Bryant Development and Review Committee Meeting

Boswell Municipal Complex - City Hall Conference Room

210 SW 3rd Street

Date: October 01, 2026 - **Time:** 9:00 AM

Call to Order

Old Business

New Business

1. Zyair Estates - Hilltop Road - Preliminary Plat

Richardson Engineering - Requesting Recommendation for Preliminary Plat Approval

- 1070-DRN-01.pdf
- 1070-PLN-01b.pdf
- 1070-PLN-01a.pdf
- 1070-PLT-01.pdf
- 1070-LTR-01.pdf

2. Autumn Hills Estates Ph.1 - Final Plat

Richardson Engineering - Requesting Recommendation for Final Plat Approval

- 1069-PLT-01.pdf
- 1069-ENGCRT-01.pdf
- 1069-LTR-01.pdf
- 1069-APP-01.pdf
- 1069-BOA-01.pdf

3. Midland Estates Ph. 2 - Final Plat

Hope Consulting - Requesting Recommendation for Final Plat Approval

- 1068-ASB-01.pdf
- 1068-LTR-01.pdf
- 1068-BNDLTR-01.pdf
- 1068-PLT-01.pdf

4. REQUEST TO ADD: Lot 2, Big Oaks Addition - 302 Ethel Dr - Conditional Use Permit

Hope Consulting - Requesting Recommendation for Approval of CUP for a Duplex in a R-M Zoning

Staff Approved

Permit Report

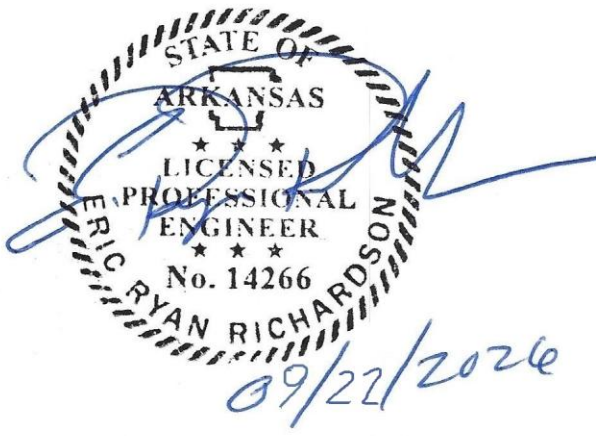
Adjournments

Drainage Report

For

Zyair Estates Subdivision

Bryant, Saline County, Arkansas



September 22, 2026

Prepared by:

RICHARDSON ENGINEERING, PLLC

325 W. South St.
Benton, AR 72015
501-315-7225

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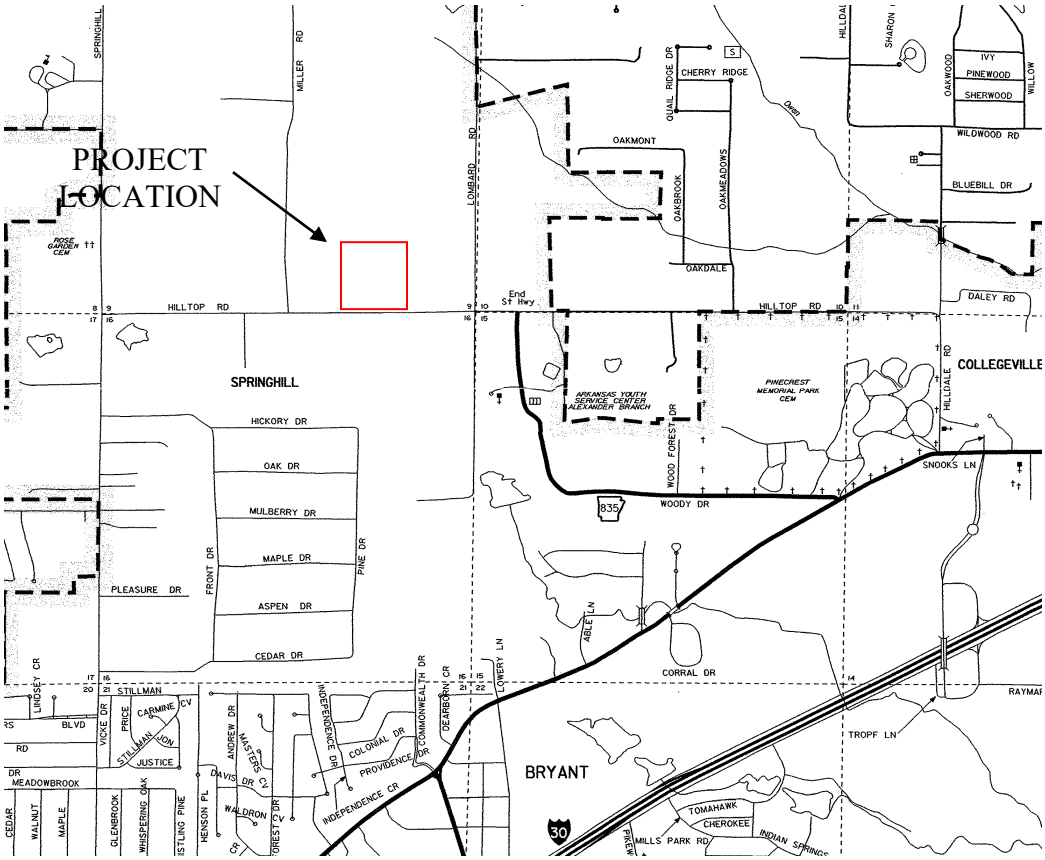
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Project Owner Information

Eminent Construction
1100 Hillfarm Road
Bryant, AR 72022

Project Location and Description

The project is located on North side of the Hilltop, part of the Southwest Quater of the Southeast Quarter, Section 9, Township 1-S, Range 14-W, Saline County, Arkansas.



Vicinity Map – N.T.S

This project is a proposed Residential Subdivision, consisting of 78 lots, located in the City of Bryant, Saline County.

Site Drainage

Pre-Development

The pre-developed runoff for the site flows to the East and West. The on-site drainage basins have been broken down into six separate basins that discharge water off-site. Drainage Basins A, B, and C discharge water to the West, Basin D, E and F discharge water to the East. The pre-development drainage basin delineation can be found in the appendix of this report.

The pre-development on-site runoff condition is undeveloped/woods.

Post-Development

The site drainage starts on the Western side of the project and flows to the East and West. The drainage is sheet flows across the lots and roads and is intercepted by the proposed storm sewer system and is discharged into a proposed detention basin on the Eastern side of the proposed development.

The City of Bryant Drainage Manual utilized different C values for each storm event. The C value for the 100-year design storm was utilized for all storm events for the drainage analysis for this site.

The minimum required volume of the detention basin was found by comparing the pre-development rational method hydrograph for the area that the detention pond is being discharged, to the post-development rational method hydrograph for the area that the detention basin is receiving using the Hydrology Studio program. The minimum required volume was found to be 62,928 CF for the 100-year storm event. In order to meet the City of Bryants Stormwater Manual detention requirements, the detention pond has to be sized with at least a 25% factory of safety; therefore, the minimum size of the detention pond is 78,660 CF.

Post-Development Basin A, B, and C consist of lots on the Western border and off-site areas. Post-development Basins A, B, and C all discharge to the West of the proposed development. Post Development Basin D consists of the back half of the lots on the north line as well as off-site areas. Basin D discharges Phase 2 of the Lombard Heights subdivision. The proposed detention basin will utilize a culvert/weir discharge structure. Post-Development Basin “E-1” is the drainage basin that discharges water into the proposed detention basin. Post-development drainage basin “E-1” consists of the majority of the storm drain system for the proposed development as well as the detention pond area. Post-Development Basin E-2 consists of the remaining storm drain system that does not get discharged into the proposed detention pond as well as off-site areas. Basin E-1 and E-2 discharge to the East. Post-Development Basin F consists of the back half of lots on the South line and off-site areas. Basin F discharges to the East. Basins A, B, C, D, E-2, and F are not routed through the detention basin, so they were calculated by themselves. A delineation for the drainage basins that were used in Hydrology Studio (for

the overall site drainage basins), as well as a delineation of the basins that were used in Storm and Sanitary Analysis (on-site storm inlets) can be seen in the appendix of this report.

The post-development on-site runoff conditions changed from undeveloped/woods to single family residential development.

Runoff Summary's

Overall Project Site Area: 29.16 Acres

Pre- Development Drainage Basin Information

Overall Pre-Development Drainage Basin Study Area: 71.08 Acres

Drainage Basins	Drainage Area (Ac)	C Value	Time of Concentration (min)
Basin A	3.20	0.62	11
Basin B	14.74	0.52	15
Basin C	6.84	0.55	11
Basin D	2.95	0.50	8
Basin E-1	11.20	0.50	12
Basin E-2	18.96	0.52	13
Basin F	13.19	0.53	17

Design Storm	Basin A (cfs)	Basin B (cfs)	Basin C (cfs)	Basin D (cfs)
2-yr	8.53	28.63	16.17	7.32
10-yr	11.43	38.41	21.67	9.80
25-yr	13.13	44.15	24.90	11.26
50-yr	14.36	48.29	27.23	12.31
100-yr	15.60	52.42	29.57	13.38

Design Storm	Basin E-1 (cfs)	Basin E-2 (cfs)	Basin F (cfs)
2-yr	23.14	39.29	24.68
10-yr	31.02	52.69	33.12
25-yr	35.65	60.55	38.07
50-yr	38.98	66.22	41.64
100-yr	42.33	71.90	45.20

Overall Site Post- Development Drainage Basin Information

Overall Post-Development Drainage Study Area: 71.05 Acres

Drainage Basins	Drainage Area (Ac)	C Value	Time of Concentration (min)
Basin A	3.33	0.65	15
Basin B	12.53	0.55	21
Basin C	6.75	0.57	11
Basin D	2.97	0.57	8
Basin E-1	18.00	0.75	23
Basin E-2	15.86	0.56	13
Basin F	11.61	0.56	16

Design Storm	Basin A (cfs)	Basin B (cfs)	Basin C (cfs)	Basin D (cfs)
2-yr	8.2	22.51	16.54	8.25
10-yr	11.01	30.23	22.16	11.06
25-yr	12.66	34.75	25.47	12.70
50-yr	13.85	38.03	27.85	13.88
100-yr	15.03	41.26	30.24	15.08

Design Storm	Basin E-1 (cfs)	Basin E-2 (cfs)	Basin F (cfs)
2-yr	41.56	35.39	23.59
10-yr	55.83	47.46	31.65
25-yr	64.18	54.55	36.38
50-yr	70.24	59.65	39.79
100-yr	76.20	64.77	43.19

Basin A

Pre-Development Drainage Study Area = 3.20
Post-Development Drainage Study Area = 3.33
Existing Condition runoff Coefficient: C = 0.65
Proposed runoff Coefficient: C = 0.65
Tc Undeveloped = 11 Minutes (TR55 Method)
Tc Developed = 15 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	8.53	8.2	+0.33
10-yr	11.43	11.01	+0.42
25-yr	13.13	12.66	+0.47
50-yr	14.36	13.85	+0.51
100-yr	15.6	15.03	+0.57

Basin B

Pre-Development Drainage Study Area = 14.7
Post-Development Drainage Study Area = 12.53
Existing Condition runoff Coefficient: C = 0.52
Proposed runoff Coefficient: C = 0.55
Tc Undeveloped = 15 Minutes (TR55 Method)
Tc Developed = 21 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	28.63	22.51	+6.12
10-yr	38.41	30.23	+8.18
25-yr	44.15	34.75	+9.4
50-yr	48.29	38.03	+10.26
100-yr	52.42	41.26	+11.16

Basin C

Pre-Development Drainage Study Area = 6.84
Post-Development Drainage Study Area = 6.75
Existing Condition runoff Coefficient: C = 0.55
Proposed runoff Coefficient: C = 0.57
Tc Undeveloped = 11 Minutes (TR55 Method)
Tc Developed = 11 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	16.17	16.54	-0.37
10-yr	21.67	22.16	-0.49
25-yr	24.9	25.47	-0.57
50-yr	27.23	27.85	-0.62
100-yr	29.57	30.24	-0.67

Basin D

Pre-Development Drainage Study Area = 2.95
Post-Development Drainage Study Area = 2.97
Existing Condition runoff Coefficient: C = 0.50
Proposed runoff Coefficient: C = 0.57
Tc Undeveloped = 8 Minutes (TR55 Method)
Tc Developed = 8 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	7.32	8.25	-0.93
10-yr	9.8	11.06	-1.26
25-yr	11.26	12.7	-1.44
50-yr	12.31	13.88	-1.57
100-yr	13.38	15.08	-1.7

Basin E1

Pre-Development Drainage Study Area = 11.20 Ac
Post-Development Drainage Study Area = 18.00 Ac
Existing Condition runoff Coefficient: C = 0.50
Proposed runoff Coefficient: C = 0.75
Tc Undeveloped = 12 Minutes (TR55 Method)
Tc Developed = 23 Minutes (TR55 Method)
Detention Basin Required Volume: 62928 CF
Detention Basin Volume: 79000 CF
Maximum Storage: 83802 CF
Discharge Structure: Culvert/Weir

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Post-Development w/ Detention Flow Rate (cfs)	Maximum Water Elevation in Pond (ft)
2-yr	23.14	41.56	23.14	470.62
10-yr	31.02	55.83	31.02	471.30
25-yr	35.65	64.18	35.65	471.71
50-yr	38.98	70.24	38.98	472.00
100-yr	42.33	76.20	42.33	472.24

Basin E2

Pre-Development Drainage Study Area = 18.96 Ac
Post-Development Drainage Study Area = 15.86 Ac
Existing Condition runoff Coefficient: C = 0.52
Proposed runoff Coefficient: C = 0.56
Tc Undeveloped = 13 Minutes (TR55 Method)
Tc Developed = 13 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	39.29	35.39	+3.90
10-yr	52.69	47.46	+5.23
25-yr	60.55	54.55	+6.00
50-yr	66.22	59.65	+6.57
100-yr	71.9	64.77	+7.13

Basin F

Pre-Development Drainage Study Area = 13.19
Post-Development Drainage Study Area = 12.00
Existing Condition runoff Coefficient: C = 0.53
Proposed runoff Coefficient: C = 0.56
Tc Undeveloped = 17 Minutes (TR55 Method)
Tc Developed = 16 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	24.68	23.59	1.09
10-yr	33.12	31.65	1.47
25-yr	38.07	36.38	1.69
50-yr	41.64	39.79	1.85
100-yr	45.2	43.19	2.01

Recommendations/Summary

The proposed drainage improvements include a storm sewer system and a detention basin on the Eastern side of the project. The proposed detention basin releases the post development runoff at a lower rate than the pre-development condition.

Appendices

Runoff Coefficient Calculations
Time of Concentration Calculation
NRCS Soil Report
NOAA Atlas 14 Data
Site Drainage Basin Map
SSA Design Layout
Storm System Design (SSA)
Detention Pond Storage Estimate
Pond and Post Development Hydrographs (Hydrology Studio)

Runoff Coefficient Calculations

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Planning ▪ Engineering ▪ Development Consulting

325 West South Street
Benton, AR 72015
(501) 315-7225

PROJECT 024-034 Drainage Analysis DATE 09/25/2026

PRE-DEV BASIN "A" Area = 3.20 ac

→ Impervious : 0.20 Ac C = 0.95

→ Residential : 2.09 Ac C = 0.65
½ ac or larger

→ Undeveloped : 0.39 Ac C = 0.50 (clay soil Avg 2-7%)

→ Ditches : 0.52 Ac C = 0.49 (Fair condition Avg 2-7%)

$$\text{Composite } C = \frac{(0.20 \times 0.95) + (2.09 \times 0.65) + (0.39 \times 0.5) + (0.52 \times 0.49)}{3.20}$$

$$\boxed{C = 0.62}$$

PRE-DEV BASIN "B" Area = 14.74 Ac

→ Impervious : 0.19 AC C = 0.95

→ Residential : 0.29 AC C = 0.65
(½ ac or larger)

→ Undeveloped : 14.26 AC C = 0.50

$$C = \frac{(0.19 \times 0.95) + (0.29 \times 0.65) + (14.26 \times 0.5)}{14.74} \qquad \boxed{C = 0.51}$$

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PRE-DEV BASIN "C" Area = 6.84 Ac

→ Impervious : 0.10 Ac C = 0.95

→ Residential : 1.66 Ac C = 0.65
(½ or larger)

→ Commercial : 0.23 Ac C = 0.8
(water tank)

→ Undeveloped : 4.85 Ac C = 0.50

$$\text{composite } C = \frac{(0.1 \times 0.95) + (1.66 \times 0.65) + (0.23 \times 0.8) + (4.85 \times 0.5)}{6.84}$$

∴ **C = 0.55**

PRE-DEV BASIN "D" Area = 2.95 Ac

→ Undeveloped : 2.95 Ac C = 0.5

∴ **C = 0.5**

PRE-DEV BASIN "E-1" Area = 11.20 Ac

→ Undeveloped : 11.20 Ac C = 0.5

∴ **C = 0.5**

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PRE-DEV BASIN "E-2" Area = 18.96 Ac

→ Single Family Residential : 1.20 Ac C = 0.7

→ Residential ($\frac{1}{2}$ or larger) : 1.0 Ac C = 0.65

→ Undeveloped : 16.76 Ac C = 0.5

$$\text{composite } c = \frac{(1.2 \times 0.7) + (1 \times 0.65) + (16.76 \times 0.5)}{18.96}$$

$$\therefore \boxed{c = 0.52}$$

PRE-DEV BASIN "F" Area = 13.19 Ac

→ Impervious : 0.35 Ac C = 0.95

→ Residential ($\frac{1}{2}$ or larger) : 1.62 Ac C = 0.65

→ Undeveloped : 11.22 Ac C = 0.5

$$\text{composite } c = \frac{(0.35 \times 0.95) + (1.62 \times 0.65) + (11.22 \times 0.5)}{13.19}$$

$$\therefore \boxed{c = 0.53}$$

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POST-DEV BASIN "A" Area: 3.33 Ac

-> Impervious : 0.27 Ac C = 0.95
-> Single Family : 0.35 Ac C = 0.7
-> Residential : 2.2 Ac C = 0.65
(½ ac or larger)
-> Ditches : 0.48 Ac C = 0.49

$$\text{composite } C = \frac{(0.27 \times 0.95) + (0.35 \times 0.7) + (2.2 \times 0.65) + (0.48 \times 0.49)}{3.33}$$

$\therefore$ **C = 0.65**

POST-DEV BASIN "B" Area: 12.53 Ac

-> Impervious : 0.19 Ac C = 0.95
-> Residential : 0.29 Ac C = 0.65
(½ Ac or larger)
-> Single Family : 3.41 Ac C = 0.7
-> Undeveloped : 8.6 Ac C = 0.5

$$\text{composite } C = \frac{(0.19 \times 0.95) + (0.29 \times 0.65) + (3.41 \times 0.7) + (8.6 \times 0.5)}{12.53}$$

$\therefore$ **C = 0.55**

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PROJECT 024-034 Drainage Analysis DATE 09/25/2026

POST-DEV BASIN "C" Area: 6.75 AC

- → Impervious : 0.1 AC — C = 0.95
- → Residential (½ or larger) : 1.66 AC — C = 0.65
- → Single Family : 0.44 AC — C = 0.7
- → Commercial (water tank) : 0.23 AC — C = 0.8
- → Undeveloped : 4.32 AC — C = 0.5

$$\text{composite } C = \frac{(0.1 \times 0.95) + (1.66 \times 0.65) + (0.44 \times 0.7) + (0.23 \times 0.8) + (4.32 \times 0.5)}{6.75}$$

$$\therefore \boxed{C = 0.57}$$

POST-DEV BASIN "D" Area: 2.97 AC

- → Single Family : 1.10 AC — C = 0.7
- → Undeveloped : 1.87 AC — C = 0.5

$$\text{Composite } C = \frac{(1.1 \times 0.7) + (1.87 \times 0.5)}{2.97} = 0.57$$

$$\therefore \boxed{C = 0.57}$$

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6/7

PROJECT 024-034 Drainage Analysis DATE 09/025/2026

POST-DEV BASIN "E-1" Area: 18 AC

→ Impervious : 4.63 AC C = 0.95
→ Single Family : 9.81 AC C = 0.7
→ Woods : 3.59 AC C = 0.6 (clay soil 7% slope)

$$\text{Composite } C = \frac{(4.63 \times 0.95) + (9.81 \times 0.7) + (3.59 \times 0.6)}{18}$$

$$\boxed{C = 0.745}$$

POST-DEV BASIN "E-2" Area: 15.86

→ single Family : 4.14 AC C = 0.7
→ Gravel : 0.36 AC C = 0.65
→ Residential (½ or larger) : 1.44 AC C = 0.65
→ Undeveloped : 9.93 AC C = 0.5

$$\text{composite } C = \frac{(4.14 \times 0.7) + (0.36 \times 0.65) + (1.44 \times 0.65) + (9.9 \times 05)}{15.86}$$

$$\therefore \boxed{C = 0.56}$$

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PROJECT 024-034 Drainage Analysis DATE 09/25/2026

POST-DEV BASIN "F"

Area = 11.61 AC

→ Impervious : 0.37 AC C = 0.95

→ Single Family : 1.50 AC C = 0.70

→ Residential : 1.52 AC C = 0.65
($\frac{1}{2}$ AC or larger)

→ Undeveloped : 8.21 AC C = 0.50

$$\text{Composite } C = \frac{(0.37 \times 0.95) + (1.50 \times 0.7) + (1.52 \times 0.65) + (8.21 \times 0.5)}{11.61}$$

$\therefore$ **C = 0.56**

Runoff Coefficients

Land Use Types	Frequency 10	25	100
Business			
Central Business District	0.9	0.93	0.95
Commercial Area	.85 (.70-.95)*	0.9	0.95
Neighborhood Area	.70 (.50-.75)	0.75	0.8
Residential			
Single Family	.50 (.30-.60)	0.6	0.7
Multi-Unit (Detached)	.60 (.40-.65)	0.65	0.75
Multi-Unit (Attached)	.70 (.60-.75)	0.75	0.8
½ Acre Lots or Larger	.40 (.25-.50)	0.45	0.65
Apartments	.70 (.50-.80)	0.75	0.8
Industrial			
Light Areas	.80 (.50-.85)	0.82	0.85
Heavy Areas	.85 (.60-.90)	0.87	0.9
Miscellaneous			
Parks and Cemeteries	.30 (.10-.40)	0.4	0.6
Playgrounds	.35 (.20-.40)	0.5	0.7
Schools and Churches	.60 (.50-.75)	0.65	0.75
Railroad Yards	.50 (.30-.60)	0.6	0.7
Offsite Flow Analysis (When Land Use Not Defined)	.55 (.45-.65)	0.67	0.7

*NOTE: The range of runoff coefficients is based on soil type. The low value is for sandy soils, while the high value is for clay soils. The given runoff coefficient outside the parenthesis is to be used for design, unless the Engineer of Record receives approval from the City Engineer for another value located within the given coefficient range.

Source: City of Little Rock Stormwater Management & Drainage Design Manual

TABLE 400-1 Runoff Coefficients for Surface Types

Character of Surface	Return Period					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Developed						
Asphaltic	0.73	0.77	0.81	0.86	0.90	0.95
Concrete/Roof	0.75	0.80	0.83	0.88	0.92	0.97
Grass Areas (Lawns, Parks, etc.)						
Poor Condition (grass cover less than 50 percent of the area)						
Flat, 0-2%	0.32	0.34	0.37	0.40	0.44	0.47
Average, 2-7%	0.37	0.40	0.43	0.46	0.49	0.53
Steep, Over 7%	0.40	0.43	0.45	0.49	0.52	0.55
Fair Condition (grass cover on 50 to 75 percent of the area)						
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49
Steep, Over 7%	0.37	0.40	0.42	0.46	0.49	0.53
Good Condition (grass cover larger than 75 percent of the area)						
Flat, 0-2%	0.21	0.23	0.25	0.29	0.32	0.36
Average, 2-7%	0.29	0.32	0.35	0.39	0.42	0.46
Steep, Over 7%	0.34	0.37	0.40	0.44	0.47	0.51
Undeveloped						
Cultivated Land						
Flat, 0-2%	0.31	0.34	0.36	0.40	0.43	0.47
Average, 2-7%	0.35	0.38	0.41	0.44	0.48	0.51
Steep, Over 7%	0.39	0.42	0.44	0.48	0.51	0.54
Pasture/Range						
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49
Steep, Over 7%	0.37	0.40	0.42	0.46	0.49	0.53
Forest/Woodlands						
Flat, 0-2%	0.22	0.25	0.28	0.31	0.35	0.39
Average, 2-7%	0.31	0.34	0.36	0.40	0.43	0.47
Steep, Over 7%	0.35	0.39	0.41	0.45	0.48	0.52

Source: Rossmiller, R.L. "The Raional Formula Revisited."
County of Austin Drainage Criteria Manual

TABLE 400-2

Runoff Coefficients for Rational Method Composite Analysis

Land Use Types	Frequency 10	25	100
Undeveloped Areas			
Historic Flow Analysis, Greenbelts			
Agricultural, Natural Vegetation			
Clay Soil			
Flat, 2%	0.3	0.33	0.37
Average, 2-7%	0.4	0.44	0.5
Steep, 7%	0.5	0.55	0.62
Sandy Soil			
Flat, 2%	0.12	0.13	0.15
Average, 2-7%	0.2	0.22	0.25
Steep, 7%	0.3	0.33	0.37
Streets			
Paved	0.9	0.92	0.95
Gravel	0.35	0.5	0.65
Miscellaneous			
Drives and Walks	0.9	0.91	0.92
Roofs	0.9	0.92	0.95
Lawns			
Clay Soil			
Flat, 2%	0.18	0.2	0.25
Average, 2-7%	0.22	0.28	0.35
Steep, 7%	0.35	0.45	0.6
Sandy Soil			
Flat, 2%	0.1	0.25	0.4
Average, 2-7%	0.15	0.3	0.45
Steep, 7%	0.2	0.35	0.5

Source: City of Little Rock Stormwater Management & Drainage Design Manual

The design engineer shall use the preceding values as a rule of thumb. Areas not conforming to the preceding descriptions will be evaluated by calculating a composite runoff coefficient. Areas will be evaluated based upon the ultimate development for the area under consideration.

Time of Concentration

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

325 West South Street
Benton, AR 72015
(501) 315-7225

PROJECT 024-034 Tc Calculation DATE 09/25/2026

POST-DEV BASIN "E-1"

overland Flow from lots to Pipe Network (L) = 157 ft

→ mannings n = 0.25

→ 24 hr, 2 Year (P) = 4.34
rainfall

→ slope (S) = 0.017

$$t_1 = \frac{0.007 \times (nL)^{0.8}}{(P)^{0.5} \times (S)^{0.4}} = \frac{0.007 \times (0.25 \times 157)^{0.8}}{4.34^{0.5} \times 0.017^{0.4}} = \boxed{20.39 \text{ min}}$$

$$\left[t = \frac{V}{\text{[illegible]} \times 60} \right]$$

Pipe-25(3)	L = 33.2 ft	V = 4.2 fps	→ t_2 = 0.12 min
pipe-25(2)	L = 150 ft	V = 4.8 fps	→ t_3 = 0.49 min
pipe-25(1)	L = 44.8 ft	V = 5.36 fps	→ t_4 = 0.13 min
pipe-24	L = 73.5 ft	V = 8.97 fps	→ t_5 = 0.13 min
pipe 23	L = 222 ft	V = 6.68 fps	→ t_6 = 0.53 min
pipe 21	L = 69.8 ft	V = 8.01 fps	→ t_7 = 0.139 min
pipe 20	L = 256 ft	V = 7.2 fps	→ t_8 = 0.56 min
Pipe 17	L = 32.9 ft	V = 7.5 fps	→ t_9 = 0.07 min
pipe 16	L = 131.6	V = 10.9 fps	→ t_{10} = 0.19 min
pipe-25(15)	L = 248	V = 8.17 fps	→ t_{11} = 0.48 min
pipe-25(15)(1)	L = 24.2	V = 7.46 fps	→ t_{12} = 0.051 min

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

325 West South Street
Benton, AR 72015
(501) 315-7225

PROJECT 024-034 t_c Calculation DATE 09/25/2026

FES-46 to Weir 6

$L = 149$ ft

$S = 0.025$ ft/ft

$V = 20.328(S)^{0.5} = 16.1345(0.025)^{0.5}$ (For paved surface)

$= 4.54$ fps

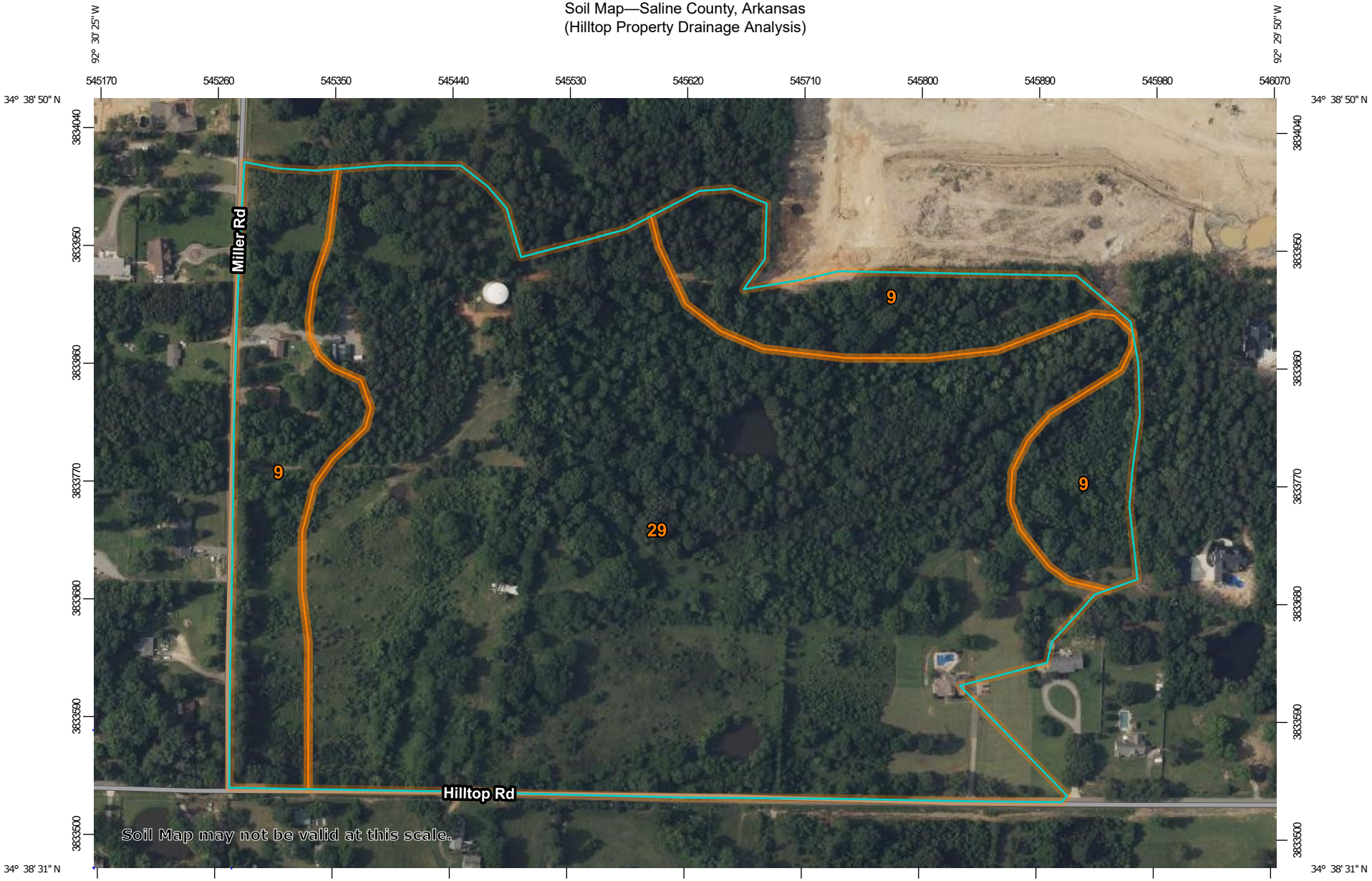
$t_{13} = \frac{149}{4.54 \times 60} = 0.54$ min

∴ Total time of concentration $= t_1 + t_2 + t_3 \ldots\ldots t_{13}$

$=$ **23 minutes** ##

NRCS Soil Report

Soil Map—Saline County, Arkansas
(Hilltop Property Drainage Analysis)



Map Scale: 1:4,150 if printed on A landscape (11" x 8.5") sheet.

N

0 50 100 200 300 Meters

0 200 400 800 1200 Feet

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:20,000.

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: Saline County, Arkansas
Survey Area Data: Version 22, Sep 10, 2025

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

Date(s) aerial images were photographed: May 1, 2022—May 29, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Carnasaw-Townley association, undulating	16.2	22.7%
29	Tiak silt loam, 3 to 8 percent slopes	54.9	77.3%
Totals for Area of Interest		**71.1**	**100.0%**

Saline County, Arkansas

9—Carnasaw-Townley association, undulating

Map Unit Setting

National map unit symbol: m073
Landscape: Hills
Elevation: 500 to 1,800 feet
Mean annual precipitation: 44 to 61 inches
Mean annual air temperature: 49 to 74 degrees F
Frost-free period: 185 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Carnasaw and similar soils: 50 percent
Townley and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carnasaw

Setting

Landscape: Hills
Landform: Hills
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from acid shale

Typical profile

A - 0 to 3 inches: gravelly silt loam
Bt1 - 3 to 6 inches: silty clay loam
Bt2 - 6 to 40 inches: clay
Cr - 40 to 72 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F119XY006AR - Clayey Upland
Hydric soil rating: No

Description of Townley

Setting

Landscape: Hills
Landform: Hills
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale over clayey residuum weathered from sandstone and shale

Typical profile

A - 0 to 6 inches: silt loam
Bt1 - 6 to 23 inches: silty clay
Bt2 - 23 to 25 inches: silty clay
Cr - 25 to 29 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F119XY006AR - Clayey Upland
Hydric soil rating: No

Minor Components

Pirum

Percent of map unit: 15 percent
Landscape: Hills
Ecological site: F119XY007AR - Loamy Upland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Saline County, Arkansas
Survey Area Data: Version 22, Sep 10, 2025

Saline County, Arkansas

29—Tiak silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: m06q
Landscape: Coastal plains
Elevation: 70 to 570 feet
Mean annual precipitation: 44 to 61 inches
Mean annual air temperature: 49 to 74 degrees F
Frost-free period: 185 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Tiak and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tiak

Setting

Landscape: Coastal plains
Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and clayey marine deposits

Typical profile

A - 0 to 7 inches: silt loam
E - 7 to 9 inches: loam
Bt1 - 9 to 32 inches: clay
Bt2 - 32 to 72 inches: clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F133BY002TX - Seasonally Wet Upland

Hydric soil rating: No

Data Source Information

Soil Survey Area: Saline County, Arkansas
Survey Area Data: Version 22, Sep 10, 2025

NOAA Atlas 14 Data

NOAA Atlas 14, Volume 9, Version 2
Location name: Bryant, Arkansas, USA*
Latitude: 34.6452°, Longitude: -92.5032°
Elevation: 527 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.452** (0.366-0.553)	**0.512** (0.414-0.627)	**0.607** (0.490-0.746)	**0.684** (0.549-0.844)	**0.786** (0.608-0.994)	**0.861** (0.652-1.11)	**0.934** (0.684-1.23)	**1.01** (0.707-1.36)	**1.10** (0.741-1.53)	**1.16** (0.768-1.66)
10-min	**0.661** (0.536-0.810)	**0.749** (0.607-0.918)	**0.889** (0.717-1.09)	**1.00** (0.803-1.24)	**1.15** (0.890-1.46)	**1.26** (0.955-1.62)	**1.37** (1.00-1.80)	**1.47** (1.04-2.00)	**1.60** (1.09-2.24)	**1.70** (1.12-2.42)
15-min	**0.806** (0.654-0.988)	**0.914** (0.740-1.12)	**1.08** (0.875-1.33)	**1.22** (0.980-1.51)	**1.40** (1.08-1.77)	**1.54** (1.16-1.98)	**1.67** (1.22-2.20)	**1.80** (1.26-2.44)	**1.96** (1.32-2.73)	**2.07** (1.37-2.96)
30-min	**1.20** (0.972-1.47)	**1.36** (1.10-1.67)	**1.62** (1.31-2.00)	**1.83** (1.47-2.26)	**2.11** (1.63-2.66)	**2.31** (1.75-2.96)	**2.50** (1.83-3.30)	**2.69** (1.89-3.65)	**2.93** (1.98-4.09)	**3.10** (2.05-4.42)
60-min	**1.60** (1.30-1.96)	**1.82** (1.47-2.23)	**2.16** (1.74-2.65)	**2.44** (1.95-3.00)	**2.81** (2.17-3.56)	**3.09** (2.34-3.97)	**3.36** (2.46-4.44)	**3.63** (2.56-4.93)	**3.98** (2.70-5.57)	**4.24** (2.80-6.05)
2-hr	**2.01** (1.64-2.44)	**2.27** (1.85-2.76)	**2.69** (2.19-3.28)	**3.04** (2.46-3.72)	**3.51** (2.74-4.42)	**3.87** (2.95-4.95)	**4.22** (3.12-5.54)	**4.58** (3.24-6.18)	**5.04** (3.44-7.00)	**5.38** (3.58-7.62)
3-hr	**2.26** (1.86-2.74)	**2.55** (2.09-3.09)	**3.03** (2.48-3.68)	**3.43** (2.79-4.19)	**3.99** (3.13-5.01)	**4.42** (3.39-5.64)	**4.85** (3.60-6.35)	**5.29** (3.77-7.13)	**5.88** (4.03-8.15)	**6.33** (4.22-8.93)
6-hr	**2.71** (2.24-3.26)	**3.08** (2.55-3.70)	**3.70** (3.05-4.46)	**4.24** (3.47-5.13)	**5.00** (3.97-6.27)	**5.61** (4.35-7.14)	**6.23** (4.67-8.14)	**6.89** (4.95-9.24)	**7.78** (5.37-10.7)	**8.47** (5.69-11.9)
12-hr	**3.20** (2.67-3.81)	**3.68** (3.07-4.40)	**4.52** (3.75-5.40)	**5.25** (4.33-6.30)	**6.30** (5.05-7.87)	**7.15** (5.59-9.06)	**8.04** (6.07-10.5)	**8.98** (6.50-12.0)	**10.3** (7.16-14.1)	**11.3** (7.65-15.8)
24-hr	**3.75** (3.15-4.44)	**4.35** (3.66-5.15)	**5.39** (4.51-6.40)	**6.30** (5.25-7.52)	**7.64** (6.18-9.50)	**8.74** (6.89-11.0)	**9.89** (7.53-12.8)	**11.1** (8.11-14.8)	**12.8** (8.99-17.5)	**14.2** (9.65-19.6)
2-day	**4.40** (3.73-5.16)	**5.07** (4.30-5.96)	**6.24** (5.27-7.35)	**7.28** (6.11-8.62)	**8.81** (7.18-10.9)	**10.1** (8.00-12.6)	**11.4** (8.73-14.6)	**12.8** (9.40-16.9)	**14.7** (10.4-20.0)	**16.3** (11.2-22.4)
3-day	**4.81** (4.10-5.62)	**5.54** (4.71-6.47)	**6.78** (5.75-7.95)	**7.87** (6.64-9.27)	**9.46** (7.75-11.6)	**10.8** (8.59-13.4)	**12.1** (9.33-15.5)	**13.6** (10.0-17.8)	**15.6** (11.0-21.0)	**17.2** (11.8-23.5)
4-day	**5.14** (4.39-5.98)	**5.90** (5.04-6.87)	**7.20** (6.12-8.41)	**8.33** (7.04-9.78)	**9.97** (8.18-12.2)	**11.3** (9.03-14.0)	**12.7** (9.78-16.1)	**14.1** (10.4-18.5)	**16.1** (11.5-21.7)	**17.7** (12.2-24.2)
7-day	**5.96** (5.13-6.89)	**6.79** (5.84-7.86)	**8.20** (7.02-9.52)	**9.41** (8.01-11.0)	**11.1** (9.18-13.5)	**12.5** (10.1-15.4)	**13.9** (10.8-17.6)	**15.4** (11.5-20.0)	**17.5** (12.5-23.4)	**19.1** (13.2-25.9)
10-day	**6.74** (5.82-7.76)	**7.61** (6.57-8.77)	**9.07** (7.80-10.5)	**10.3** (8.82-12.0)	**12.1** (9.99-14.5)	**13.5** (10.9-16.5)	**14.9** (11.6-18.7)	**16.4** (12.2-21.2)	**18.4** (13.2-24.5)	**20.0** (13.9-27.0)
20-day	**9.13** (7.96-10.4)	**10.1** (8.78-11.5)	**11.6** (10.1-13.4)	**12.9** (11.2-14.9)	**14.8** (12.3-17.5)	**16.2** (13.1-19.5)	**17.6** (13.8-21.8)	**19.0** (14.3-24.3)	**20.9** (15.1-27.6)	**22.4** (15.7-30.1)
30-day	**11.1** (9.71-12.6)	**12.2** (10.7-13.9)	**14.0** (12.2-15.9)	**15.4** (13.4-17.7)	**17.4** (14.6-20.6)	**18.9** (15.5-22.7)	**20.4** (16.1-25.2)	**21.9** (16.5-27.9)	**23.9** (17.3-31.3)	**25.4** (17.8-33.9)
45-day	**13.4** (11.8-15.2)	**14.9** (13.1-16.8)	**17.1** (15.0-19.5)	**18.9** (16.5-21.6)	**21.4** (17.9-25.1)	**23.2** (19.0-27.7)	**25.0** (19.7-30.6)	**26.7** (20.2-33.7)	**28.9** (20.9-37.7)	**30.5** (21.5-40.6)
60-day	**15.3** (13.6-17.3)	**17.1** (15.1-19.3)	**20.0** (17.5-22.6)	**22.2** (19.4-25.3)	**25.2** (21.2-29.4)	**27.4** (22.5-32.5)	**29.5** (23.3-36.0)	**31.5** (23.9-39.7)	**34.1** (24.8-44.2)	**35.9** (25.4-47.7)

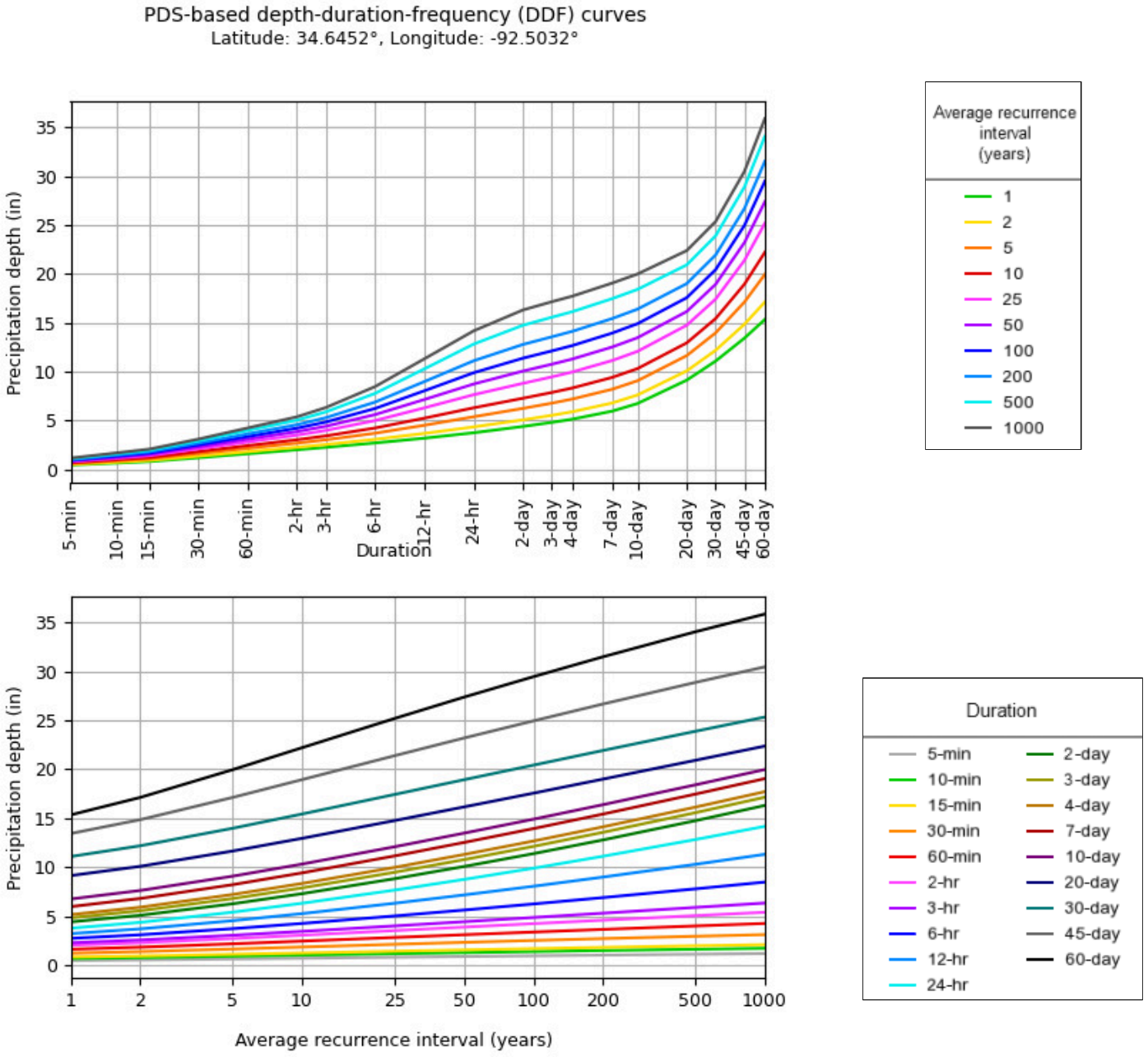
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



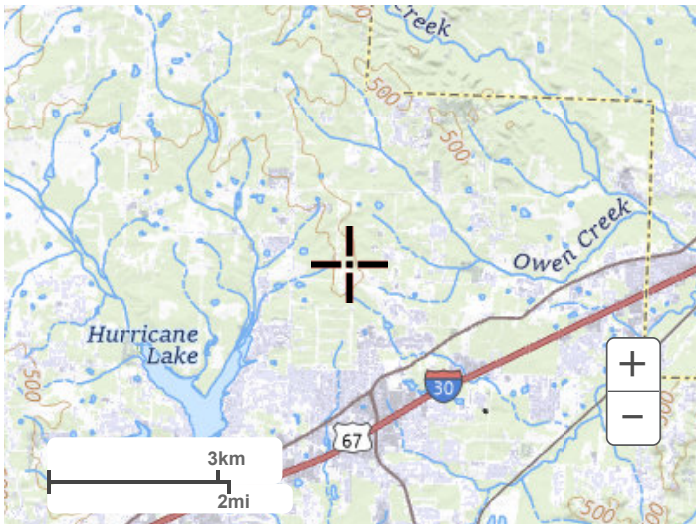
NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Tue Mar 3 15:12:54 2026

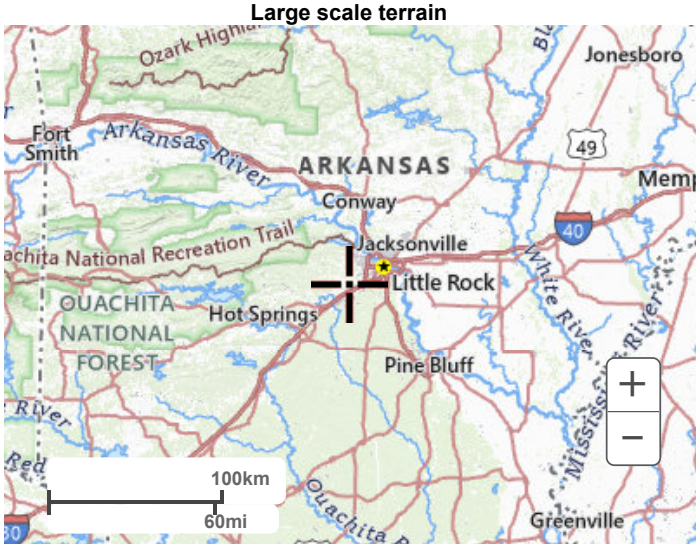
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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

NOAA Atlas 14, Volume 9, Version 2
Location name: Bryant, Arkansas, USA*
Latitude: 34.6452°, Longitude: -92.5032°
Elevation: 527 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**5.42** (4.39-6.64)	**6.14** (4.97-7.52)	**7.28** (5.88-8.95)	**8.21** (6.59-10.1)	**9.43** (7.30-11.9)	**10.3** (7.82-13.3)	**11.2** (8.21-14.8)	**12.1** (8.48-16.4)	**13.2** (8.89-18.4)	**13.9** (9.22-19.9)
10-min	**3.97** (3.22-4.86)	**4.49** (3.64-5.51)	**5.33** (4.30-6.55)	**6.01** (4.82-7.42)	**6.90** (5.34-8.73)	**7.57** (5.73-9.73)	**8.21** (6.01-10.8)	**8.84** (6.21-12.0)	**9.63** (6.52-13.4)	**10.2** (6.74-14.6)
15-min	**3.22** (2.62-3.95)	**3.66** (2.96-4.48)	**4.34** (3.50-5.33)	**4.88** (3.92-6.03)	**5.61** (4.34-7.10)	**6.15** (4.66-7.91)	**6.67** (4.88-8.80)	**7.18** (5.05-9.74)	**7.83** (5.30-10.9)	**8.30** (5.48-11.8)
30-min	**2.40** (1.94-2.94)	**2.73** (2.21-3.34)	**3.25** (2.62-3.99)	**3.66** (2.94-4.52)	**4.21** (3.25-5.32)	**4.62** (3.49-5.93)	**5.01** (3.66-6.59)	**5.38** (3.78-7.30)	**5.86** (3.96-8.17)	**6.20** (4.10-8.84)
60-min	**1.60** (1.30-1.96)	**1.82** (1.47-2.23)	**2.16** (1.74-2.65)	**2.44** (1.95-3.00)	**2.81** (2.17-3.56)	**3.09** (2.34-3.97)	**3.36** (2.46-4.44)	**3.63** (2.56-4.93)	**3.98** (2.70-5.57)	**4.24** (2.80-6.05)
2-hr	**1.00** (0.820-1.22)	**1.13** (0.926-1.38)	**1.35** (1.09-1.64)	**1.52** (1.23-1.86)	**1.75** (1.37-2.21)	**1.93** (1.48-2.47)	**2.11** (1.56-2.77)	**2.29** (1.62-3.09)	**2.52** (1.72-3.50)	**2.69** (1.79-3.81)
3-hr	**0.752** (0.618-0.910)	**0.849** (0.696-1.03)	**1.01** (0.824-1.22)	**1.14** (0.928-1.39)	**1.33** (1.04-1.67)	**1.47** (1.13-1.88)	**1.62** (1.20-2.12)	**1.76** (1.26-2.37)	**1.96** (1.34-2.72)	**2.11** (1.41-2.97)
6-hr	**0.452** (0.374-0.543)	**0.514** (0.425-0.618)	**0.618** (0.509-0.745)	**0.708** (0.579-0.857)	**0.835** (0.663-1.05)	**0.936** (0.726-1.19)	**1.04** (0.779-1.36)	**1.15** (0.825-1.54)	**1.30** (0.896-1.79)	**1.41** (0.950-1.98)
12-hr	**0.265** (0.221-0.316)	**0.305** (0.254-0.364)	**0.375** (0.311-0.448)	**0.435** (0.359-0.523)	**0.522** (0.419-0.653)	**0.593** (0.464-0.752)	**0.667** (0.504-0.867)	**0.745** (0.539-0.996)	**0.853** (0.594-1.17)	**0.938** (0.635-1.31)
24-hr	**0.156** (0.131-0.184)	**0.181** (0.152-0.214)	**0.224** (0.187-0.266)	**0.262** (0.218-0.313)	**0.318** (0.257-0.395)	**0.364** (0.287-0.458)	**0.412** (0.313-0.532)	**0.463** (0.337-0.615)	**0.534** (0.374-0.730)	**0.590** (0.402-0.817)
2-day	**0.091** (0.077-0.107)	**0.105** (0.089-0.124)	**0.130** (0.109-0.153)	**0.151** (0.127-0.179)	**0.183** (0.149-0.226)	**0.209** (0.166-0.262)	**0.237** (0.181-0.304)	**0.266** (0.195-0.351)	**0.307** (0.216-0.417)	**0.339** (0.232-0.466)
3-day	**0.066** (0.056-0.078)	**0.076** (0.065-0.089)	**0.094** (0.079-0.110)	**0.109** (0.092-0.128)	**0.131** (0.107-0.161)	**0.149** (0.119-0.185)	**0.168** (0.129-0.214)	**0.188** (0.138-0.247)	**0.216** (0.153-0.292)	**0.238** (0.163-0.326)
4-day	**0.053** (0.045-0.062)	**0.061** (0.052-0.071)	**0.074** (0.063-0.087)	**0.086** (0.073-0.101)	**0.103** (0.085-0.126)	**0.117** (0.094-0.145)	**0.131** (0.101-0.167)	**0.147** (0.108-0.192)	**0.168** (0.119-0.226)	**0.184** (0.127-0.251)
7-day	**0.035** (0.030-0.041)	**0.040** (0.034-0.046)	**0.048** (0.041-0.056)	**0.056** (0.047-0.065)	**0.066** (0.054-0.080)	**0.074** (0.059-0.091)	**0.082** (0.064-0.104)	**0.091** (0.068-0.119)	**0.103** (0.074-0.139)	**0.113** (0.078-0.153)
10-day	**0.028** (0.024-0.032)	**0.031** (0.027-0.036)	**0.037** (0.032-0.043)	**0.042** (0.036-0.049)	**0.050** (0.041-0.060)	**0.056** (0.045-0.068)	**0.062** (0.048-0.077)	**0.068** (0.050-0.088)	**0.076** (0.054-0.102)	**0.083** (0.057-0.112)
20-day	**0.019** (0.016-0.021)	**0.021** (0.018-0.024)	**0.024** (0.021-0.027)	**0.026** (0.023-0.031)	**0.030** (0.025-0.036)	**0.033** (0.027-0.040)	**0.036** (0.028-0.045)	**0.039** (0.029-0.050)	**0.043** (0.031-0.057)	**0.046** (0.032-0.062)
30-day	**0.015** (0.013-0.017)	**0.016** (0.014-0.019)	**0.019** (0.016-0.022)	**0.021** (0.018-0.024)	**0.024** (0.020-0.028)	**0.026** (0.021-0.031)	**0.028** (0.022-0.034)	**0.030** (0.022-0.038)	**0.033** (0.023-0.043)	**0.035** (0.024-0.047)
45-day	**0.012** (0.010-0.014)	**0.013** (0.012-0.015)	**0.015** (0.013-0.018)	**0.017** (0.015-0.020)	**0.019** (0.016-0.023)	**0.021** (0.017-0.025)	**0.023** (0.018-0.028)	**0.024** (0.018-0.031)	**0.026** (0.019-0.034)	**0.028** (0.019-0.037)
60-day	**0.010** (0.009-0.012)	**0.011** (0.010-0.013)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.017** (0.014-0.020)	**0.019** (0.015-0.022)	**0.020** (0.016-0.024)	**0.021** (0.016-0.027)	**0.023** (0.017-0.030)	**0.024** (0.017-0.033)

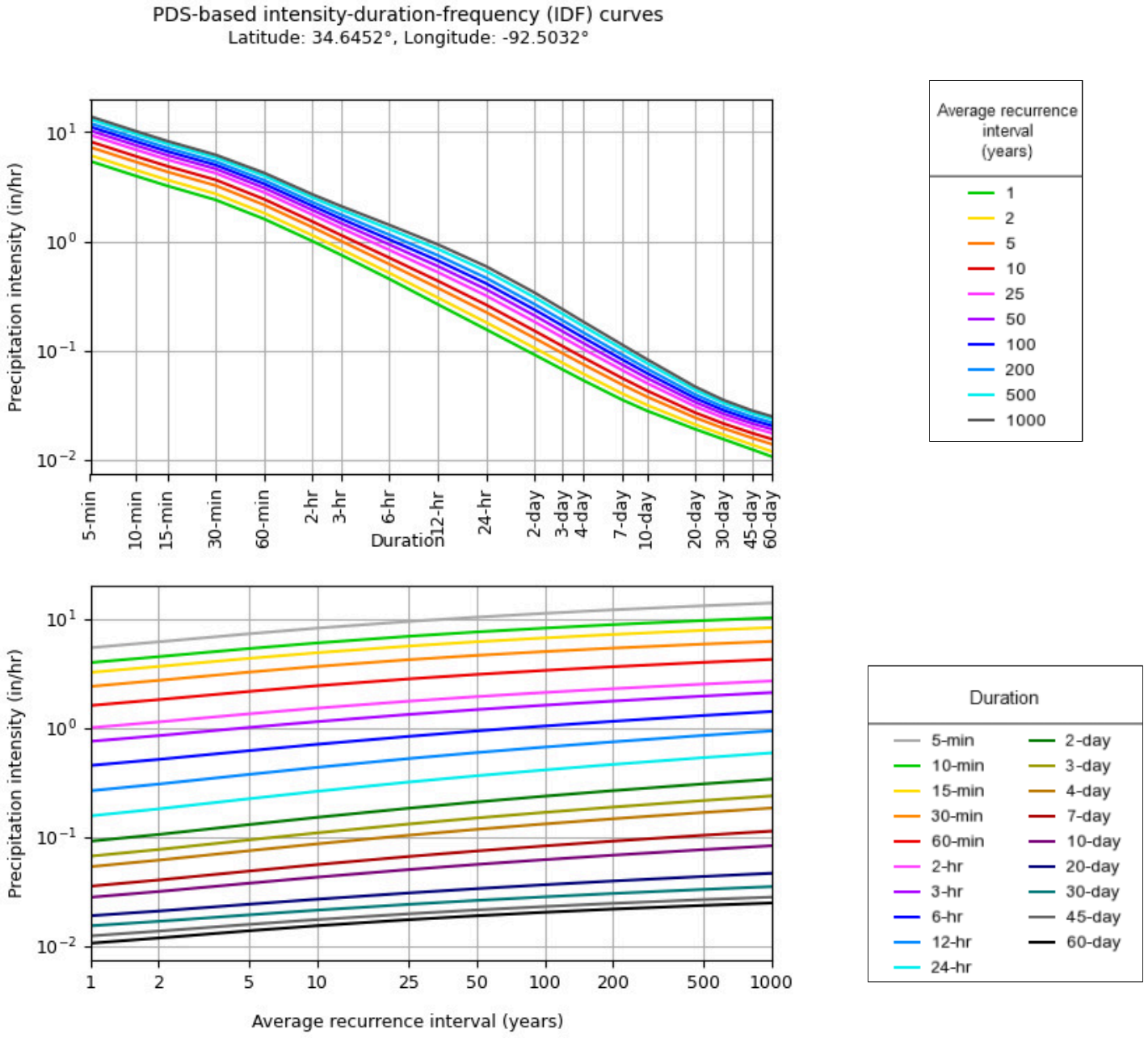
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



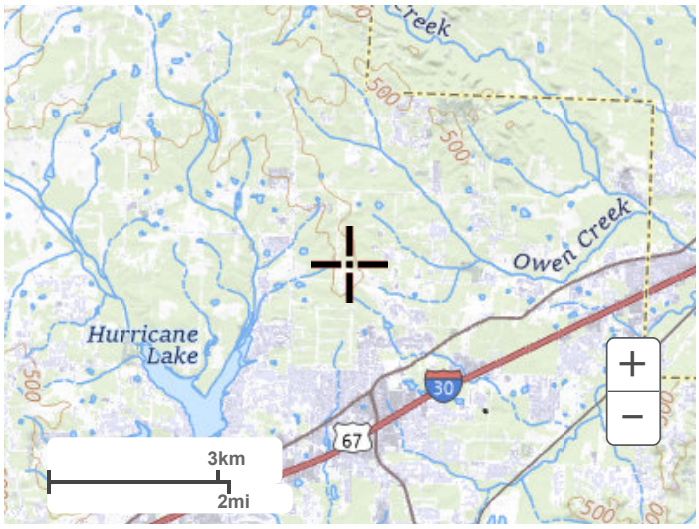
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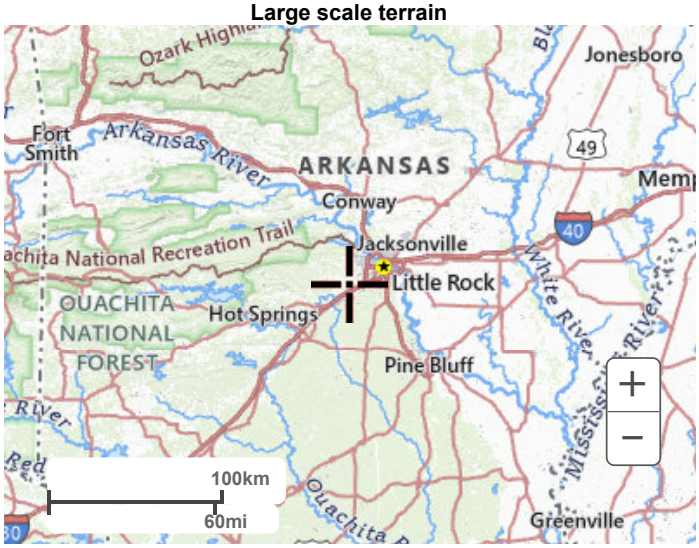
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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



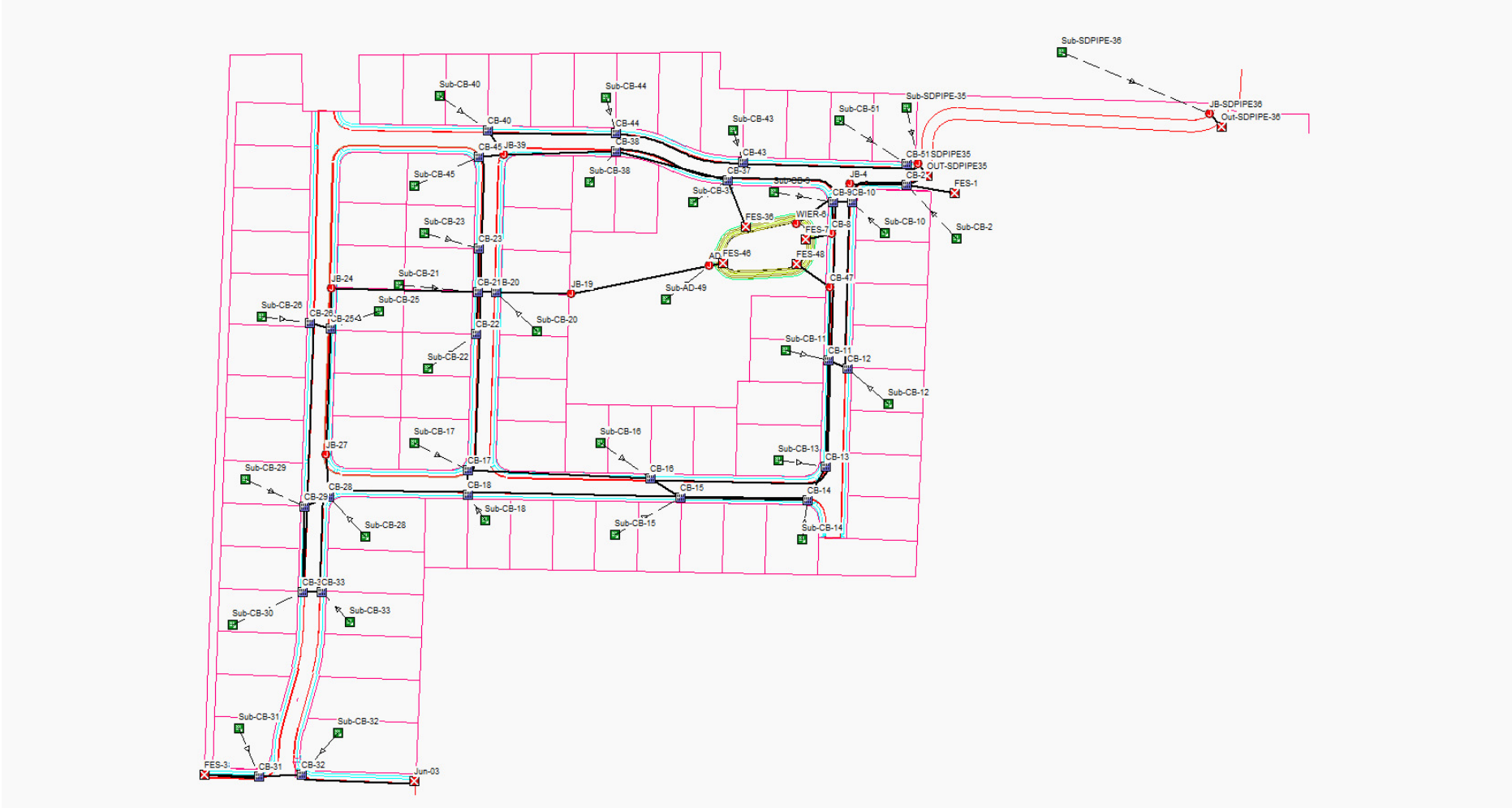
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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Site Drainage Basin Maps

SSA Design Layout



Autodesk Storm and Sanitary Analysis

Storm System Design (SSA)

2 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	2 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	1.27	0.89	4.06	9.26	0 00:26:24
2	Sub-CB-10	0.54	0.7000	0.90	0.63	0.34	1.42	0 00:14:15
3	Sub-CB-11	0.44	0.7000	0.75	0.52	0.23	1.36	0 00:10:06
4	Sub-CB-12	0.70	0.7000	0.95	0.67	0.47	1.75	0 00:15:59
5	Sub-CB-13	0.37	0.7000	0.75	0.52	0.19	1.14	0 00:10:09
6	Sub-CB-14	0.87	0.7000	0.81	0.57	0.49	2.47	0 00:12:04
7	Sub-CB-15	1.24	0.7000	0.93	0.65	0.80	3.15	0 00:15:19
8	Sub-CB-16	0.30	0.7000	0.71	0.50	0.15	0.96	0 00:09:21
9	Sub-CB-17	0.25	0.7000	0.68	0.48	0.12	0.84	0 00:08:26
10	Sub-CB-18	0.76	0.7000	0.90	0.63	0.48	1.96	0 00:14:44
11	Sub-CB-2	0.15	0.7000	0.60	0.42	0.06	0.56	0 00:06:39
12	Sub-CB-20	0.61	0.7000	0.73	0.51	0.31	1.93	0 00:09:37
13	Sub-CB-21	0.81	0.7000	0.98	0.68	0.55	1.97	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.05	0.74	0.91	2.84	0 00:19:13
15	Sub-CB-23	0.85	0.7000	0.96	0.67	0.57	2.11	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.58	0.41	0.27	2.55	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.51	0.36	0.15	1.76	0 00:05:00
18	Sub-CB-28	0.35	0.7000	0.90	0.63	0.22	0.92	0 00:14:16
19	Sub-CB-29	0.32	0.7000	0.97	0.68	0.22	0.78	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.00	0.70	0.31	1.07	0 00:17:16
21	Sub-CB-31	0.28	0.5000	0.88	0.44	0.12	0.53	0 00:13:48
22	Sub-CB-32	0.24	0.7000	0.94	0.66	0.16	0.61	0 00:15:37
23	Sub-CB-33	0.45	0.7000	0.96	0.67	0.30	1.11	0 00:16:22
24	Sub-CB-37	0.27	0.7000	0.93	0.65	0.18	0.69	0 00:15:16
25	Sub-CB-38	0.38	0.7000	0.83	0.58	0.22	1.06	0 00:12:34
26	Sub-CB-40	0.63	0.7000	0.72	0.50	0.32	1.99	0 00:09:30
27	Sub-CB-43	0.57	0.7000	0.98	0.68	0.39	1.39	0 00:16:54
28	Sub-CB-44	0.48	0.7000	0.99	0.69	0.33	1.16	0 00:17:09
29	Sub-CB-45	0.24	0.7000	0.65	0.45	0.11	0.83	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.13	0.79	0.60	1.67	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.03	0.72	0.39	1.27	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	0.77	0.54	0.09	0.48	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	1.24	0.87	1.50	3.55	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	16.89	470.00	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	10.15	471.95	0.00	7.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	1.72	468.90	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	0.50	462.56	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	10.43	502.46	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	4.51	526.39	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	3.63	534.43	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	2.22	510.29	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	0.50	462.98	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	3.55	442.08	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.07	538.98	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					1.43	461.30		
15	FES-3	Outfall	538.50					0.98	538.87		
16	FES-36	Outfall	472.00					5.36	472.42		
17	FES-46	Outfall	468.25					16.89	469.31		
18	FES-48	Outfall	468.00					10.15	468.78		
19	FES-7	Outfall	468.00					1.72	468.34		
20	3-Jun	Outfall	0.00					0.00	0.00		
21	OUT-SDPIPE35	Outfall	462.25					0.47	462.40		
22	Out-SDPIPE-36	Outfall	441.00					3.55	441.65		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.00	15.32	0.00	0.00	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	0.50	8.57	0.06	2.99	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	0.28	28.73	0.01	3.67	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	1.43	29.29	0.05	4.43	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	0.47	15.97	0.03	3.56	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	0.98	5.54	0.18	2.38	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	10.15	18.85	0.54	9.62	0.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	8.07	20.80	0.39	10.34	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	7.45	24.08	0.31	10.58	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	4.77	20.87	0.23	9.29	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	2.82	13.13	0.21	5.27	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	1.92	21.90	0.09	5.20	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	1.62	16.13	0.10	5.56	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	10.43	32.04	0.33	10.08	0.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	10.12	30.19	0.34	6.83	0.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	2.53	15.88	0.16	3.19	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	2.10	13.09	0.16	2.60	0.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	4.51	29.75	0.15	6.59	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	4.51	13.61	0.33	7.36	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	0.76	34.17	0.02	2.37	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	3.62	20.19	0.18	6.15	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	3.63	21.21	0.17	8.15	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.61	14.89	0.04	4.01	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	2.88	11.09	0.26	4.98	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	1.30	11.38	0.11	3.90	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	1.08	22.32	0.05	5.17	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	0.81	15.45	0.05	4.33	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.00	5.85	0.00	0.00	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.00	5.59	0.00	0.00	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	0.34	7.51	0.04	0.80	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	0.93	4.19	0.22	0.66	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.00	9.68	0.00	0.00	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	0.34	7.90	0.04	0.34	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.00	9.88	0.00	0.12	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	0.30	2.67	0.11	0.25	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.00	3.74	0.00	0.02	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.01	6.78	0.00	1.32	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	0.42	8.96	0.05	3.61	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.08	8.97	0.01	0.94	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.02	8.96	0.00	1.21	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.01	8.87	0.00	0.01	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.15	8.97	0.02	1.36	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.01	5.53	0.00	0.97	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.16	7.81	0.02	0.48	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.00	4.97	0.00	0.00	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.00	8.95	0.00	0.02	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	1.66	N/A	N/A	N/A	8.50	6.6
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	1.36	1.20	0.16	88.32	8.50	4.5
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	1.75	1.42	0.33	80.95	8.50	4.9
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.14	1.14	0.00	100.00	8.50	5.4
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	2.92	N/A	N/A	N/A	8.50	7.3
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	3.45	2.28	1.17	66.00	8.50	6.9
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	0.96	0.95	0.01	99.37	8.50	4.3
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	0.84	0.84	0.00	100.00	8.50	4.1
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	1.96	1.63	0.34	82.82	8.50	5.6
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.56	0.56	0.00	100.00	8.50	3.3
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	1.93	N/A	N/A	N/A	8.50	5.5
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	2.14	N/A	N/A	N/A	8.50	5.9
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	2.84	2.54	0.30	89.42	8.50	6.1
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	2.11	2.11	0.00	99.96	8.50	6.3
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	2.55	N/A	N/A	N/A	8.50	6.7
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	1.76	N/A	N/A	N/A	8.50	5.2
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	0.92	0.92	0.00	100.00	8.50	4.7
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	0.78	0.78	0.00	100.00	8.50	4.4
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.07	1.07	0.00	100.00	8.50	5.0
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.53	0.53	0.00	100.00	8.50	3.8
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	0.61	0.61	0.00	100.00	8.50	4.0
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.11	1.11	0.00	99.93	8.50	5.0
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	0.71	0.71	0.00	100.00	8.50	3.6
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.06	1.02	0.04	96.00	8.50	4.2
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	1.99	1.57	0.42	79.01	8.50	5.3
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	1.46	1.29	0.17	88.10	8.50	4.7
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	1.17	1.10	0.07	93.77	8.50	4.4
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	0.83	0.83	0.00	99.59	8.50	3.8

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	16.89	9.26	470.00	1.50	0.00	2.65	468.56	0.06	0 00:19	
2	CB-47	10.15	0.00	471.95	0.95	0.00	7.37	471.03	0.03	0 00:14	
3	CB-8	1.72	0.00	468.90	0.40	0.00	5.82	468.52	0.02	0 00:22	
4	JB	0.50	0.00	462.56	0.26	0.00	5.74	462.31	0.01	0 00:11	
5	JB-19	10.43	0.00	502.46	0.46	0.00	6.81	502.02	0.02	0 00:17	
6	JB-24	4.51	0.00	526.39	0.39	0.00	9.40	526.01	0.01	0 00:07	
7	JB-27	3.63	0.00	534.43	0.43	0.00	5.37	534.01	0.01	0 00:17	
8	JB-39	2.22	0.00	510.29	0.29	0.00	11.43	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	0.50	0.48	462.98	0.23	0.00	1.27	462.76	0.01	0 00:10	
11	JB-SDPIPE36	3.55	3.55	442.08	0.78	0.00	0.72	441.33	0.03	0 00:25	
12	8-Jun	1.07	0.00	538.98	0.48	0.00	5.52	538.52	0.02	0 00:17	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froud Numb
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.00	0 00:18	5.85	0.00	0.00		0.00	0.01	0.00	
2	Link-02	0.00	0 00:00	5.59	0.00	0.00		0.05	0.15	0.00	
3	Link-03	0.34	0 00:14	7.51	0.04	0.80	6.32	0.14	0.42	0.00	
4	Link-04	0.93	0 00:15	4.19	0.22	0.66	7.63	0.26	0.78	0.00	
5	Link-06	0.00	0 00:11	9.68	0.00	0.00		0.04	0.11	0.00	
6	Link-07	0.34	0 00:16	7.90	0.04	0.34	14.48	0.21	0.65	0.00	
7	Link-09	0.00	0 00:11	9.88	0.00	0.12	24.01	0.07	0.22	0.00	
8	Link-10	0.30	0 00:19	2.67	0.11	0.25	10.46	0.24	0.72	0.00	
9	Link-11	0.00	0 00:17	3.74	0.00	0.02	67.13	0.17	0.51	0.00	
10	Link-12	0.01	0 00:09	6.78	0.00	1.32	2.17	0.02	0.05	0.00	
11	Link-13	0.42	0 00:09	8.96	0.05	3.61	1.06	0.07	0.22	0.00	
12	Link-14	0.08	0 00:17	8.97	0.01	0.94	4.19	0.06	0.18	0.00	
13	Link-15	0.02	0 00:16	8.96	0.00	1.21	2.87	0.03	0.08	0.00	
14	Link-16	0.01	0 00:17	8.87	0.00	0.01	364.33	0.17	0.52	0.00	
15	Link-17	0.15	0 00:17	8.97	0.02	1.36	3.57	0.07	0.22	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.00	0.00	0.00	
17	Link-19	0.01	0 00:17	5.53	0.00	0.97	3.03	0.01	0.05	0.00	
18	Link-20	0.16	0 00:10	7.81	0.02	0.48	9.80	0.17	0.52	0.00	
19	Link-24	0.00	0 00:00	4.97	0.00	0.00		0.16	0.49	0.00	
20	Link-28	0.00	0 00:00	52.65	0.00	0.00		0.00	0.00	0.00	
21	Link-38	0.00	0 00:06	8.95	0.00	0.02	37.27	0.13	0.40	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.00	0 00:13	15.32	0.00	0.00		0.01	0.00	0
2	Link-08	0.50	0 00:11	8.57	0.06	2.99	0.17	0.24	0.19	0
3	Link-30	0.28	0 00:21	28.73	0.01	3.67	0.14	0.13	0.09	0
4	Link-33	1.43	0 00:22	29.29	0.05	4.43	0.13	0.32	0.16	0
5	Link-37	0.47	0 00:11	15.97	0.03	3.56	0.00	0.20	0.16	0
6	Link-39	0.98	0 00:17	5.54	0.18	2.38	0.00	0.42	0.28	0
7	L-SDPIPE-8	10.15	0 00:14	18.85	0.54	9.62	0.12	0.86	0.58	0
8	SDPIPE-10	8.07	0 00:14	20.80	0.39	10.34	0.30	0.68	0.45	0
9	SDPIPE-11	7.45	0 00:15	24.08	0.31	10.58	0.10	0.63	0.42	0
10	SDPIPE-12	4.77	0 00:15	20.87	0.23	9.29	0.53	0.50	0.33	0
11	SDPIPE-13	2.82	0 00:10	13.13	0.21	5.27	0.20	0.52	0.34	0
12	SDPIPE-14	1.92	0 00:11	21.90	0.09	5.20	1.03	0.42	0.28	0
13	SDPIPE-15	1.62	0 00:14	16.13	0.10	5.56	0.13	0.33	0.22	0
14	SDPIPE-16	10.43	0 00:17	32.04	0.33	10.08	0.22	0.73	0.36	0
15	SDPIPE-17	10.12	0 00:18	30.19	0.34	6.83	0.08	0.96	0.48	0
16	SDPIPE-18	2.53	0 00:19	15.88	0.16	3.19	0.40	0.76	0.50	0
17	SDPIPE-19	2.10	0 00:16	13.09	0.16	2.60	0.48	0.75	0.50	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.17	0.08	0
19	SDPIPE-20	4.51	0 00:07	29.75	0.15	6.59	0.65	0.74	0.49	0
20	SDPIPE-21	4.51	0 00:07	13.61	0.33	7.36	0.16	0.57	0.38	0
21	SDPIPE-22	0.76	0 00:08	34.17	0.02	2.37	0.23	0.45	0.30	0
22	SDPIPE-23	3.62	0 00:17	20.19	0.18	6.15	0.60	0.55	0.37	0
23	SDPIPE-24	3.63	0 00:17	21.21	0.17	8.15	0.15	0.45	0.30	0
24	SDPIPE-25	0.61	0 00:15	14.89	0.04	4.01	0.31	0.21	0.14	0
25	SDPIPE-25 (1)	2.88	0 00:17	11.09	0.26	4.98	0.15	0.54	0.36	0
26	SDPIPE-25 (12)	1.30	0 00:17	11.38	0.11	3.90	0.18	0.37	0.24	0
27	SDPIPE-25 (13)	1.08	0 00:17	22.32	0.05	5.17	0.11	0.33	0.22	0
28	SDPIPE-25 (14)	0.81	0 00:08	15.45	0.05	4.33	0.18	0.24	0.16	0
29	SDPIPE-25 (15)	10.43	0 00:17	89.94	0.12	7.36	0.56	0.98	0.49	0
30	SDPIPE-25 (15) (1)	16.89	0 00:19	45.15	0.37	6.68	0.06	1.28	0.51	0
31	SDPIPE-25 (17)	1.44	0 00:21	10.50	0.14	3.97	0.14	0.39	0.26	0
32	SDPIPE-25 (2)	2.11	0 00:17	22.74	0.09	4.56	0.55	0.46	0.31	0
33	SDPIPE-25 (3)	1.09	0 00:16	12.88	0.08	3.91	0.14	0.32	0.22	0
34	SDPIPE-25 (6)	5.36	0 00:10	31.10	0.17	12.09	0.12	0.45	0.30	0
35	SDPIPE-25 (7)	4.07	0 00:10	24.71	0.16	9.96	0.34	0.42	0.28	0
36	SDPIPE-25 (8)	2.22	0 00:09	28.14	0.08	9.27	0.35	0.29	0.19	0
37	SDPIPE-25 (9)	1.56	0 00:09	14.64	0.11	4.97	0.17	0.35	0.23	0
38	SDPIPE-32	1.07	0 00:15	26.26	0.04	4.43	0.36	0.34	0.23	0
39	SDPIPE-36	3.55	0 00:25	9.10	0.39	4.26	0.12	0.72	0.48	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	1.72	0 00:22	27.02	0.06	4.28	0.16	0.37	0.19	0
42	SDPIPE-6	1.72	0 00:22	25.54	0.07	3.87	0.24	0.40	0.20	0
43	SDPIPE-7	1.00	0 00:20	22.70	0.04	2.60	0.21	0.36	0.18	0
44	SDPIPE-8 (1)	10.15	0 00:14	31.86	0.32	11.14	0.19	0.77	0.51	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	1.66	1.42	N/A	N/A	N/A	6.66	474.33	0.34	0 00:20	0
2	CB-11	1.36	1.36	1.20	0.16	88.32	4.50	490.80	0.11	0 00:14	0
3	CB-12	1.75	1.75	1.42	0.33	80.95	4.96	492.01	0.12	0 00:16	0
4	CB-13	1.14	1.14	1.14	0.00	100.00	5.48	508.33	0.13	0 00:14	0
5	CB-14	2.92	2.47	N/A	N/A	N/A	7.38	513.61	0.35	0 00:15	0
6	CB-15	3.45	3.15	2.28	1.17	66.00	6.95	518.56	0.17	0 00:14	0
7	CB-16	0.96	0.96	0.95	0.01	99.37	4.32	519.80	0.10	0 00:09	0
8	CB-17	0.84	0.84	0.84	0.00	100.00	4.13	533.42	0.10	0 00:11	0
9	CB-18	1.96	1.96	1.63	0.34	82.82	5.64	535.13	0.14	0 00:14	0
10	CB-2	0.56	0.56	0.56	0.00	100.00	3.38	465.85	0.08	0 00:22	0
11	CB-20	1.93	1.93	N/A	N/A	N/A	5.59	516.20	0.31	0 00:17	0
12	CB-21	2.14	1.97	N/A	N/A	N/A	5.99	516.21	0.32	0 00:18	0
13	CB-22	2.84	2.84	2.54	0.30	89.42	6.12	517.12	0.15	0 00:19	0
14	CB-23	2.11	2.11	2.11	0.00	99.96	6.31	517.13	0.15	0 00:16	0
15	CB-25	2.55	2.55	N/A	N/A	N/A	6.73	535.63	0.34	0 00:07	0
16	CB-26	1.76	1.76	N/A	N/A	N/A	5.26	535.59	0.30	0 00:08	0
17	CB-28	0.92	0.92	0.92	0.00	100.00	4.72	542.77	0.11	0 00:17	0
18	CB-29	0.78	0.78	0.78	0.00	100.00	4.45	542.97	0.11	0 00:17	0
19	CB-30	1.07	1.07	1.07	0.00	100.00	5.00	548.03	0.12	0 00:17	0
20	CB-31	0.53	0.53	0.53	0.00	100.00	3.82	549.46	0.09	0 00:15	0
21	CB-32	0.61	0.61	0.61	0.00	100.00	4.03	549.97	0.10	0 00:15	0
22	CB-33	1.11	1.11	1.11	0.00	99.93	5.05	548.00	0.12	0 00:16	0
23	CB-37	0.71	0.69	0.71	0.00	100.00	3.67	490.78	0.09	0 00:10	0
24	CB-38	1.06	1.06	1.02	0.04	96.00	4.24	506.97	0.10	0 00:10	0
25	CB-40	1.99	1.99	1.57	0.42	79.01	5.35	524.93	0.13	0 00:09	0
26	CB-43	1.46	1.39	1.29	0.17	88.10	4.77	488.69	0.12	0 00:17	0
27	CB-44	1.17	1.16	1.10	0.07	93.77	4.41	507.11	0.11	0 00:17	0
28	CB-45	0.83	0.83	0.83	0.00	99.59	3.89	524.74	0.09	0 00:08	0
29	CB-51	1.70	1.67	1.43	0.28	83.77	5.06	465.94	0.12	0 00:21	0
30	CB-9	1.28	1.27	N/A	N/A	N/A	5.82	474.31	0.31	0 00:21	0

10 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	1.69	1.19	5.44	12.40	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.19	0.84	0.45	1.89	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.00	0.70	0.31	1.81	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.27	0.89	0.62	2.33	0 00:15:59
5	Sub-CB-13	0.37	0.7000	0.99	0.70	0.26	1.52	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.08	0.76	0.66	3.29	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.24	0.87	1.07	4.20	0 00:15:19
8	Sub-CB-16	0.30	0.7000	0.95	0.66	0.20	1.28	0 00:09:21
9	Sub-CB-17	0.25	0.7000	0.91	0.64	0.16	1.12	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.20	0.84	0.64	2.62	0 00:14:44
11	Sub-CB-2	0.15	0.7000	0.80	0.56	0.08	0.75	0 00:06:39
12	Sub-CB-20	0.61	0.7000	0.97	0.68	0.41	2.57	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.30	0.91	0.74	2.63	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.41	0.98	1.21	3.79	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.28	0.89	0.76	2.82	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.78	0.55	0.36	3.41	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.68	0.48	0.20	2.36	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.19	0.84	0.29	1.22	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.30	0.91	0.29	1.04	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.33	0.93	0.41	1.43	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.17	0.59	0.16	0.71	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.25	0.88	0.21	0.82	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.28	0.90	0.40	1.48	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.24	0.87	0.24	0.92	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.11	0.77	0.29	1.41	0 00:12:34
26	Sub-CB-40	0.63	0.7000	0.96	0.67	0.42	2.66	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.30	0.91	0.52	1.85	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.32	0.92	0.44	1.55	0 00:17:09
29	Sub-CB-45	0.24	0.7000	0.87	0.61	0.15	1.11	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.51	1.06	0.80	2.23	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.37	0.96	0.52	1.70	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.02	0.72	0.11	0.64	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	1.66	1.16	2.01	4.75	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	22.70	470.31	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	13.61	472.20	0.00	7.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	2.83	469.03	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	0.74	462.64	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	14.11	502.54	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	5.96	526.45	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	4.82	534.50	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	2.74	510.33	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	0.74	463.03	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	4.75	442.25	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.43	539.06	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					1.82	461.34		
15	FES-3	Outfall	538.50					1.33	538.93		
16	FES-36	Outfall	472.00					7.04	472.49		
17	FES-46	Outfall	468.25					22.69	469.50		
18	FES-48	Outfall	468.00					13.61	468.94		
19	FES-7	Outfall	468.00					2.83	468.44		
20	3-Jun	Outfall	0.00					0.00	0.00		
21	OUT-SDPIPE35	Outfall	462.25					0.72	462.43		
22	Out-SDPIPE-36	Outfall	441.00					4.75	441.77		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.01	15.32	0.00	2.00	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	0.74	8.57	0.09	3.26	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	0.62	28.73	0.02	4.44	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	1.82	29.29	0.06	4.69	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	0.72	15.97	0.05	3.96	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.33	5.54	0.24	2.60	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	13.61	18.85	0.72	10.05	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	11.00	20.80	0.53	11.06	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	10.06	24.08	0.42	11.23	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	6.05	20.87	0.29	9.88	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	3.59	13.13	0.27	5.55	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	2.44	21.90	0.11	5.46	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	1.95	16.13	0.12	5.81	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	14.11	32.04	0.44	10.66	0.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	13.66	30.19	0.45	7.31	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.06	15.88	0.19	3.42	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	2.70	13.09	0.21	2.81	0.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	5.95	29.75	0.20	7.01	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	5.96	13.61	0.44	7.80	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	0.93	34.17	0.03	2.34	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	4.82	20.19	0.24	6.51	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	4.82	21.21	0.23	8.71	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.81	14.89	0.05	4.34	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	3.77	11.09	0.34	5.24	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	1.69	11.38	0.15	4.17	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	1.62	22.32	0.07	5.56	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.04	15.45	0.07	4.60	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.04	5.85	0.01	1.60	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.01	5.59	0.00	0.24	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	0.67	7.51	0.09	1.01	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	1.61	4.19	0.38	0.97	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.00	9.68	0.00	0.42	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	0.65	7.90	0.08	0.58	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.01	9.88	0.00	0.53	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	0.71	2.67	0.27	0.48	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.10	3.74	0.03	0.11	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.05	6.78	0.01	1.91	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	0.78	8.96	0.09	3.74	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.21	8.97	0.02	1.28	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.12	8.96	0.01	2.05	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.02	8.87	0.00	0.03	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.35	8.97	0.04	1.54	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.06	5.53	0.01	1.13	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.36	7.81	0.05	0.66	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.00	4.97	0.00	0.00	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.01	8.95	0.00	0.05	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	2.39	N/A	N/A	N/A	8.50	2.(
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	1.81	1.45	0.36	79.91	8.50	5.(
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	2.33	1.69	0.65	72.27	8.50	5.5
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.53	1.50	0.03	98.04	8.50	6.1
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	4.25	N/A	N/A	N/A	8.50	9.4
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	4.81	2.73	2.09	56.69	8.50	7.9
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.28	1.21	0.07	94.33	8.50	4.8
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.12	1.09	0.03	97.12	8.50	4.5
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	2.63	1.94	0.68	74.03	8.50	6.3
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.75	0.75	0.00	100.00	8.50	3.7
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	2.57	N/A	N/A	N/A	8.50	6.7
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	3.22	N/A	N/A	N/A	8.50	7.8
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	3.79	3.07	0.72	80.96	8.50	6.8
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	2.82	2.71	0.11	96.23	8.50	6.9
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	3.41	N/A	N/A	N/A	8.50	8.1
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	2.35	N/A	N/A	N/A	8.50	6.3
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.26	1.24	0.02	98.78	8.50	5.3
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.06	1.06	0.00	100.00	8.50	4.9
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.43	1.38	0.05	96.64	8.50	5.5
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.71	0.71	0.00	100.00	8.50	4.2
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	0.82	0.82	0.00	100.00	8.50	4.4
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.48	1.42	0.06	95.96	8.50	5.6
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.02	0.98	0.03	96.73	8.50	4.1
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.41	1.26	0.16	88.98	8.50	4.7
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	2.66	1.87	0.79	70.30	8.50	5.9
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	2.05	1.60	0.45	78.09	8.50	5.4
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	1.65	1.40	0.26	84.54	8.50	5.(
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.11	1.06	0.06	94.90	8.50	4.3

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	22.70	12.40	470.31	1.81	0.00	2.35	468.57	0.07	0 00:19	
2	CB-47	13.61	0.00	472.20	1.20	0.00	7.12	471.03	0.03	0 00:14	
3	CB-8	2.83	0.00	469.03	0.53	0.00	5.69	468.52	0.02	0 00:18	
4	JB	0.74	0.00	462.64	0.34	0.00	5.66	462.31	0.01	0 00:17	
5	JB-19	14.11	0.00	502.54	0.54	0.00	6.74	502.02	0.02	0 00:17	
6	JB-24	5.96	0.00	526.45	0.45	0.00	9.34	526.01	0.01	0 00:07	
7	JB-27	4.82	0.00	534.50	0.50	0.00	5.30	534.01	0.01	0 00:17	
8	JB-39	2.74	0.00	510.33	0.33	0.00	11.40	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	0.74	0.64	463.03	0.28	0.00	1.22	462.76	0.01	0 00:17	
11	JB-SDPIPE36	4.75	4.75	442.25	0.95	0.00	0.55	441.33	0.03	0 00:25	
12	8-Jun	1.43	0.00	539.06	0.56	0.00	5.44	538.52	0.02	0 00:17	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froud Numb
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.04	0 00:19	5.85	0.01	1.60	1.58	0.03	0.09	0.00	
2	Link-02	0.01	0 00:15	5.59	0.00	0.24	17.58	0.08	0.24	0.00	
3	Link-03	0.67	0 00:14	7.51	0.09	1.01	5.01	0.18	0.54	0.00	
4	Link-04	1.61	0 00:15	4.19	0.38	0.97	5.19	0.28	0.85	0.00	
5	Link-06	0.00	0 00:13	9.68	0.00	0.42	7.65	0.06	0.17	0.00	
6	Link-07	0.65	0 00:16	7.90	0.08	0.58	8.49	0.23	0.69	0.00	
7	Link-09	0.01	0 00:11	9.88	0.00	0.53	5.44	0.11	0.32	0.00	
8	Link-10	0.71	0 00:19	2.67	0.27	0.48	5.45	0.26	0.80	0.00	
9	Link-11	0.10	0 00:16	3.74	0.03	0.11	12.21	0.21	0.62	0.00	
10	Link-12	0.05	0 00:08	6.78	0.01	1.91	1.50	0.05	0.14	0.00	
11	Link-13	0.78	0 00:09	8.96	0.09	3.74	1.02	0.10	0.29	0.00	
12	Link-14	0.21	0 00:17	8.97	0.02	1.28	3.08	0.09	0.26	0.00	
13	Link-15	0.12	0 00:14	8.96	0.01	2.05	1.69	0.05	0.15	0.00	
14	Link-16	0.02	0 00:16	8.87	0.00	0.03	121.44	0.18	0.55	0.00	
15	Link-17	0.35	0 00:17	8.97	0.04	1.54	3.15	0.10	0.32	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.02	0.00	
17	Link-19	0.06	0 00:16	5.53	0.01	1.13	2.60	0.05	0.14	0.00	
18	Link-20	0.36	0 00:10	7.81	0.05	0.66	7.12	0.19	0.56	0.00	
19	Link-24	0.00	0 00:17	4.97	0.00	0.00		0.17	0.50	0.00	
20	Link-28	0.00	0 00:00	52.65	0.00	0.00		0.00	0.00	0.00	
21	Link-38	0.01	0 00:06	8.95	0.00	0.05	14.91	0.17	0.51	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.01	0 00:11	15.32	0.00	2.00	3.39	0.03	0.02	0
2	Link-08	0.74	0 00:17	8.57	0.09	3.26	0.15	0.31	0.25	0
3	Link-30	0.62	0 00:21	28.73	0.02	4.44	0.12	0.20	0.13	0
4	Link-33	1.82	0 00:22	29.29	0.06	4.69	0.12	0.36	0.18	0
5	Link-37	0.72	0 00:17	15.97	0.05	3.96	0.00	0.26	0.21	0
6	Link-39	1.33	0 00:17	5.54	0.24	2.60	0.00	0.50	0.33	0
7	L-SDPIPE-8	13.61	0 00:14	18.85	0.72	10.05	0.12	1.07	0.72	0
8	SDPIPE-10	11.00	0 00:14	20.80	0.53	11.06	0.28	0.82	0.55	0
9	SDPIPE-11	10.06	0 00:15	24.08	0.42	11.23	0.10	0.76	0.51	0
10	SDPIPE-12	6.05	0 00:14	20.87	0.29	9.88	0.50	0.57	0.38	0
11	SDPIPE-13	3.59	0 00:10	13.13	0.27	5.55	0.19	0.59	0.40	0
12	SDPIPE-14	2.44	0 00:09	21.90	0.11	5.46	0.98	0.48	0.32	0
13	SDPIPE-15	1.95	0 00:14	16.13	0.12	5.81	0.12	0.37	0.25	0
14	SDPIPE-16	14.11	0 00:17	32.04	0.44	10.66	0.21	0.88	0.44	0
15	SDPIPE-17	13.66	0 00:18	30.19	0.45	7.31	0.08	1.15	0.58	0
16	SDPIPE-18	3.06	0 00:19	15.88	0.19	3.42	0.38	0.90	0.60	0
17	SDPIPE-19	2.70	0 00:16	13.09	0.21	2.81	0.45	0.90	0.60	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.19	0.10	0
19	SDPIPE-20	5.95	0 00:07	29.75	0.20	7.01	0.61	0.89	0.59	0
20	SDPIPE-21	5.96	0 00:07	13.61	0.44	7.80	0.15	0.67	0.45	0
21	SDPIPE-22	0.93	0 00:08	34.17	0.03	2.34	0.24	0.53	0.35	0
22	SDPIPE-23	4.82	0 00:17	20.19	0.24	6.51	0.57	0.65	0.44	0
23	SDPIPE-24	4.82	0 00:17	21.21	0.23	8.71	0.14	0.53	0.35	0
24	SDPIPE-25	0.81	0 00:15	14.89	0.05	4.34	0.29	0.24	0.16	0
25	SDPIPE-25 (1)	3.77	0 00:17	11.09	0.34	5.24	0.14	0.64	0.43	0
26	SDPIPE-25 (12)	1.69	0 00:17	11.38	0.15	4.17	0.17	0.42	0.28	0
27	SDPIPE-25 (13)	1.62	0 00:09	22.32	0.07	5.56	0.10	0.40	0.26	0
28	SDPIPE-25 (14)	1.04	0 00:08	15.45	0.07	4.60	0.17	0.28	0.19	0
29	SDPIPE-25 (15)	14.11	0 00:17	89.94	0.16	7.88	0.53	1.17	0.58	0
30	SDPIPE-25 (15) (1)	22.69	0 00:19	45.15	0.50	7.20	0.06	1.53	0.61	0
31	SDPIPE-25 (17)	1.82	0 00:21	10.50	0.17	4.19	0.13	0.44	0.29	0
32	SDPIPE-25 (2)	2.73	0 00:16	22.74	0.12	4.80	0.52	0.54	0.36	0
33	SDPIPE-25 (3)	1.42	0 00:16	12.88	0.11	4.17	0.13	0.37	0.25	0
34	SDPIPE-25 (6)	7.04	0 00:10	31.10	0.23	12.88	0.11	0.52	0.35	0
35	SDPIPE-25 (7)	5.36	0 00:10	24.71	0.22	10.70	0.31	0.49	0.33	0
36	SDPIPE-25 (8)	2.73	0 00:09	28.14	0.10	9.82	0.33	0.32	0.21	0
37	SDPIPE-25 (9)	1.86	0 00:09	14.64	0.13	5.18	0.17	0.39	0.26	0
38	SDPIPE-32	1.43	0 00:15	26.26	0.05	4.74	0.34	0.40	0.27	0
39	SDPIPE-36	4.75	0 00:25	9.10	0.52	4.53	0.11	0.86	0.57	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	2.83	0 00:18	27.02	0.10	4.84	0.14	0.48	0.24	0
42	SDPIPE-6	2.83	0 00:18	25.54	0.11	4.26	0.22	0.53	0.26	0
43	SDPIPE-7	2.03	0 00:17	22.70	0.09	3.22	0.17	0.51	0.26	0
44	SDPIPE-8 (1)	13.61	0 00:13	31.86	0.43	11.49	0.19	0.95	0.64	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	2.39	1.89	N/A	N/A	N/A	2.05	474.22	0.22	0 00:17	0
2	CB-11	1.81	1.81	1.45	0.36	79.91	5.02	490.82	0.12	0 00:13	0
3	CB-12	2.33	2.33	1.69	0.65	72.27	5.54	492.02	0.14	0 00:16	0
4	CB-13	1.53	1.52	1.50	0.03	98.04	6.10	508.34	0.15	0 00:13	0
5	CB-14	4.25	3.29	N/A	N/A	N/A	9.47	513.66	0.41	0 00:15	0
6	CB-15	4.81	4.20	2.73	2.09	56.69	7.90	518.59	0.20	0 00:14	0
7	CB-16	1.28	1.28	1.21	0.07	94.33	4.82	519.82	0.12	0 00:09	0
8	CB-17	1.12	1.12	1.09	0.03	97.12	4.58	533.43	0.11	0 00:09	0
9	CB-18	2.63	2.62	1.94	0.68	74.03	6.30	535.15	0.15	0 00:14	0
10	CB-2	0.75	0.75	0.75	0.00	100.00	3.76	465.86	0.09	0 00:21	0
11	CB-20	2.57	2.57	N/A	N/A	N/A	6.77	516.23	0.34	0 00:17	0
12	CB-21	3.22	2.63	N/A	N/A	N/A	7.87	516.25	0.37	0 00:18	0
13	CB-22	3.79	3.79	3.07	0.72	80.96	6.85	517.14	0.17	0 00:19	0
14	CB-23	2.82	2.82	2.71	0.11	96.23	6.99	517.15	0.17	0 00:16	0
15	CB-25	3.41	3.41	N/A	N/A	N/A	8.18	535.66	0.37	0 00:07	0
16	CB-26	2.35	2.35	N/A	N/A	N/A	6.38	535.62	0.33	0 00:08	0
17	CB-28	1.26	1.22	1.24	0.02	98.78	5.31	542.78	0.13	0 00:17	0
18	CB-29	1.06	1.04	1.06	0.00	100.00	4.98	542.98	0.12	0 00:17	0
19	CB-30	1.43	1.43	1.38	0.05	96.64	5.58	548.04	0.14	0 00:16	0
20	CB-31	0.71	0.71	0.71	0.00	100.00	4.25	549.47	0.10	0 00:15	0
21	CB-32	0.82	0.82	0.82	0.00	100.00	4.48	549.98	0.11	0 00:15	0
22	CB-33	1.48	1.48	1.42	0.06	95.96	5.64	548.02	0.14	0 00:16	0
23	CB-37	1.02	0.92	0.98	0.03	96.73	4.19	490.79	0.10	0 00:10	0
24	CB-38	1.41	1.41	1.26	0.16	88.98	4.72	506.98	0.11	0 00:10	0
25	CB-40	2.66	2.66	1.87	0.79	70.30	5.98	524.95	0.15	0 00:09	0
26	CB-43	2.05	1.85	1.60	0.45	78.09	5.43	488.70	0.13	0 00:17	0
27	CB-44	1.65	1.55	1.40	0.26	84.54	5.00	507.12	0.12	0 00:09	0
28	CB-45	1.11	1.11	1.06	0.06	94.90	4.32	524.75	0.10	0 00:08	0
29	CB-51	2.37	2.23	1.75	0.62	73.92	5.72	465.96	0.14	0 00:21	0
30	CB-9	1.73	1.70	N/A	N/A	N/A	7.09	474.34	0.35	0 00:18	0

25 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	25 year(s)

