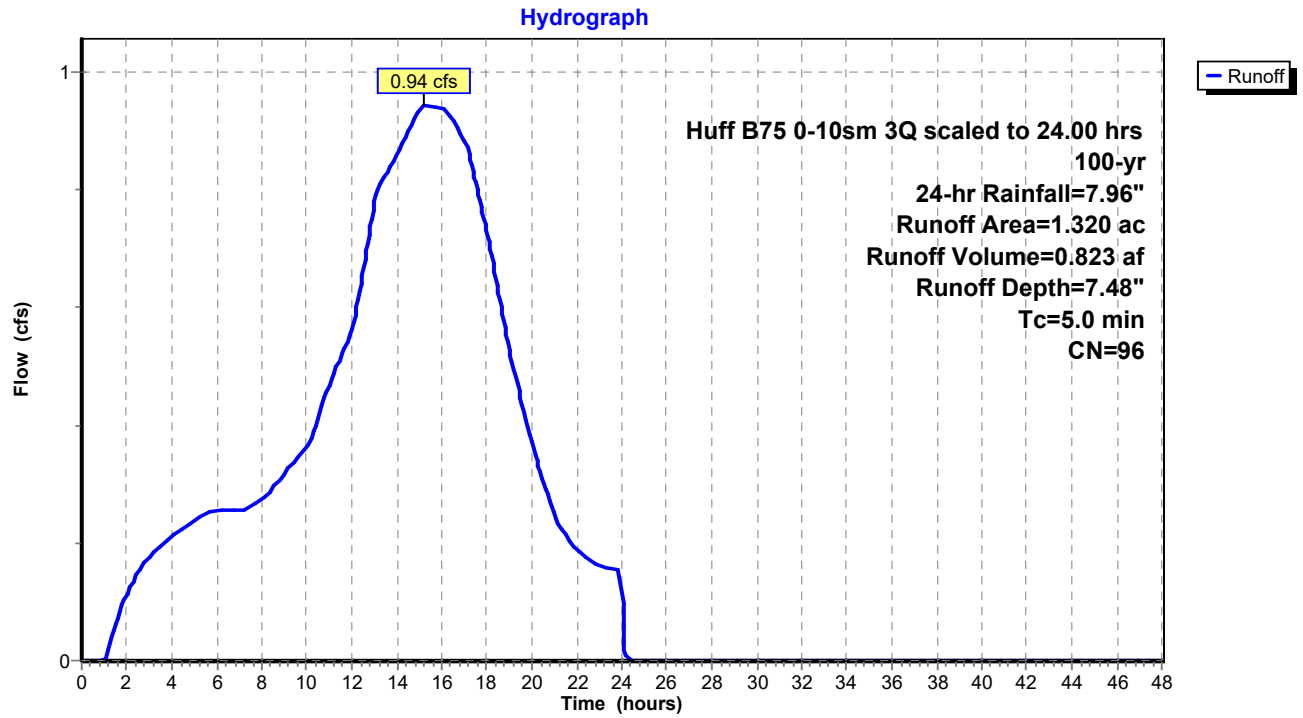
Runoff = 0.94 cfs @ 15.20 hrs, Volume= 0.823 af, Depth= 7.48"
Routed to Pond 27P : Lot 1 (Chick)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
1.190	98	Paved parking, HSG C
0.130	79	50-75% Grass cover, Fair, HSG C
1.320	96	Weighted Average
0.130		9.85% Pervious Area
1.190		90.15% Impervious Area

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

Subcatchment 26S: Pr. Area C1.2



Summary for Subcatchment 31S: Pr. Area B1.2

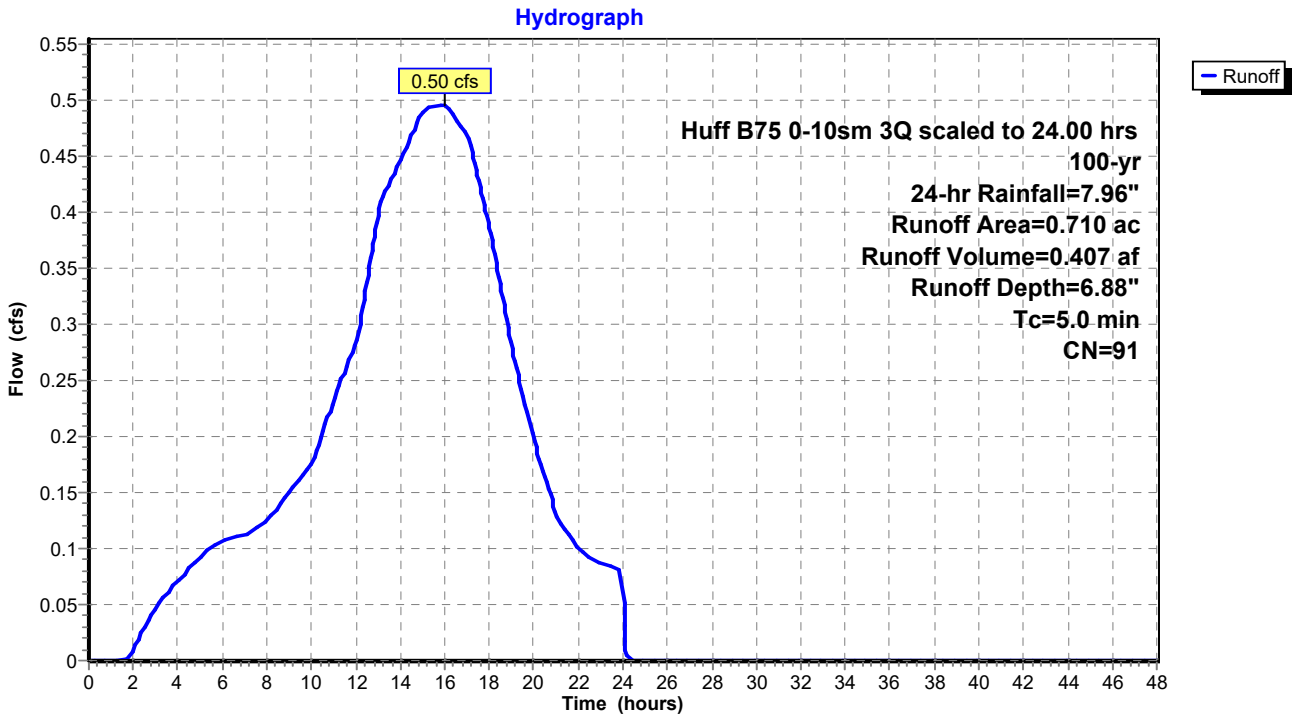
Runoff = 0.50 cfs @ 16.01 hrs, Volume= 0.407 af, Depth= 6.88"
Routed to Pond 32P : Lot 5 (Chipotle)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-yr, 24-hr Rainfall=7.96"

Area (ac)	CN	Description
0.280	79	50-75% Grass cover, Fair, HSG C
0.430	98	Paved parking, HSG C
0.710	91	Weighted Average
0.280		39.44% Pervious Area
0.430		60.56% Impervious Area

