



Bryant Development and Review Committee Meeting

Boswell Municipal Complex - City Hall Conference Room

210 SW 3rd Street

Date: April 16, 2026 - **Time:** 9:00 AM

Call to Order

Old Business

New Business

1. TNT Fireworks - 400 Bryant Ave - Temporary Business

Heather Whaley - Requesting Approval for Temporary Business for Fireworks Tent

- [1037-APP-01.pdf](#)

2. 3104 Cedar Park St - Modification from Zoning Code - Roof Pitch

Beza Investments LLC - Requesting Approval for Modification from Residential Design Section of Zoning Code on the pitch of roof.

- [1038-PLN-01.pdf](#)

3. Zyair Estates Subdivision - Hilltop Road - Preliminary Plat - (Formerly named Hilltop Manor Subdivision)

Richardson Engineering - Requesting Recommendation for Approval of Preliminary Plat

- [1022-PLN-02r.pdf](#)
- [1022-DRN-02b.pdf](#)
- [1022-DRN-02.pdf](#)
- [1022-RSP-01.pdf](#)

Staff Approved

4. Letta's Flower Cart - 5403 Hwy 5 - Sign Permit

Requesting Sign Permit Approval - STAFF APPROVED

- [94852-SGNAPP-01.pdf](#)

5. Arkansas Medicare Center - 1800 N Reynolds Rd - Sign Permit

Requesting Sign Permit Approval - STAFF APPROVED

- [94856-SGNAPP-01.pdf](#)

6. Diamond State Pyro - 23920 I-30 - Sign Permit

Requesting Sign Permit Approval - STAFF APPROVED

- [94889-SGNAPP-01.pdf](#)

Permit Report

Adjournments



City of Bryant, Arkansas
Community Development
210 SW 3rd Street Bryant, AR 72022
501-943-0943



Temporary Business Application For the Sale of Fireworks

- Applications are due by 5:00PM Wednesday the week prior to the Scheduled Development and Review Committee Meeting.
- Application Deadlines and dates can be found at www.cityofbryant.com under the Community Development tab.

Date: 04.06.2026

Business Information:

Name TNT FIREWORKS

Federal Tax Employer ID Number 63-0813092

Arkansas State Sales Tax Number 00286128

Location of Proposed Temporary Business 400 BRYANT AVE, BRYANT, AR 72022

Business Owner:

Name TERRY ANDERSON

Address 4511 HELTON DRIVE
FLORENCE, AL 35630

Phone 256.764.6131

Email _____

Contact Person:

Name HEATHER WHALEY

Address 4003 HELTON DRIVE
FLORENCE, AL 35630

Phone 256.246.0121

Email WHALEYH@TNTFIREWORKS.COM

Checklist for Submission

- Completed Application and Checklist
- Twenty-Five Dollar (\$25.00) Application fee
- Provide proof of 1,000,000 Liability Insurance or Surety Bond worth the same amount.
(Further information on the details of liability insurance can be found in Section 2-4 of the Temporary Business Section of the Bryant Business Ordinance.)

(Continued on Page 2)

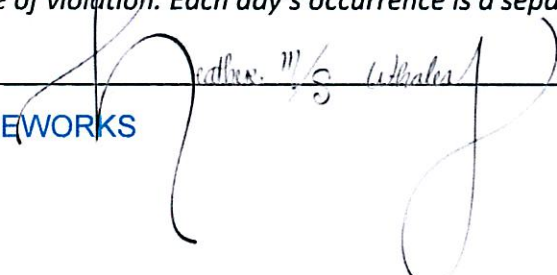
- Eight (8) copies of a **Site Plan**:
 - Site Plan shall be to scale, all structures shall be identified. Clear identification of any open display areas
 - Fireworks tent / canopy shall have a minimum 50ft. setback from all other structures
 - Show parking spaces dedicated by the owner of the property for use by the temporary business.
- Exits shall be provided every 100 ft. with a minimum of 2 remotely located exits
Minimum exit width shall be 72 in. All exits shall be identified with proper signage
- No smoking permitted within 50 ft. of firework tent / canopy. "NO SMOKING" signs shall be posted at all entrance / exits
- 2 ABC fire extinguishers, with a 2A rating or greater, shall be provided. The maximum travel distance to an extinguisher shall not exceed 75 ft. Additional extinguishers may be required. Extinguishers shall be clearly visible, marked with appropriate signage, and mounted height of not less than 36 in. from the ground
- Generators or other combustion power sources, including fuel, shall be separated from tents / canopies by a minimum of 25 ft.
- Applicant shall contact the Bryant Fire Dept. Fire Marshal's office and schedule an inspection once the business is ready for operation. The inspection shall be conducted prior to any sales to the public are allowed. Contact: 501-943-0964

READ CAREFULLY BEFORE SIGNING

I HEATHER WHALEY, do hereby certify that all information contained within this application is true and correct. I further certify that I agree too and will abide by all Temporary Business rules and regulations as outlined in the Bryant Business Ordinance. I also understand that I shall comply with all additional applicable ordinances of the City as well as the requirements of all state and federal laws. Furthermore, I understand violation of Temporary Business Ordinance 2007-43 is a misdemeanor punishable by a fine of up to \$500.00 per occurrence of violation. Each day's occurrence is a separate violation.

~~Owners~~ Signature _____

AGENT FOR TNT FIREWORKS



Heather Whaley



Entity # 597
DRC meeting

STATEMENT OF PURPOSE

American Promotional Events dba TNT Fireworks is submitting for approval for the attached application.

Location address: 400 Bryant Ave, Bryant, AR 72022

The purpose is to sell Arkansas approved fireworks in a temporary tent from June 20th 2026 - July 5th 2026. The tent will be erected three days prior to the sale and removed within two days of completion of the sale. The hours of operation will be from 9am-10pm, as permitted by local location ordinances.

There will be two fire extinguishers readily accessible. "No Smoking" and age limit signs will be posted and enforced. Arkansas State Fireworks Sales Permits will be obtained prior to the sale date and will be posted on-site along with our insurance and Certificate of Authority. There will be a minimum of two people onsite at all times and the product will be secured 24/7 to ensure safety.

Please forward any processed permits to:

4003 Helton Dr.
Florence, AL 35630
Attn: Heather Whaley

whaleyh@tntfireworks.com
(for emailing permits)

If you have any questions, please do not hesitate to call me at 256.246.0121.

Sincerely,
Heather Whaley

A handwritten signature in black ink that reads "Heather M/S Whaley". The signature is stylized, with a large, flowing 'H' and 'W'.

Stand & Tent East - Regional Administrative & Permitting Coordinator
whaleyh@tntfireworks.com

AMERICAN PROMOTIONAL EVENTS, INC.
P.O. BOX 1318 · 4511 HELTON DRIVE · FLORENCE, AL 35630
PHONE (256) 764-6131 · FAX (205) 533-6043
www.tntfireworks.com



802 Respect Drive
Bentonville, AR 72716
Jimmy.Buchanan@walmart.com

November 5, 2025

To Whom It May Concern,

American Promotional Events, Inc. dba TNT Fireworks is an approved National Supplier to conduct fireworks promotions on our Walmart parking lots where this type of promotion is legal. All stores have been researched and approved by the Walmart Realty Department. Approximate time frame for the select stores approved for additional selling date promotions are:

- **May 20th, 2026 to July 12th, 2026 with the exception of Utah which has an additional selling period through the end of July for Pioneer Days.**

American Promotional Events, Inc. dba TNT Fireworks is authorized to sign for and obtain all necessary permits and/or licenses for the promotion and must display such permits and/or licenses at each stand/tent. Walmart grants permission for all patrons of the sale to utilize the restroom facilities at each participating store.

An American Promotional Events, Inc. dba TNT Fireworks representative will call you to introduce the company and discuss your participation in the event. Participation is encouraged and does add additional income to your other income account. Store Management must approve the store's participation and placement on the parking lot.

Thank you in advance for your cooperation in this matter and if you have any questions, please contact TNT Fireworks at 256-767-7142.

Best Regards,

Signed by:

A handwritten signature in black ink that reads "Jimmy Buchanan".

C1C50CE93BEF40C...

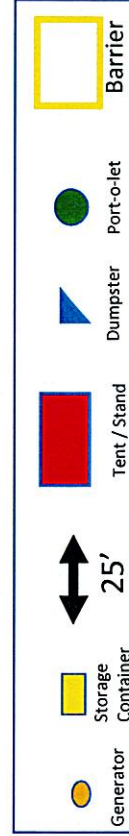
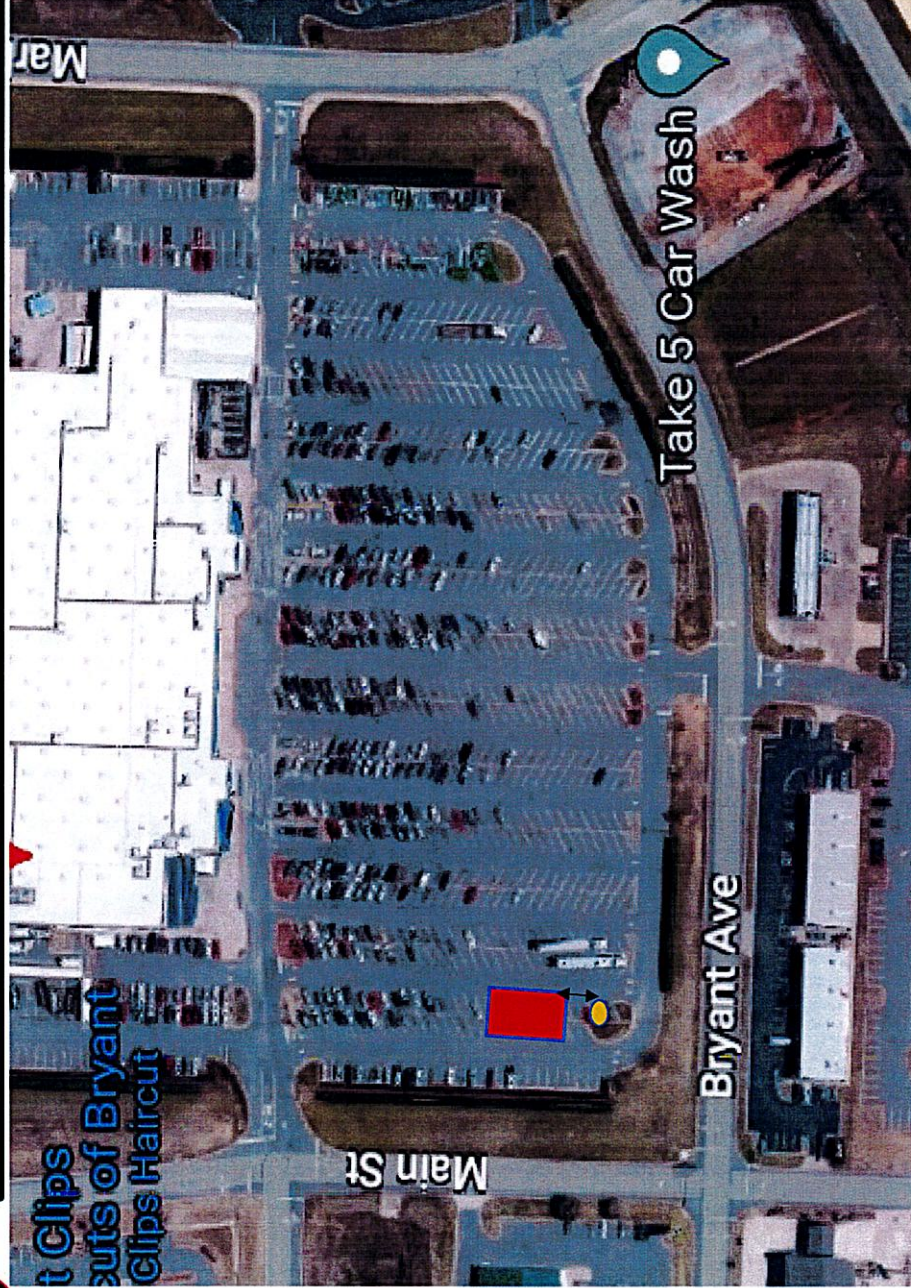
Jimmy Buchanan

Senior Manager

Walmart Retail Services



Store: WALMART# 3230 Address: 400 Bryant Ave, Bryant, AR 72022 Location#: FAR0153



Estimated # of spaces: 12

BOND
(License or Permit - Continuous)

Bond No. 800242727

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, American Promotional Events, Inc. as Principal, and ATLANTIC SPECIALTY INSURANCE COMPANY, as corporation duly incorporated under the laws of the State of New York and authorized to do business in the State of Arkansas, as Surety, are held and firmly bound unto City of Bryant, as Obligee, in the penal sum of ONE THOUSAND -----00/100 DOLLARS \$1,000 for the payment of which we hereby bind ourselves, our heirs, executors and administrators, jointly and severally, firmly by these presents.

WHEREAS, the Principal has obtained or is about to obtain a license or permit for:
Fireworks Stand at 400 Bryant Avenue, Bryant, AR 72022 - FAR0153

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that if the Principal shall faithfully comply with all applicable laws, statutes, ordinances, rules or regulations, pertaining to the license or permit issued, then this obligation shall be null and void; otherwise to remain in full force and effect.

This bond shall become effective on this 24th day of April, 2026

PROVIDED, that regardless of the number of years this bond is in force, the Surety shall not be liable hereunder for a larger amount, in the aggregate, than the penal sum listed above.

PROVIDED FURTHER, that the Surety may terminate its liability hereunder as to future acts of the Principal at any time by giving thirty (30) days written notice of such termination to the Obligee.

SIGNED, SEALED AND DATED this 24th day of April, 2026.

American Promotional Events, Inc.

By: *L. Guyman*
(Principal)

ATLANTIC SPECIALTY INSURANCE COMPANY
(Surety)

By: *Scott Reinke*
Scott Reinke, Attorney-in-Fact





Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Barbara Micek, Christina Potter, Elizabeth Vass, Erik Brooks, Jennifer Bozeman, Jordan Witbracht, Kristin Cook, Olga Tasselmyer, Scott Reinke, Sornchai Chansila, William L Hagan III**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **unlimited** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.


This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

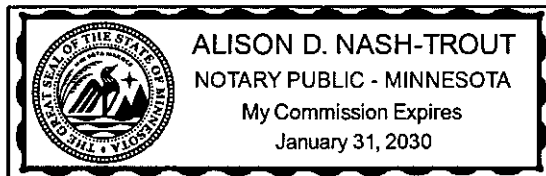
IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this first day of January, 2023.


STATE OF MINNESOTA
HENNEPIN COUNTY



By 
Sarah A. Kolar, Vice President and General Counsel

On this first day of January, 2023, before me personally came Sarah A. Kolar, Vice President and General Counsel of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and she acknowledged the execution of the same, and being by me duly sworn, that she is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.





Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 27th day of January, 2026



This Power of Attorney expires
January 31, 2030


Kara L.B. Barrow, Secretary



CERTIFICATE OF LIABILITY INSURANCE

11/1/2026

DATE (MM/DD/YYYY)

10/31/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

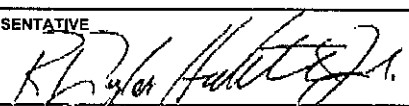
PRODUCER Lockton Companies, LLC DBA Lockton Insurance Brokers, LLC in CA CA license #0F15767 3280 Peachtree Rd. NE, Ste. 1000 Atlanta GA 30305 (404) 460-3600	CONTACT NAME: _____ PHONE (A/C, No. Ext): _____ E-MAIL ADDRESS: _____ FAX (A/C, No): _____													
	<table border="1"> <tr> <th>INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> <tr> <td>INSURER A : Century Surety Company</td> <td>36951</td> </tr> <tr> <td>INSURER B :</td> <td></td> </tr> <tr> <td>INSURER C :</td> <td></td> </tr> <tr> <td>INSURER D :</td> <td></td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A : Century Surety Company	36951	INSURER B :		INSURER C :		INSURER D :		INSURER E :		INSURER F :
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INSURER A : Century Surety Company	36951													
INSURER B :														
INSURER C :														
INSURER D :														
INSURER E :														
INSURER F :														
INSURED 1359629 American Promotional Events, Inc. DBA TNT Fireworks, Inc. P.O. Box 1318 4511 Helton Drive Florence AL 35630														

COVERAGES FAR0153 **CERTIFICATE NUMBER:** 19086138 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC OTHER: _____	Y	N	CCP1254837	11/1/2025	11/1/2026	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ Excluded PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY			NOT APPLICABLE			COMBINED SINGLE LIMIT (Ea accident) \$ XXXXXXX BODILY INJURY (Per person) \$ XXXXXXX BODILY INJURY (Per accident) \$ XXXXXXX PROPERTY DAMAGE (Per accident) \$ XXXXXXX \$
	UMBRELLA LIAB EXCESS LIAB <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$			NOT APPLICABLE			EACH OCCURRENCE \$ XXXXXXX AGGREGATE \$ XXXXXXX \$ XXXXXXX
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		N/A	NOT APPLICABLE			<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ XXXXXXX E.L. DISEASE - EA EMPLOYEE \$ XXXXXXX E.L. DISEASE - POLICY LIMIT \$ XXXXXXX

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
 ADDITIONAL INSURED: FAR0153; PROPERTY LOCATED AT - WAL-MART #3230 - 400 BRYANT AVE, BRYANT, AR 72022, SALINE COUNTY Certificate holder is an additional insured on the General Liability as required by written contract subject to policy terms, conditions, and exclusions.

CERTIFICATE HOLDER 19086138 CITY OF BRYANT 210 SW 3RD STREET BRYANT AR 72022	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
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No.	Description	Date

Owner
Cedar Park St.
First Floor Plan

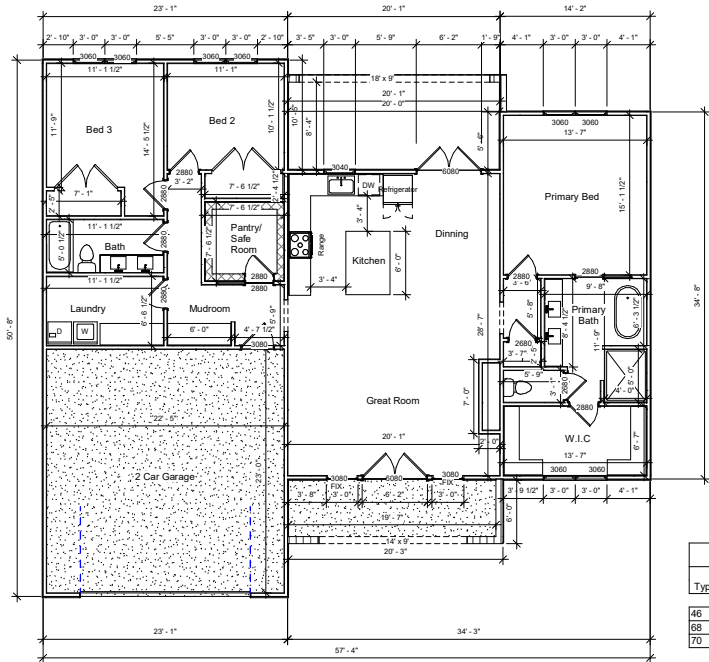
Project number 050
Date 2/27/2026
Drawn by Maria Beza
Checked by

A1

Scale 3/16" = 1'-0"

2/27/2026 11:25:02 AM

Door Schedule			
Door Number	Door Type	Door Size	Finish Comments
2	60	32" x 96"	
3	60	32" x 96"	
8	60	32" x 96"	
9	60	32" x 96"	
10	60	32" x 96"	
11	60	32" x 96"	
13	64	72" x 96"	
15	64	72" x 96"	
16	67	72" x 84"	
17	67	72" x 84"	
18	59	32" x 84"	
19	73	34" x 84"	
20	73	34" x 84"	
21	75	32" x 96"	
22	60	32" x 96"	
23	59	32" x 84"	
24	63	192" x 84"	
25	61	30" x 96"	
26	68	36" x 84"	
27	76	36" x 84" 2	
28	61	30" x 96"	



Heated & Cooled: 1,710 sqft
10 ft Ceilings

Contractor or Builder should verify all Dimensions & Square Footage prior to construction. Calculated dimensions take precedence over scaled dimensions. Some dimensions may be rounded to the nearest inch.

Contractor or Builder should also comply with all local codes and all engineered aspects of the home should incorporate actual site conditions.

Interior dimensions shown are interior stud wall dimensions.

Window Schedule				
Type Mark	Rough Opening		Type	Comments
	Width	Height		
A6	3' - 0"	8' - 0"	Fixed with Trim	
B8	3' - 0"	6' - 0"	Window-Single-Hung	
70	3' - 0"	4' - 0"	Window-Single-Hung	

A6

A6

A7

A7

First Floor
3/16" = 1'-0"



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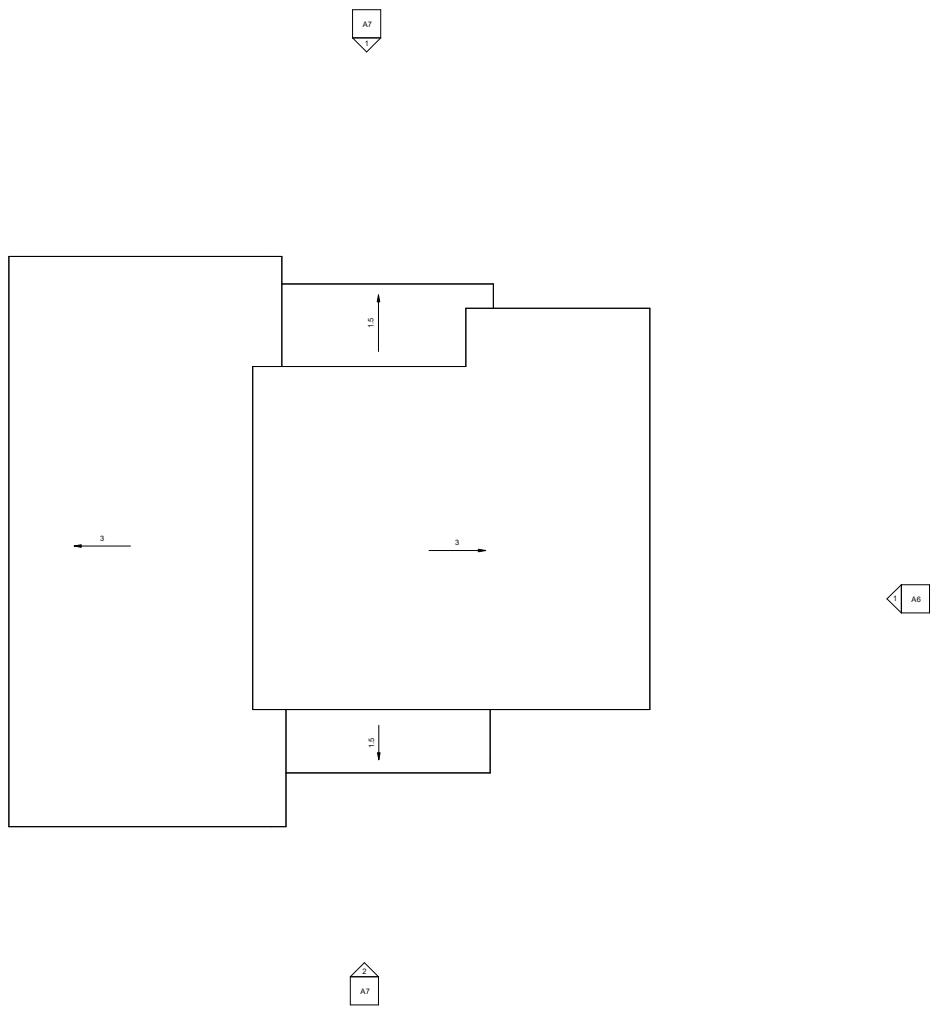
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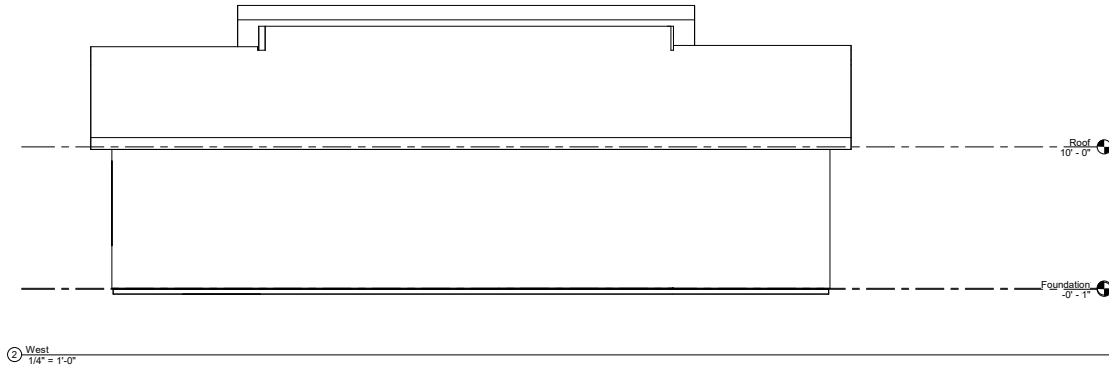
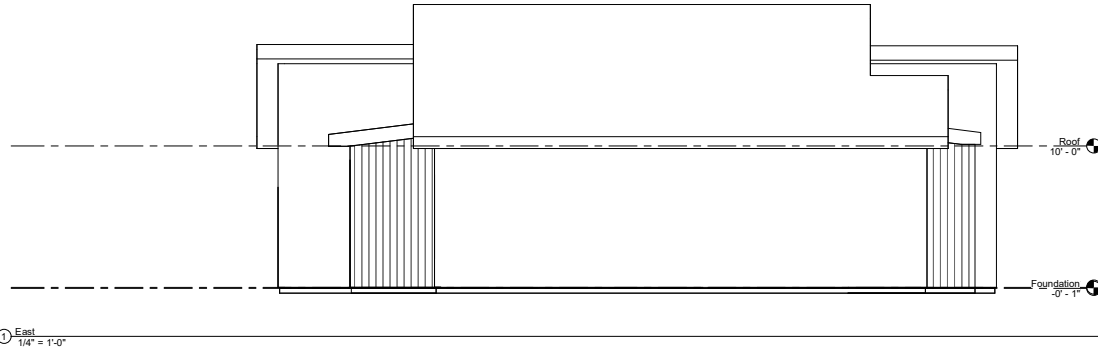
Owner
Cedar Park St.
Roof Plan

Project number	050
Date	2/27/2026
Drawn by	Maria Beza
Checked by	
A5	
Scale	3/16" = 1'-0"

Roof Plan
3/16" = 1'-0"



2/27/2026 11:23:03 AM



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No.	Description	Date

Owner
Cedar Park St.
Elevations

Project number 050
Date 2/27/2026
Drawn by Maria Beza
Checked by

A6

Scale 1/4" = 1'-0"



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No.	Description	Date

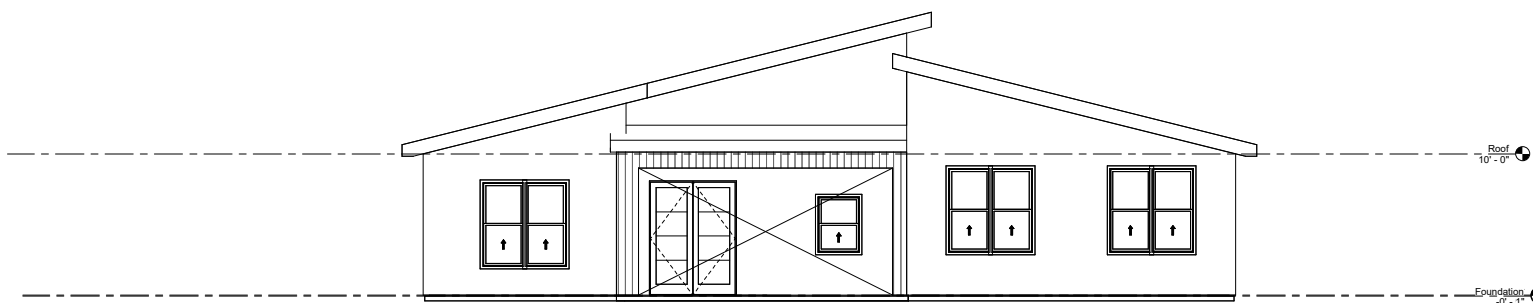
Owner
Cedar Park St.
Elevations

Project number 050
Date 2/27/2026
Drawn by Maria Beza
Checked by

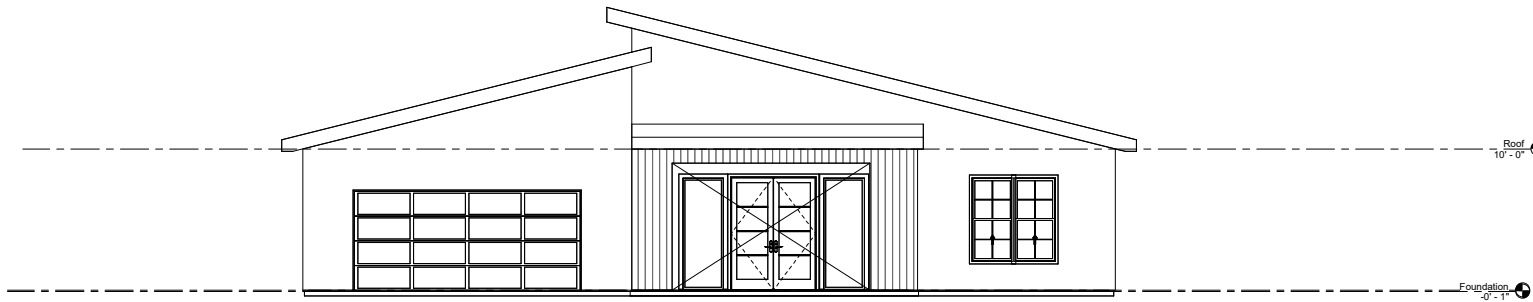
A7

Scale 1/4" = 1'-0"

2/27/2026 11:22:26 AM



① North
1/4" = 1'-0"



② South
1/4" = 1'-0"

Consultant
Address
Address
Phone
Fax
e-mail

Consultant
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e-mail

Consultant
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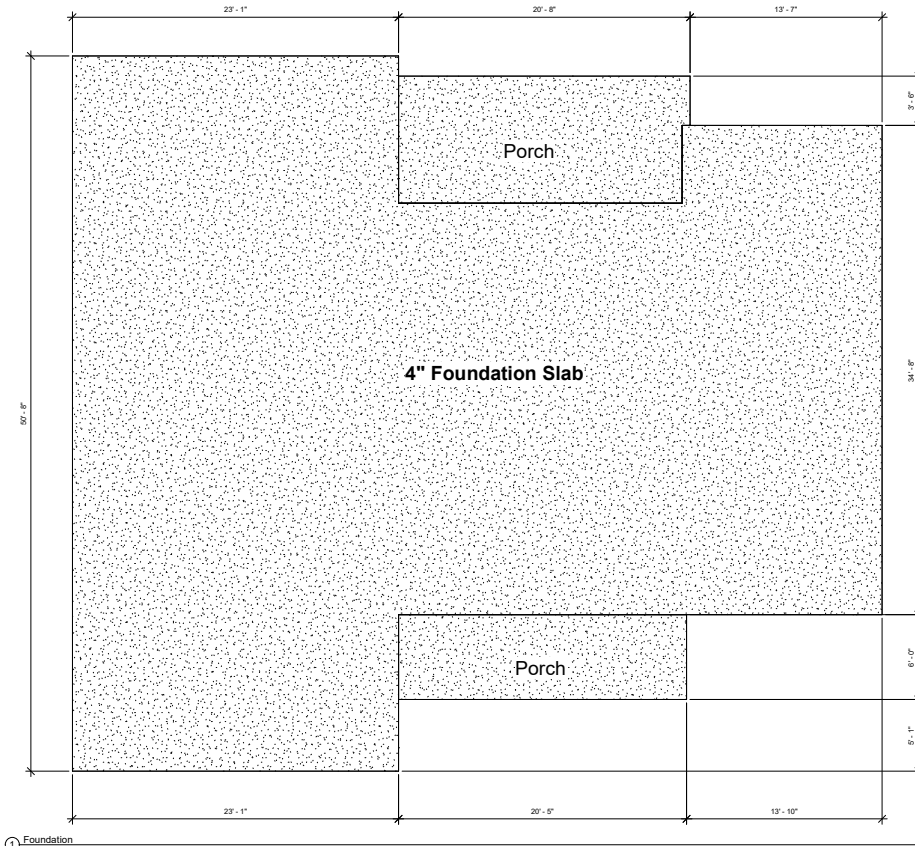
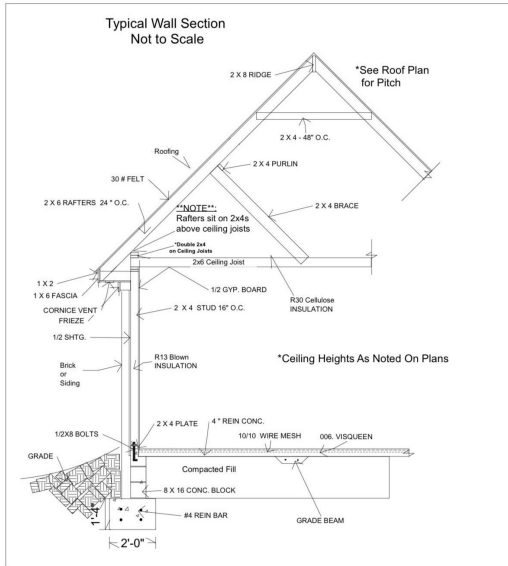
No.	Description	Date

Owner
Cedar Park St.
Foundation Plan

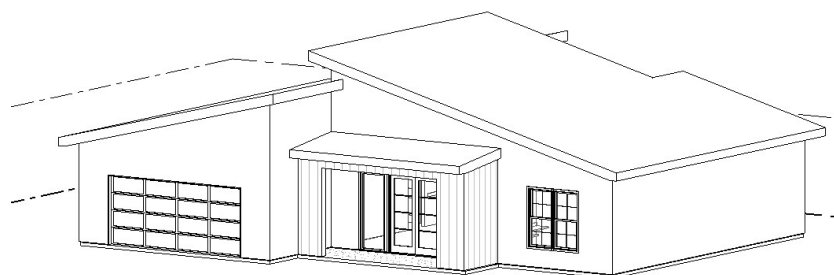
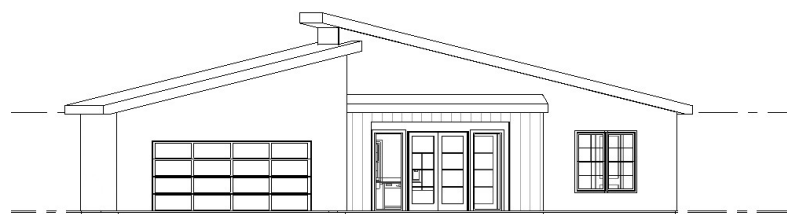
Project number 050
Date 2/27/2026
Drawn by Maria Beza
Checked by

S0

Scale 1/4" = 1'-0"



① Foundation
1/4" = 1'-0"



GENERAL NOTES:
CONTEMPORARY MODERN - 3 BED / 2 BATH W/ SAFE ROOM

SPECIFICATIONS:
WALLS:
- WOOD STUD FRAMING: INTERIOR & EXTERIOR WALLS 2X4'S
- EXTERIOR MEASURED STUD TO STUD
- INTERIOR DIMENSIONS MEASURED INTERIOR STUD TO STUD
ROOFING: OWNER TO VERIFY
ELECTRICAL/PLUMBING: OWNER TO VERIFY
INTERIOR/EXTERIOR DOORS: OWNER TO VERIFY
WINDOWS: OWNER TO VERIFY

- Consultant
Address
Phone
Fax
e-mail
- Consultant
Address
Address
Phone
Fax
e-mail
- Consultant
Address
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Phone
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e-mail
- Consultant
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e-mail
- Consultant
Address
Address
Phone
Fax
e-mail

No.	Description	Date

Owner
Cedar Park St.
Title Sheet

Project number	050
Date	2/27/2026
Drawn by	Maria Beza
Checked by	T1
Scale	

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

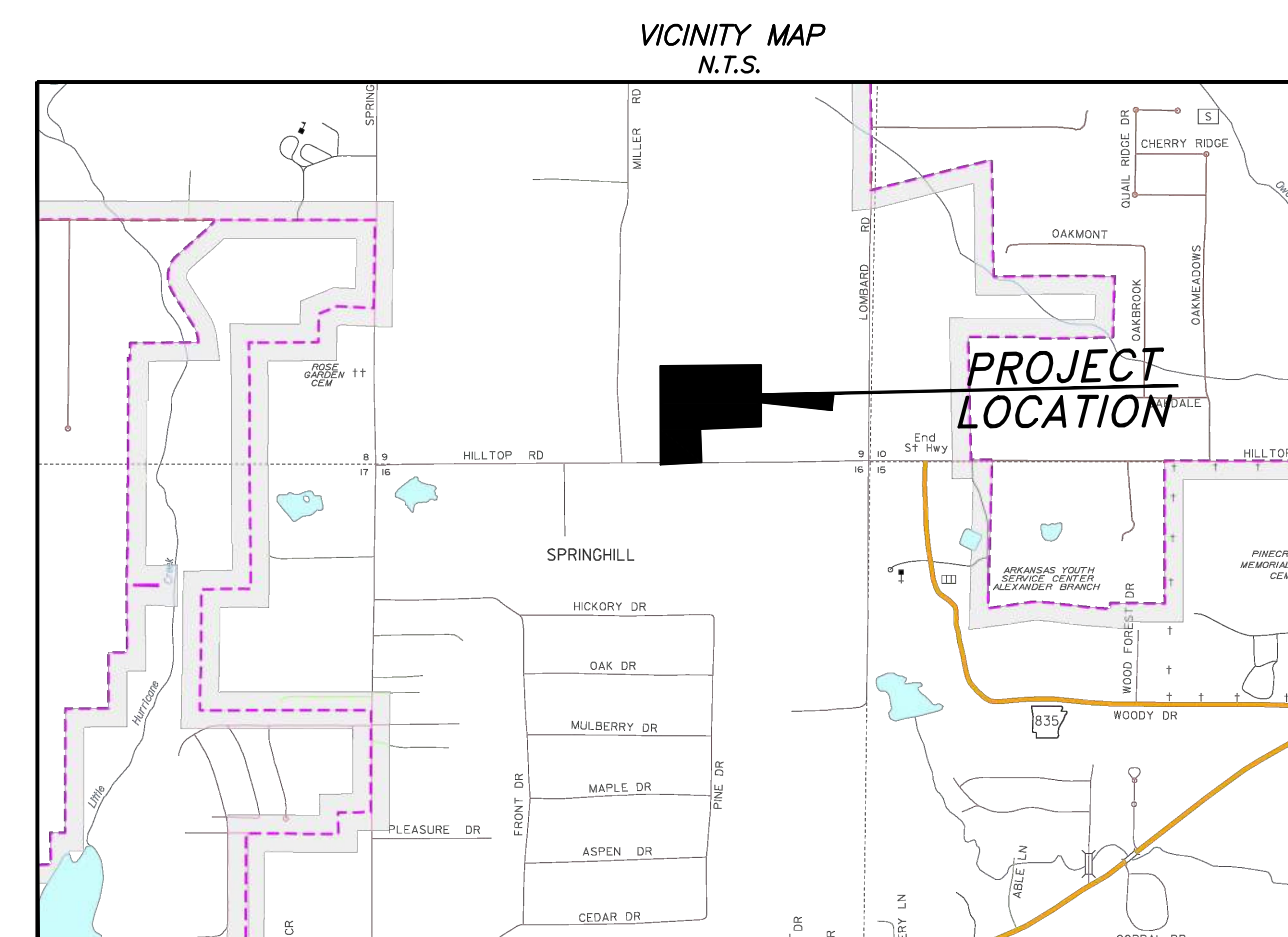
3/3/2026
REV: 4/7/2026

PREPARED FOR:

EMINENT CONSTRUCTION
1100 HILLFARM ROAD
BRYANT, AR 72022

PRE-CONSTRUCTION COPY -

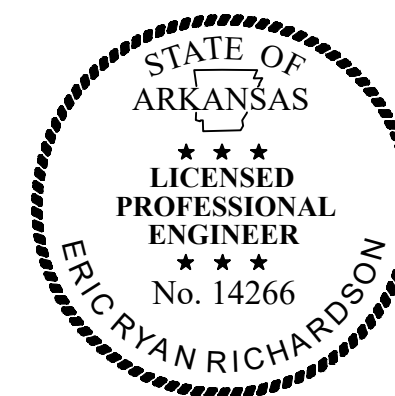
PLANS FOR BIDDING PURPOSES.
QUANTITIES TO BE VERIFIED PRIOR
TO CONSTRUCTION. CONTRACTOR
TO VERIFY GRADES WITH ENGINEER
PRIOR TO CONSTRUCTION.



Prepared By:

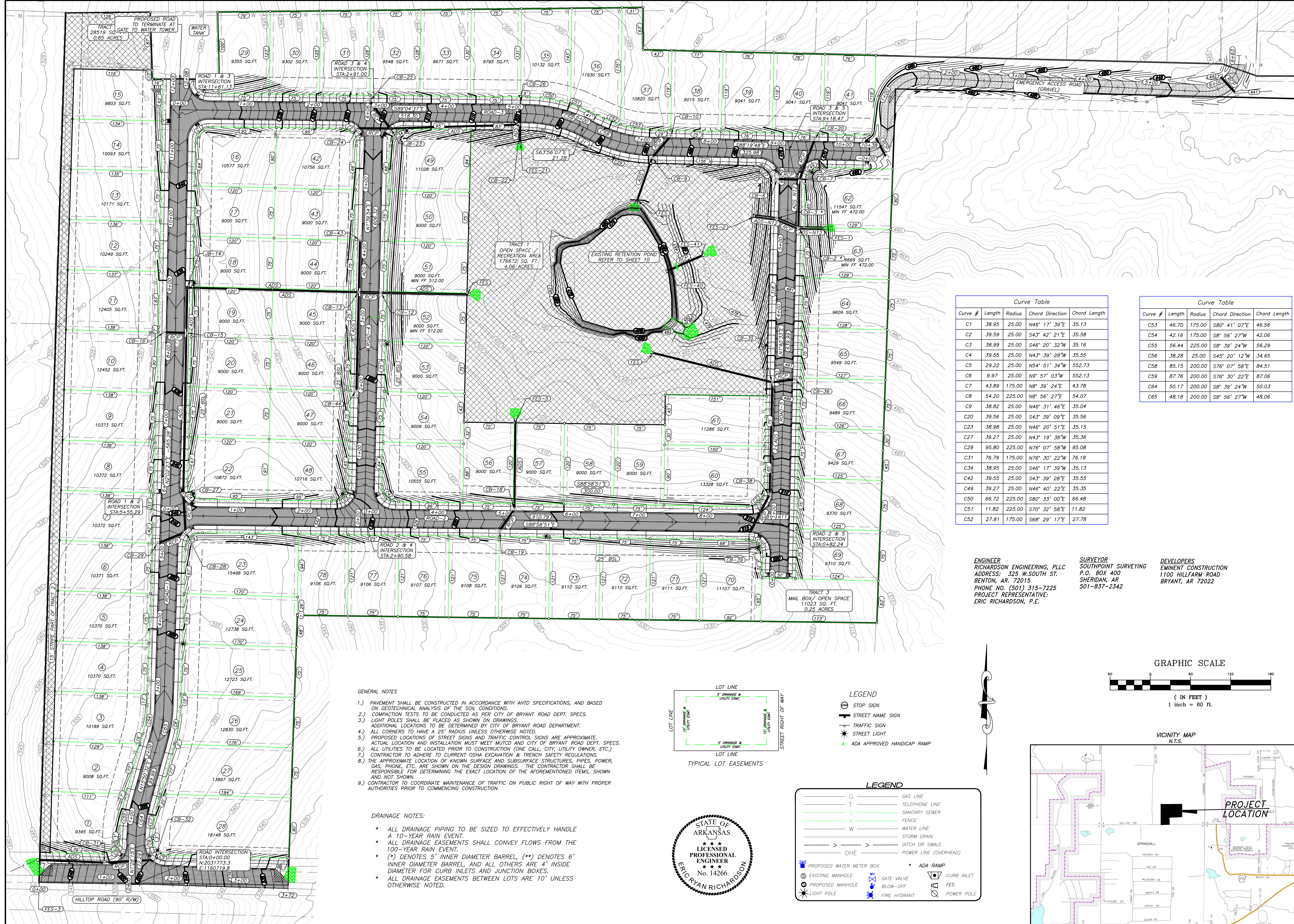


325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225



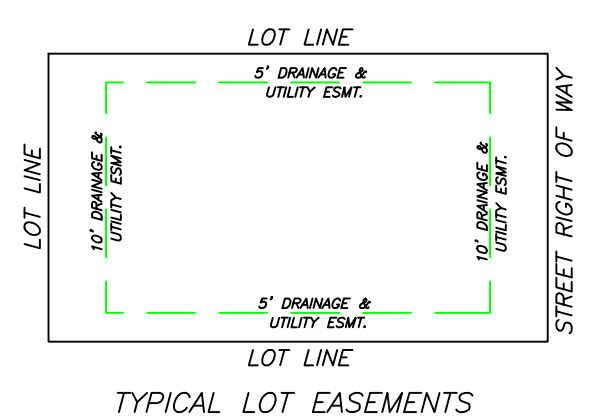
INDEX OF SHEETS

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Utility Plan	11
Sewer Plan/Profile	12-18
Erosion Control	19
Misc. Details	20-24
Street signs & lights plan	25



- GENERAL NOTES**
- PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH AHTD SPECIFICATIONS, AND BASED ON GEOTECHNICAL ANALYSIS OF THE SOIL CONDITIONS.
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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.
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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	76.79	175.00	N76° 30' 22" W	76.18
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

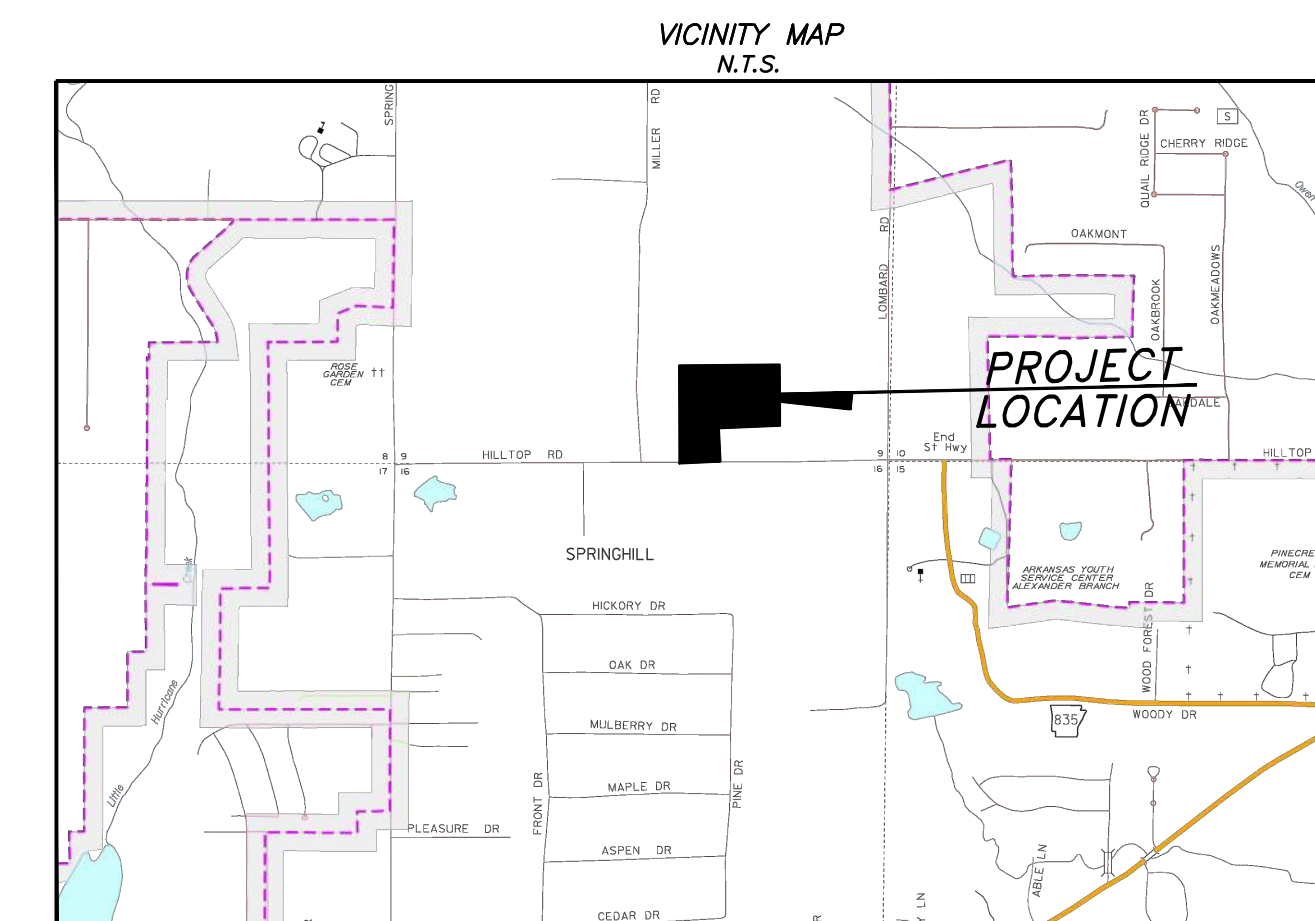
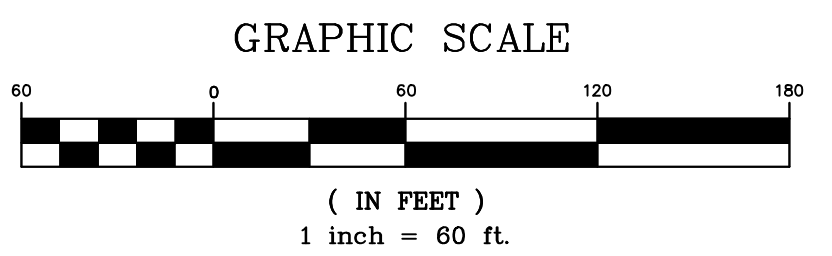
Curve Table

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

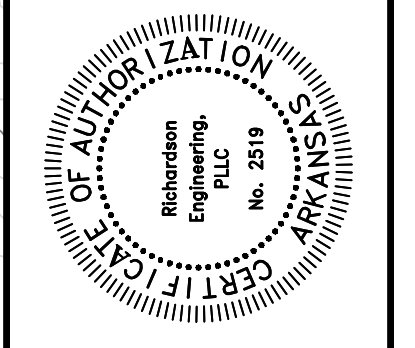
ENGINEER
 RICHARDSON ENGINEERING, PLLC
 ADDRESS: 325 W. SOUTH ST.
 BENTON, AR. 72015
 PHONE NO. (501) 315-7225
 PROJECT REPRESENTATIVE:
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SURVEYOR
 SOUTHPOINT SURVEYING
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 SHERIDAN, AR
 501-837-2342

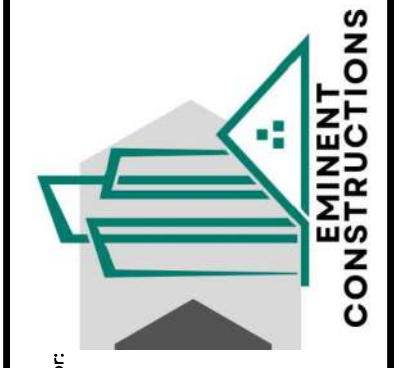
DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022



- LEGEND**
- STOP SIGN
 - STREET NAME SIGN
 - TRAFFIC SIGN
 - STREET LIGHT
 - ADA APPROVED HANDICAP RAMP
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OVERALL STREET AND DRAINAGE PLAN
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



Prepared For: _____

Date: 4/7/2026

Revision: _____

AS PER CITY COMMENTS

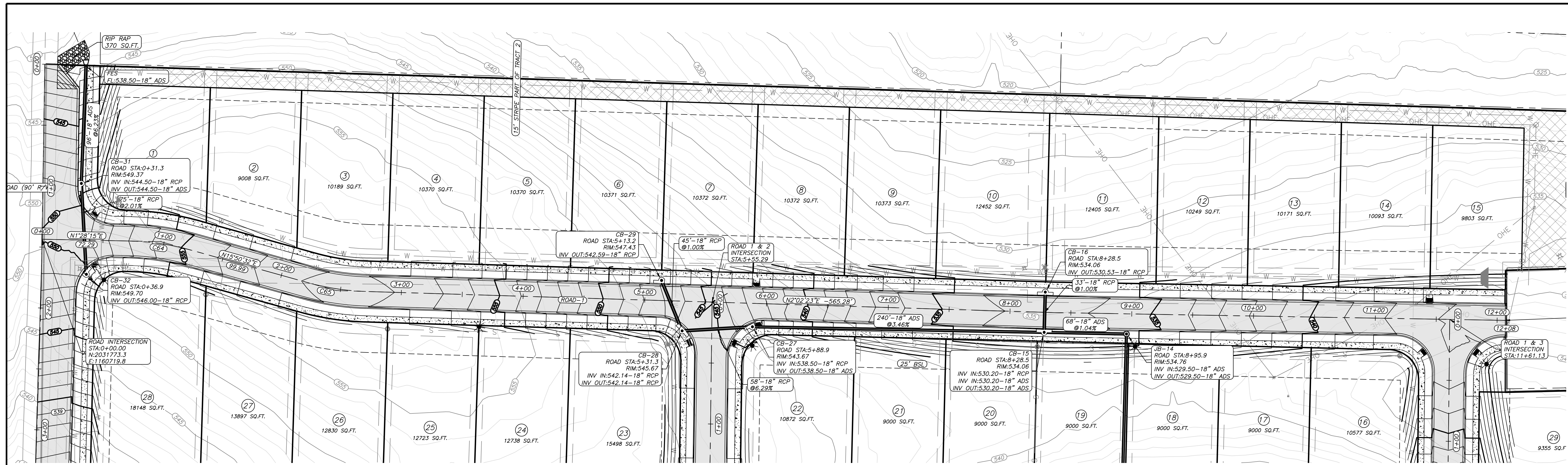
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Date: 3/3/2026

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4/7/2026

Sheet: 2 of 25



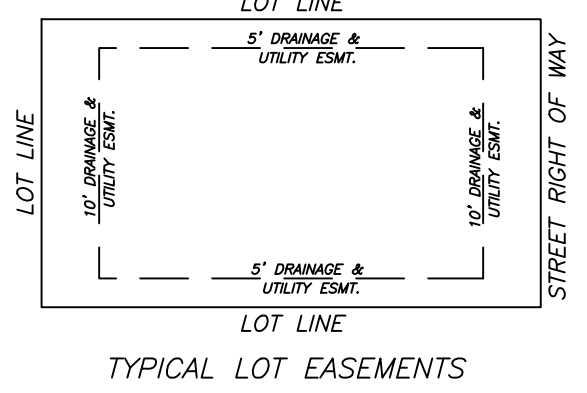
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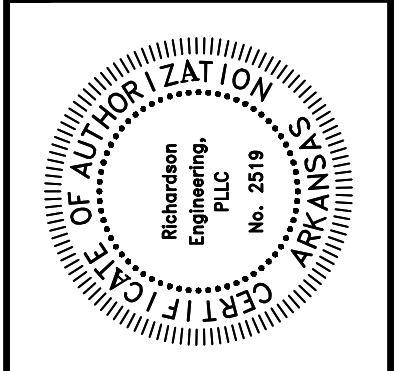
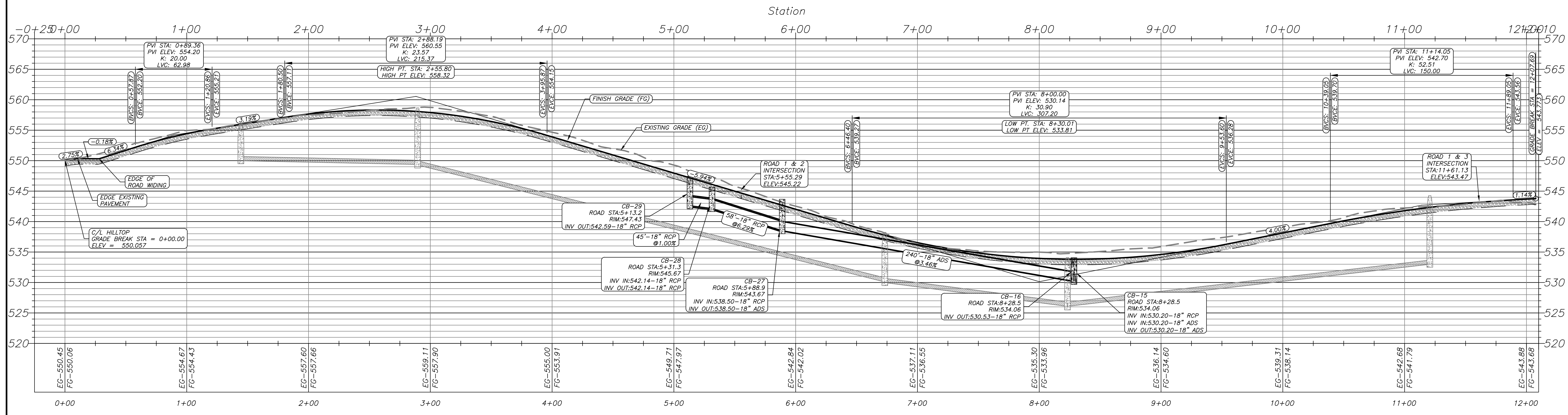
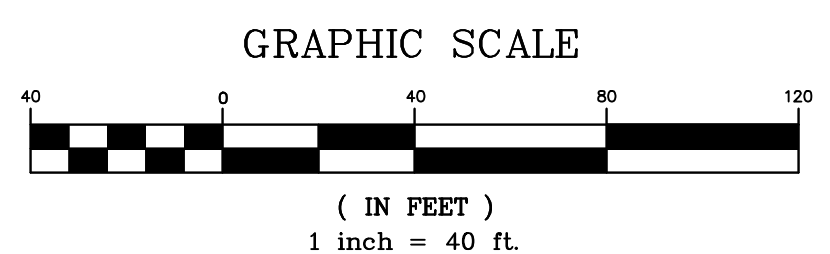
SURVEYOR
 SOUTHPOINT SURVEYING
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 SHERIDAN, AR
 501-837-2342

DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022

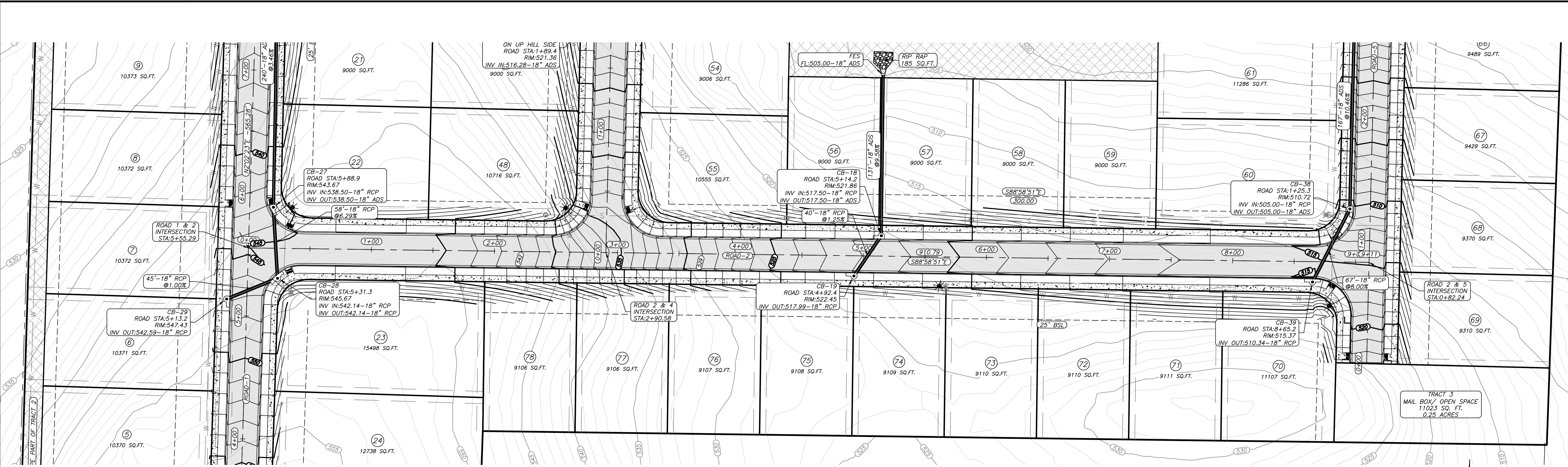


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 - BLOW-OFF
 - FIRE HYDRANT



PROJECT NO.: 024-034	Date: 3/3/2026	3 of 25
Scale: 1" = 40'	REV: 4/7/2026	
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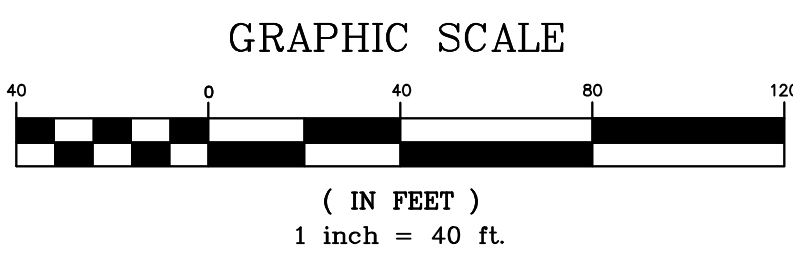
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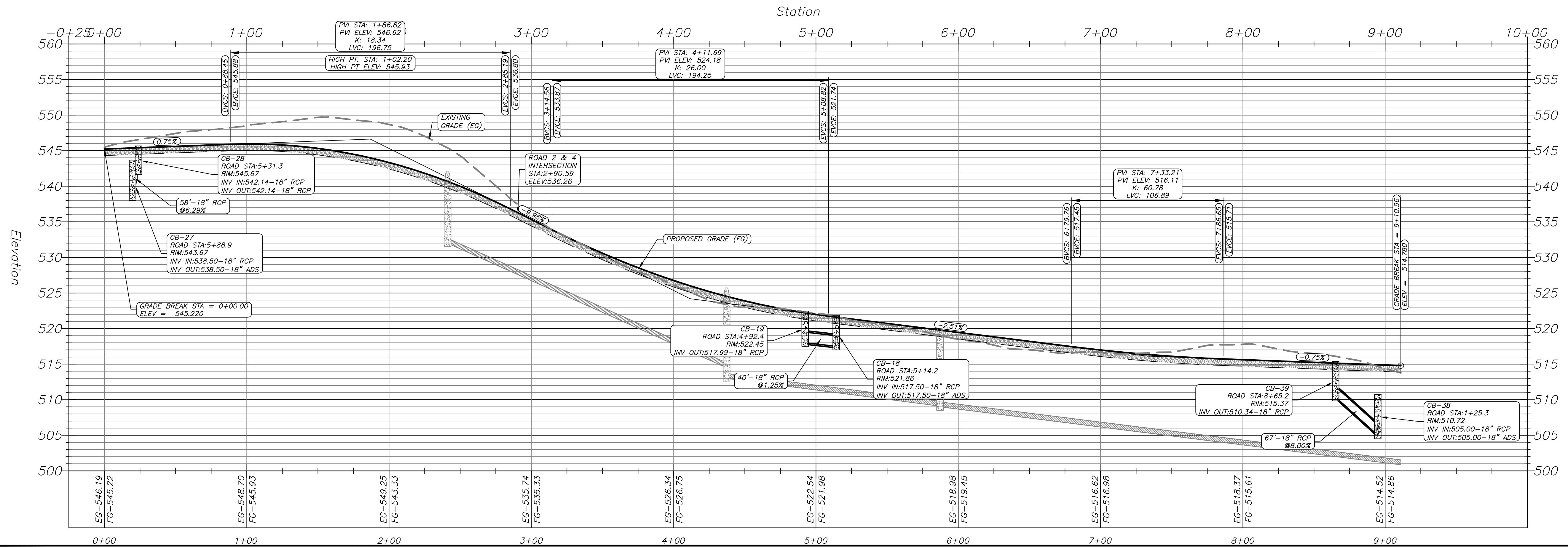
ENGINEER
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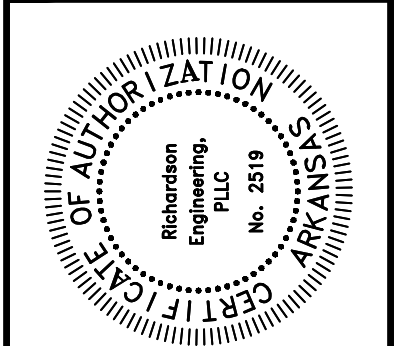
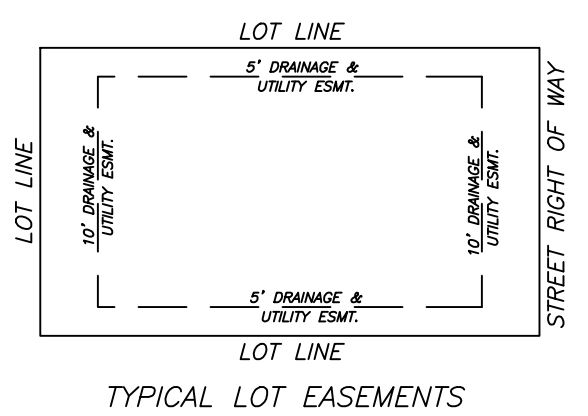
DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022



ROAD-2 PROFILE



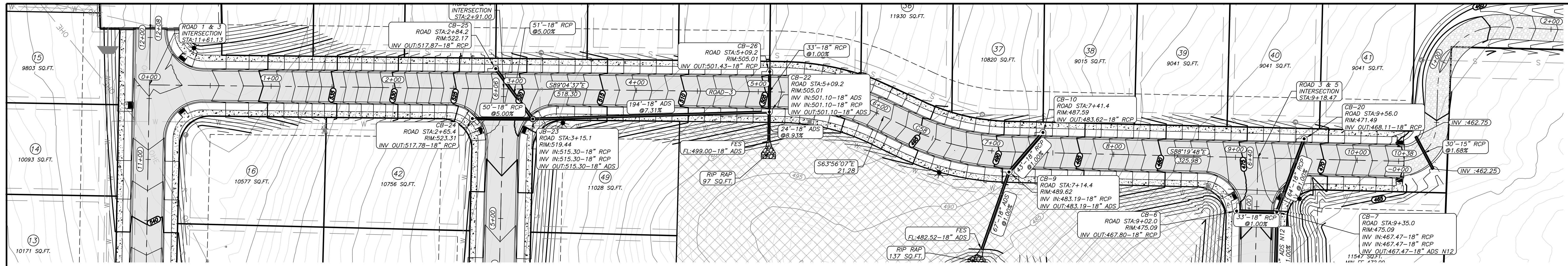
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ROAD 2 PLAN & PROFILE
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 3/3/2026	Revision: AS PER CITY COMMENTS	Sheet: 4 of 25
Scale: 1" = 40'	Date: 4/7/2026	Revision: REV	



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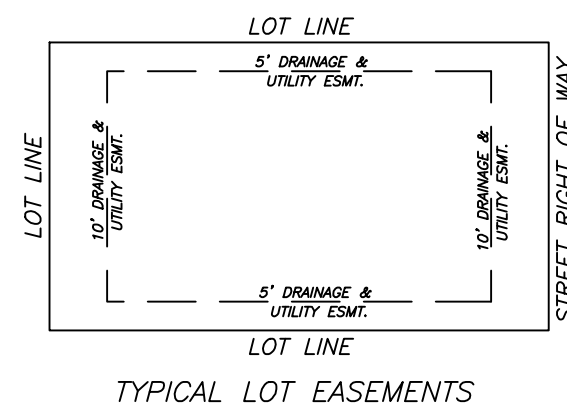
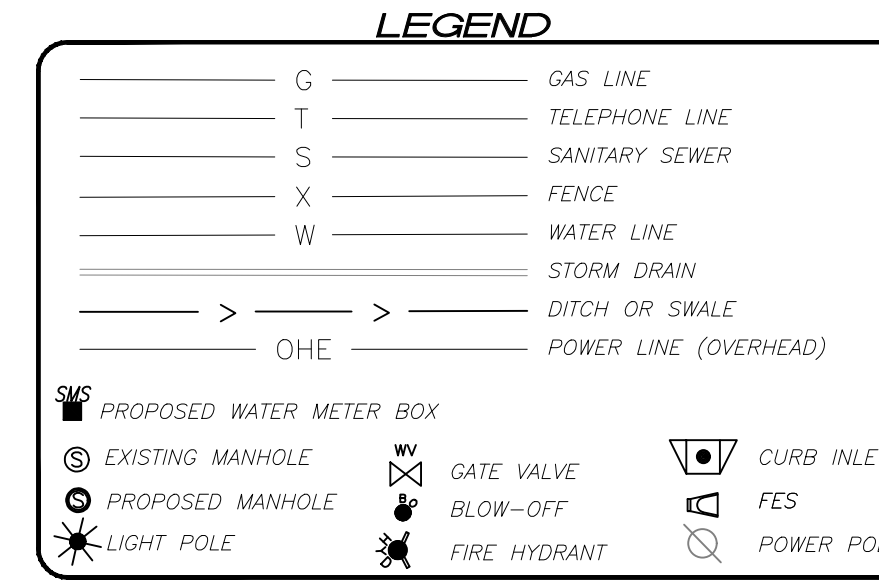
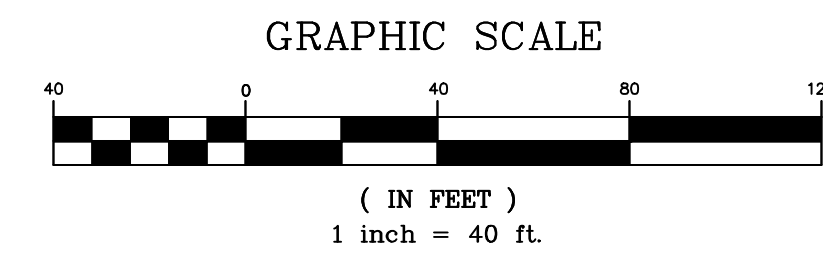
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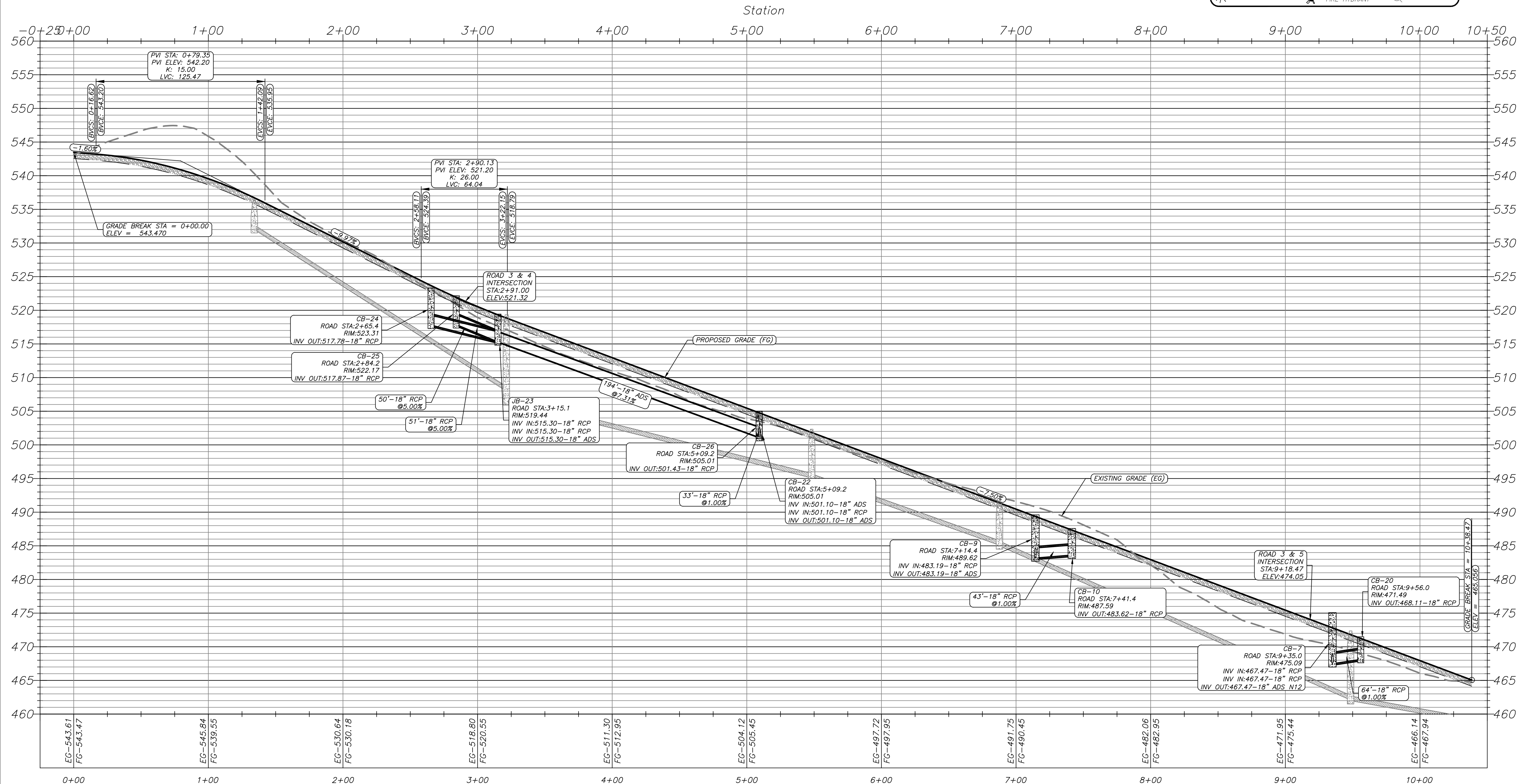
ENGINEER
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DEVELOPERS
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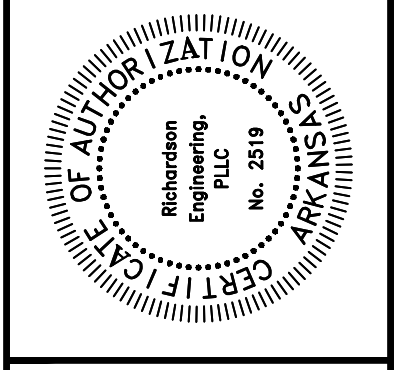


ROAD-3 PROFILE

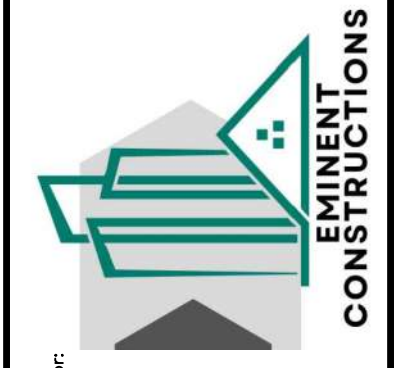


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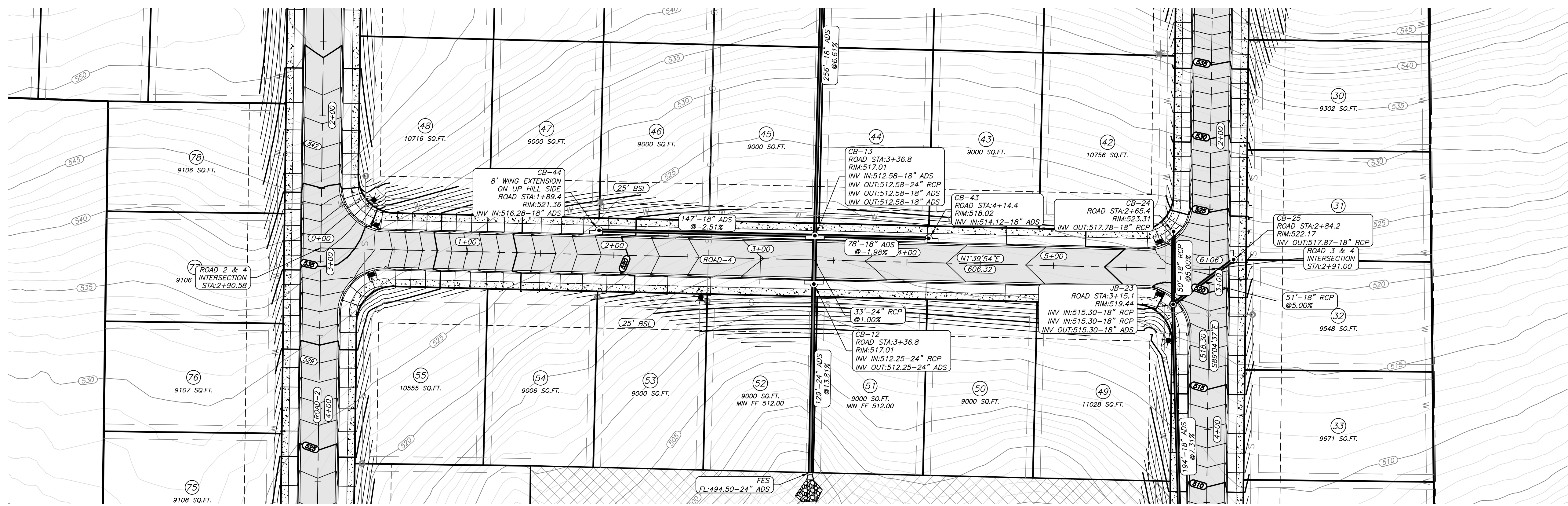
- STOP SIGN
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ROAD 3 PLAN & PROFILE
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 3/3/2026	Scale: 1" = 40'
AS PER CITY COMMENTS	REV: 4/7/2026	Sheet: 5 of 25
No. 7	Prepared For:	
Date: 4/7/2026		



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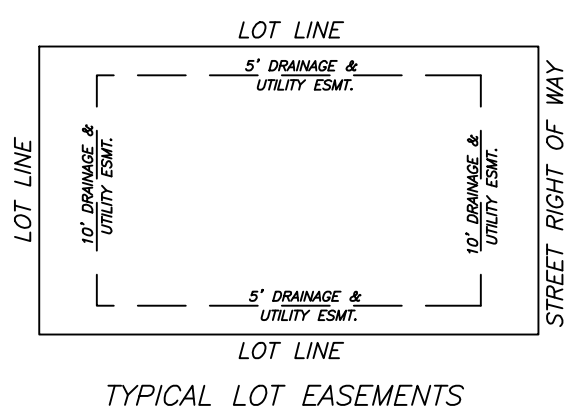
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 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022

LEGEND

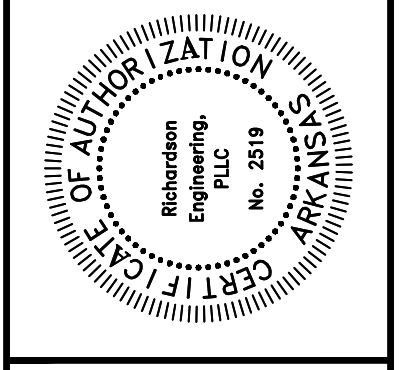
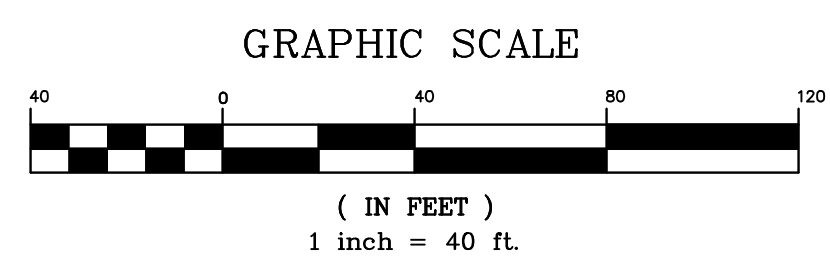
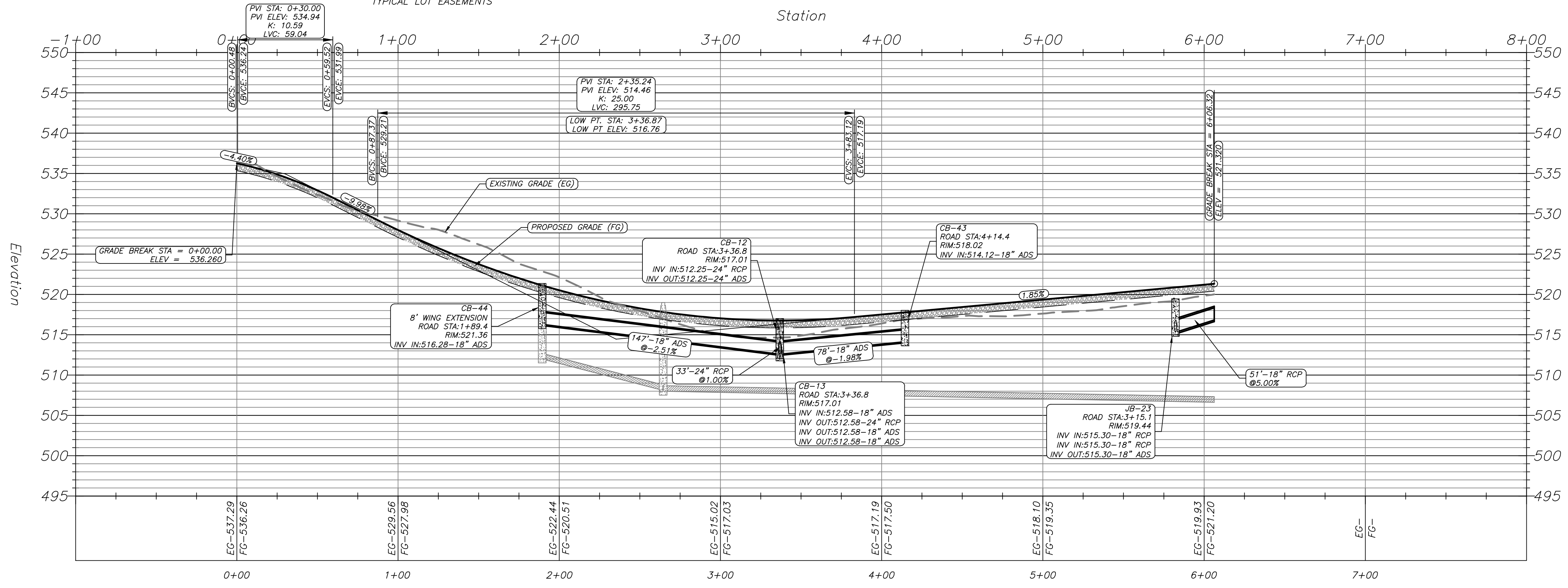
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T	TELEPHONE LINE
S	SANITARY SEWER
X	FENCE
W	WATER LINE
—	STORM DRAIN
- - -	DITCH OR SHALE
OHE	POWER LINE (OVERHEAD)

◻	PROPOSED WATER METER BOX	◻	CURB INLET
⊙	EXISTING MANHOLE	⊙	FES
⊙	PROPOSED MANHOLE	⊙	POWER POLE
⊙	LIGHT POLE	⊙	
⊙	GATE VALVE		
⊙	BLOW-OFF		
⊙	FIRE HYDRANT		

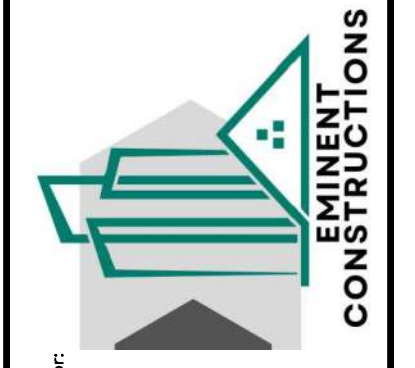
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- STOP SIGN
 - STREET NAME SIGN
 - TRAFFIC SIGN
 - STREET LIGHT
 - ADA APPROVED HANDICAP RAMP



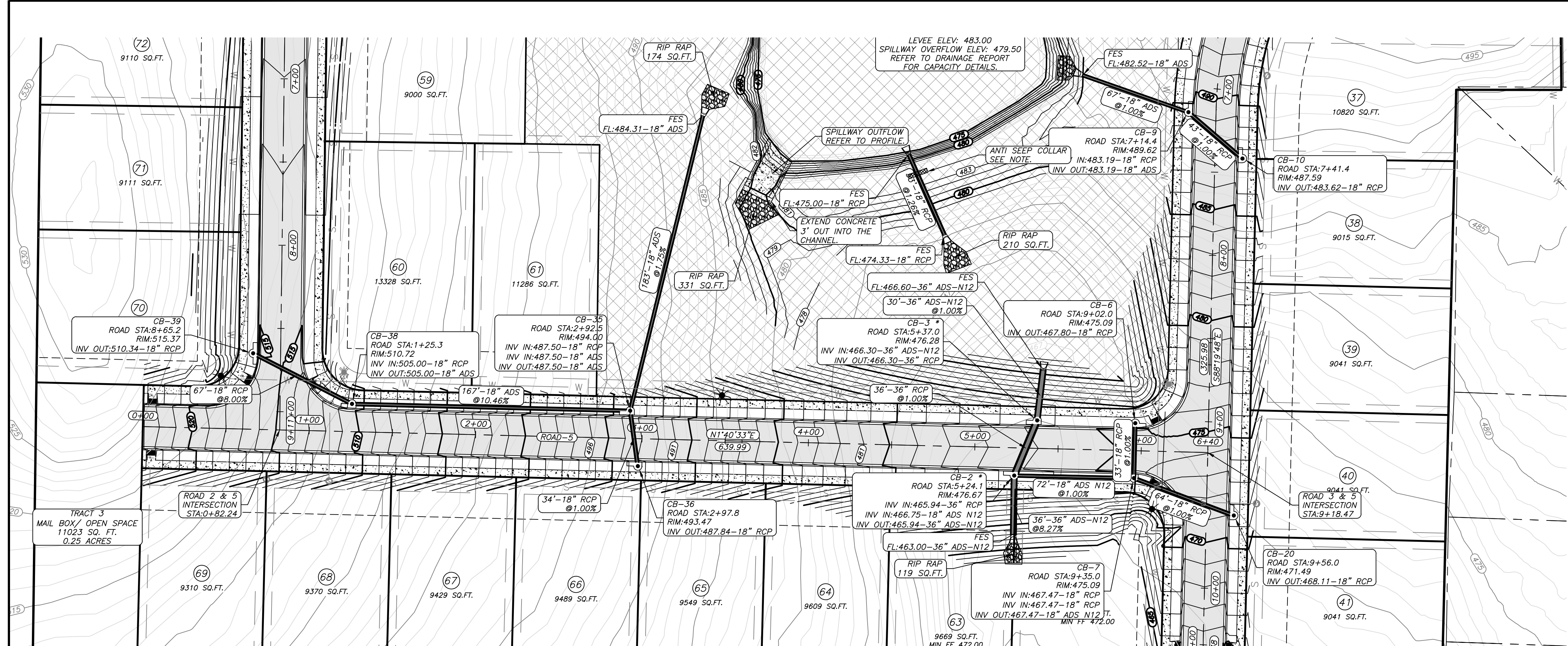
ROAD-4 PROFILE



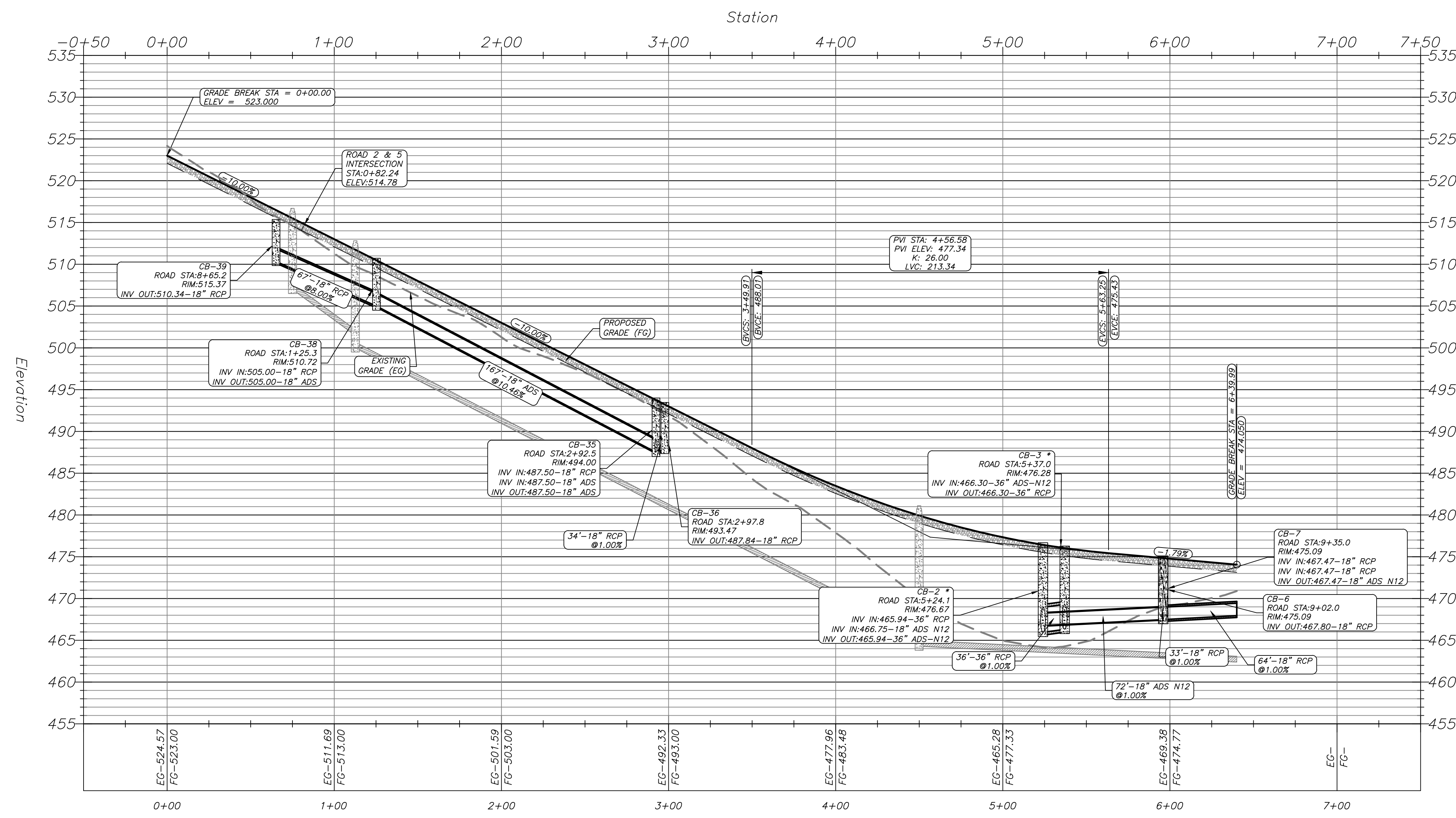
ROAD 4 PLAN & PROFILE
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 3/3/2026	Scale: 1" = 40'	Sheet: 6 of 25
AS PER CITY COMMENTS	Date: 4/7/2026		



ROAD-5 PROFILE



GENERAL NOTES

- 1.) PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH AHTD SPECIFICATIONS, AND BASED ON GEOTECHNICAL ANALYSIS OF THE SOIL CONDITIONS.
- 2.) COMPACTION TESTS TO BE CONDUCTED AS PER CITY OF BRYANT ROAD DEPT. SPECS.
- 3.) LIGHT POLES SHALL BE PLACED AS SHOWN ON DRAWINGS.
- 4.) ALL CORNERS TO HAVE A 25' RADIUS UNLESS OTHERWISE NOTED.
- 5.) PROPOSED LOCATIONS OF STREET SIGNS AND TRAFFIC CONTROL SIGNS ARE APPROXIMATE. ACTUAL LOCATION AND INSTALLATION MUST MEET MUTCD AND CITY OF BRYANT ROAD DEPT. SPECS.
- 6.) ADDITIONAL LOCATIONS TO BE DETERMINED BY CITY OF BRYANT ROAD DEPARTMENT.
- 7.) CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
- 8.) 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 FOREMENTIONED ITEMS, SHOWN AND NOT SHOWN.
- 9.) CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.

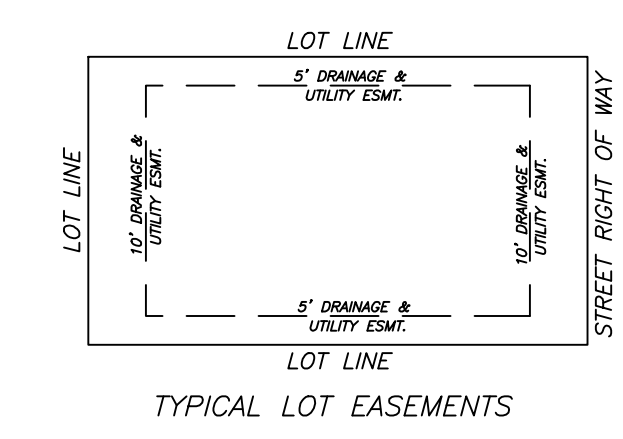
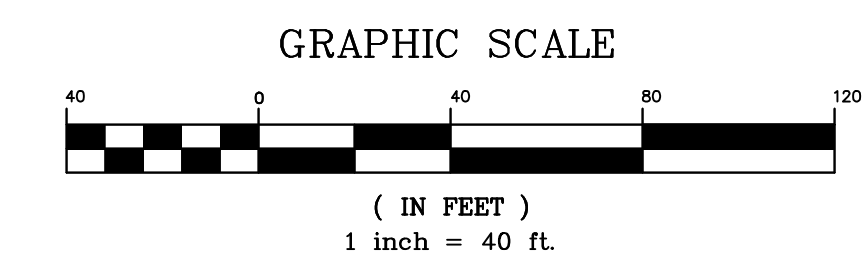
DRAINAGE NOTES:

- * ALL DRAINAGE PIPING TO BE SIZED TO EFFECTIVELY HANDLE A 10-YEAR RAIN EVENT.
- * ALL DRAINAGE EASEMENTS SHALL CONVEY FLOWS FROM THE 100-YEAR RAIN EVENT.
- (*) 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.

ENGINEER
RICHARDSON ENGINEERING, PLLC
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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

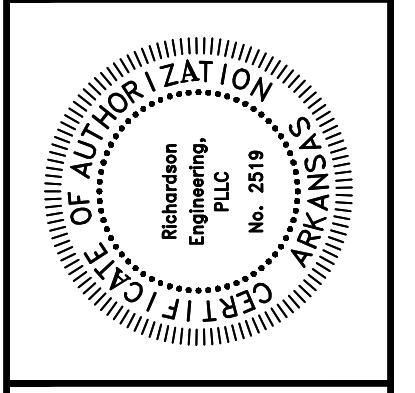


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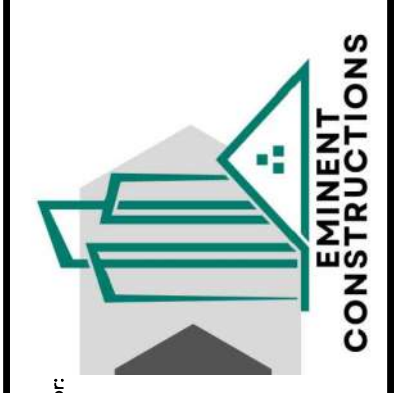
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- ⊣ STREET NAME SIGN
- ⊢ TRAFFIC SIGN
- ★ STREET LIGHT
- * ADA APPROVED HANDICAP RAMP

LEGEND

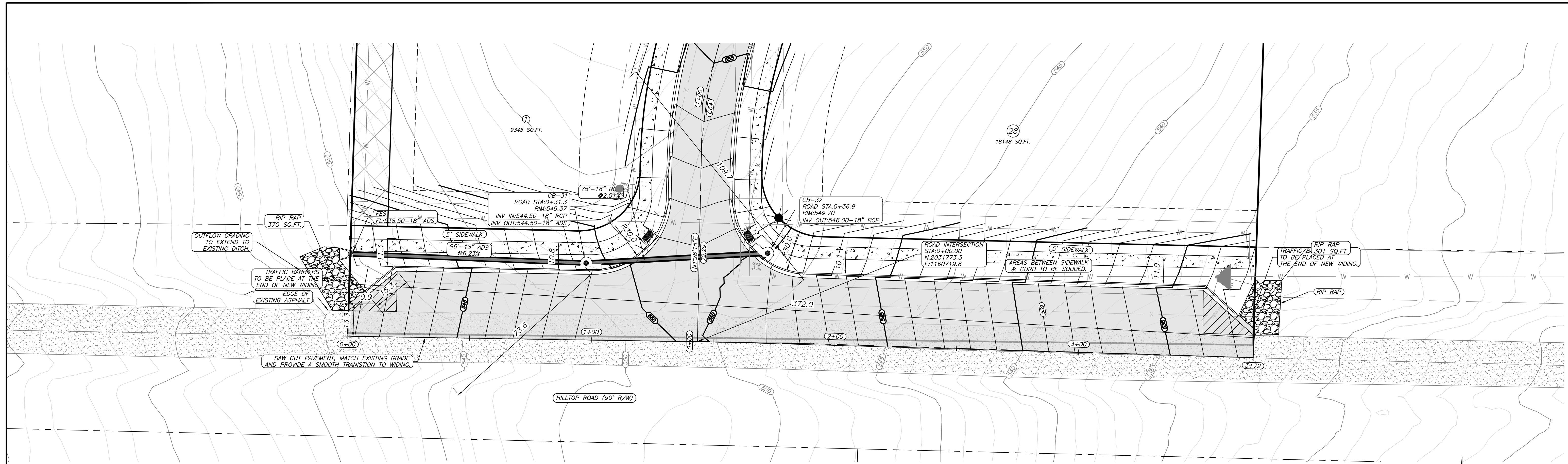
- G GAS LINE
- T TELEPHONE LINE
- S SANITARY SEWER
- X FENCE
- W WATER LINE
- SD STORM DRAIN
- D DITCH OR SWALE
- OHE POWER LINE (OVERHEAD)
- ⊙ PROPOSED WATER METER BOX
- ⊙ EXISTING MANHOLE
- ⊙ PROPOSED MANHOLE
- ⊙ LIGHT POLE
- ⊙ GATE VALVE
- ⊙ BLOW-OFF
- ⊙ FIRE HYDRANT
- ⊙ CURB INLET
- ⊙ FES
- ⊙ POWER POLE



ROAD 5 PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS



PROJECT NO.:	024-034
Date:	3/3/2026
Scale:	1" = 40'
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Date:	4/7/2026



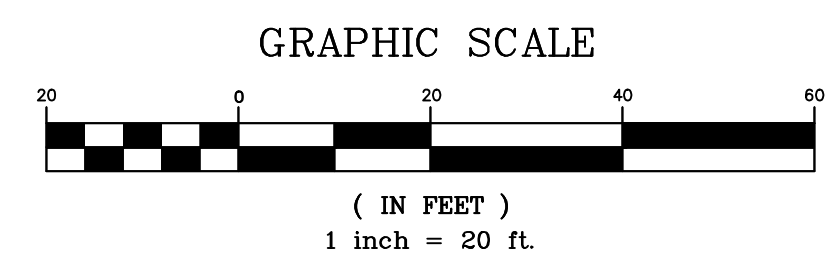
- GENERAL NOTES**
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 - ALL DRAINAGE EASEMENTS SHALL CONVEY FLOWS FROM THE 100-YEAR RAIN EVENT.
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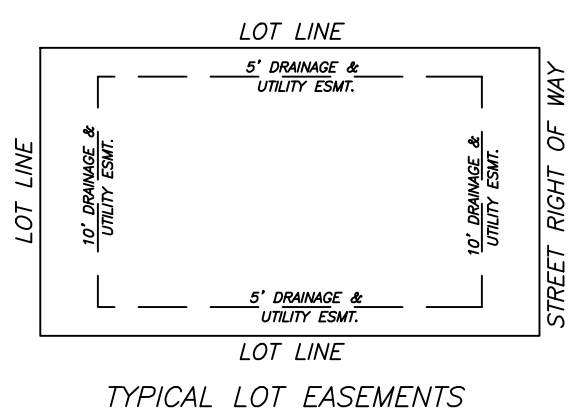
SURVEYOR
 SOUTHPOINT SURVEYING
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 SHERIDAN, AR
 501-837-2342

DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022

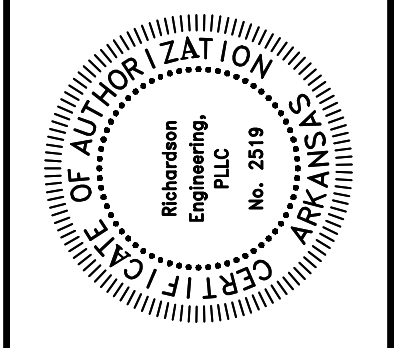
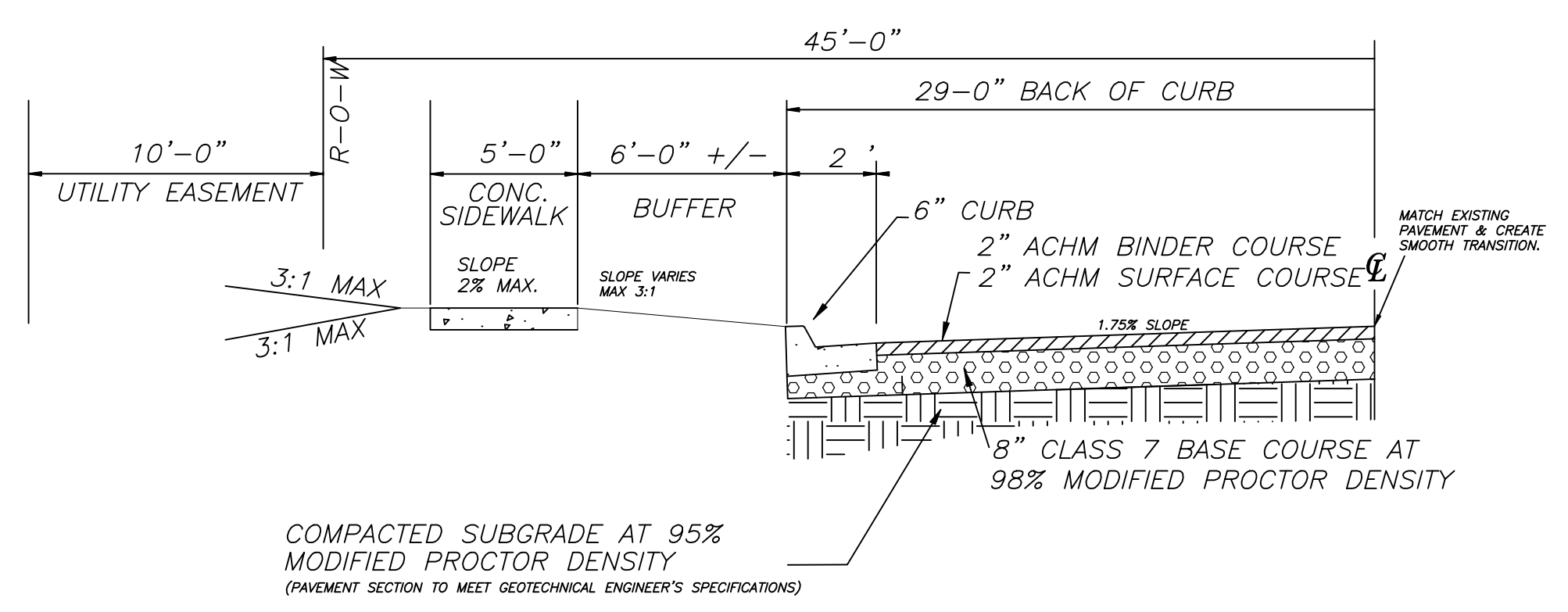
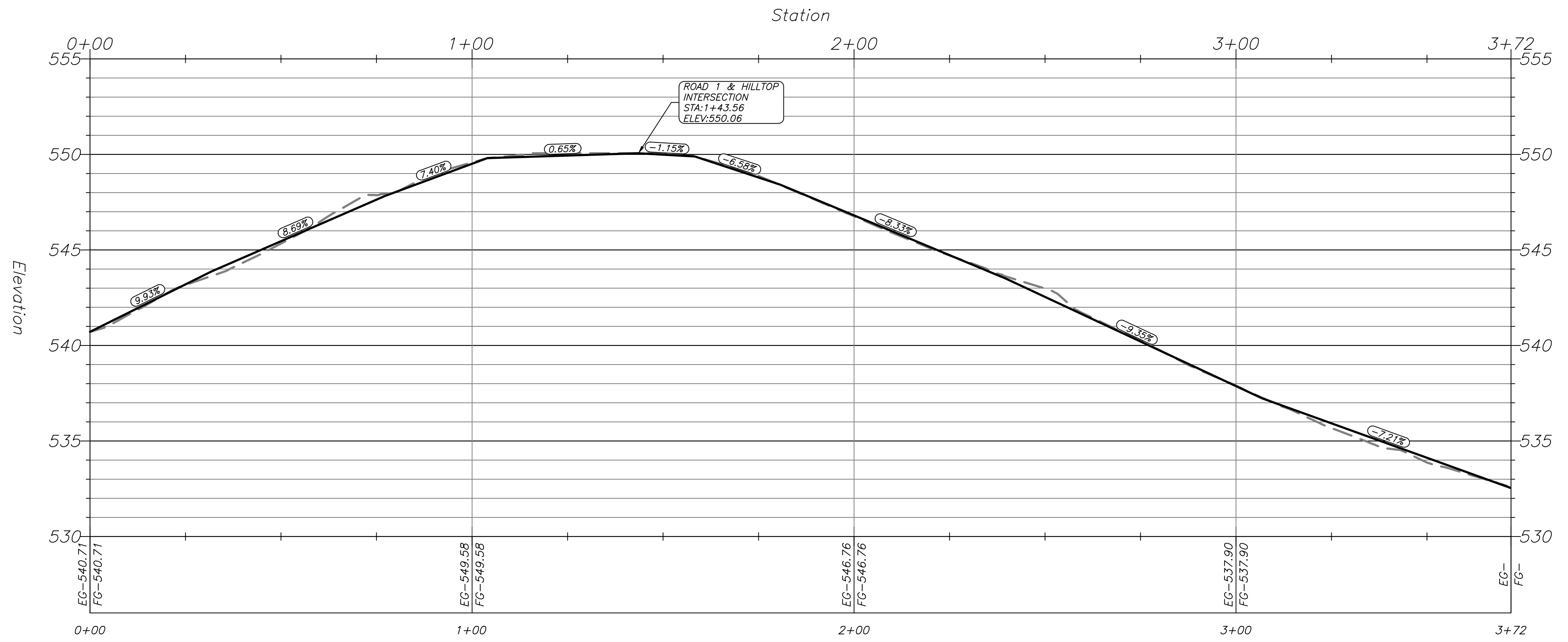


- LEGEND**
- STOP SIGN
 - STREET NAME SIGN
 - TRAFFIC SIGN
 - STREET LIGHT
 - ADA APPROVED HANDICAP RAMP
 - GATE VALVE
 - BLOW-OFF
 - FIRE HYDRANT
 - CURB INLET
 - FES
 - POWER POLE

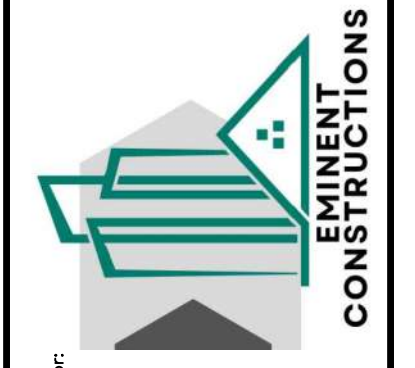
- LEGEND**
- G GAS LINE
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 - POWER LINE (OVERHEAD)
 - PROPOSED WATER METER BOX
 - EXISTING MANHOLE
 - PROPOSED MANHOLE
 - LIGHT POLE



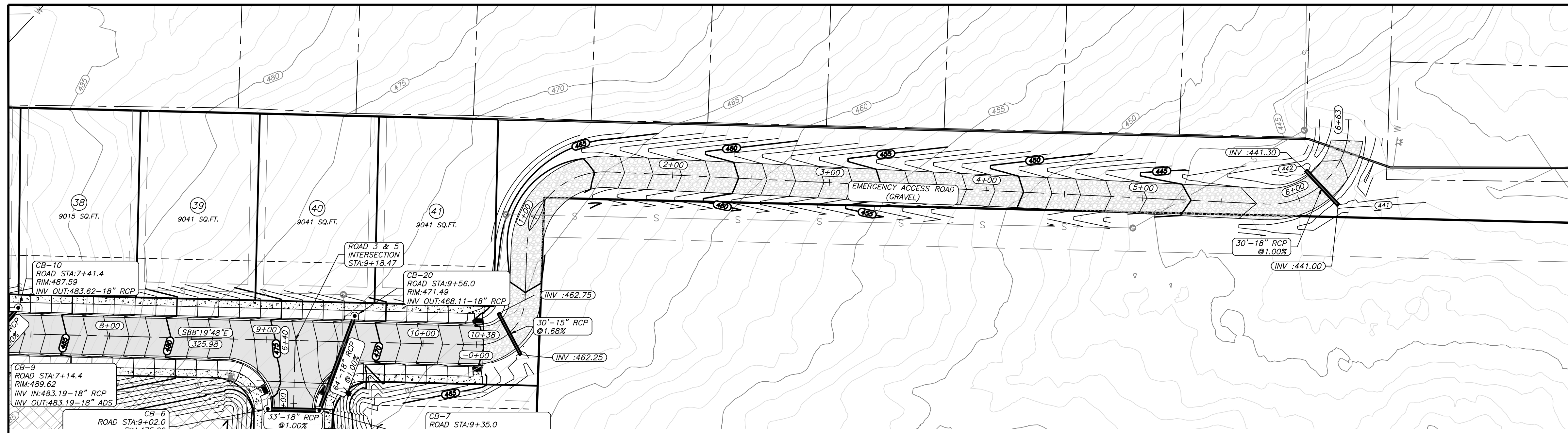
HILLTOP ROAD PROFILE



HILLTOP RD WIDING PLAN & PROFILE
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 3/3/2026	Scale: 1" = 20'	Sheet: 8 of 25
AS PER CITY COMMENTS	Revision: 4/7/2026	REY	4/7/2026

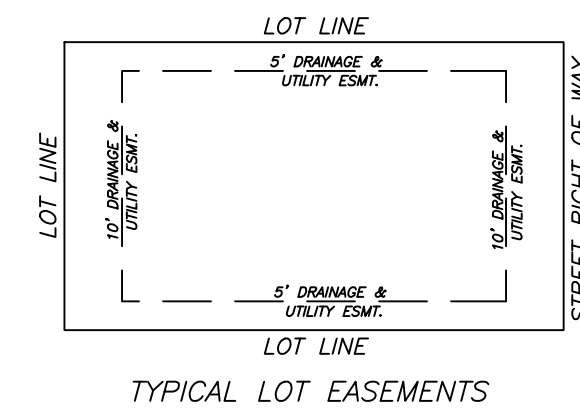
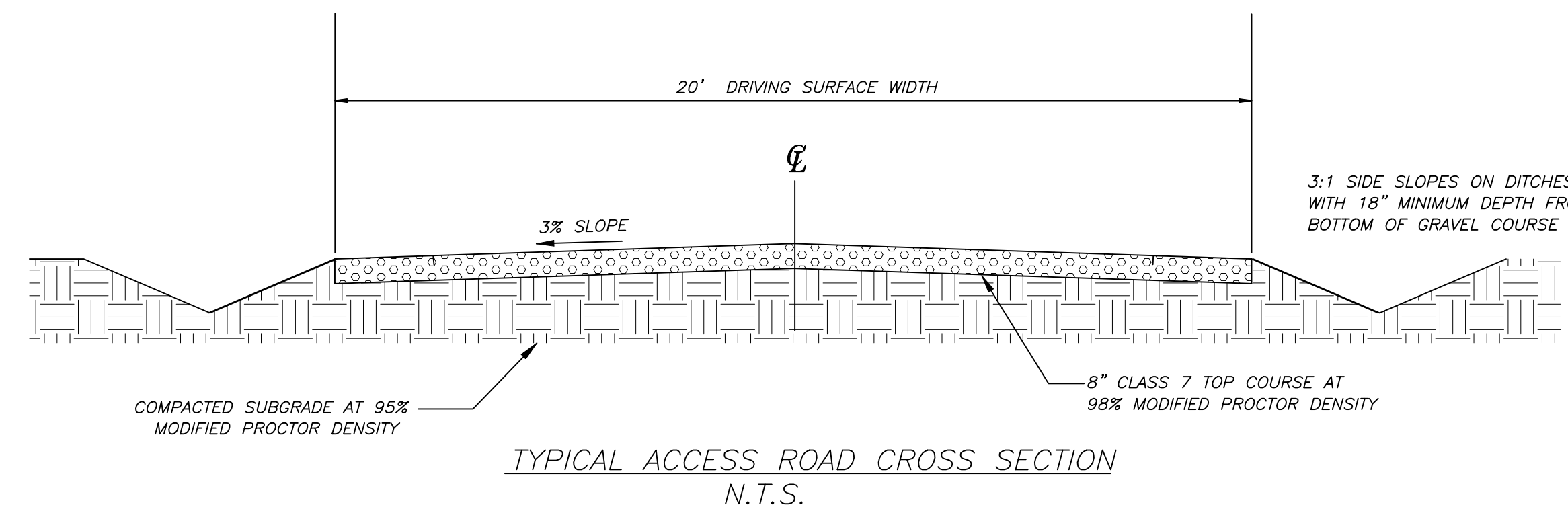


GENERAL NOTES

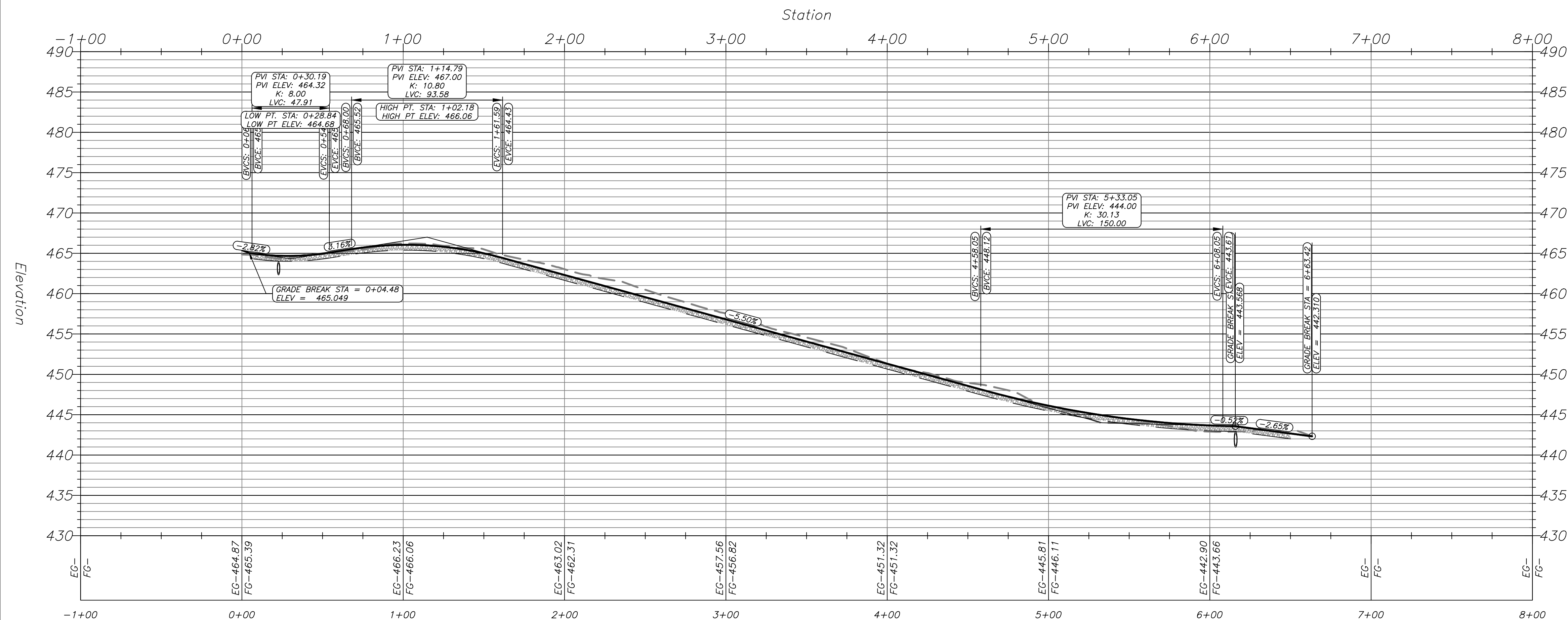
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EMERGENCY ACCESS ROAD PROFILE



- NOTE:**
- ROADWAY SHALL MEET CITY OF BRYANT SPECIFICATIONS
 - STREETS AND DRAINAGE TO BE MAINTAINED BY BRYANT ROAD DEPARTMENT
 - ROAD SHALL MEET STATE FIRE CODE REQUIREMENTS.