Subbasin Summary

SN	Subbasin ID	Area	Weighted Runoff Coefficient	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	1.95	1.36	6.26	14.26	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.37	0.96	0.52	2.17	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.15	0.80	0.35	2.08	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.46	1.02	0.72	2.68	0 00:15:59
5	Sub-CB-13	0.37	0.7000	1.14	0.80	0.30	1.75	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.24	0.87	0.76	3.79	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.42	1.00	1.23	4.83	0 00:15:19
8	Sub-CB-16	0.30	0.7000	1.09	0.76	0.23	1.47	0 00:09:21
9	Sub-CB-17	0.25	0.7000	1.04	0.73	0.18	1.29	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.38	0.97	0.74	3.01	0 00:14:44
11	Sub-CB-2	0.15	0.7000	0.92	0.64	0.10	0.87	0 00:06:39
12	Sub-CB-20	0.61	0.7000	1.12	0.78	0.48	2.96	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.50	1.05	0.85	3.03	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.62	1.13	1.39	4.36	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.47	1.03	0.87	3.24	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.90	0.63	0.41	3.92	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.79	0.55	0.23	2.71	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.37	0.96	0.34	1.41	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.49	1.04	0.33	1.20	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.53	1.07	0.48	1.65	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.35	0.67	0.19	0.82	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.44	1.01	0.25	0.94	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.47	1.03	0.46	1.70	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.42	1.00	0.27	1.06	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.27	0.89	0.34	1.62	0 00:12:34
26	Sub-CB-40	0.63	0.7000	1.10	0.77	0.48	3.06	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.50	1.05	0.60	2.13	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.52	1.06	0.51	1.78	0 00:17:09
29	Sub-CB-45	0.24	0.7000	0.99	0.70	0.17	1.28	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.74	1.22	0.93	2.56	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.58	1.10	0.60	1.96	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.18	0.82	0.13	0.74	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	1.91	1.33	2.31	5.47	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	26.08	470.48	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	15.61	472.72	0.00	6.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	3.42	469.09	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	0.99	462.70	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	16.22	502.58	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	6.84	526.49	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	5.52	534.54	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	3.00	510.34	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	0.99	463.09	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	5.47	442.36	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.64	539.11	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					2.07	461.36		
15	FES-3	Outfall	538.50					1.54	538.97		
16	FES-36	Outfall	472.00					8.02	472.52		
17	FES-46	Outfall	468.25					26.08	469.61		
18	FES-48	Outfall	468.00					15.54	469.04		
19	FES-7	Outfall	468.00					3.42	468.48		
20	3-Jun	Outfall	0.00					0.00	0.00		
21	OUT-SDPIPE35	Outfall	462.25					0.98	462.46		
22	Out-SDPIPE-36	Outfall	441.00					5.46	441.84		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.05	15.32	0.00	2.65	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	0.99	8.57	0.12	3.40	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	0.86	28.73	0.03	4.76	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	2.07	29.29	0.07	4.85	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	0.98	15.97	0.06	4.25	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.54	5.54	0.28	2.71	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	15.54	18.85	0.82	10.15	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	12.72	20.80	0.61	11.37	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	11.61	24.08	0.48	11.52	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	6.79	20.87	0.33	10.17	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	3.98	13.13	0.30	5.65	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	2.70	21.90	0.12	5.58	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	2.14	16.13	0.13	5.95	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	16.22	32.04	0.51	10.91	0.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	15.69	30.19	0.52	7.54	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.34	15.88	0.21	3.54	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	2.99	13.09	0.23	2.91	1.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	6.83	29.75	0.23	7.23	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	6.84	13.61	0.50	8.01	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	1.18	34.17	0.03	2.31	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	5.51	20.19	0.27	6.69	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	5.52	21.21	0.26	8.98	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.94	14.89	0.06	4.50	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	4.27	11.09	0.38	5.37	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	1.94	11.38	0.17	4.30	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	1.96	22.32	0.09	5.75	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.15	15.45	0.07	4.75	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.10	5.85	0.02	1.56	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.04	5.59	0.01	0.26	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	0.90	7.51	0.12	1.11	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	2.04	4.19	0.49	1.14	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.03	9.68	0.00	0.57	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	0.85	7.90	0.11	0.72	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.03	9.88	0.00	0.59	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	1.00	2.67	0.38	0.61	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.22	3.74	0.06	0.21	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.10	6.78	0.02	2.36	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	1.03	8.96	0.11	3.90	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.32	8.97	0.04	1.46	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.20	8.96	0.02	2.40	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.04	8.87	0.00	0.06	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.49	8.97	0.05	1.62	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.13	5.53	0.02	1.28	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.50	7.81	0.06	0.72	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.01	4.97	0.00	0.46	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.02	8.95	0.00	0.06	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	2.85	N/A	N/A	N/A	8.50	4.4
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	2.09	1.58	0.51	75.59	8.50	5.3
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	2.68	1.83	0.85	68.21	8.50	5.8
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.78	1.70	0.09	95.06	8.50	6.4
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	5.06	N/A	N/A	N/A	8.50	10.6
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	5.66	2.98	2.68	52.63	8.50	8.3
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.47	1.34	0.13	90.97	8.50	5.0
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.29	1.21	0.07	94.21	8.50	4.8
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	3.05	2.13	0.92	69.72	8.50	6.6
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.87	0.86	0.01	99.24	8.50	3.9
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	2.96	N/A	N/A	N/A	8.50	7.4
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	3.95	N/A	N/A	N/A	8.50	9.0
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	4.36	3.35	1.01	76.79	8.50	7.2
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	3.24	3.02	0.23	93.04	8.50	7.3
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	3.92	N/A	N/A	N/A	8.50	8.9
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	2.70	N/A	N/A	N/A	8.50	7.0
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.47	1.41	0.06	96.15	8.50	5.6
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.26	1.25	0.02	98.75	8.50	5.3
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.65	1.54	0.11	93.57	8.50	5.8
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.82	0.82	0.00	100.00	8.50	4.4
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	0.94	0.94	0.00	100.00	8.50	4.7
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.70	1.58	0.12	92.74	8.50	5.9
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.22	1.13	0.09	92.86	8.50	4.4
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.62	1.38	0.24	85.04	8.50	4.9
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	3.06	2.02	1.03	66.18	8.50	6.3
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	2.43	1.78	0.66	73.05	8.50	5.7
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	2.02	1.59	0.43	78.59	8.50	5.3
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.28	1.17	0.11	91.56	8.50	4.5

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	26.08	14.26	470.48	1.98	0.00	2.17	468.58	0.08	0 00:19	
2	CB-47	15.61	0.00	472.72	1.72	0.00	6.60	471.04	0.04	0 00:14	
3	CB-8	3.42	0.00	469.09	0.59	0.00	5.63	468.52	0.02	0 00:17	
4	JB	0.99	0.00	462.70	0.40	0.00	5.60	462.31	0.01	0 00:17	
5	JB-19	16.22	0.00	502.58	0.58	0.00	6.70	502.02	0.02	0 00:17	
6	JB-24	6.84	0.00	526.49	0.49	0.00	9.31	526.02	0.02	0 00:07	
7	JB-27	5.52	0.00	534.54	0.54	0.00	5.26	534.02	0.02	0 00:17	
8	JB-39	3.00	0.00	510.34	0.34	0.00	11.38	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	0.99	0.74	463.09	0.34	0.00	1.16	462.76	0.01	0 00:17	
11	JB-SDPIPE36	5.47	5.47	442.36	1.06	0.00	0.44	441.34	0.04	0 00:25	
12	8-Jun	1.64	0.00	539.11	0.61	0.00	5.39	538.52	0.02	0 00:16	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Numbe
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.10	0 00:18	5.85	0.02	1.56	1.62	0.05	0.15	0.00	
2	Link-02	0.04	0 00:15	5.59	0.01	0.26	16.23	0.10	0.30	0.00	
3	Link-03	0.90	0 00:14	7.51	0.12	1.11	4.56	0.20	0.59	0.00	
4	Link-04	2.04	0 00:15	4.19	0.49	1.14	4.42	0.29	0.88	0.00	
5	Link-06	0.03	0 00:11	9.68	0.00	0.57	5.63	0.07	0.21	0.00	
6	Link-07	0.85	0 00:16	7.90	0.11	0.72	6.84	0.24	0.71	0.00	
7	Link-09	0.03	0 00:10	9.88	0.00	0.59	4.88	0.12	0.37	0.00	
8	Link-10	1.00	0 00:19	2.67	0.38	0.61	4.29	0.28	0.84	0.00	
9	Link-11	0.22	0 00:16	3.74	0.06	0.21	6.39	0.22	0.67	0.00	
10	Link-12	0.10	0 00:08	6.78	0.02	2.36	1.22	0.06	0.19	0.00	
11	Link-13	1.03	0 00:09	8.96	0.11	3.90	0.98	0.11	0.33	0.00	
12	Link-14	0.32	0 00:17	8.97	0.04	1.46	2.70	0.10	0.30	0.00	
13	Link-15	0.20	0 00:13	8.96	0.02	2.40	1.44	0.06	0.18	0.00	
14	Link-16	0.04	0 00:15	8.87	0.00	0.06	60.72	0.19	0.56	0.00	
15	Link-17	0.49	0 00:17	8.97	0.05	1.62	3.00	0.12	0.37	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.03	0.00	
17	Link-19	0.13	0 00:16	5.53	0.02	1.28	2.29	0.07	0.20	0.00	
18	Link-20	0.50	0 00:10	7.81	0.06	0.72	6.53	0.20	0.62	0.00	
19	Link-24	0.01	0 00:19	4.97	0.00	0.46	11.46	0.17	0.50	0.00	
20	Link-28	0.00	0 00:00	52.65	0.00	0.00		0.00	0.00	0.00	
21	Link-38	0.02	0 00:06	8.95	0.00	0.06	12.42	0.17	0.53	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.05	0 00:11	15.32	0.00	2.65	2.56	0.05	0.03	0
2	Link-08	0.99	0 00:17	8.57	0.12	3.40	0.15	0.37	0.29	0
3	Link-30	0.86	0 00:21	28.73	0.03	4.76	0.11	0.24	0.16	0
4	Link-33	2.07	0 00:17	29.29	0.07	4.85	0.12	0.39	0.19	0
5	Link-37	0.98	0 00:17	15.97	0.06	4.25	0.00	0.30	0.24	0
6	Link-39	1.54	0 00:16	5.54	0.28	2.71	0.00	0.54	0.36	0
7	L-SDPIPE-8	15.54	0 00:14	18.85	0.82	10.15	0.11	1.27	0.85	0
8	SDPIPE-10	12.72	0 00:13	20.80	0.61	11.37	0.27	0.91	0.61	0
9	SDPIPE-11	11.61	0 00:14	24.08	0.48	11.52	0.10	0.83	0.56	0
10	SDPIPE-12	6.79	0 00:14	20.87	0.33	10.17	0.49	0.61	0.40	0
11	SDPIPE-13	3.98	0 00:10	13.13	0.30	5.65	0.19	0.63	0.42	0
12	SDPIPE-14	2.70	0 00:10	21.90	0.12	5.58	0.96	0.51	0.34	0
13	SDPIPE-15	2.14	0 00:14	16.13	0.13	5.95	0.12	0.39	0.26	0
14	SDPIPE-16	16.22	0 00:17	32.04	0.51	10.91	0.20	0.96	0.48	0
15	SDPIPE-17	15.69	0 00:18	30.19	0.52	7.54	0.07	1.26	0.63	0
16	SDPIPE-18	3.34	0 00:19	15.88	0.21	3.54	0.36	0.98	0.65	0
17	SDPIPE-19	2.99	0 00:16	13.09	0.23	2.91	0.43	1.01	0.67	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.21	0.10	0
19	SDPIPE-20	6.83	0 00:07	29.75	0.23	7.23	0.59	0.97	0.65	0
20	SDPIPE-21	6.84	0 00:07	13.61	0.50	8.01	0.15	0.73	0.49	0
21	SDPIPE-22	1.18	0 00:08	34.17	0.03	2.31	0.24	0.58	0.39	0
22	SDPIPE-23	5.51	0 00:17	20.19	0.27	6.69	0.55	0.71	0.47	0
23	SDPIPE-24	5.52	0 00:17	21.21	0.26	8.98	0.14	0.57	0.38	0
24	SDPIPE-25	0.94	0 00:15	14.89	0.06	4.50	0.28	0.26	0.18	0
25	SDPIPE-25 (1)	4.27	0 00:17	11.09	0.38	5.37	0.14	0.69	0.46	0
26	SDPIPE-25 (12)	1.94	0 00:17	11.38	0.17	4.30	0.16	0.45	0.30	0
27	SDPIPE-25 (13)	1.96	0 00:09	22.32	0.09	5.75	0.10	0.43	0.29	0
28	SDPIPE-25 (14)	1.15	0 00:08	15.45	0.07	4.75	0.16	0.29	0.19	0
29	SDPIPE-25 (15)	16.22	0 00:17	89.94	0.18	8.18	0.51	1.28	0.64	0
30	SDPIPE-25 (15) (1)	26.08	0 00:19	45.15	0.58	7.47	0.05	1.67	0.67	0
31	SDPIPE-25 (17)	2.07	0 00:17	10.50	0.20	4.32	0.13	0.47	0.32	0
32	SDPIPE-25 (2)	3.05	0 00:16	22.74	0.13	4.87	0.51	0.58	0.39	0
33	SDPIPE-25 (3)	1.57	0 00:16	12.88	0.12	4.26	0.13	0.39	0.26	0
34	SDPIPE-25 (6)	8.02	0 00:10	31.10	0.26	13.26	0.11	0.56	0.37	0
35	SDPIPE-25 (7)	6.08	0 00:10	24.71	0.25	11.04	0.30	0.52	0.35	0
36	SDPIPE-25 (8)	3.00	0 00:09	28.14	0.11	10.07	0.32	0.34	0.22	0
37	SDPIPE-25 (9)	2.02	0 00:09	14.64	0.14	5.29	0.16	0.40	0.27	0
38	SDPIPE-32	1.64	0 00:15	26.26	0.06	4.92	0.33	0.43	0.29	0
39	SDPIPE-36	5.46	0 00:25	9.10	0.60	4.65	0.11	0.95	0.63	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	3.42	0 00:17	27.02	0.13	5.06	0.14	0.54	0.27	0
42	SDPIPE-6	3.42	0 00:17	25.54	0.13	4.41	0.21	0.59	0.30	0
43	SDPIPE-7	2.54	0 00:17	22.70	0.11	3.39	0.16	0.58	0.29	0
44	SDPIPE-8 (1)	15.61	0 00:13	31.86	0.49	11.57	0.18	1.13	0.76	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	2.85	2.17	N/A	N/A	N/A	4.46	474.28	0.28	0 00:17	0
2	CB-11	2.09	2.08	1.58	0.51	75.59	5.30	490.82	0.13	0 00:14	0
3	CB-12	2.68	2.68	1.83	0.85	68.21	5.81	492.03	0.14	0 00:16	0
4	CB-13	1.78	1.75	1.70	0.09	95.06	6.47	508.35	0.16	0 00:13	0
5	CB-14	5.06	3.79	N/A	N/A	N/A	10.63	513.69	0.44	0 00:14	0
6	CB-15	5.66	4.83	2.98	2.68	52.63	8.33	518.60	0.21	0 00:14	0
7	CB-16	1.47	1.47	1.34	0.13	90.97	5.05	519.82	0.12	0 00:09	0
8	CB-17	1.29	1.29	1.21	0.07	94.21	4.82	533.43	0.12	0 00:10	0
9	CB-18	3.05	3.01	2.13	0.92	69.72	6.61	535.15	0.16	0 00:14	0
10	CB-2	0.87	0.87	0.86	0.01	99.24	3.96	465.86	0.10	0 00:17	0
11	CB-20	2.96	2.96	N/A	N/A	N/A	7.43	516.24	0.36	0 00:17	0
12	CB-21	3.95	3.03	N/A	N/A	N/A	9.02	516.28	0.40	0 00:18	0
13	CB-22	4.36	4.36	3.35	1.01	76.79	7.20	517.15	0.18	0 00:19	0
14	CB-23	3.24	3.24	3.02	0.23	93.04	7.38	517.16	0.18	0 00:18	0
15	CB-25	3.92	3.92	N/A	N/A	N/A	8.97	535.68	0.39	0 00:07	0
16	CB-26	2.70	2.70	N/A	N/A	N/A	7.00	535.63	0.34	0 00:08	0
17	CB-28	1.47	1.41	1.41	0.06	96.15	5.62	542.79	0.14	0 00:17	0
18	CB-29	1.26	1.20	1.25	0.02	98.75	5.31	542.99	0.13	0 00:17	0
19	CB-30	1.65	1.65	1.54	0.11	93.57	5.88	548.05	0.14	0 00:16	0
20	CB-31	0.82	0.82	0.82	0.00	100.00	4.48	549.48	0.11	0 00:15	0
21	CB-32	0.94	0.94	0.94	0.00	100.00	4.72	549.98	0.11	0 00:15	0
22	CB-33	1.70	1.70	1.58	0.12	92.74	5.95	548.02	0.15	0 00:16	0
23	CB-37	1.22	1.06	1.13	0.09	92.86	4.46	490.80	0.11	0 00:10	0
24	CB-38	1.62	1.62	1.38	0.24	85.04	4.97	506.99	0.12	0 00:10	0
25	CB-40	3.06	3.06	2.02	1.03	66.18	6.31	524.96	0.15	0 00:09	0
26	CB-43	2.43	2.13	1.78	0.66	73.05	5.76	488.71	0.14	0 00:17	0
27	CB-44	2.02	1.78	1.59	0.43	78.59	5.38	507.13	0.13	0 00:09	0
28	CB-45	1.28	1.28	1.17	0.11	91.56	4.56	524.75	0.11	0 00:08	0
29	CB-51	2.77	2.56	1.92	0.85	69.21	6.07	465.97	0.15	0 00:17	0
30	CB-9	1.99	1.95	N/A	N/A	N/A	7.80	474.36	0.36	0 00:17	0

50 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	50 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	2.14	1.50	6.87	15.65	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.50	1.05	0.57	2.38	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.26	0.88	0.39	2.28	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.60	1.12	0.78	2.94	0 00:15:59
5	Sub-CB-13	0.37	0.7000	1.25	0.88	0.32	1.91	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.36	0.95	0.83	4.15	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.56	1.09	1.35	5.29	0 00:15:19
8	Sub-CB-16	0.30	0.7000	1.19	0.84	0.25	1.61	0 00:09:21
9	Sub-CB-17	0.25	0.7000	1.14	0.80	0.20	1.41	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.52	1.06	0.81	3.30	0 00:14:44
11	Sub-CB-2	0.15	0.7000	1.00	0.70	0.11	0.95	0 00:06:39
12	Sub-CB-20	0.61	0.7000	1.22	0.85	0.52	3.24	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.64	1.15	0.93	3.32	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.77	1.24	1.53	4.78	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.61	1.13	0.96	3.55	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.98	0.69	0.45	4.29	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.86	0.60	0.25	2.96	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.50	1.05	0.37	1.54	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.64	1.14	0.37	1.32	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.68	1.17	0.52	1.80	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.47	0.74	0.21	0.89	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.58	1.11	0.27	1.03	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.61	1.13	0.51	1.87	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.56	1.09	0.30	1.16	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.39	0.97	0.37	1.78	0 00:12:34
26	Sub-CB-40	0.63	0.7000	1.21	0.84	0.53	3.35	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.64	1.15	0.66	2.34	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.67	1.17	0.56	1.96	0 00:17:09
29	Sub-CB-45	0.24	0.7000	1.09	0.76	0.18	1.40	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.91	1.34	1.02	2.81	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.73	1.21	0.65	2.14	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.29	0.90	0.14	0.81	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	2.09	1.46	2.53	6.00	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	28.58	470.62	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	17.05	474.95	0.00	4.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	3.98	469.14	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	1.21	462.74	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	17.74	502.60	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	7.75	526.52	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	6.03	534.56	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	3.17	510.35	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	1.21	463.13	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	6.00	442.44	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.80	539.14	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					2.26	461.38		
15	FES-3	Outfall	538.50					1.70	538.99		
16	FES-36	Outfall	472.00					8.73	472.54		
17	FES-46	Outfall	468.25					28.58	469.69		
18	FES-48	Outfall	468.00					17.05	469.12		
19	FES-7	Outfall	468.00					3.98	468.52		
20	3-Jun	Outfall	0.00					0.00	0.01		
21	OUT-SDPIPE35	Outfall	462.25					1.18	462.48		
22	Out-SDPIPE-36	Outfall	441.00					5.99	441.89		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.09	15.32	0.01	2.99	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	1.21	8.57	0.14	3.49	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	1.05	28.73	0.04	4.96	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	2.26	29.29	0.08	4.97	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	1.18	15.97	0.07	4.47	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.70	5.54	0.31	2.78	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	17.05	18.85	0.90	10.42	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	13.98	20.80	0.67	11.56	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	12.76	24.08	0.53	11.70	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	7.33	20.87	0.35	10.36	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	4.25	13.13	0.32	5.72	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	2.87	21.90	0.13	5.67	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	2.28	16.13	0.14	6.03	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	17.74	32.04	0.55	11.04	1.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	17.18	30.19	0.57	7.69	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.54	15.88	0.22	3.63	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	3.17	13.09	0.24	2.97	1.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	7.75	29.75	0.26	7.42	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	7.75	13.61	0.57	8.20	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	1.49	34.17	0.04	2.30	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	6.02	20.19	0.30	6.83	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	6.03	21.21	0.28	9.16	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	1.02	14.89	0.07	4.61	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	4.64	11.09	0.42	5.44	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	2.11	11.38	0.19	4.39	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	2.15	22.32	0.10	5.87	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.23	15.45	0.08	4.84	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.15	5.85	0.03	1.57	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.07	5.59	0.01	0.26	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	1.08	7.51	0.14	1.17	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	2.37	4.19	0.57	1.27	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.07	9.68	0.01	0.61	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	1.01	7.90	0.13	0.82	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.07	9.88	0.01	0.62	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	1.23	2.67	0.46	0.70	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.32	3.74	0.09	0.29	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.15	6.78	0.02	2.57	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	1.22	8.96	0.14	3.91	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.40	8.97	0.04	1.55	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.28	8.96	0.03	2.64	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.07	8.87	0.01	0.10	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.60	8.97	0.07	1.65	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.18	5.53	0.03	1.40	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.61	7.81	0.08	0.76	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.02	4.97	0.00	0.60	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.03	8.95	0.00	0.06	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	3.20	N/A	N/A	N/A	8.50	6.5
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	2.32	1.68	0.64	72.48	8.50	5.5
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	2.94	1.93	1.01	65.53	8.50	6.(
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.98	1.84	0.15	92.56	8.50	6.7
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	5.66	N/A	N/A	N/A	8.50	11.4
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	6.28	3.14	3.15	49.92	8.50	8.7
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.61	1.43	0.19	88.46	8.50	5.2
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.41	1.30	0.11	92.04	8.50	4.9
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	3.36	2.25	1.12	66.74	8.50	6.8
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.95	0.93	0.02	98.06	8.50	4.(
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	3.23	N/A	N/A	N/A	8.50	7.8
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	4.53	N/A	N/A	N/A	8.50	9.8
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	4.78	3.54	1.24	74.00	8.50	7.4
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	3.55	3.23	0.33	90.77	8.50	7.6
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	4.29	N/A	N/A	N/A	8.50	9.5
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	2.95	N/A	N/A	N/A	8.50	7.4
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.65	1.54	0.11	93.55	8.50	5.8
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.44	1.39	0.05	96.58	8.50	5.5
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.80	1.65	0.16	91.35	8.50	6.(
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.89	0.89	0.00	100.00	8.50	4.6
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	1.03	1.03	0.00	100.00	8.50	4.9
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.87	1.69	0.18	90.46	8.50	6.7
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.37	1.23	0.14	89.84	8.50	4.6
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.78	1.46	0.31	82.38	8.50	5.7
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	3.35	2.13	1.22	63.67	8.50	6.5
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	2.72	1.89	0.82	69.69	8.50	6.(
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	2.31	1.72	0.59	74.58	8.50	5.6
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.40	1.25	0.15	89.20	8.50	4.7

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	28.58	15.65	470.62	2.12	0.00	2.04	468.58	0.08	0 00:19	
2	CB-47	17.05	0.00	474.95	3.95	0.00	4.37	471.04	0.04	0 00:11	
3	CB-8	3.98	0.00	469.14	0.64	0.00	5.57	468.52	0.02	0 00:19	
4	JB	1.21	0.00	462.74	0.44	0.00	5.56	462.31	0.01	0 00:17	
5	JB-19	17.74	0.00	502.60	0.60	0.00	6.67	502.02	0.02	0 00:17	
6	JB-24	7.75	0.00	526.52	0.52	0.00	9.27	526.02	0.02	0 00:07	
7	JB-27	6.03	0.00	534.56	0.56	0.00	5.24	534.02	0.02	0 00:17	
8	JB-39	3.17	0.00	510.35	0.35	0.00	11.37	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	1.21	0.81	463.13	0.38	0.00	1.12	462.76	0.01	0 00:17	
11	JB-SDPIPE36	6.00	6.00	442.44	1.14	0.00	0.36	441.34	0.04	0 00:25	
12	8-Jun	1.80	0.00	539.14	0.64	0.00	5.36	538.52	0.02	0 00:16	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Numbe
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.15	0 00:17	5.85	0.03	1.57	1.61	0.06	0.20	0.00	
2	Link-02	0.07	0 00:14	5.59	0.01	0.26	16.23	0.11	0.33	0.00	
3	Link-03	1.08	0 00:14	7.51	0.14	1.17	4.32	0.21	0.63	0.00	
4	Link-04	2.37	0 00:15	4.19	0.57	1.27	3.97	0.30	0.90	0.00	
5	Link-06	0.07	0 00:11	9.68	0.01	0.61	5.27	0.08	0.25	0.00	
6	Link-07	1.01	0 00:16	7.90	0.13	0.82	6.00	0.24	0.73	0.00	
7	Link-09	0.07	0 00:09	9.88	0.01	0.62	4.65	0.13	0.40	0.00	
8	Link-10	1.23	0 00:19	2.67	0.46	0.70	3.74	0.29	0.87	0.00	
9	Link-11	0.32	0 00:16	3.74	0.09	0.29	4.63	0.23	0.69	0.00	
10	Link-12	0.15	0 00:08	6.78	0.02	2.57	1.12	0.07	0.21	0.00	
11	Link-13	1.22	0 00:09	8.96	0.14	3.91	0.97	0.12	0.37	0.00	
12	Link-14	0.40	0 00:17	8.97	0.04	1.55	2.54	0.11	0.33	0.00	
13	Link-15	0.28	0 00:13	8.96	0.03	2.64	1.31	0.07	0.21	0.00	
14	Link-16	0.07	0 00:15	8.87	0.01	0.10	36.43	0.19	0.58	0.00	
15	Link-17	0.60	0 00:17	8.97	0.07	1.65	2.94	0.13	0.40	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.04	0.00	
17	Link-19	0.18	0 00:16	5.53	0.03	1.40	2.10	0.08	0.23	0.00	
18	Link-20	0.61	0 00:10	7.81	0.08	0.76	6.19	0.21	0.65	0.00	
19	Link-24	0.02	0 00:18	4.97	0.00	0.60	8.79	0.17	0.50	0.00	
20	Link-28	0.00	0 00:15	52.65	0.00	0.00		0.00	0.01	0.00	
21	Link-38	0.03	0 00:06	8.95	0.00	0.06	12.42	0.18	0.54	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.09	0 00:11	15.32	0.01	2.99	2.27	0.07	0.05	0
2	Link-08	1.21	0 00:17	8.57	0.14	3.49	0.14	0.41	0.33	0
3	Link-30	1.05	0 00:21	28.73	0.04	4.96	0.10	0.27	0.18	0
4	Link-33	2.26	0 00:17	29.29	0.08	4.97	0.11	0.41	0.20	0
5	Link-37	1.18	0 00:17	15.97	0.07	4.47	0.00	0.33	0.27	0
6	Link-39	1.70	0 00:16	5.54	0.31	2.78	0.00	0.57	0.38	0
7	L-SDPIPE-8	17.05	0 00:13	18.85	0.90	10.42	0.11	1.31	0.87	0
8	SDPIPE-10	13.98	0 00:13	20.80	0.67	11.56	0.27	0.97	0.65	0
9	SDPIPE-11	12.76	0 00:14	24.08	0.53	11.70	0.09	0.89	0.59	0
10	SDPIPE-12	7.33	0 00:14	20.87	0.35	10.36	0.48	0.63	0.42	0
11	SDPIPE-13	4.25	0 00:10	13.13	0.32	5.72	0.19	0.66	0.44	0
12	SDPIPE-14	2.87	0 00:09	21.90	0.13	5.67	0.95	0.53	0.35	0
13	SDPIPE-15	2.28	0 00:14	16.13	0.14	6.03	0.12	0.40	0.27	0
14	SDPIPE-16	17.74	0 00:17	32.04	0.55	11.04	0.20	1.02	0.51	0
15	SDPIPE-17	17.18	0 00:18	30.19	0.57	7.69	0.07	1.34	0.67	0
16	SDPIPE-18	3.54	0 00:19	15.88	0.22	3.63	0.35	0.99	0.66	0
17	SDPIPE-19	3.17	0 00:16	13.09	0.24	2.97	0.42	1.07	0.71	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.22	0.11	0
19	SDPIPE-20	7.75	0 00:07	29.75	0.26	7.42	0.58	0.99	0.66	0
20	SDPIPE-21	7.75	0 00:07	13.61	0.57	8.20	0.14	0.79	0.53	0
21	SDPIPE-22	1.49	0 00:07	34.17	0.04	2.30	0.24	0.64	0.42	0
22	SDPIPE-23	6.02	0 00:17	20.19	0.30	6.83	0.54	0.75	0.50	0
23	SDPIPE-24	6.03	0 00:17	21.21	0.28	9.16	0.13	0.60	0.40	0
24	SDPIPE-25	1.02	0 00:15	14.89	0.07	4.61	0.27	0.27	0.18	0
25	SDPIPE-25 (1)	4.64	0 00:17	11.09	0.42	5.44	0.14	0.73	0.49	0
26	SDPIPE-25 (12)	2.11	0 00:17	11.38	0.19	4.39	0.16	0.48	0.32	0
27	SDPIPE-25 (13)	2.15	0 00:09	22.32	0.10	5.87	0.09	0.45	0.30	0
28	SDPIPE-25 (14)	1.23	0 00:08	15.45	0.08	4.84	0.16	0.30	0.20	0
29	SDPIPE-25 (15)	17.74	0 00:17	89.94	0.20	8.42	0.49	1.30	0.65	0
30	SDPIPE-25 (15) (1)	28.58	0 00:19	45.15	0.63	7.64	0.05	1.78	0.71	0
31	SDPIPE-25 (17)	2.27	0 00:17	10.50	0.22	4.40	0.12	0.50	0.33	0
32	SDPIPE-25 (2)	3.26	0 00:16	22.74	0.14	4.89	0.51	0.61	0.40	0
33	SDPIPE-25 (3)	1.68	0 00:16	12.88	0.13	4.33	0.13	0.41	0.27	0
34	SDPIPE-25 (6)	8.73	0 00:10	31.10	0.28	13.51	0.11	0.59	0.39	0
35	SDPIPE-25 (7)	6.52	0 00:10	24.71	0.26	11.24	0.30	0.55	0.36	0
36	SDPIPE-25 (8)	3.17	0 00:09	28.14	0.11	10.22	0.32	0.35	0.23	0
37	SDPIPE-25 (9)	2.12	0 00:09	14.64	0.14	5.35	0.16	0.41	0.28	0
38	SDPIPE-32	1.80	0 00:15	26.26	0.07	5.04	0.32	0.45	0.30	0
39	SDPIPE-36	5.99	0 00:25	9.10	0.66	4.73	0.11	1.01	0.67	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	3.98	0 00:19	27.02	0.15	5.24	0.13	0.58	0.29	0
42	SDPIPE-6	3.98	0 00:19	25.54	0.16	4.53	0.20	0.65	0.32	0
43	SDPIPE-7	2.90	0 00:17	22.70	0.13	3.48	0.16	0.62	0.31	0
44	SDPIPE-8 (1)	17.05	0 00:13	31.86	0.54	11.60	0.18	1.18	0.79	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	3.20	2.38	N/A	N/A	N/A	6.55	474.33	0.33	0 00:17	0
2	CB-11	2.32	2.28	1.68	0.64	72.48	5.52	490.83	0.13	0 00:13	0
3	CB-12	2.94	2.94	1.93	1.01	65.53	6.01	492.04	0.15	0 00:16	0
4	CB-13	1.98	1.91	1.84	0.15	92.56	6.73	508.36	0.17	0 00:13	0
5	CB-14	5.66	4.15	N/A	N/A	N/A	11.46	513.71	0.46	0 00:14	0
6	CB-15	6.28	5.29	3.14	3.15	49.92	8.71	518.61	0.22	0 00:14	0
7	CB-16	1.61	1.61	1.43	0.19	88.46	5.25	519.83	0.13	0 00:09	0
8	CB-17	1.41	1.41	1.30	0.11	92.04	4.98	533.44	0.12	0 00:09	0
9	CB-18	3.36	3.30	2.25	1.12	66.74	6.89	535.16	0.17	0 00:14	0
10	CB-2	0.95	0.95	0.93	0.02	98.06	4.08	465.87	0.10	0 00:17	0
11	CB-20	3.23	3.23	N/A	N/A	N/A	7.89	516.25	0.37	0 00:17	0
12	CB-21	4.53	3.32	N/A	N/A	N/A	9.87	516.30	0.42	0 00:18	0
13	CB-22	4.78	4.78	3.54	1.24	74.00	7.46	517.15	0.18	0 00:19	0
14	CB-23	3.55	3.55	3.23	0.33	90.77	7.61	517.17	0.19	0 00:18	0
15	CB-25	4.29	4.29	N/A	N/A	N/A	9.52	535.70	0.41	0 00:07	0
16	CB-26	2.95	2.95	N/A	N/A	N/A	7.42	535.64	0.36	0 00:07	0
17	CB-28	1.65	1.54	1.54	0.11	93.55	5.88	542.79	0.14	0 00:17	0
18	CB-29	1.44	1.32	1.39	0.05	96.58	5.58	543.00	0.14	0 00:17	0
19	CB-30	1.80	1.80	1.65	0.16	91.35	6.06	548.05	0.15	0 00:16	0
20	CB-31	0.89	0.89	0.89	0.00	100.00	4.65	549.48	0.11	0 00:15	0
21	CB-32	1.03	1.03	1.03	0.00	100.00	4.91	549.99	0.12	0 00:15	0
22	CB-33	1.87	1.87	1.69	0.18	90.46	6.13	548.03	0.15	0 00:16	0
23	CB-37	1.37	1.16	1.23	0.14	89.84	4.67	490.80	0.11	0 00:10	0
24	CB-38	1.78	1.78	1.46	0.31	82.38	5.14	506.99	0.13	0 00:10	0
25	CB-40	3.35	3.35	2.13	1.22	63.67	6.50	524.96	0.16	0 00:09	0
26	CB-43	2.72	2.34	1.89	0.82	69.69	6.02	488.72	0.15	0 00:17	0
27	CB-44	2.31	1.96	1.72	0.59	74.58	5.66	507.14	0.14	0 00:09	0
28	CB-45	1.40	1.40	1.25	0.15	89.20	4.71	524.76	0.11	0 00:08	0
29	CB-51	3.09	2.81	2.04	1.05	65.99	6.34	465.98	0.16	0 00:17	0
30	CB-9	2.19	2.14	N/A	N/A	N/A	8.31	474.37	0.38	0 00:19	0

100 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	100 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	2.32	1.62	7.44	16.97	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.63	1.14	0.62	2.58	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.36	0.95	0.42	2.48	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.73	1.21	0.85	3.19	0 00:15:59
5	Sub-CB-13	0.37	0.7000	1.36	0.95	0.35	2.08	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.48	1.04	0.90	4.50	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.69	1.18	1.47	5.74	0 00:15:19
8	Sub-CB-16	0.30	0.7000	1.30	0.91	0.27	1.75	0 00:09:21
9	Sub-CB-17	0.25	0.7000	1.24	0.87	0.22	1.53	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.64	1.15	0.87	3.58	0 00:14:44
11	Sub-CB-2	0.15	0.7000	1.09	0.76	0.11	1.03	0 00:06:39
12	Sub-CB-20	0.61	0.7000	1.33	0.93	0.57	3.51	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.78	1.25	1.01	3.60	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.92	1.35	1.66	5.18	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.75	1.22	1.04	3.85	0 00:16:07
16	Sub-CB-25	0.66	0.7000	1.06	0.75	0.49	4.66	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.93	0.65	0.27	3.21	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.63	1.14	0.40	1.67	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.77	1.24	0.40	1.43	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.82	1.27	0.57	1.96	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.60	0.80	0.22	0.97	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.71	1.20	0.29	1.12	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.75	1.23	0.55	2.03	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.69	1.18	0.32	1.26	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.51	1.06	0.40	1.93	0 00:12:34
26	Sub-CB-40	0.63	0.7000	1.31	0.92	0.58	3.63	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.78	1.25	0.71	2.53	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.81	1.26	0.61	2.12	0 00:17:09
29	Sub-CB-45	0.24	0.7000	1.18	0.83	0.20	1.52	0 00:07:51
30	Sub-CB-51	0.76	0.7000	2.07	1.45	1.10	3.05	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.88	1.31	0.71	2.33	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.40	0.98	0.16	0.88	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	2.27	1.59	2.75	6.51	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	30.96	470.75	0.00	1.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	18.44	475.71	0.00	3.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	4.65	469.21	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	1.42	462.78	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	19.21	502.63	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	8.63	526.55	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	6.53	534.59	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	3.33	510.36	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	1.42	463.17	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	6.51	442.52	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.95	539.17	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					2.45	461.39		
15	FES-3	Outfall	538.50					1.84	539.01		
16	FES-36	Outfall	472.00					9.43	472.57		
17	FES-46	Outfall	468.25					30.96	469.77		
18	FES-48	Outfall	468.00					18.44	469.20		
19	FES-7	Outfall	468.00					4.65	468.56		
20	3-Jun	Outfall	0.00					0.02	0.02		
21	OUT-SDPIPE35	Outfall	462.25					1.39	462.50		
22	Out-SDPIPE-36	Outfall	441.00					6.50	441.94		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.13	15.32	0.01	3.41	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	1.41	8.57	0.16	3.58	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	1.24	28.73	0.04	5.12	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	2.45	29.29	0.08	5.06	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	1.39	15.97	0.09	4.65	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.84	5.54	0.33	2.85	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	18.44	18.85	0.98	11.00	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	15.20	20.80	0.73	11.70	1.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	13.85	24.08	0.58	11.84	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	7.82	20.87	0.37	10.53	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	4.50	13.13	0.34	5.78	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	3.04	21.90	0.14	5.74	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	2.43	16.13	0.15	6.11	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	19.21	32.04	0.60	11.15	1.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	18.60	30.19	0.62	7.82	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.71	15.88	0.23	3.70	1.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	3.34	13.09	0.26	3.02	1.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	8.62	29.75	0.29	7.70	1.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	8.63	13.61	0.63	8.35	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	1.77	34.17	0.05	2.29	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	6.52	20.19	0.32	6.95	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	6.53	21.21	0.31	9.31	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	1.10	14.89	0.07	4.69	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	4.99	11.09	0.45	5.50	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	2.28	11.38	0.20	4.48	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	2.34	22.32	0.10	5.96	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.31	15.45	0.08	4.91	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.20	5.85	0.03	1.57	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.11	5.59	0.02	0.35	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	1.25	7.51	0.17	1.22	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	2.74	4.19	0.65	1.39	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.12	9.68	0.01	0.64	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	1.17	7.90	0.15	0.92	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.10	9.88	0.01	0.67	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	1.46	2.67	0.55	0.79	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.44	3.74	0.12	0.36	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.19	6.78	0.03	2.75	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	1.40	8.96	0.16	3.91	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.49	8.97	0.05	1.76	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.36	8.96	0.04	2.78	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.11	8.87	0.01	0.13	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.71	8.97	0.08	1.68	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.24	5.53	0.04	1.49	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.72	7.81	0.09	0.80	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.04	4.97	0.01	0.62	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.02	52.65	0.00	4.51	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.04	8.95	0.00	0.08	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	3.54	N/A	N/A	N/A	8.50	8.8
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	2.56	1.78	0.78	69.65	8.50	5.7
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	3.19	2.02	1.17	63.20	8.50	6.2
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	2.20	1.98	0.22	89.89	8.50	6.9
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	6.25	N/A	N/A	N/A	8.50	12.2
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	6.90	3.29	3.60	47.77	8.50	8.9
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.75	1.51	0.24	86.23	8.50	5.3
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.53	1.38	0.15	89.89	8.50	5.1
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	3.69	2.37	1.32	64.19	8.50	7.1
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	1.03	0.99	0.03	96.61	8.50	4.2
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	3.51	N/A	N/A	N/A	8.50	8.3
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	5.10	N/A	N/A	N/A	8.50	10.6
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	5.19	3.72	1.47	71.65	8.50	7.6
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	3.85	3.41	0.44	88.55	8.50	7.8
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	4.66	N/A	N/A	N/A	8.50	10.0
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	3.21	N/A	N/A	N/A	8.50	7.8
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.82	1.66	0.16	91.08	8.50	6.0
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.60	1.51	0.09	94.26	8.50	5.8
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.96	1.74	0.21	89.17	8.50	6.2
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.97	0.97	0.00	100.00	8.50	4.7
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	1.12	1.12	0.00	99.80	8.50	5.0
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	2.03	1.79	0.24	88.15	8.50	6.3
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.51	1.32	0.19	87.09	8.50	4.8
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.93	1.54	0.39	79.95	8.50	5.3
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	3.63	2.23	1.40	61.34	8.50	6.7
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	3.00	2.00	0.99	66.83	8.50	6.2
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	2.58	1.84	0.75	71.13	8.50	5.9
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.52	1.32	0.20	86.92	8.50	4.8

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	30.96	16.97	470.75	2.25	0.00	1.91	468.59	0.09	0 00:19	
2	CB-47	18.44	0.00	475.71	4.71	0.00	3.61	471.05	0.05	0 00:10	
3	CB-8	4.65	0.00	469.21	0.71	0.00	5.51	468.52	0.02	0 00:19	
4	JB	1.42	0.00	462.78	0.48	0.00	5.52	462.32	0.02	0 00:17	
5	JB-19	19.21	0.00	502.63	0.63	0.00	6.65	502.02	0.02	0 00:17	
6	JB-24	8.63	0.00	526.55	0.55	0.00	9.24	526.02	0.02	0 00:07	
7	JB-27	6.53	0.00	534.59	0.59	0.00	5.21	534.02	0.02	0 00:17	
8	JB-39	3.33	0.00	510.36	0.36	0.00	11.37	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	1.42	0.88	463.17	0.42	0.00	1.08	462.76	0.01	0 00:17	
11	JB-SDPIPE36	6.51	6.51	442.52	1.22	0.00	0.28	441.34	0.04	0 00:25	
12	8-Jun	1.95	0.00	539.17	0.67	0.00	5.33	538.52	0.02	0 00:16	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Numbe
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.20	0 00:17	5.85	0.03	1.57	1.61	0.08	0.23	0.00	
2	Link-02	0.11	0 00:14	5.59	0.02	0.35	12.06	0.12	0.36	0.00	
3	Link-03	1.25	0 00:14	7.51	0.17	1.22	4.15	0.22	0.67	0.00	
4	Link-04	2.74	0 00:15	4.19	0.65	1.39	3.62	0.31	0.93	0.00	
5	Link-06	0.12	0 00:11	9.68	0.01	0.64	5.02	0.09	0.29	0.00	
6	Link-07	1.17	0 00:16	7.90	0.15	0.92	5.35	0.24	0.74	0.00	
7	Link-09	0.10	0 00:09	9.88	0.01	0.67	4.30	0.14	0.42	0.00	
8	Link-10	1.46	0 00:19	2.67	0.55	0.79	3.31	0.30	0.90	0.00	
9	Link-11	0.44	0 00:16	3.74	0.12	0.36	3.73	0.24	0.72	0.00	
10	Link-12	0.19	0 00:08	6.78	0.03	2.75	1.04	0.08	0.24	0.00	
11	Link-13	1.40	0 00:09	8.96	0.16	3.91	0.97	0.13	0.40	0.00	
12	Link-14	0.49	0 00:17	8.97	0.05	1.76	2.24	0.12	0.35	0.00	
13	Link-15	0.36	0 00:13	8.96	0.04	2.78	1.25	0.08	0.23	0.00	
14	Link-16	0.11	0 00:15	8.87	0.01	0.13	28.03	0.19	0.59	0.00	
15	Link-17	0.71	0 00:17	8.97	0.08	1.68	2.89	0.14	0.43	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.04	0.00	
17	Link-19	0.24	0 00:16	5.53	0.04	1.49	1.97	0.08	0.25	0.00	
18	Link-20	0.72	0 00:10	7.81	0.09	0.80	5.88	0.22	0.68	0.00	
19	Link-24	0.04	0 00:18	4.97	0.01	0.62	8.50	0.17	0.50	0.00	
20	Link-28	0.02	0 00:15	52.65	0.00	4.51	0.76	0.01	0.04	0.00	
21	Link-38	0.04	0 00:06	8.95	0.00	0.08	9.32	0.18	0.54	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.13	0 00:11	15.32	0.01	3.41	1.99	0.08	0.06	0
2	Link-08	1.41	0 00:17	8.57	0.16	3.58	0.14	0.45	0.36	0
3	Link-30	1.24	0 00:21	28.73	0.04	5.12	0.10	0.29	0.20	0
4	Link-33	2.45	0 00:17	29.29	0.08	5.06	0.11	0.42	0.21	0
5	Link-37	1.39	0 00:17	15.97	0.09	4.65	0.00	0.37	0.29	0
6	Link-39	1.84	0 00:16	5.54	0.33	2.85	0.00	0.59	0.39	0
7	L-SDPIPE-8	18.44	0 00:13	18.85	0.98	11.00	0.11	1.35	0.90	0
8	SDPIPE-10	15.20	0 00:13	20.80	0.73	11.70	0.27	1.03	0.69	0
9	SDPIPE-11	13.85	0 00:14	24.08	0.58	11.84	0.09	0.94	0.63	0
10	SDPIPE-12	7.82	0 00:14	20.87	0.37	10.53	0.47	0.66	0.44	0
11	SDPIPE-13	4.50	0 00:10	13.13	0.34	5.78	0.18	0.68	0.46	0
12	SDPIPE-14	3.04	0 00:09	21.90	0.14	5.74	0.93	0.55	0.36	0
13	SDPIPE-15	2.43	0 00:14	16.13	0.15	6.11	0.12	0.42	0.28	0
14	SDPIPE-16	19.21	0 00:17	32.04	0.60	11.15	0.20	1.08	0.54	0
15	SDPIPE-17	18.60	0 00:18	30.19	0.62	7.82	0.07	1.42	0.71	0
16	SDPIPE-18	3.71	0 00:19	15.88	0.23	3.70	0.35	1.00	0.66	0
17	SDPIPE-19	3.34	0 00:16	13.09	0.26	3.02	0.42	1.13	0.75	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.23	0.11	0
19	SDPIPE-20	8.62	0 00:07	29.75	0.29	7.70	0.55	1.00	0.67	0
20	SDPIPE-21	8.63	0 00:07	13.61	0.63	8.35	0.14	0.85	0.57	0
21	SDPIPE-22	1.77	0 00:07	34.17	0.05	2.29	0.24	0.69	0.46	0
22	SDPIPE-23	6.52	0 00:17	20.19	0.32	6.95	0.53	0.79	0.52	0
23	SDPIPE-24	6.53	0 00:17	21.21	0.31	9.31	0.13	0.63	0.42	0
24	SDPIPE-25	1.10	0 00:15	14.89	0.07	4.69	0.27	0.29	0.19	0
25	SDPIPE-25 (1)	4.99	0 00:17	11.09	0.45	5.50	0.14	0.77	0.51	0
26	SDPIPE-25 (12)	2.28	0 00:17	11.38	0.20	4.48	0.16	0.50	0.33	0
27	SDPIPE-25 (13)	2.34	0 00:09	22.32	0.10	5.96	0.09	0.47	0.32	0
28	SDPIPE-25 (14)	1.31	0 00:08	15.45	0.08	4.91	0.16	0.31	0.21	0
29	SDPIPE-25 (15)	19.21	0 00:17	89.94	0.21	8.78	0.47	1.31	0.66	0
30	SDPIPE-25 (15) (1)	30.96	0 00:19	45.15	0.69	7.80	0.05	1.88	0.75	0
31	SDPIPE-25 (17)	2.45	0 00:17	10.50	0.23	4.48	0.12	0.52	0.35	0
32	SDPIPE-25 (2)	3.46	0 00:16	22.74	0.15	4.91	0.51	0.63	0.42	0
33	SDPIPE-25 (3)	1.78	0 00:16	12.88	0.14	4.39	0.13	0.42	0.28	0
34	SDPIPE-25 (6)	9.43	0 00:10	31.10	0.30	13.72	0.11	0.62	0.41	0
35	SDPIPE-25 (7)	6.95	0 00:10	24.71	0.28	11.42	0.29	0.56	0.38	0
36	SDPIPE-25 (8)	3.33	0 00:09	28.14	0.12	10.35	0.32	0.36	0.24	0
37	SDPIPE-25 (9)	2.22	0 00:09	14.64	0.15	5.41	0.16	0.42	0.28	0
38	SDPIPE-32	1.95	0 00:14	26.26	0.07	5.14	0.31	0.47	0.31	0
39	SDPIPE-36	6.50	0 00:25	9.10	0.71	4.79	0.10	1.08	0.72	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	4.65	0 00:19	27.02	0.17	5.43	0.13	0.63	0.32	0
42	SDPIPE-6	4.65	0 00:19	25.54	0.18	4.66	0.20	0.71	0.35	0
43	SDPIPE-7	3.24	0 00:16	22.70	0.14	3.55	0.16	0.68	0.34	0
44	SDPIPE-8 (1)	18.44	0 00:13	31.86	0.58	11.91	0.18	1.23	0.82	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	3.54	2.58	N/A	N/A	N/A	8.84	474.39	0.39	0 00:17	0
2	CB-11	2.56	2.48	1.78	0.78	69.65	5.70	490.83	0.14	0 00:13	0
3	CB-12	3.19	3.19	2.02	1.17	63.20	6.20	492.04	0.15	0 00:16	0
4	CB-13	2.20	2.08	1.98	0.22	89.89	6.99	508.36	0.17	0 00:13	0
5	CB-14	6.25	4.50	N/A	N/A	N/A	12.25	513.73	0.48	0 00:14	0
6	CB-15	6.90	5.74	3.29	3.60	47.77	8.98	518.61	0.22	0 00:14	0
7	CB-16	1.75	1.75	1.51	0.24	86.23	5.38	519.83	0.13	0 00:09	0
8	CB-17	1.53	1.53	1.38	0.15	89.89	5.14	533.44	0.13	0 00:09	0
9	CB-18	3.69	3.58	2.37	1.32	64.19	7.10	535.17	0.17	0 00:14	0
10	CB-2	1.03	1.03	0.99	0.03	96.61	4.21	465.87	0.10	0 00:17	0
11	CB-20	3.51	3.51	N/A	N/A	N/A	8.34	516.26	0.38	0 00:17	0
12	CB-21	5.10	3.60	N/A	N/A	N/A	10.69	516.32	0.44	0 00:18	0
13	CB-22	5.19	5.18	3.72	1.47	71.65	7.66	517.16	0.19	0 00:19	0
14	CB-23	3.85	3.85	3.41	0.44	88.55	7.85	517.17	0.19	0 00:18	0
15	CB-25	4.66	4.66	N/A	N/A	N/A	10.06	535.71	0.42	0 00:07	0
16	CB-26	3.21	3.21	N/A	N/A	N/A	7.86	535.66	0.37	0 00:07	0
17	CB-28	1.82	1.67	1.66	0.16	91.08	6.08	542.80	0.15	0 00:17	0
18	CB-29	1.60	1.43	1.51	0.09	94.26	5.81	543.00	0.14	0 00:17	0
19	CB-30	1.96	1.96	1.74	0.21	89.17	6.25	548.06	0.15	0 00:16	0
20	CB-31	0.97	0.97	0.97	0.00	100.00	4.77	549.48	0.12	0 00:14	0
21	CB-32	1.12	1.12	1.12	0.00	99.80	5.03	549.99	0.12	0 00:15	0
22	CB-33	2.03	2.03	1.79	0.24	88.15	6.35	548.03	0.16	0 00:16	0
23	CB-37	1.51	1.26	1.32	0.19	87.09	4.84	490.81	0.12	0 00:10	0
24	CB-38	1.93	1.93	1.54	0.39	79.95	5.30	507.00	0.13	0 00:10	0
25	CB-40	3.63	3.63	2.23	1.40	61.34	6.70	524.97	0.16	0 00:09	0
26	CB-43	3.00	2.53	2.00	0.99	66.83	6.24	488.72	0.15	0 00:17	0
27	CB-44	2.58	2.12	1.84	0.75	71.13	5.92	507.14	0.15	0 00:09	0
28	CB-45	1.52	1.52	1.32	0.20	86.92	4.85	524.76	0.12	0 00:08	0
29	CB-51	3.39	3.05	2.15	1.24	63.40	6.53	465.98	0.16	0 00:17	0
30	CB-9	2.39	2.32	N/A	N/A	N/A	8.80	474.39	0.39	0 00:19	0

Detention Pond Outlet Schematics

Table | Structure | Plan / Profile | Stage vs. Q | Stage vs. Drain Time | Trial Route | Help

Target Qs | Struct HG | Ext Det | Flow Path

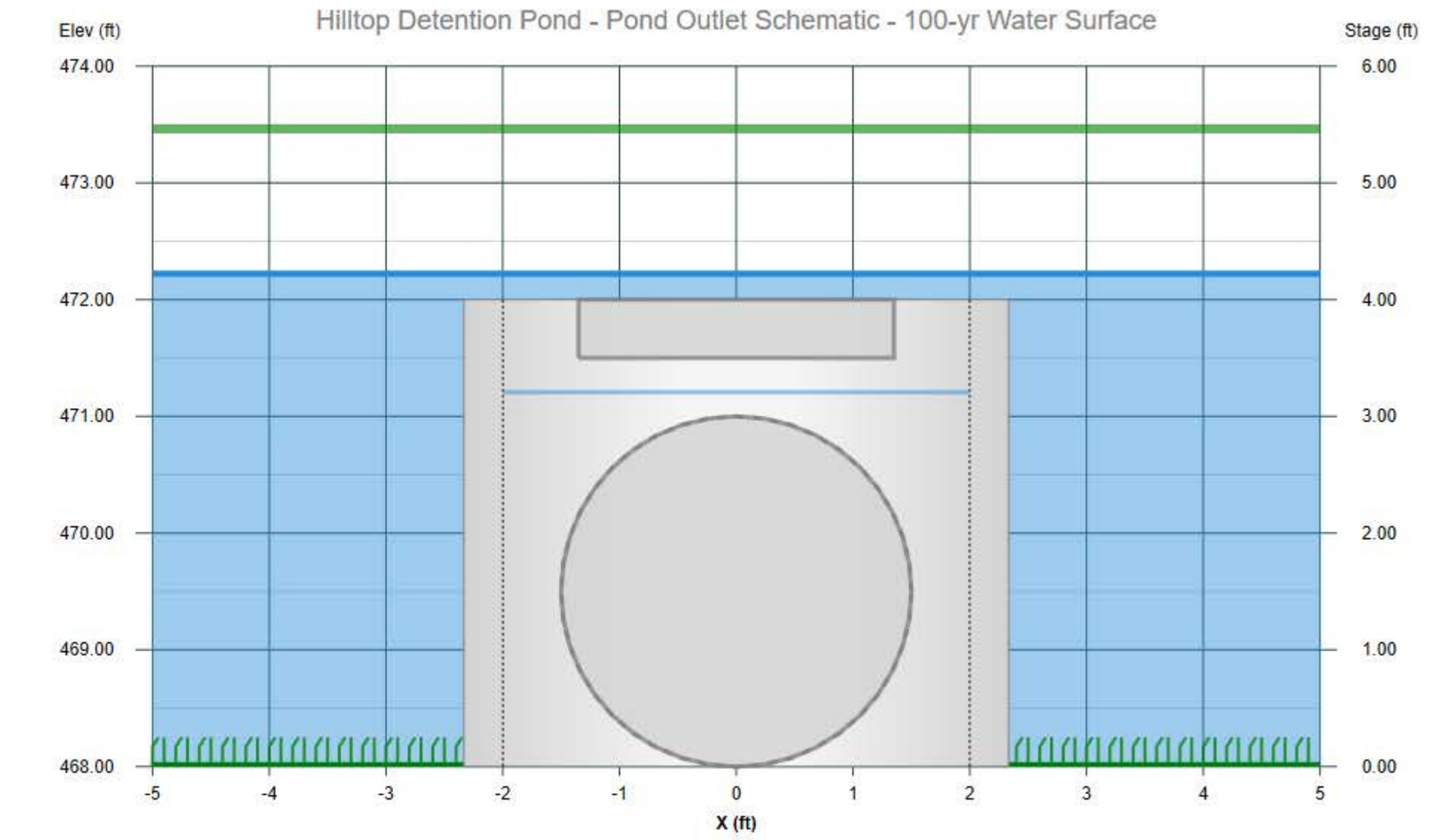
Culvert	Riser	Orifice	Weir
Exfiltration	User	Perf Riser	Tailwater

Orifice 1	Input
Outlet Structure =	Orifice 1
Shape =	Circular
Diameter (in) =	32
No. Holes =	1
Invert Elev. (ft) =	468.00
Orifice Coeff. (Co) =	0.6
Flows through Culvert =	☑
Active =	☑

Auto | Add/Update

Freq (Yr)	Q Targ (cfs)	Q Act (cfs)	Max Ele (ft)	Max Stor (cuft)
2	23.14	24.49	470.62	34,621
10	31.02	32.20	471.30	45,155
25	35.65	36.40	471.71	51,948
50	38.98	39.98	472.00	56,670
100	42.33	44.60	472.24	60,924

Auto Route | Trial Route



Click on a structure to select. Double-click to resize.

Numerical Output

X = 1.54 ft Y = 466.91 ft

< Create Pond | Finish

Detention Pond Storage Estimate

Estimate Storage* > Create Pond > Add Outlet Structures

1-Yr 2-Yr 3-Yr 5-Yr 10-Yr 25-Yr 50-Yr 100-Yr

Post-dev Hyd = 13 - Rational - Post-Dev Basin "E-1"

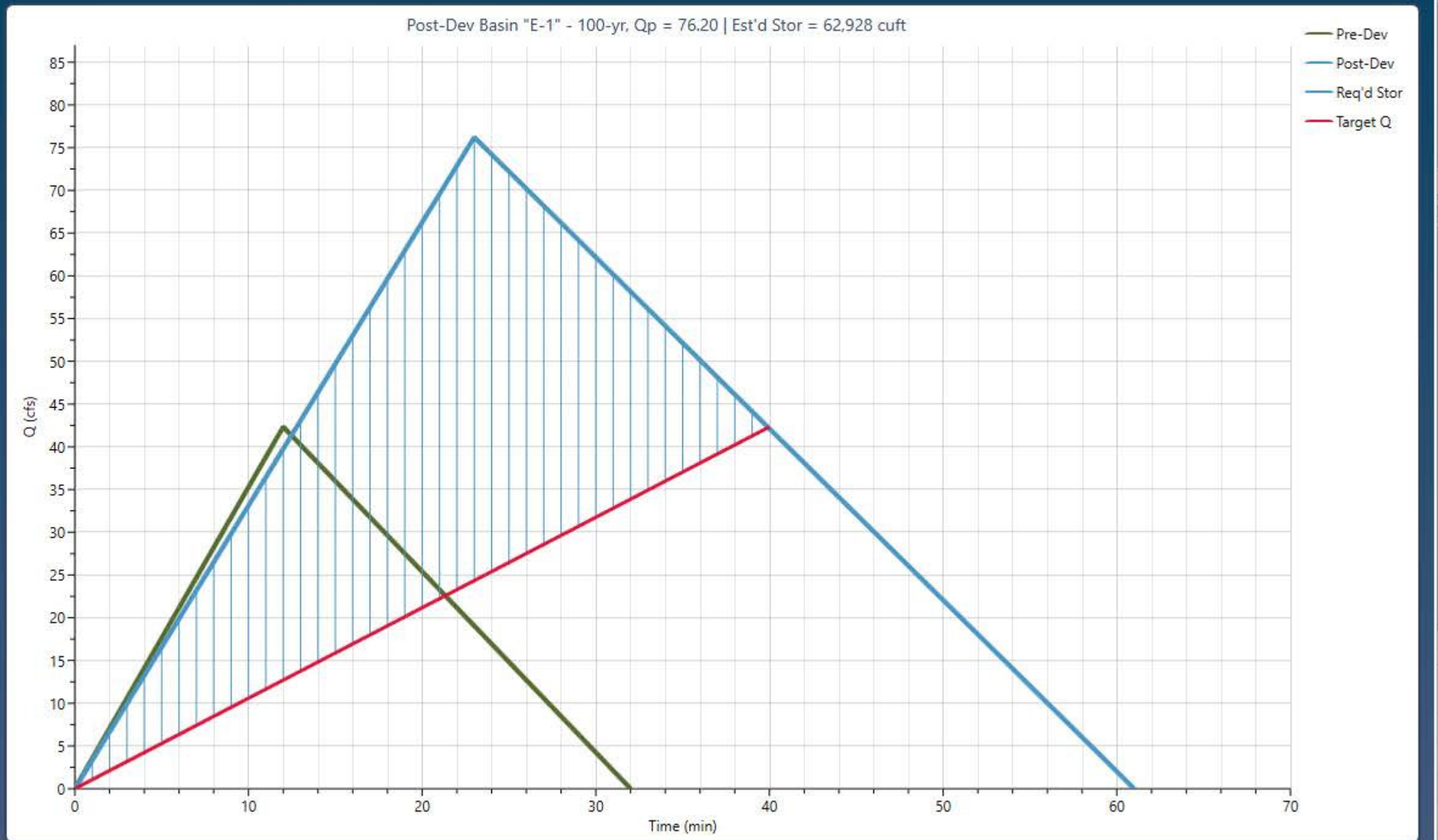
Pre-dev Hyd = 5 - Rational - Pre-Dev Basin "E-1"

Freq (Yr)	Vol Pre (cuft)	Vol Post (cuft)	Qp Post (cfs)	Q Targ (cfs)	Req Stor (cuft)
1					
2	22,242	76,570	41.56	23.14	34,223
3					
5					
10	29,819	102,852	55.83	31.02	46,086
25	34,268	118,247	64.18	35.65	53,007
50	37,472	129,411	70.24	38.98	58,077
100	40,692	140,392	76.20	42.33	62,928

Clear | Estimate Storage

	Extended Detention Storage (optional)	
Zone	Description	Volume (cuft)
1	WQv	
2	CPv	
3	Custom	
4	Custom	

Clear | Apply



*Estimate Storage Step is Optional

Always skip this step

Create Pond >

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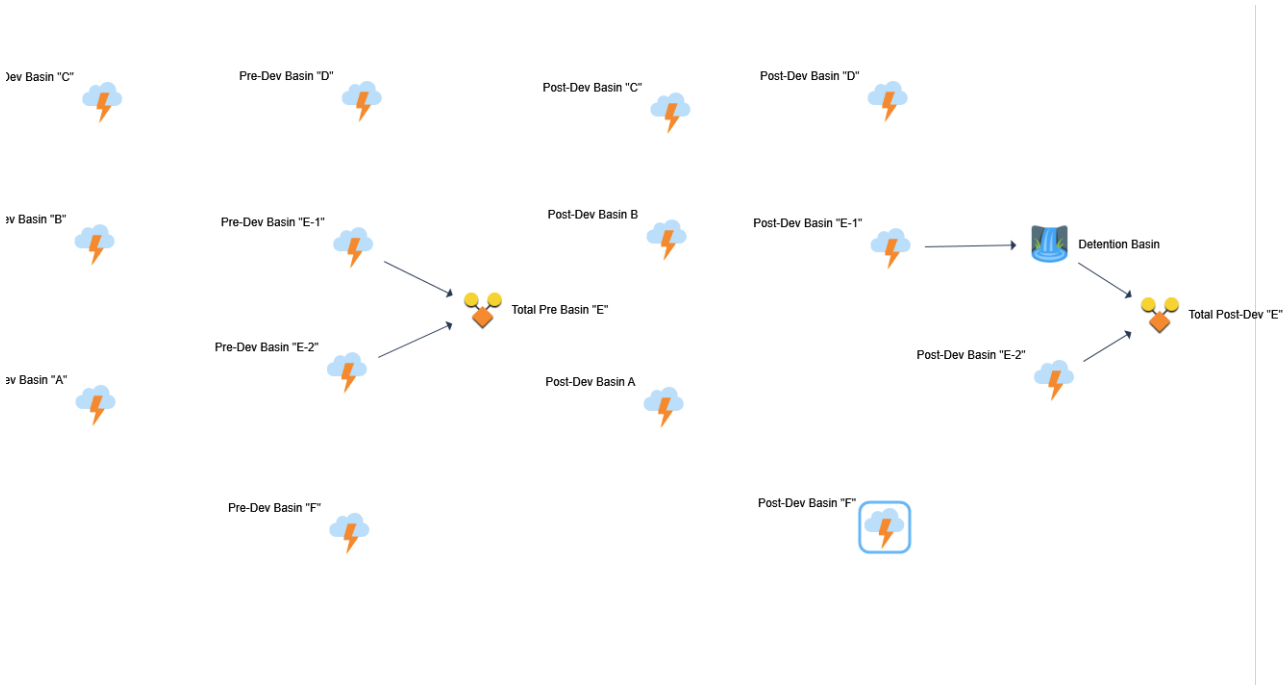
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Basin Model

Hydrology Studio v 3.0.0.44

Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026



Hydrograph by Return Period

Hydrology Studio v 3.0.0.44

Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	Rational	Pre-Dev Basin "A"		8.527			11.43	13.13	14.36	15.60
2	Rational	Pre-Dev Basin "B"		28.63			38.41	44.15	48.29	52.42
3	Rational	Pre-Dev Basin "C"		16.17			21.67	24.90	27.23	29.57
4	Rational	Pre-Dev Basin "D"		7.322			9.804	11.26	12.31	13.38
5	Rational	Pre-Dev Basin "E-1"		23.14			31.02	35.65	38.98	42.33
6	Rational	Pre-Dev Basin "E-2"		39.29			52.69	60.55	66.22	71.90
7	Junction	Total Pre Basin "E"		61.27			82.16	94.42	103.3	112.1
8	Rational	Pre-Dev Basin "F"		24.68			33.12	38.07	41.64	45.20
9	Rational	Post-Dev Basin A		8.085			10.85	12.47	13.64	14.80
10	Rational	Post-Dev Basin B		22.11			29.69	34.13	37.35	40.52
11	Rational	Post-Dev Basin "C"		16.54			22.16	25.47	27.85	30.24
12	Rational	Post-Dev Basin "D"		8.404			11.25	12.93	14.13	15.35
13	Rational	Post-Dev Basin "E-1"		41.56			55.83	64.18	70.24	76.20
14	Pond Route	Detention Basin		24.49			32.20	36.40	39.98	44.60
15	Rational	Post-Dev Basin "E-2"		35.39			47.46	54.55	59.65	64.77
16	Junction	Total Post-Dev "E"		37.88			51.67	59.86	65.87	71.78
17	Rational	Post-Dev Basin "F"		23.59			31.65	36.38	39.79	43.19

Hydrograph 2-yr Summary

Hydrology Studio v 3.0.0.44

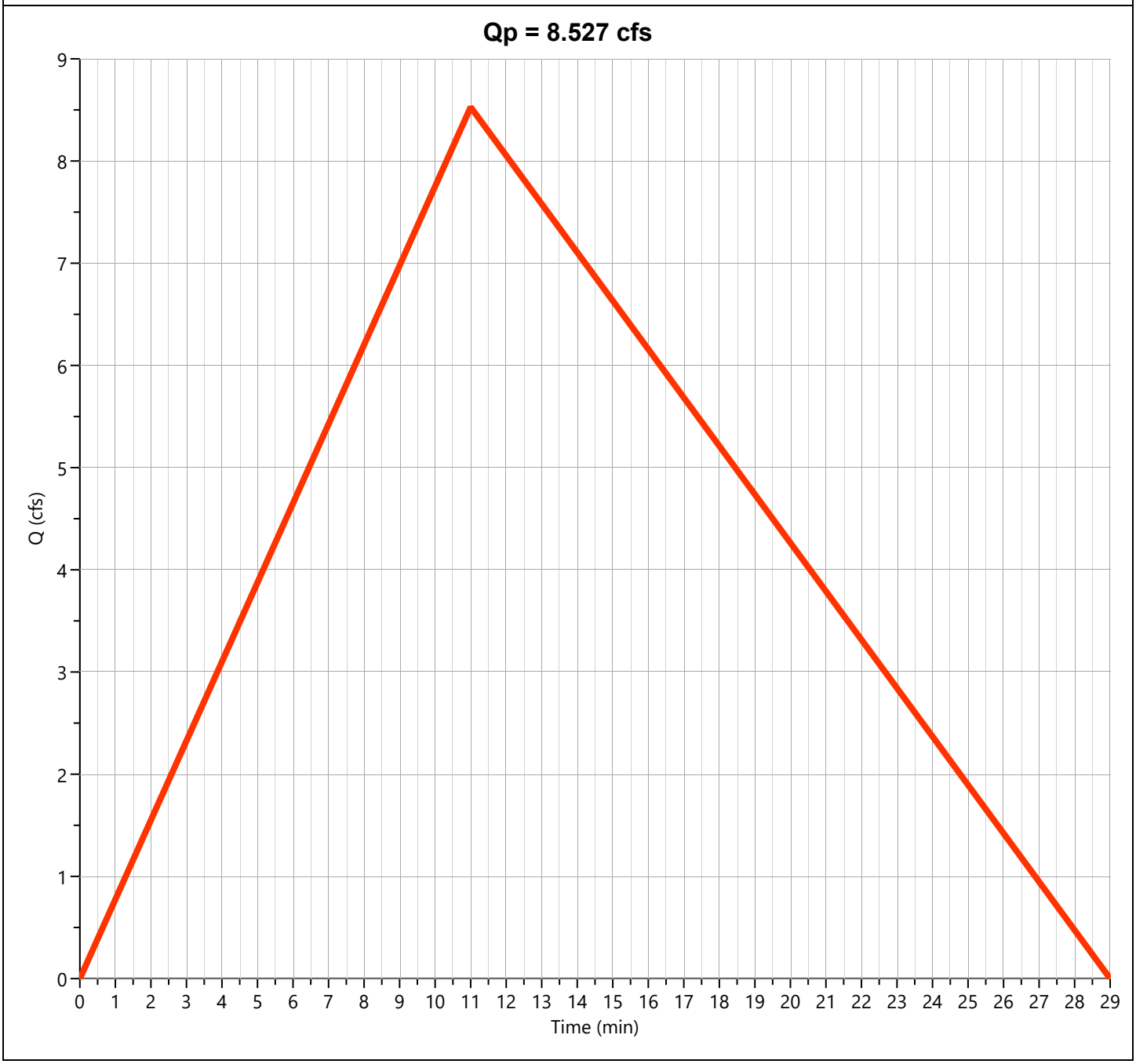
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	8.527	0.18	7,513	----		
2	Rational	Pre-Dev Basin "B"	28.63	0.25	34,400	----		
3	Rational	Pre-Dev Basin "C"	16.17	0.18	14,247	----		
4	Rational	Pre-Dev Basin "D"	7.322	0.13	4,692	----		
5	Rational	Pre-Dev Basin "E-1"	23.14	0.20	22,242	----		
6	Rational	Pre-Dev Basin "E-2"	39.29	0.22	40,914	----		
7	Junction	Total Pre Basin "E"	61.27	0.22	62,291	5, 6		
8	Rational	Pre-Dev Basin "F"	24.68	0.28	33,601	----		
9	Rational	Post-Dev Basin A	8.085	0.25	9,714	----		
10	Rational	Post-Dev Basin B	22.11	0.35	37,188	----		
11	Rational	Post-Dev Basin "C"	16.54	0.18	14,570	----		
12	Rational	Post-Dev Basin "D"	8.404	0.13	5,385	----		
13	Rational	Post-Dev Basin "E-1"	41.56	0.38	76,570	----		
14	Pond Route	Detention Basin	24.49	0.65	76,014	13	470.62	34,621
15	Rational	Post-Dev Basin "E-2"	35.39	0.22	36,857	----		
16	Junction	Total Post-Dev "E"	37.88	0.22	112,117	14, 15		
17	Rational	Post-Dev Basin "F"	23.59	0.27	30,229	----		

Pre-Dev Basin "A"

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 8.527 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 7,513 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Hydrology Studio v 3.0.0.44

09-25-2026

Pre-Dev Basin "A"
Rational

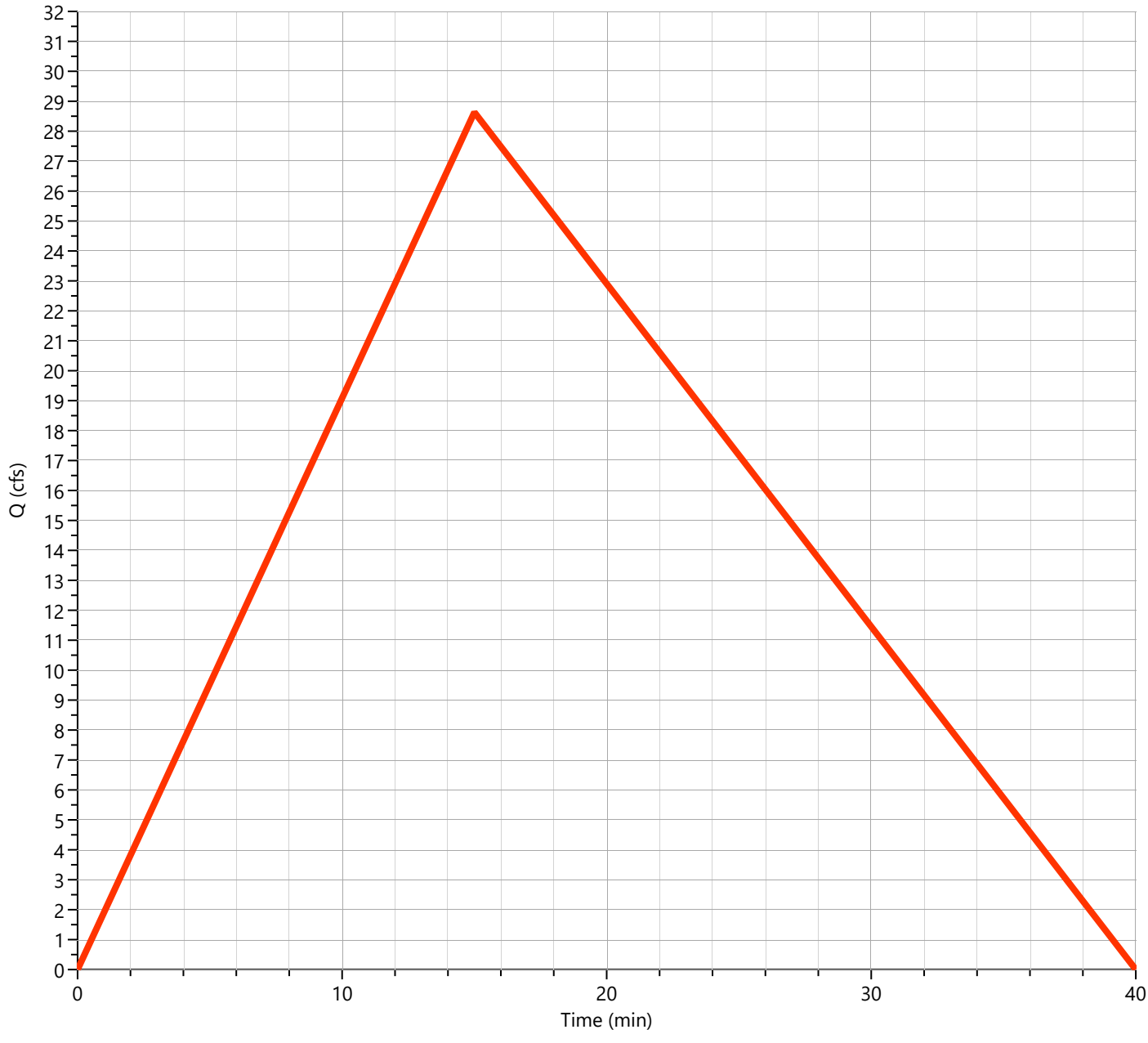
Hyd. No. 1

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	6			
Travel Time (min)	**9.43**	**0.00**	**0.00**	**9.43**
Shallow Concentrated Flow				
Flow Length (ft)	509			
Watercourse Slope (%)	8.35	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.66			
Travel Time (min)	**1.82**	**0.00**	**0.00**	**1.82**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**11 min**

Pre-Dev Basin "B"

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 28.63 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 34,400 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"
Rational

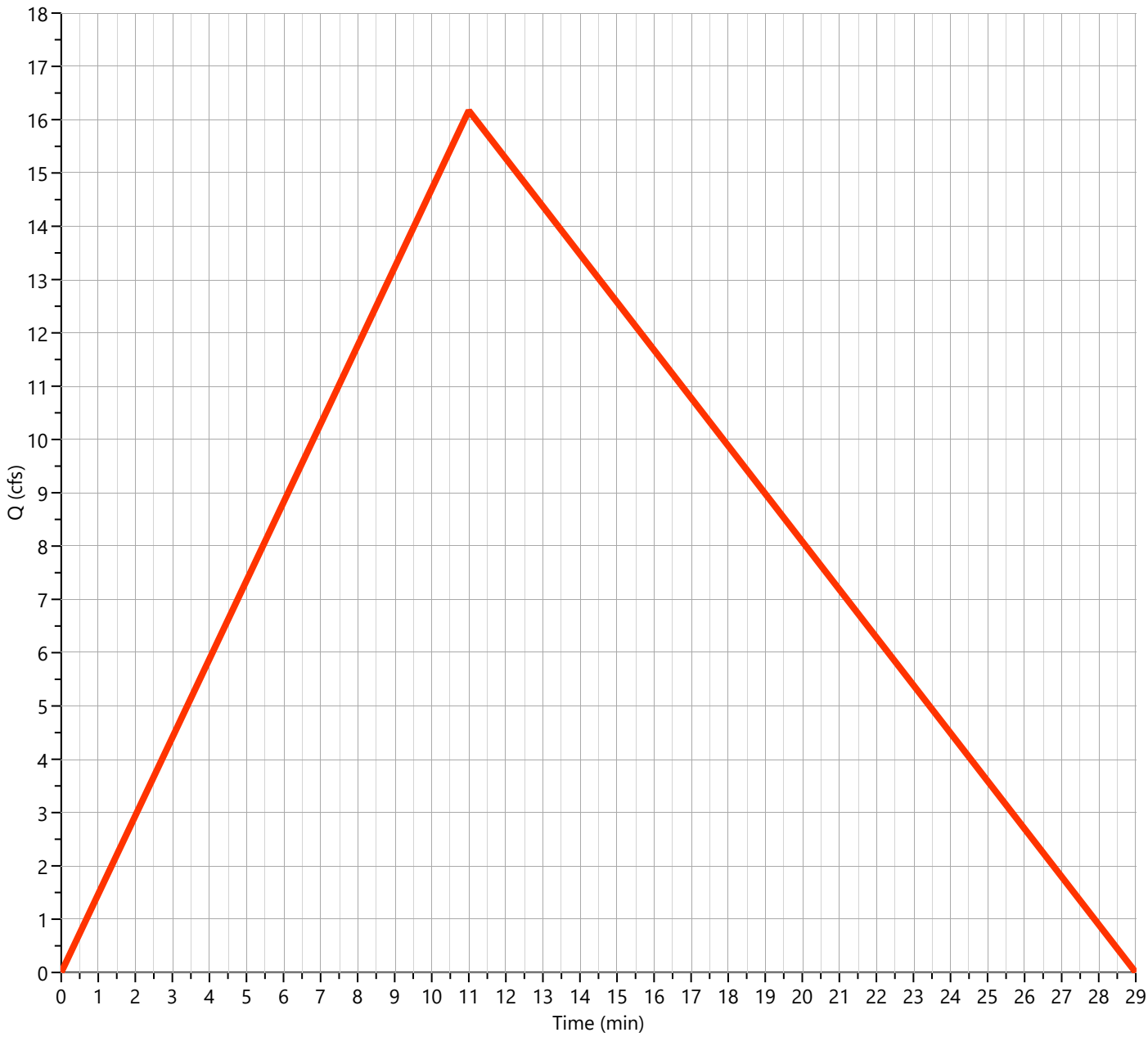
Hyd. No. 2

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	4			
Travel Time (min)	**11.09**	**0.00**	**0.00**	**11.09**
Shallow Concentrated Flow				
Flow Length (ft)	926			
Watercourse Slope (%)	5.90	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.92			
Travel Time (min)	**3.94**	**0.00**	**0.00**	**3.94**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**15 min**

Pre-Dev Basin "C"

Hyd. No. 3

Hydrograph Type	= Rational	Peak Flow	= 16.17 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 14,247 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"
Rational

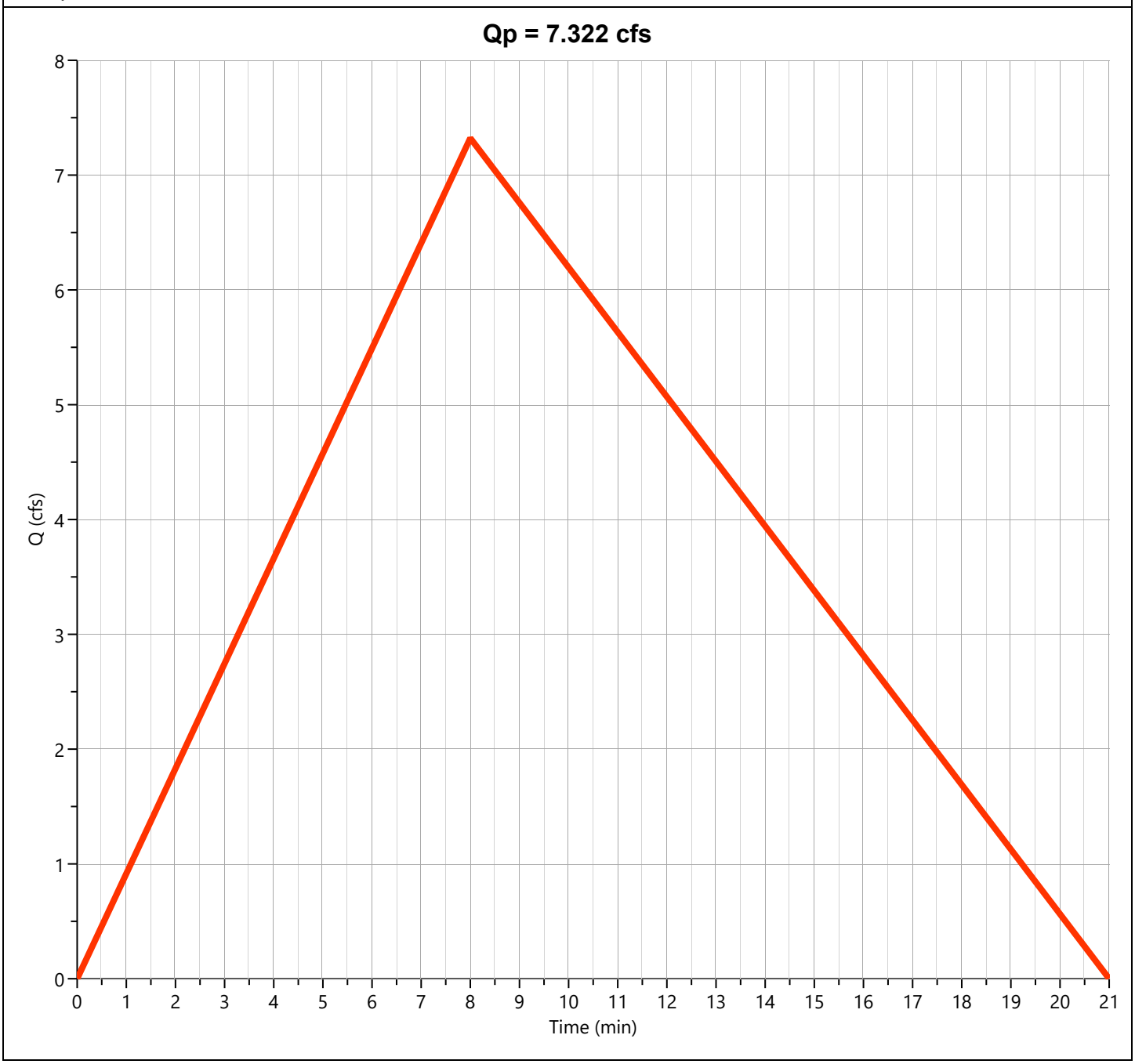
Hyd. No. 3

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	8			
Travel Time (min)	**8.40**	**0.00**	**0.00**	**8.40**
Shallow Concentrated Flow				
Flow Length (ft)	654	71		
Watercourse Slope (%)	5.68	6.20	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.85	5.06		
Travel Time (min)	**2.83**	**0.23**	**0.00**	**3.07**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**11 min**

Pre-Dev Basin "D"

Hyd. No. 4

Hydrograph Type	= Rational	Peak Flow	= 7.322 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 4,692 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Hydrology Studio v 3.0.0.44

09-25-2026

Pre-Dev Basin "D"
Rational

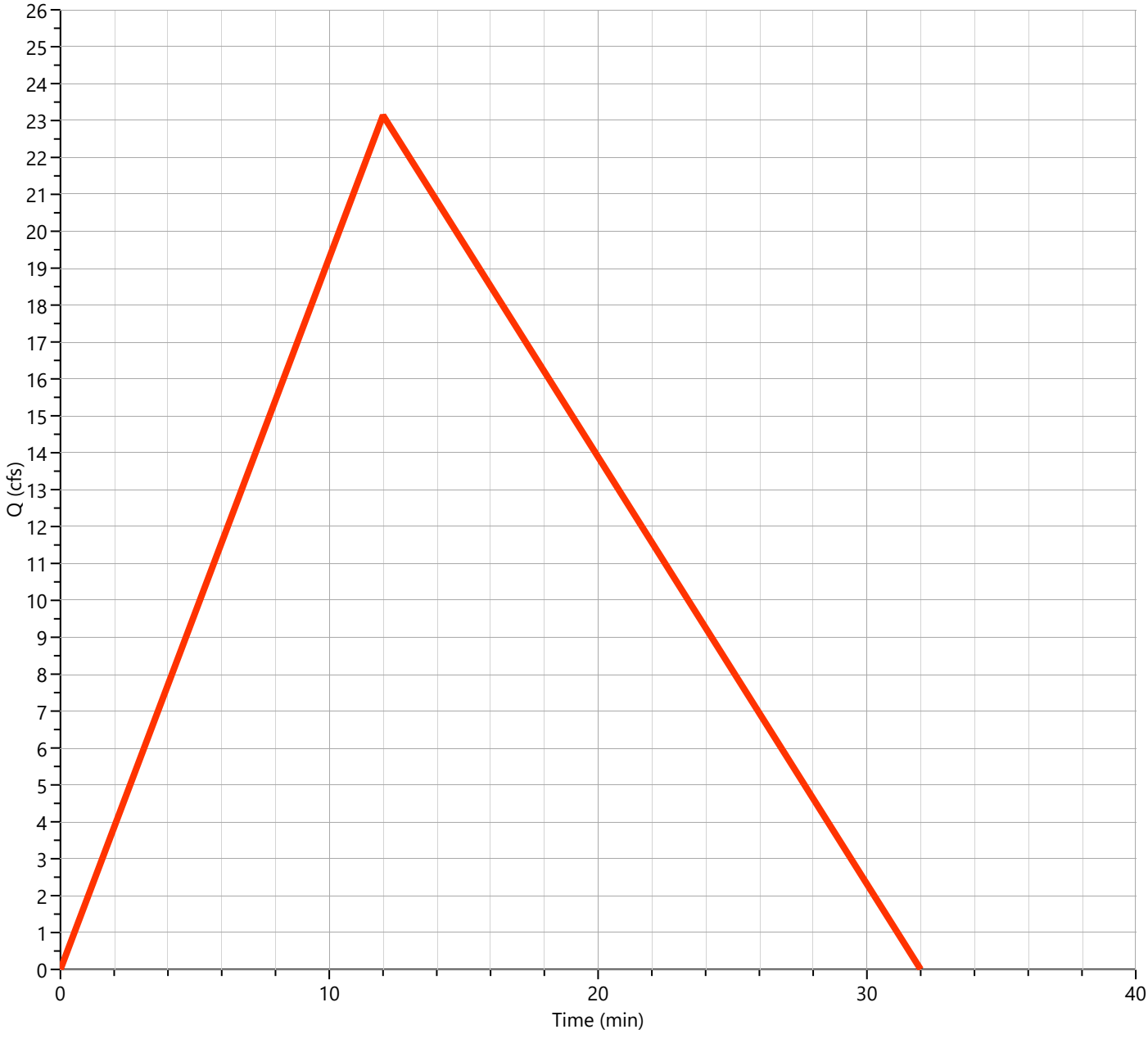
Hyd. No. 4

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	14			
Travel Time (min)	**6.72**	**0.00**	**0.00**	**6.72**
Shallow Concentrated Flow				
Flow Length (ft)	554			
Watercourse Slope (%)	11.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	5.35			
Travel Time (min)	**1.73**	**0.00**	**0.00**	**1.73**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**8 min**

Pre-Dev Basin "E-1"

Hyd. No. 5

Hydrograph Type	= Rational	Peak Flow	= 23.14 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 22,242 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.13 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"
Rational

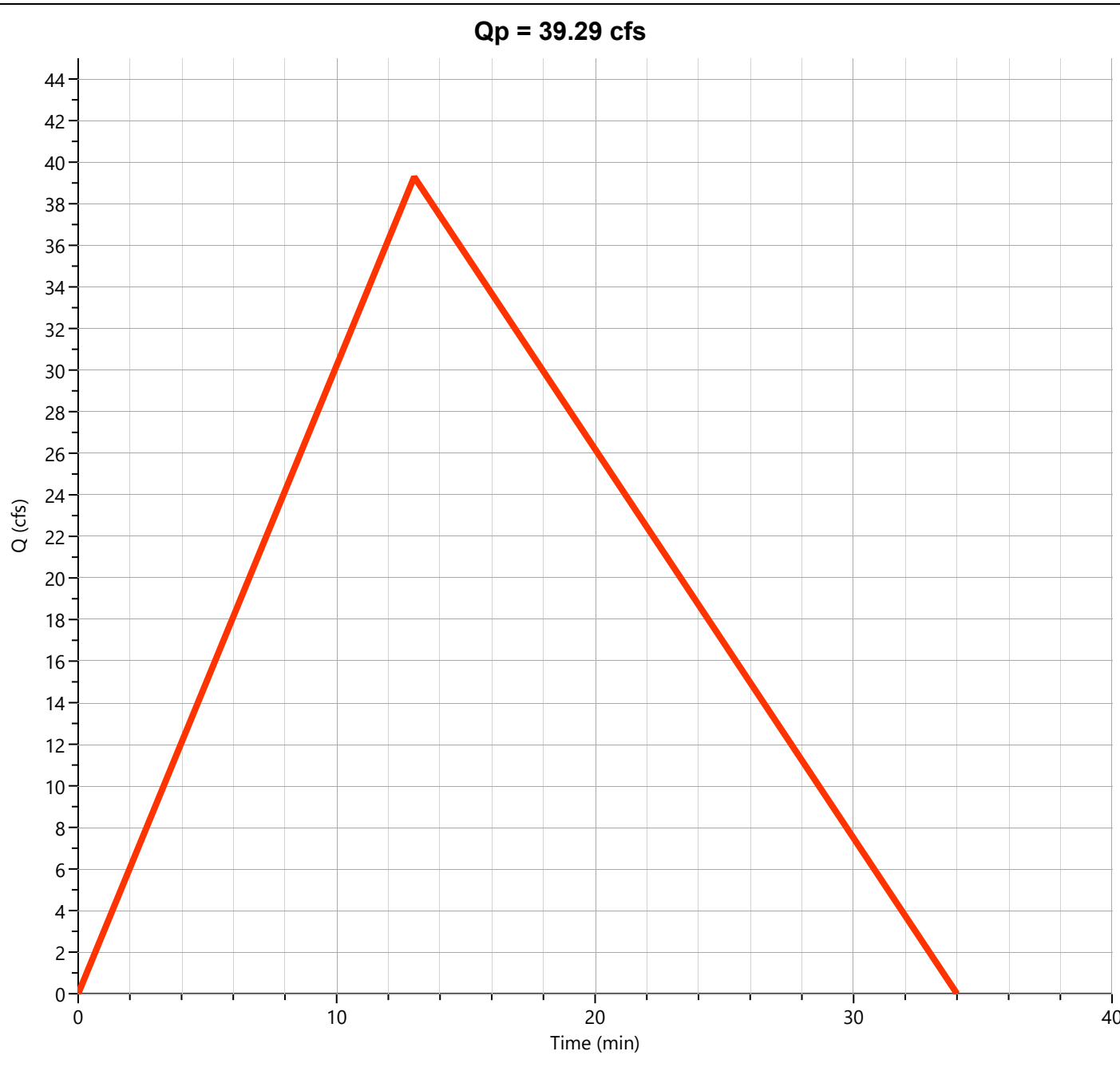
Hyd. No. 5

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	5			
Travel Time (min)	**10.14**	**0.00**	**0.00**	**10.14**
Shallow Concentrated Flow				
Flow Length (ft)	565			
Watercourse Slope (%)	13.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	5.82			
Travel Time (min)	**1.62**	**0.00**	**0.00**	**1.62**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**12 min**

Pre-Dev Basin "E-2"

Hyd. No. 6

Hydrograph Type	= Rational	Peak Flow	= 39.29 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 40,914 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.99 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"
Rational

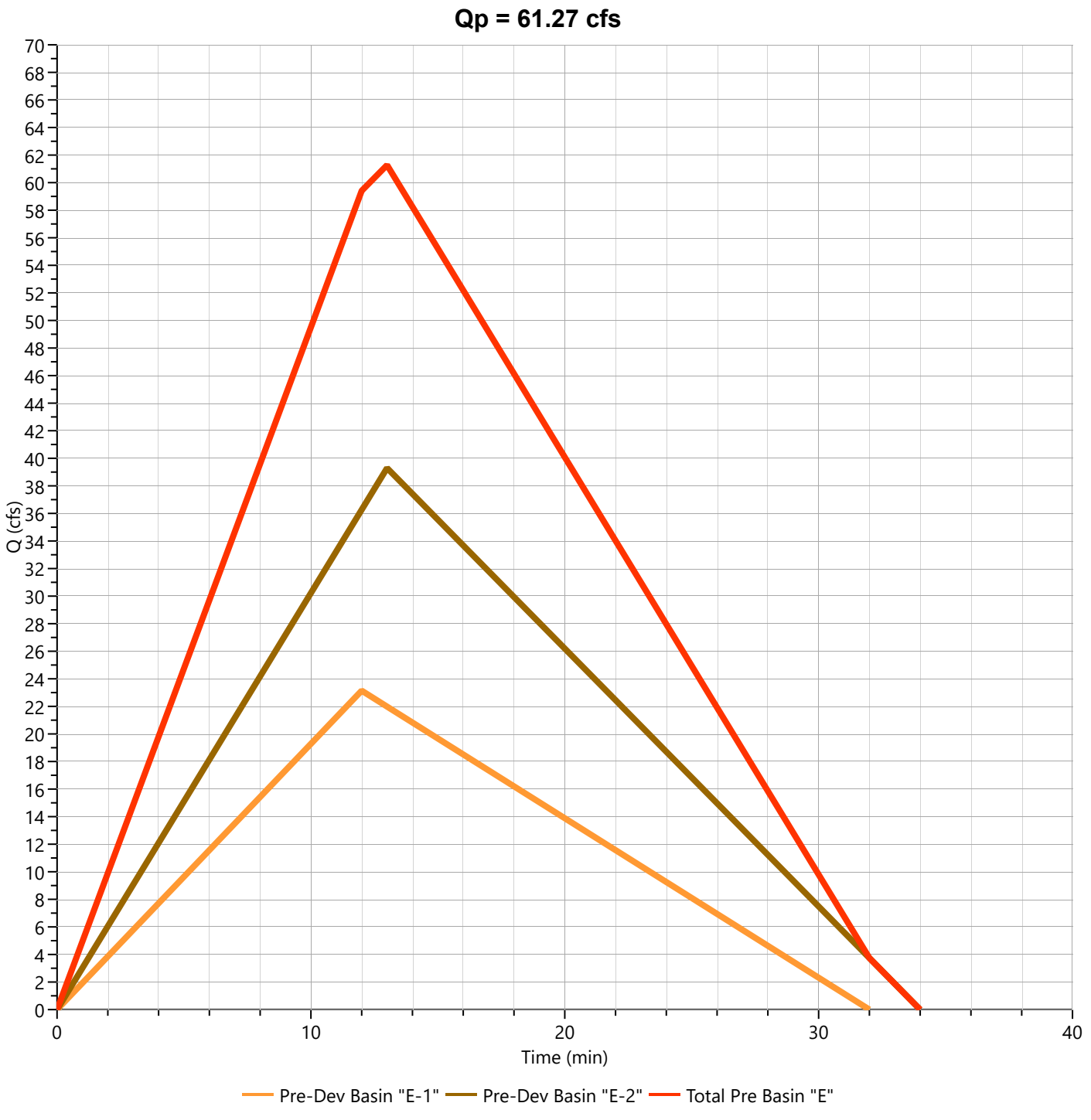
Hyd. No. 6

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	7.25			
Travel Time (min)	**8.74**	**0.00**	**0.00**	**8.74**
Shallow Concentrated Flow				
Flow Length (ft)	1070			
Watercourse Slope (%)	6.23	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.03			
Travel Time (min)	**4.43**	**0.00**	**0.00**	**4.43**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**13 min**

Total Pre Basin "E"

Hyd. No. 7

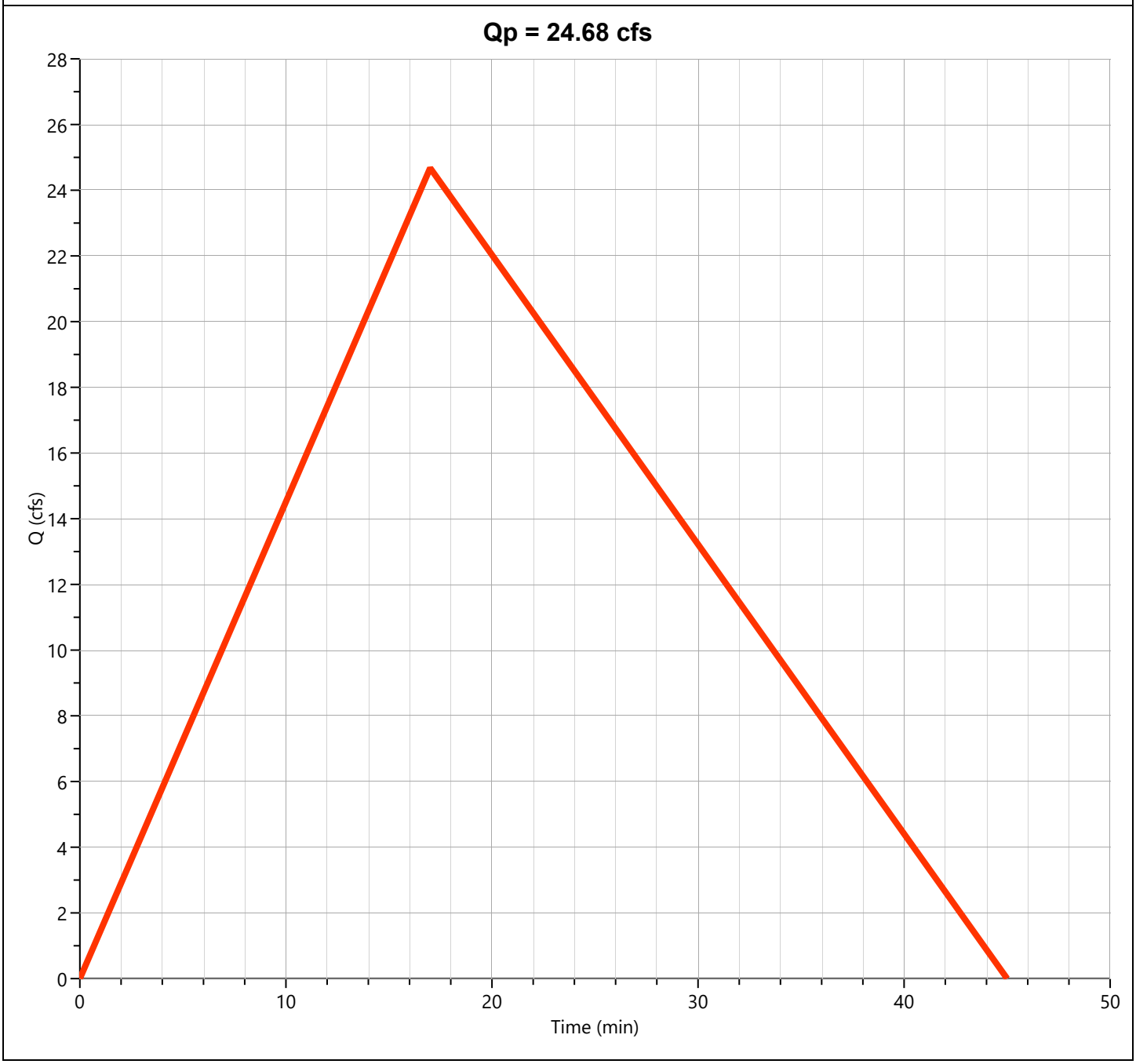
Hydrograph Type	= Junction	Peak Flow	= 61.27 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 62,291 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

Hydrograph Type	= Rational	Peak Flow	= 24.68 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 33,601 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.53 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "F"
Rational

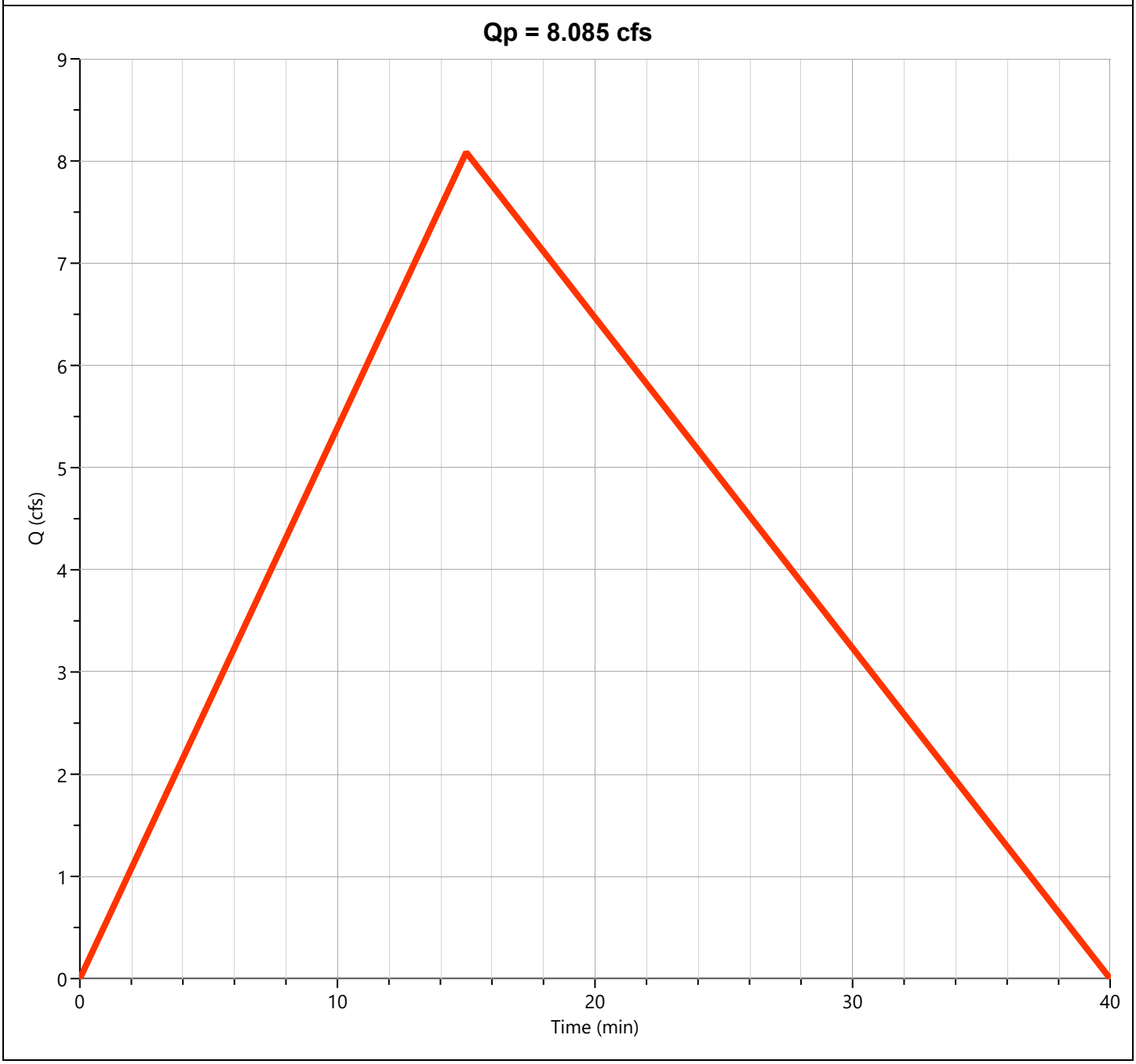
Hyd. No. 8

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	5			
Travel Time (min)	**10.14**	**0.00**	**0.00**	**10.14**
Shallow Concentrated Flow				
Flow Length (ft)	1477			
Watercourse Slope (%)	4.90	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.57			
Travel Time (min)	**6.89**	**0.00**	**0.00**	**6.89**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**17 min**