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

Subcatchment 31S: Pr. Area B1.2

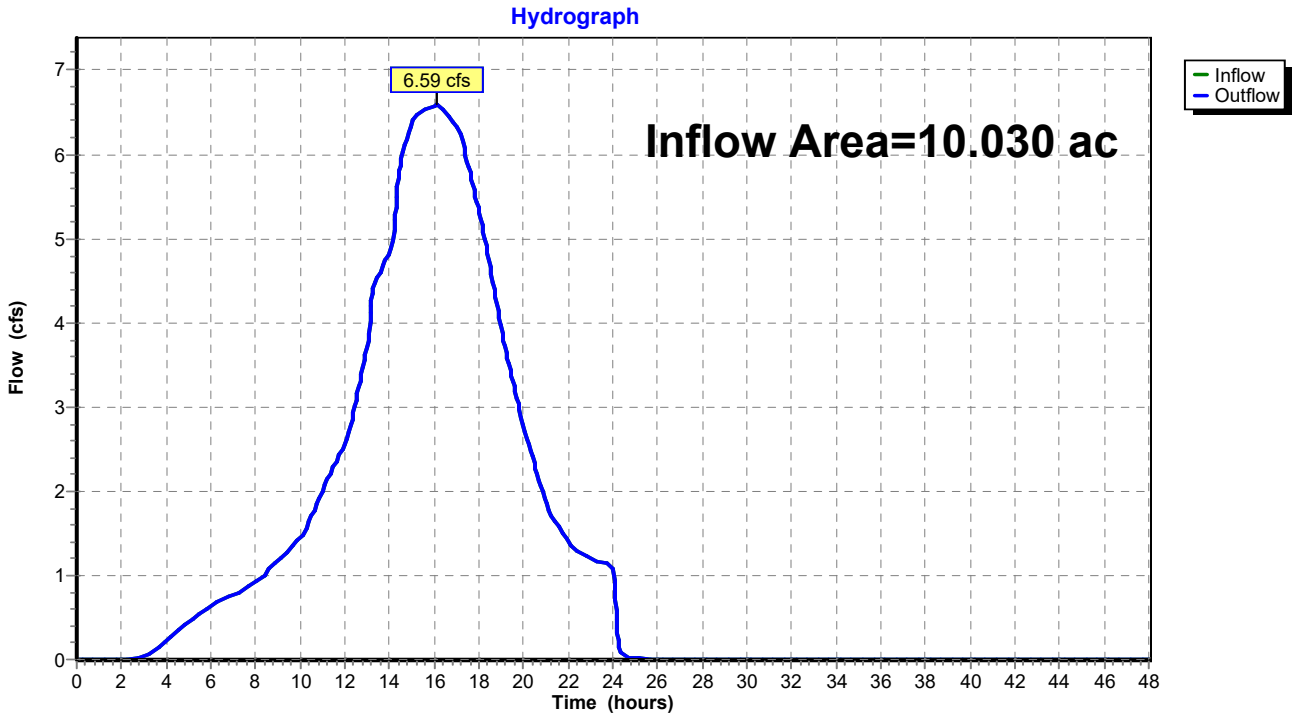


Summary for Reach 18R: Ramada Channel

Inflow Area = 10.030 ac, 27.22% Impervious, Inflow Depth = 5.50" for 100-yr, 24-hr event
Inflow = 6.59 cfs @ 16.10 hrs, Volume= 4.595 af
Outflow = 6.59 cfs @ 16.10 hrs, Volume= 4.595 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 18R: Ramada Channel

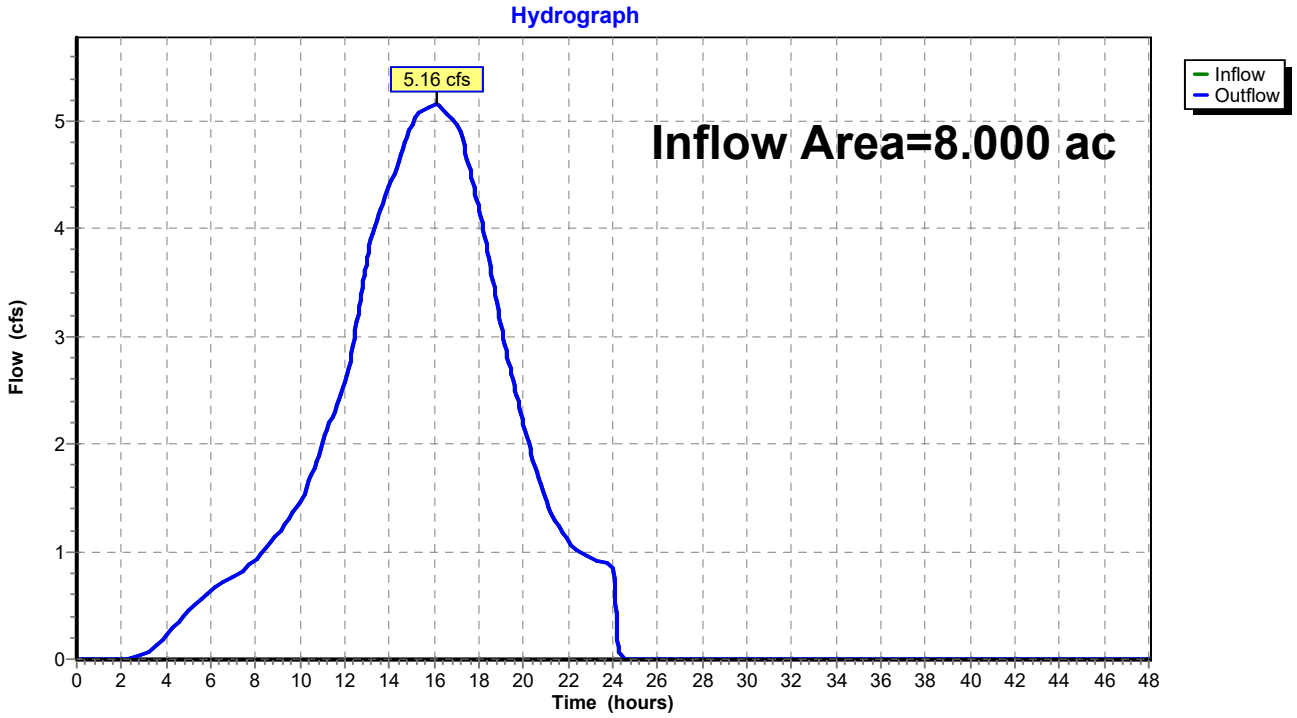


Summary for Reach 33R: Bypass

Inflow Area = 8.000 ac, 13.87% Impervious, Inflow Depth = 5.82" for 100-yr, 24-hr event
Inflow = 5.16 cfs @ 16.11 hrs, Volume= 3.878 af
Outflow = 5.16 cfs @ 16.11 hrs, Volume= 3.878 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 33R: Bypass

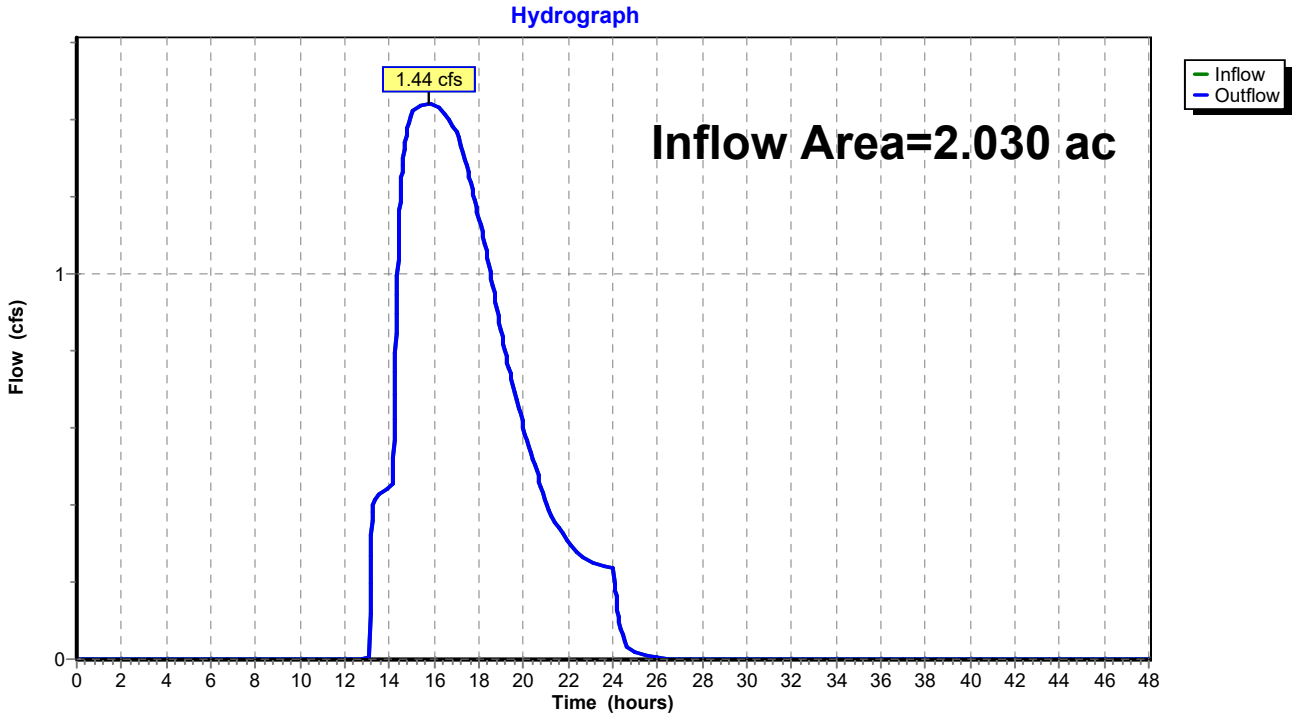


Summary for Reach 34R: City Storm

Inflow Area = 2.030 ac, 79.80% Impervious, Inflow Depth = 4.24" for 100-yr, 24-hr event
Inflow = 1.44 cfs @ 15.72 hrs, Volume= 0.717 af
Outflow = 1.44 cfs @ 15.72 hrs, Volume= 0.717 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 18R : Ramada Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Reach 34R: City Storm