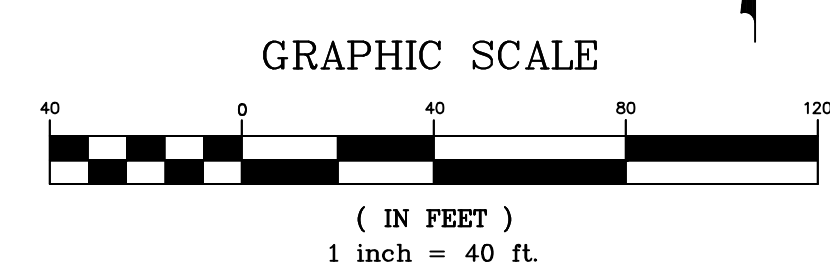
LEGEND

- STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- STREET LIGHT
- ADA APPROVED HANDICAP RAMP

ENGINEER
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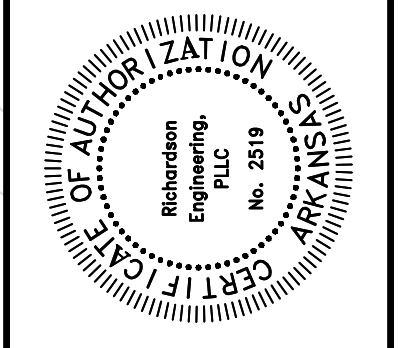
SURVEYOR
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DEVELOPERS
 EMINENT CONSTRUCTION
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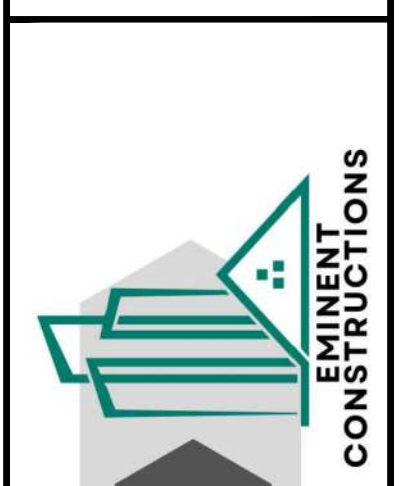


LEGEND

- G GAS LINE
- T TELEPHONE LINE
- S SANITARY SEWER
- X FENCE
- W WATER LINE
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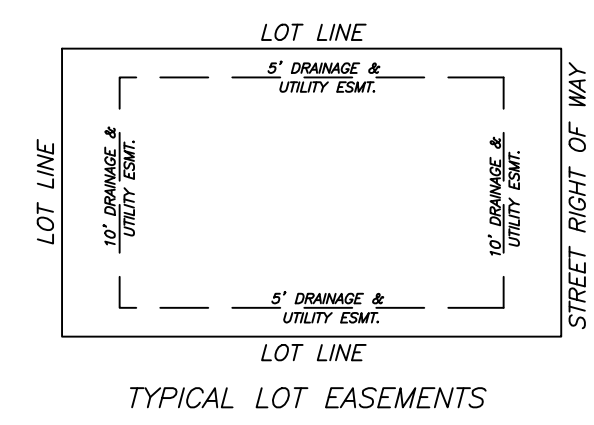
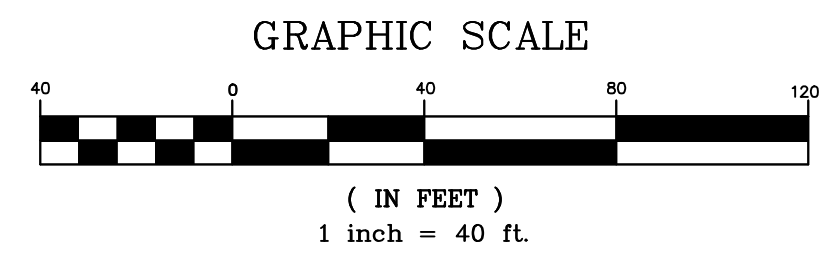
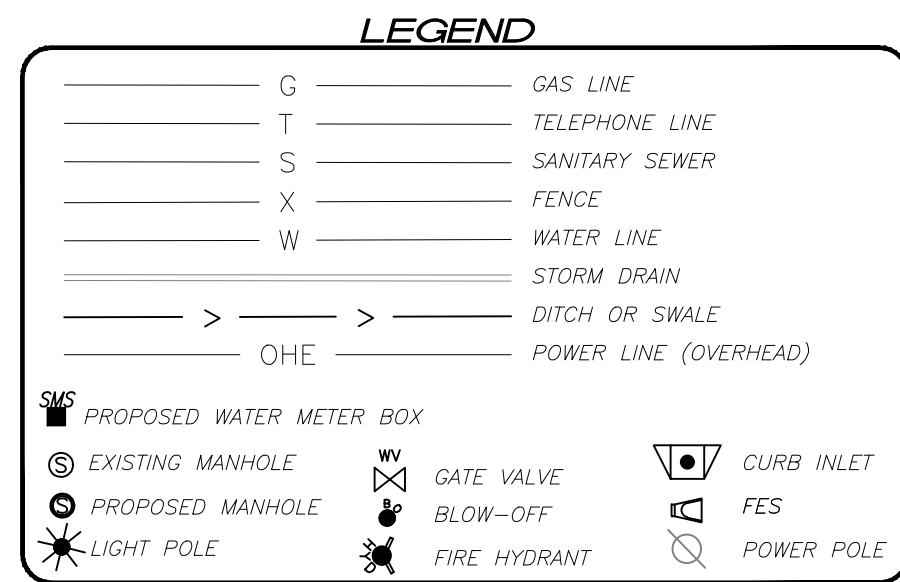
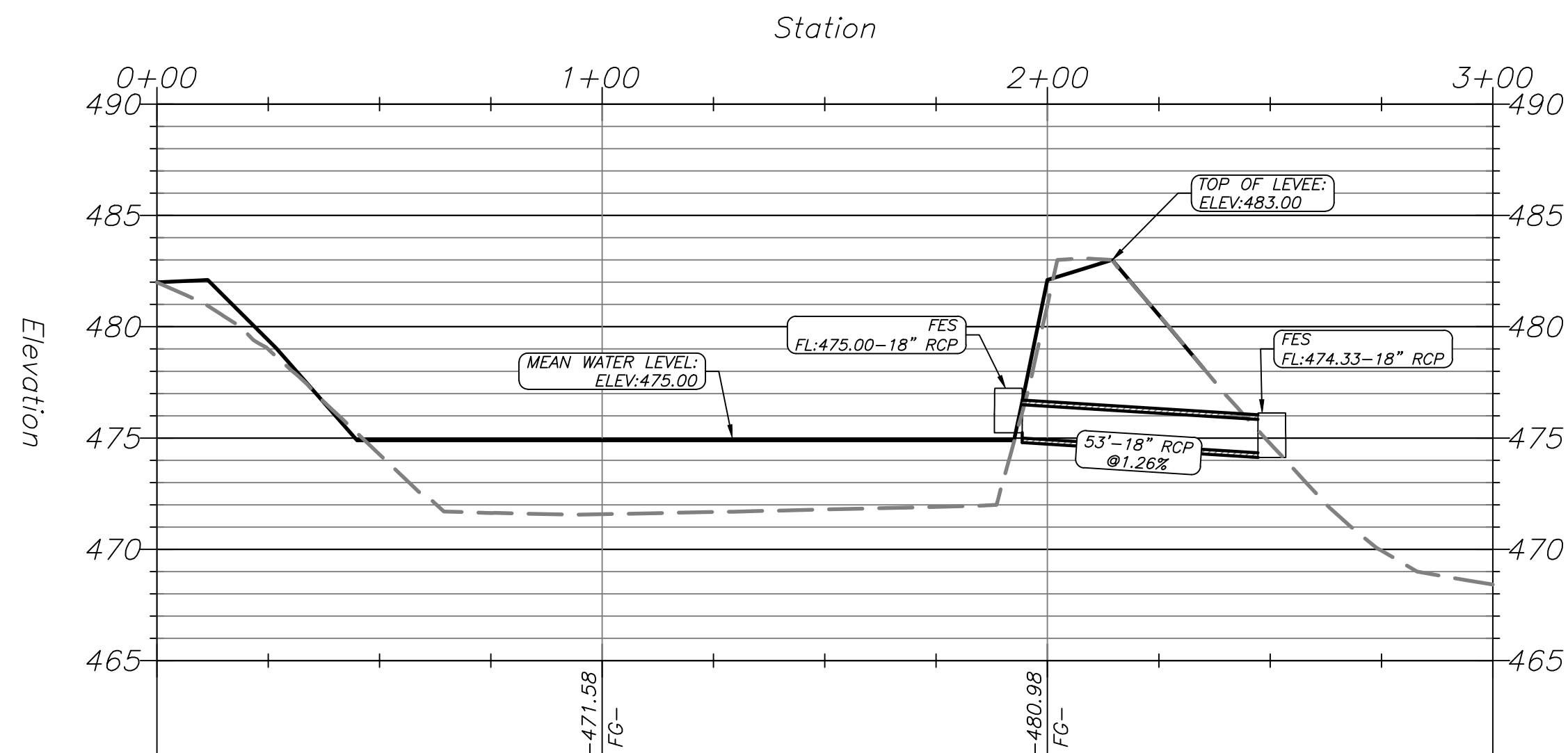


EMERGENCY ACCESS ROAD P/P
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



Project No.:	024-034
Date:	3/3/2026
Scale:	1" = 40'
Sheet:	9 of 25

RETENTION POND PROFILE



GENERAL NOTES

- 1.) PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH AHTD SPECIFICATIONS, AND BASED ON GEOTECHNICAL ANALYSIS OF THE SOIL CONDITIONS.
- 2.) COMPACTION TESTS TO BE CONDUCTED AS PER CITY OF BRYANT ROAD DEPT. SPECS.
- 3.) LIGHT POLES SHALL BE PLACED AS SHOWN ON DRAWINGS.
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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.
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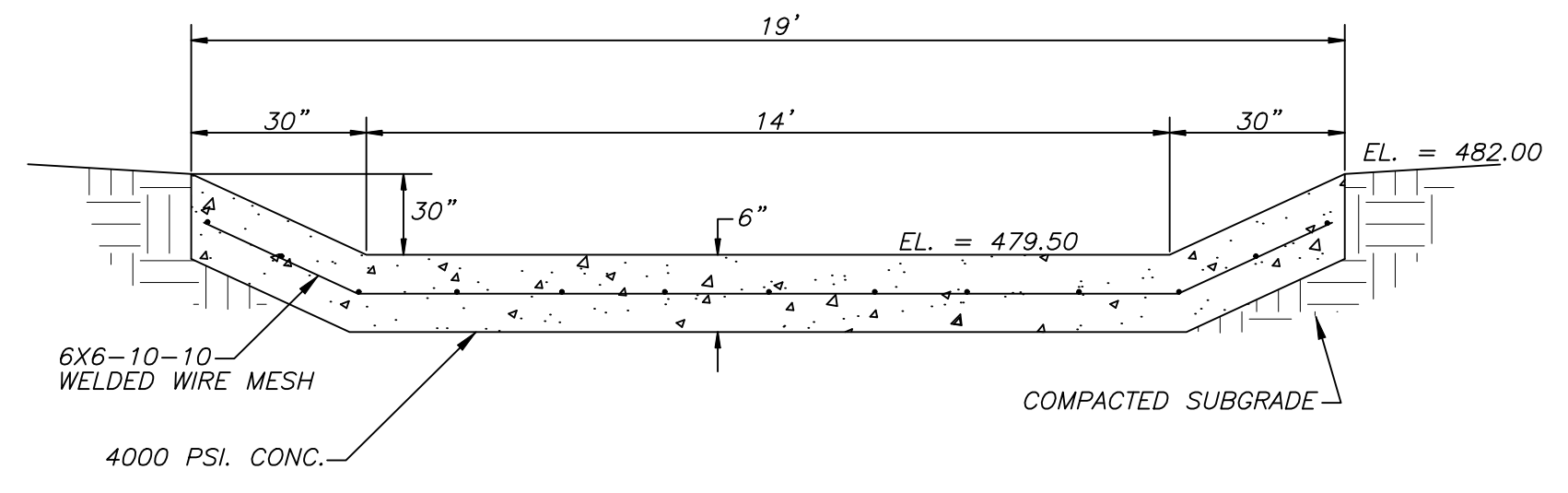
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DEVELOPERS
EMINENT CONSTRUCTION
1100 HILLFARM ROAD
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LEGEND

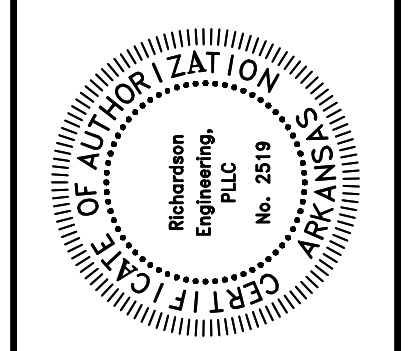
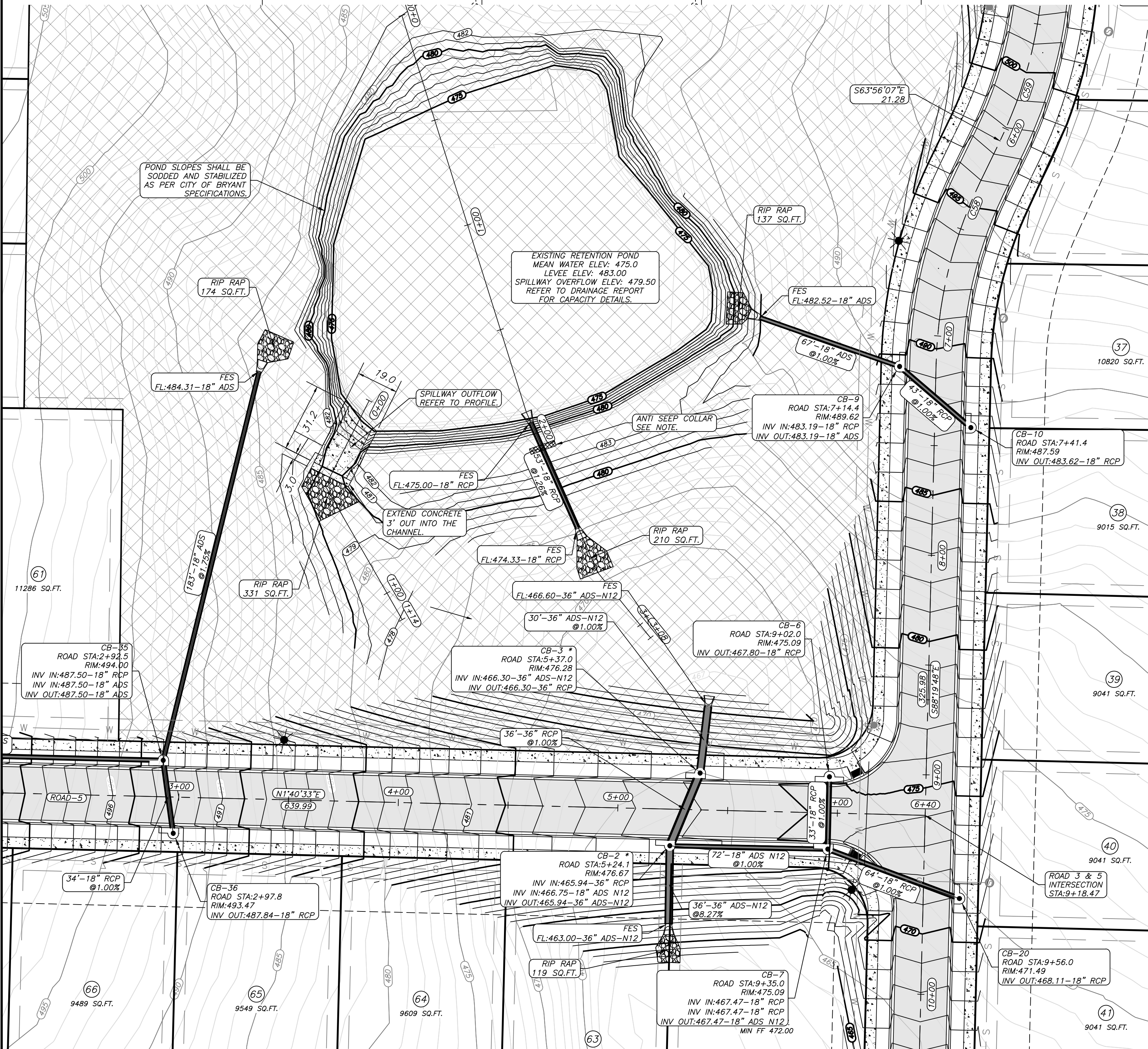
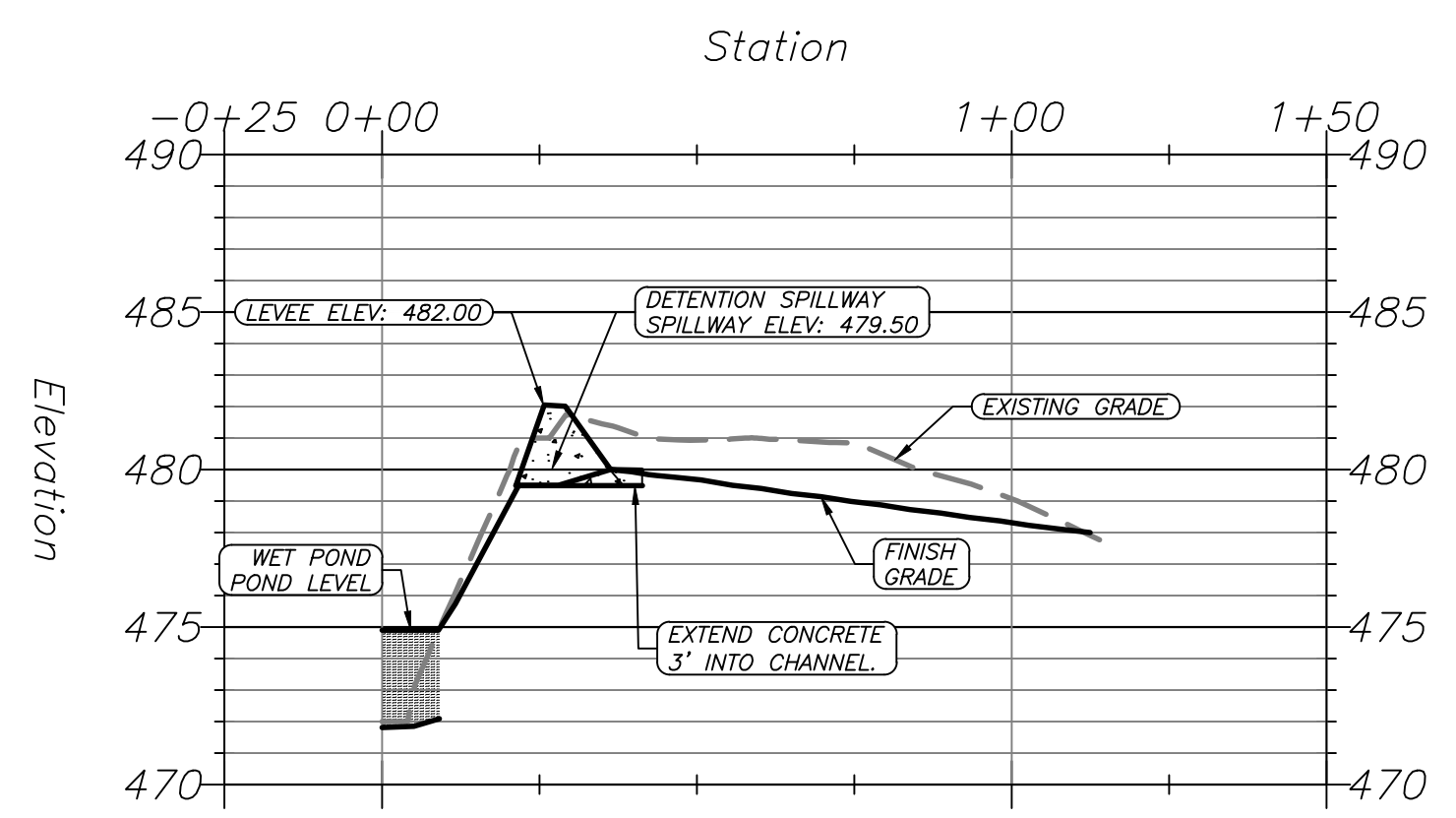
- ⊙ STOP SIGN
- STREET NAME SIGN
- TRAFFIC SIGN
- ★ STREET LIGHT
- * ADA APPROVED HANDICAP RAMP

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 ON THE OUTSIDE OF PIPE. CLAY TO EXTEND 4' BEYOND THE PIPE IN ALL DIRECTIONS AND 2" THICK MIN.



SPILLWAY DETAIL
N.T.S.

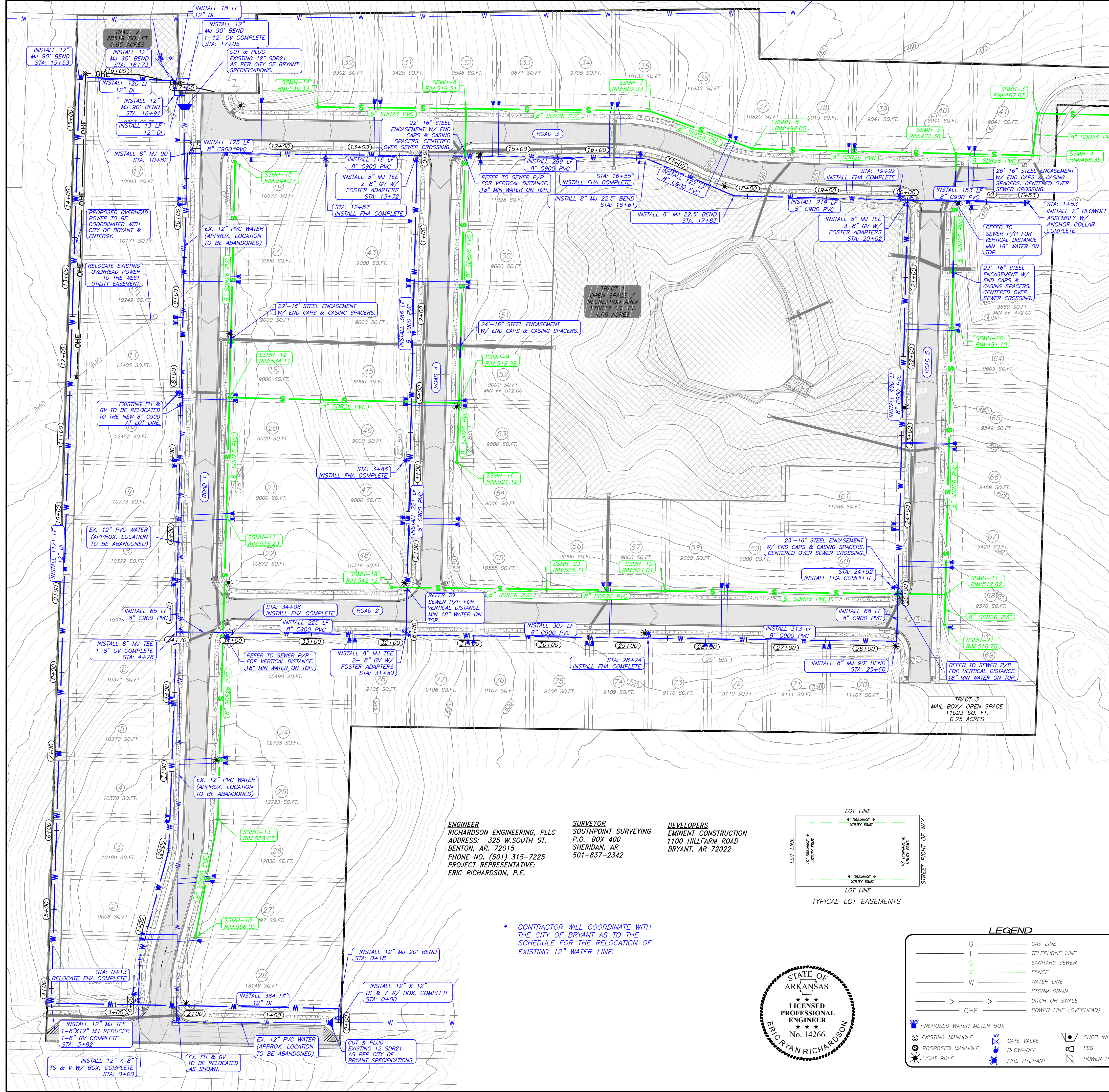
SPILLWAY OUTFLOW PROFILE



DETENTION OUTFLOW PLAN & PROFILE
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS



PROJECT NO.: 024-034	Revision: AS PER CITY COMMENTS	Date: 4/7/2026
Scale: 1" = 40'	Date: 3/13/2026 REV: 4/7/2026	
Sheet: 10 of 25		



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 AFORESAID 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.

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- 15.) 12ga GREEN COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL FORCE MAINS.

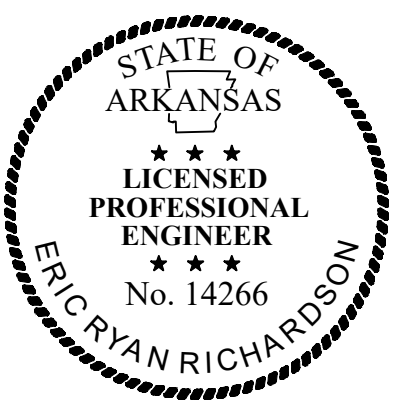
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- 2.) ALL WATER MAINS SHALL BE AS NOTED ON PLANS.
- 3.) ALL SERVICE LINES AND METER SETTINGS SHALL BE AS PER BRYANT WATER STANDARD SPECIFICATIONS.
- 4.) 12ga BLUE COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL WATERLINES (MAINS & SERVICES).
- 5.) ALL FITTINGS SHALL BE DUCTILE IRON M.J..
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- 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.

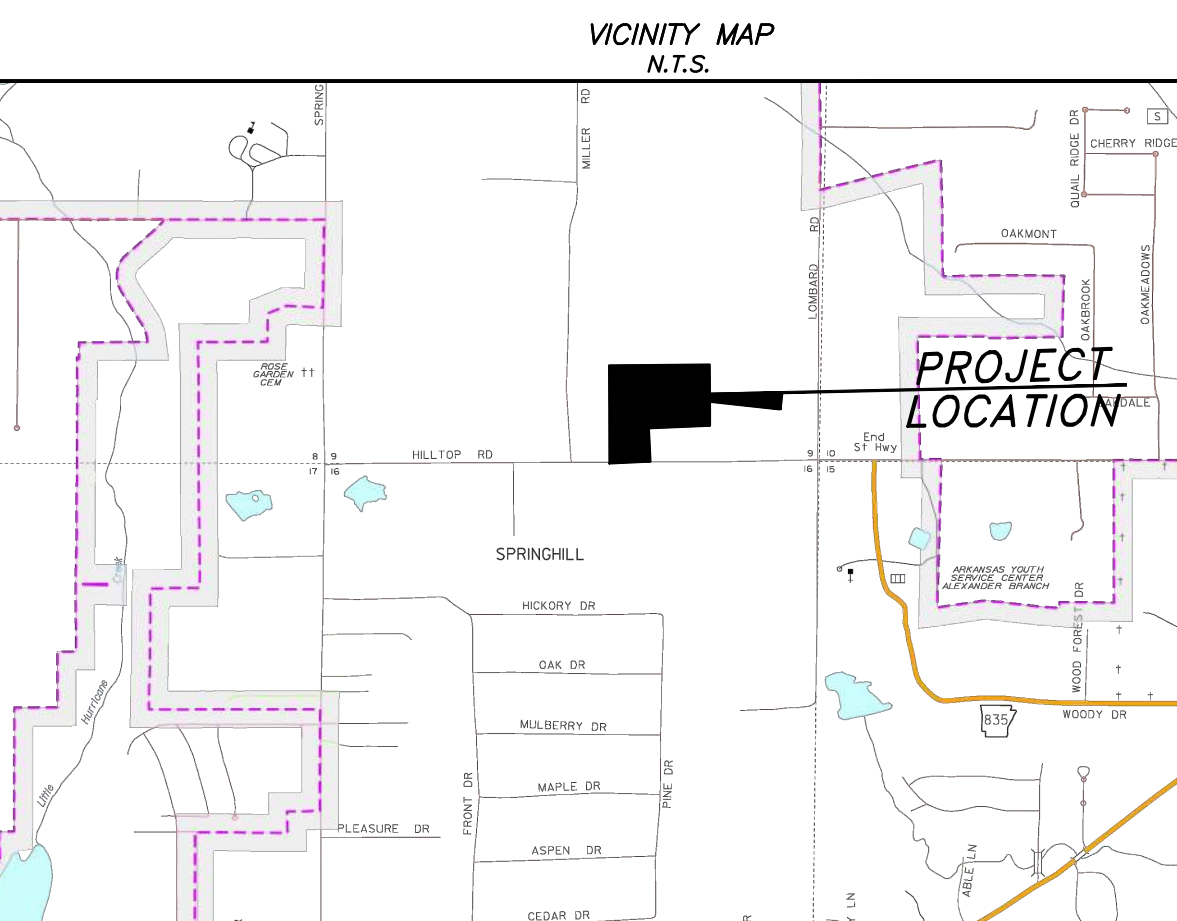
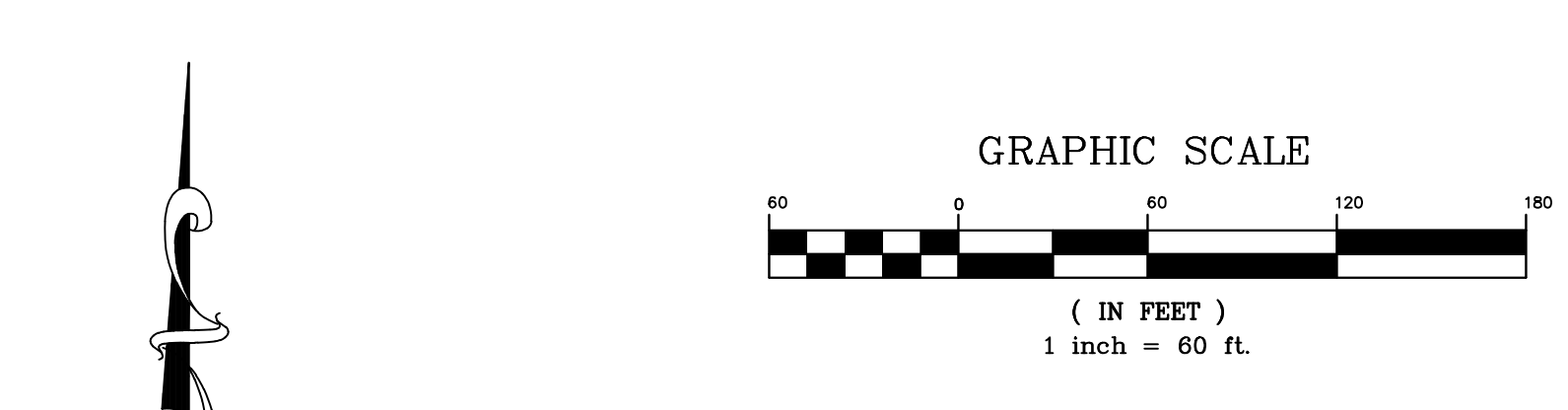
ENGINEER
 RICHARDSON ENGINEERING, PLLC
 ADDRESS: 325 W. SOUTH ST.
 BENTON, AR 72015
 PHONE NO. (501) 315-7225
 PROJECT REPRESENTATIVE:
 ERIC RICHARDSON, P.E.

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 SHERIDAN, AR
 501-837-2342

DEVELOPERS
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 1100 HILLFARM ROAD
 BRYANT, AR 72022



* CONTRACTOR WILL COORDINATE WITH THE CITY OF BRYANT AS TO THE SCHEDULE FOR THE RELOCATION OF EXISTING 12" WATER LINE.



LEGEND

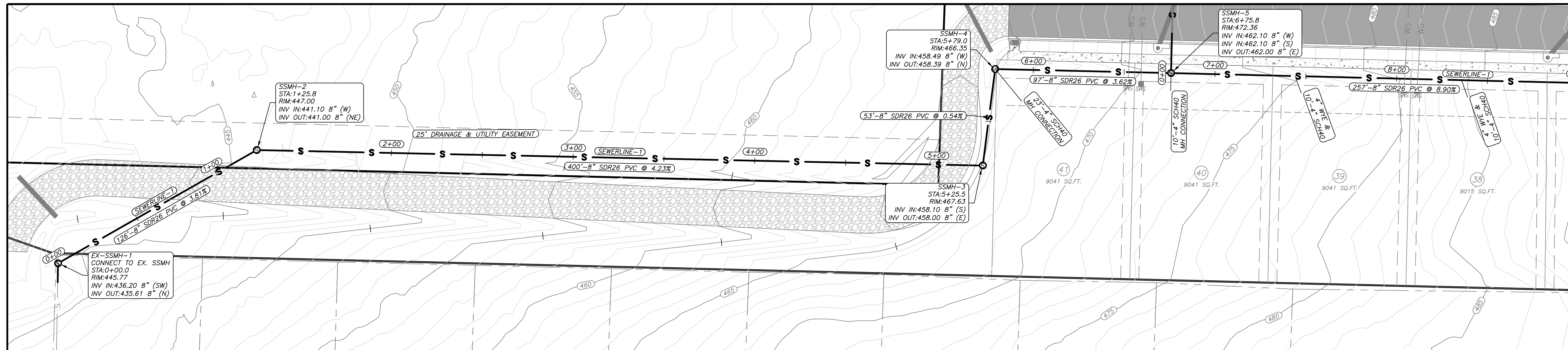
	GAS LINE		TELEPHONE LINE
	SANITARY SEWER		WATER LINE
	STORM DRAIN		DITCH OR SWALE
	POWER LINE (OVERHEAD)		PROPOSED WATER METER BOX
	EXISTING MANHOLE		PROPOSED MANHOLE
	PROPOSED MANHOLE		PROPOSED WATER METER BOX
	PROPOSED WATER METER BOX		GATE VALVE
	GATE VALVE		BLOW-OFF
	BLOW-OFF		FIRE HYDRANT
	FIRE HYDRANT		CURB INLET
	CURB INLET		FES
	FES		POWER POLE

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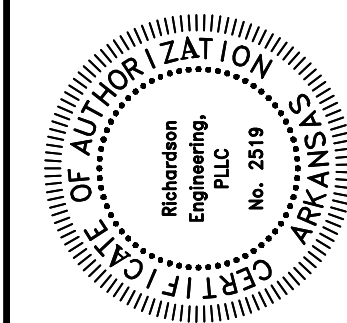
OVERALL UTILITY PLAN
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS

EMINENT CONSTRUCTIONS

PROJECT NO. 024-034	DATE 3/3/2026	REVISION 4/7/2026	SHEET 11 OF 25
AS PER CITY COMMENTS	DATE 4/7/2026	REVISION 4/7/2026	SHEET 11 OF 25
NO. 7	DATE 4/7/2026	REVISION 4/7/2026	SHEET 11 OF 25



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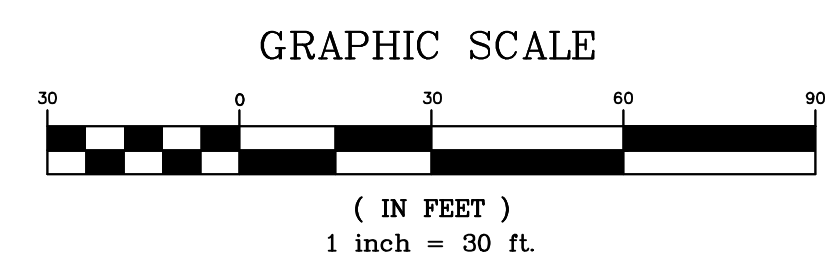
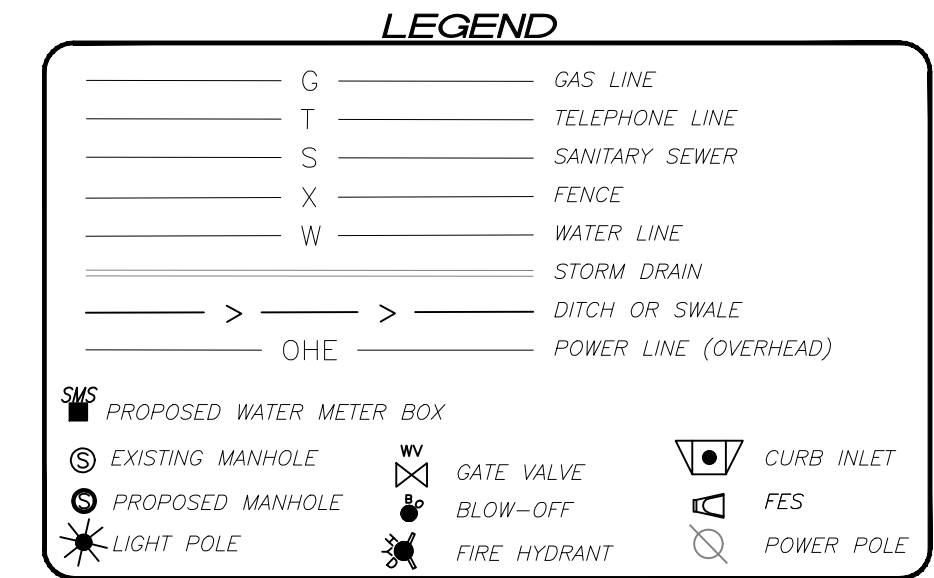
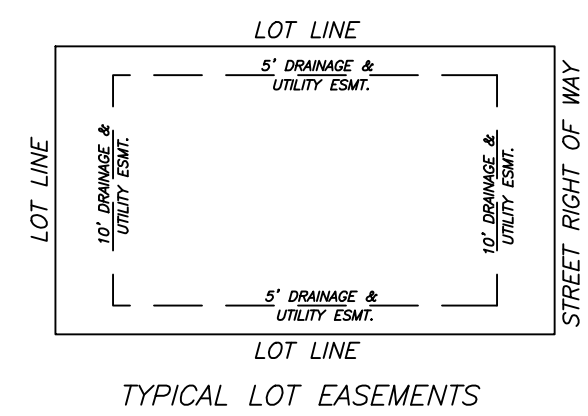
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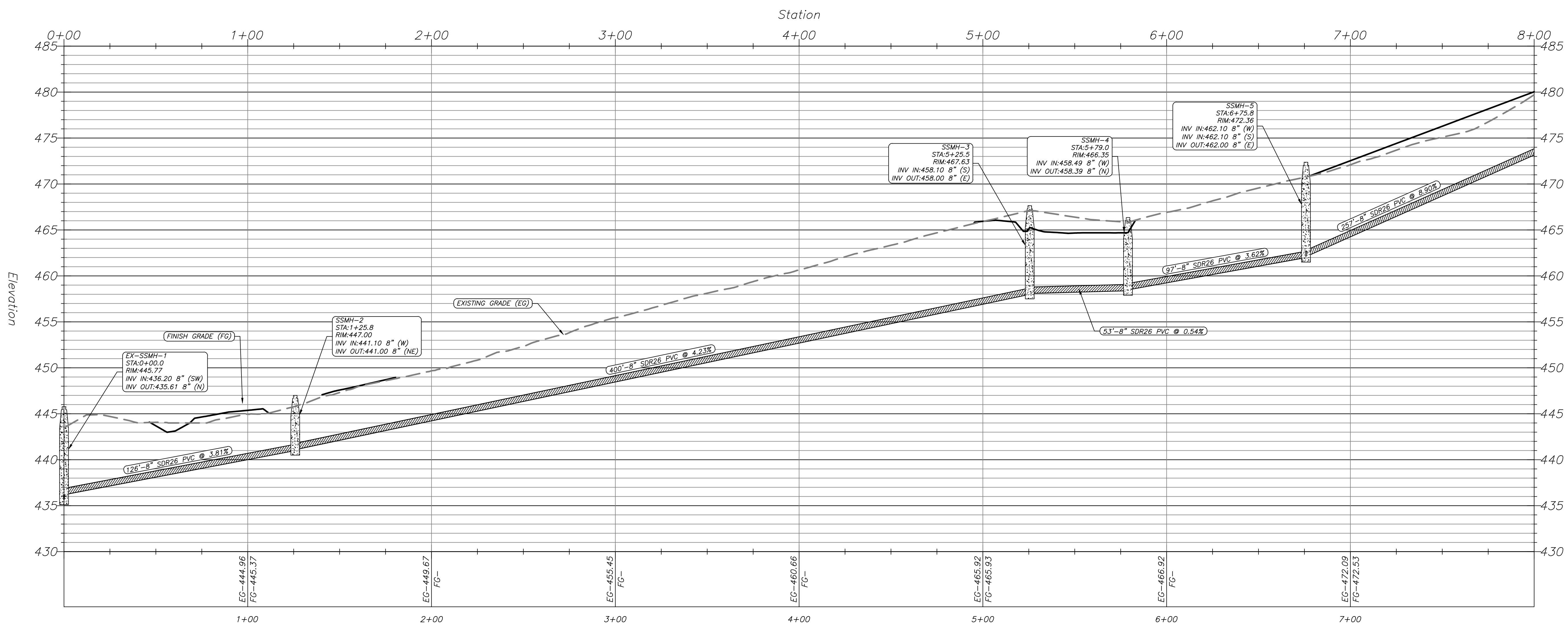
ENGINEER
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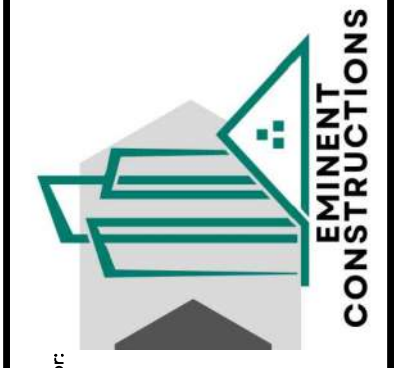
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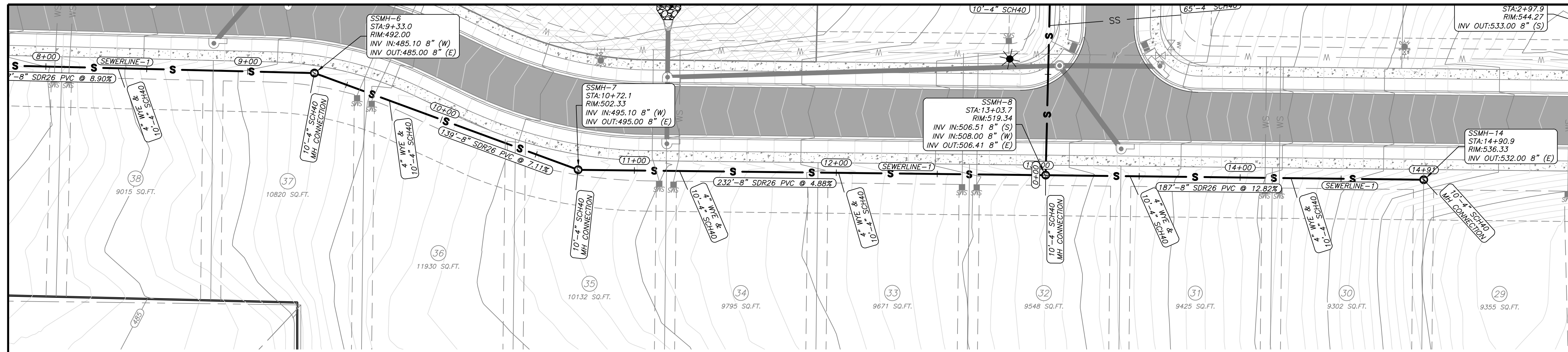
SEWERLINE-1 PROFILE



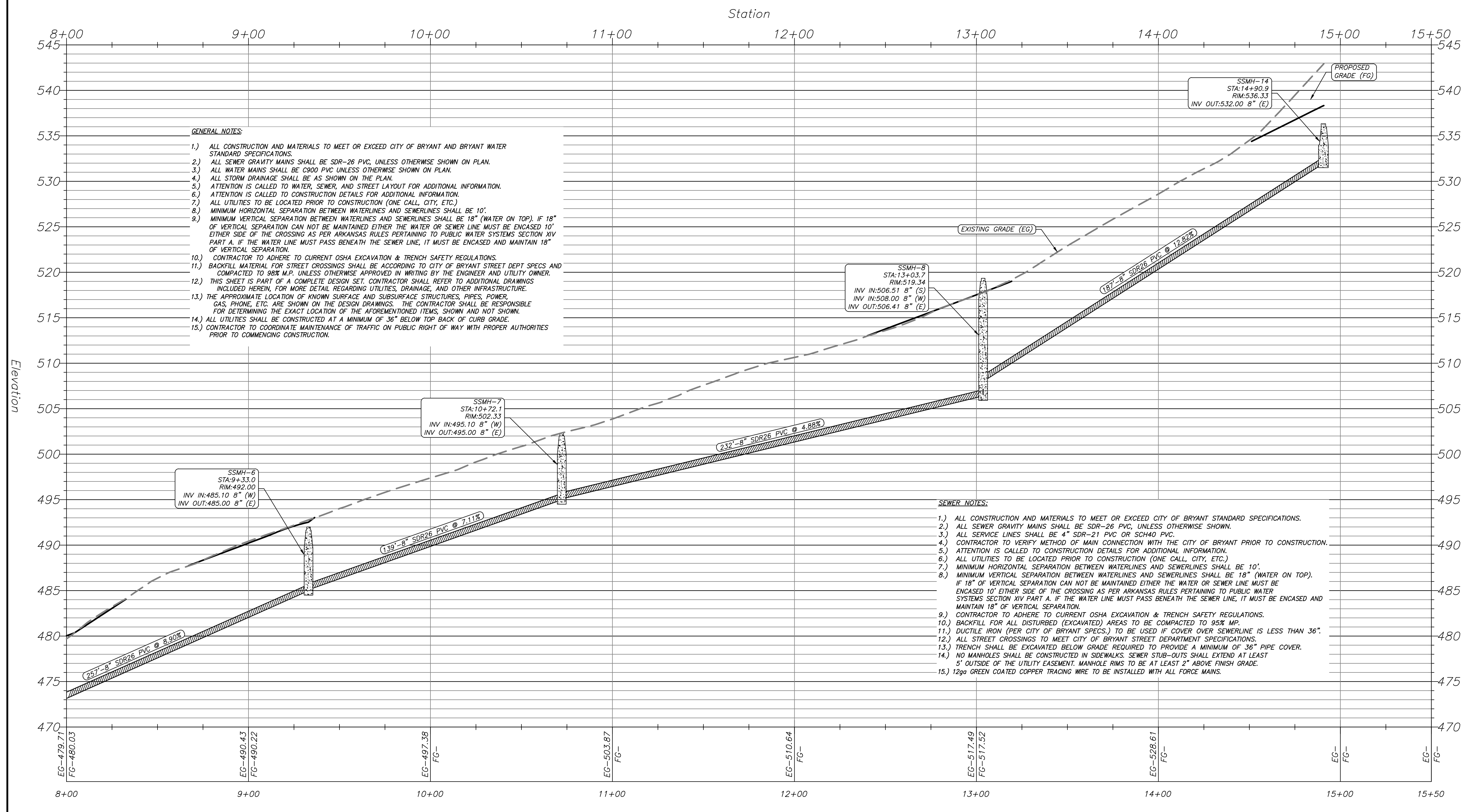
SEWER 1 P/P 0+00-8+00
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PROJECT NO.: 024-034	Date: 3/3/2026	Scale: 1" = 30'
Revision: AS PER CITY COMMENTS	Date: 4/7/2026	Sheet: 12 of 25
No. 7	Prepared For:	
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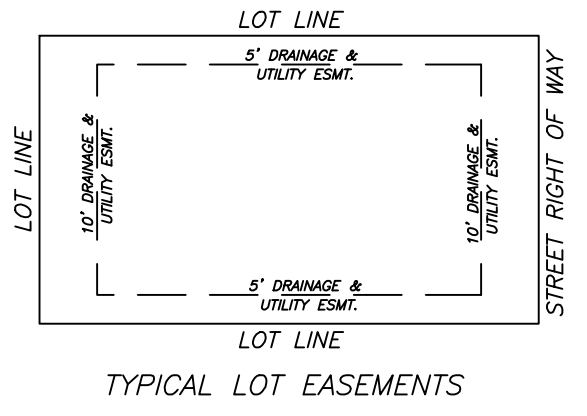
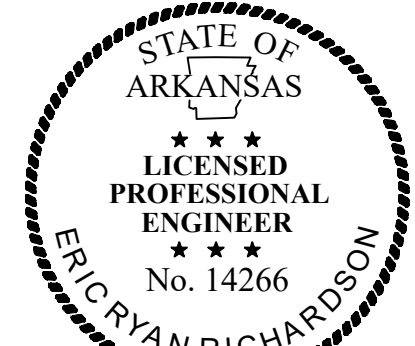


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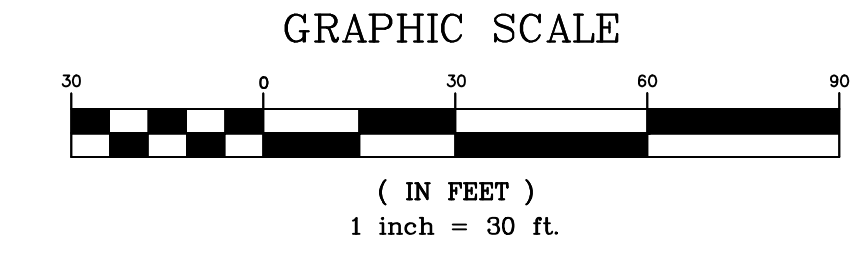
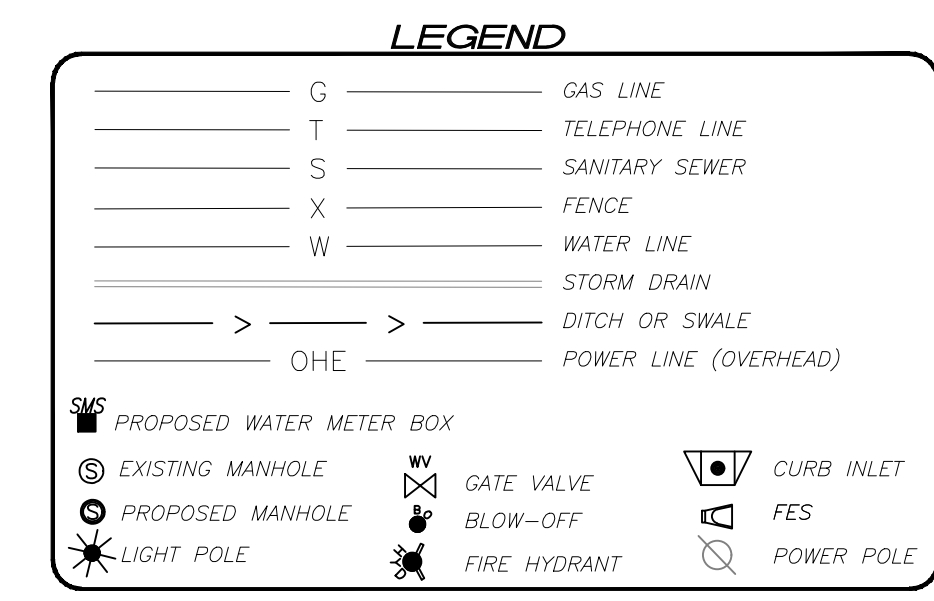
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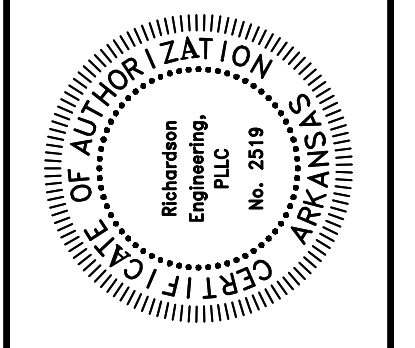
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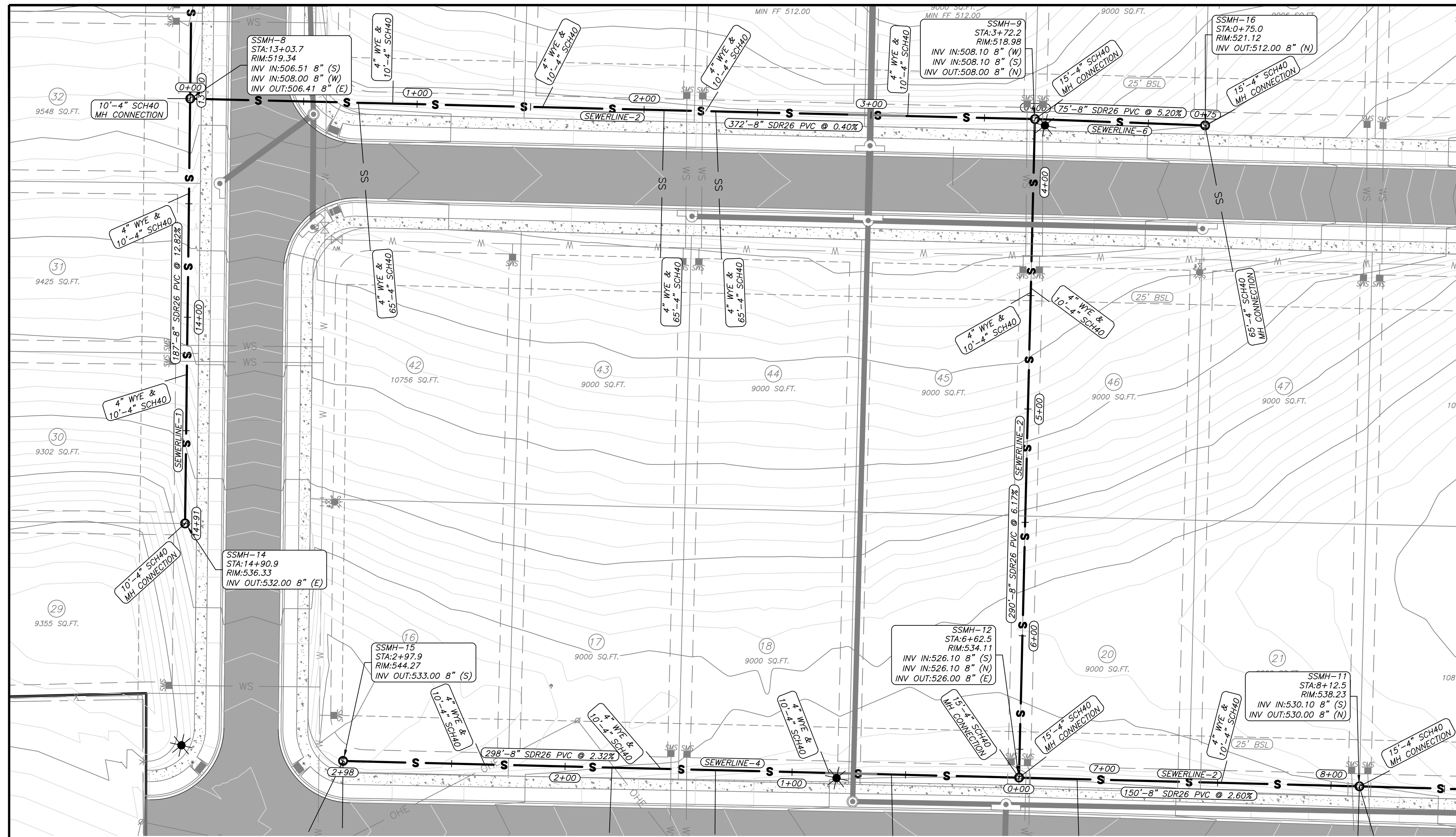
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SEWER 1 P/P 8+00-**END**
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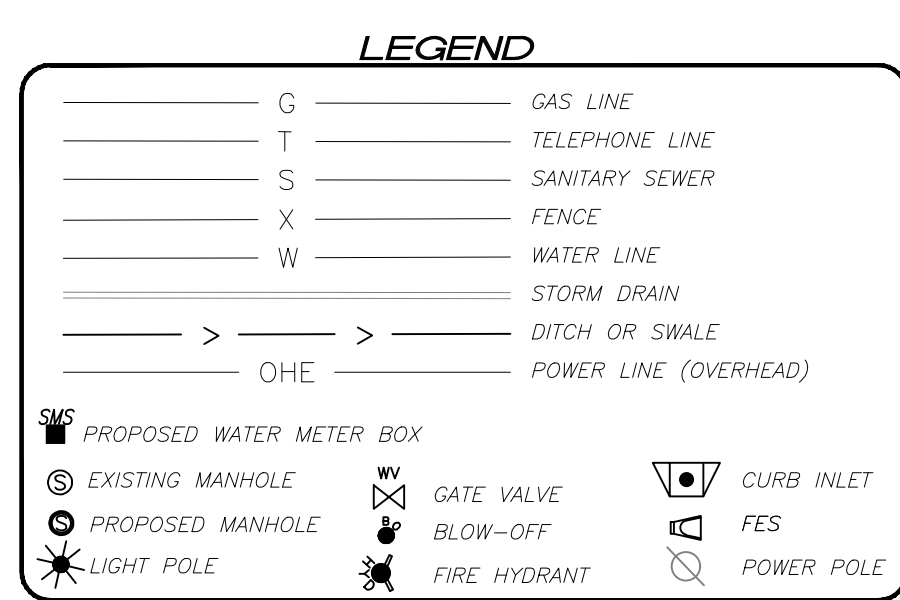


Prepared For:	
Date:	4/7/2026
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AS PER CITY COMMENTS	
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REV:	4/7/2026
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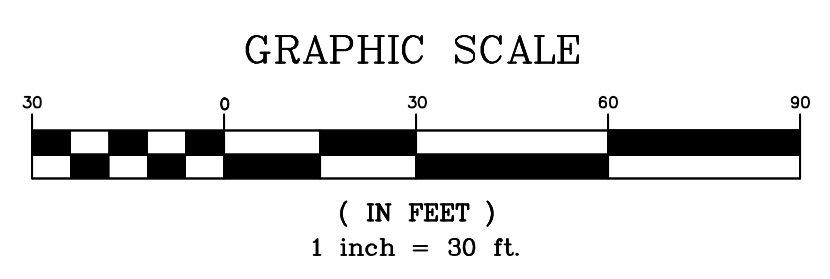
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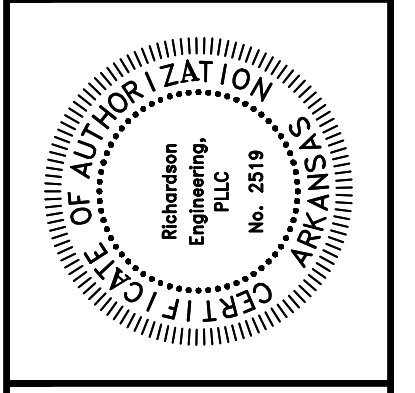
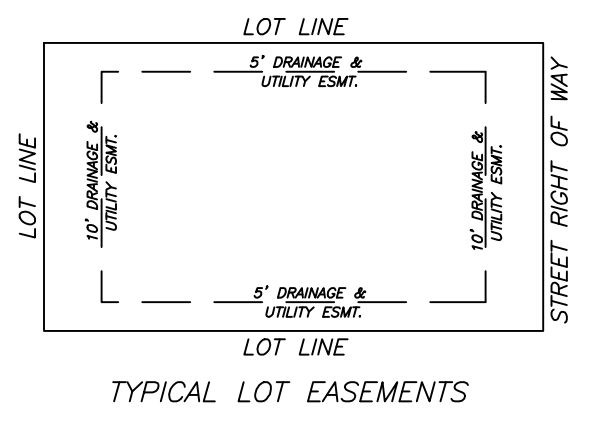
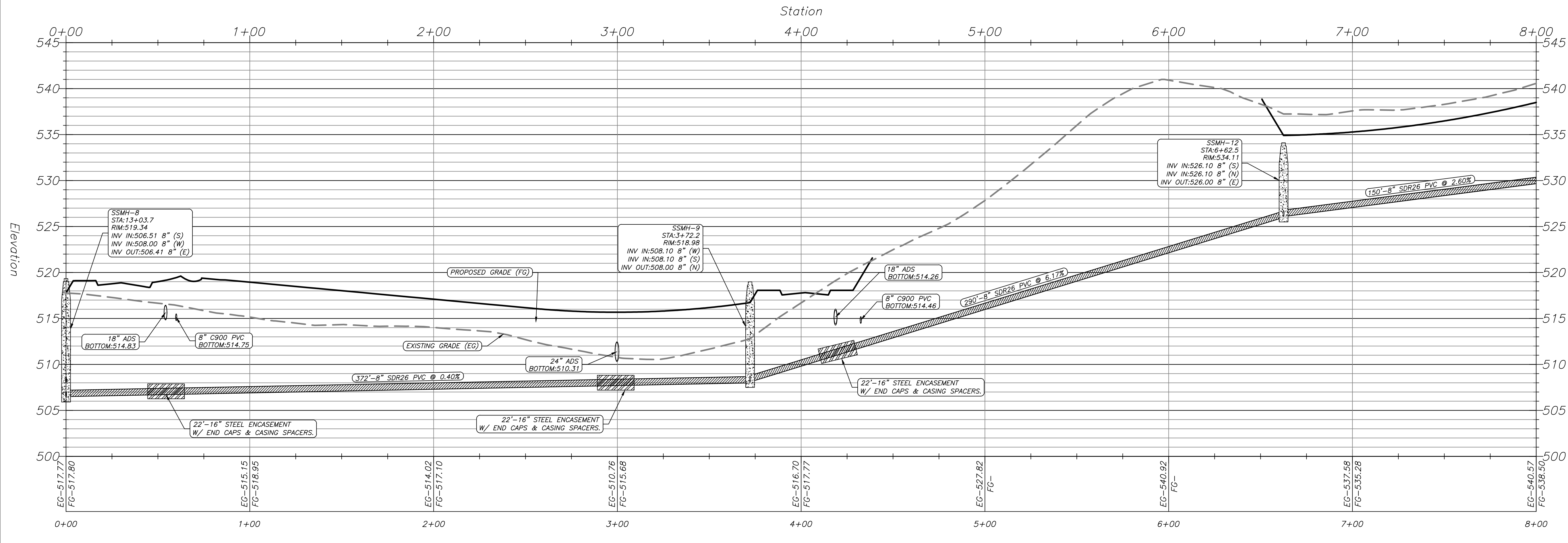
ENGINEER
 RICHARDSON ENGINEERING, PLLC
 ADDRESS: 325 W.SOUTH ST.
 BENTON, AR. 72015
 PHONE NO. (501) 315-7225
 PROJECT REPRESENTATIVE:
 ERIC RICHARDSON, P.E.

SURVEYOR
 SOUTHPOINT SURVEYING
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 SHERIDAN, AR
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DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022



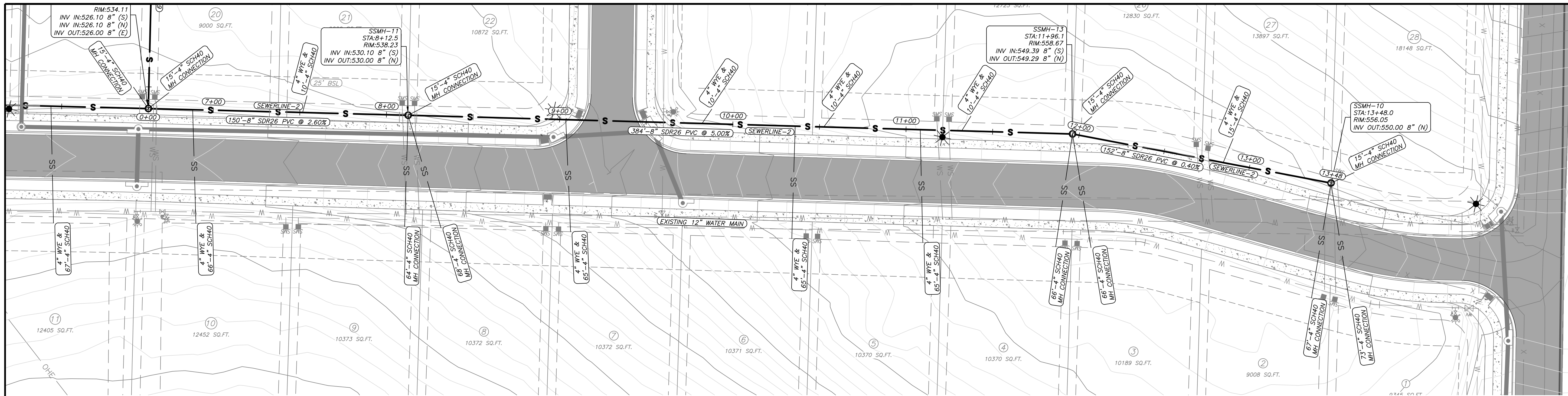
SEWERLINE-2 PROFILE



SEWER 2 P/P 0+00-8+00
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS

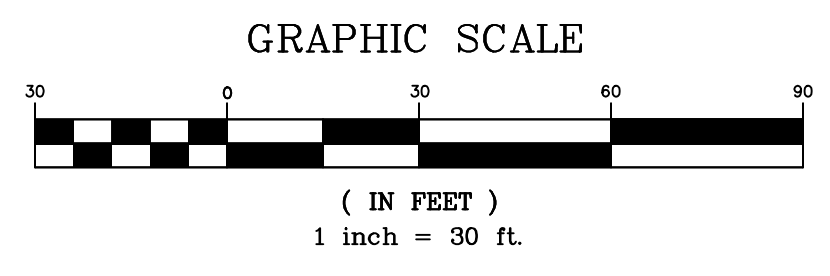


PROJECT NO.: 024-034	Date: 3/3/2026	14 of 25
Scale: 1" = 30'	REV: 4/7/2026	
Sheet:		
Revisions:	AS PER CITY COMMENTS	
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LEGEND

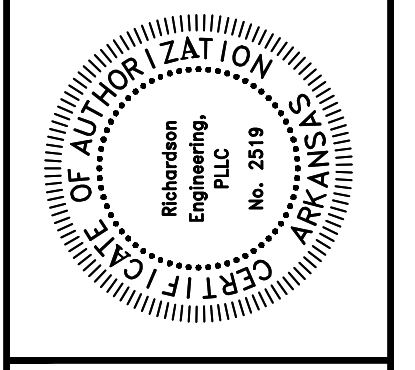
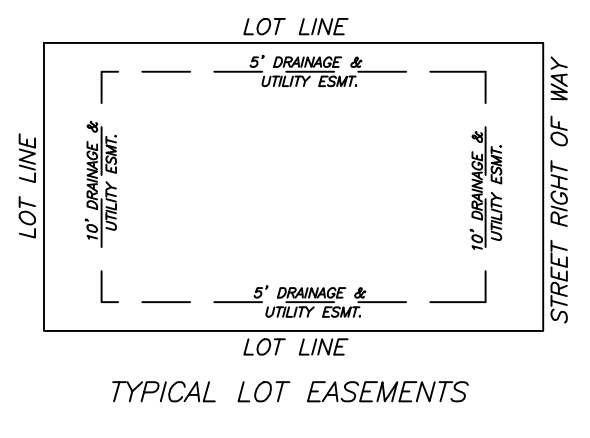
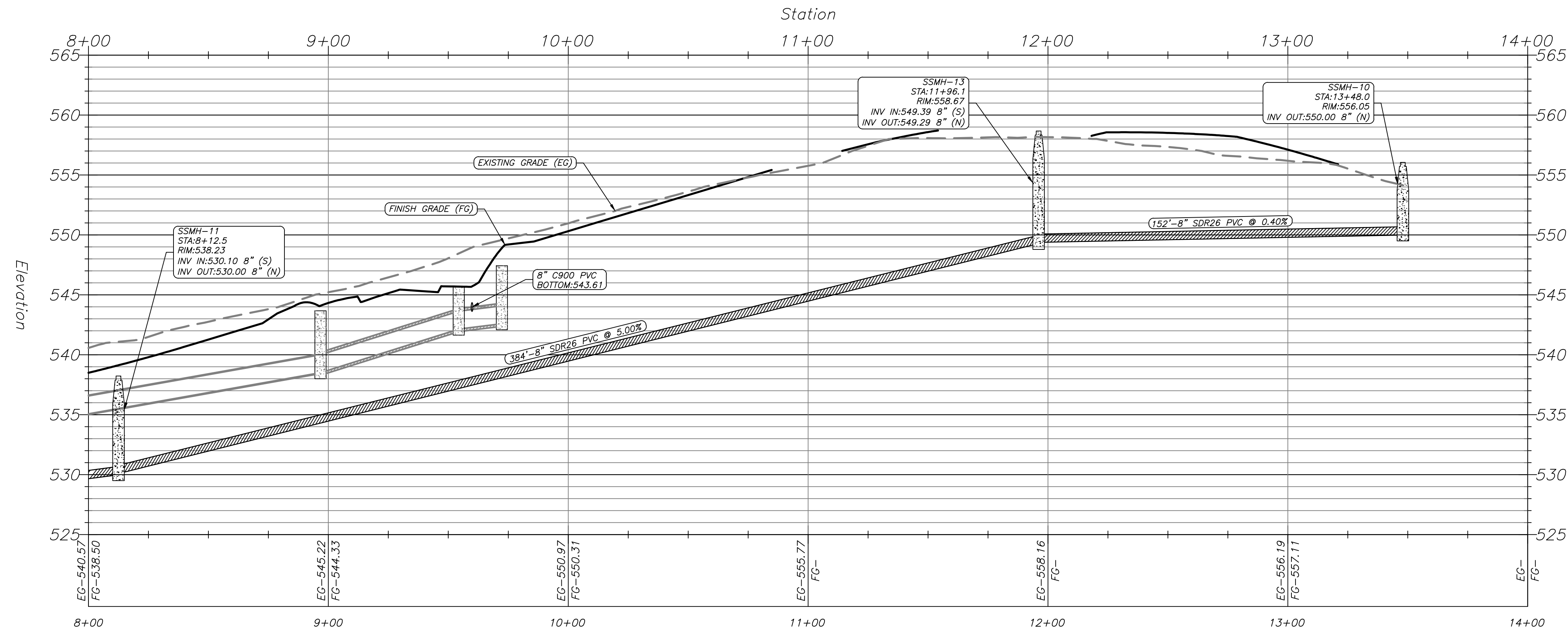
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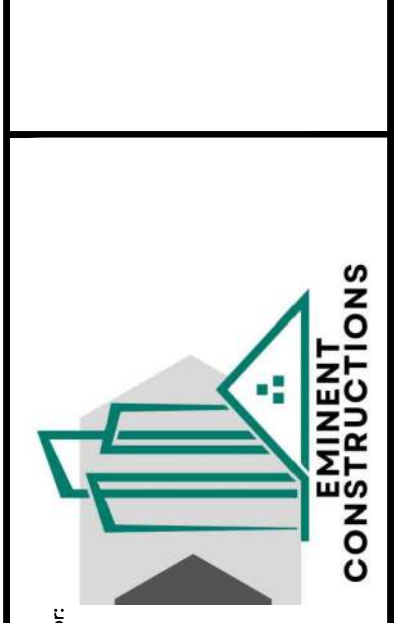
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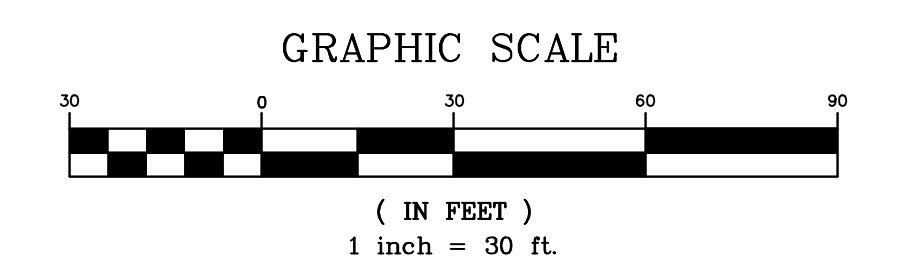
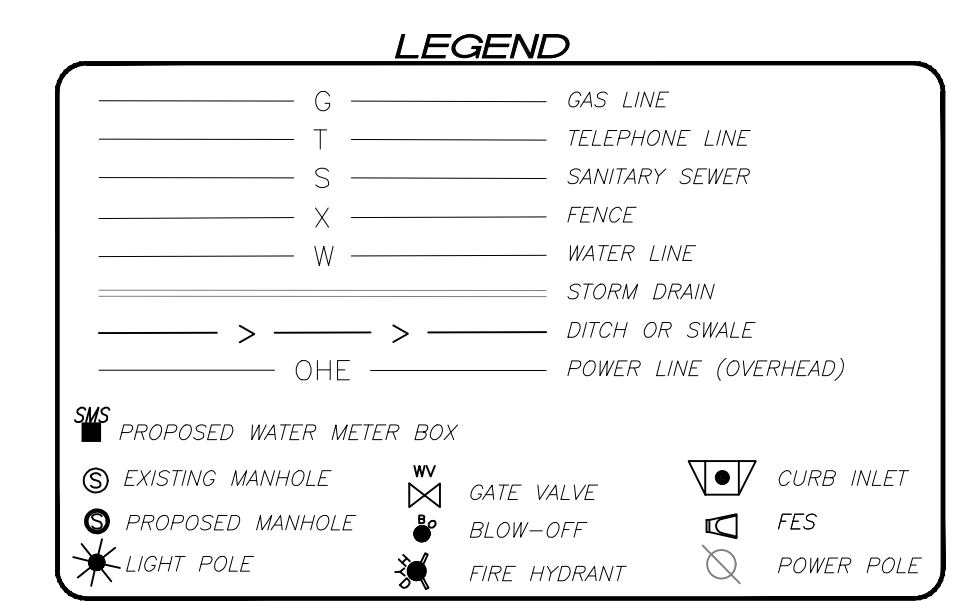
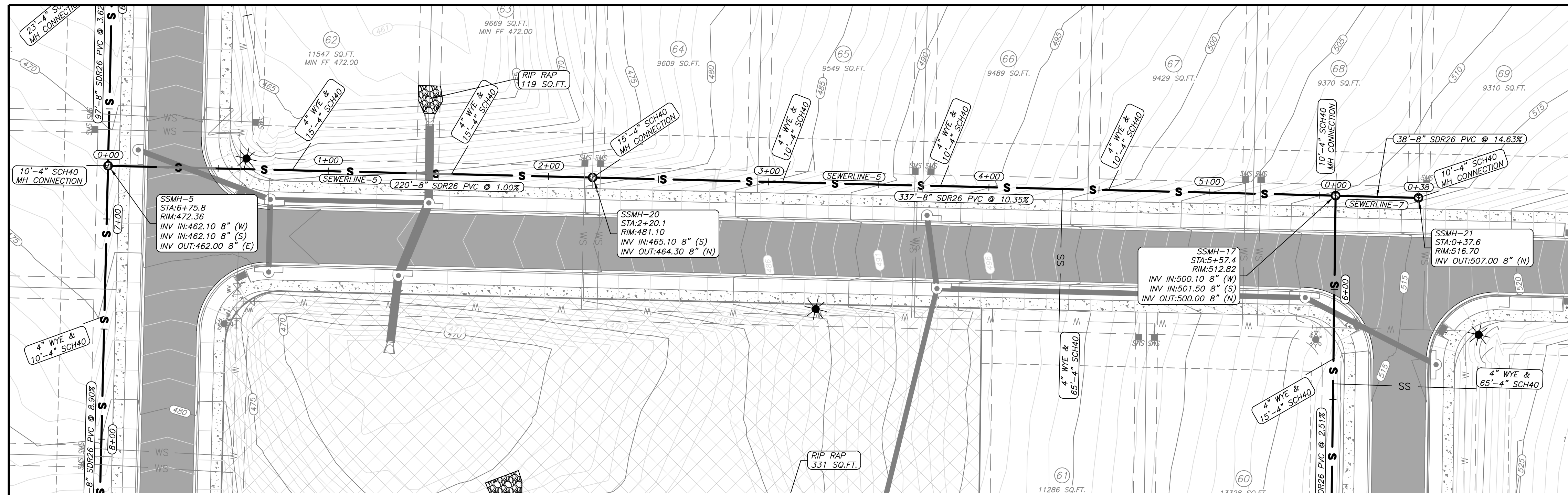
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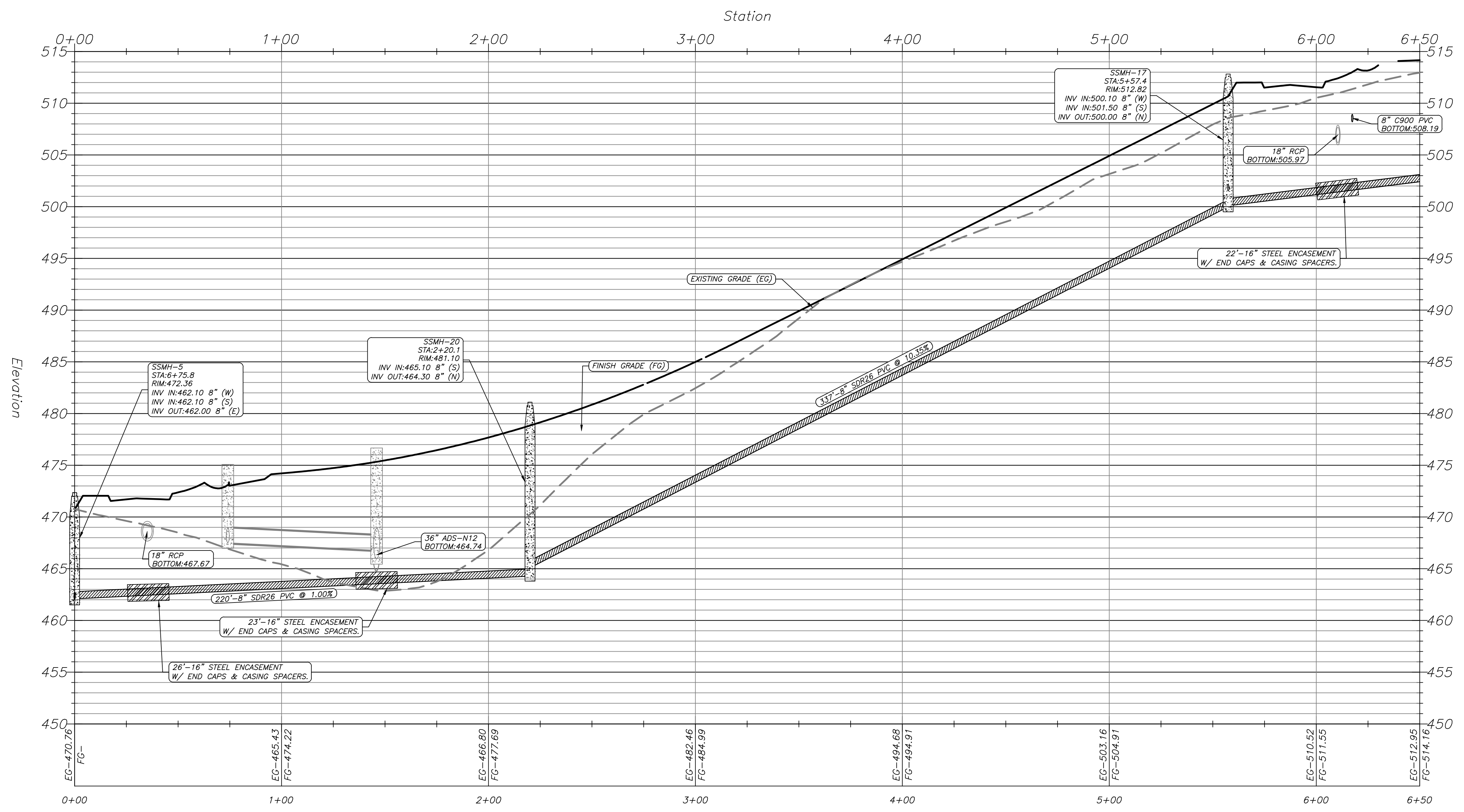
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 BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 3/3/2026	Scale: 1" = 30'	Sheet: 15 of 25
AS PER CITY COMMENTS	REVISIONS	NO. 1	DATE 4/7/2026



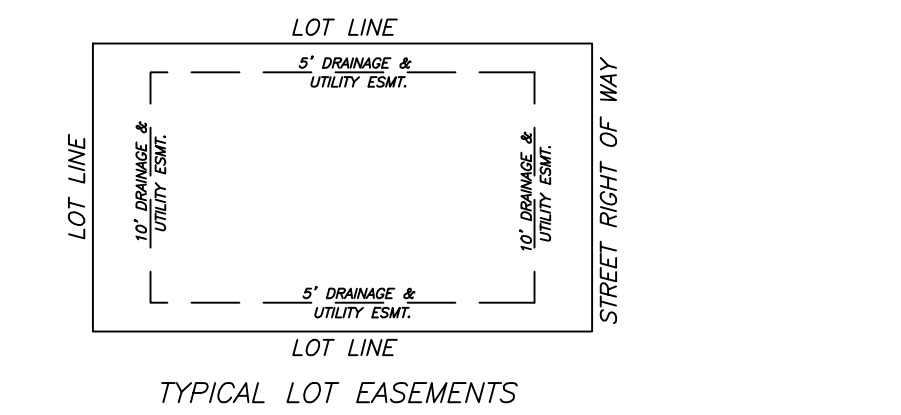
SEWERLINE-5 PROFILE



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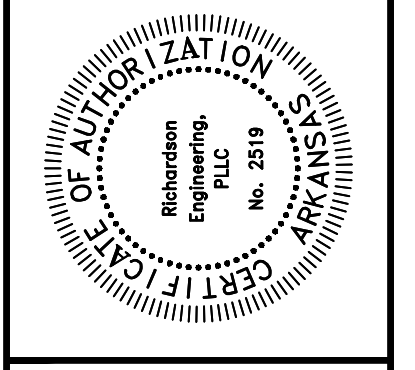


GENERAL NOTES:

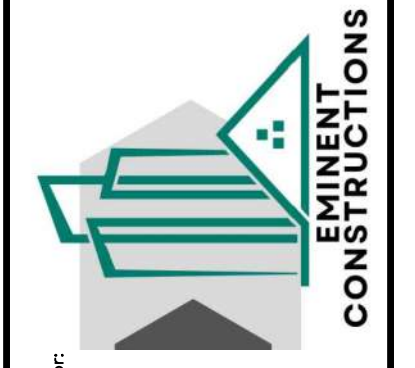
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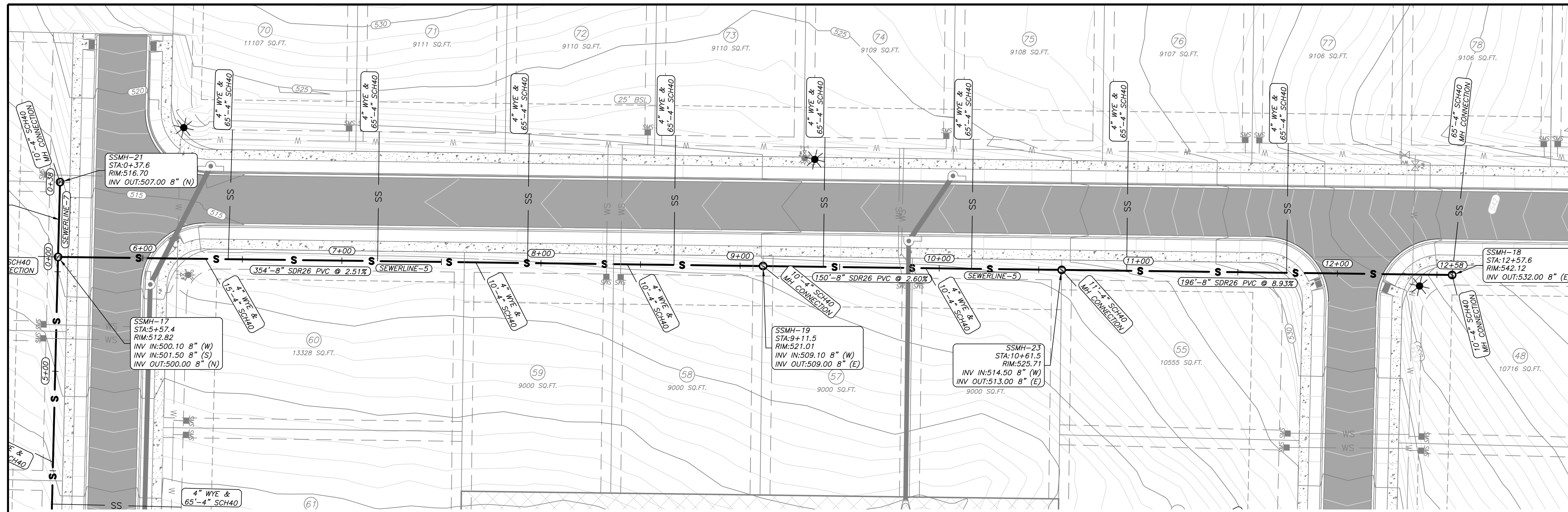
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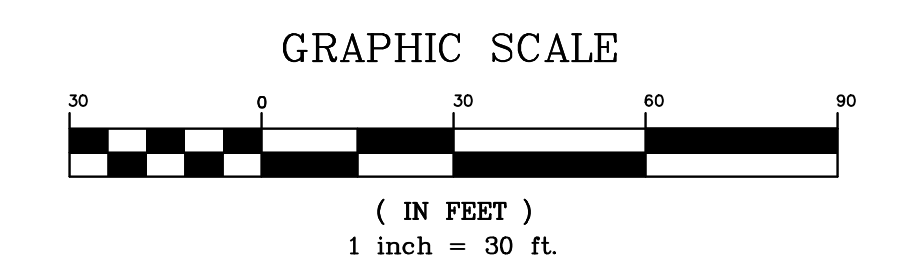


PROJECT NO.: 024-034	Date: 3/3/2026	16 of 25
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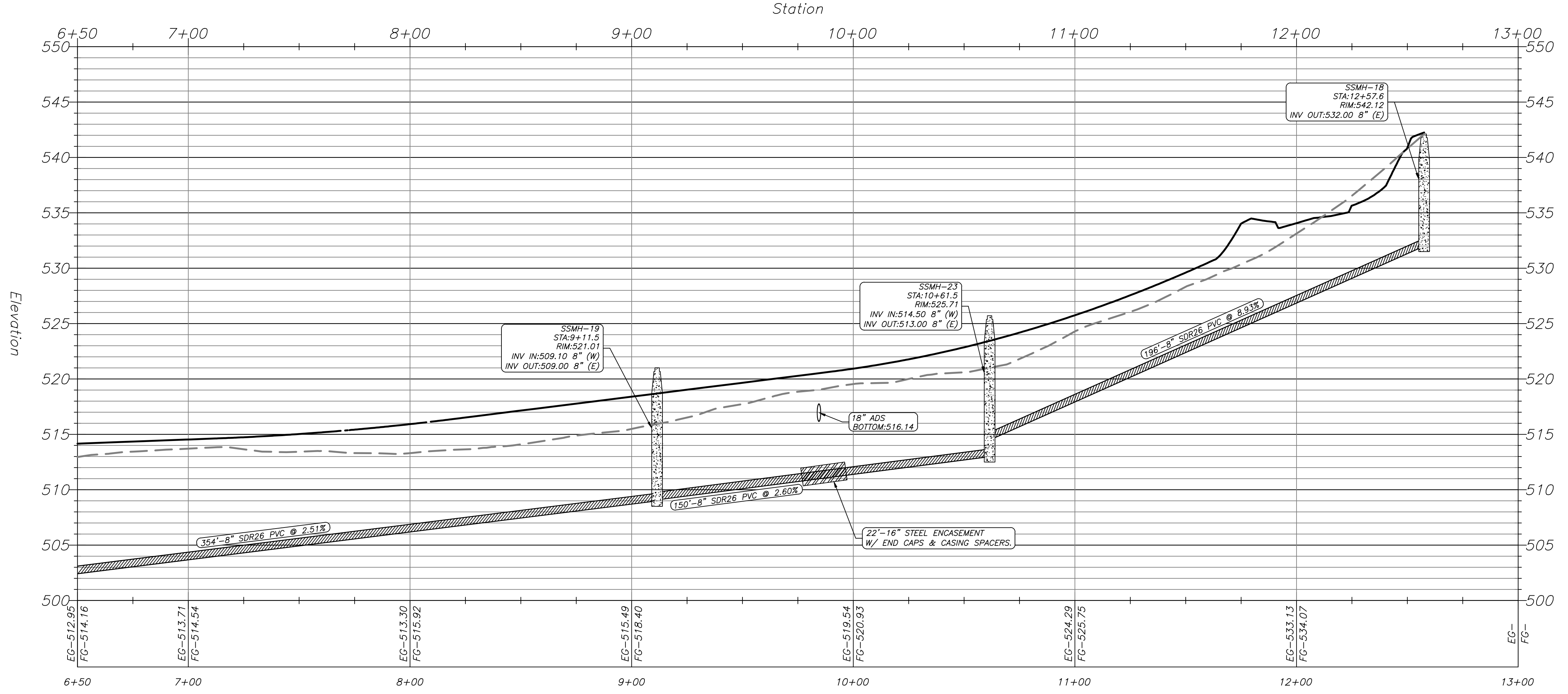
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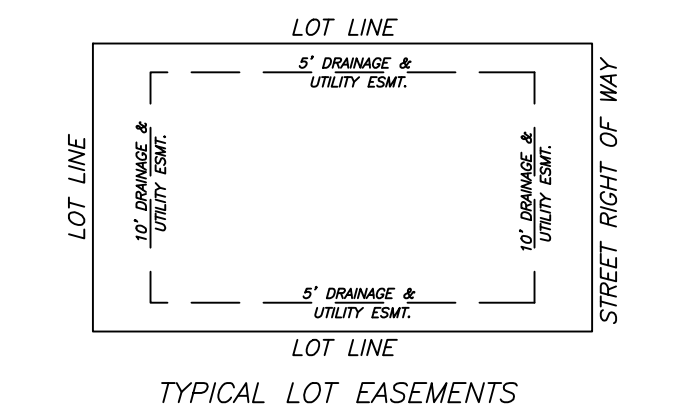
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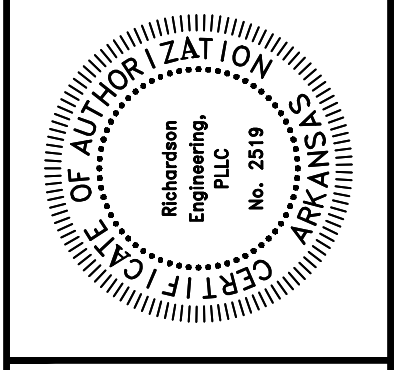
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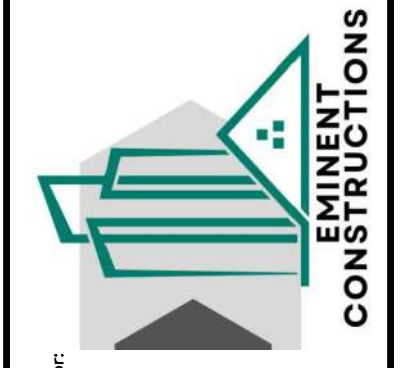
DEVELOPERS
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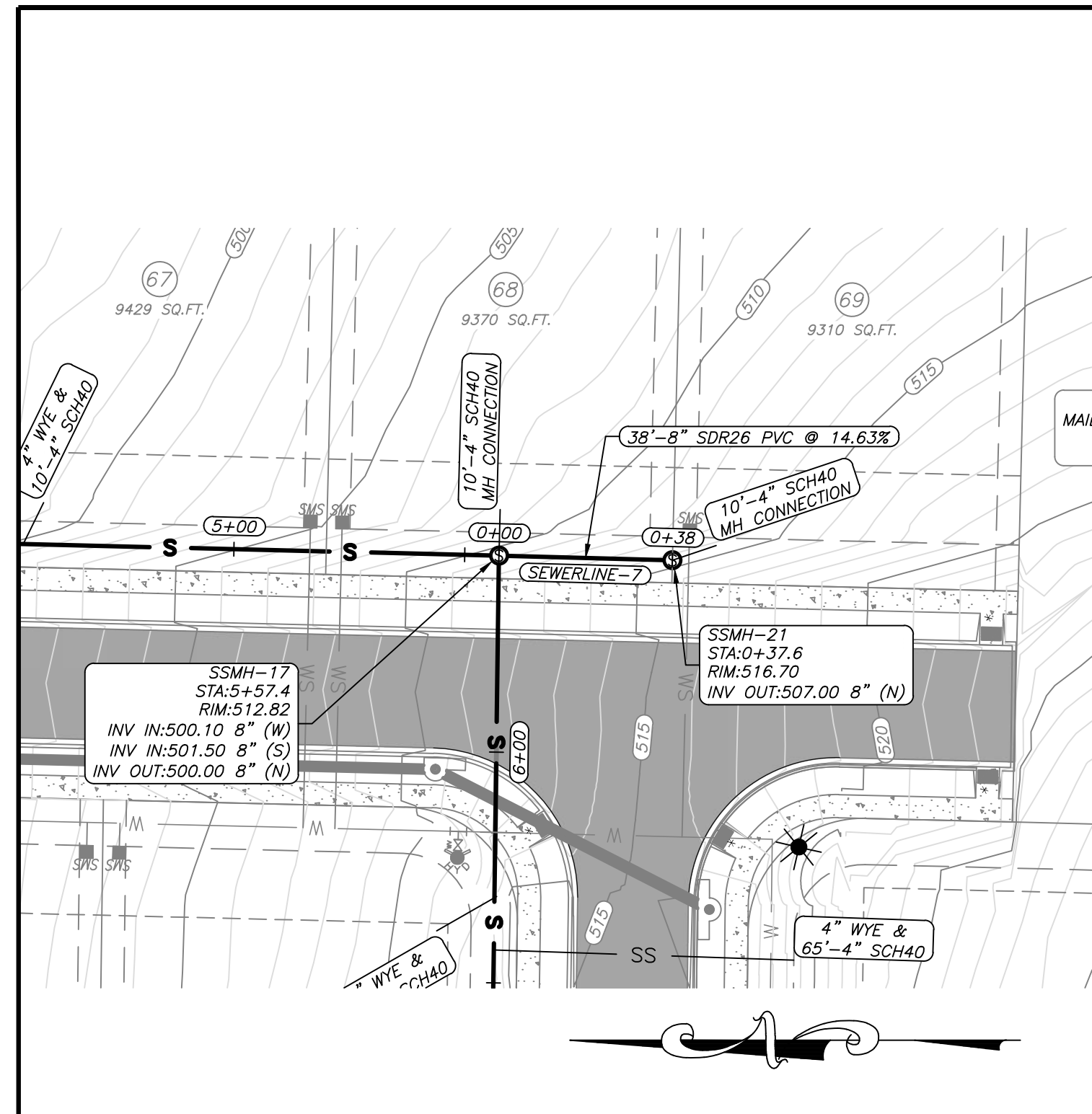
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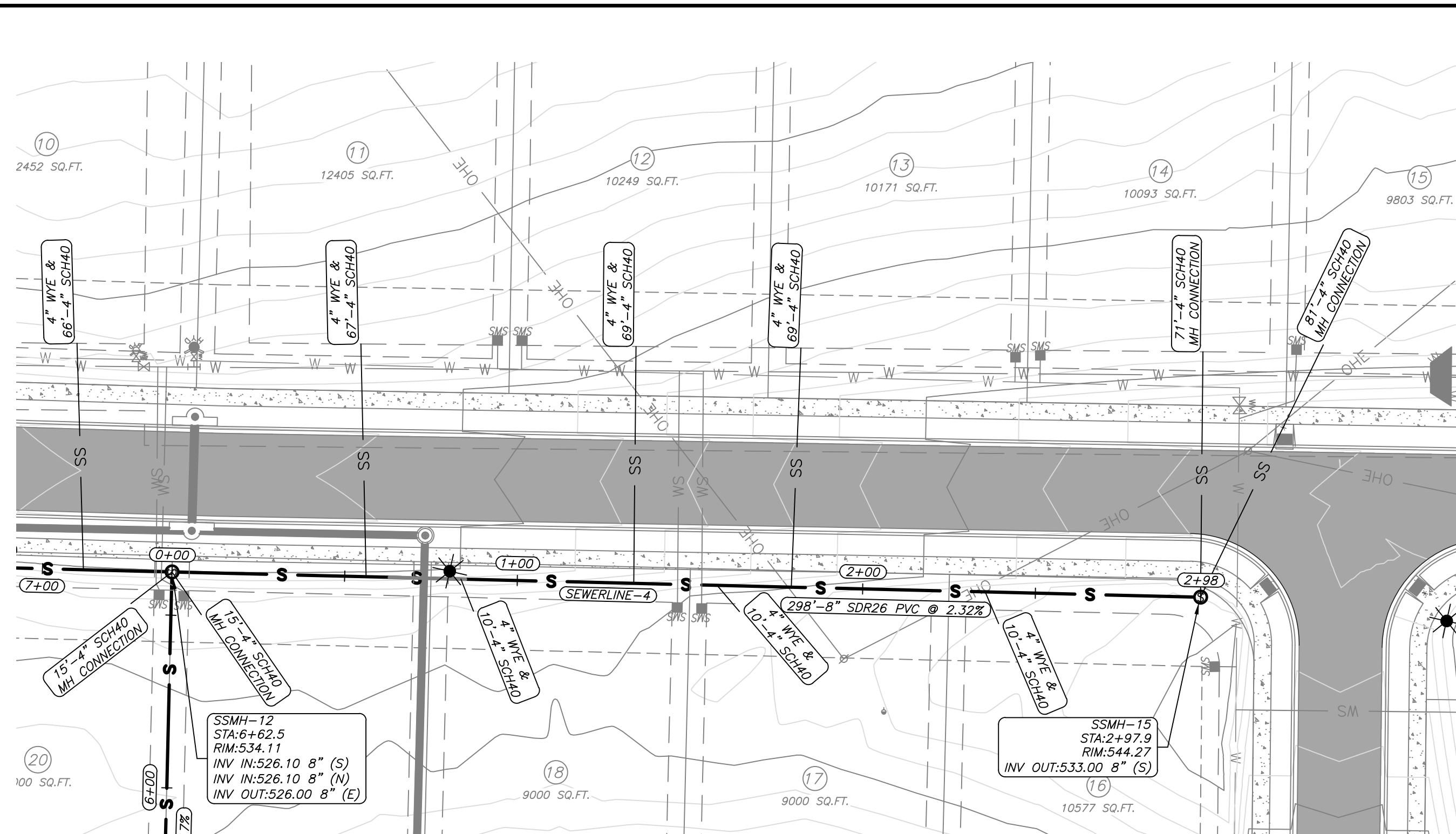
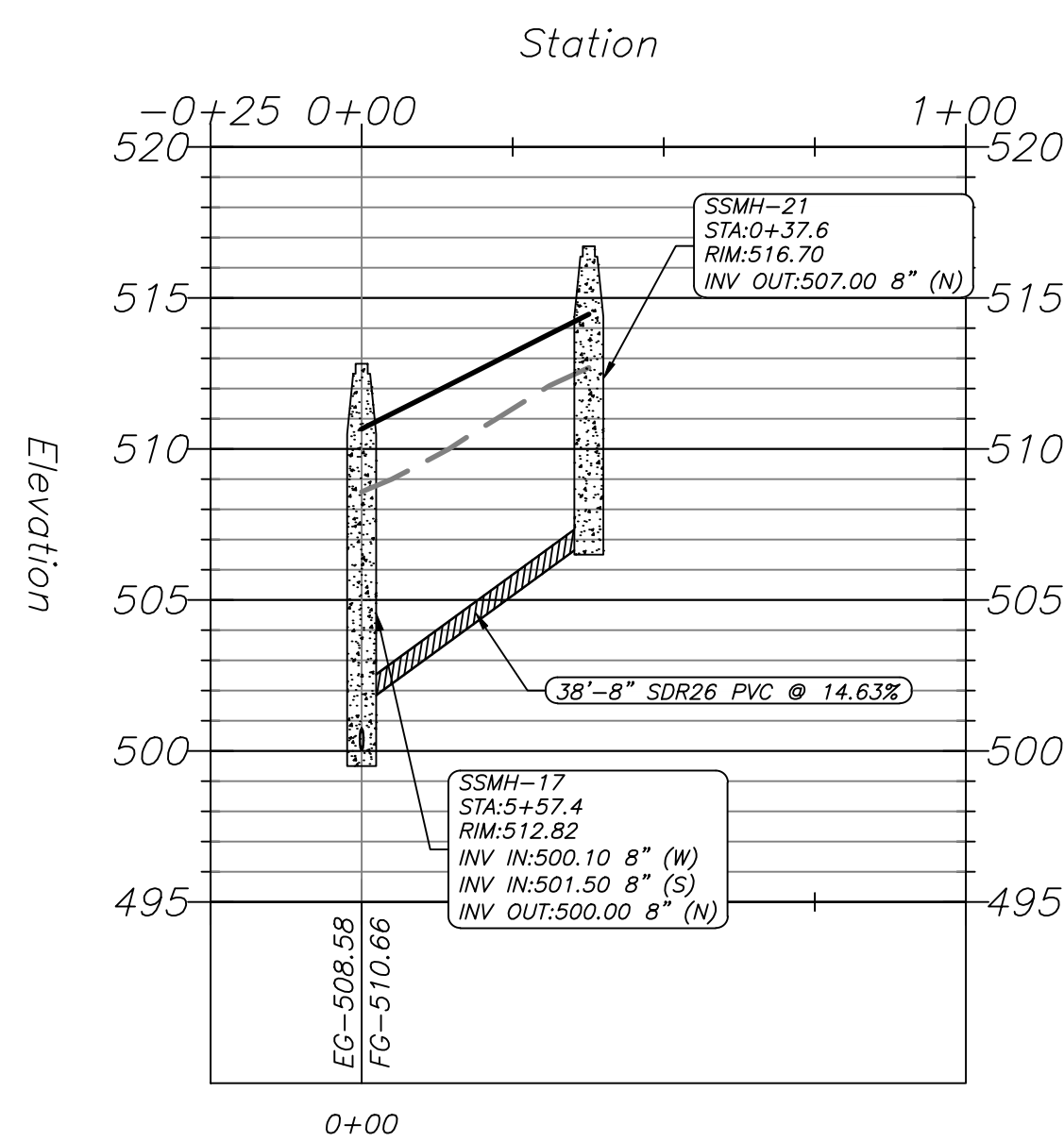
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 BRYANT, ARKANSAS



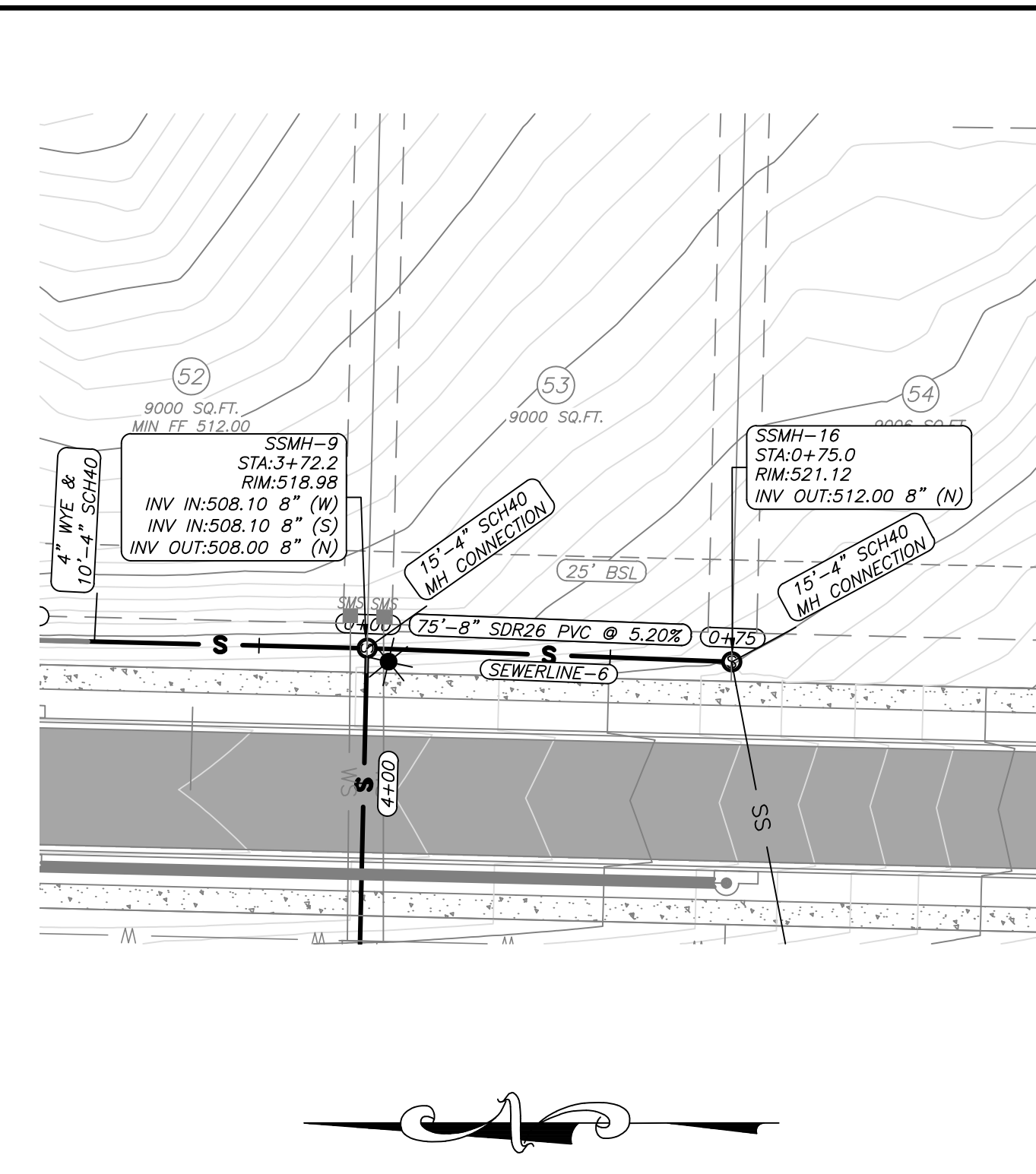
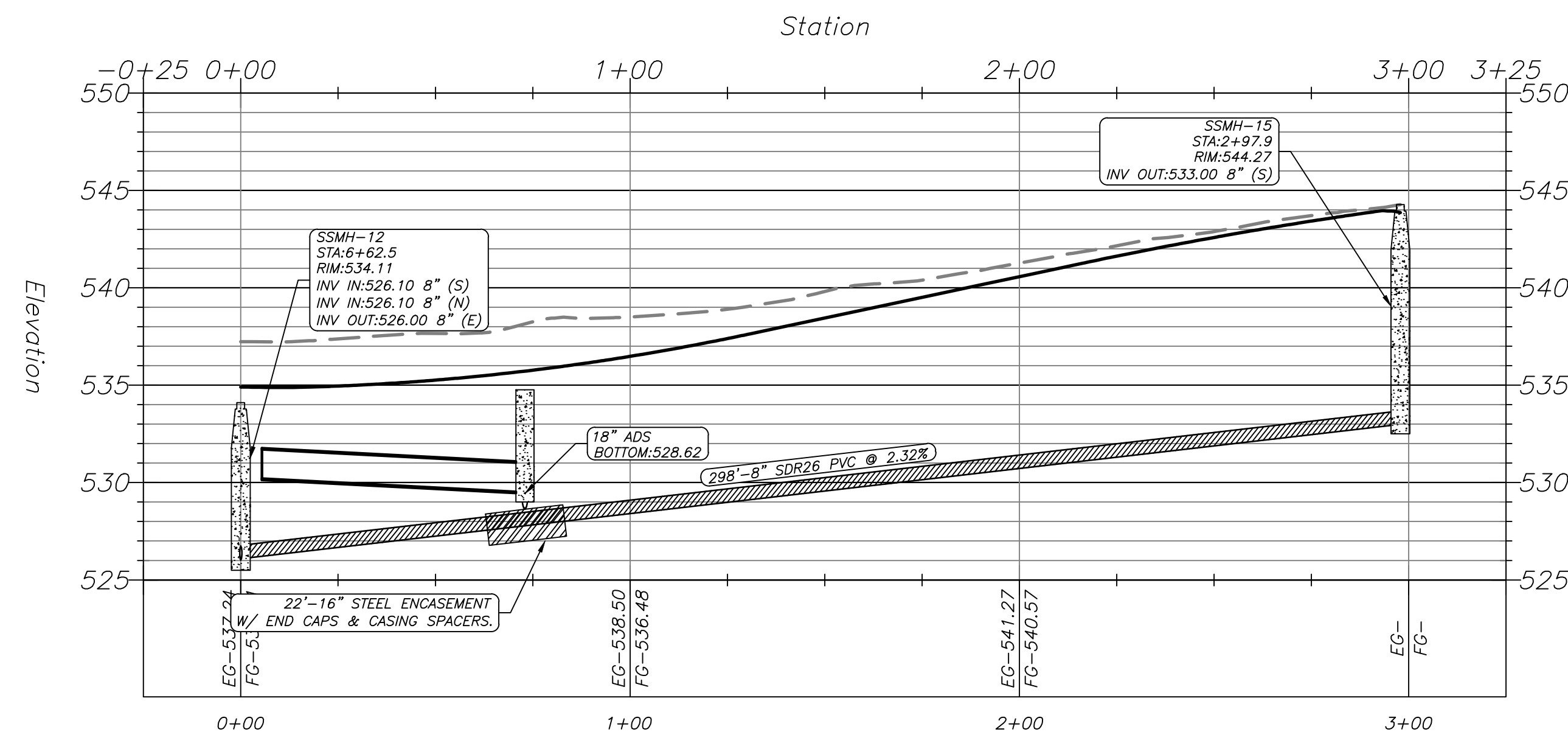
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Scale:	1" = 30'
Revision:	AS PER CITY COMMENTS
Date:	4/7/2026
Author:	3/3/2026
Check:	4/7/2026
Sheet:	17 of 25



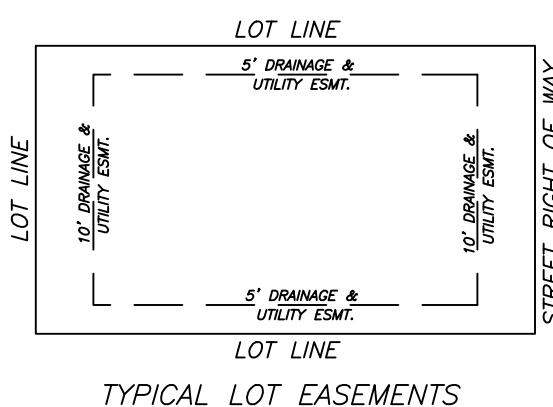
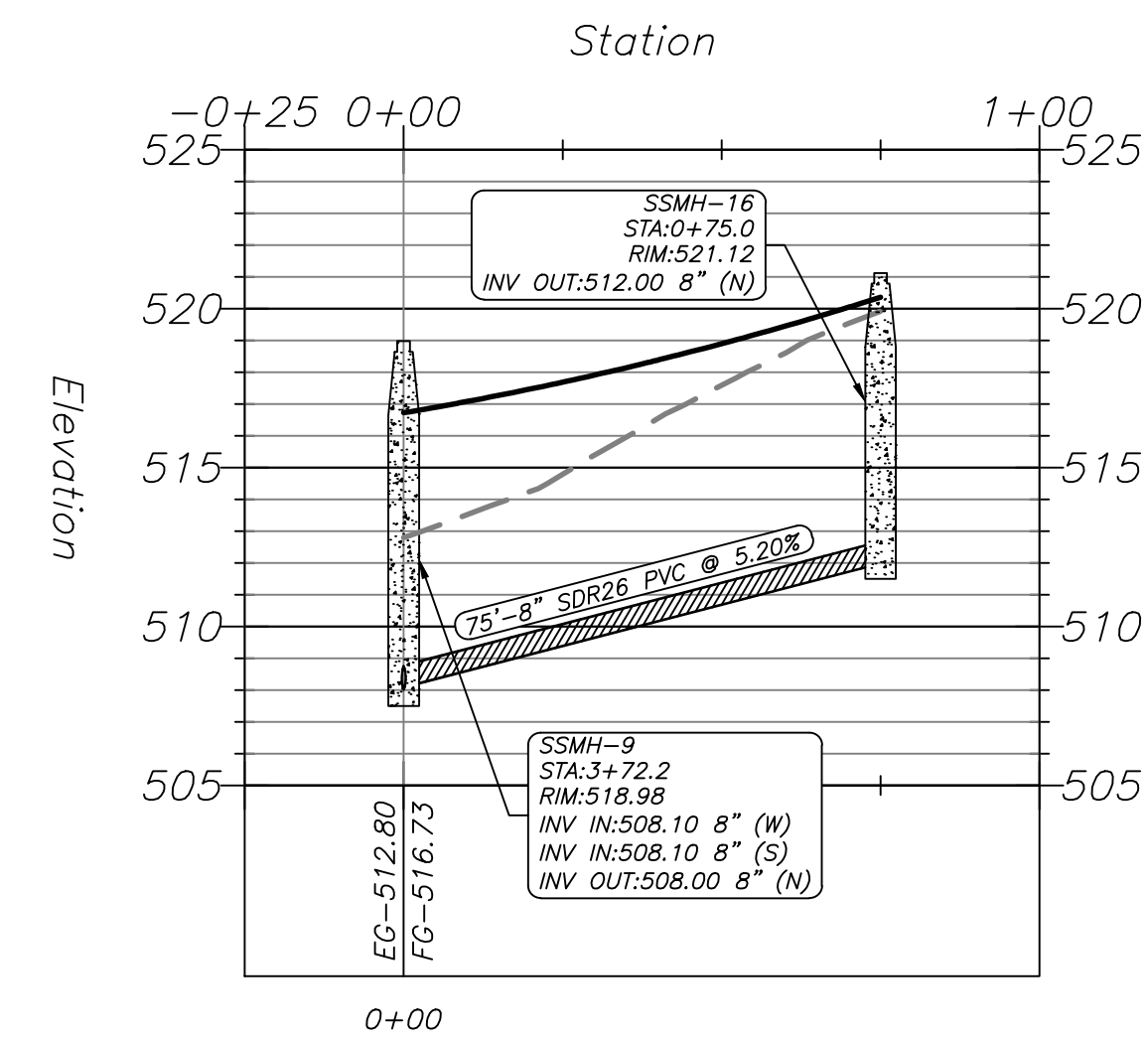
SEWERLINE-7 PROFILE



SEWERLINE-4 PROFILE



SEWERLINE-6 PROFILE



LEGEND

— G	GAS LINE	— T	TELEPHONE LINE	— S	SANITARY SEWER
— X	FENCE	— W	WATER LINE	—	STORM DRAIN
—	DITCH OR SWALE	—	POWER LINE (OVERHEAD)	—	
□	PROPOSED WATER METER BOX	○	EXISTING MANHOLE	○	PROPOSED MANHOLE
○	LIGHT POLE	□	GATE VALVE	□	BLOW-OFF
○	FIRE HYDRANT	□	CURB INLET	□	FES
○	POWER POLE				

GENERAL NOTES:

- ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT AND BRYANT WATER STANDARD SPECIFICATIONS.
- ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN ON PLAN.
- ALL WATER MAINS SHALL BE 6000 PVC UNLESS OTHERWISE SHOWN ON PLAN.
- ALL STORM DRAINAGE SHALL BE AS SHOWN ON THE PLAN.
- ATTENTION IS CALLED TO WATER, SEWER, AND STREET LAYOUT FOR ADDITIONAL INFORMATION.
- ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
- ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
- MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
- 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.
- CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
- 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.
- 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.
- 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.
- ALL UTILITIES SHALL BE CONSTRUCTED AT A MINIMUM OF 36" BELOW TOP BACK OF CURB GRADE.
- CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.

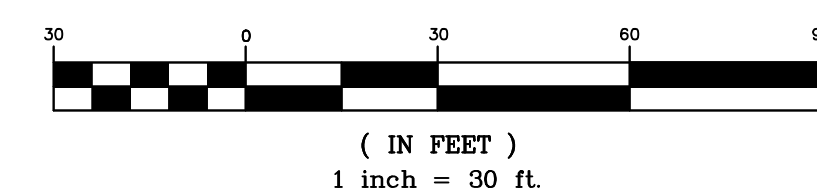
SEWER NOTES:

- ALL CONSTRUCTION AND MATERIALS TO MEET OR EXCEED CITY OF BRYANT STANDARD SPECIFICATIONS.
- ALL SEWER GRAVITY MAINS SHALL BE SDR-26 PVC, UNLESS OTHERWISE SHOWN.
- ALL SERVICE LINES SHALL BE 4" SDR-21 PVC OR SCH40.
- CONTRACTOR TO VERIFY METHOD OF MAIN CONNECTION WITH THE CITY OF BRYANT PRIOR TO CONSTRUCTION.
- ATTENTION IS CALLED TO CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
- ALL UTILITIES TO BE LOCATED PRIOR TO CONSTRUCTION (ONE CALL, CITY, ETC.)
- MINIMUM HORIZONTAL SEPARATION BETWEEN WATERLINES AND SEWERLINES SHALL BE 10'.
- 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.
- CONTRACTOR TO ADHERE TO CURRENT OSHA EXCAVATION & TRENCH SAFETY REGULATIONS.
- BACKFILL FOR ALL DISTURBED (EXCAVATED) AREAS TO BE COMPACTED TO 98% M.P.
- DUCTILE IRON (PER CITY OF BRYANT SPECS.) TO BE USED IF COVER OVER SEWERLINE IS LESS THAN 36".
- ALL STREET CROSSINGS TO MEET CITY OF BRYANT STREET DEPARTMENT SPECIFICATIONS.
- TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM OF 36" PIPE COVER.
- 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.
- 12ga GREEN COATED COPPER TRACING WIRE TO BE INSTALLED WITH ALL FORCE MAINS.

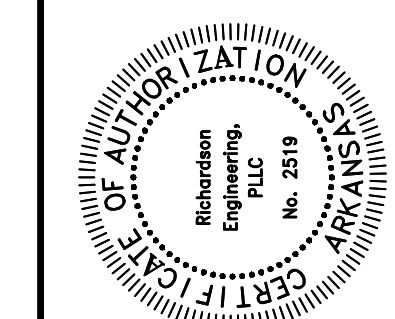
ENGINEER
 RICHARDSON ENGINEERING, PLLC
 ADDRESS: 325 W.SOUTH ST.
 BENTON, AR. 72015
 PHONE NO. (501) 315-7225
 PROJECT REPRESENTATIVE:
 ERIC RICHARDSON, P.E.

SURVEYOR
 SOUTHPOINT SURVEYING
 P.O. BOX 400
 SHERIDAN, AR
 501-837-2342

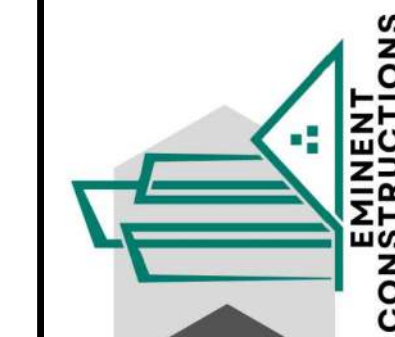
GRAPHIC SCALE



DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022



SEWER 4, 6 & 7 P/P
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



Prepared For:

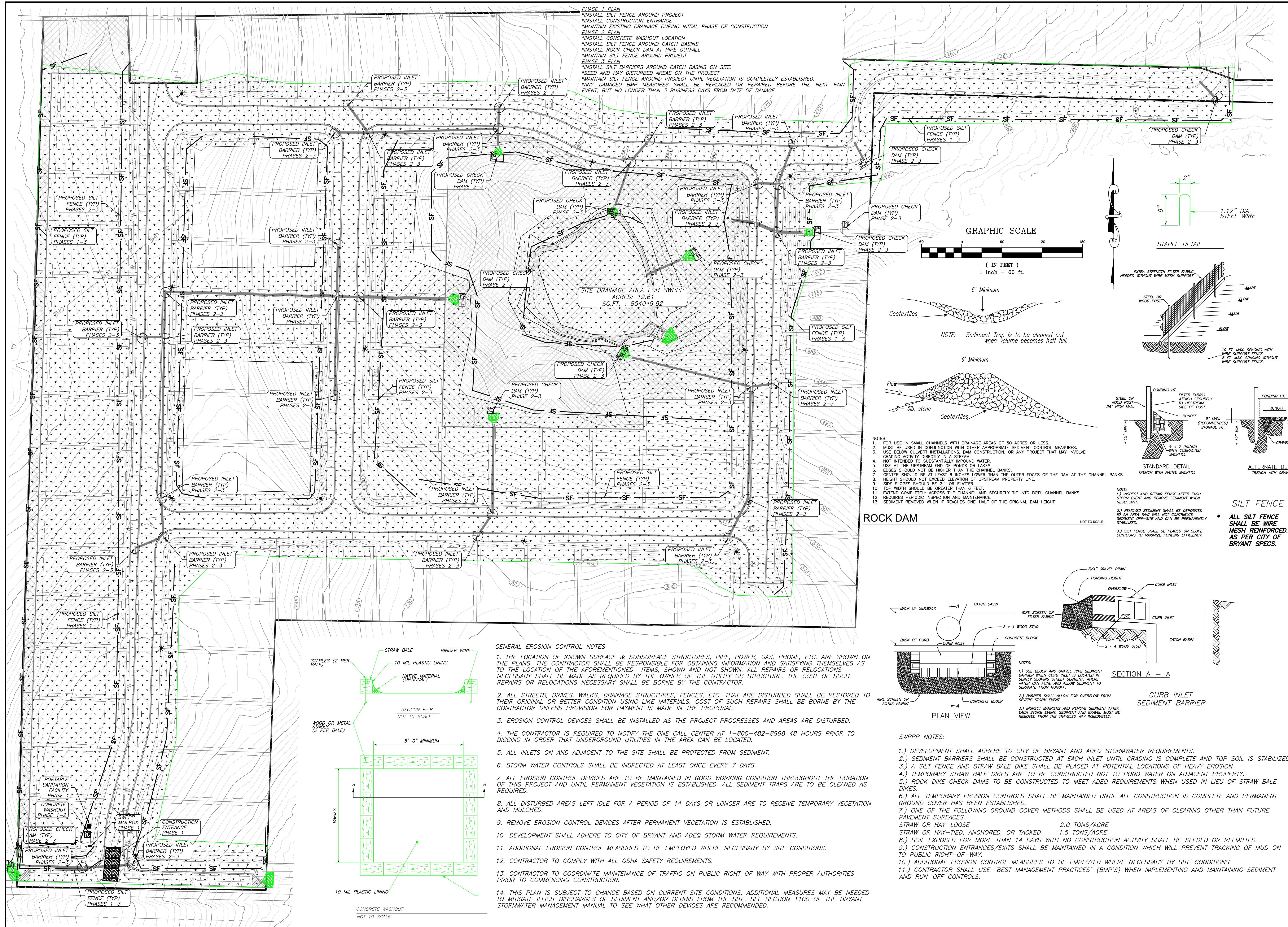
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Revisions:
 1 AS PER CITY COMMENTS

No. 7

PROJECT NO.: 024-034
 Date: 3/3/2026
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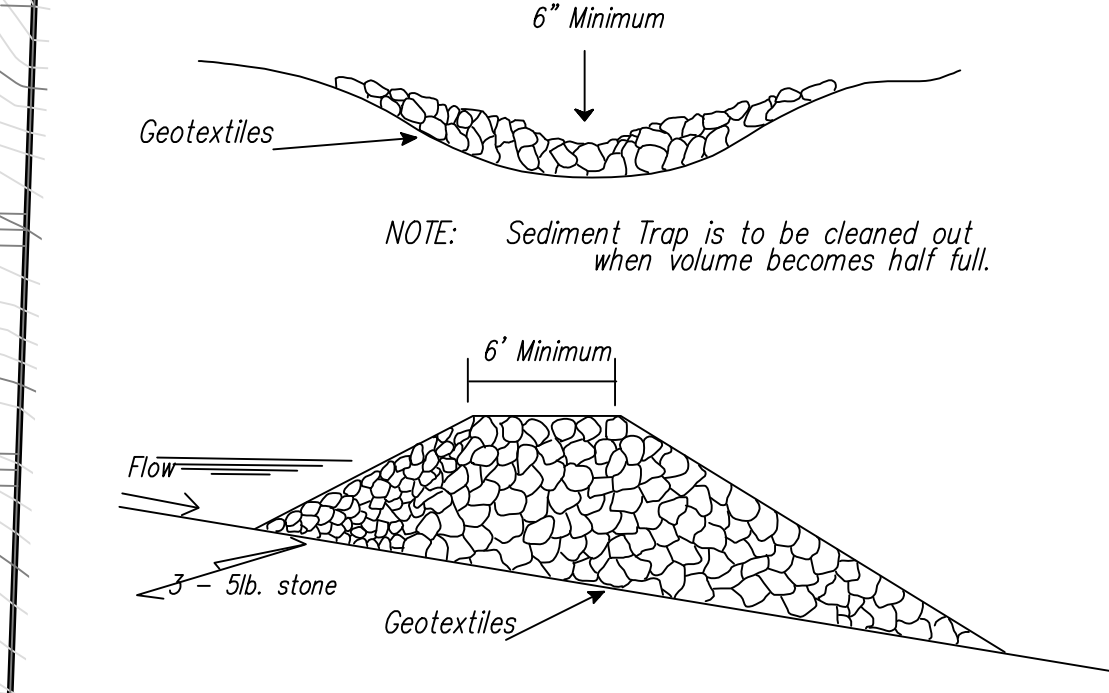
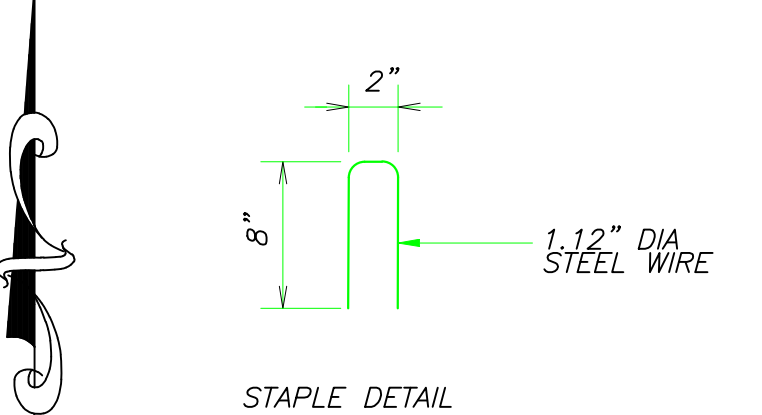
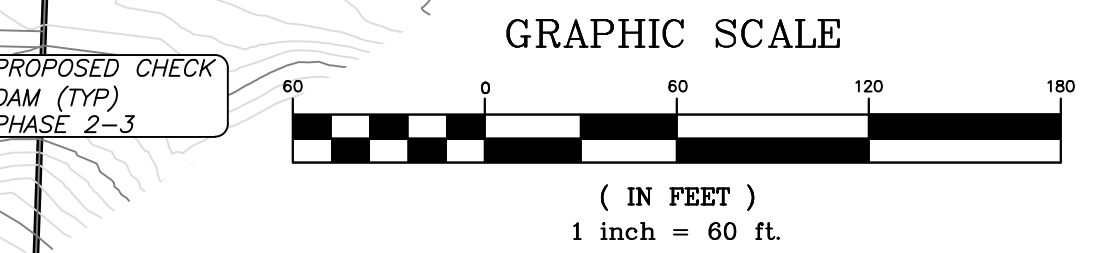
Sheet: 18 of 25



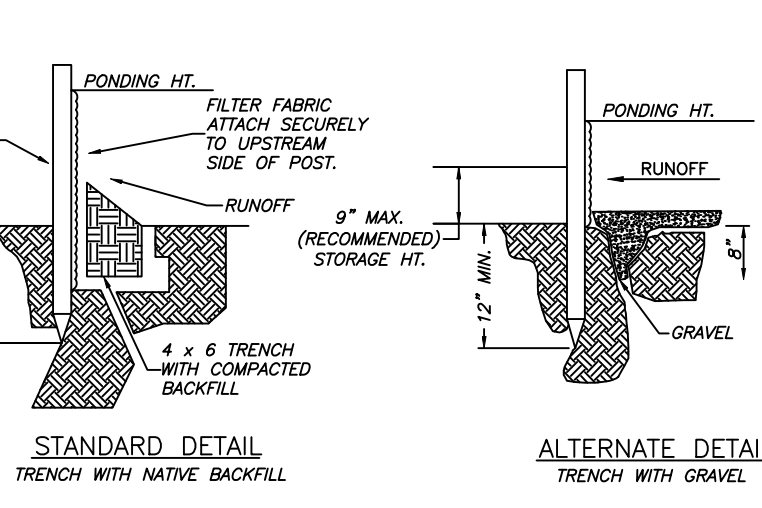
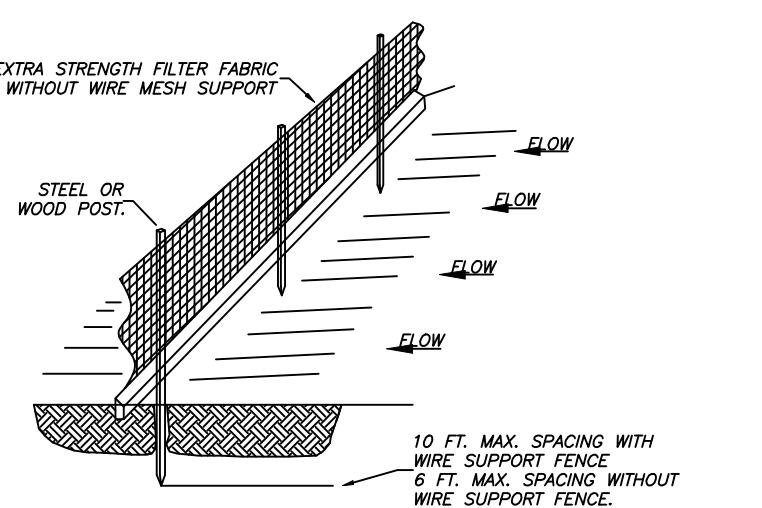
PHASE 1 PLAN
 *INSTALL SILT FENCE AROUND PROJECT
 *INSTALL CONSTRUCTION ENTRANCE
 *MAINTAIN EXISTING DRAINAGE DURING INITIAL PHASE OF CONSTRUCTION

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.