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 8.085 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 9,714 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Hydrology Studio v 3.0.0.44

09-25-2026

Post-Dev Basin A
Rational

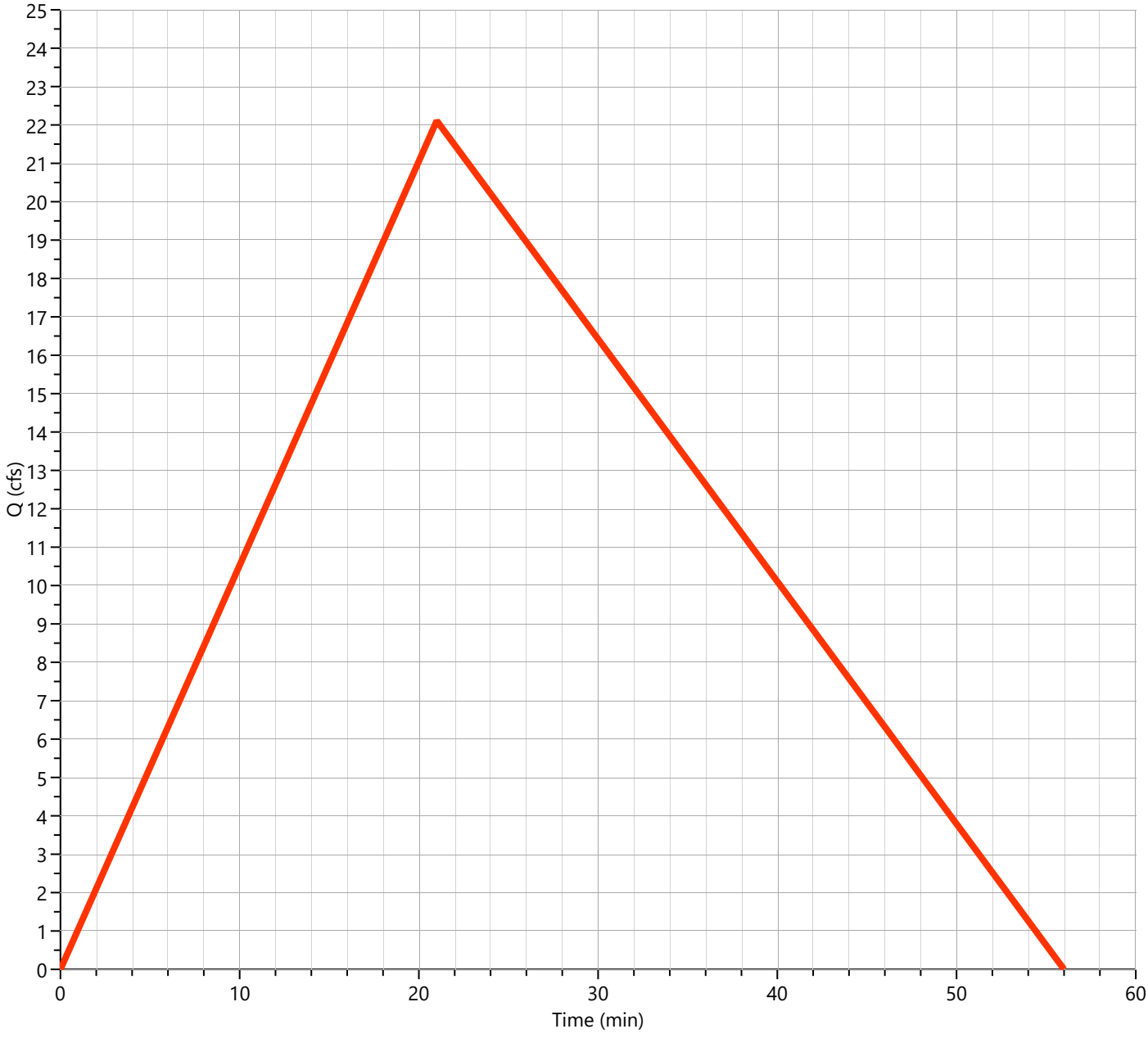
Hyd. No. 9

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	2.5			
Travel Time (min)	**13.38**	**0.00**	**0.00**	**13.38**
Shallow Concentrated Flow				
Flow Length (ft)	519			
Watercourse Slope (%)	7.80	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.51			
Travel Time (min)	**1.92**	**0.00**	**0.00**	**1.92**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**15 min**

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 22.11 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 37,188 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.21 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B
Rational

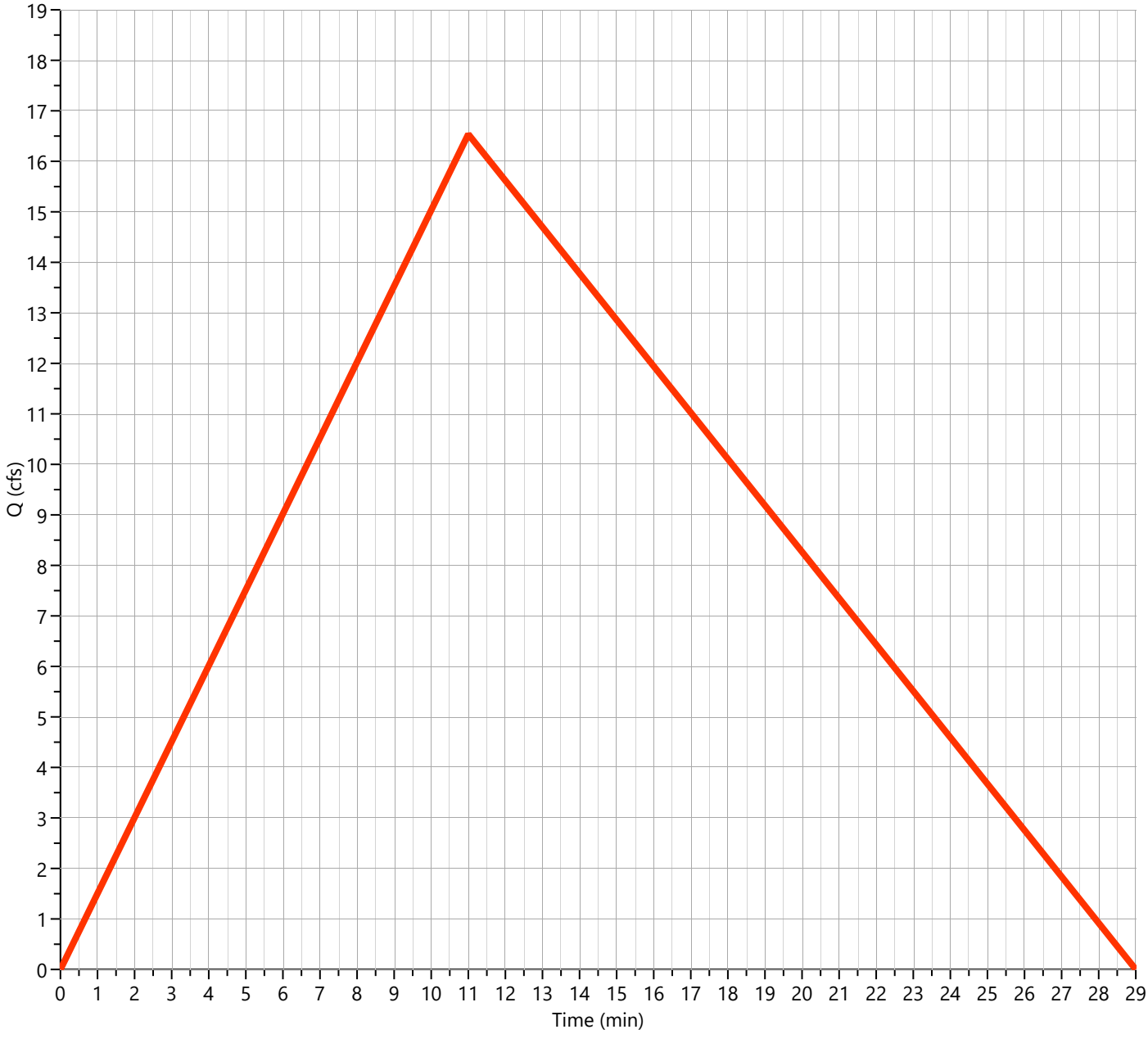
Hyd. No. 10

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	1.5			
Travel Time (min)	**16.42**	**0.00**	**0.00**	**16.42**
Shallow Concentrated Flow				
Flow Length (ft)	1025			
Watercourse Slope (%)	5.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.61			
Travel Time (min)	**4.73**	**0.00**	**0.00**	**4.73**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**21 min**

Post-Dev Basin "C"

Hyd. No. 11

Hydrograph Type	= Rational	Peak Flow	= 16.54 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 14,570 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"
Rational

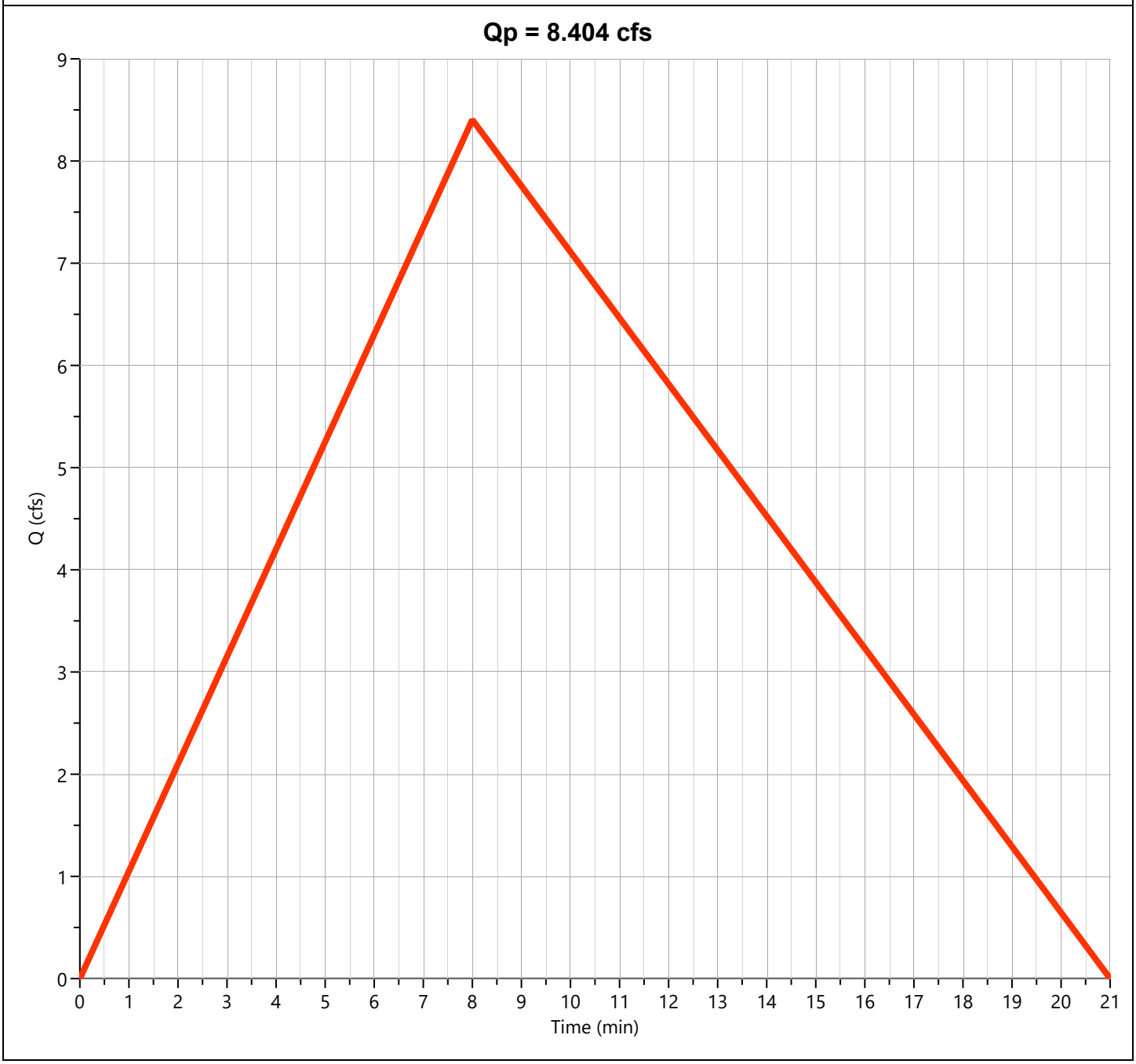
Hyd. No. 11

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	8			
Travel Time (min)	**8.40**	**0.00**	**0.00**	**8.40**
Shallow Concentrated Flow				
Flow Length (ft)	654			
Watercourse Slope (%)	5.68	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.85			
Travel Time (min)	**2.83**	**0.00**	**0.00**	**2.83**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**11 min**

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 8.404 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 5,385 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"
Rational

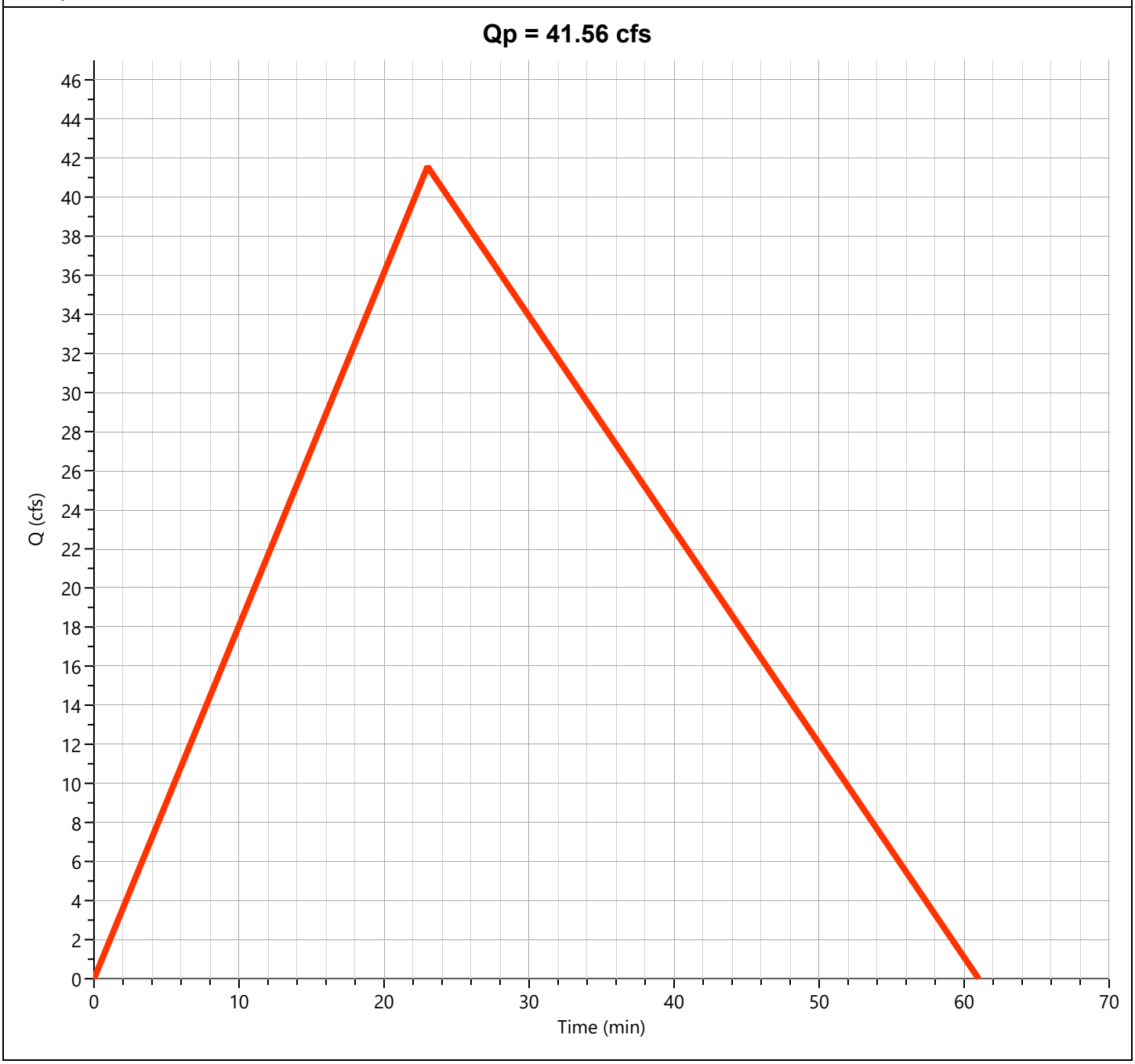
Hyd. No. 12

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	14.2			
Travel Time (min)	**6.68**	**0.00**	**0.00**	**6.68**
Shallow Concentrated Flow				
Flow Length (ft)	554			
Watercourse Slope (%)	11.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	5.35			
Travel Time (min)	**1.73**	**0.00**	**0.00**	**1.73**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**8 min**

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 41.56 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 76,570 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.08 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



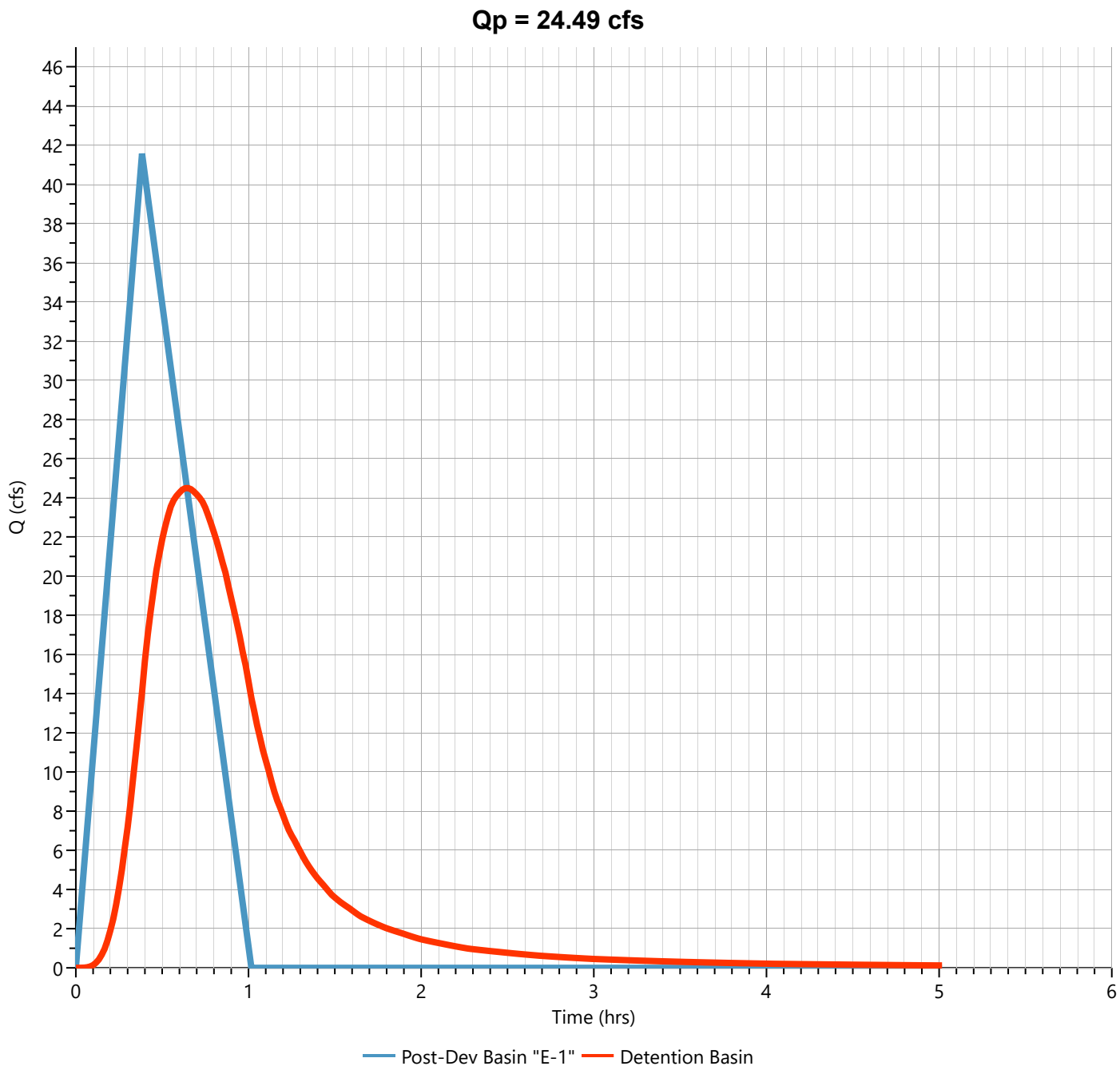
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 24.49 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 76,014 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 470.62 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 34,621 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 27 min



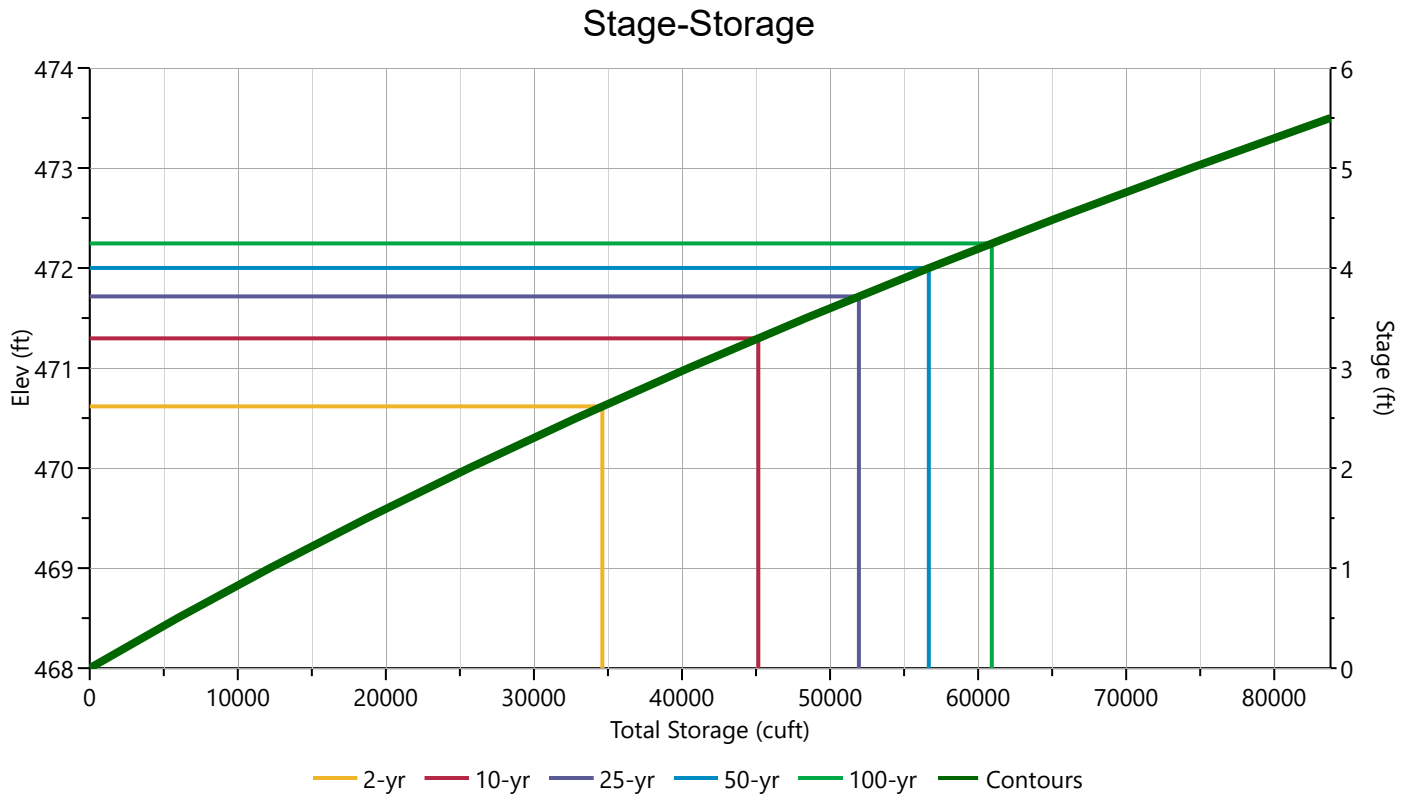
Hilltop Detention Pond

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	468.00
Voids (%)	100.00
Volume Calc	None

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	468.00	11,529	0.000	0.000
0.50	468.50	12,158	5,922	5,922
1.00	469.00	12,801	6,240	12,162
1.50	469.50	13,459	6,565	18,727
2.00	470.00	14,131	6,898	25,624
2.50	470.50	14,817	7,237	32,861
3.00	471.00	15,517	7,584	40,445
3.50	471.50	16,230	7,937	48,381
4.00	472.00	16,958	8,297	56,678
4.50	472.50	17,700	8,665	65,343
5.00	473.00	18,455	9,039	74,382
5.50	473.50	19,225	9,420	83,802

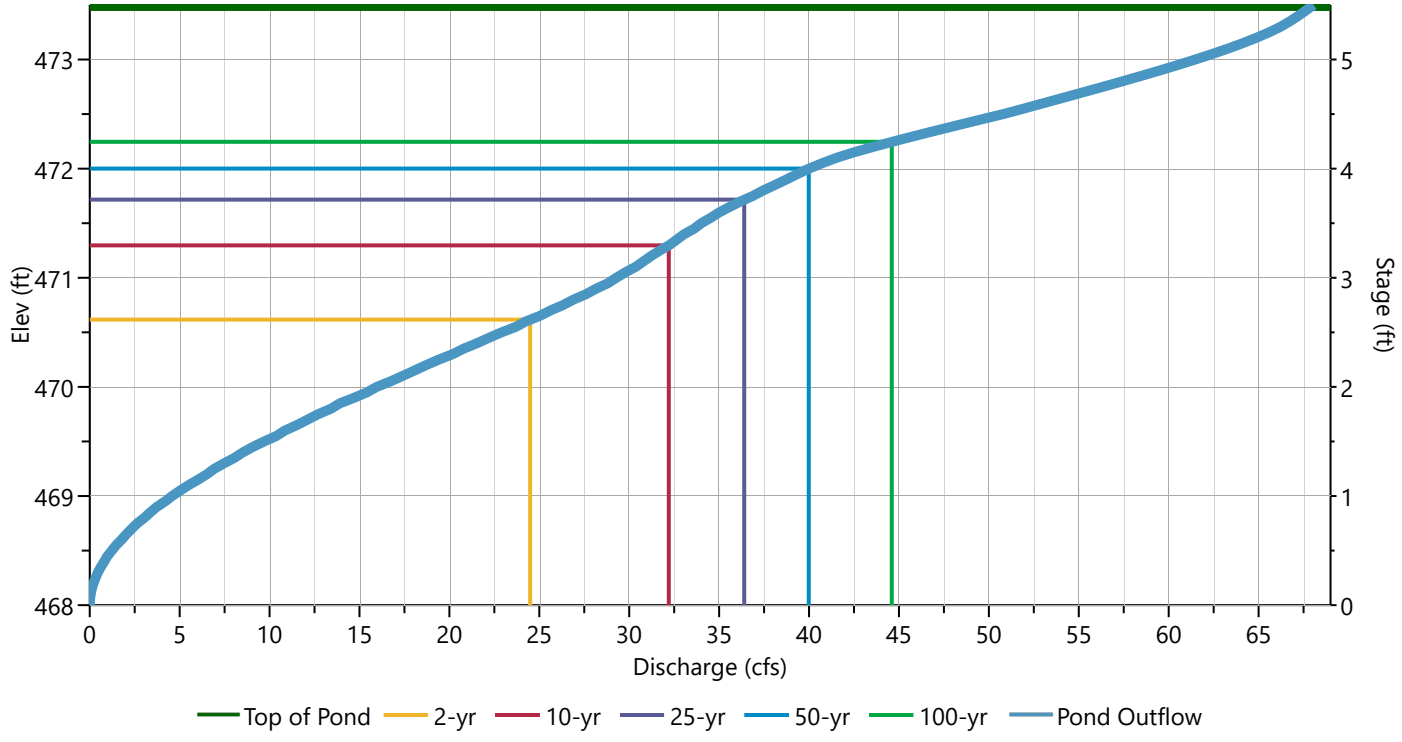


Hilltop Detention Pond

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Orifice Plate	
		1 (m)	2 (m)	3		
Rise, in	36	36	6		Orifice Dia, in	
Span, in	36	36	36		No. Orifices	
No. Barrels	1	1	1	1	Invert Elevation, ft	
Invert Elevation, ft	468.00	468.00	471.50	468.01	Height, ft	
Orifice Coefficient, Co	0.60	0.60	0.60	0.60	Orifice Coefficient, Co	
Length, ft	113					
Barrel Slope, %	4.66					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1	2	3		
Shape / Type	Circular				Exfiltration, in/hr	
Crest Elevation, ft	472	479.5				
Crest Length, ft	12.56	14				
Angle, deg		45 (1:1)				
Weir Coefficient, Cw	3.3	3.3				

m = Flows through Culvert, i = Independent



Hilltop Detention Pond

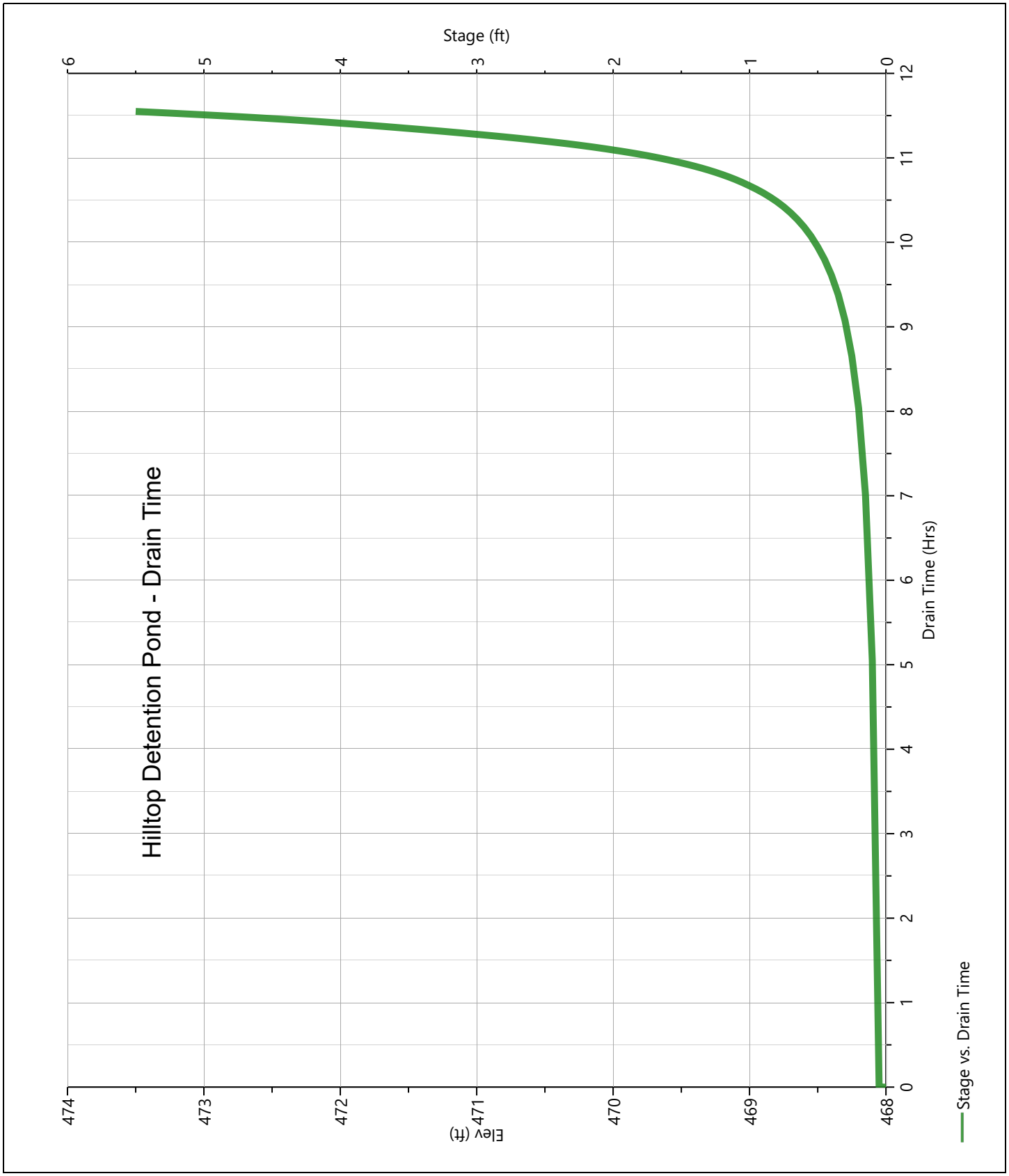
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	468.00	0.000	0.000	0.000	0.000		0.000	0.000						0.000
0.50	468.50	5,922	1.229 ic	1.229	0.000		0.000	0.000						1.229
1.00	469.00	12,162	4.579 ic	4.579	0.000		0.000	0.000						4.579
1.50	469.50	18,727	9.699 ic	9.699	0.000		0.000	0.000						9.699
2.00	470.00	25,624	15.96 ic	15.96	0.000		0.000	0.000						15.96
2.50	470.50	32,861	22.90 ic	22.90	0.000		0.000	0.000						22.90
3.00	471.00	40,445	29.28 ic	29.28	0.000		0.000	0.000						29.28
3.50	471.50	48,381	34.01 ic	34.01	0.000		0.000	0.000						34.01
4.00	472.00	56,678	39.99 ic	36.38	3.611		0.000	0.000						39.99
4.50	472.50	65,343	50.80 ic	29.89	6.255		14.65	0.000						50.80
5.00	473.00	74,382	61.48 ic	16.52	3.507		41.45	0.000						61.48
5.50	473.50	83,802	68.06 ic	0.000	0.000		0.000	0.000						68.06

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Hilltop Detention Pond

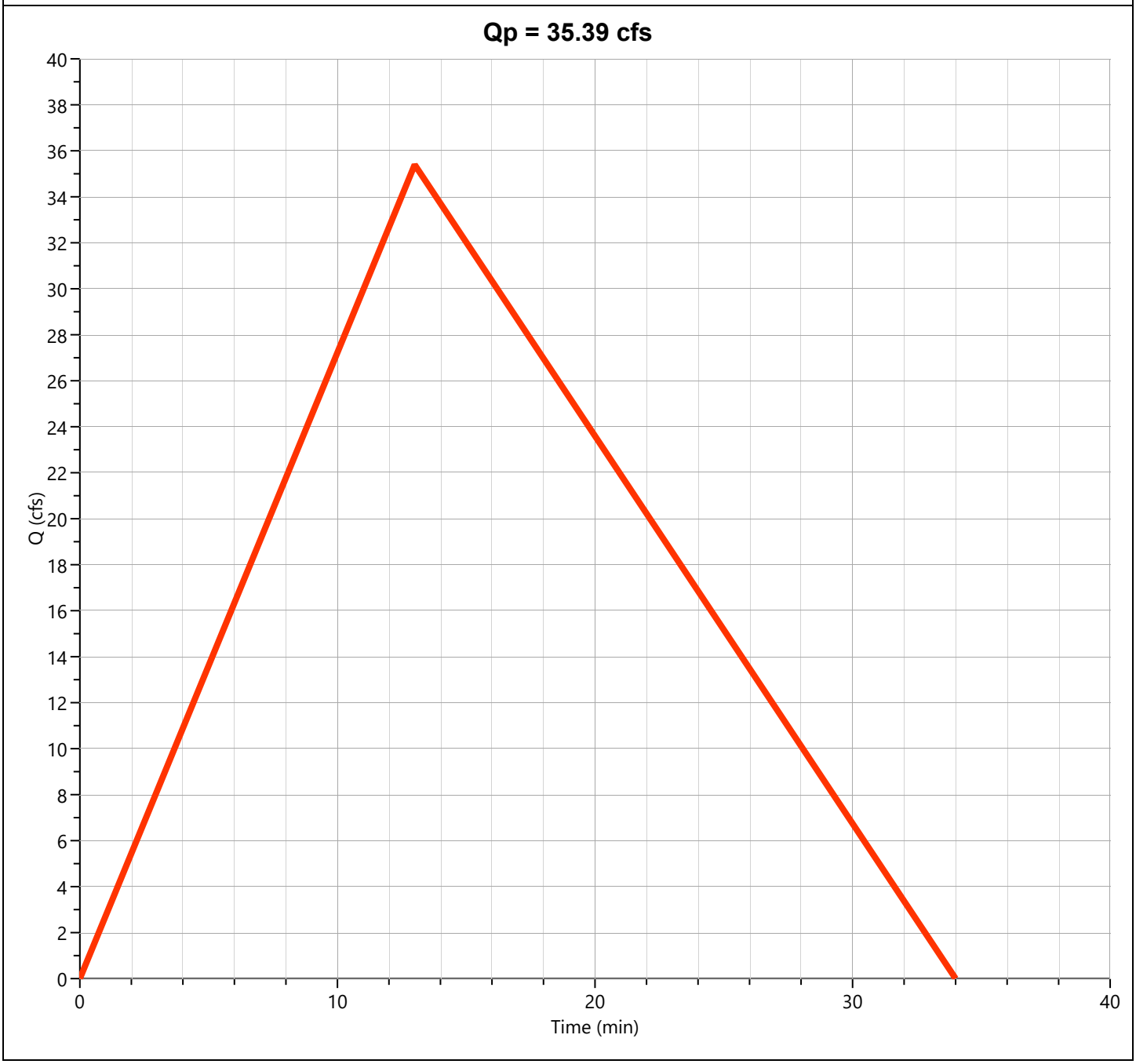
Pond Drawdown



Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 35.39 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 36,857 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.99 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-2"
Rational

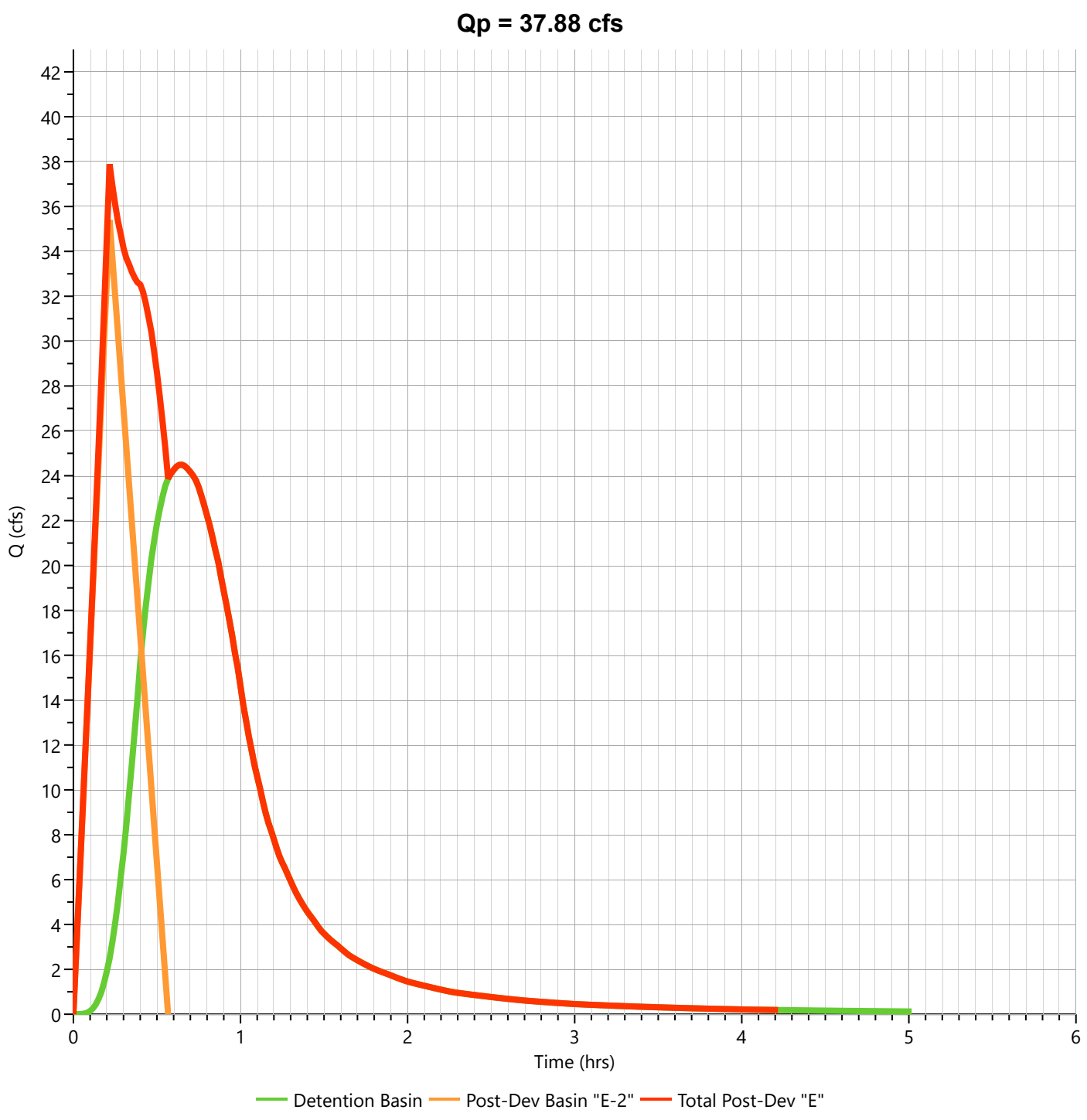
Hyd. No. 15

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	7.25			
Travel Time (min)	**8.74**	**0.00**	**0.00**	**8.74**
Shallow Concentrated Flow				
Flow Length (ft)	1070			
Watercourse Slope (%)	6.23	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.03			
Travel Time (min)	**4.43**	**0.00**	**0.00**	**4.43**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**13 min**

Total Post-Dev "E"

Hyd. No. 16

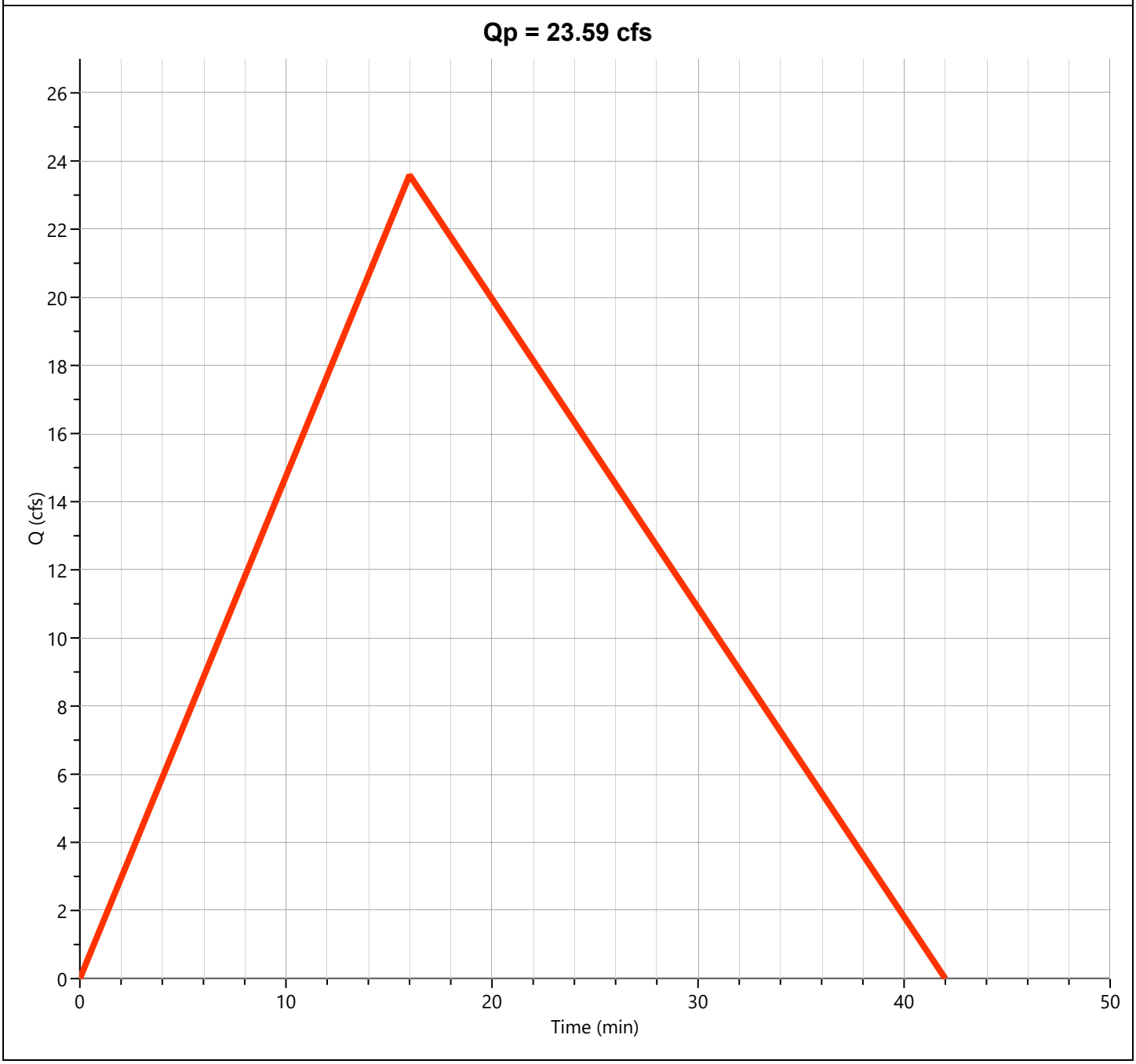
Hydrograph Type	= Junction	Peak Flow	= 37.88 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 112,117 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 23.59 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 30,229 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.63 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "F"
Rational

Hyd. No. 17

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	6			
Travel Time (min)	**9.43**	**0.00**	**0.00**	**9.43**
Shallow Concentrated Flow				
Flow Length (ft)	1362			
Watercourse Slope (%)	4.65	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.48			
Travel Time (min)	**6.52**	**0.00**	**0.00**	**6.52**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**16 min**

Design Storm Report

Custom Storm filename:

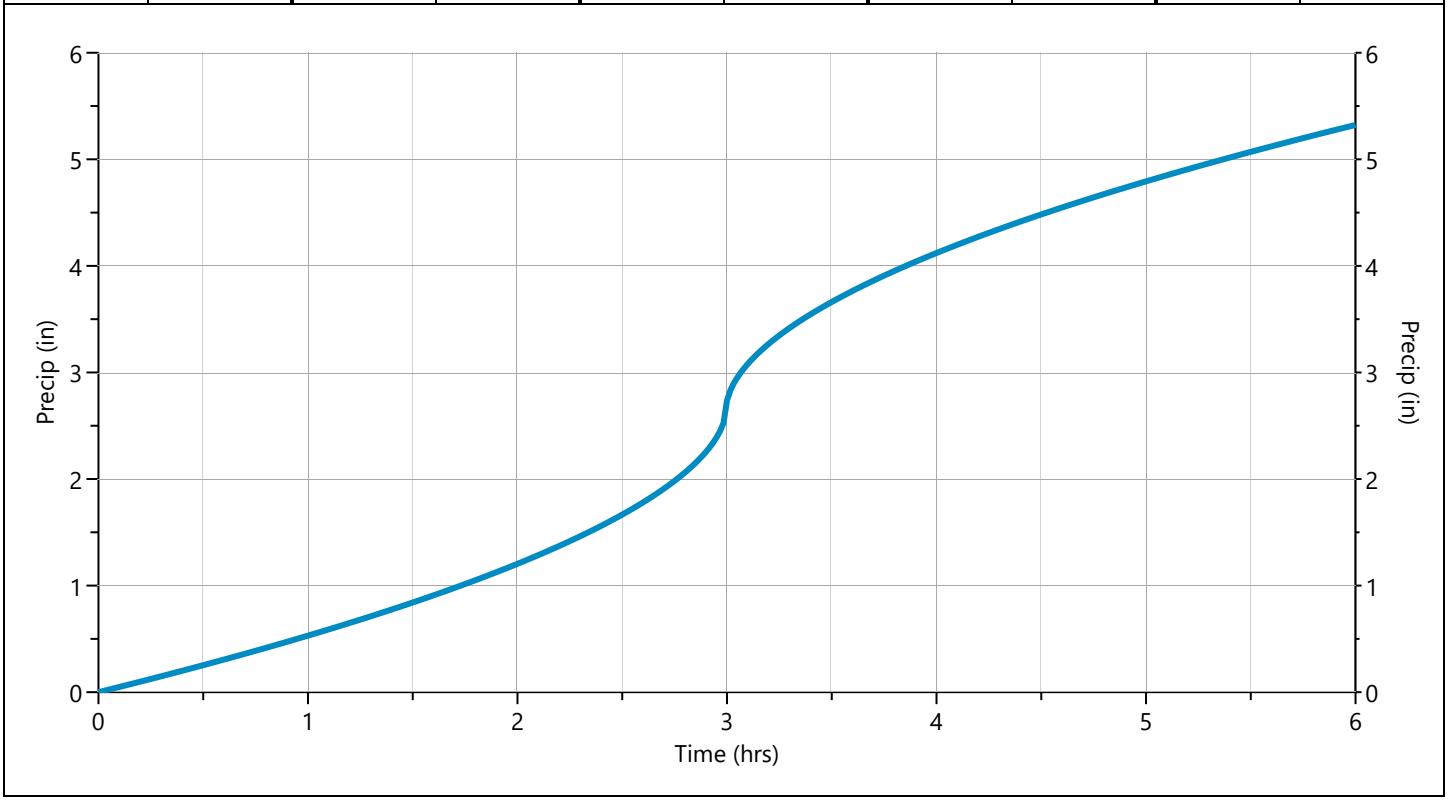
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	✔ 2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 2-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.018143	2.68	0.022259	2.87	0.032659	3.05	0.053726	3.23	0.025919
2.52	0.018421	2.70	0.022803	2.88	0.034626	3.07	0.046673	3.25	0.025108
2.53	0.018713	2.72	0.023391	2.90	0.037032	3.08	0.041932	3.27	0.024374
2.55	0.019021	2.73	0.024032	2.92	0.040074	3.10	0.038457	3.28	0.023705
2.57	0.019345	2.75	0.024733	2.93	0.044099	3.12	0.035764	3.30	0.023091
2.58	0.019688	2.77	0.025503	2.95	0.049802	3.13	0.033596	3.32	0.022526
2.60	0.020051	2.78	0.026357	2.97	0.058857	3.15	0.031801	3.33	0.022002
2.62	0.020437	2.80	0.027310	2.98	0.077022	3.17	0.030281	3.35	0.021516
2.63	0.020847	2.82	0.028382	**3.00**	**0.211936**	3.18	0.028972	3.37	0.021063
2.65	0.021286	2.83	0.029603	3.02	0.097849	3.20	0.027829	3.38	0.020639
2.67	0.021755	2.85	0.031011	3.03	0.066003	3.22	0.026819	3.40	0.020241



Hydrograph 10-yr Summary

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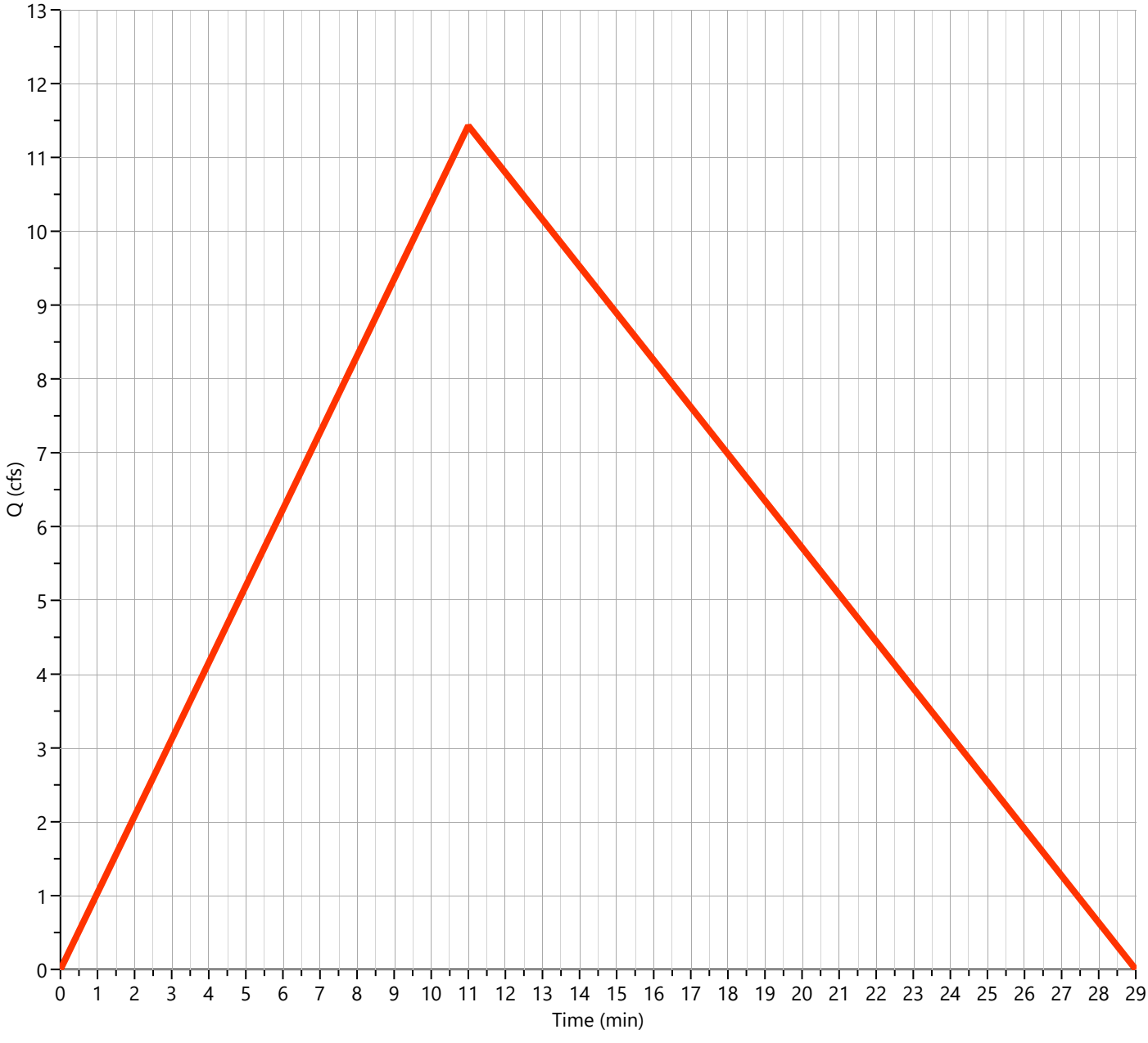
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	11.43	0.18	10,070	----		
2	Rational	Pre-Dev Basin "B"	38.41	0.25	46,149	----		
3	Rational	Pre-Dev Basin "C"	21.67	0.18	19,095	----		
4	Rational	Pre-Dev Basin "D"	9.804	0.13	6,283	----		
5	Rational	Pre-Dev Basin "E-1"	31.02	0.20	29,819	----		
6	Rational	Pre-Dev Basin "E-2"	52.69	0.22	54,864	----		
7	Junction	Total Pre Basin "E"	82.16	0.22	83,523	5, 6		
8	Rational	Pre-Dev Basin "F"	33.12	0.28	45,094	----		
9	Rational	Post-Dev Basin A	10.85	0.25	13,032	----		
10	Rational	Post-Dev Basin B	29.69	0.35	49,939	----		
11	Rational	Post-Dev Basin "C"	22.16	0.18	19,529	----		
12	Rational	Post-Dev Basin "D"	11.25	0.13	7,211	----		
13	Rational	Post-Dev Basin "E-1"	55.83	0.38	102,852	----		
14	Pond Route	Detention Basin	32.20	0.65	102,121	13	471.30	45,155
15	Rational	Post-Dev Basin "E-2"	47.46	0.22	49,424	----		
16	Junction	Total Post-Dev "E"	51.67	0.22	150,534	14, 15		
17	Rational	Post-Dev Basin "F"	31.65	0.27	40,562	----		

Pre-Dev Basin "A"

Hyd. No. 1

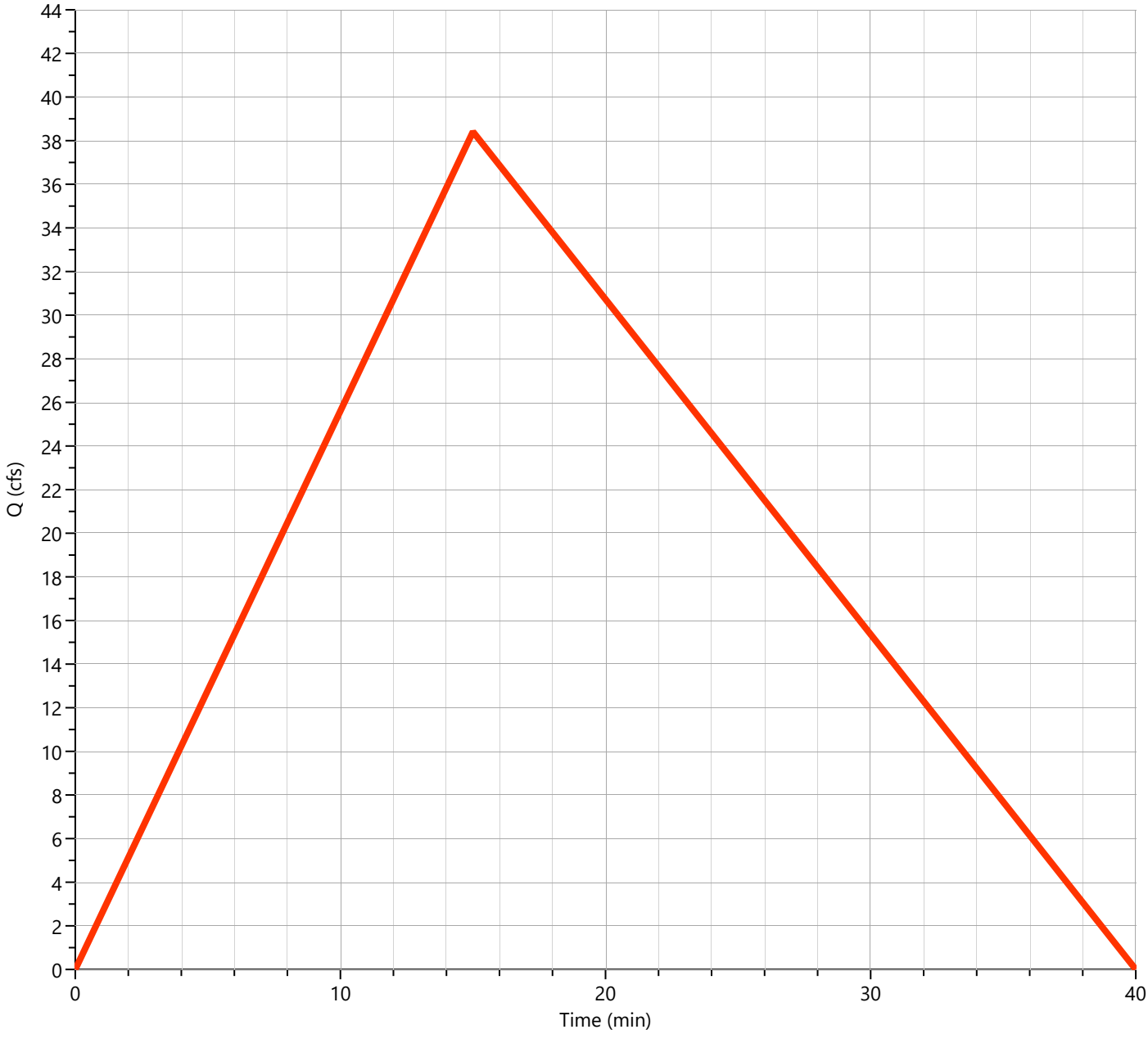
Hydrograph Type	= Rational	Peak Flow	= 11.43 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 10,070 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

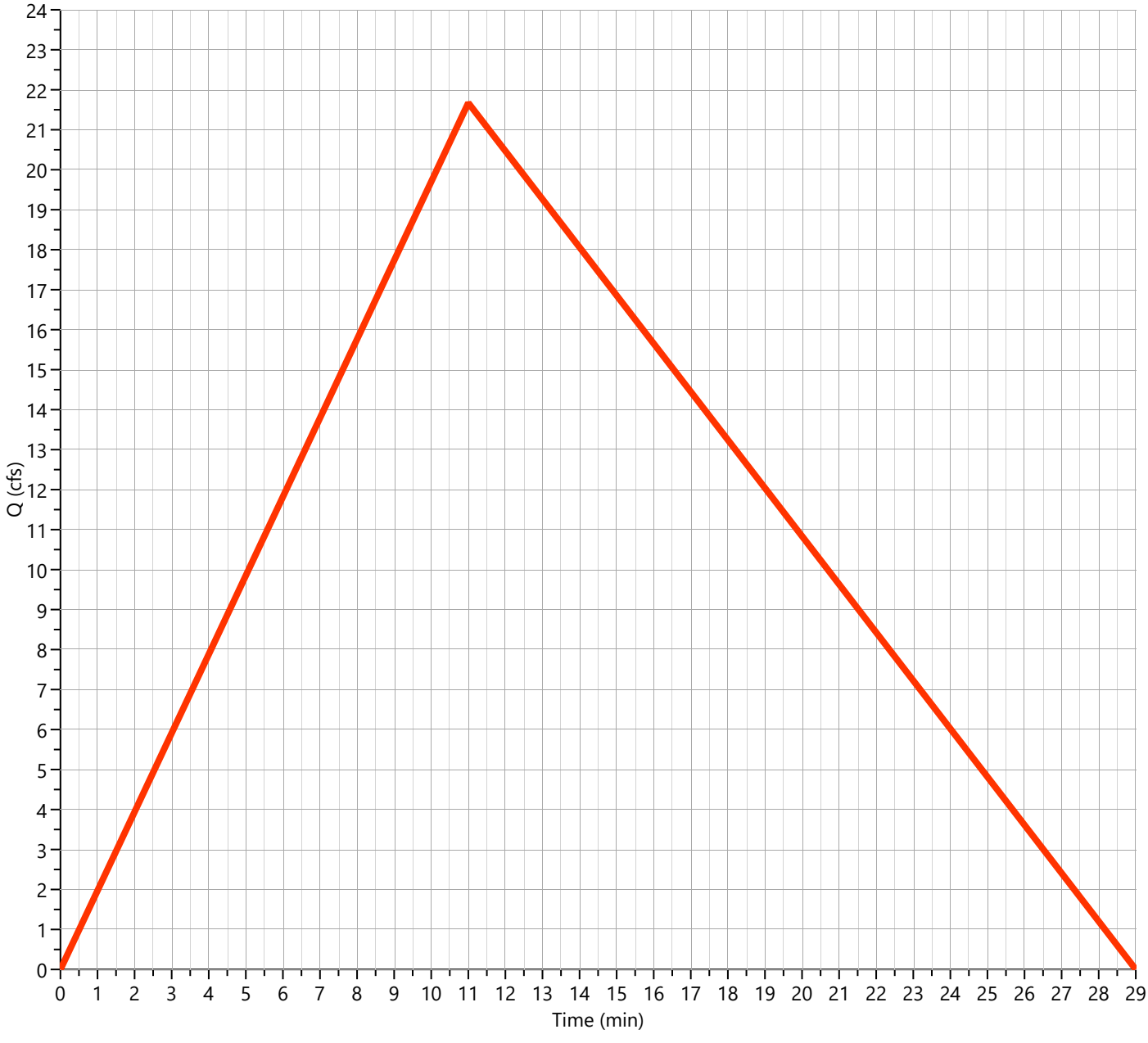
Hydrograph Type	= Rational	Peak Flow	= 38.41 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 46,149 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.01 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

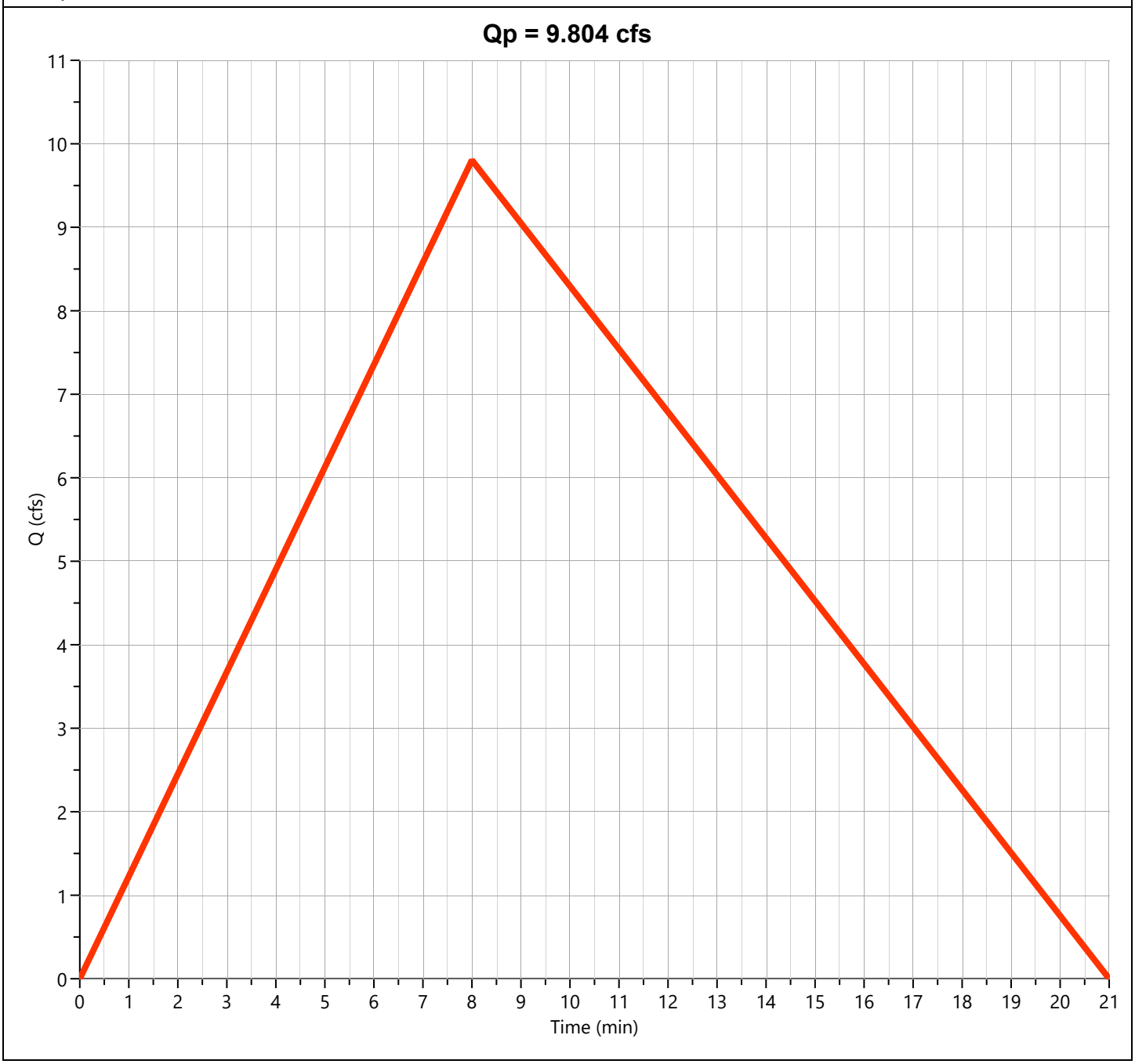
Hydrograph Type	= Rational	Peak Flow	= 21.67 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 19,095 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

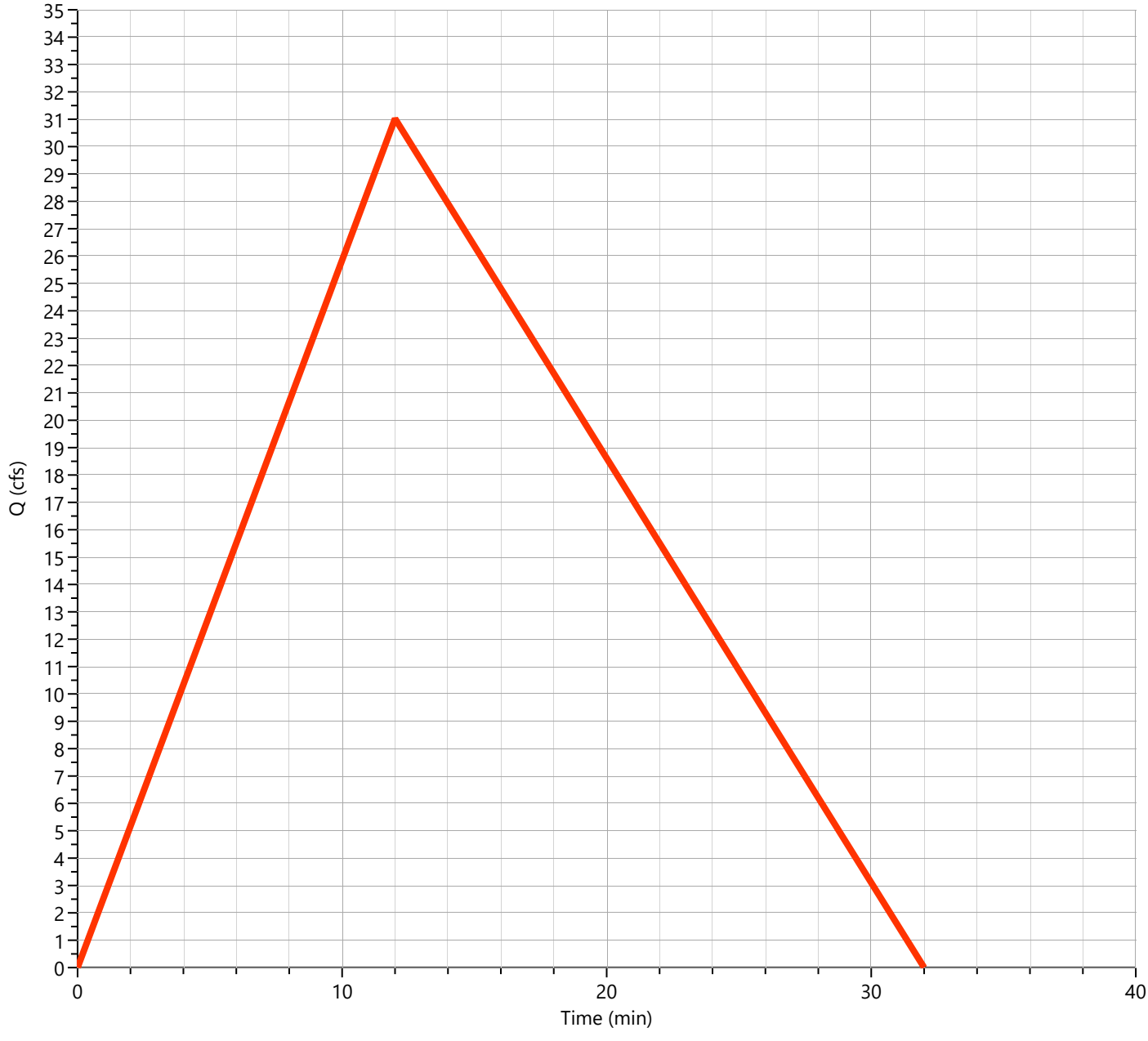
Hydrograph Type	= Rational	Peak Flow	= 9.804 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 6,283 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.65 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

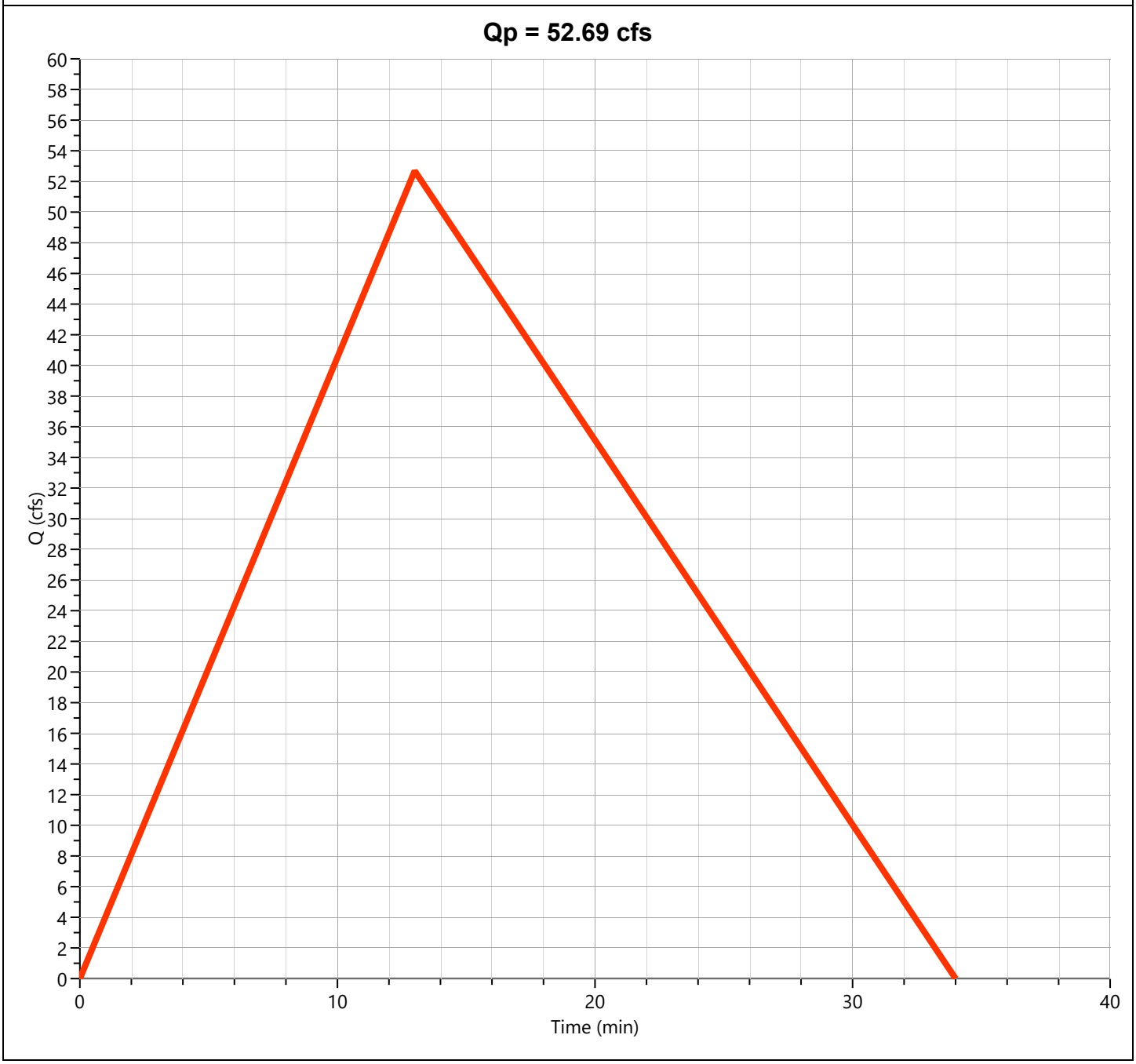
Hydrograph Type	= Rational	Peak Flow	= 31.02 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 29,819 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.54 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

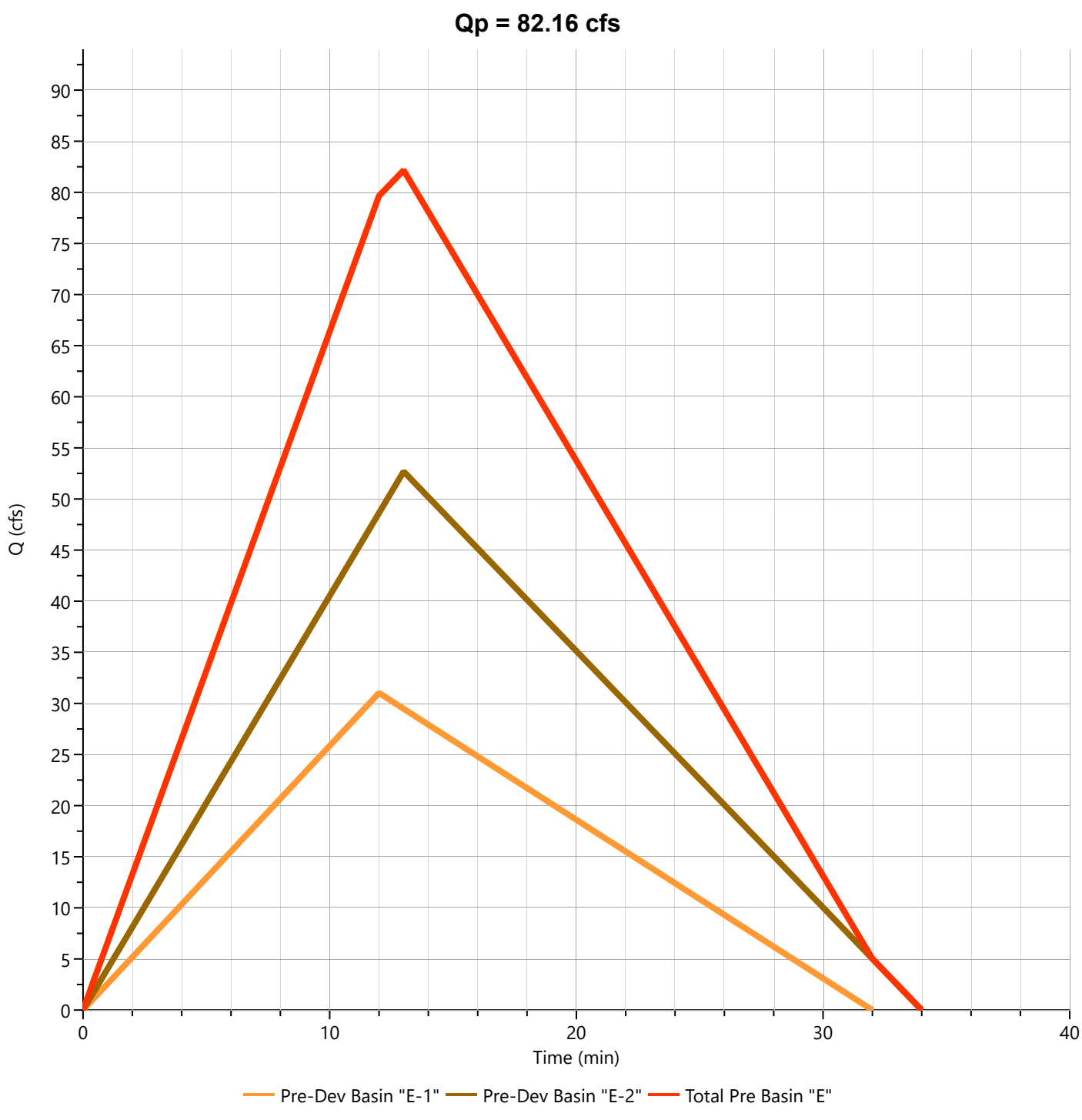
Hydrograph Type	= Rational	Peak Flow	= 52.69 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 54,864 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.34 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

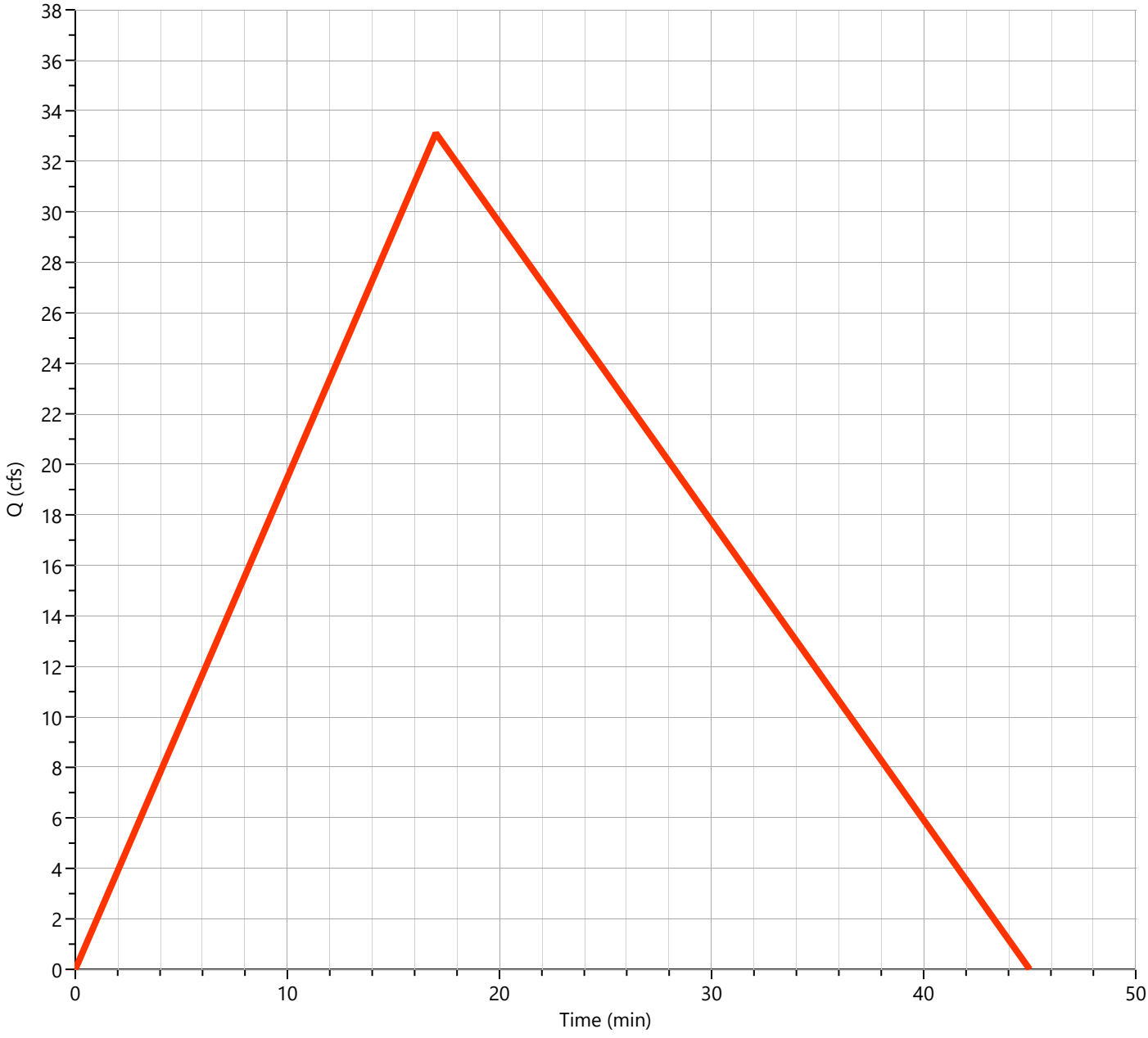
Hydrograph Type	= Junction	Peak Flow	= 82.16 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 83,523 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

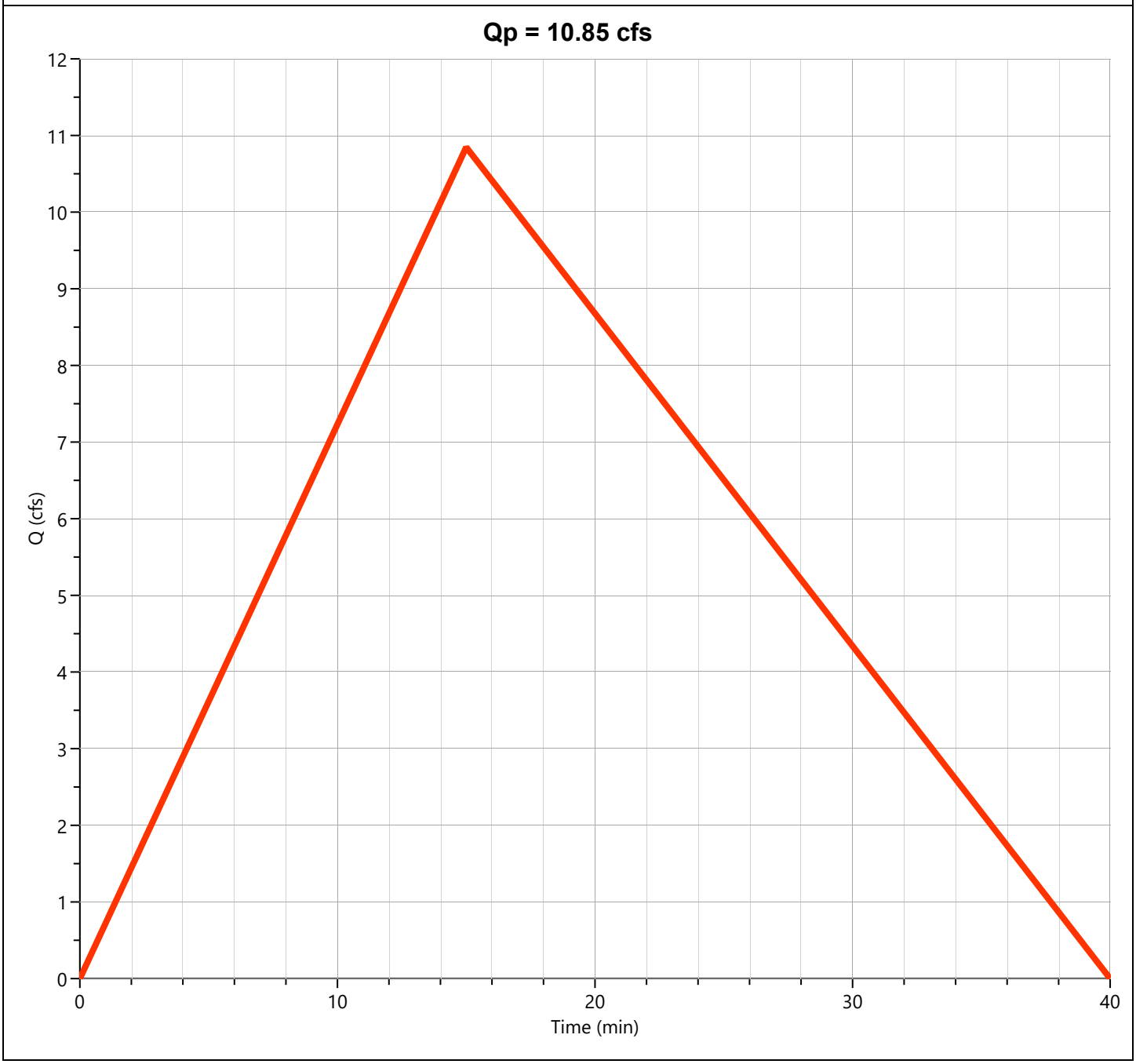
Hydrograph Type	= Rational	Peak Flow	= 33.12 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 45,094 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

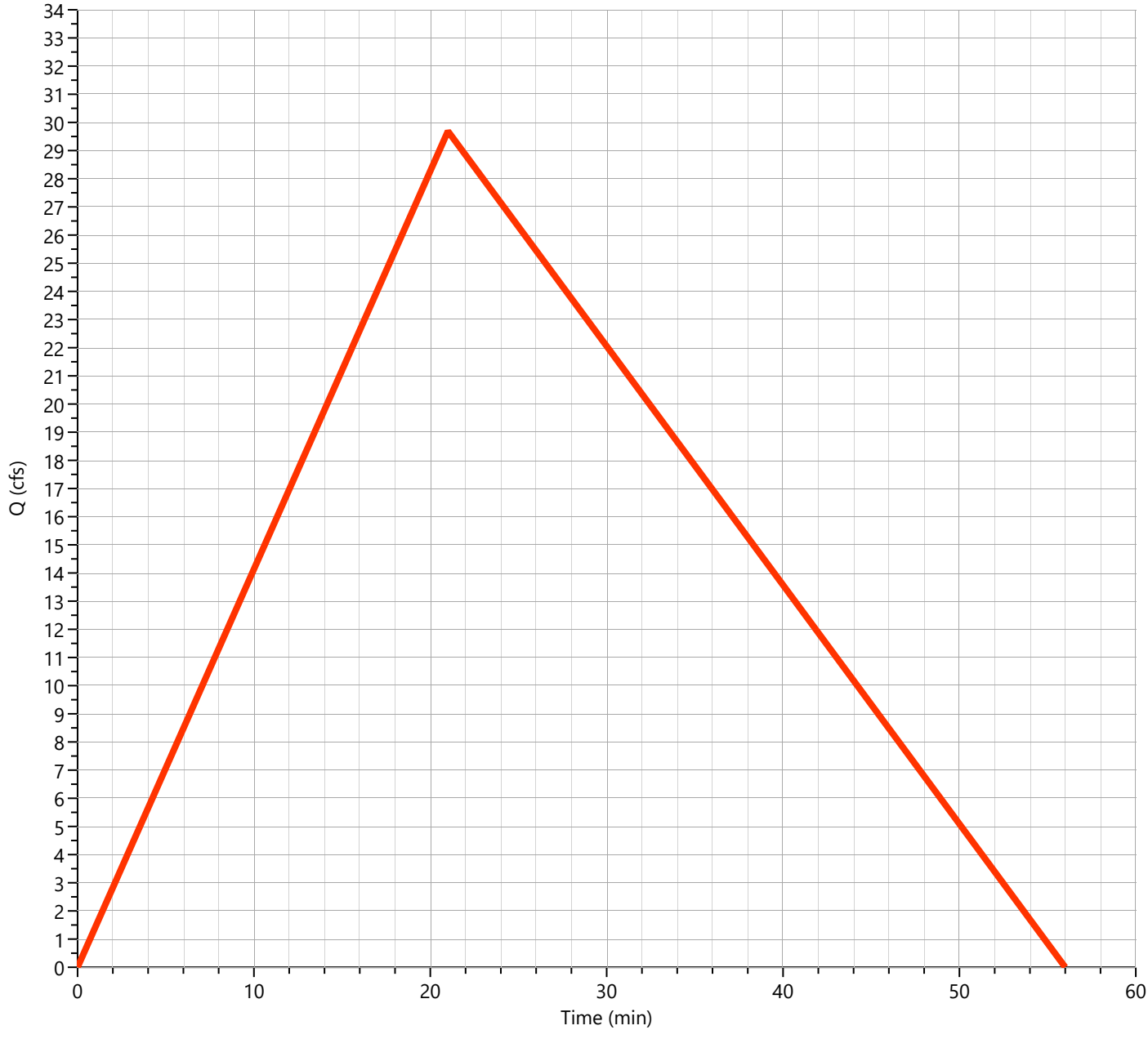
Hydrograph Type	= Rational	Peak Flow	= 10.85 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 13,032 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.01 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

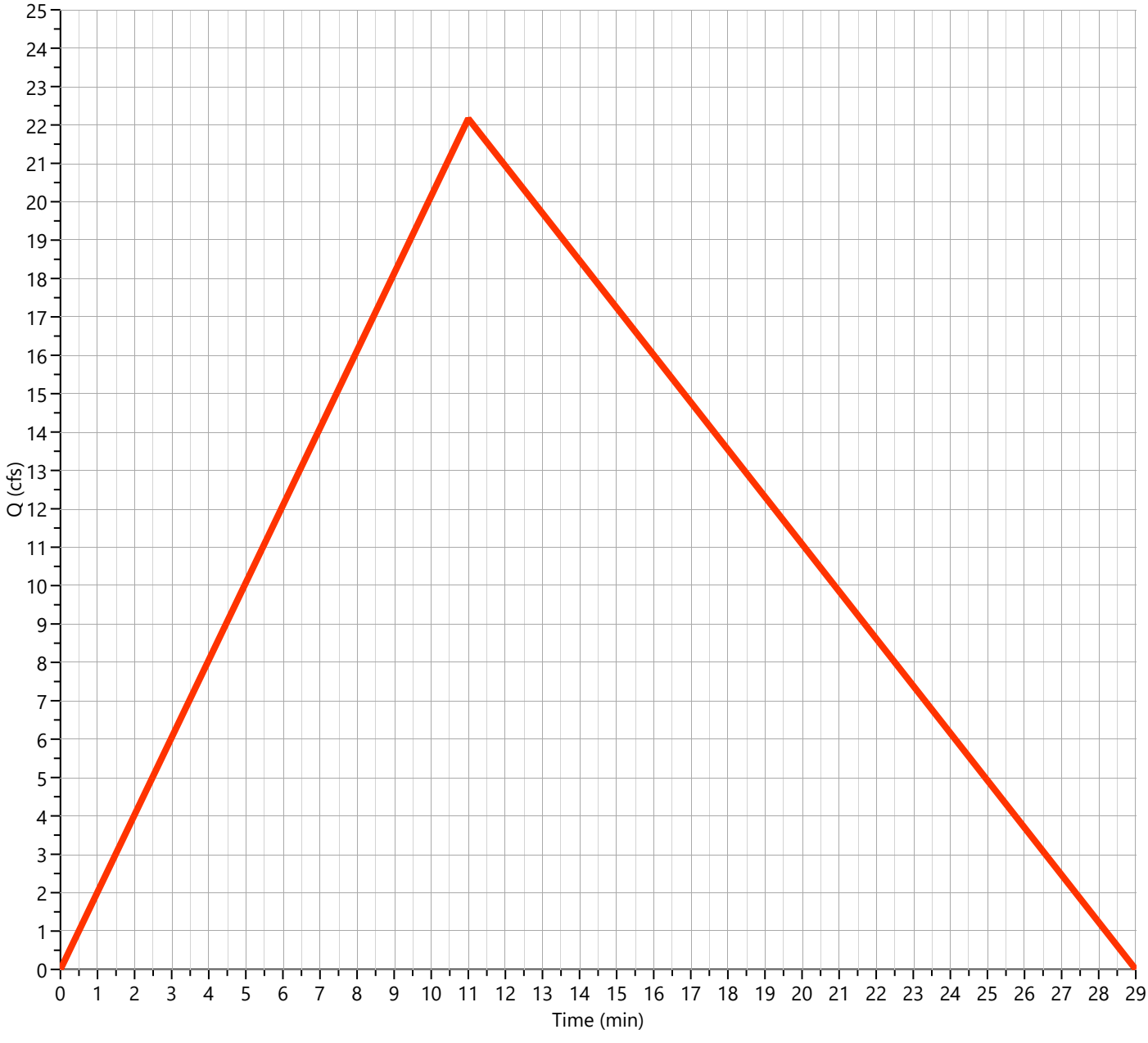
Hydrograph Type	= Rational	Peak Flow	= 29.69 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 49,939 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.31 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

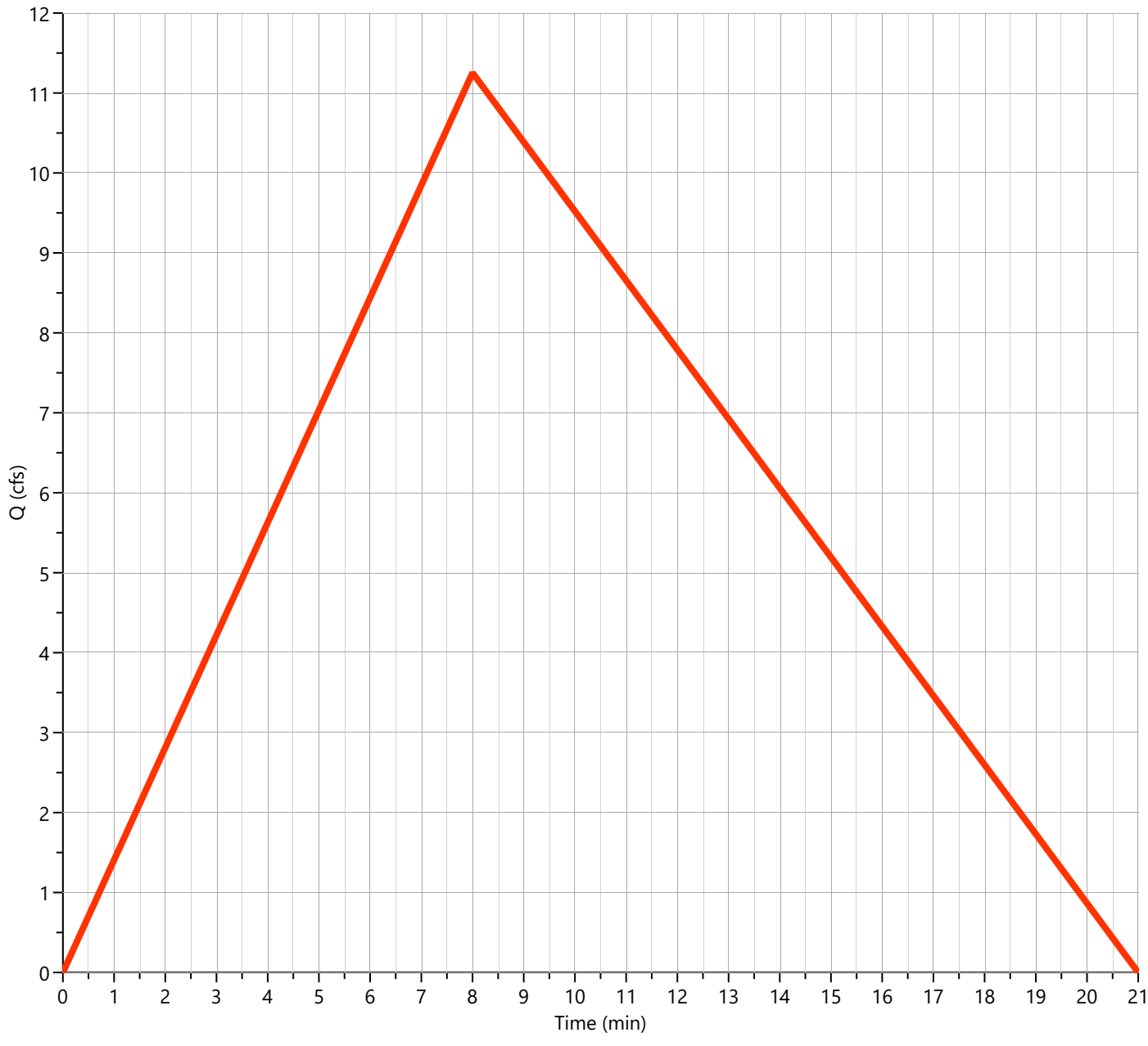
Hydrograph Type	= Rational	Peak Flow	= 22.16 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 19,529 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

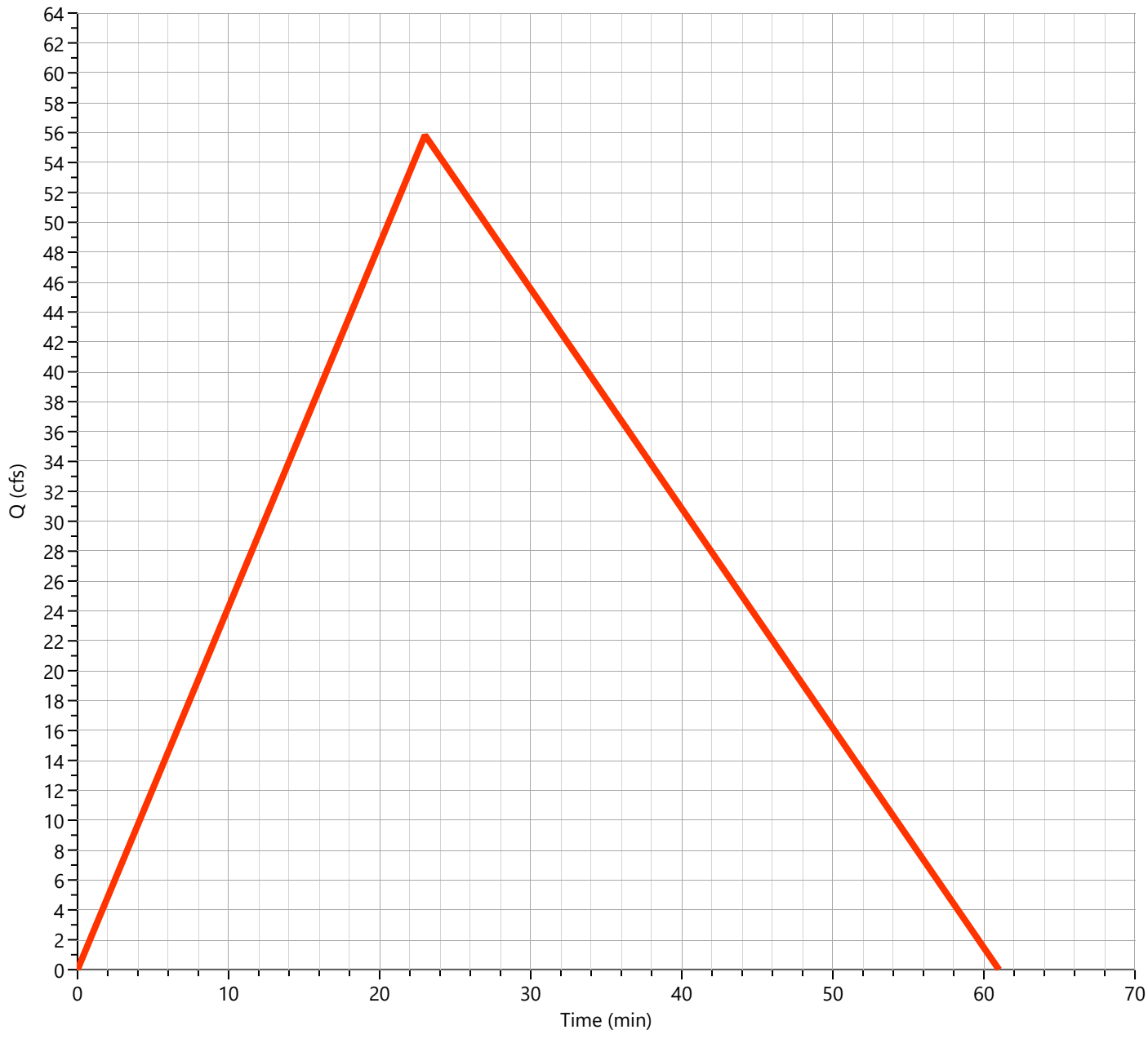
Hydrograph Type	= Rational	Peak Flow	= 11.25 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,211 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.65 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 55.83 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 102,852 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.14 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