Summary for Pond 27P: Lot 1 (Chick)

Inflow Area = 1.320 ac, 90.15% Impervious, Inflow Depth = 7.48" for 100-yr, 24-hr event
Inflow = 0.94 cfs @ 15.20 hrs, Volume= 0.823 af
Outflow = 0.94 cfs @ 15.61 hrs, Volume= 0.445 af, Atten= 0%, Lag= 24.6 min
Primary = 0.94 cfs @ 15.61 hrs, Volume= 0.445 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 448.82' @ 15.61 hrs Surf.Area= 0.161 ac Storage= 0.394 af

Plug-Flow detention time= 437.6 min calculated for 0.445 af (54% of inflow)
Center-of-Mass det. time= 229.5 min (1,065.6 - 836.1)

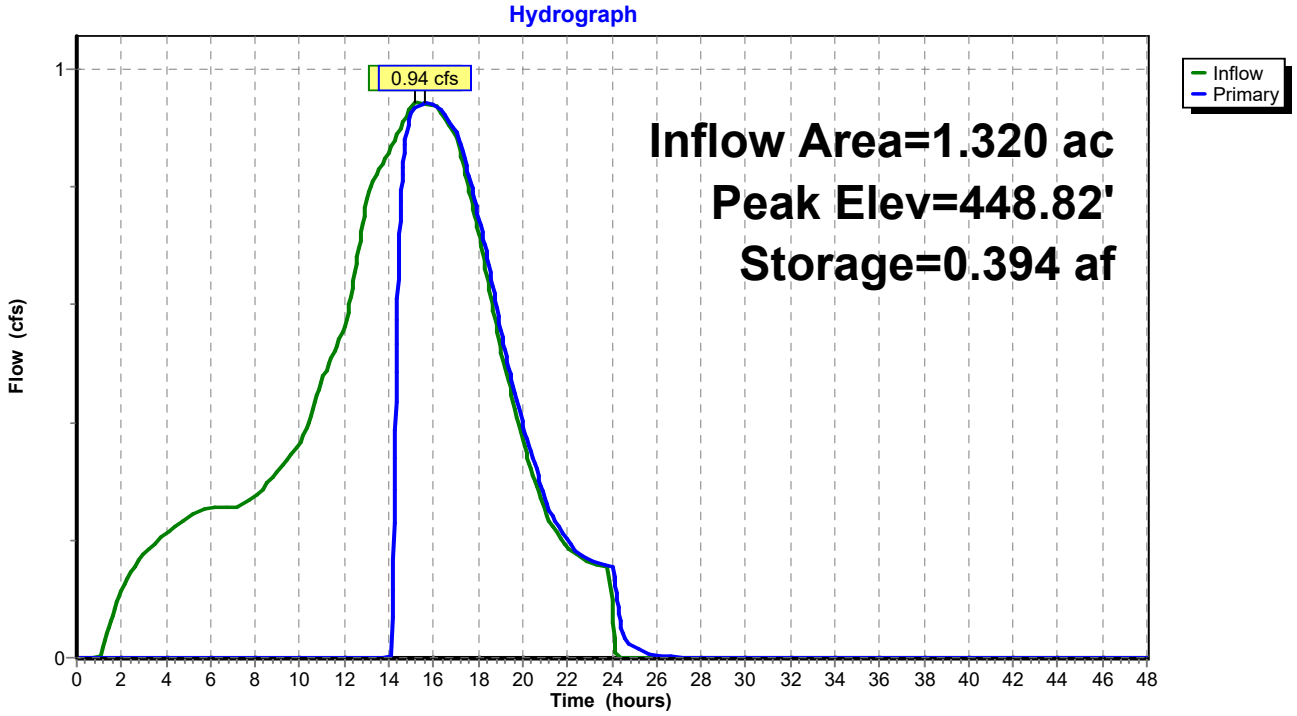
Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.230 af	**72.75'W x 96.28'L x 5.00'H Field A** 0.804 af Overall - 0.229 af Embedded = 0.575 af x 40.0% Voids
#2A	446.50'	0.229 af	**ADS_StormTech SC-800 +Cap** x 195 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 195 Chambers in 15 Rows Cap Storage= 3.4 cf x 2 x 15 rows = 102.6 cf
		0.459 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	446.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 446.00' / 445.13' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	448.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

Primary OutFlow Max=0.94 cfs @ 15.61 hrs HW=448.82' (Free Discharge)
↑—**1=Culvert** (Passes 0.94 cfs of 5.57 cfs potential flow)
↑—**2=Custom Weir/Orifice** (Weir Controls 0.94 cfs @ 1.36 fps)

Pond 27P: Lot 1 (Chick)



Summary for Pond 32P: Lot 5 (Chipotle)

Inflow Area = 0.710 ac, 60.56% Impervious, Inflow Depth = 6.88" for 100-yr, 24-hr event
Inflow = 0.50 cfs @ 16.01 hrs, Volume= 0.407 af
Outflow = 0.50 cfs @ 16.03 hrs, Volume= 0.272 af, Atten= 0%, Lag= 1.6 min
Primary = 0.50 cfs @ 16.03 hrs, Volume= 0.272 af
Routed to Reach 34R : City Storm

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 456.61' @ 16.03 hrs Surf.Area= 0.052 ac Storage= 0.138 af

Plug-Flow detention time= 294.1 min calculated for 0.272 af (67% of inflow)
Center-of-Mass det. time= 155.7 min (1,023.8 - 868.1)

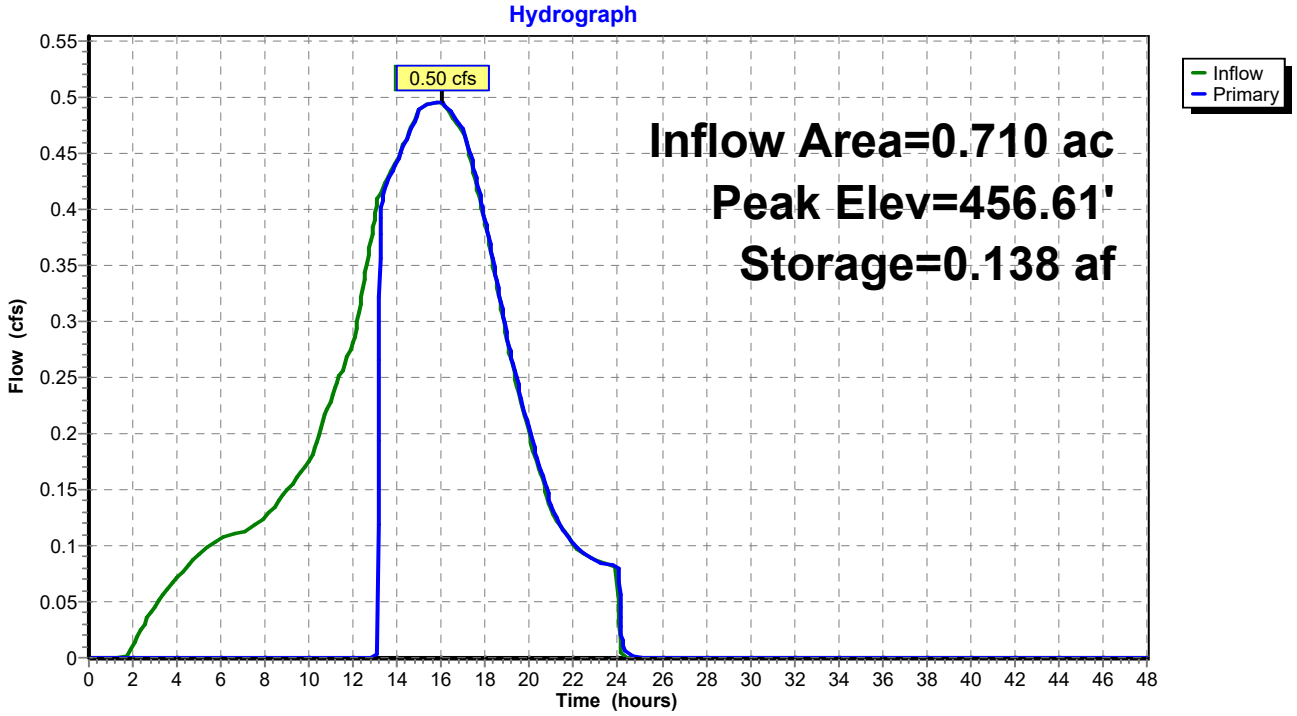
Volume	Invert	Avail.Storage	Storage Description
#1A	452.00'	0.071 af	**20.50'W x 110.52'L x 4.75'H Field A** 0.247 af Overall - 0.070 af Embedded = 0.177 af x 40.0% Voids
#2A	453.50'	0.070 af	**ADS_StormTech SC-800 +Cap** x 60 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 60 Chambers in 4 Rows Cap Storage= 3.4 cf x 2 x 4 rows = 27.4 cf
		0.141 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**12.0" Round Culvert** L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 453.00' / 452.50' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	456.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 4.00 4.00