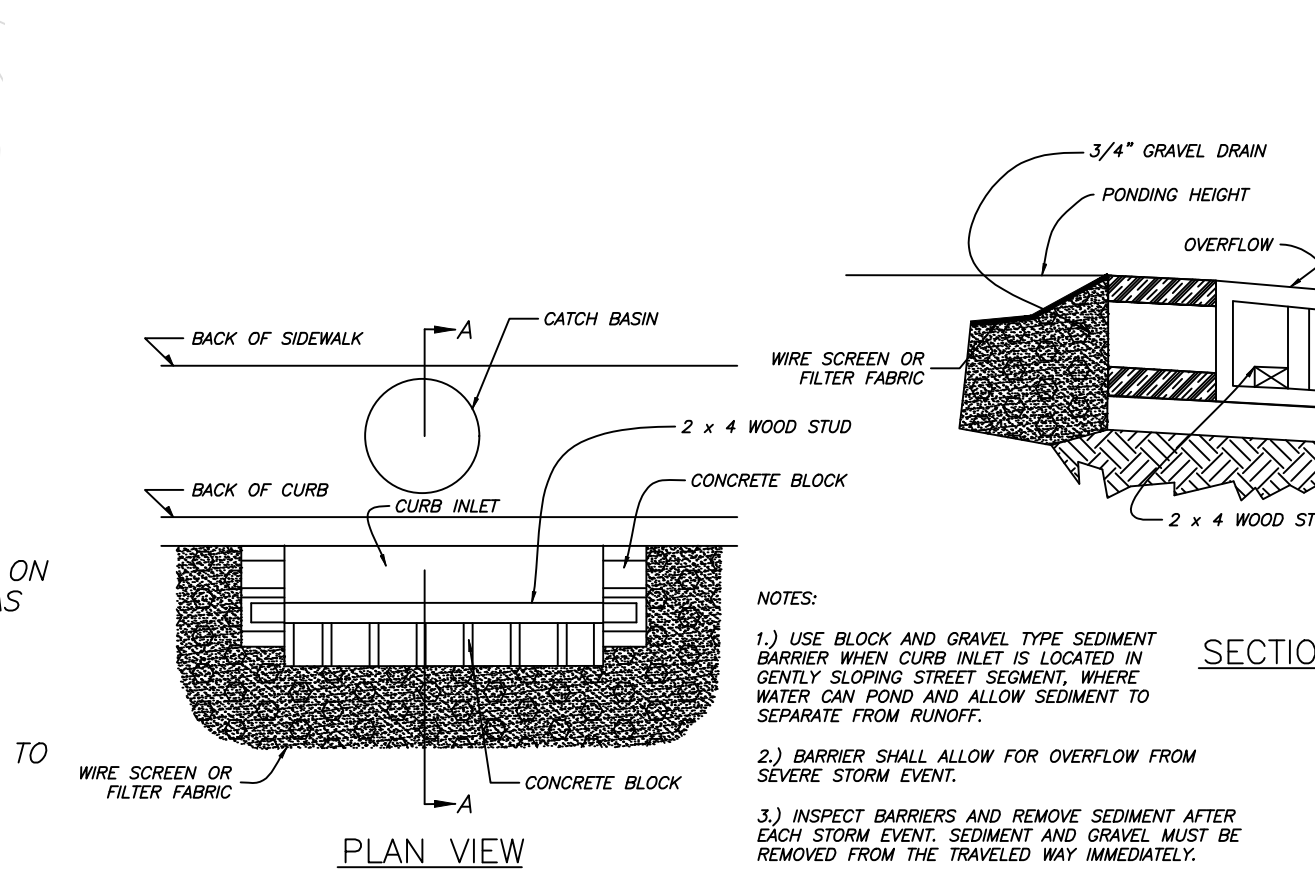
- NOTES:**
- FOR USE IN SMALL CHANNELS WITH DRAINAGE AREAS OF 50 ACRES OR LESS.
 - MUST BE USED IN CONJUNCTION WITH OTHER APPROPRIATE SEDIMENT CONTROL MEASURES.
 - USE BELOW CULVERT INSTALLATIONS, DAM CONSTRUCTION, OR ANY PROJECT THAT MAY INVOLVE GRADING ACTIVITY DIRECTLY IN A STREAM.
 - NOT INTENDED TO SUBSTANTIALLY IMPOUND WATER.
 - USE AT THE UPSTREAM END OF PONDS OR LAKES.
 - EDGES SHOULD NOT BE HIGHER THAN THE CHANNEL BANKS.
 - HEIGHT SHOULD NOT EXCEED ELEVATION OF UPSTREAM PROPERTY LINE.
 - CENTER SHOULD BE AT LEAST 6 INCHES LOWER THAN THE OUTER EDGES OF THE DAM AT THE CHANNEL BANKS.
 - HEIGHT SHOULD NOT EXCEED ELEVATION OF UPSTREAM PROPERTY LINE.
 - SIDE SLOPES SHOULD BE 2:1 OR FLATTER.
 - TRENCH WIDTH SHOULD BE GREATER THAN 6 FEET.
 - EXTEND COMPLETELY ACROSS THE CHANNEL AND SECURELY TIE INTO BOTH CHANNEL BANKS.
 - REQUIRES PERIODIC INSPECTION AND MAINTENANCE.
 - SEDIMENT REMOVED WHEN IT REACHES ONE-HALF OF THE ORIGINAL DAM HEIGHT.



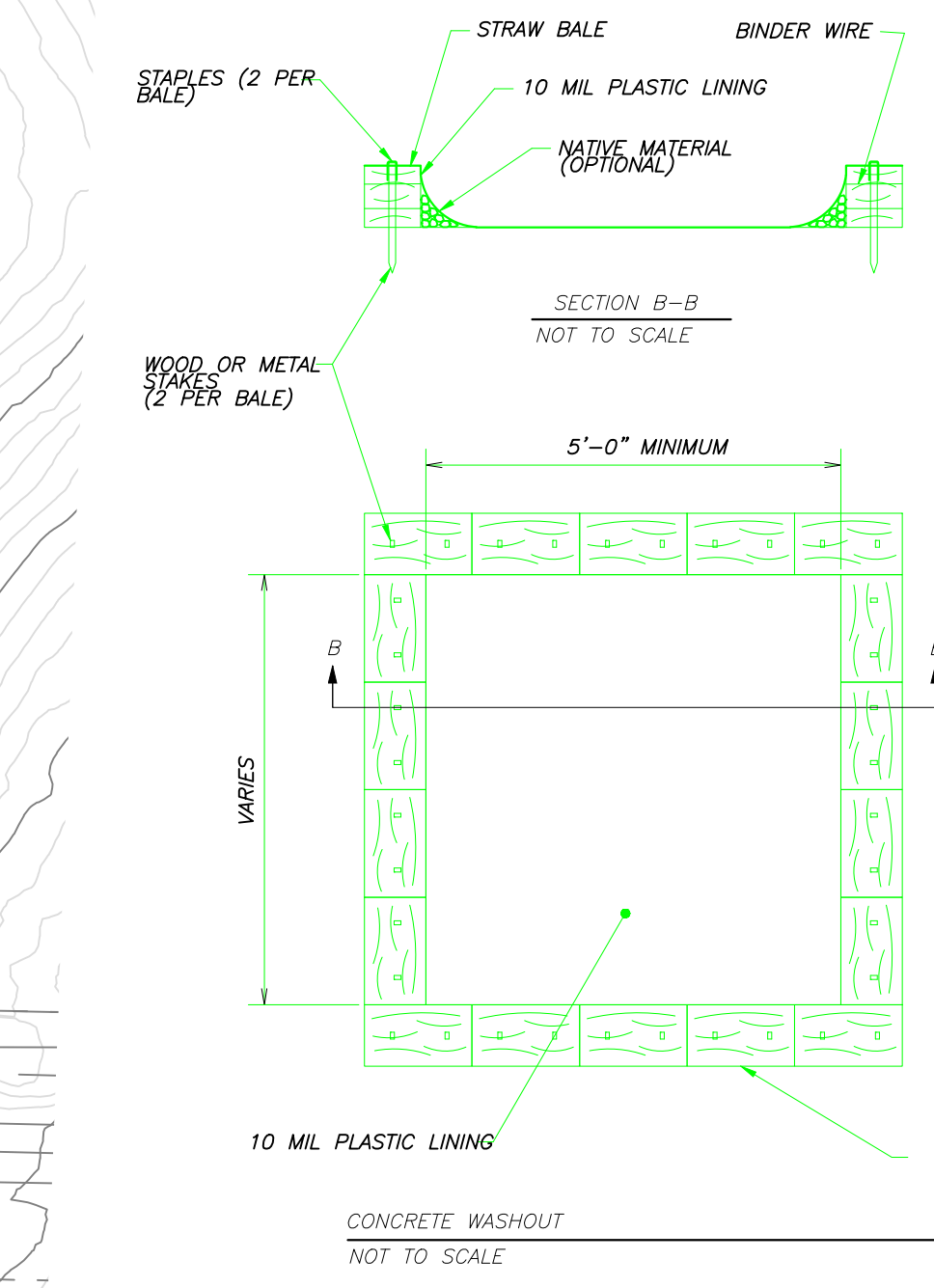
- NOTES:**
- INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
 - REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
 - SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE
 * ALL SILT FENCE SHALL BE WIRE MESH REINFORCED, AS PER CITY OF BRYANT SPECS.

ROCK DAM



- SWPPP NOTES:**
- DEVELOPMENT SHALL ADHERE TO CITY OF BRYANT AND ADEQ STORMWATER REQUIREMENTS.
 - SEDIMENT BARRIERS SHALL BE CONSTRUCTED AT EACH INLET UNTIL GRADING IS COMPLETE AND TOP SOIL IS STABILIZED.
 - A SILT FENCE AND STRAW BALE DIKE SHALL BE PLACED AT POTENTIAL LOCATIONS OF HEAVY EROSION.
 - TEMPORARY STRAW BALE DIKES ARE TO BE CONSTRUCTED NOT TO POND WATER ON ADJACENT PROPERTY.
 - ROCK DIKE CHECK DAMS TO BE CONSTRUCTED TO MEET ADEQ REQUIREMENTS WHEN USED IN LIEU OF STRAW BALE DIKES.
 - ALL TEMPORARY EROSION CONTROLS SHALL BE MAINTAINED UNTIL ALL CONSTRUCTION IS COMPLETE AND PERMANENT GROUND COVER HAS BEEN ESTABLISHED.
 - 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
 - SOIL EXPOSED FOR MORE THAN 14 DAYS WITH NO CONSTRUCTION ACTIVITY SHALL BE SEEDING OR REEMITTED.
 - CONSTRUCTION ENTRANCES/EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF MUD ON TO PUBLIC RIGHT-OF-WAY.
 - ADDITIONAL EROSION CONTROL MEASURES TO BE EMPLOYED WHERE NECESSARY BY SITE CONDITIONS.
 - CONTRACTOR SHALL USE "BEST MANAGEMENT PRACTICES" (BMP'S) WHEN IMPLEMENTING AND MAINTAINING SEDIMENT AND RUN-OFF CONTROLS.



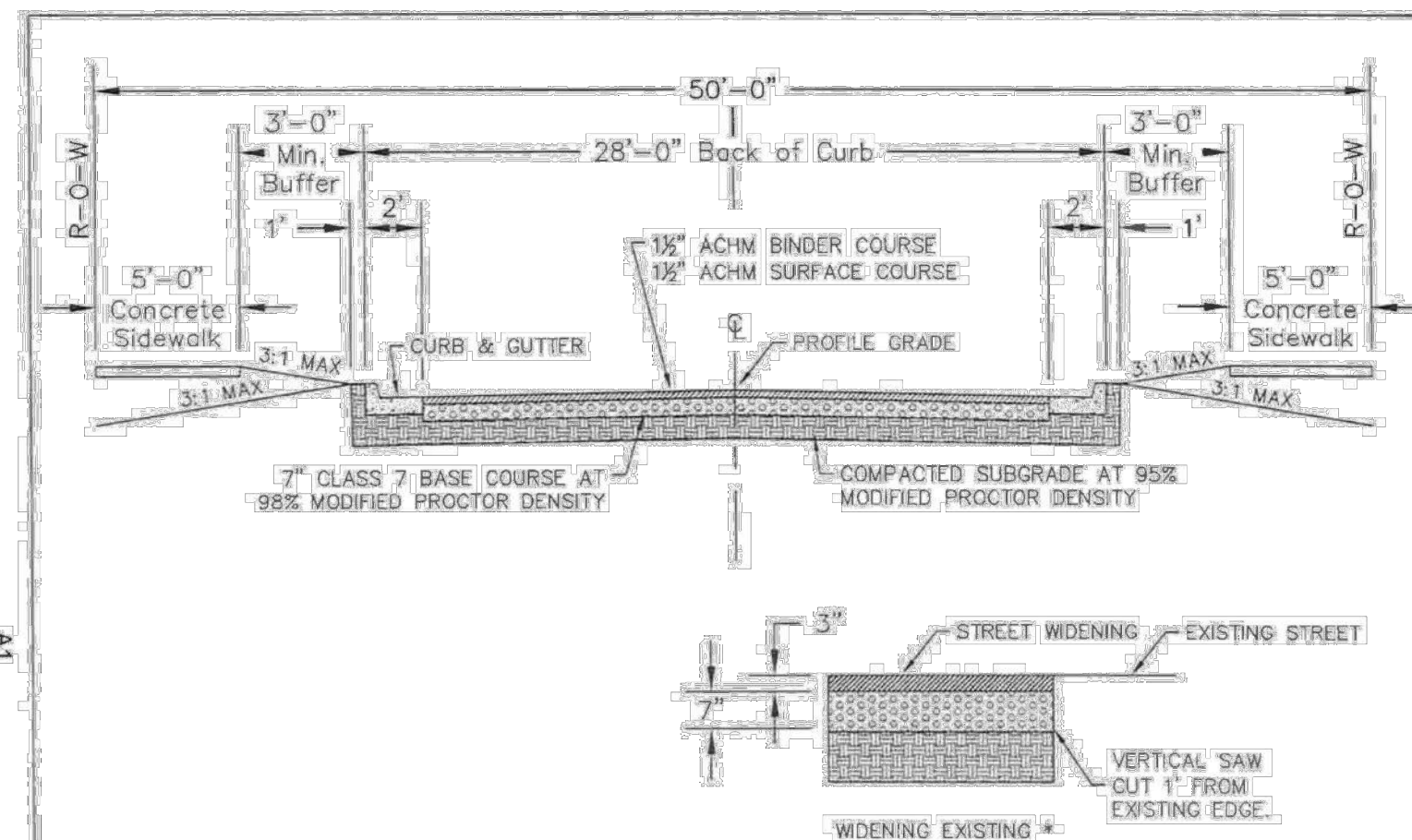
- GENERAL EROSION CONTROL NOTES**
- THE LOCATION OF KNOWN SURFACE & SUBSURFACE STRUCTURES, PIPE, POWER, GAS, PHONE, ETC. ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING INFORMATION AND SATISFYING THEMSELVES AS TO THE LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN. 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.
 - 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.
 - EROSION CONTROL DEVICES SHALL BE INSTALLED AS THE PROJECT PROGRESSES AND AREAS ARE DISTURBED.
 - 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.
 - ALL INLETS ON AND ADJACENT TO THE SITE SHALL BE PROTECTED FROM SEDIMENT.
 - STORM WATER CONTROLS SHALL BE INSPECTED AT LEAST ONCE EVERY 7 DAYS.
 - 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.
 - ALL DISTURBED AREAS LEFT IDLE FOR A PERIOD OF 14 DAYS OR LONGER ARE TO RECEIVE TEMPORARY VEGETATION AND MULCHED.
 - REMOVE EROSION CONTROL DEVICES AFTER PERMANENT VEGETATION IS ESTABLISHED.
 - DEVELOPMENT SHALL ADHERE TO CITY OF BRYANT AND ADEQ STORM WATER REQUIREMENTS.
 - ADDITIONAL EROSION CONTROL MEASURES TO BE EMPLOYED WHERE NECESSARY BY SITE CONDITIONS.
 - CONTRACTOR TO COMPLY WITH ALL OSHA SAFETY REQUIREMENTS.
 - CONTRACTOR TO COORDINATE MAINTENANCE OF TRAFFIC ON PUBLIC RIGHT OF WAY WITH PROPER AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.
 - 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.

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 325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

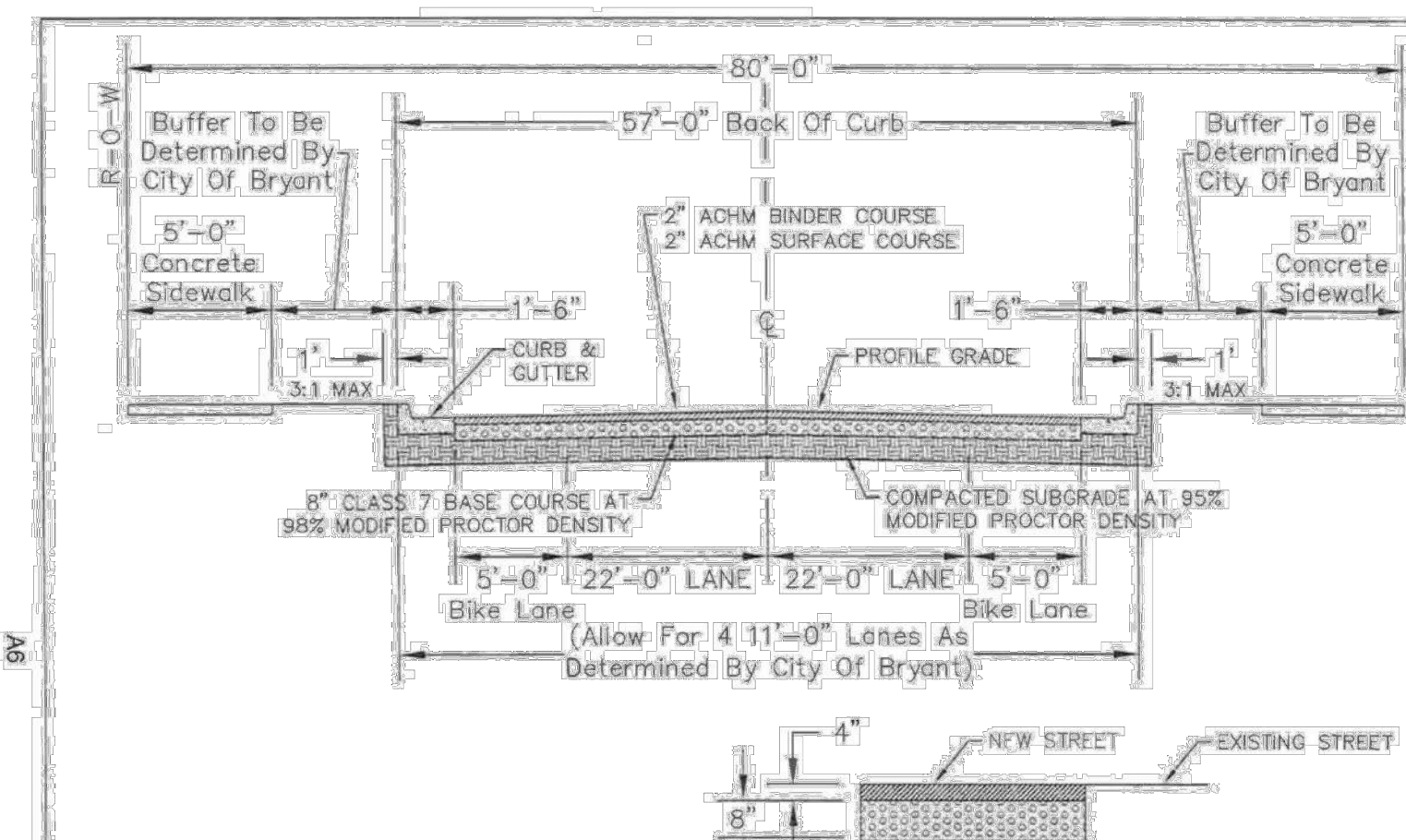
EROSION CONTROL LPLAN
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS

EMINENT CONSTRUCTIONS

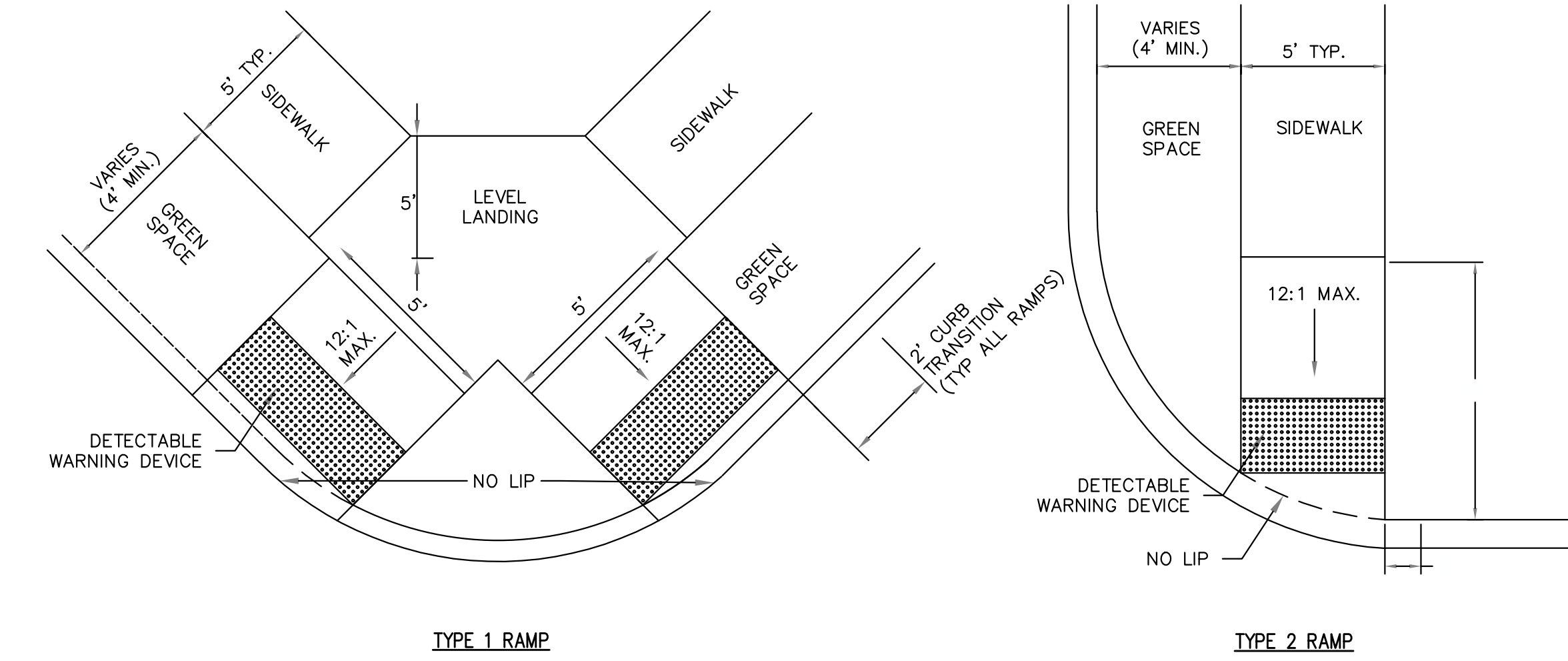
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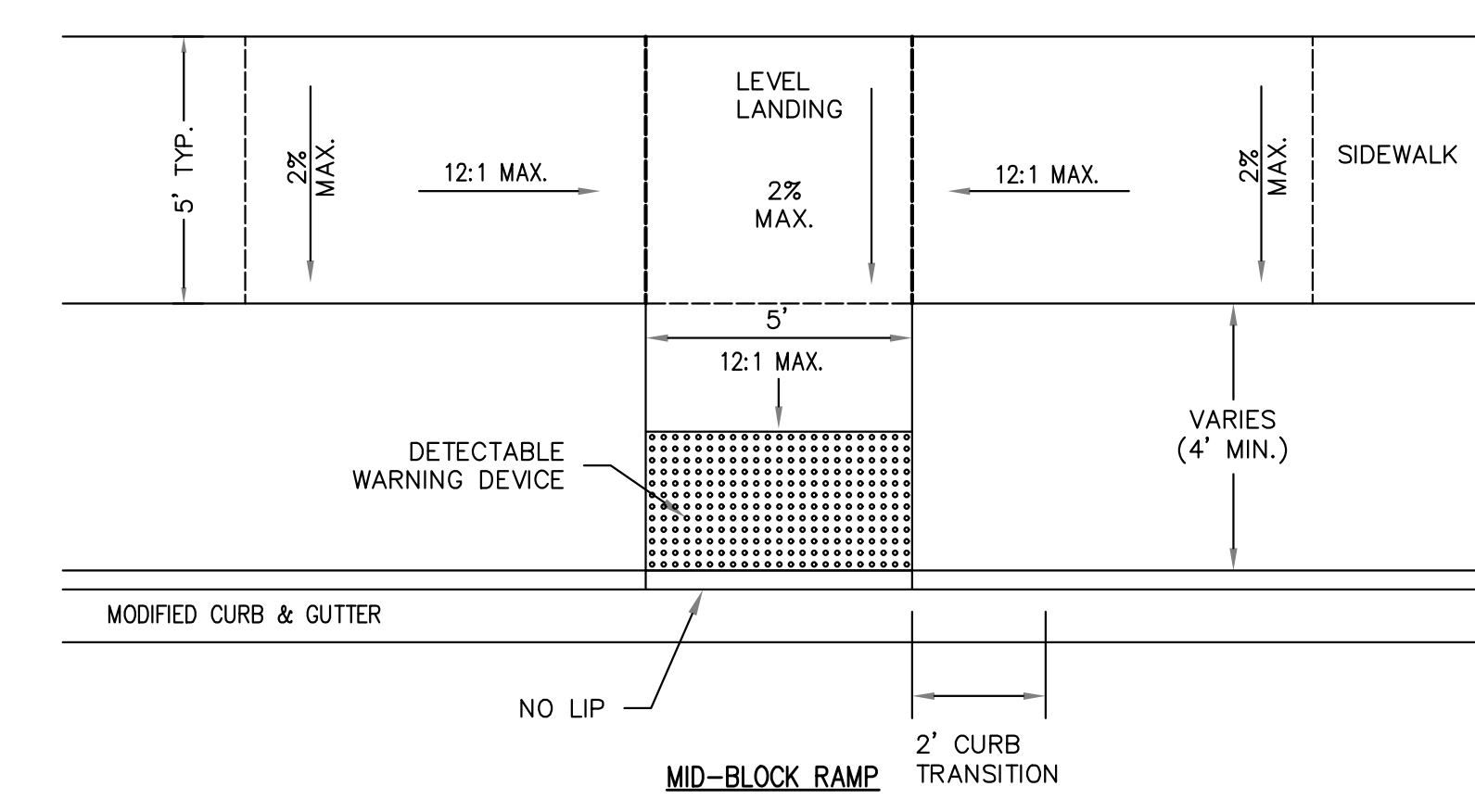
CITY OF BRYANT
TYPICAL SECTION LOCAL / RESIDENTIAL STREET
DETAIL 1
 Issue Date: APRIL 2013
 Revision Date:



CITY OF BRYANT
TYPICAL SECTION MINOR ARTERIAL
DETAIL 6
 Issue Date: APRIL 2013
 Revision Date:



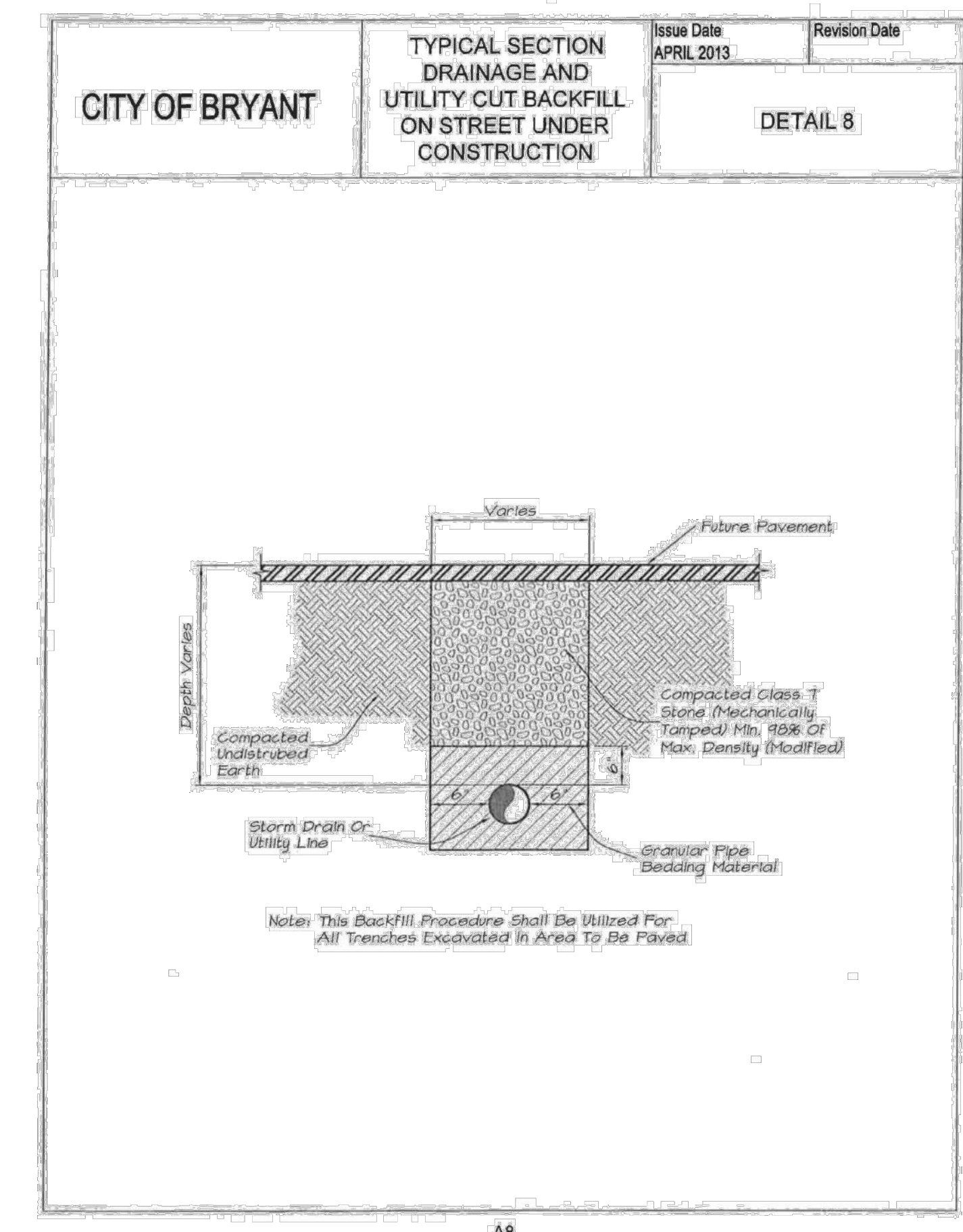
- NOTES:
- 1) THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1.
 - 2) THE NORMAL CUTTER SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
 - 3) THE MINIMUM THICKNESS FOR THE RAMP, WALK, & LANDING SHALL BE 4".
 - 4) DETECTABLE WARNING DEVICES SHALL BE PLACED AT THE LOCATIONS WHERE RAMPS CROSS A CURB.



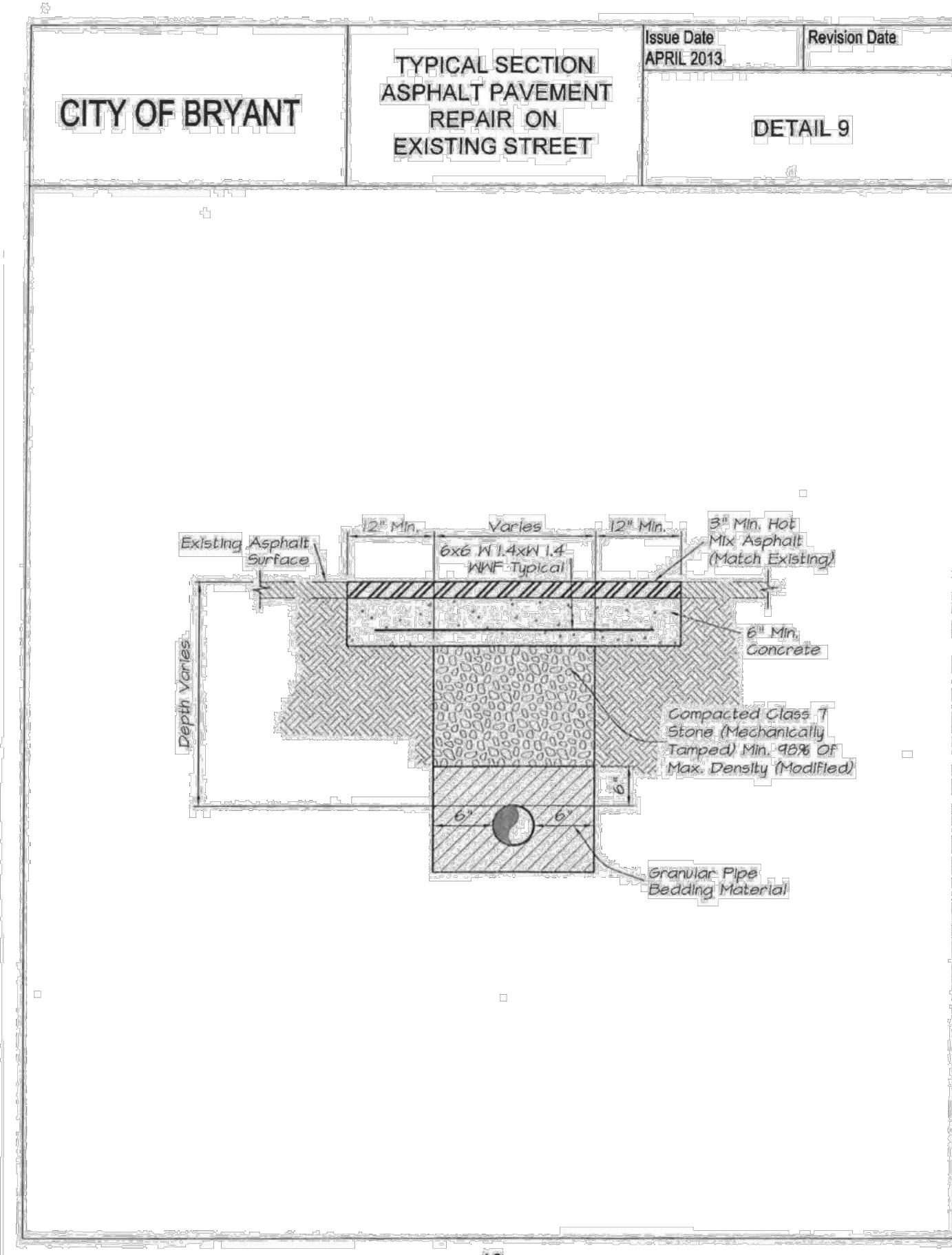
HANDICAP RAMP DETAILS
 NOT TO SCALE

- GENERAL NOTES:
1. IN AREAS TO RECEIVE BITUMINOUS PAVING, CONCRETE DRIVEWAYS OR CURB AND GUTTER, SUBGRADE SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF MAXIMUM MODIFIED DENSITY OBTAINED AT OPTIMUM MOISTURE CONTENT.
 2. FOR AREAS OF SUBGRADE PREPARATION TO RECEIVE CONCRETE SIDEWALKS, SUBGRADE SHALL BE COMPACTED TO DENSITY OF 90% MAXIMUM MODIFIED DENSITY.
 3. CRUSHED STONE - MATERIAL IN EACH COURSE SHALL BE COMPACTED TO A DENSITY OF 95% MAXIMUM MODIFIED DENSITY.
 4. CONCRETE SIDEWALK SHALL BE A MINIMUM OF 4" WIDE IN RESIDENTIAL SUBDIVISIONS.
- * NOTES: PAVEMENT RECONSTRUCTION TO CENTERLINE IS REQUIRED WHEN EXISTING STREET DOES NOT MEET THESE STANDARDS.

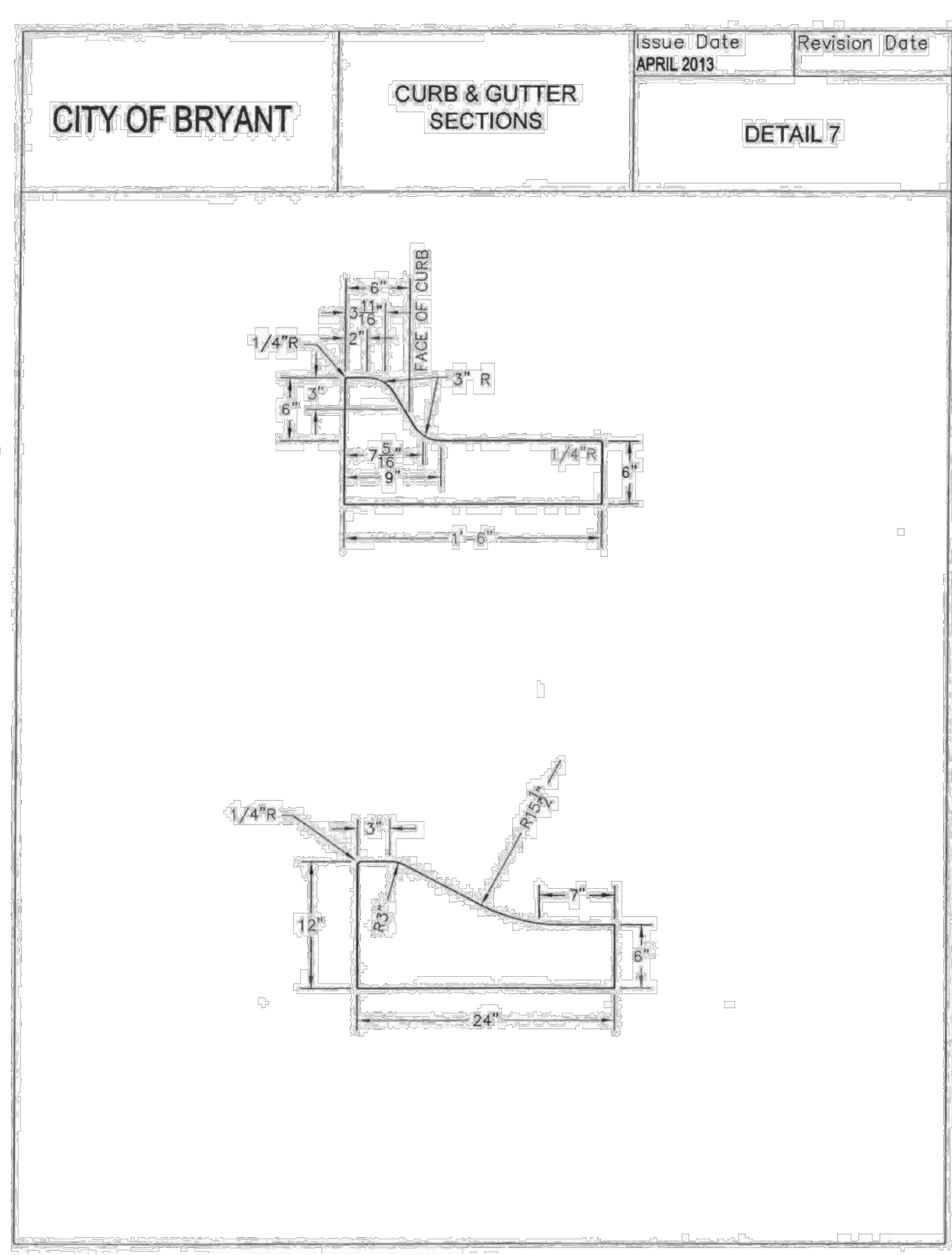
- GENERAL NOTES:
1. IN AREAS TO RECEIVE BITUMINOUS PAVING, CONCRETE DRIVEWAYS OR CURB AND GUTTER, SUBGRADE SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF MAXIMUM MODIFIED DENSITY OBTAINED AT OPTIMUM MOISTURE CONTENT.
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 3. CRUSHED STONE - MATERIAL IN EACH COURSE SHALL BE COMPACTED TO A DENSITY OF 95% MAXIMUM MODIFIED DENSITY.
- * NOTES: PAVEMENT RECONSTRUCTION TO CENTERLINE IS REQUIRED WHEN EXISTING STREET DOES NOT MEET THESE STANDARDS.



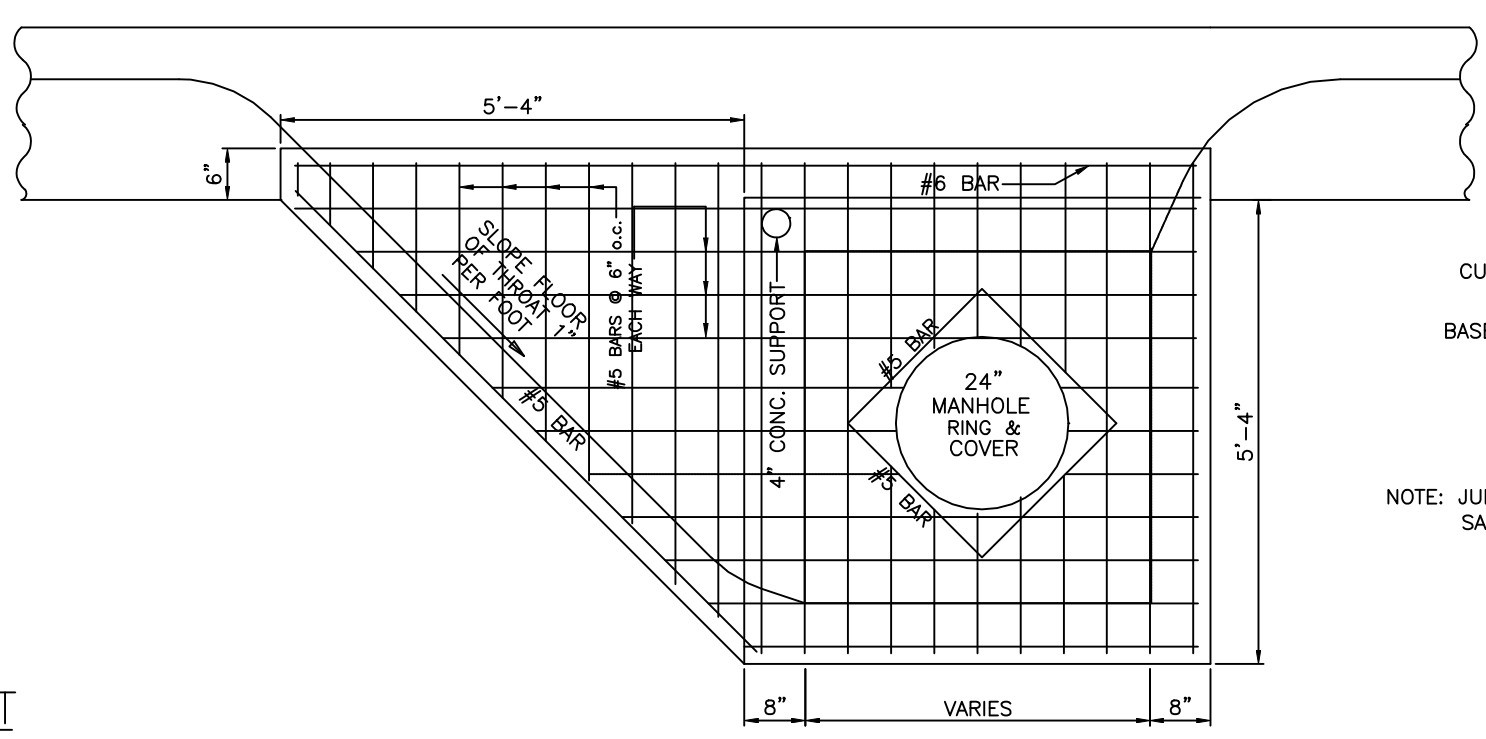
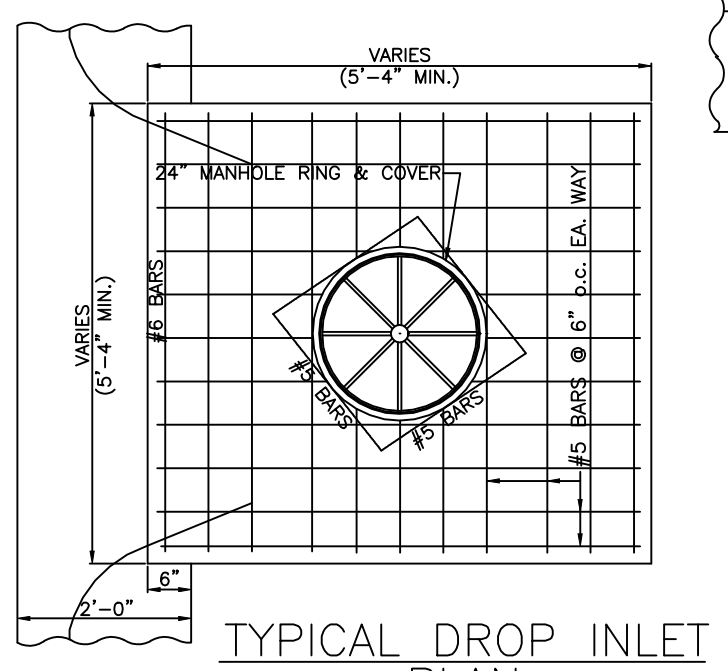
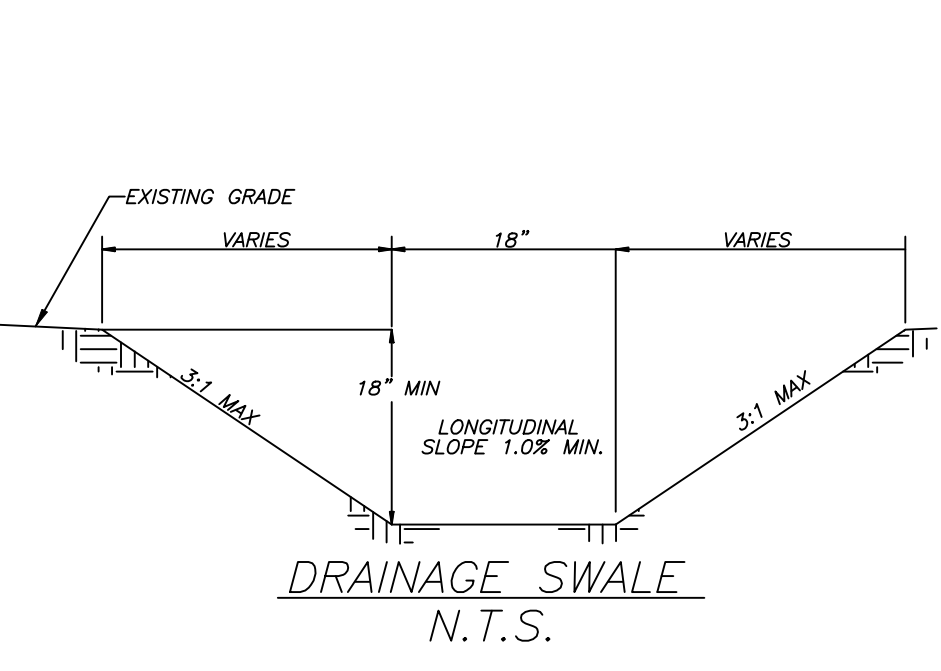
CITY OF BRYANT
TYPICAL SECTION DRAINAGE AND UTILITY CUT BACKFILL ON STREET UNDER CONSTRUCTION
DETAIL 8
 Issue Date: APRIL 2013
 Revision Date:



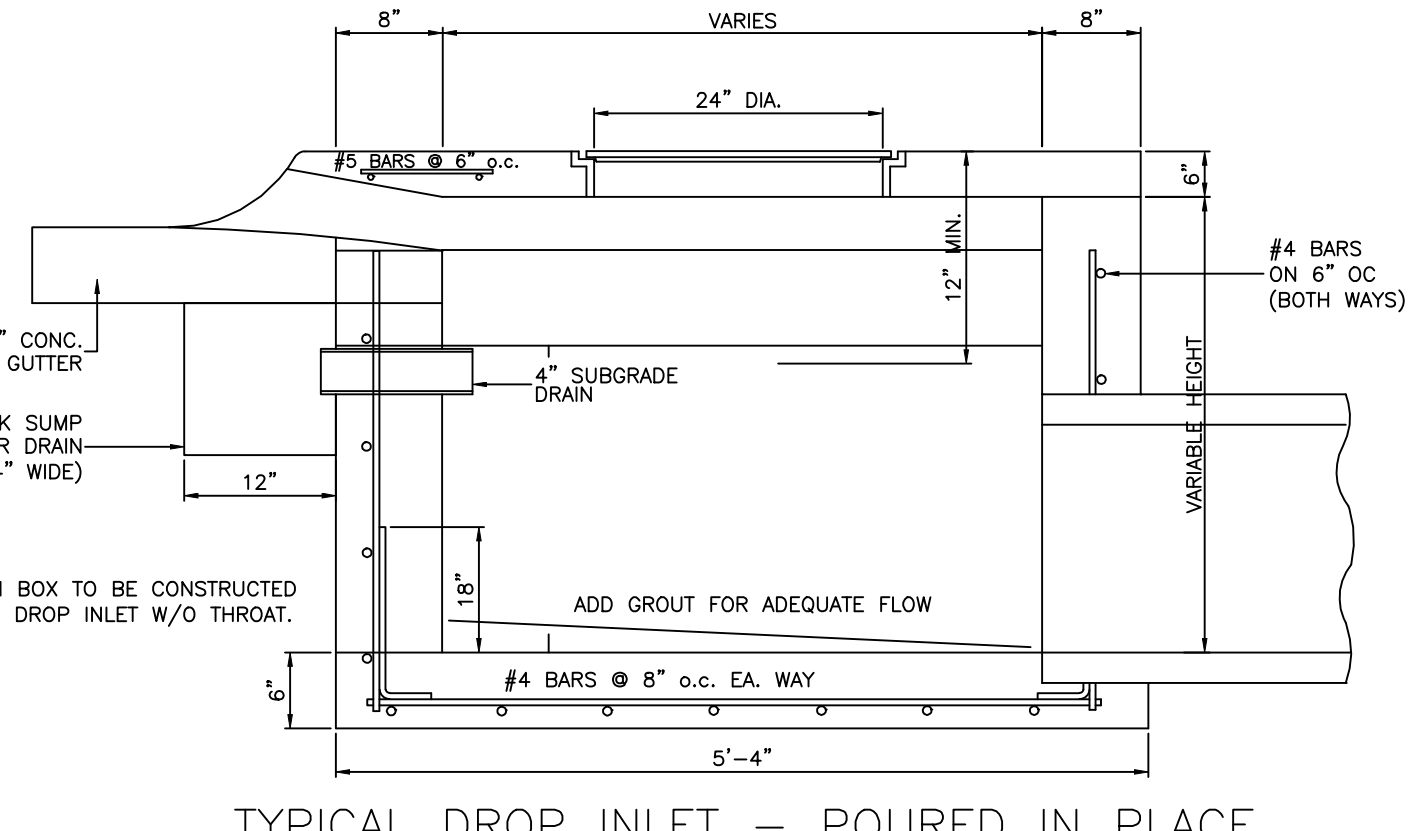
CITY OF BRYANT
TYPICAL SECTION ASPHALT PAVEMENT REPAIR ON EXISTING STREET
DETAIL 9
 Issue Date: APRIL 2013
 Revision Date:



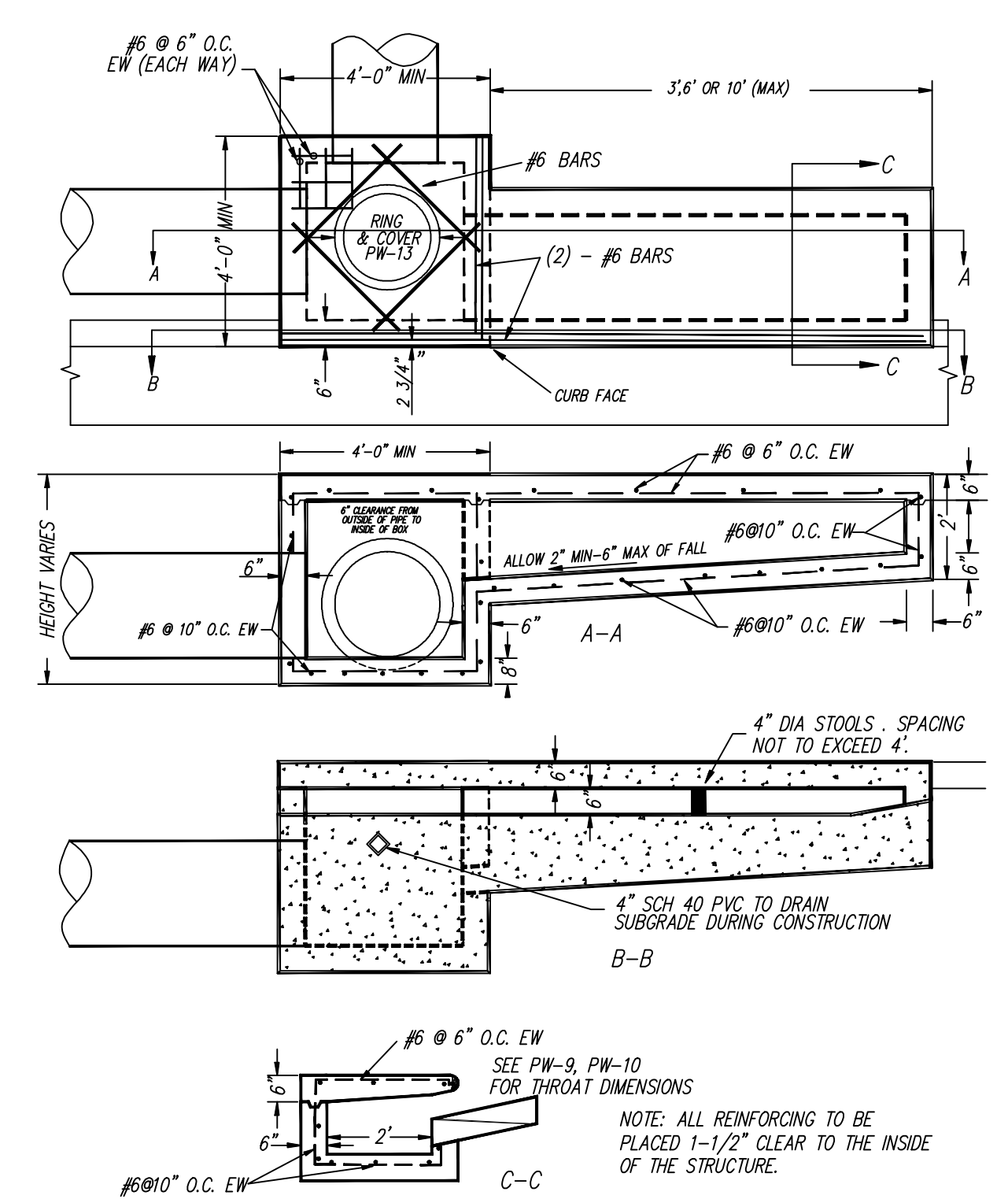
CITY OF BRYANT
CURB & GUTTER SECTIONS
DETAIL 7
 Issue Date: APRIL 2013
 Revision Date:



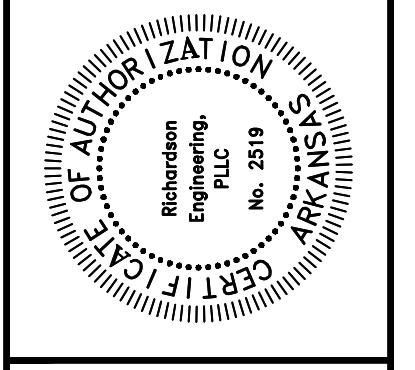
DETAIL - DROP INLET WITH EXTENDED THROAT



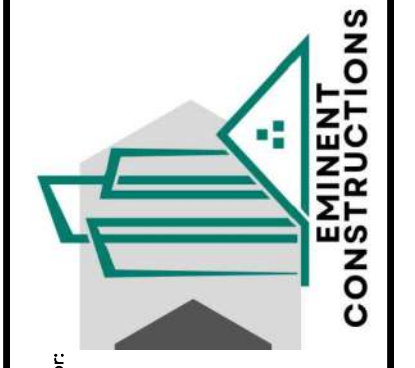
TYPICAL DROP INLET - POURED IN PLACE ELEVATION



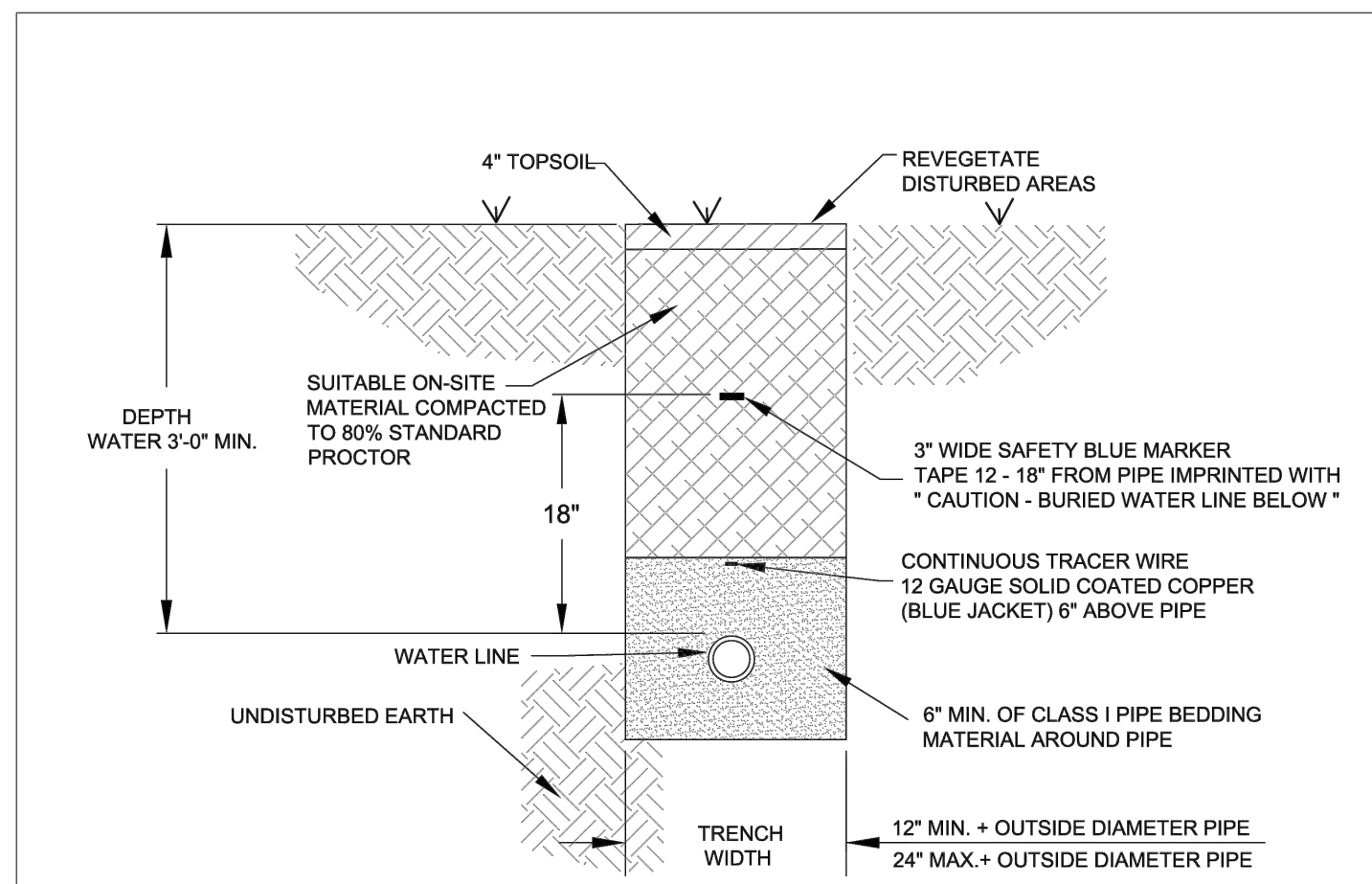
CURB INLET W/ THROAT EXTENSIONS
 NOT TO SCALE



MISC. DETAILS
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



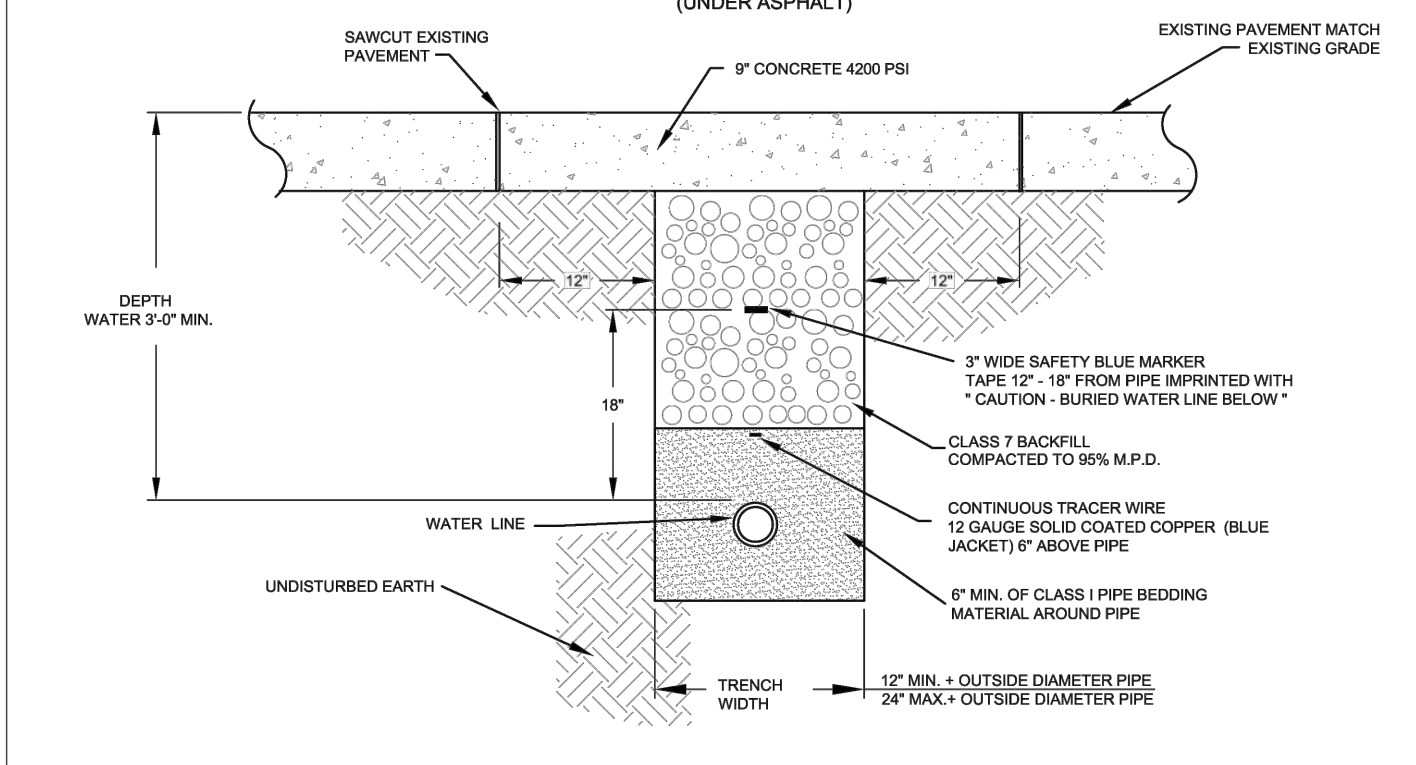
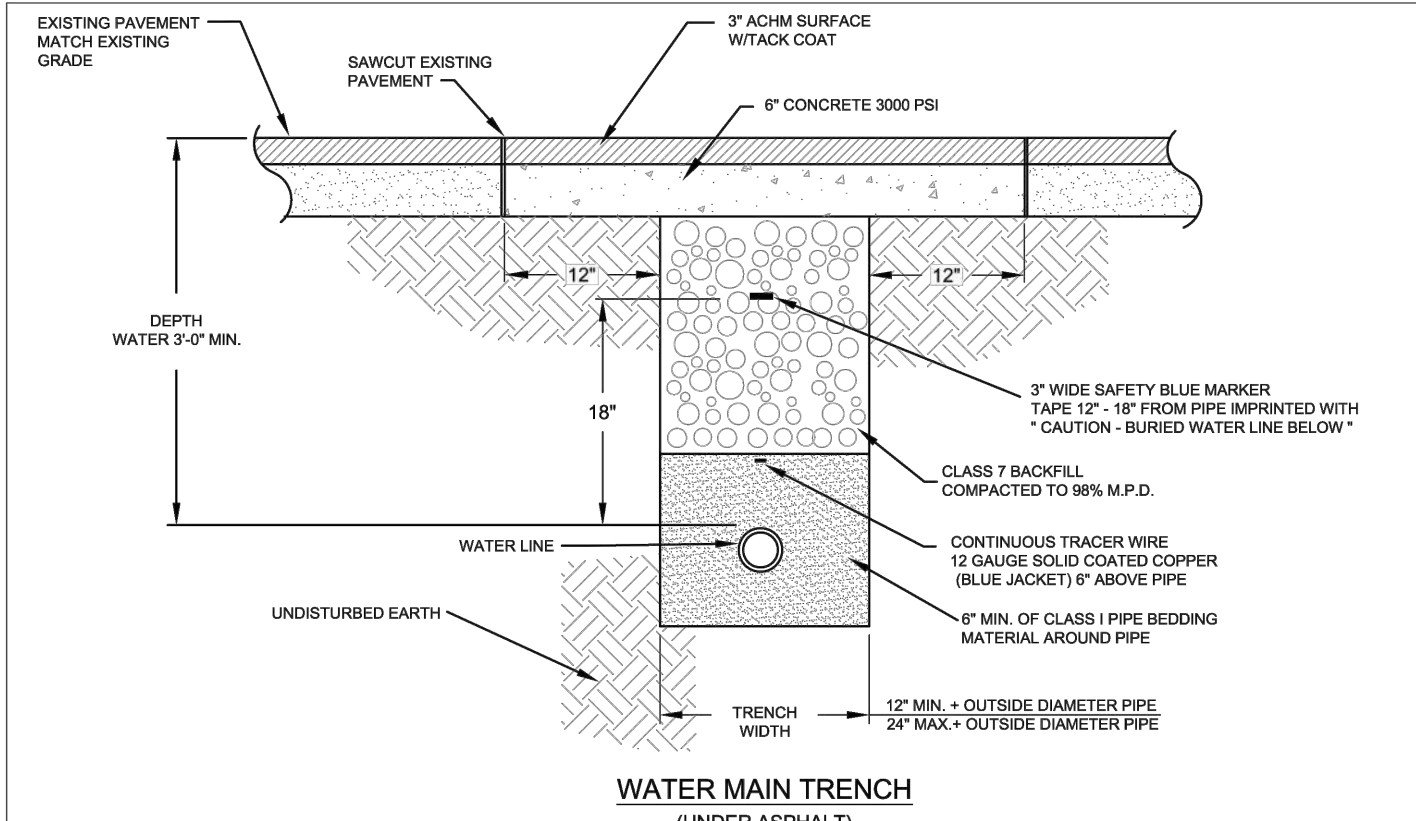
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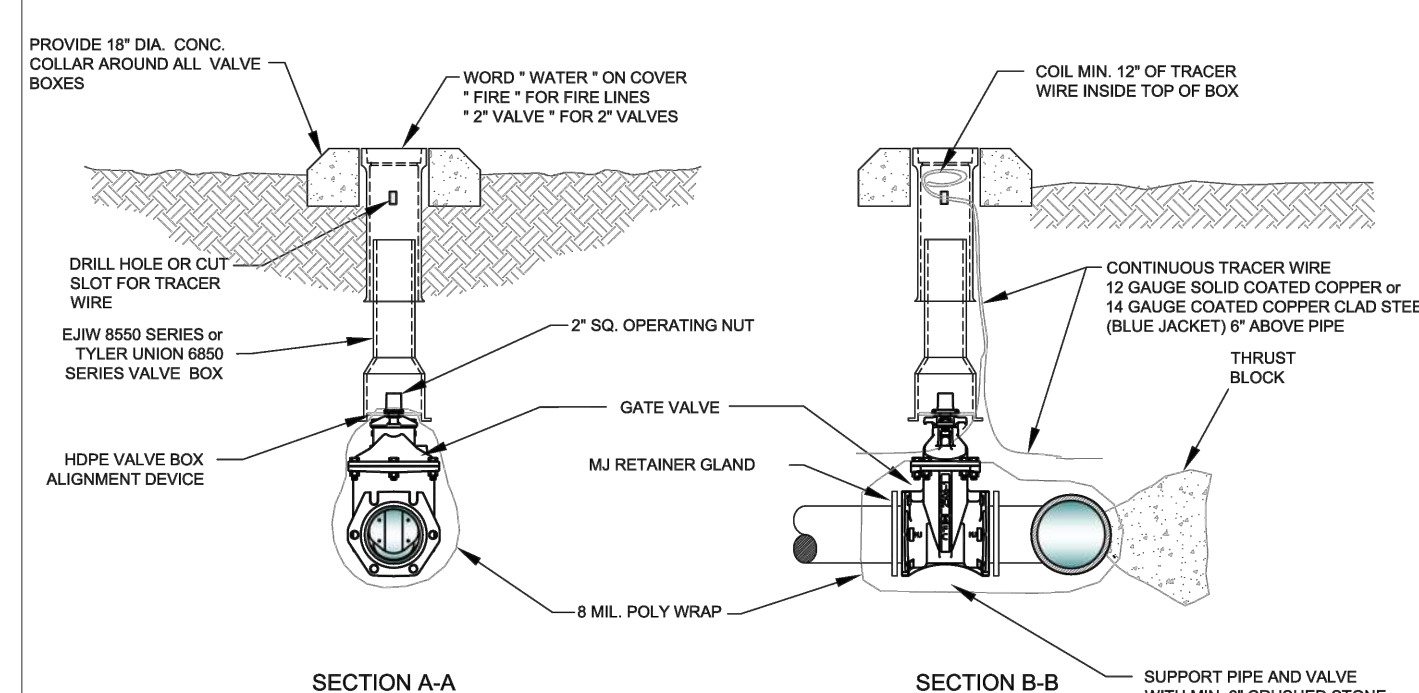
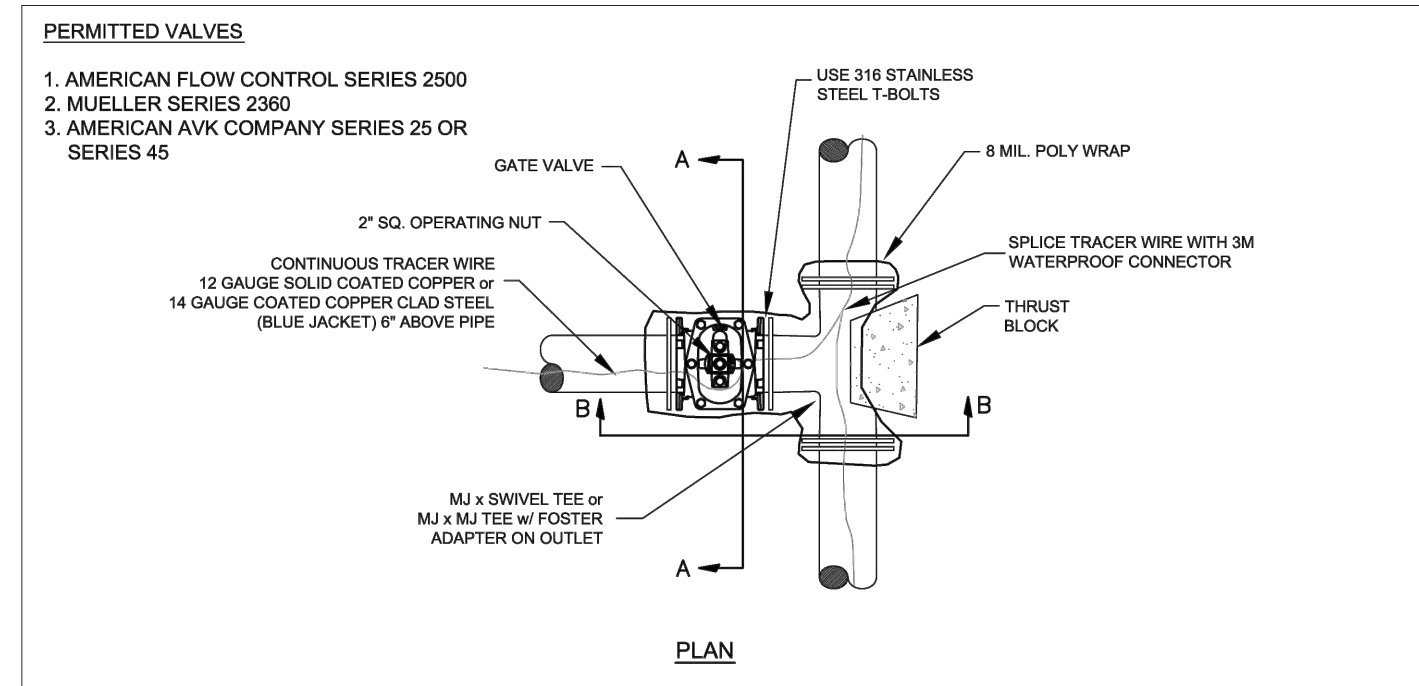
- NOTES:
1. ALL VALVES, BENDS, ETC. SHALL BE RESTRAINED.
 2. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING WATER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE WATER SYSTEM.
 3. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
 4. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36\"/>

WATER MAIN TRENCH
(NON-PAVED AREA)

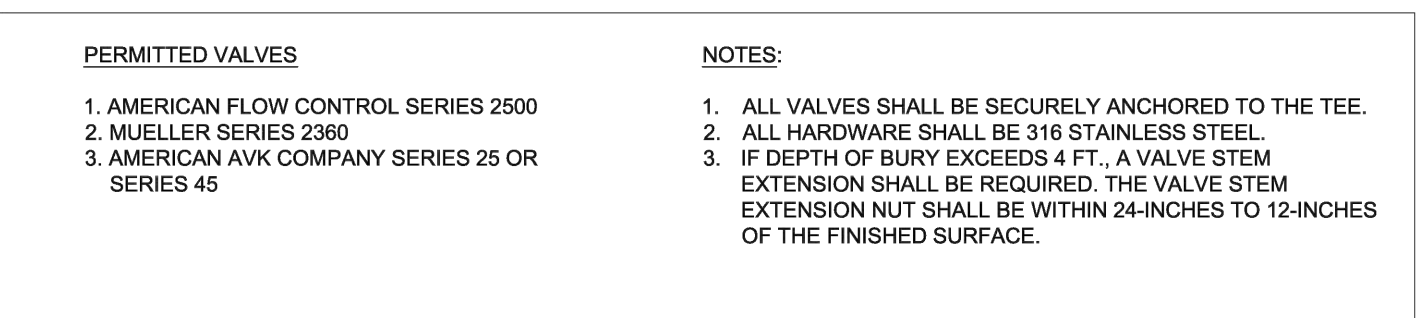
	CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd STREET BRYANT, AR PHONE: (501) 943-0468	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET: W1
		DESCRIPTION: WATER MAIN TRENCH (NON-PAVED AREA)	REVISED: _____	_____
DRAWN BY: _____		CHECKED BY: _____	FILE: W1-Water Trench (Non-Paved Area).dwg	



	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	

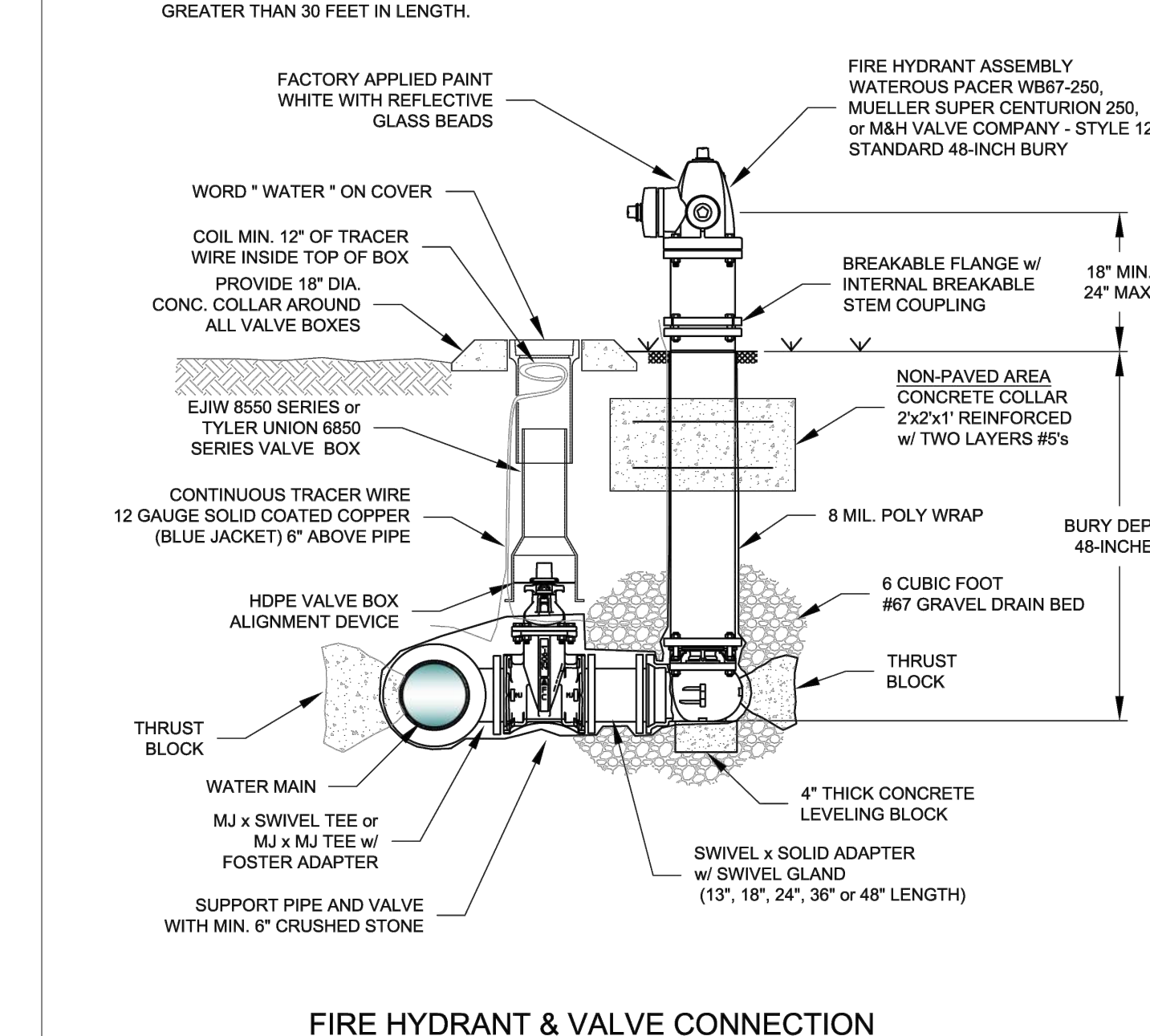


	CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd STREET BRYANT, AR PHONE: (501) 943-0468	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET: W4
		DESCRIPTION: GATE VALVE	REVISED: _____	_____
DRAWN BY: _____		CHECKED BY: _____	FILE: W4-Gate Valve.dwg	

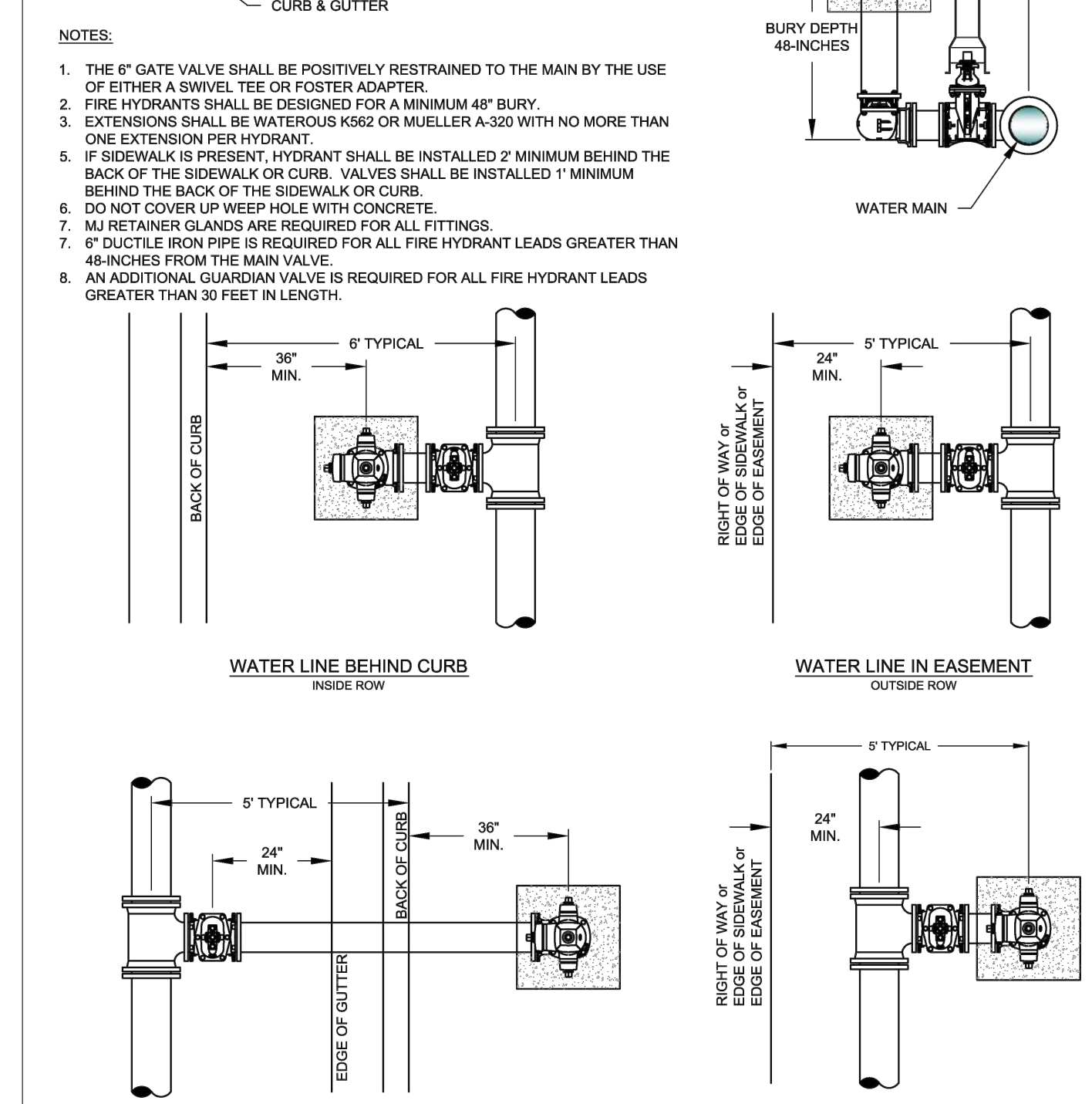
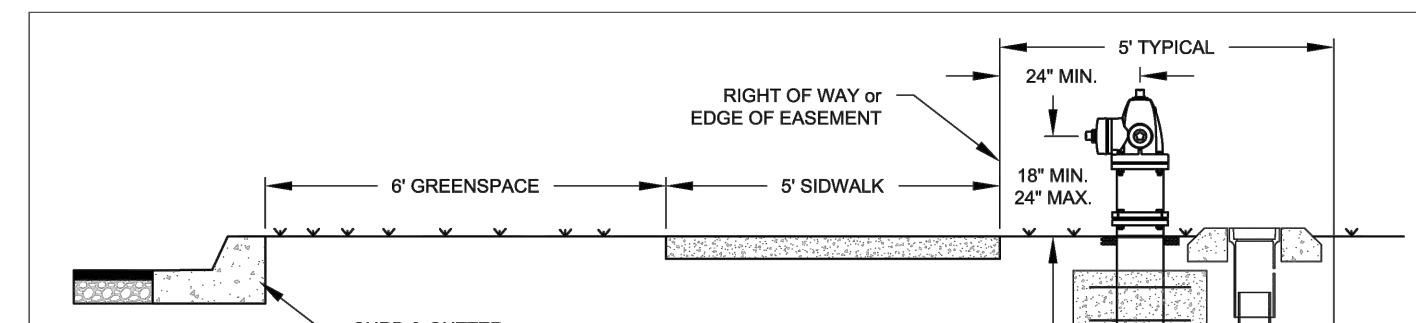


	CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd STREET BRYANT, AR PHONE: (501) 943-0468	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET: W5
		DESCRIPTION: 3-WAY GATE VALVES	REVISED: _____	_____
DRAWN BY: _____		CHECKED BY: _____	FILE: W5-3-Way Gate Valve.dwg	

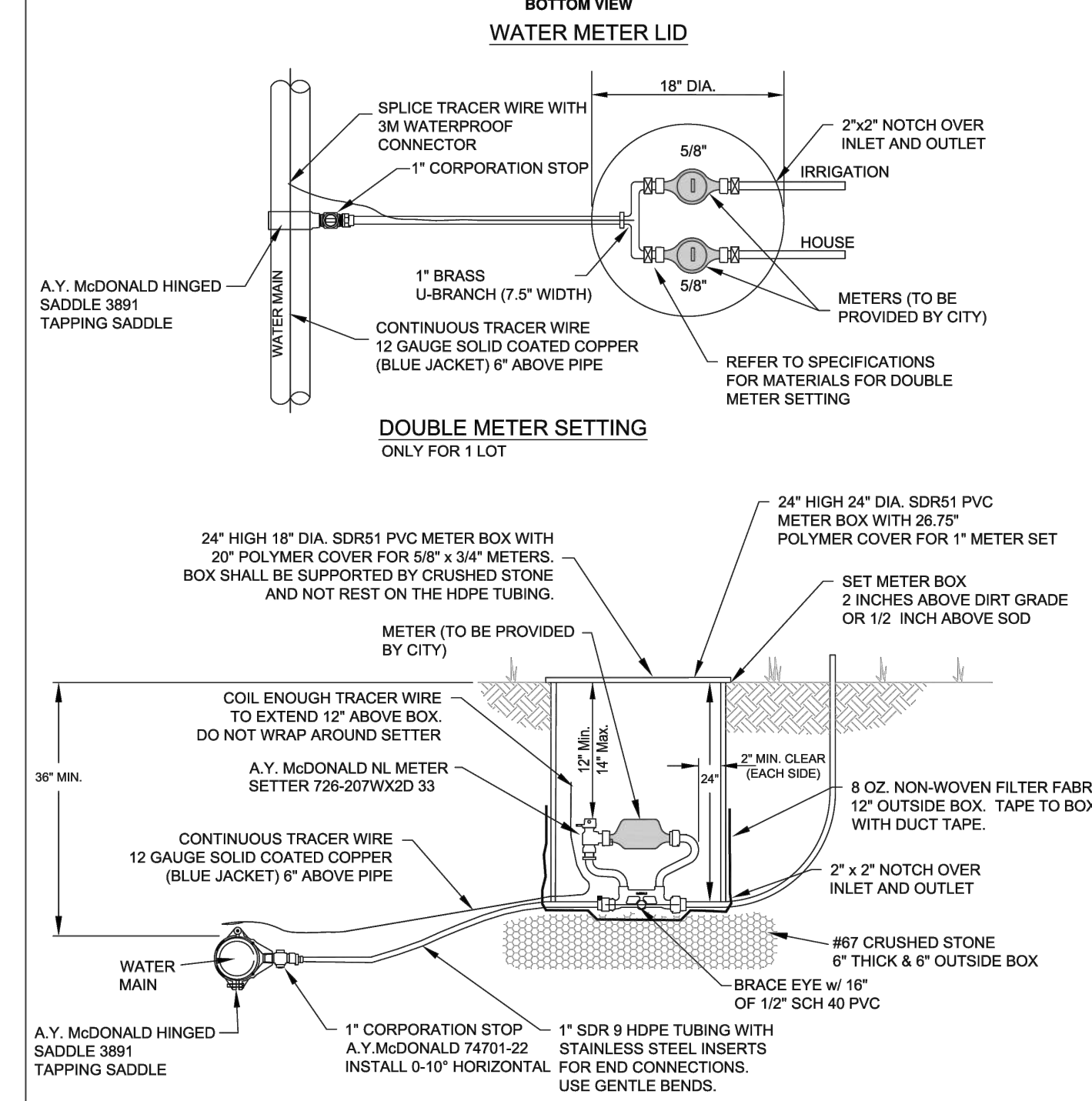
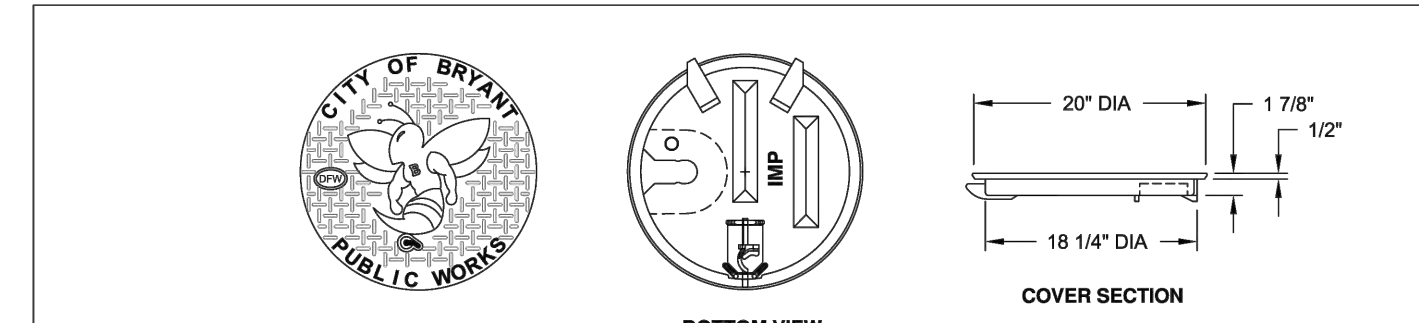
- NOTES:
1. THE 6\"/>



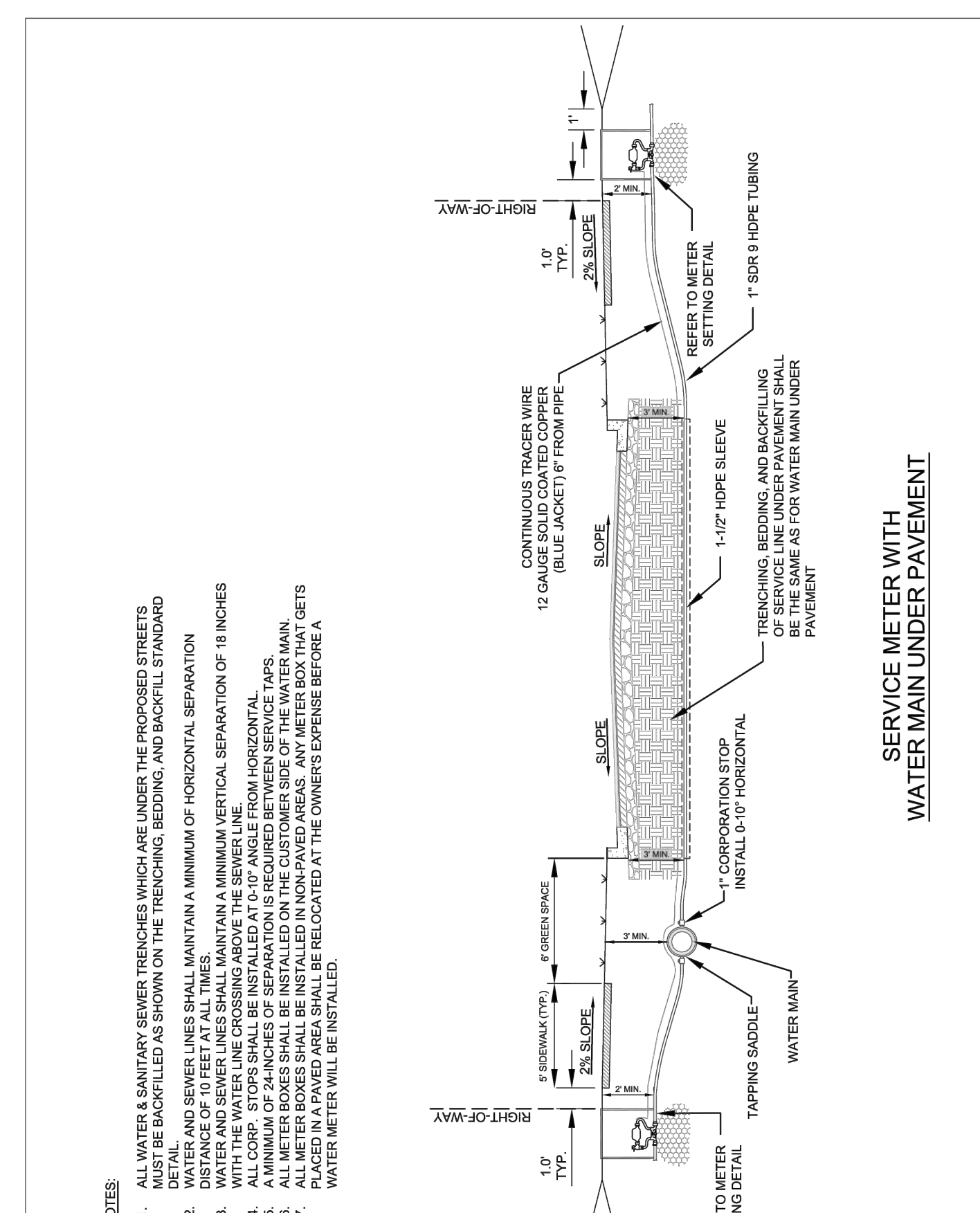
	CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd STREET BRYANT, AR PHONE: (501) 943-0468	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET: W8
		DESCRIPTION: FIRE HYDRANT AND VALVE CONNECTION	REVISED: _____	_____
DRAWN BY: _____		CHECKED BY: _____	FILE: W8-Fire Hydrant and Valve.dwg	



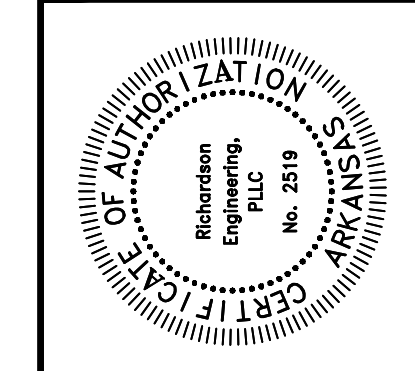
	CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd STREET BRYANT, AR PHONE: (501) 943-0468	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET: W9
		DESCRIPTION: FIRE HYDRANT PLACEMENT	REVISED: _____	_____
DRAWN BY: _____		CHECKED BY: _____	FILE: W9-Fire Hydrant Placement.dwg	



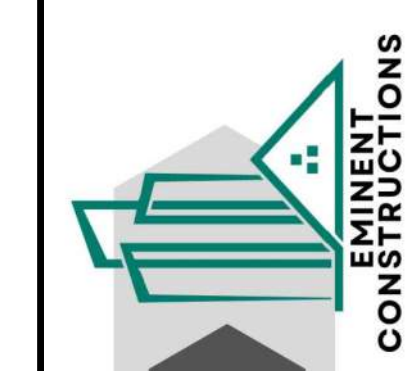
	CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd STREET BRYANT, AR PHONE: (501) 943-0468	TITLE: WATER DETAILS	DATE: APRIL 2015	SHEET: W10
		DESCRIPTION: WATER METER SETTINGS	REVISED: _____	_____
DRAWN BY: _____		CHECKED BY: _____	FILE: W10-Water Settings.dwg	



	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	



MISC. DETAILS
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SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 4/7/2016
Revisions: AS PER CITY COMMENTS	Date: 3/3/2026
No. 1	Date: 4/7/2026
Scale: NTS	
Sheet: 21 of 25	

NOTES:

- TAPPING SLEEVE SHALL BE SMITH-BLAIR 662 OR FORD FAST.
- AFTER THE TAP IS MADE, RE-TORQUE BOLTS ON SLEEVE TO SEAL TO FINAL SHAPE OF PIPE.
- TAPPING SLEEVE AND VALVE SHALL BE WRAPPED WITH 8 MIL POLY WRAP.

PLAN VIEW

PROFILE VIEW

PROVIDE 18" DIA. CONC. COLLAR AROUND ALL VALVE BOXES

WORD "WATER" ON COVER "FIRE" FOR FIRE LINES

COIL MIN. 12" OF TRACER WIRE INSIDE TOP OF BOX

CONTINUOUS TRACER WIRE 12 GAUGE SOLID COATED COPPER or 14 GAUGE COATED COPPER CLAD STEEL (BLUE JACKET) 6" ABOVE PIPE

2" SQ. OPERATING NUT

HDPE VALVE BOX ALIGNMENT DEVICE

MJ TAPPING SLEEVE

THRUST BLOCK

CITY OF BRYANT, AR
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: TAPPING SLEEVE AND VALVE

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W13**

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
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: POLYETHYLENE PROTECTION MATERIAL

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W14**

NOTES:

- STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL WITH A MINIMUM DIAMETER AND THICKNESS AS SHOWN BELOW (SEE TABLE).
- PROVIDE CASING SPACERS BY CASCADE MODEL CCEs AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
- PROVIDE END SEALS BY CASCADE MODEL CCEs AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
- 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.
- BELL RESTRAINTS FOR PVC SHALL BE SERIES 1900 RESTRAINT HARNESS AND BELL RESTRAINTS FOR DIP SHALL BE SERIES 1700 RESTRAINT HARNESS BY EBAA IRON INC., OR APPROVED EQUAL.
- DIRECT BURY STEEL ENCASEMENT SHALL BE POLY WRAPPED.
- JACK AND BORE STEEL ENCASEMENT SHALL HAVE 17# HP MAGNESIUM ANODES CAD WELDED TO THE END OF THE ENCASEMENT PIPE.

CARRIER (OD)	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 (OD)	14"	16"	18"	20"	24"	30"	36"	42"	48"
CASING (OD)	30"	36"	42"	48"	54"	60"	66"	72"	78"
CASING WALL THICKNESS	0.375	0.500	0.625	0.625	0.625	0.625	0.625	0.750	0.750

CITY OF BRYANT, AR
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: STEEL ENCASEMENT

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W15**

THRUST BLOCK SCHEDULE

FITTING SIZE	BEARING AREA OF THRUST BLOCKS IN SQ. FT.		VOLUME OF THRUST BLOCK IN CU. FEET	
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
2, 3 & 4"	1.9	2.7	1.4	0.7
6"	5.6	7.9	4.3	2.2
8"	8.6	13.6	7.4	3.8
10"	12.5	20.5	10.7	5.5
12"	17.0	28.0	15.7	8.0
16"	33.7	50.4	27.3	13.9
18"	44.8	67.4	36.3	19.2
24"	78.4	110.9	60.0	30.8

THRUST BLOCK NOTES:

- 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.
- 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.
- WRAP PIPE JOINTS IN 8 MIL POLYETHYLENE BEFORE PLACING CONCRETE.
- BEARING AREA SHOWN IN TABLE IS BASED UPON A 2000 LBS/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.
- MJ RESTRAINTS ARE REQUIRED FOR ALL FITTINGS.
- USE LONG-RADIUS FITTINGS WHEREVER POSSIBLE.
- ALL BOLTS FOR FITTINGS SHALL BE 316 STAINLESS STEEL.
- ALL DUCTILE IRON FITTINGS SHALL BE FUSION-BONDED EPOXY COATED INSIDE AND OUTSIDE IN ACCORDANCE WITH ANSIAWWA C118/A21.16.
- UNIT WEIGHT OF CONCRETE FOR VERTICAL THRUST BLOCKS IS 150 LBS/CU. FT.

CITY OF BRYANT, AR
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: THRUST BLOCKING

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W16**

PIPE SIZE	MINIMUM DIMENSIONS *			REINFORCING BARS	
	W	H	T	"A" BARS	"B" BARS
6"	1.5"	2.0"	1.0"	#6 @ 6"	#6 @ 6"
8"	2.0"	2.5"	1.0"	#6 @ 6"	#6 @ 6"
12"	2.5"	4.0"	1.5"	#6 @ 6"	#6 @ 6"
16"	3.0"	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:

- DESIGN PRESSURE IS 200 PSI PLUS 100 PSI SURGE AND 2,000 PSI SOIL BEARING.
- ALL DIMENSIONS ARE MINIMUM REQUIREMENTS. ACTUAL FIELD CONDITIONS MAY REQUIRE LARGER DIMENSIONS.
- ALL RETAINER GLANDS SHALL BE MEGA-LUG BY EBAA IRON.

CITY OF BRYANT, AR
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 BRYANT, AR
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TITLE: WATER DETAILS
DESCRIPTION: ANCHOR COLLAR

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W18**

NOTES:

- THRUST BLOCKING SHALL BE ACCORDING TO THRUST BLOCKING DETAILS.
- DO NOT COVER UP WEEP HOLE WITH CONCRETE.

CITY OF BRYANT, AR
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: BLOW-OFF ASSEMBLY

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W19**

RE: SITE PLAN FOR SPECIFIED WIDTH

CONCRETE SIDEWALK SPECIFICATIONS

* NOTES:

- PORTLAND CEMENT CONCRETE 3000 PSI MIN.
- USE W1.4 X W1.4 (6" X 6") WFF SHEET REINFORCEMENT. CUT 1/2 THE WIRES AT CONTROL JOINTS.
- CONCRETE TO CONTAIN 3-5% AIR ENTRAINMENT.
- FINISH TO BE LIGHT BROOM FINISH.
- DETECTABLE WARNING DEVICES TO BE INSTALLED AT RAMPS PER ADA REQUIREMENTS.
- MAX CROSS SLOPE 2%. MAX LONGITUDINAL SLOPE 1:12.
- CONTROL JOINTS PER CONC. WALK CONTROL JOINT DETAIL.

CITY OF BRYANT, AR
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: BLOW-OFF ASSEMBLY

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W19**

TYPICAL SECTION 4" UTILITY DUCTS

NOT TO SCALE

CITY OF BRYANT, AR
 WATER UTILITIES
 210 S.W. 3rd. STREET
 BRYANT, AR
 PHONE: (501) 943-0468

TITLE: WATER DETAILS
DESCRIPTION: THRUST BLOCKING

DATE: APRIL 2015
 REVISION: _____
 SHEET: **W16**

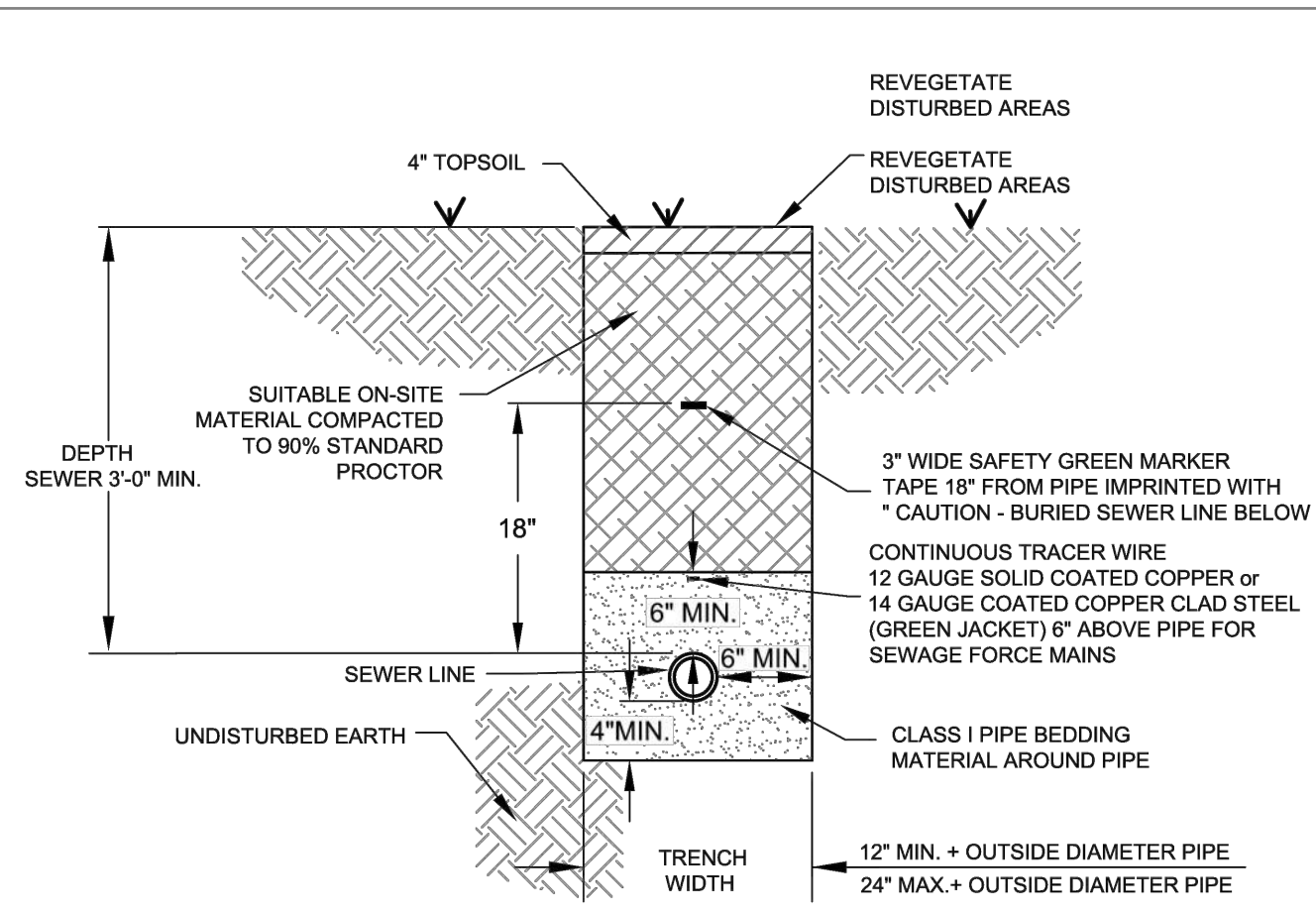
RICHARDSON ENGINEERING
 Planning • Engineering • Development Consulting
 325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225

RE ENGINEERING
 Registered Professional Engineer
 No. 2519

EMINENT CONSTRUCTIONS

MISC. DETAILS
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS

PROJECT NO.: 024-034
 Date: 4/7/2026
 AS PER CITY COMMENTS
 Revision: N/A
 No. 7
 Scale: NTS
 Date: 3/3/2026
 4/7/2026
 Sheet: 22 of 25



- 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)

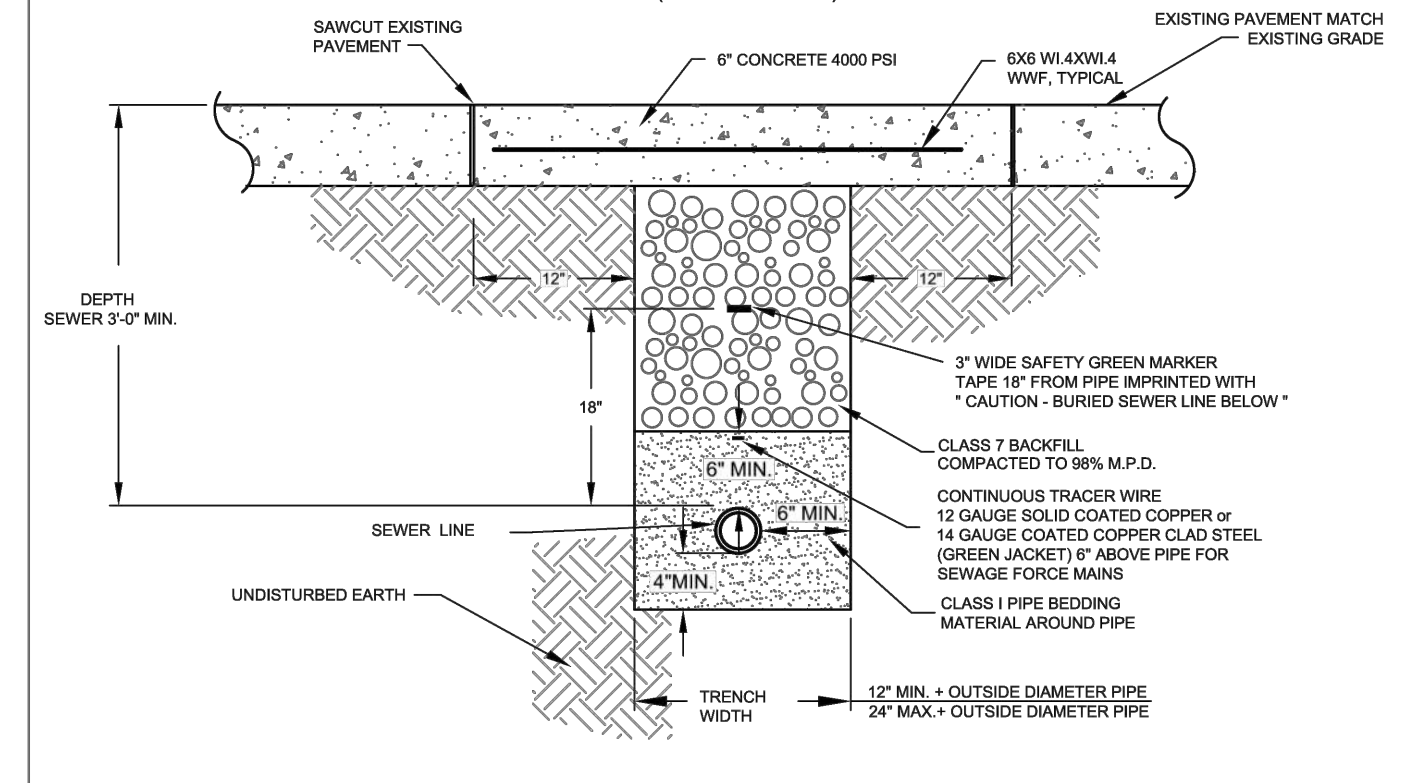
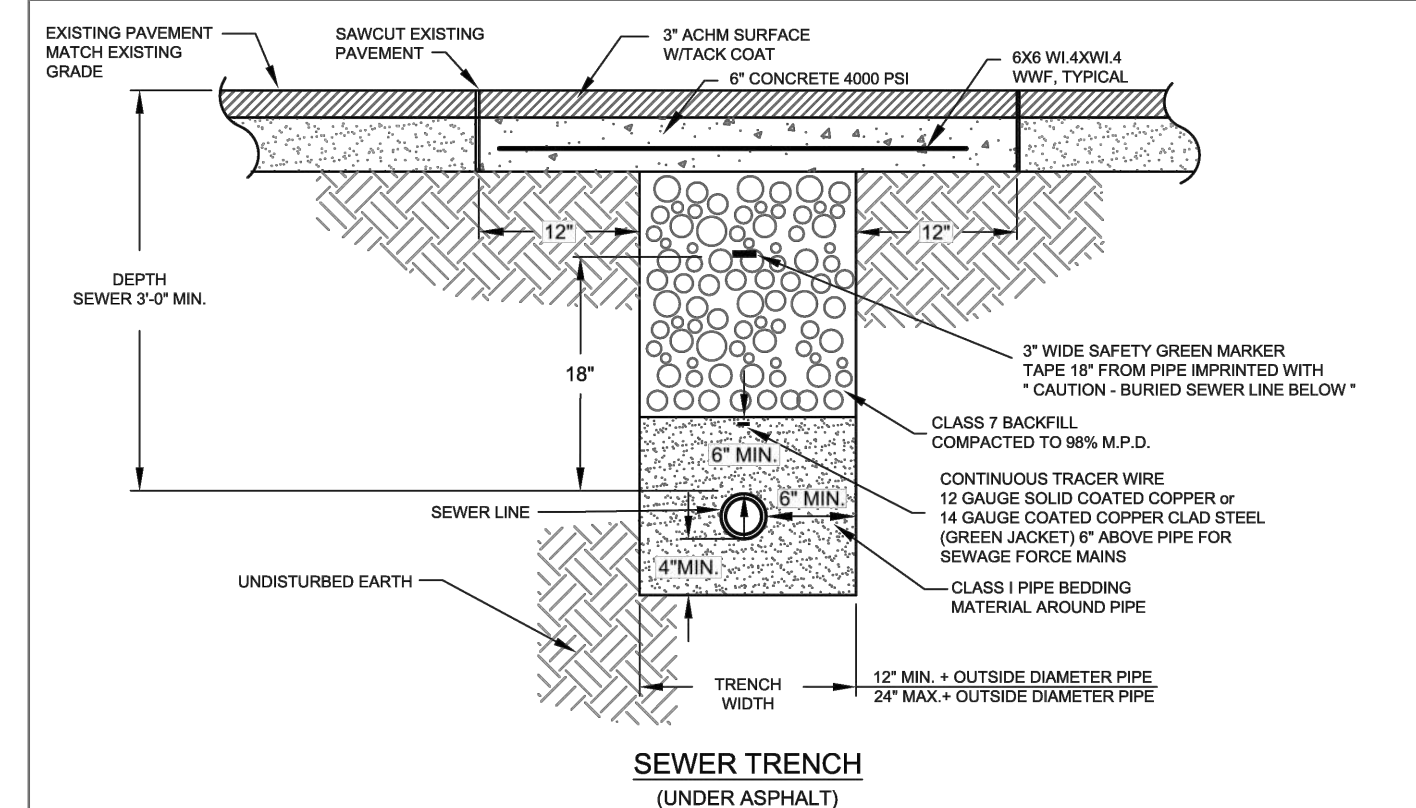
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 843-0488

SEWER DETAILS
SEWER TRENCH (NON-PAVED AREA)

DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S1-Sewer Trench (Non-Paved Area).dwg

S1



- 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.