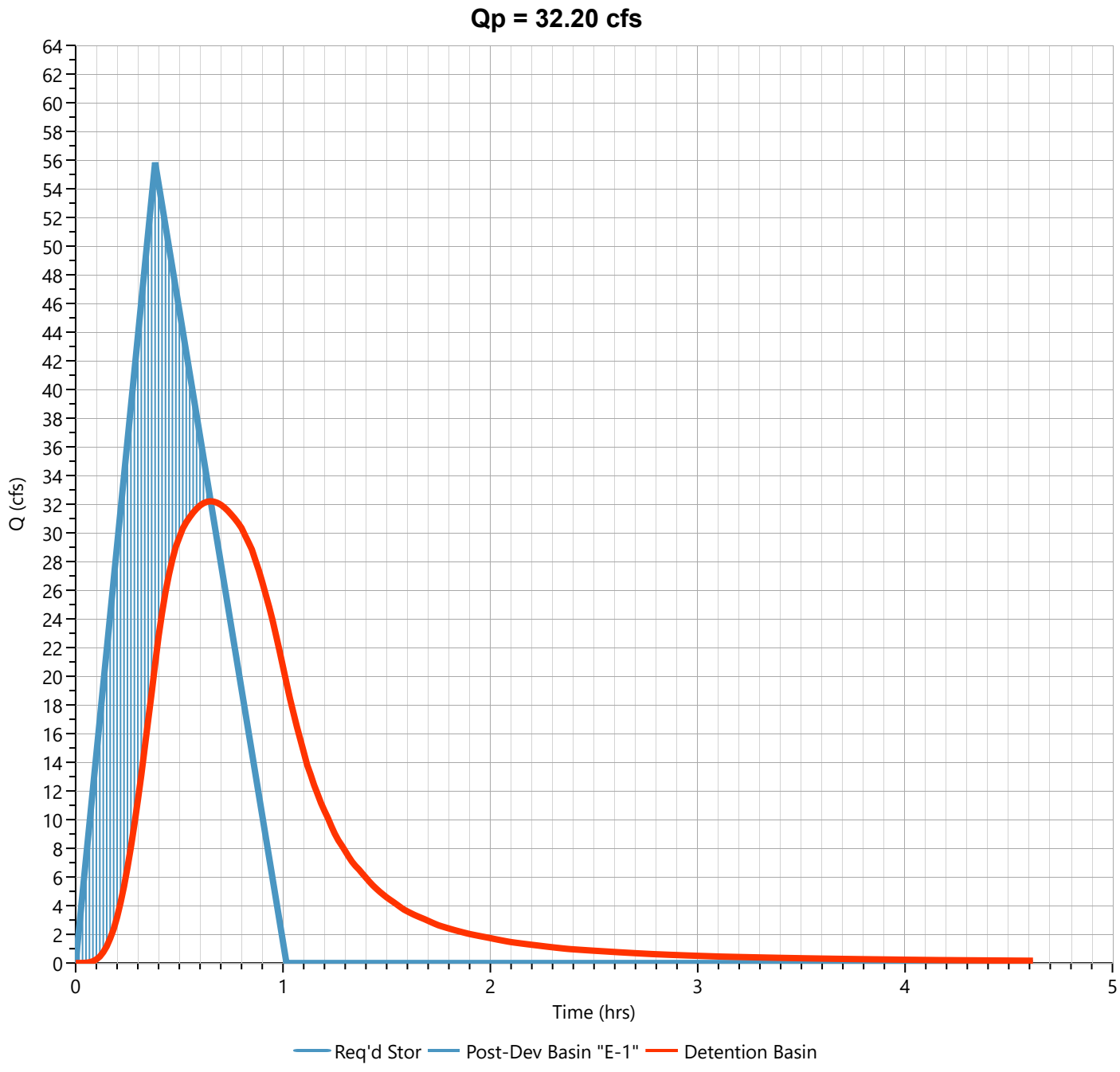
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 32.20 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 102,121 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 471.30 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 45,155 cuft

Pond Routing by Storage Indication Method

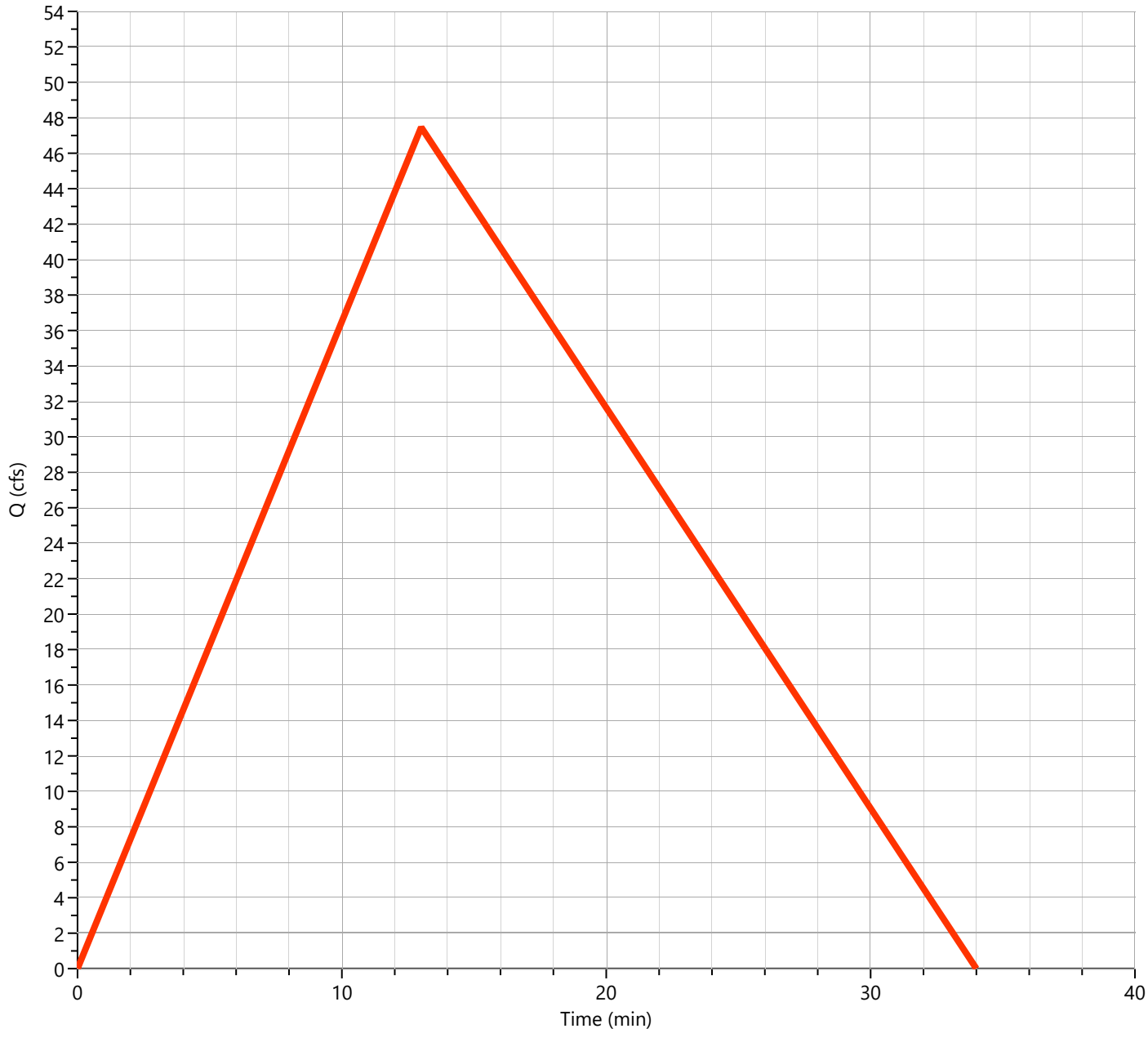
Center of mass detention time = 25 min



Post-Dev Basin "E-2"

Hyd. No. 15

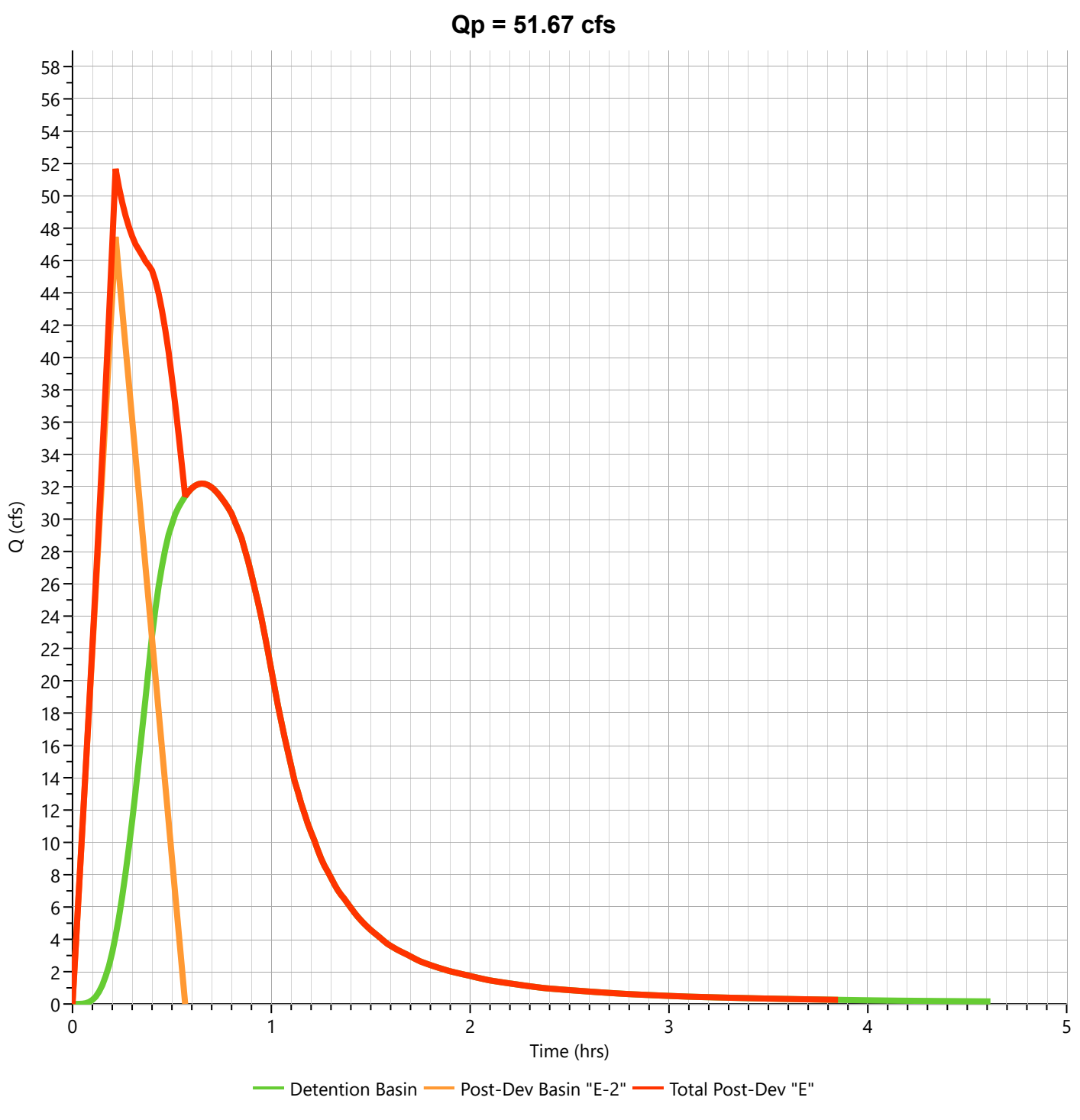
Hydrograph Type	= Rational	Peak Flow	= 47.46 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 49,424 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.34 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Post-Dev "E"

Hyd. No. 16

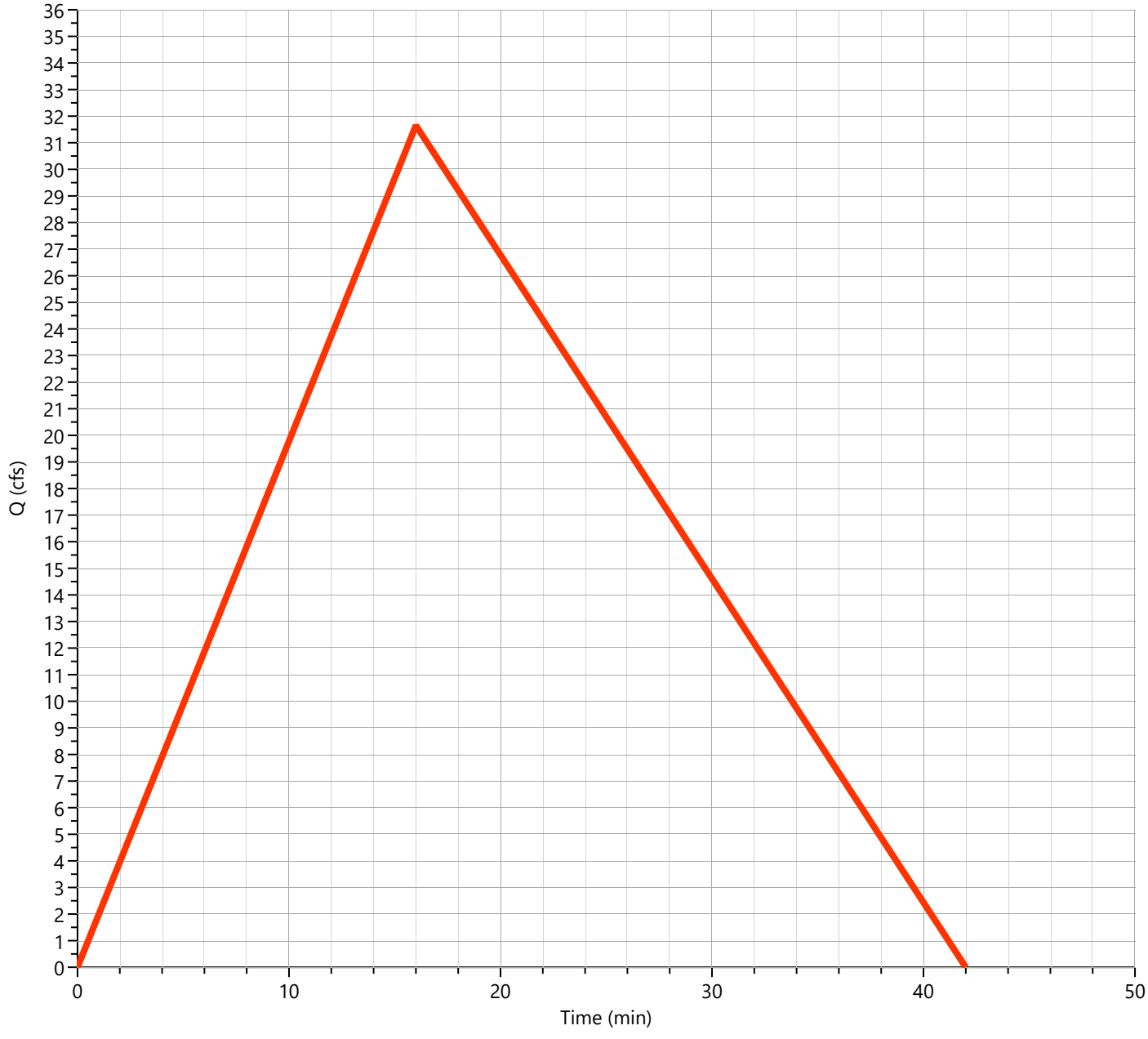
Hydrograph Type	= Junction	Peak Flow	= 51.67 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 150,534 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 31.65 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 40,562 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.87 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Design Storm Report

Custom Storm filename:

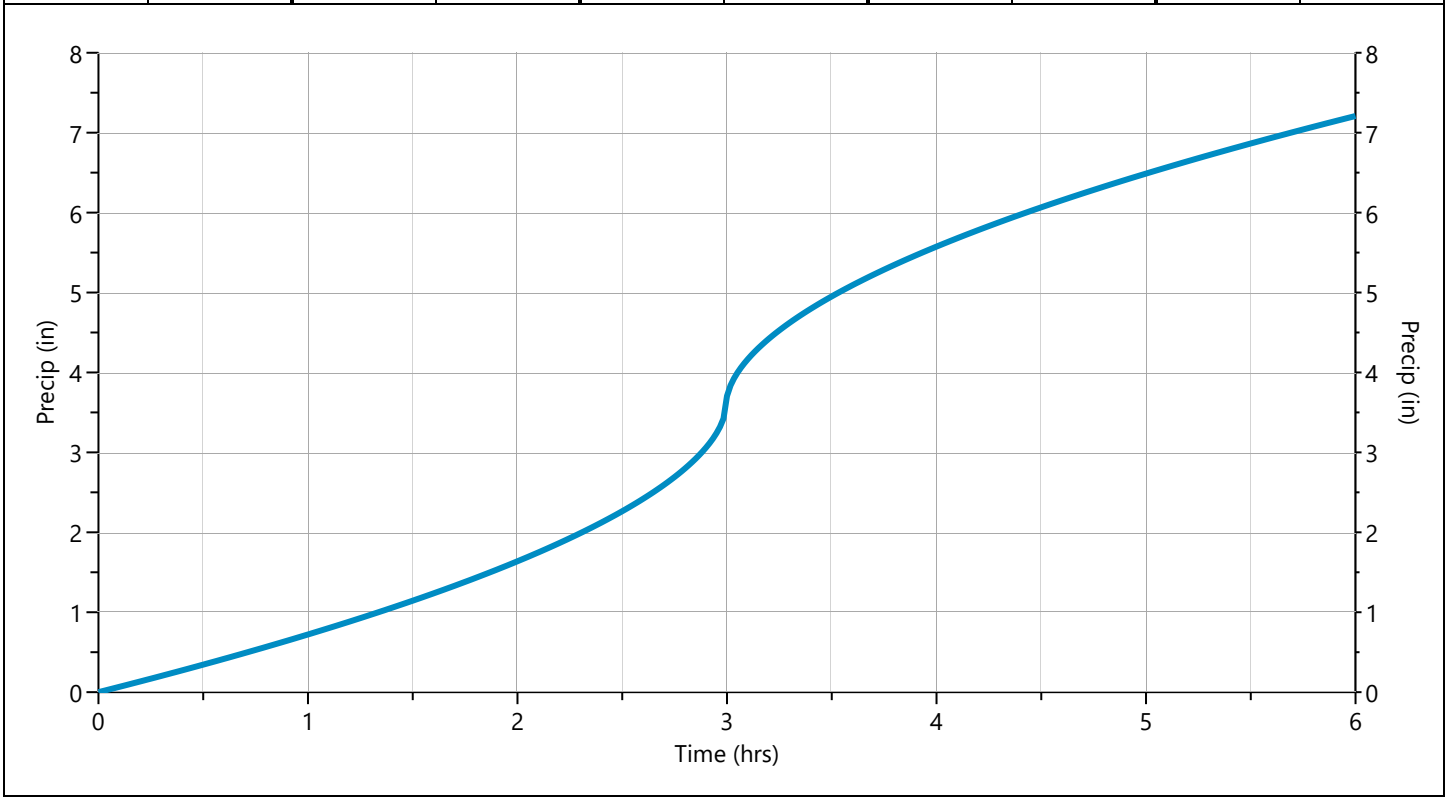
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	✔ 10-yr	25-yr	50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 10-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.024575	2.68	0.030109	2.87	0.044065	3.05	0.072251	3.23	0.035025
2.52	0.024949	2.70	0.030840	2.88	0.046700	3.07	0.062825	3.25	0.033937
2.53	0.025342	2.72	0.031631	2.90	0.049924	3.08	0.056483	3.27	0.032951
2.55	0.025755	2.73	0.032491	2.92	0.053996	3.10	0.051831	3.28	0.032052
2.57	0.026192	2.75	0.033432	2.93	0.059383	3.12	0.048225	3.30	0.031227
2.58	0.026653	2.77	0.034467	2.95	0.067008	3.13	0.045321	3.32	0.030468
2.60	0.027142	2.78	0.035612	2.97	0.079104	3.15	0.042915	3.33	0.029764
2.62	0.027660	2.80	0.036891	2.98	0.103333	3.17	0.040877	3.35	0.029111
2.63	0.028212	2.82	0.038330	**3.00**	**0.282025**	3.18	0.039122	3.37	0.028502
2.65	0.028801	2.83	0.039968	3.02	0.131064	3.20	0.037588	3.38	0.027932
2.67	0.029432	2.85	0.041856	3.03	0.088640	3.22	0.036234	3.40	0.027397



Hydrograph 25-yr Summary

Hydrology Studio v 3.0.0.44

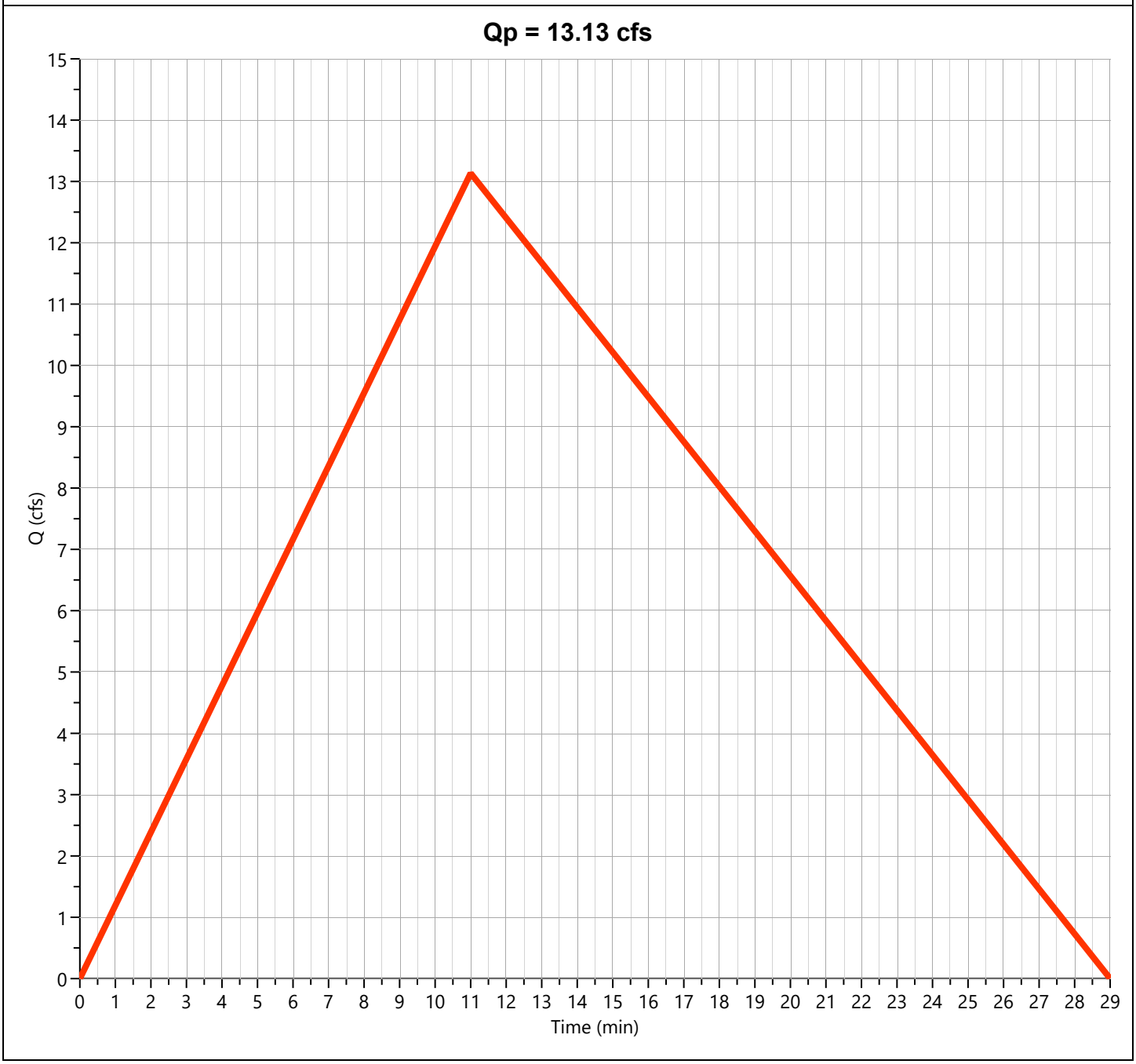
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	13.13	0.18	11,572	----		
2	Rational	Pre-Dev Basin "B"	44.15	0.25	53,043	----		
3	Rational	Pre-Dev Basin "C"	24.90	0.18	21,943	----		
4	Rational	Pre-Dev Basin "D"	11.26	0.13	7,218	----		
5	Rational	Pre-Dev Basin "E-1"	35.65	0.20	34,268	----		
6	Rational	Pre-Dev Basin "E-2"	60.55	0.22	63,053	----		
7	Junction	Total Pre Basin "E"	94.42	0.22	95,989	5, 6		
8	Rational	Pre-Dev Basin "F"	38.07	0.28	51,833	----		
9	Rational	Post-Dev Basin A	12.47	0.25	14,979	----		
10	Rational	Post-Dev Basin B	34.13	0.35	57,410	----		
11	Rational	Post-Dev Basin "C"	25.47	0.18	22,441	----		
12	Rational	Post-Dev Basin "D"	12.93	0.13	8,284	----		
13	Rational	Post-Dev Basin "E-1"	64.18	0.38	118,247	----		
14	Pond Route	Detention Basin	36.40	0.65	117,413	13	471.72	51,948
15	Rational	Post-Dev Basin "E-2"	54.55	0.22	56,801	----		
16	Junction	Total Post-Dev "E"	59.86	0.22	173,052	14, 15		
17	Rational	Post-Dev Basin "F"	36.38	0.27	46,623	----		

Pre-Dev Basin "A"

Hyd. No. 1

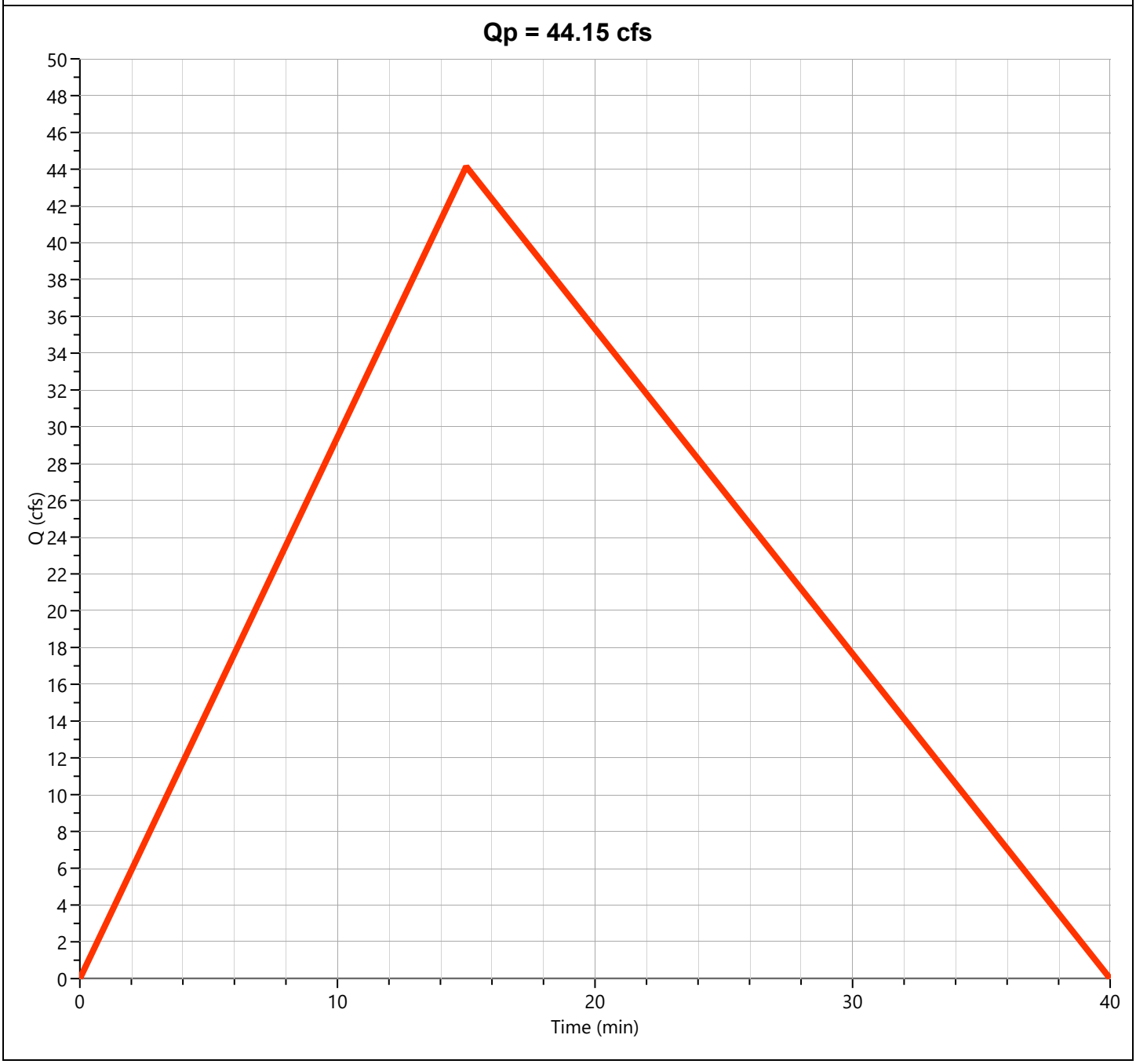
Hydrograph Type	= Rational	Peak Flow	= 13.13 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 11,572 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

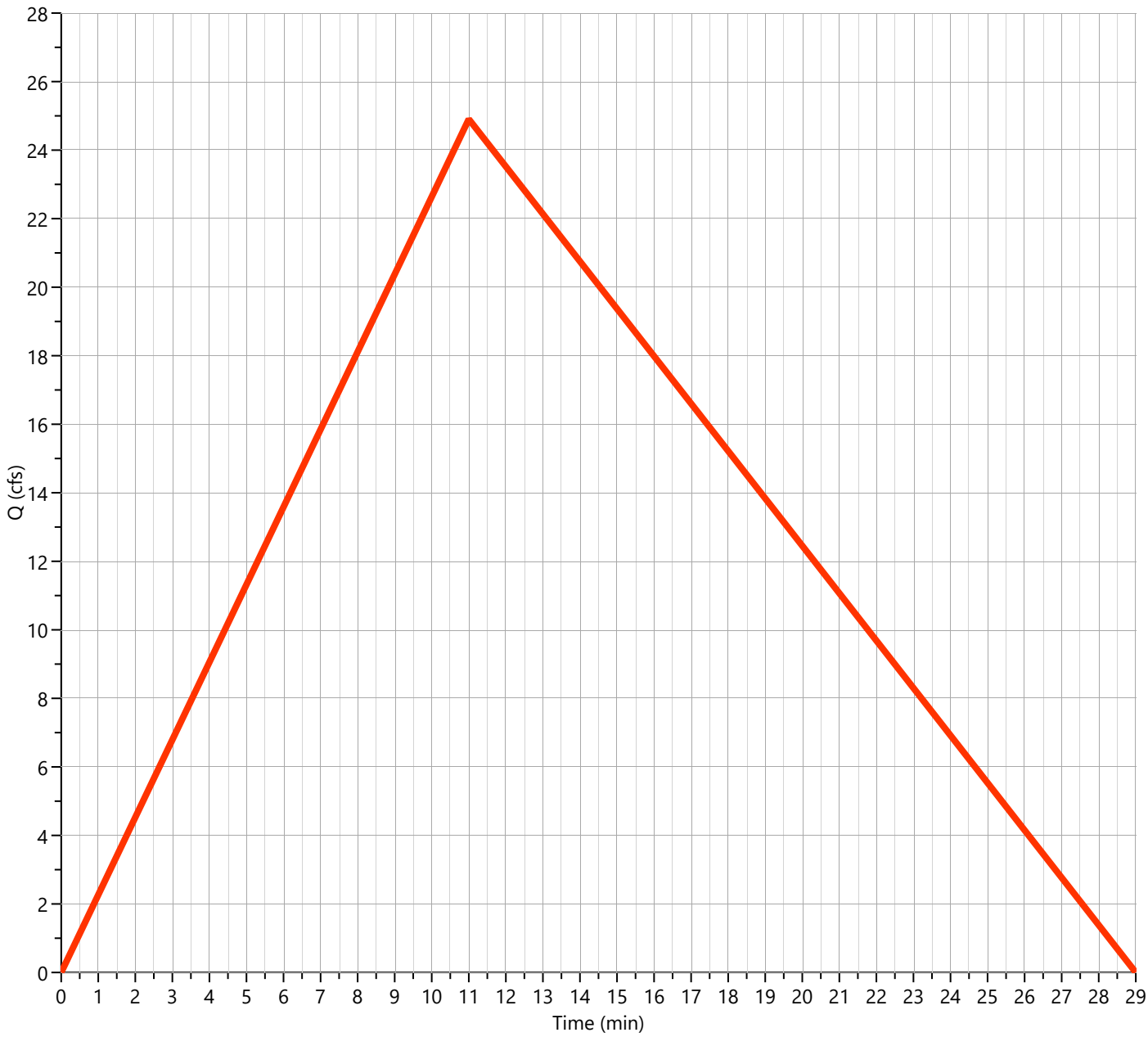
Hydrograph Type	= Rational	Peak Flow	= 44.15 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 53,043 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

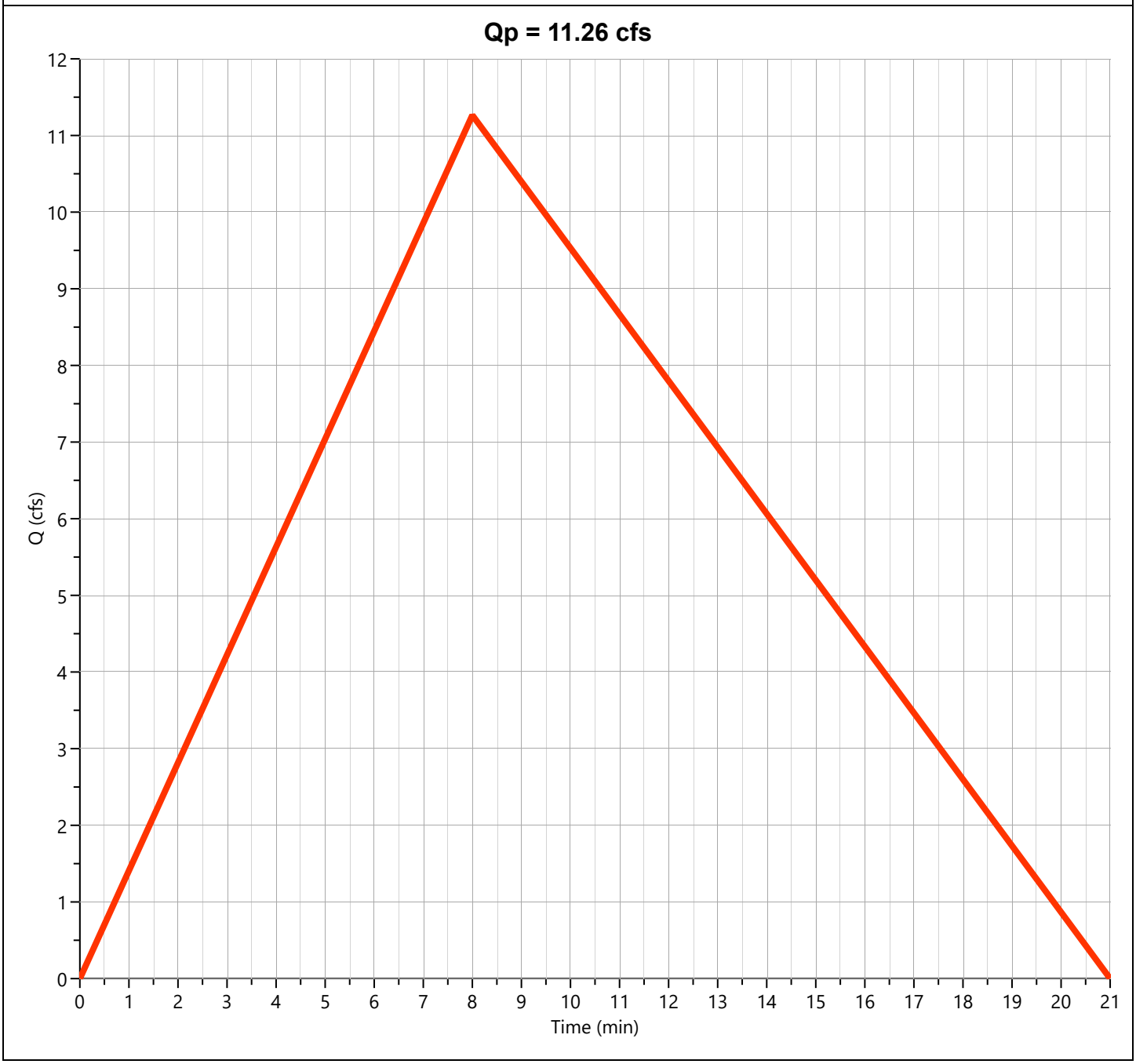
Hydrograph Type	= Rational	Peak Flow	= 24.90 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 21,943 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

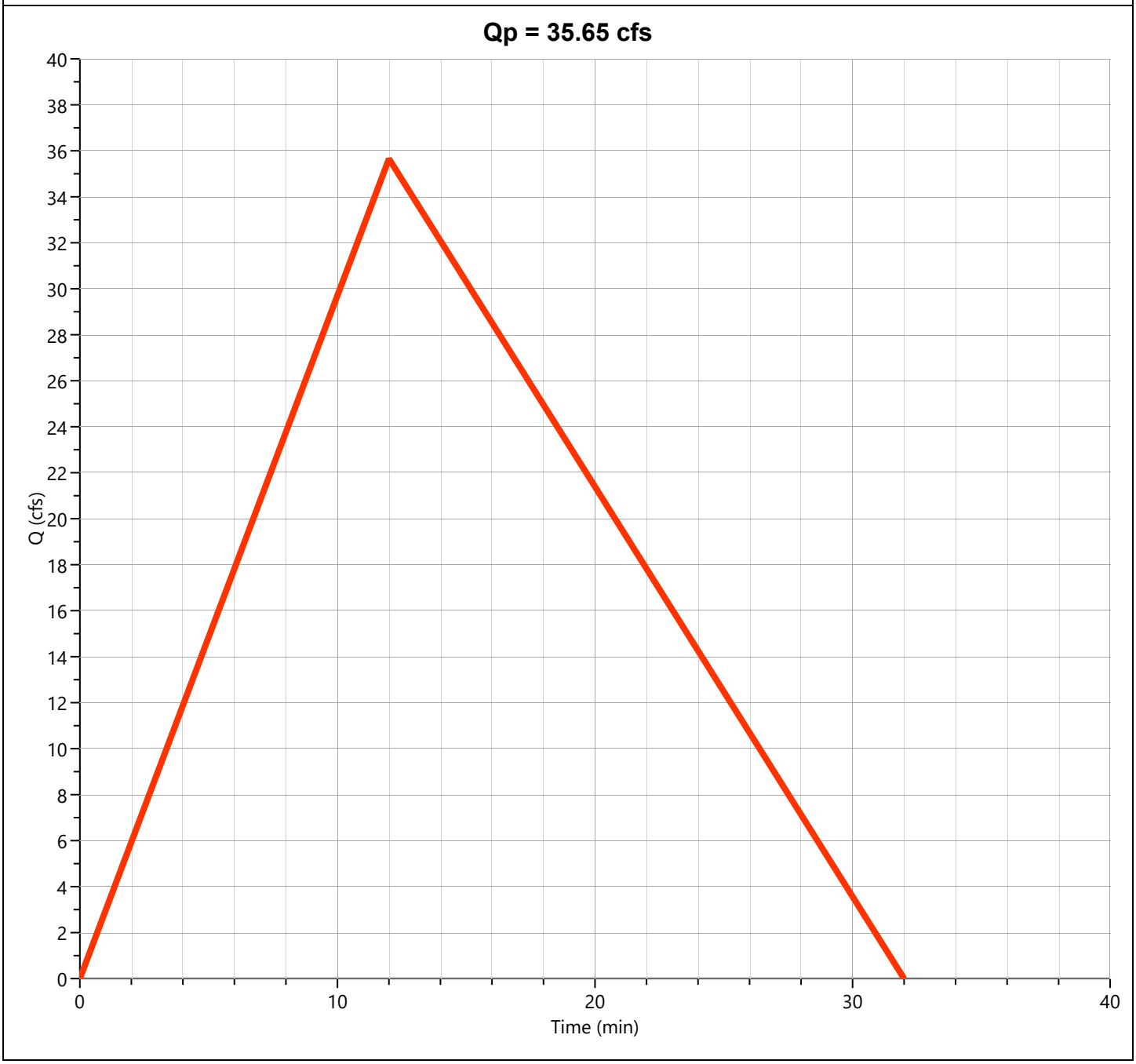
Hydrograph Type	= Rational	Peak Flow	= 11.26 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,218 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.64 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

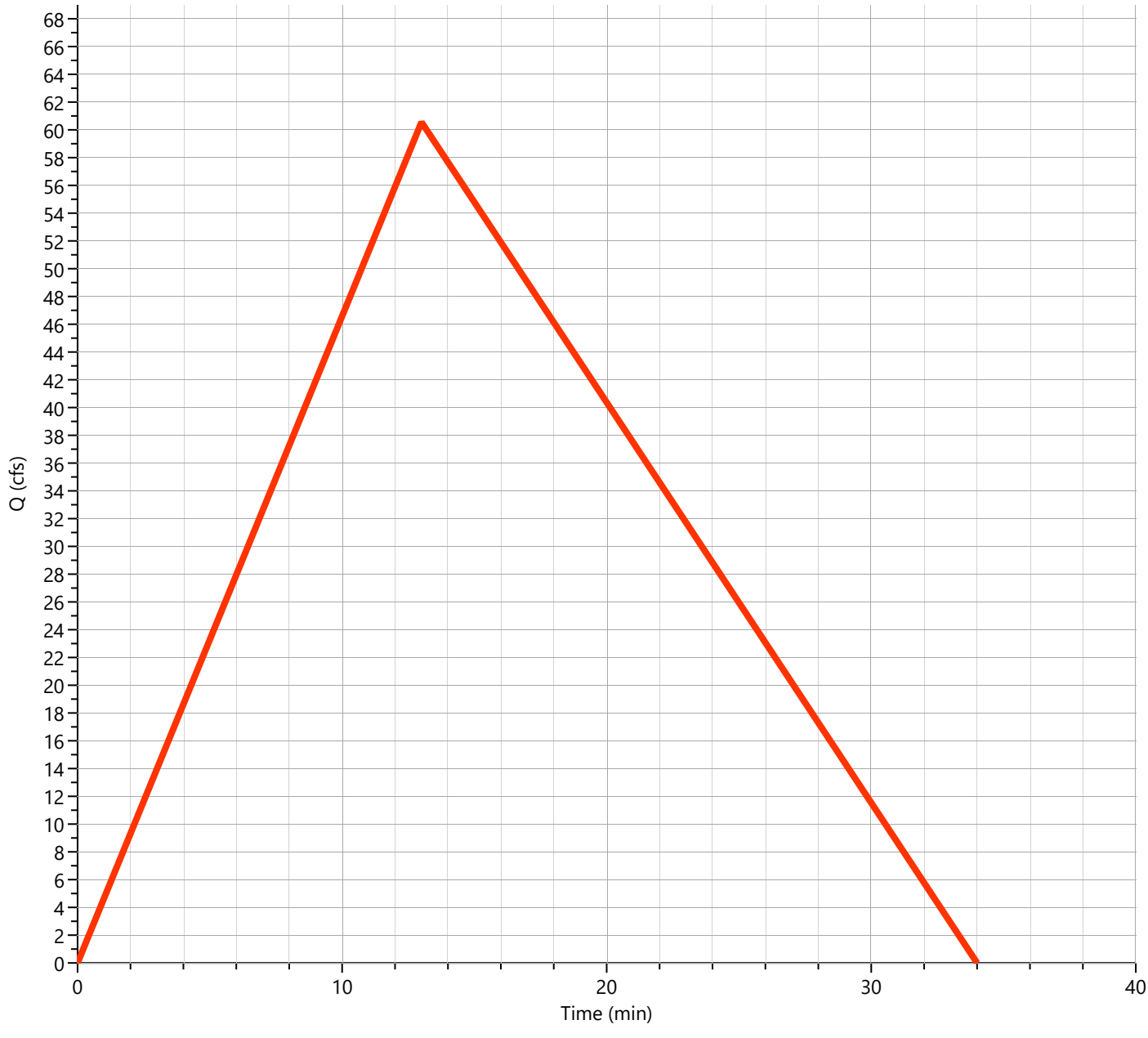
Hydrograph Type	= Rational	Peak Flow	= 35.65 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 34,268 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.37 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

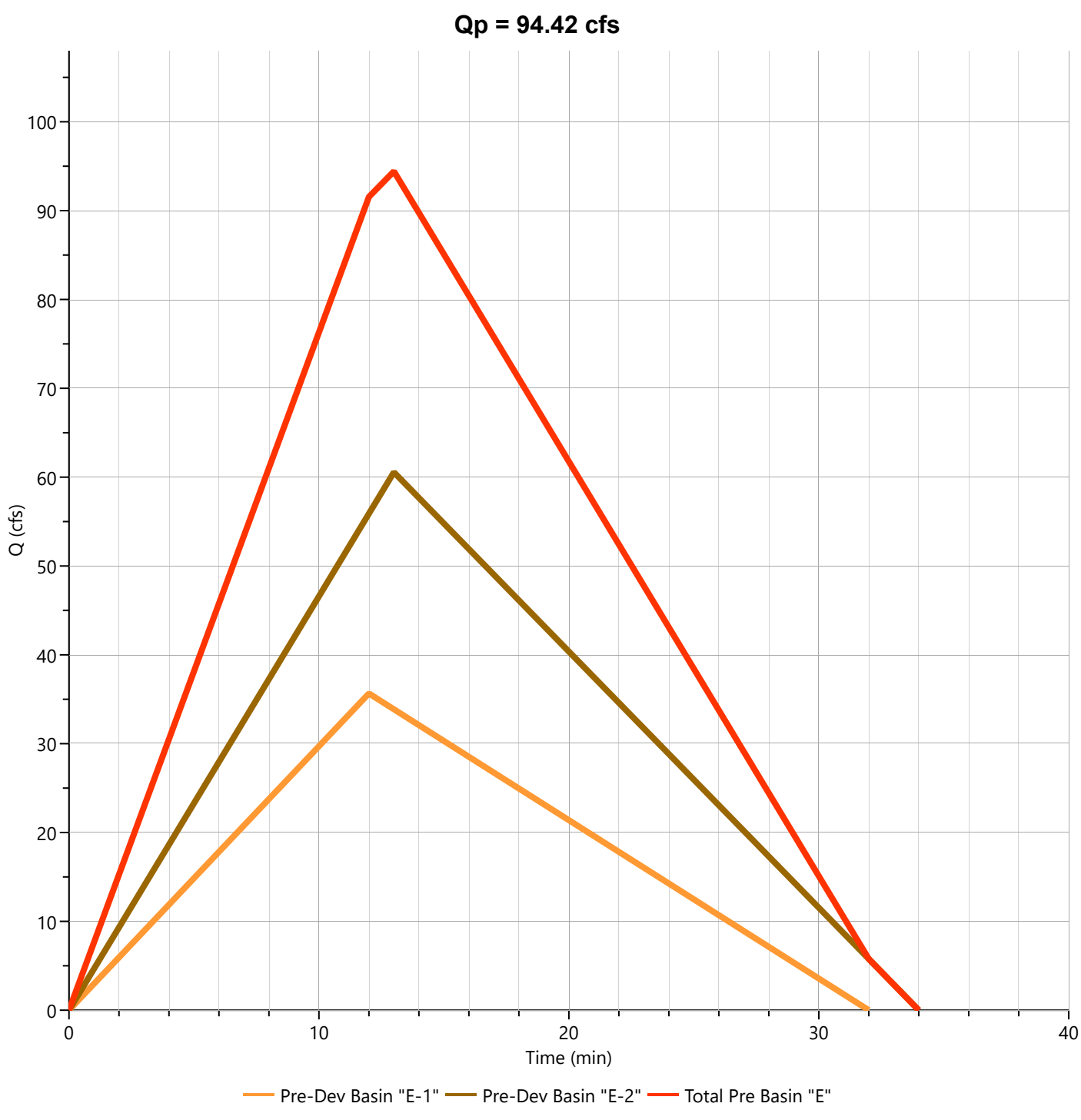
Hydrograph Type	= Rational	Peak Flow	= 60.55 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 63,053 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.14 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

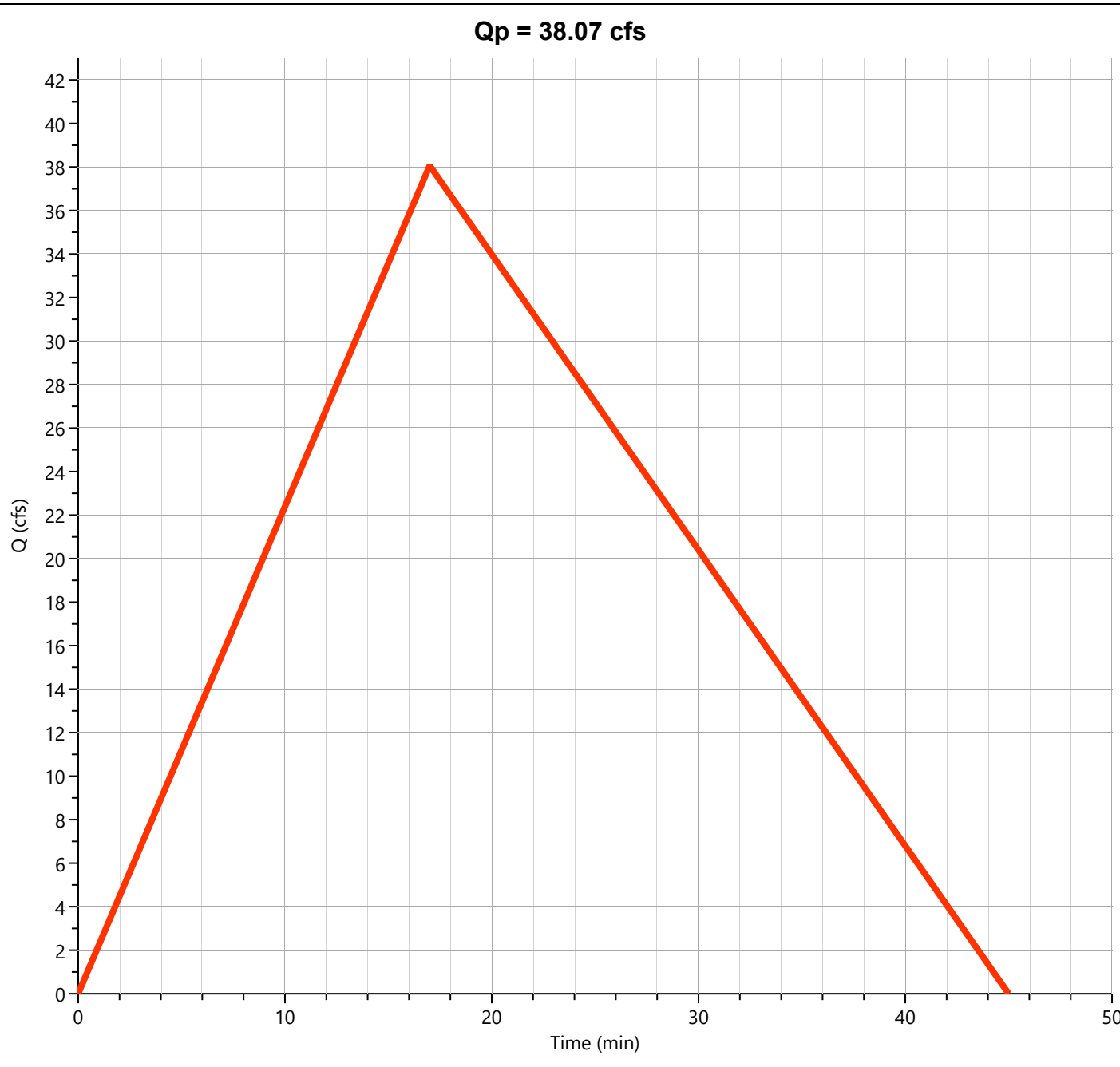
Hydrograph Type	= Junction	Peak Flow	= 94.42 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 95,989 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

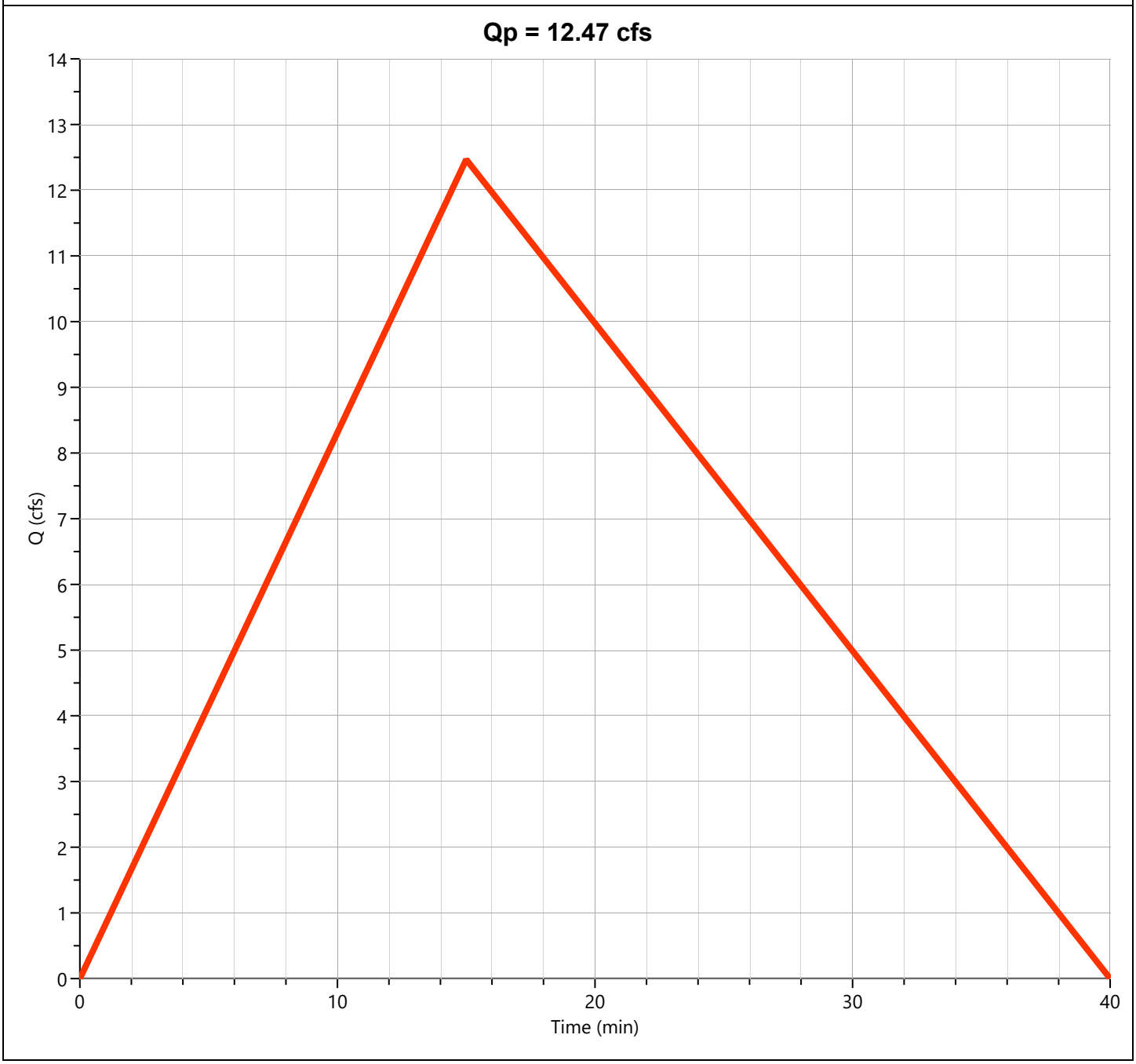
Hydrograph Type	= Rational	Peak Flow	= 38.07 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 51,833 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.45 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

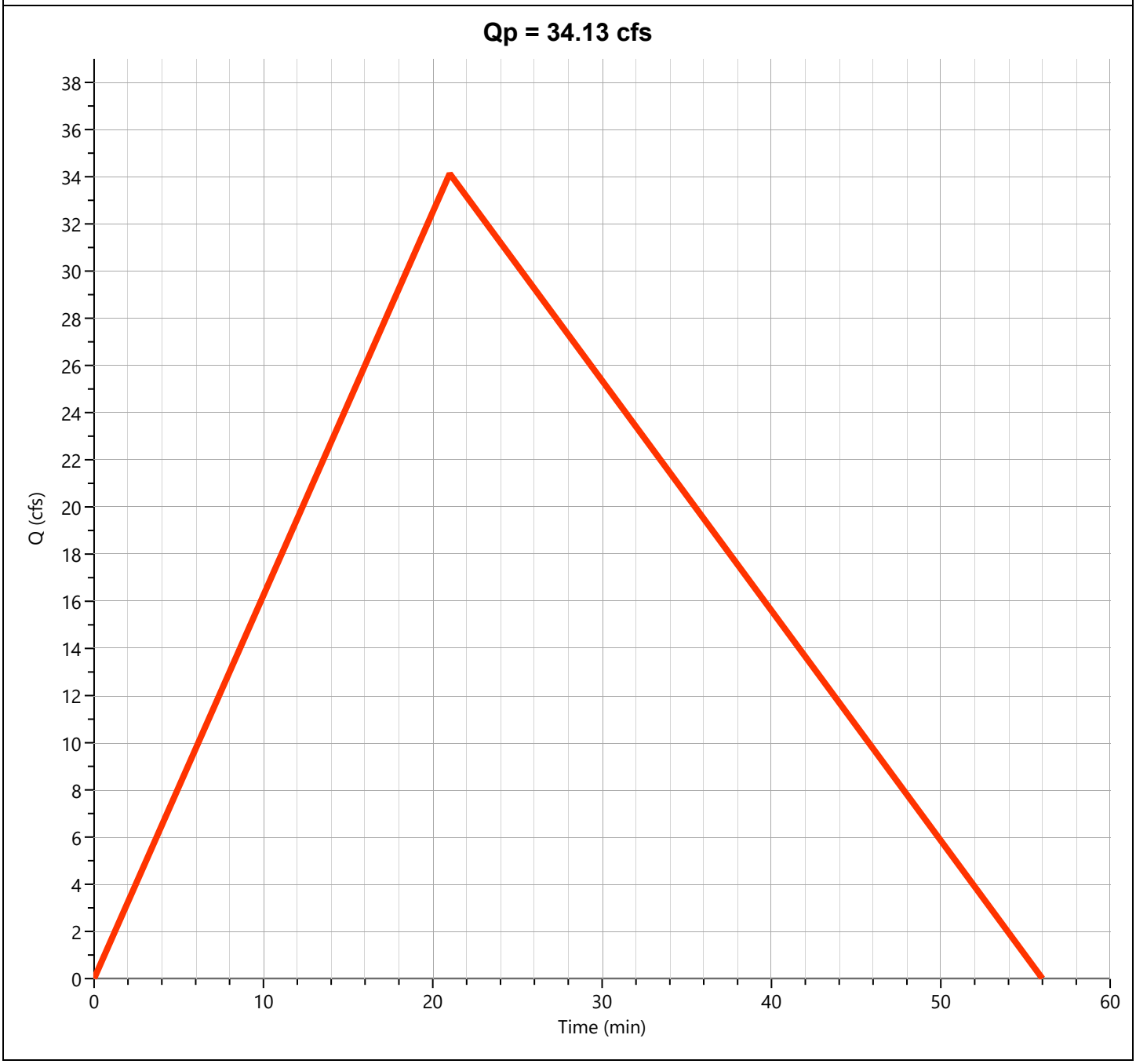
Hydrograph Type	= Rational	Peak Flow	= 12.47 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 14,979 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

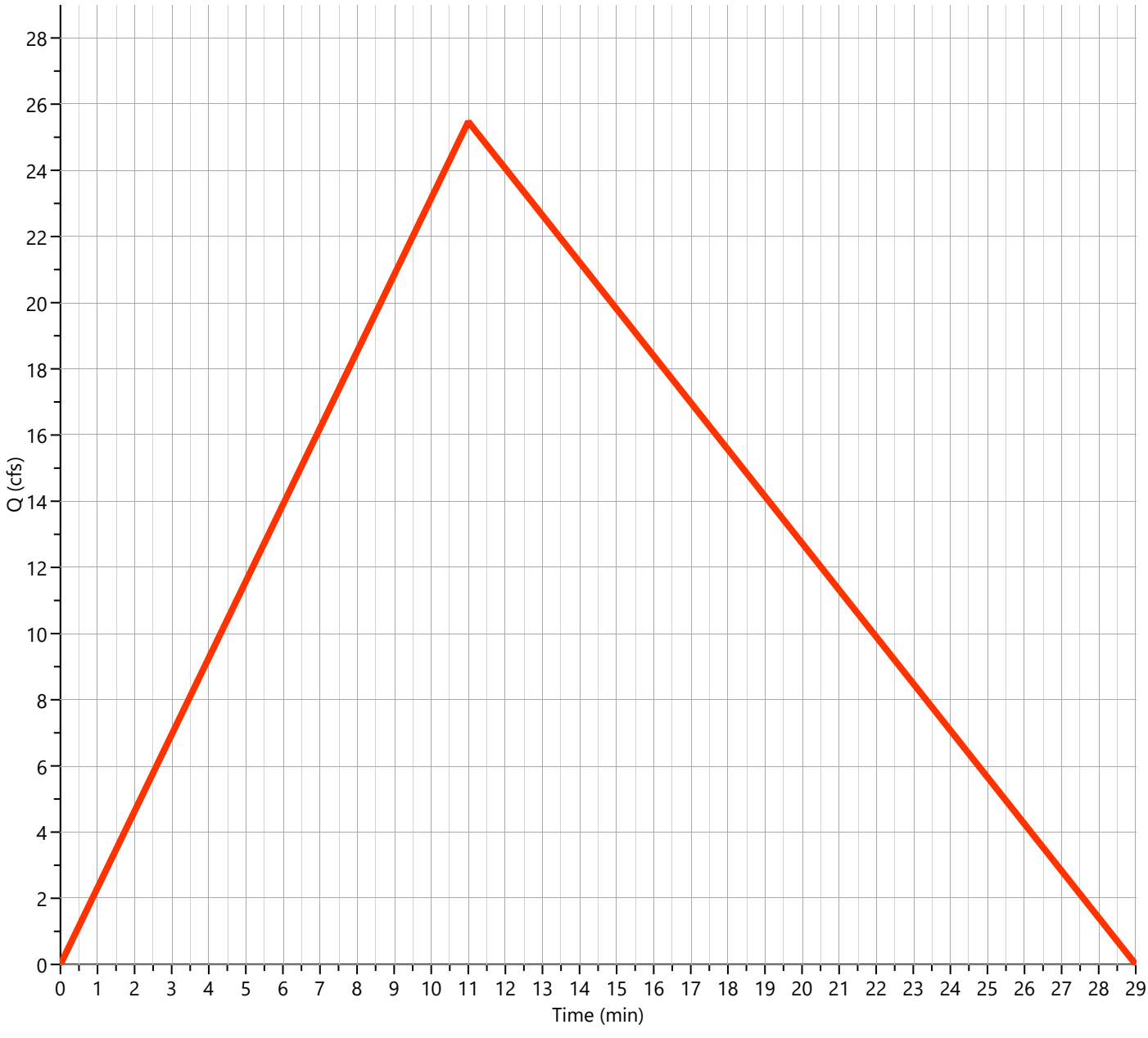
Hydrograph Type	= Rational	Peak Flow	= 34.13 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 57,410 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.95 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

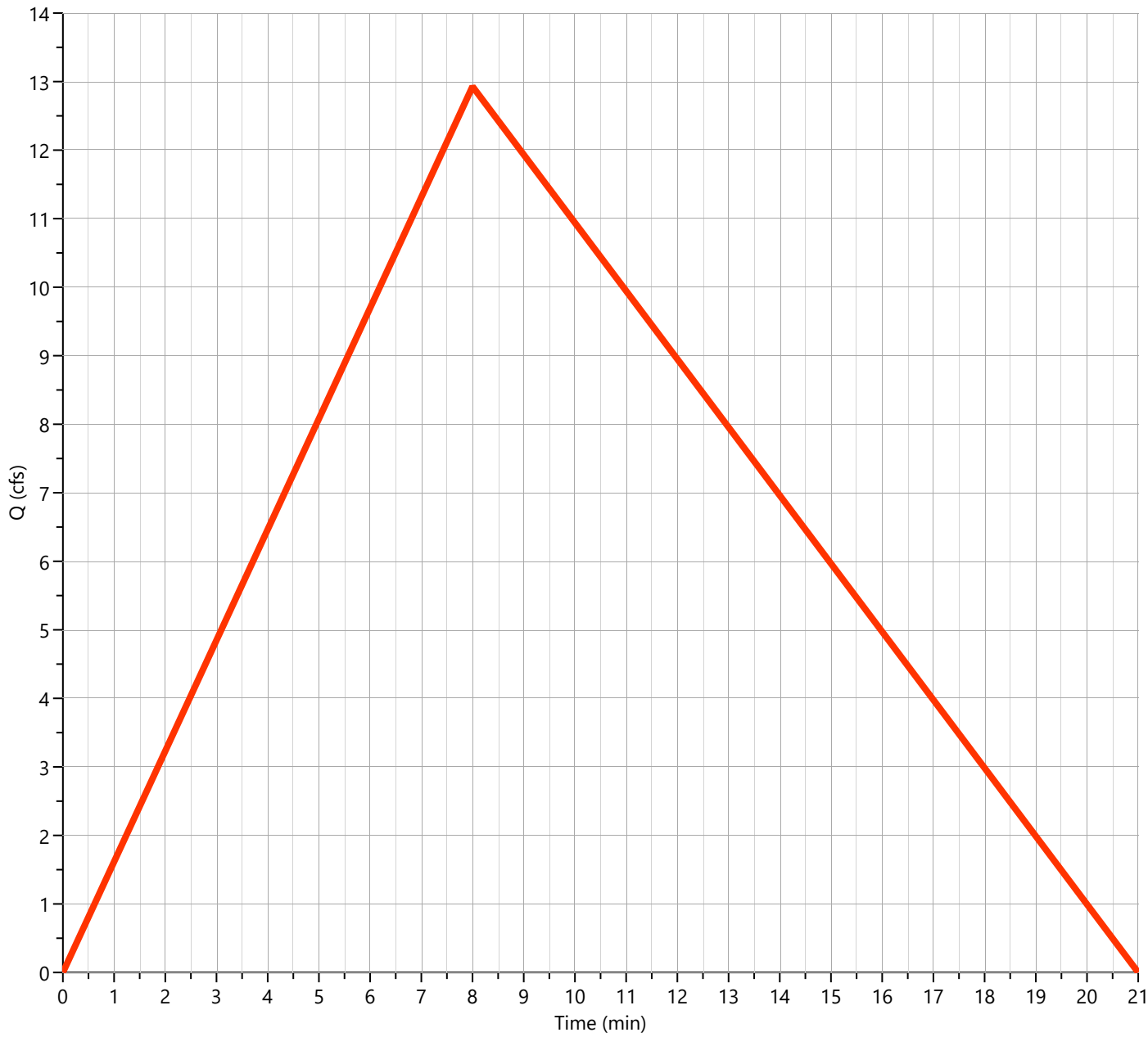
Hydrograph Type	= Rational	Peak Flow	= 25.47 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 22,441 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

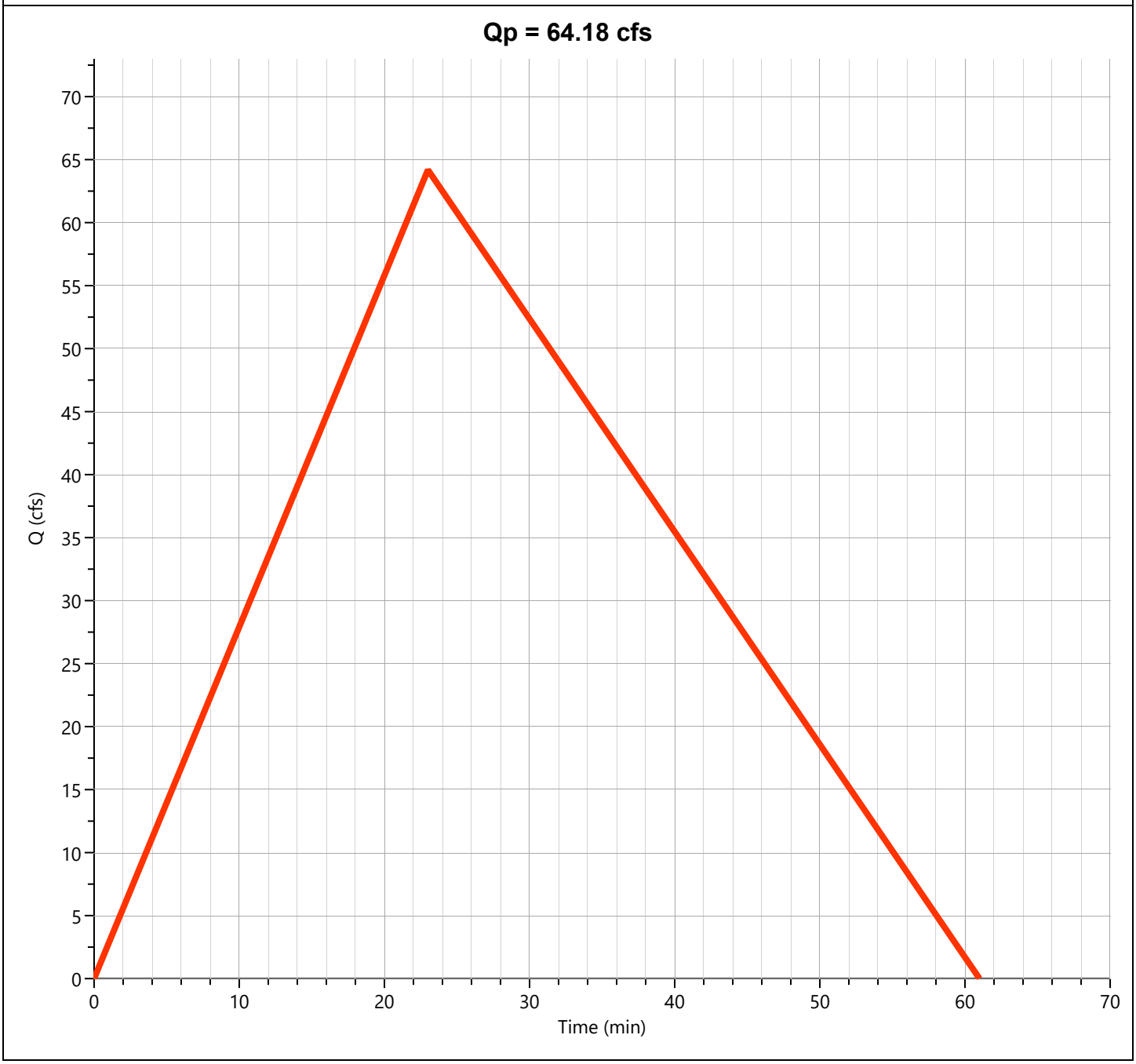
Hydrograph Type	= Rational	Peak Flow	= 12.93 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 8,284 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.64 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 64.18 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 118,247 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.75 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



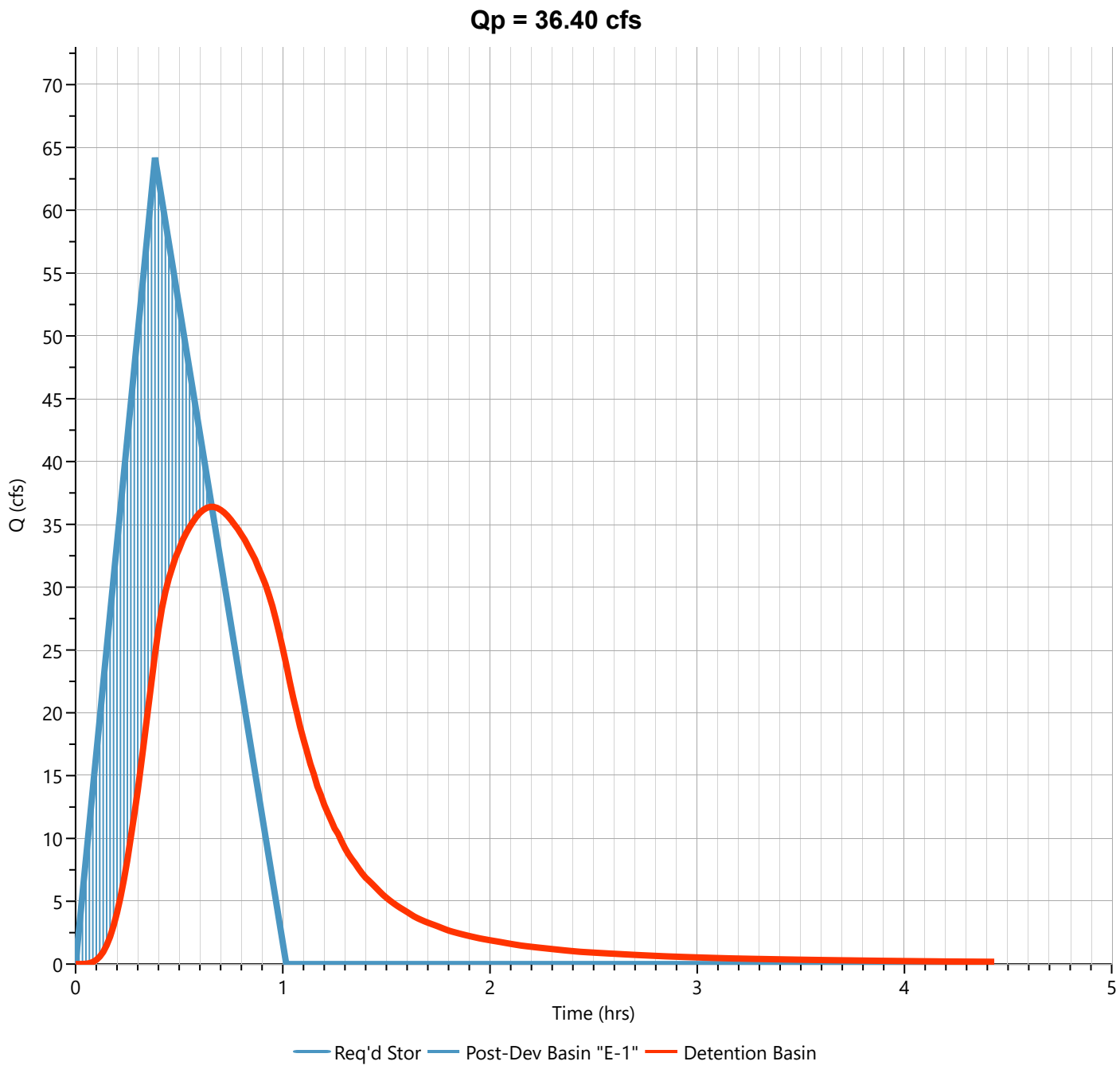
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 36.40 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 117,413 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 471.72 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 51,948 cuft

Pond Routing by Storage Indication Method

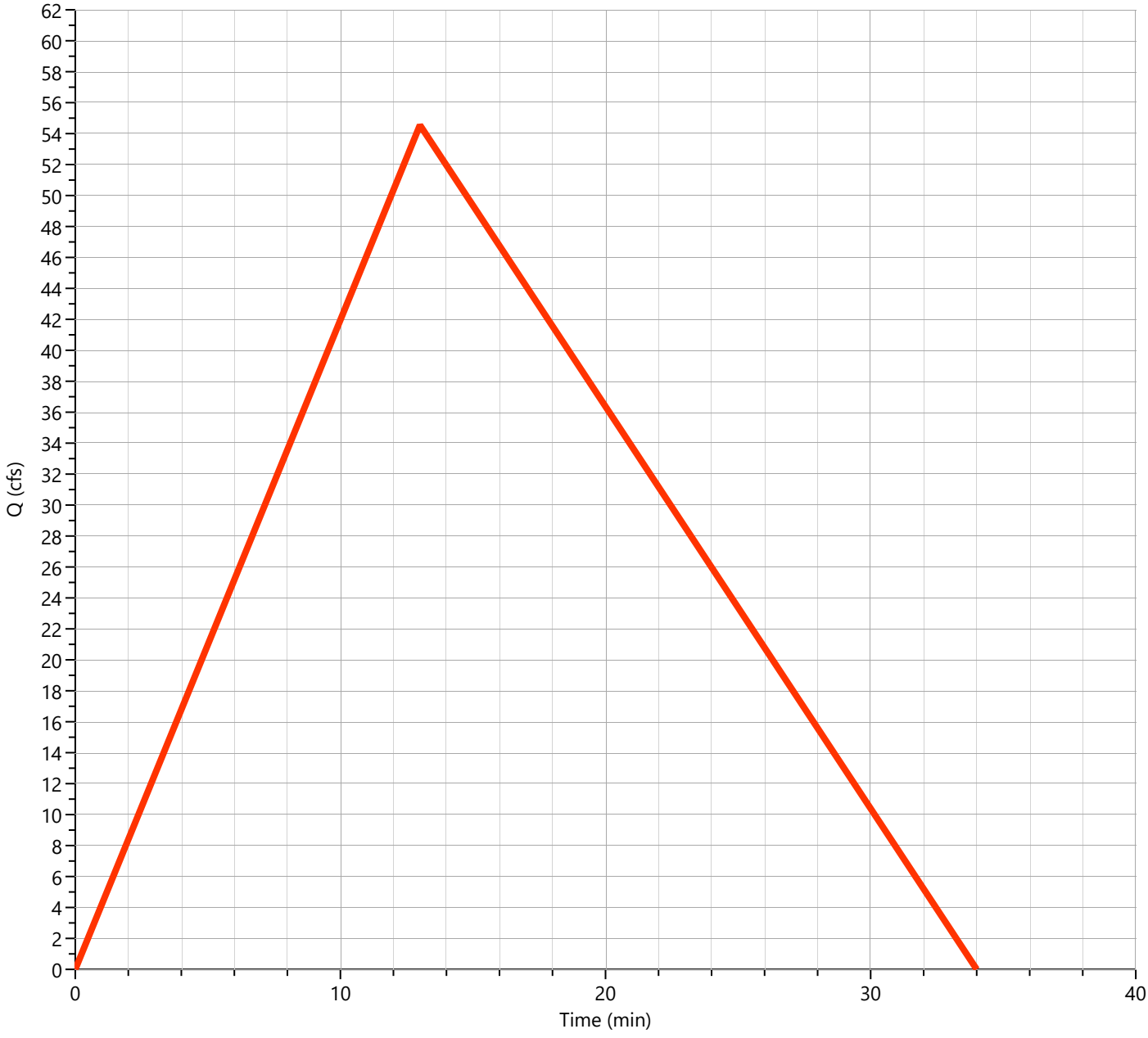
Center of mass detention time = 24 min



Post-Dev Basin "E-2"

Hyd. No. 15

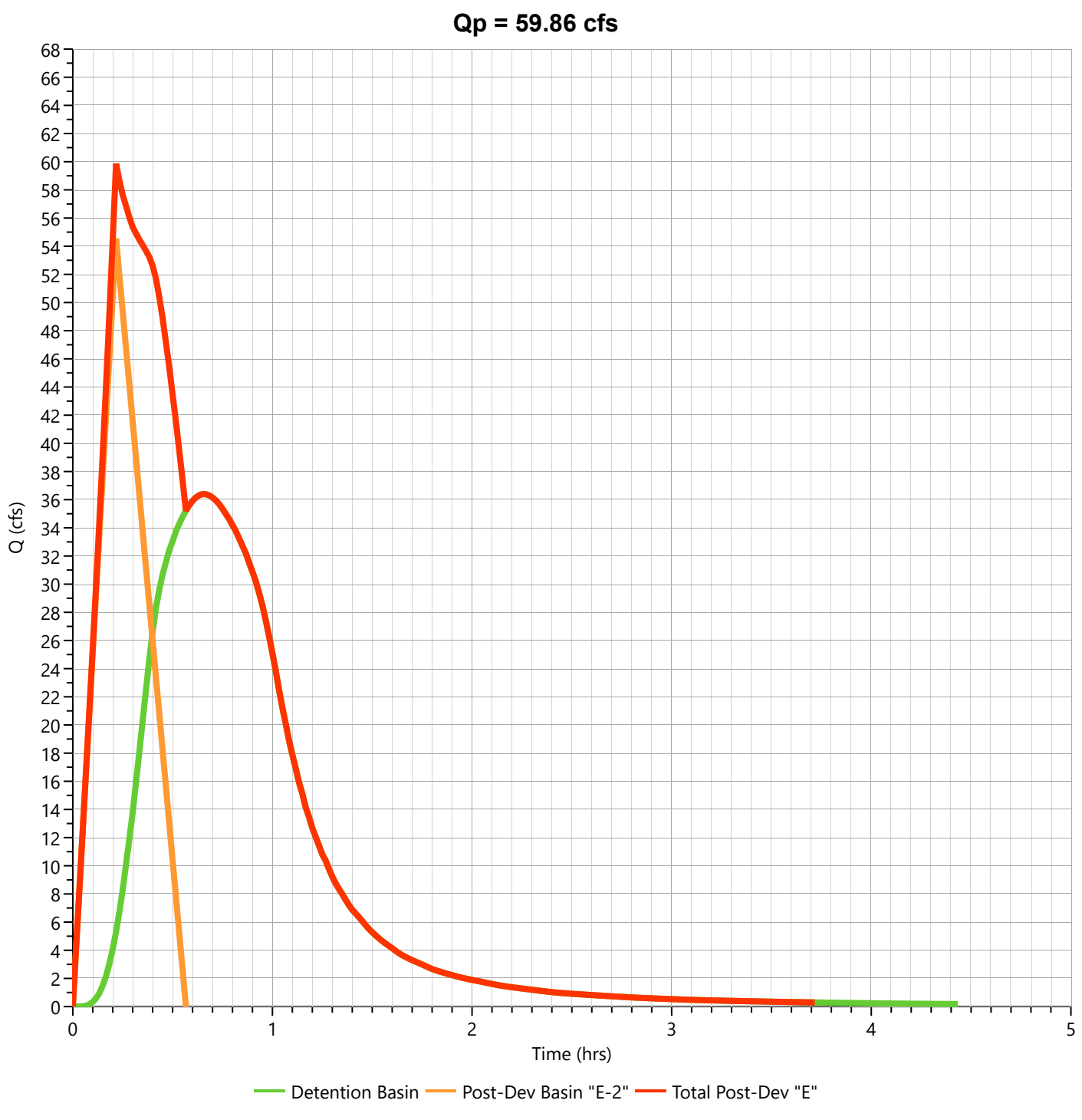
Hydrograph Type	= Rational	Peak Flow	= 54.55 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 56,801 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.14 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Post-Dev "E"

Hyd. No. 16

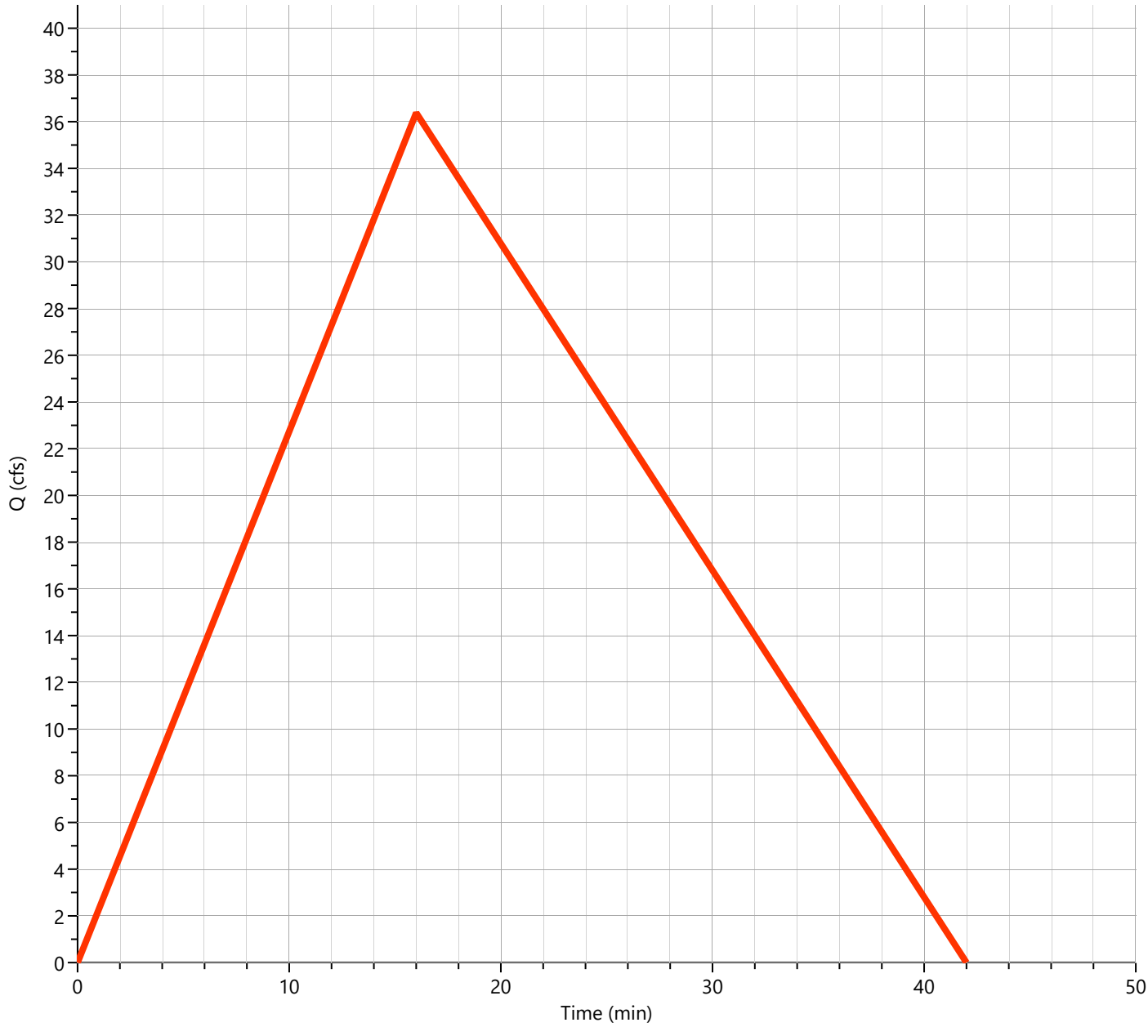
Hydrograph Type	= Junction	Peak Flow	= 59.86 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 173,052 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 36.38 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 46,623 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Design Storm Report

Custom Storm filename:

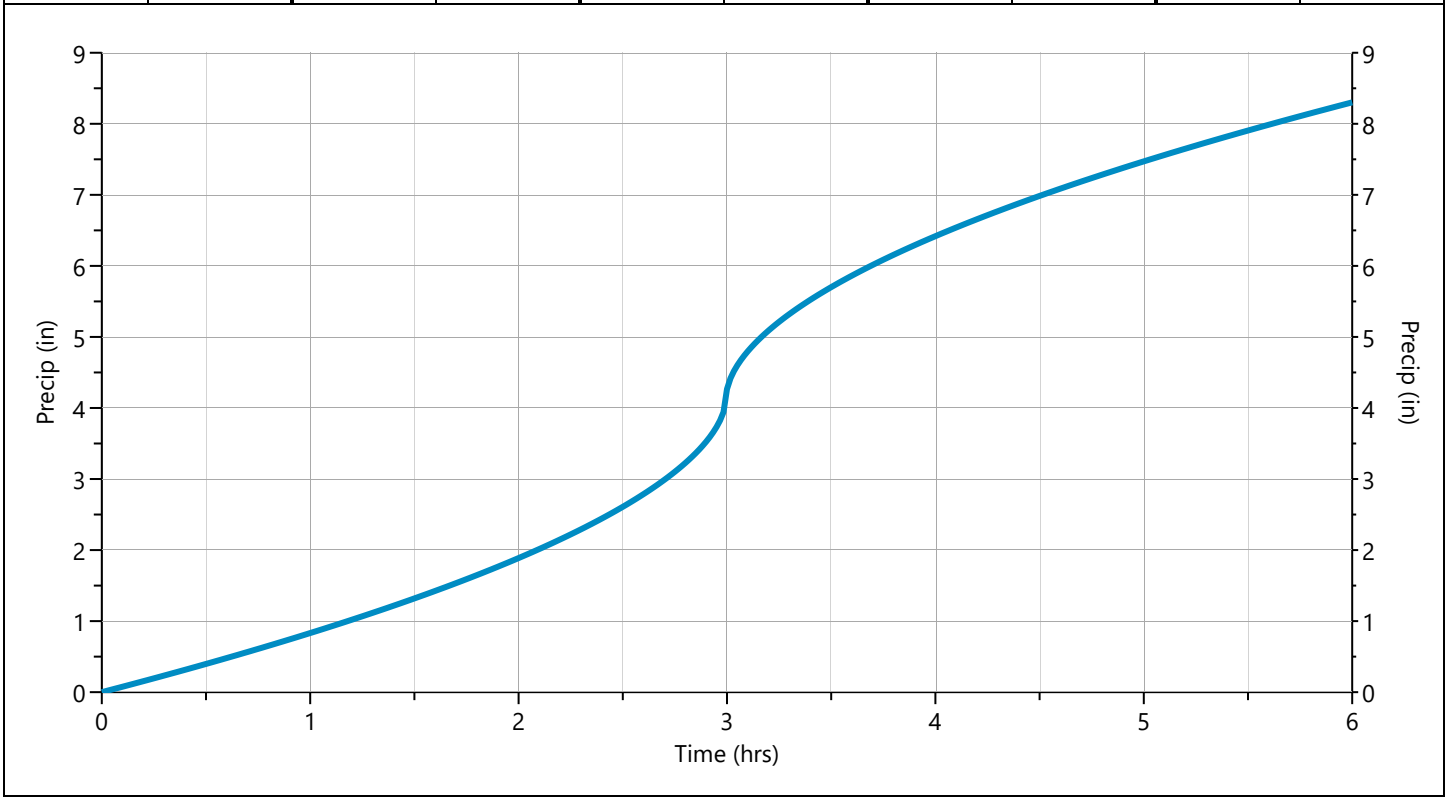
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	10-yr	✔ 25-yr	50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 25-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.028301	2.68	0.034665	2.87	0.050706	3.05	0.083084	3.23	0.040316
2.52	0.028731	2.70	0.035505	2.88	0.053735	3.07	0.072259	3.25	0.039066
2.53	0.029183	2.72	0.036415	2.90	0.057438	3.08	0.064975	3.27	0.037932
2.55	0.029659	2.73	0.037404	2.92	0.062117	3.10	0.059630	3.28	0.036899
2.57	0.030161	2.75	0.038486	2.93	0.068305	3.12	0.055487	3.30	0.035951
2.58	0.030691	2.77	0.039675	2.95	0.077064	3.13	0.052150	3.32	0.035077
2.60	0.031253	2.78	0.040992	2.97	0.090954	3.15	0.049384	3.33	0.034269
2.62	0.031849	2.80	0.042462	2.98	0.118769	3.17	0.047043	3.35	0.033518
2.63	0.032484	2.82	0.044116	**3.00**	**0.323614**	3.18	0.045025	3.37	0.032817
2.65	0.033161	2.83	0.045998	3.02	0.150593	3.20	0.043263	3.38	0.032161
2.67	0.033886	2.85	0.048168	3.03	0.101903	3.22	0.041706	3.40	0.031547



Hydrograph 50-yr Summary

Hydrology Studio v 3.0.0.44

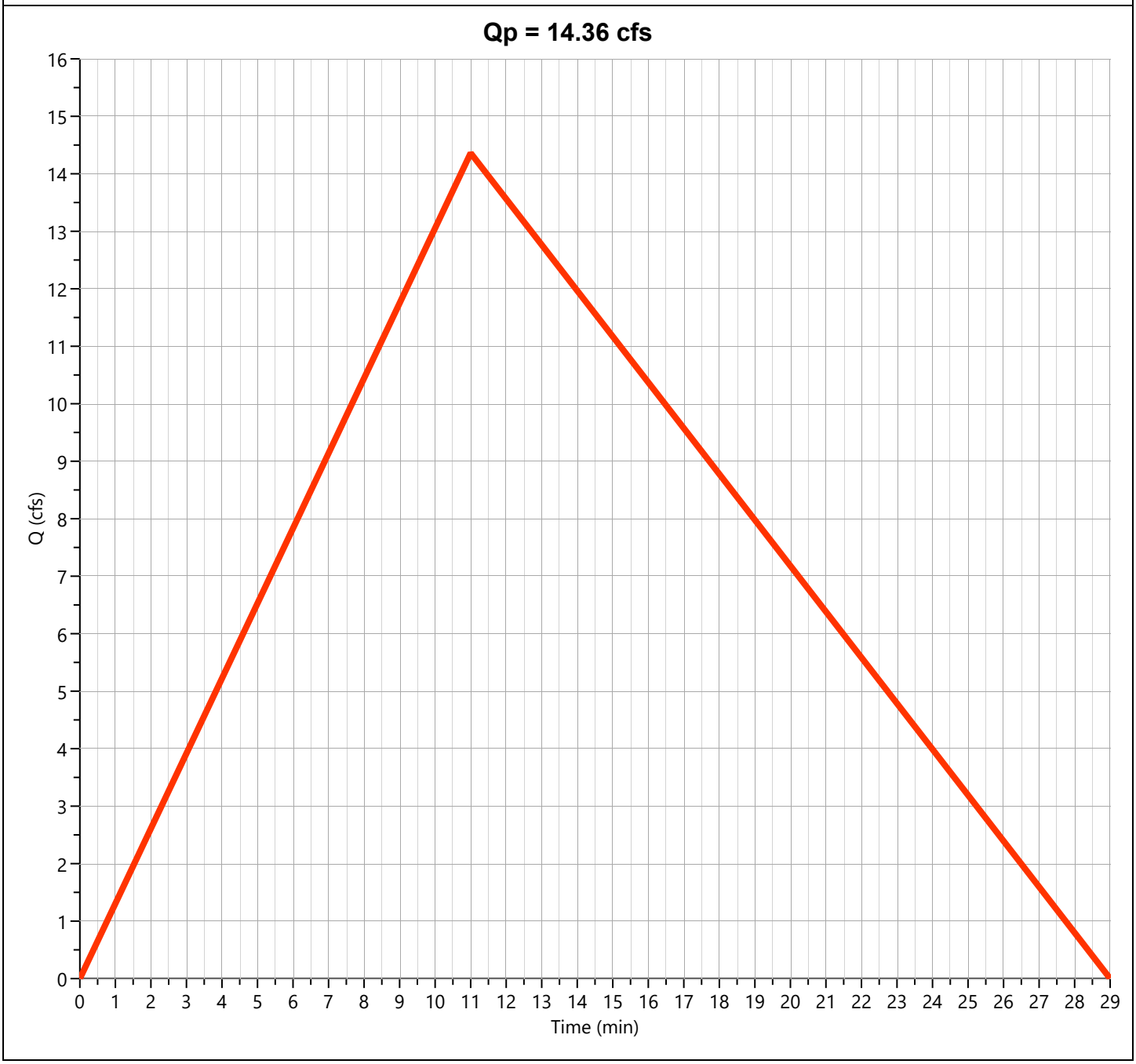
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	14.36	0.18	12,653	----		
2	Rational	Pre-Dev Basin "B"	48.29	0.25	58,019	----		
3	Rational	Pre-Dev Basin "C"	27.23	0.18	23,992	----		
4	Rational	Pre-Dev Basin "D"	12.31	0.13	7,889	----		
5	Rational	Pre-Dev Basin "E-1"	38.98	0.20	37,472	----		
6	Rational	Pre-Dev Basin "E-2"	66.22	0.22	68,955	----		
7	Junction	Total Pre Basin "E"	103.3	0.22	104,970	5, 6		
8	Rational	Pre-Dev Basin "F"	41.64	0.28	56,705	----		
9	Rational	Post-Dev Basin A	13.64	0.25	16,384	----		
10	Rational	Post-Dev Basin B	37.35	0.35	62,823	----		
11	Rational	Post-Dev Basin "C"	27.85	0.18	24,537	----		
12	Rational	Post-Dev Basin "D"	14.13	0.13	9,054	----		
13	Rational	Post-Dev Basin "E-1"	70.24	0.38	129,411	----		
14	Pond Route	Detention Basin	39.98	0.65	128,502	13	472.00	56,670
15	Rational	Post-Dev Basin "E-2"	59.65	0.22	62,118	----		
16	Junction	Total Post-Dev "E"	65.87	0.22	189,350	14, 15		
17	Rational	Post-Dev Basin "F"	39.79	0.27	51,000	----		

Pre-Dev Basin "A"

Hyd. No. 1

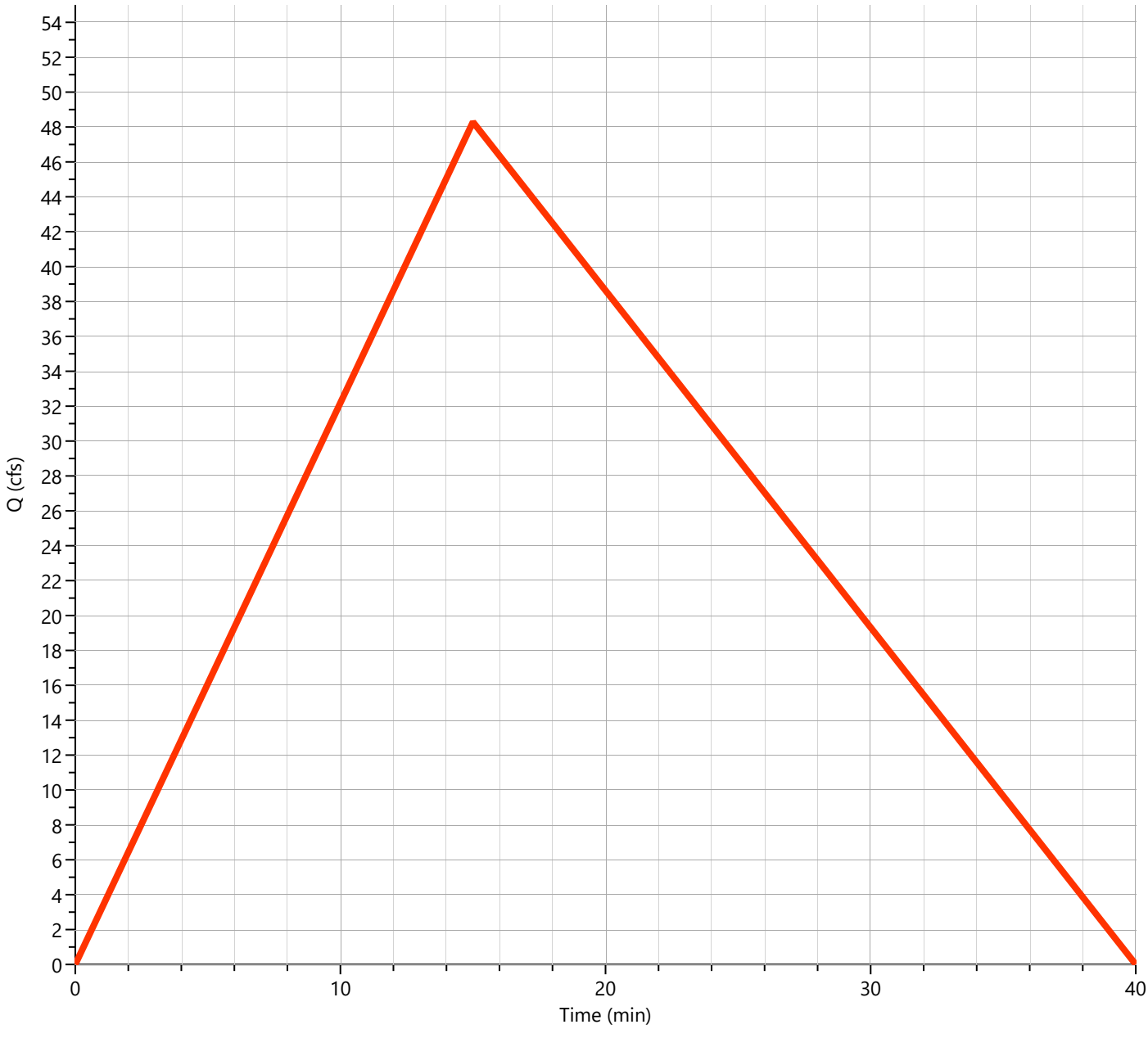
Hydrograph Type	= Rational	Peak Flow	= 14.36 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 12,653 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.24 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