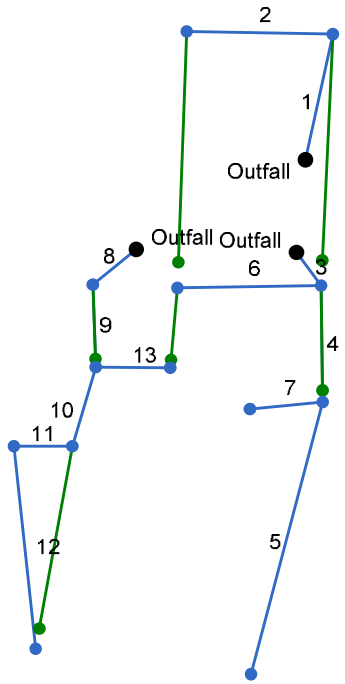
Primary OutFlow Max=0.49 cfs @ 16.03 hrs HW=456.61' (Free Discharge)
↑—**1=Culvert** (Passes 0.49 cfs of 5.99 cfs potential flow)
↑—**2=Custom Weir/Orifice** (Weir Controls 0.49 cfs @ 1.09 fps)

Pond 32P: Lot 5 (Chipotle)



Attachment J
Storm Sewer Calculations

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Lot 1.stm	Number of lines: 13	Date: 9/23/2025

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	STM 8.0 - STM 8.1	0.98	12	Cir	53.000	447.69	448.75	2.000	448.25	449.17	n/a	449.17 j	End	Combination
2	STM 8.1 - STM 8.2	0.40	12	Cir	60.000	448.75	449.95	2.000	449.17	450.21	n/a	450.21 j	1	Combination
3	STM 7.0 - STM 7.1	5.43	24	Cir	17.000	445.50	445.59	0.529	448.25*	448.26*	0.07	448.33	End	Combination
4	STM 7.1 - STM 7.2	3.08	24	Cir	48.000	445.59	445.82	0.479	448.33*	448.34*	0.02	448.36	3	Combination
5	STM 7.2 - STM 7.4	1.30	12	Cir	116.000	445.83	446.39	0.483	448.36*	448.52*	0.04	448.56	4	Combination
6	STM 7.1 - STM 7.1.1	0.78	12	Cir	59.000	445.59	445.89	0.509	448.33*	448.36*	0.02	448.37	3	Combination
7	Roofdrain - STM 7.2	1.04	8	Cir	30.000	445.82	446.12	1.000	448.36*	448.58*	0.14	448.72	4	Manhole
8	STM 6.0 - STM 6.1	4.67	18	Cir	23.000	445.50	445.62	0.522	448.25*	448.30*	0.14	448.43	End	Combination
9	STM 6.1 - STM 6.2	3.83	18	Cir	34.000	445.62	445.79	0.500	448.43*	448.48*	0.11	448.59	8	Combination
10	STM 6.2 - STM 6.3	1.92	15	Cir	34.000	445.79	445.96	0.500	448.59*	448.62*	0.06	448.67	9	Combination
11	STM 6.3 - STM 6.4	1.43	12	Cir	24.000	445.96	446.08	0.500	448.67*	448.71*	0.08	448.79	10	Combination
12	STM 6.4 - STM 6.5	1.13	12	Cir	84.000	446.08	446.50	0.500	448.79*	448.87*	0.03	448.90	11	Combination
13	STM 6.2 - STM 6.2.1	0.73	12	Cir	30.617	445.77	446.08	1.013	448.59*	448.60*	0.01	448.61	9	DropGrate

Project File: Lot 1.stm | Number of lines: 13 | Run Date: 9/23/2025

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	53.000	0.09	0.17	0.79	0.07	0.11	5.0	7.0	8.6	0.98	5.04	2.67	12	2.00	447.69	448.75	448.25	449.17	454.74	456.89	STM 8.0 - STM 8.
2	1	60.000	0.08	0.08	0.54	0.04	0.04	5.0	5.0	9.1	0.40	5.04	1.86	12	2.00	448.75	449.95	449.17	450.21	456.89	457.84	STM 8.1 - STM 8.
3	End	17.000	0.22	0.69	0.90	0.20	0.63	5.0	7.0	8.6	5.43	16.46	1.73	24	0.53	445.50	445.59	448.25	448.26	452.08	451.35	STM 7.0 - STM 7.
4	3	48.000	0.11	0.38	0.85	0.09	0.35	5.0	6.2	8.8	3.08	15.66	0.98	24	0.48	445.59	445.82	448.33	448.34	451.35	448.92	STM 7.1 - STM 7.
5	4	116.000	0.15	0.15	0.95	0.14	0.14	5.0	5.0	9.1	1.30	2.47	1.66	12	0.48	445.83	446.39	448.36	448.52	448.92	450.03	STM 7.2 - STM 7.
6	3	59.000	0.09	0.09	0.95	0.09	0.09	5.0	5.0	9.1	0.78	2.54	1.00	12	0.51	445.59	445.89	448.33	448.36	451.35	452.34	STM 7.1 - STM 7.
7	4	30.000	0.12	0.12	0.95	0.11	0.11	5.0	5.0	9.1	1.04	1.21	2.99	8	1.00	445.82	446.12	448.36	448.58	448.92	452.10	Roofdrain - STM 7
8	End	23.000	0.11	0.58	0.92	0.10	0.54	5.0	6.8	8.6	4.67	7.59	2.65	18	0.52	445.50	445.62	448.25	448.30	453.52	452.59	STM 6.0 - STM 6.
9	8	34.000	0.15	0.47	0.95	0.14	0.44	5.0	6.5	8.7	3.83	7.43	2.17	18	0.50	445.62	445.79	448.43	448.48	452.59	451.19	STM 6.1 - STM 6.
10	9	34.000	0.06	0.23	0.95	0.06	0.22	5.0	6.2	8.8	1.92	4.57	1.57	15	0.50	445.79	445.96	448.59	448.62	451.19	451.12	STM 6.2 - STM 6.
11	10	24.000	0.04	0.17	0.95	0.04	0.16	5.0	6.0	8.9	1.43	2.52	1.82	12	0.50	445.96	446.08	448.67	448.71	451.12	451.51	STM 6.3 - STM 6.
12	11	84.000	0.13	0.13	0.95	0.12	0.12	5.0	5.0	9.1	1.13	2.52	1.44	12	0.50	446.08	446.50	448.79	448.87	451.51	449.90	STM 6.4 - STM 6.
13	9	30.617	0.09	0.09	0.89	0.08	0.08	5.0	5.0	9.1	0.73	3.58	0.93	12	1.01	445.77	446.08	448.59	448.60	451.19	451.45	STM 6.2 - STM 6.