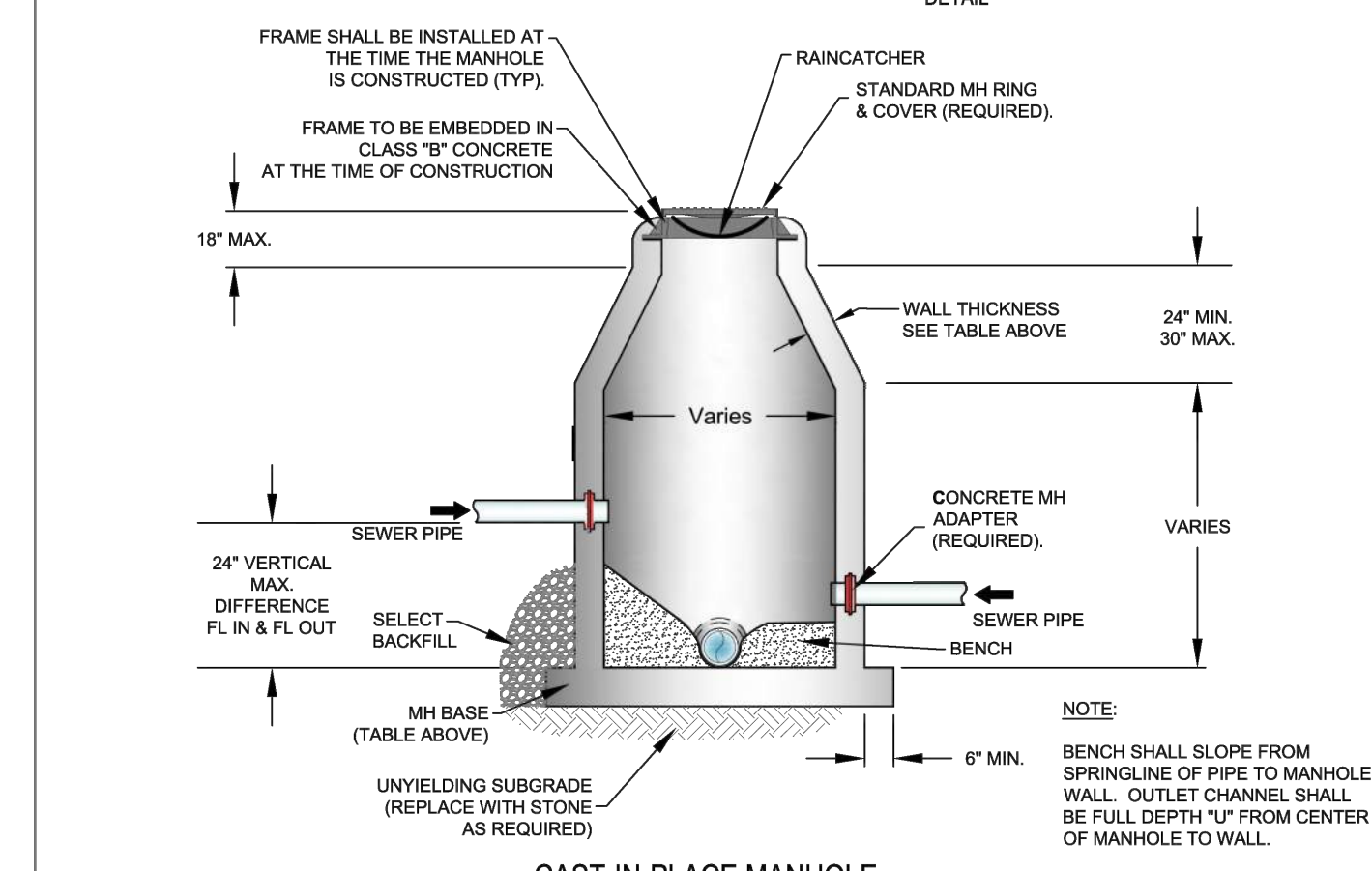
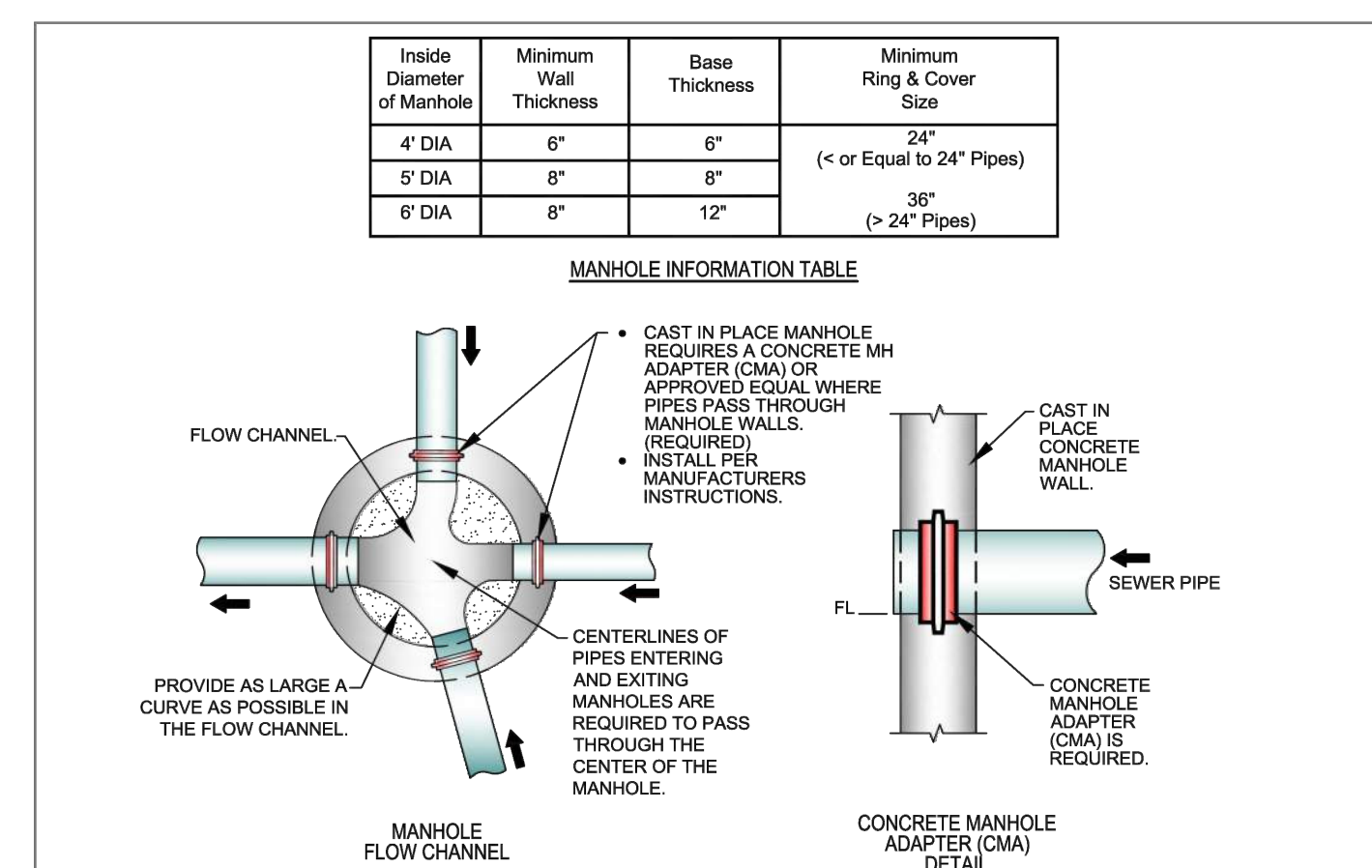
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 843-0488

SEWER DETAILS
SEWER TRENCH (UNDER PAVEMENT)

DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S2-Sewer Trench (Under Pavement).dwg

S2



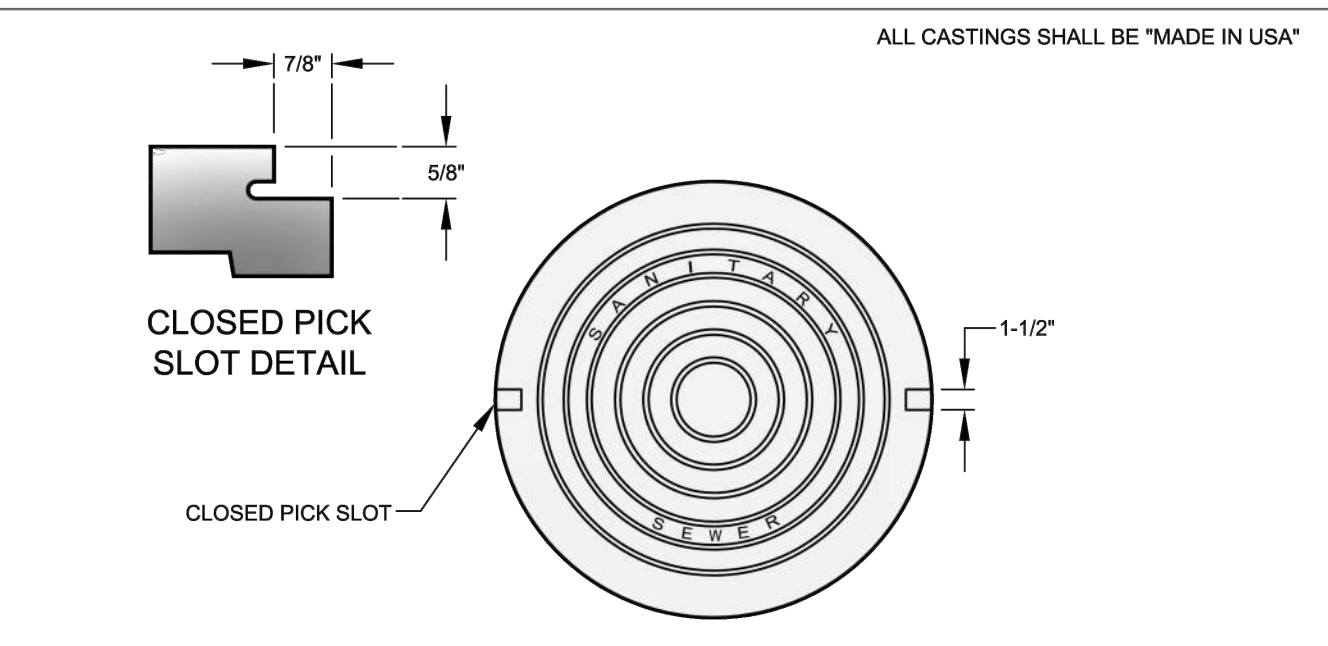
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 843-0488

SEWER DETAILS
CAST-IN-PLACE MANHOLE

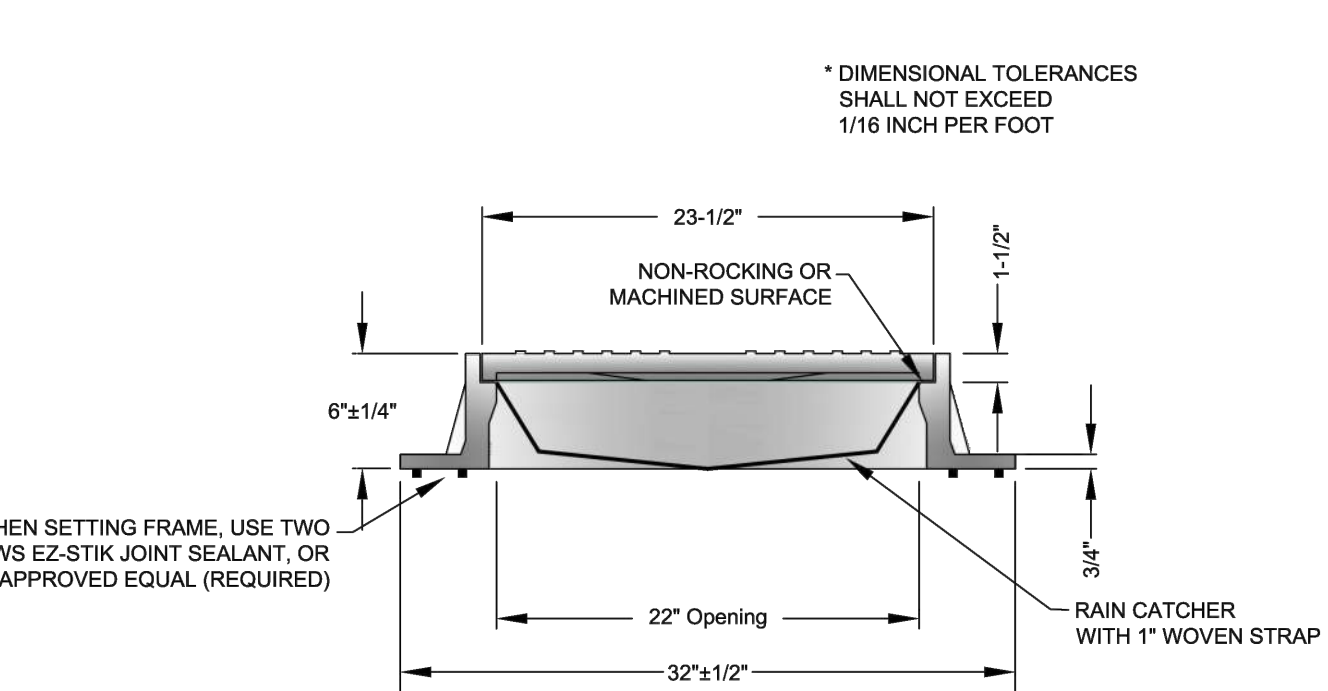
DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S4-Cast In Place Manhole.dwg

S4



- COVER DETAIL**
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**
- WHEN SETTING FRAME, USE TWO ROWS EZ-STIK JOINT SEALANT, OR APPROVED EQUAL (REQUIRED)

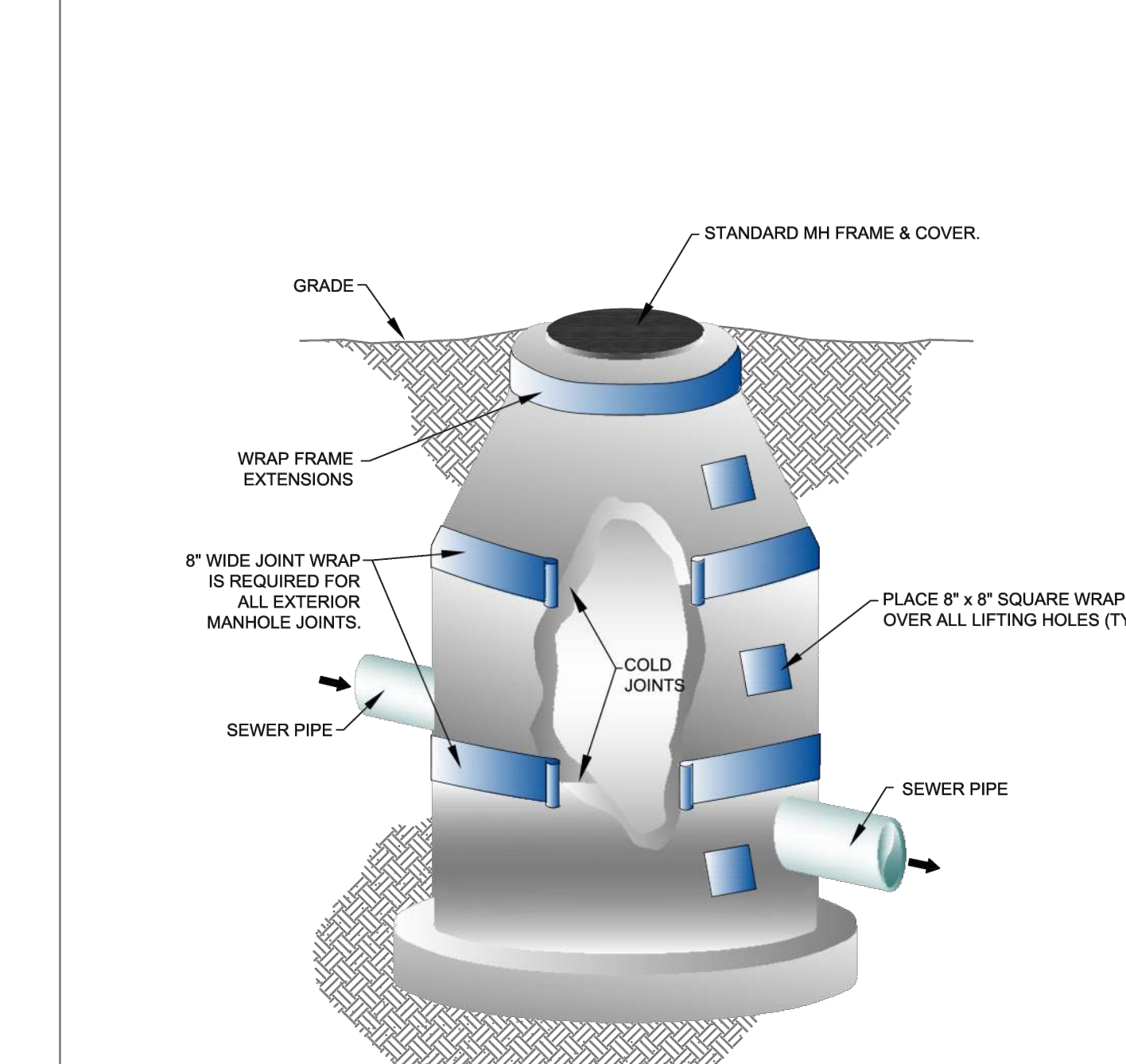
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 843-0488

SEWER DETAILS
MANHOLE FRAME AND COVER

DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S6-Manhole Frame and Cover.dwg

S6



- MANHOLE JOINT WRAP**
- NOTE: JOINT WRAP TO BE USED:
- ON OUTSIDE OF COLD JOINTS
 - ON EXTERIOR OF ALL PRECAST MANHOLE JOINTS
 - ON LIFT HOLES / SOCKETS

CITY OF BRYANT, AR
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210 S.W. 3rd. STREET
BRYANT, AR
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SEWER DETAILS
MANHOLE JOINT WRAP

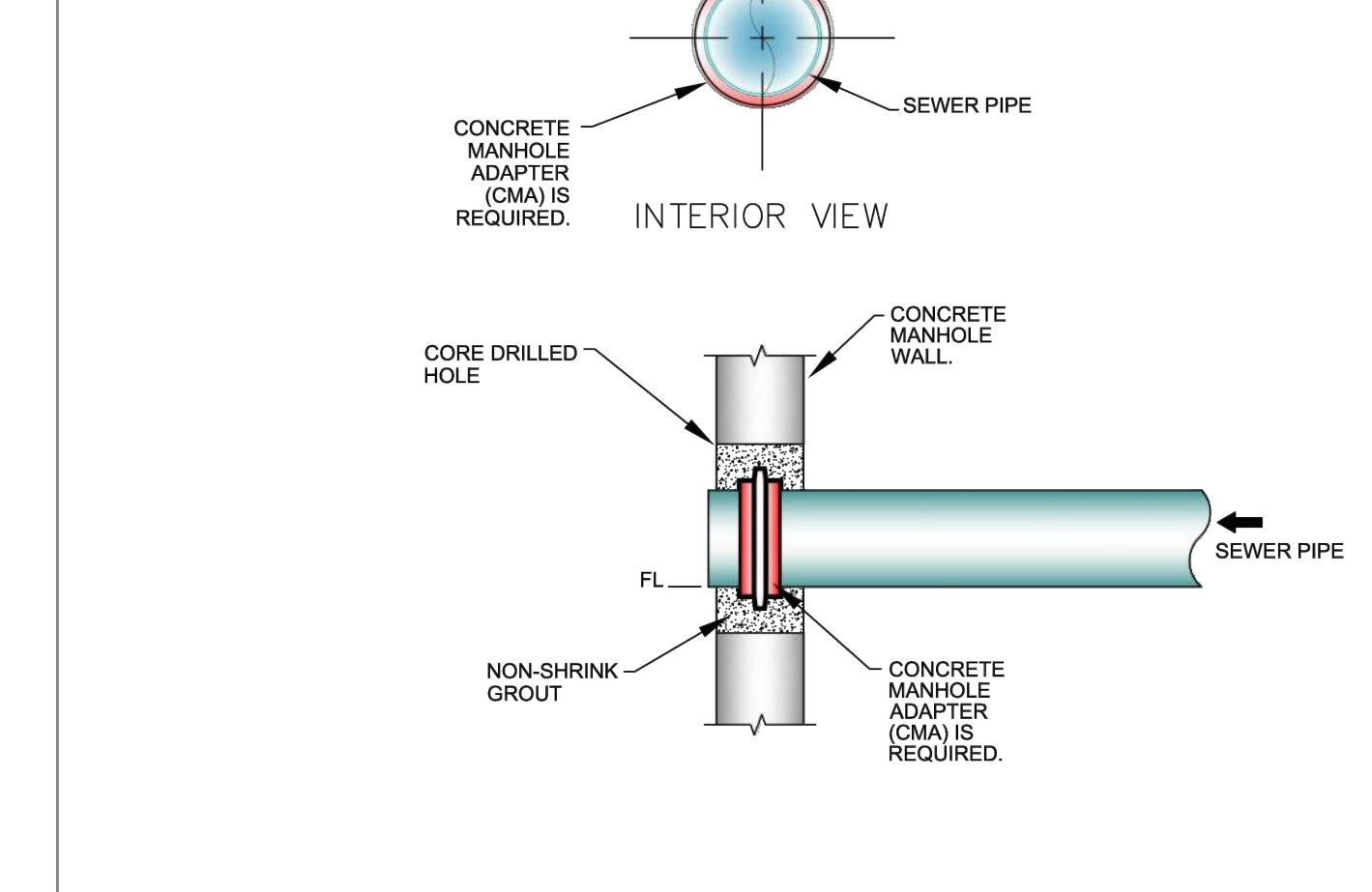
DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S9-Manhole Joint Wrap.dwg

S9



- MANHOLE CORING DETAILS**
- THE INSTALLATION SHALL BE DYE TESTED FOR ACCEPTANCE.



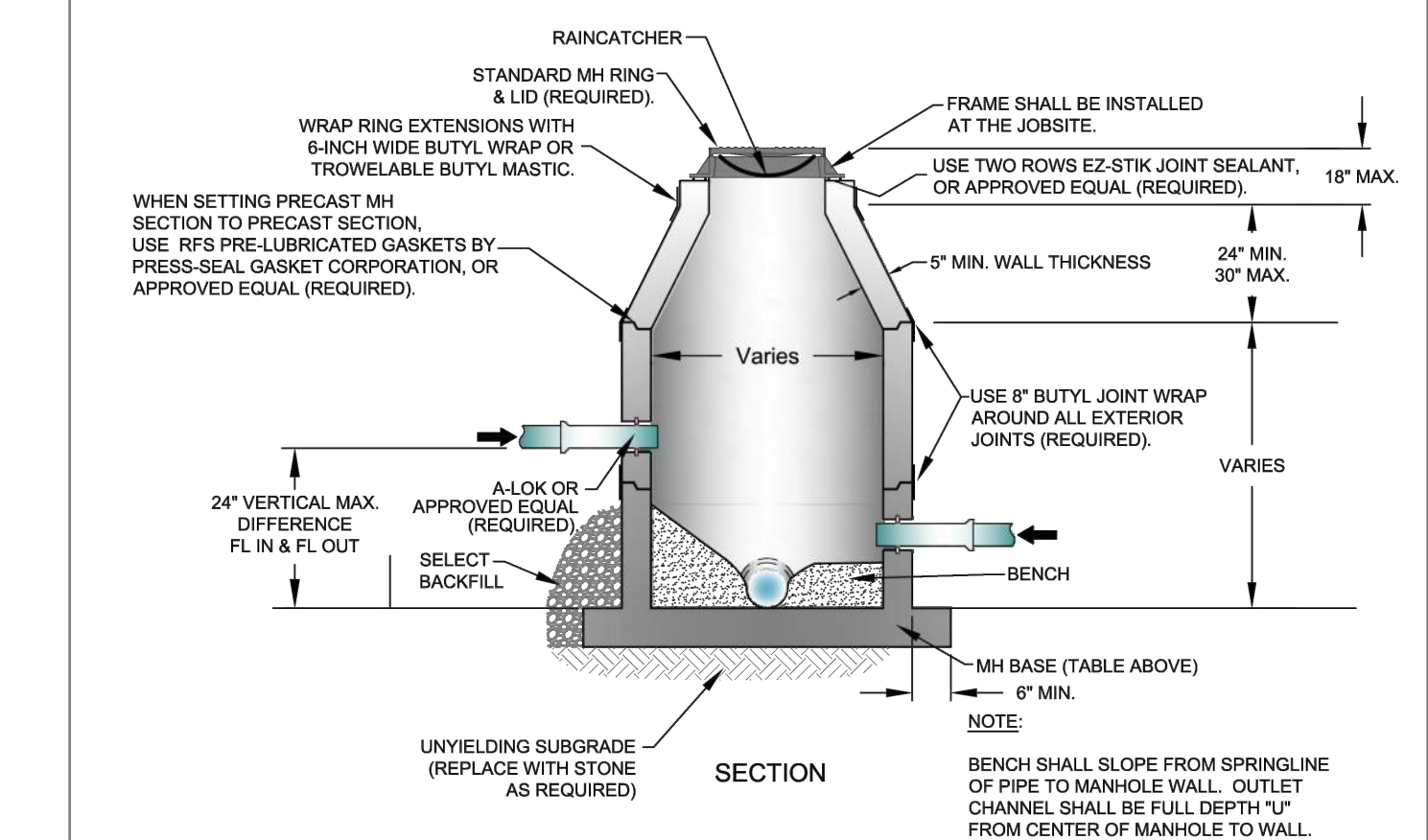
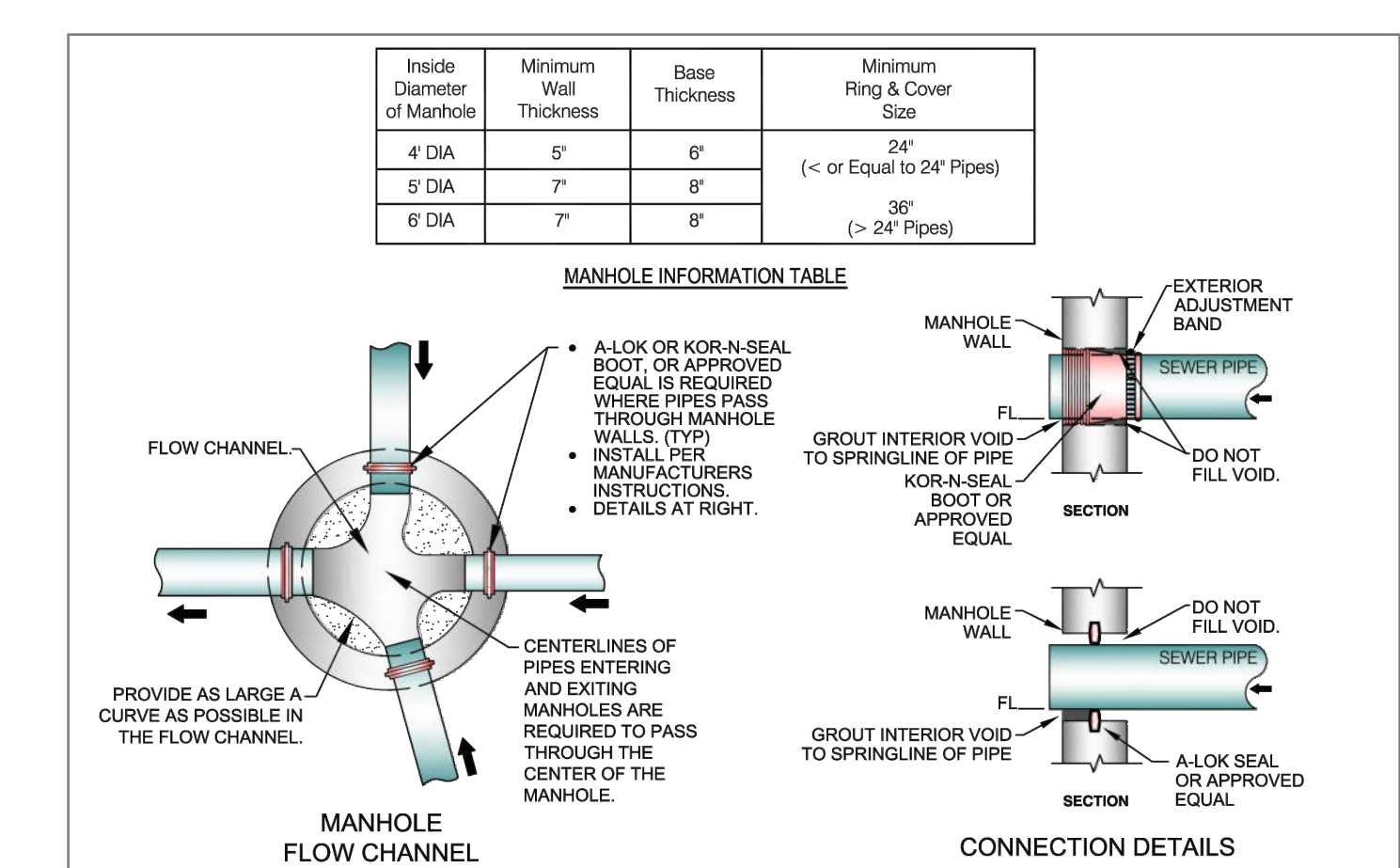
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 843-0488

SEWER DETAILS
MANHOLE CORING

DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S11-Manhole Coring.dwg

S11



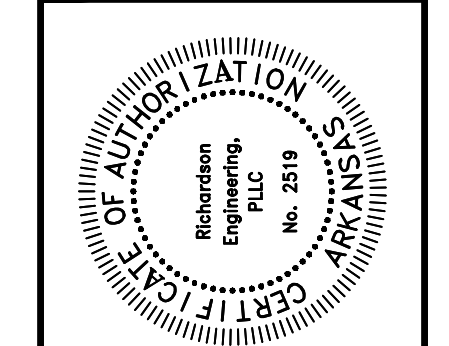
CITY OF BRYANT, AR
WATER UTILITIES
210 S.W. 3rd. STREET
BRYANT, AR
PHONE: (501) 843-0488

SEWER DETAILS
SEWER SERVICE LATERAL

DATE: APRIL 2015
REVISIONS: [REDACTED]

DRAWN BY: [REDACTED] CHECKED BY: [REDACTED] FILE: S15-Sewer Service Lateral.dwg

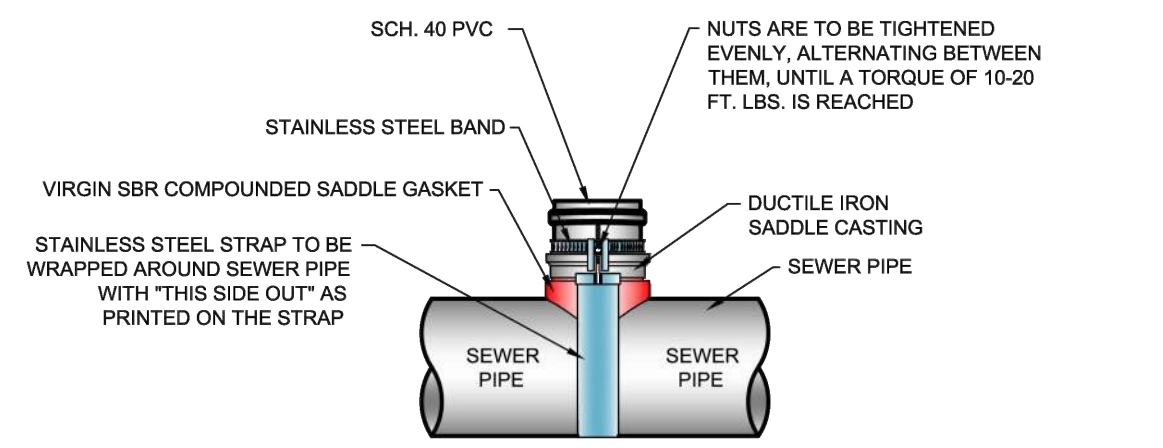
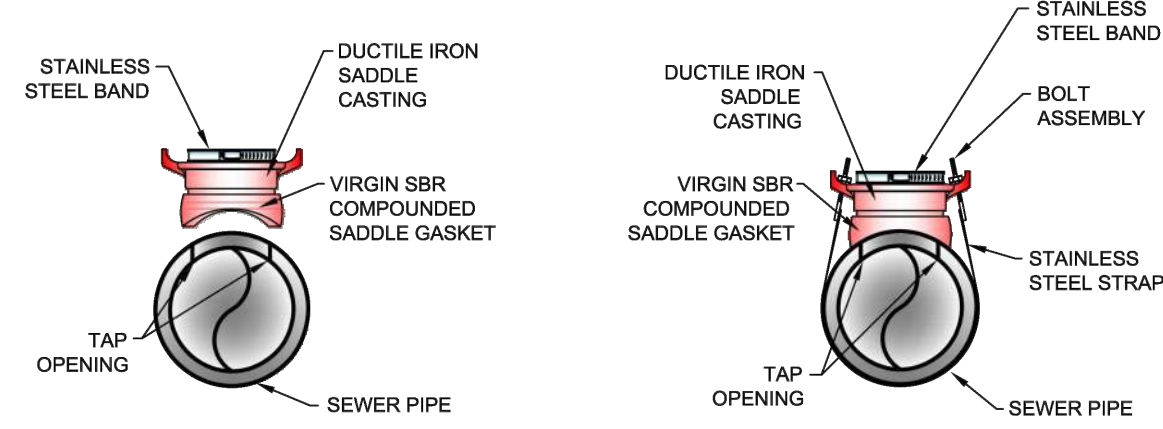
S15



MISC. DETAILS
ZYAIR ESTATES
SUBDIVISION
HILLTOP ROAD
BRYANT, ARKANSAS

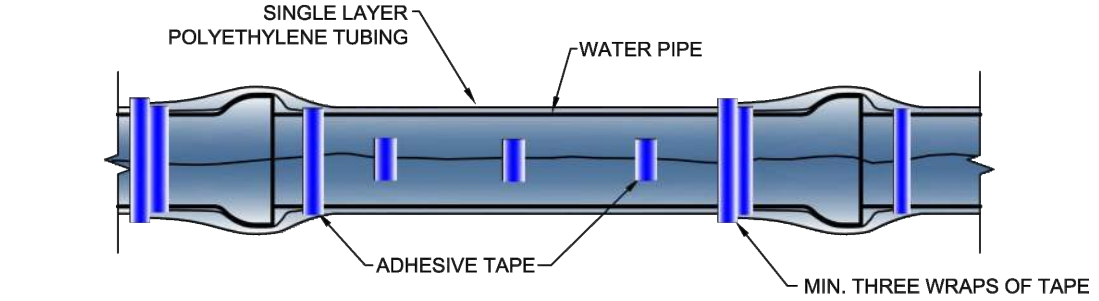


PROJECT NO.: 024-034
DATE: 3/3/2026
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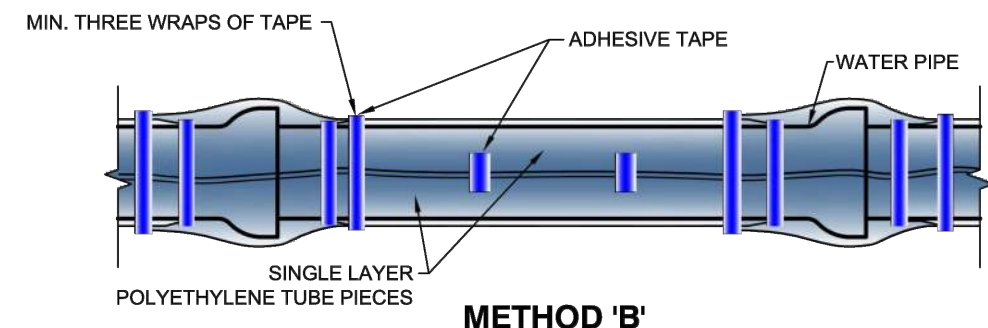


SEWER SERVICE SADDLE

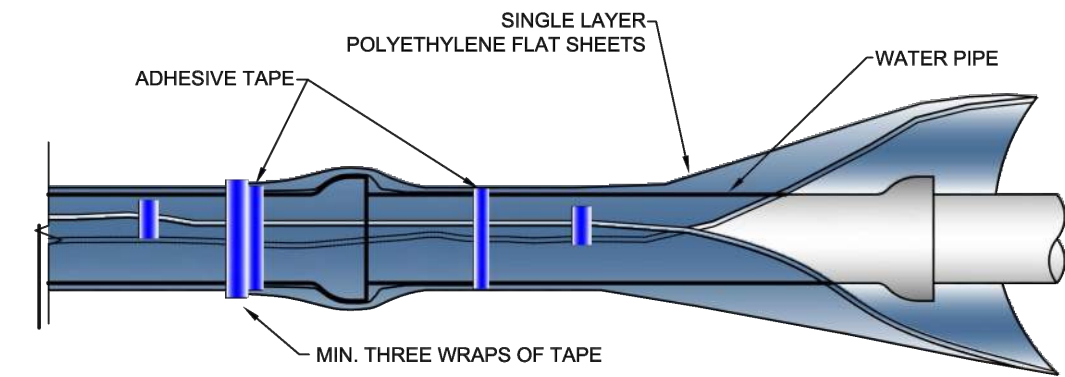
CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd. STREET BRYANT, AR PHONE: (501) 843-0488	TITLE: SEWER DETAILS DESCRIPTION: SEWER SERVICE SADDLE	DATE: APRIL 2015 REVISIONS:	SHEET: S17
	DRAWN BY: [] CHECKED BY: [] FILE: S17-Sewer Service Saddle.dwg		



METHOD 'A'
 METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS A MINIMUM OF 2 FEET.



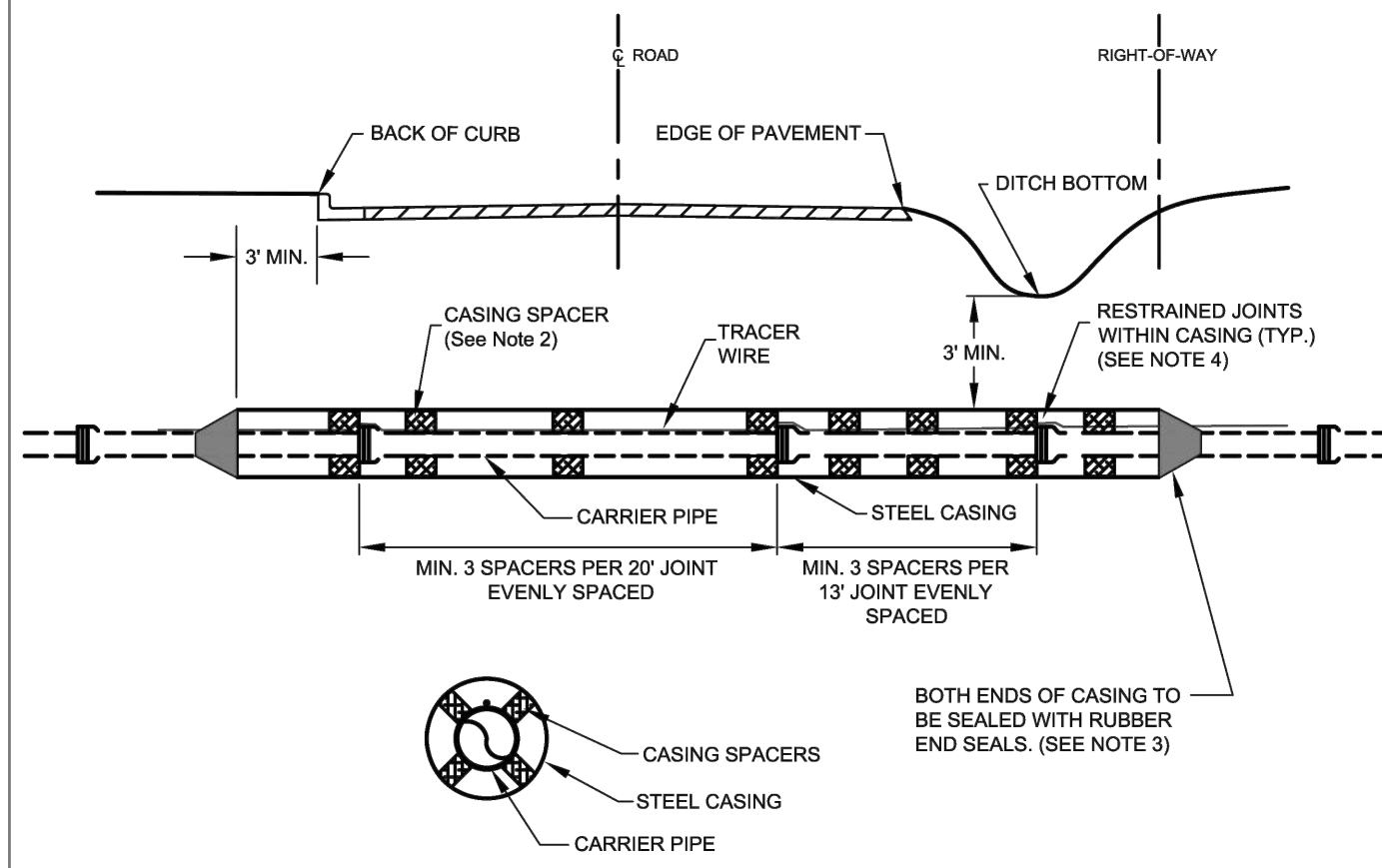
METHOD 'B'
 METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. SHORT PIECES SHALL BE APPROXIMATELY 6' LONG AND OVERLAP BARREL SECTION BY A MINIMUM OF 2 FEET.



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 ANSII/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASEMENT/ SLEEVING.

CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd. STREET BRYANT, AR PHONE: (501) 843-0488	TITLE: SEWER DETAILS DESCRIPTION: POLYETHYLENE PROTECTION MATERIAL	DATE: APRIL 2015 REVISIONS:	SHEET: S20
	DRAWN BY: [] CHECKED BY: [] FILE: S20-Poly Wrapping		



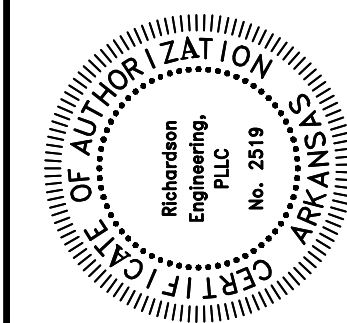
NOTES:

- STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL WITH A MINIMUM DIAMETER AND THICKNESS AS SHOWN BELOW (SEE TABLE).
- PROVIDE CASING SPACERS BY CASCADE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL, MINIMUM 12-INCHES WIDE.
- PROVIDE END SEALS BY CASCADE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
- ONE CASING SPACER SHALL BE PLACED AT THE INSERTION STOP LINE TO RESIST OVER INSERTION.
- ALL FORCE MAINS SHALL BE FULLY RESTRAINED WHERE ENCASEMENTS ARE GREATER THAN 28 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.
- DIRECT BURY STEEL ENCASEMENT SHALL BE POLY WRAPPED.

CARRIER AND CASING SIZES							
CARRIER (OD)	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 (OD)	14"	16"	18"	20"	24"	30"	36"
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

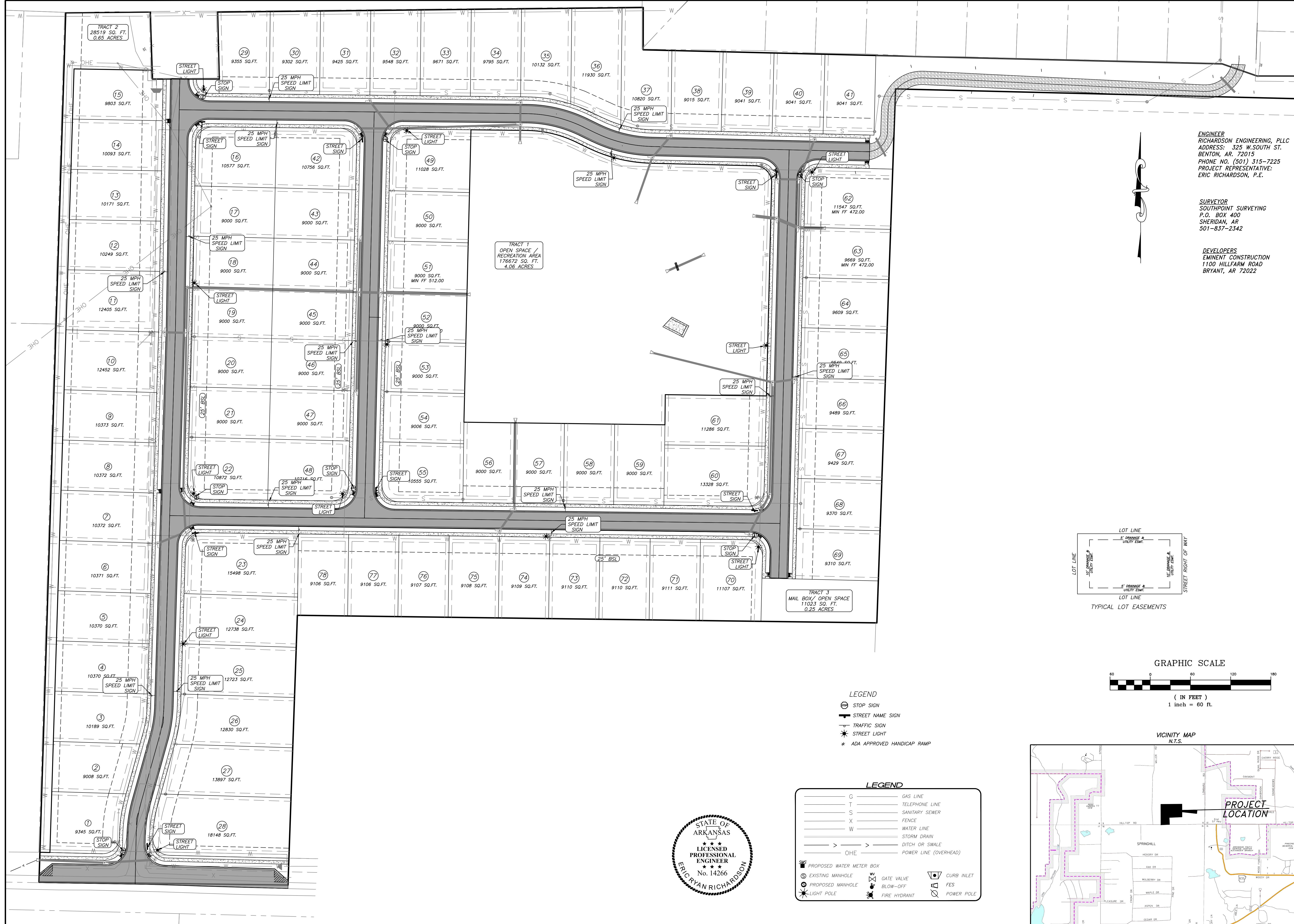
CITY OF BRYANT, AR WATER UTILITIES 210 S.W. 3rd. STREET BRYANT, AR PHONE: (501) 843-0488	TITLE: SEWER DETAILS DESCRIPTION: STEEL ENCASEMENT	DATE: APRIL 2015 REVISIONS:	SHEET: S21
	DRAWN BY: [] CHECKED BY: [] FILE: S21-Steel Encasement.dwg		



MISC. DETAILS
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



PROJECT NO.: 024-034	Date: 3/3/2026	Scale: NTS	Sheet: 24 of 25
No. 7	Revisions: AS PER CITY COMMENTS	Date: 4/7/2026	Prepared For: Eminent Constructions

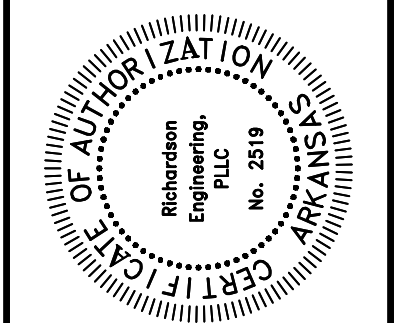


ENGINEER
 RICHARDSON ENGINEERING, PLLC
 ADDRESS: 325 W. SOUTH ST.
 BENTON, AR. 72015
 PHONE NO. (501) 315-7225
 PROJECT REPRESENTATIVE:
 ERIC RICHARDSON, P.E.

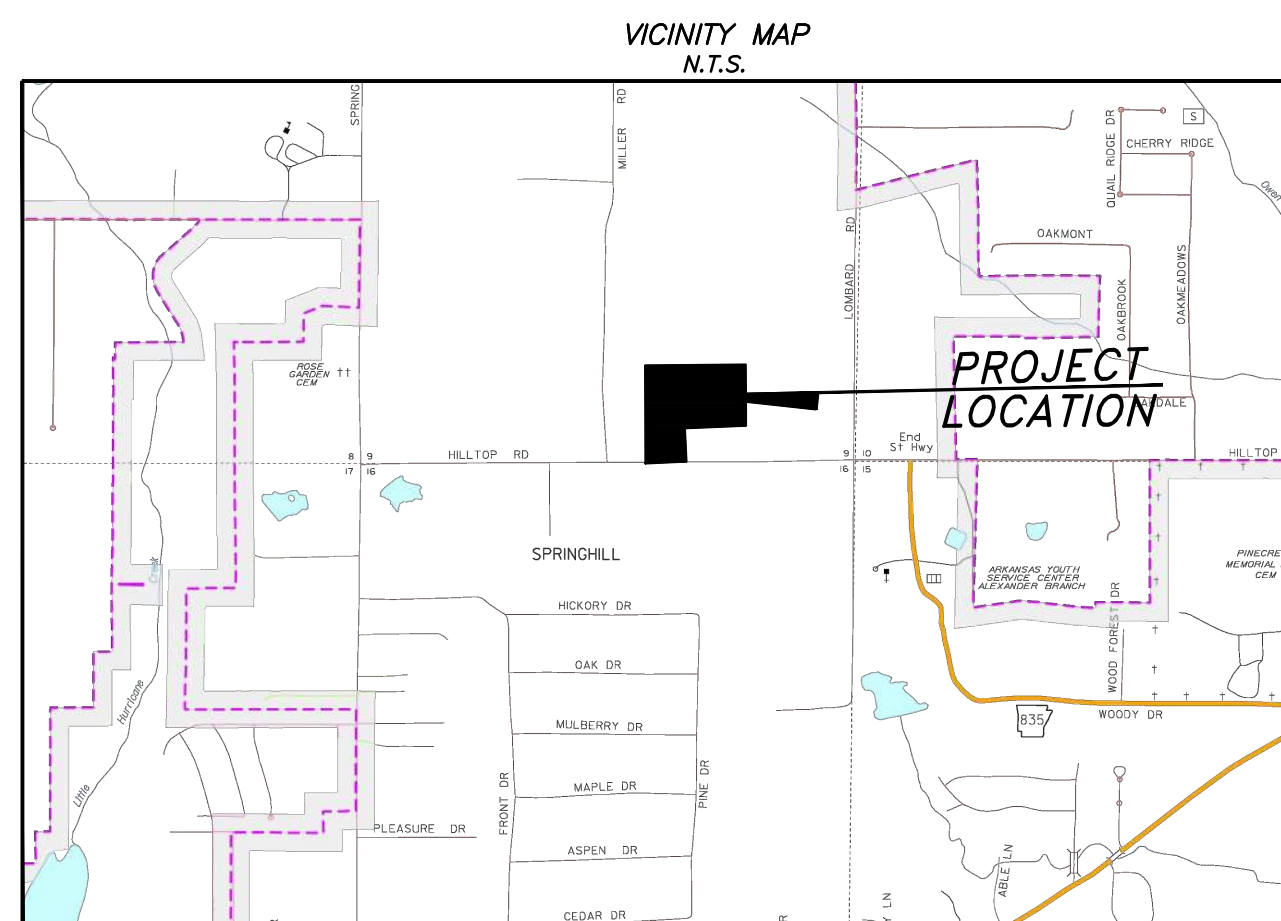
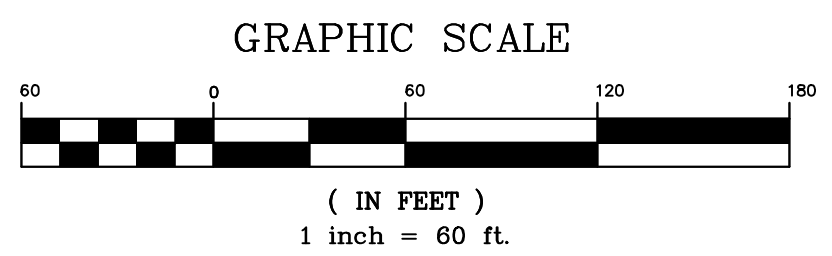
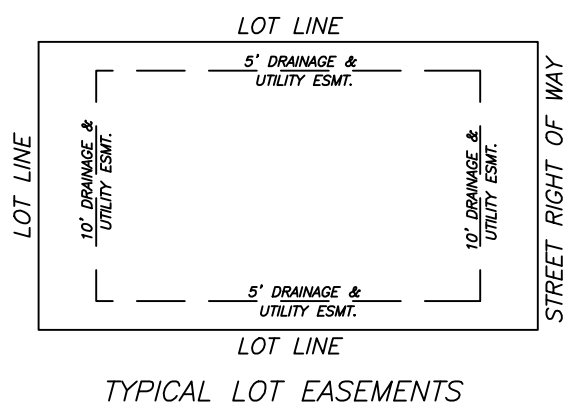
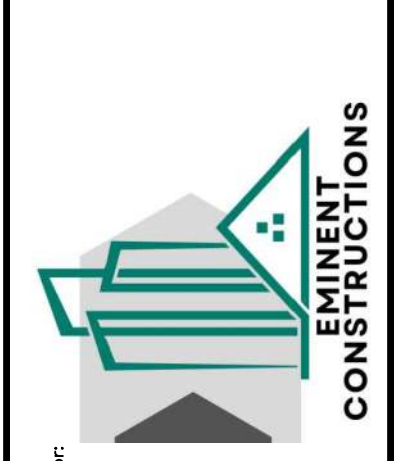
SURVEYOR
 SOUTHPOINT SURVEYING
 P.O. BOX 400
 SHERIDAN, AR
 501-837-2342

DEVELOPERS
 EMINENT CONSTRUCTION
 1100 HILLFARM ROAD
 BRYANT, AR 72022

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 325 W. SOUTH STREET, BENTON, AR 72015 (501)315-7225



STREET LIGHT & STREET SIGNAGE PLAN
 ZYAIR ESTATES
 SUBDIVISION
 HILLTOP ROAD
 BRYANT, ARKANSAS



- 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)
 - ◻ PROPOSED WATER METER BOX
 - EXISTING MANHOLE
 - PROPOSED MANHOLE
 - ★ LIGHT POLE
 - ⊕ GATE VALVE
 - ⊖ BLOW-OFF
 - ★ FIRE HYDRANT
 - ◻ CURB INLET
 - FES
 - ⊕ POWER POLE



Prepared For:	
Date:	4/7/2026
Revisions:	
No. 1	AS PER CITY COMMENTS
PROJECT NO.:	024-034
Date:	3/3/2026
Scale:	1" = 60'
Sheet:	25 of 25



RICHARDSON ENGINEERING

Planning • Engineering • Development Consulting

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

PROJECT 024-034 ZYAIR ESTATES (Hilltop Manor)

DATE 4-8-26

Soil Loss Calculations

Initial Soil Loss Calculation (No Controls)

$$A = 300 (K)(LS)(C)(P)$$

$K = 0.32$ (SCS CLASSIFICATION MAP)

$LS = 2.9$ (6-1000 @ 9.0%)

$C = 1$ (NO CONTROLS)

$P = 1$ (NO CONTROLS)

$$A = 300 (0.32)(2.9)(1)(1) = 278.4 \text{ Tons/AC/yr} > 5 \therefore \text{CONTROLS ARE REQ'D}$$

Soil Loss Calculation (w/ Controls)

$$A = 300 (K)(LS)(C)(P)$$

$K = 0.32$ (SCS CLASSIFICATION MAP)

$LS = 0.97$ (1000' @ 9%)

$C = 0.06$ (2 TONS Hay/SEED/AC)

$P = 0.50$

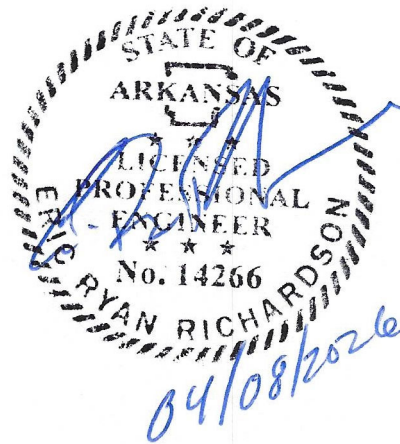
$$A = (300)(0.32)(0.97)(0.06)(0.5) = 2.77 \text{ Tons/AC/yr} < 5 \checkmark$$

Drainage Report

For

Hilltop Manor Subdivision

Bryant, Saline County, Arkansas



April 8, 2026

Prepared by:

RICHARDSON ENGINEERING, PLLC

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

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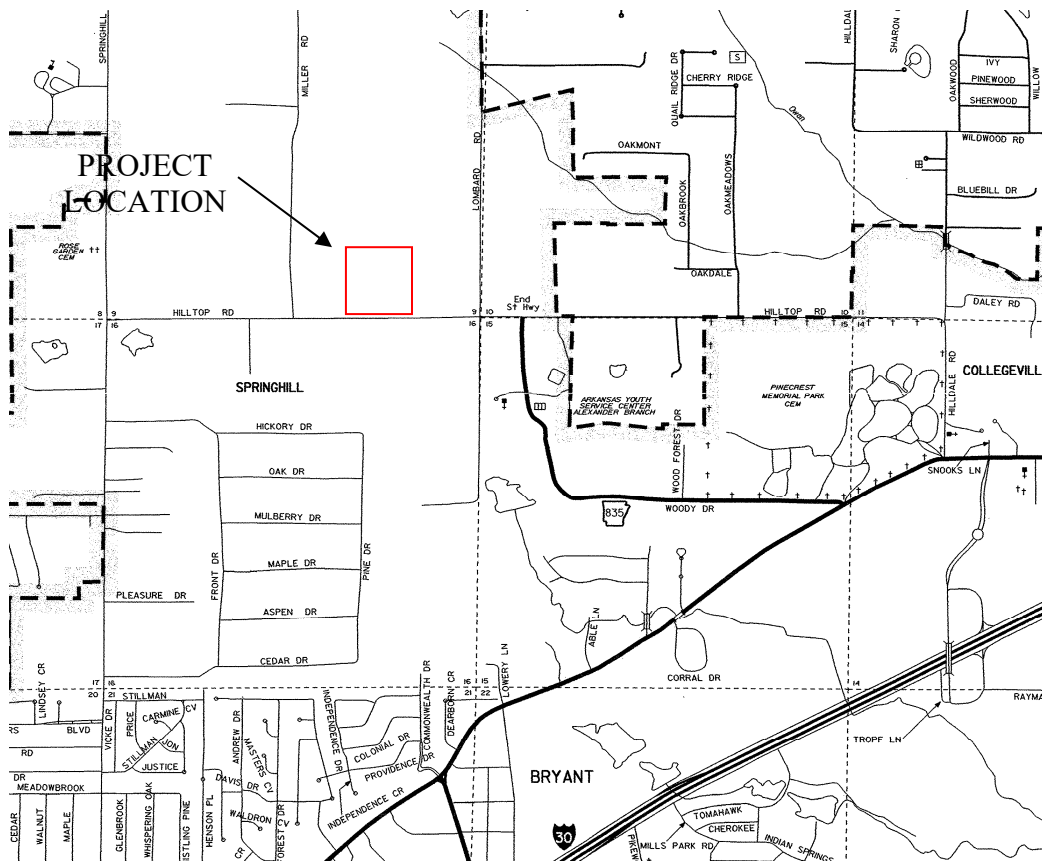
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Project Owner Information

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 Quarter 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 modified 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 42,611 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 53,264 CF.

Post-Development Basin A, B, and C consist of the 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 to 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: 71.08 Acres

Drainage Basins	Drainage Area (Ac)	C Value	Time of Concentration (min)
Basin A	3.53	0.66	14
Basin B	12.45	0.56	18
Basin C	6.75	0.57	11
Basin D	2.59	0.56	8
Basin E-1	16.23	0.66	17
Basin E-2	17.53	0.56	13
Basin F	12.00	0.56	16

Design Storm	Basin A (cfs)	Basin B (cfs)	Basin C (cfs)	Basin D (cfs)
2-yr	8.98	23.98	16.54	7.20
10-yr	12.04	32.19	22.16	9.64
25-yr	13.84	37.00	25.47	11.08
50-yr	15.14	40.48	27.85	12.11
100-yr	16.43	43.93	30.24	13.15

Design Storm	Basin E-1 (cfs)	Basin E-2 (cfs)	Basin F (cfs)
2-yr	37.81	39.12	24.38
10-yr	50.74	52.46	32.71
25-yr	58.33	60.29	37.60
50-yr	63.81	65.94	41.13
100-yr	69.26	71.59	44.65

Basin A

Pre-Development Drainage Study Area = 3.20
Post-Development Drainage Study Area = 3.53
Existing Condition runoff Coefficient: C = 0.62
Proposed runoff Coefficient: C = 0.66
Tc Undeveloped = 11 Minutes (TR55 Method)
Tc Developed = 14 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post- Development Flow Rate (cfs)	Difference (cfs)
2-yr	8.53	8.98	+0.45
10-yr	11.43	12.04	+0.61
25-yr	13.13	13.84	+0.71
50-yr	14.36	15.14	+0.78
100-yr	15.60	16.43	+0.83

Basin B

Pre-Development Drainage Study Area = 14.7
Post-Development Drainage Study Area = 12.45
Existing Condition runoff Coefficient: C = 0.52
Proposed runoff Coefficient: C = 0.56
Tc Undeveloped = 15 Minutes (TR55 Method)
Tc Developed = 18 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post- Development Flow Rate (cfs)	Difference (cfs)
2-yr	28.63	23.98	-4.65
10-yr	38.41	32.19	-6.22
25-yr	44.15	37.00	-7.15
50-yr	48.29	40.48	-7.81
100-yr	52.42	43.93	-8.49

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	24.90	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 = 2.59
Existing Condition runoff Coefficient: C = 0.50
Proposed runoff Coefficient: C = 0.56
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	7.20	-0.12
10-yr	9.80	9.64	-0.16
25-yr	11.26	11.08	-0.18
50-yr	12.31	12.11	-0.20
100-yr	13.38	13.15	-0.23

Basin E

Pre-Development Drainage Study Area = 30.16
 Post-Development Drainage Study Area = 33.76
 Existing Condition runoff Coefficient: C = 0.50/0.52
 Proposed runoff Coefficient: C = 0.66/0.56
 Tc Undeveloped = 12/13 Minutes (TR55 Method)
 Tc Developed = 17/13 Minutes (TR55 Method)
 Detention Basin Required Volume: 42,611 CF
 Detention Basin Volume: 177,357 CF
 Maximum Storage: 92,311 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	61.27	69.48	39.66	477.15
10-yr	82.16	93.21	53.39	477.88
25-yr	94.42	107.1	61.49	478.31
50-yr	103.3	117.2	67.36	478.63
100-yr	112.1	127.2	73.24	478.93

Should the culvert get 100 percent blocked and the water can only be discharged from the pond over the top of the overflow weir structure, the maximum water elevation in the pond reaches 479.92. The water elevations for the other design storms can be seen in the appendix.

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	24.38	-0.30
10-yr	33.12	32.71	-0.41
25-yr	38.07	37.60	-0.47
50-yr	41.64	41.13	-0.51
100-yr	45.20	44.65	-0.55

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
Overflow Wier Blockage Calculation
SSA Design Layout
Storm System Design (SSA)
Detention Pond Storage Estimate
Culvert Blockage Simulation
Pond and Post Development Hydrographs (Hydrology Studio)

Runoff Coefficient Calculations

Pre-Development Basin A

Land Use	Area (ac)	C Value	Area × C
Impervious	0.2	0.95	0.19
Residential (1/2 ac or larger)	2.09	0.65	1.3585
Undeveloped	0.39	0.5	0.195
Ditches	0.52	0.49	0.2548
TOTAL AREA / SUM	3.2		1.9983
Weighted C	0.62		

Pre-Development Basin B

Land Use	Area (ac)	C Value	Area × C
Impervious	0.19	0.95	0.1805
Residential (1/2 ac or larger)	0.29	0.65	0.1885
Undeveloped	14.26	0.5	7.13
TOTAL AREA / SUM	14.74		7.499
Weighted C	0.51		
Basin CFS			

Pre-Development Basin C

Land Use	Area (ac)	C Value	Area × C
Impervious	0.1	0.95	0.095
Residential (1/2 ac or larger)	1.66	0.65	1.079
Commercial (WT)	0.23	0.8	0.184
Undeveloped	4.85	0.5	2.425
TOTAL AREA / SUM	6.84		3.783
Weighted C	0.55		

Pre-Development Basin D

Land Use	Area (ac)	C Value	Area × C
Undeveloped	2.95	0.5	1.475

TOTAL AREA / SUM	2.95	1.475
Weighted C	0.50	

Pre-Development Basin E-1			
Land Use	Area (ac)	C Value	Area × C
Undeveloped	11.2	0.5	5.6

TOTAL AREA / SUM	11.2	5.6
Weighted C	0.50	

Pre-Development Basin E-2			
Land Use	Area (ac)	C Value	Area × C
Single Family Res.	1.2	0.7	0.84
Residential (1/2 ac or larger)	1	0.65	0.65
Undeveloped	16.76	0.5	8.38

TOTAL AREA / SUM	18.96	9.87
Weighted C	0.52	

Pre-Development Basin F			
Land Use	Area (ac)	C Value	Area × C
Impervious	0.35	0.95	0.3325
Residential (1/2 ac or larger)	1.62	0.65	1.053
Undeveloped	11.22	0.5	5.61

TOTAL AREA / SUM	13.19	6.9955
Weighted C	0.53	

Pre-Development Basin G

Land Use	Area (ac)	C Value	Area × C
Residential (1/2 ac or larger)	0.1	0.65	0.065
Undeveloped	0.16	0.5	0.08
TOTAL AREA / SUM	0.26		0.145
Weighted C	0.56		
TOTAL AREA / SUM	0.82		0.145
Weighted C	0.18		

Pre-Development Basin H

Land Use	Area (ac)	C Value	Area × C
Residential (1/2 ac or larger)	1.59	0.65	1.0335
Undeveloped	0	0.5	0
TOTAL AREA / SUM	1.59		1.0335
Weighted C	0.65		

Post-Development Basin A

Land Use	Area (ac)	C Value	Area × C
Impervious	0.28	0.95	0.266
Residential (1/2 ac or larger)	2.09	0.65	1.3585
Single Family	0.68	0.7	0.476
Ditches	0.48	0.49	0.2352
TOTAL AREA / SUM	3.53		2.3357
Weighted C	0.66		

Post-Development Basin B

Land Use	Area (ac)	C Value	Area × C
Impervious	0.19	0.95	0.1805
Residential (1/2 ac or larger)	0.29	0.65	0.1885
Single Family	3.33	0.7	2.331
Undeveloped	8.64	0.5	4.32
TOTAL AREA / SUM	12.45		7.02
Weighted C	0.56		

Post-Development Basin C

Land Use	Area (ac)	C Value	Area × C
Impervious	0.1	0.95	0.095
Residential (1/2 ac or larger)	1.66	0.65	1.079
Single Family	0.44	0.7	0.308
Commercial (WT)	0.23	0.8	0.184
Undeveloped	4.32	0.5	2.16
TOTAL AREA / SUM	6.75		3.826
Weighted C	0.57		

Post-Development Basin D

Land Use	Area (ac)	C Value	Area × C
Single Family	0.73	0.7	0.511
Undeveloped	1.86	0.5	0.93

TOTAL AREA / SUM	2.59	1.441
Weighted C	0.56	

Post-Development Basin E-1			
Land Use	Area (ac)	C Value	Area × C
Single Family	13.3	0.7	9.31
Undeveloped	2.93	0.5	1.465

TOTAL AREA / SUM	16.23	10.775
Weighted C	0.66	

Post-Development Basin E-2			
Land Use	Area (ac)	C Value	Area × C
Single Family	4.52	0.7	3.164
Residential (1/2 ac or larger)	1	0.65	0.65
Undeveloped	11.69	0.5	5.845
Gravel	0.32	0.65	0.208

TOTAL AREA / SUM	17.53	9.867
Weighted C	0.56	

Post-Development Basin F			
Land Use	Area (ac)	C Value	Area × C
Impervious	0.47	0.95	0.4465
Single Family	1.6	0.7	1.12
Residential (1/2 ac or larger)	1.62	0.65	1.053
Undeveloped	8.31	0.5	4.155
TOTAL AREA / SUM	12	6.7745	
Weighted C	0.56		

Post-Development Basin G

Land Use	Area (ac)	C Value	Area × C
Impervious	0.03	0.95	0.0285
Single Family	0.13	0.7	0.091
Undeveloped	0.1	0.5	0.05
TOTAL AREA / SUM	0.26		0.1695
Weighted C	0.65		
TOTAL AREA / SUM	1.01		0.2195
Weighted C	0.22		

Post-Development Basin H

Land Use	Area (ac)	C Value	Area × C
Impervious	0.09	0.95	0.0855
Single Family	1.59	0.7	1.113
Undeveloped	0	0.5	0
TOTAL AREA / SUM	1.68		1.1985
Weighted C	0.71		

Runoff Coefficients

Land Use Types	Frequency		
	10	25	100
<u>Business</u>			
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	<u>0.8</u>
<u>Residential</u>			
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	<u>0.65</u>
Apartments	.70 (.50-.80)	0.75	0.8
<u>Industrial</u>			
Light Areas	.80 (.50-.85)	0.82	0.85
Heavy Areas	.85 (.60-.90)	0.87	0.9
<u>Miscellaneous</u>			
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

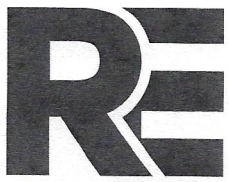
Runoff Coefficients for Rational Method Composite Analysis

Land Use Types	Frequency		
	10	25	100
<u>Undeveloped Areas</u>			
Historic Flow Analysis, Greenbelts Agricultural, Natural Vegetation			
<u>Clay Soil</u>			
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
<u>Sandy Soil</u>			
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
<u>Streets</u>			
Paved	0.9	0.92	0.95
Gravel	0.35	0.5	0.65
<u>Miscellaneous</u>			
Drives and Walks	0.9	0.91	0.92
Roofs	0.9	0.92	0.95
Lawns			
<u>Clay Soil</u>			
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
<u>Sandy Soil</u>			
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



PROJECT 024-034 Tc (CALCULATION)

DATE 03/07/2026

POST-DEV BASIN "E1"

SUB CB-28 $T_c = 15.08 \text{ MIN}$

$$\text{PIPE - 22} \Rightarrow \frac{6}{(0.1)(60)} = \frac{58}{(8.75)(60)} = 0.11 \text{ MIN}$$

$$\text{PIPE - 21} \Rightarrow \frac{237}{(4.4)(60)} = 0.89 \text{ MIN}$$

$$\text{PIPE - 110} \Rightarrow \frac{70}{(7.8)(60)} = 0.15 \text{ MIN}$$

$$\text{PIPE 10} \Rightarrow \frac{256}{(7.38)(60)} = 0.58 \text{ MIN}$$

$$\text{PIPE 9} \Rightarrow \frac{83}{(9.67)(60)} = 0.057 \text{ MIN}$$

$$\underline{T_c = 17.43 \text{ MIN}}$$

$$\text{PIPE 8} \Rightarrow \frac{130}{(22.75)(60)} = 0.095 \text{ MIN}$$

FES \rightarrow POND

$$\therefore L = 153 \text{ FT} \quad S = \frac{492 - 475}{153} = 0.111 \Rightarrow 11.11\%$$

$$V = 16.1345 (S)^{0.5} = 16.1345 (0.1111)^{0.5} = 5.38 \text{ FT}^3$$

$$T_c = 153 \div (5.38 * 60) = 0.47 \text{ MIN}$$

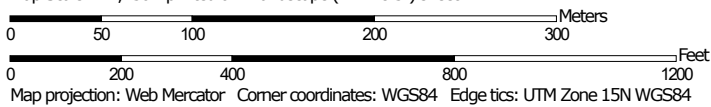
NRCS Soil Report

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




Soil Map may not be valid at this scale.

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





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 & aerals](#)

PF tabular

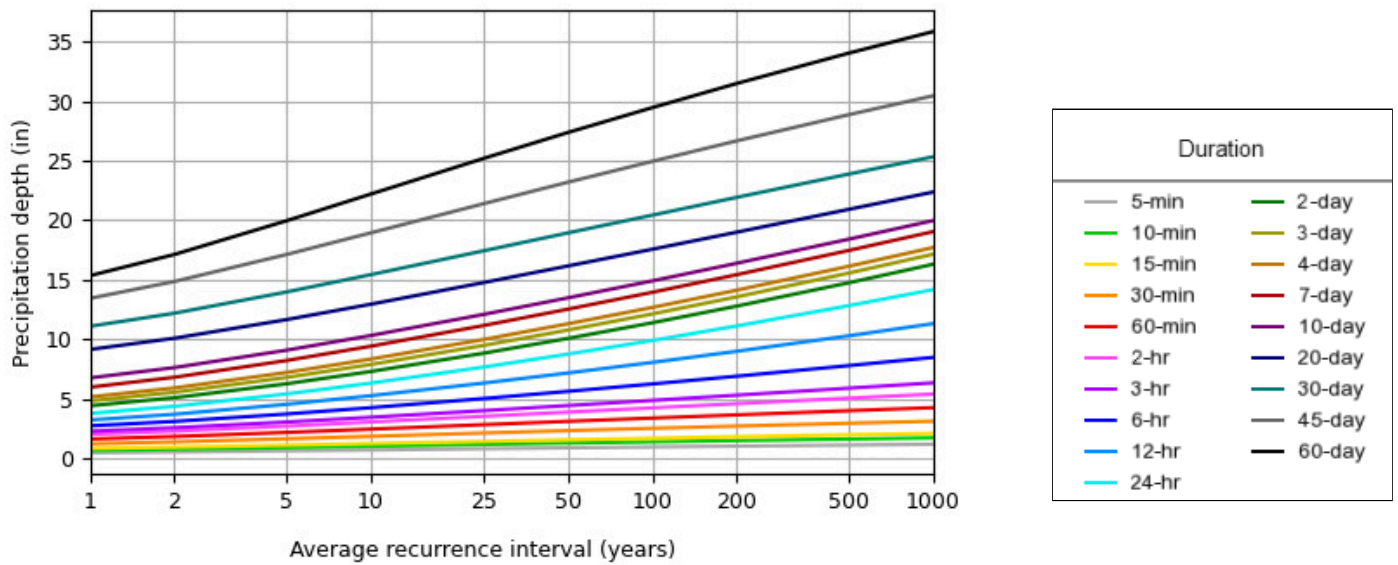
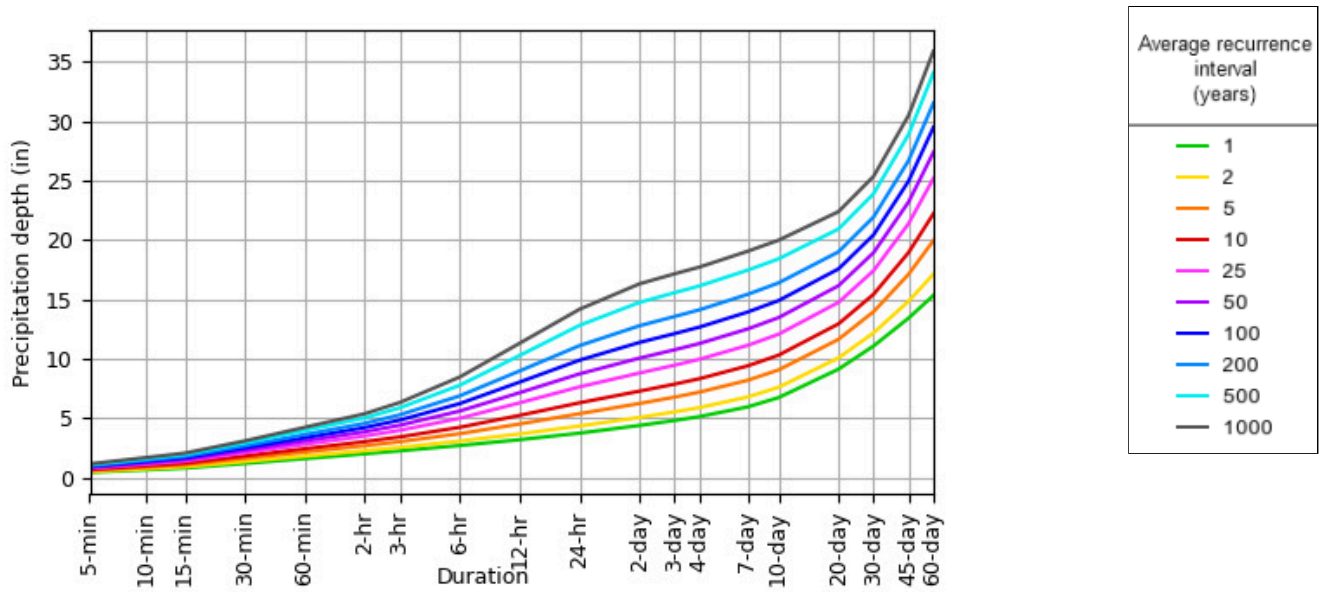
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.452 (0.366-0.553)	0.512 (0.414-0.627)	0.607 (0.490-0.746)	0.684 (0.549-0.844)	0.786 (0.608-0.994)	0.861 (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

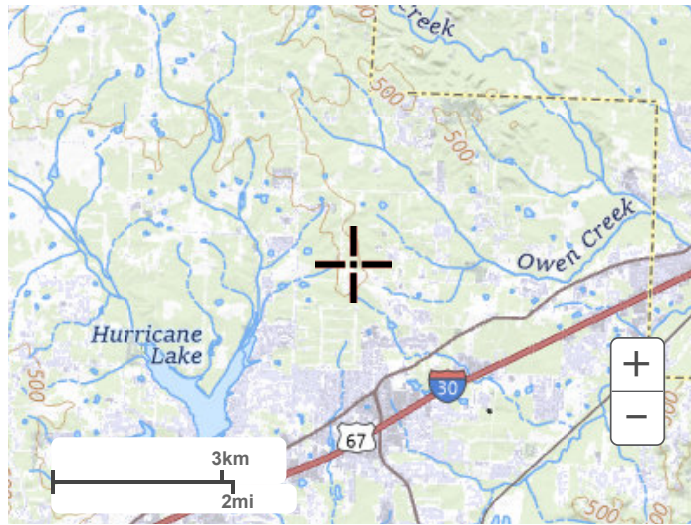
PDS-based depth-duration-frequency (DDF) curves
 Latitude: 34.6452°, Longitude: -92.5032°



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Maps & aeriels

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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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

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NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

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)

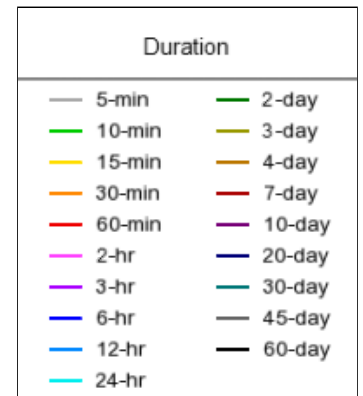
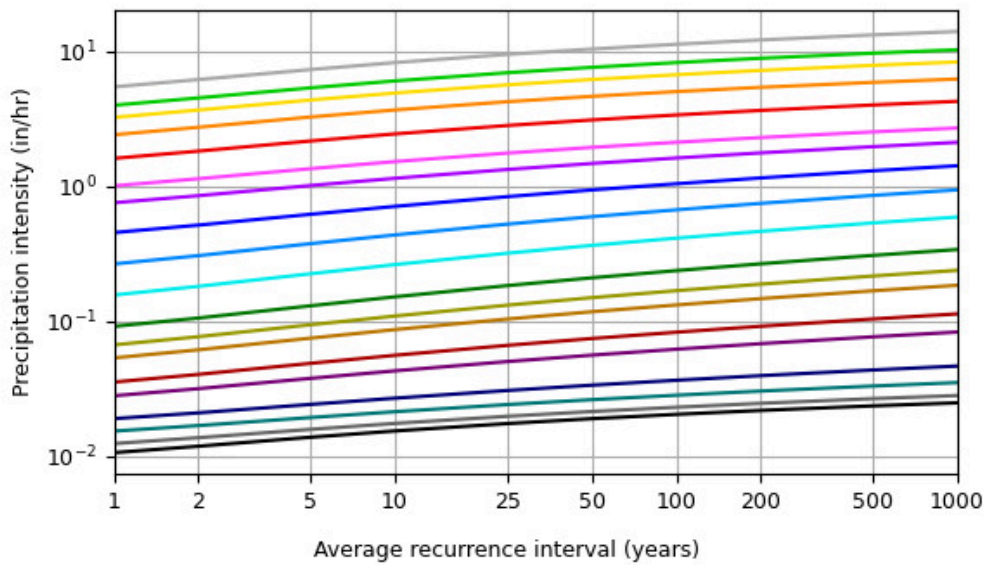
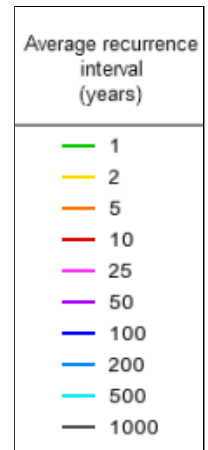
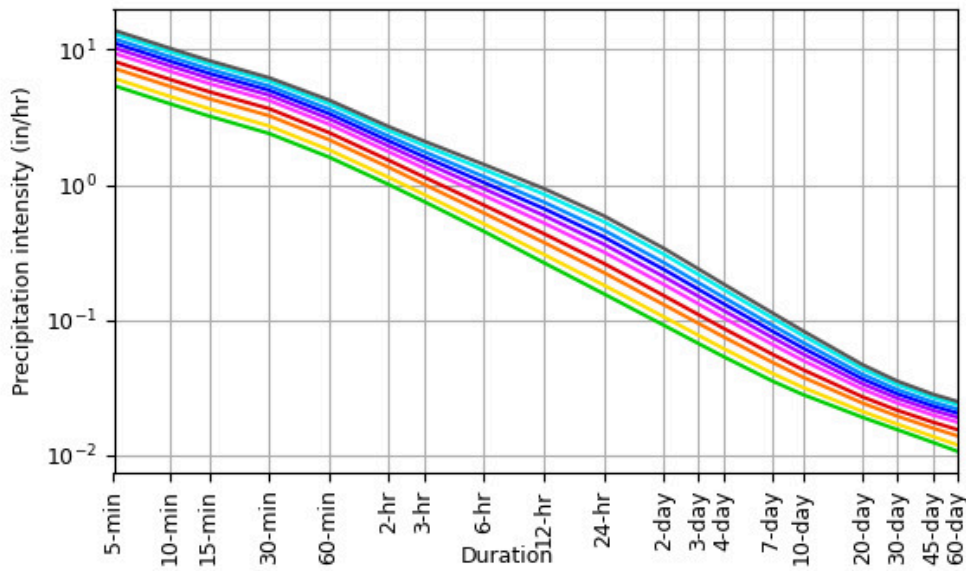
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average 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

PDS-based intensity-duration-frequency (IDF) curves

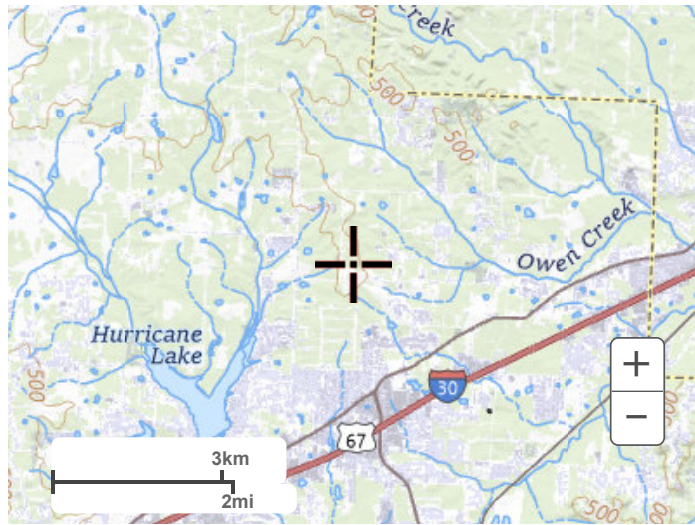
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Maps & aeriels

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

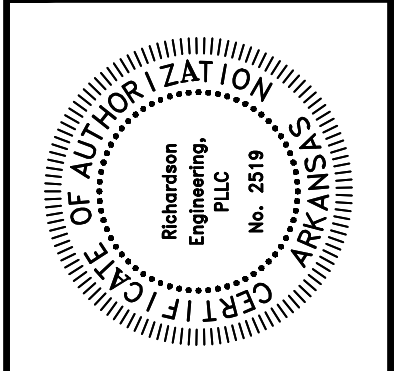
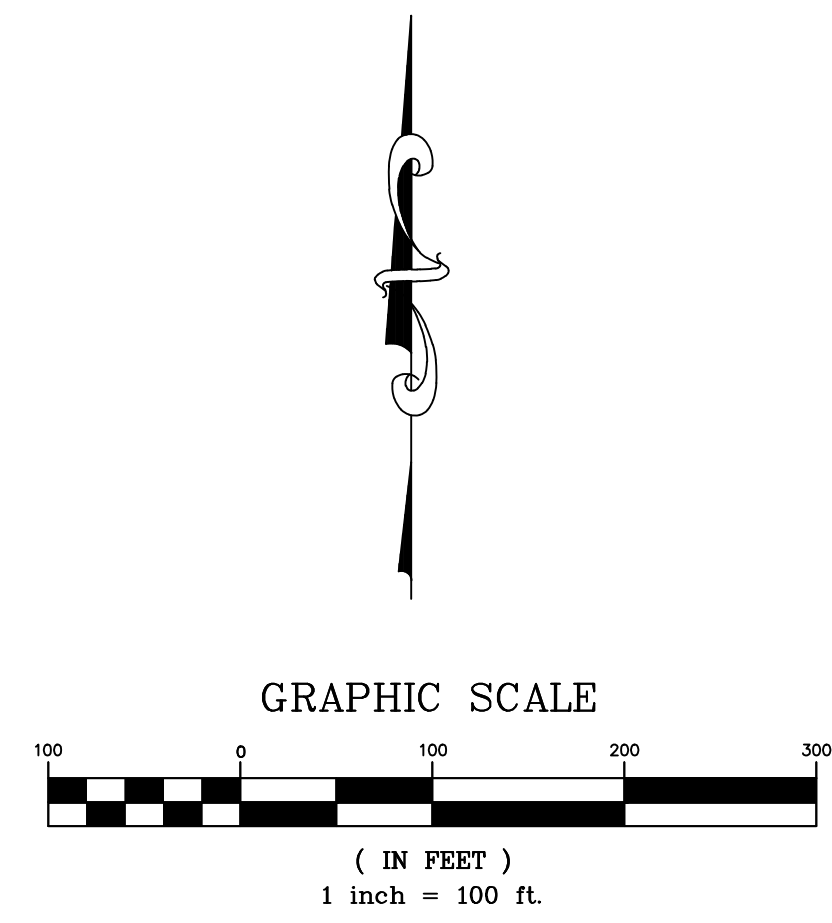
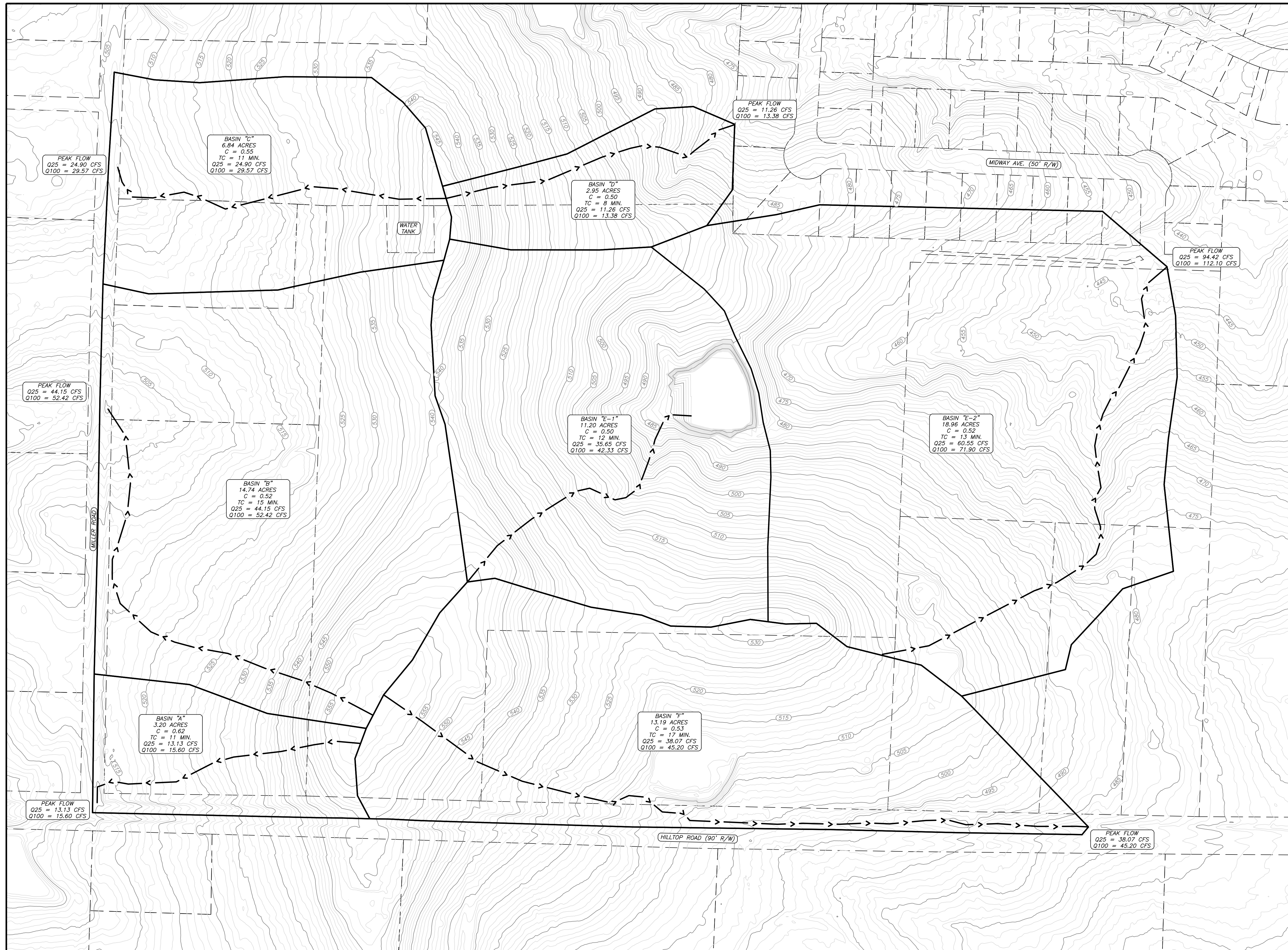


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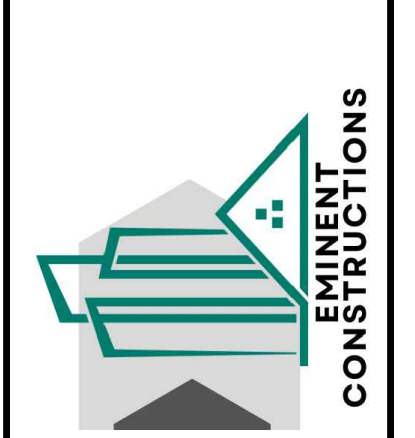
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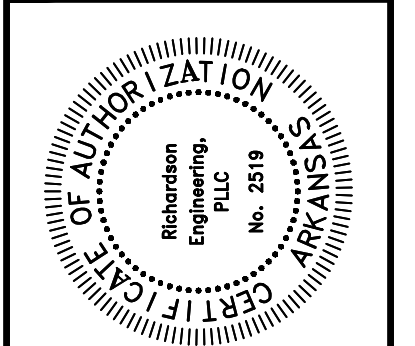
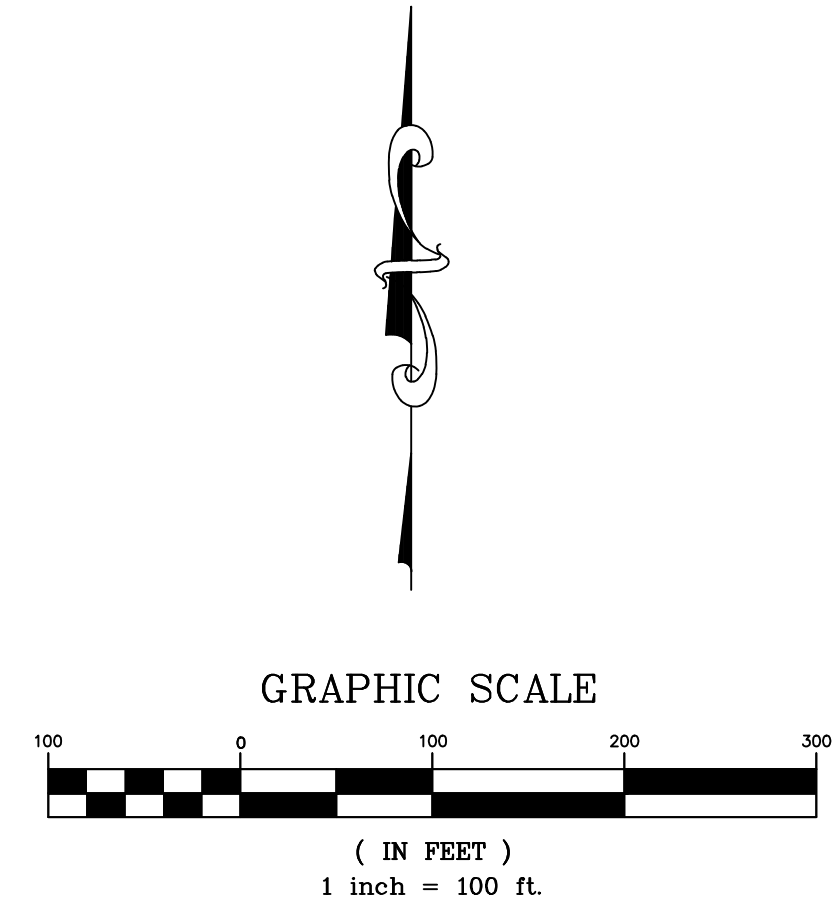
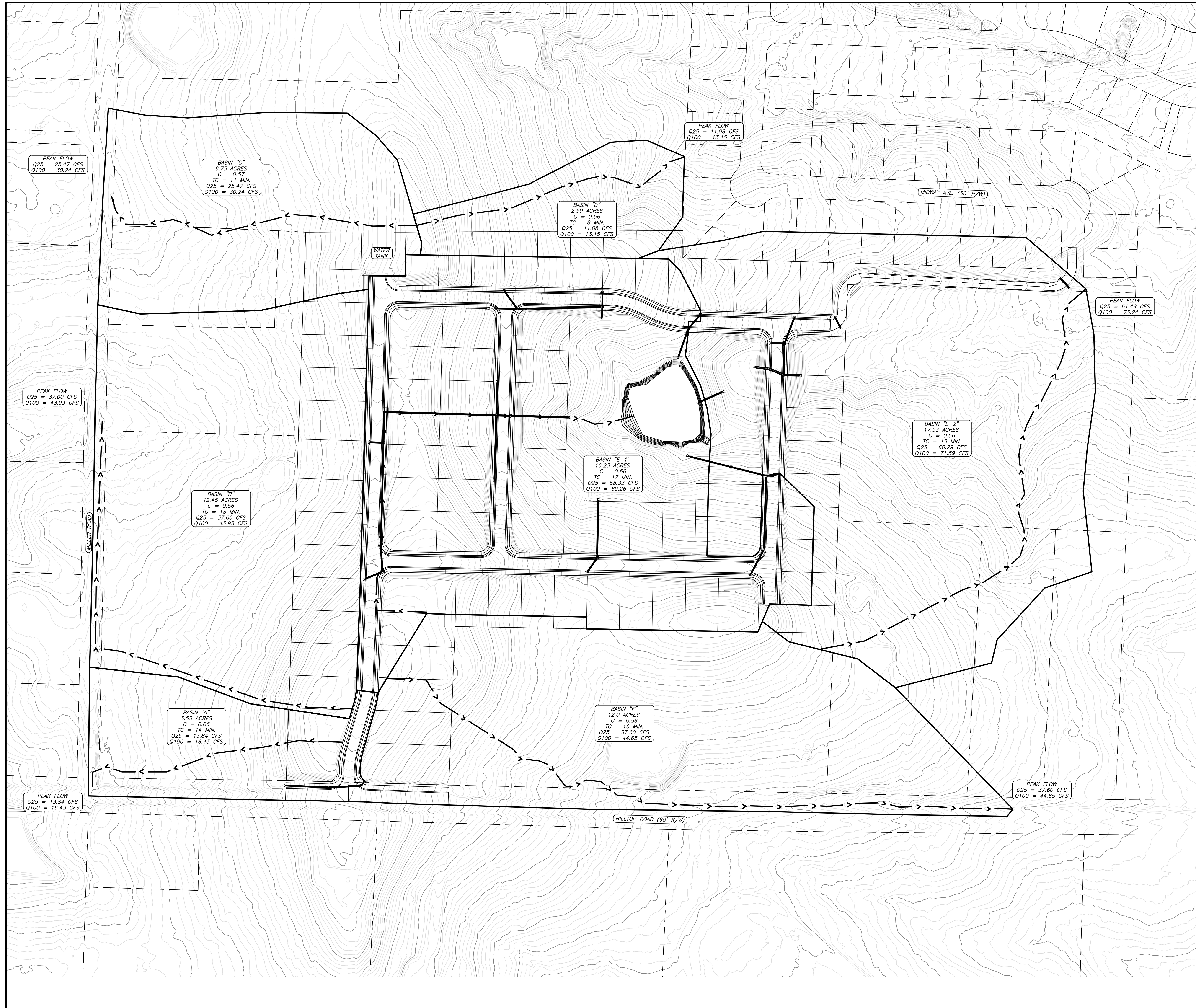
Site Drainage Basin Maps



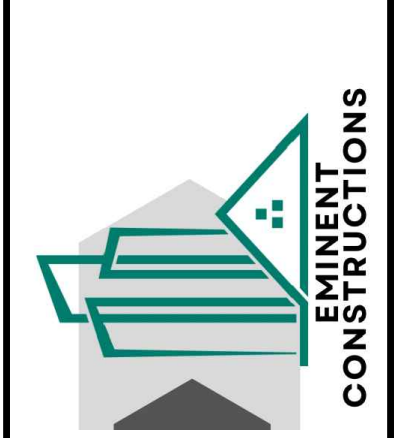
PRE-DEVELOPMENT DRAINAGE BASIN MAP
HILLTOP PROPERTY - R2
75' LOTS
HILLTOP ROAD
BRYANT, ARKANSAS



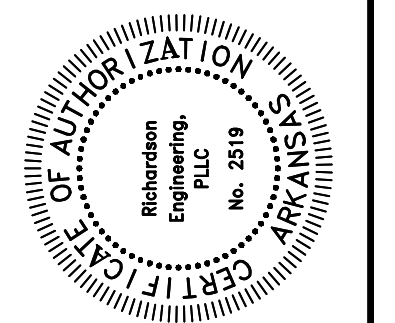
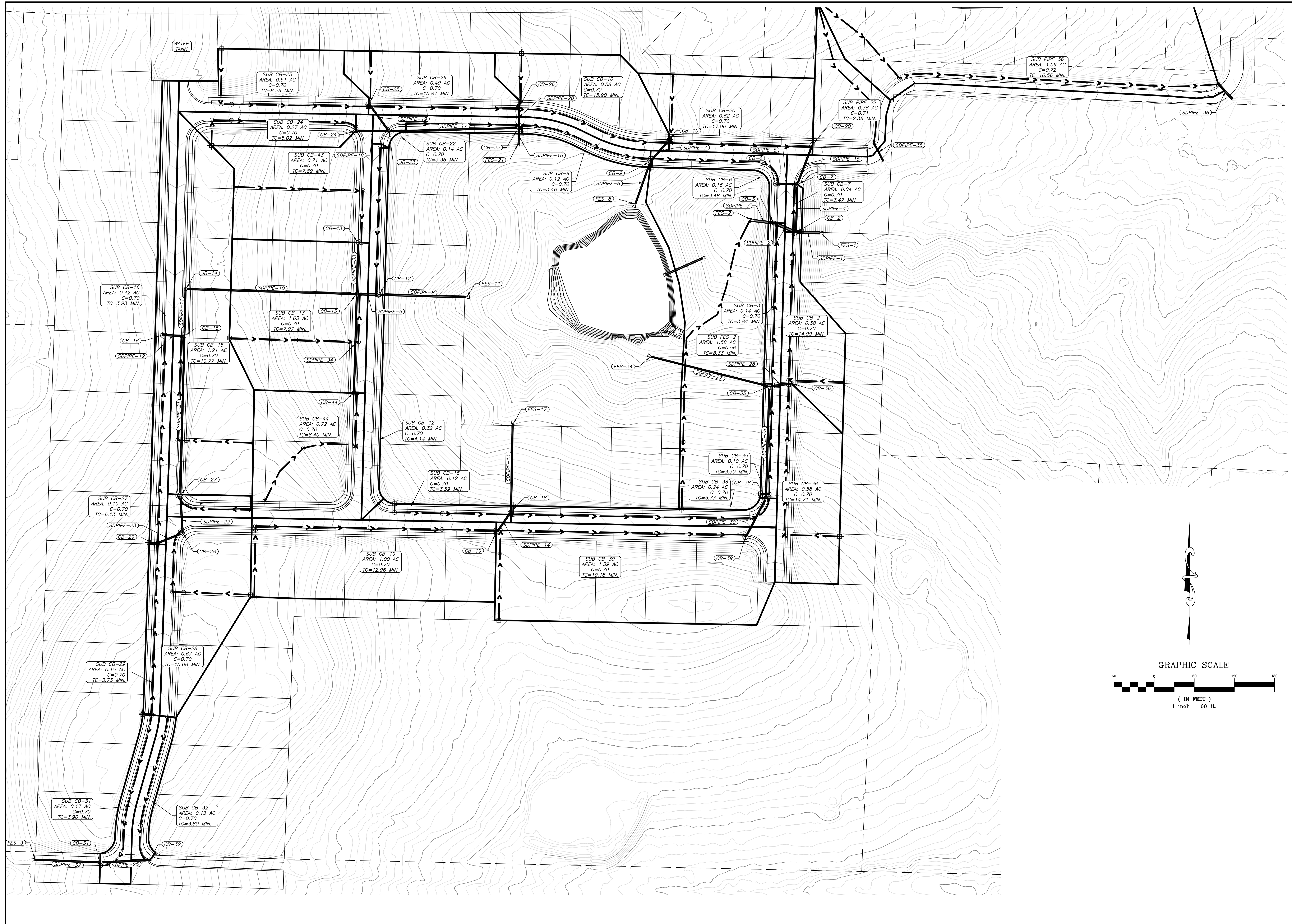
Revisions	No.	Date



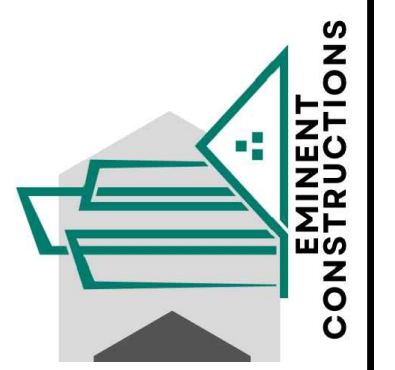
POST-DEVELOPMENT DRAINAGE BASIN MAP
HILLTOP PROPERTY - R2
75' LOTS
HILLTOP ROAD
BRYANT, ARKANSAS



PROJECT NO.:	024-034
Scale:	1" = 100'
Date:	03/04/2026
Sheet:	2 of 3
Revisions:	
Date:	
Prepared For:	



POST-DEVELOPMENT DRAINAGE BASIN MAP
 HILLTOP PROPERTY - R2
 75' LOTS
 HILLTOP ROAD
 BRYANT, ARKANSAS



Prepared For:	
Date:	
Revisions:	
No.:	
PROJECT NO.:	024-034
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Date:	03/04/2026
Sheet:	3 of 3

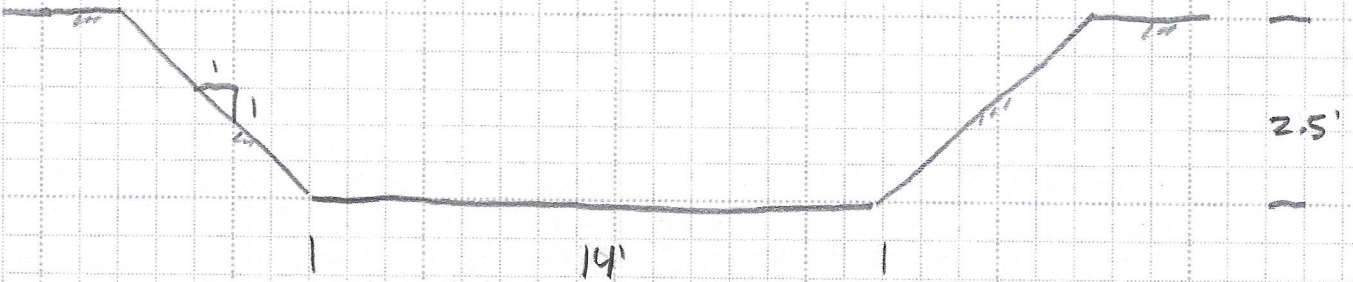
Overflow Wier Blockage Calculation



(1/1)

PROJECT 024-034 OVER FLOW WEIR CALCULATIONS

DATE 03/04/2026



$$Q = C L H^{3/2}$$

$$C = 2.8$$

$$L = 14'$$

$$H = 2.5'$$

$$Q = (2.8)(14)(2.5)^{3/2} = 154.95 \text{ CFS}$$

∴ ASSUMING THAT 50% OF THE WEIR IS BLOCKED

$$Q = \frac{154.95}{2} = 77.48 \text{ CFS} > Q_{100 \text{ INTO POND}} = 69.92 \text{ CFS} \checkmark$$

SSA Design Layout

Storm System Design (SSA)

2 Year Design Storm

Project Description

File Name Hilltop Drainage Analysis 4-8-26.SPF

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.....	31
Nodes.....	46
<i>Junctions</i>	5
<i>Outfalls</i>	13
<i>Flow Diversions</i>	0
<i>Inlets</i>	28
<i>Storage Nodes</i>	0
Links.....	54
<i>Channels</i>	21
<i>Pipes</i>	33
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 2 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-CB-10	0.58	0.7000	0.94	0.66	0.38	1.45	0 00:15:54
2	Sub-CB-12	0.32	0.7000	0.51	0.36	0.11	1.37	0 00:05:00
3	Sub-CB-13	1.03	0.7000	0.66	0.46	0.47	3.56	0 00:07:58
4	Sub-CB-15	1.21	0.7000	0.77	0.54	0.65	3.63	0 00:10:46
5	Sub-CB-16	0.42	0.7000	0.51	0.36	0.15	1.80	0 00:05:00
6	Sub-CB-18	0.12	0.7000	0.51	0.36	0.04	0.53	0 00:05:00
7	Sub-CB-19	1.00	0.7000	0.85	0.60	0.59	2.74	0 00:12:57
8	Sub-CB-2	0.38	0.7000	0.92	0.64	0.24	0.97	0 00:14:59
9	Sub-CB-20	0.62	0.7000	0.98	0.69	0.42	1.50	0 00:17:03
10	Sub-CB-22	0.14	0.7000	0.51	0.36	0.05	0.60	0 00:05:00
11	Sub-CB-24	0.27	0.7000	0.51	0.36	0.10	1.16	0 00:05:01
12	Sub-CB-25	0.51	0.7000	0.67	0.47	0.24	1.73	0 00:08:15
13	Sub-CB-26	0.49	0.7000	0.94	0.66	0.32	1.23	0 00:15:52
14	Sub-CB-27	0.10	0.7000	0.58	0.40	0.04	0.38	0 00:06:07
15	Sub-CB-28	0.67	0.7000	0.91	0.64	0.43	1.71	0 00:15:04
16	Sub-CB-29	0.15	0.7000	0.51	0.36	0.05	0.63	0 00:05:00
17	Sub-CB-3	0.14	0.7000	0.51	0.36	0.05	0.61	0 00:05:00
18	Sub-CB-31	0.17	0.7000	0.51	0.36	0.06	0.75	0 00:05:00
19	Sub-CB-32	0.13	0.7000	0.51	0.36	0.05	0.56	0 00:05:00
20	Sub-CB-35	0.10	0.7000	0.51	0.36	0.04	0.43	0 00:05:00
21	Sub-CB-36	0.58	0.7000	0.90	0.63	0.37	1.51	0 00:14:42
22	Sub-CB-38	0.24	0.7000	0.55	0.38	0.09	0.98	0 00:05:43
23	Sub-CB-39	1.39	0.7000	1.05	0.74	1.02	3.20	0 00:19:10
24	Sub-CB-43	0.71	0.7000	0.65	0.45	0.32	2.47	0 00:07:53
25	Sub-CB-44	0.72	0.7000	0.67	0.47	0.34	2.43	0 00:08:24
26	Sub-CB-6	0.16	0.7000	0.51	0.36	0.06	0.71	0 00:05:00
27	Sub-CB-7	0.04	0.7000	0.51	0.36	0.01	0.18	0 00:05:00
28	Sub-CB-9	0.36	0.7000	0.51	0.36	0.13	1.55	0 00:05:00
29	Sub-FES-2	1.58	0.5600	0.67	0.38	0.60	4.29	0 00:08:19
30	SUB-PIPE-35	0.36	0.7200	0.51	0.37	0.13	1.60	0 00:05:00
31	SUB-PIPE-36	1.26	0.7200	0.76	0.55	0.69	3.92	0 00:10:33

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft ²)	Peak Inflow (cfs)	Max HGL Elevation (ft)	Max Surcharge Depth (ft)	Min Freeboard (ft)
1	FES-2	Junction	466.60	469.78	466.60	469.78	0.00	19.47	468.35	0.00	1.43
2	IN-PIPE-35	Junction	462.75	464.00	462.75	464.00	0.00	1.59	463.18	0.00	1.07
3	IN-PIPE36	Junction	441.30	442.80	441.30	442.80	0.00	3.92	442.17	0.00	0.71
4	JB-14	Junction	529.50	534.76	529.50	535.50	0.00	5.29	529.93	0.00	4.83
5	JB-23	Junction	515.30	519.44	515.30	519.20	10.00	2.03	515.56	0.00	3.88
6	OFFSITE-1	Outfall	540.30					0.03	540.33		
7	OFFSITE-2	Outfall	532.10					0.00	532.11		
8	OFFSITE-25	Outfall	464.82					0.00	464.82		
9	OFFSITE-26	Outfall	464.82					0.18	464.90		
10	OU-PIPE-36	Outfall	441.00					3.91	441.65		
11	Out-FES-1	Outfall	463.00					21.43	463.65		
12	Out-FES-11	Outfall	492.00					11.68	492.47		
13	Out-FES-17	Outfall	505.00					2.27	505.26		
14	Out-FES-21	Outfall	499.00					3.05	499.30		
15	Out-FES-3	Outfall	538.50					1.24	538.71		
16	Out-FES-34	Outfall	484.31					4.00	484.84		
17	Out-FES-8	Outfall	482.52					1.79	482.92		
18	OUT-PIPE-35	Outfall	462.25					1.59	462.62		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Depth (ft)
1	SDPIPE-1	Pipe	CB-2	Out-FES-1	35.55	465.94	463.00	8.2700	36.000	0.0120	21.43	207.79	0.10	13.86	0.81	
2	SDPIPE-10	Pipe	JB-14	CB-13	256.10	529.50	512.58	6.6100	18.000	0.0120	5.28	29.25	0.18	5.99	0.87	
3	SDPIPE-11	Pipe	CB-15	JB-14	67.57	530.20	529.50	1.0400	18.000	0.0120	5.29	11.59	0.46	7.08	0.66	
4	SDPIPE-12	Pipe	CB-16	CB-15	33.01	530.53	530.20	1.0000	18.000	0.0130	0.69	10.49	0.07	1.74	0.72	
5	SDPIPE-13	Pipe	CB-18	Out-FES-17	130.50	517.50	505.00	9.5800	18.000	0.0120	2.27	35.22	0.06	10.80	0.26	
6	SDPIPE-14	Pipe	CB-19	CB-18	39.55	517.99	517.50	1.2500	18.000	0.0130	2.28	11.74	0.19	5.82	0.41	
7	SDPIPE-15	Pipe	CB-20	CB-7	64.04	468.11	467.47	1.0000	18.000	0.0130	1.45	10.50	0.14	3.74	0.41	
8	SDPIPE-16	Pipe	CB-22	Out-FES-21	23.51	501.10	499.00	8.9300	18.000	0.0120	3.05	34.01	0.09	9.81	0.35	
9	SDPIPE-17	Pipe	JB-23	CB-22	194.21	515.30	501.00	7.3600	18.000	0.0120	2.02	30.77	0.07	7.19	0.33	
10	SDPIPE-18	Pipe	CB-24	JB-23	49.41	517.78	515.30	5.0200	18.000	0.0130	1.05	23.53	0.04	5.70	0.24	
11	SDPIPE-19	Pipe	CB-25	JB-23	51.31	517.87	515.30	5.0100	18.000	0.0130	1.38	23.51	0.06	6.89	0.26	
12	SDPIPE-2	Pipe	CB-3	CB-2	35.82	466.30	465.94	1.0000	36.000	0.0130	19.64	66.70	0.29	6.64	1.31	
13	SDPIPE-20	Pipe	CB-26	CB-22	33.00	501.43	501.10	1.0000	18.000	0.0120	1.13	11.38	0.10	4.39	0.37	
14	SDPIPE-21	Pipe	CB-27	CB-15	239.80	538.50	530.20	3.4600	18.000	0.0120	1.69	21.17	0.08	3.65	0.57	
15	SDPIPE-22	Pipe	CB-28	CB-27	57.68	542.14	538.50	6.3100	18.000	0.0130	1.70	26.39	0.06	7.46	0.28	
16	SDPIPE-23	Pipe	CB-29	CB-28	44.75	542.59	542.14	1.0100	18.000	0.0130	0.62	10.53	0.06	3.27	0.25	
17	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.55	14.89	0.04	3.57	0.21	
18	SDPIPE-27	Pipe	CB-35	Out-FES-34	182.53	487.50	484.31	1.7500	18.000	0.0120	4.00	15.03	0.27	6.84	0.55	
19	SDPIPE-28	Pipe	CB-36	CB-35	33.55	487.84	487.50	1.0000	18.000	0.0130	1.27	10.50	0.12	3.12	0.46	
20	SDPIPE-29	Pipe	CB-38	CB-35	167.22	505.00	487.50	10.4700	18.000	0.0120	3.08	36.81	0.08	7.34	0.43	
21	SDPIPE-3	Pipe	FES-2	CB-3	30.36	466.60	466.30	1.0000	36.000	0.0120	20.72	71.83	0.29	7.93	1.60	
22	SDPIPE-30	Pipe	CB-39	CB-38	66.71	510.34	505.00	8.0000	18.000	0.0130	3.08	29.71	0.10	10.67	0.33	
23	SDPIPE-32	Pipe	CB-31	Out-FES-3	96.89	544.50	538.50	6.1900	18.000	0.0120	1.24	28.32	0.04	7.77	0.22	
24	SDPIPE-33	Pipe	CB-43	CB-13	77.61	514.12	512.58	1.9800	18.000	0.0150	2.46	12.82	0.19	3.46	0.87	
25	SDPIPE-34	Pipe	Inlet-CB-44	CB-13	147.34	516.28	512.58	2.5100	18.000	0.0150	2.16	14.43	0.15	3.23	0.85	
26	SDPIPE-4	Pipe	CB-7	CB-2	71.93	467.47	466.75	1.0000	18.000	0.0120	1.45	11.38	0.13	4.10	0.38	
27	SDPIPE-5	Pipe	CB-6	CB-7	33.00	467.80	467.47	1.0000	18.000	0.0130	0.46	10.50	0.04	1.98	0.28	
28	SDPIPE-6	Pipe	CB-9	Out-FES-8	67.57	483.19	482.52	1.0000	18.000	0.0120	1.79	11.37	0.16	4.31	0.43	

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Total Depth (ft)
46	L-SDPIPE-27	Channel	CB-35	CB-3	245.69	494.00	476.28	7.2100	3.960	0.0150	0.00	6.79	0.00	0.00	0.00	
47	L-SDPIPE-28	Channel	CB-36	CB-2	228.18	493.47	476.67	7.3600	3.960	0.0150	0.24	6.86	0.03	2.98	0.06	
48	L-SDPIPE-29	Channel	CB-38	CB-35	172.07	510.72	494.00	9.7200	3.960	0.0150	0.02	7.88	0.00	1.75	0.02	
49	L-SDPIPE-32	Channel	CB-31	OFFSITE-1	98.13	549.76	540.30	9.6400	6.000	0.0150	0.03	28.64	0.00	2.05	0.02	
50	L-SDPIPE-33	Channel	CB-43	CB-13	78.91	518.02	517.01	1.2800	3.960	0.0320	0.00	2.86	0.00	0.00	0.17	
51	L-SDPIPE-34	Channel	Inlet-CB-44	CB-13	149.42	521.36	517.01	2.9100	3.960	0.0320	0.22	4.31	0.05	0.22	0.22	
52	L-SDPIPE-4	Channel	CB-7	OFFSITE-25	129.78	475.09	464.82	7.9100	3.960	0.0320	0.00	7.11	0.00	0.00	0.00	
53	L-SDPIPE-6	Channel	CB-9	CB-6	214.12	489.62	475.09	6.7900	3.960	0.0150	0.18	6.59	0.03	0.54	0.13	
54	L-SDPIPE-7	Channel	CB-10	CB-20	216.57	487.59	471.49	7.4300	3.960	0.0150	0.16	6.90	0.02	1.23	0.08	

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 C Sp during
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	483.62	N/A	1.54	1.34	0.19	87.40	8.50	
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	512.25	10.00	1.36	N/A	N/A	N/A	8.50	
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	512.58	10.00	3.72	N/A	N/A	N/A	8.50	
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	530.20	10.00	3.63	N/A	N/A	N/A	8.50	
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	530.53	10.00	1.79	N/A	N/A	N/A	8.50	
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	517.50	N/A	0.53	0.53	0.00	100.00	8.50	
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	517.99	N/A	2.74	2.28	0.46	83.25	8.50	
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	465.94	N/A	1.20	1.20	0.00	100.00	8.50	
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	468.11	N/A	1.63	1.40	0.23	85.80	8.50	
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	501.10	N/A	0.60	0.60	0.00	100.00	8.50	
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	517.77	N/A	1.16	1.06	0.10	91.65	8.50	
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	515.81	N/A	1.73	1.39	0.34	80.28	8.50	
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	501.43	N/A	1.23	1.15	0.08	93.36	8.50	
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	538.50	N/A	0.38	0.38	0.00	100.00	8.50	
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	542.20	10.00	1.71	N/A	N/A	N/A	8.50	
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	542.65	N/A	0.63	0.63	0.00	100.00	8.50	
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	466.30	N/A	0.60	0.60	0.00	100.00	8.50	
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.74	0.74	0.01	99.03	8.50	
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	546.00	N/A	0.56	0.56	0.00	100.00	8.50	
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	487.50	N/A	0.43	0.43	0.00	100.00	8.50	
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	487.84	N/A	1.51	1.27	0.24	84.23	8.50	
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	505.00	N/A	0.97	0.93	0.04	95.57	8.50	
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	510.34	10.00	3.23	N/A	N/A	N/A	8.50	
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	514.12	N/A	2.46	2.46	0.00	100.00	8.50	
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	467.80	10.00	0.87	N/A	N/A	N/A	8.50	
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	467.47	N/A	0.18	0.18	0.00	100.00	8.50	
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	483.19	N/A	1.55	1.35	0.20	87.17	8.50	
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	516.28	N/A	2.43	2.18	0.24	89.92	8.50	

Subbasin Hydrology

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.58
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8}) / ((P^{0.5}) * (S_f^{0.4})))$$

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)

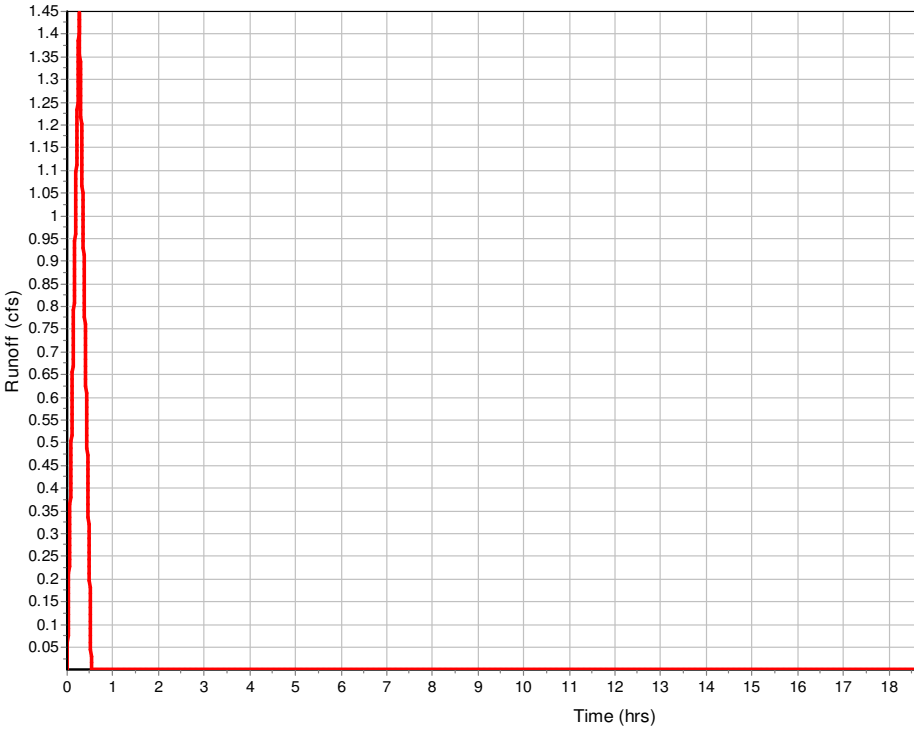
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99996647	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	229.3185963	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.69	0	0
Total TOC (min)	15.90		

Subbasin Runoff Results

Total Rainfall (in)	0.94
Total Runoff (in)	0.66
Peak Runoff (cfs)	1.45
Rainfall Intensity	3.571
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	00:15:54

Subbasin : Sub-CB-10

Runoff Hydrograph



Subbasin : Sub-CB-12

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
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

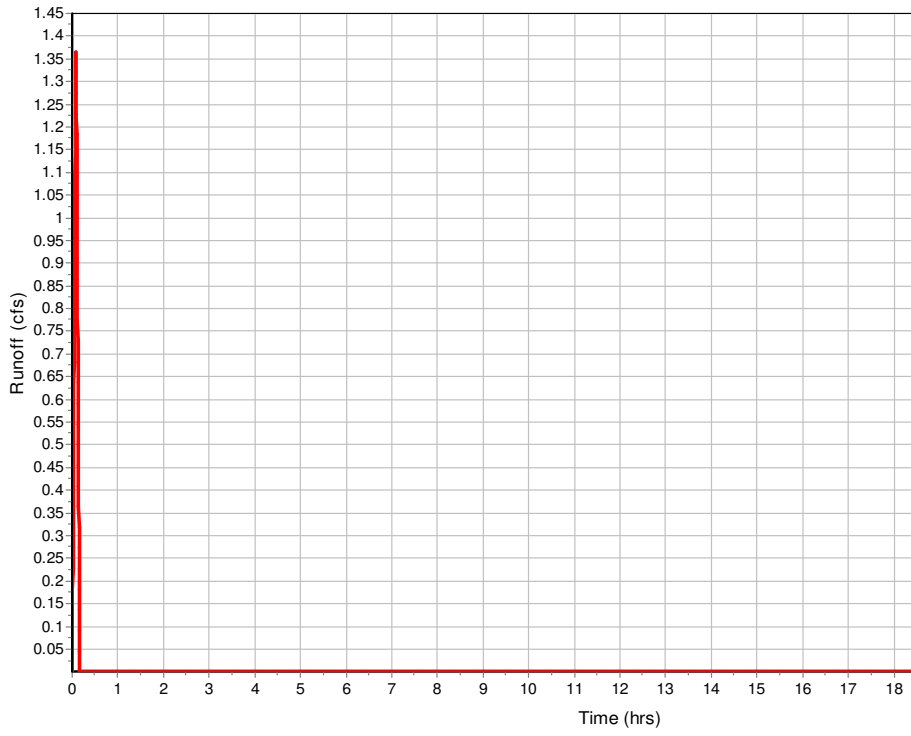
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	219.5273657	0
Slope (%) :	1.99	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.28	0	0
Total TOC (min)	4.14		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.37
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:04:08

Subbasin : Sub-CB-12

Runoff Hydrograph



Subbasin : Sub-CB-13

Input Data

Area (ac) 1.03
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.03	-	0.7
Composite Area & Weighted Runoff Coeff.	1.03		0.7