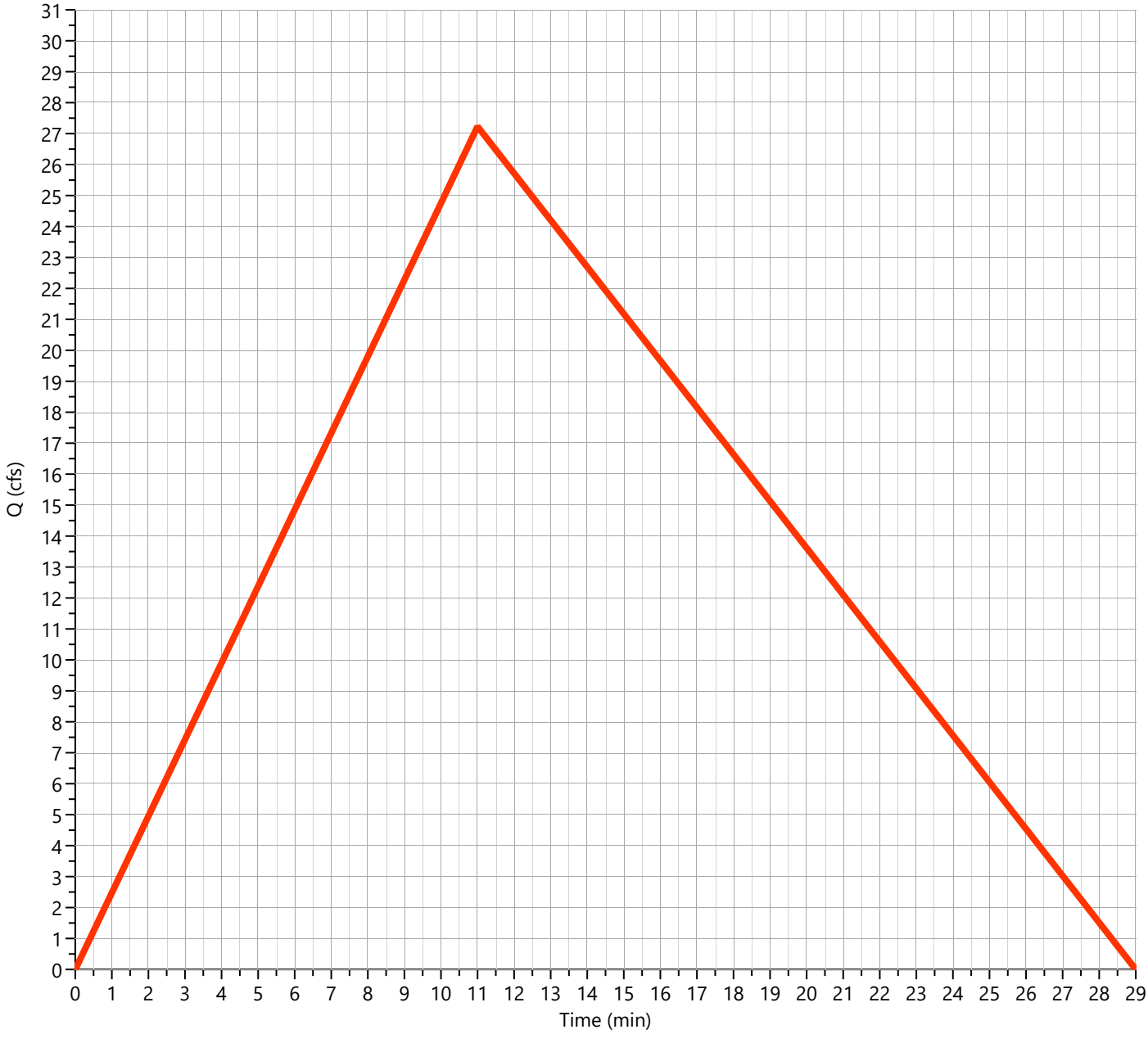
Hydrograph Type	= Rational	Peak Flow	= 48.29 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 58,019 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

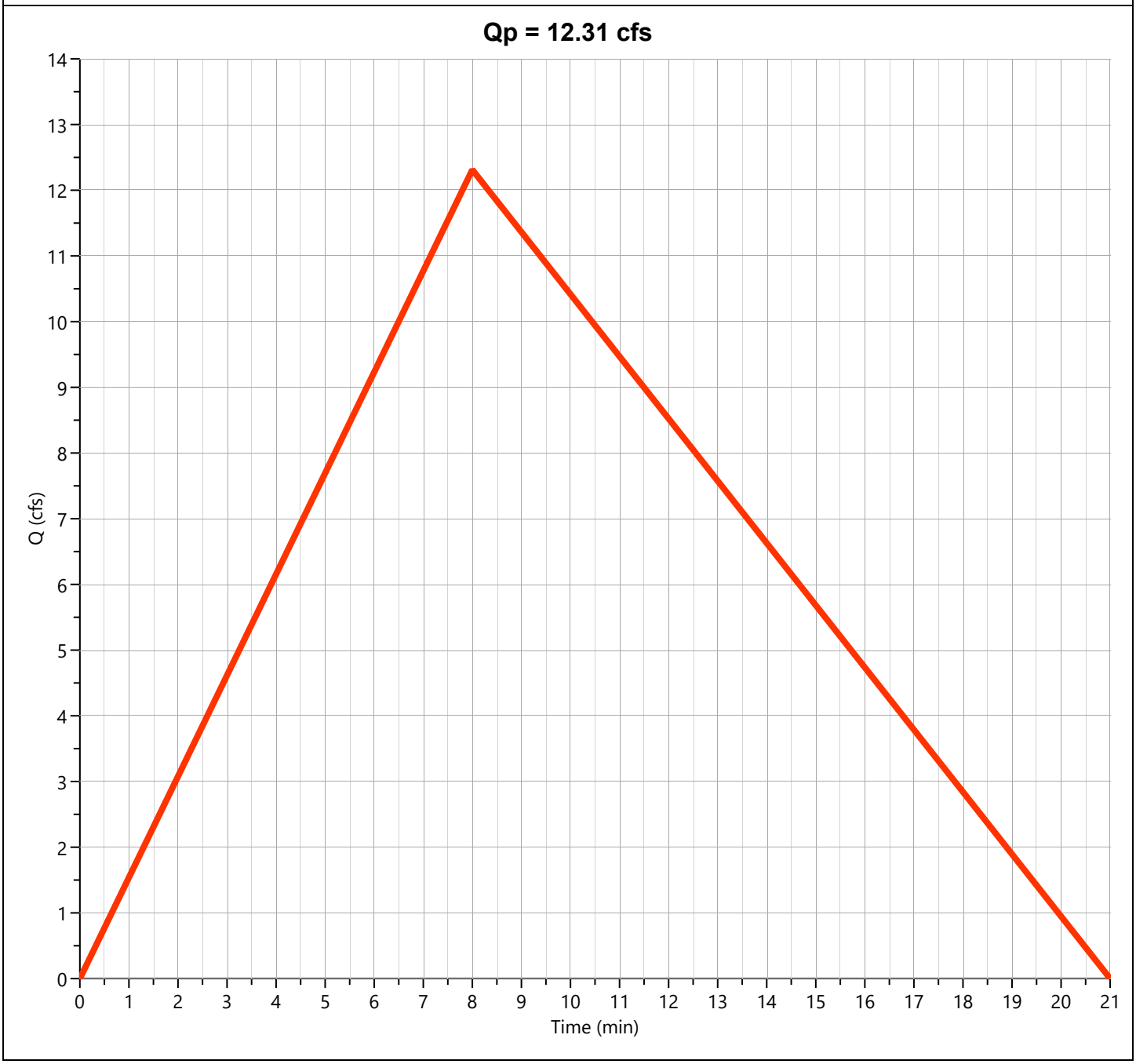
Hydrograph Type	= Rational	Peak Flow	= 27.23 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 23,992 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.24 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

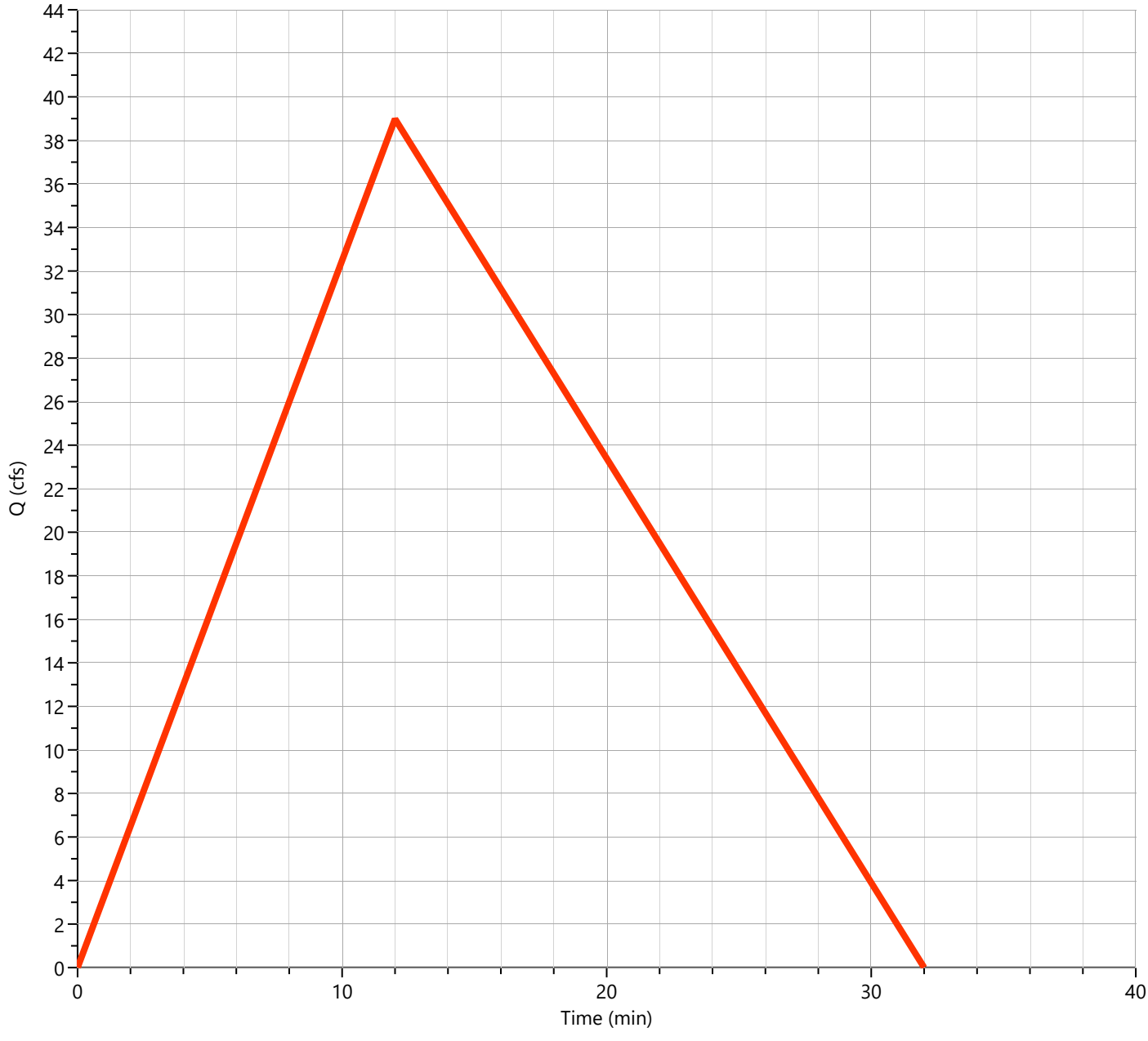
Hydrograph Type	= Rational	Peak Flow	= 12.31 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,889 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 8.35 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

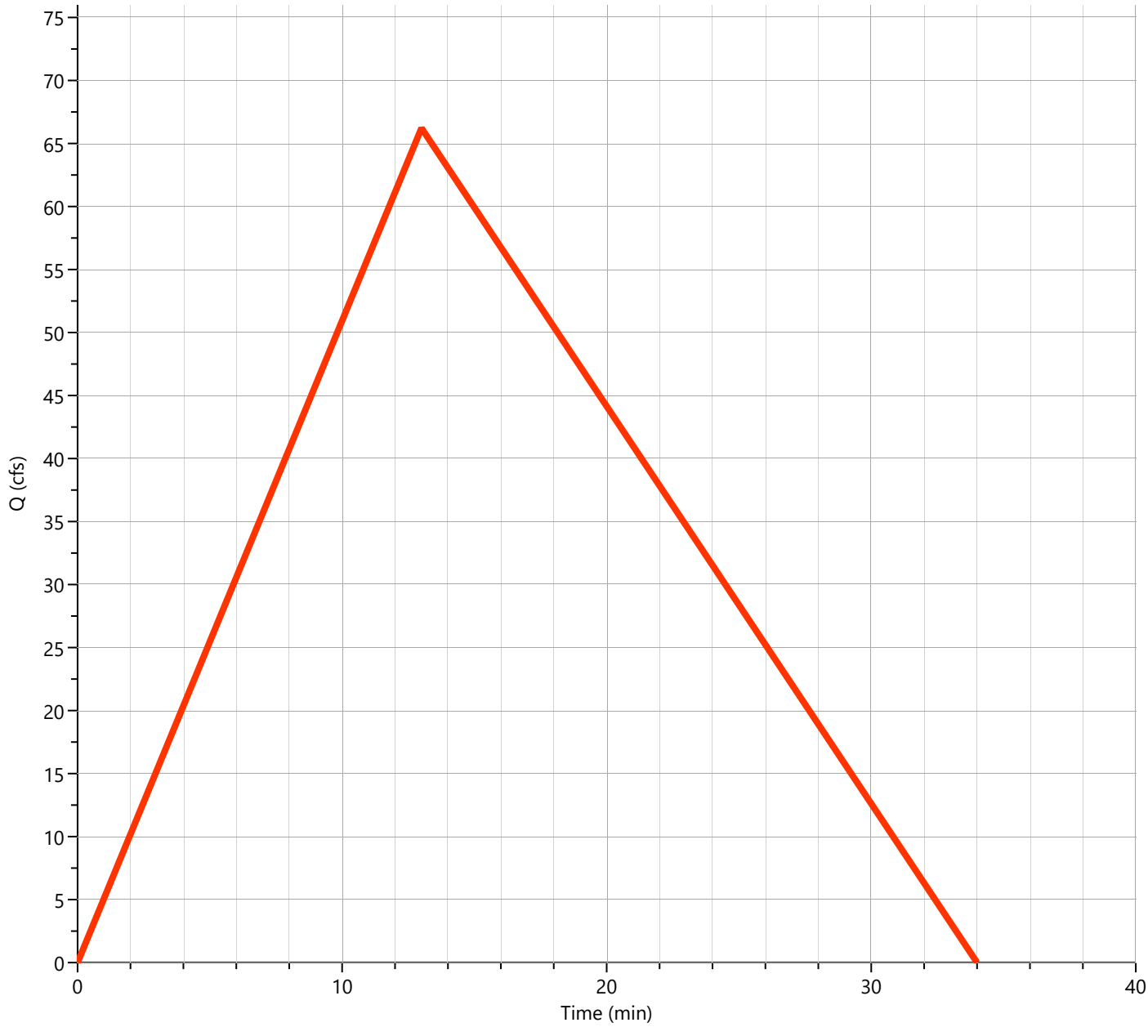
Hydrograph Type	= Rational	Peak Flow	= 38.98 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 37,472 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

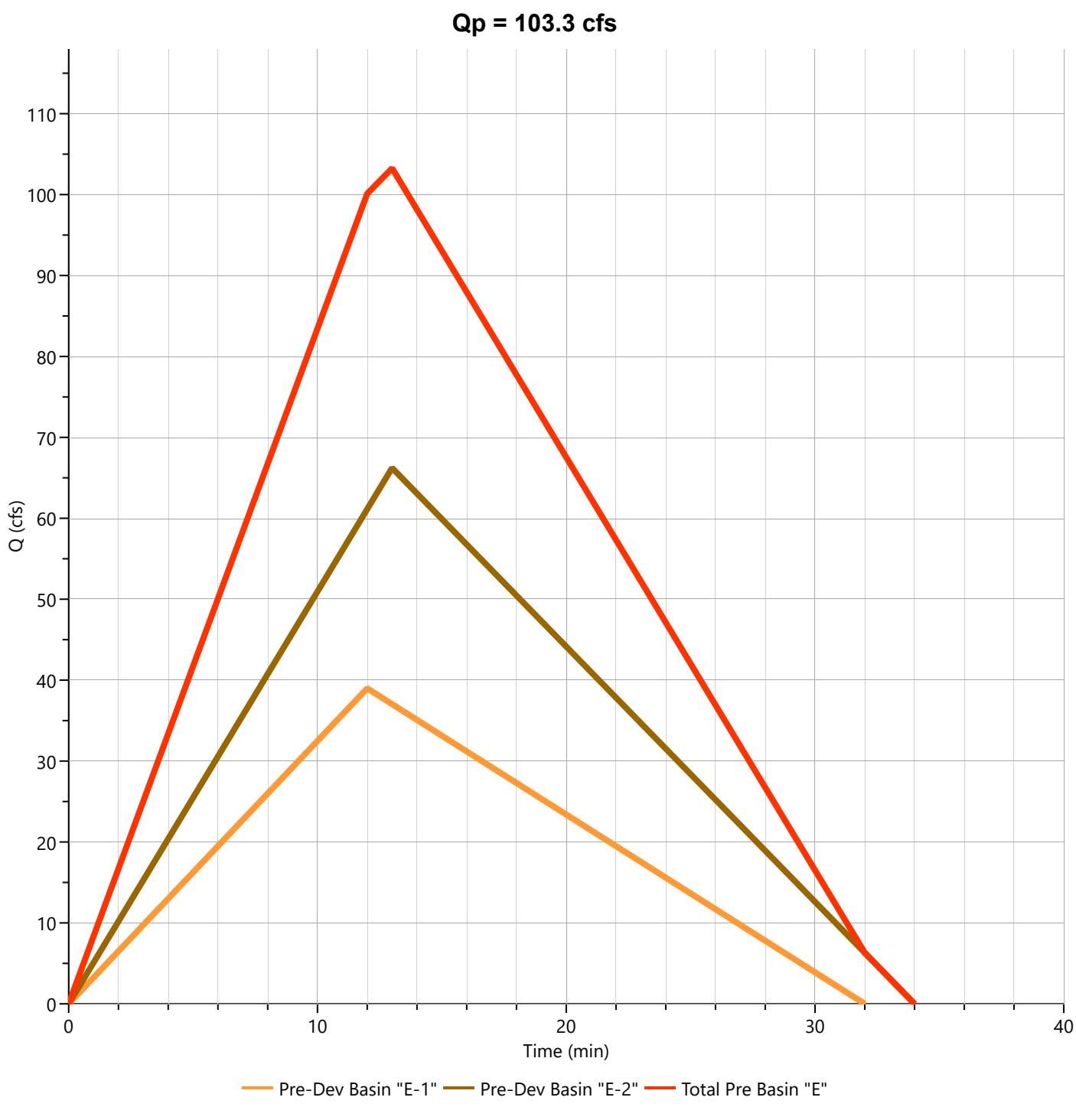
Hydrograph Type	= Rational	Peak Flow	= 66.22 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 68,955 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.72 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

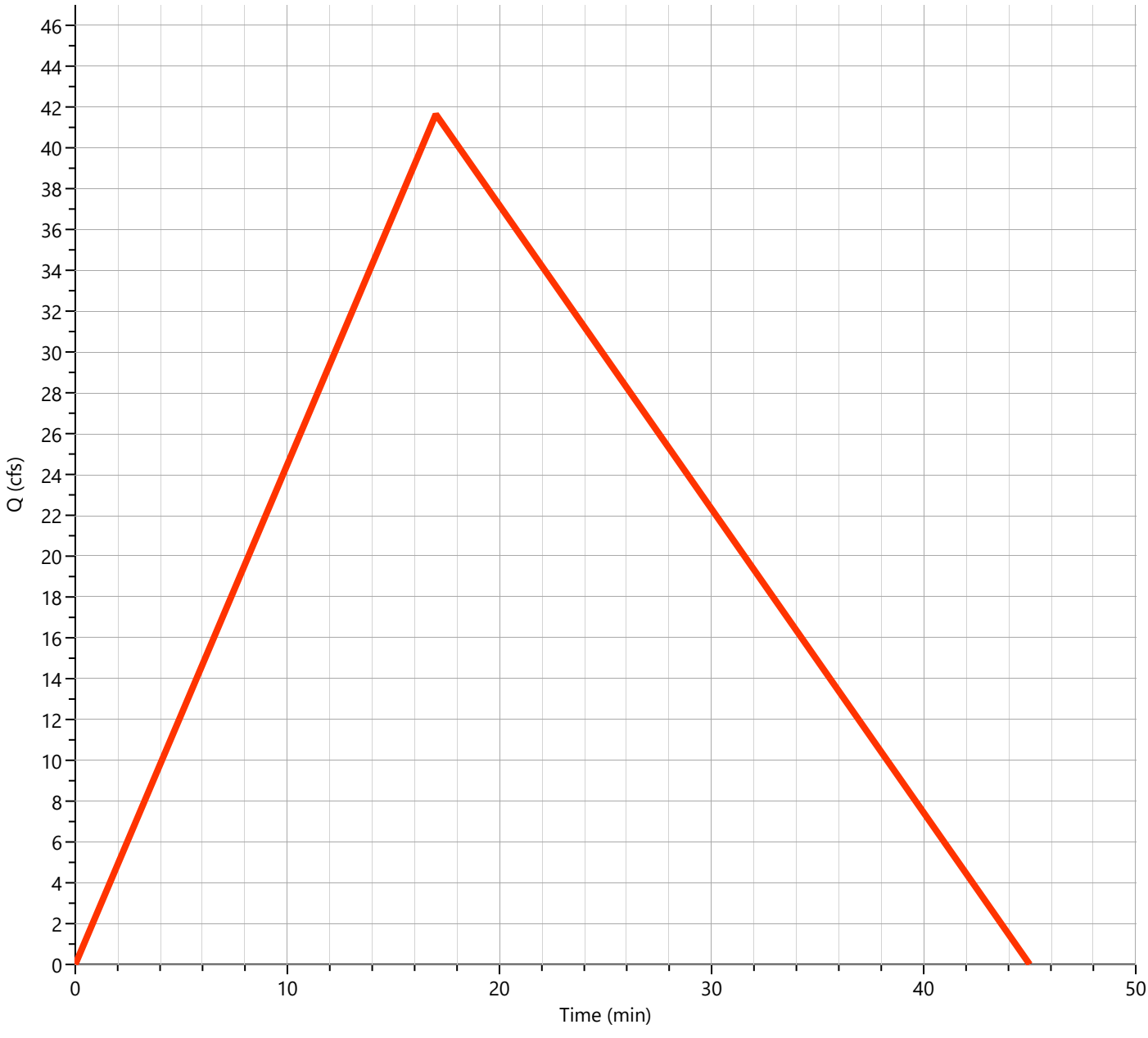
Hydrograph Type	= Junction	Peak Flow	= 103.3 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 104,970 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

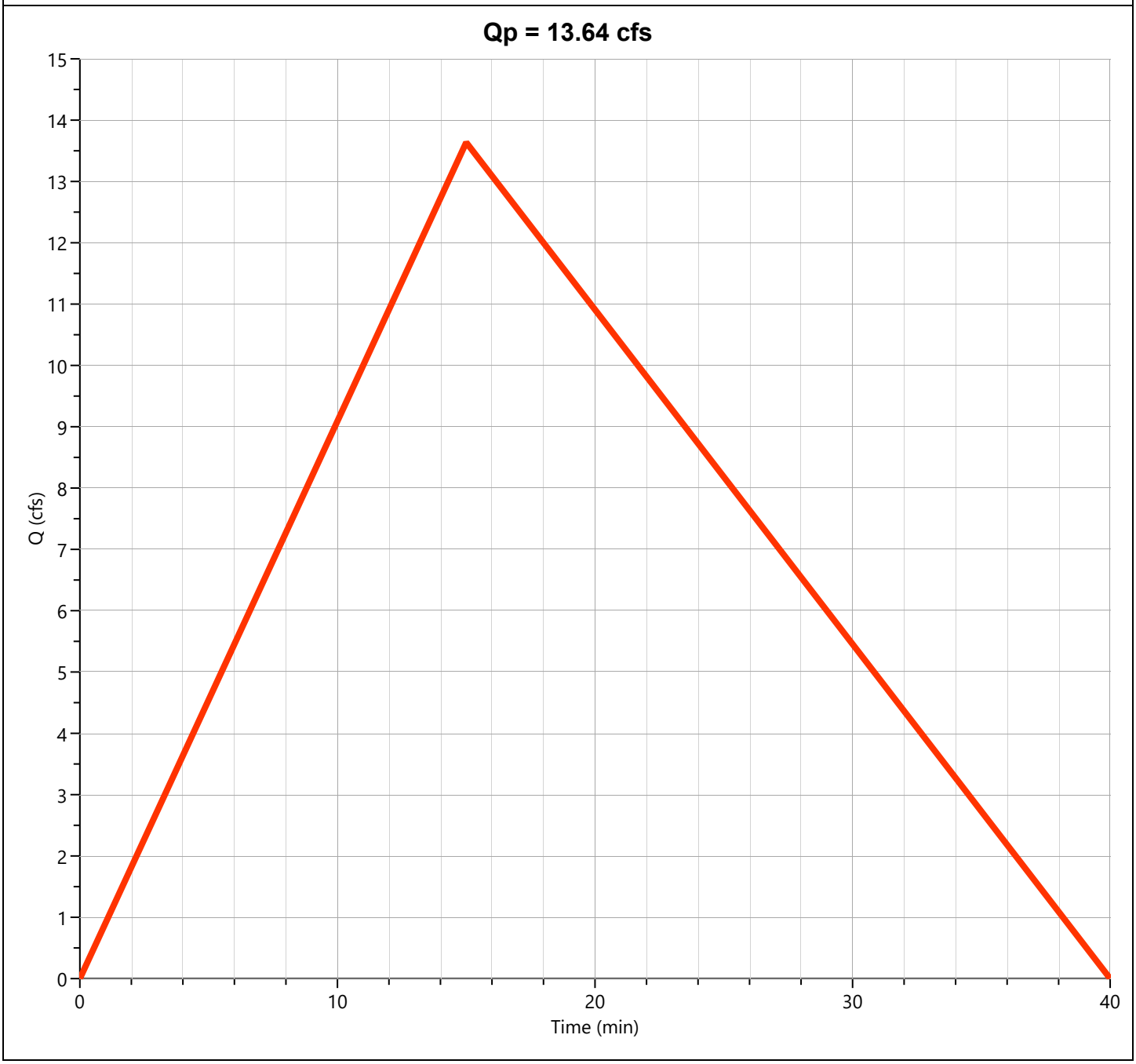
Hydrograph Type	= Rational	Peak Flow	= 41.64 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 56,705 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

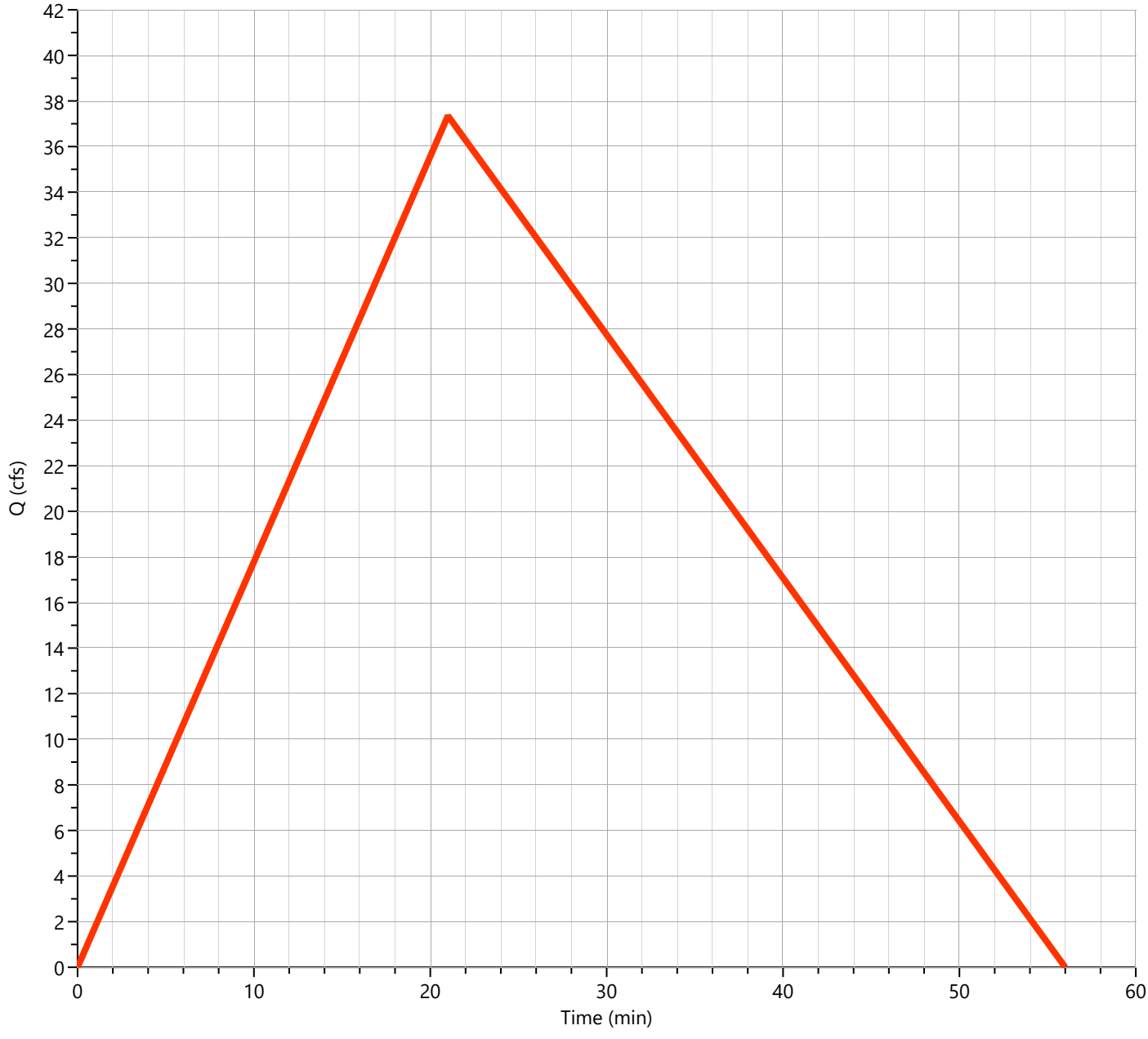
Hydrograph Type	= Rational	Peak Flow	= 13.64 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 16,384 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

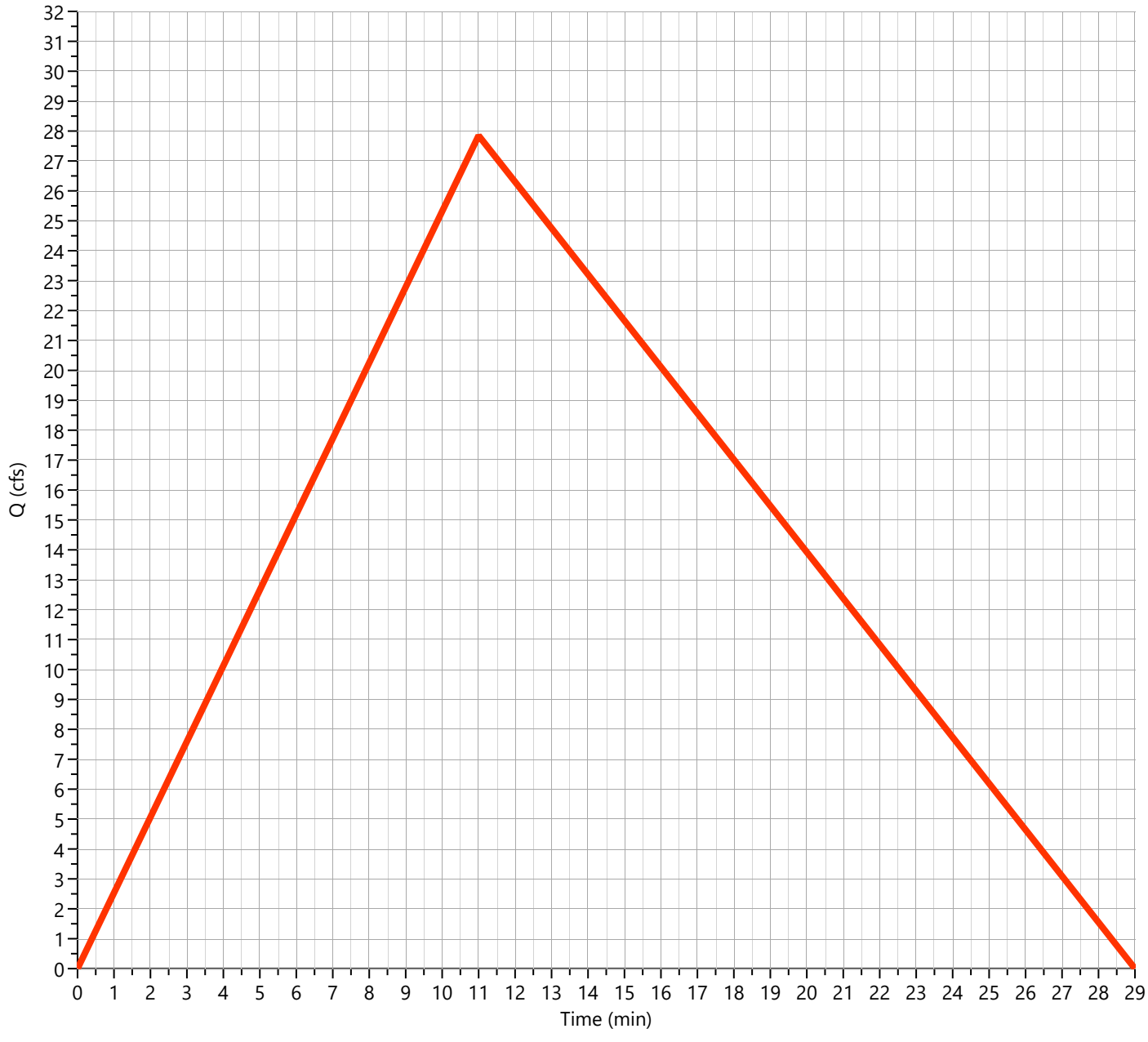
Hydrograph Type	= Rational	Peak Flow	= 37.35 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 62,823 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.42 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

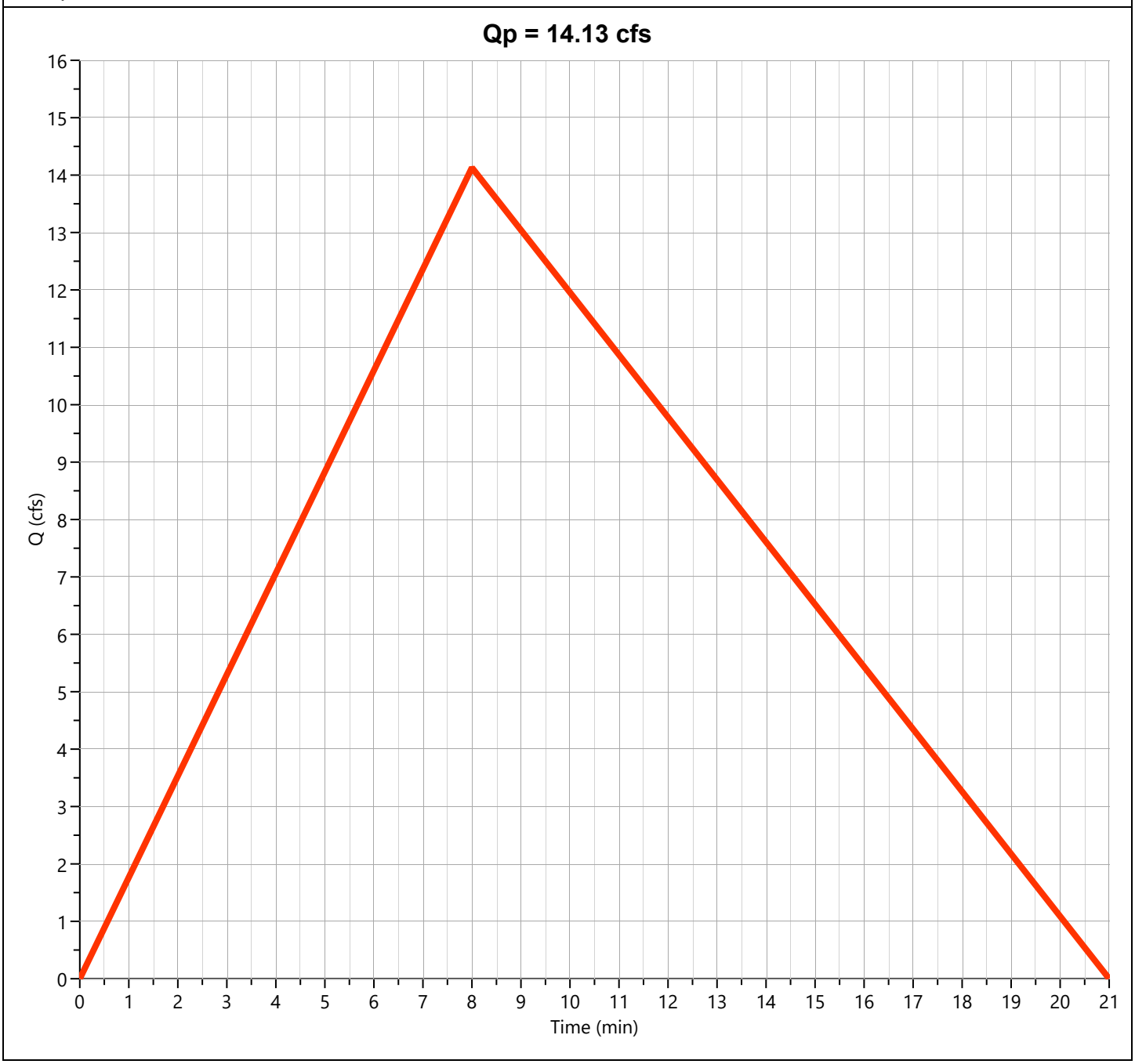
Hydrograph Type	= Rational	Peak Flow	= 27.85 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 24,537 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.24 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

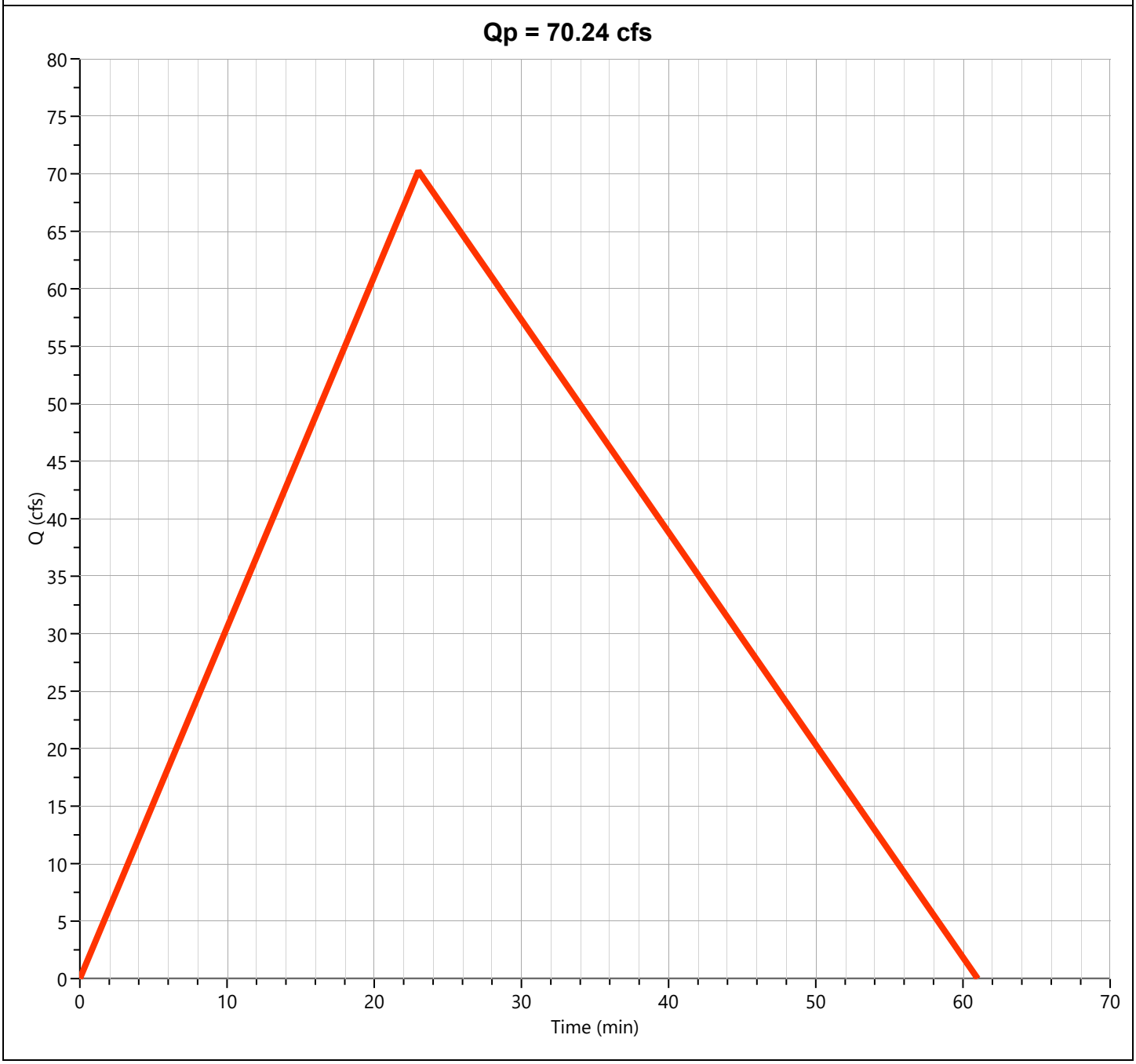
Hydrograph Type	= Rational	Peak Flow	= 14.13 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 9,054 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 8.35 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 70.24 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 129,411 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.20 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



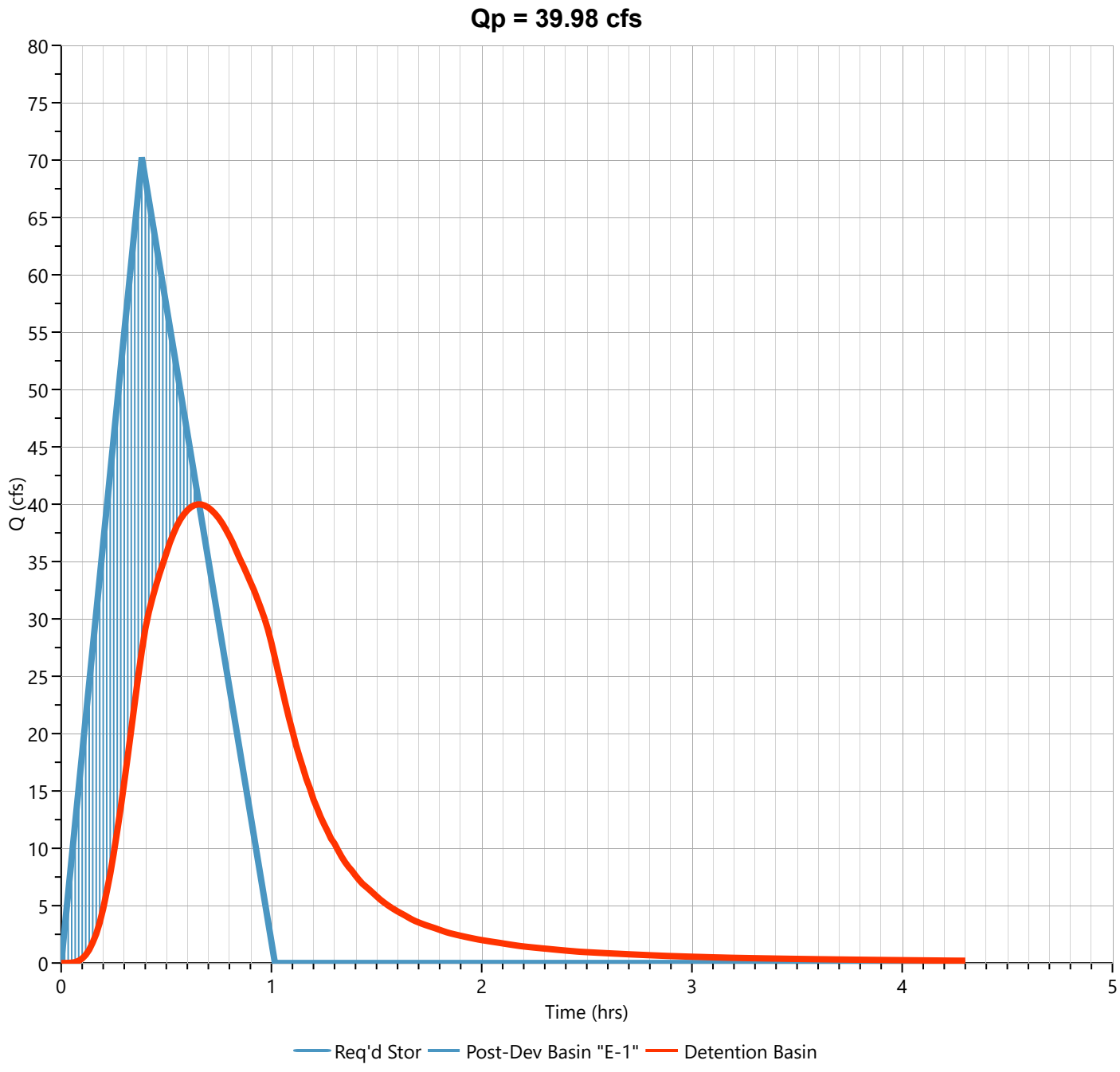
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 39.98 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 128,502 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 472.00 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 56,670 cuft

Pond Routing by Storage Indication Method

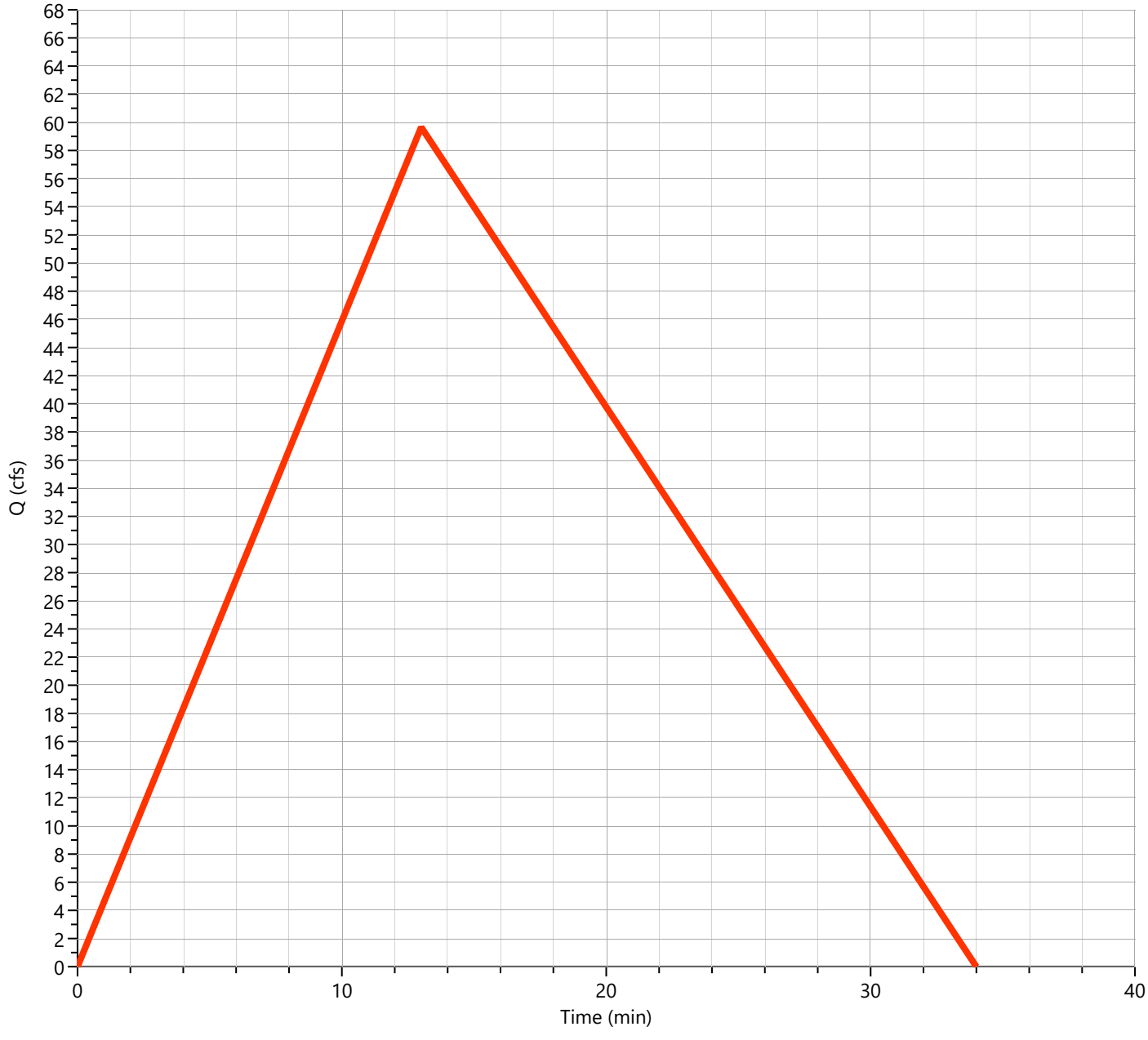
Center of mass detention time = 24 min



Post-Dev Basin "E-2"

Hyd. No. 15

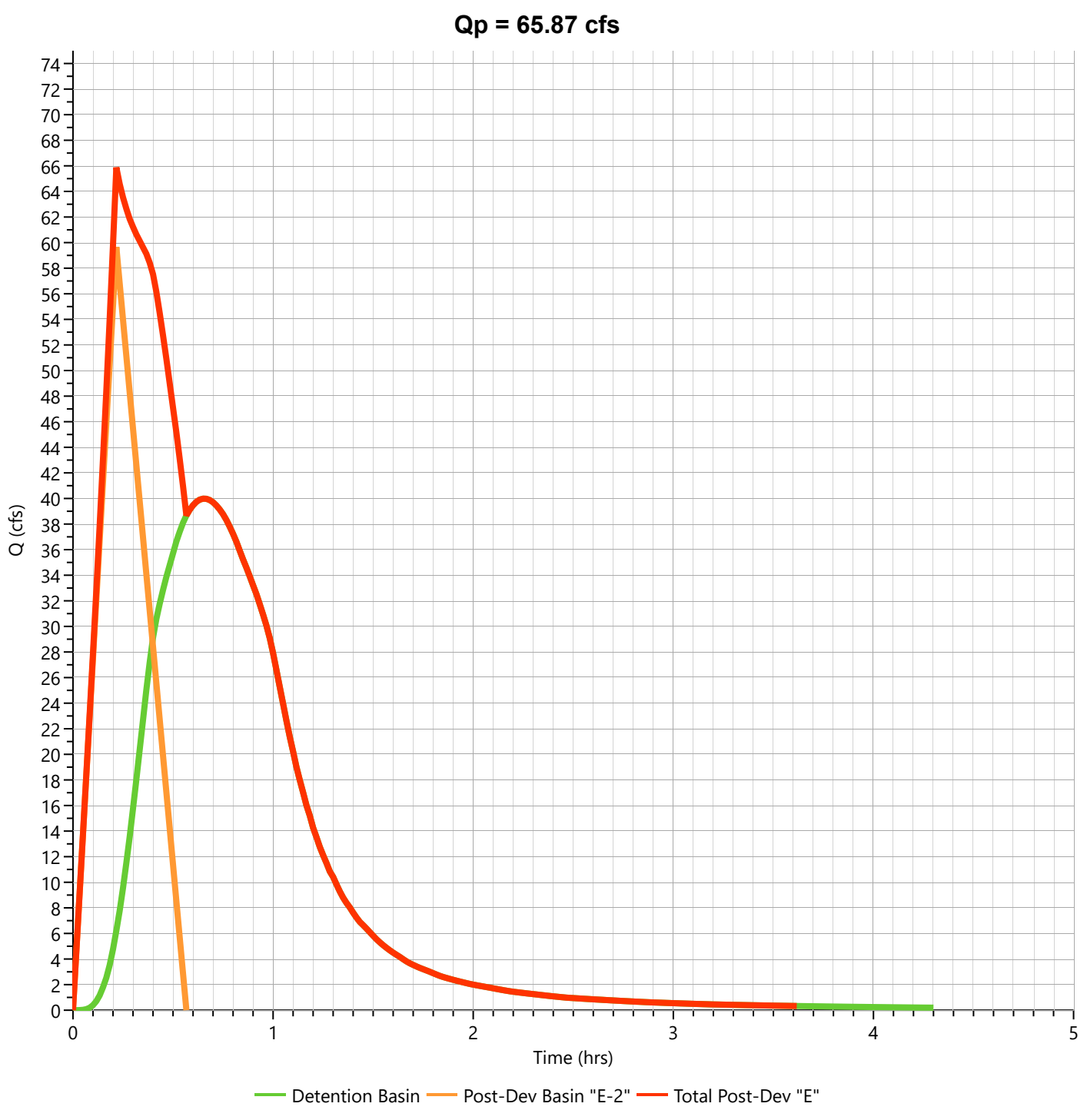
Hydrograph Type	= Rational	Peak Flow	= 59.65 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 62,118 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.72 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Post-Dev "E"

Hyd. No. 16

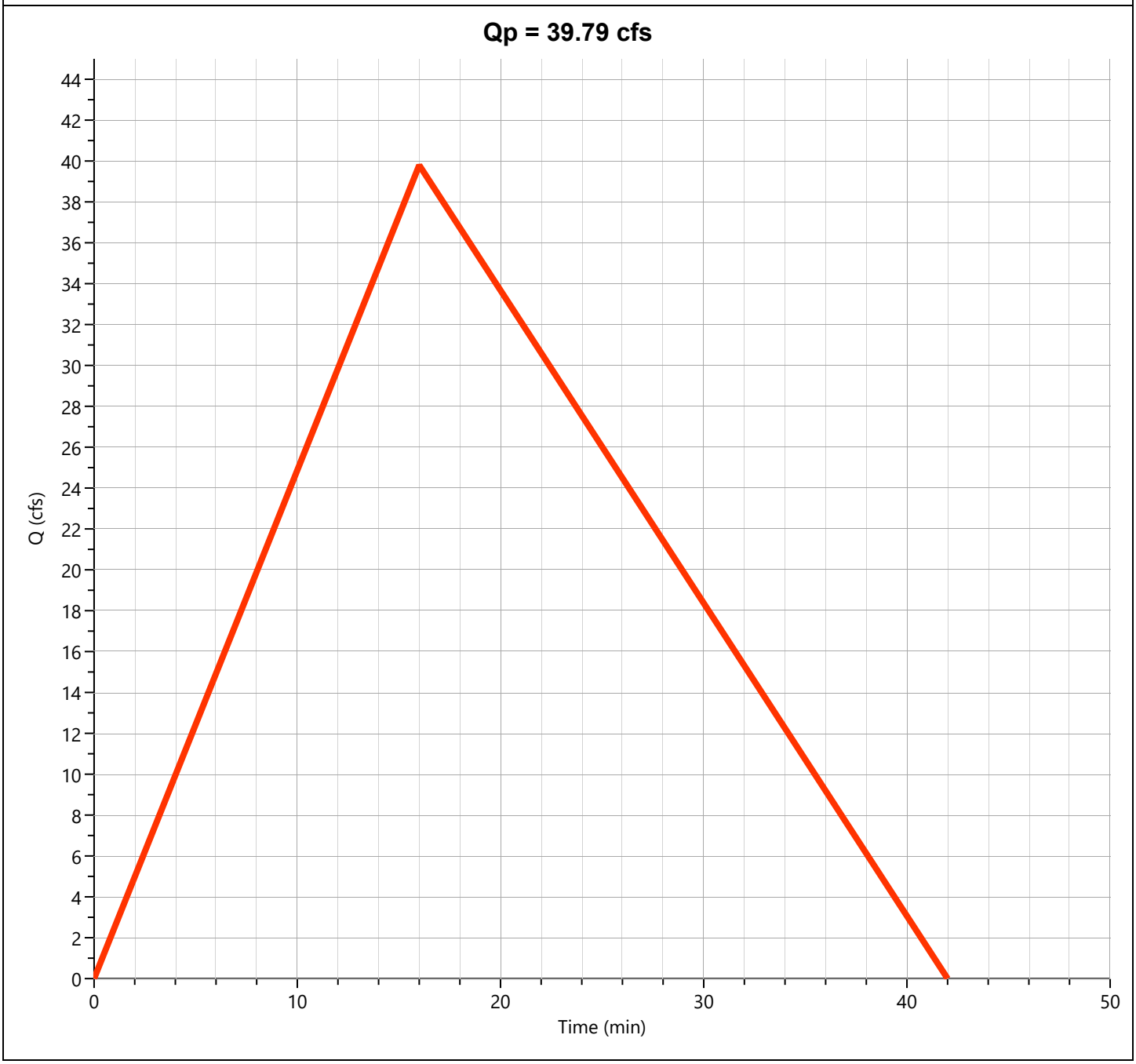
Hydrograph Type	= Junction	Peak Flow	= 65.87 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 189,350 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 39.79 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 51,000 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.12 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Design Storm Report

Custom Storm filename:

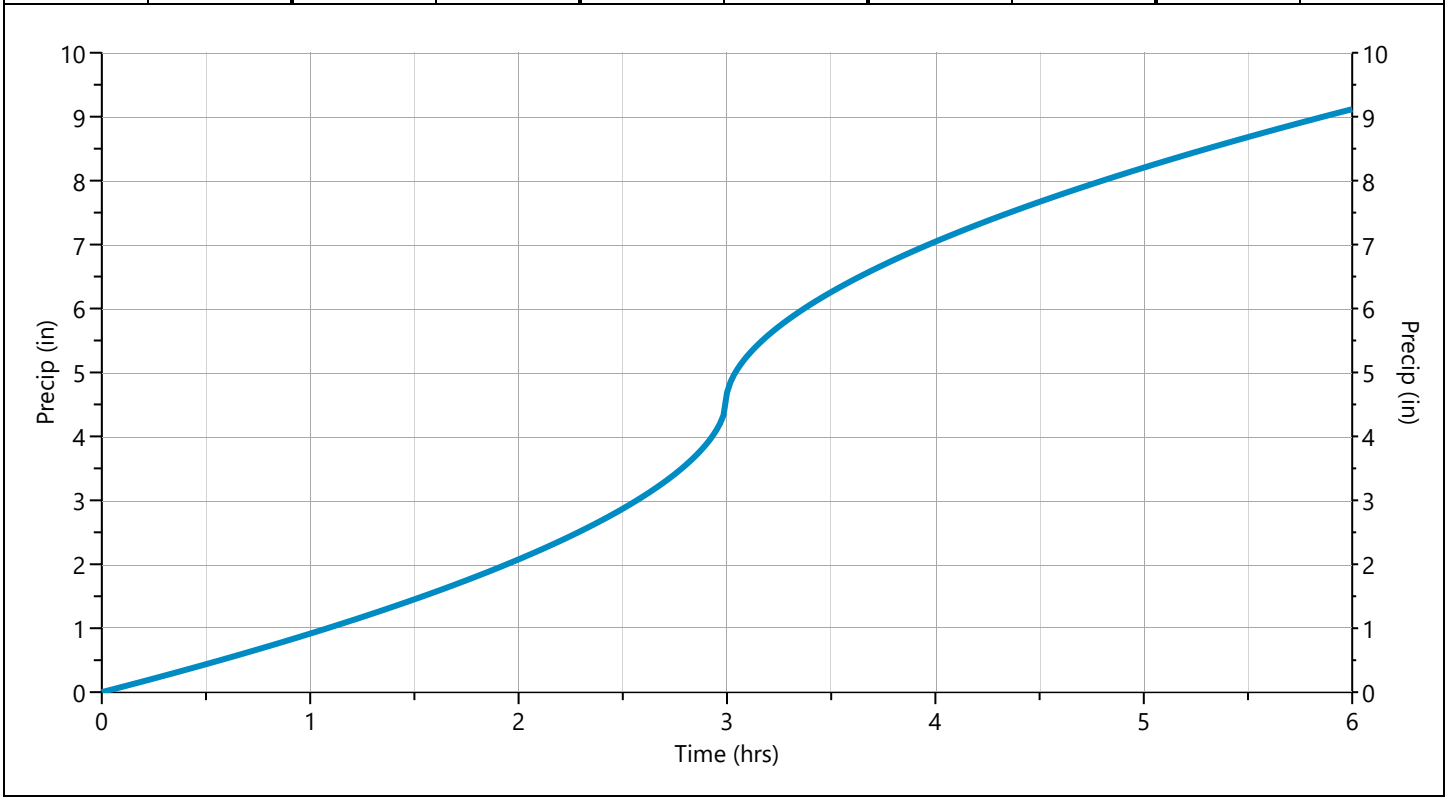
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	✔ 50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 50-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.031084	2.68	0.038052	2.87	0.055600	3.05	0.090973	3.23	0.044236
2.52	0.031555	2.70	0.038971	2.88	0.058911	3.07	0.079152	3.25	0.042868
2.53	0.032050	2.72	0.039967	2.90	0.062959	3.08	0.071194	3.27	0.041628
2.55	0.032572	2.73	0.041049	2.92	0.068072	3.10	0.065354	3.28	0.040496
2.57	0.033121	2.75	0.042233	2.93	0.074833	3.12	0.060826	3.30	0.039459
2.58	0.033702	2.77	0.043534	2.95	0.084399	3.13	0.057178	3.32	0.038503
2.60	0.034317	2.78	0.044976	2.97	0.099564	3.15	0.054154	3.33	0.037618
2.62	0.034970	2.80	0.046583	2.98	0.129912	3.17	0.051594	3.35	0.036796
2.63	0.035664	2.82	0.048393	**3.00**	**0.352737**	3.18	0.049387	3.37	0.036029
2.65	0.036406	2.83	0.050452	3.02	0.164608	3.20	0.047460	3.38	0.035311
2.67	0.037200	2.85	0.052824	3.03	0.111512	3.22	0.045756	3.40	0.034638



Hydrograph 100-yr Summary

Hydrology Studio v 3.0.0.44

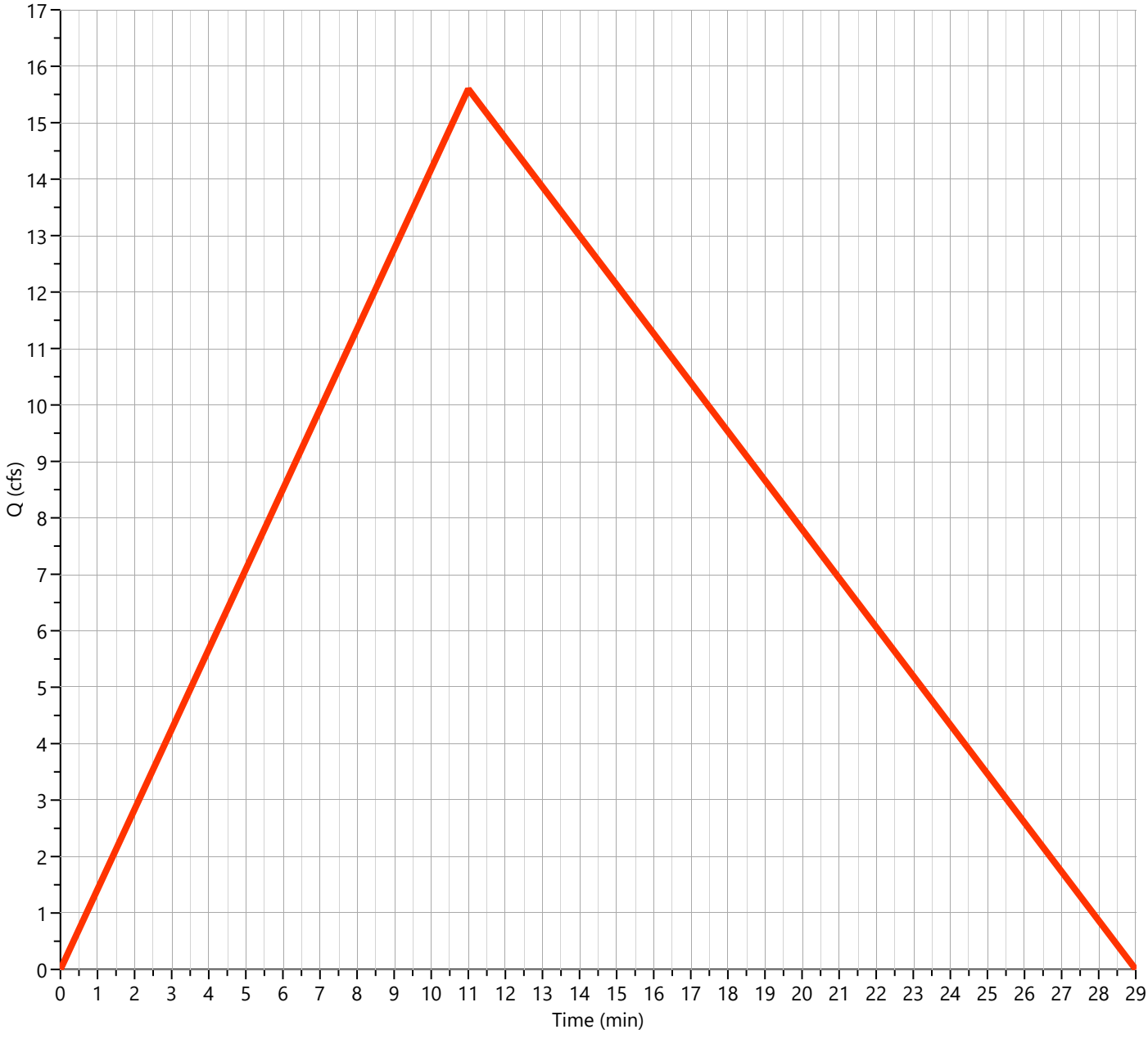
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	15.60	0.18	13,742	----		
2	Rational	Pre-Dev Basin "B"	52.42	0.25	62,983	----		
3	Rational	Pre-Dev Basin "C"	29.57	0.18	26,057	----		
4	Rational	Pre-Dev Basin "D"	13.38	0.13	8,572	----		
5	Rational	Pre-Dev Basin "E-1"	42.33	0.20	40,692	----		
6	Rational	Pre-Dev Basin "E-2"	71.90	0.22	74,872	----		
7	Junction	Total Pre Basin "E"	112.1	0.22	113,981	5, 6		
8	Rational	Pre-Dev Basin "F"	45.20	0.28	61,545	----		
9	Rational	Post-Dev Basin A	14.80	0.25	17,786	----		
10	Rational	Post-Dev Basin B	40.52	0.35	68,164	----		
11	Rational	Post-Dev Basin "C"	30.24	0.18	26,649	----		
12	Rational	Post-Dev Basin "D"	15.35	0.13	9,838	----		
13	Rational	Post-Dev Basin "E-1"	76.20	0.38	140,392	----		
14	Pond Route	Detention Basin	44.60	0.65	139,410	13	472.25	60,924
15	Rational	Post-Dev Basin "E-2"	64.77	0.22	67,448	----		
16	Junction	Total Post-Dev "E"	71.78	0.22	205,478	14, 15		
17	Rational	Post-Dev Basin "F"	43.19	0.27	55,359	----		

Pre-Dev Basin "A"

Hyd. No. 1

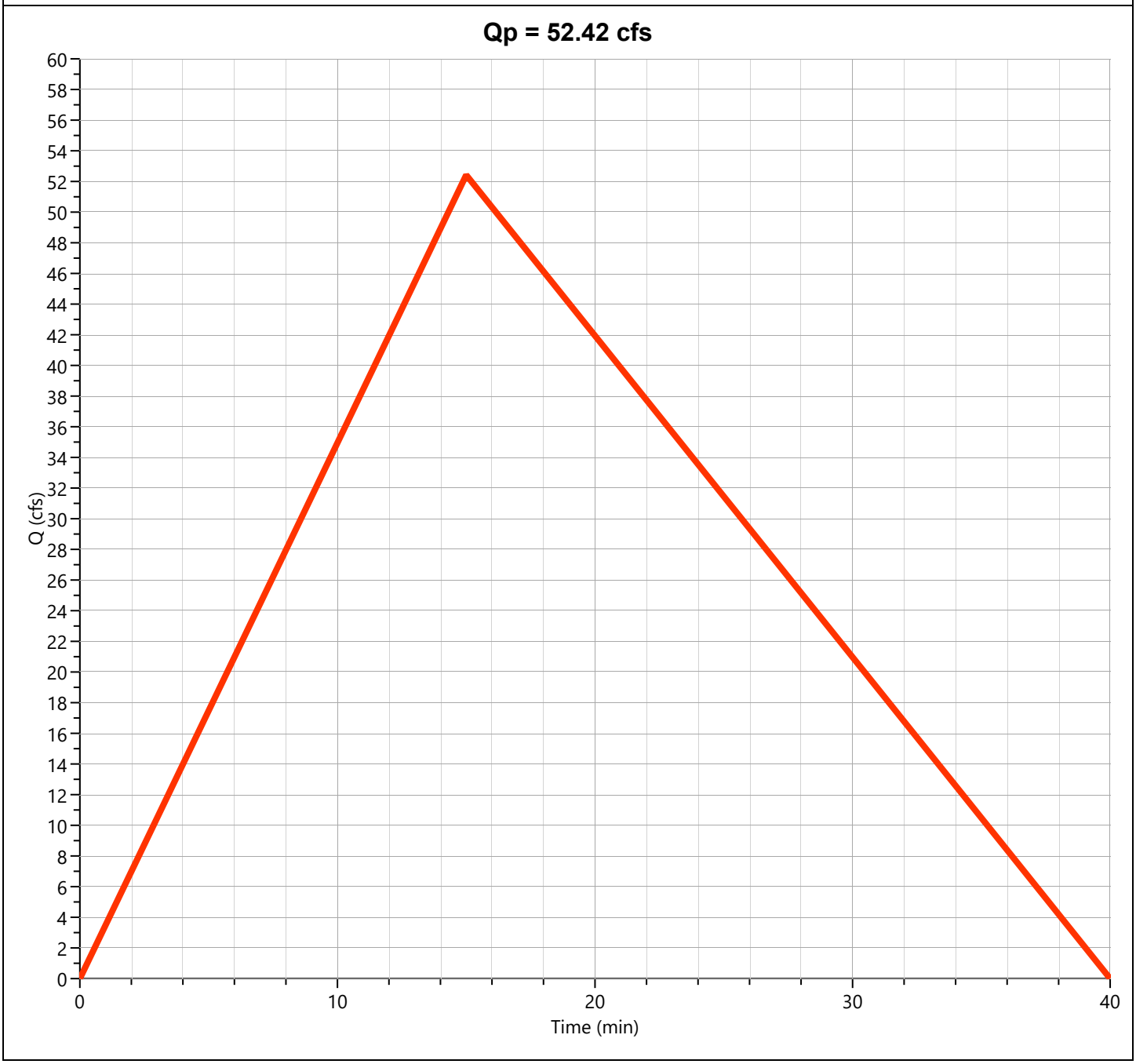
Hydrograph Type	= Rational	Peak Flow	= 15.60 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 13,742 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.86 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 52.42 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 62,983 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.84 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

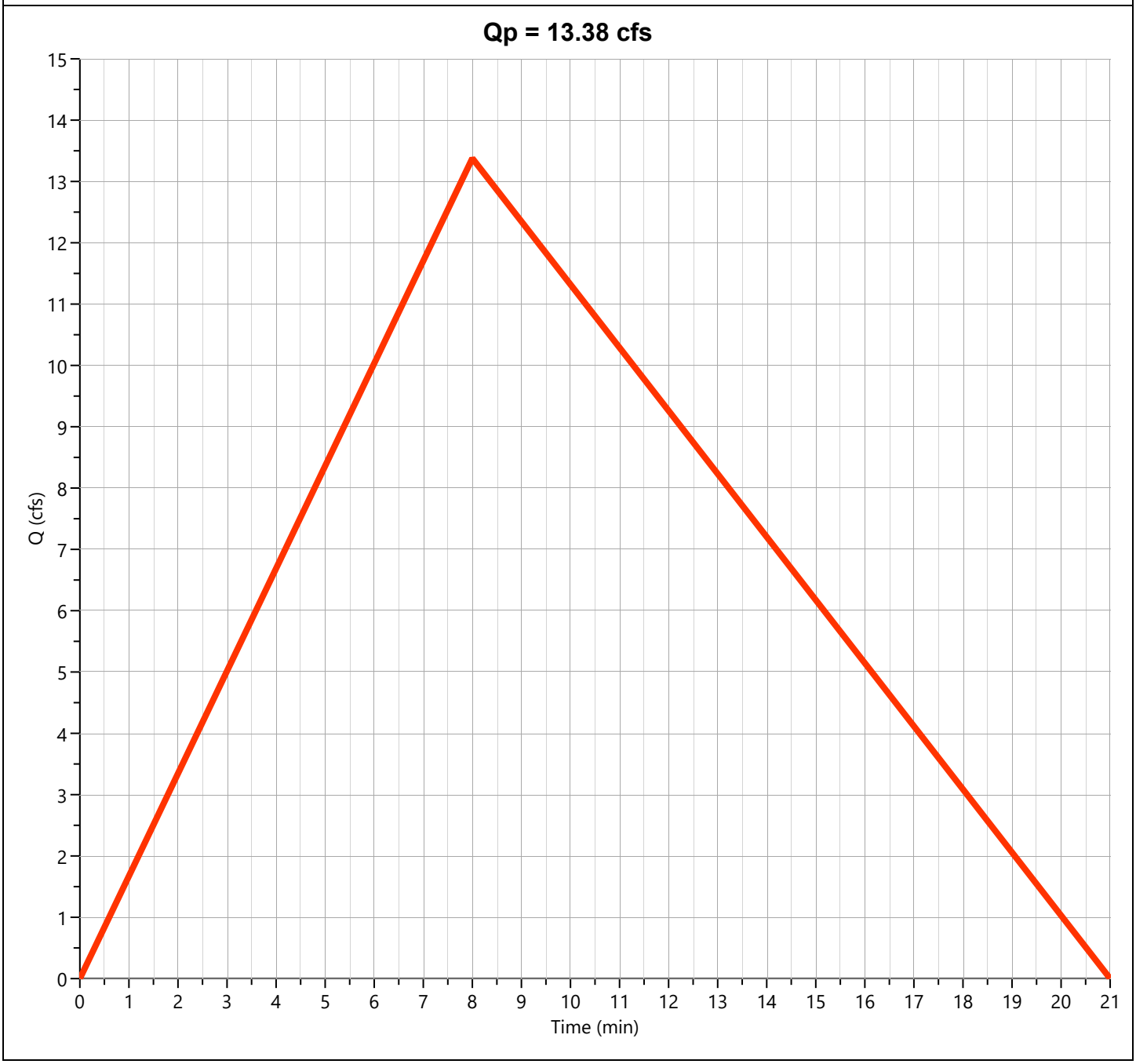
Hydrograph Type	= Rational	Peak Flow	= 29.57 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 26,057 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.86 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

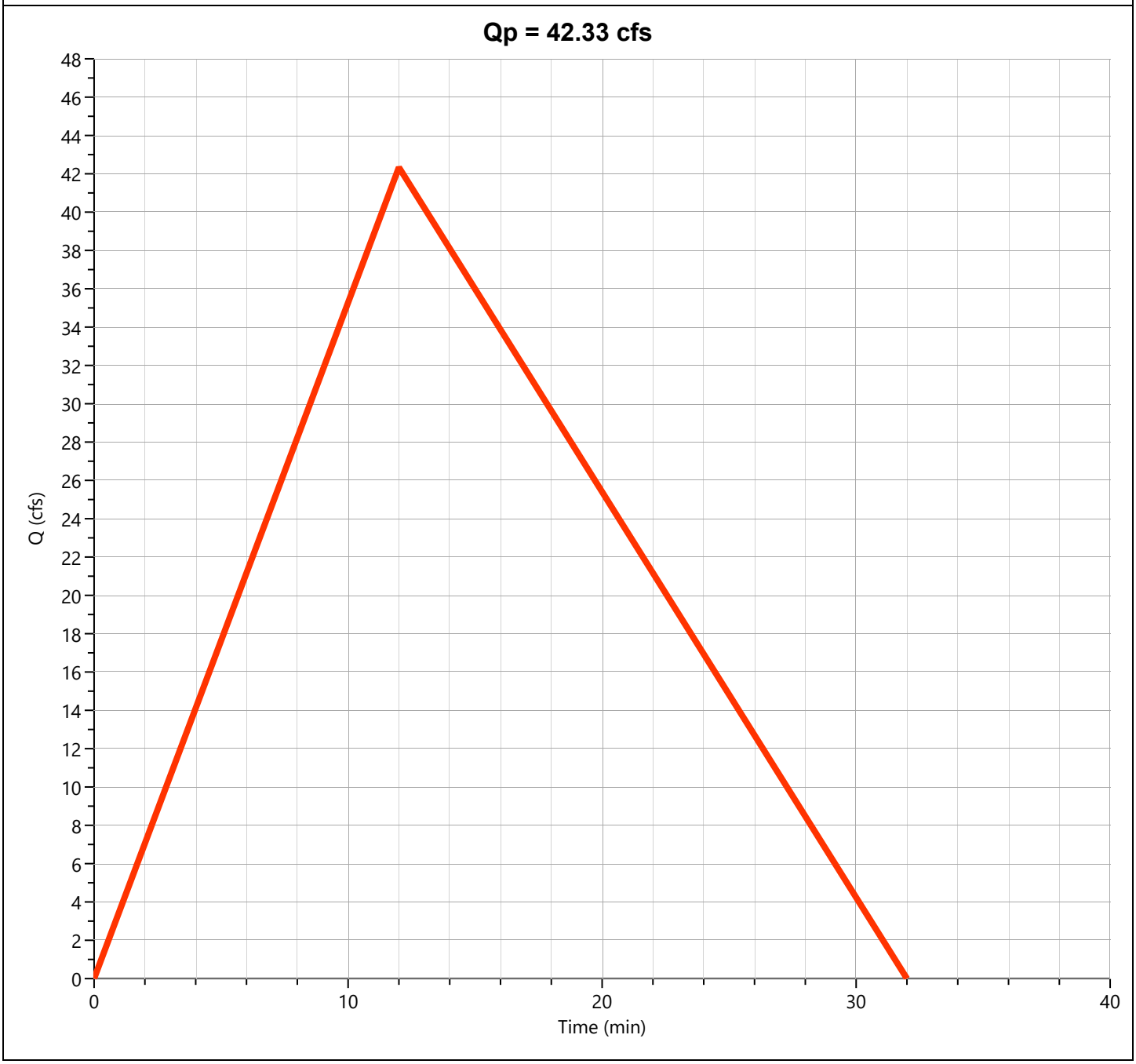
Hydrograph Type	= Rational	Peak Flow	= 13.38 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 8,572 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 9.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

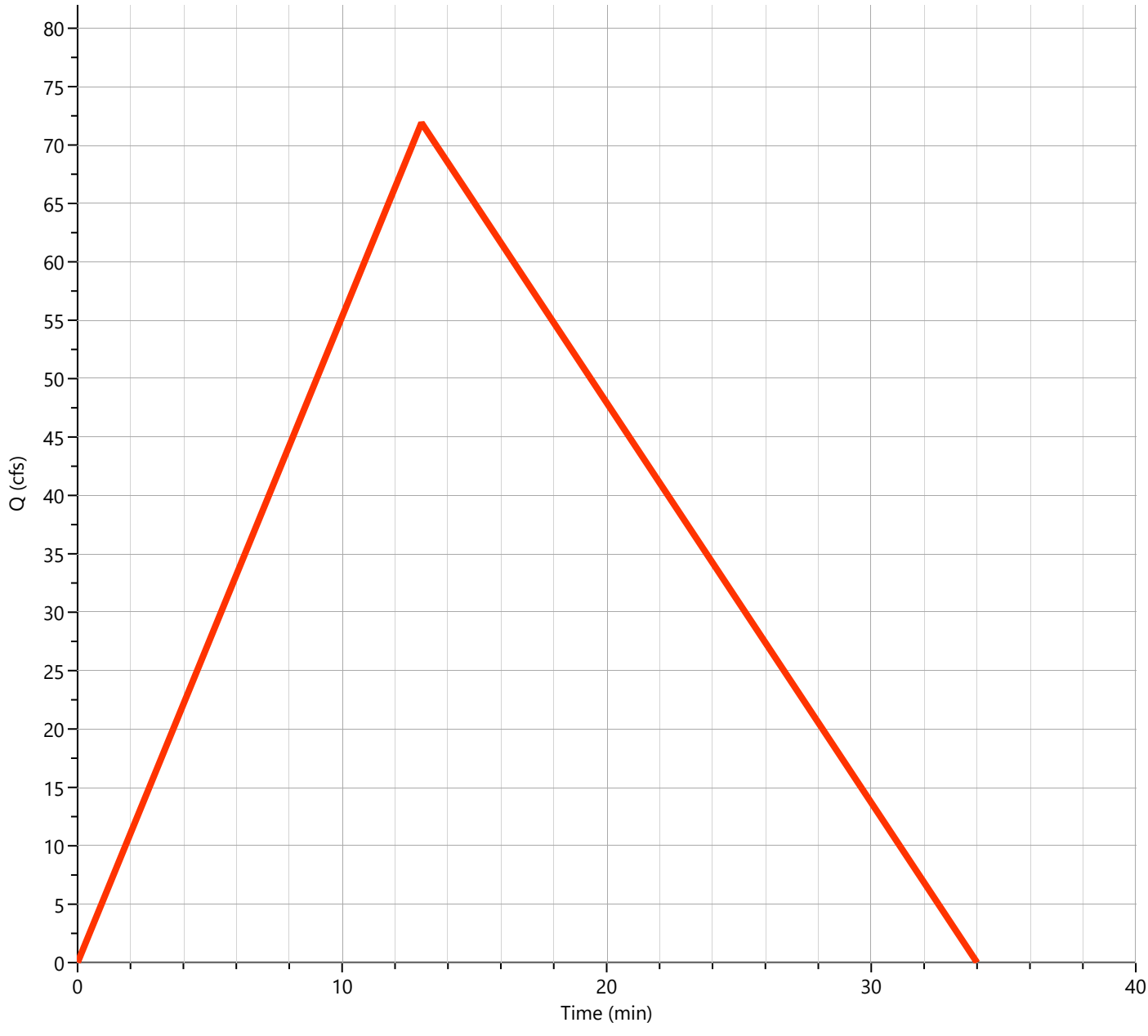
Hydrograph Type	= Rational	Peak Flow	= 42.33 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 40,692 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.56 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

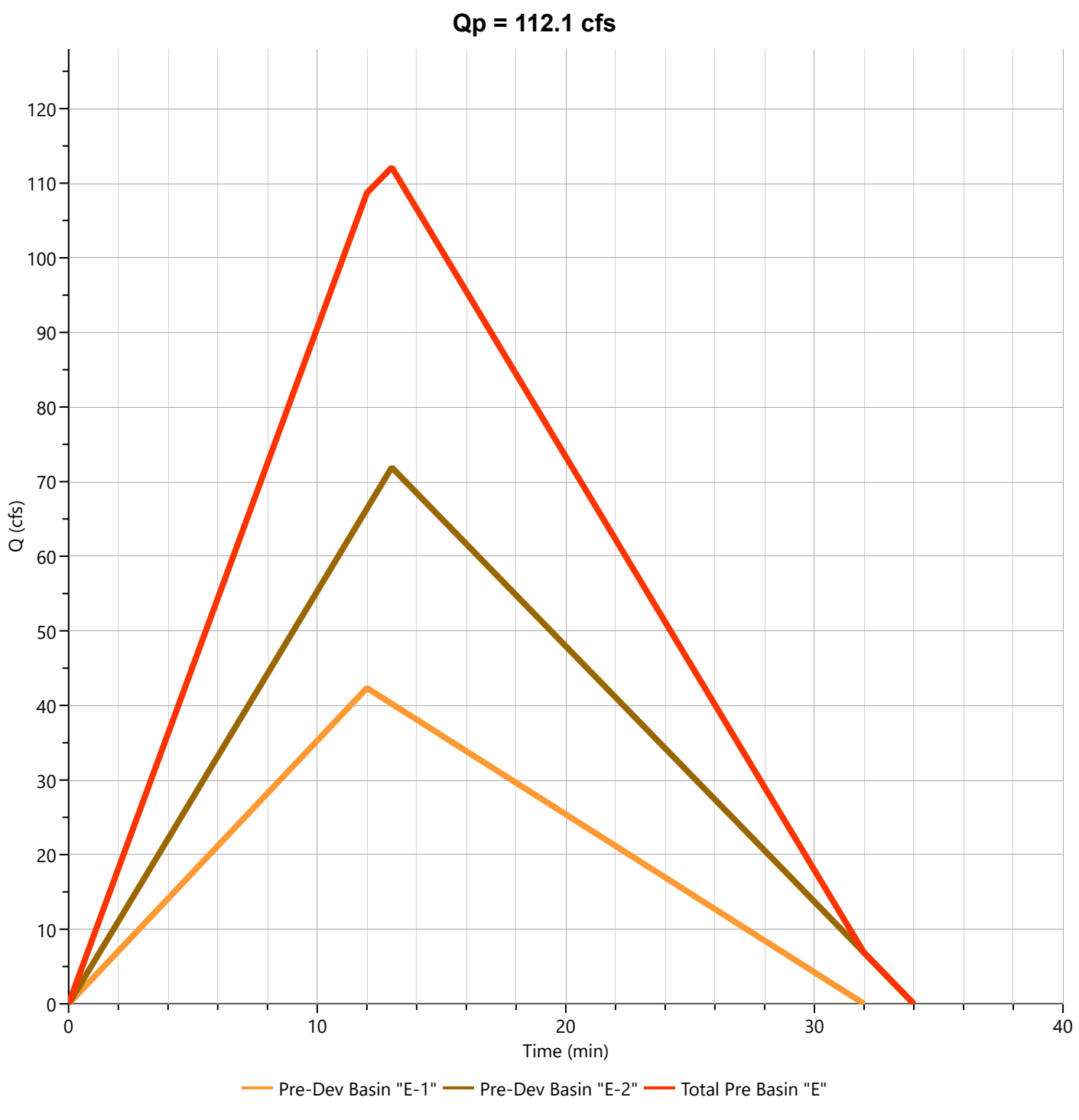
Hydrograph Type	= Rational	Peak Flow	= 71.90 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 74,872 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.29 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

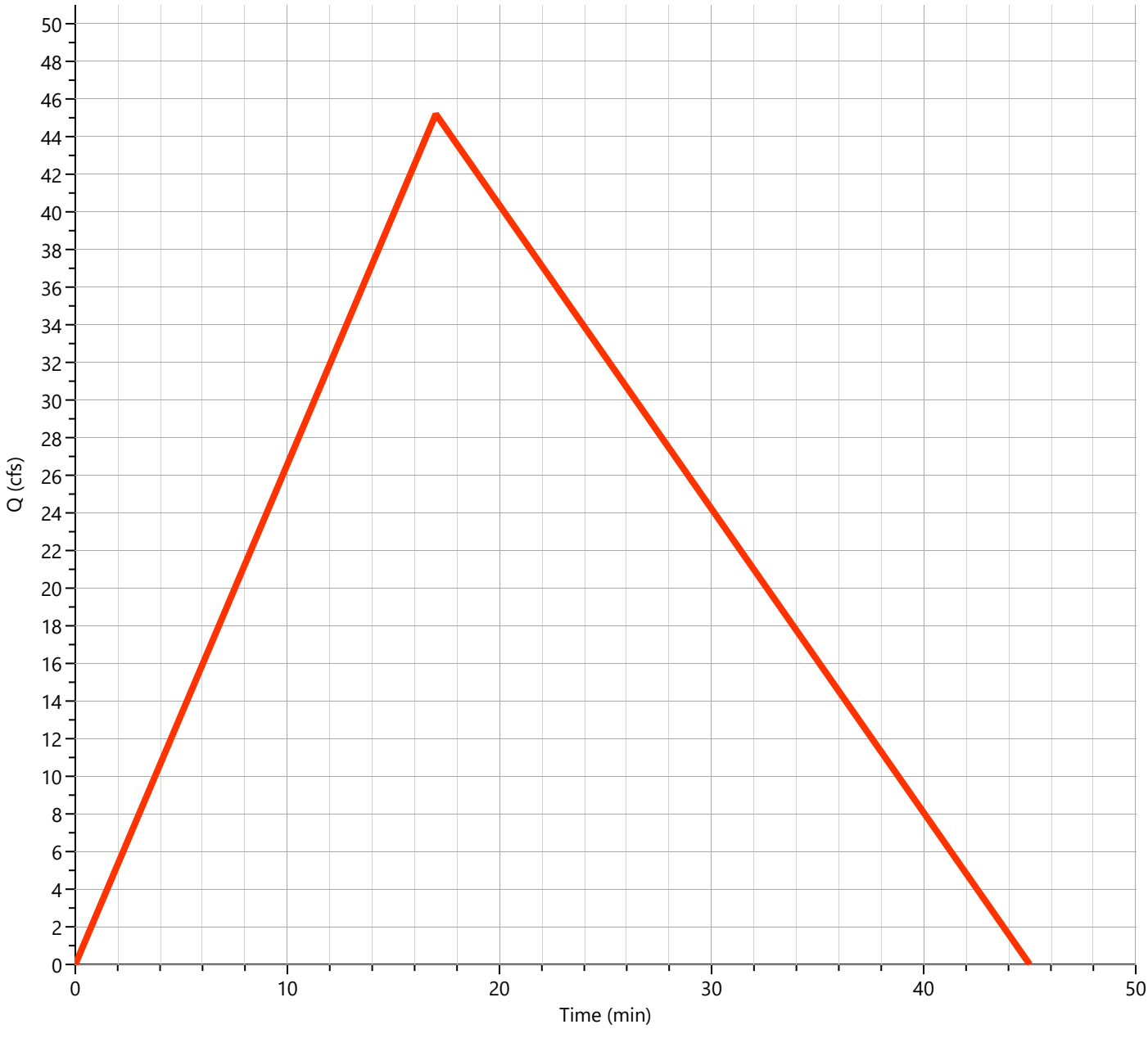
Hydrograph Type	= Junction	Peak Flow	= 112.1 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 113,981 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

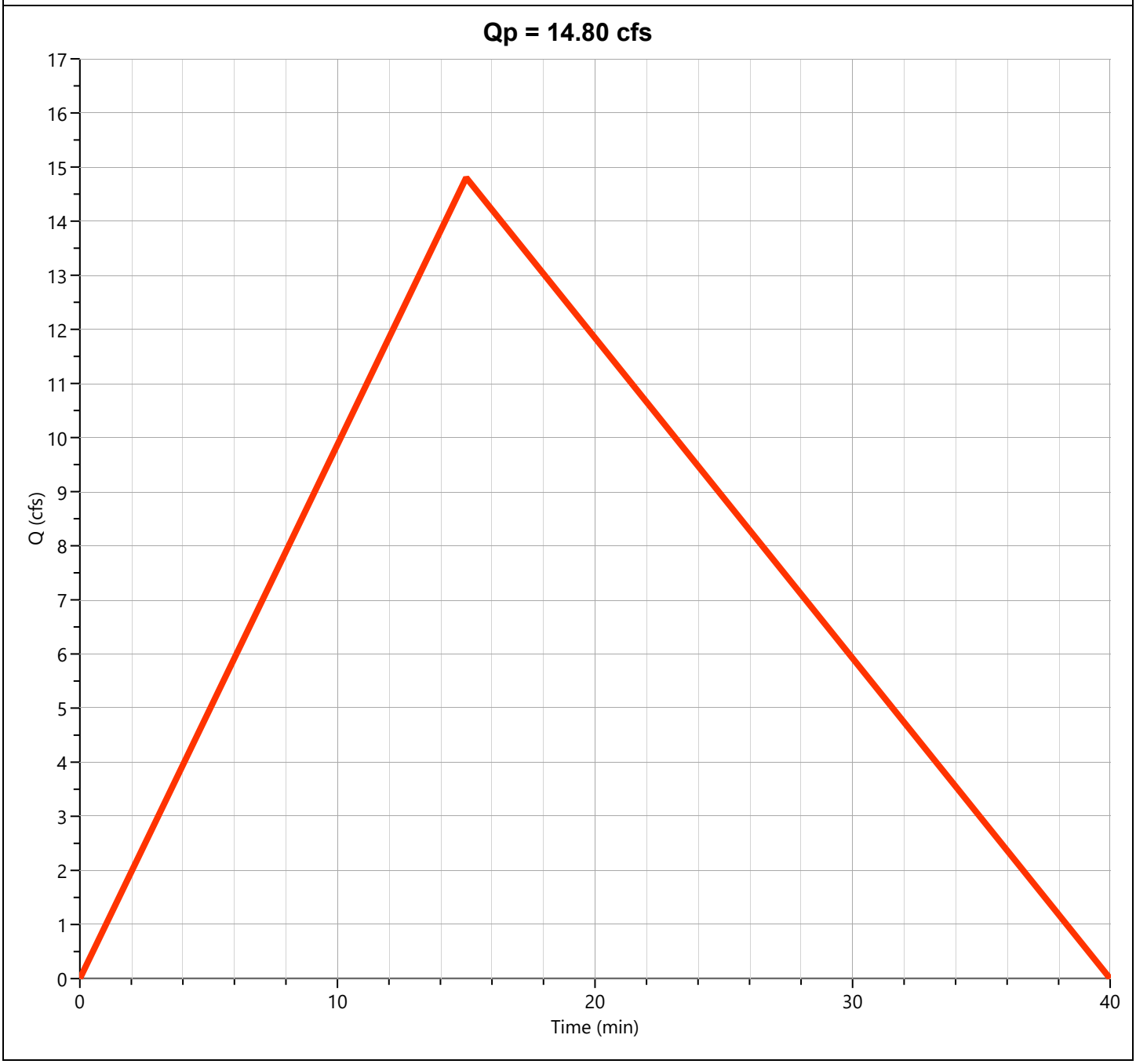
Hydrograph Type	= Rational	Peak Flow	= 45.20 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 61,545 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.47 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

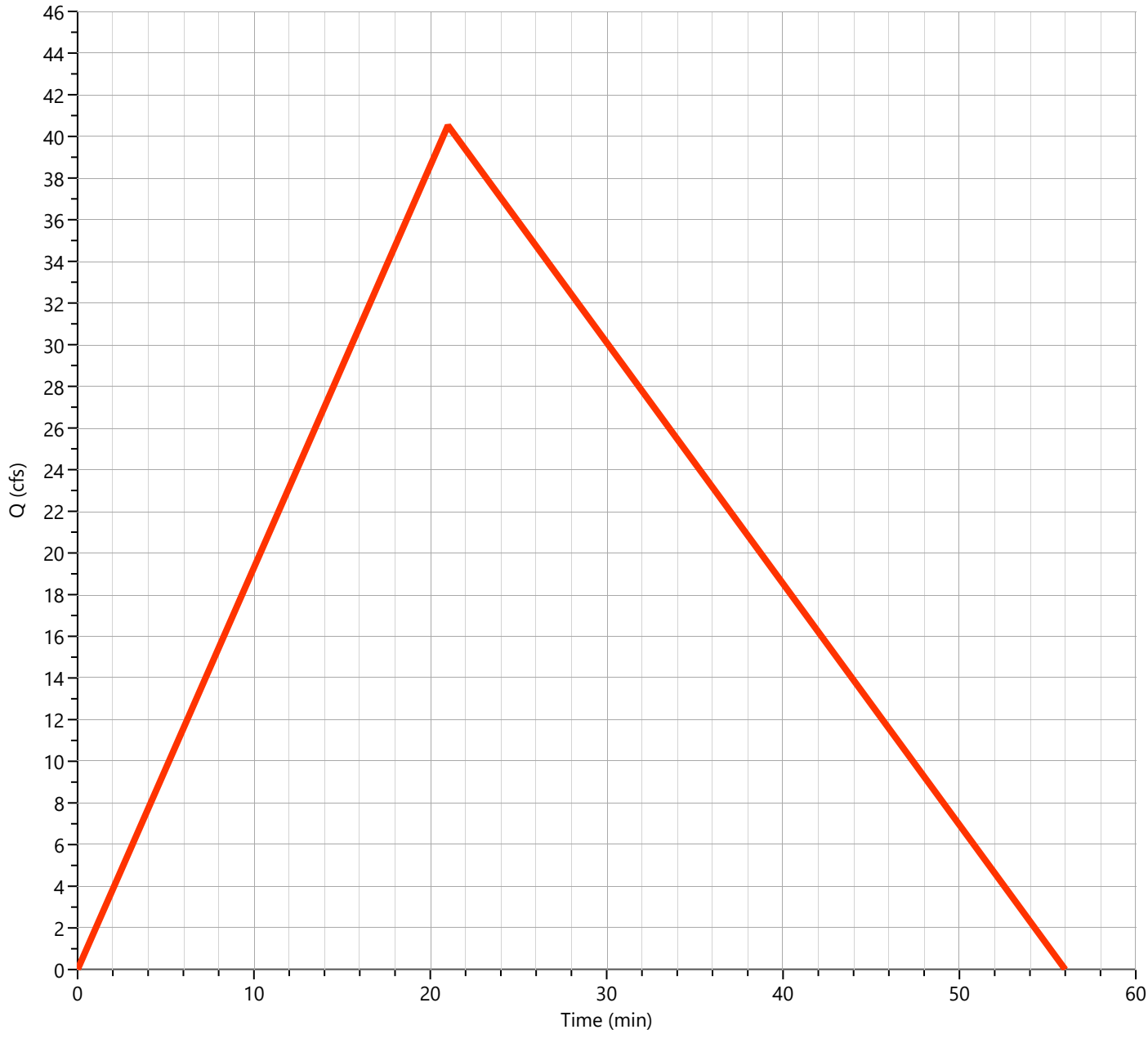
Hydrograph Type	= Rational	Peak Flow	= 14.80 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 17,786 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.84 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

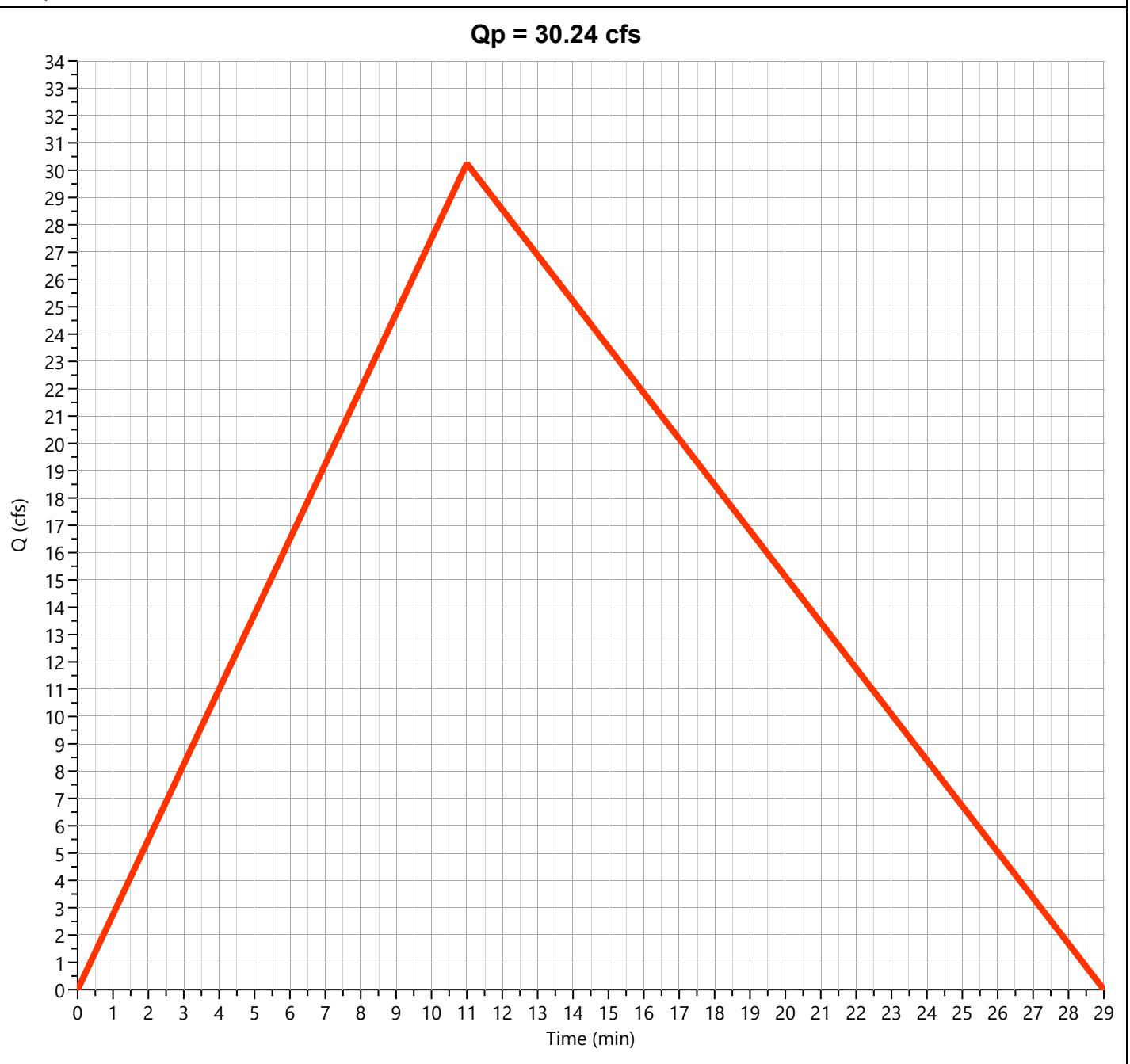
Hydrograph Type	= Rational	Peak Flow	= 40.52 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 68,164 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.88 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

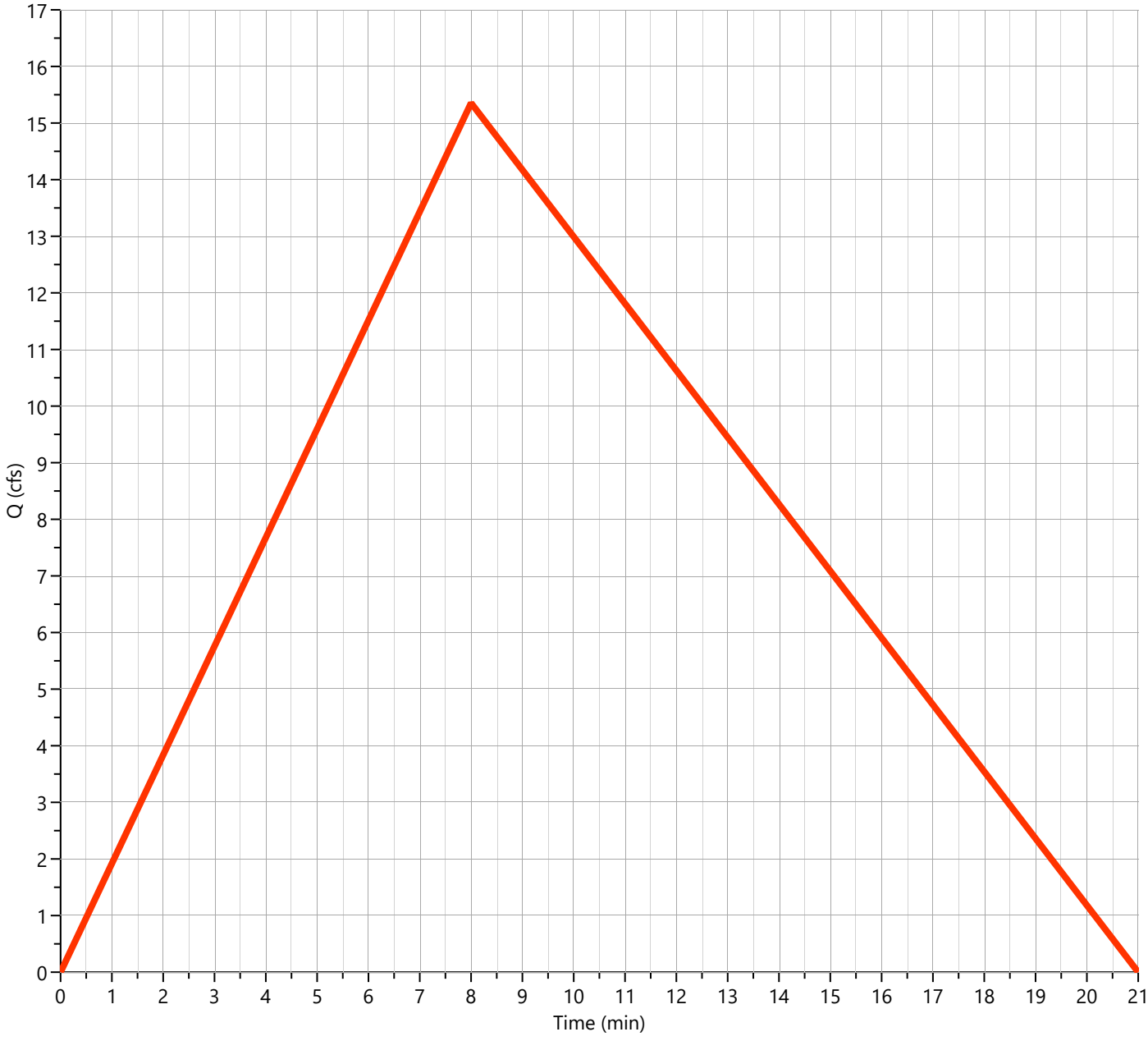
Hydrograph Type	= Rational	Peak Flow	= 30.24 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 26,649 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.86 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