Project File: Lot 1.stm

Number of lines: 13

Run Date: 9/23/2025

NOTES:Intensity = 902.70 / (Inlet time + 32.61) ^ 1.27; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	8.1	0.65	0.00	0.52	0.13	Comb	4.0	1.69	0.00	1.83	1.40	0.017	2.00	0.050	0.042	0.013	0.14	3.06	0.16	1.58	1.0	3
2	8.2	0.40	0.00	0.34	0.05	Comb	4.0	1.69	0.00	1.83	1.40	0.017	2.00	0.050	0.037	0.013	0.12	2.54	0.14	1.14	1.0	6
3	7.1	1.81	0.13	1.24	0.70	Comb	4.0	1.69	0.00	1.83	1.40	0.020	2.00	0.050	0.041	0.013	0.21	4.65	0.23	3.08	1.0	4
4	7.2/3 R3246	0.86	0.70	1.17	0.38	Comb	4.0	6.00	0.00	6.00	1.46	0.048	2.00	0.050	0.015	0.013	0.16	5.79	0.18	1.96	1.0	Off
5	7.4/5	1.30	0.00	1.30	0.00	Comb	4.0	3.66	5.12	3.66	1.40	Sag	2.00	0.050	0.042	0.000	0.17	3.76	0.26	3.76	1.0	Off
6	7.1.1	0.78	0.05	0.64	0.20	Comb	4.0	1.69	0.00	1.86	1.40	0.017	2.00	0.050	0.043	0.013	0.16	3.36	0.18	1.85	1.0	13
7	Roof	1.04	0.00	0.00	1.04	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	6.1	0.93	0.00	0.71	0.21	Comb	4.0	1.69	0.00	1.83	1.40	0.043	2.00	0.050	0.019	0.013	0.14	3.93	0.16	1.60	1.0	9
9	6.2	1.30	0.21	1.52	0.00	Comb	4.0	1.83	2.56	1.83	1.40	Sag	2.00	0.050	0.043	0.000	0.20	4.21	0.36	4.21	2.0	Off
10	6.3	0.52	0.00	0.41	0.11	Comb	4.0	1.69	0.00	1.83	1.40	0.010	2.00	0.050	0.032	0.013	0.15	3.43	0.17	1.64	1.0	12
11	6.4	0.35	0.00	0.35	0.00	Comb	4.0	1.83	2.56	1.83	1.40	Sag	2.00	0.050	0.032	0.000	0.09	1.87	0.17	1.87	1.0	Off
12	6.5/6	1.13	0.11	1.24	0.00	Comb	4.0	3.66	5.12	3.66	1.40	Sag	2.00	0.050	0.036	0.000	0.17	3.89	0.25	3.89	1.0	Off
13	6.2.1	0.73	0.20	0.93	0.00	DrGrt	0.0	0.00	130.00	65.00	2.00	Sag	2.00	0.026	0.026	0.000	0.02	3.34	0.02	3.34	0.0	Off

Project File: Lot 1.stm | Number of lines: 13 | Run Date: 9/23/2025

NOTES: Inlet N-Values = 0.016; Intensity = 902.70 / (Inlet time + 32.61) ^ 1.27; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

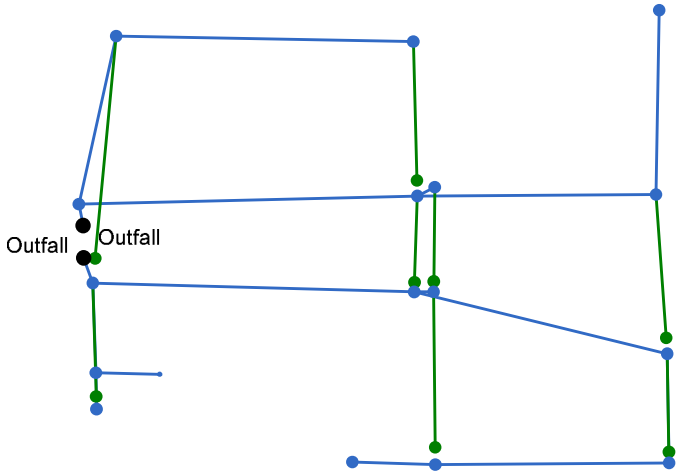
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	0.98	447.69	448.25	0.56	0.31	2.16	0.16	448.41	0.000	53.000	448.75	449.17 j	0.42**	0.31	3.18	0.16	449.32	0.000	0.000	n/a	1.50	n/a
2	12	0.40	448.75	449.17	0.42	0.16	1.28	0.09	449.26	0.000	60.000	449.95	450.21 j	0.26**	0.16	2.44	0.09	450.30	0.000	0.000	n/a	1.00	n/a
3	24	5.43	445.50	448.25	2.00	3.14	1.73	0.05	448.30	0.058	17.000	445.59	448.26	2.00	3.14	1.73	0.05	448.31	0.058	0.058	0.010	1.50	0.07
4	24	3.08	445.59	448.33	2.00	3.14	0.98	0.01	448.34	0.019	48.000	445.82	448.34	2.00	3.14	0.98	0.01	448.35	0.019	0.019	0.009	1.50	0.02
5	12	1.30	445.83	448.36	1.00	0.79	1.66	0.04	448.40	0.134	116.000	446.39	448.52	1.00	0.79	1.66	0.04	448.56	0.134	0.134	0.155	1.00	0.04
6	12	0.78	445.59	448.33	1.00	0.79	1.00	0.02	448.34	0.048	59.000	445.89	448.36	1.00	0.79	1.00	0.02	448.37	0.048	0.048	0.028	1.00	0.02
7	8	1.04	445.82	448.36	0.67	0.35	2.99	0.14	448.50	0.746	30.000	446.12	448.58	0.67	0.35	2.99	0.14	448.72	0.745	0.745	0.224	1.00	0.14
8	18	4.67	445.50	448.25	1.50	1.77	2.65	0.11	448.36	0.198	23.000	445.62	448.30	1.50	1.77	2.65	0.11	448.40	0.198	0.198	0.046	1.25	0.14
9	18	3.83	445.62	448.43	1.50	1.77	2.17	0.07	448.50	0.133	34.000	445.79	448.48	1.50	1.77	2.17	0.07	448.55	0.133	0.133	0.045	1.50	0.11
10	15	1.92	445.79	448.59	1.25	1.23	1.57	0.04	448.62	0.089	34.000	445.96	448.62	1.25	1.23	1.57	0.04	448.65	0.089	0.089	0.030	1.45	0.06
11	12	1.43	445.96	448.67	1.00	0.79	1.82	0.05	448.72	0.161	24.000	446.08	448.71	1.00	0.79	1.82	0.05	448.76	0.161	0.161	0.039	1.50	0.08
12	12	1.13	446.08	448.79	1.00	0.79	1.44	0.03	448.82	0.101	84.000	446.50	448.87	1.00	0.79	1.44	0.03	448.90	0.101	0.101	0.085	1.00	0.03
13	12	0.73	445.77	448.59	1.00	0.79	0.93	0.01	448.60	0.042	30.617	446.08	448.60	1.00	0.79	0.93	0.01	448.61	0.042	0.042	0.013	1.00	0.01

Project File: Lot 1.stm | Number of lines: 13 | Run Date: 9/23/2025

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Lot 2-4.stm	Number of lines: 17	Date: 9/23/2025

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	2.1 to 2.0	9.42	24	Cir	11.000	442.25	442.43	1.636	446.10*	446.12*	0.25	446.37	End	Combination
2	2.2 to 2.1	5.09	24	Cir	132.000	442.43	443.75	1.000	446.37*	446.44*	0.02	446.46	1	Combination
3	2.3 to 2.2	3.72	18	Cir	107.000	443.75	444.82	1.000	446.46*	446.60*	0.10	446.70	2	Combination
4	2.4 to 2.3	3.29	15	Cir	45.000	444.82	445.32	1.111	446.70*	446.81*	0.17	446.98	3	Combination
5	2.6 to 2.5	2.55	12	Cir	96.000	445.32	446.28	1.000	446.98*	447.47*	0.08	447.55	4	Combination
6	2.1.2 to 2.1	3.36	12	Cir	37.000	443.43	443.59	0.432	446.37*	446.70*	0.28	446.99	1	Manhole
7	2.1.1 to 2.1.2	2.61	12	Cir	26.178	443.56	443.68	0.458	446.99*	447.13*	0.17	447.30	6	DropGrate
8	2.1.3/4 to 2.1.2	0.78	12	Cir	15.000	443.59	443.64	0.333	446.99*	447.00*	0.02	447.01	6	Combination
9	Roof to 2.6/7	1.48	12	Cir	34.078	446.61	446.87	0.763	447.55	447.38	0.20	447.38	5	Manhole
10	2.2.1 to 2.2	0.80	12	Cir	8.000	450.00	450.50	6.250	450.20	450.87	n/a	450.87	2	DropGrate
11	1.1 TO 1.0	4.96	12	Cir	9.000	448.41	448.82	4.556	449.00	449.73	0.67	449.73	End	Manhole
12	1.2 to 1.1	2.83	12	Cir	139.000	448.82	450.35	1.101	449.73	451.07	n/a	451.07 j	11	Combination
13	1.3 to 1.2	1.55	12	Cir	98.000	450.35	451.43	1.102	451.07	451.96	n/a	451.96 j	12	Combination
14	1.1.1 to 1.1	0.82	12	Cir	71.000	448.82	449.53	1.000	449.73	449.91	n/a	449.91 j	11	Combination
15	1.1.2 to 1.1.1	0.49	12	Cir	122.000	449.53	450.75	1.000	449.91	451.04	n/a	451.04 j	14	Combination
16	1.4 to 1.3	0.71	12	Cir	76.000	451.43	455.23	5.000	451.96	455.58	n/a	455.58 j	13	Combination
17	1.2.1 to 1.2	0.95	12	Cir	8.000	450.00	450.50	6.250	451.07	451.03	0.08	451.11	12	DropGrate