Time of Concentration

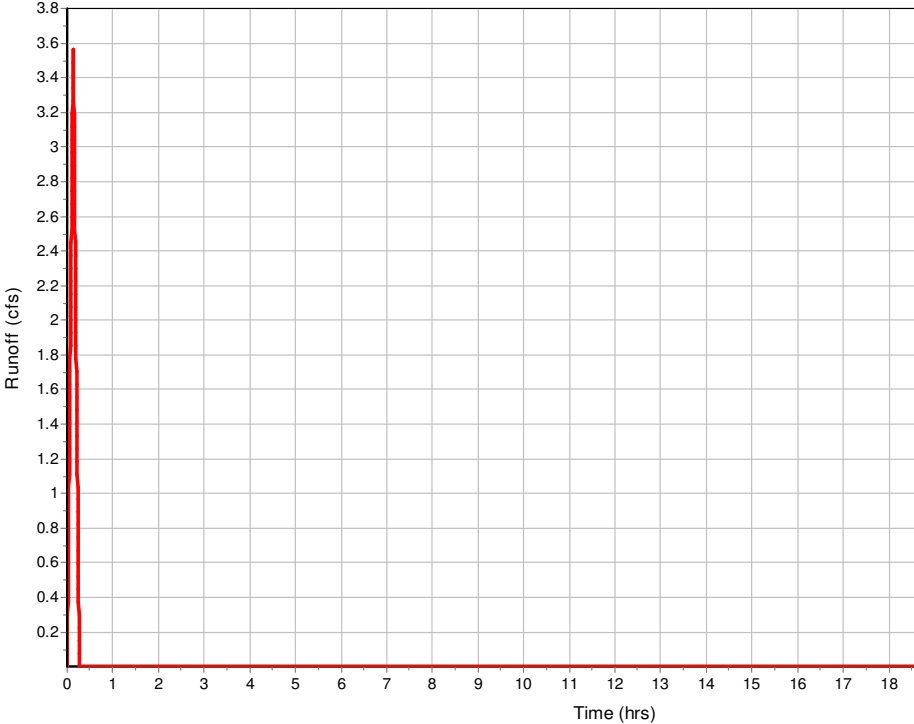
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	11.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.27	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	93	71.4	0
Slope (%) :	11.5	1.99	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.47	2.87	0
Computed Flow Time (min) :	0.28	0.41	0
Total TOC (min)	7.97		

Subbasin Runoff Results

Total Rainfall (in) 0.66
 Total Runoff (in) 0.46
 Peak Runoff (cfs) 3.56
 Rainfall Intensity 4.939
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:07:58

Runoff Hydrograph



Subbasin : Sub-CB-15

Input Data

Area (ac) 1.21
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.21	-	0.7
Composite Area & Weighted Runoff Coeff.	1.21		0.7

Time of Concentration

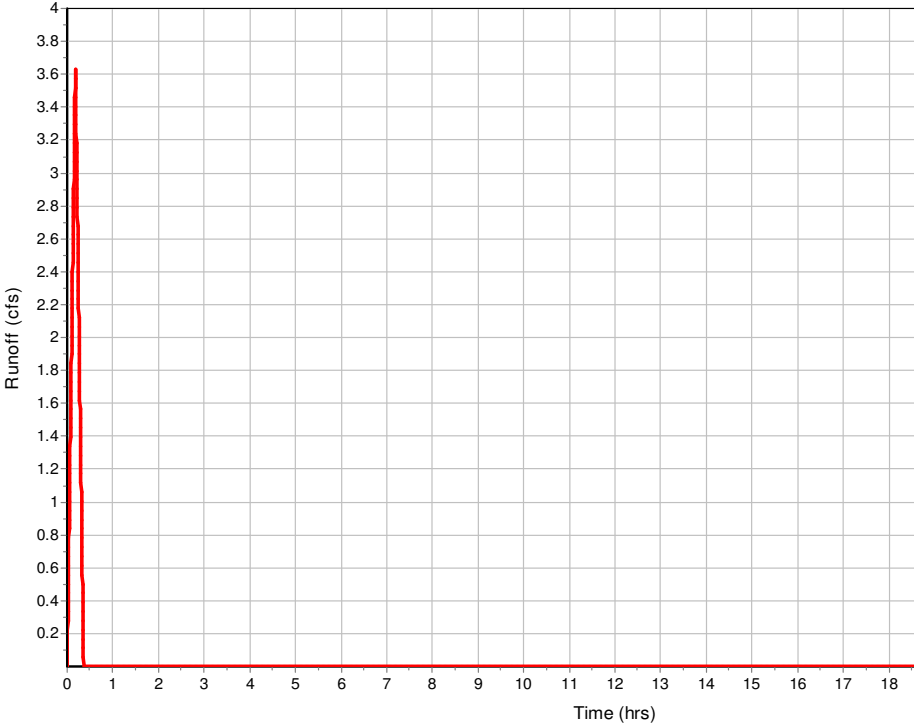
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	10.14	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	12.98144373	156.302
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.09	0.53	0
Total TOC (min)	10.77		

Subbasin Runoff Results

Total Rainfall (in) 0.77
 Total Runoff (in) 0.54
 Peak Runoff (cfs) 3.63
 Rainfall Intensity 4.282
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:10:46

Runoff Hydrograph



Subbasin : Sub-CB-16

Input Data

Area (ac) 0.42
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.42	-	0.7
Composite Area & Weighted Runoff Coeff.	0.42		0.7

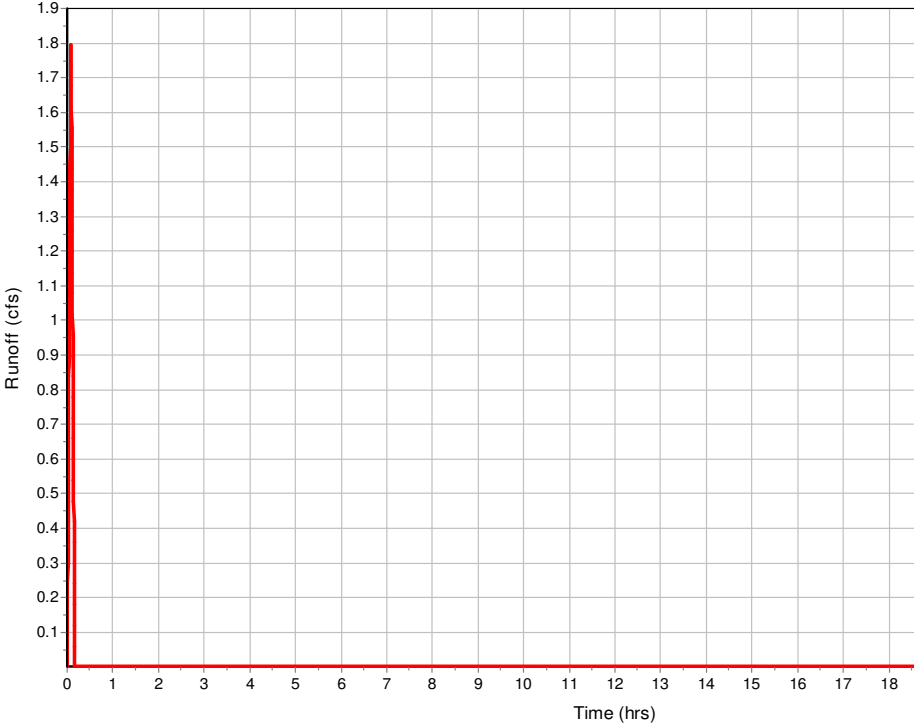
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.01720552	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	310.5319881	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	1.06	0	0
Total TOC (min)	3.93		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.8
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:56

Runoff Hydrograph



Subbasin : Sub-CB-18

Input Data

Area (ac) 0.12
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

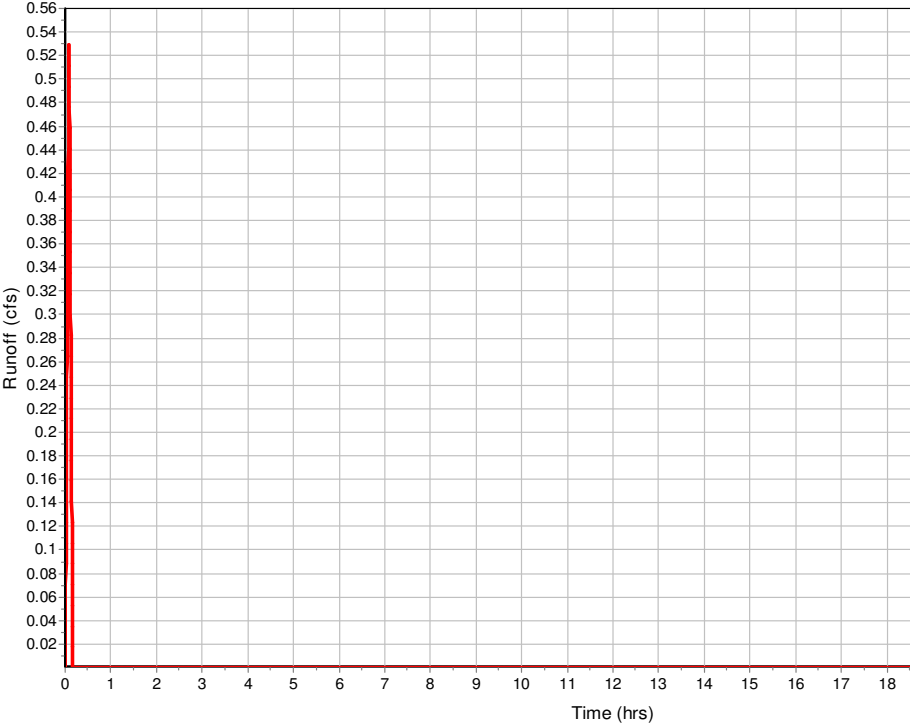
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.10752092	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.88	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	71.43477489	102.308	0
Slope (%) :	11.86	2.45	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	7	3.18	0
Computed Flow Time (min) :	0.17	0.54	0
Total TOC (min)	3.59		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.53
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:03:35

Runoff Hydrograph



Subbasin : Sub-CB-19

Input Data

Area (ac) 1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1	-	0.7
Composite Area & Weighted Runoff Coeff.	1		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100.0031436	0	0
Slope (%) :	3.4	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.14	0	0
Computed Flow Time (min) :	11.83	0	0

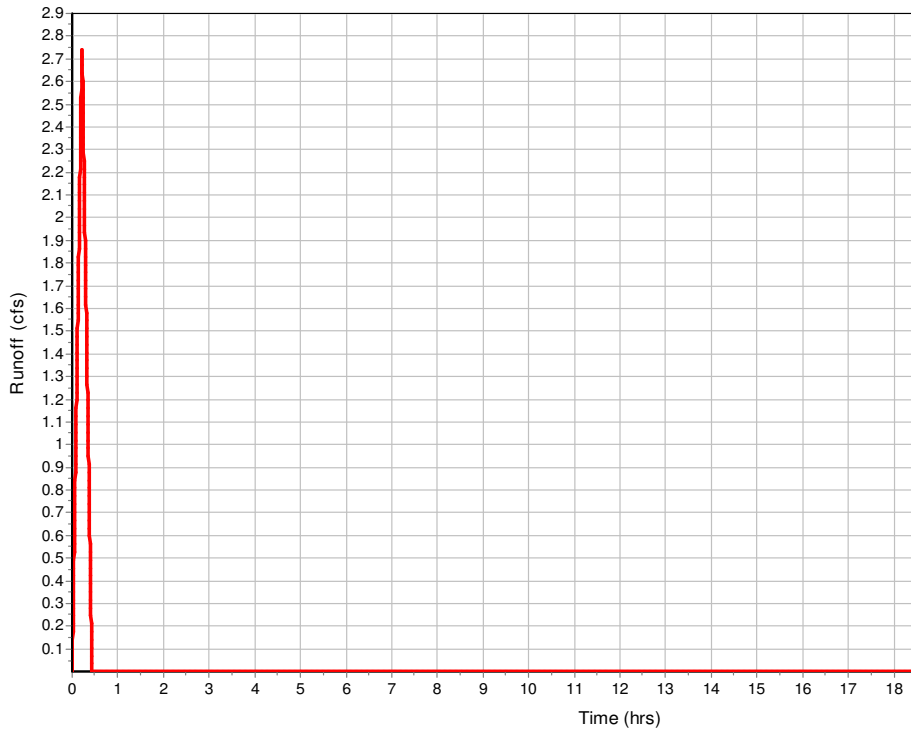
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	6.07922878	278.905
Slope (%) :	2	11.86	2.45
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	7	3.18
Computed Flow Time (min) :	0.04	0.66	0.42
Total TOC (min)	12.96		

Subbasin Runoff Results

Total Rainfall (in) 0.85
 Total Runoff (in) 0.6
 Peak Runoff (cfs) 2.74
 Rainfall Intensity 3.923
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:12:58

Subbasin : Sub-CB-19

Runoff Hydrograph



Subbasin : Sub-CB-2

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
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

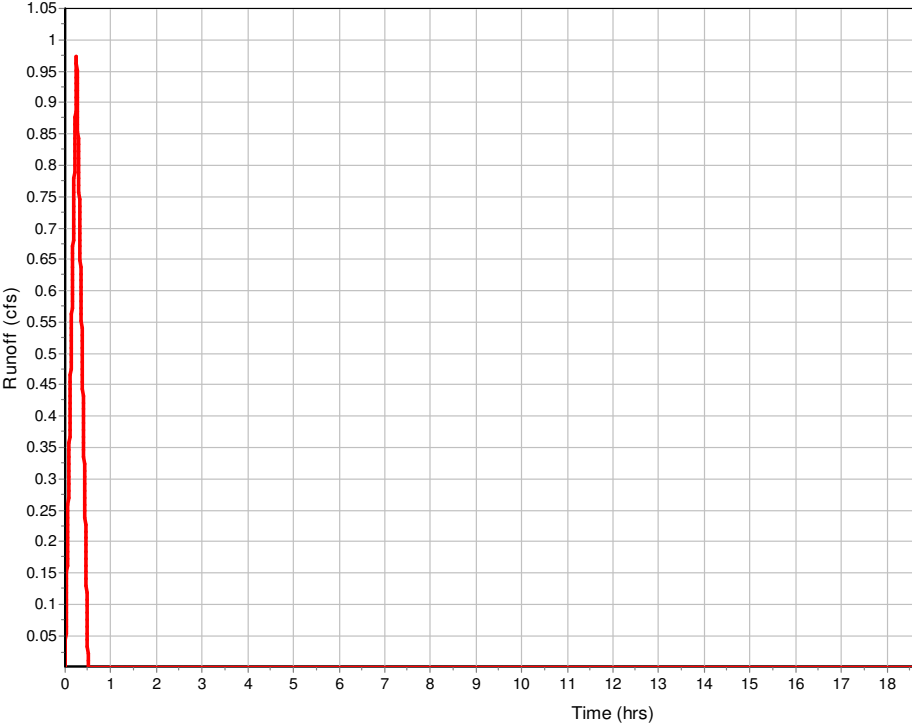
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	175.3484305	45.5292
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.44	0.4	0
Total TOC (min)	14.99		

Subbasin Runoff Results

Total Rainfall (in) 0.92
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 0.97
 Rainfall Intensity 3.661
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:14:59

Subbasin : Sub-CB-2

Runoff Hydrograph



Subbasin : Sub-CB-20

Input Data

Area (ac) 0.62
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.7
Composite Area & Weighted Runoff Coeff.	0.62		0.7

Time of Concentration

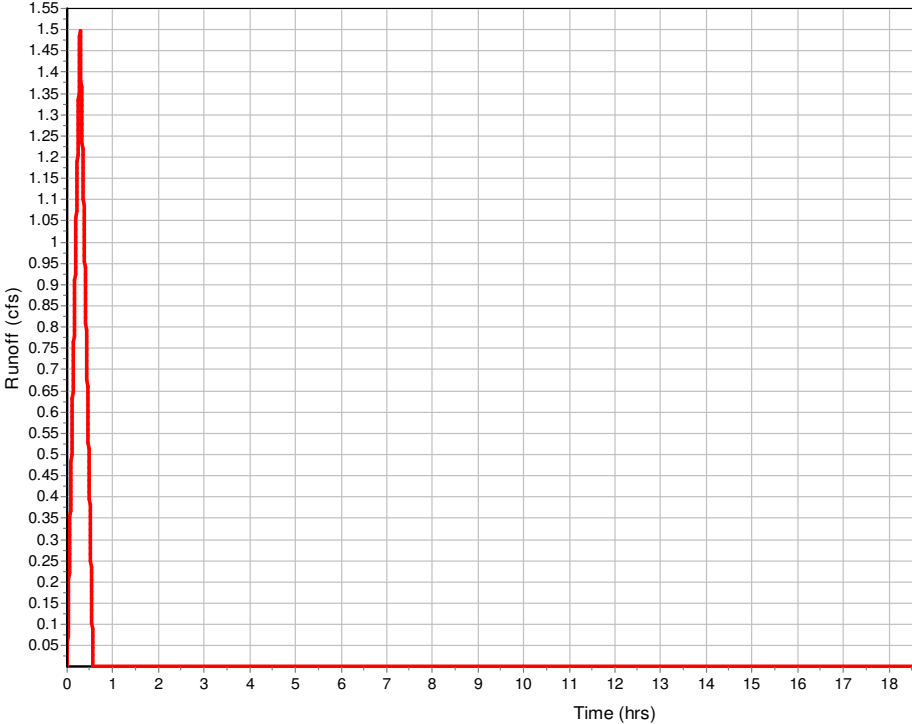
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	99.99258294	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	3.00743724	208.662
Slope (%) :	2	7.49	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	5.56	0
Computed Flow Time (min) :	0.02	0.63	0
Total TOC (min)	17.06		

Subbasin Runoff Results

Total Rainfall (in) 0.98
 Total Runoff (in) 0.69
 Peak Runoff (cfs) 1.5
 Rainfall Intensity 3.466
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:17:04

Runoff Hydrograph



Subbasin : Sub-CB-22

Input Data

Area (ac) 0.14
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

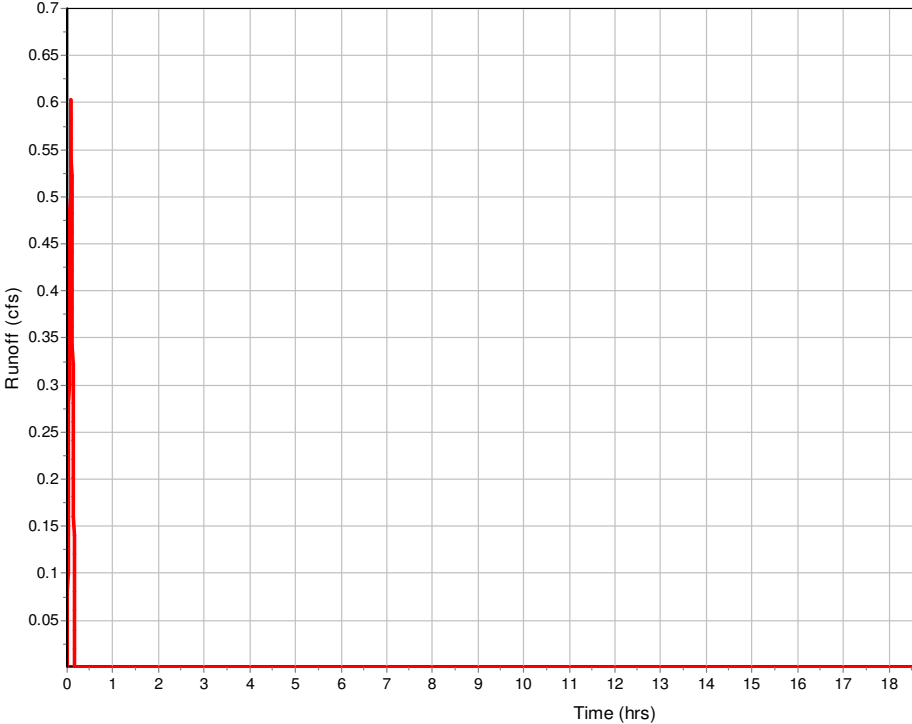
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99981258	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.0428132	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.5	0	0
Total TOC (min)3.36			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.6
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:22

Runoff Hydrograph



Subbasin : Sub-CB-24

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

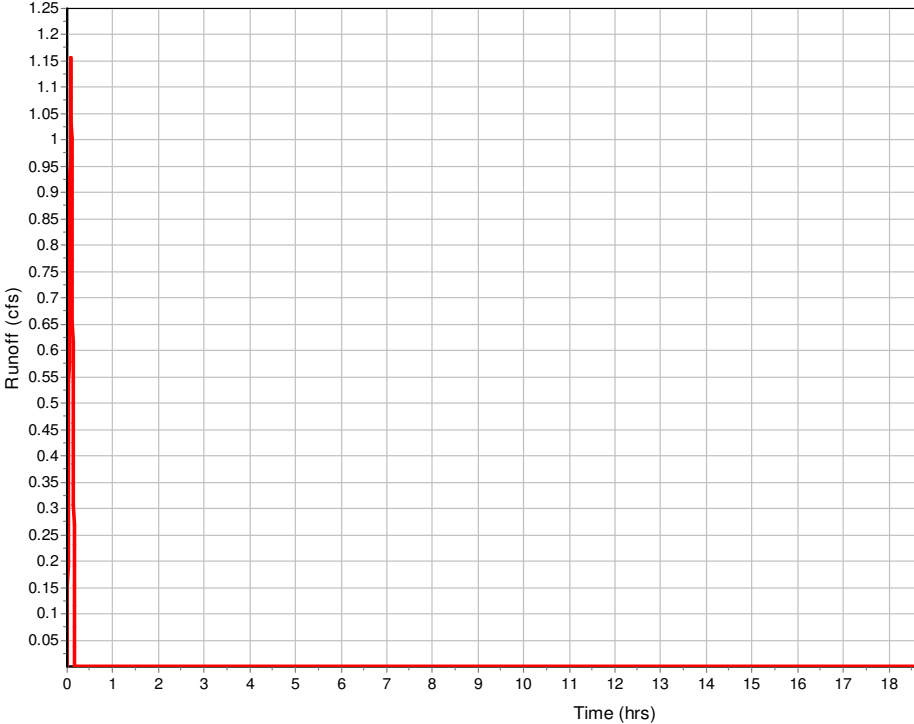
Time of Concentration

	Subarea A	Subarea B	Subarea C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	37.99958613	0	0
Slope (%) :	6.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	4.21	0	0
	Subarea A	Subarea B	Subarea C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	28.98355088	187.48	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.33	0.48	0
Total TOC (min)	5.02		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	1.16
Rainfall Intensity	6.148
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:05:01

Runoff Hydrograph



Subbasin : Sub-CB-25

Input Data

Area (ac) 0.51
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.7
Composite Area & Weighted Runoff Coeff.	0.51		0.7

Time of Concentration

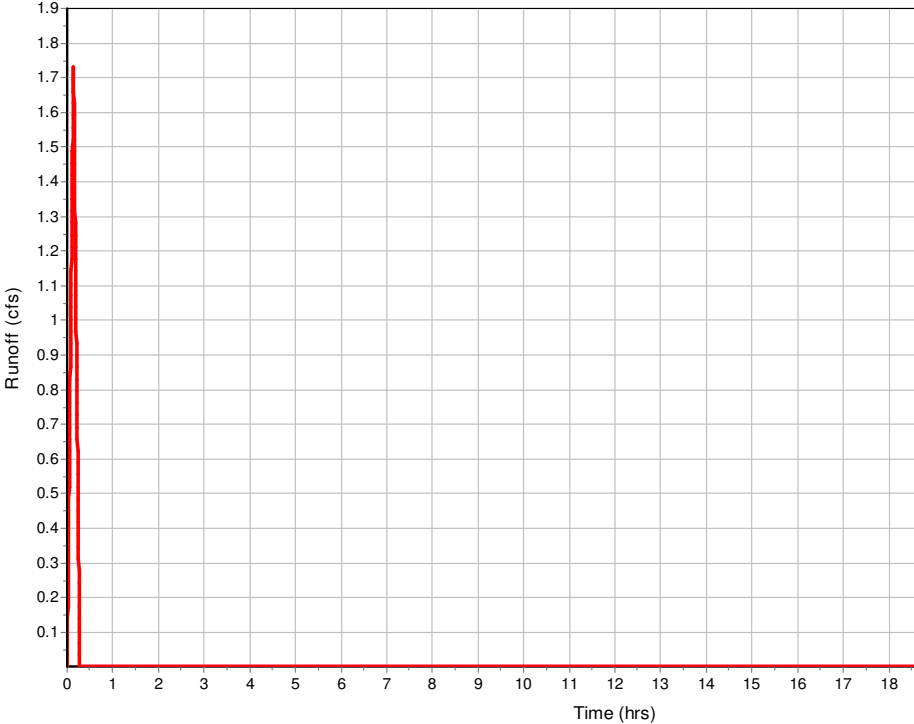
Sheet Flow Computations	Subarea		
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99999586	0	0
Slope (%) :	7.25	0	0
2 yr, 24 hr Rainfall (in) :	4.32	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	7.56	0	0

Shallow Concentrated Flow Computations	Subarea		
	A	B	C
Flow Length (ft) :	16.12667612	203.96	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.19	0.52	0
Total TOC (min)	8.26		

Subbasin Runoff Results

Total Rainfall (in) 0.67
 Total Runoff (in) 0.47
 Peak Runoff (cfs) 1.73
 Rainfall Intensity 4.856
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:08:16

Runoff Hydrograph



Subbasin : Sub-CB-26

Input Data

Area (ac) 0.49
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.49	-	0.7
Composite Area & Weighted Runoff Coeff.	0.49		0.7

Time of Concentration

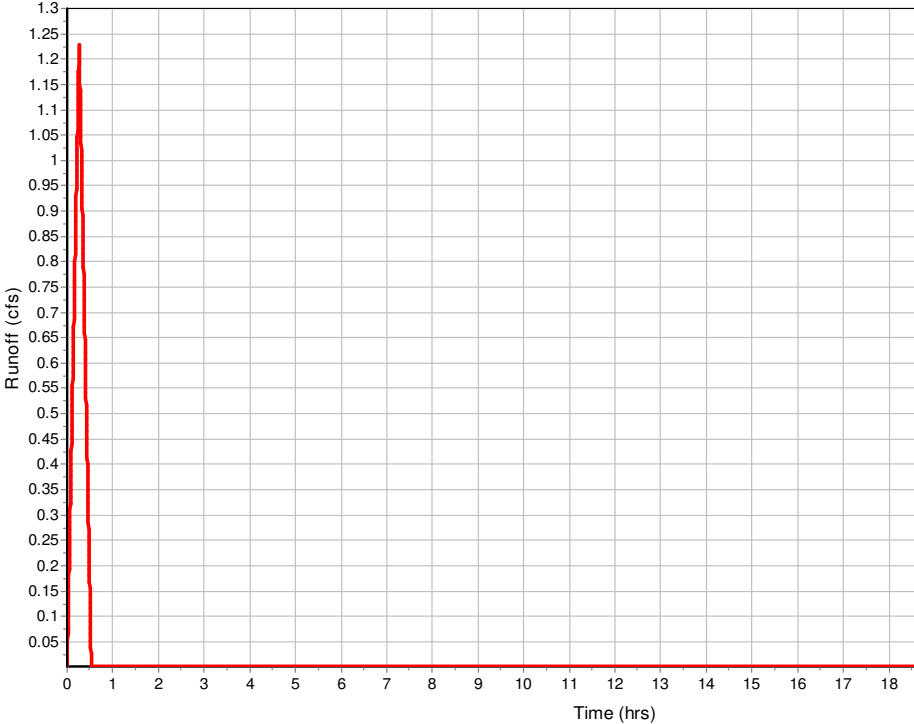
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99998121	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	221.0918618	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.66	0	0
Total TOC (min)	15.87		

Subbasin Runoff Results

Total Rainfall (in) 0.94
 Total Runoff (in) 0.66
 Peak Runoff (cfs) 1.23
 Rainfall Intensity 3.574
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:52

Runoff Hydrograph



Subbasin : Sub-CB-27

Input Data

Area (ac) 0.1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

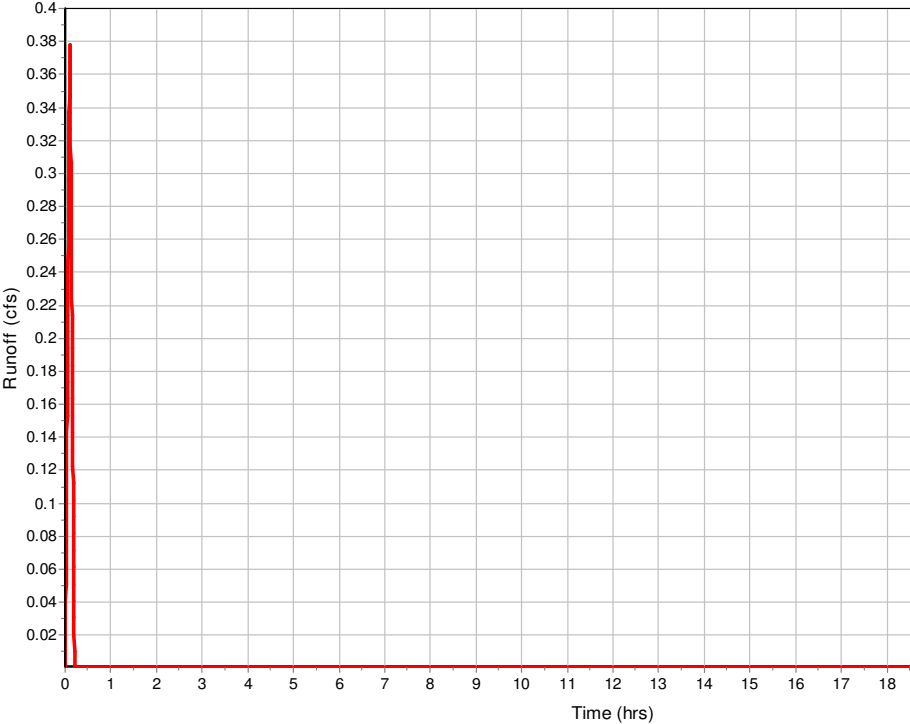
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	21.13547973	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	5.57	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	117.1502173	0	0
Slope (%) :	2.92	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.47	0	0
Computed Flow Time (min) :	0.56	0	0
Total TOC (min)6.13			

Subbasin Runoff Results

Total Rainfall (in) 0.58
 Total Runoff (in) 0.4
 Peak Runoff (cfs) 0.38
 Rainfall Intensity 5.593
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:06:08

Runoff Hydrograph



Subbasin : Sub-CB-28

Input Data

Area (ac) 0.67
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.67	-	0.7
Composite Area & Weighted Runoff Coeff.	0.67		0.7

Time of Concentration

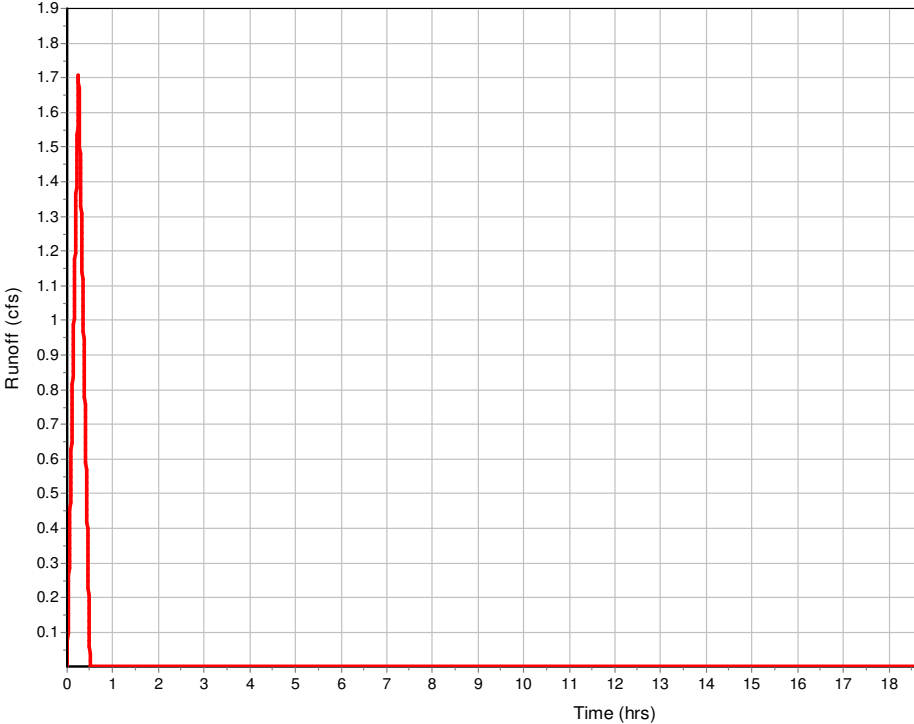
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	14.63	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	17.02372996	94.092	0
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.12	0.32	0
Total TOC (min)	15.08		

Subbasin Runoff Results

Total Rainfall (in) 0.91
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 1.71
 Rainfall Intensity 3.652
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:05

Runoff Hydrograph



Subbasin : Sub-CB-29

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

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

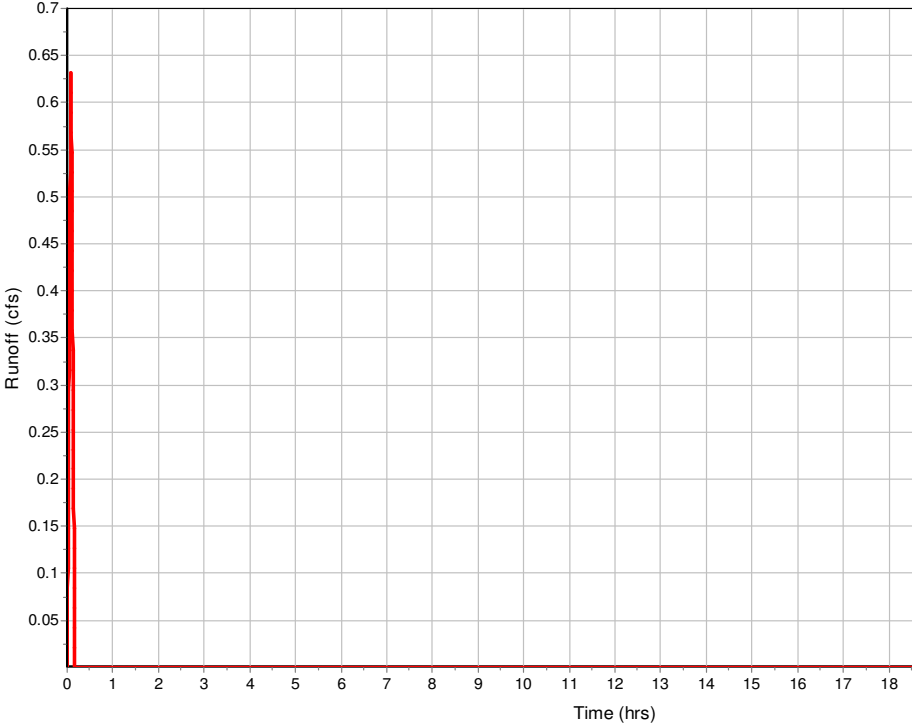
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	253.6223323	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.87	0	0
Total TOC (min)	3.73		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.63
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:44

Subbasin : Sub-CB-29

Runoff Hydrograph



Subbasin : Sub-CB-3

Input Data

Area (ac)	0.14
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

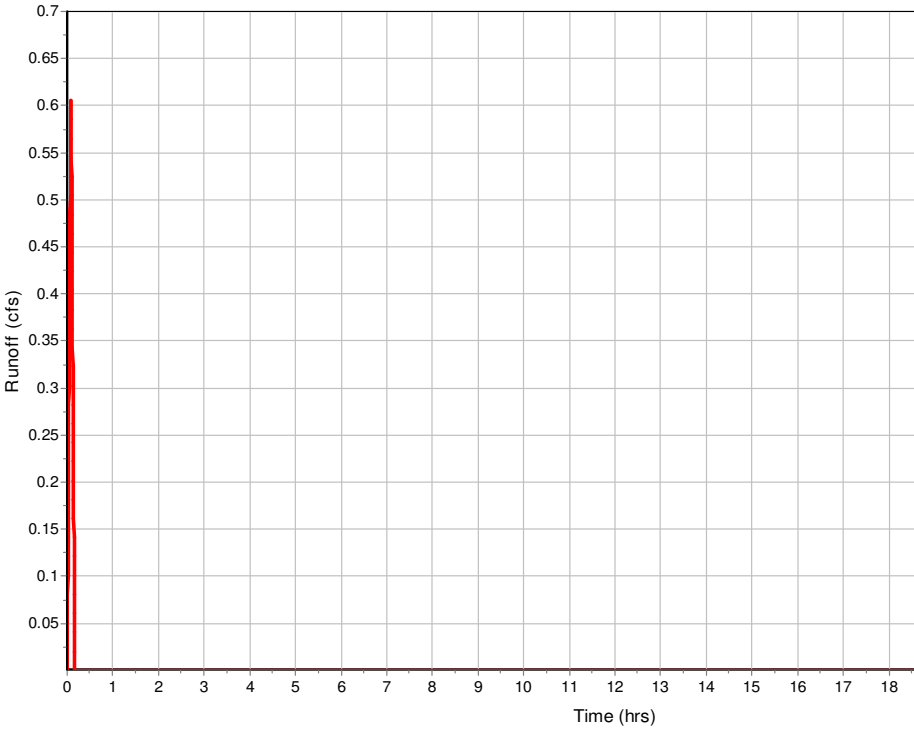
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	181.26423	58.411	0
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.46	0.52	0
Total TOC (min)	3.84		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.61
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:50

Subbasin : Sub-CB-3

Runoff Hydrograph



Subbasin : Sub-CB-31

Input Data

Area (ac) 0.17
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.7
Composite Area & Weighted Runoff Coeff.	0.17		0.7

Time of Concentration

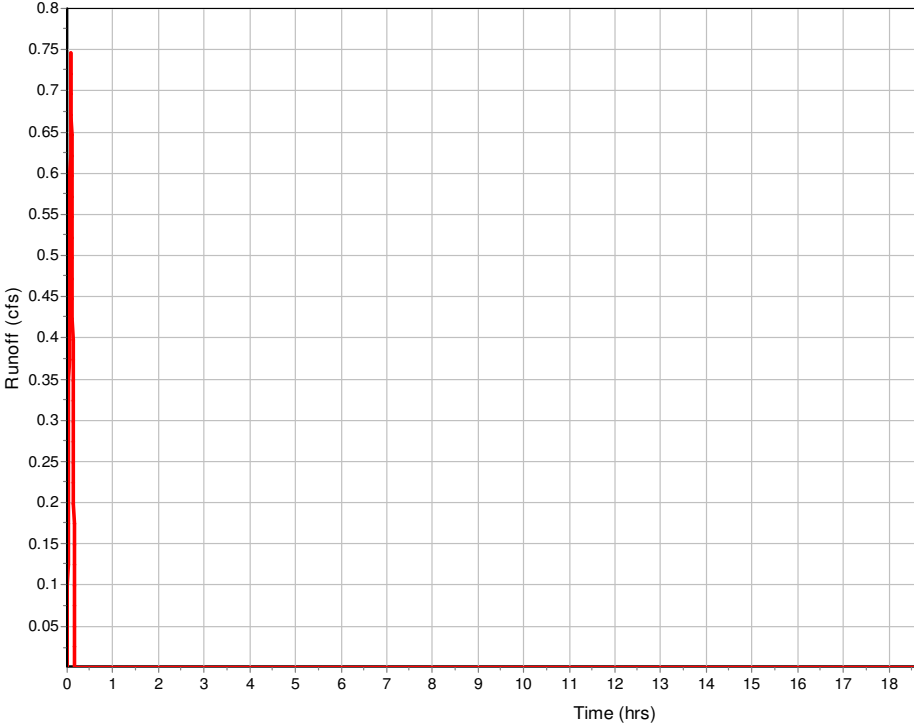
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	166.3763112	83.655	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.76	0.27	0
Total TOC (min)3.90			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.75
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:54

Runoff Hydrograph



Subbasin : Sub-CB-32

Input Data

Area (ac) 0.13
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.7
Composite Area & Weighted Runoff Coeff.	0.13		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

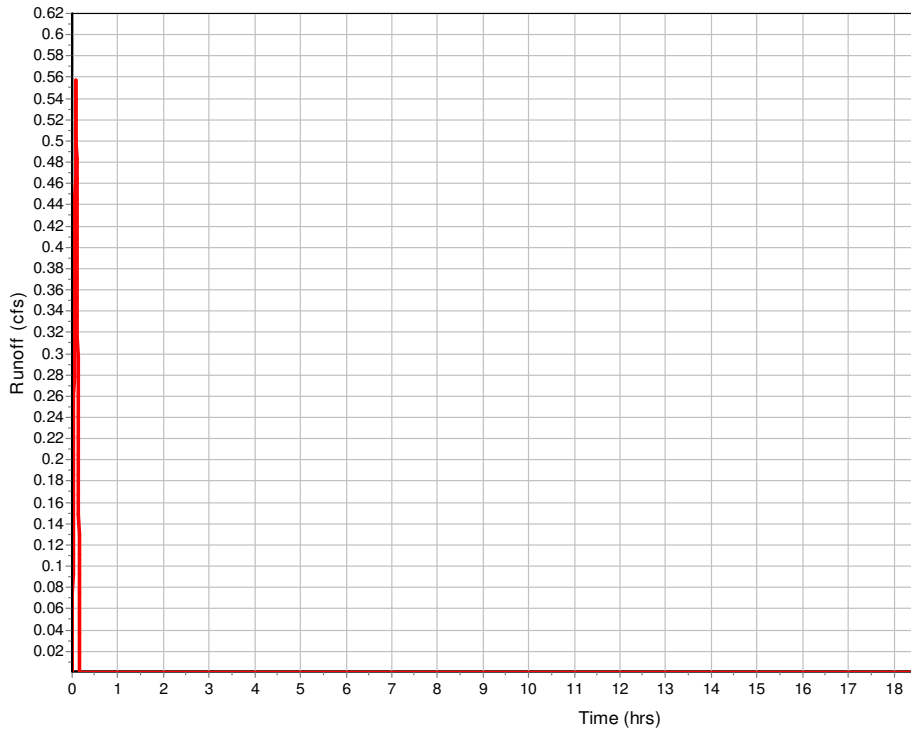
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.2624187	52.704	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.77	0.17	0
Total TOC (min)3.80			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.56
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:48

Subbasin : Sub-CB-32

Runoff Hydrograph



Subbasin : Sub-CB-35

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

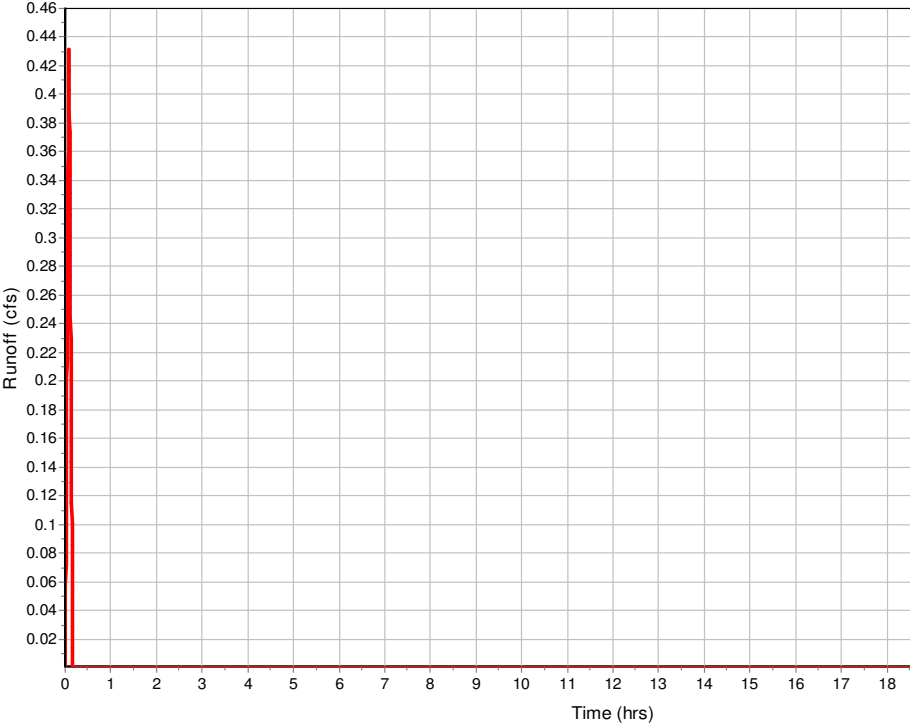
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	159.59	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.4	0	0
Total TOC (min)	3.27		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.43
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:16

Runoff Hydrograph



Subbasin : Sub-CB-36

Input Data

Area (ac) 0.58
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

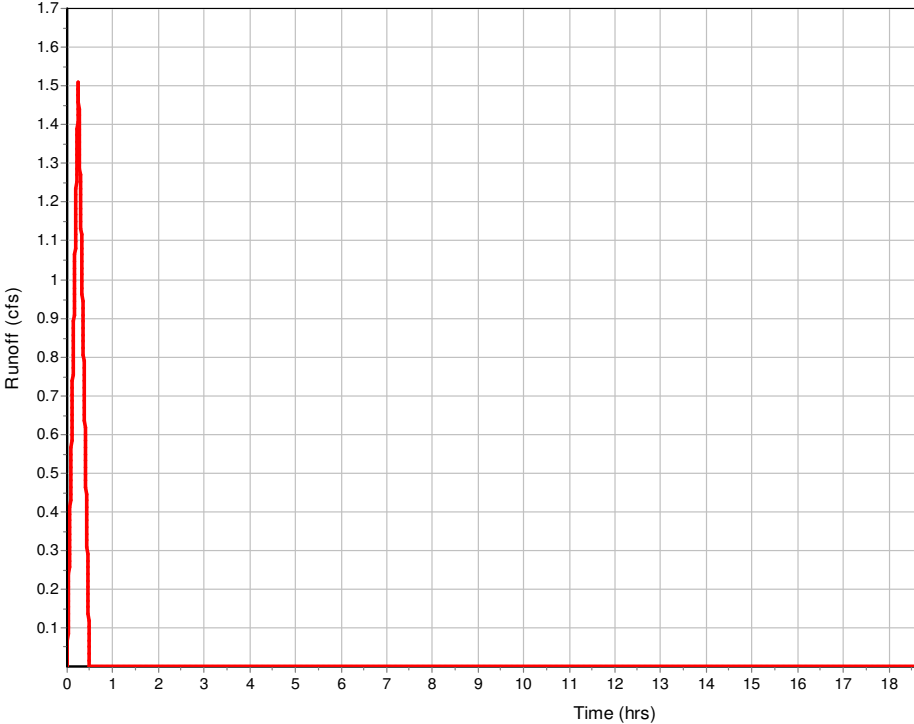
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	224.201193	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.57	0	0
Total TOC (min)	14.71		

Subbasin Runoff Results

Total Rainfall (in) 0.9
 Total Runoff (in) 0.63
 Peak Runoff (cfs) 1.51
 Rainfall Intensity 3.694
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:14:43

Runoff Hydrograph



Subbasin : Sub-CB-38

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

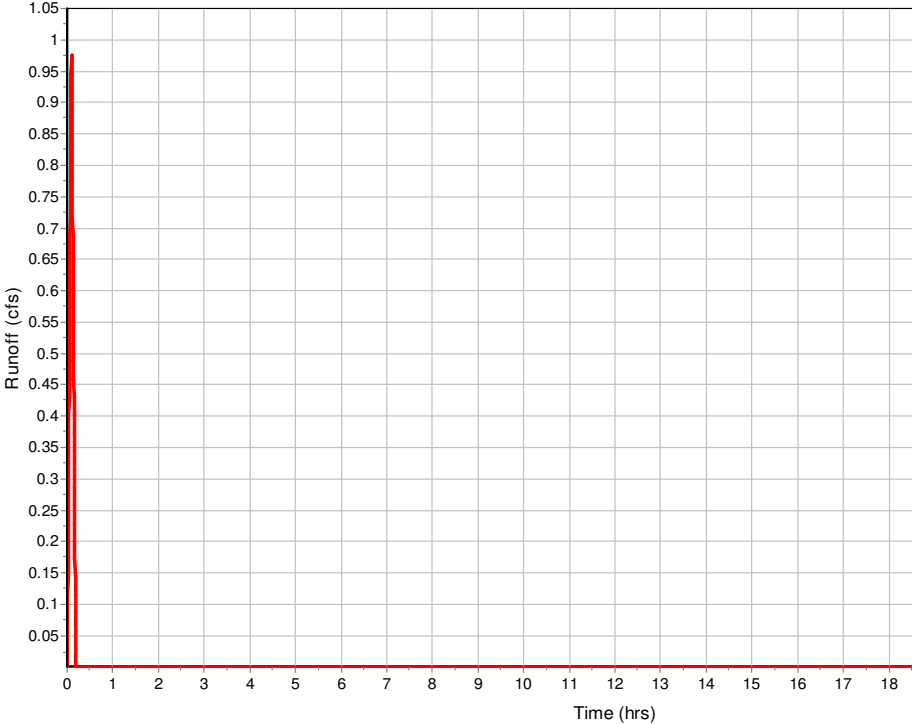
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.00000002	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	214.8866153	184.11	0
Slope (%) :	2.45	0.75	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.18	1.76	0
Computed Flow Time (min) :	1.13	1.74	0
Total TOC (min)	5.73		

Subbasin Runoff Results

Total Rainfall (in)	0.55
Total Runoff (in)	0.38
Peak Runoff (cfs)	0.98
Rainfall Intensity	5.775
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:05:44

Runoff Hydrograph



Subbasin : Sub-CB-39

Input Data

Area (ac) 1.39
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.39	-	0.7
Composite Area & Weighted Runoff Coeff.	1.39		0.7

Time of Concentration

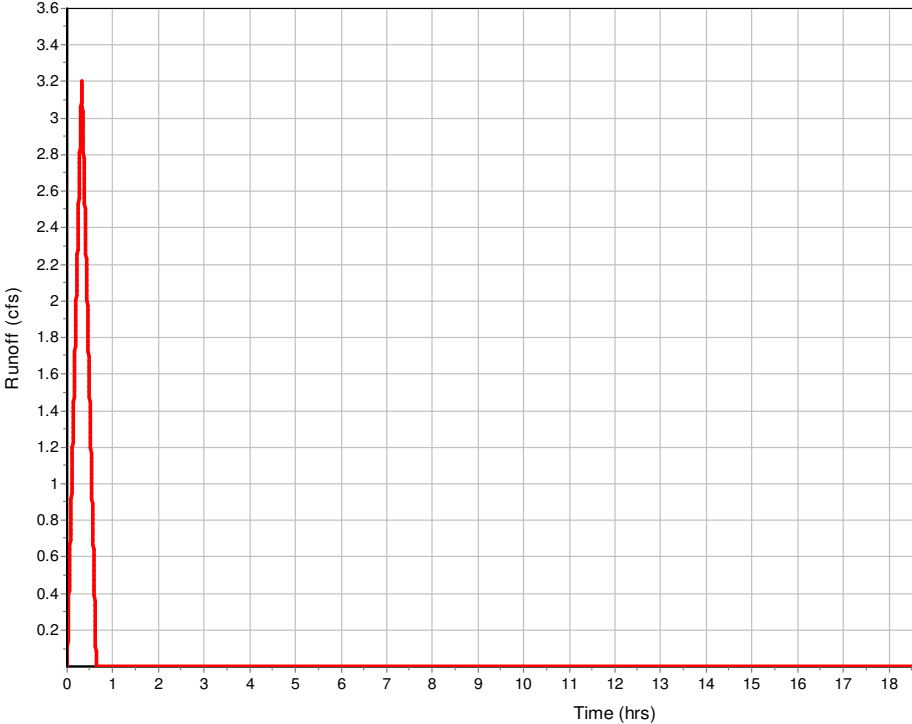
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	99.98923348	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	34.45719772	233.52	132.7
Slope (%) :	1.5	2.45	0.75
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	1.98	3.18	1.76
Computed Flow Time (min) :	0.29	1.22	1.26
Total TOC (min)	19.18		

Subbasin Runoff Results

Total Rainfall (in) 1.05
 Total Runoff (in) 0.74
 Peak Runoff (cfs) 3.2
 Rainfall Intensity 3.299
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:19:11

Runoff Hydrograph



Subbasin : Sub-CB-43

Input Data

Area (ac) 0.71
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.71	-	0.7
Composite Area & Weighted Runoff Coeff.	0.71		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

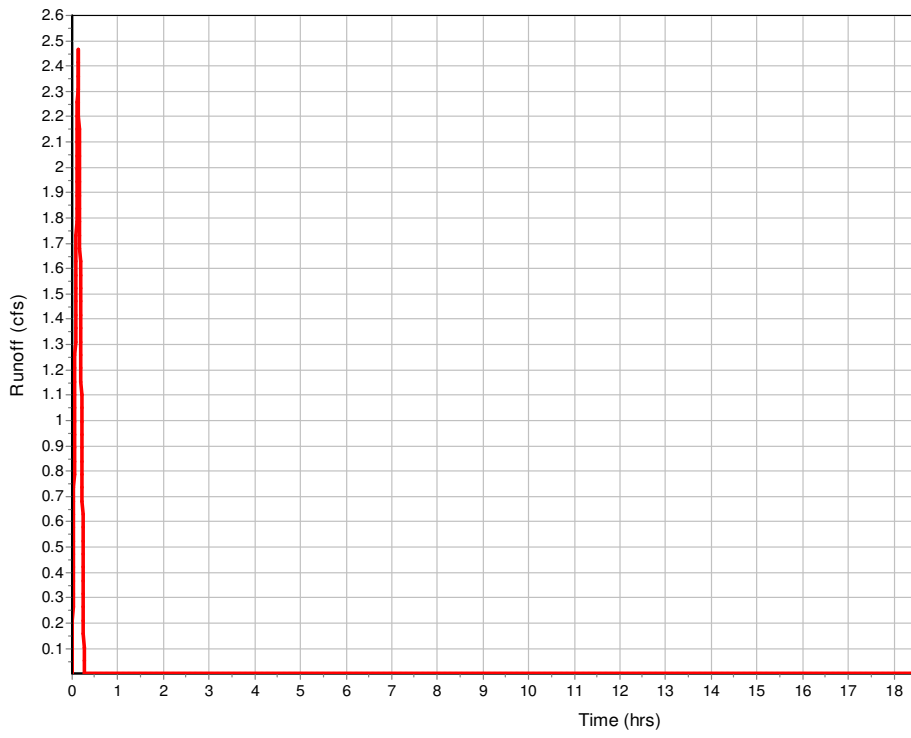
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	93	77.84	0
Slope (%) :	10.75	1.99	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	5.29	2.87	0
Computed Flow Time (min) :	0.29	0.45	0
Total TOC (min)	7.89		

Subbasin Runoff Results

Total Rainfall (in) 0.65
 Total Runoff (in) 0.45
 Peak Runoff (cfs) 2.47
 Rainfall Intensity 4.963
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:07:53

Subbasin : Sub-CB-43

Runoff Hydrograph



Subbasin : Sub-CB-44

Input Data

Area (ac)	0.72
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.72	-	0.7
Composite Area & Weighted Runoff Coeff.	0.72		0.7

Time of Concentration

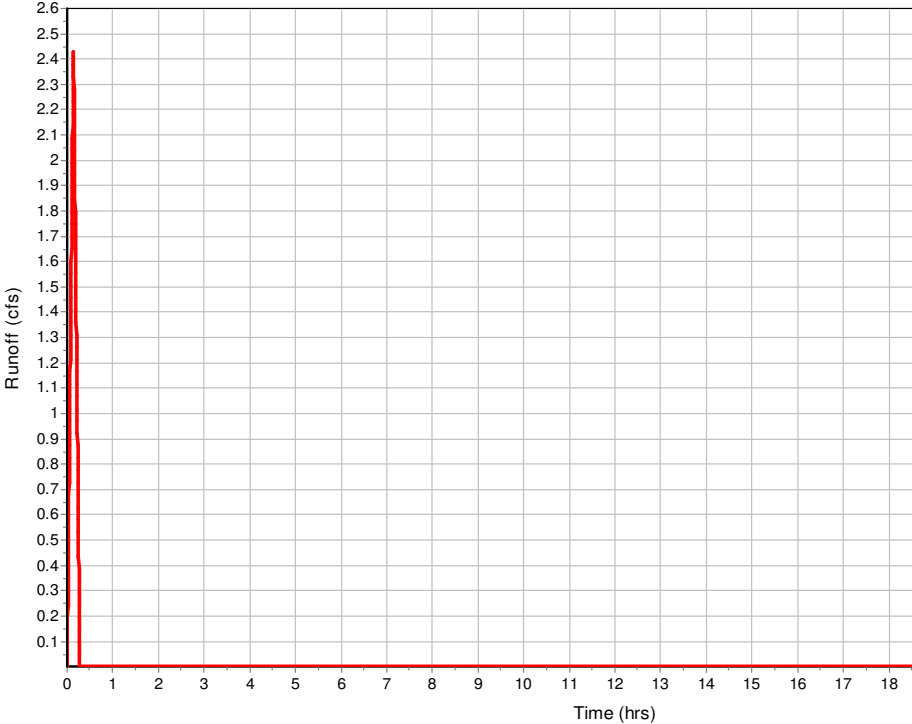
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	9	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	8.02	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	78.42	77.02	0
Slope (%) :	16.7	11.38	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	6.59	6.86	0
Computed Flow Time (min) :	0.2	0.19	0
Total TOC (min)	8.40		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.47
Peak Runoff (cfs)	2.43
Rainfall Intensity	4.817
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:08:24

Runoff Hydrograph



Subbasin : Sub-CB-6

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

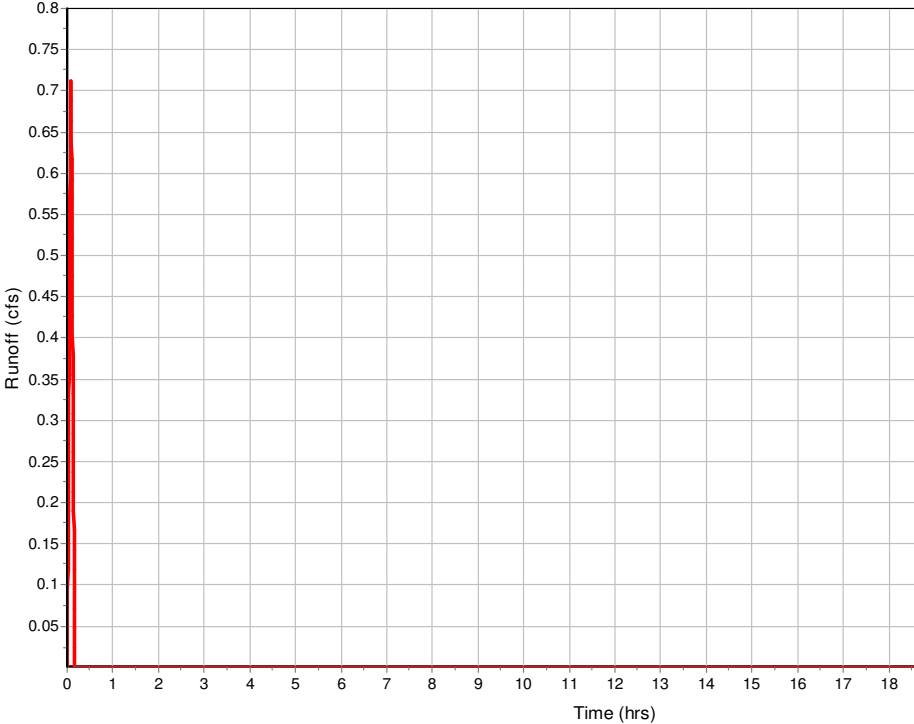
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	207.9606416	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.62	0	0
Total TOC (min)	3.48		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.71
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:29

Runoff Hydrograph



Subbasin : Sub-CB-7

Input Data

Area (ac) 0.04
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.04	-	0.7
Composite Area & Weighted Runoff Coeff.	0.04		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999999	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

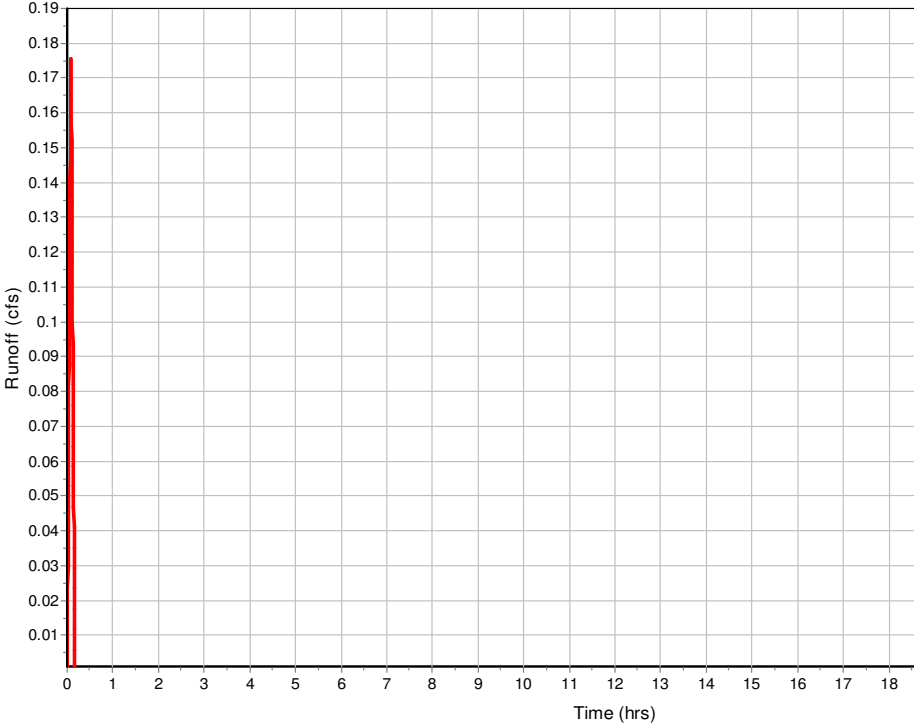
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	68.39700153	0	0
Slope (%) :	0.85	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.87	0	0
Computed Flow Time (min) :	0.61	0	0
Total TOC (min)	3.47		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.18
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-7

Runoff Hydrograph



Subbasin : Sub-CB-9

Input Data

Area (ac) 0.36
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999519	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

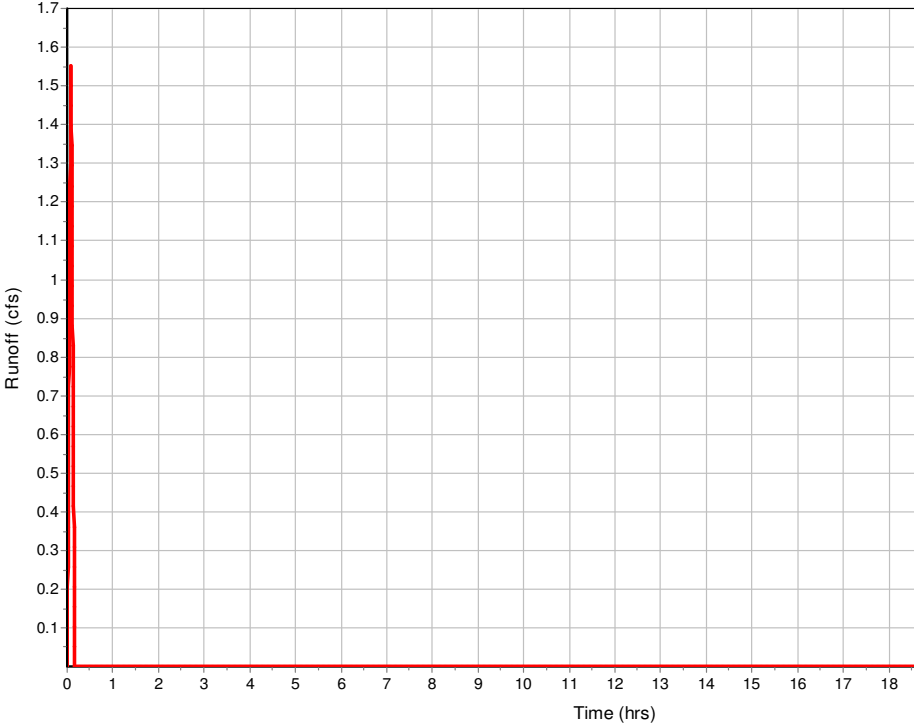
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	199.7947467	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.6	0	0
Total TOC (min)	3.46		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.55
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-9

Runoff Hydrograph



Subbasin : Sub-FES-2

Input Data

Area (ac)	1.58
Weighted Runoff Coefficient	0.56

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.58	-	0.56
Composite Area & Weighted Runoff Coeff.	1.58		0.56

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

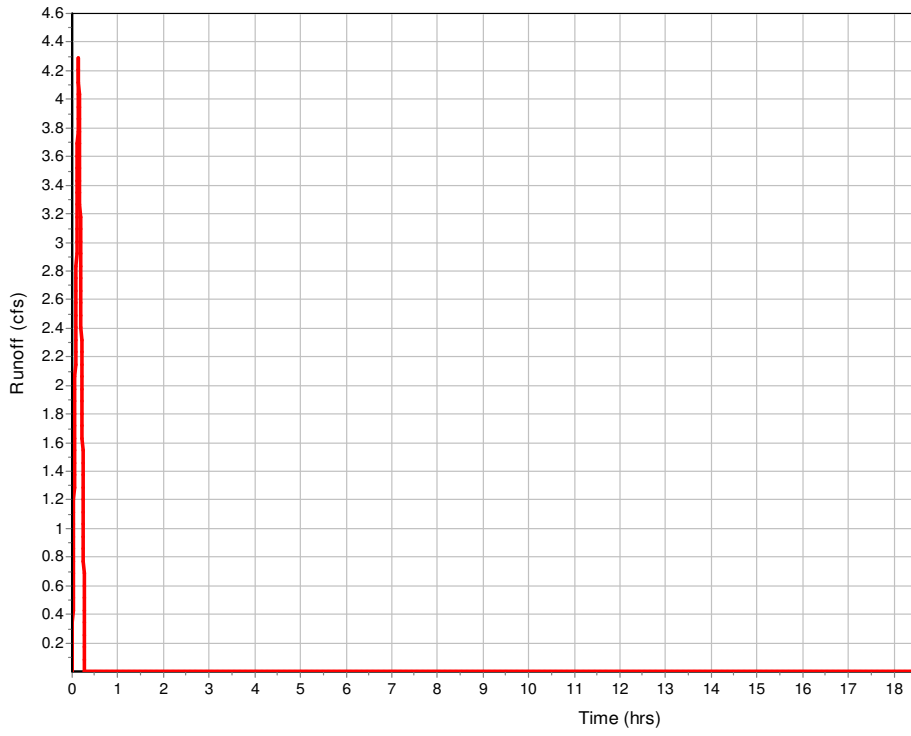
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	363.3701089	0	0
Slope (%) :	10	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.1	0	0
Computed Flow Time (min) :	1.19	0	0
Total TOC (min)	8.33		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.38
Peak Runoff (cfs)	4.29
Rainfall Intensity	4.837
Weighted Runoff Coefficient	0.56
Time of Concentration (days hh:mm:ss)	0 00:08:20

Subbasin : Sub-FES-2

Runoff Hydrograph



Subbasin : SUB-PIPE-35

Input Data

Area (ac) 0.36
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.36	-	0.72
Composite Area & Weighted Runoff Coeff.	0.36		0.72

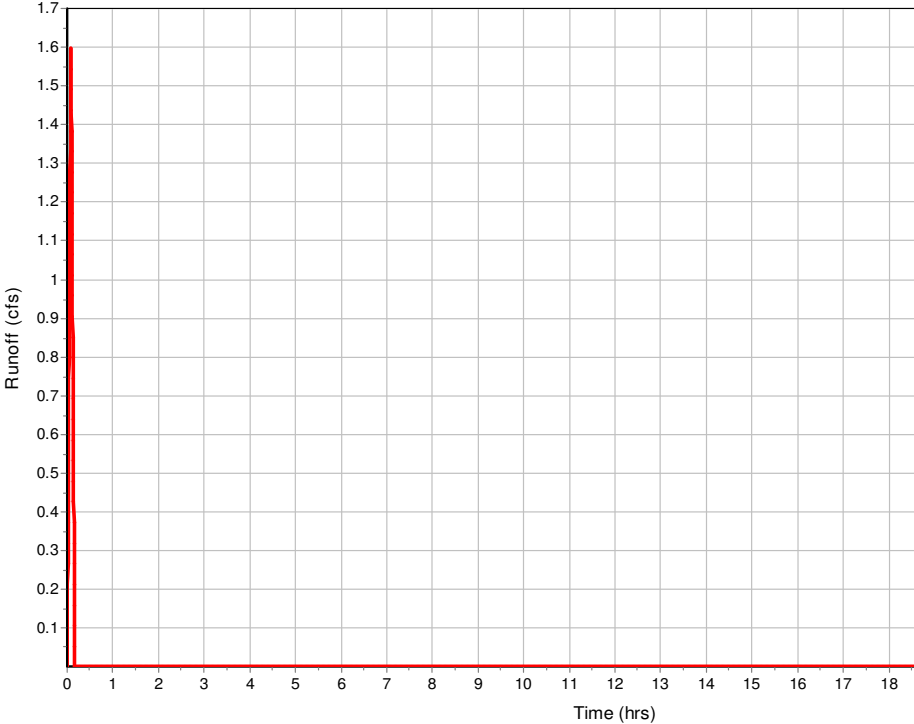
Time of Concentration

User-Defined TOC override (minutes): 2.36

Subbasin Runoff Results

Total Rainfall (in) 0.51
Total Runoff (in) 0.37
Peak Runoff (cfs) 1.6
Rainfall Intensity 6.16
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:02:22

Runoff Hydrograph



Subbasin : SUB-PIPE-36

Input Data

Area (ac) 1.26
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.26	-	0.72
Composite Area & Weighted Runoff Coeff.	1.26		0.72

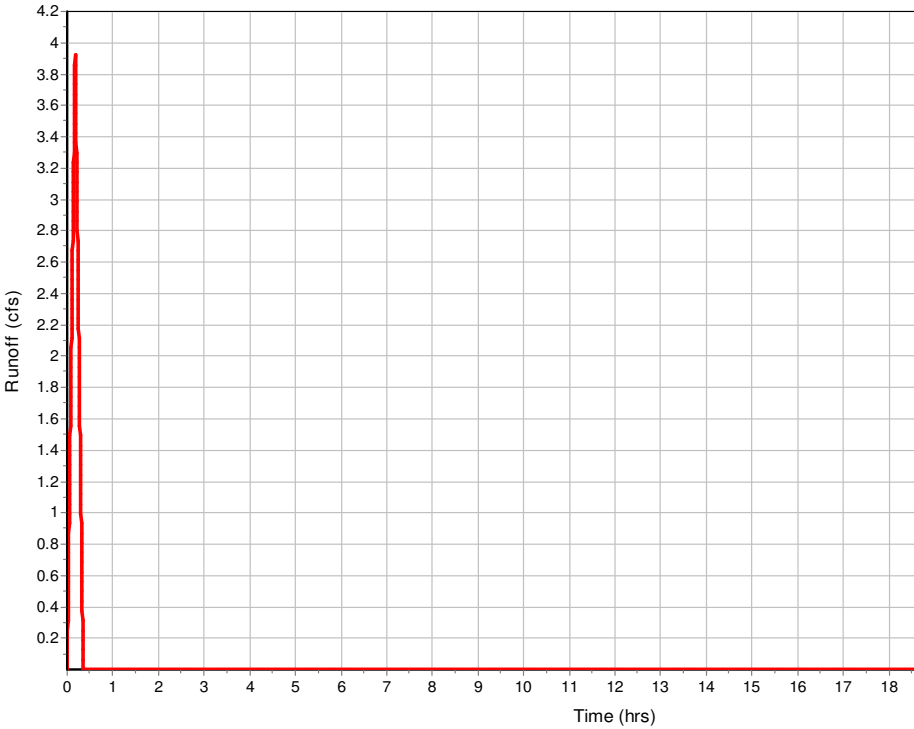
Time of Concentration

User-Defined TOC override (minutes): 10.56

Subbasin Runoff Results

Total Rainfall (in) 0.76
Total Runoff (in) 0.55
Peak Runoff (cfs) 3.92
Rainfall Intensity 4.322
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:10:34

Runoff Hydrograph



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 (ft ²)	Minimum Pipe Cover (in)
1 FES-2	466.60	469.78	3.18	466.60	0.00	469.78	0.00	0.00	2.15
2 IN-PIPE-35	462.75	464.00	1.25	462.75	0.00	464.00	0.00	0.00	0.00
3 IN-PIPE36	441.30	442.80	1.50	441.30	0.00	442.80	0.00	0.00	0.00
4 JB-14	529.50	534.76	5.26	529.50	0.00	535.50	0.74	0.00	45.12
5 JB-23	515.30	519.44	4.14	515.30	0.00	519.20	-0.24	10.00	31.68

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	1 FI Occu
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days h
1	FES-2	19.47	19.47	468.35	1.75	0.00	1.43	468.04	1.44	0 00:00	0
2	IN-PIPE-35	1.59	1.59	463.18	0.43	0.00	1.07	462.75	0.00	0 00:05	0
3	IN-PIPE36	3.92	3.92	442.17	0.87	0.00	0.71	441.39	0.09	0 00:10	0
4	JB-14	5.29	0.00	529.93	0.43	0.00	4.83	529.51	0.01	0 00:12	0
5	JB-23	2.03	0.00	515.56	0.26	0.00	3.88	515.30	0.00	0 00:05	0

Channel Input

SN Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Shape Slope (%)	Height	Width	Manning's E Roughness
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ft)	(ft)	
1 L-SDPIPE-1	73.15	476.67	10.73	475.09	7.62	1.58	2.1600 User-Defined	0.330	14.000	0.0150
2 L-SDPIPE-13	403.61	521.86	4.36	510.72	5.72	11.14	2.7600 User-Defined	0.330	14.000	0.0150
3 L-SDPIPE-14	373.89	522.45	4.46	515.37	5.03	7.08	1.8900 User-Defined	0.330	14.000	0.0150
4 L-SDPIPE-15	83.27	471.49	3.38	464.82	0.00	6.67	8.0100 User-Defined	0.330	14.000	0.0150
5 L-SDPIPE-16	206.62	505.01	3.91	489.62	6.43	15.39	7.4500 User-Defined	0.330	14.000	0.0150
6 L-SDPIPE-18	170.54	523.17	5.39	517.57	3.45	5.60	3.2800 User-Defined	0.330	14.000	0.0150
7 L-SDPIPE-19	227.29	522.18	4.31	505.01	3.58	17.17	7.5500 User-Defined	0.330	14.000	0.0150
8 L-SDPIPE-2	62.02	476.28	9.98	475.09	7.29	1.19	1.9200 User-Defined	0.330	14.000	0.0150
9 L-SDPIPE-20	233.87	505.01	3.58	487.59	3.97	17.42	7.4500 User-Defined	0.330	14.000	0.0150
10 L-SDPIPE-21	241.61	543.67	5.17	534.06	3.86	9.61	3.9800 User-Defined	0.330	14.000	0.0150
11 L-SDPIPE-23	316.61	547.43	4.84	534.06	3.53	13.37	4.2200 User-Defined	0.500	26.000	0.0150
12 L-SDPIPE-25	202.83	549.70	3.70	532.10	0.00	17.60	8.6800 User-Defined	0.500	26.000	0.0150
13 L-SDPIPE-27	245.69	494.00	6.50	476.28	9.98	17.72	7.2100 User-Defined	0.330	14.000	0.0150
14 L-SDPIPE-28	228.18	493.47	5.63	476.67	10.73	16.80	7.3600 User-Defined	0.330	14.000	0.0150
15 L-SDPIPE-29	172.07	510.72	5.72	494.00	6.50	16.72	9.7200 User-Defined	0.330	14.000	0.0150
16 L-SDPIPE-32	98.13	549.76	5.26	540.30	0.00	9.46	9.6400 User-Defined	0.500	26.000	0.0150
17 L-SDPIPE-33	78.91	518.02	3.90	517.01	4.43	1.01	1.2800 User-Defined	0.330	14.000	0.0320
18 L-SDPIPE-34	149.42	521.36	5.08	517.01	4.43	4.35	2.9100 User-Defined	0.330	14.000	0.0320
19 L-SDPIPE-4	129.78	475.09	7.62	464.82	0.00	10.27	7.9100 User-Defined	0.330	14.000	0.0320
20 L-SDPIPE-6	214.12	489.62	6.43	475.09	7.29	14.53	6.7900 User-Defined	0.330	14.000	0.0150
21 L-SDPIPE-7	216.57	487.59	3.97	471.49	3.38	16.10	7.4300 User-Defined	0.330	14.000	0.0150

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Fr
1	L-SDPIPE-1	0.00	0 00:00	3.72	0.00	0.00		0.00	0.00	0.00	
2	L-SDPIPE-13	0.00	0 00:00	4.20	0.00	0.00		0.02	0.06	0.00	
3	L-SDPIPE-14	0.46	0 00:13	3.48	0.13	0.37	16.84	0.24	0.73	0.00	
4	L-SDPIPE-15	0.18	0 00:17	7.16	0.02	1.66	0.84	0.08	0.24	0.00	
5	L-SDPIPE-16	0.00	0 00:06	6.90	0.00	0.00		0.04	0.12	0.00	
6	L-SDPIPE-18	0.11	0 00:05	4.64	0.02	6.32	0.45	0.07	0.21	0.00	
7	L-SDPIPE-19	0.34	0 00:08	6.95	0.05	2.95	1.28	0.07	0.22	0.00	
8	L-SDPIPE-2	0.00	0 00:00	3.50	0.00	0.00		0.10	0.29	0.00	
9	L-SDPIPE-20	0.09	0 00:16	6.90	0.01	0.82	4.75	0.07	0.21	0.00	
10	L-SDPIPE-21	0.00	0 00:00	5.04	0.00	0.00		0.17	0.50	0.00	
11	L-SDPIPE-23	0.00	0 00:06	19.36	0.00	0.00		0.15	0.30	0.00	
12	L-SDPIPE-25	0.00	0 00:05	27.75	0.00	0.00		0.01	0.02	0.00	
13	L-SDPIPE-27	0.00	0 00:00	6.79	0.00	0.00		0.00	0.00	0.00	
14	L-SDPIPE-28	0.24	0 00:14	6.86	0.03	2.98	1.28	0.06	0.18	0.00	
15	L-SDPIPE-29	0.02	0 00:07	7.88	0.00	1.75	1.64	0.02	0.06	0.00	
16	L-SDPIPE-32	0.03	0 00:05	28.64	0.00	2.05	0.80	0.02	0.05	0.00	
17	L-SDPIPE-33	0.00	0 00:00	2.86	0.00	0.00		0.17	0.50	0.00	
18	L-SDPIPE-34	0.22	0 00:08	4.31	0.05	0.22	11.32	0.22	0.66	0.00	
19	L-SDPIPE-4	0.00	0 00:00	7.11	0.00	0.00		0.00	0.00	0.00	
20	L-SDPIPE-6	0.18	0 00:05	6.59	0.03	0.54	6.61	0.13	0.39	0.00	
21	L-SDPIPE-7	0.16	0 00:16	6.90	0.02	1.23	2.93	0.08	0.23	0.00	

Pipe Input

SN Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness
1 SDPIPE-1	35.55	465.94	0.00	463.00	0.00	2.94	8.2700	CIRCULAR	36.000	36.000	0.0120
2 SDPIPE-10	256.10	529.50	0.00	512.58	0.00	16.92	6.6100	CIRCULAR	18.000	18.000	0.0120
3 SDPIPE-11	67.57	530.20	0.00	529.50	0.00	0.70	1.0400	CIRCULAR	18.000	18.000	0.0120
4 SDPIPE-12	33.01	530.53	0.00	530.20	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
5 SDPIPE-13	130.50	517.50	0.00	505.00	0.00	12.50	9.5800	CIRCULAR	18.000	18.000	0.0120
6 SDPIPE-14	39.55	517.99	0.00	517.50	0.00	0.49	1.2500	CIRCULAR	18.000	18.000	0.0130
7 SDPIPE-15	64.04	468.11	0.00	467.47	0.00	0.64	1.0000	CIRCULAR	18.000	18.000	0.0130
8 SDPIPE-16	23.51	501.10	0.00	499.00	0.00	2.10	8.9300	CIRCULAR	18.000	18.000	0.0120
9 SDPIPE-17	194.21	515.30	0.00	501.00	-0.10	14.30	7.3600	CIRCULAR	18.000	18.000	0.0120
10 SDPIPE-18	49.41	517.78	0.00	515.30	0.00	2.48	5.0200	CIRCULAR	18.000	18.000	0.0130
11 SDPIPE-19	51.31	517.87	0.00	515.30	0.00	2.57	5.0100	CIRCULAR	18.000	18.000	0.0130
12 SDPIPE-2	35.82	466.30	0.00	465.94	0.00	0.36	1.0000	CIRCULAR	36.000	36.000	0.0130
13 SDPIPE-20	33.00	501.43	0.00	501.10	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0120
14 SDPIPE-21	239.80	538.50	0.00	530.20	0.00	8.30	3.4600	CIRCULAR	18.000	18.000	0.0120
15 SDPIPE-22	57.68	542.14	0.00	538.50	0.00	3.64	6.3100	CIRCULAR	18.000	18.000	0.0130
16 SDPIPE-23	44.75	542.59	0.00	542.14	0.00	0.45	1.0100	CIRCULAR	18.000	18.000	0.0130
17 SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	0.0130
18 SDPIPE-27	182.53	487.50	0.00	484.31	0.00	3.19	1.7500	CIRCULAR	18.000	18.000	0.0120
19 SDPIPE-28	33.55	487.84	0.00	487.50	0.00	0.34	1.0000	CIRCULAR	18.000	18.000	0.0130
20 SDPIPE-29	167.22	505.00	0.00	487.50	0.00	17.50	10.4700	CIRCULAR	18.000	18.000	0.0120
21 SDPIPE-3	30.36	466.60	0.00	466.30	0.00	0.30	1.0000	CIRCULAR	36.000	36.000	0.0120
22 SDPIPE-30	66.71	510.34	0.00	505.00	0.00	5.34	8.0000	CIRCULAR	18.000	18.000	0.0130
23 SDPIPE-32	96.89	544.50	0.00	538.50	0.00	6.00	6.1900	CIRCULAR	18.000	18.000	0.0120
24 SDPIPE-33	77.61	514.12	0.00	512.58	0.00	1.54	1.9800	CIRCULAR	18.000	18.000	0.0150
25 SDPIPE-34	147.34	516.28	0.00	512.58	0.00	3.70	2.5100	CIRCULAR	18.000	18.000	0.0150
26 SDPIPE-4	71.93	467.47	0.00	466.75	0.81	0.72	1.0000	CIRCULAR	18.000	18.000	0.0120
27 SDPIPE-5	33.00	467.80	0.00	467.47	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
28 SDPIPE-6	67.57	483.19	0.00	482.52	0.00	0.67	1.0000	CIRCULAR	18.000	18.000	0.0120
29 SDPIPE-7	42.68	483.62	0.00	483.19	0.00	0.43	1.0000	CIRCULAR	18.000	18.000	0.0130
30 SDPIPE-8	130.97	512.25	0.00	492.00	0.00	20.25	15.4600	CIRCULAR	24.000	24.000	0.0120
31 SDPIPE-9	33.02	512.58	0.00	512.25	0.00	0.33	1.0000	CIRCULAR	24.000	24.000	0.0130
32 SPIPE-35	30.19	462.75	0.00	462.25	0.00	0.50	1.6600	CIRCULAR	18.000	18.000	0.0150
33 SPIPE-36	31.09	441.38	0.08	441.00	0.00	0.38	1.2200	CIRCULAR	18.000	18.000	0.0150

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Frc Nun
1 SDPIPE-1	21.43	0 00:08	207.79	0.10	13.86	0.04	0.81	0.27	0.00	
2 SDPIPE-10	5.28	0 00:12	29.25	0.18	5.99	0.71	0.87	0.58	0.00	
3 SDPIPE-11	5.29	0 00:12	11.59	0.46	7.08	0.16	0.66	0.44	0.00	
4 SDPIPE-12	0.69	0 00:07	10.49	0.07	1.74	0.32	0.72	0.48	0.00	
5 SDPIPE-13	2.27	0 00:13	35.22	0.06	10.80	0.20	0.26	0.18	0.00	
6 SDPIPE-14	2.28	0 00:13	11.74	0.19	5.82	0.11	0.41	0.27	0.00	
7 SDPIPE-15	1.45	0 00:17	10.50	0.14	3.74	0.29	0.41	0.27	0.00	
8 SDPIPE-16	3.05	0 00:06	34.01	0.09	9.81	0.04	0.35	0.23	0.00	
9 SDPIPE-17	2.02	0 00:05	30.77	0.07	7.19	0.45	0.33	0.22	0.00	
10 SDPIPE-18	1.05	0 00:05	23.53	0.04	5.70	0.14	0.24	0.16	0.00	
11 SDPIPE-19	1.38	0 00:08	23.51	0.06	6.89	0.12	0.26	0.17	0.00	
12 SDPIPE-2	19.64	0 00:08	66.70	0.29	6.64	0.09	1.31	0.44	0.00	
13 SDPIPE-20	1.13	0 00:16	11.38	0.10	4.39	0.13	0.37	0.25	0.00	
14 SDPIPE-21	1.69	0 00:15	21.17	0.08	3.65	1.09	0.57	0.38	0.00	
15 SDPIPE-22	1.70	0 00:15	26.39	0.06	7.46	0.13	0.28	0.19	0.00	
16 SDPIPE-23	0.62	0 00:05	10.53	0.06	3.27	0.23	0.25	0.16	0.00	
17 SDPIPE-25	0.55	0 00:05	14.89	0.04	3.57	0.35	0.21	0.14	0.00	
18 SDPIPE-27	4.00	0 00:20	15.03	0.27	6.84	0.44	0.55	0.37	0.00	
19 SDPIPE-28	1.27	0 00:14	10.50	0.12	3.12	0.18	0.46	0.31	0.00	
20 SDPIPE-29	3.08	0 00:20	36.81	0.08	7.34	0.38	0.43	0.29	0.00	
21 SDPIPE-3	20.72	0 00:00	71.83	0.29	7.93	0.06	1.60	0.53	0.00	
22 SDPIPE-30	3.08	0 00:20	29.71	0.10	10.67	0.10	0.33	0.22	0.00	
23 SDPIPE-32	1.24	0 00:05	28.32	0.04	7.77	0.21	0.22	0.15	0.00	
24 SDPIPE-33	2.46	0 00:08	12.82	0.19	3.46	0.37	0.87	0.58	0.00	
25 SDPIPE-34	2.16	0 00:08	14.43	0.15	3.23	0.76	0.85	0.57	0.00	
26 SDPIPE-4	1.45	0 00:17	11.38	0.13	4.10	0.29	0.38	0.25	0.00	
27 SDPIPE-5	0.46	0 00:07	10.50	0.04	1.98	0.28	0.28	0.19	0.00	
28 SDPIPE-6	1.79	0 00:05	11.37	0.16	4.31	0.26	0.43	0.29	0.00	
29 SDPIPE-7	1.37	0 00:16	10.50	0.13	3.58	0.20	0.40	0.27	0.00	
30 SDPIPE-8	11.68	0 00:09	96.37	0.12	19.32	0.11	0.49	0.25	0.00	
31 SDPIPE-9	11.53	0 00:09	22.62	0.51	8.12	0.07	0.93	0.46	0.00	
32 SPIPE-35	1.59	0 00:05	11.72	0.14	4.18	0.12	0.40	0.27	0.00	
33 SPIPE-36	3.91	0 00:10	10.06	0.39	4.67	0.11	0.72	0.48	0.00	

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)	Ini Wz De	
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	3.97	483.62	0
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	4.76	512.25	0
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	4.43	512.58	0
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	3.86	530.20	0
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	3.53	530.53	0
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	4.36	517.50	0
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	4.46	517.99	0
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	10.73	465.94	0
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	3.38	468.11	0
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	3.91	501.10	0
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	5.53	517.77	-0
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	4.30	515.81	-2
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	3.58	501.43	0
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	5.17	538.50	0
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	3.53	542.20	0
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	4.84	542.65	0
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	9.98	466.30	0
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	3.70	546.00	0
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	6.50	487.50	0
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	5.63	487.84	0
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	5.72	505.00	0
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	5.03	510.34	0
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	3.90	514.12	0
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	7.29	467.80	0
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	7.62	467.47	0
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	6.43	483.19	0
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	5.08	516.28	0

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	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
2 CB-12	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
3 CB-13	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
4 CB-15	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
5 CB-16	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
6 CB-18	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
7 CB-19	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
8 CB-2	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
9 CB-20	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
10 CB-22	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
11 CB-24	0.1033	0.0258	0.0150	0.0200	1.00	0.1312	8.50
12 CB-25	0.1041	0.0258	0.0150	0.0200	1.00	0.1312	8.50
13 CB-26	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
14 CB-27	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
15 CB-28	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
16 CB-29	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
17 CB-3	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
18 CB-31	0.0721	0.0200	0.0150	0.0200	1.50	0.1312	8.50
19 CB-32	0.0809	0.0258	0.0150	0.0200	1.00	0.1312	8.50
20 CB-35	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
21 CB-36	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
22 CB-38	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
23 CB-39	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
24 CB-43	0.0199	0.0258	0.0150	0.0200	1.00	0.1312	8.50
25 CB-6	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
26 CB-7	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
27 CB-9	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
28 Inlet-CB-44	0.1138	0.0258	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN Element ID	Peak Flow	Peak Lateral Inflow	Peak Flow Intercepted by Inlet	Peak Flow Bypassing Inlet	Inlet Efficiency during Peak	Max Gutter Spread during Peak	Max Gutter Water Elev. during Peak	Max Gutter Water Depth during Peak	Time of Max Depth Occurrence
	(cfs)	(cfs)	(cfs)	(cfs)	(%)	Flow (ft)	Flow (ft)	Flow (ft)	(days hh:mm)
1 CB-10	1.54	1.45	1.34	0.19	87.40	4.89	487.71	0.12	0 00:16
2 CB-12	1.36	1.36	N/A	N/A	N/A	4.37	517.29	0.28	0 00:09
3 CB-13	3.72	3.56	N/A	N/A	N/A	8.53	517.40	0.39	0 00:09
4 CB-15	3.63	3.63	N/A	N/A	N/A	8.38	534.44	0.38	0 00:12
5 CB-16	1.79	1.79	N/A	N/A	N/A	5.24	534.36	0.30	0 00:12
6 CB-18	0.53	0.53	0.53	0.00	100.00	4.05	521.96	0.10	0 00:13
7 CB-19	2.74	2.74	2.28	0.46	83.25	7.45	522.64	0.19	0 00:13
8 CB-2	1.20	0.97	1.20	0.00	100.00	6.67	476.84	0.17	0 00:08
9 CB-20	1.63	1.50	1.40	0.23	85.80	4.99	471.61	0.12	0 00:17
10 CB-22	0.60	0.60	0.60	0.00	100.00	3.45	505.09	0.08	0 00:06
11 CB-24	1.16	1.16	1.06	0.10	91.65	4.15	523.41	0.10	0 00:05
12 CB-25	1.73	1.73	1.39	0.34	80.28	4.80	522.29	0.12	0 00:08
13 CB-26	1.23	1.23	1.15	0.08	93.36	4.48	505.12	0.11	0 00:16
14 CB-27	0.38	0.38	0.38	0.00	100.00	3.07	543.74	0.07	0 00:15
15 CB-28	1.71	1.71	N/A	N/A	N/A	5.07	545.97	0.30	0 00:15
16 CB-29	0.63	0.63	0.63	0.00	100.00	3.71	547.52	0.09	0 00:05
17 CB-3	0.60	0.60	0.60	0.00	100.00	5.18	476.41	0.13	0 00:08
18 CB-31	0.74	0.74	0.74	0.01	99.03	4.36	549.46	0.09	0 00:05
19 CB-32	0.56	0.56	0.56	0.00	100.00	3.32	549.78	0.08	0 00:05
20 CB-35	0.43	0.43	0.43	0.00	100.00	2.89	494.07	0.07	0 00:20
21 CB-36	1.51	1.51	1.27	0.24	84.23	4.56	493.58	0.11	0 00:14
22 CB-38	0.97	0.97	0.93	0.04	95.57	3.88	510.81	0.09	0 00:20
23 CB-39	3.23	3.20	N/A	N/A	N/A	7.77	515.74	0.37	0 00:20
24 CB-43	2.46	2.46	2.46	0.00	100.00	7.44	518.21	0.19	0 00:08
25 CB-6	0.87	0.71	N/A	N/A	N/A	3.25	475.34	0.25	0 00:07
26 CB-7	0.18	0.18	0.18	0.00	100.00	3.27	475.17	0.08	0 00:17
27 CB-9	1.55	1.55	1.35	0.20	87.17	4.91	489.74	0.12	0 00:05
28 Inlet-CB-44	2.43	2.43	2.18	0.24	89.92	5.34	521.49	0.13	0 00:08

10 Year Design Storm

Project Description

File Name Hilltop Drainage Analysis 4-8-26.SPF

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.....	31
Nodes.....	46
<i>Junctions</i>	5
<i>Outfalls</i>	13
<i>Flow Diversions</i>	0
<i>Inlets</i>	28
<i>Storage Nodes</i>	0
Links.....	54
<i>Channels</i>	21
<i>Pipes</i>	33
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 10 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-CB-10	0.58	0.7000	0.94	0.66	0.38	1.45	0 00:15:54
2	Sub-CB-12	0.32	0.7000	0.51	0.36	0.11	1.37	0 00:05:00
3	Sub-CB-13	1.03	0.7000	0.66	0.46	0.47	3.56	0 00:07:58
4	Sub-CB-15	1.21	0.7000	0.77	0.54	0.65	3.63	0 00:10:46
5	Sub-CB-16	0.42	0.7000	0.51	0.36	0.15	1.80	0 00:05:00
6	Sub-CB-18	0.12	0.7000	0.51	0.36	0.04	0.53	0 00:05:00
7	Sub-CB-19	1.00	0.7000	0.85	0.60	0.59	2.74	0 00:12:57
8	Sub-CB-2	0.38	0.7000	0.92	0.64	0.24	0.97	0 00:14:59
9	Sub-CB-20	0.62	0.7000	0.98	0.69	0.42	1.50	0 00:17:03
10	Sub-CB-22	0.14	0.7000	0.51	0.36	0.05	0.60	0 00:05:00
11	Sub-CB-24	0.27	0.7000	0.51	0.36	0.10	1.16	0 00:05:01
12	Sub-CB-25	0.51	0.7000	0.67	0.47	0.24	1.73	0 00:08:15
13	Sub-CB-26	0.49	0.7000	0.94	0.66	0.32	1.23	0 00:15:52
14	Sub-CB-27	0.10	0.7000	0.58	0.40	0.04	0.38	0 00:06:07
15	Sub-CB-28	0.67	0.7000	0.91	0.64	0.43	1.71	0 00:15:04
16	Sub-CB-29	0.15	0.7000	0.51	0.36	0.05	0.63	0 00:05:00
17	Sub-CB-3	0.14	0.7000	0.51	0.36	0.05	0.61	0 00:05:00
18	Sub-CB-31	0.17	0.7000	0.51	0.36	0.06	0.75	0 00:05:00
19	Sub-CB-32	0.13	0.7000	0.51	0.36	0.05	0.56	0 00:05:00
20	Sub-CB-35	0.10	0.7000	0.51	0.36	0.04	0.43	0 00:05:00
21	Sub-CB-36	0.58	0.7000	0.90	0.63	0.37	1.51	0 00:14:42
22	Sub-CB-38	0.24	0.7000	0.55	0.38	0.09	0.98	0 00:05:43
23	Sub-CB-39	1.39	0.7000	1.05	0.74	1.02	3.20	0 00:19:10
24	Sub-CB-43	0.71	0.7000	0.65	0.45	0.32	2.47	0 00:07:53
25	Sub-CB-44	0.72	0.7000	0.67	0.47	0.34	2.43	0 00:08:24
26	Sub-CB-6	0.16	0.7000	0.51	0.36	0.06	0.71	0 00:05:00
27	Sub-CB-7	0.04	0.7000	0.51	0.36	0.01	0.18	0 00:05:00
28	Sub-CB-9	0.36	0.7000	0.51	0.36	0.13	1.55	0 00:05:00
29	Sub-FES-2	1.58	0.5600	0.67	0.38	0.60	4.29	0 00:08:19
30	SUB-PIPE-35	0.36	0.7200	0.51	0.37	0.13	1.60	0 00:05:00
31	SUB-PIPE-36	1.26	0.7200	0.76	0.55	0.69	3.92	0 00:10:33

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft ²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)
1	FES-2	Junction	466.60	469.78	466.60	469.78	0.00	19.47	468.35	0.00	1.43
2	IN-PIPE-35	Junction	462.75	464.00	462.75	464.00	0.00	1.59	463.18	0.00	1.07
3	IN-PIPE36	Junction	441.30	442.80	441.30	442.80	0.00	3.92	442.17	0.00	0.71
4	JB-14	Junction	529.50	534.76	529.50	535.50	0.00	5.29	529.93	0.00	4.83
5	JB-23	Junction	515.30	519.44	515.30	519.20	10.00	2.03	515.56	0.00	3.88
6	OFFSITE-1	Outfall	540.30					0.03	540.33		
7	OFFSITE-2	Outfall	532.10					0.00	532.11		
8	OFFSITE-25	Outfall	464.82					0.00	464.82		
9	OFFSITE-26	Outfall	464.82					0.18	464.90		
10	OU-PIPE-36	Outfall	441.00					3.91	441.65		
11	Out-FES-1	Outfall	463.00					21.43	463.65		
12	Out-FES-11	Outfall	492.00					11.68	492.47		
13	Out-FES-17	Outfall	505.00					2.27	505.26		
14	Out-FES-21	Outfall	499.00					3.05	499.30		
15	Out-FES-3	Outfall	538.50					1.24	538.71		
16	Out-FES-34	Outfall	484.31					4.00	484.84		
17	Out-FES-8	Outfall	482.52					1.79	482.92		
18	OUT-PIPE-35	Outfall	462.25					1.59	462.62		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Depth (ft)
1	SDPIPE-1	Pipe	CB-2	Out-FES-1	35.55	465.94	463.00	8.2700	36.000	0.0120	21.43	207.79	0.10	13.86	0.81	
2	SDPIPE-10	Pipe	JB-14	CB-13	256.10	529.50	512.58	6.6100	18.000	0.0120	5.28	29.25	0.18	5.99	0.87	
3	SDPIPE-11	Pipe	CB-15	JB-14	67.57	530.20	529.50	1.0400	18.000	0.0120	5.29	11.59	0.46	7.08	0.66	
4	SDPIPE-12	Pipe	CB-16	CB-15	33.01	530.53	530.20	1.0000	18.000	0.0130	0.69	10.49	0.07	1.74	0.72	
5	SDPIPE-13	Pipe	CB-18	Out-FES-17	130.50	517.50	505.00	9.5800	18.000	0.0120	2.27	35.22	0.06	10.80	0.26	
6	SDPIPE-14	Pipe	CB-19	CB-18	39.55	517.99	517.50	1.2500	18.000	0.0130	2.28	11.74	0.19	5.82	0.41	
7	SDPIPE-15	Pipe	CB-20	CB-7	64.04	468.11	467.47	1.0000	18.000	0.0130	1.45	10.50	0.14	3.74	0.41	
8	SDPIPE-16	Pipe	CB-22	Out-FES-21	23.51	501.10	499.00	8.9300	18.000	0.0120	3.05	34.01	0.09	9.81	0.35	
9	SDPIPE-17	Pipe	JB-23	CB-22	194.21	515.30	501.00	7.3600	18.000	0.0120	2.02	30.77	0.07	7.19	0.33	
10	SDPIPE-18	Pipe	CB-24	JB-23	49.41	517.78	515.30	5.0200	18.000	0.0130	1.05	23.53	0.04	5.70	0.24	
11	SDPIPE-19	Pipe	CB-25	JB-23	51.31	517.87	515.30	5.0100	18.000	0.0130	1.38	23.51	0.06	6.89	0.26	
12	SDPIPE-2	Pipe	CB-3	CB-2	35.82	466.30	465.94	1.0000	36.000	0.0130	19.64	66.70	0.29	6.64	1.31	
13	SDPIPE-20	Pipe	CB-26	CB-22	33.00	501.43	501.10	1.0000	18.000	0.0120	1.13	11.38	0.10	4.39	0.37	
14	SDPIPE-21	Pipe	CB-27	CB-15	239.80	538.50	530.20	3.4600	18.000	0.0120	1.69	21.17	0.08	3.65	0.57	
15	SDPIPE-22	Pipe	CB-28	CB-27	57.68	542.14	538.50	6.3100	18.000	0.0130	1.70	26.39	0.06	7.46	0.28	
16	SDPIPE-23	Pipe	CB-29	CB-28	44.75	542.59	542.14	1.0100	18.000	0.0130	0.62	10.53	0.06	3.27	0.25	
17	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.55	14.89	0.04	3.57	0.21	
18	SDPIPE-27	Pipe	CB-35	Out-FES-34	182.53	487.50	484.31	1.7500	18.000	0.0120	4.00	15.03	0.27	6.84	0.55	
19	SDPIPE-28	Pipe	CB-36	CB-35	33.55	487.84	487.50	1.0000	18.000	0.0130	1.27	10.50	0.12	3.12	0.46	
20	SDPIPE-29	Pipe	CB-38	CB-35	167.22	505.00	487.50	10.4700	18.000	0.0120	3.08	36.81	0.08	7.34	0.43	
21	SDPIPE-3	Pipe	FES-2	CB-3	30.36	466.60	466.30	1.0000	36.000	0.0120	20.72	71.83	0.29	7.93	1.60	
22	SDPIPE-30	Pipe	CB-39	CB-38	66.71	510.34	505.00	8.0000	18.000	0.0130	3.08	29.71	0.10	10.67	0.33	
23	SDPIPE-32	Pipe	CB-31	Out-FES-3	96.89	544.50	538.50	6.1900	18.000	0.0120	1.24	28.32	0.04	7.77	0.22	
24	SDPIPE-33	Pipe	CB-43	CB-13	77.61	514.12	512.58	1.9800	18.000	0.0150	2.46	12.82	0.19	3.46	0.87	
25	SDPIPE-34	Pipe	Inlet-CB-44	CB-13	147.34	516.28	512.58	2.5100	18.000	0.0150	2.16	14.43	0.15	3.23	0.85	
26	SDPIPE-4	Pipe	CB-7	CB-2	71.93	467.47	466.75	1.0000	18.000	0.0120	1.45	11.38	0.13	4.10	0.38	
27	SDPIPE-5	Pipe	CB-6	CB-7	33.00	467.80	467.47	1.0000	18.000	0.0130	0.46	10.50	0.04	1.98	0.28	
28	SDPIPE-6	Pipe	CB-9	Out-FES-8	67.57	483.19	482.52	1.0000	18.000	0.0120	1.79	11.37	0.16	4.31	0.43	

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Total Depth (ft)
46	L-SDPIPE-27	Channel	CB-35	CB-3	245.69	494.00	476.28	7.2100	3.960	0.0150	0.00	6.79	0.00	0.00	0.00	0.00
47	L-SDPIPE-28	Channel	CB-36	CB-2	228.18	493.47	476.67	7.3600	3.960	0.0150	0.24	6.86	0.03	2.98	0.06	
48	L-SDPIPE-29	Channel	CB-38	CB-35	172.07	510.72	494.00	9.7200	3.960	0.0150	0.02	7.88	0.00	1.75	0.02	
49	L-SDPIPE-32	Channel	CB-31	OFFSITE-1	98.13	549.76	540.30	9.6400	6.000	0.0150	0.03	28.64	0.00	2.05	0.02	
50	L-SDPIPE-33	Channel	CB-43	CB-13	78.91	518.02	517.01	1.2800	3.960	0.0320	0.00	2.86	0.00	0.00	0.17	
51	L-SDPIPE-34	Channel	Inlet-CB-44	CB-13	149.42	521.36	517.01	2.9100	3.960	0.0320	0.22	4.31	0.05	0.22	0.22	
52	L-SDPIPE-4	Channel	CB-7	OFFSITE-25	129.78	475.09	464.82	7.9100	3.960	0.0320	0.00	7.11	0.00	0.00	0.00	
53	L-SDPIPE-6	Channel	CB-9	CB-6	214.12	489.62	475.09	6.7900	3.960	0.0150	0.18	6.59	0.03	0.54	0.13	
54	L-SDPIPE-7	Channel	CB-10	CB-20	216.57	487.59	471.49	7.4300	3.960	0.0150	0.16	6.90	0.02	1.23	0.08	

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 C Sp during
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	483.62	N/A	1.54	1.34	0.19	87.40	8.50	
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	512.25	10.00	1.36	N/A	N/A	N/A	8.50	
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	512.58	10.00	3.72	N/A	N/A	N/A	8.50	
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	530.20	10.00	3.63	N/A	N/A	N/A	8.50	
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	530.53	10.00	1.79	N/A	N/A	N/A	8.50	
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	517.50	N/A	0.53	0.53	0.00	100.00	8.50	
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	517.99	N/A	2.74	2.28	0.46	83.25	8.50	
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	465.94	N/A	1.20	1.20	0.00	100.00	8.50	
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	468.11	N/A	1.63	1.40	0.23	85.80	8.50	
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	501.10	N/A	0.60	0.60	0.00	100.00	8.50	
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	517.77	N/A	1.16	1.06	0.10	91.65	8.50	
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	515.81	N/A	1.73	1.39	0.34	80.28	8.50	
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	501.43	N/A	1.23	1.15	0.08	93.36	8.50	
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	538.50	N/A	0.38	0.38	0.00	100.00	8.50	
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	542.20	10.00	1.71	N/A	N/A	N/A	8.50	
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	542.65	N/A	0.63	0.63	0.00	100.00	8.50	
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	466.30	N/A	0.60	0.60	0.00	100.00	8.50	
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.74	0.74	0.01	99.03	8.50	
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	546.00	N/A	0.56	0.56	0.00	100.00	8.50	
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	487.50	N/A	0.43	0.43	0.00	100.00	8.50	
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	487.84	N/A	1.51	1.27	0.24	84.23	8.50	
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	505.00	N/A	0.97	0.93	0.04	95.57	8.50	
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	510.34	10.00	3.23	N/A	N/A	N/A	8.50	
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	514.12	N/A	2.46	2.46	0.00	100.00	8.50	
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	467.80	10.00	0.87	N/A	N/A	N/A	8.50	
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	467.47	N/A	0.18	0.18	0.00	100.00	8.50	
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	483.19	N/A	1.55	1.35	0.20	87.17	8.50	
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	516.28	N/A	2.43	2.18	0.24	89.92	8.50	

Subbasin Hydrology

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.58
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8}) / ((P^{0.5}) * (S_f^{0.4})))$$

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)

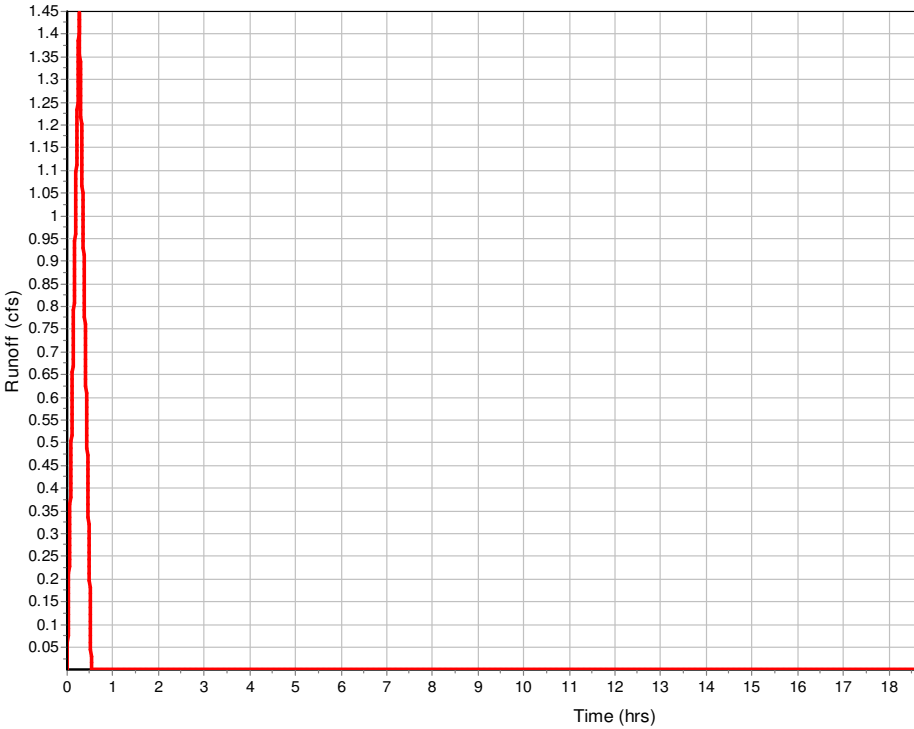
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99996647	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	229.3185963	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.69	0	0
Total TOC (min)	15.90		

Subbasin Runoff Results

Total Rainfall (in)	0.94
Total Runoff (in)	0.66
Peak Runoff (cfs)	1.45
Rainfall Intensity	3.571
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	00:15:54

Subbasin : Sub-CB-10

Runoff Hydrograph



Subbasin : Sub-CB-12

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

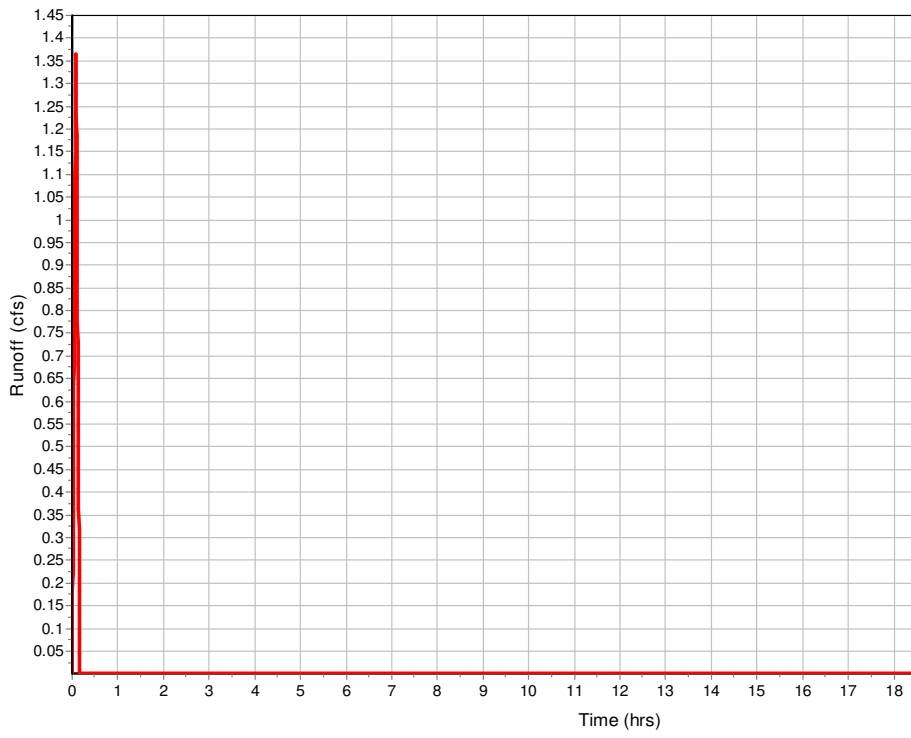
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	219.5273657	0	0
Slope (%) :	1.99	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.28	0	0
Total TOC (min)	4.14		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.37
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:04:08

Subbasin : Sub-CB-12

Runoff Hydrograph



Subbasin : Sub-CB-13

Input Data

Area (ac) 1.03
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.03	-	0.7
Composite Area & Weighted Runoff Coeff.	1.03		0.7

Time of Concentration

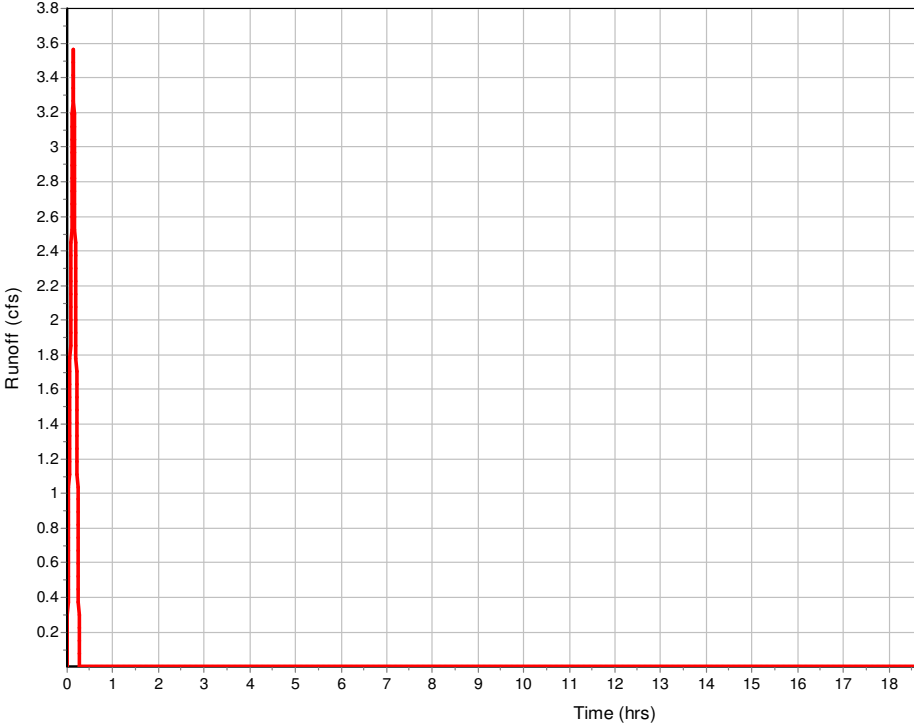
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	11.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.27	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	93	71.4	0
Slope (%) :	11.5	1.99	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.47	2.87	0
Computed Flow Time (min) :	0.28	0.41	0
Total TOC (min)	7.97		

Subbasin Runoff Results

Total Rainfall (in) 0.66
 Total Runoff (in) 0.46
 Peak Runoff (cfs) 3.56
 Rainfall Intensity 4.939
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:07:58

Runoff Hydrograph



Subbasin : Sub-CB-15

Input Data

Area (ac) 1.21
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.21	-	0.7
Composite Area & Weighted Runoff Coeff.	1.21		0.7

Time of Concentration

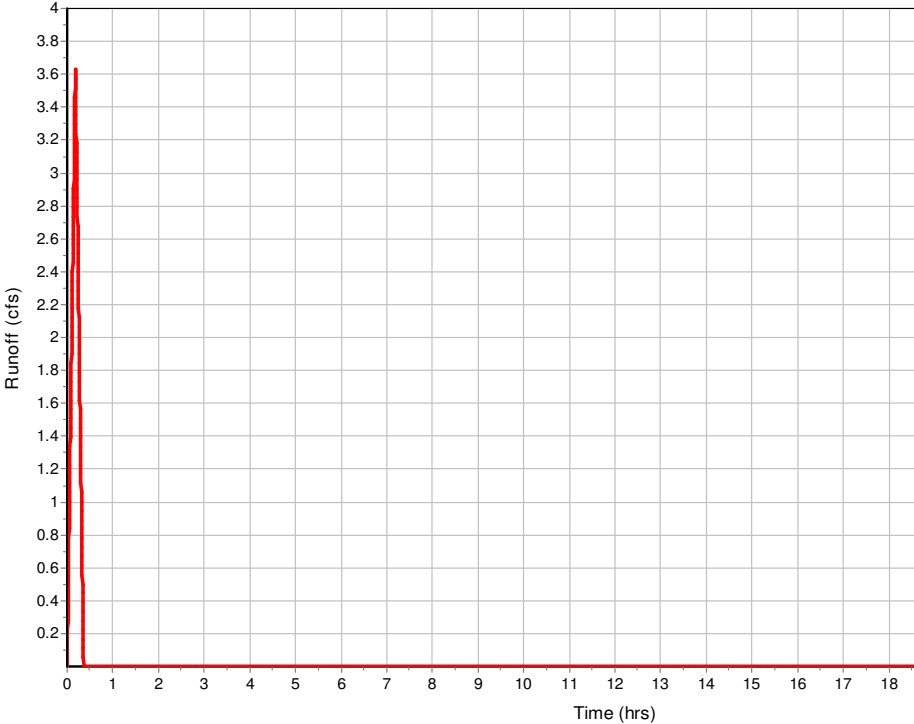
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	10.14	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	12.98144373	156.302
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.09	0.53	0
Total TOC (min)	10.77		

Subbasin Runoff Results

Total Rainfall (in) 0.77
 Total Runoff (in) 0.54
 Peak Runoff (cfs) 3.63
 Rainfall Intensity 4.282
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:10:46

Runoff Hydrograph



Subbasin : Sub-CB-16

Input Data

Area (ac) 0.42
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.42	-	0.7
Composite Area & Weighted Runoff Coeff.	0.42		0.7

Time of Concentration

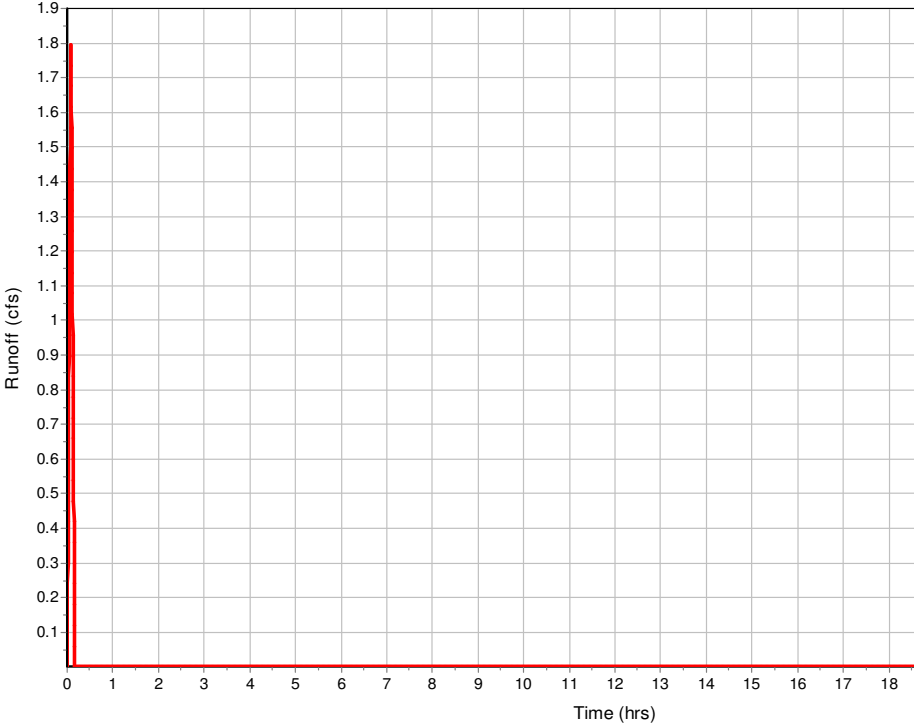
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	13.01720552	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	310.5319881	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	1.06	0	0
Total TOC (min)	3.93		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.8
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:56

Runoff Hydrograph



Subbasin : Sub-CB-18

Input Data

Area (ac) 0.12
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

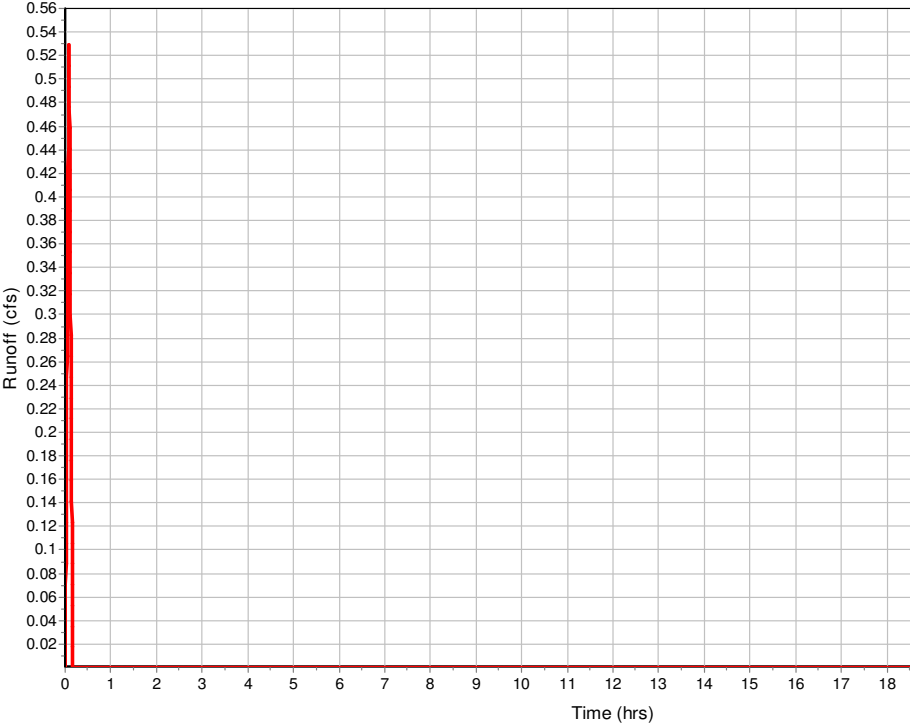
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.10752092	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.88	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	71.43477489	102.308	0
Slope (%) :	11.86	2.45	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	7	3.18	0
Computed Flow Time (min) :	0.17	0.54	0
Total TOC (min)3.59			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.53
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:03:35

Runoff Hydrograph



Subbasin : Sub-CB-19

Input Data

Area (ac) 1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1	-	0.7
Composite Area & Weighted Runoff Coeff.	1		0.7

Time of Concentration

Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100.0031436	0	0
Slope (%) :	3.4	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.14	0	0
Computed Flow Time (min) :	11.83	0	0