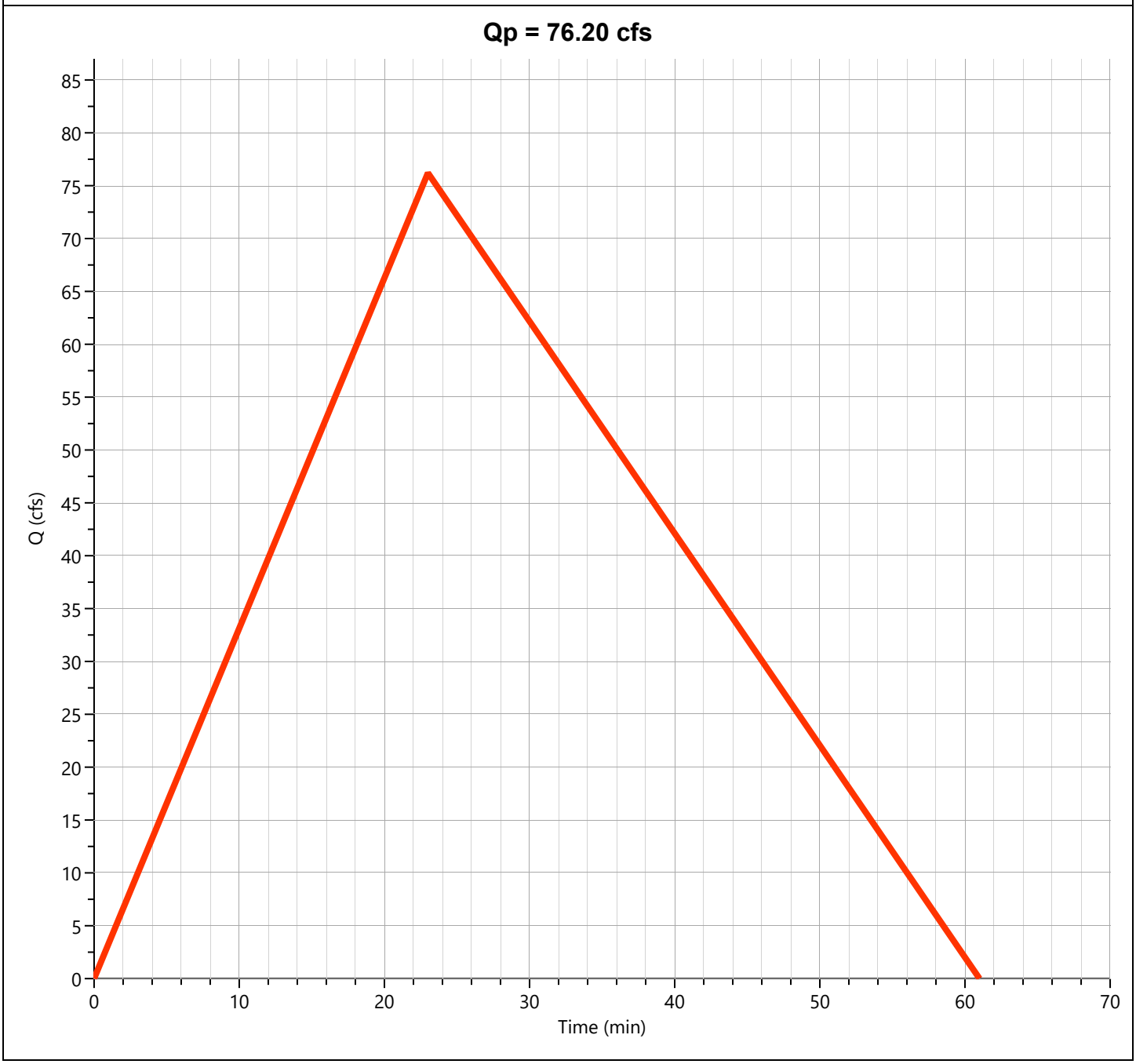
Hydrograph Type	= Rational	Peak Flow	= 15.35 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 9,838 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 9.07 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 76.20 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 140,392 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.64 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



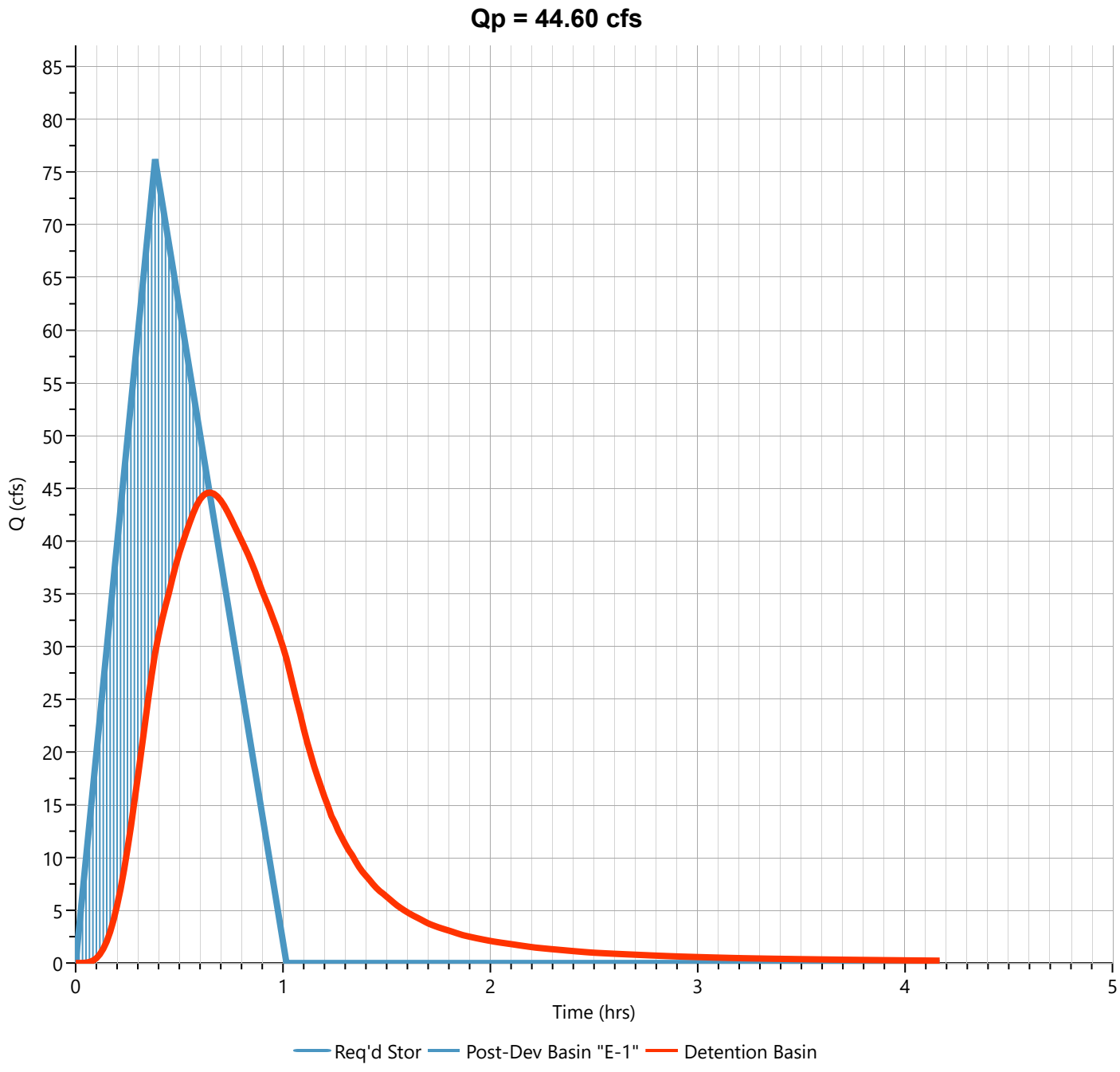
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 44.60 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 139,410 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 472.25 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 60,924 cuft

Pond Routing by Storage Indication Method

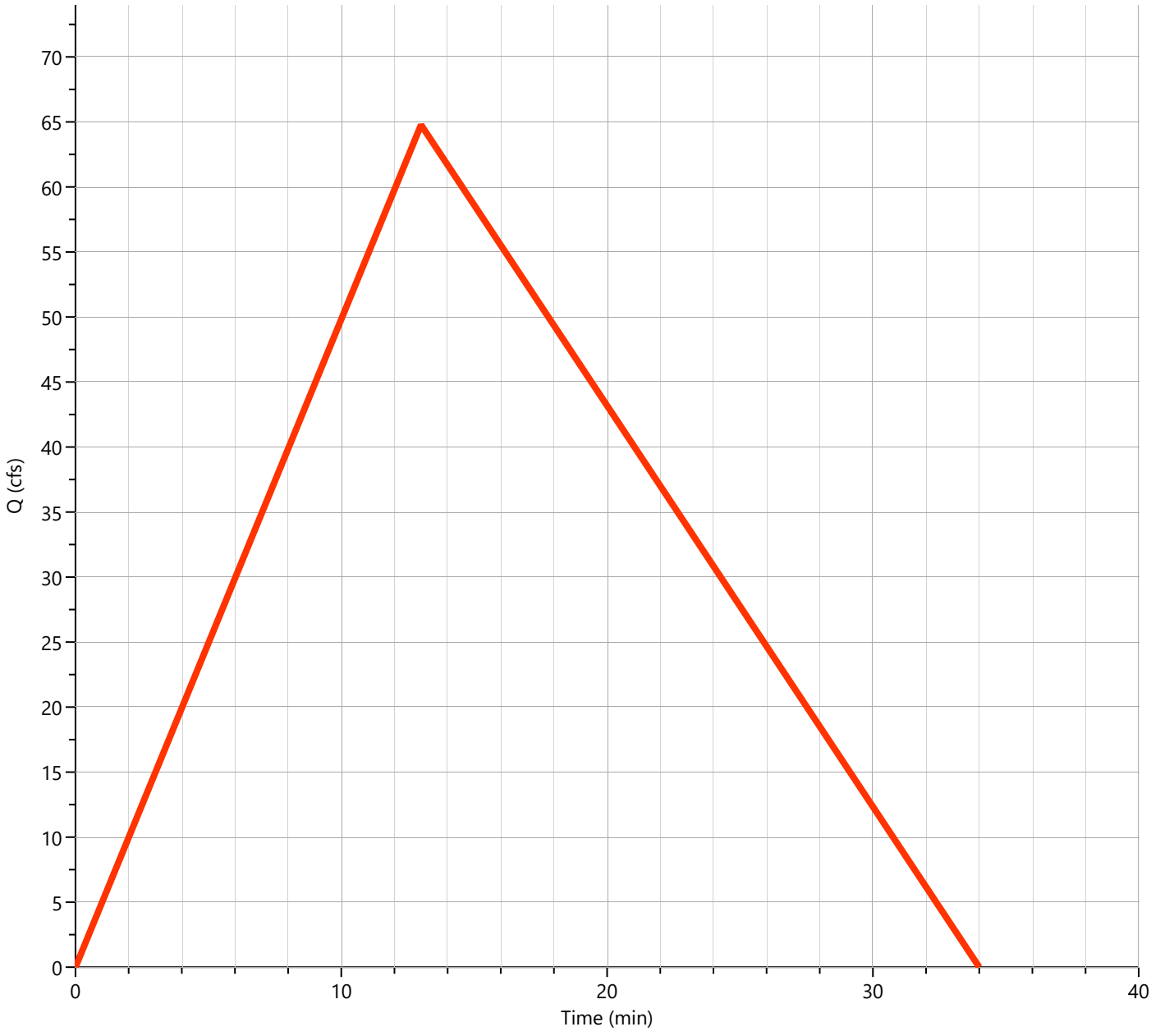
Center of mass detention time = 24 min



Post-Dev Basin "E-2"

Hyd. No. 15

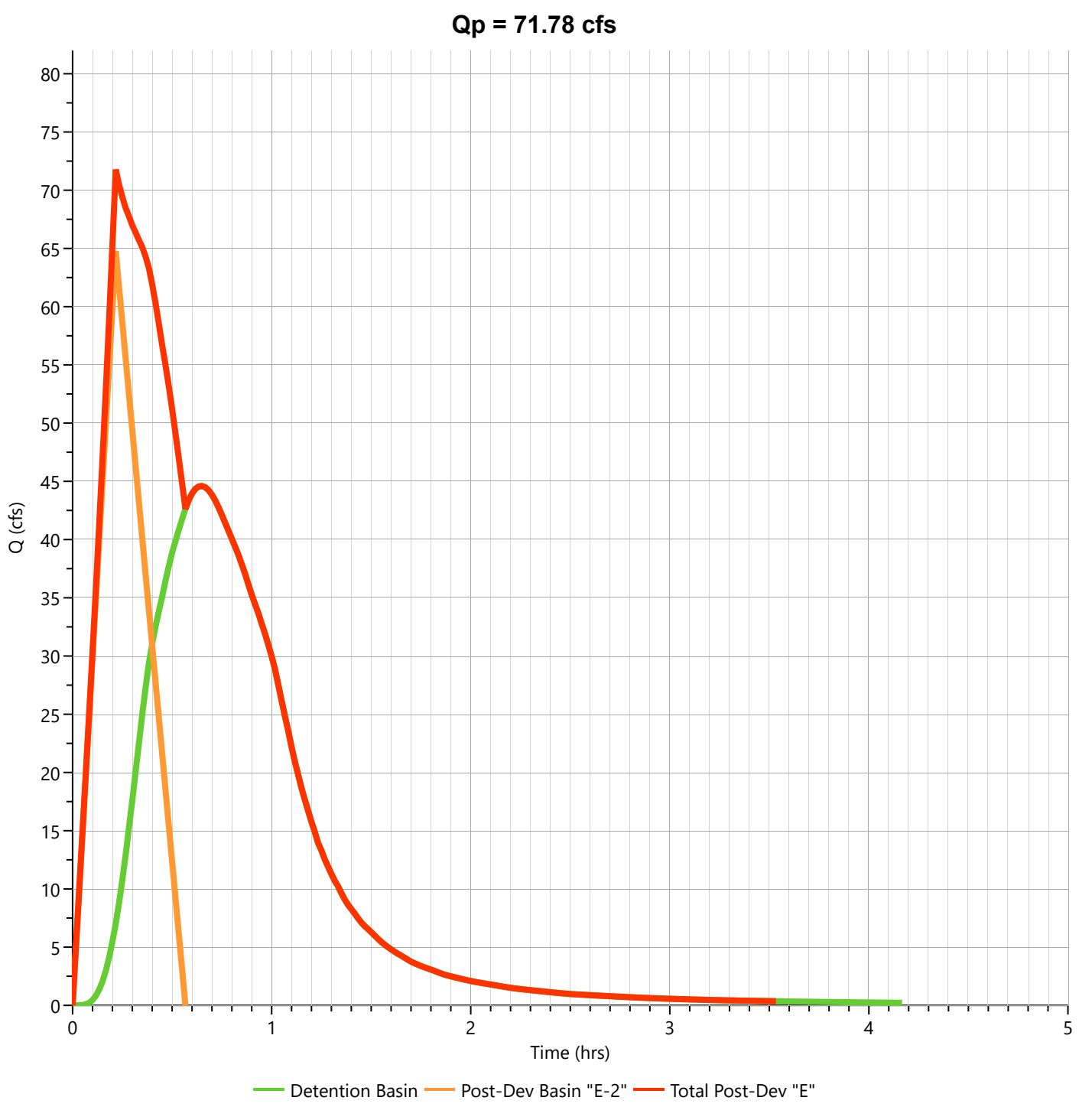
Hydrograph Type	= Rational	Peak Flow	= 64.77 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 67,448 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.29 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Post-Dev "E"

Hyd. No. 16

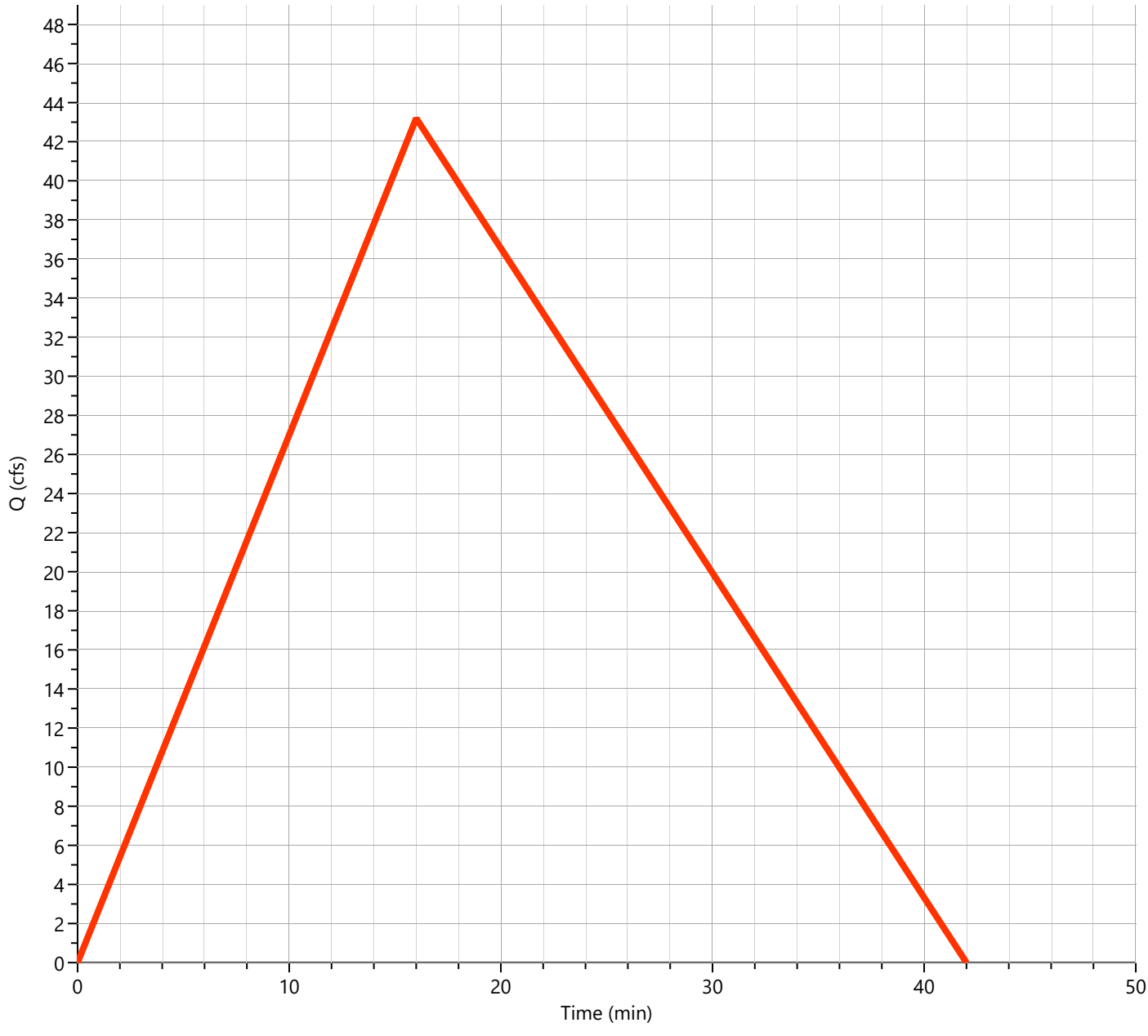
Hydrograph Type	= Junction	Peak Flow	= 71.78 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 205,478 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 43.19 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 55,359 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.64 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Design Storm Report

Custom Storm filename:

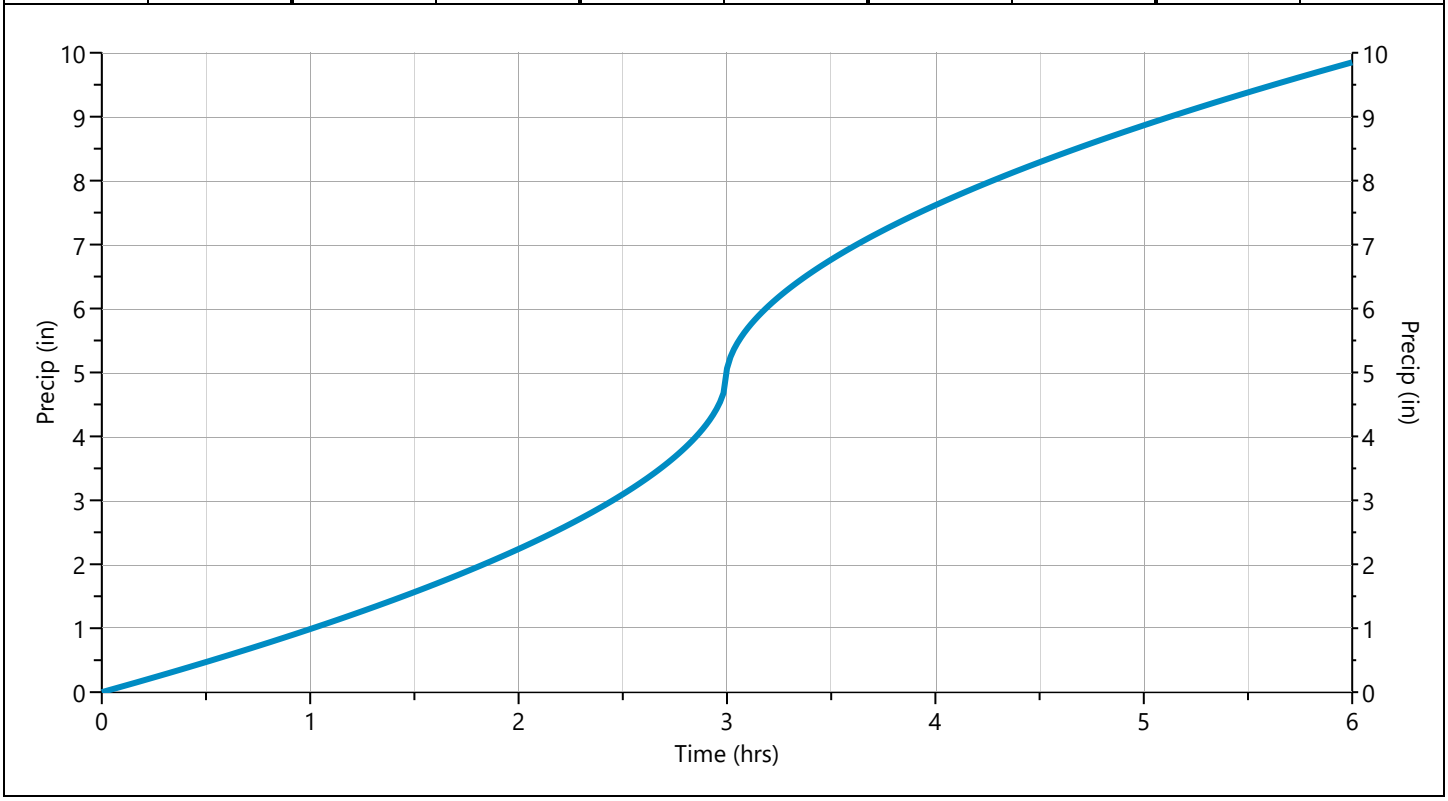
Hydrology Studio v 3.0.0.44

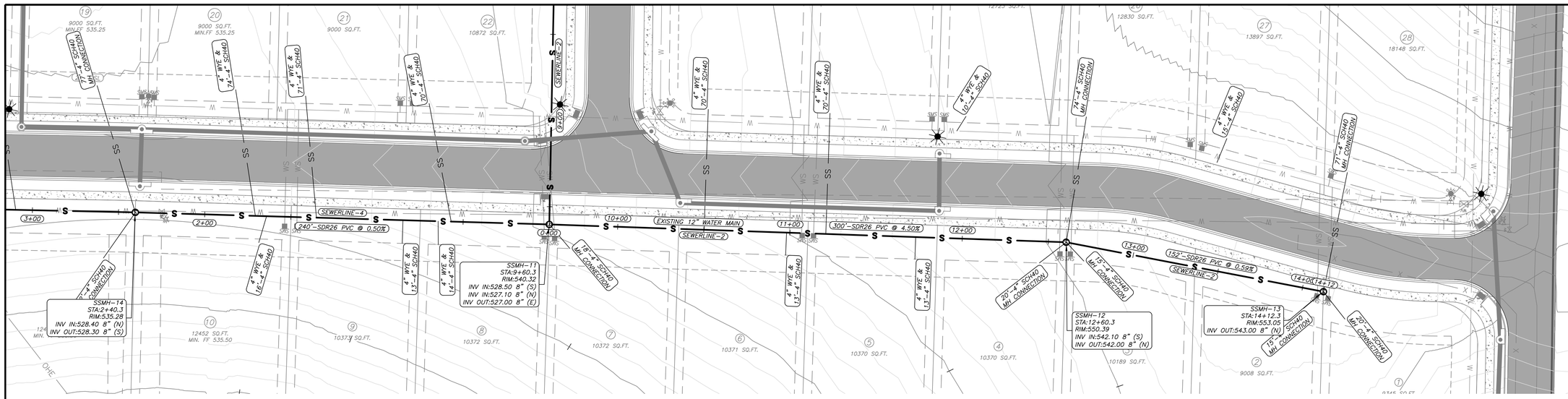
09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	✔ 100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 100-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.033580	2.68	0.041135	2.87	0.060182	3.05	0.098636	3.23	0.047844
2.52	0.034090	2.70	0.042132	2.88	0.063778	3.07	0.085778	3.25	0.046360
2.53	0.034627	2.72	0.043212	2.90	0.068176	3.08	0.077126	3.27	0.045014
2.55	0.035192	2.73	0.044387	2.92	0.073733	3.10	0.070779	3.28	0.043787
2.57	0.035787	2.75	0.045671	2.93	0.081082	3.12	0.065859	3.30	0.042661
2.58	0.036417	2.77	0.047083	2.95	0.091485	3.13	0.061896	3.32	0.041624
2.60	0.037084	2.78	0.048647	2.97	0.107983	3.15	0.058612	3.33	0.040664
2.62	0.037792	2.80	0.050391	2.98	0.141026	3.17	0.055832	3.35	0.039772
2.63	0.038545	2.82	0.052356	**3.00**	**0.384499**	3.18	0.053436	3.37	0.038940
2.65	0.039349	2.83	0.054591	3.02	0.178836	3.20	0.051344	3.38	0.038162
2.67	0.040210	2.85	0.057167	3.03	0.120989	3.22	0.049495	3.40	0.037432





GENERAL NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT AND BRYANT WATER STANDARD SPECIFICATIONS.
2.) ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN ON PLAN.
3.) ALL WATER MAINS SHALL BE C900 PVC UNLESS OTHERWISE SHOWN ON PLAN.
4.) ALL STORM DRAINAGE SHALL BE AS SHOWN ON THE PLAN.
5.) ATTENTION IS CALLED TO WATER, SEWER, AND STREET LAYOUT FOR ADDITIONAL INFORMATION.
6.) ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
7.) ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
8.) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
9.) MINIMUM VERTICAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 18" (WATER ON TOP). IF 18" OF VERTICAL SEPARATION CAN NOT BE MAINTAINED EITHER THE WATER OR SEWER LINE MUST BE ENCASED 10' EITHER SIDE OF THE CROSSING AS PER ARKANSAS RULES PERTAINING TO PUBLIC WATER SYSTEMS SECTION XIV PART A. IF THE WATER LINE MUST PASS BENEATH THE SEWER LINE, IT MUST BE ENCASED AND MAINTAIN 18" OF VERTICAL SEPARATION.
10.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
11.) BACKFILL MATERIAL FOR STREET CROSSINGS SHALL BE ACCORDING TO CITY OF BRYANT STREET DEPT SPECS AND COMPACTED TO 98% M.P. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER AND UTILITY OWNER.
12.) THIS SHEET IS PART OF A COMPLETE DESIGN SET. CONTRACTOR SHALL REFER TO ADDITIONAL DRAWINGS INCLUDED HEREIN, FOR MORE DETAIL REGARDING UTILITIES, DRAINAGE, AND OTHER INFRASTRUCTURE.
13.) THE APPROXIMATE LOCATION OF KNOWN SURFACE AND SUBSURFACE STRUCTURES, PIPES, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE DESIGN DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN.
14.) ALL UTILITIES SHALL BE CONSTRUCTED AT A MINIMUM OF 36" BELOW TOP BACK OF CURB GRADE.
15.) CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.

SEWER NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT STANDARD SPECIFICATIONS.
2.) ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN.
3.) ALL SERVICE LINES SHALL BE 4" SDR-21 PVC OR SCH40 PVC.
4.) CONTRACTOR TO VERIFY METHOD OF MAIN CONNECTION WITH THE CITY OF BRYANT PRIOR TO CONSTRUCTION.
5.) ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
6.) ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
7.) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
8.) MINIMUM VERTICAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 18" (WATER ON TOP). IF 18" OF VERTICAL SEPARATION CAN NOT BE MAINTAINED EITHER THE WATER OR SEWER LINE MUST BE ENCASED 10' EITHER SIDE OF THE CROSSING AS PER ARKANSAS RULES PERTAINING TO PUBLIC WATER SYSTEMS SECTION XIV PART A. IF THE WATER LINE MUST PASS BENEATH THE SEWER LINE, IT MUST BE ENCASED AND MAINTAIN 18" OF VERTICAL SEPARATION.
9.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
10.) BACKFILL FOR ALL DISTURBED (EXCAVATED) AREAS TO BE COMPACTED TO 95% MP.
11.) DUCTILE IRON (PER CITY OF BRYANT SPECS.) TO BE USED IF COVER OVER SEWERLINE IS LESS THAN 36".
12.) ALL STREET CROSSINGS TO MEET CITY OF BRYANT STREET DEPARTMENT SPECIFICATIONS.
13.) TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM OF 36" PIPE COVER.
14.) NO MANHOLES SHALL BE CONSTRUCTED IN SIDEWALKS. SEWER STUB-OUTS SHALL EXTEND AT LEAST 5' OUTSIDE OF THE UTILITY EASEMENT. MANHOLE RIMS TO BE AT LEAST 2" ABOVE FINISH GRADE.
15.) 12ga GREEN COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL FORCE MAINS.

GRAPHIC SCALE

30 0 30 60 90

(IN FEET)
1 inch = 30 ft.

LEGEND

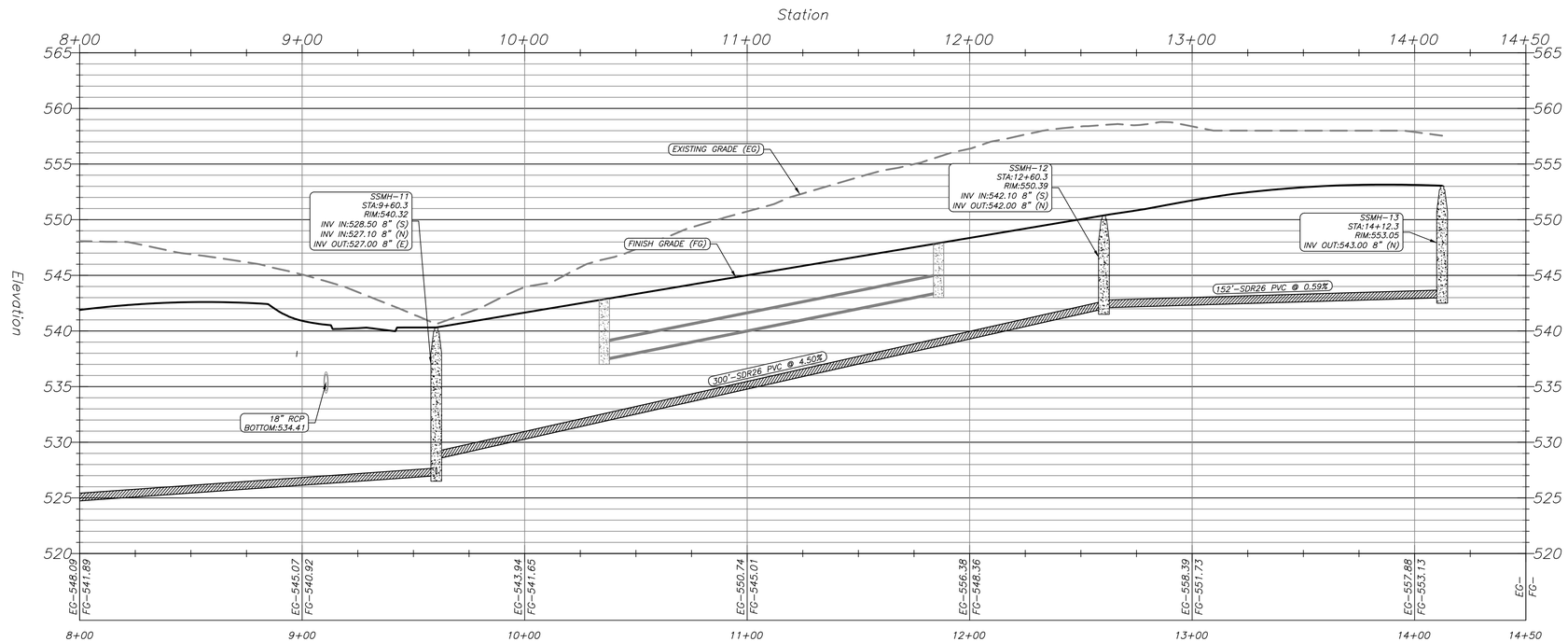
- G — GAS LINE
- T — TELEPHONE LINE
- S — SANITARY SEWER
- X — FENCE
- W — WATER LINE
- STORM DRAIN
- DITCH OR SWALE
- OHE — POWER LINE (OVERHEAD)
- PROPOSED WATER METER BOX
- EXISTING MANHOLE
- PROPOSED MANHOLE
- LIGHT POLE
- GATE VALVE
- BLOW-OFF
- FIRE HYDRANT
- CURB INLET
- FES
- POWER POLE

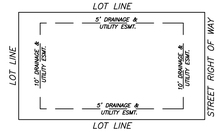
ENGINEER
RICHARDSON ENGINEERING, PLLC
ADDRESS: 325 W.SOUTH ST.
BENTON, AR. 72015
PHONE NO. (501) 315-7225
PROJECT REPRESENTATIVE:
ERIC RICHARDSON, P.E.

SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

SEWERLINE-2 PROFILE





TYPICAL LOT EASEMENTS

RICHARDSON ENGINEERING
Planning • Engineering • Development Consulting
325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

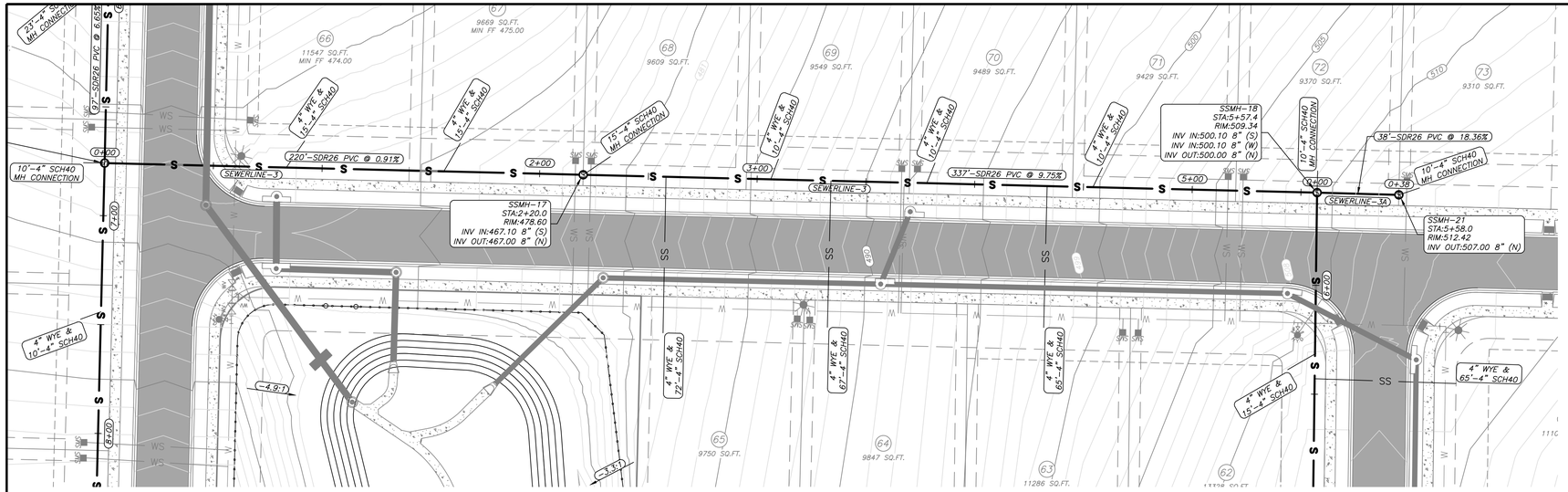
CERTIFICATE OF AUTHORIZATION — Richardson Engineering, PLLC — No. 2519 — ARKANSAS

SEWER 2 P/P 8+00-END
ZYAIR ESTATES SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

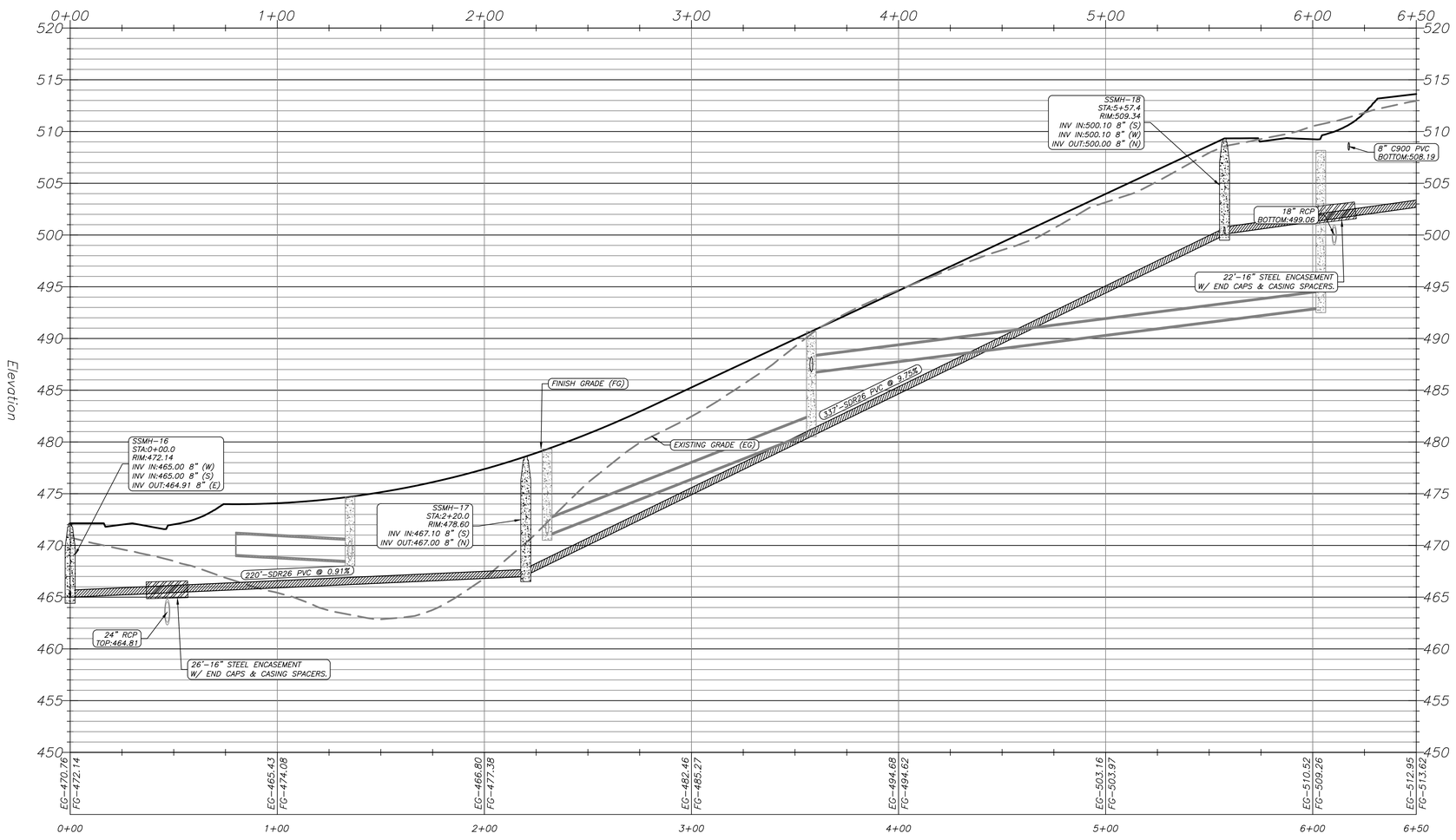
Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/20/2026
3	REDESIGN ROAD PROFILES	9/30/2026

PROJECT NO.: 024-034
Date: 3/3/2026
Scale: 1" = 30'
Sheet: 15 of 26



SEWERLINE-3 PROFILE



LEGEND

- G — GAS LINE
- T — TELEPHONE LINE
- S — SANITARY SEWER
- X — FENCE
- W — WATER LINE
- STORM DRAIN
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- PROPOSED MANHOLE
- LIGHT POLE
- GATE VALVE
- BLOW-OFF
- FIRE HYDRANT
- CURB INLET
- FES
- POWER POLE

GRAPHIC SCALE

30 0 30 60 90

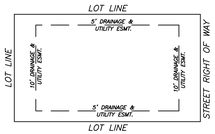
(IN FEET)

1 inch = 30 ft.

ENGINEER
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PHONE NO. (501) 315-7225
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501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022



TYPICAL LOT EASEMENTS

GENERAL NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT AND BRYANT WATER STANDARD SPECIFICATIONS.
2.) ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN ON PLAN.
3.) ALL WATER MAINS SHALL BE C900 PVC UNLESS OTHERWISE SHOWN ON PLAN.
4.) ALL STORM DRAINAGE SHALL BE AS SHOWN ON THE PLAN.
5.) ATTENTION IS CALLED TO WATER, SEWER, AND STREET LAYOUT FOR ADDITIONAL INFORMATION.
6.) ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
7.) ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
8.) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
9.) MINIMUM VERTICAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 18" (WATER ON TOP). IF 18" OF VERTICAL SEPARATION CAN NOT BE MAINTAINED EITHER THE WATER OR SEWER LINE MUST BE ENCASED 10' EITHER SIDE OF THE CROSSING AS PER ARKANSAS RULES PERTAINING TO PUBLIC WATER SYSTEMS SECTION XIV PART A. IF THE WATER LINE MUST PASS BENEATH THE SEWER LINE, IT MUST BE ENCASED AND MAINTAIN 18" OF VERTICAL SEPARATION.
10.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
11.) BACKFILL MATERIAL FOR STREET CROSSINGS SHALL BE ACCORDING TO CITY OF BRYANT STREET DEPT SPECS AND COMPACTED TO 98% M.P. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER AND UTILITY OWNER.
12.) THIS SHEET IS PART OF A COMPLETE DESIGN SET. CONTRACTOR SHALL REFER TO ADDITIONAL DRAWINGS INCLUDED HEREIN, FOR MORE DETAIL REGARDING UTILITIES, DRAINAGE, AND OTHER INFRASTRUCTURE.
13.) THE APPROXIMATE LOCATION OF KNOWN SURFACE AND SUBSURFACE STRUCTURES, PIPES, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE DESIGN DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN.
14.) ALL UTILITIES SHALL BE CONSTRUCTED AT A MINIMUM OF 36" BELOW TOP BACK OF CURB GRADE.
15.) CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.

SEWER NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT STANDARD SPECIFICATIONS.
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15.) 12ga GREEN COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL FORCE MAINS.

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Planning • Engineering • Development Consulting
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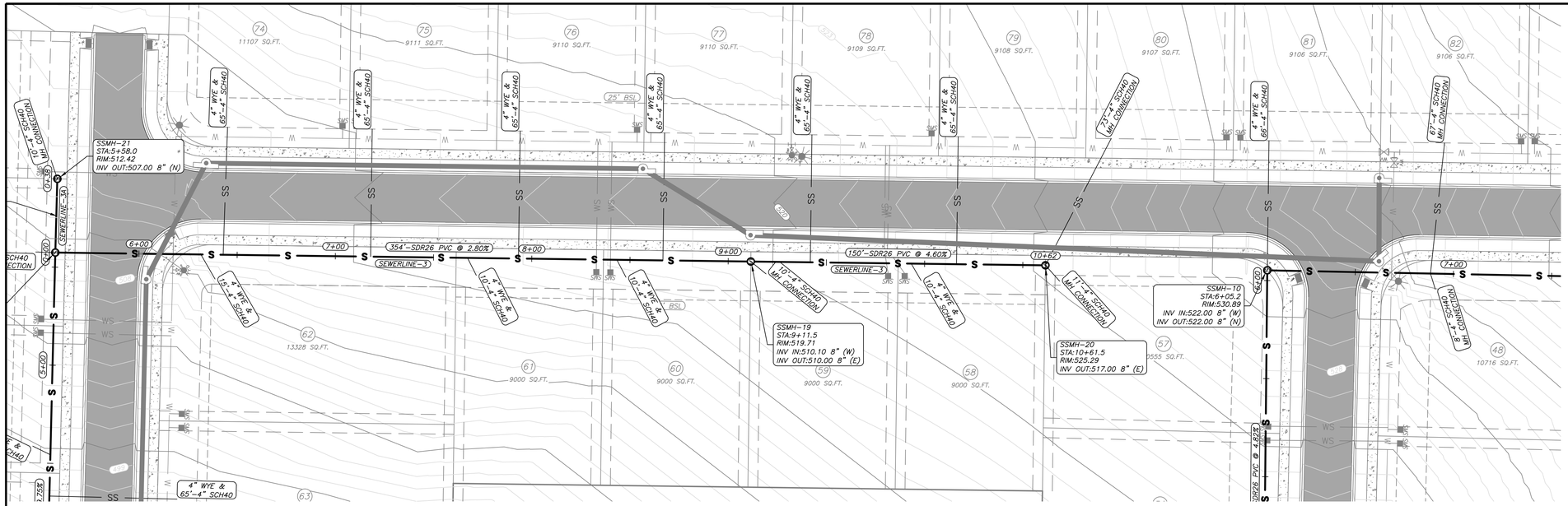
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ARKANSAS

SEWER 3 P/P 0+00-6+50
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024-034
Date: 3/3/2026
REV:9/22/2026
Scale: 1" = 30'
Sheet: 16 of 26



LEGEND

- G — GAS LINE
- T — TELEPHONE LINE
- S — SANITARY SEWER
- X — FENCE
- W — WATER LINE
- STORM DRAIN
- DITCH OR SWALE
- OHE — POWER LINE (OVERHEAD)
- PROPOSED WATER METER BOX
- EXISTING MANHOLE
- PROPOSED MANHOLE
- LIGHT POLE
- GATE VALVE
- BLOW-OFF
- FIRE HYDRANT
- CURB INLET
- FES
- POWER POLE

GRAPHIC SCALE

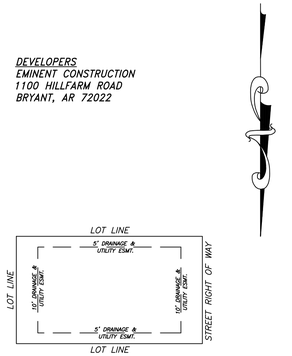
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(IN FEET)
1 inch = 30 ft.

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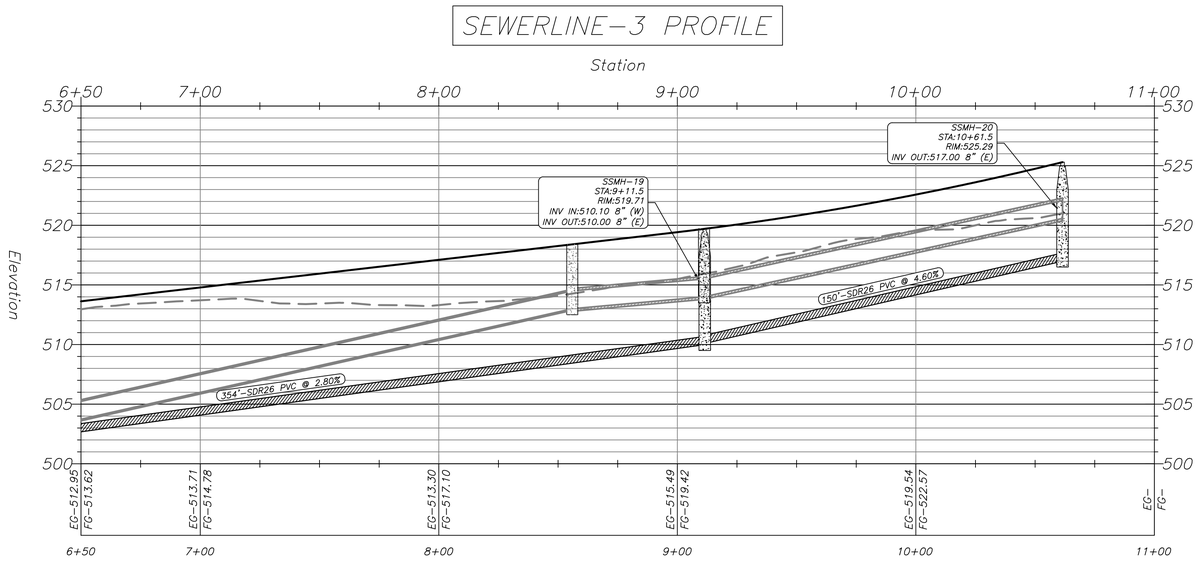
SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022



TYPICAL LOT EASEMENTS

SEWERLINE-3 PROFILE



GENERAL NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT AND BRYANT WATER STANDARD SPECIFICATIONS.
2.) ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN ON PLAN.
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10.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
11.) BACKFILL MATERIAL FOR STREET CROSSINGS SHALL BE ACCORDING TO CITY OF BRYANT STREET DEPT SPECS AND COMPACTED TO 98% M.P. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER AND UTILITY OWNER.
12.) THIS SHEET IS PART OF A COMPLETE DESIGN SET. CONTRACTOR SHALL REFER TO ADDITIONAL DRAWINGS INCLUDED HEREIN, FOR MORE DETAIL REGARDING UTILITIES, DRAINAGE, AND OTHER INFRASTRUCTURE.
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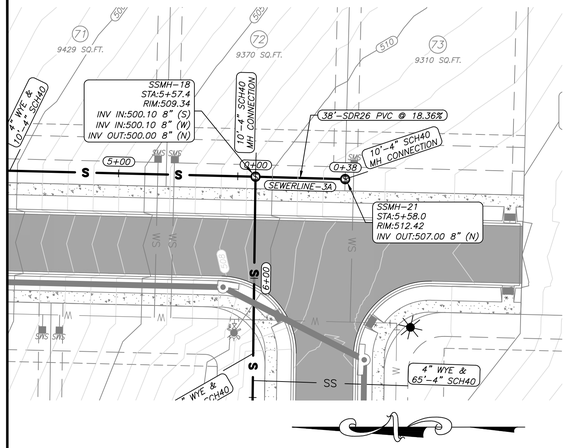
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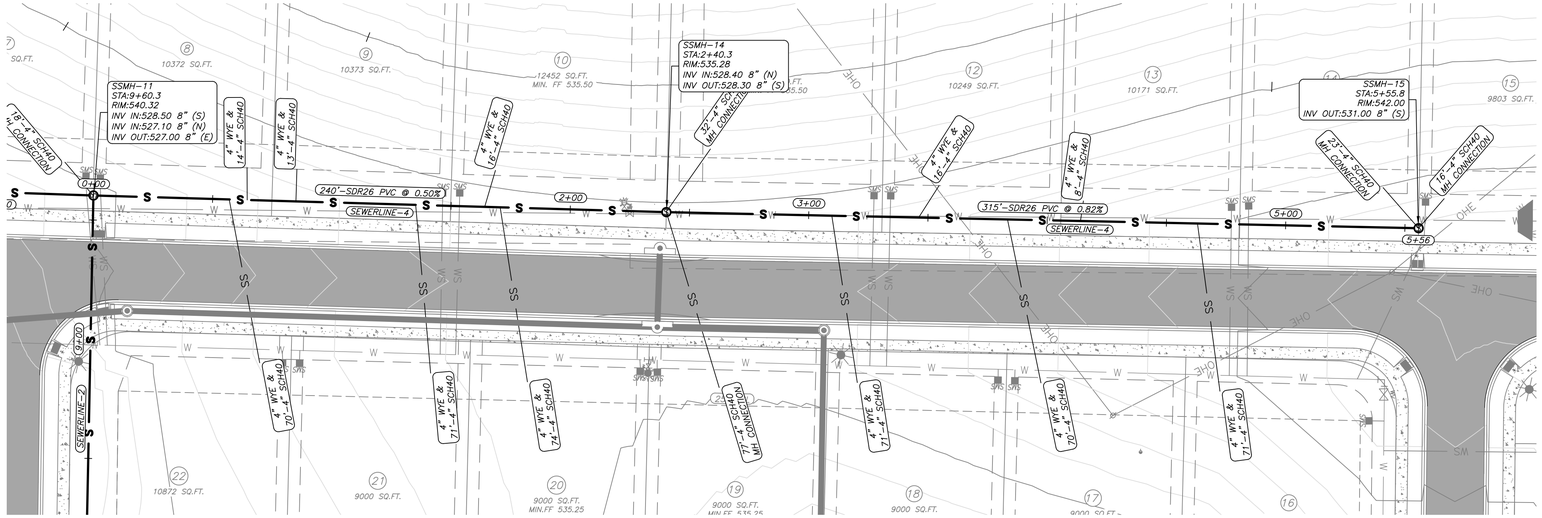
SEWER 3 P/P 6+50-END
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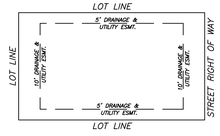
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SEWERLINE-3A PROFILE

SEWERLINE-4 PROFILE



TYPICAL LOT EASEMENTS

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BRYANT, AR 72022

SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
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GRAPHIC SCALE

30 0 30 60 90
(IN FEET)
1 inch = 30 ft.

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SEWER 3A & 4 P/P
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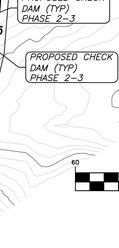
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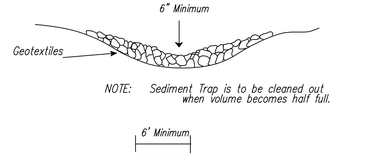
PHASE 1 PLAN
•INSTALL SILT FENCE AROUND PROJECT
•INSTALL CONSTRUCTION ENTRANCE
•MAINTAIN EXISTING DRAINAGE DURING INITIAL PHASE OF CONSTRUCTION
PHASE 2 PLAN
•INSTALL CONCRETE WASHOUT LOCATION
•INSTALL SILT FENCE AROUND CATCH BASINS
•INSTALL ROCK CHECK DAM AT PIPE OUTFALL
•MAINTAIN SILT FENCE AROUND PROJECT
PHASE 3 PLAN
•INSTALL SILT BARRIERS AROUND CATCH BASINS ON SITE.
•SEED AND HAY DISTURBED AREAS ON THE PROJECT
•MAINTAIN SILT FENCE AROUND PROJECT UNTIL VEGETATION IS COMPLETELY ESTABLISHED.
•ANY DAMAGED BMP MEASURES SHALL BE REPLACED OR REPAIRED BEFORE THE NEXT RAIN EVENT, BUT NO LONGER THAN 3 BUSINESS DAYS FROM DATE OF DAMAGE.

PROPOSED INLET BARRIER (TYP) PHASES 2–3
PROPOSED SILT FENCE (TYP) PHASES 1–3
PROPOSED SILT FENCE (TYP) PHASES 2–3
PROPOSED CHECK DAM (TYP) PHASE 2–3
PORTABLE SANITATION FACILITY PHASE 1
CONCRETE WASHOUT PHASE 1–2
SWPPP MAILBOX PHASE 1
CONSTRUCTION ENTRANCE PHASE 1

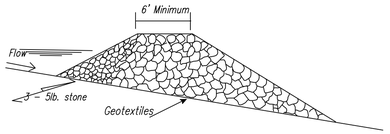
GRAPHIC SCALE
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(IN FEET)
1 inch = 60 ft.



STAPLE DETAIL



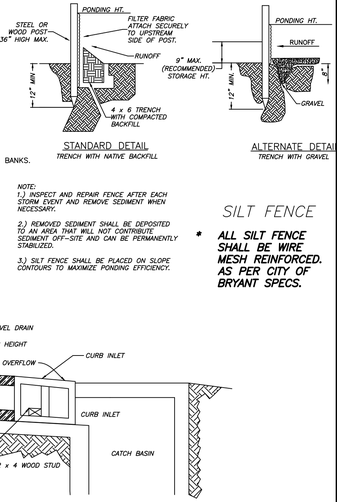
NOTE: Sediment Trap is to be cleaned out when volume becomes half full.



NOTES:
1. FOR USE IN SMALL CHANNELS WITH DRAINAGE AREAS OF 50 ACRES OR LESS.
2. MUST BE USED IN CONJUNCTION WITH OTHER APPROPRIATE SEDIMENT CONTROL MEASURES.
3. USE BELOW CULVERT INSTALLATIONS, DAM CONSTRUCTION, OR ANY PROJECT THAT MAY INVOLVE GRADING ACTIVITY DIRECTLY IN A STREAM.
4. NOT INTENDED TO SUBSTANTIALLY IMPOUND WATER.
5. USE AT THE UPSTREAM END OF PONDS OR LAKES.
6. EDGES SHOULD NOT BE HIGHER THAN THE CHANNEL BANKS.
7. CENTER SHOULD BE AT LEAST 6 INCHES LOWER THAN THE OUTER EDGES OF THE DAM AT THE CHANNEL BANKS.
8. HEIGHT SHOULD NOT EXCEED ELEVATION OF UPSTREAM PROPERTY LINE.
9. SIDE SLOPES SHOULD BE 2:1 OR FLATTER.
10. TOP WIDTH SHOULD BE GREATER THAN 6 FEET.
11. EXTEND COMPLETELY ACROSS THE CHANNEL AND SECURELY TIE INTO BOTH CHANNEL BANKS
12. REQUIRES PERIODIC INSPECTION AND MAINTENANCE.
13. SEDIMENT REMOVED WHEN IT REACHES ONE–HALF OF THE ORIGINAL DAM HEIGHT

ROCK DAM

NOT TO SCALE



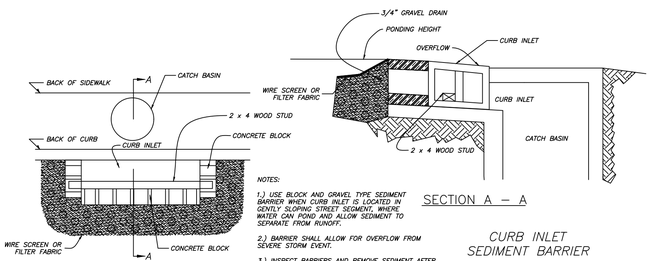
STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

ALTERNATE DETAIL
TRENCH WITH GRAVEL

NOTE:
1.) INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2.) REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF–SITE AND CAN BE PERMANENTLY STABILIZED.
3.) SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE

* **ALL SILT FENCE SHALL BE WIRE MESH REINFORCED. AS PER CITY OF BRYANT SPECS.**

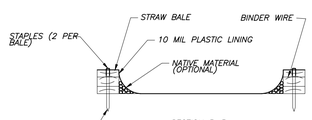


PLAN VIEW

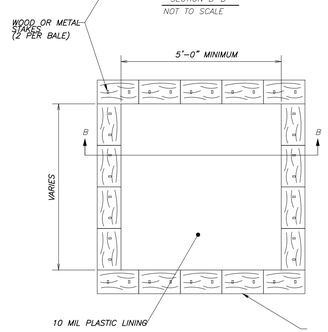
NOTES:
1.) USE BLOCK AND GRAVEL TYPE SEDIMENT BARRIER WHEN CURB INLET IS LOCATED IN GENTLY SLOPING STREET SEGMENT, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2.) BARRIER SHALL ALLOW FOR OVERFLOW FROM SEVERE STORM EVENT.
3.) INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

SECTION A – A

CURB INLET SEDIMENT BARRIER



SECTION B–B
NOT TO SCALE



CONCRETE WASHOUT
NOT TO SCALE

GENERAL EROSION CONTROL NOTES

1. THE LOCATION OF KNOWN SURFACE & SUBSURFACE STRUCTURES, PIPE, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING INFORMATION AND SATISFYING THEMSELVES AS TO THE LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN. ALL REPAIRS OR RELOCATIONS NECESSARY SHALL BE MADE AS REQUIRED BY THE OWNER OF THE UTILITY OR STRUCTURE. THE COST OF SUCH REPAIRS OR RELOCATIONS NECESSARY SHALL BE BORNE BY THE CONTRACTOR.
2. ALL STREETS, DRIVES, WALKS, DRAINAGE STRUCTURES, FENCES, ETC. THAT ARE DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION USING LIKE MATERIALS. COST OF SUCH REPAIRS SHALL BE BORNE BY THE CONTRACTOR UNLESS PROVISION FOR PAYMENT IS MADE IN THE PROPOSAL.
3. EROSION CONTROL DEVICES SHALL BE INSTALLED AS THE PROJECT PROGRESSES AND AREAS ARE DISTURBED.
4. THE CONTRACTOR IS REQUIRED TO NOTIFY THE ONE CALL CENTER AT 1–800–482–8998 48 HOURS PRIOR TO DIGGING IN ORDER THAT UNDERGROUND UTILITIES IN THE AREA CAN BE LOCATED.
5. ALL INLETS ON AND ADJACENT TO THE SITE SHALL BE PROTECTED FROM SEDIMENT.
6. STORM WATER CONTROLS SHALL BE INSPECTED AT LEAST ONCE EVERY 7 DAYS.
7. ALL EROSION CONTROL DEVICES ARE TO BE MAINTAINED IN GOOD WORKING CONDITION THROUGHOUT THE DURATION OF THIS PROJECT AND UNTIL PERMANENT VEGETATION IS ESTABLISHED. ALL SEDIMENT TRAPS ARE TO BE CLEANED AS REQUIRED.
8. ALL DISTURBED AREAS LEFT IDLE FOR A PERIOD OF 14 DAYS OR LONGER ARE TO RECEIVE TEMPORARY VEGETATION AND MULCHED.
9. REMOVE EROSION CONTROL DEVICES AFTER PERMANENT VEGETATION IS ESTABLISHED.
10. DEVELOPMENT SHALL ADHERE TO CITY OF BRYANT AND ADEQ STORM WATER REQUIREMENTS.
11. ADDITIONAL EROSION CONTROL MEASURES TO BE EMPLOYED WHERE NECESSARY BY SITE CONDITIONS.
12. CONTRACTOR TO COMPLY WITH ALL OSHA SAFETY REQUIREMENTS.
13. CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.
14. THIS PLAN IS SUBJECT TO CHANGE BASED ON CURRENT SITE CONDITIONS. ADDITIONAL MEASURES MAY BE NEEDED TO MITIGATE ILLICIT DISCHARGES OF SEDIMENT AND/OR DEBRIS FROM THE SITE. SEE SECTION 1100 OF THE BRYANT STORMWATER MANAGEMENT MANUAL TO SEE WHAT OTHER DEVICES ARE RECOMMENDED.

SWPPP NOTES:

1.) DEVELOPMENT SHALL ADHERE TO CITY OF BRYANT AND ADEQ STORMWATER REQUIREMENTS.
2.) SEDIMENT BARRIERS SHALL BE CONSTRUCTED AT EACH INLET UNTIL GRADING IS COMPLETE AND TOP SOIL IS STABILIZED.
3.) A SILT FENCE AND STRAW BALE DIKE SHALL BE PLACED AT POTENTIAL LOCATIONS OF HEAVY EROSION.
4.) TEMPORARY STRAW BALE DIKES ARE TO BE CONSTRUCTED NOT TO POND WATER ON ADJACENT PROPERTY.
5.) ROCK DIKE CHECK DAMS TO BE CONSTRUCTED TO MEET ADEQ REQUIREMENTS WHEN USED IN LIEU OF STRAW BALE DIKES.
6.) ALL TEMPORARY EROSION CONTROLS SHALL BE MAINTAINED UNTIL ALL CONSTRUCTION IS COMPLETE AND PERMANENT GROUND COVER HAS BEEN ESTABLISHED.
7.) ONE OF THE FOLLOWING GROUND COVER METHODS SHALL BE USED AT AREAS OF CLEARING OTHER THAN FUTURE PAVEMENT SURFACES.
STRAW OR HAY–LOOSE 2.0 TONS/ACRE
STRAW OR HAY–TIED, ANCHORED, OR TACKED 1.5 TONS/ACRE
8.) SOIL EXPOSED FOR MORE THAN 14 DAYS WITH NO CONSTRUCTION ACTIVITY SHALL BE SEEDED OR REEMITTED.
9.) CONSTRUCTION ENTRANCES/EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF MUD ON TO PUBLIC RIGHT–OF–WAY.
10.) ADDITIONAL EROSION CONTROL MEASURES TO BE EMPLOYED WHERE NECESSARY BY SITE CONDITIONS.
11.) CONTRACTOR SHALL USE "BEST MANAGEMENT PRACTICES" (BMP'S) WHEN IMPLEMENTING AND MAINTAINING SEDIMENT AND RUN–OFF CONTROLS.

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No. 2519
ARKANSAS

EROSION CONTROL PLAN
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

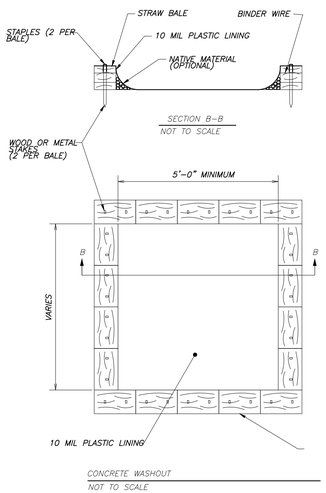
No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024–034
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PHASE 1 PLAN
*INSTALL SILT FENCE AROUND PROJECT
*INSTALL CONSTRUCTION ENTRANCE
*MAINTAIN EXISTING DRAINAGE DURING INITIAL PHASE OF CONSTRUCTION
PHASE 2 PLAN
*INSTALL CONCRETE WASHOUT LOCATION
*INSTALL SILT FENCE AROUND CATCH BASINS
*INSTALL ROCK CHECK DAM AT PIPE OUTFALL
*MAINTAIN SILT FENCE AROUND PROJECT
PHASE 3 PLAN
*INSTALL SILT BARRIERS AROUND CATCH BASINS ON SITE.
*SEED AND HAY DISTURBED AREAS ON THE PROJECT
*MAINTAIN SILT FENCE AROUND PROJECT UNTIL VEGETATION IS COMPLETELY ESTABLISHED.
*ANY DAMAGED BMP MEASURES SHALL BE REPLACED OR REPAIRED BEFORE THE NEXT RAIN EVENT, BUT NO LONGER THAN 3 BUSINESS DAYS FROM DATE OF DAMAGE.

PROPOSED INLET BARRIER (TYP) PHASES 2–3
PROPOSED SILT FENCE (TYP) PHASES 1–3
PROPOSED SILT FENCE (TYP) PHASES 2–3
PROPOSED CHECK DAM (TYP) PHASE 2–3
PORTABLE SANITATION FACILITY PHASE 1
CONCRETE WASHOUT PHASE 1–2
SWPPP MAILBOX PHASE 1
CONSTRUCTION ENTRANCE PHASE 1

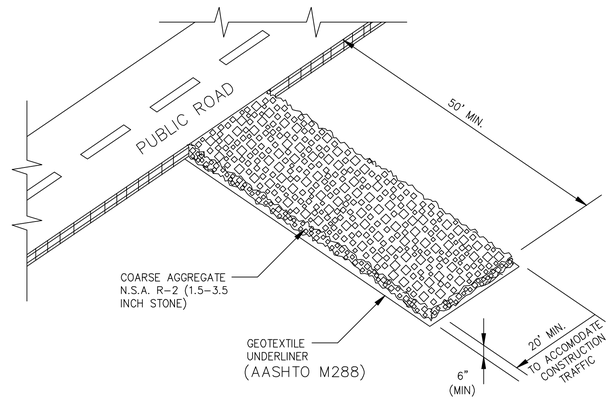
GRAPHIC SCALE
60 0 60 120 180
(IN FEET)
1 inch = 60 ft.



EROSION CONTROL MAINTENANCE & INSPECTION NOTES

1. THE LOCATION OF KNOWN SURFACE & SUBSURFACE STRUCTURES, PIPE, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING INFORMATION AND SATISFYING THEMSELVES AS TO THE LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN. ALL REPAIRS OR RELOCATIONS NECESSARY SHALL BE MADE AS REQUIRED BY THE OWNER OF THE UTILITY OR STRUCTURE. THE COST OF SUCH REPAIRS OR RELOCATIONS NECESSARY SHALL BE BORNE BY THE CONTRACTOR.
2. ALL STREETS, DRIVES, WALKS, DRAINAGE STRUCTURES, FENCES, ETC. THAT ARE DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION USING LIKE MATERIALS. COST OF SUCH REPAIRS SHALL BE BORNE BY THE CONTRACTOR UNLESS PROVISION FOR PAYMENT IS MADE IN THE PROPOSAL.
3. EROSION CONTROL DEVICES SHALL BE INSTALLED AS THE PROJECT PROGRESSES AND AREAS ARE DISTURBED.
4. THE CONTRACTOR IS REQUIRED TO NOTIFY THE ONE CALL CENTER AT 1–800–482–8998 48 HOURS PRIOR TO DIGGING IN ORDER THAT UNDERGROUND UTILITIES IN THE AREA CAN BE LOCATED.
5. ALL INLETS ON AND ADJACENT TO THE SITE SHALL BE PROTECTED FROM SEDIMENT.
6. STORM WATER CONTROLS SHALL BE INSPECTED AT LEAST ONCE EVERY 7 DAYS.
7. ALL EROSION CONTROL DEVICES ARE TO BE MAINTAINED IN GOOD WORKING CONDITION THROUGHOUT THE DURATION OF THIS PROJECT AND UNTIL PERMANENT VEGETATION IS ESTABLISHED. ALL SEDIMENT TRAPS ARE TO BE CLEANED AS REQUIRED.
8. ALL DISTURBED AREAS LEFT IDLE FOR A PERIOD OF 14 DAYS OR LONGER ARE TO RECEIVE TEMPORARY VEGETATION AND MULCHED.
9. REMOVE EROSION CONTROL DEVICES AFTER PERMANENT VEGETATION IS ESTABLISHED.
10. DEVELOPMENT SHALL ADHERE TO CITY OF BRYANT AND ADEQ STORM WATER REQUIREMENTS.
11. ADDITIONAL EROSION CONTROL MEASURES TO BE EMPLOYED WHERE NECESSARY BY SITE CONDITIONS.
12. CONTRACTOR TO COMPLY WITH ALL OSHA SAFETY REQUIREMENTS.

1. LOCATE STONE STABILIZED PAD AT ANY POINT WHERE VEHICULAR TRAFFIC WILL BE LEAVING THE CONSTRUCTION SITE ONTO A PUBLIC RIGHT–OF–WAY, STREET, ALLEY, SIDEWALK, OR PARKING AREA OR ANY OTHER AREA WHERE THERE IS A TRANSITION FROM BARE SOIL TO A PAVED AREA.
2. WIDTH – 20'–0 MINIMUM BUT NOT LESS THAN FULL WIDTH OF ALL POINTS OF VEHICULAR EGRESS. LENGTH – 50'–0 MINUMUM
3. MAINTAIN THE EXIT TO PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS– OF–WAY. PROVIDE PERIODIC TOP DRESSING WITH 1.5 – 3.5" STONE, AS CONDITIONS DEMAND. IMMEDIATELY REMOVE ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE OR SITE ONTO ROADWAY OR INTO STORM DRAINS. CLEAN TIRES AND WHEELS TO REMOVE MUD PRIOR TO ENTRANCE ON TO PUBLIC RIGHTS–OF–WAY.
4. WHEN WASHING IS REQUIRED, DO SO ON AREAS STABILIZED WITH CRUSHED STONE DRAINING INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.



CONSTRUCTION EXIT

NOT TO SCALE

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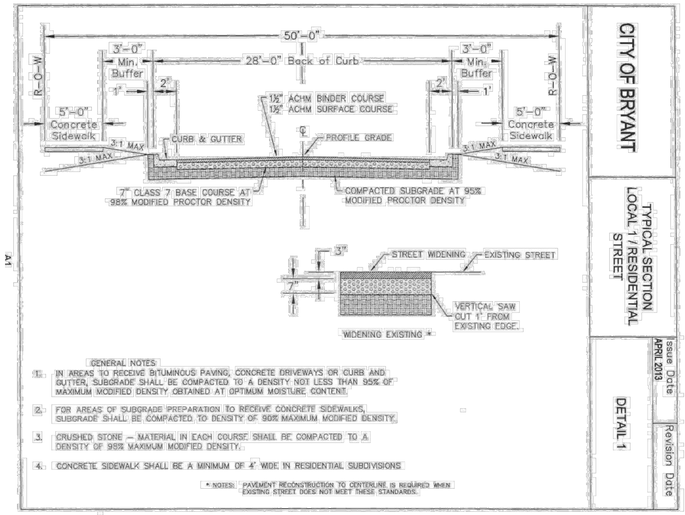
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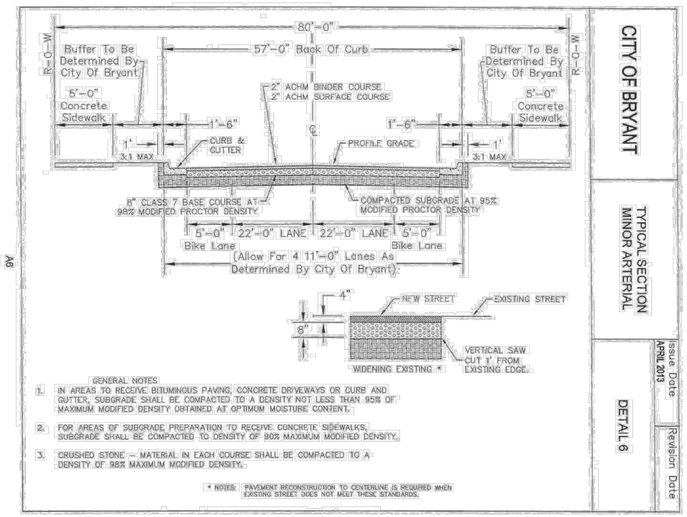
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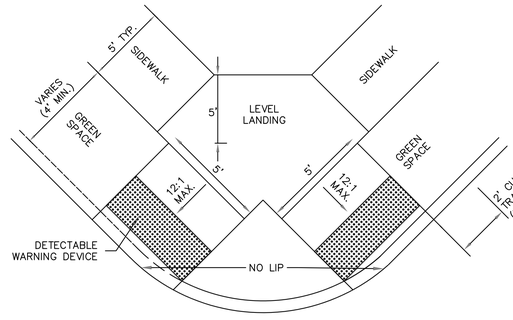
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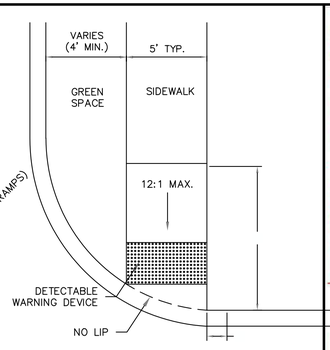
CITY OF BRYANT | TYPICAL SECTION LOCAL / RESIDENTIAL STREET | Issue Date APRIL 2013 | Revision Date | DETAIL 1



CITY OF BRYANT | TYPICAL SECTION MINOR ARTERIAL | Issue Date APRIL 2013 | Revision Date | DETAIL 6



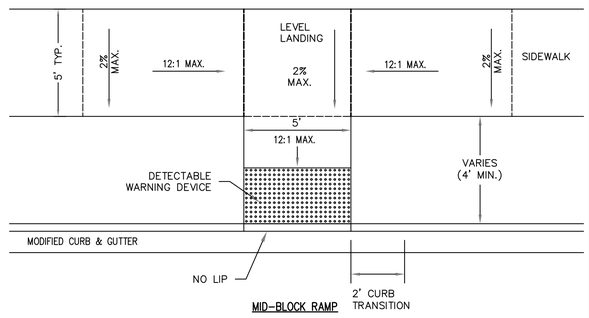
TYPE 1 RAMP



TYPE 2 RAMP

NOTES:

1) THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1.
2) THE NORMAL GUTTER SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
3) THE MINIMUM THICKNESS FOR THE RAMP, WALK, & LANDING SHALL BE 4".
4) DETECTABLE WARNING DEVICES SHALL BE PLACED AT THE LOCATIONS WHERE RAMPS CROSS A CURB.

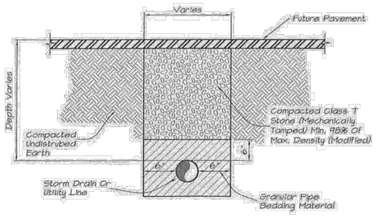


MID-BLOCK RAMP

HANDICAP RAMP DETAILS

NOT TO SCALE

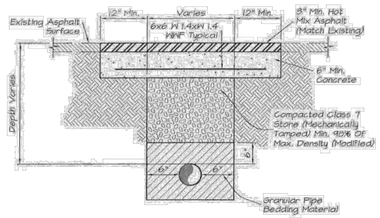
CITY OF BRYANT | TYPICAL SECTION DRAINAGE AND UTILITY CUT BACKFILL ON STREET UNDER CONSTRUCTION | Issue Date APRIL 2013 | Revision Date | DETAIL 8



Note: This Backfill Procedure Shall Be Utilized For All Trenches Excavated In Area To Be Paved.

A8

CITY OF BRYANT | TYPICAL SECTION ASPHALT PAVEMENT REPAIR ON EXISTING STREET | Issue Date APRIL 2013 | Revision Date | DETAIL 9

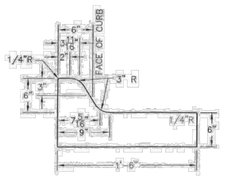


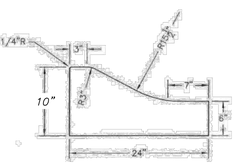
CONC. WALK/CONCRETE SWALE CONTROL JOINT DETAILS

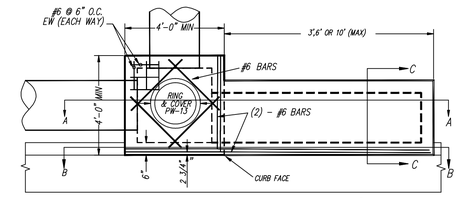
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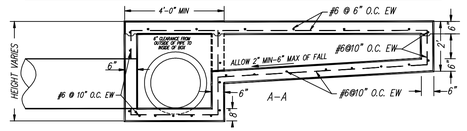
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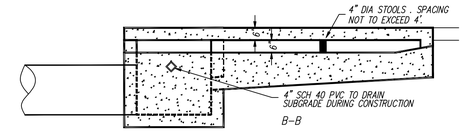
CITY OF BRYANT | CURB & GUTTER SECTIONS | Issue Date APRIL 2013 | Revision Date | DETAIL 7

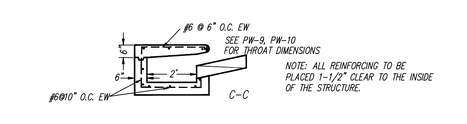








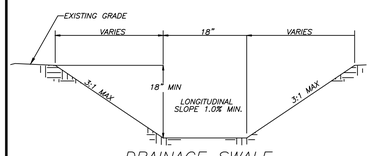




NOTE: ALL REINFORCING TO BE PLACED 1-1/2" CLEAR TO THE INSIDE OF THE STRUCTURE.

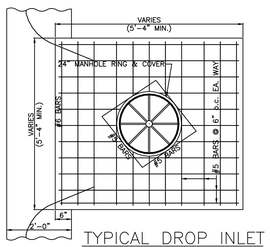
CURB INLET W/ THROAT EXTENSIONS

NOT TO SCALE

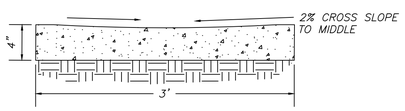


DRAINAGE SWALE

N.T.S.

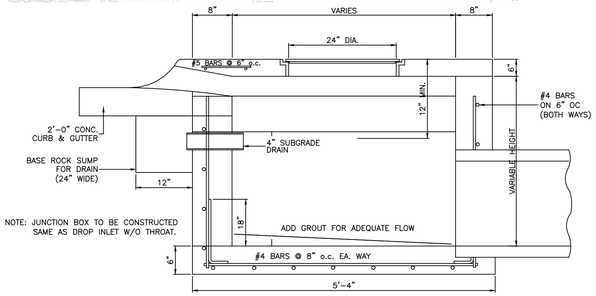


TYPICAL DROP INLET PLAN



TYPICAL TRICKLE CHANNEL

* NOTES:
1. PORTLAND CEMENT CONCRETE 3000 PSI. MIN.
2. USE W1.4 X W1.4 (6" X 6") WWF SHEET REINFORCEMENT. CUT ½ THE WIRES AT CONTROL JOINTS.
3. CONCRETE TO CONTAIN 3–5% AIR ENTRAINMENT.



TYPICAL DROP INLET – POURED IN PLACE ELEVATION

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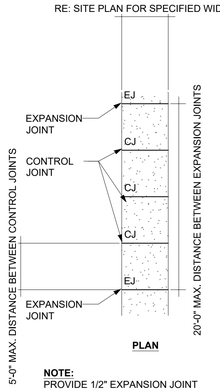
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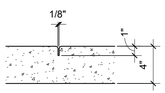
CONC. WALK/CONCRETE SWALE CONTROL JOINT DETAILS

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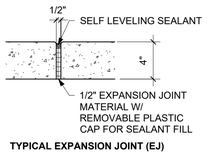


PLAN

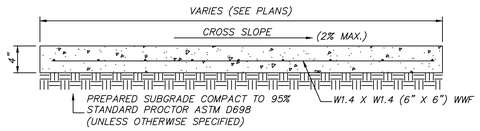
NOTE:
PROVIDE 1/2" EXPANSION JOINT AND SEALANT AS NOTED AND WHERE SIDEWALK ABUTS STRUCTURES OR OTHER SIDEWALKS.



TYPICAL CONTROL JOINT (CJ)



TYPICAL EXPANSION JOINT (EJ)



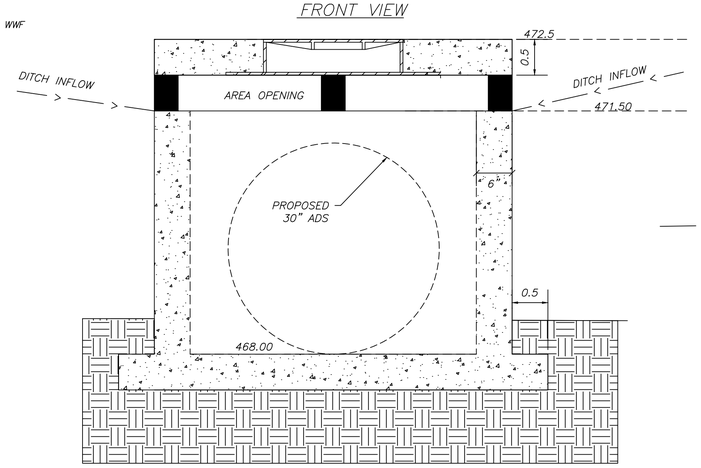
CONCRETE SIDEWALK SPECIFICATIONS

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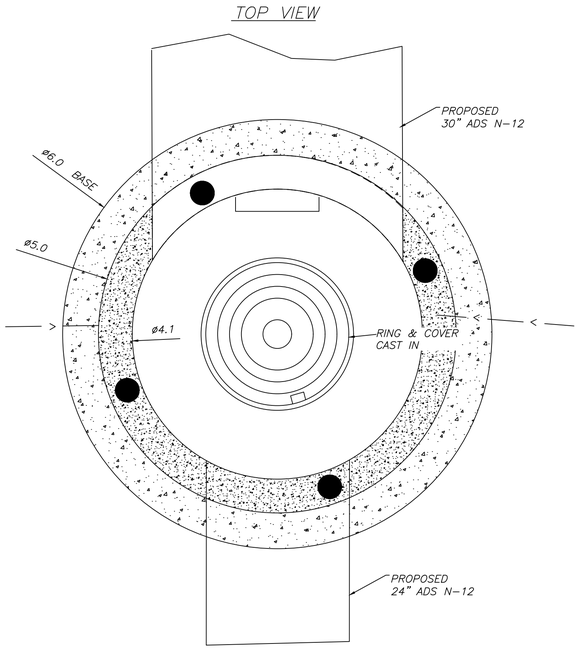
* NOTES:

1. PORTLAND CEMENT CONCRETE 3000 PSI. MIN.
2. USE W1.4 X W1.4 (6" X 6") WWF SHEET REINFORCEMENT. CUT ½ THE WIRES AT CONTROL JOINTS.
3. CONCRETE TO CONTAIN 3–5% AIR ENTRAINMENT.
4. FINISH TO BE BROOM FINISH.
5. DETECTABLE WARNING DEVICES TO BE INSTALLED AT RAMPS PER ADA REQUIREMENTS.
6. MAX CROSS SLOPE 2%. MAX LONGITUDINAL SLOPE 1:12.
7. CONTROL JOINTS PER CONC. WALK CONTROL JOINT DETAIL.

FRONT VIEW

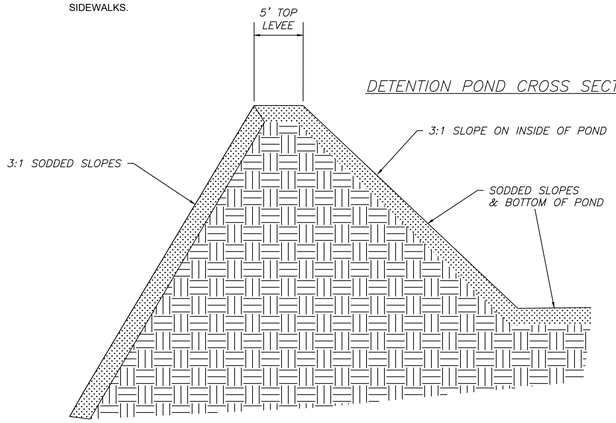


TOP VIEW

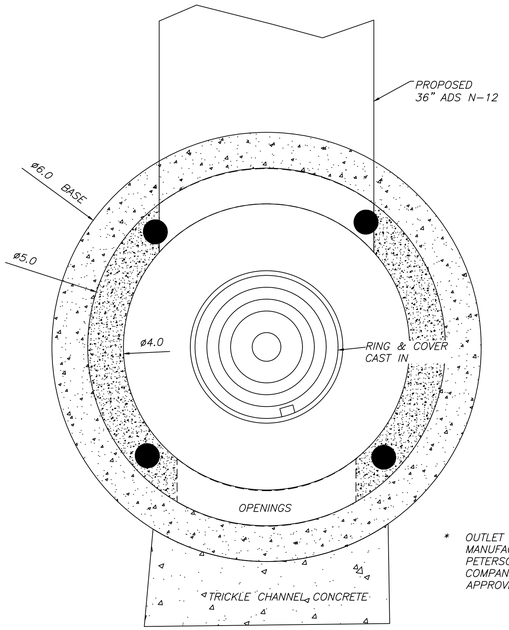


AREA JUNCTION BOX WEST OF POND

DETENTION POND CROSS SECTION

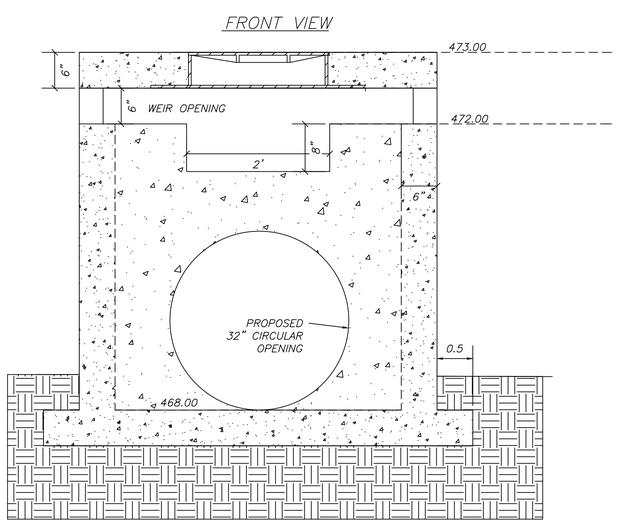


DETENTION POND WEIR STRUCTURE TOP VIEW



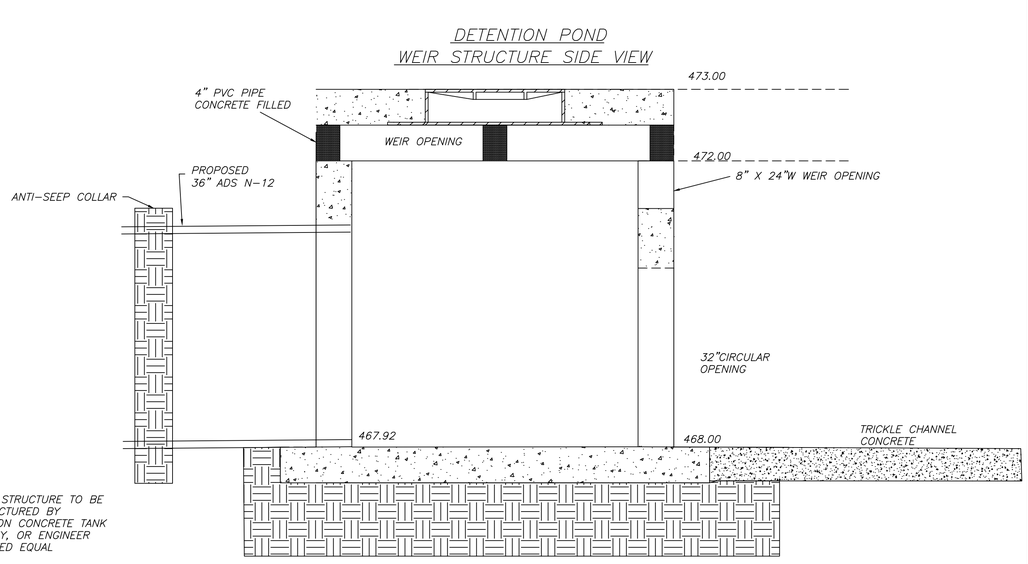
* OUTLET STRUCTURE TO BE MANUFACTURED BY PETERSON CONCRETE TANK COMPANY, OR ENGINEER APPROVED EQUAL

FRONT VIEW



DETENTION POND OUTLET STRUCTURE

DETENTION POND WEIR STRUCTURE SIDE VIEW



REFER TO CITY OF BRYANT, ARKANSAS PUBLIC WORKS STREET AND DRAINAGE STANDARD DETAILS FOR ADDITIONAL DETAILS AND INFORMATION.

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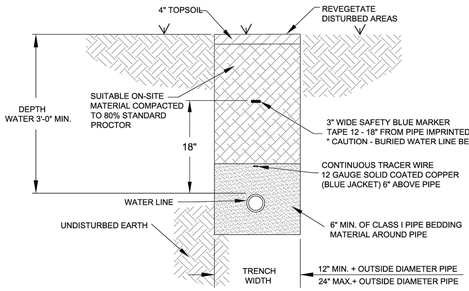
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NOTES:

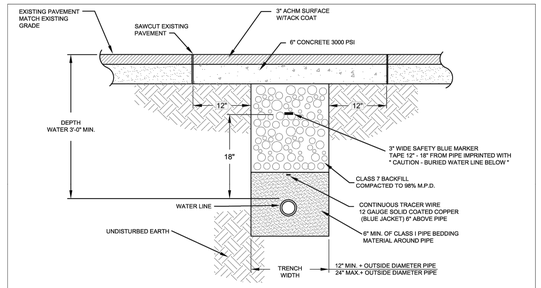
1. ALL VALVES, BENDS, ETC. SHALL BE RESTRAINED.
2. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING WATER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE WATER SYSTEM.
3. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
4. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36" OF PIPE COVER.
5. MAXIMUM PIPE COVER SHALL BE 60" UNDER NORMAL CONDITIONS. COVER GREATER THAN 60" MAY BE ALLOWED FOR SHORT DISTANCES WHERE REQUIRED BY FIELD CONDITIONS. NO HYDRANT SHALL BE ALLOWED WHERE LINES ARE GREATER THAN 60" DEEP.

WATER MAIN TRENCH

(NON-PAVED AREA)

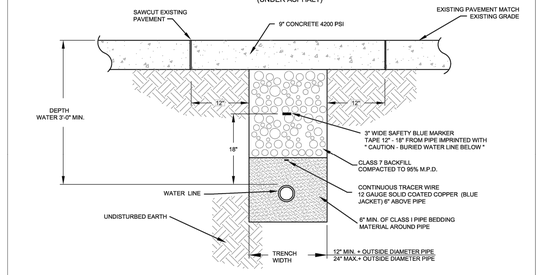
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W1
DESCRIPTION: **WATER MAIN TRENCH (NON-PAVED AREA)** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W1-Water Trench (Non-Paved Area).dwg



WATER MAIN TRENCH

(UNDER ASPHALT)



WATER MAIN TRENCH

(UNDER CONCRETE)

NOTES:

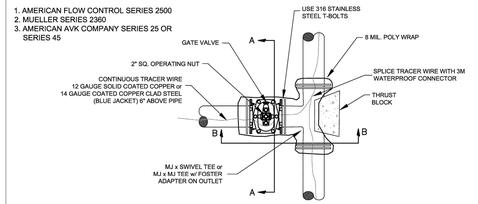
1. ALL VALVES, BENDS, ETC. SHALL BE RESTRAINED.
2. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING WATER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE WATER SYSTEM.
3. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
4. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36" OF PIPE COVER.
5. MAXIMUM PIPE COVER SHALL BE 60" UNDER NORMAL CONDITIONS. COVER GREATER THAN 60" MAY BE ALLOWED FOR SHORT DISTANCES WHERE REQUIRED BY FIELD CONDITIONS. NO HYDRANT SHALL BE ALLOWED WHERE LINES ARE GREATER THAN 60" DEEP.

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

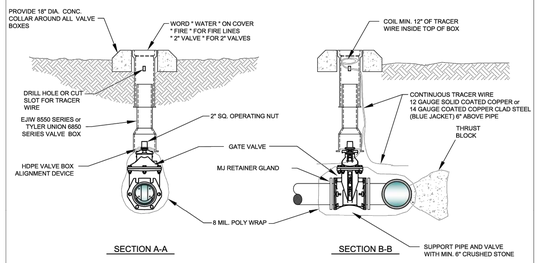
TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W2
DESCRIPTION: **WATER MAIN TRENCH (UNDER PAVEMENT)** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W2-Water Trench (Under Pavement).dwg

PERMITTED VALVES

1. AMERICAN FLOW CONTROL SERIES 2500
2. MUELLER SERIES 2360
3. AMERICAN AVK COMPANY SERIES 25 OR SERIES 45



PLAN



NOTES:

1. ALL VALVES SHALL BE SECURELY ANCHORED TO THE TEE.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
3. IF DEPTH OF BURY EXCEEDS 4 FT., A VALVE STEM EXTENSION SHALL BE REQUIRED. THE VALVE STEM EXTENSION NUT SHALL BE WITHIN 24-INCHES TO 12-INCHES OF THE FINISHED SURFACE.

GATE VALVE DETAIL

2" - 12"

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

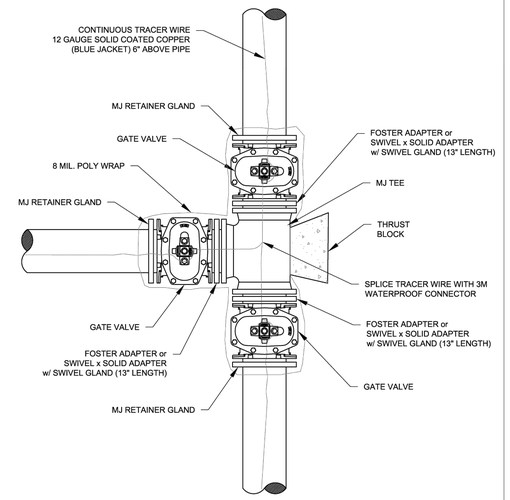
TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W4
DESCRIPTION: **GATE VALVE** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W4-Gate Valve.dwg

PERMITTED VALVES

1. AMERICAN FLOW CONTROL SERIES 2500
2. MUELLER SERIES 2360
3. AMERICAN AVK COMPANY SERIES 25 OR SERIES 45

NOTES:

1. ALL VALVES SHALL BE SECURELY ANCHORED TO THE TEE.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
3. IF DEPTH OF BURY EXCEEDS 4 FT., A VALVE STEM EXTENSION SHALL BE REQUIRED. THE VALVE STEM EXTENSION NUT SHALL BE WITHIN 24-INCHES TO 12-INCHES OF THE FINISHED SURFACE.



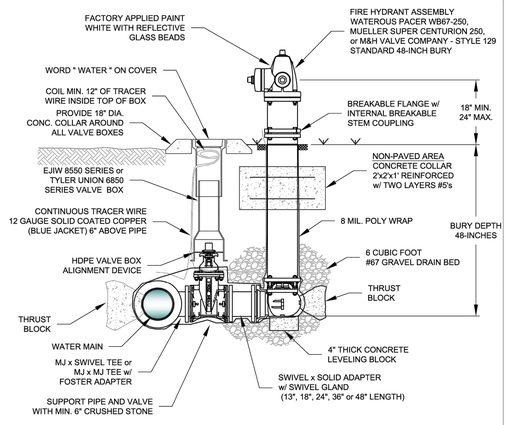
3-WAY GATE VALVE DETAIL

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WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W5
DESCRIPTION: **3-WAY GATE VALVES** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W5-3-Way Gate Valves.dwg

NOTES:

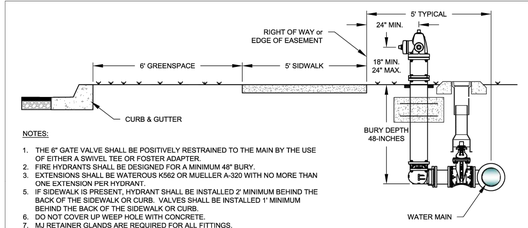
1. THE 6" GATE VALVE SHALL BE POSITIVELY RESTRAINED TO THE MAIN BY THE USE OF EITHER A SWIVEL TEE OR FOSTER ADAPTER.
2. FIRE HYDRANTS SHALL BE DESIGNED FOR A MINIMUM 48" BURY.
3. BURY LINE OF HYDRANT SHALL BE NO LESS THAN THE PROPOSED FINISHED ELEVATION OF BACK OF CURB, OR SIDEWALK, WHICHEVER IS GREATER.
4. EXTENSIONS SHALL BE WATEROUS K562 OR MUELLER A-320 WITH NO MORE THAN ONE EXTENSION PER HYDRANT.
5. IF SIDEWALK IS PRESENT, HYDRANT SHALL BE INSTALLED 2' MINIMUM BEHIND THE BACK OF THE SIDEWALK OR CURB. VALVES SHALL BE INSTALLED 1' MINIMUM BEHIND THE BACK OF THE SIDEWALK OR CURB.
6. DO NOT COVER UP WEEP HOLE WITH CONCRETE.
7. MJ RETAINER GLANDS ARE REQUIRED FOR ALL FITTINGS.
8. 6" DUCTILE IRON PIPE IS REQUIRED FOR ALL FIRE HYDRANT LEADS GREATER THAN 48-INCHES FROM THE MAIN VALVE.
9. AN ADDITIONAL GUARDIAN VALVE IS REQUIRED FOR ALL FIRE HYDRANT LEADS GREATER THAN 30 FEET IN LENGTH.



FIRE HYDRANT & VALVE CONNECTION

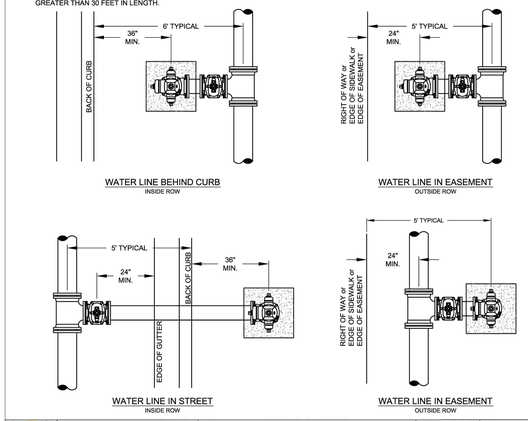
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W8
DESCRIPTION: **FIRE HYDRANT AND VALVE CONNECTION** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W8-Fire Hydrant and Valve.dwg



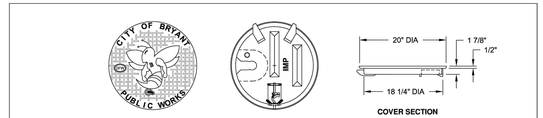
NOTES:

1. THE 6" GATE VALVE SHALL BE POSITIVELY RESTRAINED TO THE MAIN BY THE USE OF EITHER A SWIVEL TEE OR FOSTER ADAPTER.
2. FIRE HYDRANTS SHALL BE DESIGNED FOR A MINIMUM 48" BURY.
3. EXTENSIONS SHALL BE WATEROUS K562 OR MUELLER A-320 WITH NO MORE THAN ONE EXTENSION PER HYDRANT.
5. IF SIDEWALK IS PRESENT, HYDRANT SHALL BE INSTALLED 2' MINIMUM BEHIND THE BACK OF THE SIDEWALK OR CURB. VALVES SHALL BE INSTALLED 1' MINIMUM BEHIND THE BACK OF THE SIDEWALK OR CURB.
6. DO NOT COVER UP WEEP HOLE WITH CONCRETE.
7. MJ RETAINER GLANDS ARE REQUIRED FOR ALL FITTINGS.
7. 6" DUCTILE IRON PIPE IS REQUIRED FOR ALL FIRE HYDRANT LEADS GREATER THAN 48-INCHES FROM THE MAIN VALVE.
8. AN ADDITIONAL GUARDIAN VALVE IS REQUIRED FOR ALL FIRE HYDRANT LEADS GREATER THAN 30 FEET IN LENGTH.