Project File: Lot 2-4.stm | Number of lines: 17 | Run Date: 9/23/2025

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	11.000	0.20	1.29	0.91	0.18	1.14	5.0	8.3	8.2	9.42	28.93	3.00	24	1.64	442.25	442.43	446.10	446.12	0.00	451.37	2.1 to 2.0
2	1	132.000	0.09	0.70	0.92	0.08	0.59	5.0	6.9	8.6	5.09	22.62	1.62	24	1.00	442.43	443.75	446.37	446.44	451.37	451.79	2.2 to 2.1
3	2	107.000	0.08	0.50	0.65	0.05	0.42	5.0	6.1	8.8	3.72	10.50	2.11	18	1.00	443.75	444.82	446.46	446.60	451.79	450.70	2.3 to 2.2
4	3	45.000	0.10	0.42	0.88	0.09	0.37	5.0	5.8	8.9	3.29	6.81	2.68	15	1.11	444.82	445.32	446.70	446.81	450.70	449.27	2.4 to 2.3
5	4	96.000	0.15	0.32	0.80	0.12	0.28	5.0	5.3	9.1	2.55	3.56	3.25	12	1.00	445.32	446.28	446.98	447.47	449.27	449.30	2.6 to 2.5
6	1	37.000	0.00	0.39	0.95	0.00	0.37	5.0	5.3	9.1	3.36	2.34	4.28	12	0.43	443.43	443.59	446.37	446.70	451.37	449.64	2.1.2 to 2.1
7	6	26.178	0.30	0.30	0.95	0.29	0.29	5.0	5.0	9.1	2.61	2.41	3.32	12	0.46	443.56	443.68	446.99	447.13	449.64	450.83	2.1.1 to 2.1.2
8	6	15.000	0.09	0.09	0.95	0.09	0.09	5.0	5.0	9.1	0.78	2.06	1.00	12	0.33	443.59	443.64	446.99	447.00	449.64	448.71	2.1.3/4 to 2.1.2
9	5	34.078	0.17	0.17	0.95	0.16	0.16	5.0	5.0	9.1	1.48	3.11	2.77	12	0.76	446.61	446.87	447.55	447.38	449.30	451.30	Roof to 2.6/7
10	2	8.000	0.11	0.11	0.80	0.09	0.09	5.0	5.0	9.1	0.80	8.90	5.01	12	6.25	450.00	450.50	450.20	450.87	451.79	452.50	2.2.1 to 2.2
11	End	9.000	0.20	0.79	0.95	0.19	0.62	5.0	9.3	8.0	4.96	7.60	8.44	12	4.56	448.41	448.82	449.00	449.73	451.85	453.59	1.1 TO 1.0
12	11	139.000	0.07	0.44	0.74	0.05	0.33	5.0	7.2	8.5	2.83	3.74	4.22	12	1.10	448.82	450.35	449.73	451.07	453.59	454.80	1.2 to 1.1
13	12	98.000	0.11	0.24	0.90	0.10	0.18	5.0	6.4	8.7	1.55	3.74	3.12	12	1.10	450.35	451.43	451.07	451.96	454.80	455.60	1.3 to 1.2
14	11	71.000	0.06	0.15	0.77	0.05	0.10	5.0	8.3	8.2	0.82	3.56	2.05	12	1.00	448.82	449.53	449.73	449.91	453.59	456.97	1.1.1 to 1.1
15	14	122.000	0.09	0.09	0.59	0.05	0.05	5.0	5.0	9.1	0.49	3.56	2.19	12	1.00	449.53	450.75	449.91	451.04	456.97	457.64	1.1.2 to 1.1.1
16	13	76.000	0.13	0.13	0.60	0.08	0.08	5.0	5.0	9.1	0.71	7.96	2.29	12	5.00	451.43	455.23	451.96	455.58	455.60	0.00	1.4 to 1.3
17	12	8.000	0.13	0.13	0.80	0.10	0.10	5.0	5.0	9.1	0.95	8.90	1.74	12	6.25	450.00	450.50	451.07	451.03	454.80	456.00	1.2.1 to 1.2

Project File: Lot 2-4.stm

Number of lines: 17

Run Date: 9/23/2025

NOTES:Intensity = 902.70 / (Inlet time + 32.61) ^ 1.27; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	STM 2.1	1.66	0.07	1.11	0.62	Comb	4.0	1.69	0.00	1.83	1.40	0.019	2.00	0.044	0.044	0.013	0.20	4.44	0.22	3.02	1.0	8
2	STM 2.2	0.76	0.22	0.98	0.00	Comb	4.0	3.00	2.40	3.00	1.46	Sag	2.00	0.037	0.037	0.000	0.14	3.79	0.22	3.79	1.0	Off
3	STM 2.3	0.48	0.43	0.46	0.45	Comb	4.0	1.69	0.00	1.83	1.40	0.046	2.00	0.014	0.014	0.013	0.08	6.04	0.15	4.63	1.0	4
4	STM 2.4/2.5	0.80	0.45	1.25	0.00	Comb	4.0	6.00	4.80	6.00	1.46	Sag	2.00	0.017	0.017	0.000	0.11	6.18	0.19	6.18	1.0	Off
5	STM 2.6/2.7	1.10	0.00	1.10	0.00	Comb	4.0	6.00	4.80	6.00	1.46	Sag	2.00	0.028	0.028	0.000	0.11	3.77	0.19	3.77	1.0	Off
6	2.1.2	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
7	2.1.1	2.61	0.00	2.61	0.00	DrGrt	0.0	0.00	234.00	117.00	2.00	Sag	2.00	0.040	0.040	0.000	0.02	3.18	0.02	3.18	0.0	Off
8	2.1.3/4	0.78	0.62	0.90	0.51	Comb	4.0	6.00	0.00	6.00	1.46	0.048	2.00	0.015	0.015	0.013	0.10	6.75	0.15	4.61	1.0	Off
9	Roof	1.48	0.00	0.00	1.48	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	STM 2.2.1	0.80	0.00	0.81	0.00	DrGrt	0.0	0.00	0.00	42.00	2.00	0.048	2.00	0.040	0.040	0.013	0.07	5.55	0.07	5.55	0.0	5
11	STM 1.1	1.74	0.00	0.00	1.74	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
12	STM 1.2	0.47	0.10	0.35	0.22	Comb	4.0	3.00	0.00	3.00	1.46	0.046	2.00	0.013	0.013	0.013	0.07	5.32	0.13	3.74	1.0	2
13	STM 1.3	0.91	0.00	0.47	0.43	Comb	4.0	1.69	0.00	1.83	1.40	0.046	2.00	0.015	0.015	0.013	0.09	5.78	0.15	4.37	1.0	3
14	STM 1.1.1	0.42	0.00	0.35	0.07	Comb	4.0	1.69	0.00	1.83	1.40	0.019	2.00	0.042	0.042	0.013	0.11	2.69	0.14	1.38	1.0	1
15	STM 1.1.2	0.49	0.00	0.39	0.10	Comb	4.0	1.69	0.00	1.83	1.40	0.006	2.00	0.046	0.046	0.013	0.15	3.33	0.17	1.82	1.0	12
16	STM 1.4	0.71	0.00	0.71	0.00	Comb	4.0	3.00	2.40	3.00	1.46	Sag	2.00	0.014	0.014	0.000	0.09	6.40	0.17	6.40	1.0	Off
17	STM 1.2.1	0.95	0.00	0.95	0.00	DrGrt	0.0	0.00	0.00	42.00	2.00	0.048	2.00	0.040	0.040	0.013	0.08	6.05	0.08	6.05	0.0	10