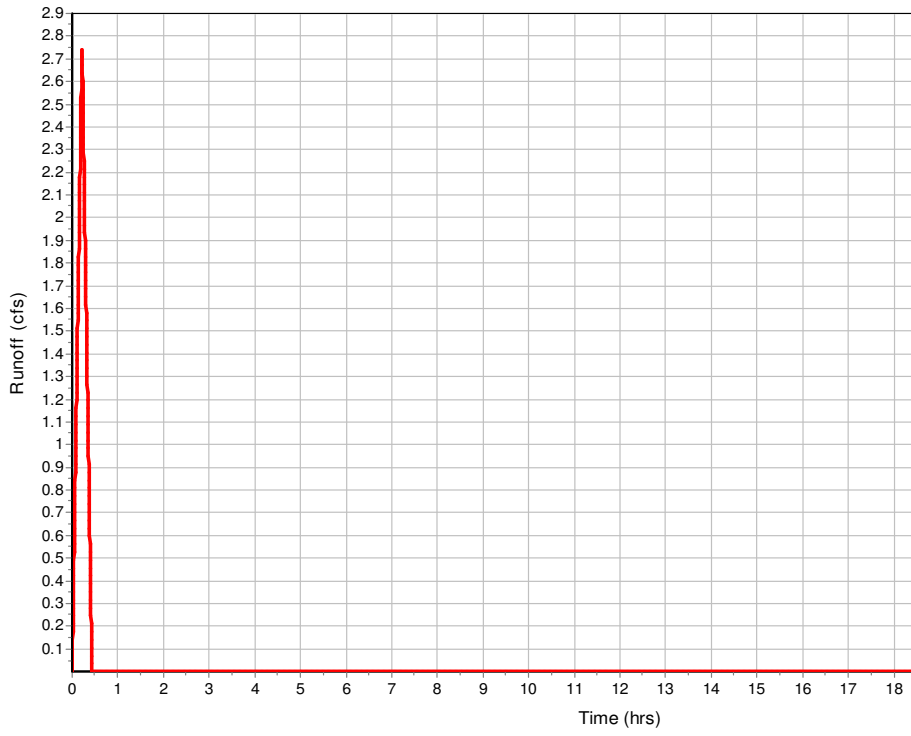
Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	6.07922878	278.905	79.9642
Slope (%) :	2	11.86	2.45
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	7	3.18
Computed Flow Time (min) :	0.04	0.66	0.42
Total TOC (min)	12.96		

Subbasin Runoff Results

Total Rainfall (in) 0.85
 Total Runoff (in) 0.6
 Peak Runoff (cfs) 2.74
 Rainfall Intensity 3.923
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:12:58

Subbasin : Sub-CB-19

Runoff Hydrograph



Subbasin : Sub-CB-2

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
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

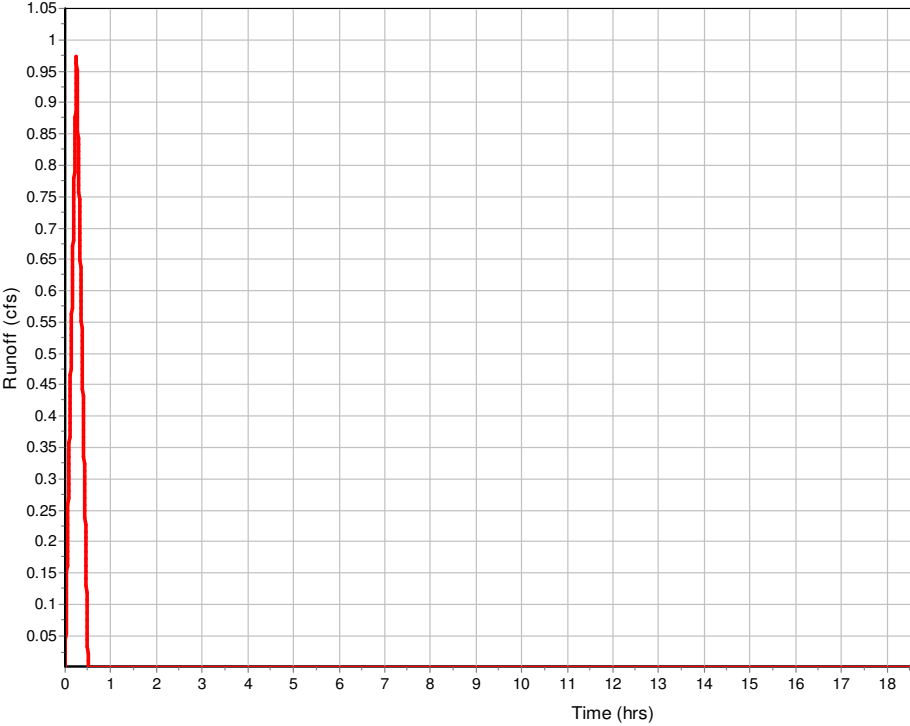
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	175.3484305	45.5292
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.44	0.4	0
Total TOC (min)	14.99		

Subbasin Runoff Results

Total Rainfall (in) 0.92
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 0.97
 Rainfall Intensity 3.661
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:14:59

Subbasin : Sub-CB-2

Runoff Hydrograph



Subbasin : Sub-CB-20

Input Data

Area (ac) 0.62
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.7
Composite Area & Weighted Runoff Coeff.	0.62		0.7

Time of Concentration

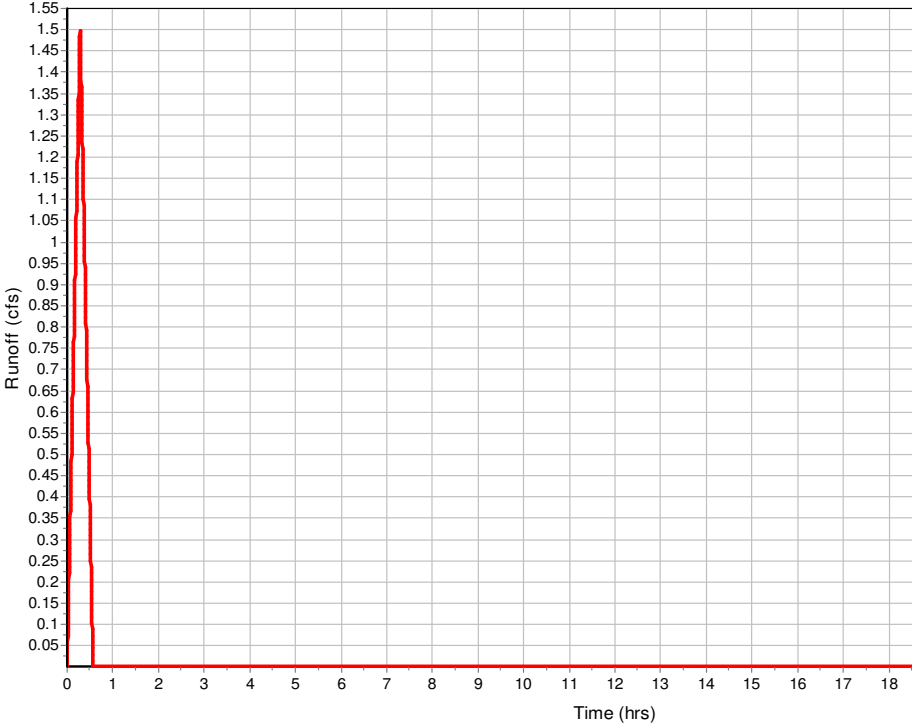
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	99.99258294	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	3.00743724	208.662
Slope (%) :	2	7.49	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	5.56	0
Computed Flow Time (min) :	0.02	0.63	0
Total TOC (min)	17.06		

Subbasin Runoff Results

Total Rainfall (in) 0.98
 Total Runoff (in) 0.69
 Peak Runoff (cfs) 1.5
 Rainfall Intensity 3.466
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:17:04

Runoff Hydrograph



Subbasin : Sub-CB-22

Input Data

Area (ac) 0.14
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

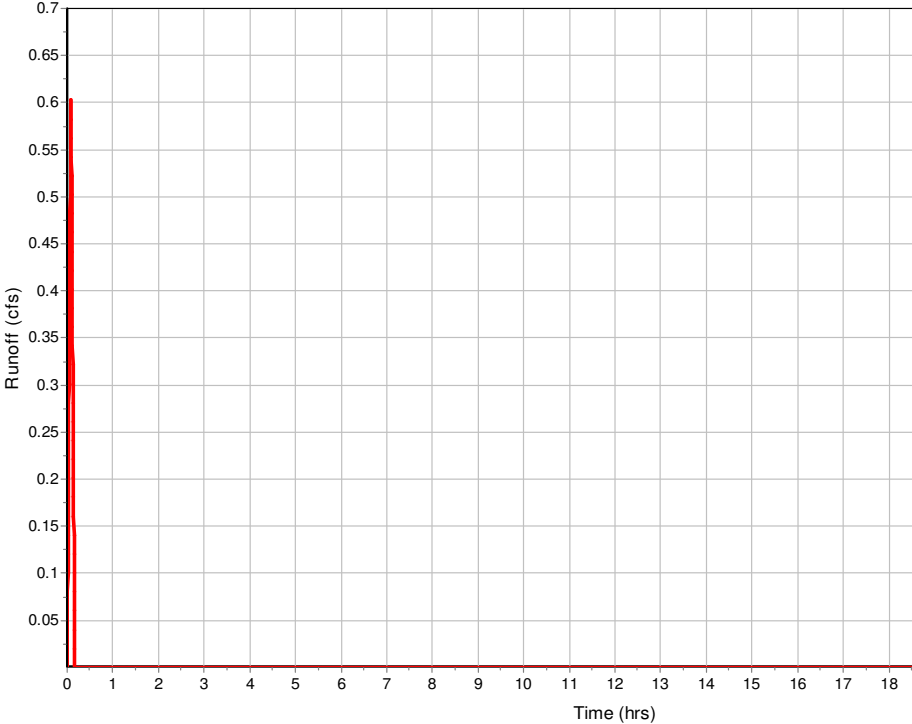
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99981258	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.0428132	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.5	0	0
Total TOC (min)3.36			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.6
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:22

Runoff Hydrograph



Subbasin : Sub-CB-24

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

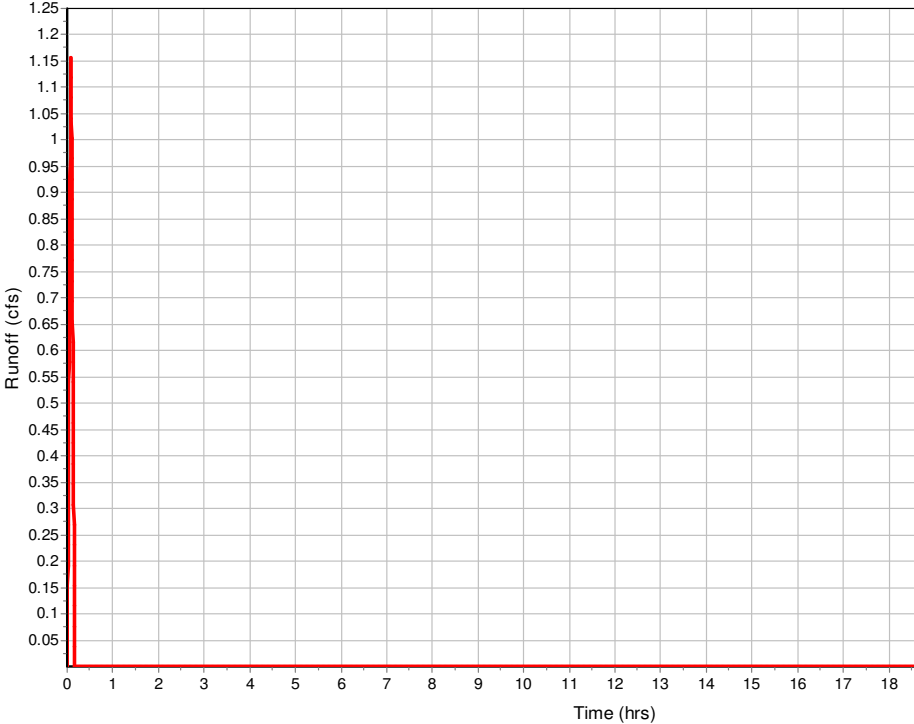
Time of Concentration

	Subarea A	Subarea B	Subarea C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	37.99958613	0	0
Slope (%) :	6.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	4.21	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	28.98355088	187.48	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.33	0.48	0
Total TOC (min)	5.02		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	1.16
Rainfall Intensity	6.148
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:05:01

Runoff Hydrograph



Subbasin : Sub-CB-25

Input Data

Area (ac) 0.51
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.7
Composite Area & Weighted Runoff Coeff.	0.51		0.7

Time of Concentration

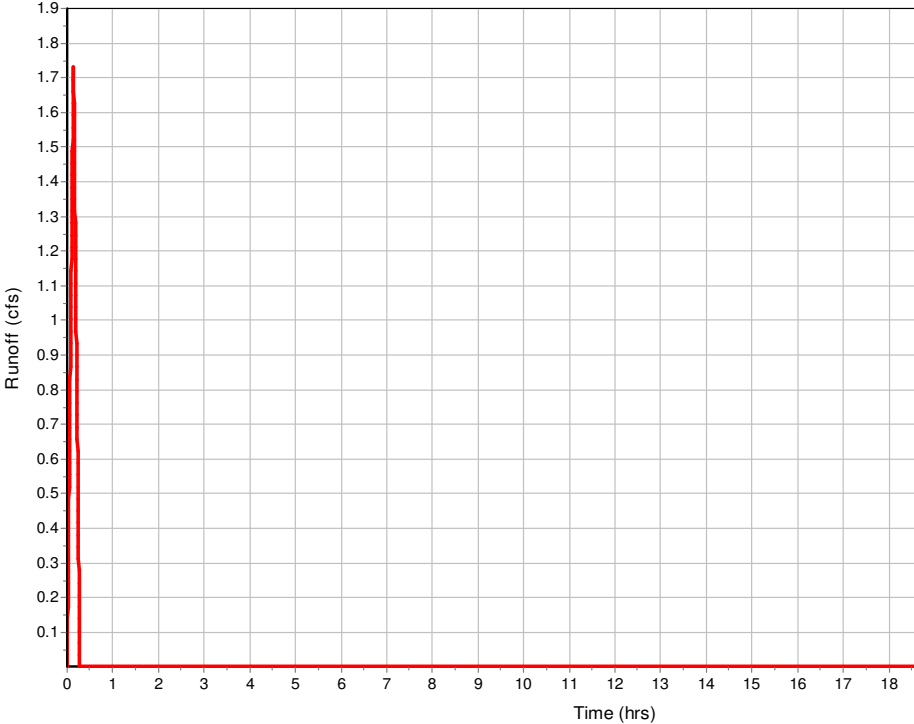
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99999586	0	0
Slope (%) :	7.25	0	0
2 yr, 24 hr Rainfall (in) :	4.32	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	7.56	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	16.12667612	203.96	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.19	0.52	0
Total TOC (min)8.26			

Subbasin Runoff Results

Total Rainfall (in) 0.67
 Total Runoff (in) 0.47
 Peak Runoff (cfs) 1.73
 Rainfall Intensity 4.856
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:08:16

Runoff Hydrograph



Subbasin : Sub-CB-26

Input Data

Area (ac) 0.49
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.49	-	0.7
Composite Area & Weighted Runoff Coeff.	0.49		0.7

Time of Concentration

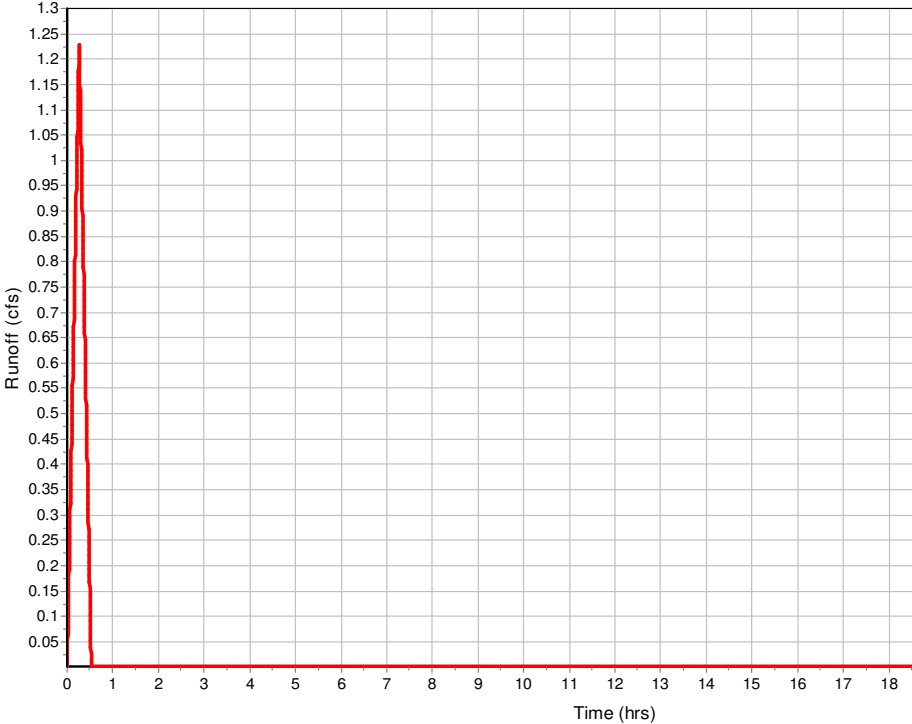
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99998121	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	221.0918618	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.66	0	0
Total TOC (min)15.87			

Subbasin Runoff Results

Total Rainfall (in) 0.94
 Total Runoff (in) 0.66
 Peak Runoff (cfs) 1.23
 Rainfall Intensity 3.574
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:52

Runoff Hydrograph



Subbasin : Sub-CB-27

Input Data

Area (ac) 0.1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

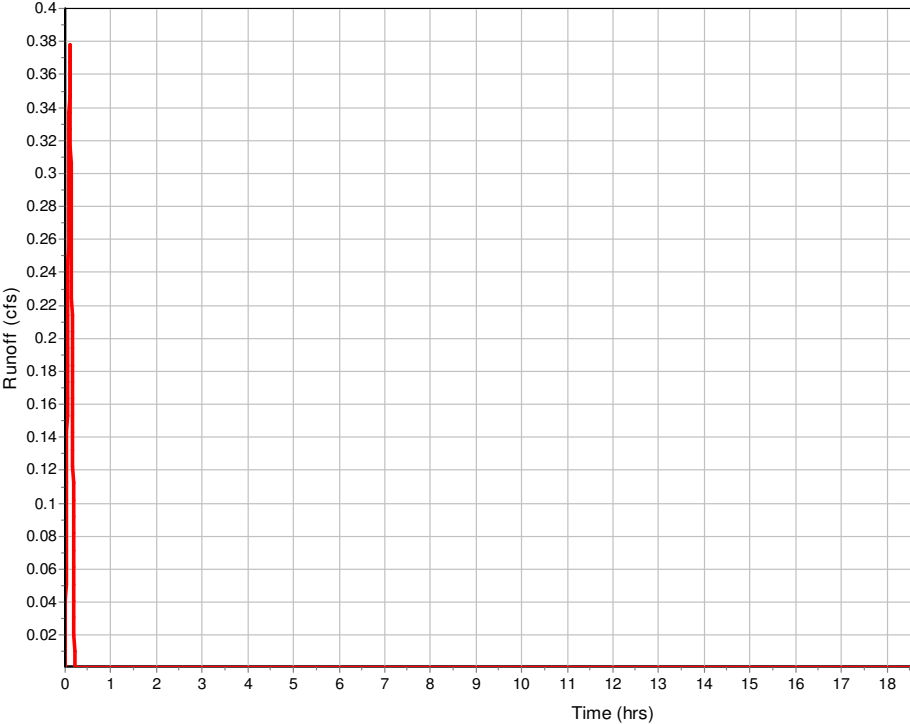
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	21.13547973	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	5.57	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	117.1502173	0	0
Slope (%) :	2.92	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.47	0	0
Computed Flow Time (min) :	0.56	0	0
Total TOC (min)6.13			

Subbasin Runoff Results

Total Rainfall (in) 0.58
 Total Runoff (in) 0.4
 Peak Runoff (cfs) 0.38
 Rainfall Intensity 5.593
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:06:08

Runoff Hydrograph



Subbasin : Sub-CB-28

Input Data

Area (ac) 0.67
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.67	-	0.7
Composite Area & Weighted Runoff Coeff.	0.67		0.7

Time of Concentration

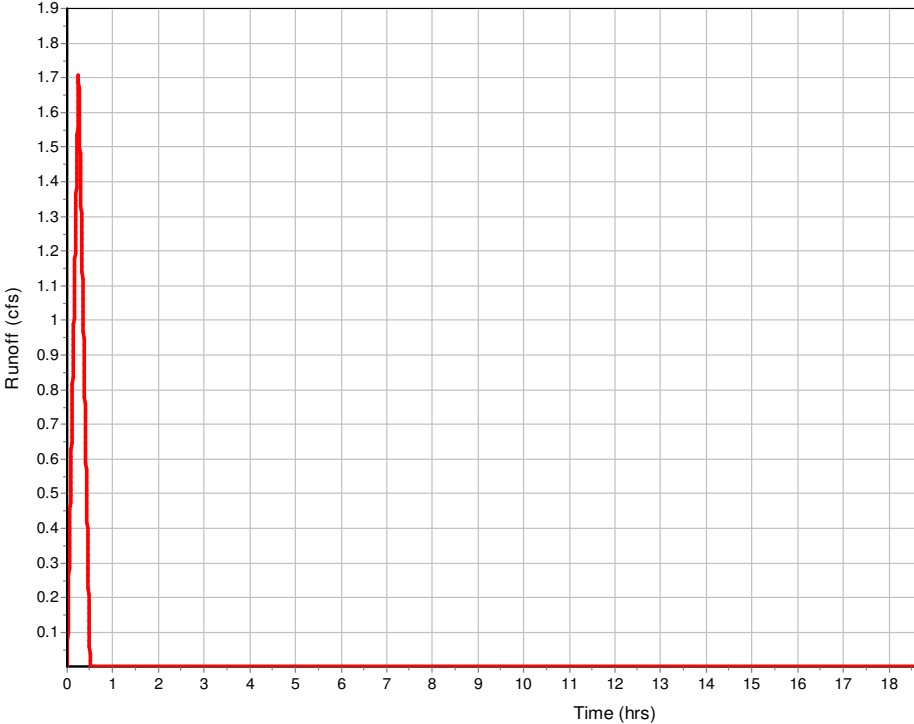
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	14.63	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	17.02372996	94.092	0
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.12	0.32	0
Total TOC (min)	15.08		

Subbasin Runoff Results

Total Rainfall (in) 0.91
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 1.71
 Rainfall Intensity 3.652
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:05

Runoff Hydrograph



Subbasin : Sub-CB-29

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

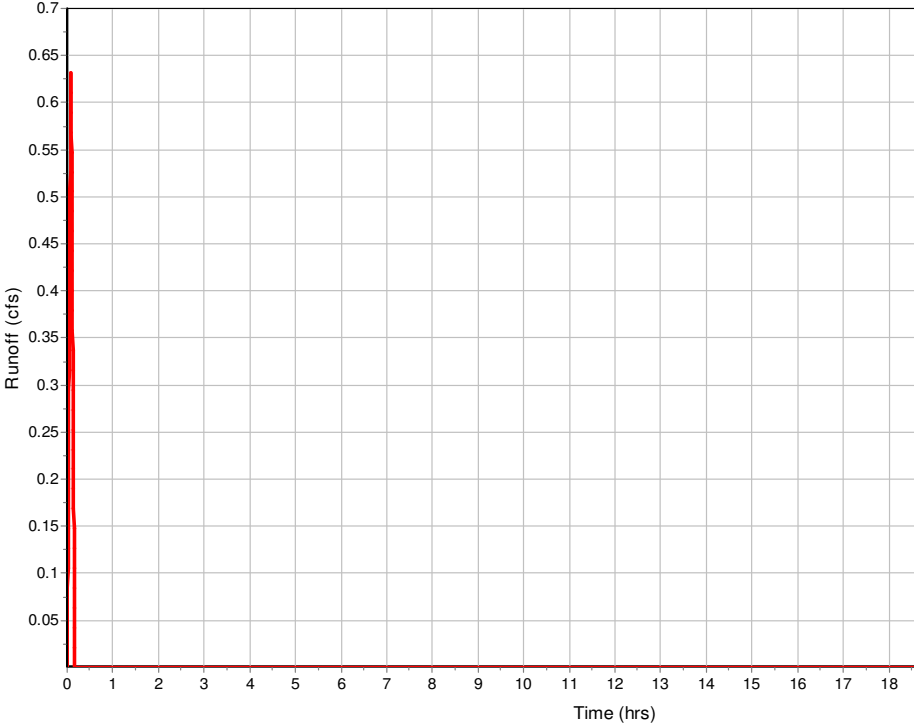
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	253.6223323	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.87	0	0
Total TOC (min)	3.73		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.63
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:44

Runoff Hydrograph



Subbasin : Sub-CB-3

Input Data

Area (ac)	0.14
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

Time of Concentration

	Subarea A	Subarea B	Subarea C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

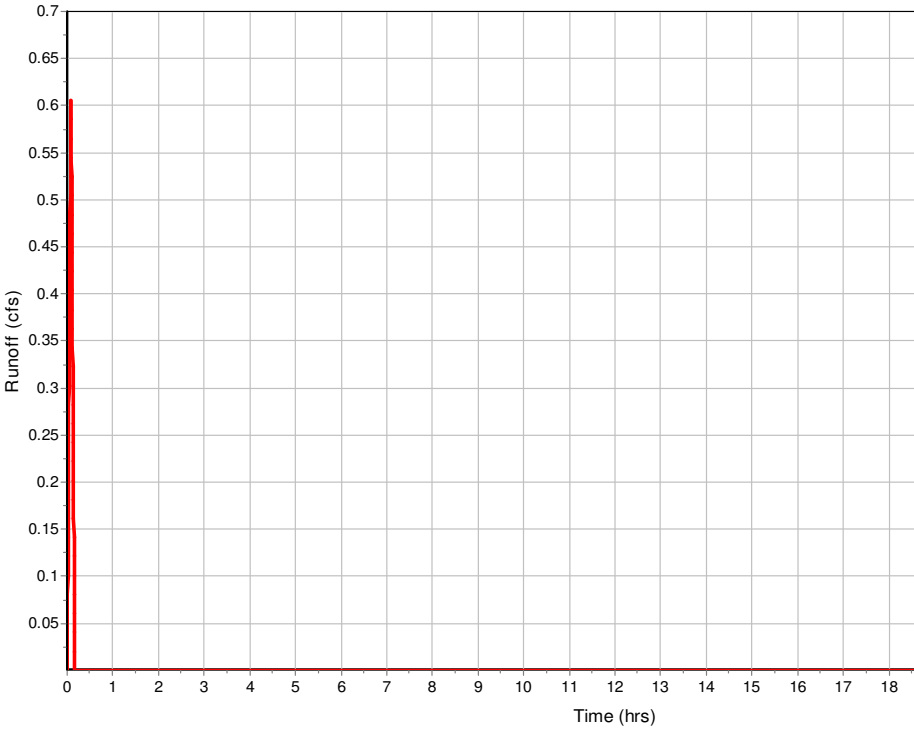
	Subarea A	Subarea B	Subarea C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	181.26423	58.411	0
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.46	0.52	0
Total TOC (min)	3.84		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.61
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:50

Subbasin : Sub-CB-3

Runoff Hydrograph



Subbasin : Sub-CB-31

Input Data

Area (ac) 0.17
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.7
Composite Area & Weighted Runoff Coeff.	0.17		0.7

Time of Concentration

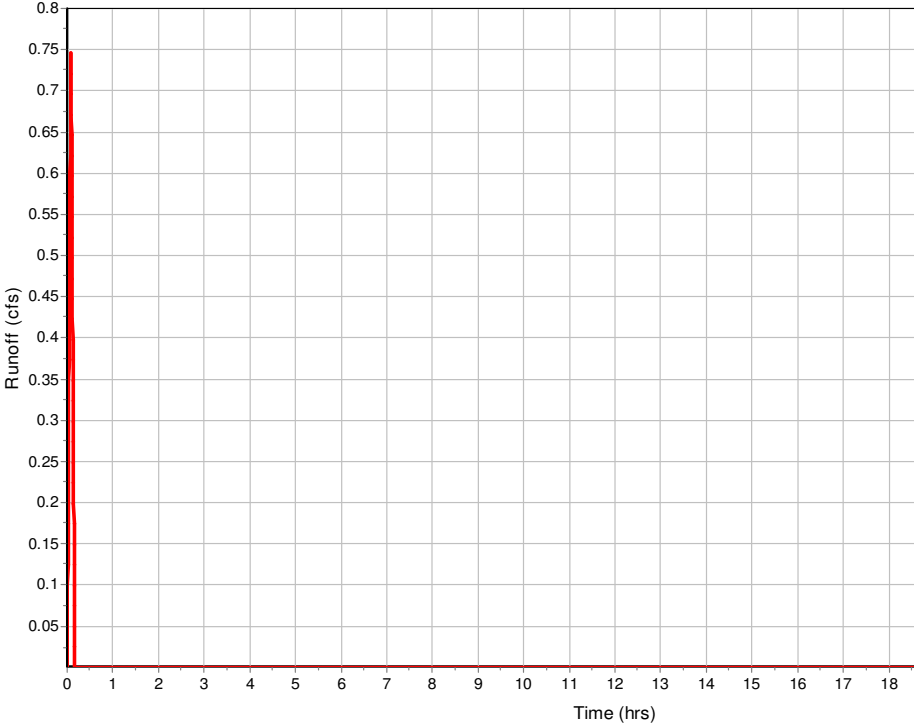
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	166.3763112	83.655	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.76	0.27	0
Total TOC (min)	3.90		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.75
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:54

Runoff Hydrograph



Subbasin : Sub-CB-32

Input Data

Area (ac) 0.13
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.7
Composite Area & Weighted Runoff Coeff.	0.13		0.7

Time of Concentration

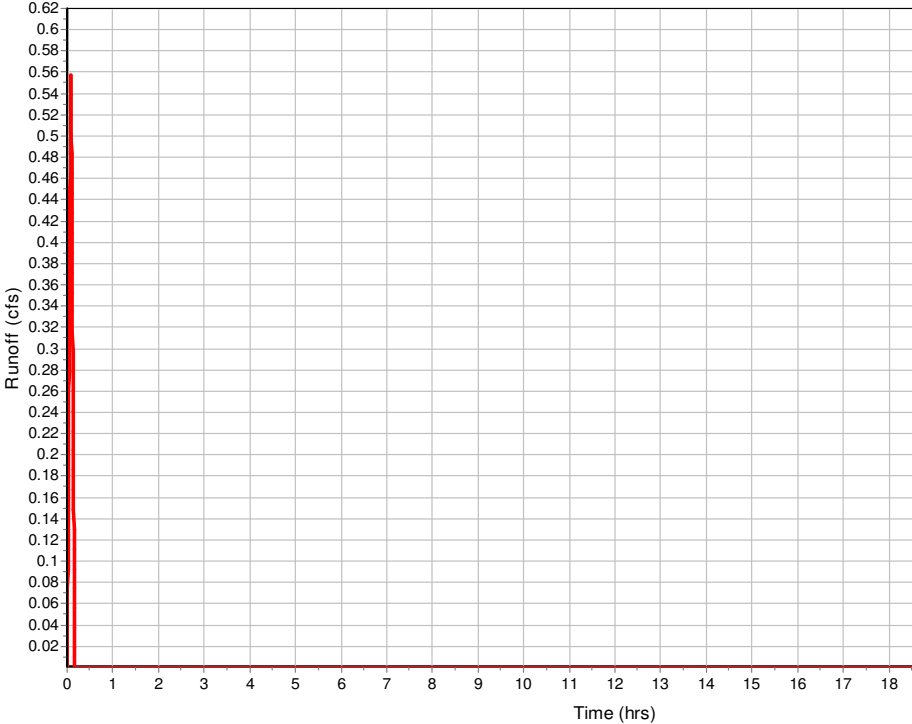
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.2624187	52.704	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.77	0.17	0
Total TOC (min)3.80			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.56
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:48

Runoff Hydrograph



Subbasin : Sub-CB-35

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

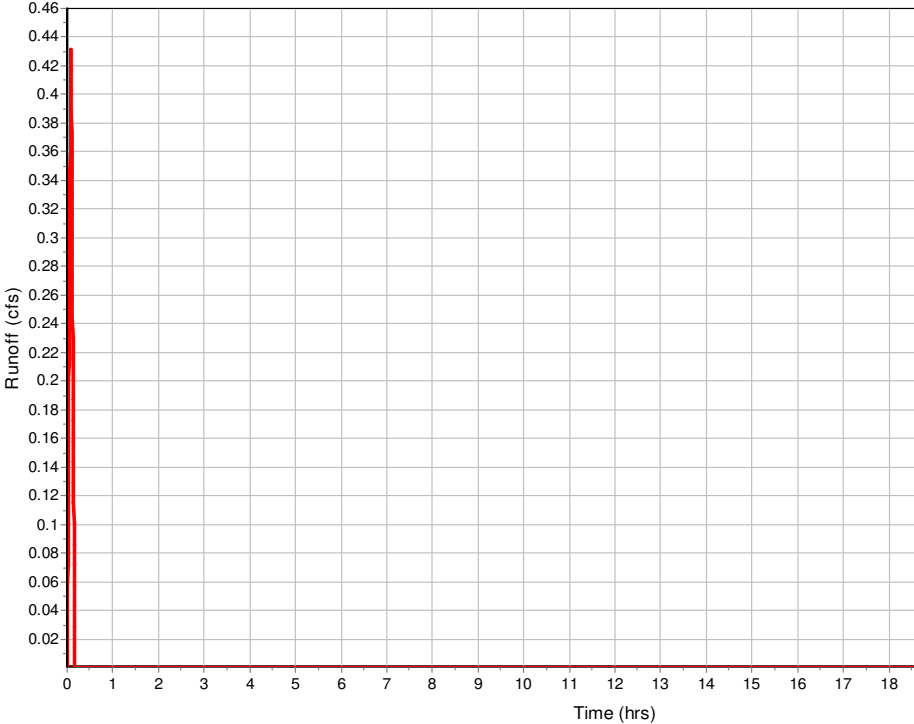
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	159.59	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.4	0	0
Total TOC (min)	3.27		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.43
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:16

Runoff Hydrograph



Subbasin : Sub-CB-36

Input Data

Area (ac) 0.58
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

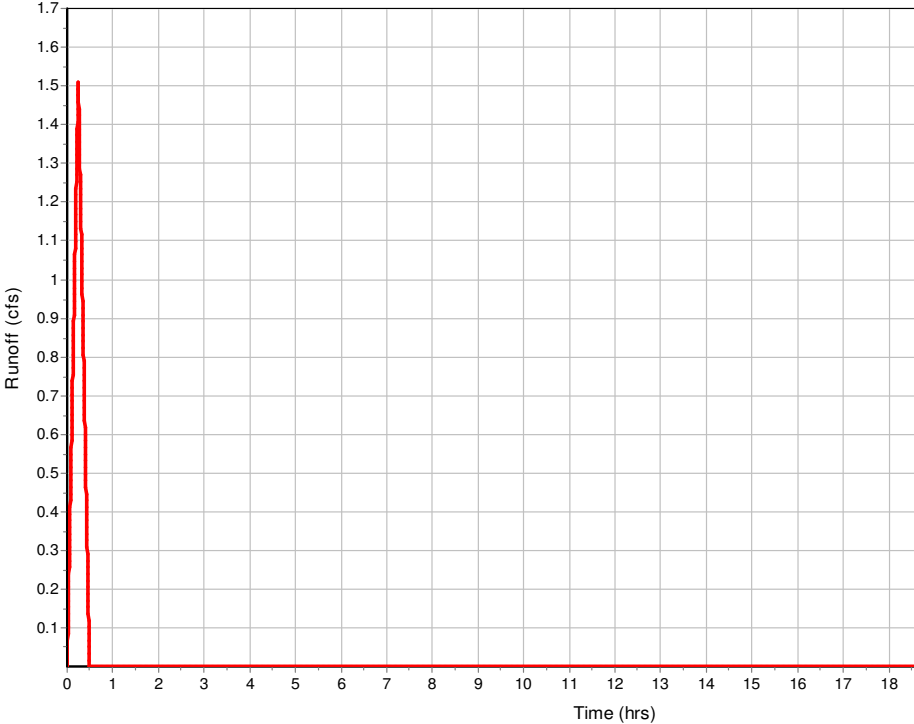
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	224.201193	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.57	0	0
Total TOC (min)	14.71		

Subbasin Runoff Results

Total Rainfall (in) 0.9
 Total Runoff (in) 0.63
 Peak Runoff (cfs) 1.51
 Rainfall Intensity 3.694
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:14:43

Runoff Hydrograph



Subbasin : Sub-CB-38

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

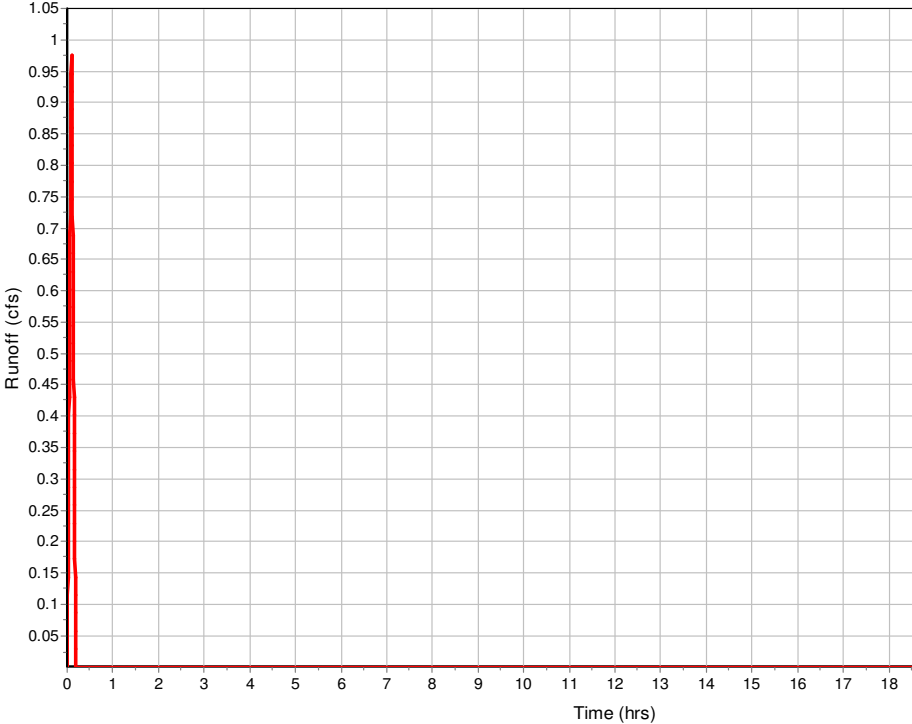
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.00000002	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	214.8866153	184.11	0
Slope (%) :	2.45	0.75	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.18	1.76	0
Computed Flow Time (min) :	1.13	1.74	0
Total TOC (min)5.73			

Subbasin Runoff Results

Total Rainfall (in) 0.55
 Total Runoff (in) 0.38
 Peak Runoff (cfs) 0.98
 Rainfall Intensity 5.775
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:05:44

Runoff Hydrograph



Subbasin : Sub-CB-39

Input Data

Area (ac) 1.39
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.39	-	0.7
Composite Area & Weighted Runoff Coeff.	1.39		0.7

Time of Concentration

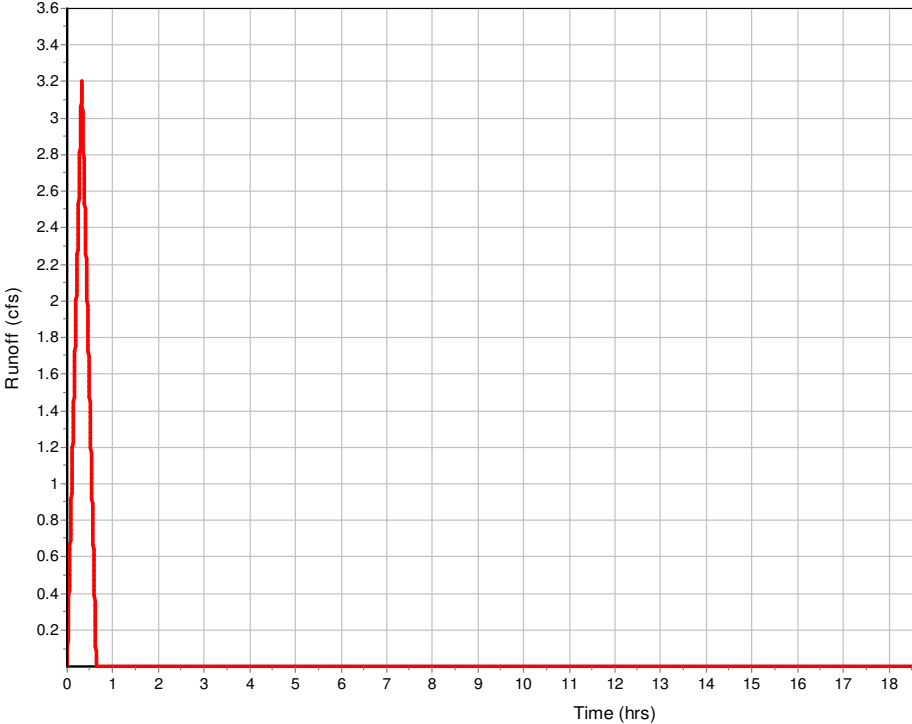
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	99.98923348	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	34.45719772	233.52	132.7
Slope (%) :	1.5	2.45	0.75
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	1.98	3.18	1.76
Computed Flow Time (min) :	0.29	1.22	1.26
Total TOC (min)	19.18		

Subbasin Runoff Results

Total Rainfall (in) 1.05
 Total Runoff (in) 0.74
 Peak Runoff (cfs) 3.2
 Rainfall Intensity 3.299
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:19:11

Runoff Hydrograph



Subbasin : Sub-CB-43

Input Data

Area (ac)	0.71
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.71	-	0.7
Composite Area & Weighted Runoff Coeff.	0.71		0.7

Time of Concentration

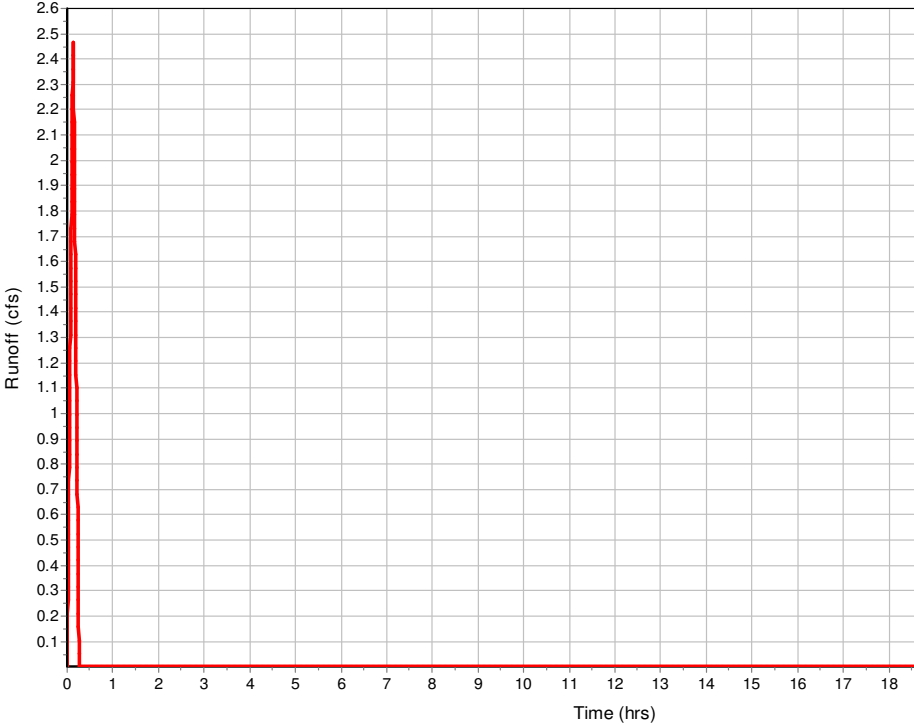
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	93	77.84	0
Slope (%) :	10.75	1.99	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	5.29	2.87	0
Computed Flow Time (min) :	0.29	0.45	0
Total TOC (min)	7.89		

Subbasin Runoff Results

Total Rainfall (in)	0.65
Total Runoff (in)	0.45
Peak Runoff (cfs)	2.47
Rainfall Intensity	4.963
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:07:53

Runoff Hydrograph



Subbasin : Sub-CB-44

Input Data

Area (ac)	0.72
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.72	-	0.7
Composite Area & Weighted Runoff Coeff.	0.72		0.7

Time of Concentration

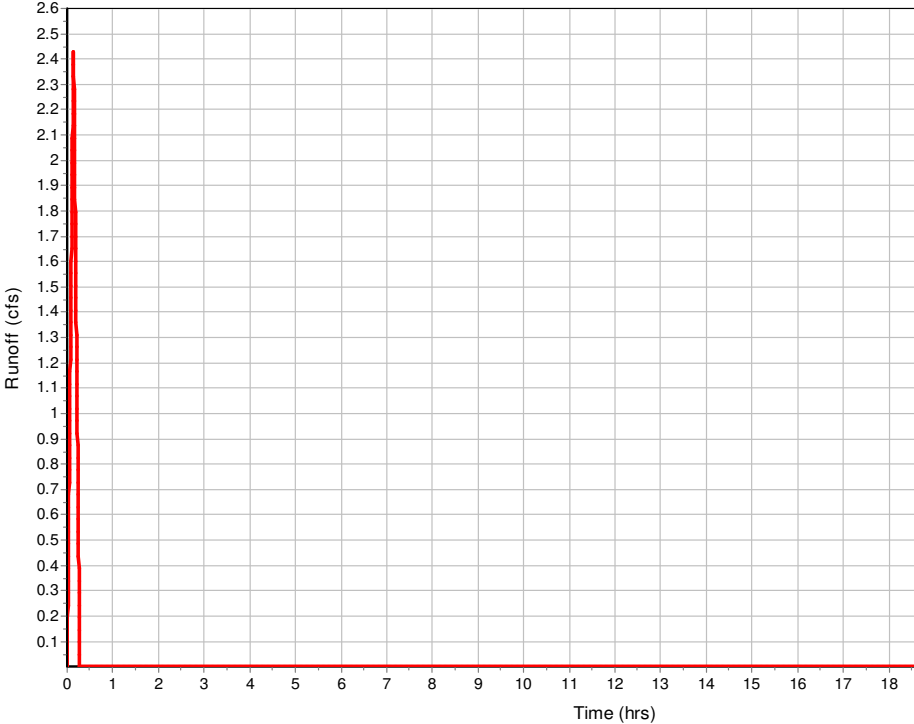
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	9	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	8.02	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	78.42	77.02
Slope (%) :	16.7	11.38	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	6.59	6.86	0
Computed Flow Time (min) :	0.2	0.19	0
Total TOC (min)	8.40		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.47
Peak Runoff (cfs)	2.43
Rainfall Intensity	4.817
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:08:24

Runoff Hydrograph



Subbasin : Sub-CB-6

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

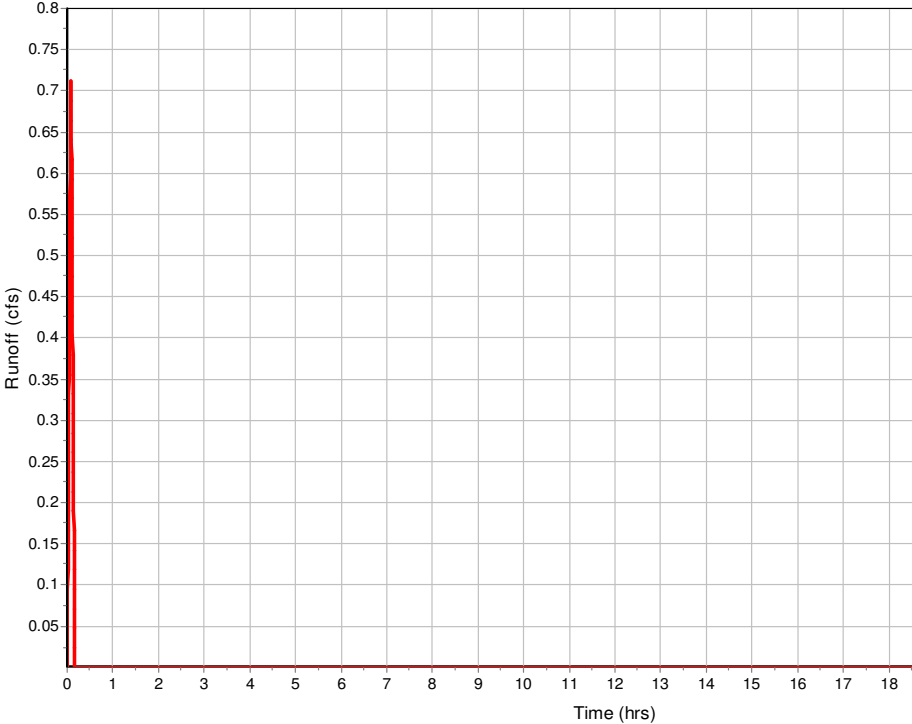
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	207.9606416	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.62	0	0
Total TOC (min)	3.48		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.71
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:29

Runoff Hydrograph



Subbasin : Sub-CB-7

Input Data

Area (ac) 0.04
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.04	-	0.7
Composite Area & Weighted Runoff Coeff.	0.04		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999999	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

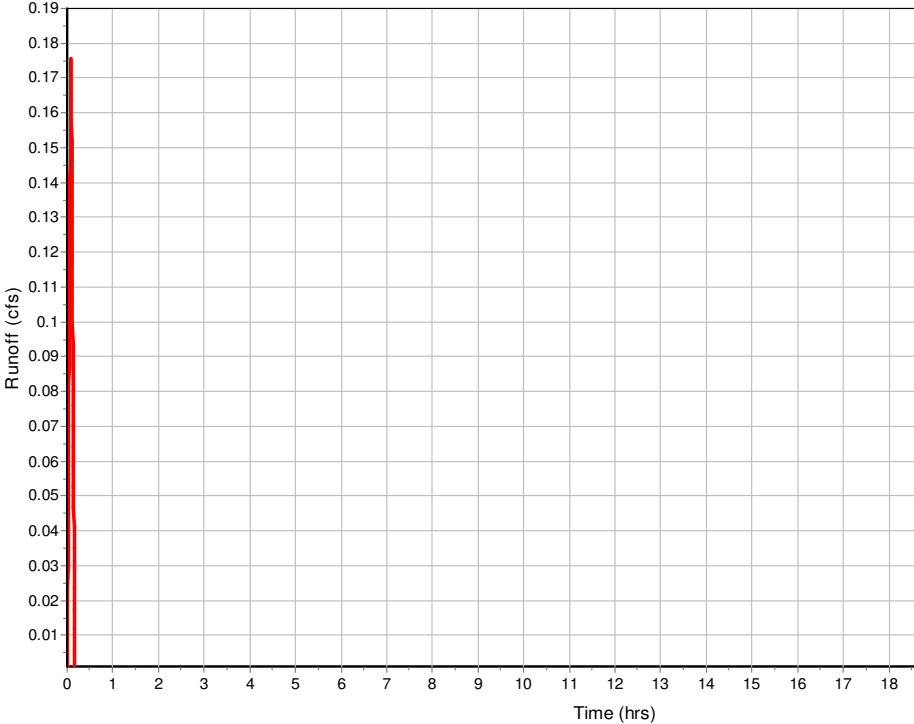
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	68.39700153	0	0
Slope (%) :	0.85	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.87	0	0
Computed Flow Time (min) :	0.61	0	0
Total TOC (min)3.47			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.18
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-7

Runoff Hydrograph



Subbasin : Sub-CB-9

Input Data

Area (ac) 0.36
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999519	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

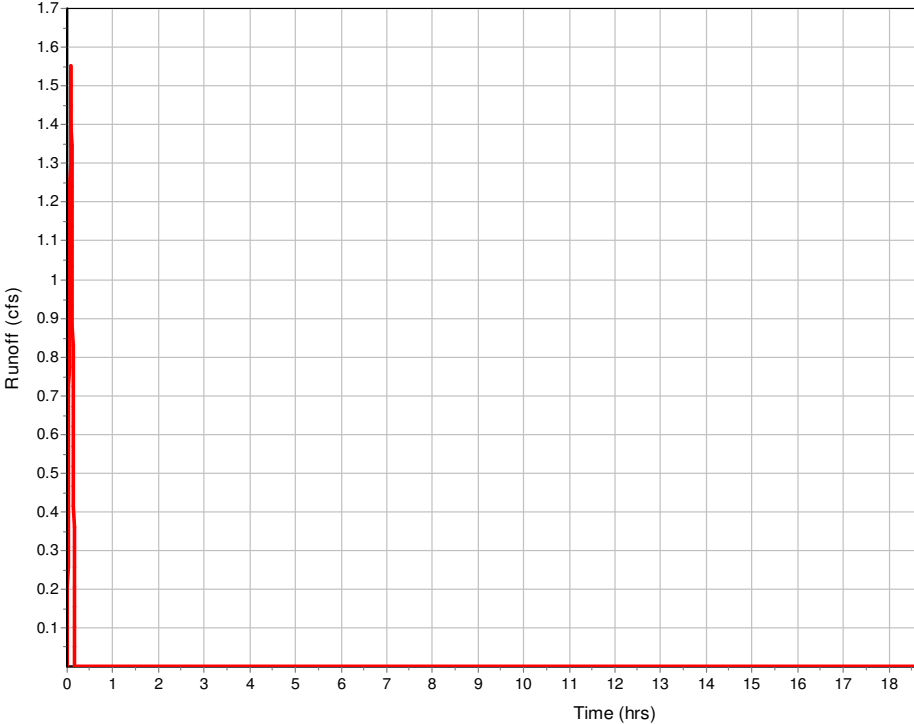
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	199.7947467	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.6	0	0
Total TOC (min)	3.46		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.55
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-9

Runoff Hydrograph



Subbasin : Sub-FES-2

Input Data

Area (ac)	1.58
Weighted Runoff Coefficient	0.56

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.58	-	0.56
Composite Area & Weighted Runoff Coeff.	1.58		0.56

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

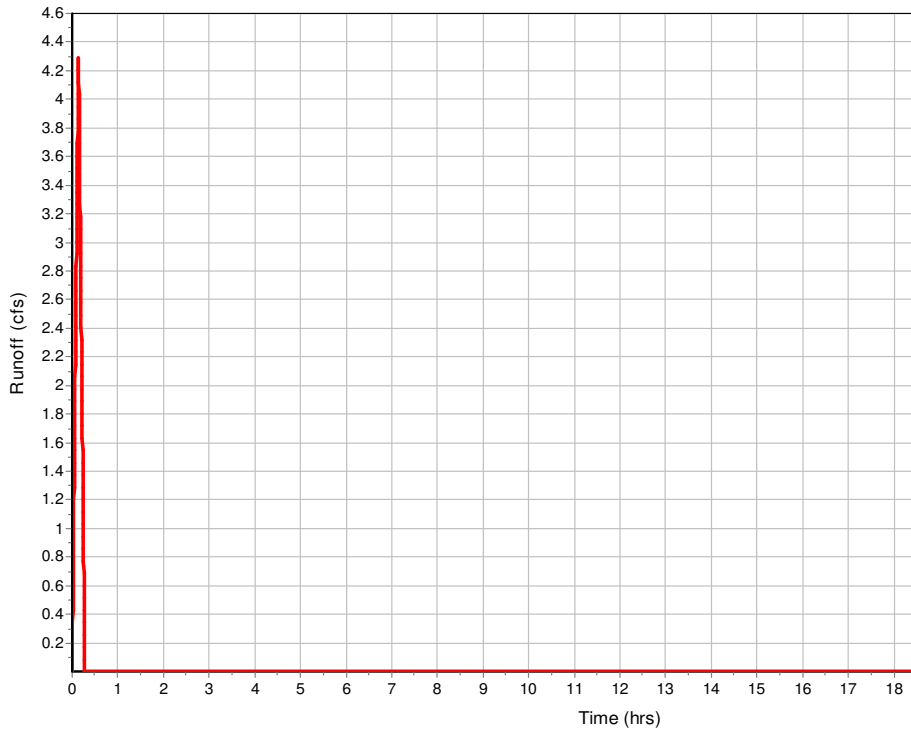
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	363.3701089	0	0
Slope (%) :	10	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.1	0	0
Computed Flow Time (min) :	1.19	0	0
Total TOC (min)	8.33		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.38
Peak Runoff (cfs)	4.29
Rainfall Intensity	4.837
Weighted Runoff Coefficient	0.56
Time of Concentration (days hh:mm:ss)	0 00:08:20

Subbasin : Sub-FES-2

Runoff Hydrograph



Subbasin : SUB-PIPE-35

Input Data

Area (ac) 0.36
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.36	-	0.72
Composite Area & Weighted Runoff Coeff.	0.36		0.72

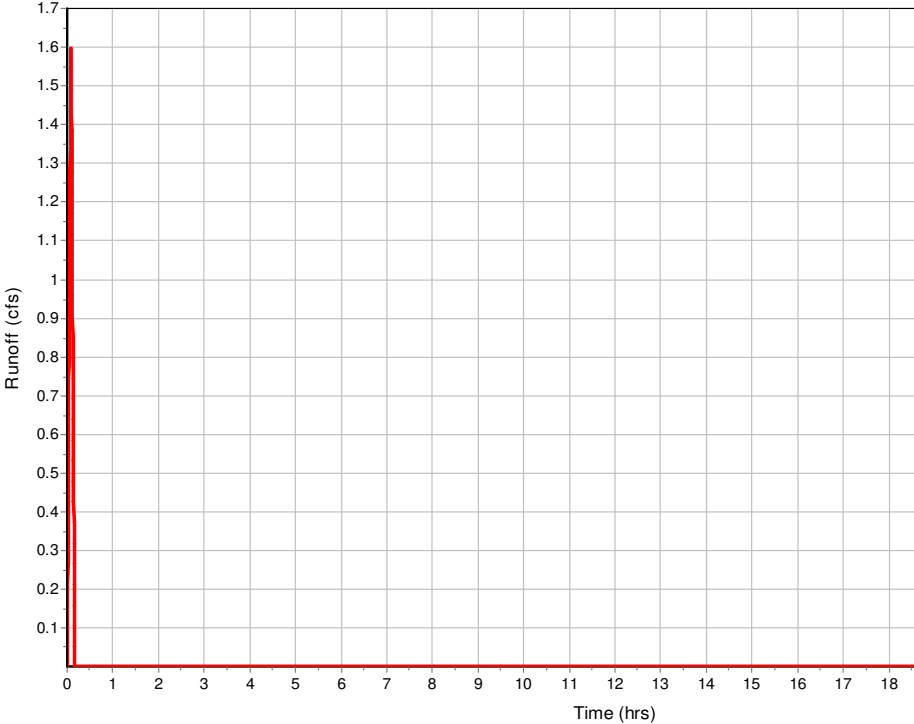
Time of Concentration

User-Defined TOC override (minutes): 2.36

Subbasin Runoff Results

Total Rainfall (in) 0.51
Total Runoff (in) 0.37
Peak Runoff (cfs) 1.6
Rainfall Intensity 6.16
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:02:22

Runoff Hydrograph



Subbasin : SUB-PIPE-36

Input Data

Area (ac) 1.26
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.26	-	0.72
Composite Area & Weighted Runoff Coeff.	1.26		0.72

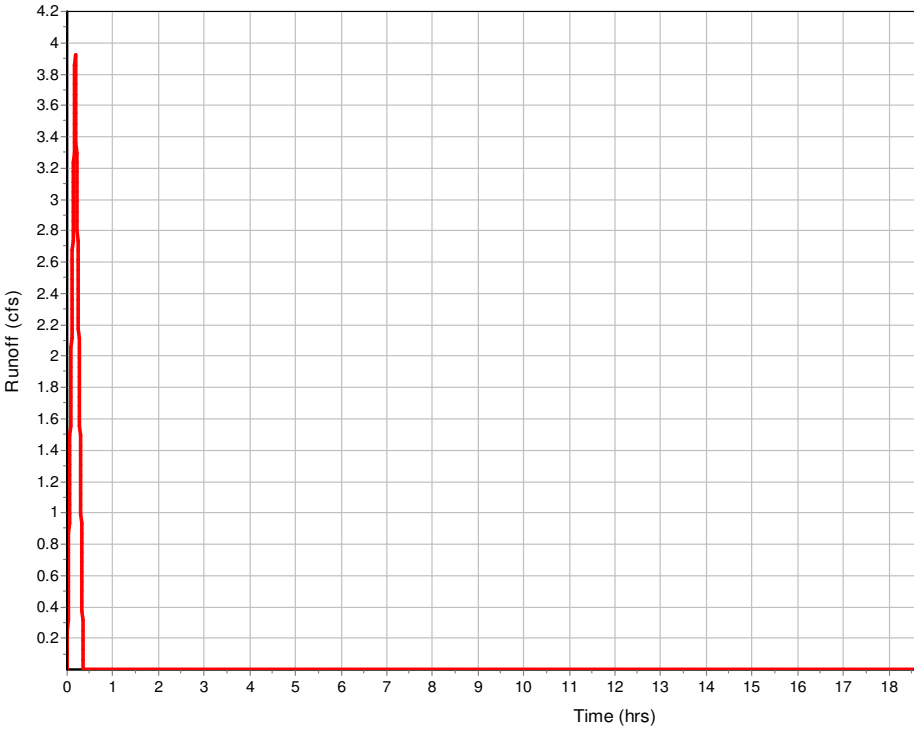
Time of Concentration

User-Defined TOC override (minutes): 10.56

Subbasin Runoff Results

Total Rainfall (in) 0.76
Total Runoff (in) 0.55
Peak Runoff (cfs) 3.92
Rainfall Intensity 4.322
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:10:34

Runoff Hydrograph



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 (ft ²)	Minimum Pipe Cover (in)
1 FES-2	466.60	469.78	3.18	466.60	0.00	469.78	0.00	0.00	2.15
2 IN-PIPE-35	462.75	464.00	1.25	462.75	0.00	464.00	0.00	0.00	0.00
3 IN-PIPE36	441.30	442.80	1.50	441.30	0.00	442.80	0.00	0.00	0.00
4 JB-14	529.50	534.76	5.26	529.50	0.00	535.50	0.74	0.00	45.12
5 JB-23	515.30	519.44	4.14	515.30	0.00	519.20	-0.24	10.00	31.68

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	1 FI Occu
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days h
1	FES-2	19.47	19.47	468.35	1.75	0.00	1.43	468.04	1.44	0 00:00	0
2	IN-PIPE-35	1.59	1.59	463.18	0.43	0.00	1.07	462.75	0.00	0 00:05	0
3	IN-PIPE36	3.92	3.92	442.17	0.87	0.00	0.71	441.39	0.09	0 00:10	0
4	JB-14	5.29	0.00	529.93	0.43	0.00	4.83	529.51	0.01	0 00:12	0
5	JB-23	2.03	0.00	515.56	0.26	0.00	3.88	515.30	0.00	0 00:05	0

Channel Input

SN Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Shape Slope	Height	Width	Manning's E Roughness
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ft)	(ft)	
1 L-SDPIPE-1	73.15	476.67	10.73	475.09	7.62	1.58	2.1600 User-Defined	0.330	14.000	0.0150
2 L-SDPIPE-13	403.61	521.86	4.36	510.72	5.72	11.14	2.7600 User-Defined	0.330	14.000	0.0150
3 L-SDPIPE-14	373.89	522.45	4.46	515.37	5.03	7.08	1.8900 User-Defined	0.330	14.000	0.0150
4 L-SDPIPE-15	83.27	471.49	3.38	464.82	0.00	6.67	8.0100 User-Defined	0.330	14.000	0.0150
5 L-SDPIPE-16	206.62	505.01	3.91	489.62	6.43	15.39	7.4500 User-Defined	0.330	14.000	0.0150
6 L-SDPIPE-18	170.54	523.17	5.39	517.57	3.45	5.60	3.2800 User-Defined	0.330	14.000	0.0150
7 L-SDPIPE-19	227.29	522.18	4.31	505.01	3.58	17.17	7.5500 User-Defined	0.330	14.000	0.0150
8 L-SDPIPE-2	62.02	476.28	9.98	475.09	7.29	1.19	1.9200 User-Defined	0.330	14.000	0.0150
9 L-SDPIPE-20	233.87	505.01	3.58	487.59	3.97	17.42	7.4500 User-Defined	0.330	14.000	0.0150
10 L-SDPIPE-21	241.61	543.67	5.17	534.06	3.86	9.61	3.9800 User-Defined	0.330	14.000	0.0150
11 L-SDPIPE-23	316.61	547.43	4.84	534.06	3.53	13.37	4.2200 User-Defined	0.500	26.000	0.0150
12 L-SDPIPE-25	202.83	549.70	3.70	532.10	0.00	17.60	8.6800 User-Defined	0.500	26.000	0.0150
13 L-SDPIPE-27	245.69	494.00	6.50	476.28	9.98	17.72	7.2100 User-Defined	0.330	14.000	0.0150
14 L-SDPIPE-28	228.18	493.47	5.63	476.67	10.73	16.80	7.3600 User-Defined	0.330	14.000	0.0150
15 L-SDPIPE-29	172.07	510.72	5.72	494.00	6.50	16.72	9.7200 User-Defined	0.330	14.000	0.0150
16 L-SDPIPE-32	98.13	549.76	5.26	540.30	0.00	9.46	9.6400 User-Defined	0.500	26.000	0.0150
17 L-SDPIPE-33	78.91	518.02	3.90	517.01	4.43	1.01	1.2800 User-Defined	0.330	14.000	0.0320
18 L-SDPIPE-34	149.42	521.36	5.08	517.01	4.43	4.35	2.9100 User-Defined	0.330	14.000	0.0320
19 L-SDPIPE-4	129.78	475.09	7.62	464.82	0.00	10.27	7.9100 User-Defined	0.330	14.000	0.0320
20 L-SDPIPE-6	214.12	489.62	6.43	475.09	7.29	14.53	6.7900 User-Defined	0.330	14.000	0.0150
21 L-SDPIPE-7	216.57	487.59	3.97	471.49	3.38	16.10	7.4300 User-Defined	0.330	14.000	0.0150

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Friction Coefficient (Nu)
1	L-SDPIPE-1	0.00	0 00:00	3.72	0.00	0.00		0.00	0.00	0.00	
2	L-SDPIPE-13	0.00	0 00:00	4.20	0.00	0.00		0.02	0.06	0.00	
3	L-SDPIPE-14	0.46	0 00:13	3.48	0.13	0.37	16.84	0.24	0.73	0.00	
4	L-SDPIPE-15	0.18	0 00:17	7.16	0.02	1.66	0.84	0.08	0.24	0.00	
5	L-SDPIPE-16	0.00	0 00:06	6.90	0.00	0.00		0.04	0.12	0.00	
6	L-SDPIPE-18	0.11	0 00:05	4.64	0.02	6.32	0.45	0.07	0.21	0.00	
7	L-SDPIPE-19	0.34	0 00:08	6.95	0.05	2.95	1.28	0.07	0.22	0.00	
8	L-SDPIPE-2	0.00	0 00:00	3.50	0.00	0.00		0.10	0.29	0.00	
9	L-SDPIPE-20	0.09	0 00:16	6.90	0.01	0.82	4.75	0.07	0.21	0.00	
10	L-SDPIPE-21	0.00	0 00:00	5.04	0.00	0.00		0.17	0.50	0.00	
11	L-SDPIPE-23	0.00	0 00:06	19.36	0.00	0.00		0.15	0.30	0.00	
12	L-SDPIPE-25	0.00	0 00:05	27.75	0.00	0.00		0.01	0.02	0.00	
13	L-SDPIPE-27	0.00	0 00:00	6.79	0.00	0.00		0.00	0.00	0.00	
14	L-SDPIPE-28	0.24	0 00:14	6.86	0.03	2.98	1.28	0.06	0.18	0.00	
15	L-SDPIPE-29	0.02	0 00:07	7.88	0.00	1.75	1.64	0.02	0.06	0.00	
16	L-SDPIPE-32	0.03	0 00:05	28.64	0.00	2.05	0.80	0.02	0.05	0.00	
17	L-SDPIPE-33	0.00	0 00:00	2.86	0.00	0.00		0.17	0.50	0.00	
18	L-SDPIPE-34	0.22	0 00:08	4.31	0.05	0.22	11.32	0.22	0.66	0.00	
19	L-SDPIPE-4	0.00	0 00:00	7.11	0.00	0.00		0.00	0.00	0.00	
20	L-SDPIPE-6	0.18	0 00:05	6.59	0.03	0.54	6.61	0.13	0.39	0.00	
21	L-SDPIPE-7	0.16	0 00:16	6.90	0.02	1.23	2.93	0.08	0.23	0.00	

Pipe Input

SN Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness
1 SDPIPE-1	35.55	465.94	0.00	463.00	0.00	2.94	8.2700	CIRCULAR	36.000	36.000	0.0120
2 SDPIPE-10	256.10	529.50	0.00	512.58	0.00	16.92	6.6100	CIRCULAR	18.000	18.000	0.0120
3 SDPIPE-11	67.57	530.20	0.00	529.50	0.00	0.70	1.0400	CIRCULAR	18.000	18.000	0.0120
4 SDPIPE-12	33.01	530.53	0.00	530.20	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
5 SDPIPE-13	130.50	517.50	0.00	505.00	0.00	12.50	9.5800	CIRCULAR	18.000	18.000	0.0120
6 SDPIPE-14	39.55	517.99	0.00	517.50	0.00	0.49	1.2500	CIRCULAR	18.000	18.000	0.0130
7 SDPIPE-15	64.04	468.11	0.00	467.47	0.00	0.64	1.0000	CIRCULAR	18.000	18.000	0.0130
8 SDPIPE-16	23.51	501.10	0.00	499.00	0.00	2.10	8.9300	CIRCULAR	18.000	18.000	0.0120
9 SDPIPE-17	194.21	515.30	0.00	501.00	-0.10	14.30	7.3600	CIRCULAR	18.000	18.000	0.0120
10 SDPIPE-18	49.41	517.78	0.00	515.30	0.00	2.48	5.0200	CIRCULAR	18.000	18.000	0.0130
11 SDPIPE-19	51.31	517.87	0.00	515.30	0.00	2.57	5.0100	CIRCULAR	18.000	18.000	0.0130
12 SDPIPE-2	35.82	466.30	0.00	465.94	0.00	0.36	1.0000	CIRCULAR	36.000	36.000	0.0130
13 SDPIPE-20	33.00	501.43	0.00	501.10	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0120
14 SDPIPE-21	239.80	538.50	0.00	530.20	0.00	8.30	3.4600	CIRCULAR	18.000	18.000	0.0120
15 SDPIPE-22	57.68	542.14	0.00	538.50	0.00	3.64	6.3100	CIRCULAR	18.000	18.000	0.0130
16 SDPIPE-23	44.75	542.59	0.00	542.14	0.00	0.45	1.0100	CIRCULAR	18.000	18.000	0.0130
17 SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	0.0130
18 SDPIPE-27	182.53	487.50	0.00	484.31	0.00	3.19	1.7500	CIRCULAR	18.000	18.000	0.0120
19 SDPIPE-28	33.55	487.84	0.00	487.50	0.00	0.34	1.0000	CIRCULAR	18.000	18.000	0.0130
20 SDPIPE-29	167.22	505.00	0.00	487.50	0.00	17.50	10.4700	CIRCULAR	18.000	18.000	0.0120
21 SDPIPE-3	30.36	466.60	0.00	466.30	0.00	0.30	1.0000	CIRCULAR	36.000	36.000	0.0120
22 SDPIPE-30	66.71	510.34	0.00	505.00	0.00	5.34	8.0000	CIRCULAR	18.000	18.000	0.0130
23 SDPIPE-32	96.89	544.50	0.00	538.50	0.00	6.00	6.1900	CIRCULAR	18.000	18.000	0.0120
24 SDPIPE-33	77.61	514.12	0.00	512.58	0.00	1.54	1.9800	CIRCULAR	18.000	18.000	0.0150
25 SDPIPE-34	147.34	516.28	0.00	512.58	0.00	3.70	2.5100	CIRCULAR	18.000	18.000	0.0150
26 SDPIPE-4	71.93	467.47	0.00	466.75	0.81	0.72	1.0000	CIRCULAR	18.000	18.000	0.0120
27 SDPIPE-5	33.00	467.80	0.00	467.47	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
28 SDPIPE-6	67.57	483.19	0.00	482.52	0.00	0.67	1.0000	CIRCULAR	18.000	18.000	0.0120
29 SDPIPE-7	42.68	483.62	0.00	483.19	0.00	0.43	1.0000	CIRCULAR	18.000	18.000	0.0130
30 SDPIPE-8	130.97	512.25	0.00	492.00	0.00	20.25	15.4600	CIRCULAR	24.000	24.000	0.0120
31 SDPIPE-9	33.02	512.58	0.00	512.25	0.00	0.33	1.0000	CIRCULAR	24.000	24.000	0.0130
32 SPIPE-35	30.19	462.75	0.00	462.25	0.00	0.50	1.6600	CIRCULAR	18.000	18.000	0.0150
33 SPIPE-36	31.09	441.38	0.08	441.00	0.00	0.38	1.2200	CIRCULAR	18.000	18.000	0.0150

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Frc Nun
1 SDPIPE-1	21.43	0 00:08	207.79	0.10	13.86	0.04	0.81	0.27	0.00	
2 SDPIPE-10	5.28	0 00:12	29.25	0.18	5.99	0.71	0.87	0.58	0.00	
3 SDPIPE-11	5.29	0 00:12	11.59	0.46	7.08	0.16	0.66	0.44	0.00	
4 SDPIPE-12	0.69	0 00:07	10.49	0.07	1.74	0.32	0.72	0.48	0.00	
5 SDPIPE-13	2.27	0 00:13	35.22	0.06	10.80	0.20	0.26	0.18	0.00	
6 SDPIPE-14	2.28	0 00:13	11.74	0.19	5.82	0.11	0.41	0.27	0.00	
7 SDPIPE-15	1.45	0 00:17	10.50	0.14	3.74	0.29	0.41	0.27	0.00	
8 SDPIPE-16	3.05	0 00:06	34.01	0.09	9.81	0.04	0.35	0.23	0.00	
9 SDPIPE-17	2.02	0 00:05	30.77	0.07	7.19	0.45	0.33	0.22	0.00	
10 SDPIPE-18	1.05	0 00:05	23.53	0.04	5.70	0.14	0.24	0.16	0.00	
11 SDPIPE-19	1.38	0 00:08	23.51	0.06	6.89	0.12	0.26	0.17	0.00	
12 SDPIPE-2	19.64	0 00:08	66.70	0.29	6.64	0.09	1.31	0.44	0.00	
13 SDPIPE-20	1.13	0 00:16	11.38	0.10	4.39	0.13	0.37	0.25	0.00	
14 SDPIPE-21	1.69	0 00:15	21.17	0.08	3.65	1.09	0.57	0.38	0.00	
15 SDPIPE-22	1.70	0 00:15	26.39	0.06	7.46	0.13	0.28	0.19	0.00	
16 SDPIPE-23	0.62	0 00:05	10.53	0.06	3.27	0.23	0.25	0.16	0.00	
17 SDPIPE-25	0.55	0 00:05	14.89	0.04	3.57	0.35	0.21	0.14	0.00	
18 SDPIPE-27	4.00	0 00:20	15.03	0.27	6.84	0.44	0.55	0.37	0.00	
19 SDPIPE-28	1.27	0 00:14	10.50	0.12	3.12	0.18	0.46	0.31	0.00	
20 SDPIPE-29	3.08	0 00:20	36.81	0.08	7.34	0.38	0.43	0.29	0.00	
21 SDPIPE-3	20.72	0 00:00	71.83	0.29	7.93	0.06	1.60	0.53	0.00	
22 SDPIPE-30	3.08	0 00:20	29.71	0.10	10.67	0.10	0.33	0.22	0.00	
23 SDPIPE-32	1.24	0 00:05	28.32	0.04	7.77	0.21	0.22	0.15	0.00	
24 SDPIPE-33	2.46	0 00:08	12.82	0.19	3.46	0.37	0.87	0.58	0.00	
25 SDPIPE-34	2.16	0 00:08	14.43	0.15	3.23	0.76	0.85	0.57	0.00	
26 SDPIPE-4	1.45	0 00:17	11.38	0.13	4.10	0.29	0.38	0.25	0.00	
27 SDPIPE-5	0.46	0 00:07	10.50	0.04	1.98	0.28	0.28	0.19	0.00	
28 SDPIPE-6	1.79	0 00:05	11.37	0.16	4.31	0.26	0.43	0.29	0.00	
29 SDPIPE-7	1.37	0 00:16	10.50	0.13	3.58	0.20	0.40	0.27	0.00	
30 SDPIPE-8	11.68	0 00:09	96.37	0.12	19.32	0.11	0.49	0.25	0.00	
31 SDPIPE-9	11.53	0 00:09	22.62	0.51	8.12	0.07	0.93	0.46	0.00	
32 SPIPE-35	1.59	0 00:05	11.72	0.14	4.18	0.12	0.40	0.27	0.00	
33 SPIPE-36	3.91	0 00:10	10.06	0.39	4.67	0.11	0.72	0.48	0.00	

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)	Ini Wz De	
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	3.97	483.62	0
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	4.76	512.25	0
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	4.43	512.58	0
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	3.86	530.20	0
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	3.53	530.53	0
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	4.36	517.50	0
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	4.46	517.99	0
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	10.73	465.94	0
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	3.38	468.11	0
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	3.91	501.10	0
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	5.53	517.77	-0
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	4.30	515.81	-2
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	3.58	501.43	0
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	5.17	538.50	0
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	3.53	542.20	0
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	4.84	542.65	0
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	9.98	466.30	0
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	3.70	546.00	0
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	6.50	487.50	0
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	5.63	487.84	0
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	5.72	505.00	0
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	5.03	510.34	0
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	3.90	514.12	0
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	7.29	467.80	0
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	7.62	467.47	0
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	6.43	483.19	0
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	5.08	516.28	0

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	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
2 CB-12	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
3 CB-13	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
4 CB-15	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
5 CB-16	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
6 CB-18	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
7 CB-19	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
8 CB-2	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
9 CB-20	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
10 CB-22	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
11 CB-24	0.1033	0.0258	0.0150	0.0200	1.00	0.1312	8.50
12 CB-25	0.1041	0.0258	0.0150	0.0200	1.00	0.1312	8.50
13 CB-26	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
14 CB-27	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
15 CB-28	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
16 CB-29	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
17 CB-3	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
18 CB-31	0.0721	0.0200	0.0150	0.0200	1.50	0.1312	8.50
19 CB-32	0.0809	0.0258	0.0150	0.0200	1.00	0.1312	8.50
20 CB-35	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
21 CB-36	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
22 CB-38	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
23 CB-39	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
24 CB-43	0.0199	0.0258	0.0150	0.0200	1.00	0.1312	8.50
25 CB-6	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
26 CB-7	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
27 CB-9	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
28 Inlet-CB-44	0.1138	0.0258	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN Element ID	Peak Flow	Peak Lateral Inflow	Peak Flow Intercepted by Inlet	Peak Flow Bypassing Inlet	Inlet Efficiency during Peak	Max Gutter Spread during Peak	Max Gutter Water Elev. during Peak	Max Gutter Water Depth during Peak	Time of Max Depth Occurrence
	(cfs)	(cfs)	(cfs)	(cfs)	(%)	Flow (ft)	Flow (ft)	Flow (ft)	(days hh:mm)
1 CB-10	1.54	1.45	1.34	0.19	87.40	4.89	487.71	0.12	0 00:16
2 CB-12	1.36	1.36	N/A	N/A	N/A	4.37	517.29	0.28	0 00:09
3 CB-13	3.72	3.56	N/A	N/A	N/A	8.53	517.40	0.39	0 00:09
4 CB-15	3.63	3.63	N/A	N/A	N/A	8.38	534.44	0.38	0 00:12
5 CB-16	1.79	1.79	N/A	N/A	N/A	5.24	534.36	0.30	0 00:12
6 CB-18	0.53	0.53	0.53	0.00	100.00	4.05	521.96	0.10	0 00:13
7 CB-19	2.74	2.74	2.28	0.46	83.25	7.45	522.64	0.19	0 00:13
8 CB-2	1.20	0.97	1.20	0.00	100.00	6.67	476.84	0.17	0 00:08
9 CB-20	1.63	1.50	1.40	0.23	85.80	4.99	471.61	0.12	0 00:17
10 CB-22	0.60	0.60	0.60	0.00	100.00	3.45	505.09	0.08	0 00:06
11 CB-24	1.16	1.16	1.06	0.10	91.65	4.15	523.41	0.10	0 00:05
12 CB-25	1.73	1.73	1.39	0.34	80.28	4.80	522.29	0.12	0 00:08
13 CB-26	1.23	1.23	1.15	0.08	93.36	4.48	505.12	0.11	0 00:16
14 CB-27	0.38	0.38	0.38	0.00	100.00	3.07	543.74	0.07	0 00:15
15 CB-28	1.71	1.71	N/A	N/A	N/A	5.07	545.97	0.30	0 00:15
16 CB-29	0.63	0.63	0.63	0.00	100.00	3.71	547.52	0.09	0 00:05
17 CB-3	0.60	0.60	0.60	0.00	100.00	5.18	476.41	0.13	0 00:08
18 CB-31	0.74	0.74	0.74	0.01	99.03	4.36	549.46	0.09	0 00:05
19 CB-32	0.56	0.56	0.56	0.00	100.00	3.32	549.78	0.08	0 00:05
20 CB-35	0.43	0.43	0.43	0.00	100.00	2.89	494.07	0.07	0 00:20
21 CB-36	1.51	1.51	1.27	0.24	84.23	4.56	493.58	0.11	0 00:14
22 CB-38	0.97	0.97	0.93	0.04	95.57	3.88	510.81	0.09	0 00:20
23 CB-39	3.23	3.20	N/A	N/A	N/A	7.77	515.74	0.37	0 00:20
24 CB-43	2.46	2.46	2.46	0.00	100.00	7.44	518.21	0.19	0 00:08
25 CB-6	0.87	0.71	N/A	N/A	N/A	3.25	475.34	0.25	0 00:07
26 CB-7	0.18	0.18	0.18	0.00	100.00	3.27	475.17	0.08	0 00:17
27 CB-9	1.55	1.55	1.35	0.20	87.17	4.91	489.74	0.12	0 00:05
28 Inlet-CB-44	2.43	2.43	2.18	0.24	89.92	5.34	521.49	0.13	0 00:08

25 Year Design Storm

Project Description

File Name Hilltop Drainage Analysis 4-8-26.SPF

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.....	31
Nodes.....	46
<i>Junctions</i>	5
<i>Outfalls</i>	13
<i>Flow Diversions</i>	0
<i>Inlets</i>	28
<i>Storage Nodes</i>	0
Links.....	54
<i>Channels</i>	21
<i>Pipes</i>	33
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	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-CB-10	0.58	0.7000	0.94	0.66	0.38	1.45	0 00:15:54
2	Sub-CB-12	0.32	0.7000	0.51	0.36	0.11	1.37	0 00:05:00
3	Sub-CB-13	1.03	0.7000	0.66	0.46	0.47	3.56	0 00:07:58
4	Sub-CB-15	1.21	0.7000	0.77	0.54	0.65	3.63	0 00:10:46
5	Sub-CB-16	0.42	0.7000	0.51	0.36	0.15	1.80	0 00:05:00
6	Sub-CB-18	0.12	0.7000	0.51	0.36	0.04	0.53	0 00:05:00
7	Sub-CB-19	1.00	0.7000	0.85	0.60	0.59	2.74	0 00:12:57
8	Sub-CB-2	0.38	0.7000	0.92	0.64	0.24	0.97	0 00:14:59
9	Sub-CB-20	0.62	0.7000	0.98	0.69	0.42	1.50	0 00:17:03
10	Sub-CB-22	0.14	0.7000	0.51	0.36	0.05	0.60	0 00:05:00
11	Sub-CB-24	0.27	0.7000	0.51	0.36	0.10	1.16	0 00:05:01
12	Sub-CB-25	0.51	0.7000	0.67	0.47	0.24	1.73	0 00:08:15
13	Sub-CB-26	0.49	0.7000	0.94	0.66	0.32	1.23	0 00:15:52
14	Sub-CB-27	0.10	0.7000	0.58	0.40	0.04	0.38	0 00:06:07
15	Sub-CB-28	0.67	0.7000	0.91	0.64	0.43	1.71	0 00:15:04
16	Sub-CB-29	0.15	0.7000	0.51	0.36	0.05	0.63	0 00:05:00
17	Sub-CB-3	0.14	0.7000	0.51	0.36	0.05	0.61	0 00:05:00
18	Sub-CB-31	0.17	0.7000	0.51	0.36	0.06	0.75	0 00:05:00
19	Sub-CB-32	0.13	0.7000	0.51	0.36	0.05	0.56	0 00:05:00
20	Sub-CB-35	0.10	0.7000	0.51	0.36	0.04	0.43	0 00:05:00
21	Sub-CB-36	0.58	0.7000	0.90	0.63	0.37	1.51	0 00:14:42
22	Sub-CB-38	0.24	0.7000	0.55	0.38	0.09	0.98	0 00:05:43
23	Sub-CB-39	1.39	0.7000	1.05	0.74	1.02	3.20	0 00:19:10
24	Sub-CB-43	0.71	0.7000	0.65	0.45	0.32	2.47	0 00:07:53
25	Sub-CB-44	0.72	0.7000	0.67	0.47	0.34	2.43	0 00:08:24
26	Sub-CB-6	0.16	0.7000	0.51	0.36	0.06	0.71	0 00:05:00
27	Sub-CB-7	0.04	0.7000	0.51	0.36	0.01	0.18	0 00:05:00
28	Sub-CB-9	0.36	0.7000	0.51	0.36	0.13	1.55	0 00:05:00
29	Sub-FES-2	1.58	0.5600	0.67	0.38	0.60	4.29	0 00:08:19
30	SUB-PIPE-35	0.36	0.7200	0.51	0.37	0.13	1.60	0 00:05:00
31	SUB-PIPE-36	1.26	0.7200	0.76	0.55	0.69	3.92	0 00:10:33

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft ²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)
1	FES-2	Junction	466.60	469.78	466.60	469.78	0.00	19.47	468.35	0.00	1.43
2	IN-PIPE-35	Junction	462.75	464.00	462.75	464.00	0.00	1.59	463.18	0.00	1.07
3	IN-PIPE36	Junction	441.30	442.80	441.30	442.80	0.00	3.92	442.17	0.00	0.71
4	JB-14	Junction	529.50	534.76	529.50	535.50	0.00	5.29	529.93	0.00	4.83
5	JB-23	Junction	515.30	519.44	515.30	519.20	10.00	2.03	515.56	0.00	3.88
6	OFFSITE-1	Outfall	540.30					0.03	540.33		
7	OFFSITE-2	Outfall	532.10					0.00	532.11		
8	OFFSITE-25	Outfall	464.82					0.00	464.82		
9	OFFSITE-26	Outfall	464.82					0.18	464.90		
10	OU-PIPE-36	Outfall	441.00					3.91	441.65		
11	Out-FES-1	Outfall	463.00					21.43	463.65		
12	Out-FES-11	Outfall	492.00					11.68	492.47		
13	Out-FES-17	Outfall	505.00					2.27	505.26		
14	Out-FES-21	Outfall	499.00					3.05	499.30		
15	Out-FES-3	Outfall	538.50					1.24	538.71		
16	Out-FES-34	Outfall	484.31					4.00	484.84		
17	Out-FES-8	Outfall	482.52					1.79	482.92		
18	OUT-PIPE-35	Outfall	462.25					1.59	462.62		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Depth (ft)
1	SDPIPE-1	Pipe	CB-2	Out-FES-1	35.55	465.94	463.00	8.2700	36.000	0.0120	21.43	207.79	0.10	13.86	0.81	
2	SDPIPE-10	Pipe	JB-14	CB-13	256.10	529.50	512.58	6.6100	18.000	0.0120	5.28	29.25	0.18	5.99	0.87	
3	SDPIPE-11	Pipe	CB-15	JB-14	67.57	530.20	529.50	1.0400	18.000	0.0120	5.29	11.59	0.46	7.08	0.66	
4	SDPIPE-12	Pipe	CB-16	CB-15	33.01	530.53	530.20	1.0000	18.000	0.0130	0.69	10.49	0.07	1.74	0.72	
5	SDPIPE-13	Pipe	CB-18	Out-FES-17	130.50	517.50	505.00	9.5800	18.000	0.0120	2.27	35.22	0.06	10.80	0.26	
6	SDPIPE-14	Pipe	CB-19	CB-18	39.55	517.99	517.50	1.2500	18.000	0.0130	2.28	11.74	0.19	5.82	0.41	
7	SDPIPE-15	Pipe	CB-20	CB-7	64.04	468.11	467.47	1.0000	18.000	0.0130	1.45	10.50	0.14	3.74	0.41	
8	SDPIPE-16	Pipe	CB-22	Out-FES-21	23.51	501.10	499.00	8.9300	18.000	0.0120	3.05	34.01	0.09	9.81	0.35	
9	SDPIPE-17	Pipe	JB-23	CB-22	194.21	515.30	501.00	7.3600	18.000	0.0120	2.02	30.77	0.07	7.19	0.33	
10	SDPIPE-18	Pipe	CB-24	JB-23	49.41	517.78	515.30	5.0200	18.000	0.0130	1.05	23.53	0.04	5.70	0.24	
11	SDPIPE-19	Pipe	CB-25	JB-23	51.31	517.87	515.30	5.0100	18.000	0.0130	1.38	23.51	0.06	6.89	0.26	
12	SDPIPE-2	Pipe	CB-3	CB-2	35.82	466.30	465.94	1.0000	36.000	0.0130	19.64	66.70	0.29	6.64	1.31	
13	SDPIPE-20	Pipe	CB-26	CB-22	33.00	501.43	501.10	1.0000	18.000	0.0120	1.13	11.38	0.10	4.39	0.37	
14	SDPIPE-21	Pipe	CB-27	CB-15	239.80	538.50	530.20	3.4600	18.000	0.0120	1.69	21.17	0.08	3.65	0.57	
15	SDPIPE-22	Pipe	CB-28	CB-27	57.68	542.14	538.50	6.3100	18.000	0.0130	1.70	26.39	0.06	7.46	0.28	
16	SDPIPE-23	Pipe	CB-29	CB-28	44.75	542.59	542.14	1.0100	18.000	0.0130	0.62	10.53	0.06	3.27	0.25	
17	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.55	14.89	0.04	3.57	0.21	
18	SDPIPE-27	Pipe	CB-35	Out-FES-34	182.53	487.50	484.31	1.7500	18.000	0.0120	4.00	15.03	0.27	6.84	0.55	
19	SDPIPE-28	Pipe	CB-36	CB-35	33.55	487.84	487.50	1.0000	18.000	0.0130	1.27	10.50	0.12	3.12	0.46	
20	SDPIPE-29	Pipe	CB-38	CB-35	167.22	505.00	487.50	10.4700	18.000	0.0120	3.08	36.81	0.08	7.34	0.43	
21	SDPIPE-3	Pipe	FES-2	CB-3	30.36	466.60	466.30	1.0000	36.000	0.0120	20.72	71.83	0.29	7.93	1.60	
22	SDPIPE-30	Pipe	CB-39	CB-38	66.71	510.34	505.00	8.0000	18.000	0.0130	3.08	29.71	0.10	10.67	0.33	
23	SDPIPE-32	Pipe	CB-31	Out-FES-3	96.89	544.50	538.50	6.1900	18.000	0.0120	1.24	28.32	0.04	7.77	0.22	
24	SDPIPE-33	Pipe	CB-43	CB-13	77.61	514.12	512.58	1.9800	18.000	0.0150	2.46	12.82	0.19	3.46	0.87	
25	SDPIPE-34	Pipe	Inlet-CB-44	CB-13	147.34	516.28	512.58	2.5100	18.000	0.0150	2.16	14.43	0.15	3.23	0.85	
26	SDPIPE-4	Pipe	CB-7	CB-2	71.93	467.47	466.75	1.0000	18.000	0.0120	1.45	11.38	0.13	4.10	0.38	
27	SDPIPE-5	Pipe	CB-6	CB-7	33.00	467.80	467.47	1.0000	18.000	0.0130	0.46	10.50	0.04	1.98	0.28	
28	SDPIPE-6	Pipe	CB-9	Out-FES-8	67.57	483.19	482.52	1.0000	18.000	0.0120	1.79	11.37	0.16	4.31	0.43	

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Total Depth (ft)
46	L-SDPIPE-27	Channel	CB-35	CB-3	245.69	494.00	476.28	7.2100	3.960	0.0150	0.00	6.79	0.00	0.00	0.00	
47	L-SDPIPE-28	Channel	CB-36	CB-2	228.18	493.47	476.67	7.3600	3.960	0.0150	0.24	6.86	0.03	2.98	0.06	
48	L-SDPIPE-29	Channel	CB-38	CB-35	172.07	510.72	494.00	9.7200	3.960	0.0150	0.02	7.88	0.00	1.75	0.02	
49	L-SDPIPE-32	Channel	CB-31	OFFSITE-1	98.13	549.76	540.30	9.6400	6.000	0.0150	0.03	28.64	0.00	2.05	0.02	
50	L-SDPIPE-33	Channel	CB-43	CB-13	78.91	518.02	517.01	1.2800	3.960	0.0320	0.00	2.86	0.00	0.00	0.17	
51	L-SDPIPE-34	Channel	Inlet-CB-44	CB-13	149.42	521.36	517.01	2.9100	3.960	0.0320	0.22	4.31	0.05	0.22	0.22	
52	L-SDPIPE-4	Channel	CB-7	OFFSITE-25	129.78	475.09	464.82	7.9100	3.960	0.0320	0.00	7.11	0.00	0.00	0.00	
53	L-SDPIPE-6	Channel	CB-9	CB-6	214.12	489.62	475.09	6.7900	3.960	0.0150	0.18	6.59	0.03	0.54	0.13	
54	L-SDPIPE-7	Channel	CB-10	CB-20	216.57	487.59	471.49	7.4300	3.960	0.0150	0.16	6.90	0.02	1.23	0.08	

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 C Sp during
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	483.62	N/A	1.54	1.34	0.19	87.40	8.50	
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	512.25	10.00	1.36	N/A	N/A	N/A	8.50	
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	512.58	10.00	3.72	N/A	N/A	N/A	8.50	
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	530.20	10.00	3.63	N/A	N/A	N/A	8.50	
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	530.53	10.00	1.79	N/A	N/A	N/A	8.50	
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	517.50	N/A	0.53	0.53	0.00	100.00	8.50	
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	517.99	N/A	2.74	2.28	0.46	83.25	8.50	
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	465.94	N/A	1.20	1.20	0.00	100.00	8.50	
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	468.11	N/A	1.63	1.40	0.23	85.80	8.50	
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	501.10	N/A	0.60	0.60	0.00	100.00	8.50	
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	517.77	N/A	1.16	1.06	0.10	91.65	8.50	
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	515.81	N/A	1.73	1.39	0.34	80.28	8.50	
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	501.43	N/A	1.23	1.15	0.08	93.36	8.50	
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	538.50	N/A	0.38	0.38	0.00	100.00	8.50	
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	542.20	10.00	1.71	N/A	N/A	N/A	8.50	
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	542.65	N/A	0.63	0.63	0.00	100.00	8.50	
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	466.30	N/A	0.60	0.60	0.00	100.00	8.50	
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.74	0.74	0.01	99.03	8.50	
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	546.00	N/A	0.56	0.56	0.00	100.00	8.50	
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	487.50	N/A	0.43	0.43	0.00	100.00	8.50	
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	487.84	N/A	1.51	1.27	0.24	84.23	8.50	
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	505.00	N/A	0.97	0.93	0.04	95.57	8.50	
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	510.34	10.00	3.23	N/A	N/A	N/A	8.50	
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	514.12	N/A	2.46	2.46	0.00	100.00	8.50	
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	467.80	10.00	0.87	N/A	N/A	N/A	8.50	
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	467.47	N/A	0.18	0.18	0.00	100.00	8.50	
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	483.19	N/A	1.55	1.35	0.20	87.17	8.50	
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	516.28	N/A	2.43	2.18	0.24	89.92	8.50	

Subbasin Hydrology

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.58
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8}) / ((P^{0.5}) * (S_f^{0.4})))$$

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)

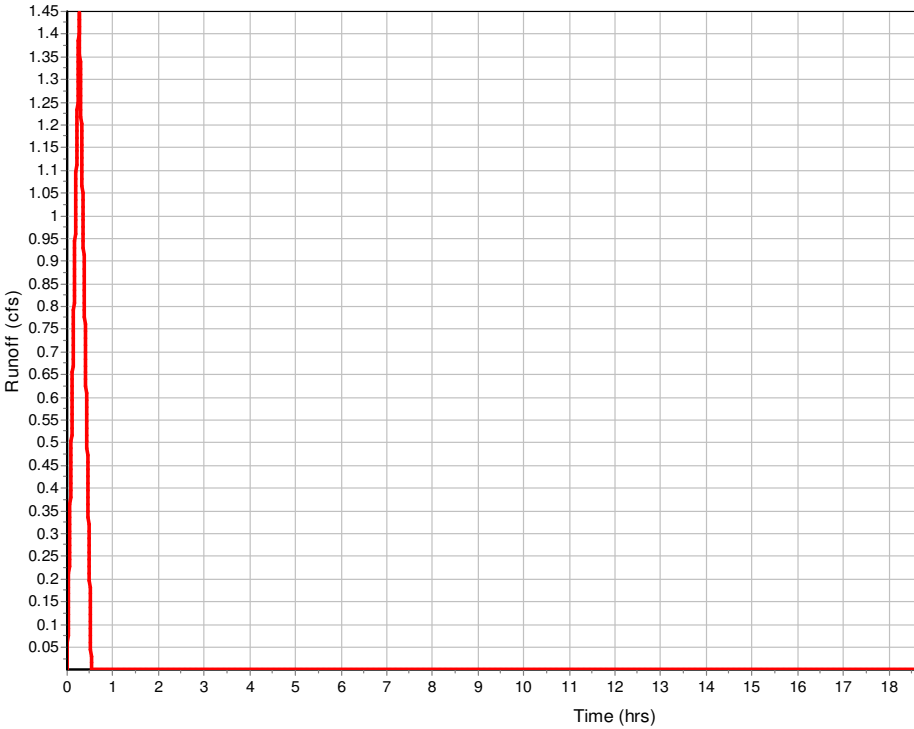
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99996647	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	229.3185963	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.69	0	0
Total TOC (min)	15.90		

Subbasin Runoff Results

Total Rainfall (in)	0.94
Total Runoff (in)	0.66
Peak Runoff (cfs)	1.45
Rainfall Intensity	3.571
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	00:15:54

Subbasin : Sub-CB-10

Runoff Hydrograph



Subbasin : Sub-CB-12

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
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

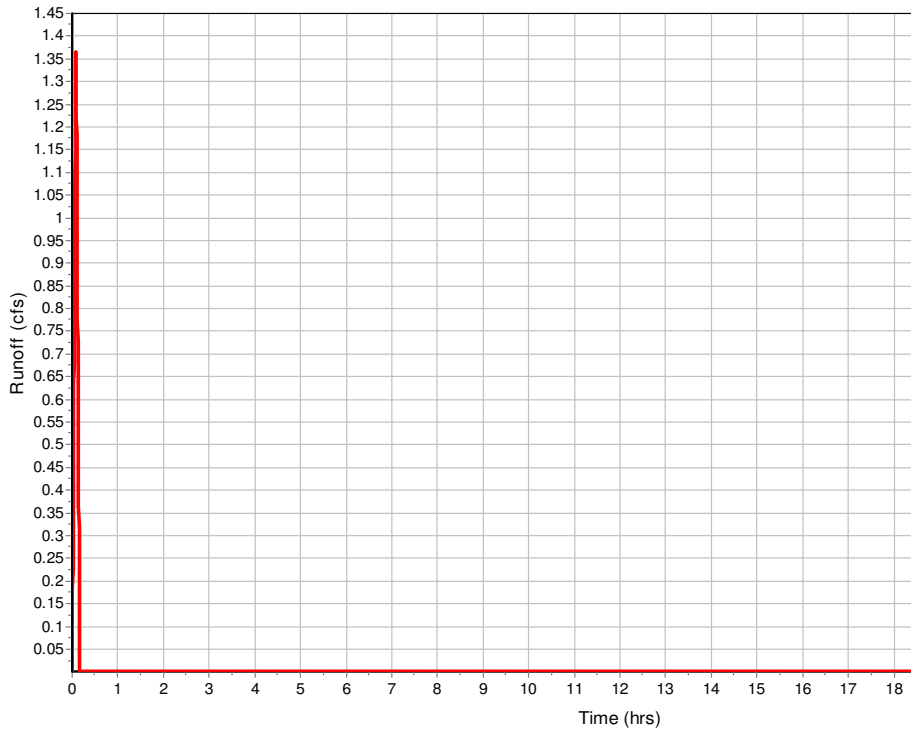
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	219.5273657	0
Slope (%) :	1.99	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.28	0	0
Total TOC (min)	4.14		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.37
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:04:08

Subbasin : Sub-CB-12

Runoff Hydrograph



Subbasin : Sub-CB-13

Input Data

Area (ac) 1.03
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.03	-	0.7
Composite Area & Weighted Runoff Coeff.	1.03		0.7

Time of Concentration

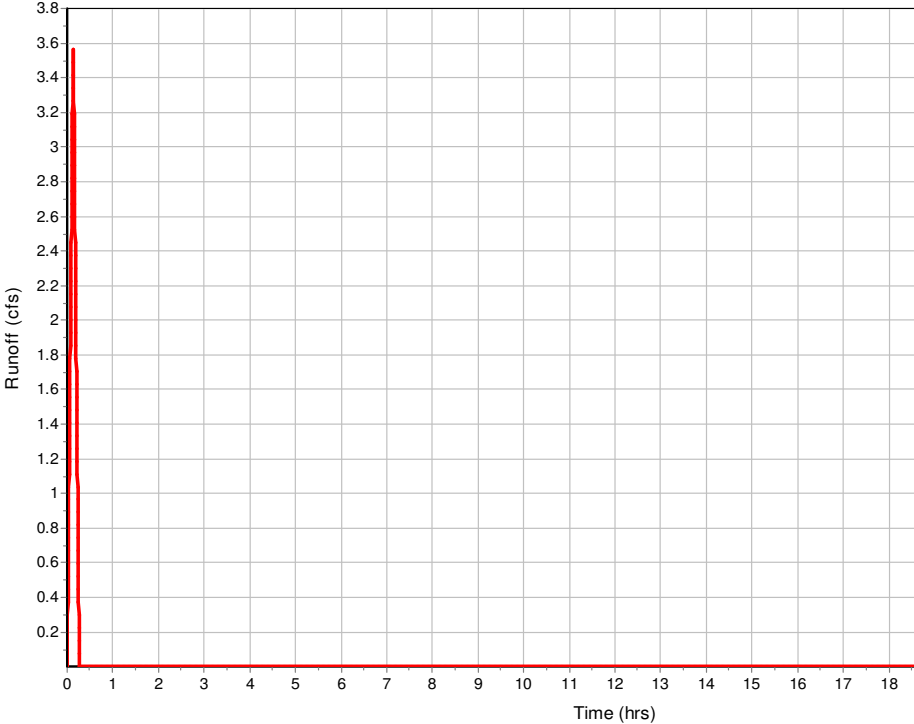
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	11.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.27	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	93	71.4	0
Slope (%) :	11.5	1.99	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.47	2.87	0
Computed Flow Time (min) :	0.28	0.41	0
Total TOC (min)	7.97		

Subbasin Runoff Results

Total Rainfall (in) 0.66
 Total Runoff (in) 0.46
 Peak Runoff (cfs) 3.56
 Rainfall Intensity 4.939
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:07:58

Runoff Hydrograph



Subbasin : Sub-CB-15

Input Data

Area (ac) 1.21
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.21	-	0.7
Composite Area & Weighted Runoff Coeff.	1.21		0.7

Time of Concentration

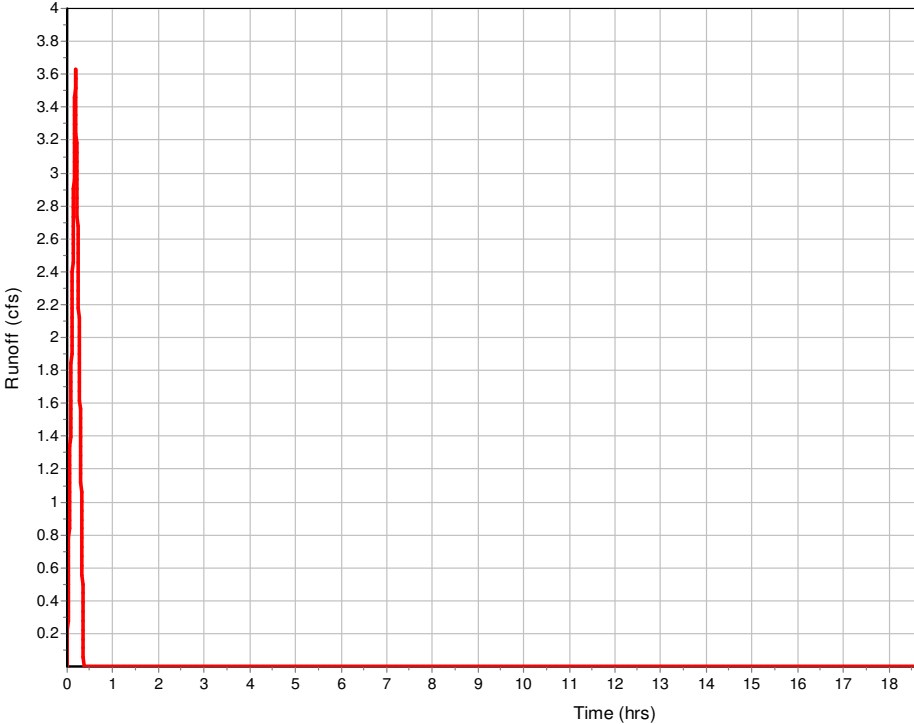
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	10.14	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	12.98144373	156.302
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.09	0.53	0
Total TOC (min)	10.77		

Subbasin Runoff Results

Total Rainfall (in) 0.77
 Total Runoff (in) 0.54
 Peak Runoff (cfs) 3.63
 Rainfall Intensity 4.282
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:10:46

Runoff Hydrograph



Subbasin : Sub-CB-16

Input Data

Area (ac) 0.42
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.42	-	0.7
Composite Area & Weighted Runoff Coeff.	0.42		0.7

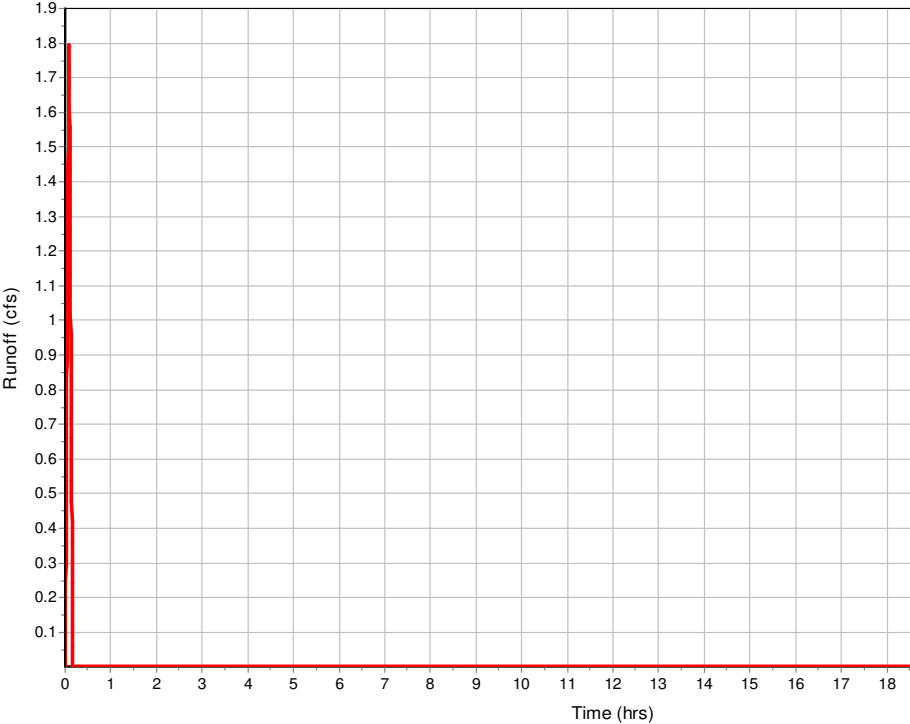
Time of Concentration

	Subarea A	Subarea B	Subarea C
	Sheet Flow Computations		
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.01720552	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	310.5319881	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	1.06	0	0
Total TOC (min)	3.93		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.8
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:56

Runoff Hydrograph



Subbasin : Sub-CB-18

Input Data

Area (ac) 0.12
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

Time of Concentration

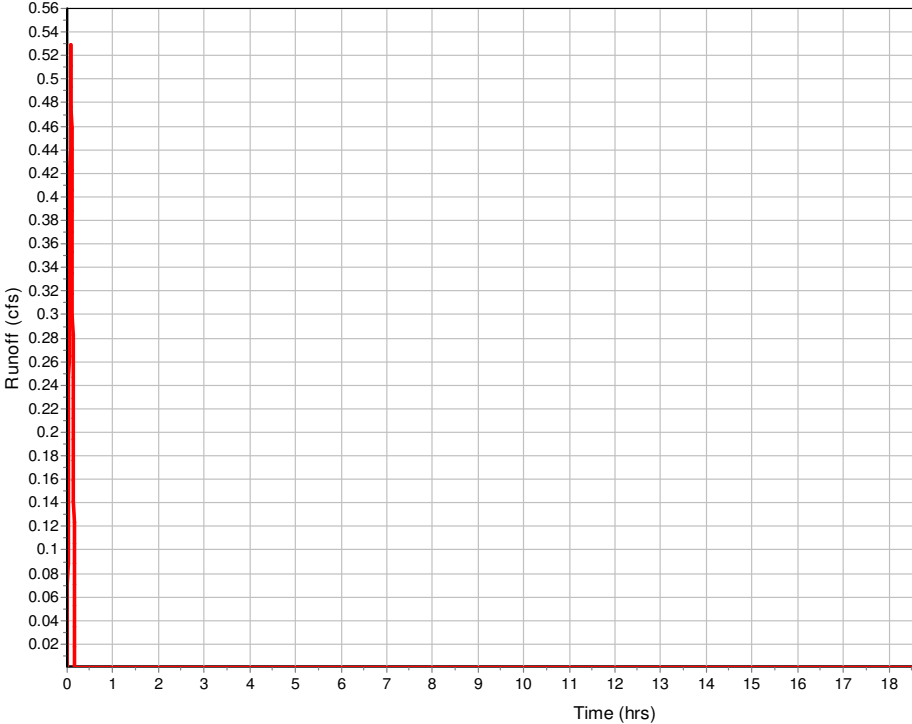
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	13.10752092	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.88	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	71.43477489	102.308
Slope (%) :	11.86	2.45	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	7	3.18	0
Computed Flow Time (min) :	0.17	0.54	0
Total TOC (min)	3.59		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.53
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:03:35

Runoff Hydrograph



Subbasin : Sub-CB-19

Input Data

Area (ac) 1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1	-	0.7
Composite Area & Weighted Runoff Coeff.	1		0.7

Time of Concentration

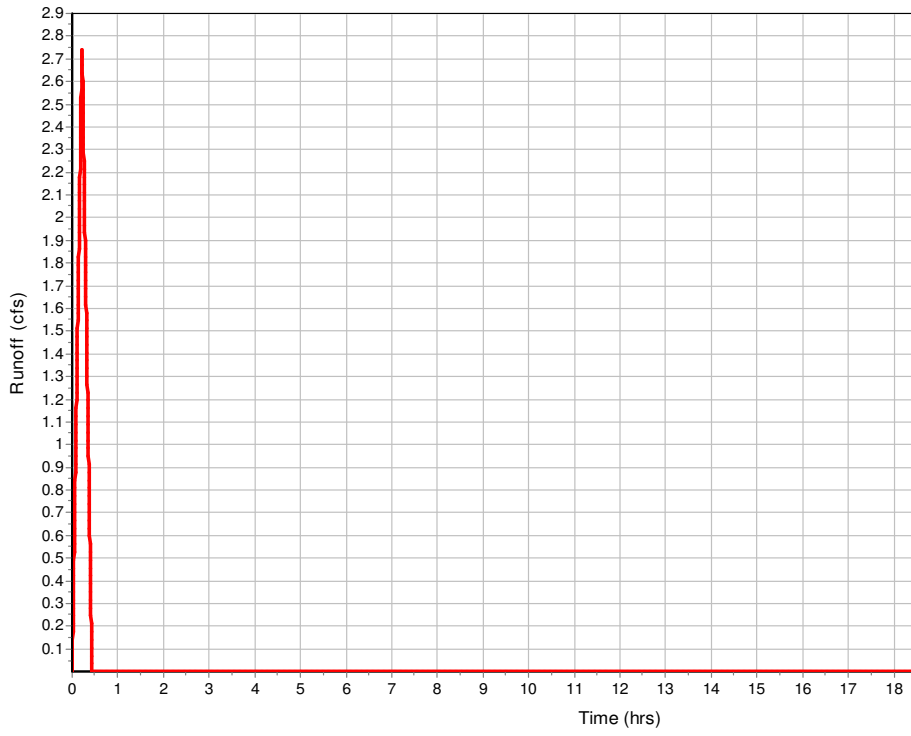
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100.0031436	0	0
Slope (%) :	3.4	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.14	0	0
Computed Flow Time (min) :	11.83	0	0
Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	6.07922878	278.905	79.9642
Slope (%) :	2	11.86	2.45
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	7	3.18
Computed Flow Time (min) :	0.04	0.66	0.42
Total TOC (min)	12.96		

Subbasin Runoff Results

Total Rainfall (in) 0.85
 Total Runoff (in) 0.6
 Peak Runoff (cfs) 2.74
 Rainfall Intensity 3.923
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:12:58

Subbasin : Sub-CB-19

Runoff Hydrograph



Subbasin : Sub-CB-2

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
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

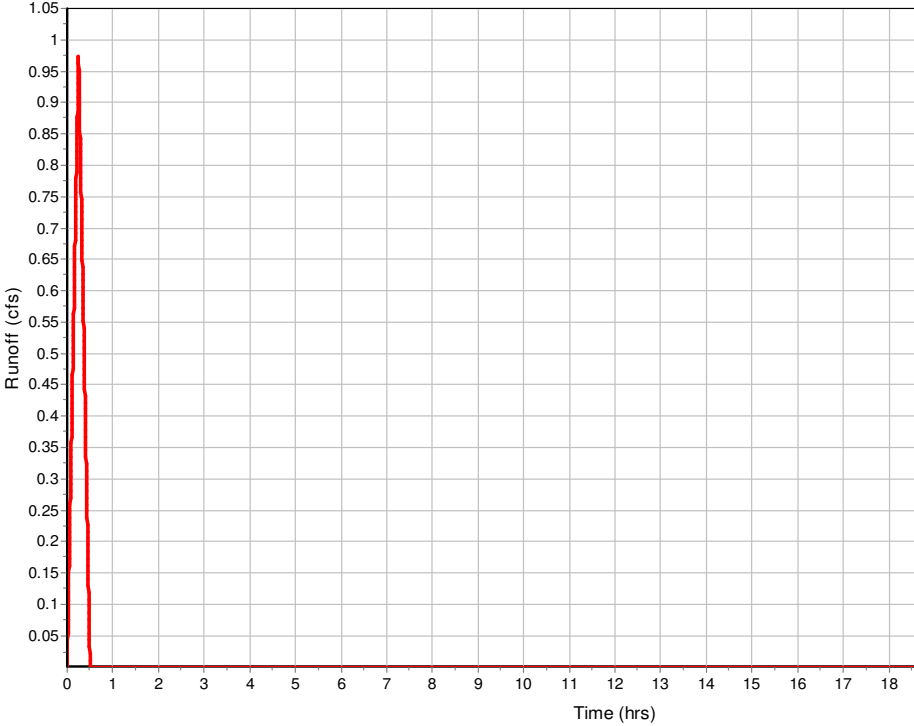
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	175.3484305	45.5292
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.44	0.4	0
Total TOC (min)	14.99		

Subbasin Runoff Results

Total Rainfall (in) 0.92
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 0.97
 Rainfall Intensity 3.661
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:14:59

Subbasin : Sub-CB-2

Runoff Hydrograph



Subbasin : Sub-CB-20

Input Data

Area (ac) 0.62
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.7
Composite Area & Weighted Runoff Coeff.	0.62		0.7

Time of Concentration

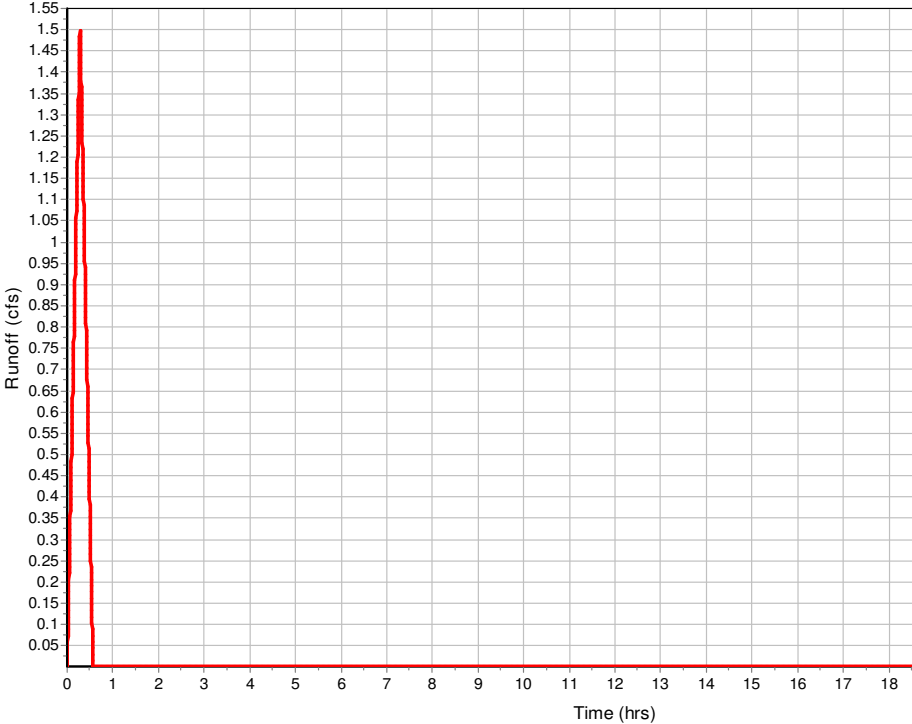
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	99.99258294	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	3.00743724	208.662
Slope (%) :	2	7.49	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	5.56	0
Computed Flow Time (min) :	0.02	0.63	0
Total TOC (min)	17.06		

Subbasin Runoff Results

Total Rainfall (in) 0.98
 Total Runoff (in) 0.69
 Peak Runoff (cfs) 1.5
 Rainfall Intensity 3.466
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:17:04

Runoff Hydrograph



Subbasin : Sub-CB-22

Input Data

Area (ac) 0.14
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

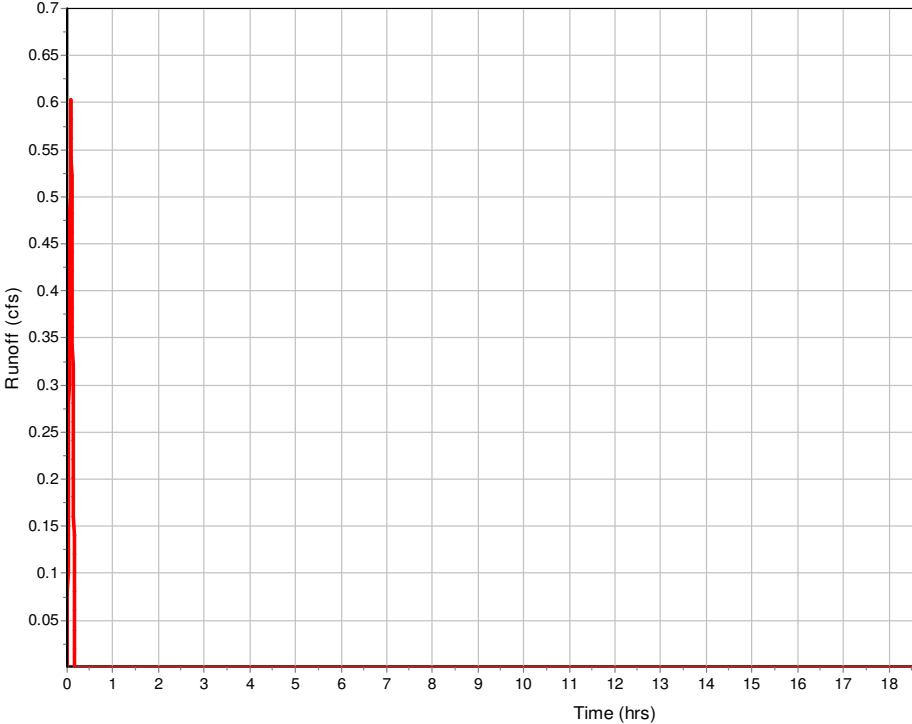
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99981258	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.0428132	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.5	0	0
Total TOC (min)3.36			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.6
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:22