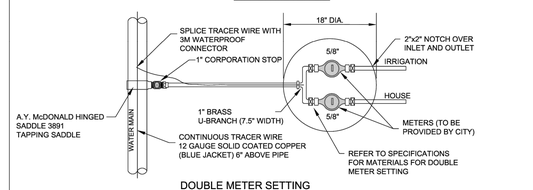


CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W9
DESCRIPTION: **FIRE HYDRANT PLACEMENT** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W9-Fire Hydrant Placement.dwg

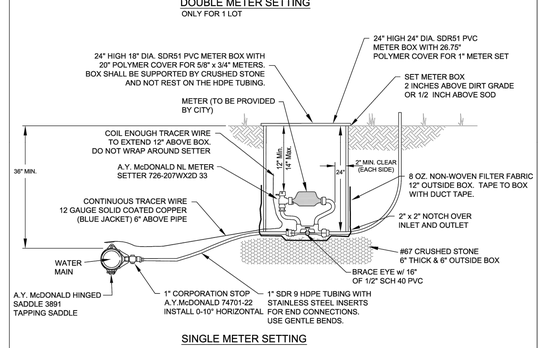


WATER METER LID



DOUBLE METER SETTING

ONLY FOR 1 LOT



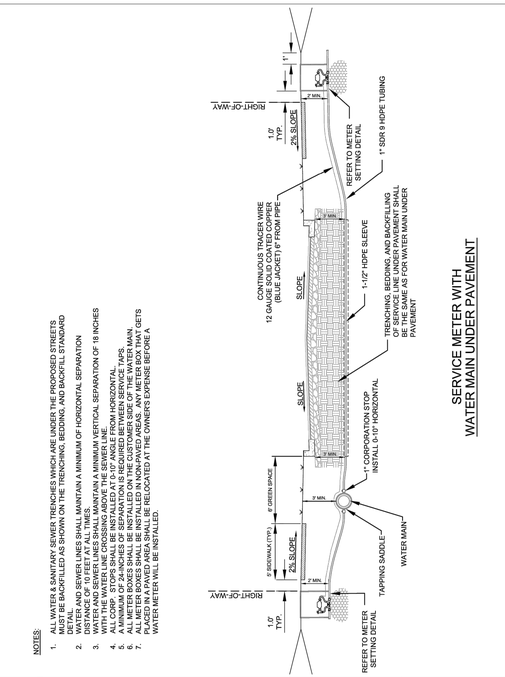
SINGLE METER SETTING

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W10
DESCRIPTION: **METER SETTINGS** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W10-Meter Settings.dwg

NOTES:

1. ALL WATER & SANITARY SEWER TRENCHES WHICH ARE UNDER THE PROPOSED STREETS MUST BE BACKFILLED AS SHOWN ON THE TRENCHING, BEDDING, AND BACKFILL STANDARD DETAILS.
2. WATER AND SEWER LINES SHALL MAINTAIN A MINIMUM OF HORIZONTAL SEPARATION OF 18 INCHES BETWEEN THE OUTSIDE OF PIPE AND THE SEWER LINE.
3. WATER AND SEWER LINES SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18 INCHES WITH THE WATER LINE CROSSING ABOVE THE SEWER LINE.
4. A MINIMUM OF 24-INCHES OF SEPARATION IS REQUIRED BETWEEN SERVICE TAPS.
5. A MINIMUM OF 24-INCHES OF SEPARATION IS REQUIRED BETWEEN SERVICE TAPS.
6. ALL METER BOXES SHALL BE INSTALLED IN NON-PAVED AREAS. ANY METER BOX THAT GETS PLACED IN A PAVED AREA SHALL BE RELOCATED AT THE OWNER'S EXPENSE BEFORE A WATER METER WILL BE INSTALLED.



SERVICE METER WITH WATER MAIN UNDER PAVEMENT

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0468

TITLE: **WATER DETAILS** | DATE: APRIL 2015 | SHEET: W11
DESCRIPTION: **METER SERVICE LINE UNDER PAVEMENT** | REVISED
DRAWN BY: | CHECKED BY: | FILE: W11-Meter Service Line Under Pavement.dwg

RICHARDSON ENGINEERING
Planning • Engineering • Development Consulting
325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

CERTIFICATE OF AUTHORIZATION
Richardson Engineering, PLLC
No. 2519
ARKANSAS

MISC. DETAILS
ZYAIR ESTATES SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

EMINENT CONSTRUCTIONS

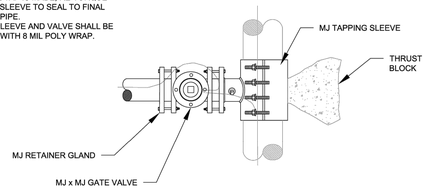
Prepared For:

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	9/22/2026

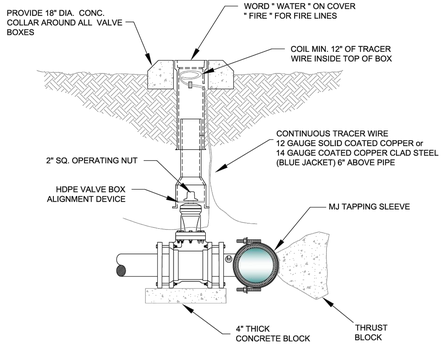
PROJECT NO.: 024-034
Date: 3/3/2026
9/22/2026
Scale: NTS
Sheet: 22 of 26

NOTES:

1. TAPPING SLEEVE SHALL BE SMITH-BLAIR 662 OR FORD FAST.
2. AFTER THE TAP IS MADE, RE-TORQUE BOLTS ON SLEEVE TO SEAL TO FINAL SHAPE OF PIPE.
3. TAPPING SLEEVE AND VALVE SHALL BE WRAPPED WITH 8 MIL POLY WRAP.

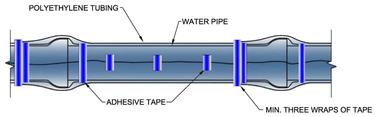


PLAN VIEW



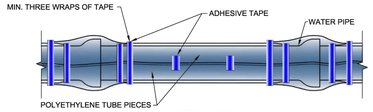
PROFILE VIEW

CITY OF BRYANT, AR	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES	DESCRIPTION: TAPPING SLEEVE AND VALVE	REVISED	W13
210 S.W. 3rd. STREET		-----	
BRYANT, AR		-----	
PHONE: (501) 943-0468	DRAWN BY: CHECKED BY: FILE: W13-Tapping Sleeve and Valve.dwg	-----	



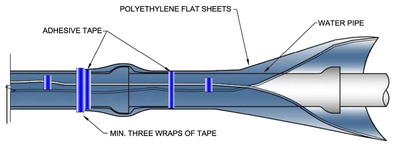
METHOD 'A'

METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS A MINIMUM OF 2 FEET.



METHOD 'B'

METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. SHORT PIECES SHALL BE APPROXIMATELY 6' LONG AND OVERLAP BARREL SECTION BY A MINIMUM OF 2 FEET.



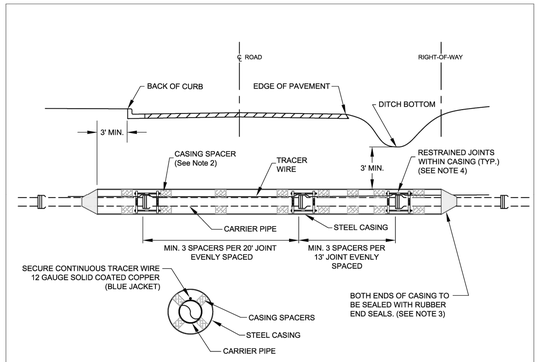
METHOD 'C'

METHOD 'C' - USED FOR PIPE-SHAPED AND ODD- SHAPED APPURTENANCES SUCH AS BENDS, REDUCERS, OFFSETS, VALVES, TEES, ETC.

ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE POLY WRAPPED.

THE ANSI/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASEMENT/ SLEEVING.

CITY OF BRYANT, AR	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES	DESCRIPTION: POLYETHYLENE PROTECTION MATERIAL	REVISED	W14
210 S.W. 3rd. STREET		-----	
BRYANT, AR		-----	
PHONE: (501) 943-0468	DRAWN BY: CHECKED BY: FILE: W14-Poly Wrap.dwg	-----	



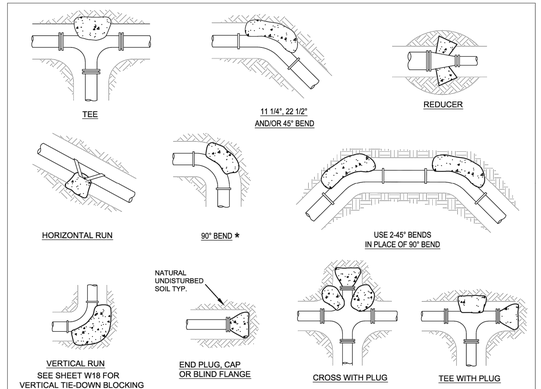
NOTES:

1. STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL WITH A MINIMUM DIAMETER AND THICKNESS AS SHOWN BELOW (SEE TABLE).
2. PROVIDE CASING SPACERS BY CASCADE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
3. PROVIDE END SEALS BY CASCADE MODEL CCES AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
4. WHERE ENCASEMENTS ARE GREATER THAN 25 FEET IN LENGTH, SELF-RESTRAINING GASKETS OR BELL RESTRAINTS SHALL BE USED FOR ALL JOINTS INSIDE THE ENCASEMENT PIPE AND FOR THE FIRST JOINT IN EACH DIRECTION OUTSIDE THE ENCASEMENT PIPE.
5. BELL RESTRAINTS FOR PVC SHALL BE SERIES1900 RESTRAINT HARNESS AND BELL RESTRAINTS FOR DIP SHALL BE SERIES 1700 RESTRAINT HARNESS BY EBAA IRON INC., OR APPROVED EQUAL.
6. DIRECT BURY STEEL ENCASEMENT SHALL BE POLY WRAPPED.
7. JACK AND BORE STEEL ENCASEMENT SHALL HAVE 178 HP MAGNESIUM ANODES CAD WELDED TO THE END OF THE ENCASEMENT PIPE.

CARRIER AND CASING SIZES							
CARRIER (ID)	2"	3"	4"	6"	8	10"	12"
CASING (OD)	5"	6"	8"	12"	16"	20"	24"
CASING WALL THICKNESS	0.250	0.250	0.250	0.250	0.250	0.250	0.375
CARRIER (ID)	14" - 16"	18" - 20"	24"	30"	36"	42"	48"
CASING (ID)	30"	36"	42"	48"	54"	60"	72"
CASING WALL THICKNESS	0.375	0.500	0.625	0.625	0.625	0.625	0.750

STEEL ENCASEMENT

CITY OF BRYANT, AR	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES	DESCRIPTION: STEEL ENCASEMENT	REVISED	W15
210 S.W. 3rd. STREET		-----	
BRYANT, AR		-----	
PHONE: (501) 943-0468	DRAWN BY: CHECKED BY: FILE: W15-Steel Encasement.dwg	-----	



THRUST BLOCK SCHEDULE

(2000 PSF SOIL, 200 PSI WATER PRESSURE, 100 PSI WATER HAMMER)

FITTING SIZE	PLUG TEE OR CAP	BEARING AREA OF THRUST BLOCKS IN SQ. FT (HORIZONTAL BENDS) BEND ANGLE 90° *	45°	22 1/2°	11 1/4°	FITTING SIZE	VOLUME OF THRUST BLOCK IN CU. FEET (VERTICAL BENDS) BEND ANGLE 90° *	45°	22 1/2°	11 1/4°	IN/O DIAM.	EMBED MENT
2, 3, & 4	1.9	2.7	1.4	0.7	0.4	2, 3, & 4	35.5	19.2	9.8	4.9	50"	30"
6	5.6	7.9	4.3	2.2	1.1	6	105.8	57.2	29.2	14.7	70"	30"
8	9.6	13.9	7.4	3.8	1.9	8	181.9	98.5	50.2	25.2	75"	30"
12	20.5	29.0	15.7	8.0	4.0	12	387.1	209.5	106.8	53.7	1.0"	30"
16	35.7	50.4	27.3	13.9	7.0	16	672.8	364.0	185.6	93.2	1.0"	36"
18	44.8	63.4	34.3	17.5	18.8	18	844.7	457.2	233.1	117.1	1.0"	36"
24	78.4	110.9	60.0	30.6	15.4	24	1478.7	800.3	408.0	205.0	1.5"	36"

* 90 DEGREE BENDS SHALL ONLY BE USED ON A BY-EXCEPTION BASIS, AND MUST EACH BE SPECIFICALLY APPROVED BY CITY.

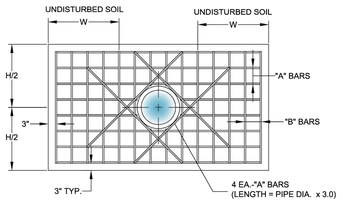
THRUST BLOCK NOTES:

1. CONCRETE FOR THRUST BLOCKS - CLASS A CONCRETE SHALL DEVELOP NOT LESS THAN 3000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAYS AND BE PLACED AGAINST UNDISTURBED SOIL.
2. ALL BENDS, BOTH HORIZONTAL AND VERTICAL, SHALL BE BACKED WITH CONCRETE. VERTICAL BENDS SHALL BE PLACED ON CONCRETE PADS WHERE BENDS TURN UP, OR LOADED WHERE BENDS TURN DOWN.
3. WRAP PIPE JOINTS IN 8 MIL "POLYETHLENE" BEFORE PLACING CONCRETE.
4. BEARING AREA SHOWN IN TABLE, IS BASED UPON A 2000 LB/SF. SOIL BEARING, AND UPON A PIPELINE PRESSURE OF 200 psi. PLUS 100 psi. WATER HAMMER. AREAS SHOWN SHALL BE ADJUSTED, SHOULD FIELD CONDITIONS VARY.
5. MJ RESTRAINTS ARE REQUIRED FOR ALL FITTINGS.
6. USE LONG-RADIUS FITTINGS WHEREVER POSSIBLE.
7. ALL BOLTS FOR FITTINGS SHALL BE 316 STAINLESS STEEL.
8. ALL DUCTILE IRON FITTINGS SHALL BE FUSION-BONDED EPOXY COATED INSIDE AND OUTSIDE IN ACCORDANCE WITH ANSI/AWWA C116/A21.16.
9. UNIT WEIGHT OF CONCRETE FOR VERTICAL THRUST BLOCKS IS 150 LBS/CU. FT.

THRUST BLOCKING

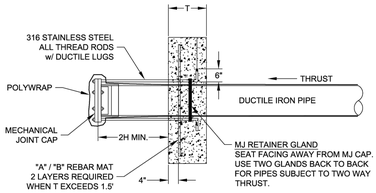
CITY OF BRYANT, AR	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES	DESCRIPTION: THRUST BLOCKING	REVISED	W16
210 S.W. 3rd. STREET		-----	
BRYANT, AR		-----	
PHONE: (501) 943-0468	DRAWN BY: CHECKED BY: FILE: W16-Thrust Blocking.dwg	-----	

ANCHOR COLLAR SCHEDULE					
PIPE SIZE	* MINIMUM DIMENSIONS * W	H	T	REINFORCING BARS "A" BARS	"B" BARS
6"	1.5'	2.0'	1.0'	#5 @ 6"	#6 @ 6"
8"	2.0'	2.5'	1.0'	#5 @ 6"	#6 @ 6"
12"	2.5'	4.0'	1.5'	#6 @ 6"	#6 @ 6"
16"	3.5'	5.0'	1.5'	#6 @ 6"	#6 @ 6"
20"	5.0'	5.5'	2.0'	#6 @ 6"	#6 @ 6"
24"	6.5'	6.0'	2.0'	#7 @ 6"	#7 @ 10"

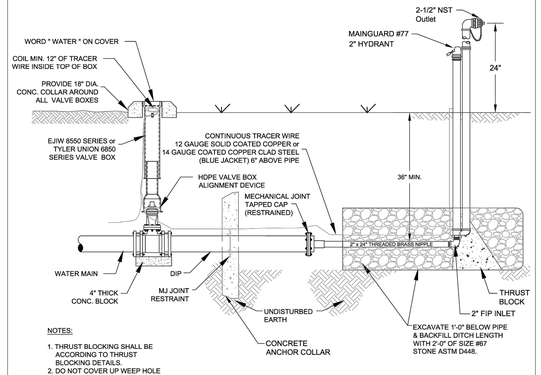


NOTES:

1. DESIGN PRESSURE IS 200 PSI PLUS 100 PSI SURGE AND 2,000 PSI SOIL BEARING.
2. ALL DIMENSIONS ARE MINIMUM REQUIREMENTS. ACTUAL FIELD CONDITIONS MAY REQUIRE LARGER DIMENSIONS.
3. ALL RETAINER GLANDS SHALL BE MEGA-LUG BY EBAA IRON.



CITY OF BRYANT, AR	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES	DESCRIPTION: ANCHOR COLLAR	REVISED	W18
210 S.W. 3rd. STREET		-----	
BRYANT, AR		-----	
PHONE: (501) 943-0468	DRAWN BY: CHECKED BY: FILE: W18-Anchor Collar.dwg	-----	

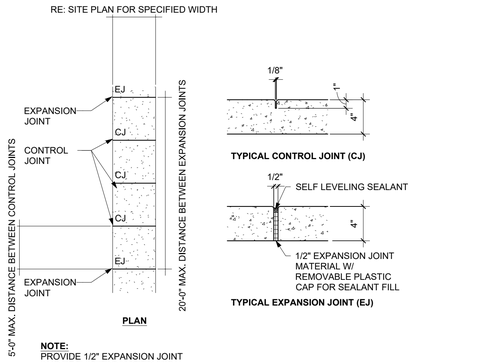


NOTES:

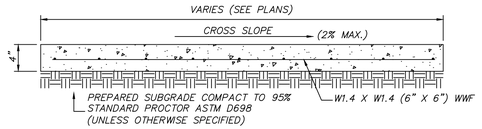
1. THRUST BLOCKING SHALL BE ACCORDING TO THRUST BLOCKING DETAILS.
2. DO NOT COVER UP WEEP HOLE WITH CONCRETE.

BLOW-OFF ASSEMBLY

CITY OF BRYANT, AR	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES	DESCRIPTION: BLOW-OFF ASSEMBLY	REVISED	W19
210 S.W. 3rd. STREET		-----	
BRYANT, AR		-----	
PHONE: (501) 943-0468	DRAWN BY: CHECKED BY: FILE: W19-Blow-off Assembly.dwg	-----	



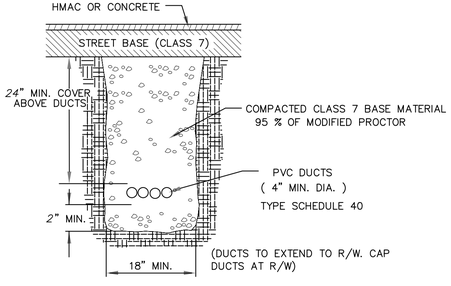
NOTE:
PROVIDE 1/2" EXPANSION JOINT AND SEALANT AS NOTED AND WHERE SIDEWALK ABUTS STRUCTURES OR OTHER SIDEWALKS.



CONCRETE SIDEWALK SPECIFICATIONS

NTS

* NOTES:
1. PORTLAND CEMENT CONCRETE 3000 PSI. MIN.
2. USE W1.4 X W1.4 (6" X 6") WWF SHEET REINFORCEMENT. CUT ½ THE WIRES AT CONTROL JOINTS.
3. CONCRETE TO CONTAIN 3-5% AIR ENTRAINMENT.
4. FINISH TO BE LIGHT BROOM FINISH.
5. DETECTABLE WARNING DEVICES TO BE INSTALLED AT RAMPS PER ADA REQUIREMENTS.
6. MAX CROSS SLOPE 2%. MAX LONGITUDINAL SLOPE 1:12.
7. CONTROL JOINTS PER CONC. WALK CONTROL JOINT DETAIL.



TYPICAL SECTION
4" UTILITY DUCTS

NOT TO SCALE

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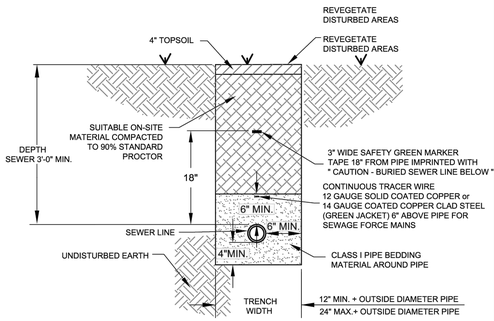
Richardson Engineering, PLLC No. 2519 CERTIFICATE OF AUTHORIZATION ARKANSAS

MISC. DETAILS
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024-034
Date: 3/3/2026
9/22/2026
Scale: NTS
Sheet: 23 of 26



NOTES:

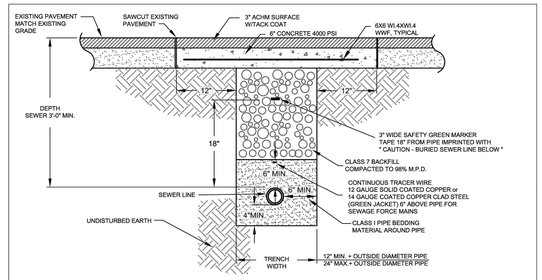
1. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING SEWER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE SEWER SYSTEM.
2. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
3. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36" OF PIPE COVER.

SEWER TRENCH

(NON-PAVED AREA)

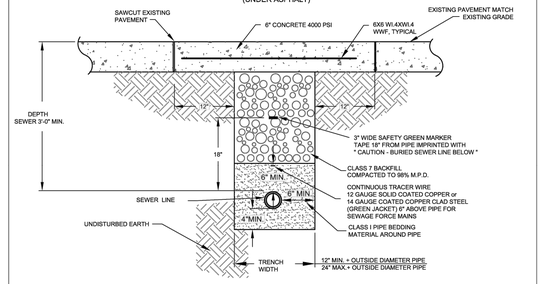
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S1
DESCRIPTION: **SEWER TRENCH (NON-PAVED AREA)** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S1-Sewer Trench (Non-Paved Area).dwg



SEWER TRENCH

(UNDER ASPHALT)



SEWER TRENCH

(UNDER CONCRETE)

NOTES:

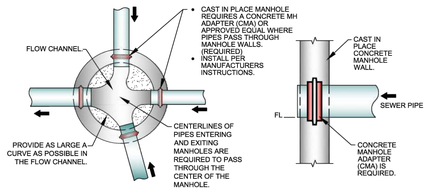
1. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING SEWER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE SEWER SYSTEM.
2. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
3. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36" OF PIPE COVER.

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S2
DESCRIPTION: **SEWER TRENCH (UNDER PAVEMENT)** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S2-Sewer Trench (Under Pavement).dwg

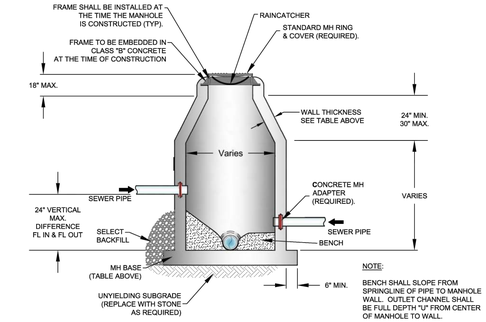
Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Ring & Cover Size
4' DIA	6"	6"	24" (< or Equal to 24" Pipes)
5' DIA	8"	8"	
6' DIA	8"	12"	36" (> 24" Pipes)

MANHOLE INFORMATION TABLE



MANHOLE FLOW CHANNEL

CONCRETE MANHOLE ADAPTER (CMA) DETAIL



NOTE:
BENCH SHALL SLOPE FROM SPRINGLINE OF PIPE TO MANHOLE WALL. OUTLET CHANNEL SHALL BE FULL DEPTH "U" FROM CENTER OF MANHOLE TO WALL.

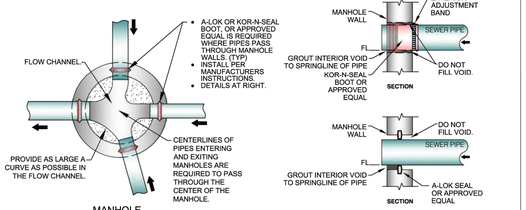
CAST-IN-PLACE MANHOLE

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S4
DESCRIPTION: **CAST-IN-PLACE MANHOLE** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S4-Cast in Place Manhole.dwg

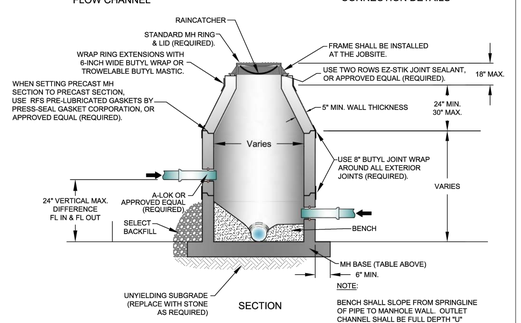
Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Ring & Cover Size
4' DIA	5"	6"	24" (< or Equal to 24" Pipes)
5' DIA	7"	8"	
6' DIA	7"	8"	36" (> 24" Pipes)

MANHOLE INFORMATION TABLE



MANHOLE FLOW CHANNEL

CONNECTION DETAILS



SECTION

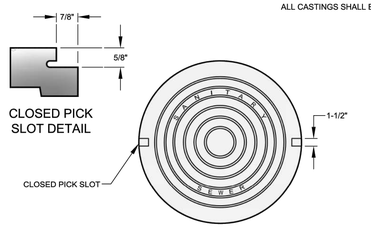
NOTE:
BENCH SHALL SLOPE FROM SPRINGLINE OF PIPE TO MANHOLE WALL. OUTLET CHANNEL SHALL BE FULL DEPTH "U" FROM CENTER OF MANHOLE TO WALL.

PRECAST MANHOLE

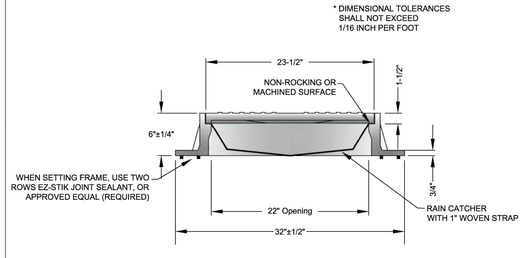
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S5
DESCRIPTION: **PRECAST MANHOLE** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S5-Precast Manhole.dwg

ALL CASTINGS SHALL BE "MADE IN USA"



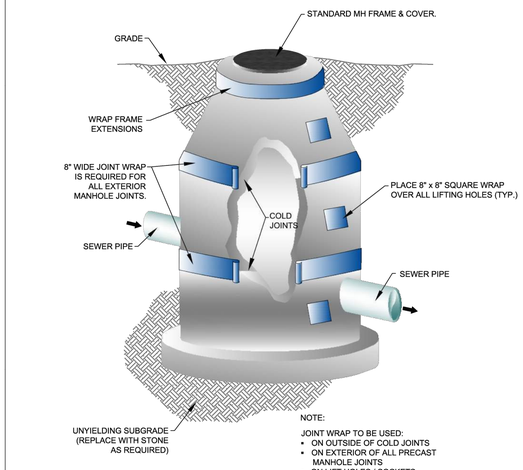
1. MINIMUM WEIGHT OF RING: 100 POUNDS
2. MINIMUM WEIGHT OF COVER: 110 POUNDS
3. COVERS ARE FURNISHED WITH TWO CLOSED PICK SLOTS.
4. CASTINGS SHALL BE "MADE IN USA"



FRAME AND COVER DETAIL

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S6
DESCRIPTION: **MANHOLE FRAME AND COVER** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S6-Manhole Frame and Cover.dwg

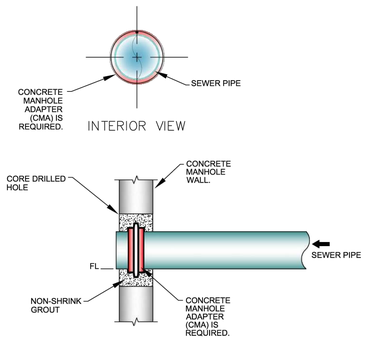


NOTE:
JOINT WRAP TO BE USED:
- ON OUTSIDE OF COLD JOINTS
- ON EXTERIOR OF ALL PRECAST MANHOLE JOINTS
- ON LIFT HOLES / SOCKETS

MANHOLE JOINT WRAP

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S9
DESCRIPTION: **MANHOLE JOINT WRAP** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S9-Manhole Joint Wrap.dwg



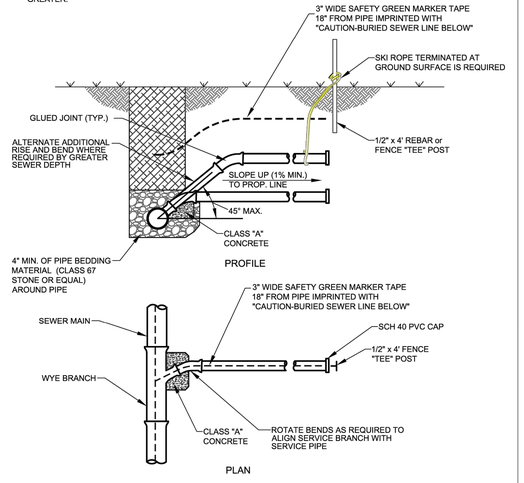
MANHOLE CORING DETAILS

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S11
DESCRIPTION: **MANHOLE CORING** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S11-Manhole Coring.dwg

NOTES:

1. MODIFIED RISER LATERAL SHALL BE USED WHEN DEPTH OF COVER EXCEEDS 7'-0"
2. PLACE CLASS "A" CONCRETE UNDER EACH WYE BRANCH TO PREVENT CRACKING OR TWISTING UNDER EARTH LOADS.
3. SERVICE LATERAL STUBS SHALL TERMINATE AT LEAST 2 FEET INSIDE THE PROPERTY LINE BUT IN NO CASE SHALL THE SERVICE LATERAL STUB TERMINATE AT A DISTANCE LESS THAN 8 FEET FROM THE SANITARY SEWER MAIN.
4. BURY A 1/2" x 4' STEEL TEE FENCE POST AT END OF SERVICE LATERAL STUB AND BACKFILL TO FINISHED GRADE OF PROPERTY.
5. 4" DUCTILE IRON PIPE, LINED FOR SANITARY SEWER AND 4" DUCTILE IRON M.J. FITTINGS, LINED FOR SANITARY SEWER, SHALL BE INSTALLED FOR SERVICES BURIED AT DEPTHS OF 14 FEET AND GREATER.



SEWER SERVICE LATERAL

CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 943-0488

TITLE: **SEWER DETAILS** | DATE: APRIL 2015 | SHEET: S15
DESCRIPTION: **SEWER SERVICE LATERAL** | REVISED: -----
DRAWN BY: | CHECKED BY: | FILE: S15-Sewer Service Lateral.dwg

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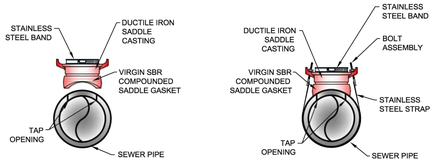
Richardson Engineering, PLLC No. 2519 — CERTIFICATE OF AUTHORIZATION — ARKANSAS

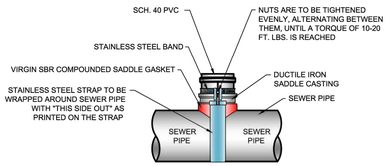
MISC. DETAILS
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	9/22/2026

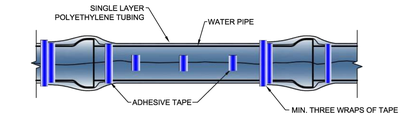
PROJECT NO.: 024-034
Date: 3/3/2026 9/22/2026
Scale: NTS
Sheet: 24 of 26





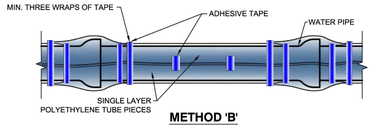
SEWER SERVICE SADDLE

CITY OF BRYANT, AR	TITLE: SEWER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES 210 S.W. 3rd. STREET BRYANT, AR PHONE: (501) 943-0468	DESCRIPTION: SEWER SERVICE SADDLE	REVISED ----- ----- ----- -----	S17
	DRAWN BY: CHECKED BY: FILE: S17-Sewer Service Saddle.dwg	-----	



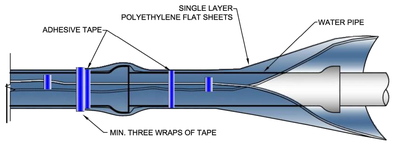
METHOD 'A'

METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS A MINIMUM OF 2 FEET.



METHOD 'B'

METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. SHORT PIECES SHALL BE APPROXIMATELY 6' LONG AND OVERLAP BARREL SECTION BY A MINIMUM OF 2 FEET.



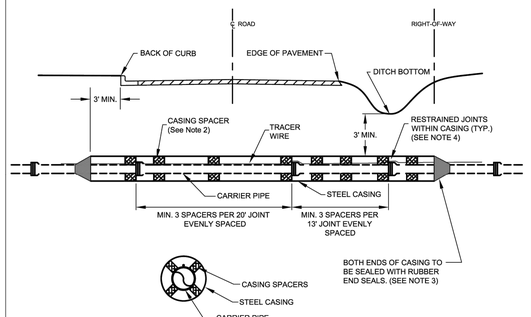
METHOD 'C'

METHOD 'C' - USED FOR PIPE-SHAPED AND ODD- SHAPED APPURTENANCES SUCH AS BENDS, REDUCERS, OFFSETS, VALVES, TEES, ETC.

ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE POLY WRAPPED.

THE ANSI/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASEMENT/ SLEEVING.

CITY OF BRYANT, AR	TITLE: SEWER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES 210 S.W. 3rd. STREET BRYANT, AR PHONE: (501) 943-0468	DESCRIPTION: POLYETHYLENE PROTECTION MATERIAL	REVISED ----- ----- ----- -----	S20
	DRAWN BY: CHECKED BY: FILE: S20-Poly Wrap.dwg	-----	



NOTES:

1. STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL WITH A MINIMUM DIAMETER AND THICKNESS AS SHOWN BELOW (SEE TABLE).
2. PROVIDE CASING SPACERS BY CASCADE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL, MINIMUM 13-INCHES WIDE.
3. PROVIDE END SEALS BY CASCADE MODEL CCES AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
4. ONE CASING SPACER SHALL BE PLACED AT THE INSERTION STOP LINE TO RESIST OVER INSERTION.
5. ALL FORCE MAINS SHALL BE FULLY RESTRAINED WHERE ENCASEMENTS ARE GREATER THAN 25 FEET IN LENGTH, SELF-RESTRAINING GASKETS OR BELL RESTRAINTS SHALL BE USED FOR ALL JOINTS INSIDE THE ENCASEMENT PIPE AND FOR THE FIRST JOINT IN EACH DIRECTION OUTSIDE THE ENCASEMENT PIPE.
6. DIRECT BURY STEEL ENCASEMENT SHALL BE POLY WRAPPED.

CARRIER AND CASING SIZES

CARRIER (ID)	2"	3"	4"	6"	8	10"	12"
CASING (ID)	5"	6"	8"	12"	16"	20"	24"
CASING WALL THICKNESS	0.250	0.250	0.250	0.250	0.250	0.250	0.375
CARRIER (ID)	14" - 16"	18" - 20"	24"	30"	36"	42"	48"
CASING (ID)	30"	36"	42"	48"	54"	60"	72"
CASING WALL THICKNESS	0.375	0.500	0.625	0.625	0.625	0.625	0.750

STEEL ENCASEMENT

CITY OF BRYANT, AR	TITLE: SEWER DETAILS	DATE: APRIL 2015	SHEET:
WATER UTILITIES 210 S.W. 3rd. STREET BRYANT, AR PHONE: (501) 943-0468	DESCRIPTION: STEEL ENCASEMENT	REVISED ----- ----- ----- -----	S21
	DRAWN BY: CHECKED BY: FILE: S21-Steel Encasement.dwg	-----	

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Richardson Engineering, PLLC
No. 2519
ARKANSAS

MISC. DETAILS
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

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3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024-034
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Sheet: 25 of 26

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TRACT 2
28519 SQ. FT.
0.65 ACRES

TRACT 1
OPEN SPACE / RECREATION AREA
137356 SQ. FT.
3.15 ACRES

TRACT 3
RECREATION AREA
11023 SQ. FT.
0.25 ACRES

| | | |

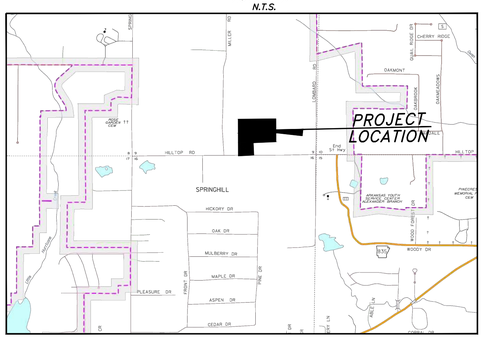
DETAILED PLANS:

ZYAIR ESTATES SUBDIVISION

PART OF THE SOUTHWEST $\frac{1}{4}$ OF THE SOUTHEAST $\frac{1}{4}$, SECTION 9, T-1-S, R-14-W
SALINE COUNTY, ARKANSAS

3/3/2026
REV:9/22/2026

VICINITY MAP
N.T.S.



Prepared By:

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting
325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

PREPARED FOR:

EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

STATE OF ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
No. 14266
ERIC RYAN RICHARDSON
09/22/2026

PRE-CONSTRUCTION COPY -

PLANS FOR BIDDING PURPOSES. QUANTITIES TO BE VERIFIED PRIOR TO CONSTRUCTION. CONTRACTOR TO VERIFY GRADES WITH ENGINEER PRIOR TO CONSTRUCTION.

INDEX OF SHEETS

Cover Sheet	*1*
Street & Drainage Plan	*2*
Street Plan/Profile	*3-9*
Detention Pond Grading	*10*
Utility Plan	*11*
Sewer Plan/Profile	*12-18*
Erosion Control	*19-19B*
Misc. Details	*20-25*
Street signs & lights plan	*26*

PROPOSED ROAD TO TERMINATE AT GATE TO WATER TOWER

WATER TANK

WATER TANK

TRACT 2 28519 SQ. FT. 0.65 ACRES

ROAD 1 & 3 INTERSECTION STA:1+61.13

ROAD 3 & 4 INTERSECTION STA:2+91.00

ROAD 3 & 5 INTERSECTION STA:9+18.47

ROAD 1 & 2 INTERSECTION STA:5+55.29

ROAD 2 & 4 INTERSECTION STA:2+90.58

ROAD 2 & 5 INTERSECTION STA:0+82.24

ROAD INTERSECTION STA:0+00.00 N:2031773.3 E:1160719.8

ROAD 1 (10+00)

ROAD 2 (4+00)

ROAD 3 (5+00)

ROAD 4 (4+00)

ROAD 5 (4+00)

EMERGENCY ACCESS ROAD (GRAVEL)

S89°04'37"E 515.30

S63°56'07"E 21.28

S86°19'45"E 395.99

S88°58'51"E 910.79

N19°59'54"E 686.49

N12°00'24"E 565.28

N11°59'23"E 687.99

832 LF OF FENCING TO MEET CITY OF BRYANT REQUIREMENTS.

TRACT 1 OPEN SPACE / RECREATION AREA 137356 SQ. FT. 3.15 ACRES

TRACT 3 RECREATION AREA 11023 SQ. FT. 0.25 ACRES

Curve Table				
Curve #	Length	Radius	Chord Direction	Chord Length
C1	38.95	25.00	N46° 17' 39"E	35.13
C2	39.59	25.00	S43° 42' 21"E	35.58
C3	38.99	25.00	S46° 20' 32"W	35.16
C4	39.55	25.00	N43° 39' 28"W	35.55
C5	29.22	25.00	N54° 51' 34"W	552.73
C6	9.97	25.00	N9° 57' 03"W	552.13
C7	43.89	175.00	N8° 39' 24"E	43.78
C8	54.20	225.00	N8° 56' 27"E	54.07
C9	38.82	25.00	N46° 31' 46"E	35.04
C20	39.56	25.00	S43° 39' 09"E	35.56
C23	38.98	25.00	N46° 20' 51"E	35.15
C27	39.27	25.00	N43° 19' 38"W	35.36
C29	95.80	225.00	N76° 07' 58"W	95.08
C31	69.00	175.00	N77° 46' 51"W	68.56
C34	38.95	25.00	S46° 17' 39"W	35.13
C42	39.55	25.00	S43° 39' 28"E	35.55
C49	39.27	25.00	N46° 40' 22"E	35.35
C50	66.72	225.00	S80° 33' 00"E	66.48
C51	11.82	225.00	S70° 32' 58"E	11.82
C52	27.81	175.00	S68° 29' 17"E	27.78

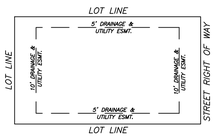
Curve Table				
Curve #	Length	Radius	Chord Direction	Chord Length
C53	46.70	175.00	S80° 41' 07"E	46.56
C54	42.16	175.00	S8° 56' 27"W	42.06
C55	56.44	225.00	S8° 39' 24"W	56.29
C56	38.28	25.00	S45° 20' 12"W	34.65
C58	85.15	200.00	S76° 07' 58"E	84.51
C59	87.76	200.00	S76° 30' 22"E	87.06
C64	50.17	200.00	S8° 39' 24"W	50.03
C65	48.18	200.00	S8° 56' 27"W	48.06

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TYPICAL LOT EASEMENTS

LEGEND

- STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- STREET LIGHT
- ADA APPROVED HANDICAP RAMP

LEGEND

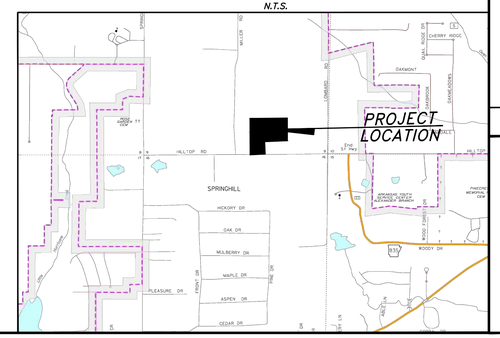
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- FIRE HYDRANT
- * ADA RAMP
- CURB INLET
- FES
- POWER POLE

GRAPHIC SCALE

60 0 60 120 180

(IN FEET)
1 inch = 60 ft.

VICINITY MAP
N.T.S.



ENGINEER
RICHARDSON ENGINEERING, PLLC
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SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

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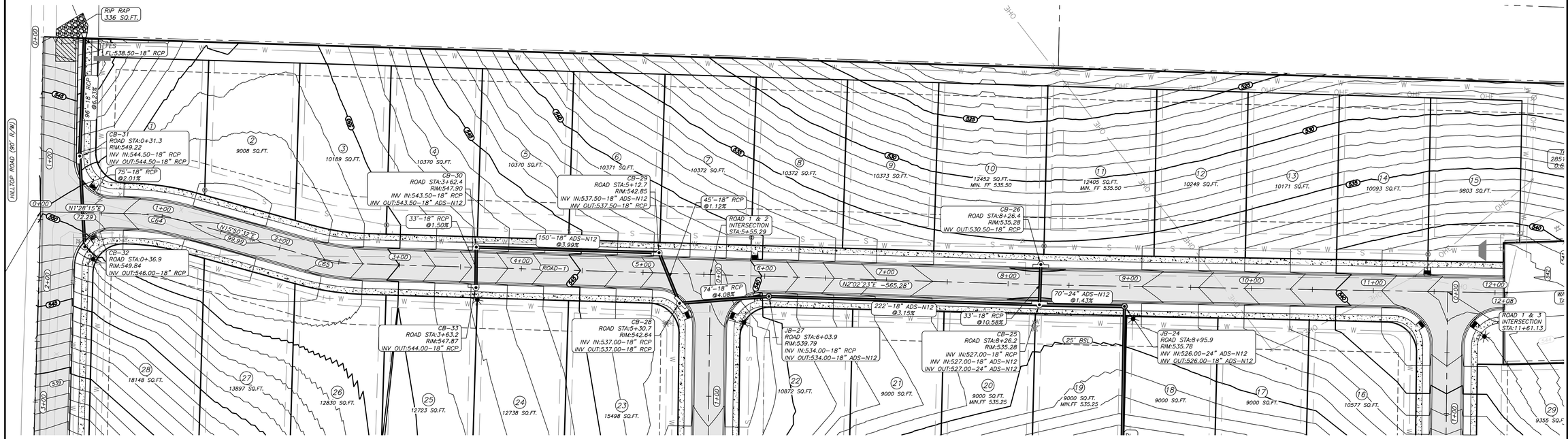
CERTIFICATE OF AUTHORIZATION
Richardson Engineering, PLLC
No. 2519
ARKANSAS

OVERALL STREET AND DRAINAGE PLAN
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS 4/15/26	4/17/2026
2	CITY COMMENTS 4/15/26	4/20/2026
3	REDESIGN ROAD PROFILES	4/20/2026

PROJECT NO.: 024-034
Date: 3/3/2026 REV:9/22/2026
Scale: 1" = 60'
Sheet: 2 of 26



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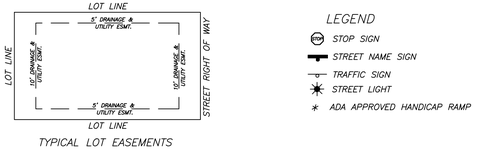
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DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022



TYPICAL LOT EASEMENTS

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LEGEND

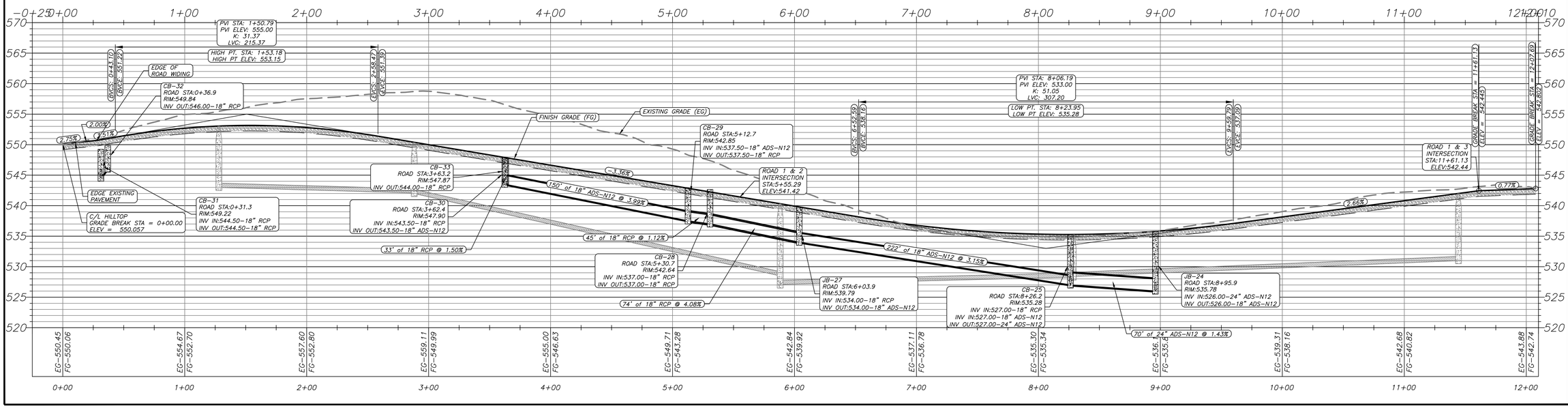
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- FES
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- FIRE HYDRANT
- POWER POLE

GRAPHIC SCALE

40 0 40 80 120

(IN FEET)
1 inch = 40 ft.

ROAD–1 PROFILE



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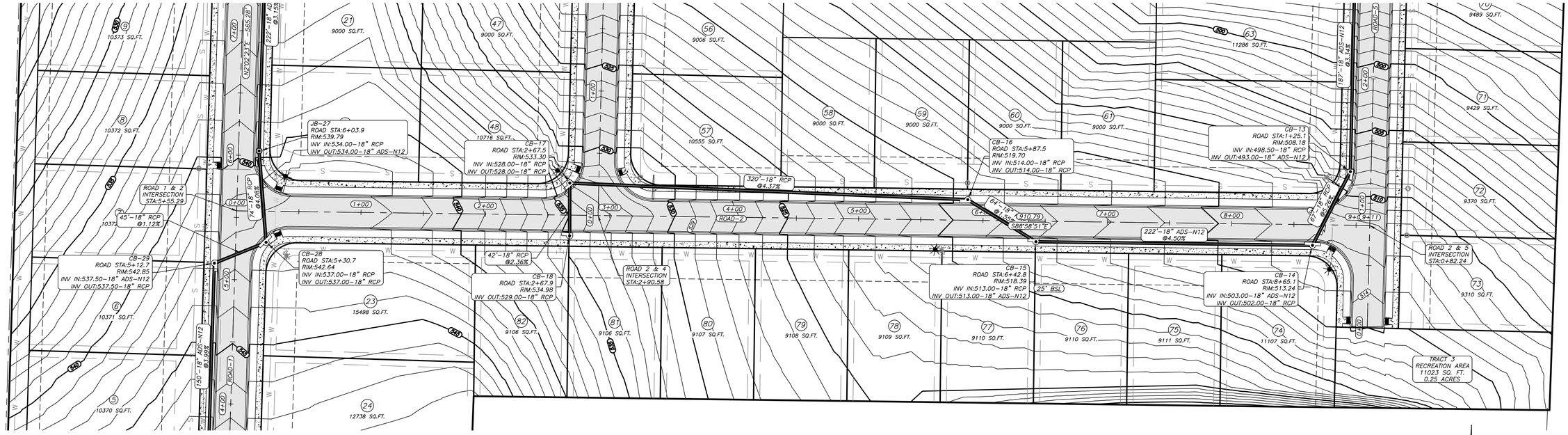
CERTIFICATE OF AUTHORIZATION
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ARKANSAS

ROAD 1 PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/20/2026
3	REDESIGN ROAD PROFILES	5/20/2026

PROJECT NO.: 024–034
Date: 3/3/2026
REV:9/22/2026
Scale: 1" = 40'
Sheet: 3 of 26



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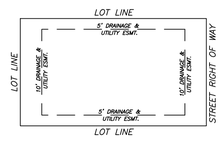
ENGINEER
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DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
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TYPICAL LOT EASEMENTS

LEGEND

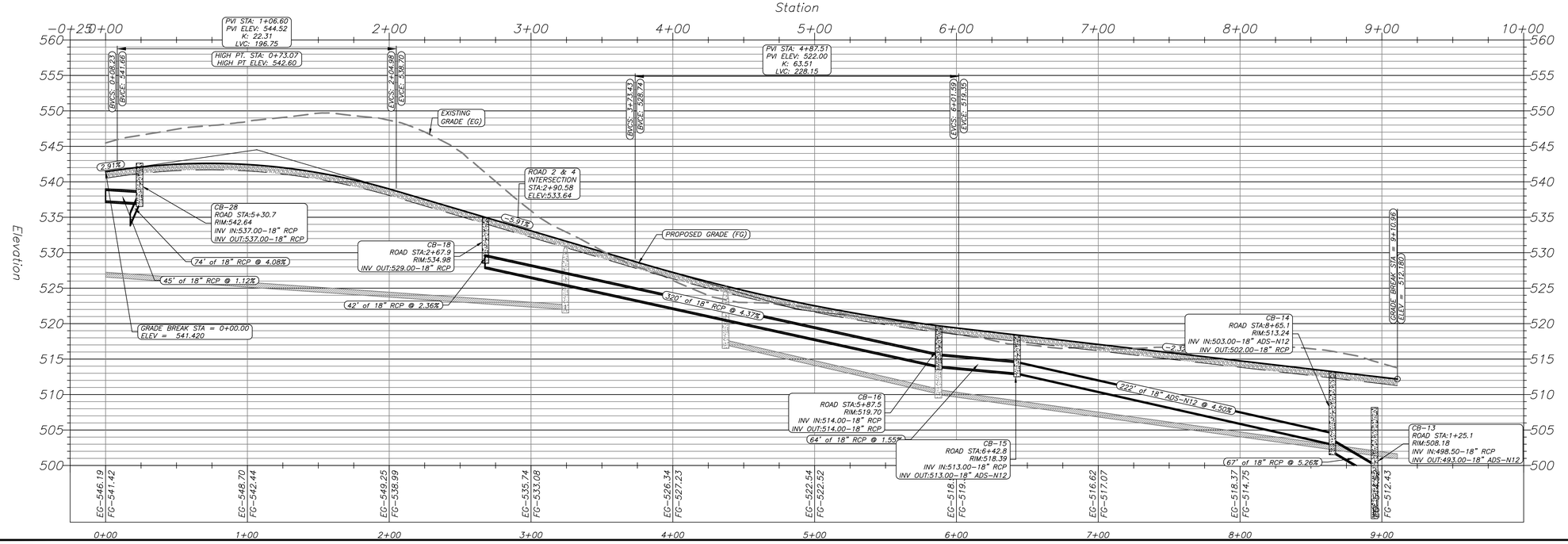
- STOP SIGN
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GRAPHIC SCALE

40 0 40 80 120

(IN FEET)
1 inch = 40 ft.

ROAD-2 PROFILE



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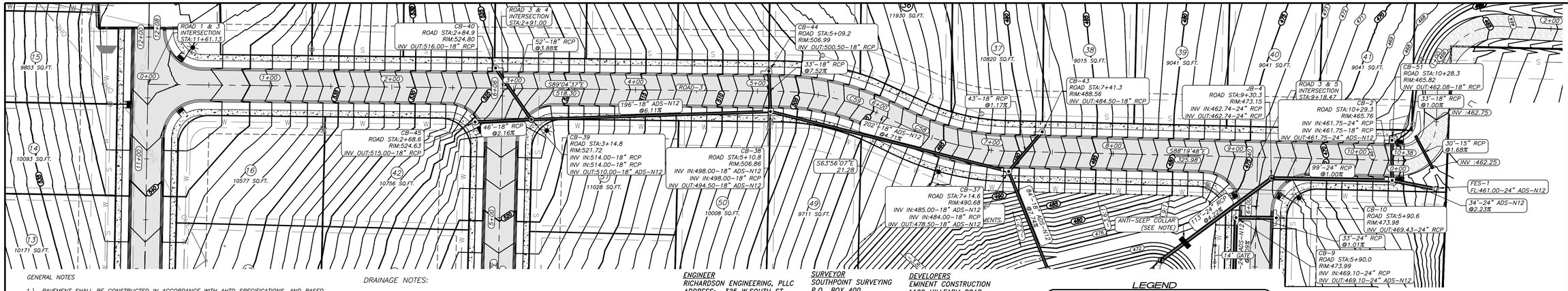
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ROAD 2 PLAN & PROFILE
ZYAIR ESTATES
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Scale: 1" = 40'
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DEVELOPERS
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1100 HILLFARM ROAD
BRYANT, AR 72022

LEGEND

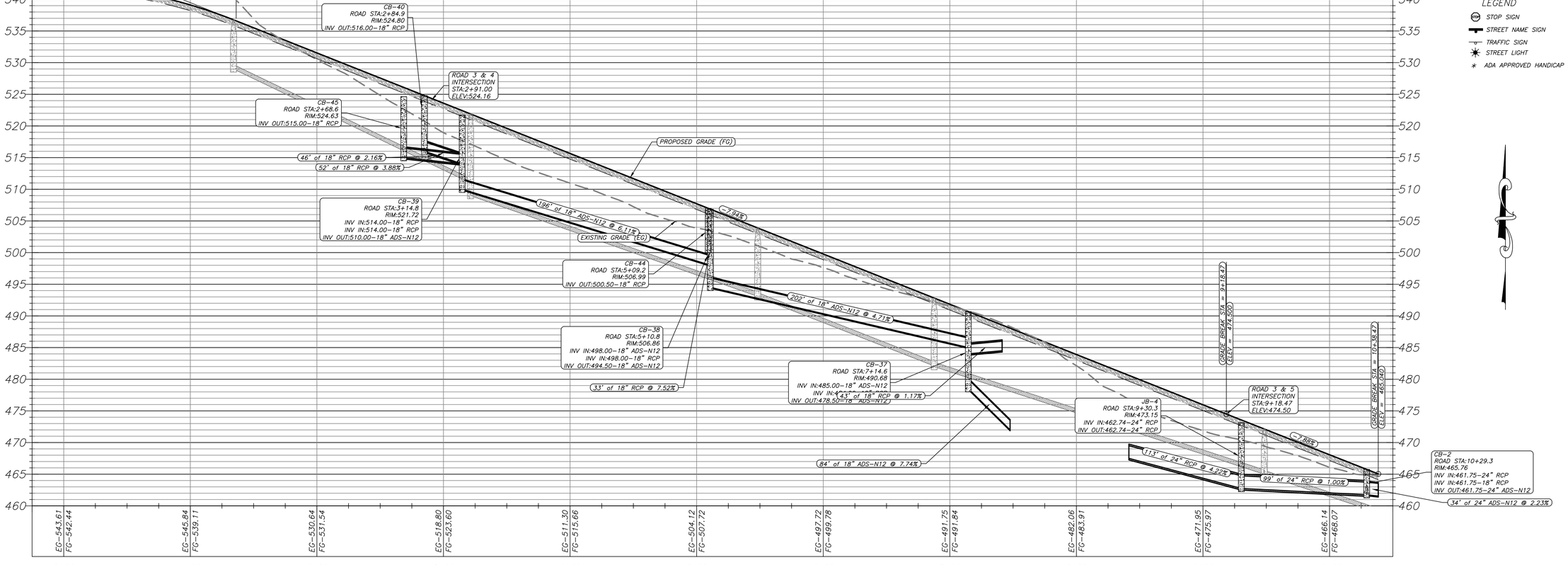
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GRAPHIC SCALE

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1 inch = 40 ft.

LOT LINE
5' DRAINAGE & UTILITY EASEMENT
10' DRAINAGE & UTILITY EASEMENT
STREET RIGHT OF WAY
TYPICAL LOT EASEMENTS

ROAD-3 PROFILE



LEGEND

STOP SIGN
STREET NAME SIGN
TRAFFIC SIGN
STREET LIGHT
ADA APPROVED HANDICAP RAMP

RICHARDSON ENGINEERING
Planning • Engineering • Development Consulting
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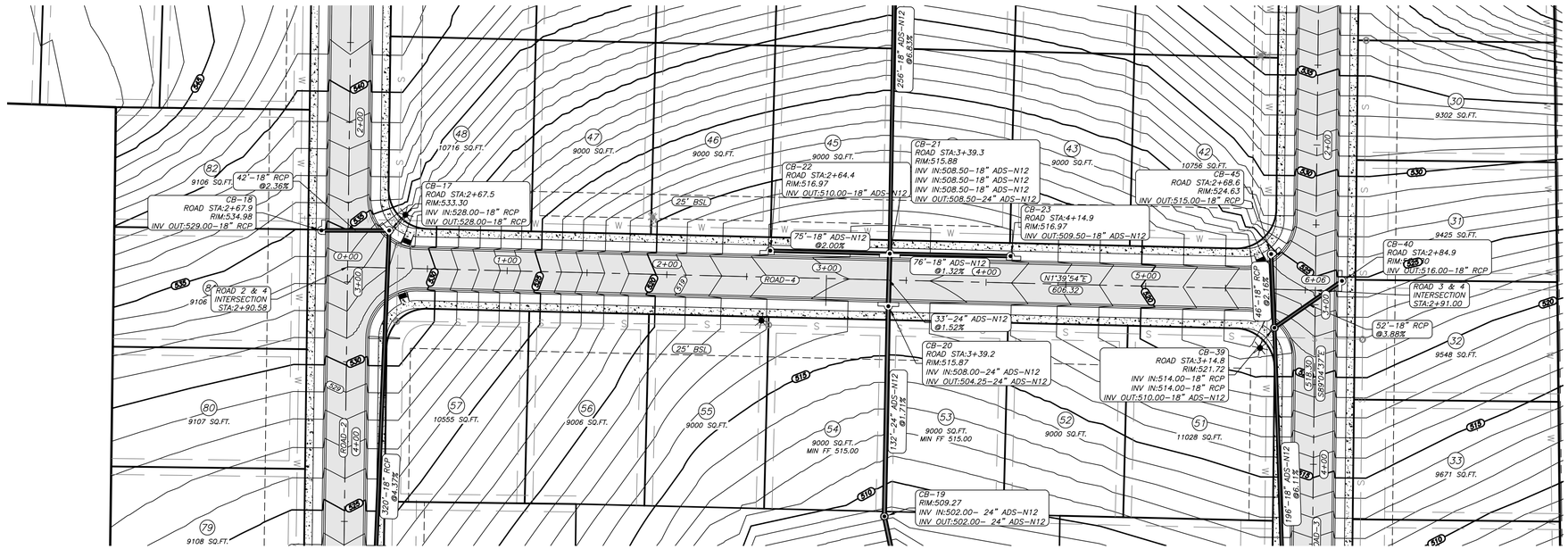
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ROAD 3 PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For: EMINENT CONSTRUCTIONS

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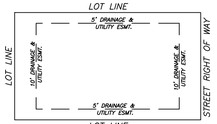


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* (*) DENOTES 5' INNER DIAMETER BARREL, (**) DENOTES 6' INNER DIAMETER BARREL, AND ALL OTHERS ARE 4' INSIDE DIAMETER FOR CURB INLETS AND JUNCTION BOXES.
* ALL DRAINAGE EASEMENTS BETWEEN LOTS ARE 10' UNLESS OTHERWISE NOTED.



TYPICAL LOT EASEMENTS

ENGINEER
RICHARDSON ENGINEERING, PLLC
ADDRESS: 325 W.SOUTH ST.
BENTON, AR. 72015
PHONE NO. (501) 315-7225
PROJECT REPRESENTATIVE:
ERIC RICHARDSON, P.E.

SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

LEGEND

- STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- STREET LIGHT
- ADA APPROVED HANDICAP RAMP

LEGEND

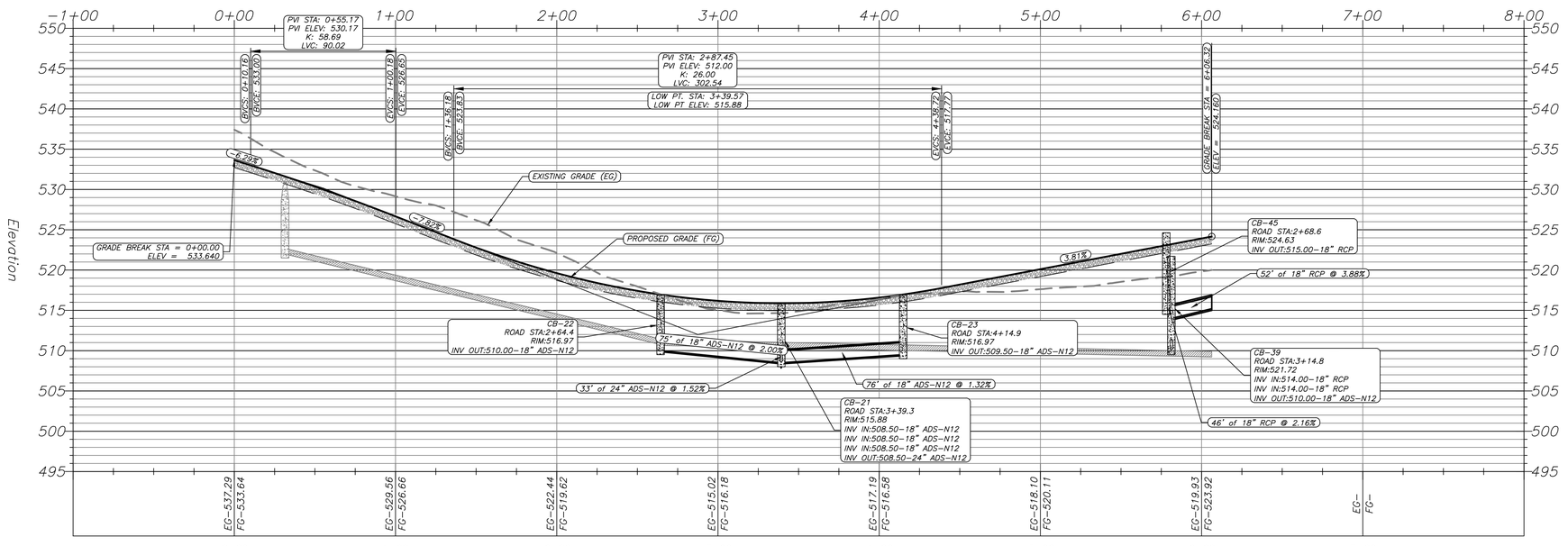
- G — GAS LINE
- T — TELEPHONE LINE
- S — SANITARY SEWER
- X — FENCE
- W — WATER LINE
- STORM DRAIN
- > — > — DITCH OR SWALE
- OHE — POWER LINE (OVERHEAD)
- SMH PROPOSED WATER METER BOX
- EXISTING MANHOLE
- PROPOSED MANHOLE
- LIGHT POLE
- WV GATE VALVE
- BLOW-OFF
- FIRE HYDRANT
- CURB INLET
- FES
- POWER POLE

GRAPHIC SCALE

40 0 40 80 120

(IN FEET)
1 inch = 40 ft.

ROAD-4 PROFILE



RICHARDSON ENGINEERING
Planning • Engineering • Development Consulting
325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

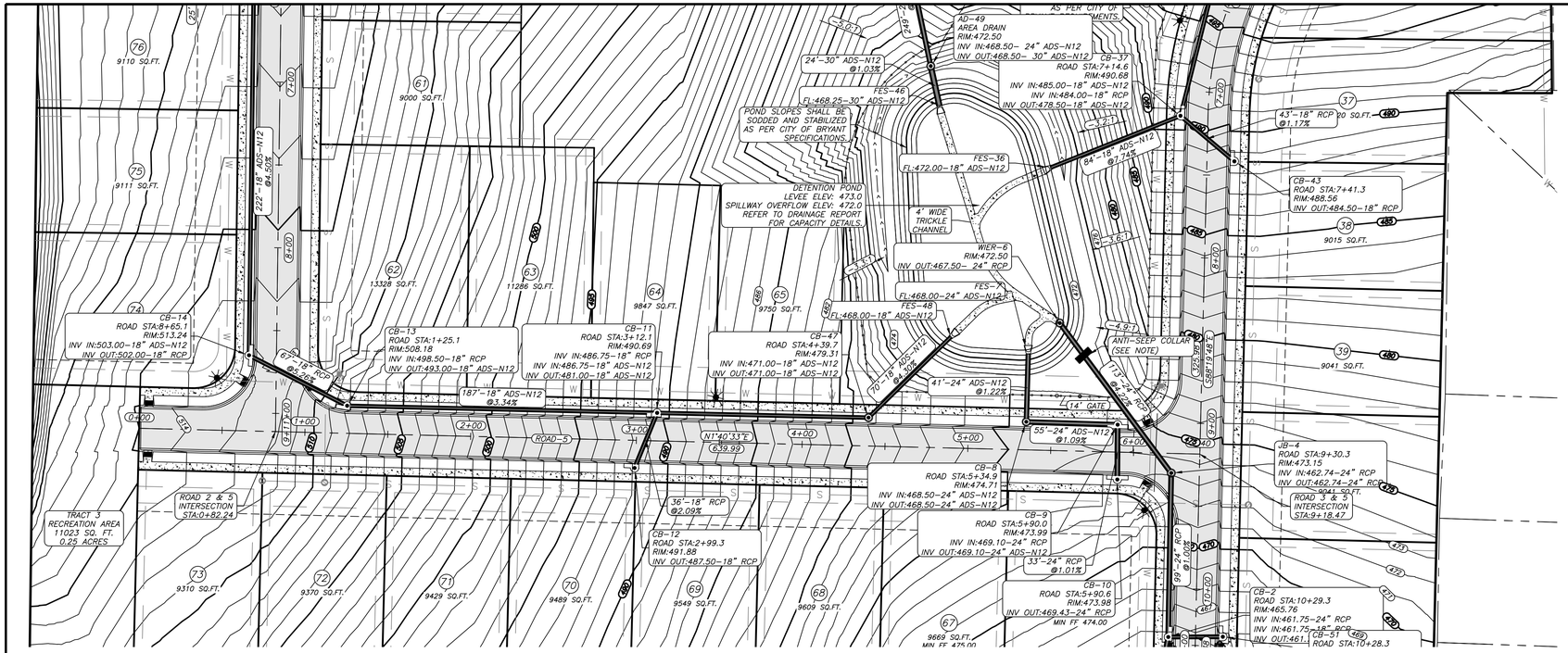
CERTIFICATE OF AUTHORIZATION
Richardson Engineering, PLLC
No. 2519
STATE OF ARKANSAS

ROAD 4 PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

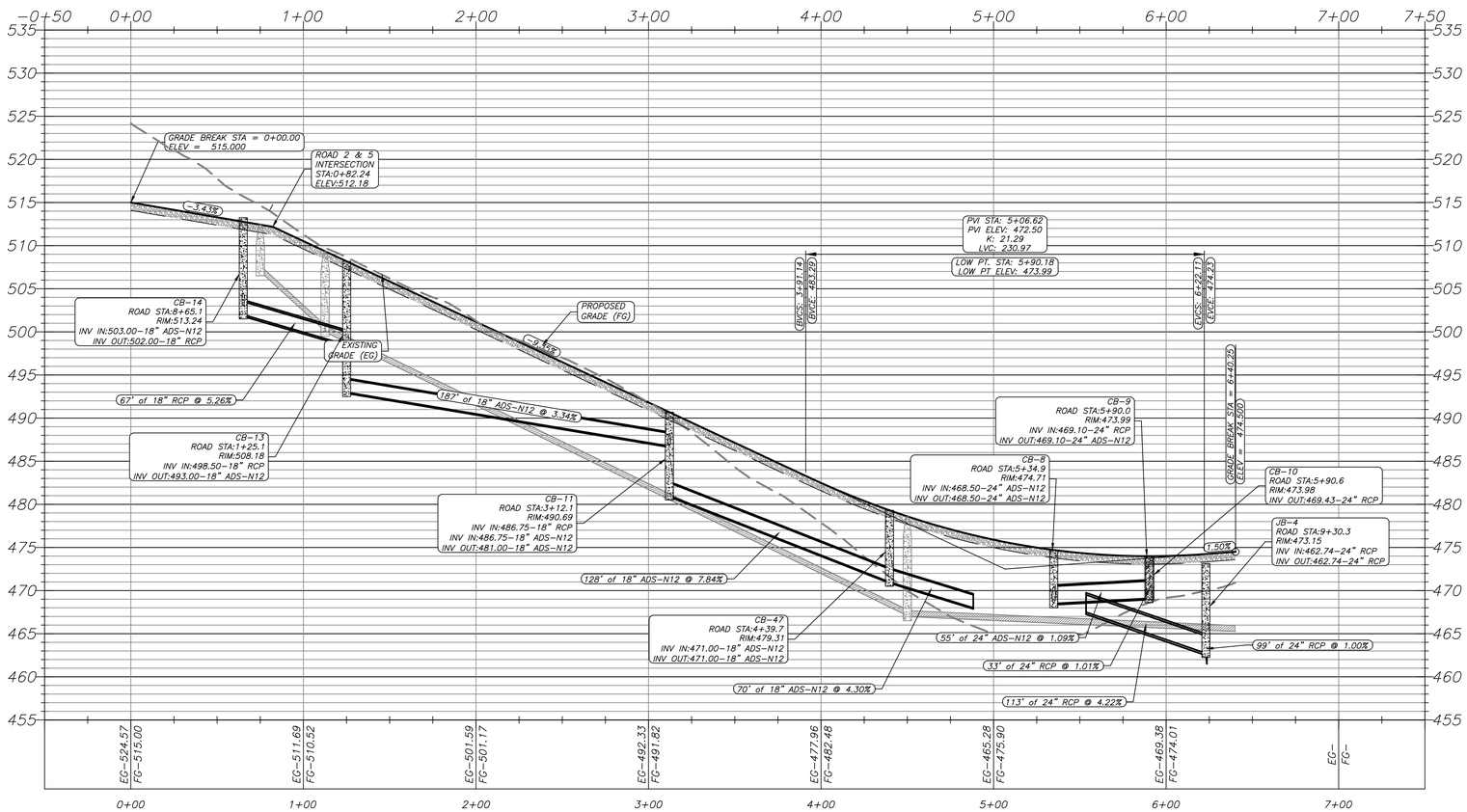
Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024-034
Date: 3/3/2026
REV:9/22/2026
Scale: 1" = 40'
Sheet: 6 of 26



ROAD-5 PROFILE



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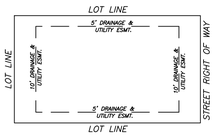
SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

GRAPHIC SCALE

40 0 40 80 120

(IN FEET)
1 inch = 40 ft.



TYPICAL LOT EASEMENTS

LEGEND

- STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- STREET LIGHT
- ADA APPROVED HANDICAP RAMP

LEGEND

- G — GAS LINE
- T — TELEPHONE LINE
- S — SANITARY SEWER
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Planning • Engineering • Development Consulting
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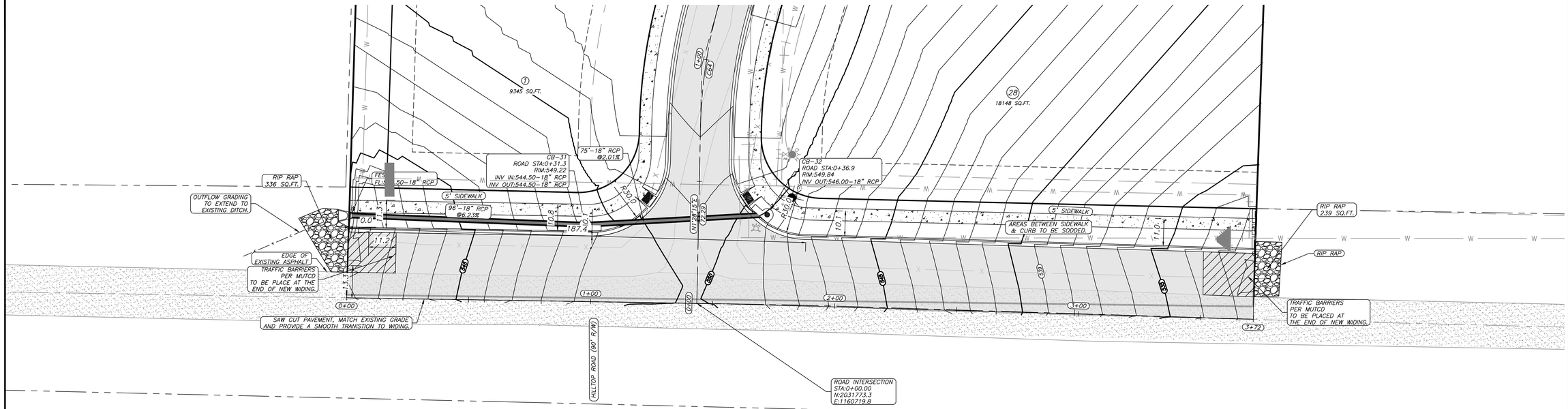
CERTIFICATE OF AUTHORIZATION
Richardson Engineering, PLLC
No. 2519
ARKANSAS

ROAD 5 PLAN & PROFILE
ZYAIR ESTATES SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
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SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

GRAPHIC SCALE

20 0 20 40 60

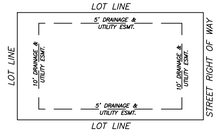
(IN FEET)
1 inch = 20 ft.

LEGEND

- STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- STREET LIGHT
- ADA APPROVED HANDICAP RAMP

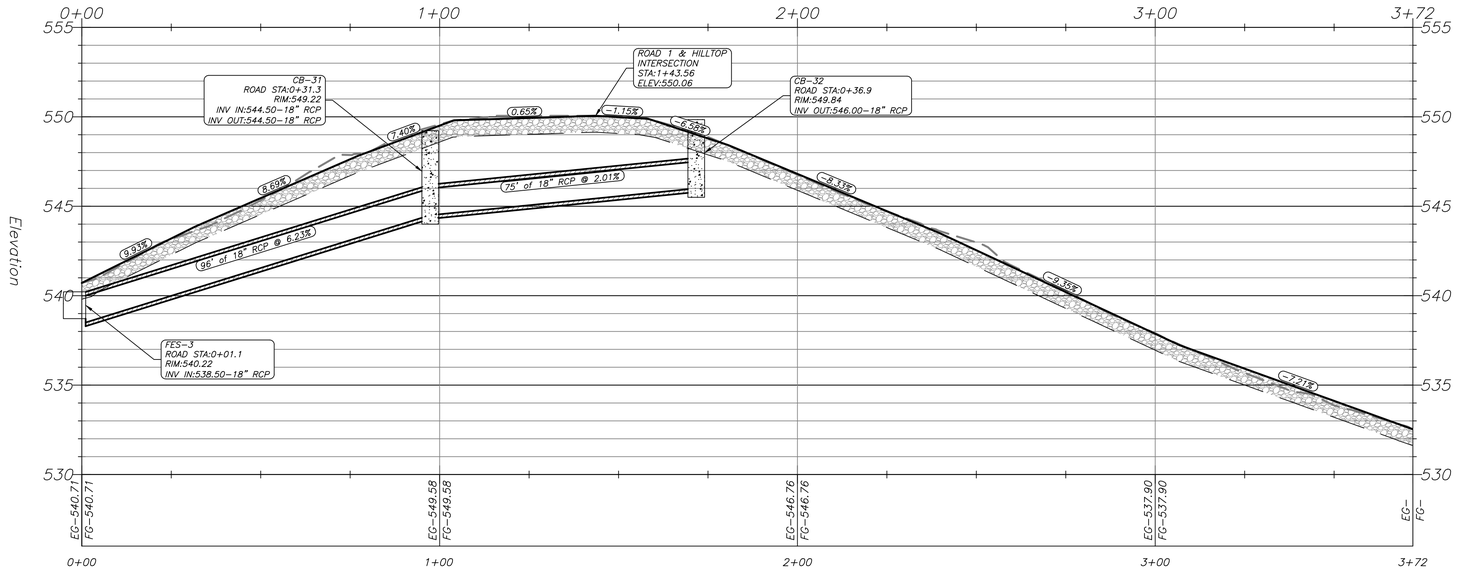
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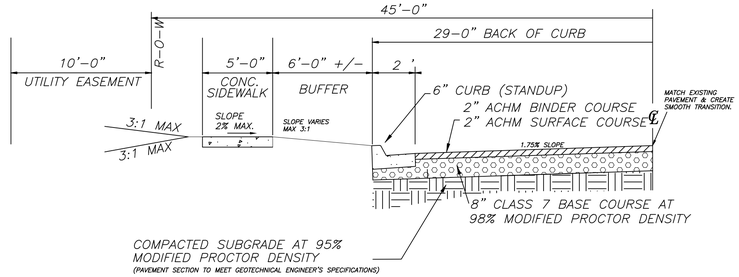
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- FES
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TYPICAL LOT EASEMENTS

HILLTOP ROAD PROFILE





TYPICAL ROAD CROSS SECTION (HALF STREET)
N.T.S.

RICHARDSON ENGINEERING
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325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

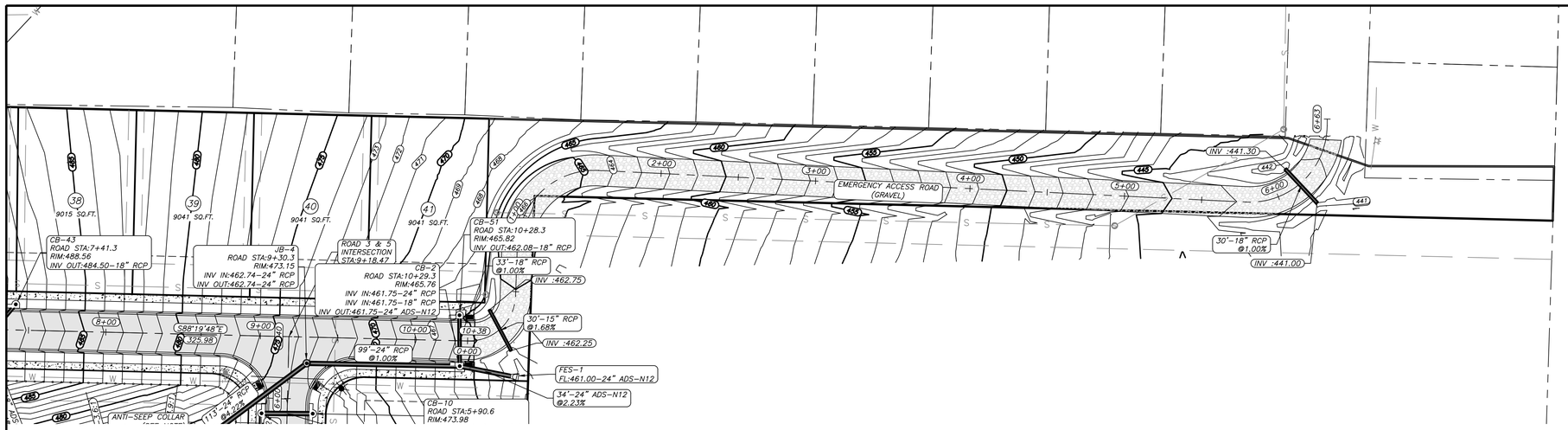
CERTIFICATE OF AUTHORIZATION
Richardson Engineering, PLLC
No. 2519
ARKANSAS

HILLTOP RD WIDING PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

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PROJECT NO.: 024-034
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Scale: 1" = 20'
Sheet: 8 of 26

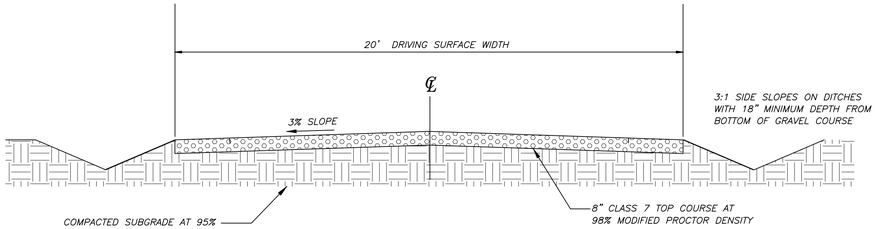


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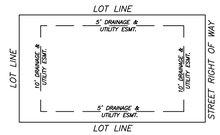
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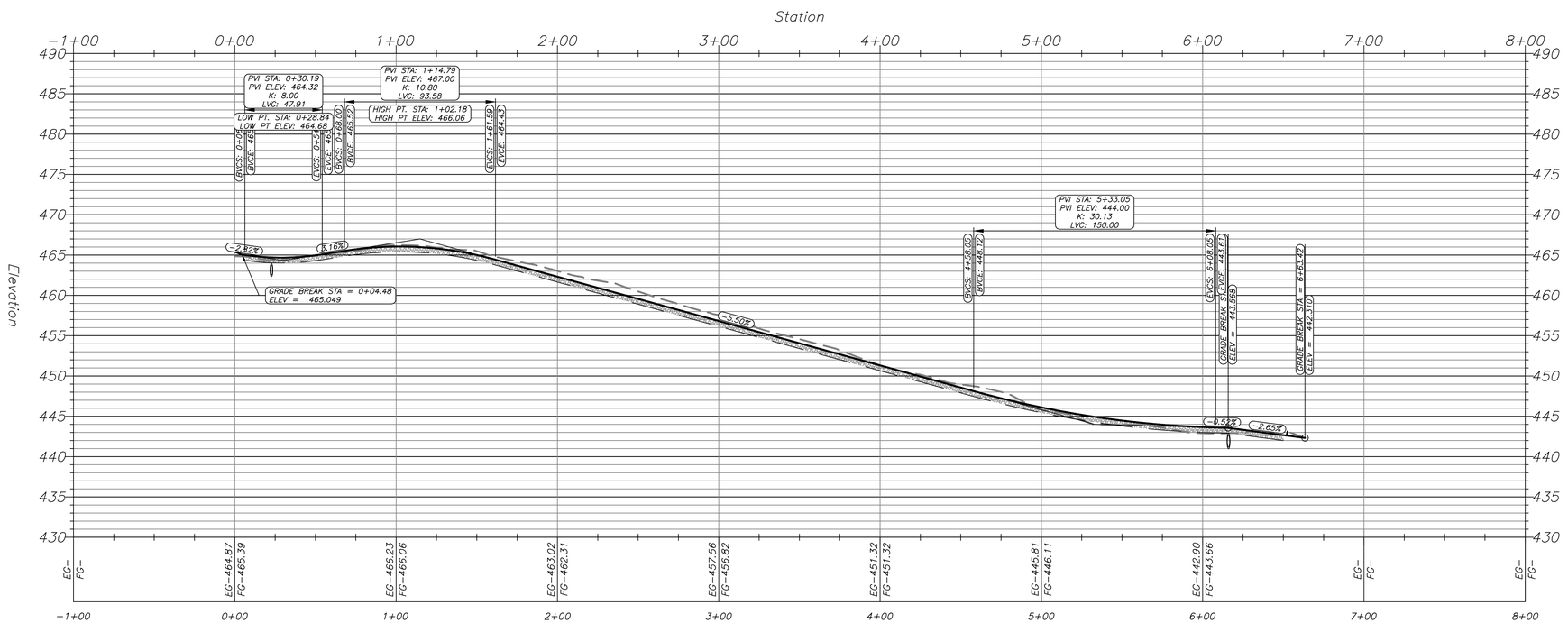
TYPICAL ACCESS ROAD CROSS SECTION
N.T.S.

NOTE:
1. ROADWAY SHALL MEET CITY OF BRYANT SPECIFICATIONS
2. STREETS AND DRAINAGE TO BE MAINTAINED BY BRYANT ROAD DEPARTMENT
3. ROAD SHALL MEET STATE FIRE CODE REQUIREMENTS.



TYPICAL LOT EASEMENTS

EMERGENCY ACCESS ROAD PROFILE



LEGEND

- STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- STREET LIGHT
- ADA APPROVED HANDICAP RAMP

ENGINEER
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SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

GRAPHIC SCALE
40 0 40 80 120
(IN FEET)
1 inch = 40 ft.

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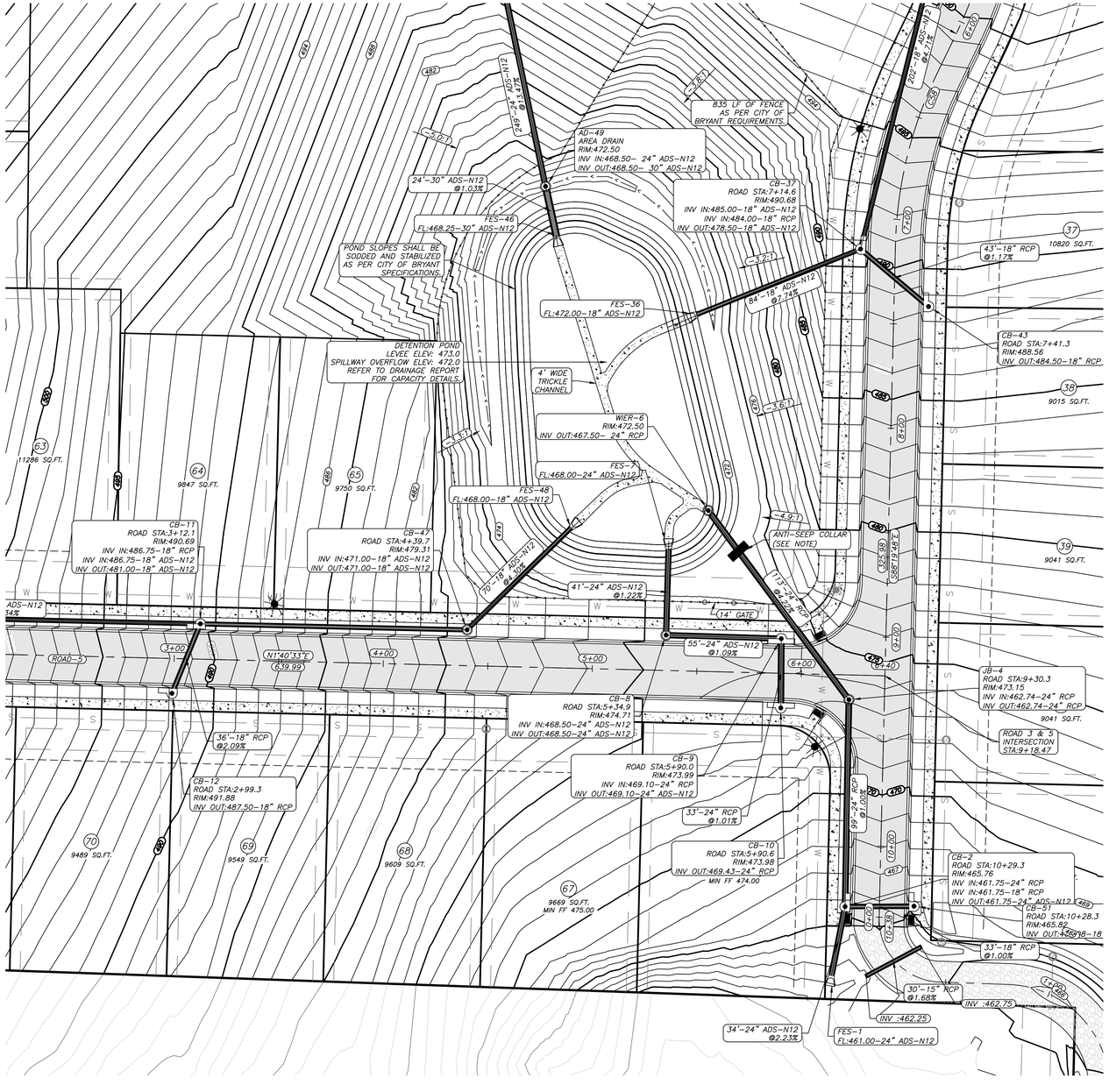
CERTIFICATE OF AUTHORIZATION
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ARKANSAS

EMERGENCY ACCESS ROAD P/P
2YAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

No.	Revisions	Date
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PROJECT NO.: 024-034
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Sheet: 9 of 26



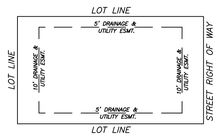
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- CURB INLET
- FES
- POWER POLE

GRAPHIC SCALE

30 0 30 60 90

(IN FEET)
1 inch = 30 ft.



TYPICAL LOT EASEMENTS

ANTI SEEP COLLAR NOTE:
ANTI SEEP COLLAR SHALL CONSIST OF QUALIFIED CLAY MATERIAL PACKED AROUND THE PIPE TO CREATE A BARRIER TO PREVENT WATER PASSING ALONG THE OUTSIDE DIAMETER OF PIPE. CLAY TO EXTEND 4' BEYOND THE PIPE IN ALL DIRECTIONS AND 2' THICK MIN. MATERIAL TO BE APPROVED BY GEO-TECHNICAL ENGINEER.

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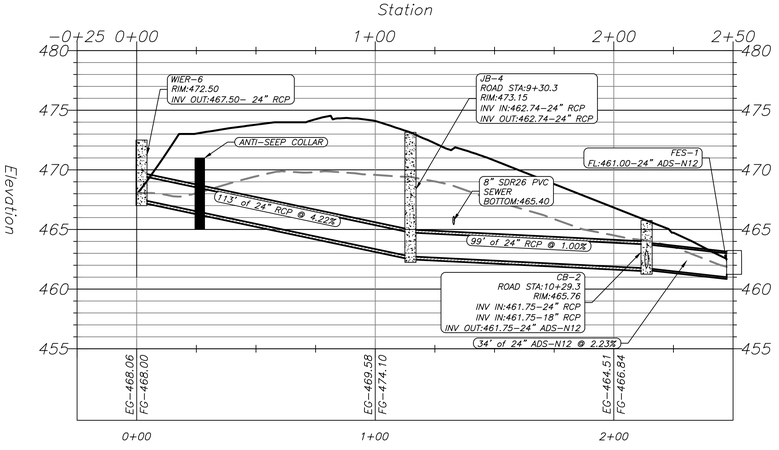
DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

LEGEND

- STOP SIGN
- STREET NAME SIGN
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- STREET LIGHT
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* SPILLWAY CONCRETE TO EXTEND TO 1'-0" BELOW MEAN WATER ELEVATION.

DETENTION POND DISCHARGE LINE PROFILE



RICHARDSON ENGINEERING
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325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

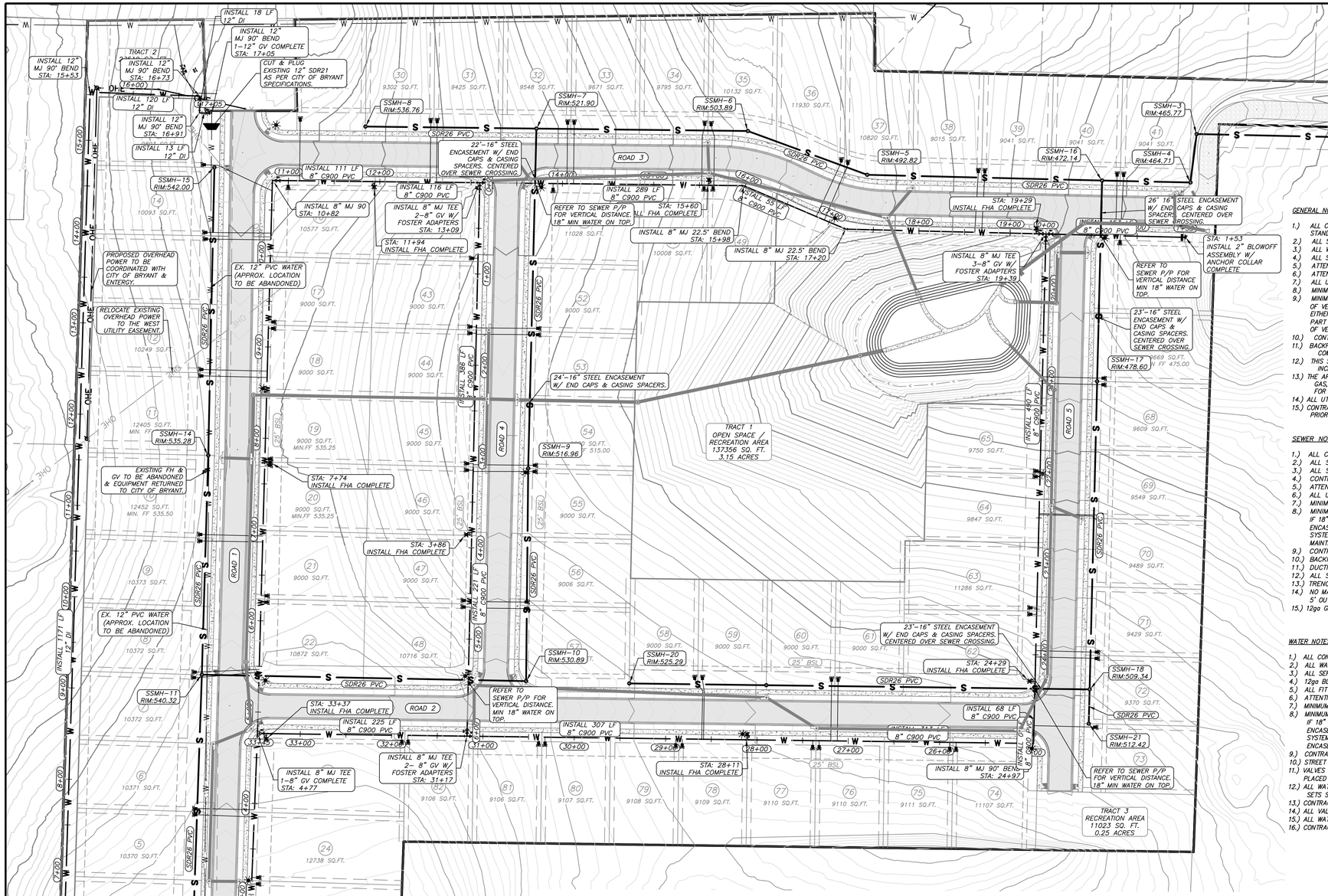
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ARKANSAS

RETENTION OUTFLOW PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

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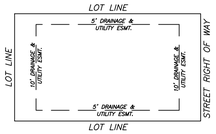
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ENGINEER
RICHARDSON ENGINEERING, PLLC
ADDRESS: 325 W.SOUTH ST.
BENTON, AR. 72015
PHONE NO. (501) 315-7225
PROJECT REPRESENTATIVE:
ERIC RICHARDSON, P.E.

SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022



TYPICAL LOT EASEMENTS

* CONTRACTOR WILL COORDINATE WITH THE CITY OF BRYANT AS TO THE SCHEDULE FOR THE RELOCATION OF EXISTING 12" WATER LINE.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14266
ERIC RYAN RICHARDSON

LEGEND

G	GAS LINE
T	TELEPHONE LINE
S	SANITARY SEWER
X	FENCE
W	WATER LINE
> > >	STORM DRAIN
	DITCH OR SWALE
OHE	POWER LINE (OVERHEAD)
SMS	PROPOSED WATER METER BOX
	EXISTING MANHOLE
	PROPOSED MANHOLE
	LIGHT POLE
WV	GATE VALVE
	BLOW-OFF
	FIRE HYDRANT
	CURB INLET
	FES
	POWER POLE

GENERAL NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT AND BRYANT WATER STANDARD SPECIFICATIONS.
2.) ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN ON PLAN.
3.) ALL WATER MAINS SHALL BE C900 PVC UNLESS OTHERWISE SHOWN ON PLAN.
4.) ALL STORM DRAINAGE SHALL BE AS SHOWN ON THE PLAN.
5.) ATTENTION IS CALLED TO WATER, SEWER, AND STREET LAYOUT FOR ADDITIONAL INFORMATION.
6.) ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
7.) ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
8.) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
9.) MINIMUM VERTICAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 18" (WATER ON TOP). IF 18" OF VERTICAL SEPARATION CAN NOT BE MAINTAINED EITHER THE WATER OR SEWER LINE MUST BE ENCASED 10' EITHER SIDE OF THE CROSSING AS PER ARKANSAS RULES PERTAINING TO PUBLIC WATER SYSTEMS SECTION XIV PART A. IF THE WATER LINE MUST PASS BENEATH THE SEWER LINE, IT MUST BE ENCASED AND MAINTAIN 18" OF VERTICAL SEPARATION.
10.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
11.) BACKFILL MATERIAL FOR STREET CROSSINGS SHALL BE ACCORDING TO CITY OF BRYANT STREET DEPT SPECS AND COMPACTED TO 98% M.P. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER AND UTILITY OWNER.
12.) THIS SHEET IS PART OF A COMPLETE DESIGN SET. CONTRACTOR SHALL REFER TO ADDITIONAL DRAWINGS INCLUDED HEREIN, FOR MORE DETAIL REGARDING UTILITES, DRAINAGE, AND OTHER INFRASTRUCTURE.
13.) THE APPROXIMATE LOCATION OF KNOWN SURFACE AND SUBSURFACE STRUCTURES, PIPES, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE DESIGN DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN.
14.) ALL UTILITIES SHALL BE CONSTRUCTED AT A MINIMUM OF 36" BELOW TOP BACK OF CURB GRADE.
15.) CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.

SEWER NOTES:

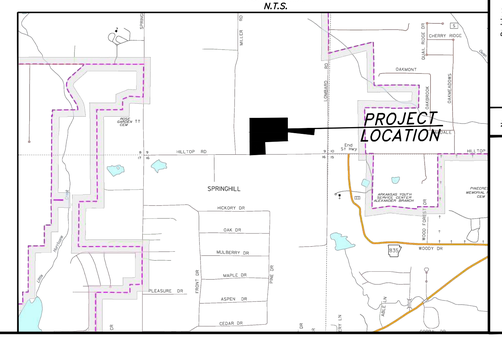
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10.) BACKFILL FOR ALL DISTURBED (EXCAVATED) AREAS TO BE COMPACTED TO 95% MP.
11.) DUCTILE IRON (PER CITY OF BRYANT SPECS.) TO BE USED IF COVER OVER SEWERLINE IS LESS THAN 36".
12.) ALL STREET CROSSINGS TO MEET CITY OF BRYANT STREET DEPARTMENT SPECIFICATIONS.
13.) TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM OF 36" PIPE COVER.
14.) NO MANHOLES SHALL BE CONSTRUCTED IN SIDEWALKS. SEWER STUB-OUTS SHALL EXTEND AT LEAST 5' OUTSIDE OF THE UTILITY EASEMENT. MANHOLE RIMS TO BE AT LEAST 2" ABOVE FINISH GRADE.
15.) 12ga GREEN COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL FORCE MAINS.

WATER NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED BRYANT STANDARD SPECIFICATIONS.
2.) ALL WATER MAINS SHALL BE AS NOTED ON PLANS.
3.) ALL SERVICE LINES AND METER SETTINGS SHALL BE AS PER BRYANT WATER STANDARD SPECIFICATIONS.
4.) 12ga BLUE COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL WATERLINES (MAINS & SERVICES).
5.) ALL FITTINGS SHALL BE DUCTILE IRON M.J.
6.) ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
7.) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES & SEWERLINES SHALL BE 10'.
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9.) CONTRACTOR SHALL ADHERE TO CURRENT OSHA REGULATIONS FOR EXCAVATION & TRENCH SAFETY.
10.) STREET CROSSINGS TO MEET CITY OF BRYANT STREET DEPARTMENT SPECIFICATIONS.
11.) VALVES SHALL NOT BE PLACED UNDER HARD SURFACES (PAVEMENT, CURB, ETC.). VALVES SHALL BE PLACED A MINIMUM OF 2' BEHIND THE BACK OF CURB.
12.) ALL WATER SERVICES REQUIRE DOUBLE METERS (DOMESTIC AND IRRIGATION) FOR EACH LOT. DOUBLE METER SETS SHALL BE PLACED AT A 5' OFFSET FROM THE LOT LINE.
13.) CONTRACTOR TO ADHERE TO AWWA SPECS FOR BLOCKING AND ANCHORING.
14.) ALL VALVES SHALL HAVE A 2" OPERATING NUT.
15.) ALL WATER METER BOXES & VALVE BOXES SHALL BE PLACED 2" ABOVE FINAL EARTHWORK GRADE.
16.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.

GRAPHIC SCALE
60 0 60 120 180
(IN FEET)
1 inch = 60 ft.

VICINITY MAP
N.T.S.