Project File: Lot 2-4.stm | Number of lines: 17 | Run Date: 9/23/2025

NOTES: Inlet N-Values = 0.016; Intensity = 902.70 / (Inlet time + 32.61) ^ 1.27; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

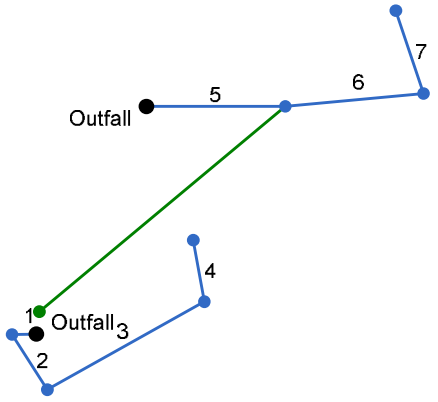
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	9.42	442.25	446.10	2.00	3.14	3.00	0.14	446.24	0.174	11.000	442.43	446.12	2.00	3.14	3.00	0.14	446.26	0.174	0.174	0.019	1.82	0.25
2	24	5.09	442.43	446.37	2.00	3.14	1.62	0.04	446.41	0.051	132.000	443.75	446.44	2.00	3.14	1.62	0.04	446.48	0.051	0.051	0.067	0.50	0.02
3	18	3.72	443.75	446.46	1.50	1.77	2.11	0.07	446.53	0.126	107.000	444.82	446.60	1.50	1.77	2.11	0.07	446.66	0.126	0.126	0.134	1.46	0.10
4	15	3.29	444.82	446.70	1.25	1.23	2.68	0.11	446.81	0.260	45.000	445.32	446.81	1.25	1.23	2.68	0.11	446.92	0.260	0.260	0.117	1.50	0.17
5	12	2.55	445.32	446.98	1.00	0.79	3.25	0.16	447.14	0.512	96.000	446.28	447.47	1.00	0.79	3.24	0.16	447.64	0.512	0.512	0.492	0.50	0.08
6	12	3.36	443.43	446.37	1.00	0.79	4.28	0.28	446.66	0.891	37.000	443.59	446.70	1.00	0.79	4.28	0.28	446.99	0.890	0.890	0.329	1.00	0.28
7	12	2.61	443.56	446.99	1.00	0.79	3.32	0.17	447.16	0.536	26.178	443.68	447.13	1.00	0.79	3.32	0.17	447.30	0.536	0.536	0.140	1.00	0.17
8	12	0.78	443.59	446.99	1.00	0.79	1.00	0.02	447.00	0.048	15.000	443.64	447.00	1.00	0.79	1.00	0.02	447.01	0.048	0.048	0.007	1.00	0.02
9	12	1.48	446.61	447.55	0.94	0.41	1.92	0.20	447.76	0.000	34.078	446.87	447.38	0.51**	0.41	3.63	0.20	447.59	0.000	0.000	n/a	1.00	0.20
10	12	0.80	450.00	450.20	0.20*	0.11	7.03	0.14	450.34	0.000	8.000	450.50	450.87	0.37**	0.27	2.99	0.14	451.01	0.000	0.000	n/a	1.00	n/a
11	12	4.96	448.41	449.00	0.59*	0.48	10.31	0.67	449.67	0.000	9.000	448.82	449.73	0.91**	0.75	6.58	0.67	450.41	0.000	0.000	n/a	1.00	0.67
12	12	2.83	448.82	449.73	0.91	0.61	3.76	0.34	450.07	0.000	139.000	450.35	451.07 j	0.72**	0.61	4.67	0.34	451.41	0.000	0.000	n/a	0.73	n/a
13	12	1.55	450.35	451.07	0.72	0.42	2.55	0.21	451.28	0.000	98.000	451.43	451.96 j	0.53**	0.42	3.68	0.21	452.17	0.000	0.000	n/a	1.50	n/a
14	12	0.82	448.82	449.73	0.91	0.27	1.09	0.14	449.87	0.000	71.000	449.53	449.91 j	0.38**	0.27	3.01	0.14	450.05	0.000	0.000	n/a	1.48	n/a
15	12	0.49	449.53	449.91	0.38	0.19	1.79	0.10	450.01	0.000	122.000	450.75	451.04 j	0.29**	0.19	2.58	0.10	451.14	0.000	0.000	n/a	1.00	n/a
16	12	0.71	451.43	451.96	0.53	0.25	1.70	0.13	452.09	0.000	76.000	455.23	455.58 j	0.35**	0.25	2.89	0.13	455.71	0.000	0.000	n/a	1.00	0.13
17	12	0.95	450.00	451.07	1.00	0.79	1.21	0.02	451.09	0.071	8.000	450.50	451.03	0.53	0.42	2.27	0.08	451.11	0.241	0.156	0.012	1.00	0.08

Project File: Lot 2-4.stm | Number of lines: 17 | Run Date: 9/23/2025

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Lot 5.stm	Number of lines: 7	Date: 9/23/2025

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	STM 9.0 - STM 9.1	2.73	12	Cir	10.000	455.00	455.10	1.000	455.66	455.81	0.49	455.81	End	Combination
2	STM 9.1 - STM 9.2	1.50	12	Cir	27.000	455.10	455.37	1.000	455.81	455.89	n/a	455.89 j	1	Combination
3	STM 9.2 - STM 9.3	1.03	12	Cir	74.000	455.37	456.11	1.000	455.89	456.54	n/a	456.54 j	2	Grate
4	Roofdrain to STM 9.3	0.43	8	Cir	25.772	456.03	456.29	1.009	456.54	456.60	n/a	456.60 j	3	Manhole
5	STM 10.1 - STM 10.2	0.91	12	Cir	57.000	455.08	455.65	1.000	455.66	456.05	n/a	456.05 j	End	Grate
6	STM 10.2 - STM 10.3	0.40	12	Cir	57.000	455.65	456.22	1.000	456.05	456.48	n/a	456.48 j	5	Grate
7	STM 10.3 - STM 10.4	0.17	12	Cir	36.000	456.22	456.58	1.000	456.48	456.75	n/a	456.75 j	6	Grate

Project File: Lot 5.stm | Number of lines: 7 | Run Date: 9/23/2025

NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	10.000	0.15	0.33	0.95	0.14	0.31	5.0	6.5	8.7	2.73	3.56	4.78	12	1.00	455.00	455.10	455.66	455.81	460.51	460.27	STM 9.0 - STM 9.
2	1	27.000	0.06	0.18	0.95	0.06	0.17	5.0	6.3	8.8	1.50	3.56	3.08	12	1.00	455.10	455.37	455.81	455.89	460.27	460.30	STM 9.1 - STM 9.
3	2	74.000	0.07	0.12	0.95	0.07	0.11	5.0	5.3	9.0	1.03	3.56	2.87	12	1.00	455.37	456.11	455.89	456.54	460.30	461.37	STM 9.2 - STM 9.
4	3	25.772	0.05	0.05	0.95	0.05	0.05	5.0	5.0	9.1	0.43	1.21	2.15	8	1.01	456.03	456.29	456.54	456.60	461.37	462.80	Roofdrain to STM
5	End	57.000	0.07	0.12	0.95	0.07	0.11	5.0	9.4	7.9	0.91	3.56	2.51	12	1.00	455.08	455.65	455.66	456.05	462.85	462.20	STM 10.1 - STM 1
6	5	57.000	0.03	0.05	0.95	0.03	0.05	5.0	7.7	8.4	0.40	3.56	1.90	12	1.00	455.65	456.22	456.05	456.48	462.20	460.94	STM 10.2 - STM 1
7	6	36.000	0.02	0.02	0.95	0.02	0.02	5.0	5.0	9.1	0.17	3.56	1.51	12	1.00	456.22	456.58	456.48	456.75	460.94	460.83	STM 10.3 - STM 1