Runoff Hydrograph



Subbasin : Sub-CB-24

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

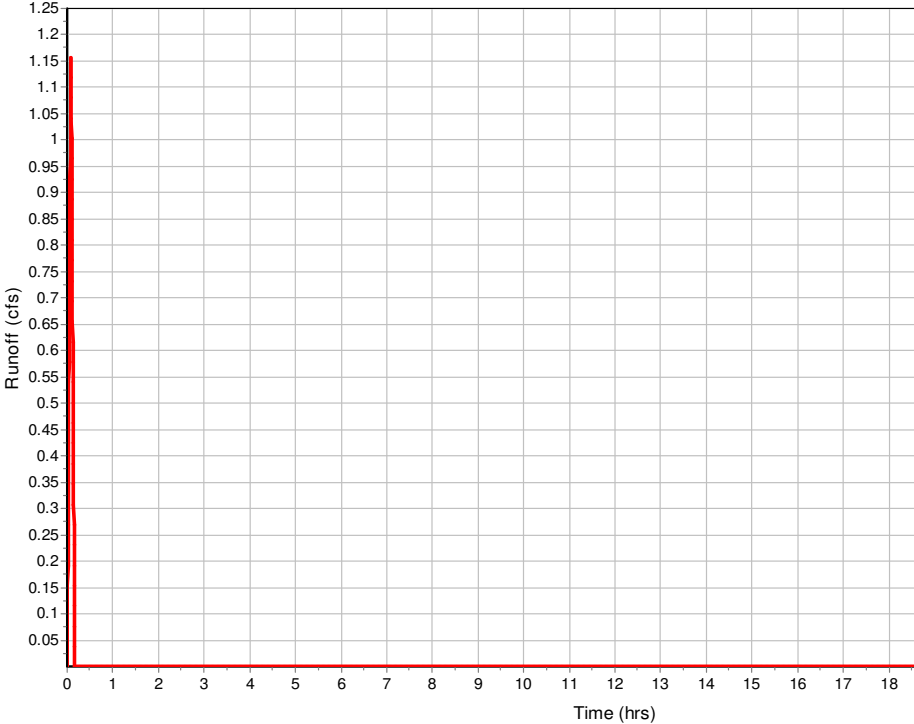
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	37.99958613	0	0
Slope (%) :	6.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	4.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	28.98355088	187.48	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.33	0.48	0
Total TOC (min)5.02			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.16
 Rainfall Intensity 6.148
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:05:01

Runoff Hydrograph



Subbasin : Sub-CB-25

Input Data

Area (ac) 0.51
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.7
Composite Area & Weighted Runoff Coeff.	0.51		0.7

Time of Concentration

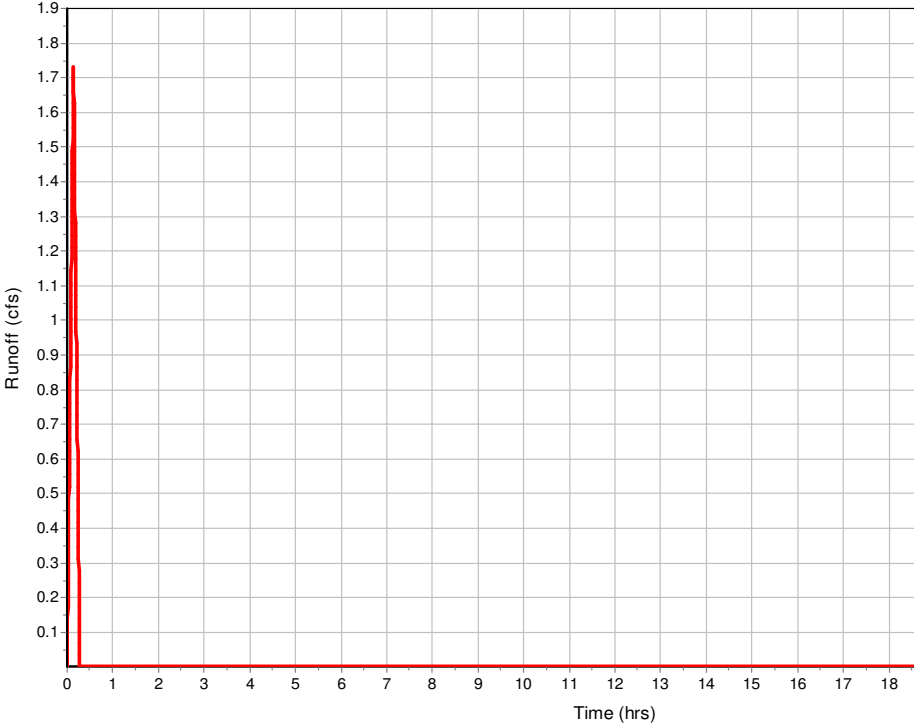
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99999586	0	0
Slope (%) :	7.25	0	0
2 yr, 24 hr Rainfall (in) :	4.32	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	7.56	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	16.12667612	203.96	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.19	0.52	0
Total TOC (min)8.26			

Subbasin Runoff Results

Total Rainfall (in) 0.67
 Total Runoff (in) 0.47
 Peak Runoff (cfs) 1.73
 Rainfall Intensity 4.856
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:08:16

Runoff Hydrograph



Subbasin : Sub-CB-26

Input Data

Area (ac) 0.49
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.49	-	0.7
Composite Area & Weighted Runoff Coeff.	0.49		0.7

Time of Concentration

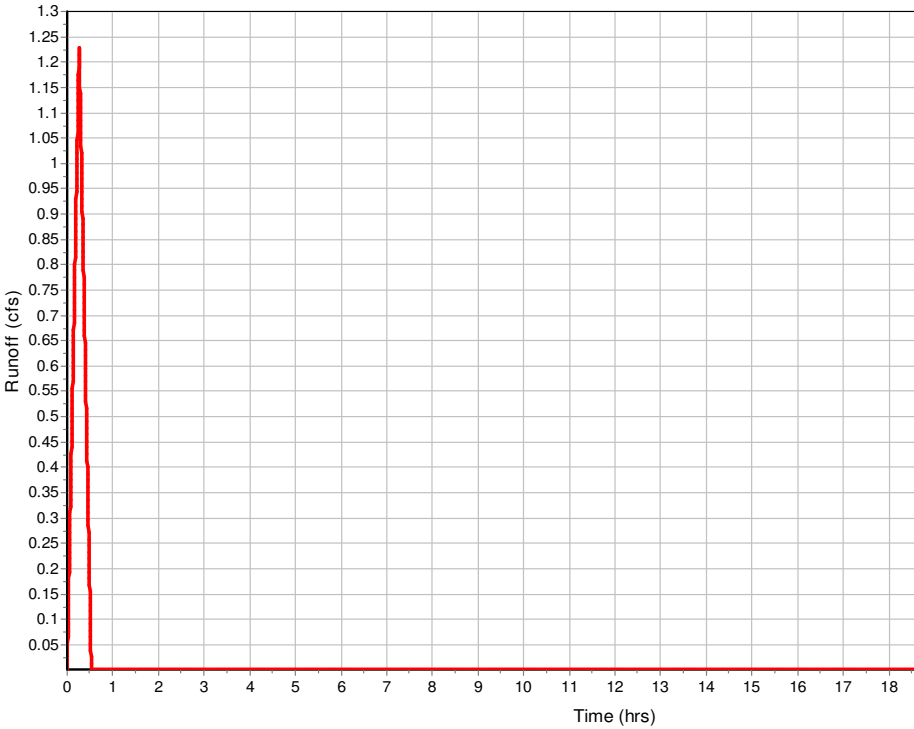
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99998121	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	221.0918618	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.66	0	0
Total TOC (min)	15.87		

Subbasin Runoff Results

Total Rainfall (in) 0.94
 Total Runoff (in) 0.66
 Peak Runoff (cfs) 1.23
 Rainfall Intensity 3.574
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:52

Runoff Hydrograph



Subbasin : Sub-CB-27

Input Data

Area (ac) 0.1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

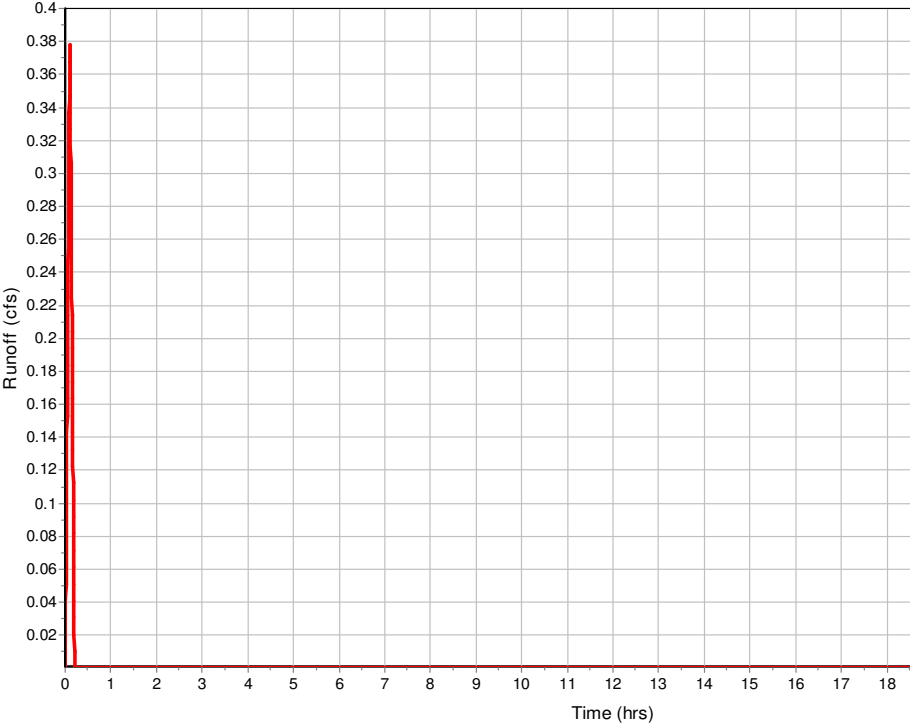
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	21.13547973	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	5.57	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	117.1502173	0	0
Slope (%) :	2.92	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.47	0	0
Computed Flow Time (min) :	0.56	0	0
Total TOC (min)6.13			

Subbasin Runoff Results

Total Rainfall (in) 0.58
 Total Runoff (in) 0.4
 Peak Runoff (cfs) 0.38
 Rainfall Intensity 5.593
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:06:08

Runoff Hydrograph



Subbasin : Sub-CB-28

Input Data

Area (ac)	0.67
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.67	-	0.7
Composite Area & Weighted Runoff Coeff.	0.67		0.7

Time of Concentration

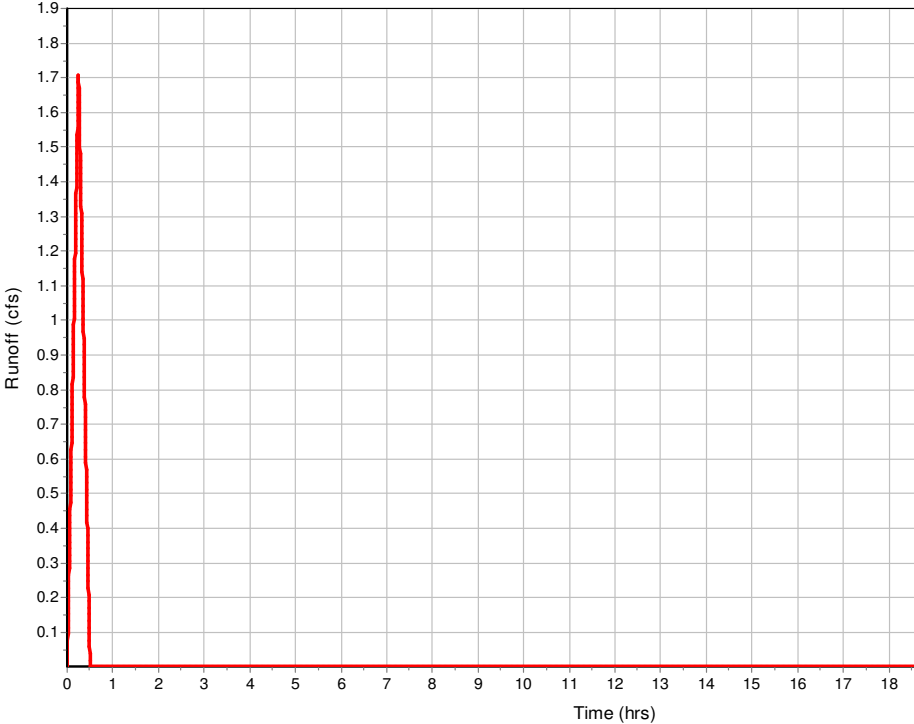
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	14.63	0	0

	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	17.02372996	94.092	0
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.12	0.32	0
Total TOC (min)	15.08		

Subbasin Runoff Results

Total Rainfall (in)	0.91
Total Runoff (in)	0.64
Peak Runoff (cfs)	1.71
Rainfall Intensity	3.652
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:15:05

Runoff Hydrograph



Subbasin : Sub-CB-29

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

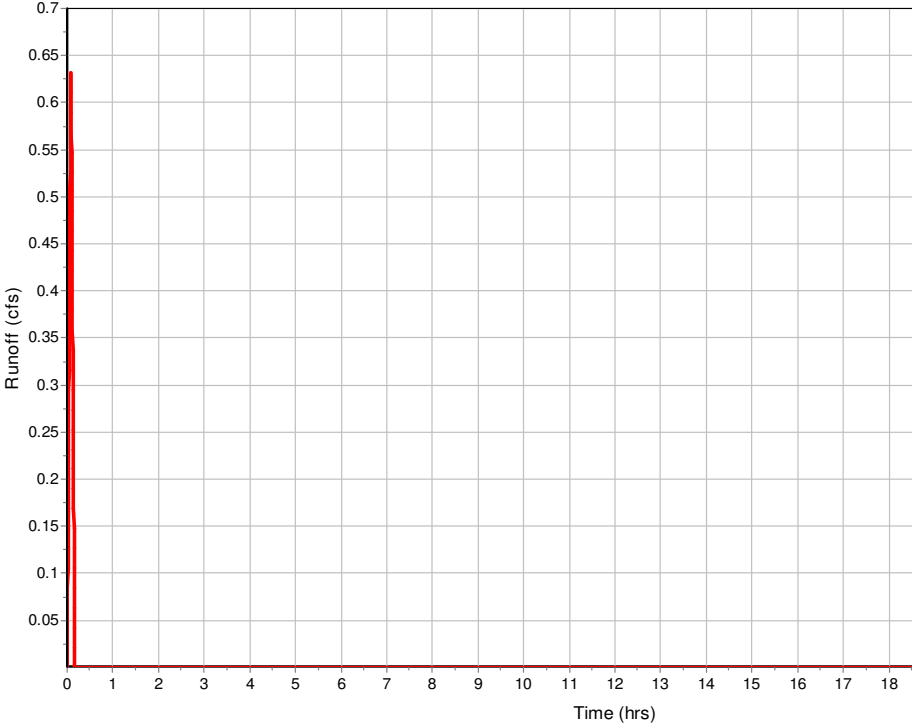
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	253.6223323	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.87	0	0
Total TOC (min)	3.73		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.63
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:44

Runoff Hydrograph



Subbasin : Sub-CB-3

Input Data

Area (ac)	0.14
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

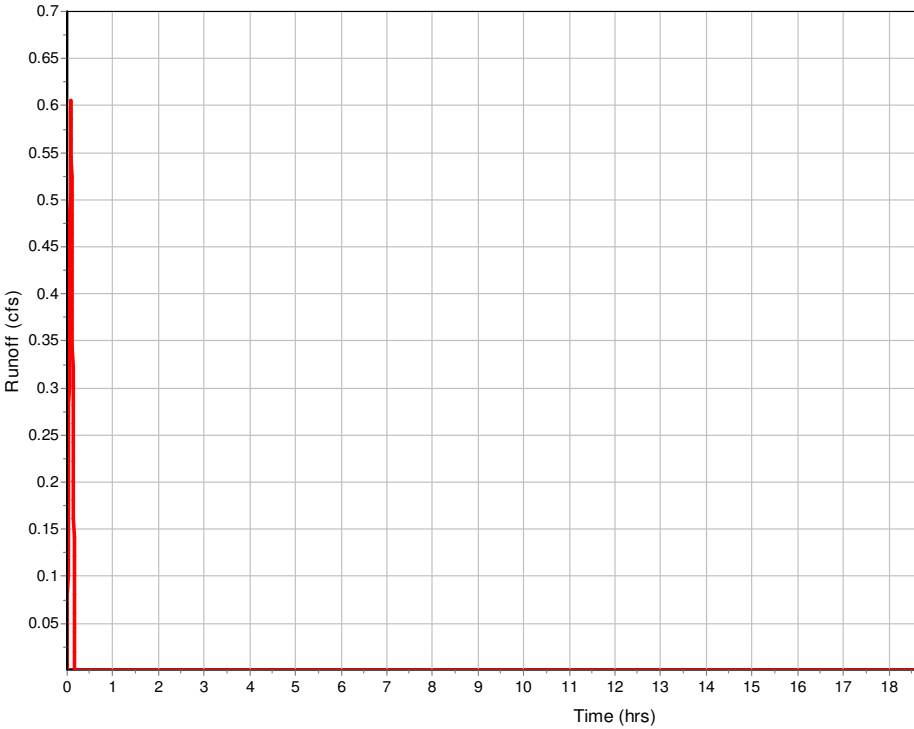
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	181.26423	58.411	0
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.46	0.52	0
Total TOC (min)	3.84		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.61
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:50

Subbasin : Sub-CB-3

Runoff Hydrograph



Subbasin : Sub-CB-31

Input Data

Area (ac) 0.17
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.7
Composite Area & Weighted Runoff Coeff.	0.17		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

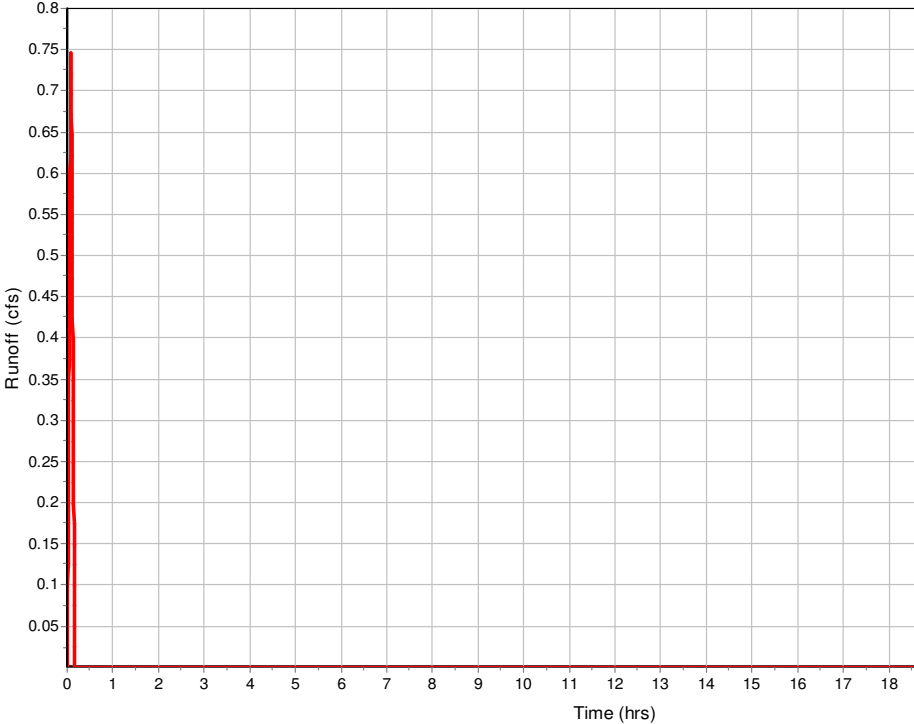
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	166.3763112	83.655	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.76	0.27	0
Total TOC (min)3.90			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.75
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:54

Subbasin : Sub-CB-31

Runoff Hydrograph



Subbasin : Sub-CB-32

Input Data

Area (ac) 0.13
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.7
Composite Area & Weighted Runoff Coeff.	0.13		0.7

Time of Concentration

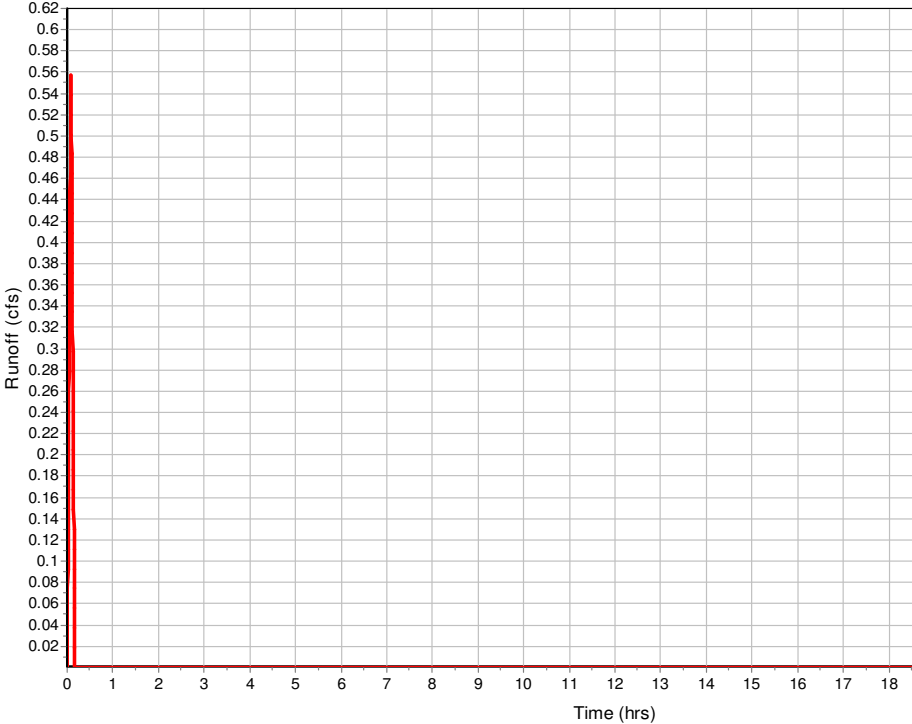
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.2624187	52.704	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.77	0.17	0
Total TOC (min)3.80			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.56
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:48

Runoff Hydrograph



Subbasin : Sub-CB-35

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

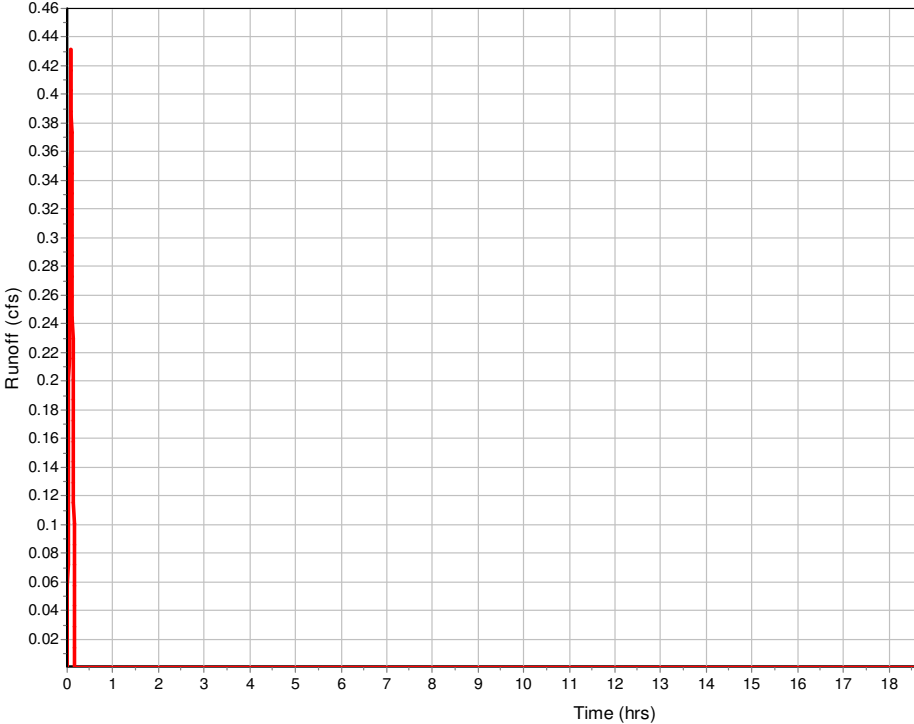
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	159.59	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.4	0	0
Total TOC (min)	3.27		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.43
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:16

Runoff Hydrograph



Subbasin : Sub-CB-36

Input Data

Area (ac) 0.58
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

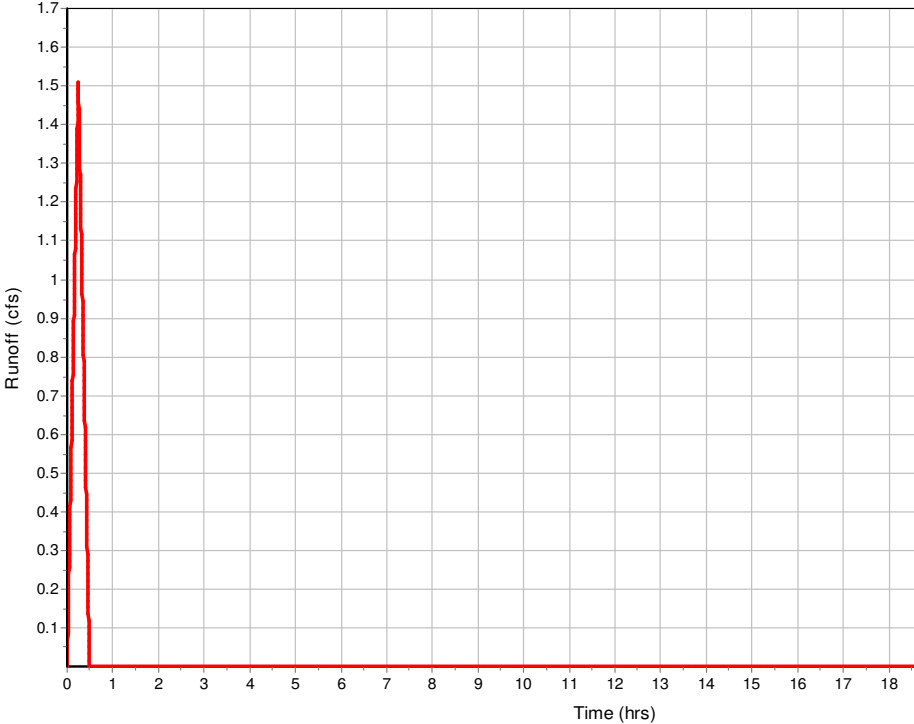
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	224.201193	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.57	0	0
Total TOC (min)	14.71		

Subbasin Runoff Results

Total Rainfall (in) 0.9
 Total Runoff (in) 0.63
 Peak Runoff (cfs) 1.51
 Rainfall Intensity 3.694
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:14:43

Runoff Hydrograph



Subbasin : Sub-CB-38

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

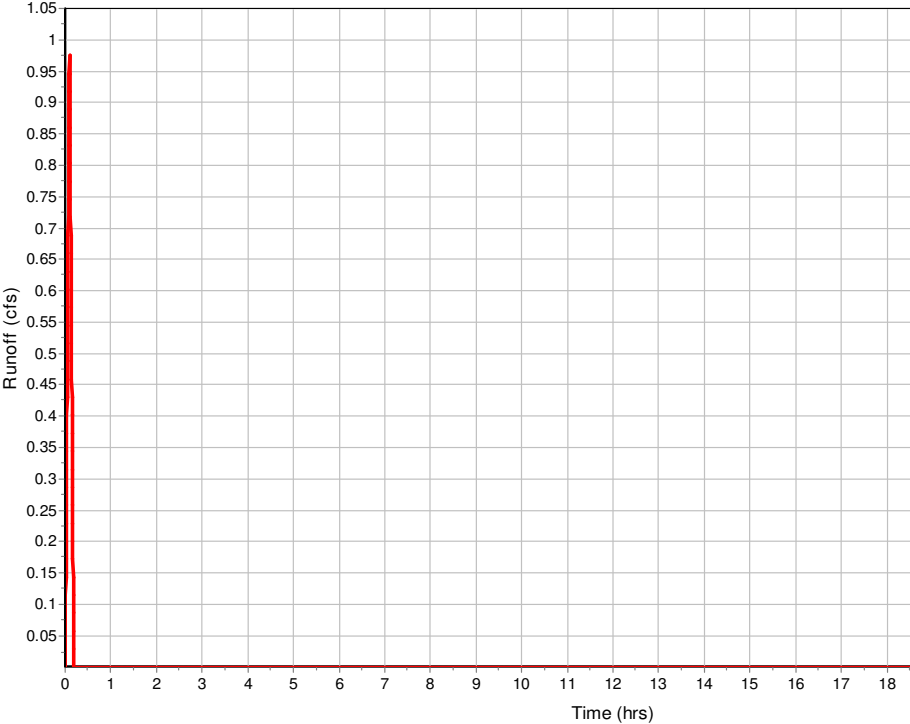
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.00000002	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	214.8866153	184.11	0
Slope (%) :	2.45	0.75	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.18	1.76	0
Computed Flow Time (min) :	1.13	1.74	0
Total TOC (min)5.73			

Subbasin Runoff Results

Total Rainfall (in) 0.55
 Total Runoff (in) 0.38
 Peak Runoff (cfs) 0.98
 Rainfall Intensity 5.775
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:05:44

Runoff Hydrograph



Subbasin : Sub-CB-39

Input Data

Area (ac) 1.39
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.39	-	0.7
Composite Area & Weighted Runoff Coeff.	1.39		0.7

Time of Concentration

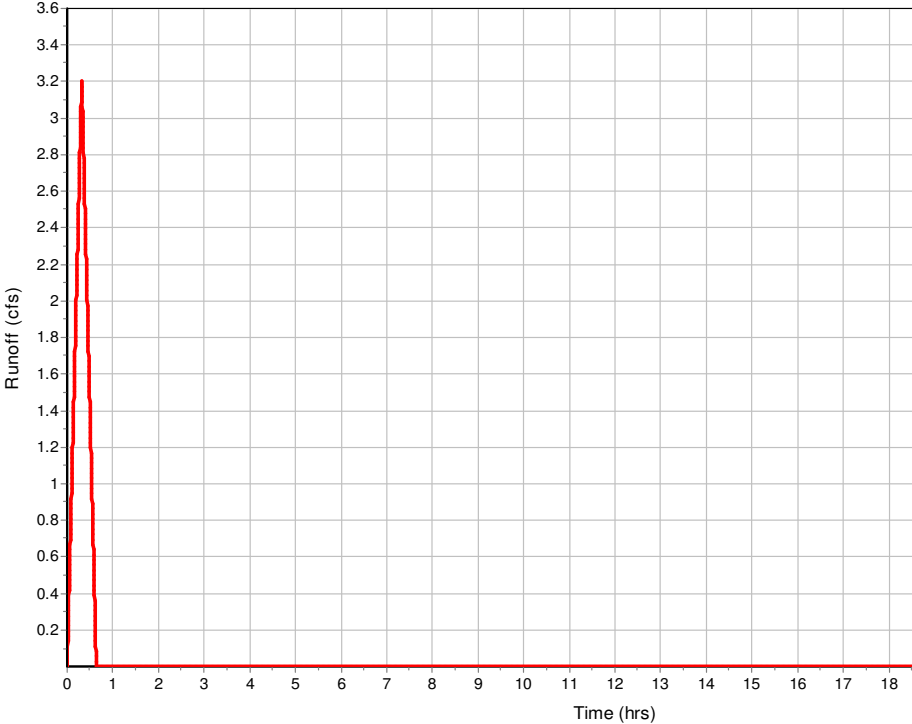
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	99.98923348	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	34.45719772	233.52	132.7
Slope (%) :	1.5	2.45	0.75
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	1.98	3.18	1.76
Computed Flow Time (min) :	0.29	1.22	1.26
Total TOC (min)	19.18		

Subbasin Runoff Results

Total Rainfall (in) 1.05
 Total Runoff (in) 0.74
 Peak Runoff (cfs) 3.2
 Rainfall Intensity 3.299
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:19:11

Runoff Hydrograph



Subbasin : Sub-CB-43

Input Data

Area (ac)	0.71
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.71	-	0.7
Composite Area & Weighted Runoff Coeff.	0.71		0.7

Time of Concentration

	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

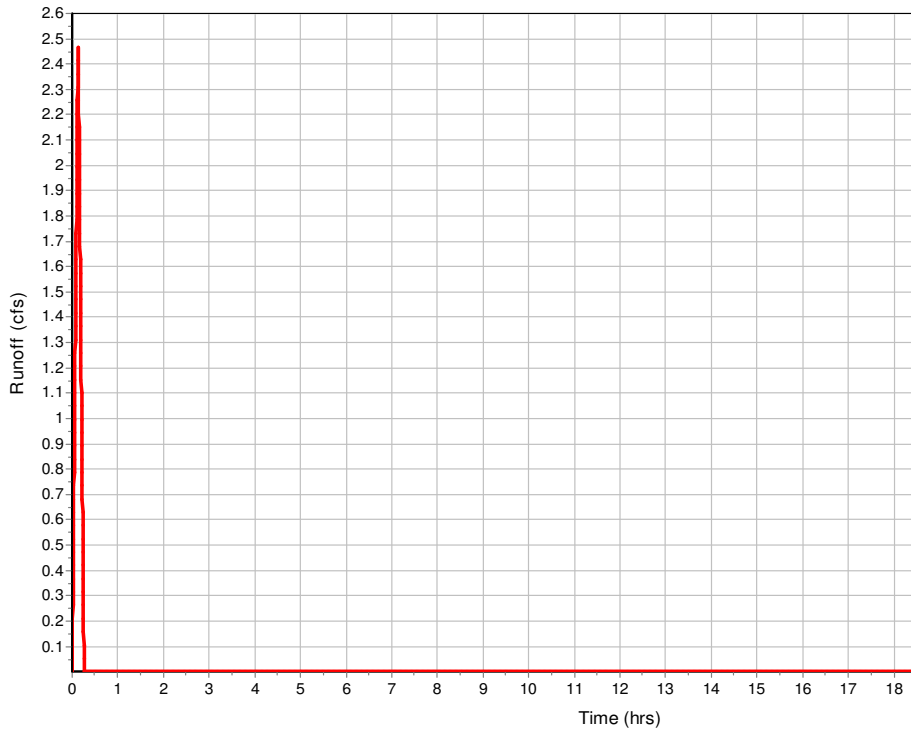
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	93	77.84	0
Slope (%) :	10.75	1.99	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	5.29	2.87	0
Computed Flow Time (min) :	0.29	0.45	0
Total TOC (min)	7.89		

Subbasin Runoff Results

Total Rainfall (in)	0.65
Total Runoff (in)	0.45
Peak Runoff (cfs)	2.47
Rainfall Intensity	4.963
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:07:53

Subbasin : Sub-CB-43

Runoff Hydrograph



Subbasin : Sub-CB-44

Input Data

Area (ac)	0.72
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.72	-	0.7
Composite Area & Weighted Runoff Coeff.	0.72		0.7

Time of Concentration

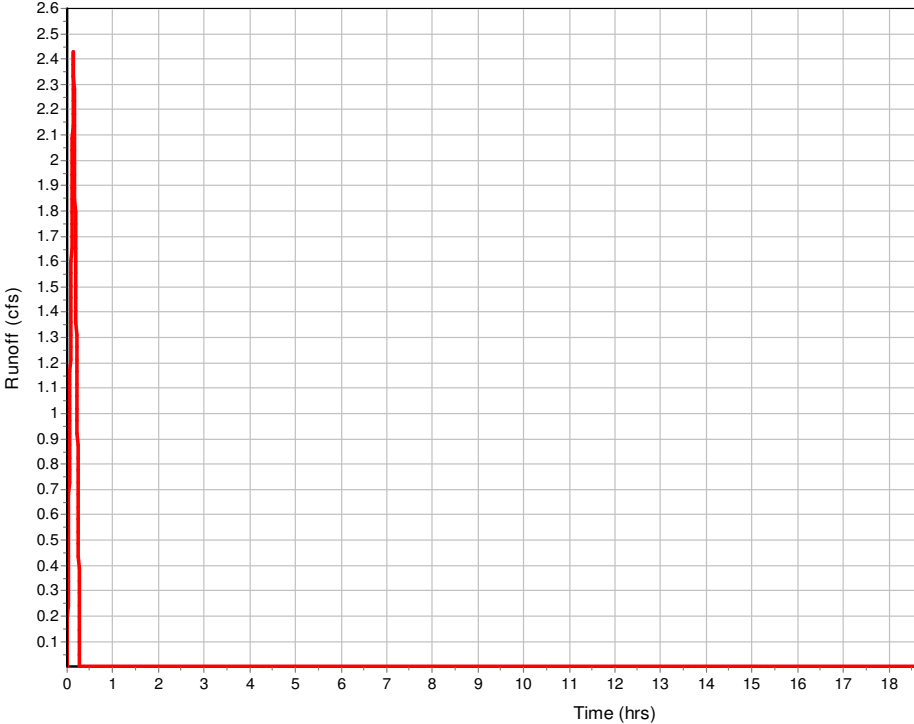
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	9	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	8.02	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	78.42	77.02
Slope (%) :	16.7	11.38	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	6.59	6.86	0
Computed Flow Time (min) :	0.2	0.19	0
Total TOC (min)	8.40		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.47
Peak Runoff (cfs)	2.43
Rainfall Intensity	4.817
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:08:24

Runoff Hydrograph



Subbasin : Sub-CB-6

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

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

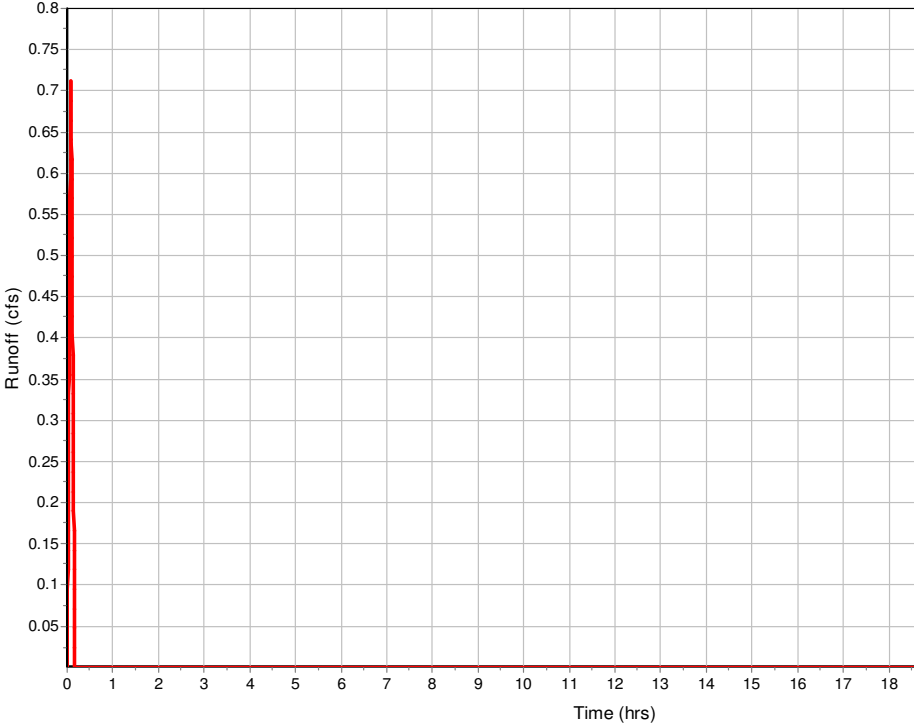
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	207.9606416	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.62	0	0
Total TOC (min)	3.48		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.71
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:29

Subbasin : Sub-CB-6

Runoff Hydrograph



Subbasin : Sub-CB-7

Input Data

Area (ac) 0.04
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.04	-	0.7
Composite Area & Weighted Runoff Coeff.	0.04		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999999	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

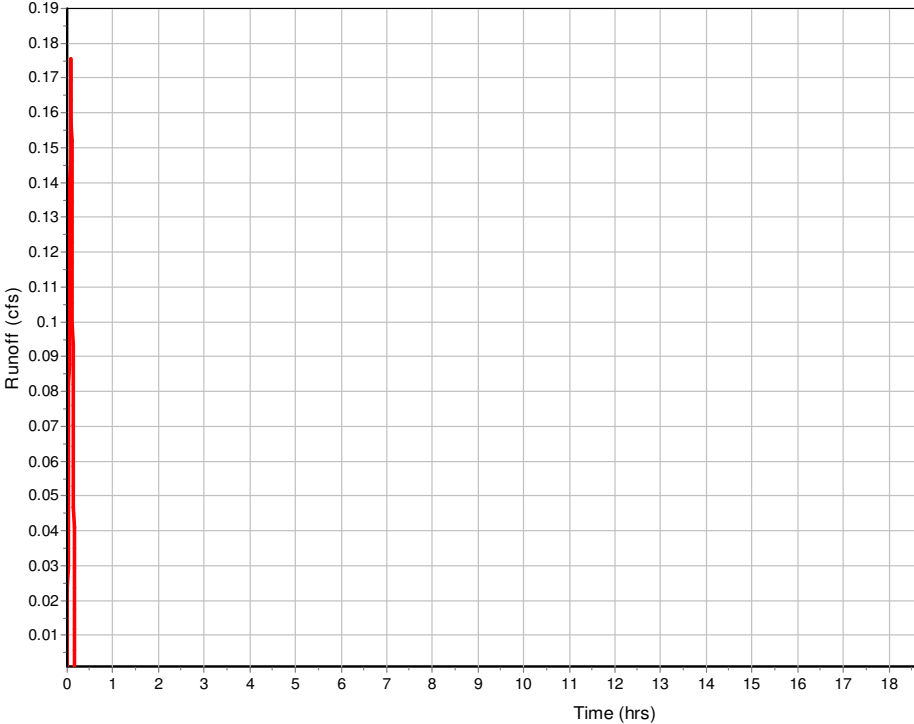
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	68.39700153	0	0
Slope (%) :	0.85	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.87	0	0
Computed Flow Time (min) :	0.61	0	0
Total TOC (min)	3.47		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.18
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-7

Runoff Hydrograph



Subbasin : Sub-CB-9

Input Data

Area (ac) 0.36
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999519	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

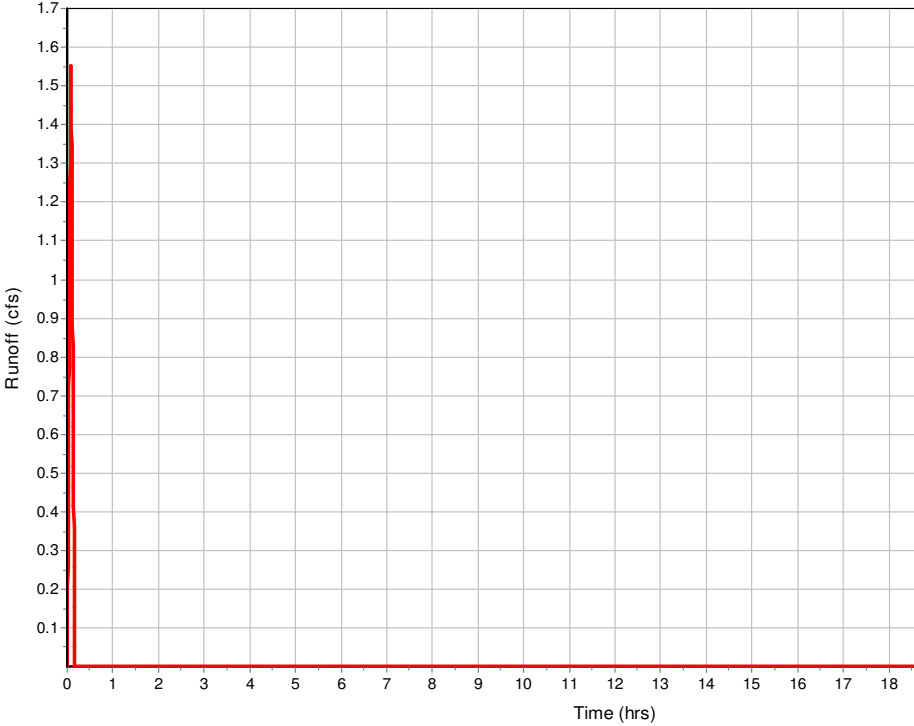
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	199.7947467	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.6	0	0
Total TOC (min)	3.46		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.55
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-9

Runoff Hydrograph



Subbasin : Sub-FES-2

Input Data

Area (ac)	1.58
Weighted Runoff Coefficient	0.56

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.58	-	0.56
Composite Area & Weighted Runoff Coeff.	1.58		0.56

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

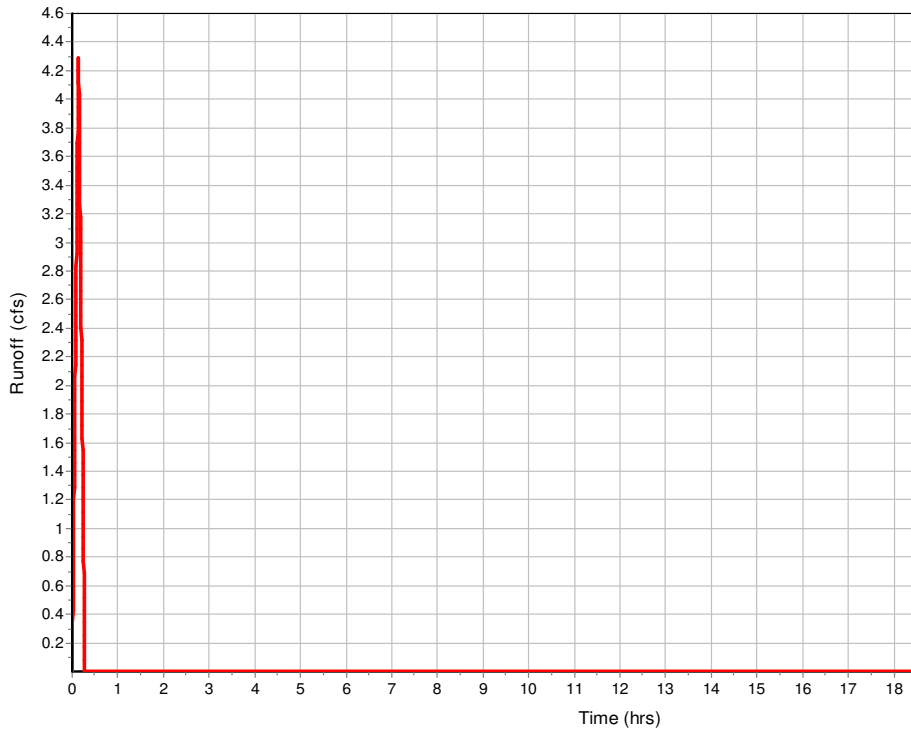
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	363.3701089	0	0
Slope (%) :	10	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.1	0	0
Computed Flow Time (min) :	1.19	0	0
Total TOC (min)	8.33		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.38
Peak Runoff (cfs)	4.29
Rainfall Intensity	4.837
Weighted Runoff Coefficient	0.56
Time of Concentration (days hh:mm:ss)	0 00:08:20

Subbasin : Sub-FES-2

Runoff Hydrograph



Subbasin : SUB-PIPE-35

Input Data

Area (ac) 0.36
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.36	-	0.72
Composite Area & Weighted Runoff Coeff.	0.36		0.72

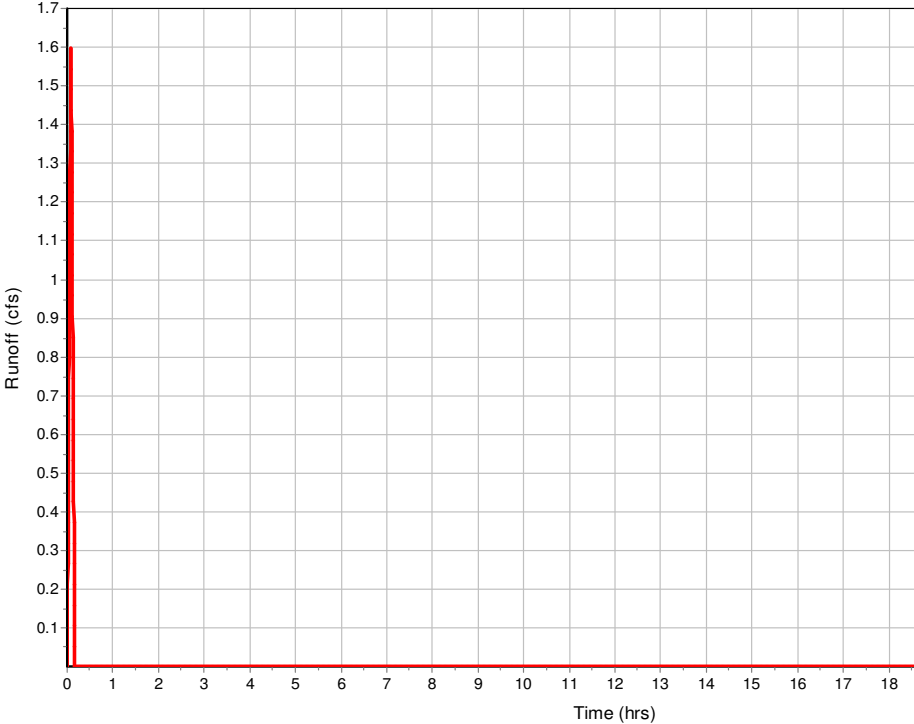
Time of Concentration

User-Defined TOC override (minutes): 2.36

Subbasin Runoff Results

Total Rainfall (in) 0.51
Total Runoff (in) 0.37
Peak Runoff (cfs) 1.6
Rainfall Intensity 6.16
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:02:22

Runoff Hydrograph



Subbasin : SUB-PIPE-36

Input Data

Area (ac) 1.26
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.26	-	0.72
Composite Area & Weighted Runoff Coeff.	1.26		0.72

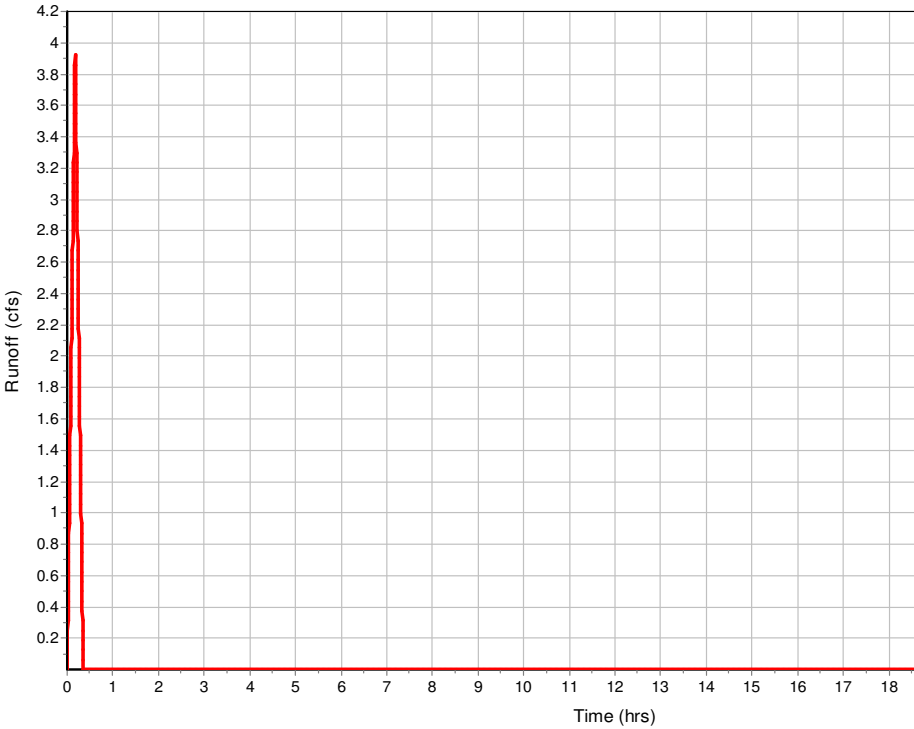
Time of Concentration

User-Defined TOC override (minutes): 10.56

Subbasin Runoff Results

Total Rainfall (in) 0.76
Total Runoff (in) 0.55
Peak Runoff (cfs) 3.92
Rainfall Intensity 4.322
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:10:34

Runoff Hydrograph



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 (ft ²)	Minimum Pipe Cover (in)
1 FES-2	466.60	469.78	3.18	466.60	0.00	469.78	0.00	0.00	2.15
2 IN-PIPE-35	462.75	464.00	1.25	462.75	0.00	464.00	0.00	0.00	0.00
3 IN-PIPE36	441.30	442.80	1.50	441.30	0.00	442.80	0.00	0.00	0.00
4 JB-14	529.50	534.76	5.26	529.50	0.00	535.50	0.74	0.00	45.12
5 JB-23	515.30	519.44	4.14	515.30	0.00	519.20	-0.24	10.00	31.68

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	1 FI Occu
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days h
1	FES-2	19.47	19.47	468.35	1.75	0.00	1.43	468.04	1.44	0 00:00	0
2	IN-PIPE-35	1.59	1.59	463.18	0.43	0.00	1.07	462.75	0.00	0 00:05	0
3	IN-PIPE36	3.92	3.92	442.17	0.87	0.00	0.71	441.39	0.09	0 00:10	0
4	JB-14	5.29	0.00	529.93	0.43	0.00	4.83	529.51	0.01	0 00:12	0
5	JB-23	2.03	0.00	515.56	0.26	0.00	3.88	515.30	0.00	0 00:05	0

Channel Input

SN Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Shape Slope (%)	Height	Width	Manning's E Roughness
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ft)	(ft)	
1 L-SDPIPE-1	73.15	476.67	10.73	475.09	7.62	1.58	2.1600 User-Defined	0.330	14.000	0.0150
2 L-SDPIPE-13	403.61	521.86	4.36	510.72	5.72	11.14	2.7600 User-Defined	0.330	14.000	0.0150
3 L-SDPIPE-14	373.89	522.45	4.46	515.37	5.03	7.08	1.8900 User-Defined	0.330	14.000	0.0150
4 L-SDPIPE-15	83.27	471.49	3.38	464.82	0.00	6.67	8.0100 User-Defined	0.330	14.000	0.0150
5 L-SDPIPE-16	206.62	505.01	3.91	489.62	6.43	15.39	7.4500 User-Defined	0.330	14.000	0.0150
6 L-SDPIPE-18	170.54	523.17	5.39	517.57	3.45	5.60	3.2800 User-Defined	0.330	14.000	0.0150
7 L-SDPIPE-19	227.29	522.18	4.31	505.01	3.58	17.17	7.5500 User-Defined	0.330	14.000	0.0150
8 L-SDPIPE-2	62.02	476.28	9.98	475.09	7.29	1.19	1.9200 User-Defined	0.330	14.000	0.0150
9 L-SDPIPE-20	233.87	505.01	3.58	487.59	3.97	17.42	7.4500 User-Defined	0.330	14.000	0.0150
10 L-SDPIPE-21	241.61	543.67	5.17	534.06	3.86	9.61	3.9800 User-Defined	0.330	14.000	0.0150
11 L-SDPIPE-23	316.61	547.43	4.84	534.06	3.53	13.37	4.2200 User-Defined	0.500	26.000	0.0150
12 L-SDPIPE-25	202.83	549.70	3.70	532.10	0.00	17.60	8.6800 User-Defined	0.500	26.000	0.0150
13 L-SDPIPE-27	245.69	494.00	6.50	476.28	9.98	17.72	7.2100 User-Defined	0.330	14.000	0.0150
14 L-SDPIPE-28	228.18	493.47	5.63	476.67	10.73	16.80	7.3600 User-Defined	0.330	14.000	0.0150
15 L-SDPIPE-29	172.07	510.72	5.72	494.00	6.50	16.72	9.7200 User-Defined	0.330	14.000	0.0150
16 L-SDPIPE-32	98.13	549.76	5.26	540.30	0.00	9.46	9.6400 User-Defined	0.500	26.000	0.0150
17 L-SDPIPE-33	78.91	518.02	3.90	517.01	4.43	1.01	1.2800 User-Defined	0.330	14.000	0.0320
18 L-SDPIPE-34	149.42	521.36	5.08	517.01	4.43	4.35	2.9100 User-Defined	0.330	14.000	0.0320
19 L-SDPIPE-4	129.78	475.09	7.62	464.82	0.00	10.27	7.9100 User-Defined	0.330	14.000	0.0320
20 L-SDPIPE-6	214.12	489.62	6.43	475.09	7.29	14.53	6.7900 User-Defined	0.330	14.000	0.0150
21 L-SDPIPE-7	216.57	487.59	3.97	471.49	3.38	16.10	7.4300 User-Defined	0.330	14.000	0.0150

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Fr Nu
1	L-SDPIPE-1	0.00	0 00:00	3.72	0.00	0.00		0.00	0.00	0.00	
2	L-SDPIPE-13	0.00	0 00:00	4.20	0.00	0.00		0.02	0.06	0.00	
3	L-SDPIPE-14	0.46	0 00:13	3.48	0.13	0.37	16.84	0.24	0.73	0.00	
4	L-SDPIPE-15	0.18	0 00:17	7.16	0.02	1.66	0.84	0.08	0.24	0.00	
5	L-SDPIPE-16	0.00	0 00:06	6.90	0.00	0.00		0.04	0.12	0.00	
6	L-SDPIPE-18	0.11	0 00:05	4.64	0.02	6.32	0.45	0.07	0.21	0.00	
7	L-SDPIPE-19	0.34	0 00:08	6.95	0.05	2.95	1.28	0.07	0.22	0.00	
8	L-SDPIPE-2	0.00	0 00:00	3.50	0.00	0.00		0.10	0.29	0.00	
9	L-SDPIPE-20	0.09	0 00:16	6.90	0.01	0.82	4.75	0.07	0.21	0.00	
10	L-SDPIPE-21	0.00	0 00:00	5.04	0.00	0.00		0.17	0.50	0.00	
11	L-SDPIPE-23	0.00	0 00:06	19.36	0.00	0.00		0.15	0.30	0.00	
12	L-SDPIPE-25	0.00	0 00:05	27.75	0.00	0.00		0.01	0.02	0.00	
13	L-SDPIPE-27	0.00	0 00:00	6.79	0.00	0.00		0.00	0.00	0.00	
14	L-SDPIPE-28	0.24	0 00:14	6.86	0.03	2.98	1.28	0.06	0.18	0.00	
15	L-SDPIPE-29	0.02	0 00:07	7.88	0.00	1.75	1.64	0.02	0.06	0.00	
16	L-SDPIPE-32	0.03	0 00:05	28.64	0.00	2.05	0.80	0.02	0.05	0.00	
17	L-SDPIPE-33	0.00	0 00:00	2.86	0.00	0.00		0.17	0.50	0.00	
18	L-SDPIPE-34	0.22	0 00:08	4.31	0.05	0.22	11.32	0.22	0.66	0.00	
19	L-SDPIPE-4	0.00	0 00:00	7.11	0.00	0.00		0.00	0.00	0.00	
20	L-SDPIPE-6	0.18	0 00:05	6.59	0.03	0.54	6.61	0.13	0.39	0.00	
21	L-SDPIPE-7	0.16	0 00:16	6.90	0.02	1.23	2.93	0.08	0.23	0.00	

Pipe Input

SN Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness
1 SDPIPE-1	35.55	465.94	0.00	463.00	0.00	2.94	8.2700	CIRCULAR	36.000	36.000	0.0120
2 SDPIPE-10	256.10	529.50	0.00	512.58	0.00	16.92	6.6100	CIRCULAR	18.000	18.000	0.0120
3 SDPIPE-11	67.57	530.20	0.00	529.50	0.00	0.70	1.0400	CIRCULAR	18.000	18.000	0.0120
4 SDPIPE-12	33.01	530.53	0.00	530.20	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
5 SDPIPE-13	130.50	517.50	0.00	505.00	0.00	12.50	9.5800	CIRCULAR	18.000	18.000	0.0120
6 SDPIPE-14	39.55	517.99	0.00	517.50	0.00	0.49	1.2500	CIRCULAR	18.000	18.000	0.0130
7 SDPIPE-15	64.04	468.11	0.00	467.47	0.00	0.64	1.0000	CIRCULAR	18.000	18.000	0.0130
8 SDPIPE-16	23.51	501.10	0.00	499.00	0.00	2.10	8.9300	CIRCULAR	18.000	18.000	0.0120
9 SDPIPE-17	194.21	515.30	0.00	501.00	-0.10	14.30	7.3600	CIRCULAR	18.000	18.000	0.0120
10 SDPIPE-18	49.41	517.78	0.00	515.30	0.00	2.48	5.0200	CIRCULAR	18.000	18.000	0.0130
11 SDPIPE-19	51.31	517.87	0.00	515.30	0.00	2.57	5.0100	CIRCULAR	18.000	18.000	0.0130
12 SDPIPE-2	35.82	466.30	0.00	465.94	0.00	0.36	1.0000	CIRCULAR	36.000	36.000	0.0130
13 SDPIPE-20	33.00	501.43	0.00	501.10	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0120
14 SDPIPE-21	239.80	538.50	0.00	530.20	0.00	8.30	3.4600	CIRCULAR	18.000	18.000	0.0120
15 SDPIPE-22	57.68	542.14	0.00	538.50	0.00	3.64	6.3100	CIRCULAR	18.000	18.000	0.0130
16 SDPIPE-23	44.75	542.59	0.00	542.14	0.00	0.45	1.0100	CIRCULAR	18.000	18.000	0.0130
17 SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	0.0130
18 SDPIPE-27	182.53	487.50	0.00	484.31	0.00	3.19	1.7500	CIRCULAR	18.000	18.000	0.0120
19 SDPIPE-28	33.55	487.84	0.00	487.50	0.00	0.34	1.0000	CIRCULAR	18.000	18.000	0.0130
20 SDPIPE-29	167.22	505.00	0.00	487.50	0.00	17.50	10.4700	CIRCULAR	18.000	18.000	0.0120
21 SDPIPE-3	30.36	466.60	0.00	466.30	0.00	0.30	1.0000	CIRCULAR	36.000	36.000	0.0120
22 SDPIPE-30	66.71	510.34	0.00	505.00	0.00	5.34	8.0000	CIRCULAR	18.000	18.000	0.0130
23 SDPIPE-32	96.89	544.50	0.00	538.50	0.00	6.00	6.1900	CIRCULAR	18.000	18.000	0.0120
24 SDPIPE-33	77.61	514.12	0.00	512.58	0.00	1.54	1.9800	CIRCULAR	18.000	18.000	0.0150
25 SDPIPE-34	147.34	516.28	0.00	512.58	0.00	3.70	2.5100	CIRCULAR	18.000	18.000	0.0150
26 SDPIPE-4	71.93	467.47	0.00	466.75	0.81	0.72	1.0000	CIRCULAR	18.000	18.000	0.0120
27 SDPIPE-5	33.00	467.80	0.00	467.47	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
28 SDPIPE-6	67.57	483.19	0.00	482.52	0.00	0.67	1.0000	CIRCULAR	18.000	18.000	0.0120
29 SDPIPE-7	42.68	483.62	0.00	483.19	0.00	0.43	1.0000	CIRCULAR	18.000	18.000	0.0130
30 SDPIPE-8	130.97	512.25	0.00	492.00	0.00	20.25	15.4600	CIRCULAR	24.000	24.000	0.0120
31 SDPIPE-9	33.02	512.58	0.00	512.25	0.00	0.33	1.0000	CIRCULAR	24.000	24.000	0.0130
32 SPIPE-35	30.19	462.75	0.00	462.25	0.00	0.50	1.6600	CIRCULAR	18.000	18.000	0.0150
33 SPIPE-36	31.09	441.38	0.08	441.00	0.00	0.38	1.2200	CIRCULAR	18.000	18.000	0.0150

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Frc Nun
1 SDPIPE-1	21.43	0 00:08	207.79	0.10	13.86	0.04	0.81	0.27	0.00	
2 SDPIPE-10	5.28	0 00:12	29.25	0.18	5.99	0.71	0.87	0.58	0.00	
3 SDPIPE-11	5.29	0 00:12	11.59	0.46	7.08	0.16	0.66	0.44	0.00	
4 SDPIPE-12	0.69	0 00:07	10.49	0.07	1.74	0.32	0.72	0.48	0.00	
5 SDPIPE-13	2.27	0 00:13	35.22	0.06	10.80	0.20	0.26	0.18	0.00	
6 SDPIPE-14	2.28	0 00:13	11.74	0.19	5.82	0.11	0.41	0.27	0.00	
7 SDPIPE-15	1.45	0 00:17	10.50	0.14	3.74	0.29	0.41	0.27	0.00	
8 SDPIPE-16	3.05	0 00:06	34.01	0.09	9.81	0.04	0.35	0.23	0.00	
9 SDPIPE-17	2.02	0 00:05	30.77	0.07	7.19	0.45	0.33	0.22	0.00	
10 SDPIPE-18	1.05	0 00:05	23.53	0.04	5.70	0.14	0.24	0.16	0.00	
11 SDPIPE-19	1.38	0 00:08	23.51	0.06	6.89	0.12	0.26	0.17	0.00	
12 SDPIPE-2	19.64	0 00:08	66.70	0.29	6.64	0.09	1.31	0.44	0.00	
13 SDPIPE-20	1.13	0 00:16	11.38	0.10	4.39	0.13	0.37	0.25	0.00	
14 SDPIPE-21	1.69	0 00:15	21.17	0.08	3.65	1.09	0.57	0.38	0.00	
15 SDPIPE-22	1.70	0 00:15	26.39	0.06	7.46	0.13	0.28	0.19	0.00	
16 SDPIPE-23	0.62	0 00:05	10.53	0.06	3.27	0.23	0.25	0.16	0.00	
17 SDPIPE-25	0.55	0 00:05	14.89	0.04	3.57	0.35	0.21	0.14	0.00	
18 SDPIPE-27	4.00	0 00:20	15.03	0.27	6.84	0.44	0.55	0.37	0.00	
19 SDPIPE-28	1.27	0 00:14	10.50	0.12	3.12	0.18	0.46	0.31	0.00	
20 SDPIPE-29	3.08	0 00:20	36.81	0.08	7.34	0.38	0.43	0.29	0.00	
21 SDPIPE-3	20.72	0 00:00	71.83	0.29	7.93	0.06	1.60	0.53	0.00	
22 SDPIPE-30	3.08	0 00:20	29.71	0.10	10.67	0.10	0.33	0.22	0.00	
23 SDPIPE-32	1.24	0 00:05	28.32	0.04	7.77	0.21	0.22	0.15	0.00	
24 SDPIPE-33	2.46	0 00:08	12.82	0.19	3.46	0.37	0.87	0.58	0.00	
25 SDPIPE-34	2.16	0 00:08	14.43	0.15	3.23	0.76	0.85	0.57	0.00	
26 SDPIPE-4	1.45	0 00:17	11.38	0.13	4.10	0.29	0.38	0.25	0.00	
27 SDPIPE-5	0.46	0 00:07	10.50	0.04	1.98	0.28	0.28	0.19	0.00	
28 SDPIPE-6	1.79	0 00:05	11.37	0.16	4.31	0.26	0.43	0.29	0.00	
29 SDPIPE-7	1.37	0 00:16	10.50	0.13	3.58	0.20	0.40	0.27	0.00	
30 SDPIPE-8	11.68	0 00:09	96.37	0.12	19.32	0.11	0.49	0.25	0.00	
31 SDPIPE-9	11.53	0 00:09	22.62	0.51	8.12	0.07	0.93	0.46	0.00	
32 SPIPE-35	1.59	0 00:05	11.72	0.14	4.18	0.12	0.40	0.27	0.00	
33 SPIPE-36	3.91	0 00:10	10.06	0.39	4.67	0.11	0.72	0.48	0.00	

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)	Ini Wz De	
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	3.97	483.62	0
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	4.76	512.25	0
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	4.43	512.58	0
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	3.86	530.20	0
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	3.53	530.53	0
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	4.36	517.50	0
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	4.46	517.99	0
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	10.73	465.94	0
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	3.38	468.11	0
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	3.91	501.10	0
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	5.53	517.77	-0
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	4.30	515.81	-2
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	3.58	501.43	0
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	5.17	538.50	0
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	3.53	542.20	0
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	4.84	542.65	0
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	9.98	466.30	0
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	3.70	546.00	0
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	6.50	487.50	0
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	5.63	487.84	0
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	5.72	505.00	0
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	5.03	510.34	0
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	3.90	514.12	0
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	7.29	467.80	0
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	7.62	467.47	0
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	6.43	483.19	0
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	5.08	516.28	0

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	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
2 CB-12	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
3 CB-13	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
4 CB-15	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
5 CB-16	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
6 CB-18	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
7 CB-19	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
8 CB-2	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
9 CB-20	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
10 CB-22	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
11 CB-24	0.1033	0.0258	0.0150	0.0200	1.00	0.1312	8.50
12 CB-25	0.1041	0.0258	0.0150	0.0200	1.00	0.1312	8.50
13 CB-26	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
14 CB-27	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
15 CB-28	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
16 CB-29	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
17 CB-3	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
18 CB-31	0.0721	0.0200	0.0150	0.0200	1.50	0.1312	8.50
19 CB-32	0.0809	0.0258	0.0150	0.0200	1.00	0.1312	8.50
20 CB-35	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
21 CB-36	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
22 CB-38	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
23 CB-39	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
24 CB-43	0.0199	0.0258	0.0150	0.0200	1.00	0.1312	8.50
25 CB-6	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
26 CB-7	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
27 CB-9	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
28 Inlet-CB-44	0.1138	0.0258	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN Element ID	Peak Flow	Peak Lateral Inflow	Peak Flow Intercepted by Inlet	Peak Flow Bypassing Inlet	Inlet Efficiency during Peak	Max Gutter Spread during Peak	Max Gutter Water Elev. during Peak	Max Gutter Water Depth during Peak	Time of Max Depth Occurrence
	(cfs)	(cfs)	(cfs)	(cfs)	(%)	Flow (ft)	Flow (ft)	Flow (ft)	(days hh:mm)
1 CB-10	1.54	1.45	1.34	0.19	87.40	4.89	487.71	0.12	0 00:16
2 CB-12	1.36	1.36	N/A	N/A	N/A	4.37	517.29	0.28	0 00:09
3 CB-13	3.72	3.56	N/A	N/A	N/A	8.53	517.40	0.39	0 00:09
4 CB-15	3.63	3.63	N/A	N/A	N/A	8.38	534.44	0.38	0 00:12
5 CB-16	1.79	1.79	N/A	N/A	N/A	5.24	534.36	0.30	0 00:12
6 CB-18	0.53	0.53	0.53	0.00	100.00	4.05	521.96	0.10	0 00:13
7 CB-19	2.74	2.74	2.28	0.46	83.25	7.45	522.64	0.19	0 00:13
8 CB-2	1.20	0.97	1.20	0.00	100.00	6.67	476.84	0.17	0 00:08
9 CB-20	1.63	1.50	1.40	0.23	85.80	4.99	471.61	0.12	0 00:17
10 CB-22	0.60	0.60	0.60	0.00	100.00	3.45	505.09	0.08	0 00:06
11 CB-24	1.16	1.16	1.06	0.10	91.65	4.15	523.41	0.10	0 00:05
12 CB-25	1.73	1.73	1.39	0.34	80.28	4.80	522.29	0.12	0 00:08
13 CB-26	1.23	1.23	1.15	0.08	93.36	4.48	505.12	0.11	0 00:16
14 CB-27	0.38	0.38	0.38	0.00	100.00	3.07	543.74	0.07	0 00:15
15 CB-28	1.71	1.71	N/A	N/A	N/A	5.07	545.97	0.30	0 00:15
16 CB-29	0.63	0.63	0.63	0.00	100.00	3.71	547.52	0.09	0 00:05
17 CB-3	0.60	0.60	0.60	0.00	100.00	5.18	476.41	0.13	0 00:08
18 CB-31	0.74	0.74	0.74	0.01	99.03	4.36	549.46	0.09	0 00:05
19 CB-32	0.56	0.56	0.56	0.00	100.00	3.32	549.78	0.08	0 00:05
20 CB-35	0.43	0.43	0.43	0.00	100.00	2.89	494.07	0.07	0 00:20
21 CB-36	1.51	1.51	1.27	0.24	84.23	4.56	493.58	0.11	0 00:14
22 CB-38	0.97	0.97	0.93	0.04	95.57	3.88	510.81	0.09	0 00:20
23 CB-39	3.23	3.20	N/A	N/A	N/A	7.77	515.74	0.37	0 00:20
24 CB-43	2.46	2.46	2.46	0.00	100.00	7.44	518.21	0.19	0 00:08
25 CB-6	0.87	0.71	N/A	N/A	N/A	3.25	475.34	0.25	0 00:07
26 CB-7	0.18	0.18	0.18	0.00	100.00	3.27	475.17	0.08	0 00:17
27 CB-9	1.55	1.55	1.35	0.20	87.17	4.91	489.74	0.12	0 00:05
28 Inlet-CB-44	2.43	2.43	2.18	0.24	89.92	5.34	521.49	0.13	0 00:08

50 Year Design Storm

Project Description

File Name Hilltop Drainage Analysis 4-8-26.SPF

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.....	31
Nodes.....	46
<i>Junctions</i>	5
<i>Outfalls</i>	13
<i>Flow Diversions</i>	0
<i>Inlets</i>	28
<i>Storage Nodes</i>	0
Links.....	54
<i>Channels</i>	21
<i>Pipes</i>	33
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 50 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-CB-10	0.58	0.7000	0.94	0.66	0.38	1.45	0 00:15:54
2	Sub-CB-12	0.32	0.7000	0.51	0.36	0.11	1.37	0 00:05:00
3	Sub-CB-13	1.03	0.7000	0.66	0.46	0.47	3.56	0 00:07:58
4	Sub-CB-15	1.21	0.7000	0.77	0.54	0.65	3.63	0 00:10:46
5	Sub-CB-16	0.42	0.7000	0.51	0.36	0.15	1.80	0 00:05:00
6	Sub-CB-18	0.12	0.7000	0.51	0.36	0.04	0.53	0 00:05:00
7	Sub-CB-19	1.00	0.7000	0.85	0.60	0.59	2.74	0 00:12:57
8	Sub-CB-2	0.38	0.7000	0.92	0.64	0.24	0.97	0 00:14:59
9	Sub-CB-20	0.62	0.7000	0.98	0.69	0.42	1.50	0 00:17:03
10	Sub-CB-22	0.14	0.7000	0.51	0.36	0.05	0.60	0 00:05:00
11	Sub-CB-24	0.27	0.7000	0.51	0.36	0.10	1.16	0 00:05:01
12	Sub-CB-25	0.51	0.7000	0.67	0.47	0.24	1.73	0 00:08:15
13	Sub-CB-26	0.49	0.7000	0.94	0.66	0.32	1.23	0 00:15:52
14	Sub-CB-27	0.10	0.7000	0.58	0.40	0.04	0.38	0 00:06:07
15	Sub-CB-28	0.67	0.7000	0.91	0.64	0.43	1.71	0 00:15:04
16	Sub-CB-29	0.15	0.7000	0.51	0.36	0.05	0.63	0 00:05:00
17	Sub-CB-3	0.14	0.7000	0.51	0.36	0.05	0.61	0 00:05:00
18	Sub-CB-31	0.17	0.7000	0.51	0.36	0.06	0.75	0 00:05:00
19	Sub-CB-32	0.13	0.7000	0.51	0.36	0.05	0.56	0 00:05:00
20	Sub-CB-35	0.10	0.7000	0.51	0.36	0.04	0.43	0 00:05:00
21	Sub-CB-36	0.58	0.7000	0.90	0.63	0.37	1.51	0 00:14:42
22	Sub-CB-38	0.24	0.7000	0.55	0.38	0.09	0.98	0 00:05:43
23	Sub-CB-39	1.39	0.7000	1.05	0.74	1.02	3.20	0 00:19:10
24	Sub-CB-43	0.71	0.7000	0.65	0.45	0.32	2.47	0 00:07:53
25	Sub-CB-44	0.72	0.7000	0.67	0.47	0.34	2.43	0 00:08:24
26	Sub-CB-6	0.16	0.7000	0.51	0.36	0.06	0.71	0 00:05:00
27	Sub-CB-7	0.04	0.7000	0.51	0.36	0.01	0.18	0 00:05:00
28	Sub-CB-9	0.36	0.7000	0.51	0.36	0.13	1.55	0 00:05:00
29	Sub-FES-2	1.58	0.5600	0.67	0.38	0.60	4.29	0 00:08:19
30	SUB-PIPE-35	0.36	0.7200	0.51	0.37	0.13	1.60	0 00:05:00
31	SUB-PIPE-36	1.26	0.7200	0.76	0.55	0.69	3.92	0 00:10:33

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft ²)	Peak Inflow (cfs)	Max HGL Elevation (ft)	Max Surcharge Depth (ft)	Min Freeboard (ft)
1	FES-2	Junction	466.60	469.78	466.60	469.78	0.00	19.47	468.35	0.00	1.43
2	IN-PIPE-35	Junction	462.75	464.00	462.75	464.00	0.00	1.59	463.18	0.00	1.07
3	IN-PIPE36	Junction	441.30	442.80	441.30	442.80	0.00	3.92	442.17	0.00	0.71
4	JB-14	Junction	529.50	534.76	529.50	535.50	0.00	5.29	529.93	0.00	4.83
5	JB-23	Junction	515.30	519.44	515.30	519.20	10.00	2.03	515.56	0.00	3.88
6	OFFSITE-1	Outfall	540.30					0.03	540.33		
7	OFFSITE-2	Outfall	532.10					0.00	532.11		
8	OFFSITE-25	Outfall	464.82					0.00	464.82		
9	OFFSITE-26	Outfall	464.82					0.18	464.90		
10	OU-PIPE-36	Outfall	441.00					3.91	441.65		
11	Out-FES-1	Outfall	463.00					21.43	463.65		
12	Out-FES-11	Outfall	492.00					11.68	492.47		
13	Out-FES-17	Outfall	505.00					2.27	505.26		
14	Out-FES-21	Outfall	499.00					3.05	499.30		
15	Out-FES-3	Outfall	538.50					1.24	538.71		
16	Out-FES-34	Outfall	484.31					4.00	484.84		
17	Out-FES-8	Outfall	482.52					1.79	482.92		
18	OUT-PIPE-35	Outfall	462.25					1.59	462.62		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Depth (ft)
1	SDPIPE-1	Pipe	CB-2	Out-FES-1	35.55	465.94	463.00	8.2700	36.000	0.0120	21.43	207.79	0.10	13.86	0.81	
2	SDPIPE-10	Pipe	JB-14	CB-13	256.10	529.50	512.58	6.6100	18.000	0.0120	5.28	29.25	0.18	5.99	0.87	
3	SDPIPE-11	Pipe	CB-15	JB-14	67.57	530.20	529.50	1.0400	18.000	0.0120	5.29	11.59	0.46	7.08	0.66	
4	SDPIPE-12	Pipe	CB-16	CB-15	33.01	530.53	530.20	1.0000	18.000	0.0130	0.69	10.49	0.07	1.74	0.72	
5	SDPIPE-13	Pipe	CB-18	Out-FES-17	130.50	517.50	505.00	9.5800	18.000	0.0120	2.27	35.22	0.06	10.80	0.26	
6	SDPIPE-14	Pipe	CB-19	CB-18	39.55	517.99	517.50	1.2500	18.000	0.0130	2.28	11.74	0.19	5.82	0.41	
7	SDPIPE-15	Pipe	CB-20	CB-7	64.04	468.11	467.47	1.0000	18.000	0.0130	1.45	10.50	0.14	3.74	0.41	
8	SDPIPE-16	Pipe	CB-22	Out-FES-21	23.51	501.10	499.00	8.9300	18.000	0.0120	3.05	34.01	0.09	9.81	0.35	
9	SDPIPE-17	Pipe	JB-23	CB-22	194.21	515.30	501.00	7.3600	18.000	0.0120	2.02	30.77	0.07	7.19	0.33	
10	SDPIPE-18	Pipe	CB-24	JB-23	49.41	517.78	515.30	5.0200	18.000	0.0130	1.05	23.53	0.04	5.70	0.24	
11	SDPIPE-19	Pipe	CB-25	JB-23	51.31	517.87	515.30	5.0100	18.000	0.0130	1.38	23.51	0.06	6.89	0.26	
12	SDPIPE-2	Pipe	CB-3	CB-2	35.82	466.30	465.94	1.0000	36.000	0.0130	19.64	66.70	0.29	6.64	1.31	
13	SDPIPE-20	Pipe	CB-26	CB-22	33.00	501.43	501.10	1.0000	18.000	0.0120	1.13	11.38	0.10	4.39	0.37	
14	SDPIPE-21	Pipe	CB-27	CB-15	239.80	538.50	530.20	3.4600	18.000	0.0120	1.69	21.17	0.08	3.65	0.57	
15	SDPIPE-22	Pipe	CB-28	CB-27	57.68	542.14	538.50	6.3100	18.000	0.0130	1.70	26.39	0.06	7.46	0.28	
16	SDPIPE-23	Pipe	CB-29	CB-28	44.75	542.59	542.14	1.0100	18.000	0.0130	0.62	10.53	0.06	3.27	0.25	
17	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.55	14.89	0.04	3.57	0.21	
18	SDPIPE-27	Pipe	CB-35	Out-FES-34	182.53	487.50	484.31	1.7500	18.000	0.0120	4.00	15.03	0.27	6.84	0.55	
19	SDPIPE-28	Pipe	CB-36	CB-35	33.55	487.84	487.50	1.0000	18.000	0.0130	1.27	10.50	0.12	3.12	0.46	
20	SDPIPE-29	Pipe	CB-38	CB-35	167.22	505.00	487.50	10.4700	18.000	0.0120	3.08	36.81	0.08	7.34	0.43	
21	SDPIPE-3	Pipe	FES-2	CB-3	30.36	466.60	466.30	1.0000	36.000	0.0120	20.72	71.83	0.29	7.93	1.60	
22	SDPIPE-30	Pipe	CB-39	CB-38	66.71	510.34	505.00	8.0000	18.000	0.0130	3.08	29.71	0.10	10.67	0.33	
23	SDPIPE-32	Pipe	CB-31	Out-FES-3	96.89	544.50	538.50	6.1900	18.000	0.0120	1.24	28.32	0.04	7.77	0.22	
24	SDPIPE-33	Pipe	CB-43	CB-13	77.61	514.12	512.58	1.9800	18.000	0.0150	2.46	12.82	0.19	3.46	0.87	
25	SDPIPE-34	Pipe	Inlet-CB-44	CB-13	147.34	516.28	512.58	2.5100	18.000	0.0150	2.16	14.43	0.15	3.23	0.85	
26	SDPIPE-4	Pipe	CB-7	CB-2	71.93	467.47	466.75	1.0000	18.000	0.0120	1.45	11.38	0.13	4.10	0.38	
27	SDPIPE-5	Pipe	CB-6	CB-7	33.00	467.80	467.47	1.0000	18.000	0.0130	0.46	10.50	0.04	1.98	0.28	
28	SDPIPE-6	Pipe	CB-9	Out-FES-8	67.57	483.19	482.52	1.0000	18.000	0.0120	1.79	11.37	0.16	4.31	0.43	

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Total Depth (ft)
46	L-SDPIPE-27	Channel	CB-35	CB-3	245.69	494.00	476.28	7.2100	3.960	0.0150	0.00	6.79	0.00	0.00	0.00	
47	L-SDPIPE-28	Channel	CB-36	CB-2	228.18	493.47	476.67	7.3600	3.960	0.0150	0.24	6.86	0.03	2.98	0.06	
48	L-SDPIPE-29	Channel	CB-38	CB-35	172.07	510.72	494.00	9.7200	3.960	0.0150	0.02	7.88	0.00	1.75	0.02	
49	L-SDPIPE-32	Channel	CB-31	OFFSITE-1	98.13	549.76	540.30	9.6400	6.000	0.0150	0.03	28.64	0.00	2.05	0.02	
50	L-SDPIPE-33	Channel	CB-43	CB-13	78.91	518.02	517.01	1.2800	3.960	0.0320	0.00	2.86	0.00	0.00	0.17	
51	L-SDPIPE-34	Channel	Inlet-CB-44	CB-13	149.42	521.36	517.01	2.9100	3.960	0.0320	0.22	4.31	0.05	0.22	0.22	
52	L-SDPIPE-4	Channel	CB-7	OFFSITE-25	129.78	475.09	464.82	7.9100	3.960	0.0320	0.00	7.11	0.00	0.00	0.00	
53	L-SDPIPE-6	Channel	CB-9	CB-6	214.12	489.62	475.09	6.7900	3.960	0.0150	0.18	6.59	0.03	0.54	0.13	
54	L-SDPIPE-7	Channel	CB-10	CB-20	216.57	487.59	471.49	7.4300	3.960	0.0150	0.16	6.90	0.02	1.23	0.08	

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 C Sp during
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	483.62	N/A	1.54	1.34	0.19	87.40	8.50	
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	512.25	10.00	1.36	N/A	N/A	N/A	8.50	
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	512.58	10.00	3.72	N/A	N/A	N/A	8.50	
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	530.20	10.00	3.63	N/A	N/A	N/A	8.50	
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	530.53	10.00	1.79	N/A	N/A	N/A	8.50	
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	517.50	N/A	0.53	0.53	0.00	100.00	8.50	
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	517.99	N/A	2.74	2.28	0.46	83.25	8.50	
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	465.94	N/A	1.20	1.20	0.00	100.00	8.50	
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	468.11	N/A	1.63	1.40	0.23	85.80	8.50	
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	501.10	N/A	0.60	0.60	0.00	100.00	8.50	
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	517.77	N/A	1.16	1.06	0.10	91.65	8.50	
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	515.81	N/A	1.73	1.39	0.34	80.28	8.50	
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	501.43	N/A	1.23	1.15	0.08	93.36	8.50	
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	538.50	N/A	0.38	0.38	0.00	100.00	8.50	
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	542.20	10.00	1.71	N/A	N/A	N/A	8.50	
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	542.65	N/A	0.63	0.63	0.00	100.00	8.50	
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	466.30	N/A	0.60	0.60	0.00	100.00	8.50	
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.74	0.74	0.01	99.03	8.50	
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	546.00	N/A	0.56	0.56	0.00	100.00	8.50	
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	487.50	N/A	0.43	0.43	0.00	100.00	8.50	
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	487.84	N/A	1.51	1.27	0.24	84.23	8.50	
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	505.00	N/A	0.97	0.93	0.04	95.57	8.50	
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	510.34	10.00	3.23	N/A	N/A	N/A	8.50	
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	514.12	N/A	2.46	2.46	0.00	100.00	8.50	
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	467.80	10.00	0.87	N/A	N/A	N/A	8.50	
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	467.47	N/A	0.18	0.18	0.00	100.00	8.50	
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	483.19	N/A	1.55	1.35	0.20	87.17	8.50	
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	516.28	N/A	2.43	2.18	0.24	89.92	8.50	

Subbasin Hydrology

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.58
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8}) / ((P^{0.5}) * (S_f^{0.4})))$$

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)

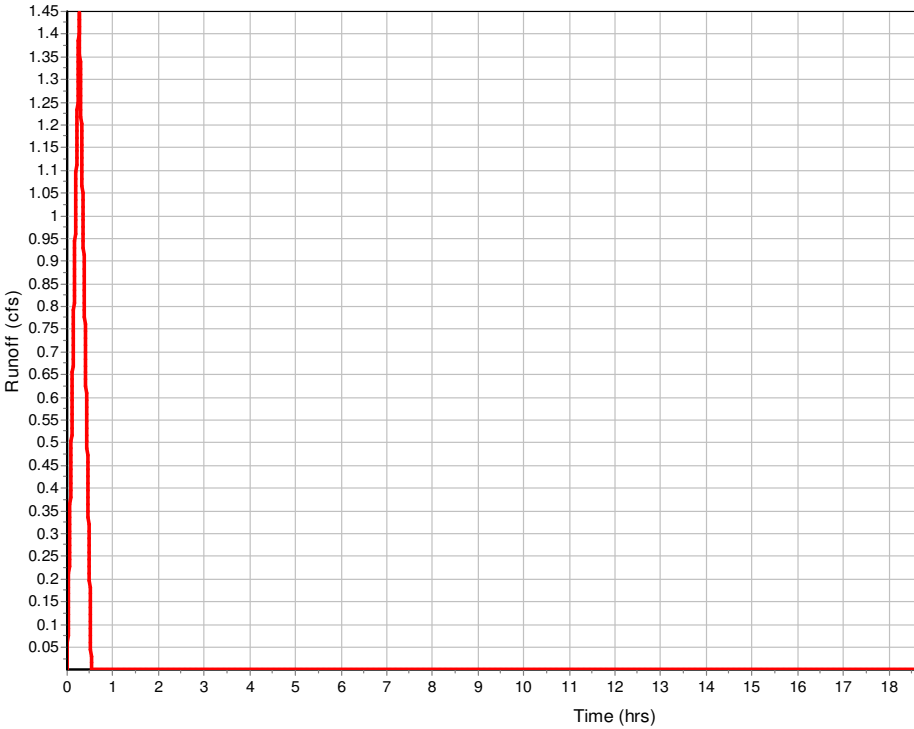
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99996647	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	229.3185963	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.69	0	0
Total TOC (min)	15.90		

Subbasin Runoff Results

Total Rainfall (in)	0.94
Total Runoff (in)	0.66
Peak Runoff (cfs)	1.45
Rainfall Intensity	3.571
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	00:15:54

Subbasin : Sub-CB-10

Runoff Hydrograph



Subbasin : Sub-CB-12

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

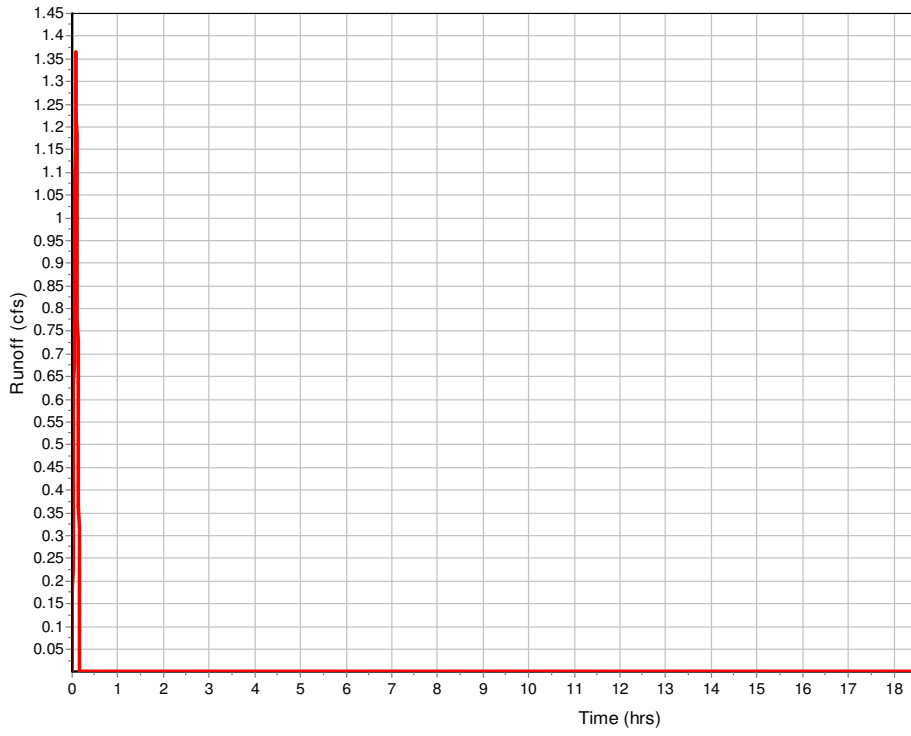
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	219.5273657	0	0
Slope (%) :	1.99	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.28	0	0
Total TOC (min)	4.14		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.37
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:04:08

Subbasin : Sub-CB-12

Runoff Hydrograph



Subbasin : Sub-CB-13

Input Data

Area (ac) 1.03
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.03	-	0.7
Composite Area & Weighted Runoff Coeff.	1.03		0.7

Time of Concentration

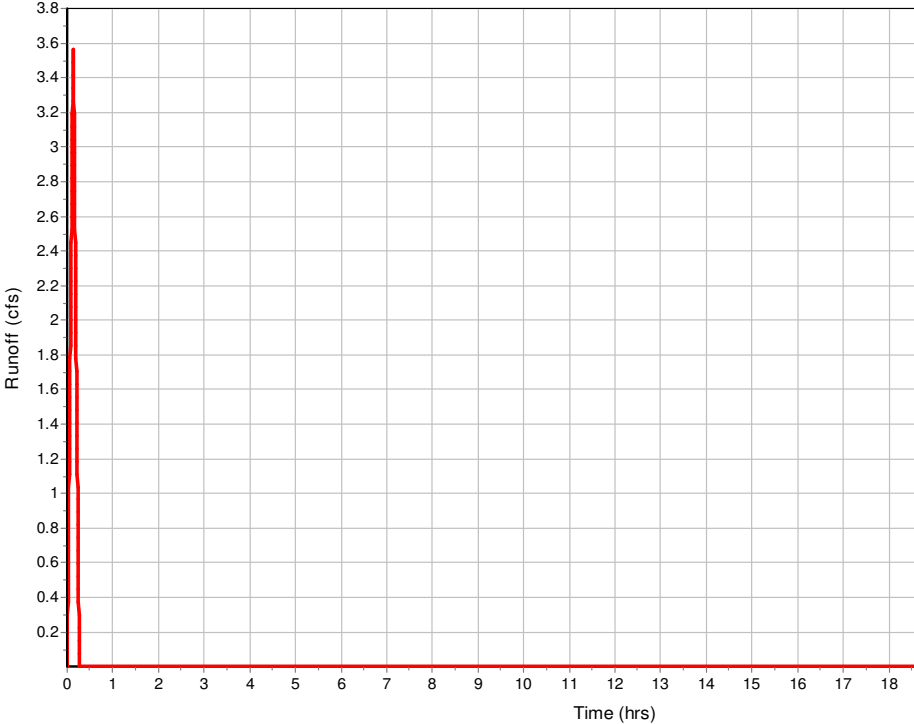
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	11.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.27	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	93	71.4	0
Slope (%) :	11.5	1.99	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.47	2.87	0
Computed Flow Time (min) :	0.28	0.41	0
Total TOC (min)	7.97		

Subbasin Runoff Results

Total Rainfall (in) 0.66
 Total Runoff (in) 0.46
 Peak Runoff (cfs) 3.56
 Rainfall Intensity 4.939
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:07:58

Runoff Hydrograph



Subbasin : Sub-CB-15

Input Data

Area (ac) 1.21
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.21	-	0.7
Composite Area & Weighted Runoff Coeff.	1.21		0.7

Time of Concentration

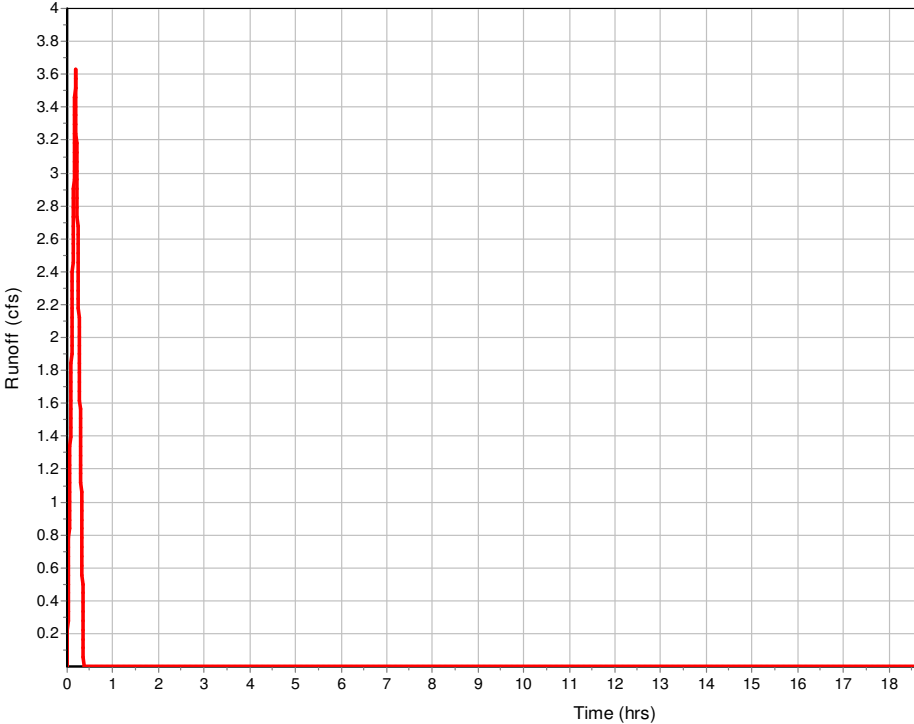
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	10.14	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	12.98144373	156.302
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.09	0.53	0
Total TOC (min)	10.77		

Subbasin Runoff Results

Total Rainfall (in) 0.77
 Total Runoff (in) 0.54
 Peak Runoff (cfs) 3.63
 Rainfall Intensity 4.282
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:10:46

Runoff Hydrograph



Subbasin : Sub-CB-16

Input Data

Area (ac) 0.42
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.42	-	0.7
Composite Area & Weighted Runoff Coeff.	0.42		0.7

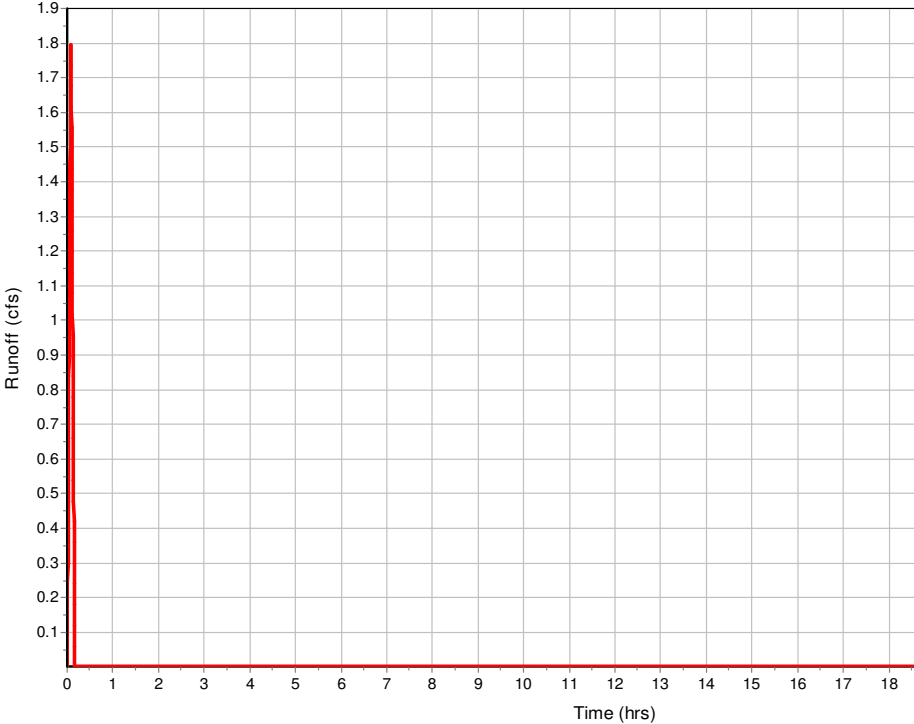
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.01720552	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	310.5319881	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	1.06	0	0
Total TOC (min)	3.93		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.8
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:56

Runoff Hydrograph



Subbasin : Sub-CB-18

Input Data

Area (ac) 0.12
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

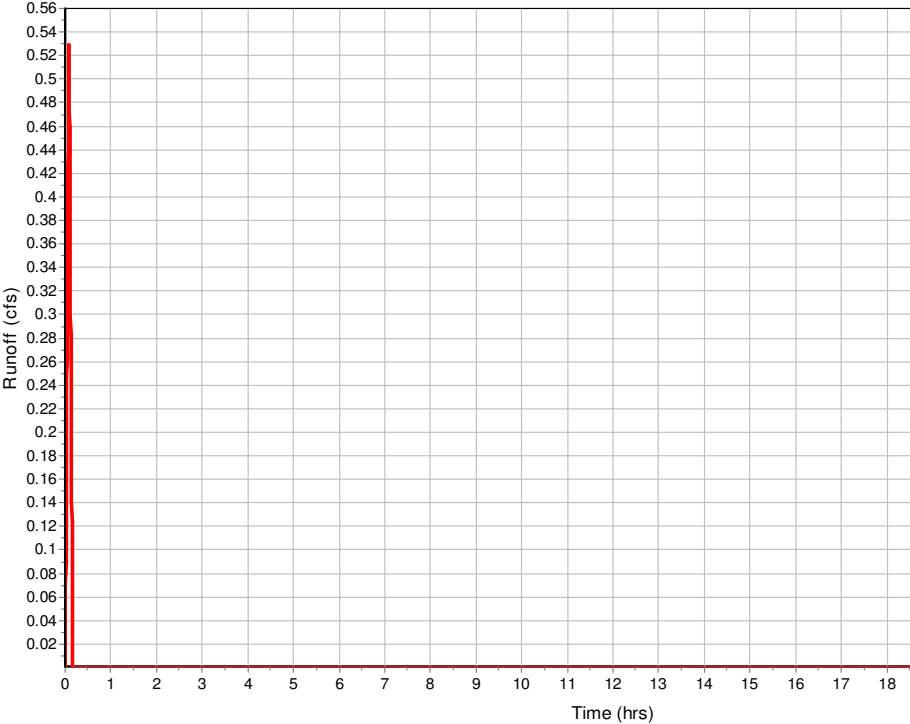
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.10752092	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.88	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	71.43477489	102.308	0
Slope (%) :	11.86	2.45	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	7	3.18	0
Computed Flow Time (min) :	0.17	0.54	0
Total TOC (min)	3.59		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.53
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:03:35

Runoff Hydrograph



Subbasin : Sub-CB-19

Input Data

Area (ac) 1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1	-	0.7
Composite Area & Weighted Runoff Coeff.	1		0.7

Time of Concentration

Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100.0031436	0	0
Slope (%) :	3.4	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.14	0	0
Computed Flow Time (min) :	11.83	0	0

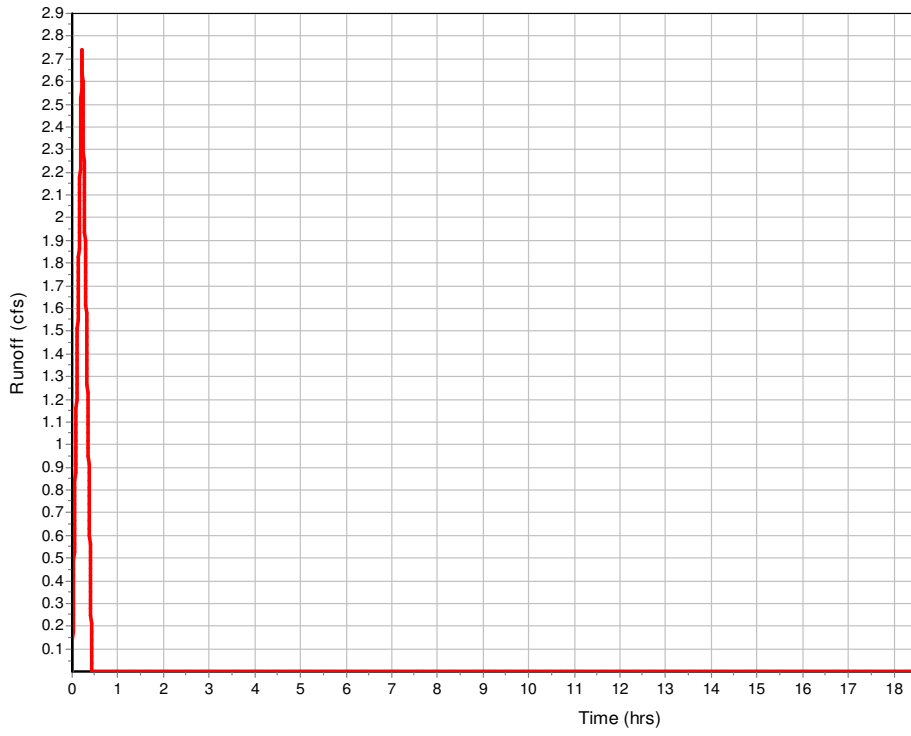
Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	6.07922878	278.905	79.9642
Slope (%) :	2	11.86	2.45
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	7	3.18
Computed Flow Time (min) :	0.04	0.66	0.42
Total TOC (min)	12.96		

Subbasin Runoff Results

Total Rainfall (in) 0.85
 Total Runoff (in) 0.6
 Peak Runoff (cfs) 2.74
 Rainfall Intensity 3.923
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:12:58

Subbasin : Sub-CB-19

Runoff Hydrograph



Subbasin : Sub-CB-2

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
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

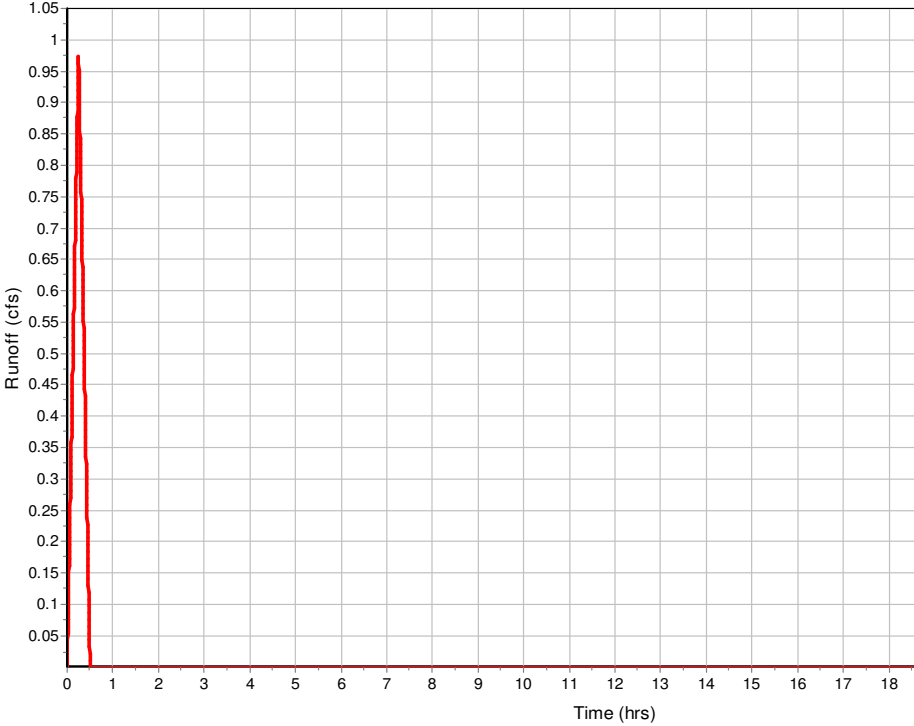
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	175.3484305	45.5292
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.44	0.4	0
Total TOC (min)	14.99		

Subbasin Runoff Results

Total Rainfall (in) 0.92
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 0.97
 Rainfall Intensity 3.661
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:14:59

Subbasin : Sub-CB-2

Runoff Hydrograph



Subbasin : Sub-CB-20

Input Data

Area (ac) 0.62
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.7
Composite Area & Weighted Runoff Coeff.	0.62		0.7

Time of Concentration

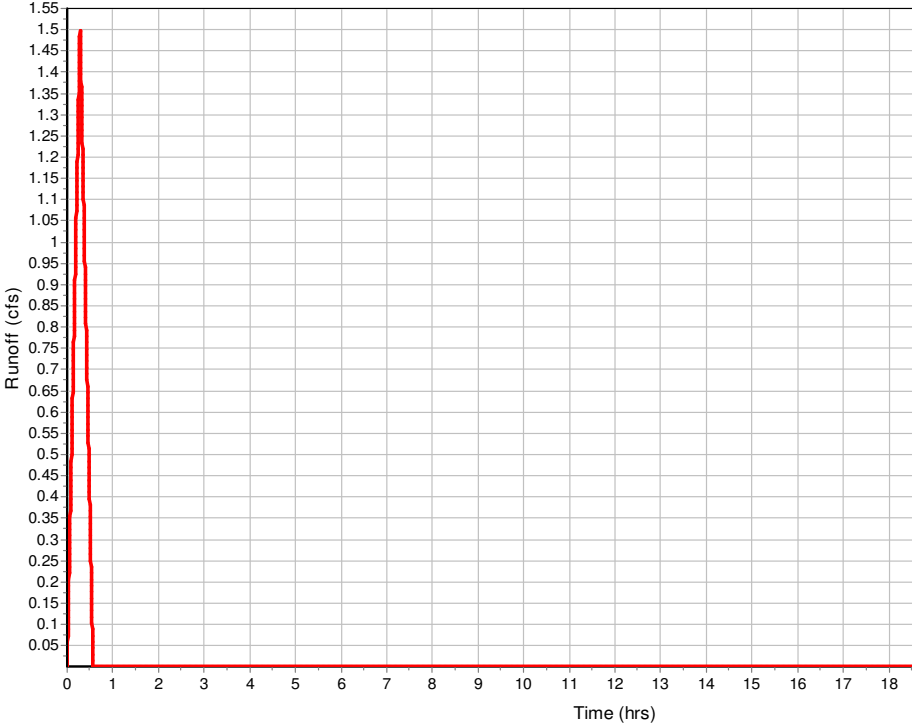
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	99.99258294	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	3.00743724	208.662	0
Slope (%) :	2	7.49	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	5.56	0
Computed Flow Time (min) :	0.02	0.63	0
Total TOC (min)	17.06		

Subbasin Runoff Results

Total Rainfall (in) 0.98
 Total Runoff (in) 0.69
 Peak Runoff (cfs) 1.5
 Rainfall Intensity 3.466
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:17:04

Runoff Hydrograph



Subbasin : Sub-CB-22

Input Data

Area (ac) 0.14
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

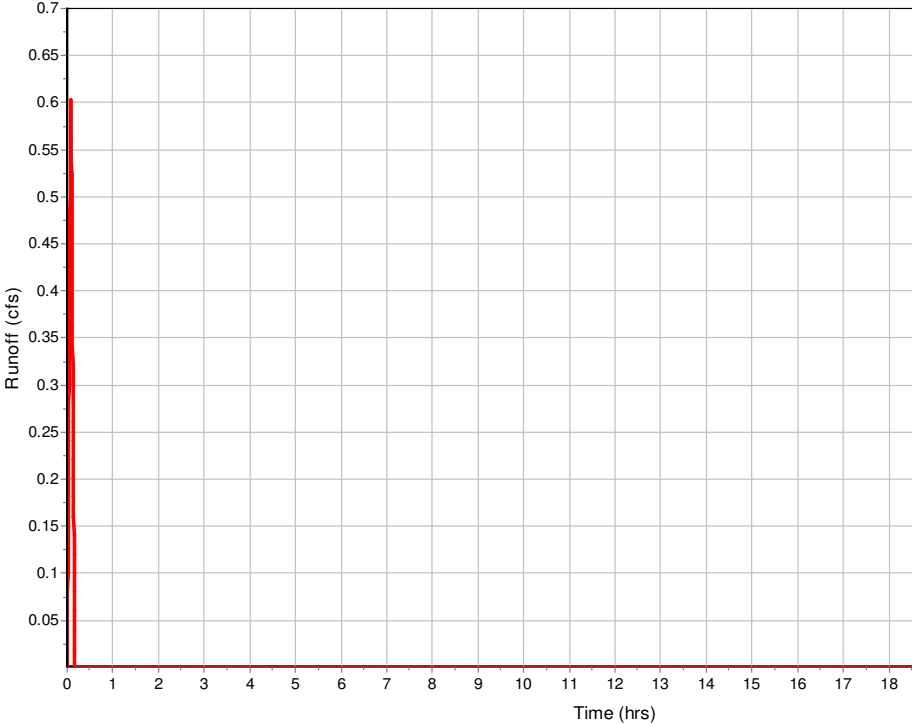
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99981258	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.0428132	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.5	0	0
Total TOC (min)	3.36		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.6
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:22

Runoff Hydrograph



Subbasin : Sub-CB-24

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

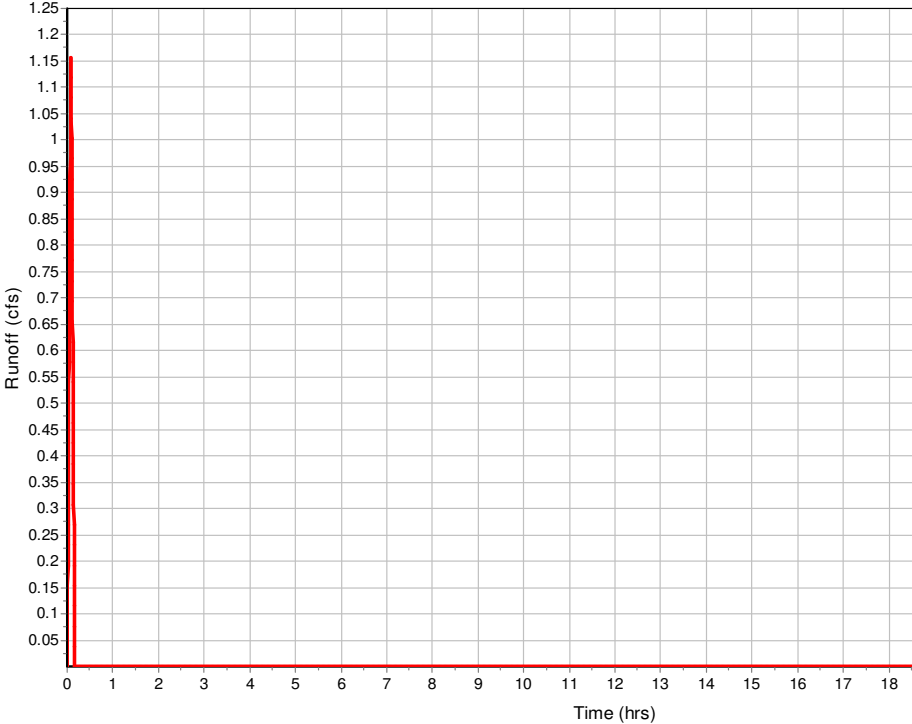
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	37.99958613	0	0
Slope (%) :	6.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	4.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	28.98355088	187.48	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.33	0.48	0
Total TOC (min)5.02			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.16
 Rainfall Intensity 6.148
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:05:01

Runoff Hydrograph



Subbasin : Sub-CB-25

Input Data

Area (ac) 0.51
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.7
Composite Area & Weighted Runoff Coeff.	0.51		0.7

Time of Concentration

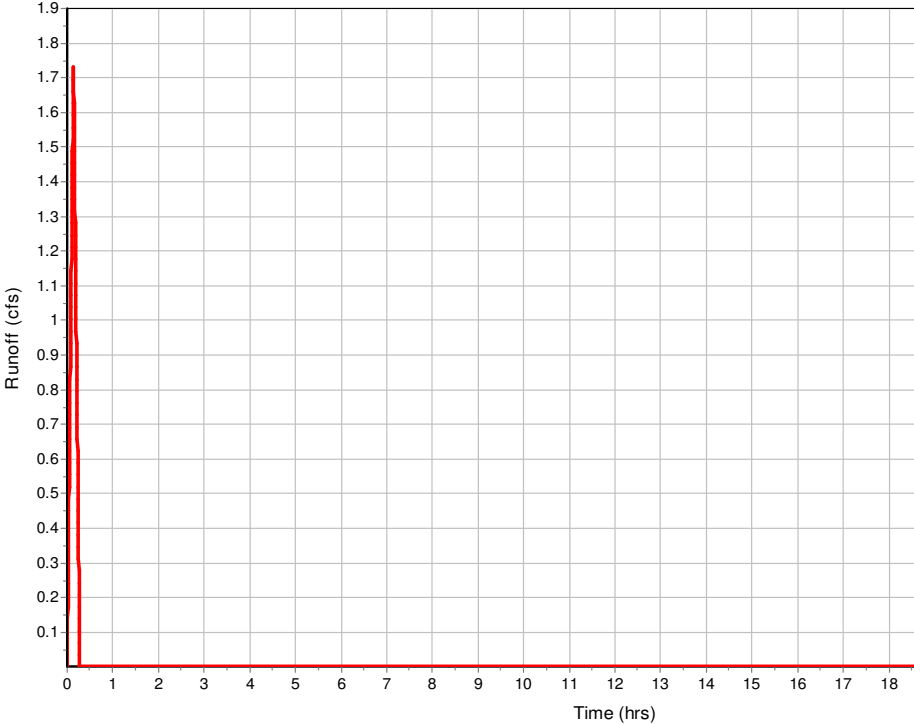
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99999586	0	0
Slope (%) :	7.25	0	0
2 yr, 24 hr Rainfall (in) :	4.32	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	7.56	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	16.12667612	203.96	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.19	0.52	0
Total TOC (min)8.26			

Subbasin Runoff Results

Total Rainfall (in) 0.67
 Total Runoff (in) 0.47
 Peak Runoff (cfs) 1.73
 Rainfall Intensity 4.856
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:08:16

Runoff Hydrograph



Subbasin : Sub-CB-26

Input Data

Area (ac) 0.49
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.49	-	0.7
Composite Area & Weighted Runoff Coeff.	0.49		0.7

Time of Concentration

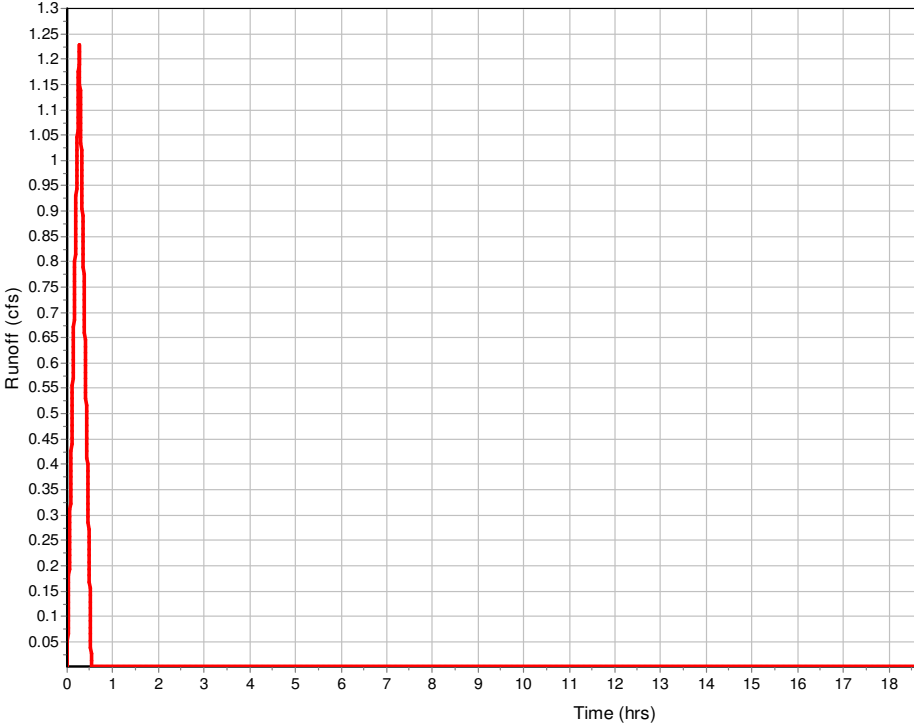
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99998121	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	221.0918618	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.66	0	0
Total TOC (min)	15.87		

Subbasin Runoff Results

Total Rainfall (in) 0.94
 Total Runoff (in) 0.66
 Peak Runoff (cfs) 1.23
 Rainfall Intensity 3.574
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:52

Runoff Hydrograph



Subbasin : Sub-CB-27

Input Data

Area (ac) 0.1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

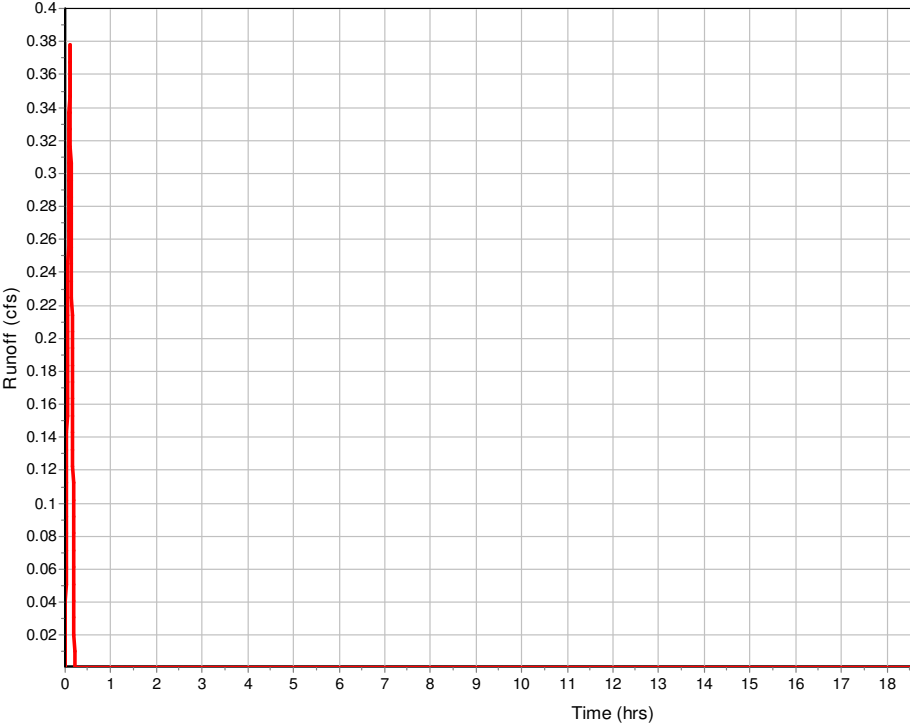
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	21.13547973	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	5.57	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	117.1502173	0	0
Slope (%) :	2.92	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.47	0	0
Computed Flow Time (min) :	0.56	0	0
Total TOC (min)6.13			

Subbasin Runoff Results

Total Rainfall (in) 0.58
 Total Runoff (in) 0.4
 Peak Runoff (cfs) 0.38
 Rainfall Intensity 5.593
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:06:08

Runoff Hydrograph



Subbasin : Sub-CB-28

Input Data

Area (ac) 0.67
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.67	-	0.7
Composite Area & Weighted Runoff Coeff.	0.67		0.7