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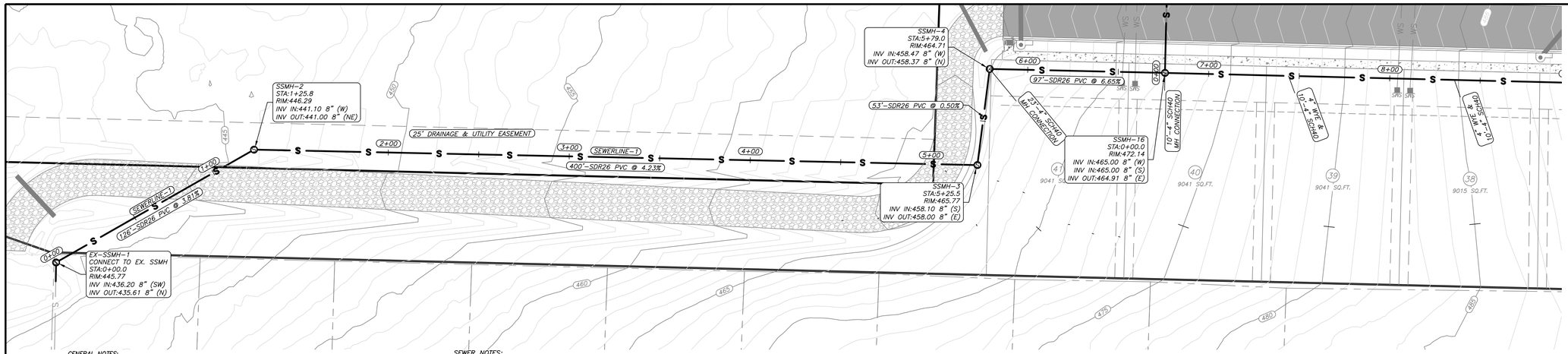
CERTIFICATE OF AUTHORIZATION
Richardson Engineering, PLLC
No. 2519
STATE OF ARKANSAS

OVERALL UTILITY PLAN
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For:
EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	5/22/2026

PROJECT NO.: 024-034
Date: 3/3/2026 REV:5/22/2026
Scale: 1" = 60'
Sheet: 11 of 26



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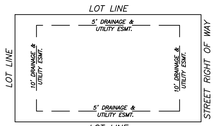
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TYPICAL LOT EASEMENTS

LEGEND

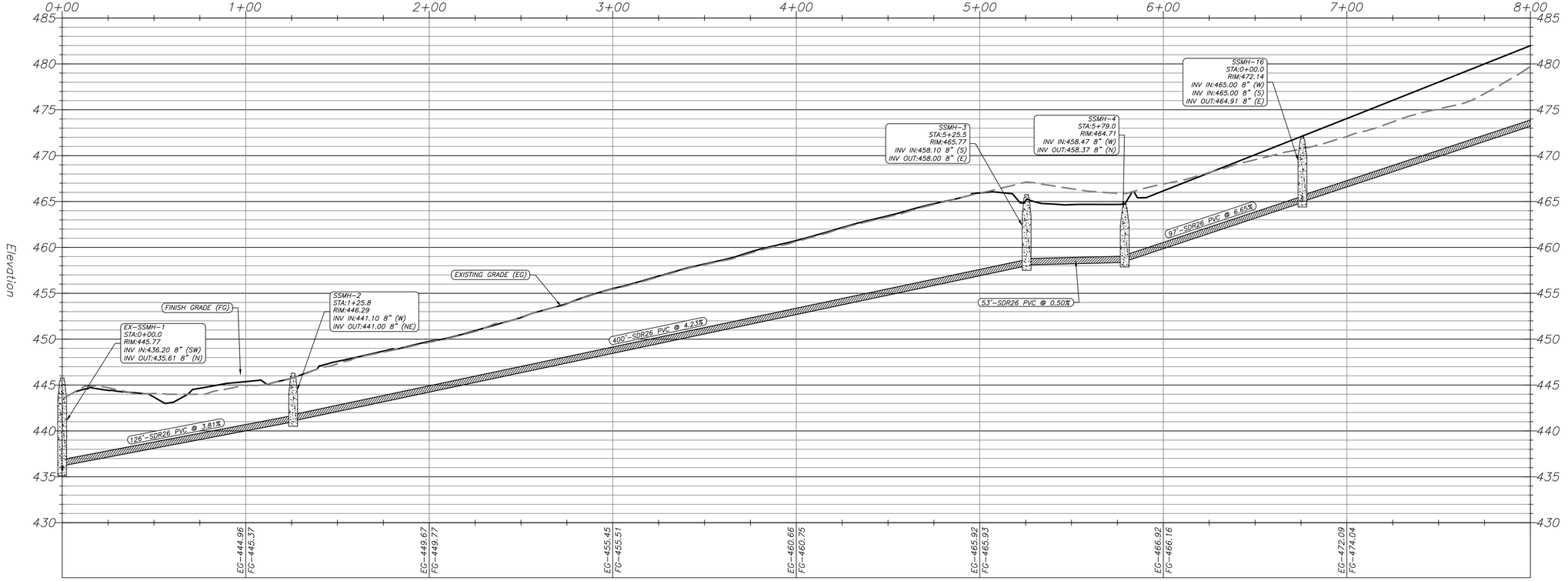
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CURB INLET	
FES	
POWER POLE	

GRAPHIC SCALE

30 0 30 60 90

(IN FEET)
1 inch = 30 ft.

SEWERLINE-1 PROFILE



RICHARDSON ENGINEERING
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STATE OF ARKANSAS
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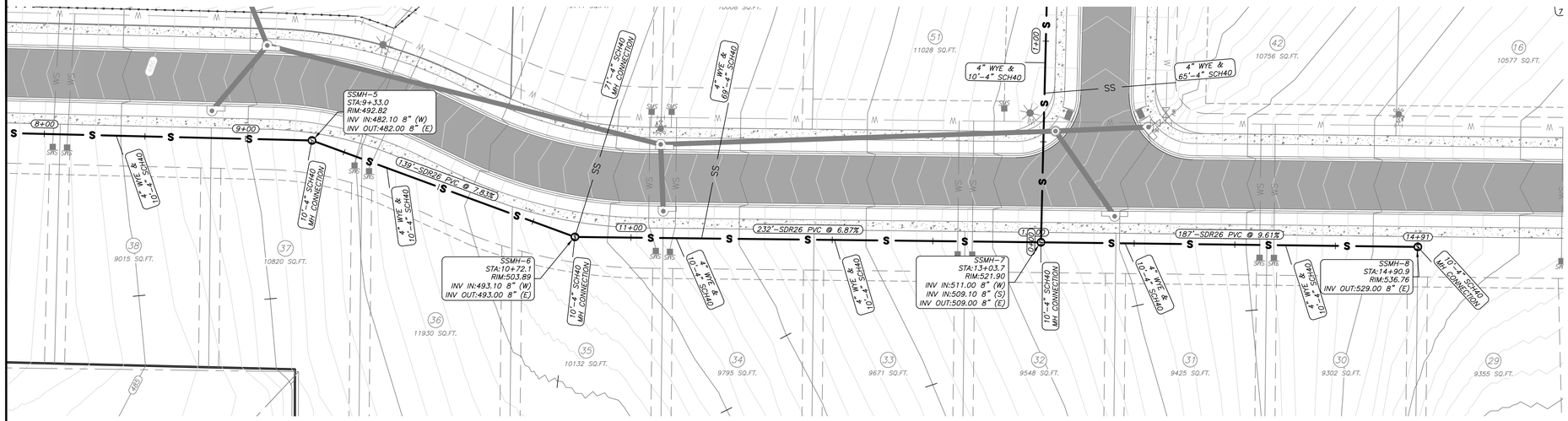
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SEWER 1 P/P 0+00-8+00
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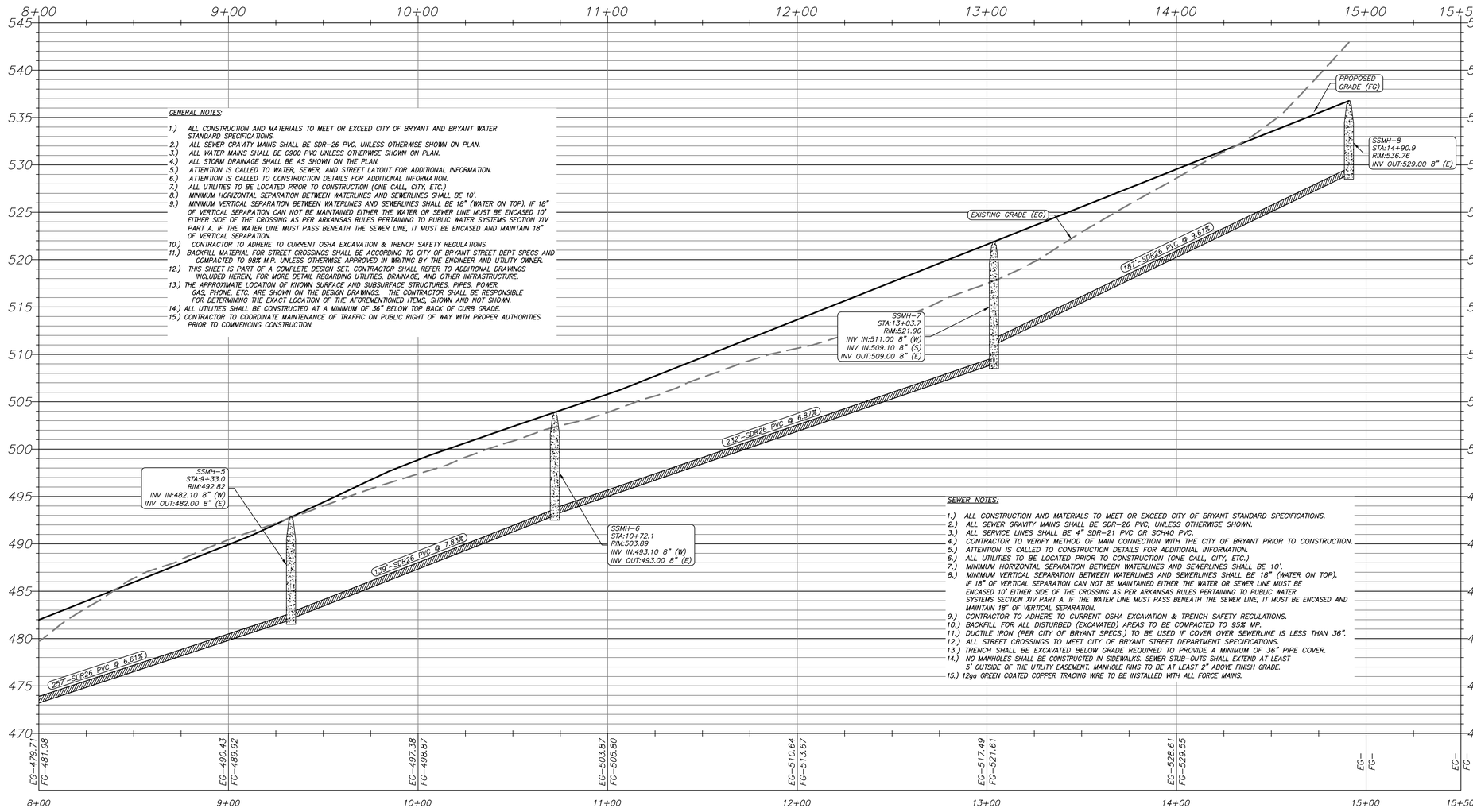
Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS	4/7/2026
2	CITY COMMENTS 4/15/26	4/25/2026
3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024-034
Date: 3/3/2026 REV:9/22/2026
Scale: 1" = 30'
Sheet: 12 of 26



SEWERLINE-1 PROFILE



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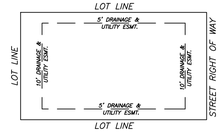
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TYPICAL LOT EASEMENTS

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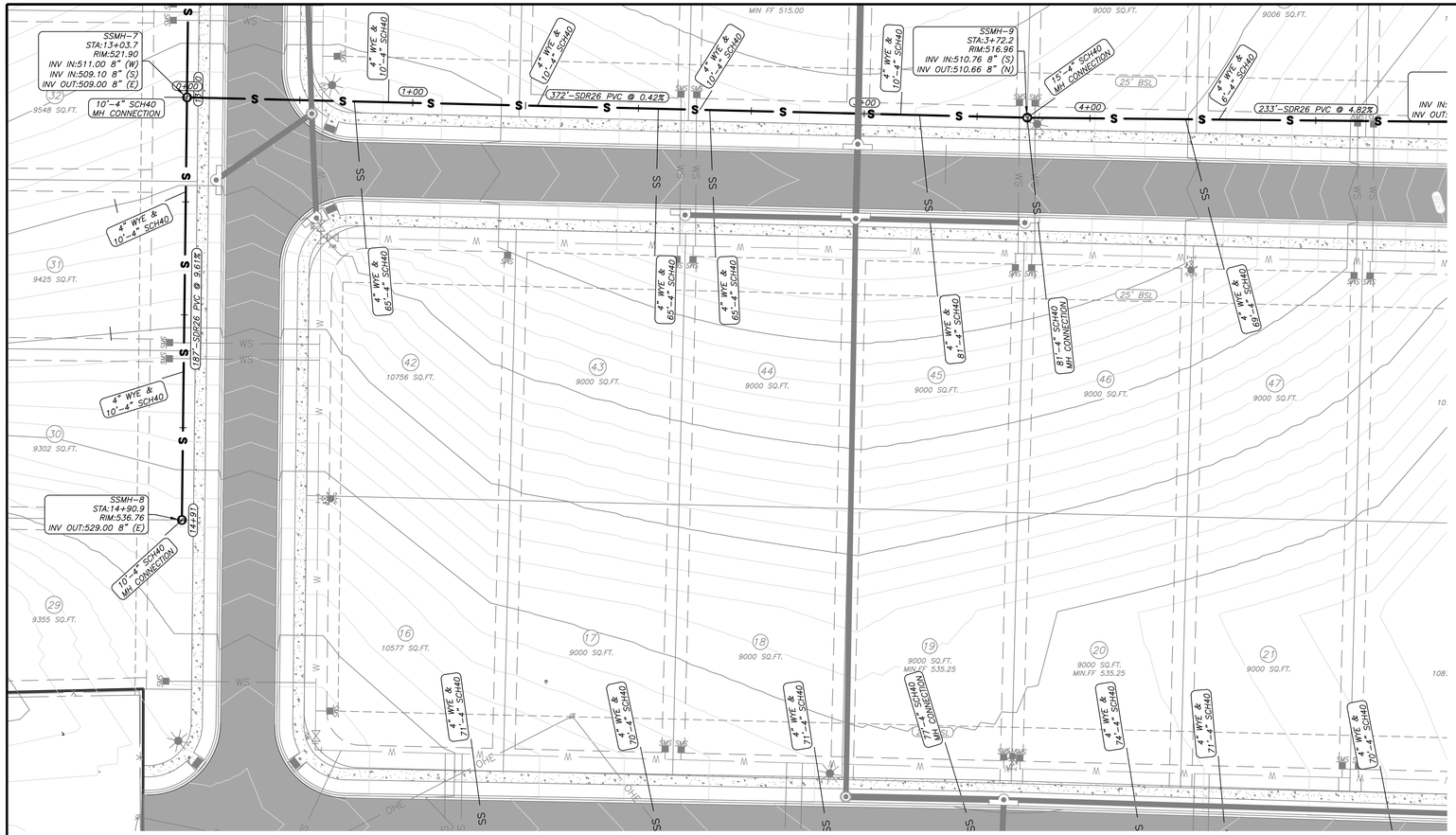


SEWER 1 P/P 8+00-END
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SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

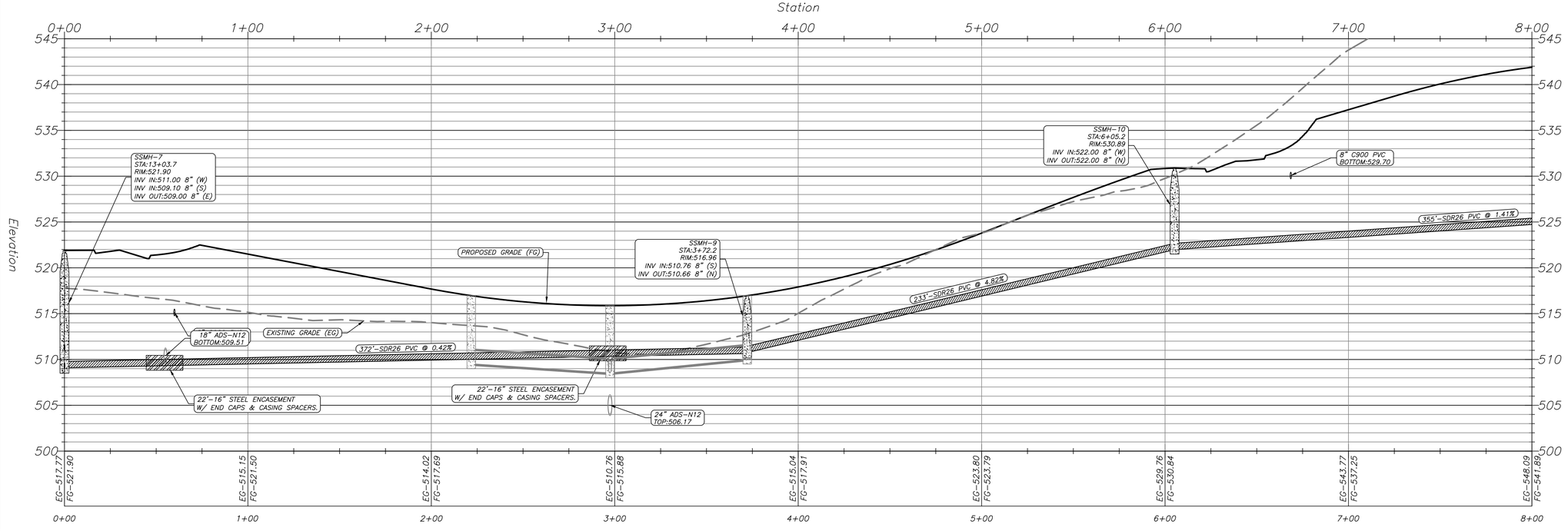
Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS 4/15/26	4/21/2026
2	CITY COMMENTS 4/15/26	4/23/2026
3	REDESIGN ROAD PROFILES	9/22/2026

PROJECT NO.: 024-034
Date: 3/3/2026 REV:9/22/2026
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Sheet: 13 of 26



SEWERLINE-2 PROFILE



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10.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
11.) BACKFILL MATERIAL FOR STREET CROSSINGS SHALL BE ACCORDING TO CITY OF BRYANT STREET DEPT SPECS AND COMPACTED TO 98% M.P. UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER AND UTILITY OWNER.
12.) THIS SHEET IS PART OF A COMPLETE DESIGN SET. CONTRACTOR SHALL REFER TO ADDITIONAL DRAWINGS INCLUDED HEREIN, FOR MORE DETAIL REGARDING UTILITIES, DRAINAGE, AND OTHER INFRASTRUCTURE.
13.) THE APPROXIMATE LOCATION OF KNOWN SURFACE AND SUBSURFACE STRUCTURES, PIPES, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE DESIGN DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN.
14.) ALL UTILITIES SHALL BE CONSTRUCTED AT A MINIMUM OF 36" BELOW TOP BACK OF CURB GRADE.
15.) CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.

SEWER NOTES:

1.) ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT STANDARD SPECIFICATIONS.
2.) ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN.
3.) ALL SERVICE LINES SHALL BE 4" SDR-21 PVC OR SCH40 PVC.
4.) CONTRACTOR TO VERIFY METHOD OF MAIN CONNECTION WITH THE CITY OF BRYANT PRIOR TO CONSTRUCTION.
5.) ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
6.) ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
7.) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
8.) MINIMUM VERTICAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 18" (WATER ON TOP). IF 18" OF VERTICAL SEPARATION CAN NOT BE MAINTAINED EITHER THE WATER OR SEWER LINE MUST BE ENCASED 10' EITHER SIDE OF THE CROSSING AS PER ARKANSAS RULES PERTAINING TO PUBLIC WATER SYSTEMS SECTION XIV PART A. IF THE WATER LINE MUST PASS BENEATH THE SEWER LINE, IT MUST BE ENCASED AND MAINTAIN 18" OF VERTICAL SEPARATION.
9.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
10.) BACKFILL FOR ALL DISTURBED (EXCAVATED) AREAS TO BE COMPACTED TO 95% MP.
11.) DUCTILE IRON (PER CITY OF BRYANT SPECS.) TO BE USED IF COVER OVER SEWERLINE IS LESS THAN 36".
12.) ALL STREET CROSSINGS TO MEET CITY OF BRYANT STREET DEPARTMENT SPECIFICATIONS.
13.) TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM OF 36" PIPE COVER.
14.) NO MANHOLES SHALL BE CONSTRUCTED IN SIDEWALKS. SEWER STUB-OUTS SHALL EXTEND AT LEAST 5' OUTSIDE OF THE UTILITY EASEMENT. MANHOLE RIMS TO BE AT LEAST 2" ABOVE FINISH GRADE.
15.) 12ga GREEN COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL FORCE MAINS.

LEGEND

- G — GAS LINE
- T — TELEPHONE LINE
- S — SANITARY SEWER
- X — FENCE
- W — WATER LINE
- STORM DRAIN
- DITCH OR SWALE
- OHE — POWER LINE (OVERHEAD)
- PROPOSED WATER METER BOX
- EXISTING MANHOLE
- PROPOSED MANHOLE
- LIGHT POLE
- GATE VALVE
- BLOW-OFF
- FIRE HYDRANT
- CURB INLET
- FES
- POWER POLE

GRAPHIC SCALE

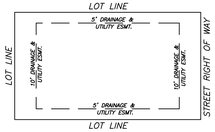
30 0 30 60 90

(IN FEET)
1 inch = 30 ft.

ENGINEER
RICHARDSON ENGINEERING, PLLC
ADDRESS: 325 W.SOUTH ST.
BENTON, AR. 72015
PHONE NO. (501) 315-7225
PROJECT REPRESENTATIVE:
ERIC RICHARDSON, P.E.

SURVEYOR
SOUTHPOINT SURVEYING
P.O. BOX 400
SHERIDAN, AR
501-837-2342

DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022



TYPICAL LOT EASEMENTS

RICHARDSON ENGINEERING
Planning • Engineering • Development Consulting
325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

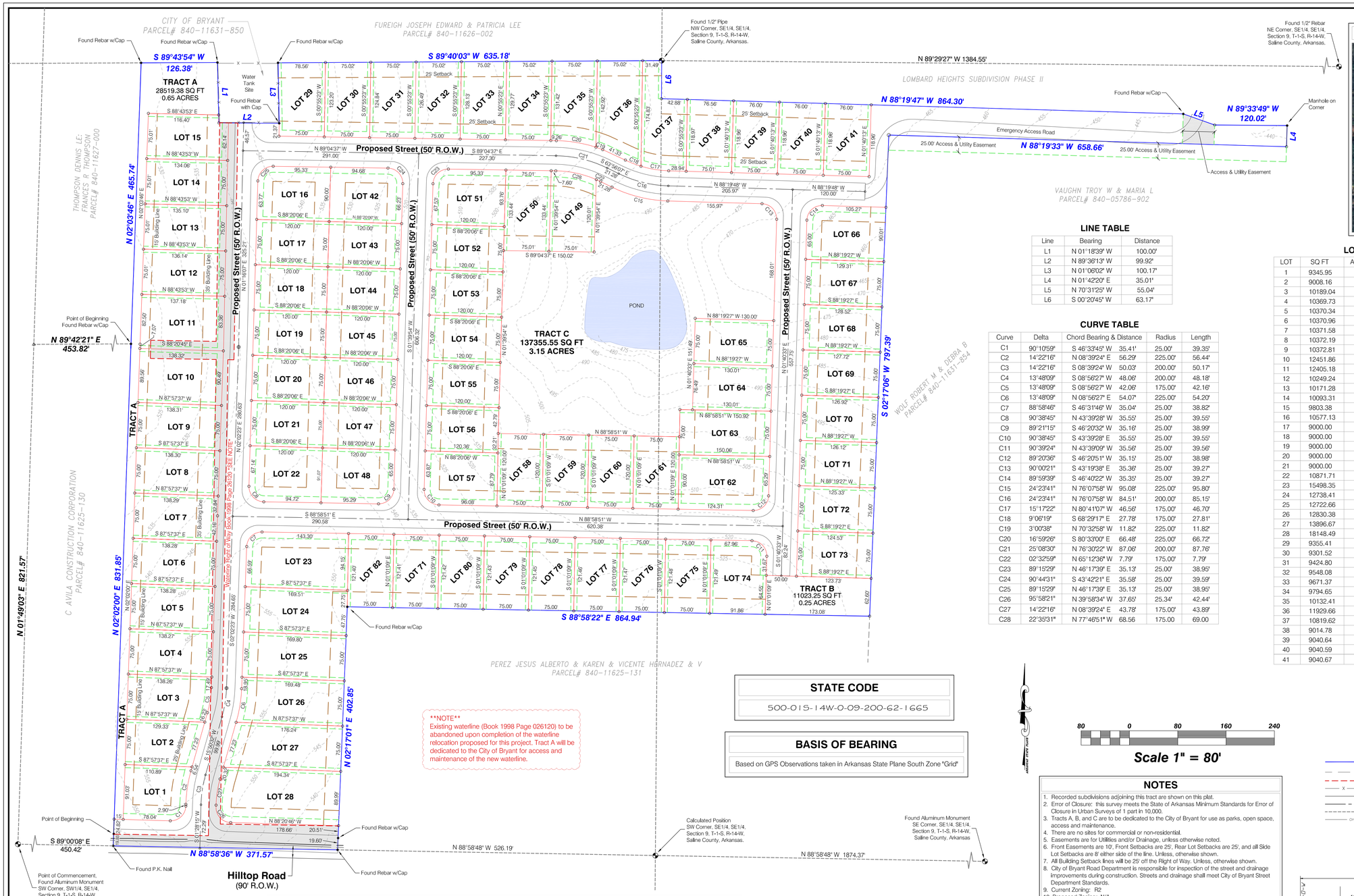
CERTIFICATE OF AUTHORIZATION — Richardson Engineering, PLLC — No. 2519 — ARKANSAS

SEWER 2 P/P 0+00-8+00
ZYAIR ESTATES SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

Prepared For: EMINENT CONSTRUCTIONS

No.	Revisions	Date
1	AS PER CITY COMMENTS 4/15/26	4/17/2026
2	CITY COMMENTS 4/15/26	4/22/2026
3	REDESIGN ROAD PROFILES	4/30/2026

PROJECT NO.: 024-034
Date: 3/3/2026 REV:9/22/2026
Scale: 1" = 30'
Sheet: 14 of 26



VICINITY MAP



LINE TABLE

Line	Bearing	Distance
L1	N 01°18'39" W	100.00'
L2	N 89°36'13" W	99.92'
L3	N 01°06'02" W	100.17'
L4	N 01°42'20" E	35.01'
L5	N 70°31'25" W	55.04'
L6	S 00°20'45" W	63.17'

CURVE TABLE

Curve	Delta	Chord Bearing & Distance	Radius	Length
C1	90°10'59"	S 46°33'45" W 35.41'	25.00'	39.35'
C2	14°22'16"	N 08°39'24" E 56.29'	225.00'	56.44'
C3	14°22'16"	S 08°39'24" W 50.03'	200.00'	50.17'
C4	13°48'09"	S 08°56'27" W 48.06'	200.00'	48.18'
C5	13°48'09"	S 08°56'27" W 42.06'	175.00'	42.16'
C6	13°48'09"	N 08°56'27" E 54.07'	225.00'	54.20'
C7	88°58'46"	S 46°31'46" W 35.04'	25.00'	38.82'
C8	90°38'45"	N 43°39'28" W 35.55'	25.00'	39.55'
C9	89°21'15"	S 46°20'32" W 35.16'	25.00'	38.99'
C10	90°38'45"	S 43°39'28" E 35.55'	25.00'	39.55'
C11	90°39'24"	N 43°39'09" W 35.56'	25.00'	39.56'
C12	89°20'36"	S 46°20'51" W 35.15'	25.00'	38.98'
C13	90°00'21"	S 43°19'38" E 35.36'	25.00'	39.27'
C14	89°59'39"	S 46°40'22" W 35.35'	25.00'	39.27'
C15	24°23'41"	N 76°07'58" W 95.08'	225.00'	95.80'
C16	24°23'41"	N 76°07'58" W 84.51'	200.00'	85.15'
C17	15°17'22"	N 80°41'07" W 46.56'	175.00'	46.70'
C18	9°06'19"	S 68°29'17" E 27.78'	175.00'	27.81'
C19	3°00'38"	N 70°32'58" W 11.82'	225.00'	11.82'
C20	16°59'26"	S 80°33'00" E 66.48'	225.00'	66.72'
C21	25°08'30"	N 76°30'22" W 87.06'	200.00'	87.76'
C22	02°32'59"	N 65°12'36" W 7.79'	175.00'	7.79'
C23	89°15'29"	N 46°17'39" E 35.13'	25.00'	38.95'
C24	90°44'31"	S 43°42'21" E 35.58'	25.00'	39.59'
C25	89°15'29"	N 46°17'39" E 35.13'	25.00'	38.95'
C26	95°58'21"	N 39°58'34" W 37.65'	25.34'	42.44'
C27	14°22'16"	N 08°39'24" E 43.78'	175.00'	43.89'
C28	22°35'31"	N 77°46'51" W 68.56	175.00	69.00

LOT AREA TABLE

LOT	SQ FT	ACRES	LOT	SQ FT	ACRES
1	9345.95	0.21	42	10755.52	0.25
2	9008.16	0.21	43	9000.00	0.21
3	10189.04	0.23	44	9000.00	0.21
4	10369.73	0.24	45	9000.00	0.21
5	10370.34	0.24	46	9000.00	0.21
6	10370.96	0.24	47	9000.00	0.21
7	10371.58	0.24	48	10716.41	0.25
8	10372.19	0.24	49	9710.67	0.22
9	10372.81	0.24	50	10008.00	0.23
10	12451.86	0.29	51	11027.79	0.25
11	12405.18	0.28	52	9000.00	0.21
12	10249.24	0.24	53	9000.00	0.21
13	10171.28	0.23	54	9000.00	0.21
14	10093.31	0.23	55	9000.00	0.21
15	9803.38	0.23	56	9005.85	0.21
16	10577.13	0.24	57	10554.69	0.24
17	9000.00	0.21	58	9000.00	0.21
18	9000.00	0.21	59	9000.00	0.21
19	9000.00	0.21	60	9000.00	0.21
20	9000.00	0.21	61	9000.00	0.21
21	9000.00	0.21	62	13328.05	0.31
22	10871.71	0.25	63	11286.45	0.26
23	15498.35	0.36	64	9847.49	0.23
24	12738.41	0.29	65	9750.00	0.22
25	12722.66	0.29	66	11547.23	0.27
26	12830.38	0.29	67	9668.68	0.22
27	13896.67	0.32	68	9608.87	0.22
28	18148.49	0.42	69	9549.06	0.22
29	9355.41	0.21	70	9489.25	0.22
30	9301.52	0.21	71	9429.45	0.22
31	9424.80	0.22	72	9369.64	0.22
32	9548.08	0.22	73	9309.83	0.21
33	9671.37	0.22	74	11107.27	0.25
34	9794.65	0.22	75	9111.19	0.21
35	10132.41	0.23	76	9110.40	0.21
36	11929.66	0.27	77	9109.61	0.21
37	10819.62	0.25	78	9108.81	0.21
38	9014.78	0.21	79	9108.02	0.21
39	9040.64	0.21	80	9107.22	0.21
40	9040.59	0.21	71	9106.43	0.21
41	9040.67	0.21	82	9105.64	0.21

STATE CODE

500-015-14W-0-09-200-62-1665

BASIS OF BEARING

Based on GPS Observations taken in Arkansas State Plane South Zone "Grid"

- ○ - SET 1/2" REBAR & CAP
- ● - FOUND MONUMENT
- ⌖ - CONTROLLING CORNER
- BOUNDARY
- BULDING LINE
- EASEMENT
- FENCE LINE
- ROAD
- RIGHT-OF-WAY
- SECTION LINE
- OVERHEAD ELECTRIC

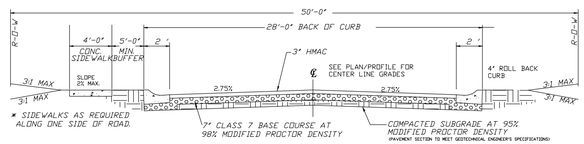
NOTES

1. Recorded subdivisions adjoining this tract are shown on this plat.
2. Error of Closure: this survey meets the State of Arkansas Minimum Standards for Error of Closure in Urban Surveys of 1 part in 10,000.
3. Tracts A, B, and C are to be dedicated to the City of Bryant for use as parks, open space, access and maintenance.
4. There are no sites for commercial or non-residential.
5. Easements are for Utilities and/or Drainage, unless otherwise noted.
6. Front Easements are 10', Front Setbacks are 25', Rear Lot Setbacks are 25', and all Side Lot Setbacks are 8' either side of the line. Unless, otherwise shown.
7. All Building Setback lines will be 25' off the Right of Way. Unless, otherwise shown.
8. City of Bryant Road Department is responsible for inspection of the street and drainage improvements during construction. Streets and drainage shall meet City of Bryant Street Department Standards.
9. Current Zoning: R2
10. Proposed Zoning: N/A
11. Total Number of Lots: 82
    Total Acreage: 29.15 Acres
12. Subdivider: Eminent Construction
13. According to Saline County FEMA Map, panel #05125C0225E dated June 05, 2020, no portion of this property is located in a Flood Hazard area.
14. Utility Providers
    Water: City of Bryant
    Electric: Entergy
    Gas: Summit Utilities
    Sewer: City of Bryant
15. Bryant School District
16. City of Bryant Fire District
17. Plat prepared by South Point Surveying 501-837-2342
    P.O. Box 400, Sheridan AR. 72150
18. Engineering by Richardson Engineering 501-315-7225
    325 West South Street, Benton, AR 72015
19. Developer is Eminent Construction
    1100 Hill Farm Road
    Bryant, Arkansas, 72022
20. Soil conditions and soil stability at the time of construction is the responsibility of the lot owner. Soil conditions shall be verified by a Geotechnical Engineer prior to home construction.

SURVEY DESCRIPTION

A PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER AND A PART OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 1 SOUTH, RANGE 14 WEST, SALINE COUNTY, ARKANSAS MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING A FOUND 2 1/2"ALUMINUM MONUMENT ACCEPTED AS THE SOUTHWEST CORNER OF SAID SW 1/4, SE 1/4 OF SECTION 9; THENCE ALONG THE WEST LINE THEREOF N 01°49'03" E A DISTANCE OF 821.57'; THENCE LEAVING SAID WEST LINE N 89°42'21" E A DISTANCE OF 453.82' TO A FOUND REBAR AND CAP AT THE POINT OF BEGINNING; THENCE N 02°03'46" E A DISTANCE OF 465.74' TO A FOUND REBAR AND CAP ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 9; THENCE ALONG SAID NORTH LINE N 89°43'54" E A DISTANCE OF 126.38' TO A FOUND REBAR AND CAP; THENCE LEAVING SAID NORTH LINE S 01°18'39" E A DISTANCE OF 100.00' TO A SET REBAR AND CAP; THENCE S 89°36'13" E A DISTANCE OF 99.92' TO A FOUND 1/2" REBAR ; THENCE N 01°06'02" W A DISTANCE OF 100.17' TO A FOUND REBAR AND CAP ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 9; THENCE ALONG SAID NORTH LINE N 89°43'54" E A DISTANCE OF 635.18' TO A FOUND 1/2" PIPE ON THE WEST LINE OF LOMBARD HEIGHTS SUBDIVISION, ALSO ACCEPTED AS THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 9; THENCE ALONG THE WEST LINE THEREOF S 00°20'45" W A DISTANCE OF 63.17' TO A FOUND 1/2" REBAR AT THE SOUTHWEST CORNER OF LOMBARD HEIGHTS SUBDIVISION; THENCE ALONG THE SOUTH LINE OF SAID LOMBARD HEIGHTS S 88°19'47" E A DISTANCE OF 864.30' TO A FOUND REBAR AND CAP; THENCE CONTINUE ALONG SAID SOUTH LINE S 70°31'25" E A DISTANCE OF 55.04' TO A SET REBAR AND CAP; THENCE CONTINUE ALONG SAID SOUTH LINE S 89°33'49" E A DISTANCE OF 120.02' TO A THE SOUTHEAST CORNER OF LOMBARD HEIGHTS SUBDIVISION; THENCE S 01°42'20" W A DISTANCE OF 35.01' TO A SET REBAR AND CAP; THENCE N 88°19'33" W A DISTANCE OF 658.66' TO A SET REBAR AND CAP; THENCE S 02°17'06" W A DISTANCE OF 797.39' TO A SET REBAR AND CAP; THENCE N 88°58'22" W A DISTANCE OF 864.94' TO A FOUND REBAR AND CAP; THENCE S 02°17'01" W A DISTANCE OF 402.85' TO A FOUND MAG NAIL IN HILLTOP ROAD; THENCE N 88°58'36" W A DISTANCE OF 371.57' TO A FOUND MAG NAIL IN HILLTOP ROAD; THENCE N 02°02'00" E A DISTANCE OF 831.85' TO THE POINT OF BEGINNING CONTAINING 29.15 ACRES MORE OR LESS.

Preliminary Plat of "Zyair Estates Subdivision" Bryant, Arkansas



TYPICAL ROAD CROSS SECTION (RESIDENTIAL)
N.T.S.

CERTIFICATE OF PRELIMINARY ENGINEERING ACCURACY

I, Eric Richardson, hereby certify that I am the engineer of record for this subdivision, and that I or those made by me under my supervision will design and cause to be constructed the improvements required in accord with the City Bryant Subdivision of Land Regulations.

Date of Execution
Registered Professional Engineer
No. 14266, Arkansas

CERTIFICATE OF PRELIMINARY SURVEYING ACCURACY

I, Kirt Sledge, hereby certify that this proposed preliminary plat correctly represents a survey completed by me, or under my supervision on February 8, 2026, that all monuments shown hereon actually exist and their location, size, type and material are correctly shown; and that all interior lot lines are accurately described in terms of length and direction of the property sides.

03-11-2026
Date of Execution

Kirt Sledge
Registered Professional Surveyor
No. 1665, Arkansas

CERTIFICATE OF PROPERTY OWNERSHIP

I, _____, hereby certify that the deed records in the office of the Circuit Clerk and Ex-Officio Recorder of Saline County Arkansas reflect that NXT GEN Homes is the record title owner of real property more particularly described herein on plat, dated this ___ day of _____, 2026

Signed_____

Licensed Abstractor No_____
or Attorney Bar No_____

CERTIFICATE OF PRELIMINARY PLAT APPROVAL

All requirements of the City of Bryant Subdivision of Land Regulations relative to the preparation and submittal of a Preliminary Plat having been fulfilled, approval of this plat is hereby granted, subject to further provisions of said regulations.

This Certificate shall expire Date_____

Signed_____
Date of Execution Name, Chairman
Bryant Planning Commission

LICENSED PROFESSIONAL SURVEYOR
STATE OF ARKANSAS
No. 1665
REGISTERED
KIRT SLEDGE

CERTIFICATE OF AUTHORIZATION
SOUTH POINT SURVEYING
No. 2408
ARKANSAS

SOUTH POINT SURVEYING, PLLC
P.O. Box 400 Sheridan, AR 72150
southpointsurveying@yahoo.com
501-285-5958 501-837-2342

Drawing:	Date:	Page:	Drawn by:
ZYAIR ESTATES SUBDIVISION	9/22/26	1 OF 1	LMR

ZYAIR ESTATES SUBDIVISION PRELIMINARY PLAT
BRYANT, ARKANSAS

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

September 23, 2026

City of Bryant
Development & Review Committee
Attn: Mr. Colton Leonard
Planning and Development Director
RE: Request for Preliminary Plat Approval – Zyair Estates Subdivision, Bryant, Arkansas

Dear Mr. Leonard:

On behalf of Eminent Constructions, LLC please accept this correspondence as a formal request for Preliminary Plat approval for the proposed Zyair Estates Subdivision located on Hilltop Road in Bryant, Arkansas.

We respectfully request that this item be placed on the October 12th, 2026, City of Bryant Planning Commission agenda for consideration.

Please find below the relevant contact information for the developer and project engineer:

Developer Information:
Sahil Hameerani
Eminent Constructions, LLC
15600 Hartford St
Little Rock, AR 72223
shameerani@gmail.com
(501) 786-0684

Engineer Information:
Eric Richardson, P.E.
Richardson Engineering, PLLC
P.O. Box 192
Benton, AR 72018
Eric@Richardson-Engrs.com
(501) 315-7225

Should you require any additional documentation or information, please do not hesitate to contact our office at your convenience. We appreciate your time and consideration of this request.

Sincerely,



Eric Richardson, P.E.

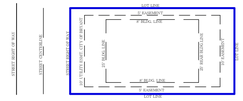
FINAL PLAT
AUTUMN HILLS ESTATES, PHASE 1,
A SUBDIVISION IN THE CITY OF BRYANT,
SALINE COUNTY, ARKANSAS
BEING PART OF THE
SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER,
OF SECTION 23,
TOWNSHIP 1 SOUTH, RANGE 14 WEST,
SALINE COUNTY, ARKANSAS

PROPERTY DESCRIPTION AS SURVEYED

THAT PART OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 23, TOWNSHIP 1 SOUTH, RANGE 14 WEST, SALINE COUNTY, ARKANSAS, DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHEAST CORNER OF SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 23; THENCE NORTH 87°58'06" WEST ALONG THE SOUTH LINE THEREOF A DISTANCE OF 165.65 FEET; THENCE NORTH 02°01'54" EAST LEAVING SAID SOUTH LINE A DISTANCE OF 23.95 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF SOUTH SHOBE ROAD, SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE ALONG SAID NORTH RIGHT OF WAY LINE THE FOLLOWING COURSES: THENCE NORTH 86°54'50" WEST A DISTANCE OF 382.19 FEET; THENCE WESTERLY, ALONG A CURVE 522.83 FEET, CONCAVE SOUTHERLY, HAVING A RADIUS OF 12470.86 FEET SAID CURVE HAVING A CHORD DIRECTION OF NORTH 87°34'41" WEST AND A CHORD LENGTH OF 522.79 FEET; THENCE NORTH 88°46'45" WEST A DISTANCE OF 39.29 FEET; THENCE NORTH 89°05'36" WEST A DISTANCE OF 68.65 FEET; THENCE WESTERLY, ALONG A CURVE 94.82 FEET, CONCAVE NORTHERLY, HAVING A RADIUS OF 3847.23 FEET SAID CURVE HAVING A CHORD DIRECTION OF NORTH 89°59'24" WEST AND A CHORD LENGTH OF 94.81 FEET TO A POINT ON THE EAST RIGHT OF WAY LINE OF RAYMAR SHORE CONNECTOR; THENCE ALONG SAID EAST RIGHT OF WAY LINE THE FOLLOWING COURSES: THENCE NORTH 35°42'56" WEST A DISTANCE OF 32.52 FEET; THENCE NORTH 08°33'26" EAST A DISTANCE OF 206.25 FEET; THENCE NORTH 04°13'18" EAST A DISTANCE OF 313.10 FEET; THENCE NORTH 03°20'10" EAST A DISTANCE OF 88.41 FEET; THENCE SOUTH 70°56'35" EAST LEAVING SAID EAST RIGHT OF WAY LINE A DISTANCE OF 111.42 FEET; THENCE SOUTH 83°24'28" EAST A DISTANCE OF 137.63 FEET; THENCE SOUTH 88°03'24" EAST A DISTANCE OF 169.87 FEET; THENCE NORTH 45°47'00" EAST A DISTANCE OF 71.35 FEET; THENCE SOUTH 59°25'44" EAST A DISTANCE OF 146.54 FEET; THENCE NORTH 01°17'54" EAST A DISTANCE OF 3.14 FEET; THENCE NORTH 17°06'38" EAST A DISTANCE OF 56.15 FEET; THENCE SOUTH 88°07'46" EAST A DISTANCE OF 462.29 FEET; THENCE SOUTH 01°02'18" EAST A DISTANCE OF 164.02 FEET; THENCE SOUTH 00°53'26" WEST A DISTANCE OF 99.32 FEET; THENCE SOUTH 00°59'47" WEST A DISTANCE OF 80.08 FEET; THENCE SOUTH 00°08'18" WEST A DISTANCE OF 115.12 FEET; THENCE SOUTH 00°08'19" WEST A DISTANCE OF 100.90 FEET TO THE POINT OF BEGINNING. CONTAINING 15.45 ACRES, MORE OR LESS.



VICINITY MAP
(NTS)



TYPICAL LOT SETBACKS & EASEMENTS
(NTS)

THE BEARING SYSTEM IS BASED ON GRID NORTH PER GPS OBSERVATION

1"X2" STEEL BAR
NE CORNER
SE 1/4 SW 1/4
SECTION 23
T-1-S, R-14-W

REBAR W/CAP# 1374
NW CORNER
SE 1/4 SW 1/4
SECTION 23
T-1-S, R-14-W

LINE TABLE CHART

LINE	BEARING	DISTANCE
L1	N 02°01'54" E	23.95'
L2	N 88°46'45" W	39.29'
L3	N 89°05'36" W	68.65'
L4	N 35°42'56" W	32.52'
L5	N 17°06'38" E	56.15'
L6	S 82°59'55" E	20.51'
L7	S 88°44'16" E	20.66'
L8	S 02°58'56" W	50.02'
L9	N 01°17'54" E	9.10'
L10	N 01°17'54" E	3.14'

CURVE TABLE CHART

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	N 87°34'41" W	522.79'	12470.86'	522.83'
C2	N 86°59'24" W	94.81'	3847.23'	94.82'
C3	S 85°52'05" E	40.05'	400.00'	40.07'
C4	S 86°04'22" E	27.15'	291.85'	27.16'
C5	S 85°31'42" E	33.21'	300.00'	33.23'
C6	N 87°14'17" W	97.07'	12470.86'	97.08'
C7	S 43°42'06" E	35.36'	25.00'	39.27'
C8	N 87°38'51" W	80.01'	12470.86'	80.01'
C9	N 88°00'49" W	80.01'	12470.86'	80.01'
C10	N 88°22'52" W	80.00'	12470.86'	80.00'
C11	N 88°40'19" W	46.63'	12470.86'	46.63'
C12	N 62°24'18" E	33.05'	50.00'	33.68'
C13	N 67°12'13" E	20.41'	25.00'	21.03'
C14	N 67°26'47" W	51.28'	50.00'	53.85'
C15	N 01°03'06" W	58.13'	50.00'	62.03'
C16	N 41°52'26" E	12.85'	50.00'	12.89'
C17	N 26°14'13" E	20.16'	25.15'	20.74'
C18	N 41°03'17" W	33.68'	24.97'	36.97'
C19	N 86°08'44" W	45.38'	475.00'	45.40'
C21	N 48°10'36" E	36.49'	25.00'	40.91'
C22	S 83°59'11" E	18.03'	325.00'	18.04'
C23	S 87°08'20" E	17.73'	325.00'	17.73'
C24	S 42°51'35" E	35.87'	25.00'	40.00'
C25	S 47°08'25" W	69.66'	50.00'	77.07'
C26	N 43°42'06" W	70.71'	50.00'	78.54'
C27	S 47°08'25" W	34.83'	25.00'	38.54'
C28	S 21°06'45" E	20.41'	25.00'	21.03'
C29	S 41°33'01" E	6.38'	50.00'	6.38'
C30	S 02°56'48" E	65.39'	50.00'	71.28'
C31	S 68°09'21" W	41.26'	50.00'	42.53'
C32	N 63°59'36" W	39.85'	50.00'	40.98'
C33	N 64°36'24" W	20.41'	25.00'	21.03'
C34	S 46°17'54" W	35.36'	25.00'	39.27'
C35	S 87°18'21" E	18.74'	375.00'	18.74'
C36	S 86°04'44" E	50.16'	525.00'	50.17'
C37	S 82°50'17" E	5.08'	275.00'	5.08'
C38	S 88°02'04" E	25.59'	275.00'	25.60'
C39	S 43°42'06" E	35.36'	25.00'	39.27'
C41	N 86°34'54" W	89.08'	12470.86'	89.08'
C42	N 86°54'05" W	50.02'	12470.86'	50.02'

GENERAL NOTES:

CURRENT ZONING: R-2
TOTAL ACRES =15.45 ACRES (672829 SQ. FT.)
AVERAGE LOT SIZE = 107' X 50' (5350 SQ. FT.)
TOTAL NO. OF LOTS = 43 LOTS
LINEAR FEET OF NEW ROAD = 2772 FEET + -
SOURCE OF WATER = CITY OF BRYANT
SOURCE OF SEWER = CITY OF BRYANT
SOURCE OF ELECTRIC = ENTERGY
SOURCE OF GAS = SUMMIT UTILITIES, INC
SOURCE OF CABLE = COMCAST

SOIL CONDITIONS
SOIL SUITABILITY AT THE TIME OF CONSTRUCTION IS THE RESPONSIBILITY OF THE LOT OWNER. SOIL CONDITIONS SHALL BE VERIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO HOME CONSTRUCTION

BUILDING LINE SETBACKS

FRONT SETBACKS = 25' FEET (AS SHOWN)
SIDE SETBACKS = 8 FEET (AS SHOWN)
SIDE (EXTERIOR ON CORNERS LOT) = 15 FEET (AS SHOWN)
REAR SETBACKS = 25 FEET (AS SHOWN)

EASEMENTS
FRONT = 10 FEET
SIDE = 5 FEET OR AS SHOWN
REAR = 10 FEET
NO FENCE CROSSING DRAINAGE EASEMENTS
ALL EASEMENTS TO BE DEDICATED TO CITY OF BRYANT FOR UTILITY CONSTRUCTION AND MAINTENANCE

OWNER
TNL DREAM HOME, LLC
7902 WORTH AVE.
BENTON, AR. 72019

LOT 48 · LOT 47 · LOT 49 · LOT 50 · LOT 63 · LOT 64 · LOT 46 · LOT 45 · LOT 44 · LOT 43 · LOT 65
FUTURE DEVELEPMENT
60' R
28.00'

PARCEL NUMBER 840-13186-002
DORMAN - FLEMING MARSHA

PARCEL NUMBER
840-13179-000
RUTHERFORD
HH & MARY

PARCEL NUMBER 840-13180-000
REYES VALENTIN RAMIREZ

S 88°07'46" E 462.29'
#4 REBAR
N 02°56'35" E 1322.56'

EXISTING EP
REBAR W/CAP# 1506
N 02°42'45" E 1324.15'
S 70°56'35" E 111.42'
87.32' 10' ESMT.
24.10'
S 83°24'28" E 137.63'
57.29'
80.34'
S 88°03'24" E 169.87'
89.87'
80.01'
10' ESMT.
N 45°47'00" E 71.35'
S 59°25'44" E 146.54'
L10
L5
80.75'
TRACT A
MAILBOX AREA
0.13 ACRES
5743 SQ. FT.
TRACT B
DETENTION AREA
1.78 ACRES
77598 SQ. FT.
25' BLDG. LINE
LOT 38
0.27 ACRES
11781 SQ. FT.
LOT 39
0.22 ACRES
9701 SQ. FT.
LOT 40
0.22 Acres
9641 Sq. Ft.
LOT 41
0.22 Acres
9694 Sq. Ft.
LOT 42
0.25 Acres
10680 Sq. Ft.
LOT 66
0.26 ACRES
11370 SQ. FT.
F.F. ELEVATION
362.0'
S 88°42'06" E 127.83'
65.00' 10' ESMT.
90.00' 10' ESMT.
N 01°17'54" E
102.83'
10' EASEMENT
S 88°42'06" E 405.29'
RAYMAR SHORE CONNECTOR (R/W VARIES)
REBAR W/CAP# 1506
N 03°20'10" E 88.41'
N 01°17'54" E 125.74'
N 01°17'48" E 120.51'
N 01°17'54" E 120.56'
N 01°17'54" E 120.86'
N 01°17'53" E 170.30'
60.86'
27.59'
C36
17.76'
80.35'
75.26'
54.44'
65.03'
C38
C39
94.84'
15' BLDG. LINE
L6
C3
50.07'
L7
C4
75.88'
S 83°24'28" E 176.01'
100.13'
C5
169.30'
GOLDEN GROVE LANE (50' R/W)
MAPLE CREST LANE (50' R/W)
497.36'
S 88°42'06" E 726.68'
20' ESMT.
60.03'
S 01°02'18" E 164.02'
37.75'
S 88°42'06" E 99.32'
S 00°53'26" W
61.57'
S 00°59'47" W
80.08'
S 00°08'18" W
115.12'
S 00°08'19" W
100.90'
16.74'
84.16'
PARCEL NUMBER 840-13186-000
TNL DREAM HOME, LLC
7902 WORTH AVE.
BENTON, AR. 72019
30.30'
C19
21.25'
C18
LOT 10
0.26 ACRES
11205 SQ. FT.
68.79'
25' BLDG. LINE
97.30'
N 04°13'18" E 313.10'
S 85°45'35" E 124.48'
LOT 9
0.23 Acres
10122 Sq. Ft.
80.00'
80.11'
S 85°45'35" E 128.57'
LOT 8
0.24 Acres
10358 Sq. Ft.
20.86'
49.28'
51.20'
C16
C17
S 85°45'35" E 119.52'
LOT 7
0.33 Acres
14445 Sq. Ft.
206.25'
N 08°33'26" E
10' ESMT.
126.97'
C15
50' R
C14
168.15'
N 59°24'26" E
20' DRAINAGE ESMT.
LOT 6
0.31 Acres
13470 Sq. Ft.
N 08°26'08" E 101.67'
C13
31.97'
C12
LOT 5
0.23 Acres
9860 Sq. Ft.
LOT 4
0.23 Acres
10059 Sq. Ft.
LOT 3
0.23 Acres
10115 Sq. Ft.
LOT 2
0.23 Acres
10212 Sq. Ft.
LOT 1
0.29 Acres
12440 Sq. Ft.
C2
L3
65.92'
L2
C11
C10
C9
C8
C1
C6
C7
L1
P.O.B.
RB W/CAP# 1506
#4 REBAR
SW CORNER
SE 1/4 SW 1/4
SECTION 23
T-1-S, R-14-W
N 87°58'06" W 1155.04'
S SHOBE ROAD (60' R/W)
N 87°58'06" W 165.65'
P.O.C.
XTIE
SE CORNER
SE 1/4 SW 1/4
SECTION 23
T-1-S, R-14-W
DECORATIVE PERIMETER FENCE
LOT 11
0.25 Acres
11055 Sq. Ft.
LOT 12
0.21 Acres
9363 Sq. Ft.
LOT 13
0.21 Acres
9349 Sq. Ft.
LOT 14
0.24 Acres
10440 Sq. Ft.
LOT 15
0.24 Acres
10560 Sq. Ft.
LOT 16
0.21 Acres
9360 Sq. Ft.
LOT 17
0.21 Acres
9360 Sq. Ft.
LOT 18
0.21 Acres
9360 Sq. Ft.
LOT 19
0.25 ACRES
10880 SQ. FT.
LOT 20
0.23 Acres
10100 Sq. Ft.
LOT 21
0.21 Acres
9360 Sq. Ft.
LOT 22
0.21 Acres
9360 Sq. Ft.
LOT 23
0.21 Acres
9360 Sq. Ft.
LOT 24
0.24 Acres
10560 Sq. Ft.
LOT 25
0.24 Acres
10440 Sq. Ft.
LOT 26
0.21 Acres
9349 Sq. Ft.
LOT 27
0.21 Acres
9360 Sq. Ft.
LOT 28
0.24 Acres
10280 Sq. Ft.
LOT 29
0.23 ACRES
9823 SQ. FT.
F.F. ELEVATION
362.0'
LOT 30
0.21 ACRES
9008 SQ. FT.
LOT 31
0.21 ACRES
9148 SQ. FT.
LOT 32
0.23 ACRES
9856 SQ. FT.
LOT 33
0.40 ACRES
17508 SQ. FT.
LOT 34
0.23 ACRES
9860 SQ. FT.
LOT 35
0.24 ACRES
10446 SQ. FT.
LOT 36
0.24 ACRES
10270 SQ. FT.
LOT 37
0.27 Acres
11931 Sq. Ft.
FAMILY TREE DRIVE (50' R/W)
S 88°42'06" E 516.90'
S 88°42'06" E 274.09'
N 02°58'56" E 290.13'
CEDAR AUTUMN WAY (50' R/W)
N 01°17'54" E 187.08'
N 01°17'54" E 135.77'
N 01°17'54" E 138.26'
N 01°17'54" E 140.76'
N 01°17'54" E 117.69'
S 63°30'31" E 128.61'
S 87°01'04" E 118.78'
S 87°01'04" E 121.58'
S 87°01'04" E 112.18'
N 86°54'50" W 382.19'
156.10'
20' EXCLUSIVE SEWER ESMT.
PARCEL NUMBER 840-13186-001
ALMOND MATTHEW RYAN & BROOKE
BY GRAPHIC PLOTTING ONLY THE DESCRIBED PROPERTY DOES NOT LIE WITHIN A FLOOD PRONE AREA.
SOURCE: FIRM
PANEL NO.: 05125C0380E
DATE: JUNE 05, 2020
I hereby certify that the above plat represents a survey made by me or under my supervision on this day. No independent search for easements, covenants, encumbrances, or any other facts which an accurate title search may disclose was performed.

Certificate of Owner

We, the undersigned, owners of the real estate shown and described herein do hereby certify that we have laid off, platted and subdivided, and do hereby lay off, plat and subdivide said real estate in accordance with the within plat.

Name: TNL Dream Home, LLC
Address: 7902 Worth Ave. Benton, Ar. 72019

Signed_____

Source of Title: Document Number 2019-018823

Certificate of Engineering Accuracy

I, Eric Richardson, hereby certify that this plat correctly represents a survey and a plan made by me or under my supervision: that all monuments shown hereon actually exist and their locations, size, type, and material are correctly shown: and that all requirements of the City of Bryant Subdivision Rules and Regulations have been fully complied with.

Signed: _____

Date of Execution:_____
Registered Professional Engineer No. 14266, Arkansas

Certificate of Final Surveying Accuracy

I, James Aaron Rasburry hereby certify that this final plat correctly represents a survey completed by me, or under my supervision on _____: that the boundary lines shown hereon correspond with the description in the deeds cited in the above source of title: and that all monuments which were found or placed on the property are correctly described and located.

Signed: _____

Date of Execution:_____
Registered Land Surveyor No. 1506, Arkansas

Certificate of Final Plat Approval

Pursuant to the City of Bryant Subdivision Rules and Regulations, this document was given approval by the Bryant Planning Commission at a meeting held _____ 20_____. All of the document is hereby accepted, and this certificate executed under the authority of said rules and regulations.

_____ _____
Bryant Planning Commission Date of Execution

Approval of the final plat shall become null and void unless said plat is filed for record within one hundred twenty (120) days from the date of execution of this certificate.

LEGEND
● - FOUND MONUMENT
⊙ - SET #5 REBAR/CAP #1506
⁂ - COMPUTED POINT
⁘ - CONTROLLING CORNER
-x- - FENCE
- - - - DECORATIVE FENCE
——— - CENTERLINE

50 0 50 100
Scale: 1" = 50'

CERTIFICATE OF AUTHORIZATION
RASBURRY SURVEYING, LLC
NO. 2267
ARKANSAS

RASBURRY SURVEYING
308 W. South Street
Benton, AR 72015
Office/Fax: (501) 860-6893
E-Mail: aaron@razsurvey.com

FINAL PLAT
AUTUMN HILLS ESTATES, PHASE 1,
A SUBDIVISION IN THE CITY OF BRYANT,
SALINE COUNTY, ARKANSAS
BEING PART OF THE
SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER,
OF SECTION 23, TOWNSHIP 1 SOUTH, RANGE 14 WEST,
SALINE COUNTY, ARKANSAS

FILE: C:\DRAWINGS\AUTUMN HILLS ESTATES\AUTUMN HILLS ESTATES
PLAT DATE:9-21-26 | DRAWN BY: DCR
JOB#: 21-370 | CHECKED BY: JAR

REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF ARKANSAS
No. 1506
JAMES A. RASBURRY
SIGN HERE

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

September 17, 2026

City of Bryant
Attn: Mr. Colton Leonard
Planning & Development Director
RE: Autumn Hills Estates Phase 1, Bryant, Arkansas

Dear Mr. Leonard:

Please accept this letter as the Professional Engineer's certification that all infrastructure improvements and installations have been installed in accordance with the submitted construction plans and drawings and the standards established by the City of Bryant and are functioning properly.

Developer Information:
Ly Phan
TNL Dream Home, LLC
7902 Worth Ave.
Benton, AR 72019
lyphan9@icloud.com
Phone: (501) 909-2602

Engineer Information:
Eric Richardson, P.E.
Richardson Engineering, PLLC
P.O. Box 192
Benton, AR 72018
Eric@Richardson-Engrs.com
(501) 315-7225

Should you require any additional documentation or information, please do not hesitate to contact our office at your convenience. We appreciate your time and consideration of this request.

Sincerely,



Eric Richardson, P.E.

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

September 17, 2026

City of Bryant
Attn: Mr. Colton Leonard
Planning & Development Director
RE: Request for Final Plat Approval – Autumn Hills Estates Phase 1, Bryant, Arkansas

Dear Mr. Leonard:

On behalf of TNL Dream Home, LLC, please accept this correspondence as a formal request for Final Plat approval for the proposed Autumn Hills Estates, Phase 1, located on Shobe Road, in Bryant, Arkansas.

We respectfully request that this item be placed on the October 12th, 2026, City of Bryant Planning Commission agenda for consideration.

Please find below the relevant contact information for the developer and project engineer:

Developer Information:
Ly Phan
TNL Dream Home, LLC
7902 Worth Ave.
Benton, AR 72019
lyphan9@icloud.com
Phone: (501) 909-2602

Engineer Information:
Eric Richardson, P.E.
Richardson Engineering, PLLC
P.O. Box 192
Benton, AR 72018
Eric@Richardson-Engrs.com
(501) 315-7225

Should you require any additional documentation or information, please do not hesitate to contact our office at your convenience. We appreciate your time and consideration of this request.

Sincerely,



Eric Richardson, P.E.

City of Bryant Subdivision Checklist

Subdivision/Project Name Autumn Hills Estates, Phase 1

Contact Person Charlotte Crone **Phone** 501-315-7225

Mailing Address 325 West South Street, Benton, AR 72015

I. Basic Information Needed On The Plat

- ▲ 1. Name of Subdivision/Project
- ▲ 2. Current zoning R-2
- ▲ 3. Name and Address of owner of Record
- ▲ 4. Illustrate Source of Title giving deed record book and page number
- ▲ 5. Name & address of the sub-divider
- ▲ 6. Date of Survey
- ▲ 7. Vicinity map locating streets, highways, section lines, railroad, schools, & parks within ½ mile
- ▲ 8. Legal description of the property with exact boundary lines
- ▲ 9. Acreage of property
- ▲ 10. Number of Lots
- ▲ 11. Lot area in square feet
- ▲ 12. Lot lines with appropriate dimensions
- ▲ 13. Building setback lines
- ▲ 14. Preliminary Engineering certificate seal and signature on each page
- ▲ 15. Certificate of Engineering Accuracy
- ▲ 16. Certificate of Owner
- ▲ 17. Certificate of Final Plat Approval
- ▲ 18. Certificate of Recording
- ▲ 19. Show scale (not less than 1" = 100')
- ▲ 20. North Arrow
- ▲ 21. Show Title block
- ▲ 22. Show adjoining property owners
- ▲ 23. Layout of all proposed streets including traffic control devices (stop signs, speed limit, etc.)
- 24. Layout of all subdivision entrance street upgrades
- ▲ 25. Layout of all proposed alleys
- ▲ 26. Layout of all proposed sidewalk systems
- ▲ 27. Layout identifies any FEMA flood plain and flood way property within the 100-year flood elevation. (Provide Corp of Engineers 404 Permit if required)
- ▲ 28. Drainage easements for stormwater run-off and detention giving dimensions, locations, and purpose
- ▲ 29. Layout accommodates Master Street Plan segments within the boundaries
- ▲ 30. Street layout ties to existing adjoining subdivision stub-out streets and provides stub-out streets for future adjoining subdivisions.
- ▲ 31. Street width and right-of-way properly shown for each functional classification
- ▲ 32. Street centerlines showing angles of deflection, intersection, radii, length oftangents and arcs, and degree of curvature with basis of curve data
- ▲ 33. Typical cross section of streets
- ▲ 34. Location and name of existing streets
- ▲ 35. New street names that are not similar to existing street names
- ▲ 36. Show street lights
- ▲ 37. Show Fire Hydrant placement

III. Final Plat Attachments

(Application will not be accepted until all attachment requirements are met)

- ▲ 71. **Letter to Planning Commission** stating your request
- ▲ 72. Completed **Checklist**
- ~~▲ 73. 20 copies of Final Plat Plan (folded) that includes vicinity map (minimum size 17" X 24" paper)~~
- ~~▲ 74. Two (2) IBM compatible diskettes or CDR's with pertinent data and Plat in CAD compatible .DXF~~ electronic file format
- ▲ 75. **Bill of Assurance** including provisions set out in Title 15 Subdivision Regulations 15.16.01
- ▲ 76. Copy of **Water & Sewer Commission approval** or....
- ▲ 77. State Health Department approval of any new water supply and/or sewage system.
- ▲ 78. **Letter submitted by a Registered Professional Engineer, certifying that all infrastructure improvements and installations have been installed** in accordance with the submitted construction plans and drawings and the standards established by the City of Bryant and are functioning properly.
- ▲ 79. Infrastructure Maintenance Bond or Cashier's check.
- ▲ 80. Check for **$25.00 + $1.00 per lot for final Subdivision fee**
- ▲ 81. Check for **Water Sewer impact fees ($100.00 Flushing Fee and $100.00 impact fee per lot)**

Autumn Hills Estates
Name of Subdivision

Rasbury Surveying
Surveyor

I HAVE COMPLIED WITH THE REQUIREMENTS LISTED ABOVE AND HAVE CHECKED ALL OF THE BOXES ON THE CHECKLIST WHICH APPLY TO THIS PROJECT SUBMITTAL.

Owner Signature

Engineer Signature

CITY USE

Preliminary Plat Approved _____

Planning Commission Date _____

Final Plat Approved _____

Planning Commission Date _____

Proof of Recording - County _____

County Clerk _____ Date _____

BILL OF ASSURANCE

Autumn Hills Estates

PART A. PREAMBLE

WHEREAS, TNL Dream Home, LLC. is the Owner, by virtue of Instruments, _____ of the following land situated in Saline County, Arkansas, to wit:

LEGAL DESCRIPTION –AUTUMN HILLS ESTATES

See Attached
"Exhibit A" Final Plat Recorded Plat for Legal Description

WHEREAS, Owner has caused said land to be surveyed and a plat thereof made, dividing said land into lots as shown on said plat and showing the dimensions of each lot and the width of the streets as known as Autumn Hills Estates, to the City of Bryant, Saline County, Arkansas.

WHEREAS, the Saline County Real Estate Assessor and Office of Emergency Services have approved said Subdivision and road names.

NOW THEREFORE, TNL Dream Home, LLC in consideration of the purposes herein stated, does hereby designate said land and make part hereof to be known as Autumn Hills Estates to the City of Bryant, Saline County, Arkansas, and that hereafter any conveyance by the Owners of said land by lot number shall forever be held to be good and legal description and the streets shown on said plat in said Subdivision are hereby and will become a public road to be accepted by the City of Bryant for maintenance. The property owners will establish Autumn Hills Estates Property Owner's Association for the purpose of maintaining and ownership of common areas and appurtenances belonging thereto. The use of the land in said Subdivision being subject to the following Protective and Restrictive Covenants:

PART B. AREA OF APPLICATION

B-1 FULLY PROTECTED RESIDENTIAL AREA. The residential area covenants in Part C in their entirety shall apply to the entire Subdivision.

PART C: RESIDENTIAL AREA COVENANTS:

C-1 LAND USE AND BUILDING TYPE. No lot shall be used except for residential purposes. No business of any nature or kind shall at any time be conducted in any building located on any of the lots. No building shall be erected, altered, placed or allowed to remain on any lot other than one detached, single-family dwelling not to exceed two stories in height, excluding basement area. No lot can be subdivided for any purpose without the prior approval from the City of Bryant Planning Board and the consent of 51% of the voting members of the Property owners' associations.

C-2 ARCHITECTURAL CONTROL. No dwelling or structure shall be erected, placed or altered on any lot until the construction plans and specifications and a plan showing the location of the structure, including landscaping, have been approved by the architectural control committee as to quality of workmanship and materials, harmony of external design with existing structures, and as to location with respect to topography and finish grade elevation, and intended objectives of the Architectural Control Committee to achieve a subdivision that accomplishes the desired architectural design in the structure and subdivision aesthetics. No fence or wall shall be erected, placed or altered on any lot nearer than the setbacks as shown on the Plat. The term structure is defined to include any and all types of fences, antennas, decks, Permanent basketball goals, swimming pools and television satellite dishes, which in no event shall be placed in front of dwellings. Each property owner requesting approval shall submit to the Architectural Control Committee at least two weeks prior to the time approval is needed, a complete set of house plans and completed material and specifications list. Approval shall be provided in Part D.

C-3. DWELLING COST, QUALITY AND SIZE. No dwelling shall be permitted on any lot unless the dwelling has at least 2,200 square feet, it being the intention and purpose of the covenants to assure that all dwellings shall be of a quality of workmanship and materials substantially the same or better than that for the minimum permitted dwelling size. The ground floor area of the main structure for two-story dwellings shall not be less than 1200 square feet, exclusive of basements, porches, garages, patio and overhangs. Any one-story dwelling will have a minimum of 2,200 square feet, exclusive of basements, porches, garages, patio and overhangs. Each dwelling shall have a minimum of a two-car garage. No open carports are allowed. No manufactured houses are allowed, site-built homes only.

C-4. BUILDING LOCATION. No building shall be located on any lot, nearer to the side street line, than the minimum building set back lines as shown on the recorded plat. No lot shall be subdivided and no more than one dwelling shall be permitted on any one lot.

C-5 BUILDING REQUIRMENTS. All buildings shall have roof pitch of no less than 6/12. All dwellings or structures shall have brick or rock on the front of the structure with the exception of gable and dormer areas where brick, rock, or vertical or shake siding is allowed. Perimeter brick skirting is encouraged but not required. All plans shall be approved by the Architectural Control Committee. Unless otherwise approved by the Architectural Control Committee, all fences shall be of a wood type with privacy fence posts inside the fence. All fences shall be approved by the Architectural Control Committee.

C-6 SIDEWALKS. It shall be the responsibility of all owners of lots to construct per the requirements detailed on the recorded Plat per the requirements of the City of Bryant.

C-7. EASEMENTS AND RIGHTS OF WAY. Easements for installation and maintenance of utilities and drainage facilities, and construction, repair and maintenance of adequate walls, roofs and eaves are reserved as shown on recorded plat. There shall be no fencing installed within gas company right of way.

C-8. NUISANCES. No noxious or offensive trade or activities shall be carried on, nor shall anything be done thereon which may be or become a nuisance to the neighborhood.

C-9. TEMPORARY STRUCTURES. No structure of a temporary character, basement, tent, shack, garage, barn or other outbuilding shall be used on any tract at any time as a residence either temporarily or permanently; except that the developer may have a temporary construction, storage facility and/or sales office.

C-10 OUT BUILDINGS. One outbuilding for storage shall be permitted, if approved by the Architectural Control Committee and shall conform to the same architectural design and construction of the dwelling. No prefabricated outbuilding may be installed, placed or located upon any lot. Above-ground swimming pools are prohibited.

.

C-11. SIGNS. No sign of any kind shall be displayed to the public view on any lot, except, one professional sign of not more than one square foot; one sign of not more than five square feet advertising the property for sale or rent or any signs used by a builder to advertise the property during the construction and sales period.

C-12. OWNER RESPONSIBILITY. All property owners shall ensure that any contractor performing services for the property owner shall comply with the provisions of this Bill of Assurance.

C-13. CONTRACTOR RESPONSIBILITY. No contractor shall damage in any way the utilities or streets in any manner.

C-14. OIL AND MINING OPERATIONS. No oil drilling, oil development operations, oil refining, quarrying or mining operations of any kind shall be permitted upon or in any lot, nor shall oil wells, tanks, tunnels, mineral excavations or shafts be permitted upon or in any lot. No derrick or structures designated for use in boring for oil or natural gas shall be erected, maintained or permitted upon any lot.

C-15. LIVESTOCK AND POULTRY. No animals, livestock or poultry of any kind may be raised, bred or kept on any tract, except that dogs or cats may be kept, on any lot provided that they are not kept, bred or maintained for any commercial purpose and provided that facilities for maintenance of same are approved by the Architectural Control Committee and that the keeping of same does not constitute a nuisance.

C-16. GARBAGE AND REFUSE DISPOSAL. No lot or easement shall be used or maintained as dumping ground for rubbish. Trash, garbage and other waste shall not be kept except in sanitary containers. There shall be no burning of trash, rubbish, leaves or yard waste.

C-17 SIGHT DISTANCE AT INTERSECTIONS. No fence, wall, hedge or shrub planting which obstructs sight lines at elevations between 2 and 6 feet above the roadways shall be placed or permitted to remain on any lot corner which the triangular area formed by the street property lines and the line connecting them at points 15 feet from the intersection of street right of way lines, or in the case of a rounded property corner, from the intersection of the street property line extended. The same sight line limitations shall apply on any lot within 10 feet from the intersection of the street property line with the edge of a driveway pavement. No tree shall be permitted to remain within such distances or such intersections unless the foliage line is maintained at sufficient height to prevent obstruction of such sight lines. Lot owners are precluded from constructing,

planting, or otherwise maintaining any part of their lot that realistically has the effect of establishing or maintaining a site obstruction that interferes with proper and safe vehicular movement in the public access area.

C-18. LOT, YARD AND HOME MAINTENANCE. All property owners, after acquisition of any lot, shall keep all grounds and yards mowed, trimmed and clean. All houses shall be painted and stained. No deviation from the original plans shall be permitted without approval of the Architectural Control Committee.

C-19 COMMENCEMENT OF CONSTRUCTION. A property owner may start construction of an approved dwelling at any time.

C-20 COMPLETION OF CONSTRUCTION. Any dwelling must be completed in its entirety within a period of one year from date such construction commences.

C-21 MOTOR VEHICLE PARKING. Abandoned or unused motor vehicles shall not be parked or permitted to remain on any lot or within the dedicated street. Boats, recreational vehicles and trailers cannot be parked at the front or side of any dwelling or in the dedicated street and must be parked in back of the dwelling. Owners or permanent residents are prohibited from parking in the street. There shall be no non-functioning vehicles kept on the lot or in view of the public. There shall be no repair work done outside of the garage. Vehicles shall not be parked within fire zones at any time.

C-22. MINIMUM FLOOR LEVEL ELEVATIONS. The Architectural Control Committee reserves the right to prescribe the minimum finished floor elevations for lots. Filed Final Plat shall be referred to ensure homes meet the minimum finished floor elevations.

C-23. SOIL CONDITIONS. Soil suitability at the time of construction is the responsibility of the lot owner. Soil conditions shall be verified by a geotechnical engineer prior to home construction.

PART D. ARCHITECTURAL CONTROL COMMITTEE:

D-1 MEMBERSHIP. The Architectural Control Committee shall be composed of the Developer until 90% of the lots have been conveyed by the Developer. The owners of 51% or more of the lots within the subdivision may vote to expand or reduce the membership of the Architectural Control Committee after 90% of the lots are conveyed by the Developer. A majority of the committee may designate a representative to act for it. In the event of death or resignation of any member of the committee, the remaining members shall have full authority to designate a successor. Neither the members of the committee nor its designated representative shall be entitled to any compensation for their services performed pursuant to this covenant. Any member of the Architectural Control Committee may be removed by a vote of 51% or more of the owners of lots in the subdivision. In the event of any vacancy in the Architectural Control Committee, the owners of 51% or more of the lots within the subdivision may select additional members.

D-2 PROCEDURE. The committee's approval or disapproval as required in these covenants shall be in writing and should be retained by the owner/builder as proof of the Committee's

approval. In the event the committee or its designated representative fails to approve or disapprove within 30 days after plans and specifications have been submitted to it or in the event no suit to enjoin the construction or compliance with these covenants has been commenced within 180 days after the completion thereof will not be required and the related covenants shall be deemed to have been fully complied with.

PART E. PROPERTY OWNERS' ASSOCIATION

E-1 OWNERS EASEMENTS OF ENJOYMENT. Every owner shall have a right and easement of enjoyment in and to the common area which shall be appurtenant to and shall pass with the title to every tract. Subject to the following provision:

(a) The right of the Association to charge reasonable fees for maintenance of the common areas and appurtenances such as sign maintenance.

E-2. MEMBERSHIP AND VOTING RIGHTS

SECTION 1: Every owner of a tract which is subject to assessment shall be a member of the Association. Membership shall be appurtenant to and may not be separated from ownership of any tract which is subject to assessment.

SECTION 2: The Association shall have two classes of voting membership:

Class A: Class A members shall be all owners, with the exception of the Declarant, and shall be entitled to one vote for each tract owned, which may be voted at such time as all tracts are sold by the Declarant. When more than one person holds an interest in any tract, all such persons shall be members. The vote for such tract shall be exercised as they determine, but in no event shall more than one vote be cast with respect to any Tract.

Class B: The Class B member(s) shall be the Declarant and shall be entitled to one vote per tract owned. The Class B membership shall cease on the happening of the following events.

(a) When all tracts are sold by declarant.

E-3. COVENANT FOR MAINTENANCE ASSESSMENTS

SECTION 1: Creation of the Lien and Personal Obligation of Assessments: The Declarant, for each tract owned within the properties, hereby covenants, and each owner of any tract by acceptance of a deed therefore, whether or not it shall be so expressed in such deed, is deemed to covenant and agree to pay to the Association annual assessment or charges, such assessments to be established and collected as hereinafter provided. The annual assessments, together with interest, costs and reasonable attorneys' fees, shall be a charge on the land and shall be a continuing lien upon the property against which each such assessment is made. Each such assessment, together with interest, costs, and reasonable attorneys' fees, shall also be the personal obligation of the person who is the owner of such property at the time when the assessment fell due. The

personal obligation for delinquent assessments shall not pass to his successors in title unless expressly assumed by them.

SECTION 2: Purpose of Assessment: The assessments levied by the Association shall be used as follows:

(a) For the maintenance and upkeep of all common areas and appurtenances if any and neighborhood entrance signage and mailbox area.

(b) For any other purposes deemed in the best interest of the property owners by the Association

SECTION 3: Annual Assessment: The POA is authorized to initiate annual assessments or levy special assessments for capital improvements at which time they are deemed necessary by the board.

a) The developer is exempt from paying POA dues.

SECTION 4: Notice and Quorum for Any Action Authorized Under Section 3: Written Notice of any meeting called for the purpose of taking any action authorized under Section 3 shall be sent to all members not less than 10 days in advance of the meeting. At the first such meeting called, the presence of members or proxies entitled to cast 60% of all votes shall constitute a quorum. If the required quorum is not present, another meeting may be called subject to the same notice requirement, and the required quorum at the preceding meeting shall be one-half (1/2) of the required quorum at the preceding meeting. No such subsequent meeting shall be held for more than 60 days following the preceding meeting. Each tract as conveyed by Declarant shall have one vote.

SECTION 5: Uniform Rate of Assessment: Both annual and special assessments must be fixed at a uniform rate and may be collected on a semi-annual or annual basis.

SECTION 6: Date of Commencement of Annual Assessments: The Board of Directors shall fix the amount of the annual assessment against each Lot at least thirty (30) days in advance of each annual assessment period. Written notice of the annual assessment shall be sent to every Owner subject thereto. The due date shall be established by the Board of Directors. The Association shall, upon demand, and for a reasonable charge, furnish a certificate signed by an officer of the Association setting forth whether the assessments on a specified Lot have been paid. A properly executed certificate of the Association as to the status of assessments on a Lot is binding upon the Association as of the date of its issuance.

SECTION 7: Effect of Nonpayment of Assessments: Remedies of the Association: Any assessment not paid within thirty (30) days after the due date shall bear interest from the due date at the rate of ten percent per annum. The Association may bring an action at law against the owner personally obligated to pay the same or foreclose the lien against the property. No owner may waive or otherwise escape liability for the assessments provided for herein by non-use of the common area or abandonment of the property.

SECTION 8: Subordination of the Lien to Mortgages: The lien of the assessments provided for herein shall be subordinate to the lien of any first mortgage. Sale or transfer of any tract shall not affect the assessment lien. However, the sale or transfer of any tract pursuant to mortgage foreclosure or any proceeding in lieu thereof, shall extinguish the lien of such assessments as to payments which became due prior to such sale or transfer. No sale or transfer shall relieve such tract from liability for any assessments thereafter becoming due or from the lien thereon.

SECTION 9: Special Assessments for Capital Improvements: In addition to the annual assessments authorized above, the members may levy, in any assessment year, a special assessment applicable to that year only for the purpose of defraying, in whole or in part, the cost of any construction, reconstruction, repair or replacement of a capital improvement upon the common areas, provided that such assessment shall have the assent of two-thirds (2/3) of the votes of the members who are voting in person or by proxy at a meeting duly called for this purpose.

PART F. GENERAL PROVISIONS:

F-1. TERM These covenants are to run with the land and shall be binding on all parties and all persons claiming under them for a period of twenty-five years from the date these covenants are recorded after which time, said covenants shall be automatically extended for successive period of ten years, subject to the express provision that these covenants may be amended
at any time after the date of execution hereby by an instrument signed by the members of the Architectural Control Committee and the Declarant (until 90% of the lots have been conveyed by the Declarant).

F-2 ENFORCEMENT Enforcement shall be by proceedings at law or in equity against any person or persons violating or attempting to violate any covenant either to restrain violations or to recover damages.

F-3 SEVERABILITY Invalidation of any one of these covenants by judgment or court order shall in no way affect any of the other provisions, which shall remain in full force and effect.

F-4 AMENDMENT These covenants may be amended, modified or rescinded, in whole or in part (following the Declarant's conveyance of 90% of the lots) upon the express written consent of at least sixty-six and two thirds' percent (66 2/3%) of the owners of the lots within the subdivision. Any and all amendments, modifications or recessions, if any, shall be recorded in the office of the Circuit Clerk of Saline County, or in any county in which any of the lots might lie and shall not be effective until the date of such recording.

F-5 MULTIPURPOSE IMPROVEMENT DISTRICT. It is agreed and understood that all lots in this subdivision are part of the "Bryant Municipal Property Owners' Multipurpose Improvements District No. 139 (Autumn Hills Estates) and subject to an annual special improvement district tax assessment of $495.00.

IN WITNESS WHEREOF, the name of Owner is hereby affixed by its Members this _____ day of _____, 2025.

TNL Dream Home, LLC

BY:_____
Ly Phan

ACKNOWLEDGEMENT

STATE OF ARKANSAS)
)ss
COUNTY OF SALINE)

On this day appeared before me, a Notary Public, _____, known to me to be the Member TNL Dream Home, LLC and acknowledged that he is authorized to execute the foregoing on its behalf and that they had executed same for the consideration and purpose therein mentions and set forth.

WITNESS my hand and seal this _____ day of _____, 2026.

_____
Notary Public

My commission expires

_____

Exhibit "A"

PROPERTY DESCRIPTION AS SURVEYED

THAT PART OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 2 SOUTH, RANGE 15 WEST, SALINE COUNTY, ARKANSAS, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE SOUTH 87°53'38" EAST ALONG THE NORTH LINE THEREOF A DISTANCE OF 656.32 FEET; THENCE SOUTH 03°09'52" WEST LEAVING SAID NORTH LINE A DISTANCE OF 133.21 FEET A POINT ON THE SOUTH RIGHT OF WAY LINE OF GRAND AVE., THENCE SOUTHEASTERLY, ALONG SAID SOUTH RIGHT OF WAY LINE OF GRAND AVENUE ALONG A CURVE 48.35 FEET, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 181.60 FEET, SAID CURVE HAVING A CHORD DIRECTION OF SOUTH 44°38'13" EAST AND A CHORD LENGTH OF 48.21 FEET TO THE POINT OF BEGINNING; THENCE SOUTHEASTERLY, CONTINUING ALONG SAID SOUTH RIGHT OF WAY LINE OF GRAND AVENUE THE FOLLOWING COURSES: THENCE ALONG A CURVE 60.72 FEET, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 181.60 FEET, SAID CURVE HAVING A CHORD DIRECTION OF SOUTH 61°50'31" EAST AND A CHORD LENGTH OF 60.43 FEET; THENCE SOUTH 71°25'11" EAST A DISTANCE OF 194.07 FEET; THENCE SOUTHEASTERLY, ALONG A CURVE 34.06 FEET, CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 25.00 FEET, SAID CURVE HAVING A CHORD DIRECTION OF SOUTH 33°58'59" EAST AND A CHORD LENGTH OF 31.49 FEET TO A POINT ON THE WEST RIGHT OF WAY LINE OF KENNEDY STREET; THENCE ALONG SAID WEST RIGHT OF WAY LINE THE FOLLOWING COURSES: THENCE SOUTH 04°38'05" WEST A DISTANCE OF 110.74 FEET; THENCE SOUTH 03°51'44" WEST A DISTANCE OF 133.12 FEET; THENCE SOUTH 03°27'17" WEST A DISTANCE OF 233.16 FEET TO THE SOUTHEAST CORNER OF LAND DESCRIBED IN DOCUMENT NUMBER 1995-015413; THENCE NORTH 87°53'58" WEST ALONG THE SOUTH LINE OF DOCUMENT NUMBER 1995-015413 AND DOCUMENT NUMBER 2002-069474 A DISTANCE OF 616.49 FEET TO THE SOUTHWEST CORNER OF LAND DESCRIBED IN DOCUMENT NUMBER 2002-069474; THENCE NORTH 03°07'01" EAST ALONG THE WEST LINE OF LAND DESCRIBED IN SAID DOCUMENT NUMBER 2002-069474 A DISTANCE OF 393.26 FEET TO THE NORTHWEST CORNER OF LAND DESCRIBED IN SAID DOCUMENT NUMBER 2002-069474; THENCE SOUTH 88°36'12" EAST ALONG THE NORTH LINE OF LAND DESCRIBED IN SAID DOCUMENT NUMBER 2002-069474 A DISTANCE OF 266.71 FEET TO THE SOUTHWEST CORNER OF LAND DESCRIBED IN

DOCUMENT NUMBER 2025-008634 RECORDS OF SALINE COUNTY, ARKANSAS; THENCE ALONG SAID WEST LINE THE FOLLOWING COURSES: THENCE NORTH 37°59'39" EAST A DISTANCE OF 52.30 FEET; THENCE NORTH 36°06'41" EAST A DISTANCE OF 53.88 FEET TO THE NORTHEAST CORNER OF LAND DESCRIBED IN DOCUMENT NUMBER 2025-008634, RECORDS OF SALINE COUNTY ARKANSAS; THENCE NORTH 03°09'52" EAST A DISTANCE OF 25.31 FEET TO THE SOUTHWEST CORNER OF LAND DESCRIBED IN DOCUMENT NUMBER 2025-008635, RECORDS OF SALINE COUNTY, ARKANSAS; THENCE SOUTH 86°50'08" EAST ALONG THE SOUTH LINE OF SAID DOCUMENT NUMBER 2025-008635 A DISTANCE OF 9.15 FEET TO THE SOUTHEAST CORNER OF LAND DESCRIBED IN DOCUMENT NUMBER 2025-008635, RECORDS OF SALINE COUNTY, ARKANSAS; THENCE ALONG SAID EAST LINE OF LAND DESCRIBED IN DOCUMENT NUMBER 2025-008635 THE FOLLOWING COURSES: THENCE NORTH 04°37'31" EAST A DISTANCE OF 36.21 FEET; THENCE NORTH 36°09'45" EAST A DISTANCE OF 47.08 FEET TO THE POINT OF BEGINNING. CONTAINING 6.63 ACRES, MORE OR LESS.

SUBJECT TO A ARKANSAS NATURAL GAS 50 FOOT RIGHT OF WAY DOCUMENT NUMBER 1995-06860

Appendix

“A”

PROPERTY DESCRIPTION AS SURVEYED

THAT PART OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 23, TOWNSHIP 1 SOUTH, RANGE 14 WEST, SALINE COUNTY, ARKANSAS, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 23; THENCE NORTH 87°58'06" WEST ALONG THE SOUTH LINE THEREOF A DISTANCE OF 165.65 FEET; THENCE NORTH 02°01'54" EAST LEAVING SAID SOUTH LINE A DISTANCE OF 23.95 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF SOUTH SHOBE ROAD, SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE ALONG SAID NORTH RIGHT OF WAY LINE THE FOLLOWING COURSES: THENCE NORTH 86°54'50" WEST A DISTANCE OF 382.19 FEET; THENCE WESTERLY, ALONG A CURVE 522.83 FEET, CONCAVE SOUTHERLY, HAVING A RADIUS OF 12470.86 FEET SAID CURVE HAVING A CHORD DIRECTION OF NORTH 87°34'41" WEST AND A CHORD LENGTH OF 522.79 FEET; THENCE NORTH 88°46'45" WEST A DISTANCE OF 39.29 FEET; THENCE NORTH 89°05'36" WEST A DISTANCE OF 68.65 FEET; THENCE WESTERLY, ALONG A CURVE 94.82 FEET, CONCAVE NORTHERLY, HAVING A RADIUS OF 3847.23 FEET SAID CURVE HAVING A CHORD DIRECTION OF NORTH 86°59'24" WEST AND A CHORD LENGTH OF 94.81 FEET TO A POINT ON THE EAST RIGHT OF WAY LINE OF RAYMAR SHOBE CONNECTOR; THENCE ALONG SAID EAST RIGHT OF WAY LINE THE FOLLOWING COURSES: THENCE NORTH 35°42'56" WEST A DISTANCE OF 32.52 FEET; THENCE NORTH 08°33'26" EAST A DISTANCE OF 206.25 FEET; THENCE NORTH 04°13'18" EAST A DISTANCE OF 313.10 FEET; THENCE NORTH 03°20'10" EAST A DISTANCE OF 88.41 FEET; THENCE SOUTH 70°56'35" EAST LEAVING SAID EAST RIGHT OF WAY LINE A DISTANCE OF 111.42 FEET; THENCE SOUTH 83°24'28" EAST A DISTANCE OF 137.63 FEET; THENCE SOUTH 88°03'24" EAST A DISTANCE OF 169.87 FEET; THENCE NORTH 45°47'00" EAST A DISTANCE OF 71.35 FEET; THENCE SOUTH 59°25'44" EAST A DISTANCE OF 146.54 FEET; THENCE NORTH 01°17'54" EAST A DISTANCE OF 3.14 FEET; THENCE NORTH 17°06'38" EAST A DISTANCE OF 56.15 FEET; THENCE SOUTH 88°07'46" EAST A DISTANCE OF 462.29 FEET; THENCE SOUTH 01°02'18" EAST A DISTANCE OF 164.02 FEET; THENCE SOUTH 00°53'26" WEST A DISTANCE OF 99.32 FEET; THENCE SOUTH 00°59'47" WEST A DISTANCE OF 80.05 FEET; THENCE SOUTH 00°26'11" WEST A DISTANCE OF 80.08 FEET;

THENCE SOUTH 00°08'18" WEST A DISTANCE OF 115.12 FEET; THENCE SOUTH 00°08'19" WEST A DISTANCE OF 100.90 FEET TO THE POINT OF BEGINNING. CONTAINING 15.45 ACRES, MORE OR LESS.

FUTURE DEVELOPEMNT

PHASE 1

MH - 19
RIM:392.68
INV. OUT:386.54

MH - 18
RIM:382.68
INV IN:373.53
INV OUT:373.43

MH - 17
RIM:379.12
INV IN:371.76
INV IN:371.76
INV OUT:371.66

MH - 16
RIM:360.31
INV IN:359.12
INV OUT:359.02

MH - 15
RIM:366.84
INV IN:356.87
INV IN:356.87
INV OUT:356.77

MH - 20
RIM:366.51
INV IN:358.07
INV OUT:357.97

MH - 14
RIM:364.24
INV OUT:373.62

MH - 12
RIM:365.78
INV IN:379.71
INV OUT:379.61

MH - 11
RIM:372.90
INV IN:364.84
INV OUT:364.74

MH - 10
RIM:368.01
INV IN:359.09
INV IN:355.09
INV OUT:355.07

MH - 13
RIM:387.74
INV OUT:382.35

MH - 7
RIM:371.36
INV IN:363.16
INV IN:363.16
INV OUT:353.76

332' OF 8" SDR-26 PVC @ 3.31%
115' OF 8" SDR-26 PVC @ 3.19%
365' OF 8" SDR-26 PVC @ 3.43%
167' OF 8" SDR-26 PVC @ 1.35%
230' OF 8" SDR-26 PVC @ 0.50%
250' OF 8" SDR-26 PVC @ 0.67%
364' OF 8" SDR-26 PVC @ 4.05%
161' OF 8" SDR-26 PVC @ 3.52%
250' OF 8" SDR-26 PVC @ 3.24%
150' OF 8" SDR-26 PVC @ 1.30%
150' OF 8" SDR-26 PVC @ 1.20%

20' DRAINAGE EASEMENT

GILBERT MICHAEL A
001-03736-000

BERGANZA ORLANDO
VICENTE ORTEGA
001-03735-000

ORLANDO
BERGANZA
001-03738-000

WOOD JAMES T III (JAY)
001-03745-000

DETENTION AREA
0.63 ACRES
28414 Sq. Ft.

BASIS OF BEARING
IS GRID NORTH, ARKANSAS
GRID NORTH ARKANSAS
COORDINATE SYSTEM, SOUTH ZONE
BY GPS OBSERVATION

50' 25' 0 50'

SEWER LEGEND:	WATER LEGEND:
SEWER SERVICE	DUAL WATER METERS
SEWER MAIN — S — S — SEWER MANHOLE	SINGLE WATER METER
NOTE: USE SDR-26 PVC SEWER PIPE EXCEPT WHERE DUCTILE IRON PIPE REQUIRED FOR COVER. USE DUCTILE IRON PIPE WHERE 3' MINIMUM COVE CANNOT BE MAINTAINED.	GATE VALVE
CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL BURIED UTILITIES PRIOR TO CONSTRUCTION.	45° FITTING
	90° FITTING
	TEE FITTING
	CROSS FITTING
	FIRE HYDRANT

HOPE CONSULTING
ENGINEERS - SURVEYORS
129 North Main Street,
Benton, Arkansas 72015
PH. (501)315-2626
FAX (501) 315-0024
www.hopeconsulting.com

FOR USE AND BENEFIT OF:

HAVEN'S DEVELOPMENT, LLC

SANITARY SEWER & WATER AS-BUILTS
MIDLAND ROAD ESTATES, PHASE 2
IN THE CITY OF BRYANT, SALINE COUNTY, ARKANSAS

DATE: 09/22/2026	C.A.D. BY:		DRAWING NUMBER:
REVISED:	CHECKED BY:		23-0024
SHEET:	SCALE: 1" =50'		
500	0		

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HOPE CONSULTING

129 North Main Street, Benton, Arkansas 72015
70 N. College Avenue, Fayetteville, Arkansas 72701
(t) 501-315-2626 (w) www.HopeConsulting.com

September 22, 2026

Bryant Planning Commission
c/o Colton Leonard, Planning & Development Director
City of Bryant
210 SW 3rd Street
Bryant, AR 72022

Re: Midland Road Estates – Phase 2
Request for Review and Final Approval of Final Plat

Colton,

On behalf of our client, Havens Development, I am formally requesting staff review for the Final Plat of Midland Estates Phase 2. We would like to be included in the DRC Meeting and subsequent Planning Commission Meeting October 12th at 6:00 P.M. We thank you for your review and look forward to addressing any comments.

We appreciate your consideration of this request.

Sincerely,

Jonathan Hope
President
Hope Consulting, Inc.

HOPE CONSULTING

129 North Main Street, Benton, Arkansas 72015
70 N. College Avenue, Fayetteville, Arkansas 72701
(t) 501-315-2626 (w) www.HopeConsulting.com

September 22, 2026

Ted Taylor
Director of Public Works
City of Bryant
210 SW 3rd Street
Bryant, AR 72022

Re: Midland Road Estates – Phase 2
Detailed Cost Estimate for Streets, Sanitary Sewer, & Storm Water Bonds

Dear Ted,

Hope Consulting has reviewed the project with the owner, Havens Development, LLC, and the costs associated with the Street Construction, Sanitary Sewer Construction, and Storm Water Construction for Midland Road Estates – Phase 2.

1. Streets (1 Year Bond: 25% of the Total Cost)

- Total Street Costs on this Project are $309,718.37
- Bond Cost is $77,429.59

2. Sanitary Sewer (2 Year Bond: 50% of the Total Cost)

- Total Sanitary Sewer Costs on this Project are $199,054.71
- Bond Cost is $99,527.35

3. Storm Water (1 Year Bond: 100% of the Total Cost)

- Total Storm Water Costs on this Project are $247,724.86
- Bond Cost is $247,724.86

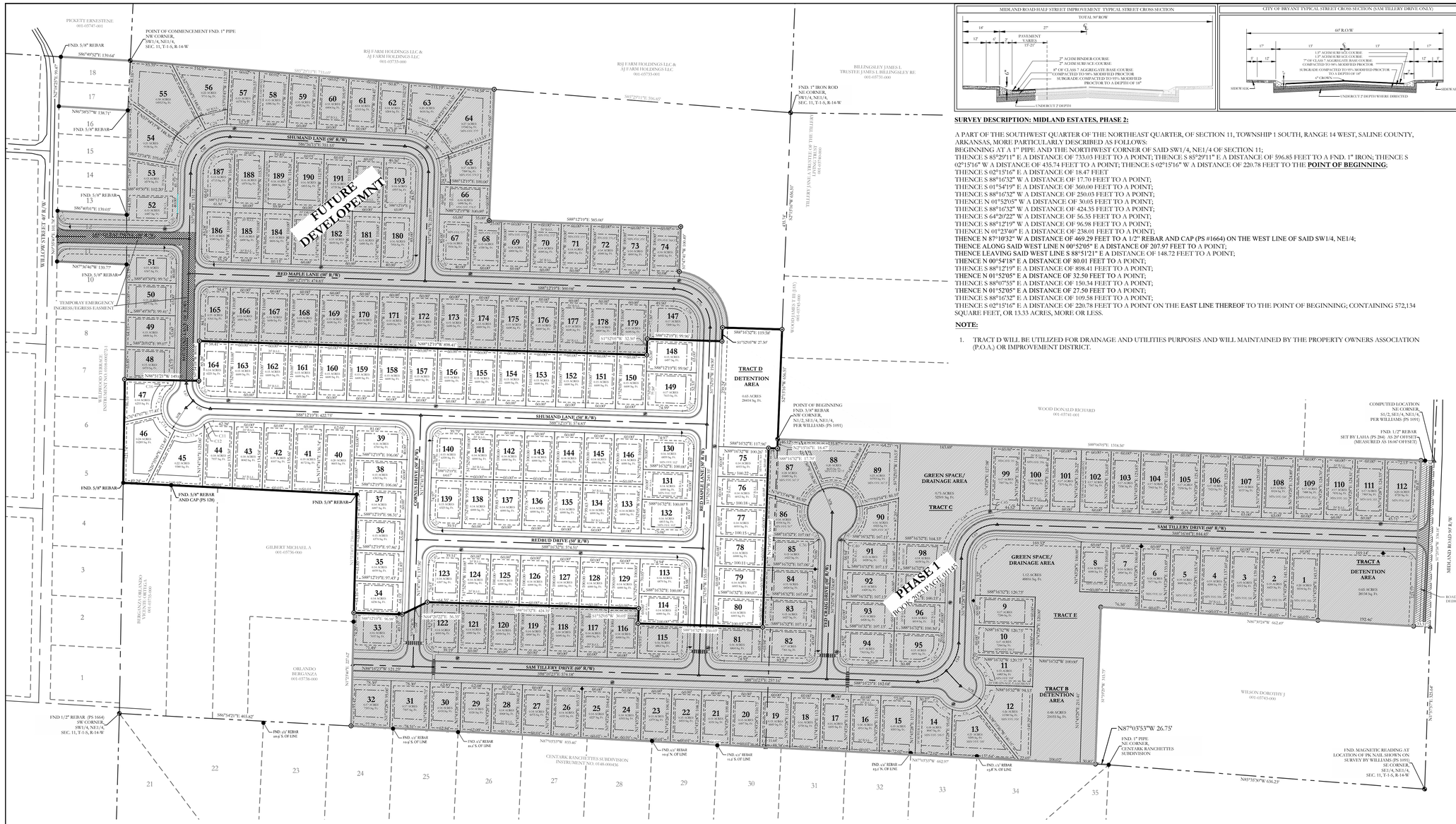
Basis: Streets – Minimum Standard Specifications for Streets (Rev. April 2022), Part 2.7. Sanitary Sewer – Standard Specifications for Design and Construction of Water Lines and Sewer Lines (2015), Section 1.04. Storm Water – Stormwater Infrastructure Warranty Bond SOP.

Please contact us if you have any questions or require additional information.

Sincerely,



Kazi Islam, P.E.
Hope Consulting, Inc.


PICKETT ERNESTENE
001-05747-001
POINT OF COMMENCEMENT FND. 1" PIPE
NW CORNER,
NW1/4, NE1/4,
SEC. 11, T-1-S, R-14-W
FND. 5/8" REBAR
S86°40'52"E 139.64'
RSJ FARM HOLDINGS LLC &
AJ FARM HOLDINGS LLC
001-03733-000
RSJ FARM HOLDINGS LLC &
AJ FARM HOLDINGS LLC
001-03733-001
BILLINGSLEY JAMES L
TRUSTEE JAMES L BILLINGSLEY RE
001-03731-000
FND. 1" IRON ROD
NE CORNER,
SW1/4, NE1/4,
SEC. 11, T-1-S, R-14-W
S85°29'11"E 596.87'
N86°38'57"W 138.71'
FND. 5/8" REBAR
N87°36'40"W 139.77'
FND. 5/8" REBAR
S86°40'01"E 130.03'
FND. 5/8" REBAR
TEMPORAY EMERGENCY
INGRESS/EGRESS EASEMENT
WILLOW STREET (60' R/W)
WILLOW STREET
INSTRUMENT NO. 2021-00007273
FUTURE
DEVELOPMENT
SHUMAND LANE (50' R/W)
S88°12'19"E 585.00'
RED MAPLE LANE (50' R/W)
S88°12'19"E 674.83'
S88°12'19"E 99.96'
S88°12'19"E 32.50'
N87°12'19"W 698.41'
S88°12'19"E 99.96'
S88°12'19"E 425.75'
SHUMAND LANE (50' R/W)
S88°12'19"E 574.83'
S88°12'19"E 106.00'
S88°12'19"E 106.00'
S88°12'19"E 98.33'
S88°12'19"E 97.86'
S88°12'19"E 97.86'
REDBUD DRIVE (50' R/W)
S88°16'32"E 574.83'
S88°16'32"E 100.00'
S88°16'32"E 100.00'
S88°16'32"E 100.00