Project File: Lot 5.stm | Number of lines: 7 | Run Date: 9/23/2025

NOTES:Intensity = 902.70 / (Inlet time + 32.61) ^ 1.27; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	9.1 R-3246	1.30	0.16	1.47	0.00	Comb	4.0	3.66	2.40	3.00	1.46	Sag	2.00	0.050	0.020	0.000	0.17	5.35	0.25	5.35	1.0	Off
2	9.2	0.52	0.14	0.66	0.00	Comb	4.0	3.66	2.40	3.00	1.46	Sag	2.00	0.050	0.025	0.000	0.11	2.20	0.19	2.20	1.0	Off
3	9.3	0.61	0.00	0.47	0.14	Grate	0.0	0.00	0.00	1.83	1.40	0.010	2.00	0.050	0.034	0.013	0.15	3.60	0.17	1.79	1.0	2
4	roof	0.43	0.00	0.00	0.43	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	10.2	0.61	0.00	0.45	0.16	Grate	0.0	0.00	0.00	1.83	1.40	0.010	2.00	0.050	0.020	0.013	0.15	4.57	0.18	1.90	1.0	1
6	10.3	0.26	0.00	0.23	0.03	Grate	0.0	0.00	0.00	1.83	1.40	0.010	2.00	0.050	0.020	0.013	0.11	2.67	0.13	1.03	1.0	Off
7	10.4	0.17	0.00	0.16	0.01	Grate	0.0	0.00	0.00	1.83	1.40	0.010	2.00	0.050	0.020	0.013	0.10	1.95	0.12	0.71	1.0	Off

Project File: Lot 5.stm | Number of lines: 7 | Run Date: 9/23/2025

NOTES: Inlet N-Values = 0.016; Intensity = 902.70 / (Inlet time + 32.61) ^ 1.27; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	2.73	455.00	455.66	0.66	0.55	4.96	0.33	455.99	0.000	10.000	455.10	455.81	0.71**	0.59	4.59	0.33	456.14	0.000	0.000	n/a	1.50	0.49
2	12	1.50	455.10	455.81	0.71	0.41	2.52	0.21	456.01	0.000	27.000	455.37	455.89 j	0.52**	0.41	3.64	0.21	456.10	0.000	0.000	n/a	1.50	0.31
3	12	1.03	455.37	455.89	0.52	0.32	2.51	0.16	456.05	0.000	74.000	456.11	456.54 j	0.43**	0.32	3.23	0.16	456.70	0.000	0.000	n/a	1.43	n/a
4	8	0.43	456.03	456.54	0.51	0.16	1.53	0.12	456.66	0.000	25.772	456.29	456.60 j	0.31**	0.16	2.76	0.12	456.72	0.000	0.000	n/a	1.00	n/a
5	12	0.91	455.08	455.66	0.58	0.29	1.92	0.15	455.81	0.000	57.000	455.65	456.05 j	0.40**	0.29	3.10	0.15	456.20	0.000	0.000	n/a	0.50	0.07
6	12	0.40	455.65	456.05	0.40	0.16	1.36	0.09	456.14	0.000	57.000	456.22	456.48 j	0.26**	0.16	2.45	0.09	456.57	0.000	0.000	n/a	1.50	n/a
7	12	0.17	456.22	456.48	0.26	0.09	1.07	0.06	456.54	0.000	36.000	456.58	456.75 j	0.17**	0.09	1.95	0.06	456.81	0.000	0.000	n/a	1.00	n/a

Project File: Lot 5.stm | Number of lines: 7 | Run Date: 9/23/2025

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Attachment K
Water Quality Calculation

REQUIRED POST DEVELOPMENT WATER QUALITY VOLUME
98TH PERCENTILE STORM
PROPOSED AREA C1.1
WATER QUALITY VOLUME

					POST DEVELOPMENT			
Location	Surface	Area (SF)	Area (AC)	Ax% imp	% Imp	Rv	WQv ac-ft	WQv cf
Site	Pervious Area	16,552.00	0.38	0.00	0.00%	0.0500	0.002	69
	Impervious Area	67,082.00	1.54	1.54	100.00%	0.9500	0.122	5311
		83,634.00	1.92	1.54				5380
		Composite % imp		80.21%				

WQv = (P)(Rv)(A)/12
P = rainfall depth in inches and is equal to 1.0
Rv = 0.05 + 0.009x(I) I is in Percent
A = area in acres

Provided:
Area (Af) = 5062 *s.f.*

Required WQv (100%): 5380 *Cu. Ft*
Rock Storage Depth (df): 2.75 *Ft.*

Isolator Row 4925 28 Chambers MC-7200

Required WQv: 5380 *Cu. Ft.*

v (Voids) = 0.40

Treatment Volume Provided (Vt) 10493 *Cu. Ft.* v(dfxAf)

%WQV 195% of the required WQv

Af = surface area of rock bed (s.f.)
df = rock bed thickness (ft)
v = voids
Vt = treatment volume

REQUIRED POST DEVELOPMENT WATER QUALITY VOLUME
98TH PERCENTILE STORM
PROPOSED AREA C1.2
WATER QUALITY VOLUME

					POST DEVELOPMENT			
Location	Surface	Area (SF)	Area (AC)	Ax% imp	% Imp	Rv	WQv ac-ft	WQv cf
Site	Pervious Area	5,663.00	0.13	0.00	0.00%	0.0500	0.001	24
	Impervious Area	51,952.00	1.19	1.19	100.00%	0.9500	0.094	4113
		57,615.00	1.32	1.19				4136
		Composite % imp		90.17%				

WQv = (P)(Rv)(A)/12
P = rainfall depth in inches and is equal to 1.0
Rv = 0.05 + 0.009x(I) I is in Percent
A = area in acres

Provided:
Area (Af) = 7050 *s.f.*

Required WQv (100%): 4136 *Cu. Ft*
Rock Storage Depth (df): 1.75 *Ft.*

Isolator Row 1265 25 Chambers SC-800

Required WQv: 4136 *Cu. Ft.*

v (Voids) = 0.40

Treatment Volume Provided (Vt) 6200 *Cu. Ft.* v(dfxAf)

%WQV 150% of the required WQv

Af = surface area of filter bed (s.f.)
df = filter bed thickness (ft)
v = voids
Vt = treatment volume

REQUIRED POST DEVELOPMENT WATER QUALITY VOLUME
98TH PERCENTILE STORM
PROPOSED AREA B1.2
WATER QUALITY VOLUME

					POST DEVELOPMENT			
Location	Surface	Area (SF)	Area (AC)	Ax% imp	% Imp	Rv	WQv ac-ft	WQv cf
Site	Pervious Area	12,197.00	0.28	0.00	0.00%	0.0500	0.001	51
	Impervious Area	18,731.00	0.43	0.43	100.00%	0.9500	0.034	1483
		30,928.00	0.71	0.43				1534
		Composite % imp		60.56%				

WQv = (P)(Rv)(A)/12
P = rainfall depth in inches and is equal to 1.0
Rv = 0.05 + 0.009x(I) I is in Percent
A = area in acres

Provided:
Area (Af) = 2362 *s.f.*

Required WQv (100%): 1534 *Cu. Ft*
Rock Storage Depth (df): 1.5 *Ft.*

Isolator Row 759 *Cu. Ft.* 15 Chambers SC-800

Required WQv: 1534 *Cu. Ft.*

v (Voids) = 0.40

Treatment Volume Provided (Vt) 2176 *Cu. Ft.* v(dfxAf)

%WQV 142% of the required WQv

Af = surface area of filter bed (s.f.)
df = filter bed thickness (ft)
v = voids
Vt = treatment volume

REQUIRED POST DEVELOPMENT WATER QUALITY VOLUME
98TH PERCENTILE STORM
PROPOSED AREA TOTAL
WATER QUALITY VOLUME

				POST DEVELOPMENT				
Location	Surface	Area (SF)	Area (AC)	Ax% imp	% Imp	Rv	WQv ac-ft	WQv cf
Site	Pervious Area	54,757.00	1.26	0.00	0.00%	0.0500	0.005	228
	Impervious Area	144,673.00	3.32	3.32	100.00%	0.9500	0.263	11453
		199,430.00	4.58	3.32				11681
		Composite % imp		72.54%				

WQv = (P)(Rv)(A)/12
P = rainfall depth in inches and is equal to 1.0
Rv = 0.05 + 0.009x(I) I is in Percent
A = area in acres

Required WQv (100%):	11681	*Cu. Ft*
Required WQv:	11050	*Cu. Ft.*
Bypassed Volume:	632	*Cu. Ft.*
Total Required WQv:	11681	*Cu. Ft.*
Provided Area C1.1	10493	*Cu. Ft.*
Provided Area C1.2	6200	*Cu. Ft.*
Provided Area B1.2	2176	*Cu. Ft.*
Total Treatment Volume Provided (Vt)	18870	*Cu. Ft.* v(dfxAf)

%WQV 162% of the required WQv

Af = surface area of filter bed (s.f.)
df = filter bed thickness (ft)
v = voids
Vt = treatment volume