Time of Concentration

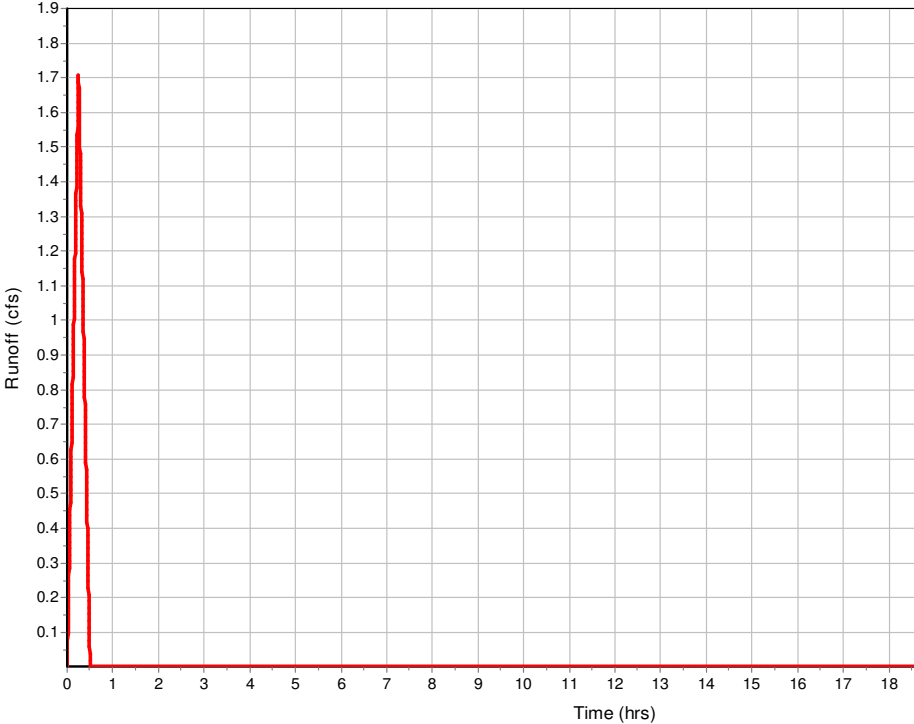
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	14.63	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	17.02372996	94.092	0
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.12	0.32	0
Total TOC (min)	15.08		

Subbasin Runoff Results

Total Rainfall (in) 0.91
 Total Runoff (in) 0.64
 Peak Runoff (cfs) 1.71
 Rainfall Intensity 3.652
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:05

Runoff Hydrograph



Subbasin : Sub-CB-29

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

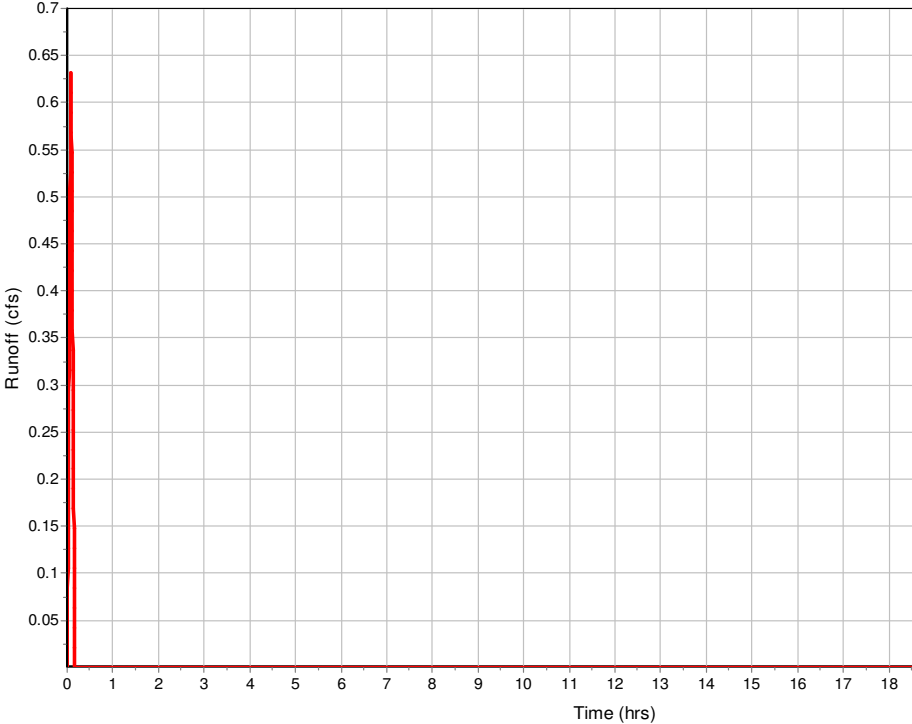
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	253.6223323	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.87	0	0
Total TOC (min)	3.73		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.63
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:44

Runoff Hydrograph



Subbasin : Sub-CB-3

Input Data

Area (ac)	0.14
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

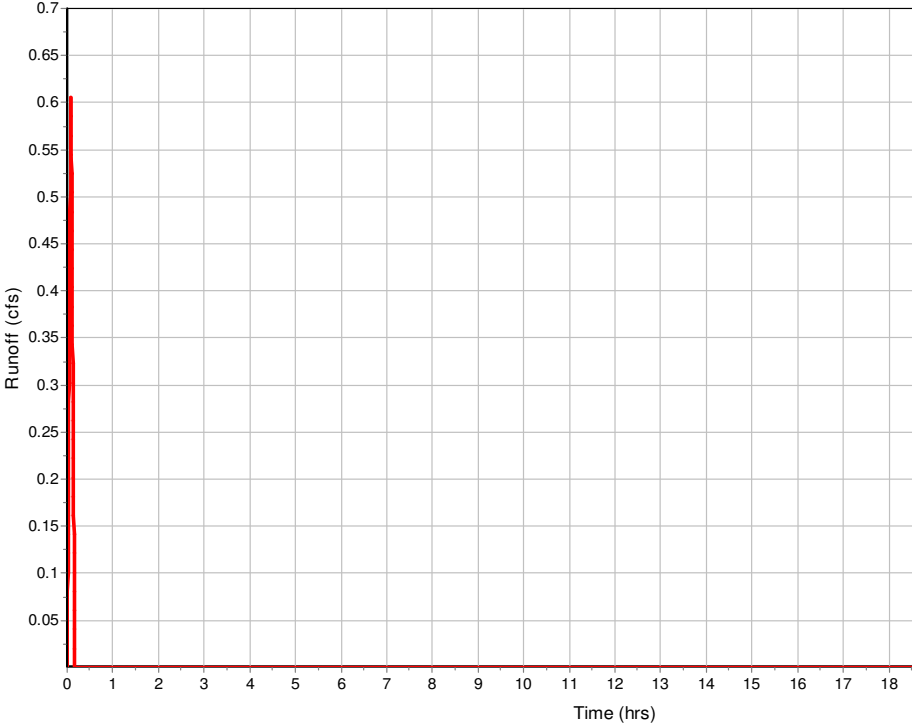
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	181.26423	58.411	0
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.46	0.52	0
Total TOC (min)	3.84		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.61
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:50

Subbasin : Sub-CB-3

Runoff Hydrograph



Subbasin : Sub-CB-31

Input Data

Area (ac) 0.17
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.7
Composite Area & Weighted Runoff Coeff.	0.17		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

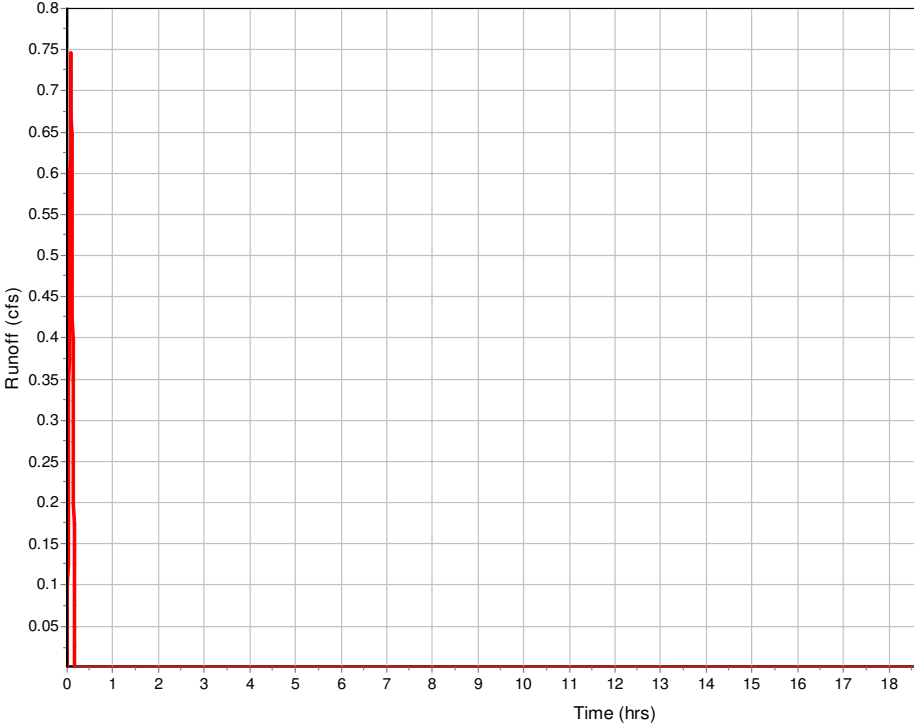
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	166.3763112	83.655	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.76	0.27	0
Total TOC (min)	3.90		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.75
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:54

Subbasin : Sub-CB-31

Runoff Hydrograph



Subbasin : Sub-CB-32

Input Data

Area (ac) 0.13
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.7
Composite Area & Weighted Runoff Coeff.	0.13		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

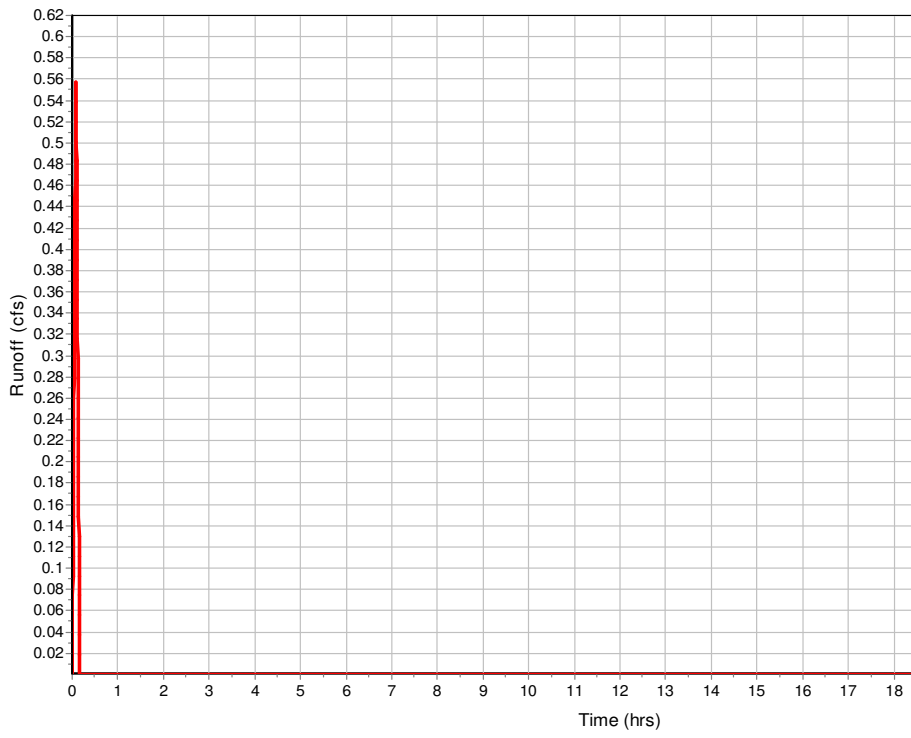
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.2624187	52.704	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.77	0.17	0
Total TOC (min)3.80			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.56
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:48

Subbasin : Sub-CB-32

Runoff Hydrograph



Subbasin : Sub-CB-35

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

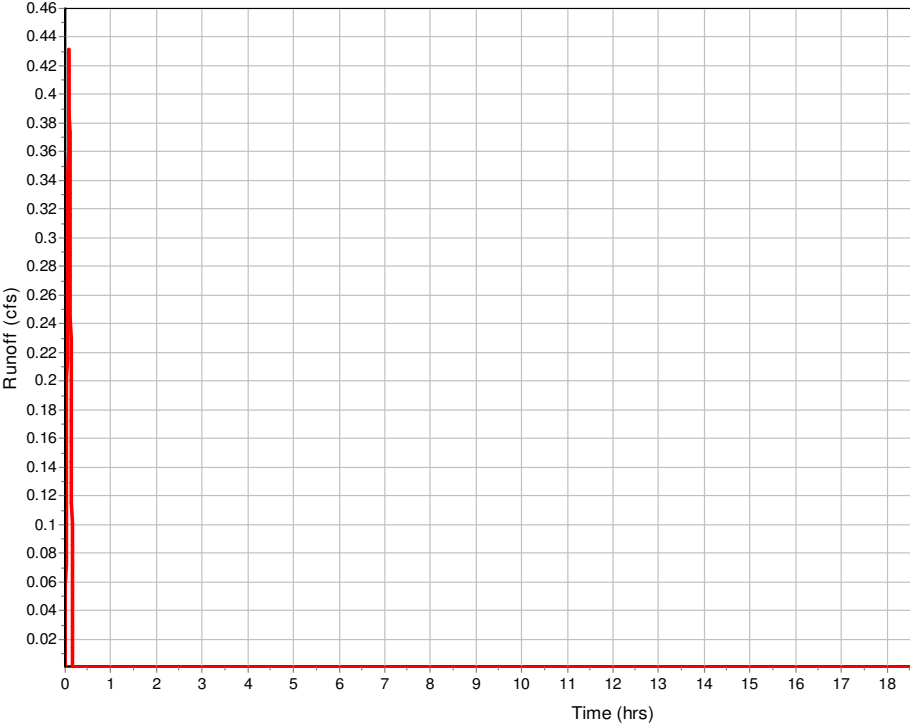
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	159.59	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.4	0	0
Total TOC (min)	3.27		

Subbasin Runoff Results

Total Rainfall (in)	0.51
Total Runoff (in)	0.36
Peak Runoff (cfs)	0.43
Rainfall Intensity	6.16
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:16

Runoff Hydrograph



Subbasin : Sub-CB-36

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

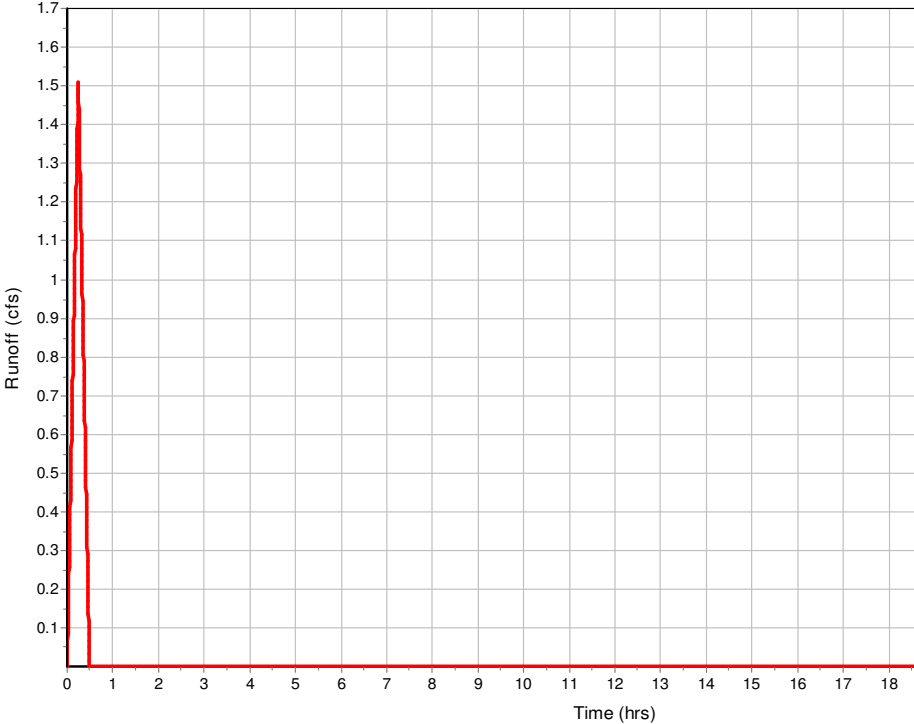
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	224.201193	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.57	0	0
Total TOC (min)	14.71		

Subbasin Runoff Results

Total Rainfall (in)	0.9
Total Runoff (in)	0.63
Peak Runoff (cfs)	1.51
Rainfall Intensity	3.694
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:14:43

Runoff Hydrograph



Subbasin : Sub-CB-38

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

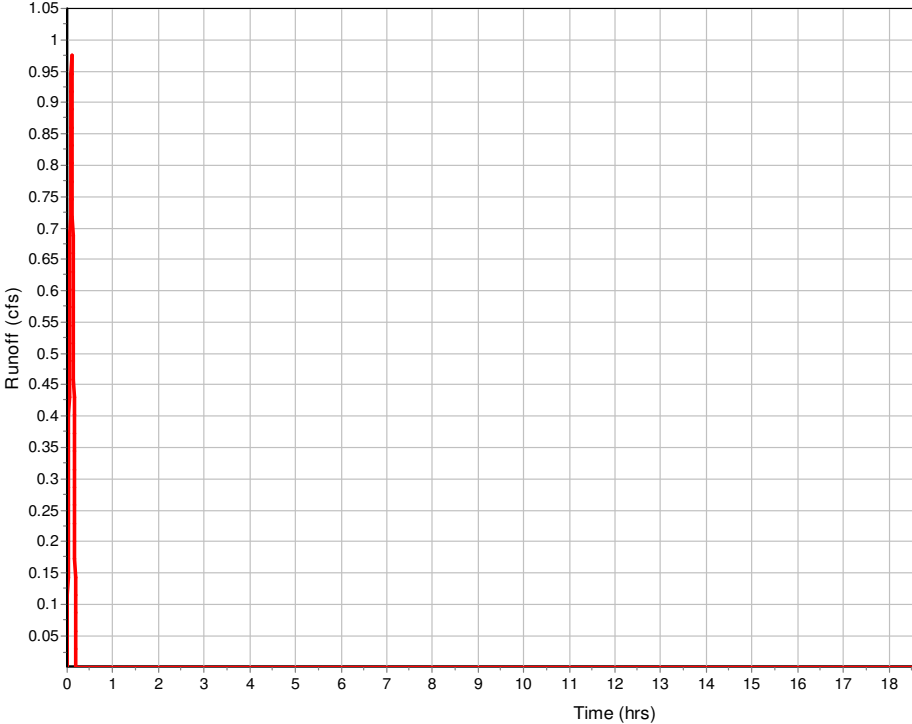
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.00000002	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	214.8866153	184.11	0
Slope (%) :	2.45	0.75	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.18	1.76	0
Computed Flow Time (min) :	1.13	1.74	0
Total TOC (min)	5.73		

Subbasin Runoff Results

Total Rainfall (in)	0.55
Total Runoff (in)	0.38
Peak Runoff (cfs)	0.98
Rainfall Intensity	5.775
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:05:44

Runoff Hydrograph



Subbasin : Sub-CB-39

Input Data

Area (ac) 1.39
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.39	-	0.7
Composite Area & Weighted Runoff Coeff.	1.39		0.7

Time of Concentration

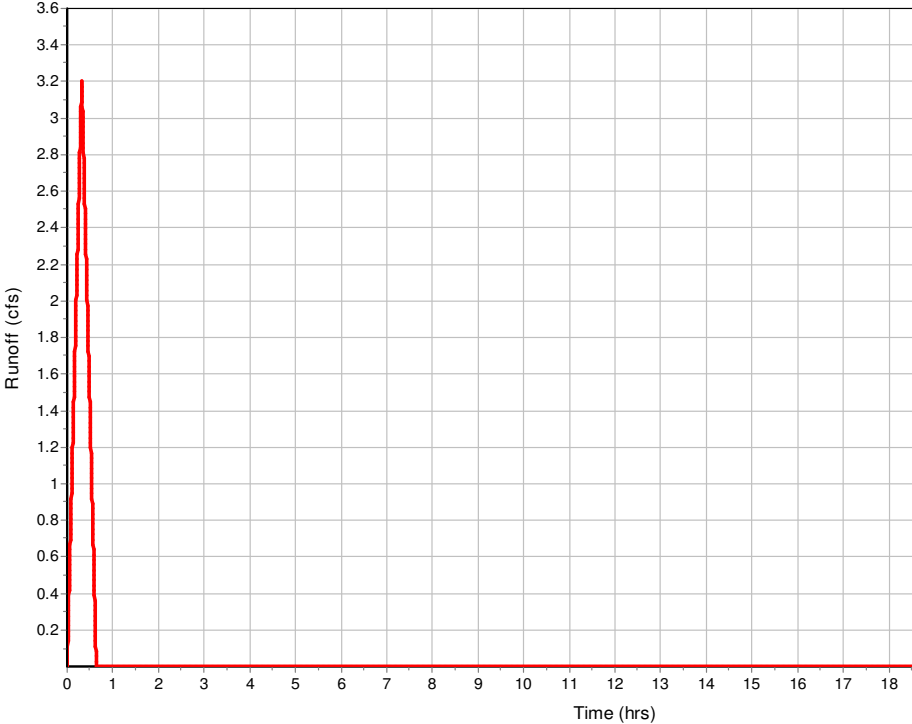
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	99.98923348	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	34.45719772	233.52	132.7
Slope (%) :	1.5	2.45	0.75
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	1.98	3.18	1.76
Computed Flow Time (min) :	0.29	1.22	1.26
Total TOC (min)	19.18		

Subbasin Runoff Results

Total Rainfall (in) 1.05
 Total Runoff (in) 0.74
 Peak Runoff (cfs) 3.2
 Rainfall Intensity 3.299
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:19:11

Runoff Hydrograph



Subbasin : Sub-CB-43

Input Data

Area (ac)	0.71
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.71	-	0.7
Composite Area & Weighted Runoff Coeff.	0.71		0.7

Time of Concentration

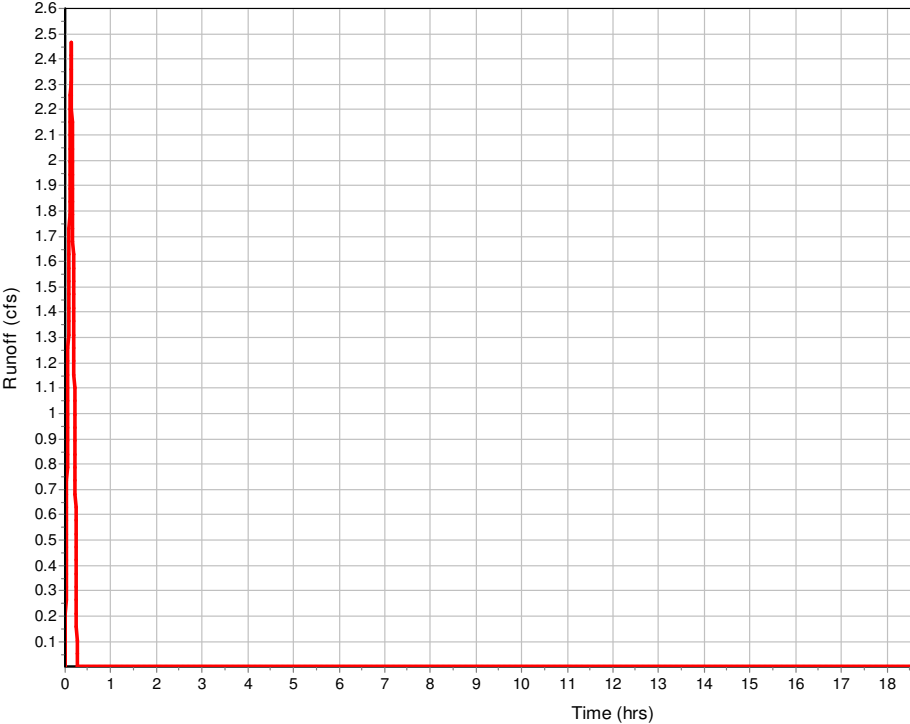
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	93	77.84	0
Slope (%) :	10.75	1.99	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	5.29	2.87	0
Computed Flow Time (min) :	0.29	0.45	0
Total TOC (min)	7.89		

Subbasin Runoff Results

Total Rainfall (in)	0.65
Total Runoff (in)	0.45
Peak Runoff (cfs)	2.47
Rainfall Intensity	4.963
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:07:53

Runoff Hydrograph



Subbasin : Sub-CB-44

Input Data

Area (ac)	0.72
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.72	-	0.7
Composite Area & Weighted Runoff Coeff.	0.72		0.7

Time of Concentration

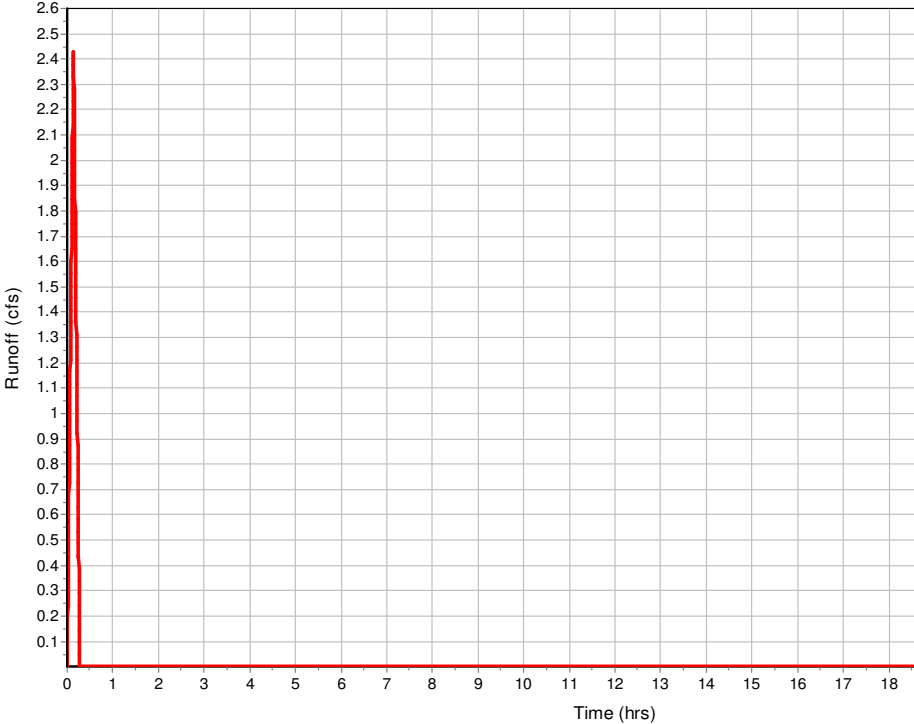
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	9	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	8.02	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	78.42	77.02	0
Slope (%) :	16.7	11.38	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	6.59	6.86	0
Computed Flow Time (min) :	0.2	0.19	0
Total TOC (min)	8.40		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.47
Peak Runoff (cfs)	2.43
Rainfall Intensity	4.817
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:08:24

Runoff Hydrograph



Subbasin : Sub-CB-6

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

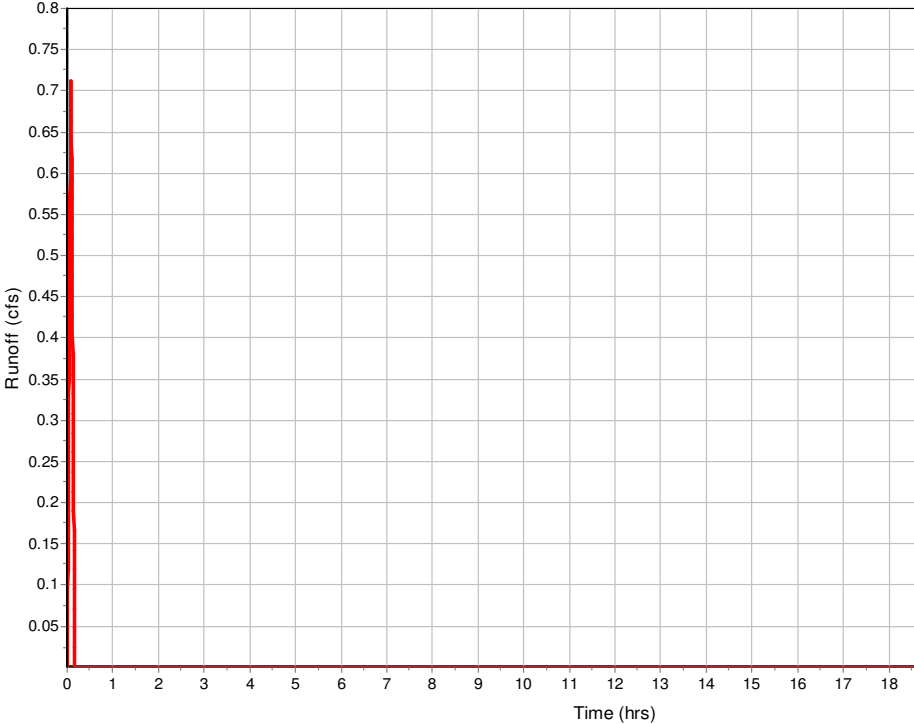
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	207.9606416	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.62	0	0
Total TOC (min)	3.48		

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.71
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:29

Runoff Hydrograph



Subbasin : Sub-CB-7

Input Data

Area (ac) 0.04
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.04	-	0.7
Composite Area & Weighted Runoff Coeff.	0.04		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999999	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

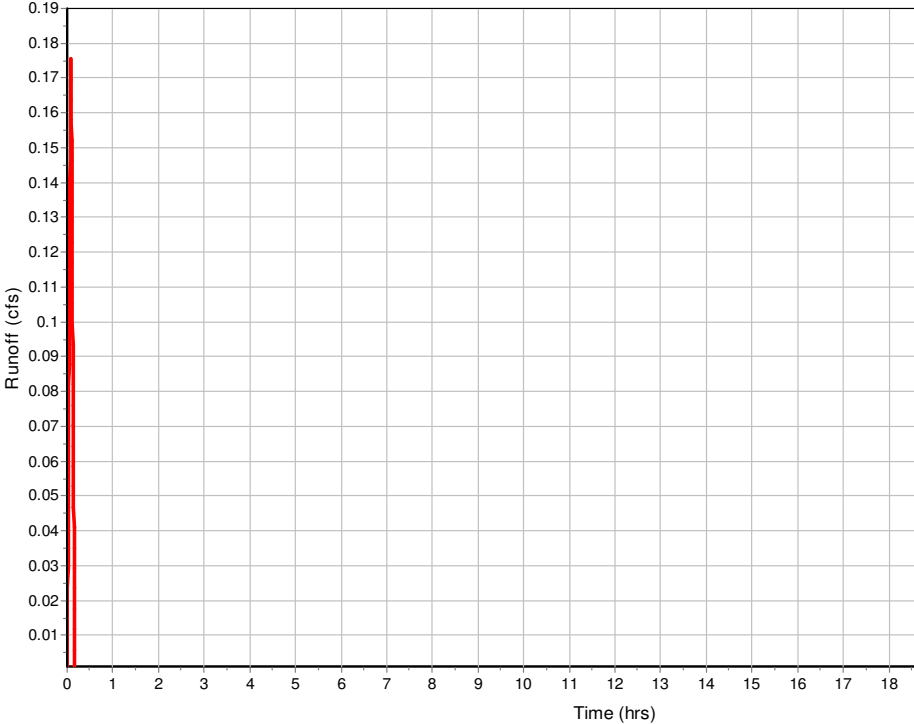
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	68.39700153	0	0
Slope (%) :	0.85	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.87	0	0
Computed Flow Time (min) :	0.61	0	0
Total TOC (min)3.47			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 0.18
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-7

Runoff Hydrograph



Subbasin : Sub-CB-9

Input Data

Area (ac) 0.36
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999519	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

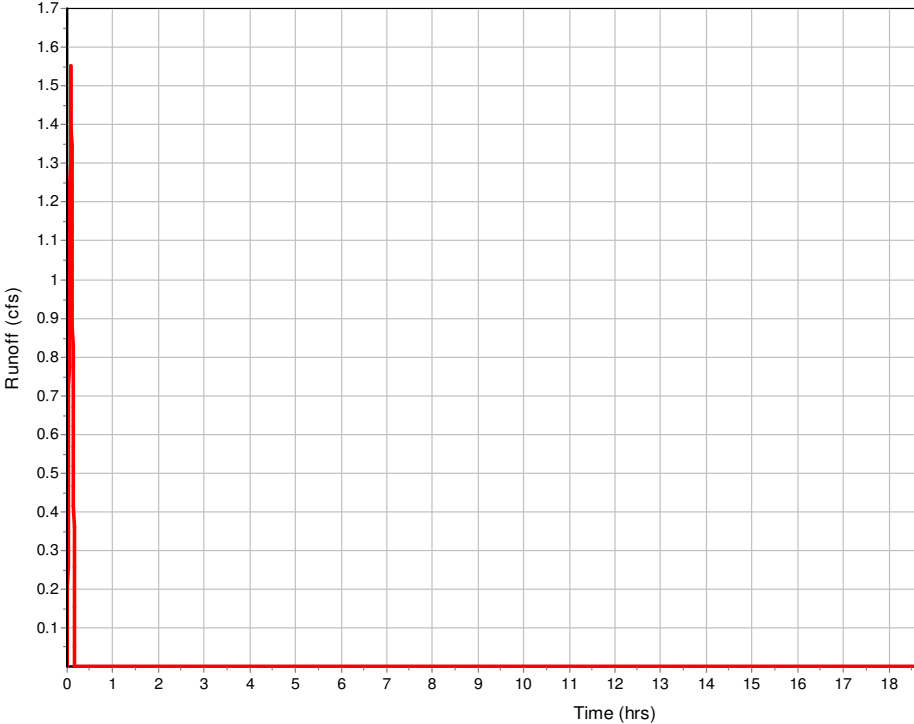
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	199.7947467	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.6	0	0
Total TOC (min)3.46			

Subbasin Runoff Results

Total Rainfall (in) 0.51
 Total Runoff (in) 0.36
 Peak Runoff (cfs) 1.55
 Rainfall Intensity 6.16
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-9

Runoff Hydrograph



Subbasin : Sub-FES-2

Input Data

Area (ac)	1.58
Weighted Runoff Coefficient	0.56

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.58	-	0.56
Composite Area & Weighted Runoff Coeff.	1.58		0.56

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

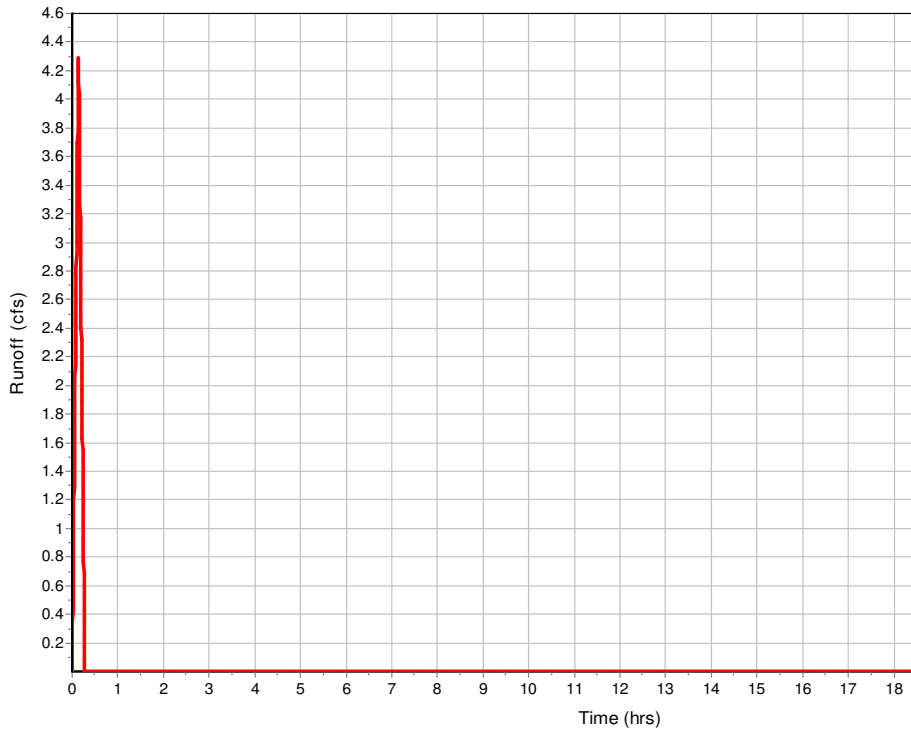
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	363.3701089	0	0
Slope (%) :	10	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.1	0	0
Computed Flow Time (min) :	1.19	0	0
Total TOC (min)	8.33		

Subbasin Runoff Results

Total Rainfall (in)	0.67
Total Runoff (in)	0.38
Peak Runoff (cfs)	4.29
Rainfall Intensity	4.837
Weighted Runoff Coefficient	0.56
Time of Concentration (days hh:mm:ss)	0 00:08:20

Subbasin : Sub-FES-2

Runoff Hydrograph



Subbasin : SUB-PIPE-35

Input Data

Area (ac) 0.36
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.36	-	0.72
Composite Area & Weighted Runoff Coeff.	0.36		0.72

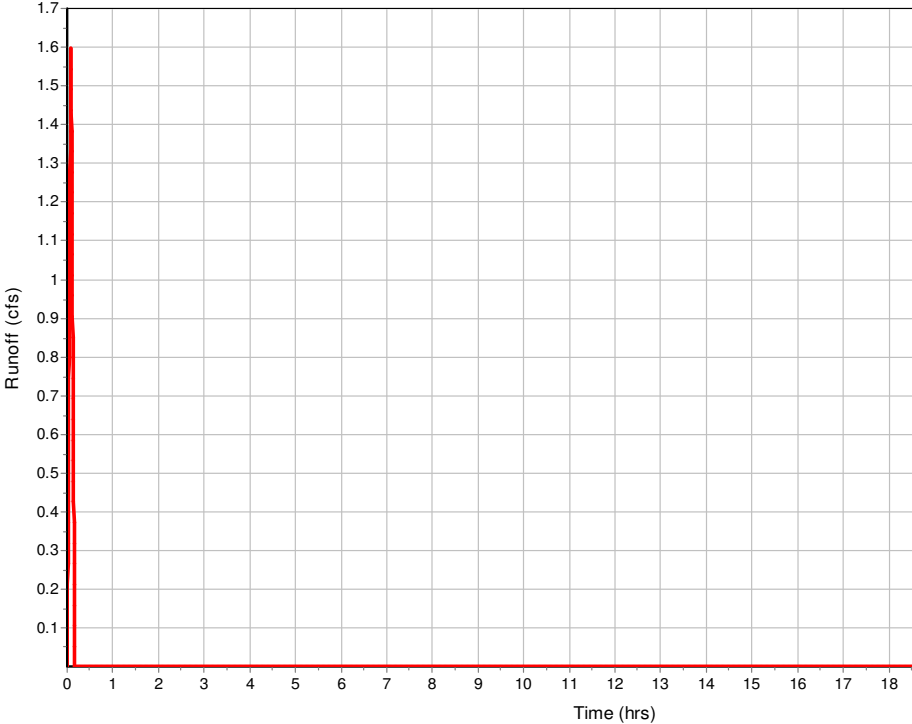
Time of Concentration

User-Defined TOC override (minutes): 2.36

Subbasin Runoff Results

Total Rainfall (in) 0.51
Total Runoff (in) 0.37
Peak Runoff (cfs) 1.6
Rainfall Intensity 6.16
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:02:22

Runoff Hydrograph



Subbasin : SUB-PIPE-36

Input Data

Area (ac) 1.26
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.26	-	0.72
Composite Area & Weighted Runoff Coeff.	1.26		0.72

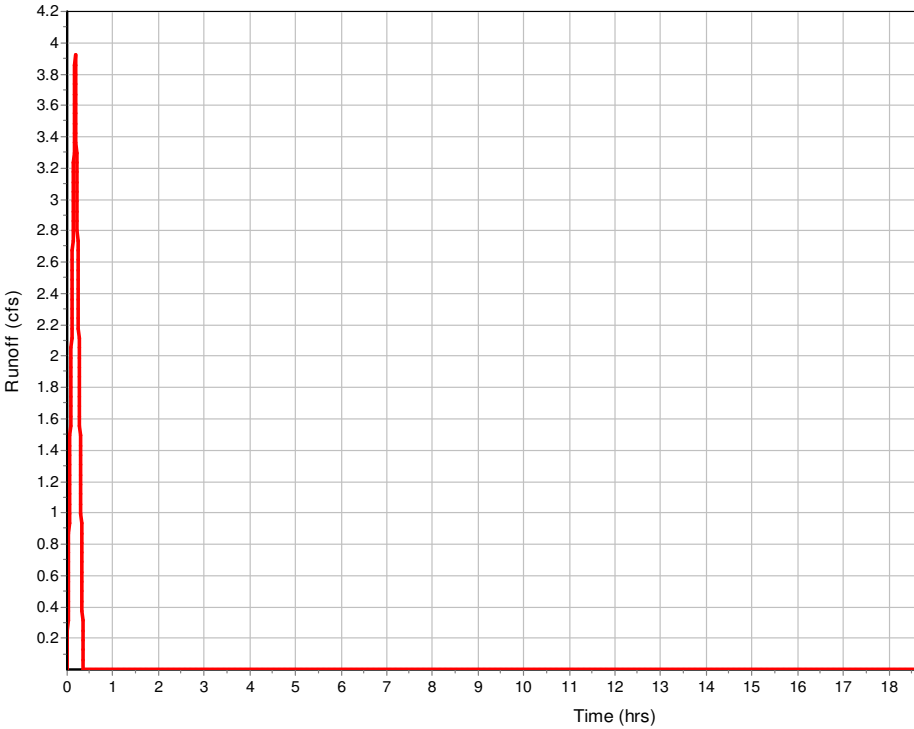
Time of Concentration

User-Defined TOC override (minutes): 10.56

Subbasin Runoff Results

Total Rainfall (in) 0.76
Total Runoff (in) 0.55
Peak Runoff (cfs) 3.92
Rainfall Intensity 4.322
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:10:34

Runoff Hydrograph



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 (ft ²)	Minimum Pipe Cover (in)
1 FES-2	466.60	469.78	3.18	466.60	0.00	469.78	0.00	0.00	2.15
2 IN-PIPE-35	462.75	464.00	1.25	462.75	0.00	464.00	0.00	0.00	0.00
3 IN-PIPE36	441.30	442.80	1.50	441.30	0.00	442.80	0.00	0.00	0.00
4 JB-14	529.50	534.76	5.26	529.50	0.00	535.50	0.74	0.00	45.12
5 JB-23	515.30	519.44	4.14	515.30	0.00	519.20	-0.24	10.00	31.68

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	1 FI Occu
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days h
1	FES-2	19.47	19.47	468.35	1.75	0.00	1.43	468.04	1.44	0 00:00	0
2	IN-PIPE-35	1.59	1.59	463.18	0.43	0.00	1.07	462.75	0.00	0 00:05	0
3	IN-PIPE36	3.92	3.92	442.17	0.87	0.00	0.71	441.39	0.09	0 00:10	0
4	JB-14	5.29	0.00	529.93	0.43	0.00	4.83	529.51	0.01	0 00:12	0
5	JB-23	2.03	0.00	515.56	0.26	0.00	3.88	515.30	0.00	0 00:05	0

Channel Input

SN Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Shape Slope (%)	Height	Width	Manning's E Roughness
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ft)	(ft)	
1 L-SDPIPE-1	73.15	476.67	10.73	475.09	7.62	1.58	2.1600 User-Defined	0.330	14.000	0.0150
2 L-SDPIPE-13	403.61	521.86	4.36	510.72	5.72	11.14	2.7600 User-Defined	0.330	14.000	0.0150
3 L-SDPIPE-14	373.89	522.45	4.46	515.37	5.03	7.08	1.8900 User-Defined	0.330	14.000	0.0150
4 L-SDPIPE-15	83.27	471.49	3.38	464.82	0.00	6.67	8.0100 User-Defined	0.330	14.000	0.0150
5 L-SDPIPE-16	206.62	505.01	3.91	489.62	6.43	15.39	7.4500 User-Defined	0.330	14.000	0.0150
6 L-SDPIPE-18	170.54	523.17	5.39	517.57	3.45	5.60	3.2800 User-Defined	0.330	14.000	0.0150
7 L-SDPIPE-19	227.29	522.18	4.31	505.01	3.58	17.17	7.5500 User-Defined	0.330	14.000	0.0150
8 L-SDPIPE-2	62.02	476.28	9.98	475.09	7.29	1.19	1.9200 User-Defined	0.330	14.000	0.0150
9 L-SDPIPE-20	233.87	505.01	3.58	487.59	3.97	17.42	7.4500 User-Defined	0.330	14.000	0.0150
10 L-SDPIPE-21	241.61	543.67	5.17	534.06	3.86	9.61	3.9800 User-Defined	0.330	14.000	0.0150
11 L-SDPIPE-23	316.61	547.43	4.84	534.06	3.53	13.37	4.2200 User-Defined	0.500	26.000	0.0150
12 L-SDPIPE-25	202.83	549.70	3.70	532.10	0.00	17.60	8.6800 User-Defined	0.500	26.000	0.0150
13 L-SDPIPE-27	245.69	494.00	6.50	476.28	9.98	17.72	7.2100 User-Defined	0.330	14.000	0.0150
14 L-SDPIPE-28	228.18	493.47	5.63	476.67	10.73	16.80	7.3600 User-Defined	0.330	14.000	0.0150
15 L-SDPIPE-29	172.07	510.72	5.72	494.00	6.50	16.72	9.7200 User-Defined	0.330	14.000	0.0150
16 L-SDPIPE-32	98.13	549.76	5.26	540.30	0.00	9.46	9.6400 User-Defined	0.500	26.000	0.0150
17 L-SDPIPE-33	78.91	518.02	3.90	517.01	4.43	1.01	1.2800 User-Defined	0.330	14.000	0.0320
18 L-SDPIPE-34	149.42	521.36	5.08	517.01	4.43	4.35	2.9100 User-Defined	0.330	14.000	0.0320
19 L-SDPIPE-4	129.78	475.09	7.62	464.82	0.00	10.27	7.9100 User-Defined	0.330	14.000	0.0320
20 L-SDPIPE-6	214.12	489.62	6.43	475.09	7.29	14.53	6.7900 User-Defined	0.330	14.000	0.0150
21 L-SDPIPE-7	216.57	487.59	3.97	471.49	3.38	16.10	7.4300 User-Defined	0.330	14.000	0.0150

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Fr	Nu
1	L-SDPIPE-1	0.00	0 00:00	3.72	0.00	0.00		0.00	0.00	0.00		
2	L-SDPIPE-13	0.00	0 00:00	4.20	0.00	0.00		0.02	0.06	0.00		
3	L-SDPIPE-14	0.46	0 00:13	3.48	0.13	0.37	16.84	0.24	0.73	0.00		
4	L-SDPIPE-15	0.18	0 00:17	7.16	0.02	1.66	0.84	0.08	0.24	0.00		
5	L-SDPIPE-16	0.00	0 00:06	6.90	0.00	0.00		0.04	0.12	0.00		
6	L-SDPIPE-18	0.11	0 00:05	4.64	0.02	6.32	0.45	0.07	0.21	0.00		
7	L-SDPIPE-19	0.34	0 00:08	6.95	0.05	2.95	1.28	0.07	0.22	0.00		
8	L-SDPIPE-2	0.00	0 00:00	3.50	0.00	0.00		0.10	0.29	0.00		
9	L-SDPIPE-20	0.09	0 00:16	6.90	0.01	0.82	4.75	0.07	0.21	0.00		
10	L-SDPIPE-21	0.00	0 00:00	5.04	0.00	0.00		0.17	0.50	0.00		
11	L-SDPIPE-23	0.00	0 00:06	19.36	0.00	0.00		0.15	0.30	0.00		
12	L-SDPIPE-25	0.00	0 00:05	27.75	0.00	0.00		0.01	0.02	0.00		
13	L-SDPIPE-27	0.00	0 00:00	6.79	0.00	0.00		0.00	0.00	0.00		
14	L-SDPIPE-28	0.24	0 00:14	6.86	0.03	2.98	1.28	0.06	0.18	0.00		
15	L-SDPIPE-29	0.02	0 00:07	7.88	0.00	1.75	1.64	0.02	0.06	0.00		
16	L-SDPIPE-32	0.03	0 00:05	28.64	0.00	2.05	0.80	0.02	0.05	0.00		
17	L-SDPIPE-33	0.00	0 00:00	2.86	0.00	0.00		0.17	0.50	0.00		
18	L-SDPIPE-34	0.22	0 00:08	4.31	0.05	0.22	11.32	0.22	0.66	0.00		
19	L-SDPIPE-4	0.00	0 00:00	7.11	0.00	0.00		0.00	0.00	0.00		
20	L-SDPIPE-6	0.18	0 00:05	6.59	0.03	0.54	6.61	0.13	0.39	0.00		
21	L-SDPIPE-7	0.16	0 00:16	6.90	0.02	1.23	2.93	0.08	0.23	0.00		

Pipe Input

SN Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness
1 SDPIPE-1	35.55	465.94	0.00	463.00	0.00	2.94	8.2700	CIRCULAR	36.000	36.000	0.0120
2 SDPIPE-10	256.10	529.50	0.00	512.58	0.00	16.92	6.6100	CIRCULAR	18.000	18.000	0.0120
3 SDPIPE-11	67.57	530.20	0.00	529.50	0.00	0.70	1.0400	CIRCULAR	18.000	18.000	0.0120
4 SDPIPE-12	33.01	530.53	0.00	530.20	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
5 SDPIPE-13	130.50	517.50	0.00	505.00	0.00	12.50	9.5800	CIRCULAR	18.000	18.000	0.0120
6 SDPIPE-14	39.55	517.99	0.00	517.50	0.00	0.49	1.2500	CIRCULAR	18.000	18.000	0.0130
7 SDPIPE-15	64.04	468.11	0.00	467.47	0.00	0.64	1.0000	CIRCULAR	18.000	18.000	0.0130
8 SDPIPE-16	23.51	501.10	0.00	499.00	0.00	2.10	8.9300	CIRCULAR	18.000	18.000	0.0120
9 SDPIPE-17	194.21	515.30	0.00	501.00	-0.10	14.30	7.3600	CIRCULAR	18.000	18.000	0.0120
10 SDPIPE-18	49.41	517.78	0.00	515.30	0.00	2.48	5.0200	CIRCULAR	18.000	18.000	0.0130
11 SDPIPE-19	51.31	517.87	0.00	515.30	0.00	2.57	5.0100	CIRCULAR	18.000	18.000	0.0130
12 SDPIPE-2	35.82	466.30	0.00	465.94	0.00	0.36	1.0000	CIRCULAR	36.000	36.000	0.0130
13 SDPIPE-20	33.00	501.43	0.00	501.10	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0120
14 SDPIPE-21	239.80	538.50	0.00	530.20	0.00	8.30	3.4600	CIRCULAR	18.000	18.000	0.0120
15 SDPIPE-22	57.68	542.14	0.00	538.50	0.00	3.64	6.3100	CIRCULAR	18.000	18.000	0.0130
16 SDPIPE-23	44.75	542.59	0.00	542.14	0.00	0.45	1.0100	CIRCULAR	18.000	18.000	0.0130
17 SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	0.0130
18 SDPIPE-27	182.53	487.50	0.00	484.31	0.00	3.19	1.7500	CIRCULAR	18.000	18.000	0.0120
19 SDPIPE-28	33.55	487.84	0.00	487.50	0.00	0.34	1.0000	CIRCULAR	18.000	18.000	0.0130
20 SDPIPE-29	167.22	505.00	0.00	487.50	0.00	17.50	10.4700	CIRCULAR	18.000	18.000	0.0120
21 SDPIPE-3	30.36	466.60	0.00	466.30	0.00	0.30	1.0000	CIRCULAR	36.000	36.000	0.0120
22 SDPIPE-30	66.71	510.34	0.00	505.00	0.00	5.34	8.0000	CIRCULAR	18.000	18.000	0.0130
23 SDPIPE-32	96.89	544.50	0.00	538.50	0.00	6.00	6.1900	CIRCULAR	18.000	18.000	0.0120
24 SDPIPE-33	77.61	514.12	0.00	512.58	0.00	1.54	1.9800	CIRCULAR	18.000	18.000	0.0150
25 SDPIPE-34	147.34	516.28	0.00	512.58	0.00	3.70	2.5100	CIRCULAR	18.000	18.000	0.0150
26 SDPIPE-4	71.93	467.47	0.00	466.75	0.81	0.72	1.0000	CIRCULAR	18.000	18.000	0.0120
27 SDPIPE-5	33.00	467.80	0.00	467.47	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
28 SDPIPE-6	67.57	483.19	0.00	482.52	0.00	0.67	1.0000	CIRCULAR	18.000	18.000	0.0120
29 SDPIPE-7	42.68	483.62	0.00	483.19	0.00	0.43	1.0000	CIRCULAR	18.000	18.000	0.0130
30 SDPIPE-8	130.97	512.25	0.00	492.00	0.00	20.25	15.4600	CIRCULAR	24.000	24.000	0.0120
31 SDPIPE-9	33.02	512.58	0.00	512.25	0.00	0.33	1.0000	CIRCULAR	24.000	24.000	0.0130
32 SPIPE-35	30.19	462.75	0.00	462.25	0.00	0.50	1.6600	CIRCULAR	18.000	18.000	0.0150
33 SPIPE-36	31.09	441.38	0.08	441.00	0.00	0.38	1.2200	CIRCULAR	18.000	18.000	0.0150

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Frc Nun
1 SDPIPE-1	21.43	0 00:08	207.79	0.10	13.86	0.04	0.81	0.27	0.00	
2 SDPIPE-10	5.28	0 00:12	29.25	0.18	5.99	0.71	0.87	0.58	0.00	
3 SDPIPE-11	5.29	0 00:12	11.59	0.46	7.08	0.16	0.66	0.44	0.00	
4 SDPIPE-12	0.69	0 00:07	10.49	0.07	1.74	0.32	0.72	0.48	0.00	
5 SDPIPE-13	2.27	0 00:13	35.22	0.06	10.80	0.20	0.26	0.18	0.00	
6 SDPIPE-14	2.28	0 00:13	11.74	0.19	5.82	0.11	0.41	0.27	0.00	
7 SDPIPE-15	1.45	0 00:17	10.50	0.14	3.74	0.29	0.41	0.27	0.00	
8 SDPIPE-16	3.05	0 00:06	34.01	0.09	9.81	0.04	0.35	0.23	0.00	
9 SDPIPE-17	2.02	0 00:05	30.77	0.07	7.19	0.45	0.33	0.22	0.00	
10 SDPIPE-18	1.05	0 00:05	23.53	0.04	5.70	0.14	0.24	0.16	0.00	
11 SDPIPE-19	1.38	0 00:08	23.51	0.06	6.89	0.12	0.26	0.17	0.00	
12 SDPIPE-2	19.64	0 00:08	66.70	0.29	6.64	0.09	1.31	0.44	0.00	
13 SDPIPE-20	1.13	0 00:16	11.38	0.10	4.39	0.13	0.37	0.25	0.00	
14 SDPIPE-21	1.69	0 00:15	21.17	0.08	3.65	1.09	0.57	0.38	0.00	
15 SDPIPE-22	1.70	0 00:15	26.39	0.06	7.46	0.13	0.28	0.19	0.00	
16 SDPIPE-23	0.62	0 00:05	10.53	0.06	3.27	0.23	0.25	0.16	0.00	
17 SDPIPE-25	0.55	0 00:05	14.89	0.04	3.57	0.35	0.21	0.14	0.00	
18 SDPIPE-27	4.00	0 00:20	15.03	0.27	6.84	0.44	0.55	0.37	0.00	
19 SDPIPE-28	1.27	0 00:14	10.50	0.12	3.12	0.18	0.46	0.31	0.00	
20 SDPIPE-29	3.08	0 00:20	36.81	0.08	7.34	0.38	0.43	0.29	0.00	
21 SDPIPE-3	20.72	0 00:00	71.83	0.29	7.93	0.06	1.60	0.53	0.00	
22 SDPIPE-30	3.08	0 00:20	29.71	0.10	10.67	0.10	0.33	0.22	0.00	
23 SDPIPE-32	1.24	0 00:05	28.32	0.04	7.77	0.21	0.22	0.15	0.00	
24 SDPIPE-33	2.46	0 00:08	12.82	0.19	3.46	0.37	0.87	0.58	0.00	
25 SDPIPE-34	2.16	0 00:08	14.43	0.15	3.23	0.76	0.85	0.57	0.00	
26 SDPIPE-4	1.45	0 00:17	11.38	0.13	4.10	0.29	0.38	0.25	0.00	
27 SDPIPE-5	0.46	0 00:07	10.50	0.04	1.98	0.28	0.28	0.19	0.00	
28 SDPIPE-6	1.79	0 00:05	11.37	0.16	4.31	0.26	0.43	0.29	0.00	
29 SDPIPE-7	1.37	0 00:16	10.50	0.13	3.58	0.20	0.40	0.27	0.00	
30 SDPIPE-8	11.68	0 00:09	96.37	0.12	19.32	0.11	0.49	0.25	0.00	
31 SDPIPE-9	11.53	0 00:09	22.62	0.51	8.12	0.07	0.93	0.46	0.00	
32 SPIPE-35	1.59	0 00:05	11.72	0.14	4.18	0.12	0.40	0.27	0.00	
33 SPIPE-36	3.91	0 00:10	10.06	0.39	4.67	0.11	0.72	0.48	0.00	

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)	Ini Wz De	
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	3.97	483.62	0
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	4.76	512.25	0
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	4.43	512.58	0
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	3.86	530.20	0
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	3.53	530.53	0
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	4.36	517.50	0
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	4.46	517.99	0
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	10.73	465.94	0
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	3.38	468.11	0
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	3.91	501.10	0
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	5.53	517.77	-0
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	4.30	515.81	-2
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	3.58	501.43	0
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	5.17	538.50	0
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	3.53	542.20	0
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	4.84	542.65	0
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	9.98	466.30	0
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	3.70	546.00	0
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	6.50	487.50	0
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	5.63	487.84	0
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	5.72	505.00	0
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	5.03	510.34	0
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	3.90	514.12	0
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	7.29	467.80	0
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	7.62	467.47	0
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	6.43	483.19	0
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	5.08	516.28	0

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	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
2 CB-12	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
3 CB-13	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
4 CB-15	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
5 CB-16	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
6 CB-18	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
7 CB-19	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
8 CB-2	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
9 CB-20	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
10 CB-22	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
11 CB-24	0.1033	0.0258	0.0150	0.0200	1.00	0.1312	8.50
12 CB-25	0.1041	0.0258	0.0150	0.0200	1.00	0.1312	8.50
13 CB-26	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
14 CB-27	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
15 CB-28	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
16 CB-29	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
17 CB-3	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
18 CB-31	0.0721	0.0200	0.0150	0.0200	1.50	0.1312	8.50
19 CB-32	0.0809	0.0258	0.0150	0.0200	1.00	0.1312	8.50
20 CB-35	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
21 CB-36	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
22 CB-38	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
23 CB-39	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
24 CB-43	0.0199	0.0258	0.0150	0.0200	1.00	0.1312	8.50
25 CB-6	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
26 CB-7	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
27 CB-9	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
28 Inlet-CB-44	0.1138	0.0258	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN Element ID	Peak Flow	Peak Lateral Inflow	Peak Flow Intercepted by Inlet	Peak Flow Bypassing Inlet	Inlet Efficiency during Peak	Max Gutter Spread during Peak	Max Gutter Water Elev. during Peak	Max Gutter Water Depth during Peak	Time of Max Depth Occurrence
	(cfs)	(cfs)	(cfs)	(cfs)	(%)	Flow (ft)	Flow (ft)	Flow (ft)	(days hh:mm)
1 CB-10	1.54	1.45	1.34	0.19	87.40	4.89	487.71	0.12	0 00:16
2 CB-12	1.36	1.36	N/A	N/A	N/A	4.37	517.29	0.28	0 00:09
3 CB-13	3.72	3.56	N/A	N/A	N/A	8.53	517.40	0.39	0 00:09
4 CB-15	3.63	3.63	N/A	N/A	N/A	8.38	534.44	0.38	0 00:12
5 CB-16	1.79	1.79	N/A	N/A	N/A	5.24	534.36	0.30	0 00:12
6 CB-18	0.53	0.53	0.53	0.00	100.00	4.05	521.96	0.10	0 00:13
7 CB-19	2.74	2.74	2.28	0.46	83.25	7.45	522.64	0.19	0 00:13
8 CB-2	1.20	0.97	1.20	0.00	100.00	6.67	476.84	0.17	0 00:08
9 CB-20	1.63	1.50	1.40	0.23	85.80	4.99	471.61	0.12	0 00:17
10 CB-22	0.60	0.60	0.60	0.00	100.00	3.45	505.09	0.08	0 00:06
11 CB-24	1.16	1.16	1.06	0.10	91.65	4.15	523.41	0.10	0 00:05
12 CB-25	1.73	1.73	1.39	0.34	80.28	4.80	522.29	0.12	0 00:08
13 CB-26	1.23	1.23	1.15	0.08	93.36	4.48	505.12	0.11	0 00:16
14 CB-27	0.38	0.38	0.38	0.00	100.00	3.07	543.74	0.07	0 00:15
15 CB-28	1.71	1.71	N/A	N/A	N/A	5.07	545.97	0.30	0 00:15
16 CB-29	0.63	0.63	0.63	0.00	100.00	3.71	547.52	0.09	0 00:05
17 CB-3	0.60	0.60	0.60	0.00	100.00	5.18	476.41	0.13	0 00:08
18 CB-31	0.74	0.74	0.74	0.01	99.03	4.36	549.46	0.09	0 00:05
19 CB-32	0.56	0.56	0.56	0.00	100.00	3.32	549.78	0.08	0 00:05
20 CB-35	0.43	0.43	0.43	0.00	100.00	2.89	494.07	0.07	0 00:20
21 CB-36	1.51	1.51	1.27	0.24	84.23	4.56	493.58	0.11	0 00:14
22 CB-38	0.97	0.97	0.93	0.04	95.57	3.88	510.81	0.09	0 00:20
23 CB-39	3.23	3.20	N/A	N/A	N/A	7.77	515.74	0.37	0 00:20
24 CB-43	2.46	2.46	2.46	0.00	100.00	7.44	518.21	0.19	0 00:08
25 CB-6	0.87	0.71	N/A	N/A	N/A	3.25	475.34	0.25	0 00:07
26 CB-7	0.18	0.18	0.18	0.00	100.00	3.27	475.17	0.08	0 00:17
27 CB-9	1.55	1.55	1.35	0.20	87.17	4.91	489.74	0.12	0 00:05
28 Inlet-CB-44	2.43	2.43	2.18	0.24	89.92	5.34	521.49	0.13	0 00:08

100 Year Design Storm

Project Description

File Name Hilltop Drainage Analysis 4-8-26.SPF

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.....	31
Nodes.....	46
<i>Junctions</i>	5
<i>Outfalls</i>	13
<i>Flow Diversions</i>	0
<i>Inlets</i>	28
<i>Storage Nodes</i>	0
Links.....	54
<i>Channels</i>	21
<i>Pipes</i>	33
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 100 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-CB-10	0.58	0.7000	1.72	1.21	0.70	2.65	0 00:15:54
2	Sub-CB-12	0.32	0.7000	0.93	0.65	0.21	2.48	0 00:05:00
3	Sub-CB-13	1.03	0.7000	1.20	0.84	0.87	6.49	0 00:07:58
4	Sub-CB-15	1.21	0.7000	1.41	0.99	1.20	6.62	0 00:10:46
5	Sub-CB-16	0.42	0.7000	0.93	0.65	0.27	3.27	0 00:05:00
6	Sub-CB-18	0.12	0.7000	0.93	0.65	0.08	0.96	0 00:05:00
7	Sub-CB-19	1.00	0.7000	1.55	1.09	1.09	5.01	0 00:12:57
8	Sub-CB-2	0.38	0.7000	1.67	1.17	0.44	1.78	0 00:14:59
9	Sub-CB-20	0.62	0.7000	1.80	1.26	0.78	2.74	0 00:17:03
10	Sub-CB-22	0.14	0.7000	0.93	0.65	0.09	1.10	0 00:05:00
11	Sub-CB-24	0.27	0.7000	0.93	0.65	0.18	2.11	0 00:05:01
12	Sub-CB-25	0.51	0.7000	1.23	0.86	0.44	3.15	0 00:08:15
13	Sub-CB-26	0.49	0.7000	1.72	1.21	0.59	2.25	0 00:15:52
14	Sub-CB-27	0.10	0.7000	1.05	0.73	0.07	0.69	0 00:06:07
15	Sub-CB-28	0.67	0.7000	1.67	1.17	0.78	3.12	0 00:15:04
16	Sub-CB-29	0.15	0.7000	0.93	0.65	0.10	1.15	0 00:05:00
17	Sub-CB-3	0.14	0.7000	0.93	0.65	0.09	1.10	0 00:05:00
18	Sub-CB-31	0.17	0.7000	0.93	0.65	0.11	1.36	0 00:05:00
19	Sub-CB-32	0.13	0.7000	0.93	0.65	0.08	1.01	0 00:05:00
20	Sub-CB-35	0.10	0.7000	0.93	0.65	0.07	0.78	0 00:05:00
21	Sub-CB-36	0.58	0.7000	1.65	1.16	0.67	2.76	0 00:14:42
22	Sub-CB-38	0.24	0.7000	0.99	0.70	0.17	1.77	0 00:05:43
23	Sub-CB-39	1.39	0.7000	1.93	1.35	1.87	5.86	0 00:19:10
24	Sub-CB-43	0.71	0.7000	1.18	0.83	0.59	4.49	0 00:07:53
25	Sub-CB-44	0.72	0.7000	1.22	0.85	0.61	4.43	0 00:08:24
26	Sub-CB-6	0.16	0.7000	0.93	0.65	0.11	1.29	0 00:05:00
27	Sub-CB-7	0.04	0.7000	0.93	0.65	0.03	0.32	0 00:05:00
28	Sub-CB-9	0.36	0.7000	0.93	0.65	0.24	2.82	0 00:05:00
29	Sub-FES-2	1.58	0.5600	1.22	0.69	1.09	7.82	0 00:08:19
30	SUB-PIPE-35	0.36	0.7200	0.93	0.67	0.24	2.90	0 00:05:00
31	SUB-PIPE-36	1.26	0.7200	1.38	0.99	1.25	7.16	0 00:10:33

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft ²)	Peak Inflow (cfs)	Max HGL Elevation (ft)	Max Surcharge Depth (ft)	Min Freeboard (ft)
1	FES-2	Junction	466.60	469.78	466.60	469.78	0.00	23.00	468.51	0.00	1.27
2	IN-PIPE-35	Junction	462.75	464.00	462.75	464.00	0.00	2.90	463.36	0.00	0.89
3	IN-PIPE36	Junction	441.30	442.80	441.30	442.80	0.00	7.15	442.59	0.00	0.29
4	JB-14	Junction	529.50	534.76	529.50	535.50	0.00	9.58	530.09	0.00	4.67
5	JB-23	Junction	515.30	519.44	515.30	519.20	10.00	3.04	515.62	0.00	3.82
6	OFFSITE-1	Outfall	540.30					0.20	540.37		
7	OFFSITE-2	Outfall	532.10					0.03	532.13		
8	OFFSITE-25	Outfall	464.82					0.00	464.82		
9	OFFSITE-26	Outfall	464.82					0.82	464.96		
10	OU-PIPE-36	Outfall	441.00					7.13	441.93		
11	Out-FES-1	Outfall	463.00					26.81	463.73		
12	Out-FES-11	Outfall	492.00					22.96	492.66		
13	Out-FES-17	Outfall	505.00					3.27	505.31		
14	Out-FES-21	Outfall	499.00					5.35	499.40		
15	Out-FES-3	Outfall	538.50					2.10	538.78		
16	Out-FES-34	Outfall	484.31					7.59	485.07		
17	Out-FES-8	Outfall	482.52					2.76	483.02		
18	OUT-PIPE-35	Outfall	462.25					2.89	462.76		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inlet Depth (ft)
1	SDPIPE-1	Pipe	CB-2	Out-FES-1	35.55	465.94	463.00	8.2700	36.000	0.0120	26.81	207.79	0.13	14.35	0.93	
2	SDPIPE-10	Pipe	JB-14	CB-13	256.10	529.50	512.58	6.6100	18.000	0.0120	9.58	29.25	0.33	7.38	1.05	
3	SDPIPE-11	Pipe	CB-15	JB-14	67.57	530.20	529.50	1.0400	18.000	0.0120	9.58	11.59	0.83	7.85	0.98	
4	SDPIPE-12	Pipe	CB-16	CB-15	33.01	530.53	530.20	1.0000	18.000	0.0130	1.15	10.49	0.11	1.86	1.21	
5	SDPIPE-13	Pipe	CB-18	Out-FES-17	130.50	517.50	505.00	9.5800	18.000	0.0120	3.27	35.22	0.09	11.98	0.32	
6	SDPIPE-14	Pipe	CB-19	CB-18	39.55	517.99	517.50	1.2500	18.000	0.0130	3.27	11.74	0.28	6.32	0.50	
7	SDPIPE-15	Pipe	CB-20	CB-7	64.04	468.11	467.47	1.0000	18.000	0.0130	2.60	10.50	0.25	4.07	0.59	
8	SDPIPE-16	Pipe	CB-22	Out-FES-21	23.51	501.10	499.00	8.9300	18.000	0.0120	5.35	34.01	0.16	10.86	0.48	
9	SDPIPE-17	Pipe	JB-23	CB-22	194.21	515.30	501.00	7.3600	18.000	0.0120	3.03	30.77	0.10	7.30	0.44	
10	SDPIPE-18	Pipe	CB-24	JB-23	49.41	517.78	515.30	5.0200	18.000	0.0130	1.56	23.53	0.07	6.31	0.30	
11	SDPIPE-19	Pipe	CB-25	JB-23	51.31	517.87	515.30	5.0100	18.000	0.0130	1.97	23.51	0.08	7.62	0.31	
12	SDPIPE-2	Pipe	CB-3	CB-2	35.82	466.30	465.94	1.0000	36.000	0.0130	23.32	66.70	0.35	6.93	1.44	
13	SDPIPE-20	Pipe	CB-26	CB-22	33.00	501.43	501.10	1.0000	18.000	0.0120	2.21	11.38	0.19	4.82	0.56	
14	SDPIPE-21	Pipe	CB-27	CB-15	239.80	538.50	530.20	3.4600	18.000	0.0120	3.09	21.17	0.15	4.42	0.86	
15	SDPIPE-22	Pipe	CB-28	CB-27	57.68	542.14	538.50	6.3100	18.000	0.0130	3.11	26.39	0.12	8.69	0.38	
16	SDPIPE-23	Pipe	CB-29	CB-28	44.75	542.59	542.14	1.0100	18.000	0.0130	1.10	10.53	0.10	3.70	0.34	
17	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.97	14.89	0.07	4.20	0.28	
18	SDPIPE-27	Pipe	CB-35	Out-FES-34	182.53	487.50	484.31	1.7500	18.000	0.0120	7.59	15.03	0.50	7.93	0.80	
19	SDPIPE-28	Pipe	CB-36	CB-35	33.55	487.84	487.50	1.0000	18.000	0.0130	1.82	10.50	0.17	2.86	0.69	
20	SDPIPE-29	Pipe	CB-38	CB-35	167.22	505.00	487.50	10.4700	18.000	0.0120	6.15	36.81	0.17	8.74	0.63	
21	SDPIPE-3	Pipe	FES-2	CB-3	30.36	466.60	466.30	1.0000	36.000	0.0120	22.99	71.83	0.32	7.93	1.78	
22	SDPIPE-30	Pipe	CB-39	CB-38	66.71	510.34	505.00	8.0000	18.000	0.0130	6.15	29.71	0.21	12.56	0.48	
23	SDPIPE-32	Pipe	CB-31	Out-FES-3	96.89	544.50	538.50	6.1900	18.000	0.0120	2.10	28.32	0.07	8.96	0.29	
24	SDPIPE-33	Pipe	CB-43	CB-13	77.61	514.12	512.58	1.9800	18.000	0.0150	4.04	12.82	0.31	4.01	1.25	
25	SDPIPE-34	Pipe	Inlet-CB-44	CB-13	147.34	516.28	512.58	2.5100	18.000	0.0150	3.17	14.43	0.22	3.76	0.99	
26	SDPIPE-4	Pipe	CB-7	CB-2	71.93	467.47	466.75	1.0000	18.000	0.0120	2.85	11.38	0.25	4.84	0.55	
27	SDPIPE-5	Pipe	CB-6	CB-7	33.00	467.80	467.47	1.0000	18.000	0.0130	0.80	10.50	0.08	2.15	0.42	
28	SDPIPE-6	Pipe	CB-9	Out-FES-8	67.57	483.19	482.52	1.0000	18.000	0.0120	2.76	11.37	0.24	4.78	0.54	

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Inflow Total Depth (ft)
46	L-SDPIPE-27	Channel	CB-35	CB-3	245.69	494.00	476.28	7.2100	3.960	0.0150	0.00	6.79	0.00	0.00	0.01	
47	L-SDPIPE-28	Channel	CB-36	CB-2	228.18	493.47	476.67	7.3600	3.960	0.0150	1.02	6.86	0.15	4.13	0.15	
48	L-SDPIPE-29	Channel	CB-38	CB-35	172.07	510.72	494.00	9.7200	3.960	0.0150	0.33	7.88	0.04	3.21	0.07	
49	L-SDPIPE-32	Channel	CB-31	OFFSITE-1	98.13	549.76	540.30	9.6400	6.000	0.0150	0.20	28.64	0.01	2.24	0.07	
50	L-SDPIPE-33	Channel	CB-43	CB-13	78.91	518.02	517.01	1.2800	3.960	0.0320	0.36	2.86	0.13	0.30	0.24	
51	L-SDPIPE-34	Channel	Inlet-CB-44	CB-13	149.42	521.36	517.01	2.9100	3.960	0.0320	1.20	4.31	0.28	0.81	0.27	
52	L-SDPIPE-4	Channel	CB-7	OFFSITE-25	129.78	475.09	464.82	7.9100	3.960	0.0320	0.00	7.11	0.00	0.00	0.00	
53	L-SDPIPE-6	Channel	CB-9	CB-6	214.12	489.62	475.09	6.7900	3.960	0.0150	0.84	6.59	0.13	0.92	0.22	
54	L-SDPIPE-7	Channel	CB-10	CB-20	216.57	487.59	471.49	7.4300	3.960	0.0150	0.76	6.90	0.11	1.80	0.14	

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 C Spreading during
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	483.62	N/A	3.18	2.10	1.08	66.02	8.50	
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	512.25	10.00	2.48	N/A	N/A	N/A	8.50	
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	512.58	10.00	7.94	N/A	N/A	N/A	8.50	
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	530.20	10.00	6.62	N/A	N/A	N/A	8.50	
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	530.53	10.00	3.28	N/A	N/A	N/A	8.50	
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	517.50	N/A	0.96	0.96	0.00	100.00	8.50	
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	517.99	N/A	5.01	3.27	1.73	65.39	8.50	
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	465.94	N/A	2.77	2.61	0.16	94.09	8.50	
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	468.11	N/A	3.39	2.18	1.21	64.21	8.50	
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	501.10	N/A	1.09	1.05	0.04	95.92	8.50	
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	517.77	N/A	2.10	1.57	0.54	74.48	8.50	
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	515.81	N/A	3.15	1.97	1.18	62.63	8.50	
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	501.43	N/A	2.37	1.77	0.60	74.78	8.50	
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	538.50	N/A	0.69	0.69	0.00	100.00	8.50	
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	542.20	10.00	3.12	N/A	N/A	N/A	8.50	
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	542.65	N/A	1.15	1.11	0.03	97.01	8.50	
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	466.30	N/A	1.10	1.10	0.00	100.00	8.50	
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	1.35	1.16	0.19	85.78	8.50	
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	546.00	N/A	1.01	0.98	0.03	96.82	8.50	
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	487.50	N/A	0.98	0.93	0.05	95.37	8.50	
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	487.84	N/A	2.76	1.83	0.93	66.42	8.50	
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	505.00	N/A	1.77	1.41	0.36	79.52	8.50	
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	510.34	10.00	6.29	N/A	N/A	N/A	8.50	
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	514.12	N/A	4.49	4.11	0.38	91.44	8.50	
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	467.80	10.00	2.12	N/A	N/A	N/A	8.50	
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	467.47	N/A	0.32	0.32	0.00	100.00	8.50	
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	483.19	N/A	2.82	1.96	0.86	69.56	8.50	
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	516.28	N/A	4.42	3.20	1.23	72.29	8.50	

Subbasin Hydrology

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.58
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8}) / ((P^{0.5}) * (S_f^{0.4})))$$

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)

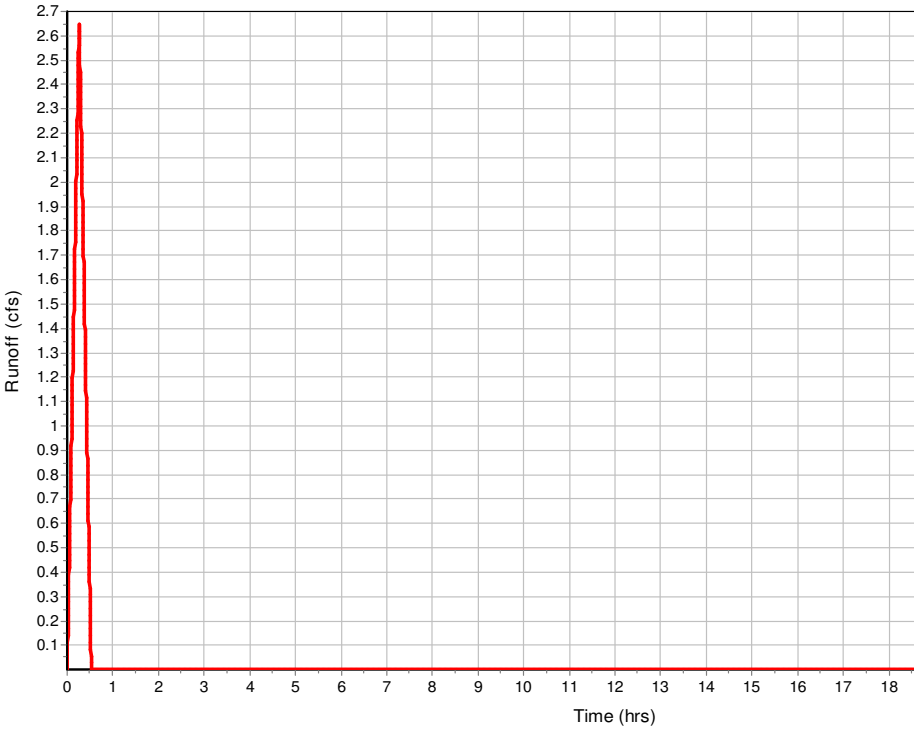
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99996647	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	229.3185963	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.69	0	0
Total TOC (min)	15.90		

Subbasin Runoff Results

Total Rainfall (in)	1.72
Total Runoff (in)	1.21
Peak Runoff (cfs)	2.65
Rainfall Intensity	6.529
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	00:15:54

Subbasin : Sub-CB-10

Runoff Hydrograph



Subbasin : Sub-CB-12

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

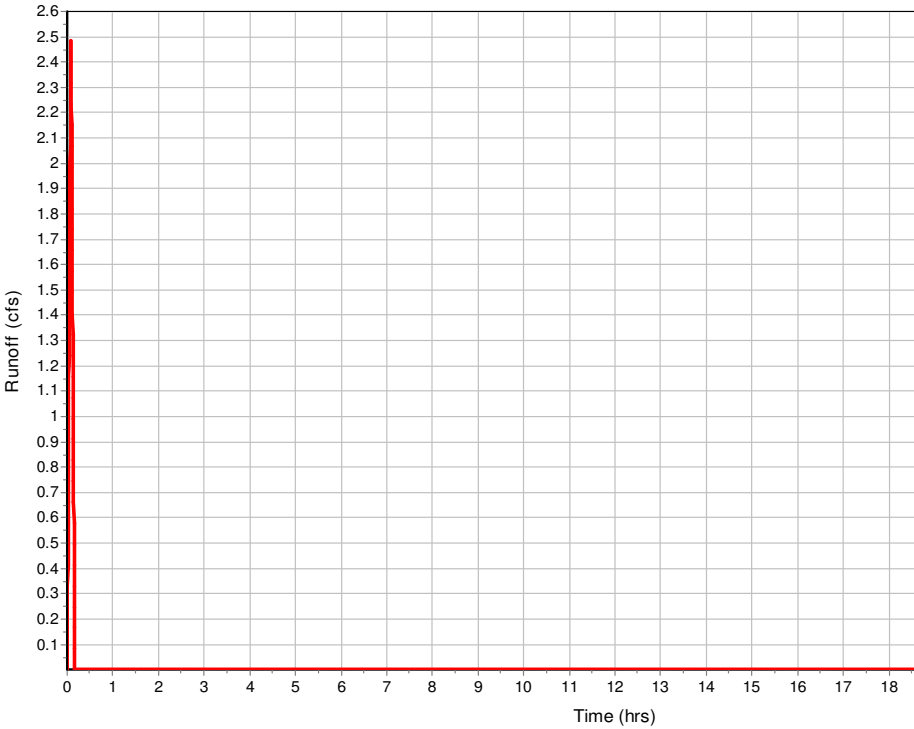
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	219.5273657	0	0
Slope (%) :	1.99	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.28	0	0
Total TOC (min)	4.14		

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 2.48
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:04:08

Runoff Hydrograph



Subbasin : Sub-CB-13

Input Data

Area (ac) 1.03
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.03	-	0.7
Composite Area & Weighted Runoff Coeff.	1.03		0.7

Time of Concentration

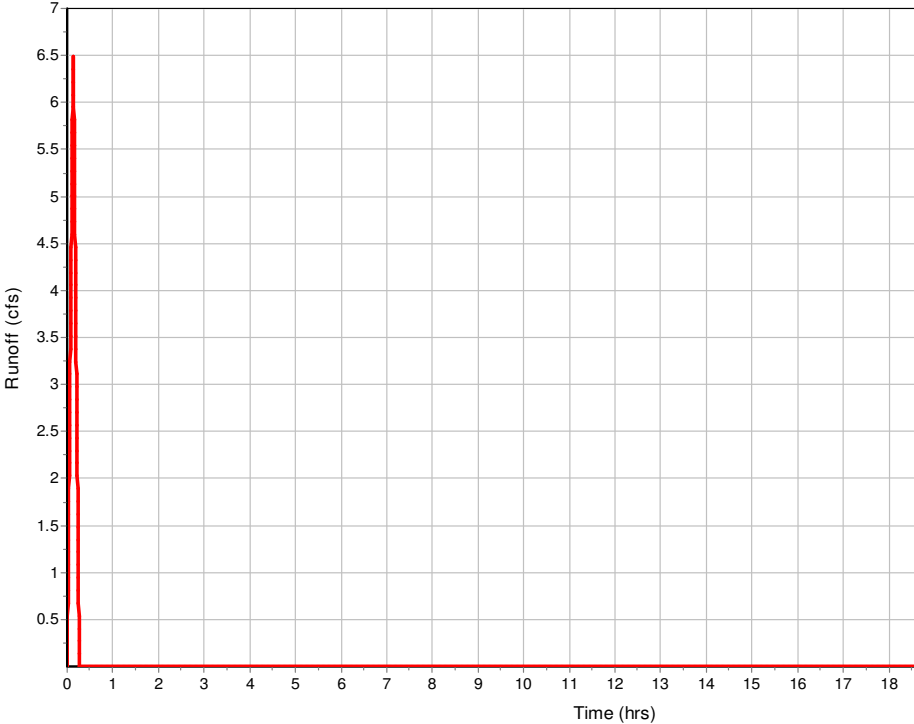
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	11.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.27	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	93	71.4	0
Slope (%) :	11.5	1.99	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.47	2.87	0
Computed Flow Time (min) :	0.28	0.41	0
Total TOC (min)	7.97		

Subbasin Runoff Results

Total Rainfall (in) 1.2
 Total Runoff (in) 0.84
 Peak Runoff (cfs) 6.49
 Rainfall Intensity 9
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:07:58

Runoff Hydrograph



Subbasin : Sub-CB-15

Input Data

Area (ac) 1.21
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.21	-	0.7
Composite Area & Weighted Runoff Coeff.	1.21		0.7

Time of Concentration

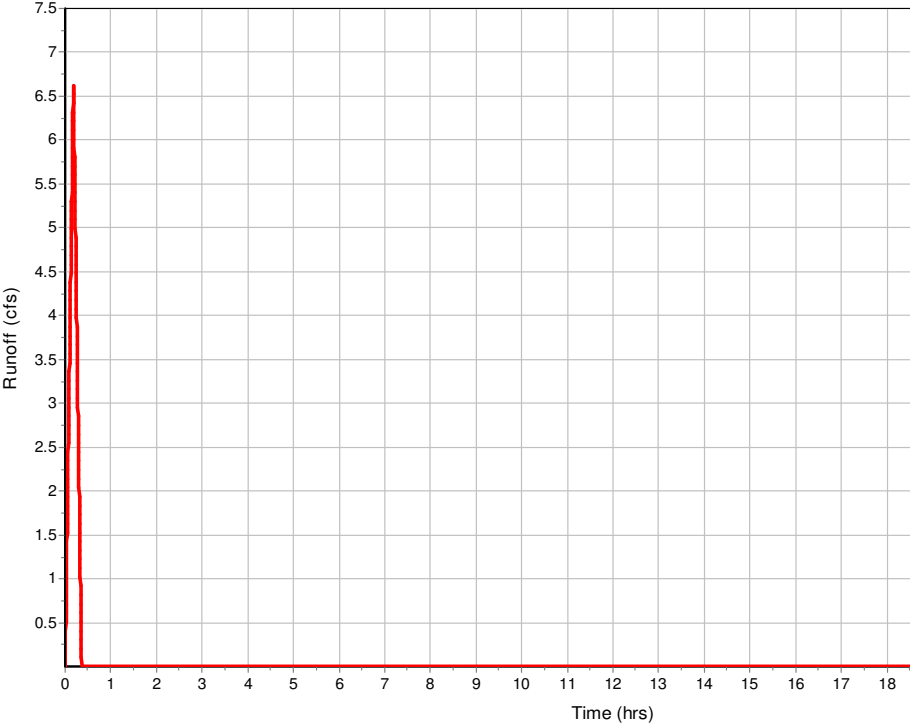
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	100	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	10.14	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	12.98144373	156.302
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.09	0.53	0
Total TOC (min)	10.77		

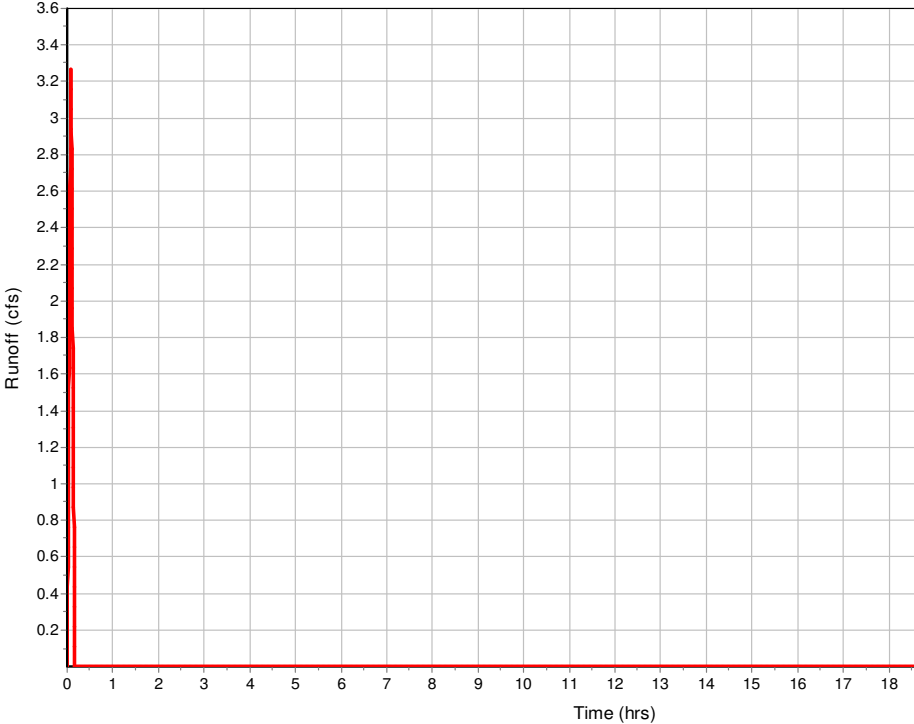
Subbasin Runoff Results

Total Rainfall (in) 1.41
 Total Runoff (in) 0.99
 Peak Runoff (cfs) 6.62
 Rainfall Intensity 7.815
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:10:46

Runoff Hydrograph



Runoff Hydrograph



Subbasin : Sub-CB-18

Input Data

Area (ac) 0.12
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

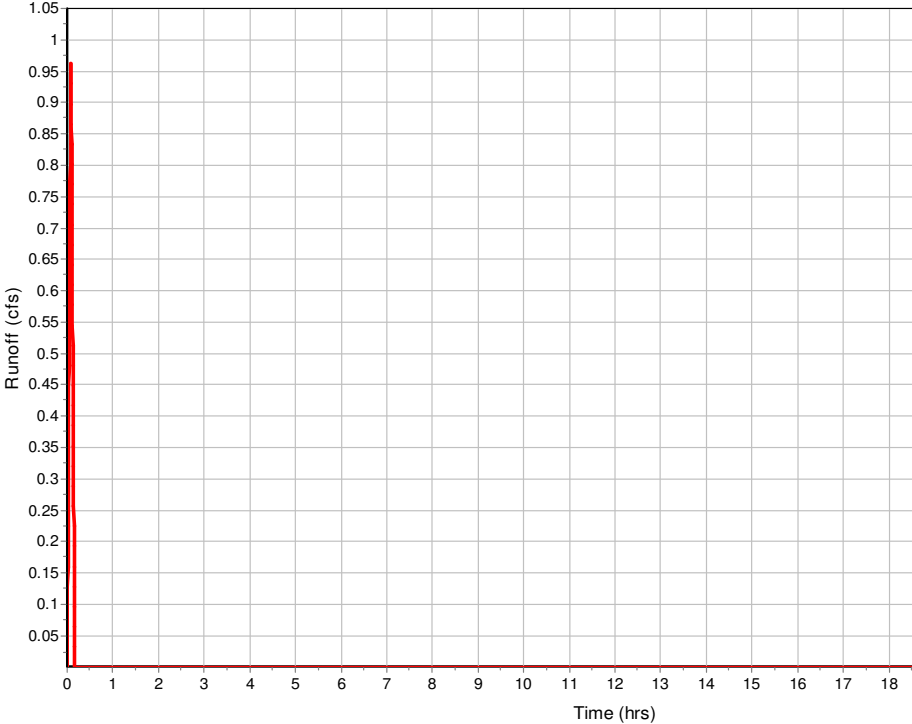
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.10752092	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.88	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	71.43477489	102.308	0
Slope (%) :	11.86	2.45	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	7	3.18	0
Computed Flow Time (min) :	0.17	0.54	0
Total TOC (min)3.59			

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 0.96
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:35

Runoff Hydrograph



Subbasin : Sub-CB-19

Input Data

Area (ac) 1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1	-	0.7
Composite Area & Weighted Runoff Coeff.	1		0.7

Time of Concentration

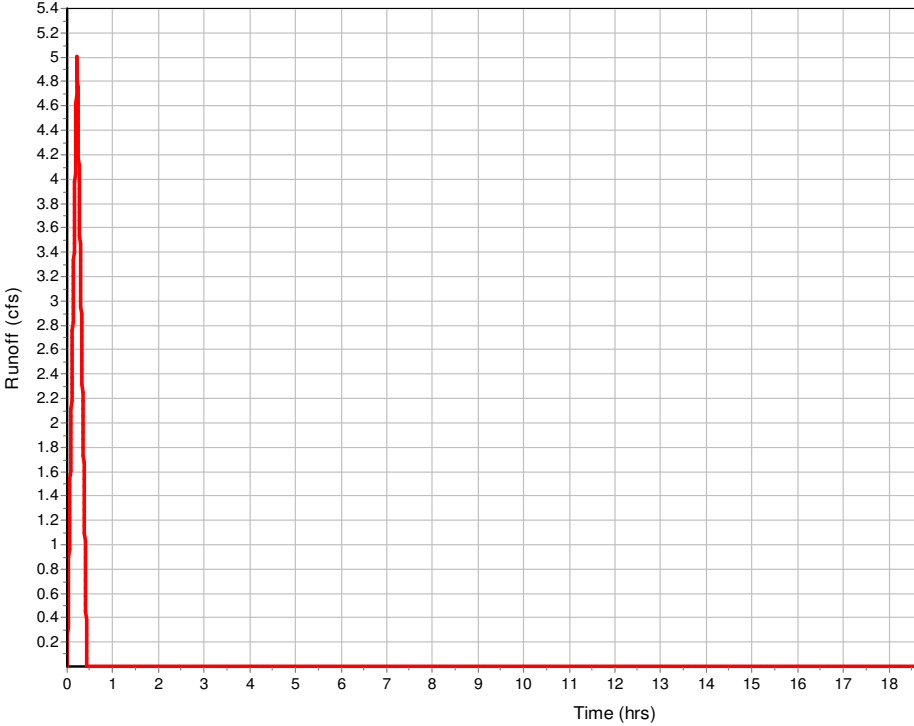
Sheet Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100.0031436	0	0
Slope (%) :	3.4	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.14	0	0
Computed Flow Time (min) :	11.83	0	0

Shallow Concentrated Flow Computations	Subarea	Subarea	Subarea
	A	B	C
Flow Length (ft) :	6.07922878	278.905	79.9642
Slope (%) :	2	11.86	2.45
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	7	3.18
Computed Flow Time (min) :	0.04	0.66	0.42
Total TOC (min)	12.96		

Subbasin Runoff Results

Total Rainfall (in) 1.55
 Total Runoff (in) 1.09
 Peak Runoff (cfs) 5.01
 Rainfall Intensity 7.165
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:12:58

Runoff Hydrograph



Subbasin : Sub-CB-2

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
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

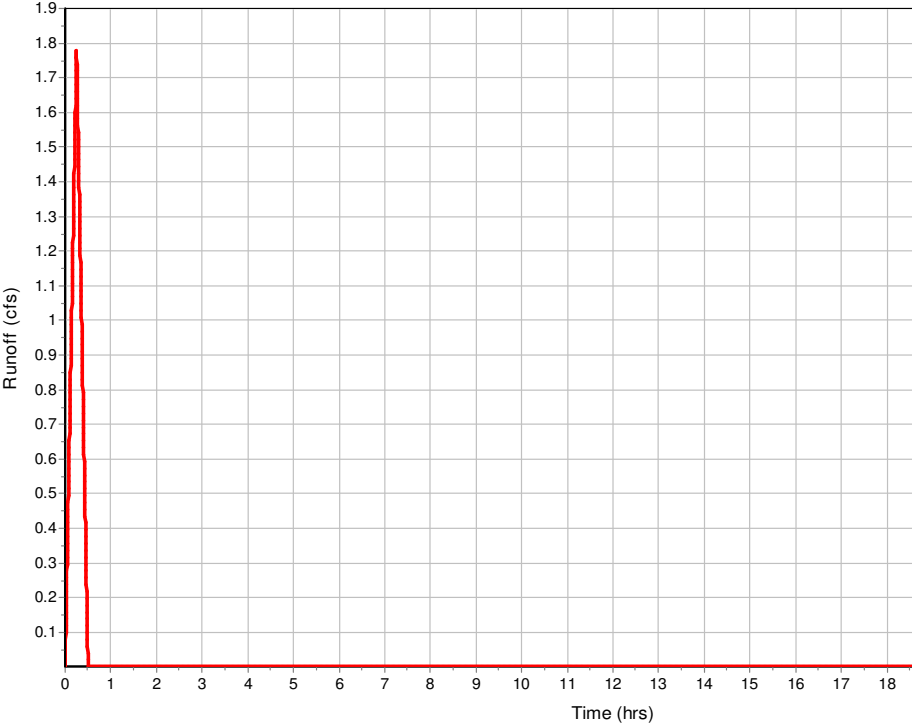
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	175.3484305	45.5292
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.44	0.4	0
Total TOC (min)	14.99		

Subbasin Runoff Results

Total Rainfall (in) 1.67
 Total Runoff (in) 1.17
 Peak Runoff (cfs) 1.78
 Rainfall Intensity 6.692
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:14:59

Subbasin : Sub-CB-2

Runoff Hydrograph



Subbasin : Sub-CB-20

Input Data

Area (ac) 0.62
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.7
Composite Area & Weighted Runoff Coeff.	0.62		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	99.99258294	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0

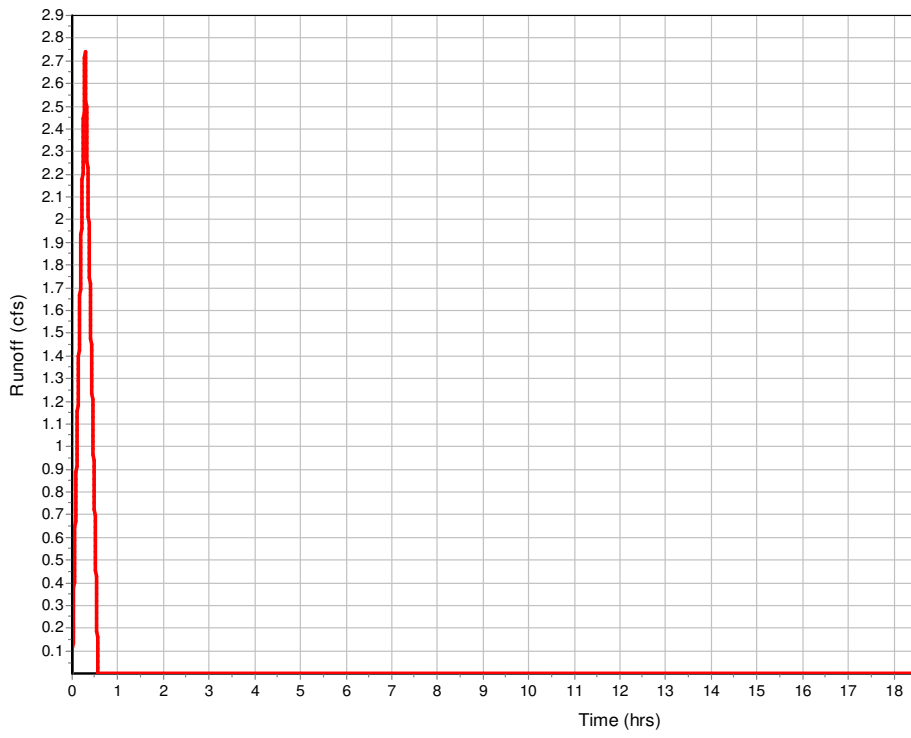
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	3.00743724	208.662
Slope (%) :	2	7.49	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	5.56	0
Computed Flow Time (min) :	0.02	0.63	0
Total TOC (min)	17.06		

Subbasin Runoff Results

Total Rainfall (in) 1.8
 Total Runoff (in) 1.26
 Peak Runoff (cfs) 2.74
 Rainfall Intensity 6.34
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 000:17:04

Subbasin : Sub-CB-20

Runoff Hydrograph



Subbasin : Sub-CB-22

Input Data

Area (ac) 0.14
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

Time of Concentration

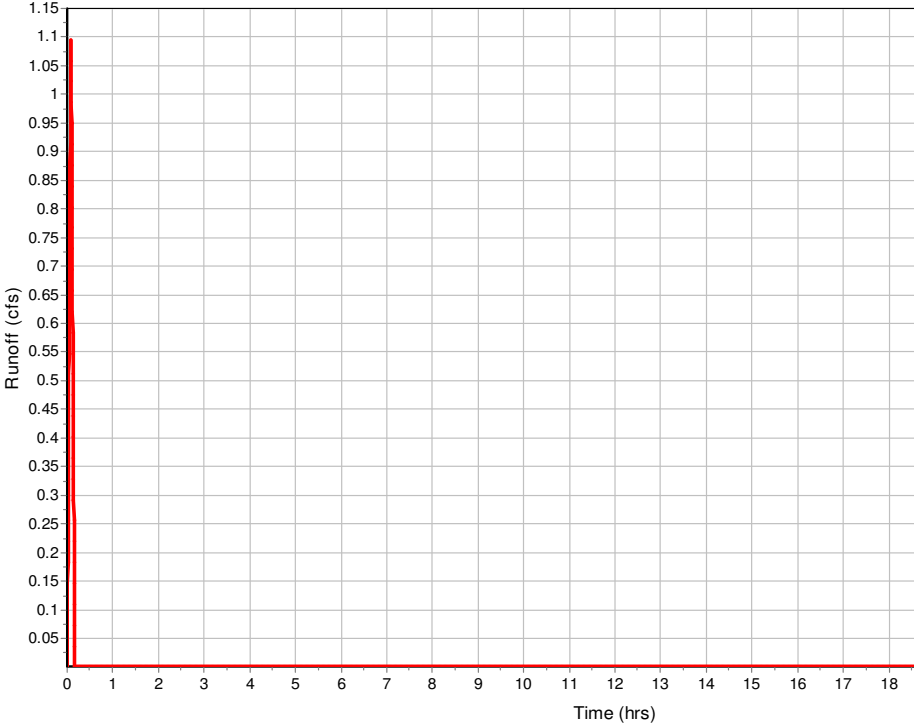
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
	Manning's Roughness :	0.3	0
Flow Length (ft) :	12.99981258	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
	Flow Length (ft) :	167.0428132	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.5	0	0
Total TOC (min)	3.36		

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 1.1
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 00:03:22

Runoff Hydrograph



Subbasin : Sub-CB-24

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

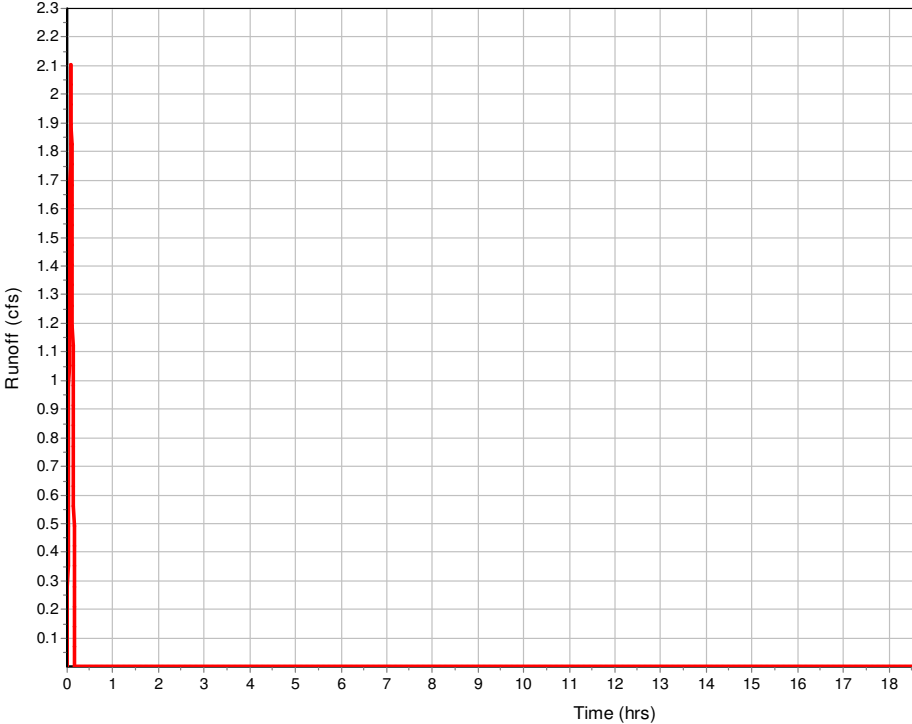
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	37.99958613	0	0
Slope (%) :	6.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	4.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	28.98355088	187.48	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.33	0.48	0
Total TOC (min)5.02			

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 2.11
 Rainfall Intensity 11.179
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:05:01

Runoff Hydrograph



Subbasin : Sub-CB-25

Input Data

Area (ac)	0.51
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.7
Composite Area & Weighted Runoff Coeff.	0.51		0.7

Time of Concentration

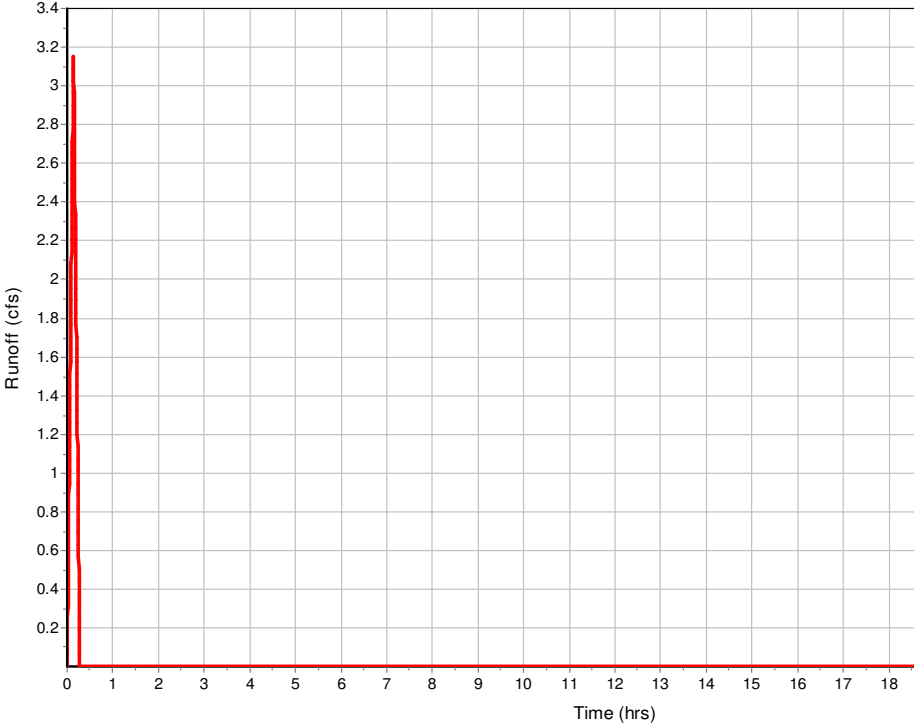
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99999586	0	0
Slope (%) :	7.25	0	0
2 yr, 24 hr Rainfall (in) :	4.32	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	7.56	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	16.12667612	203.96	0
Slope (%) :	0.51	10.41	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.45	6.56	0
Computed Flow Time (min) :	0.19	0.52	0
Total TOC (min)	8.26		

Subbasin Runoff Results

Total Rainfall (in)	1.23
Total Runoff (in)	0.86
Peak Runoff (cfs)	3.15
Rainfall Intensity	8.85
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:08:16

Runoff Hydrograph



Subbasin : Sub-CB-26

Input Data

Area (ac) 0.49
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.49	-	0.7
Composite Area & Weighted Runoff Coeff.	0.49		0.7

Time of Concentration

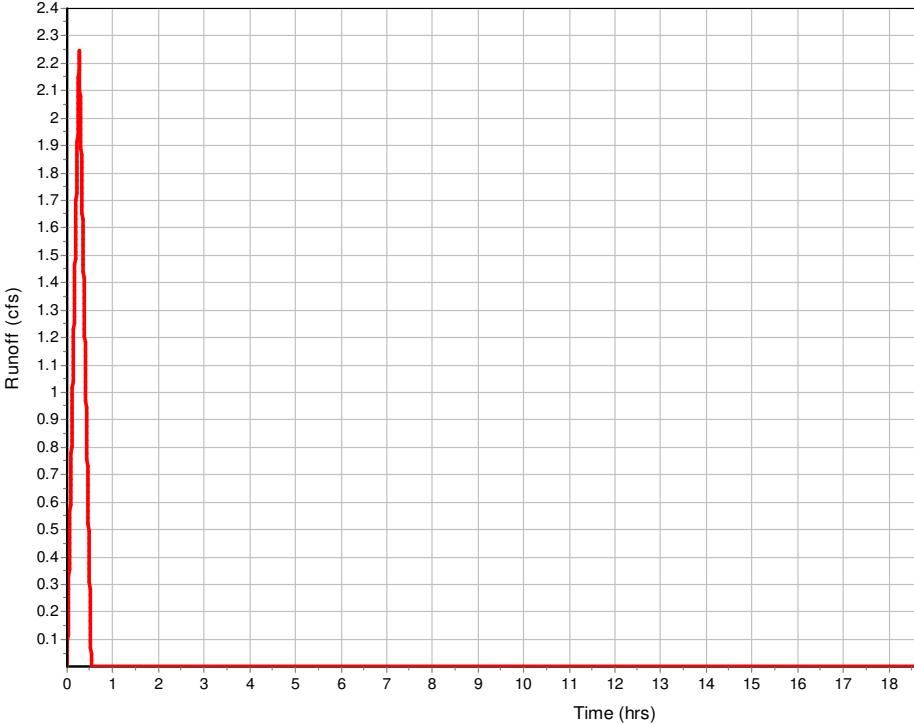
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.99998121	0	0
Slope (%) :	1.25	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	15.21	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	221.0918618	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.66	0	0
Total TOC (min)15.87			

Subbasin Runoff Results

Total Rainfall (in) 1.72
 Total Runoff (in) 1.21
 Peak Runoff (cfs) 2.25
 Rainfall Intensity 6.534
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:15:52

Runoff Hydrograph



Subbasin : Sub-CB-27

Input Data

Area (ac) 0.1
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

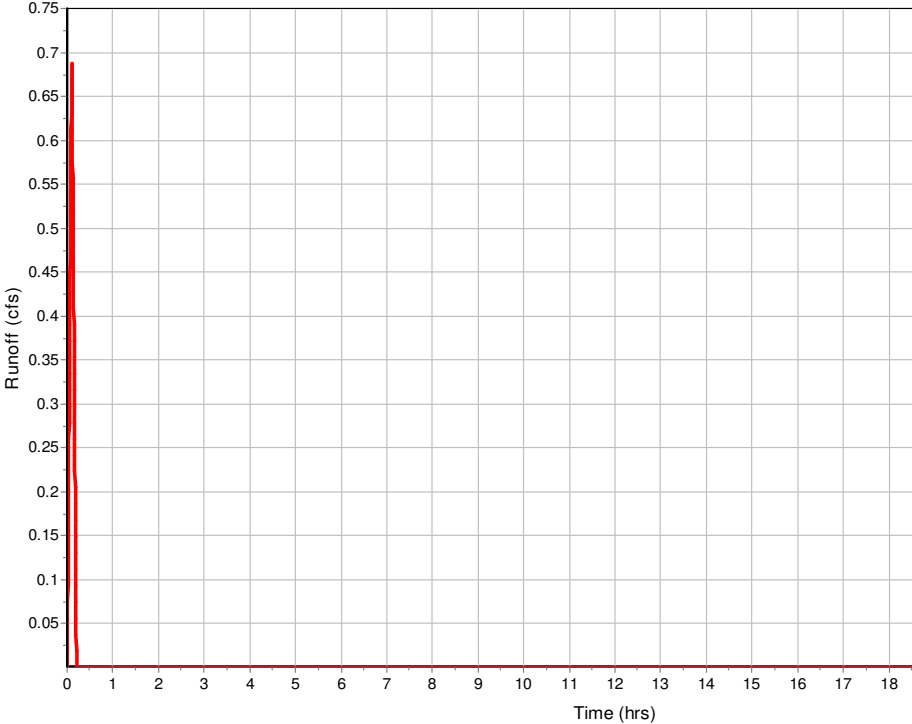
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	21.13547973	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	5.57	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	117.1502173	0	0
Slope (%) :	2.92	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.47	0	0
Computed Flow Time (min) :	0.56	0	0
Total TOC (min)6.13			

Subbasin Runoff Results

Total Rainfall (in) 1.05
 Total Runoff (in) 0.73
 Peak Runoff (cfs) 0.69
 Rainfall Intensity 10.179
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:06:08

Runoff Hydrograph



Subbasin : Sub-CB-28

Input Data

Area (ac)	0.67
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.67	-	0.7
Composite Area & Weighted Runoff Coeff.	0.67		0.7

Time of Concentration

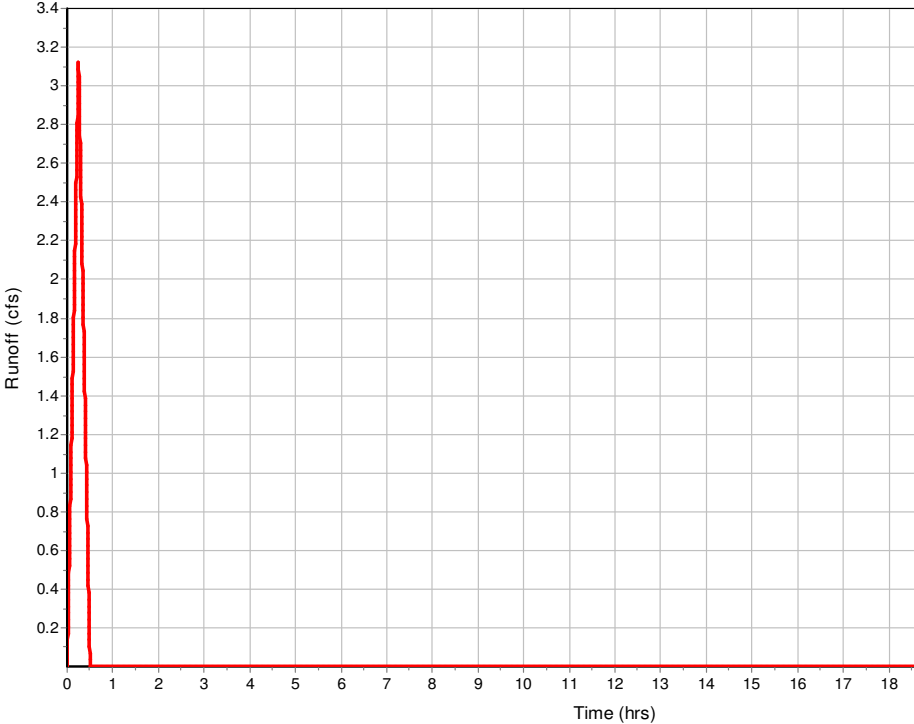
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	14.63	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	17.02372996	94.092	0
Slope (%) :	2	5.74	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	2.28	4.87	0
Computed Flow Time (min) :	0.12	0.32	0
Total TOC (min)	15.08		

Subbasin Runoff Results

Total Rainfall (in)	1.67
Total Runoff (in)	1.17
Peak Runoff (cfs)	3.12
Rainfall Intensity	6.675
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:15:05

Runoff Hydrograph



Subbasin : Sub-CB-29

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

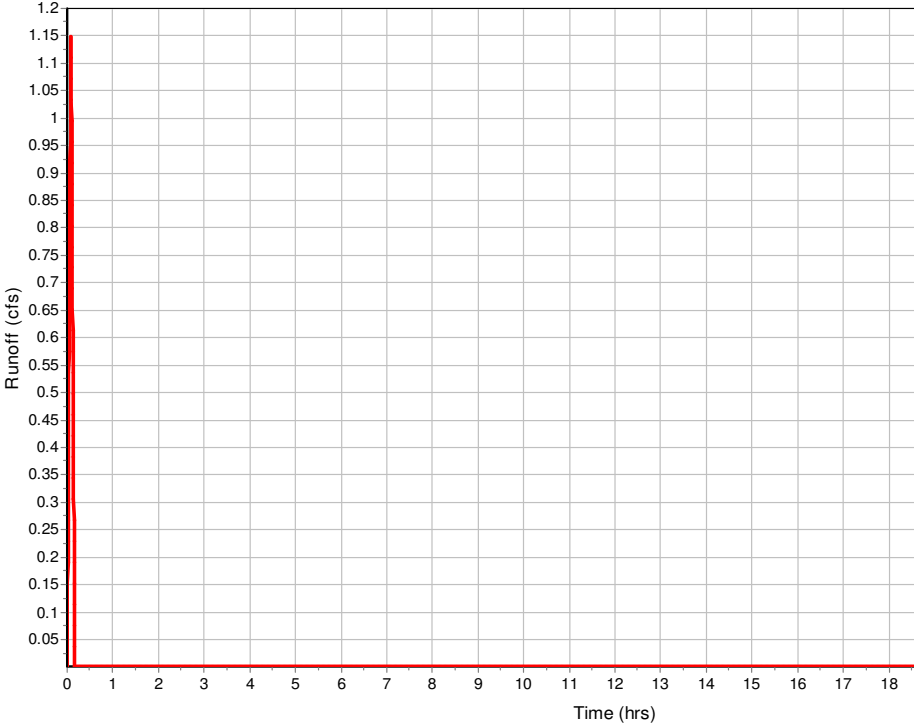
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	253.6223323	0	0
Slope (%) :	5.74	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.87	0	0
Total TOC (min)	3.73		

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 1.15
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:44

Runoff Hydrograph



Subbasin : Sub-CB-3

Input Data

Area (ac) 0.14
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.7
Composite Area & Weighted Runoff Coeff.	0.14		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

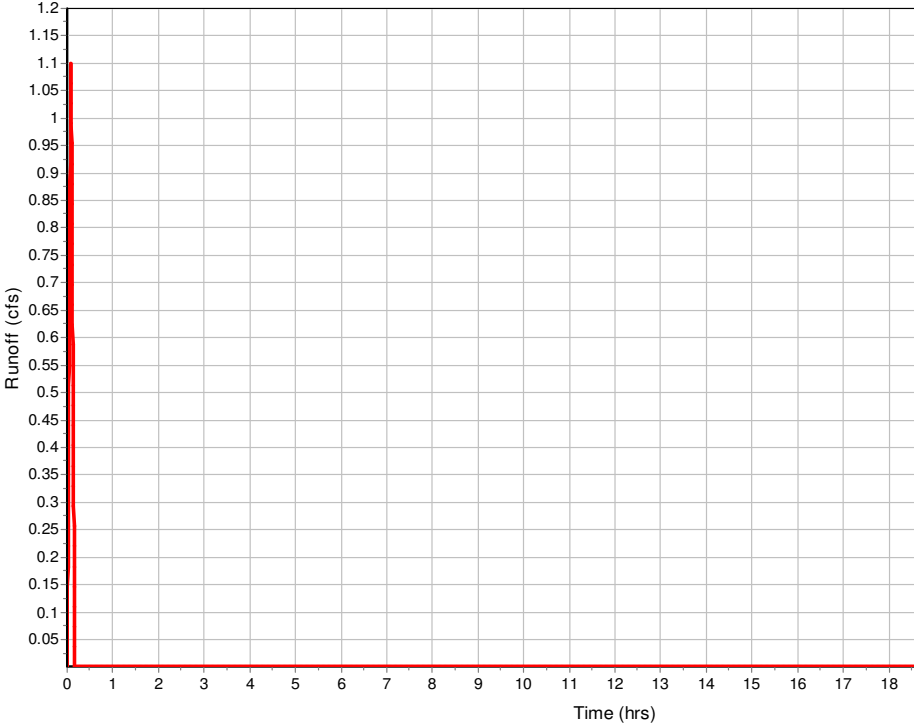
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	181.26423	58.411	0
Slope (%) :	10.46	0.85	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	1.87	0
Computed Flow Time (min) :	0.46	0.52	0
Total TOC (min)3.84			

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 1.1
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:50

Subbasin : Sub-CB-3

Runoff Hydrograph



Subbasin : Sub-CB-31

Input Data

Area (ac)	0.17
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.7
Composite Area & Weighted Runoff Coeff.	0.17		0.7

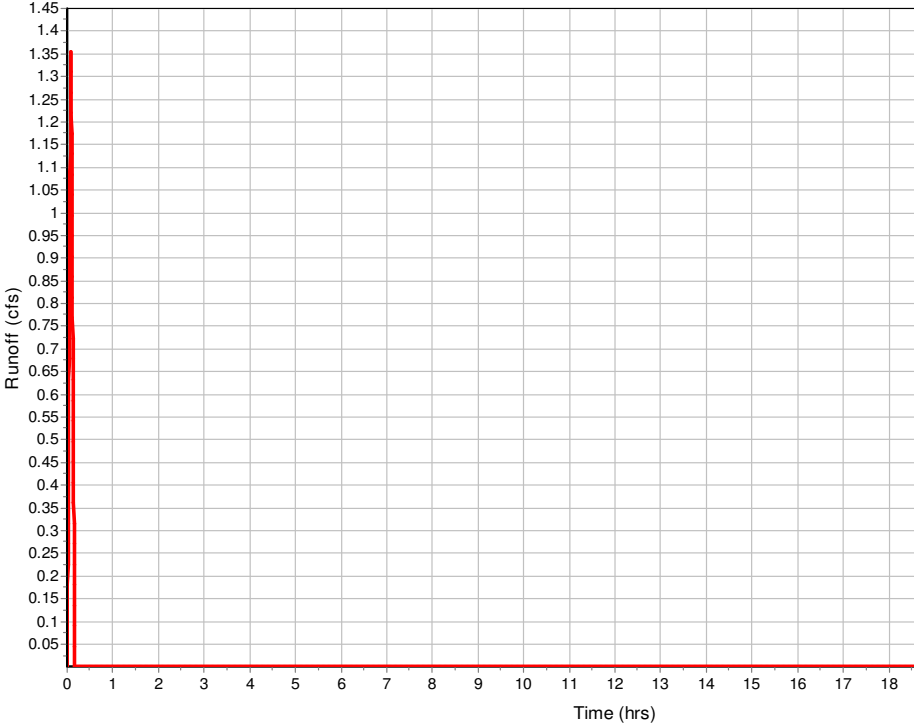
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	166.3763112	83.655	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.76	0.27	0
Total TOC (min)	3.90		

Subbasin Runoff Results

Total Rainfall (in)	0.93
Total Runoff (in)	0.65
Peak Runoff (cfs)	1.36
Rainfall Intensity	11.2
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:54

Runoff Hydrograph



Subbasin : Sub-CB-32

Input Data

Area (ac) 0.13
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.7
Composite Area & Weighted Runoff Coeff.	0.13		0.7

Time of Concentration

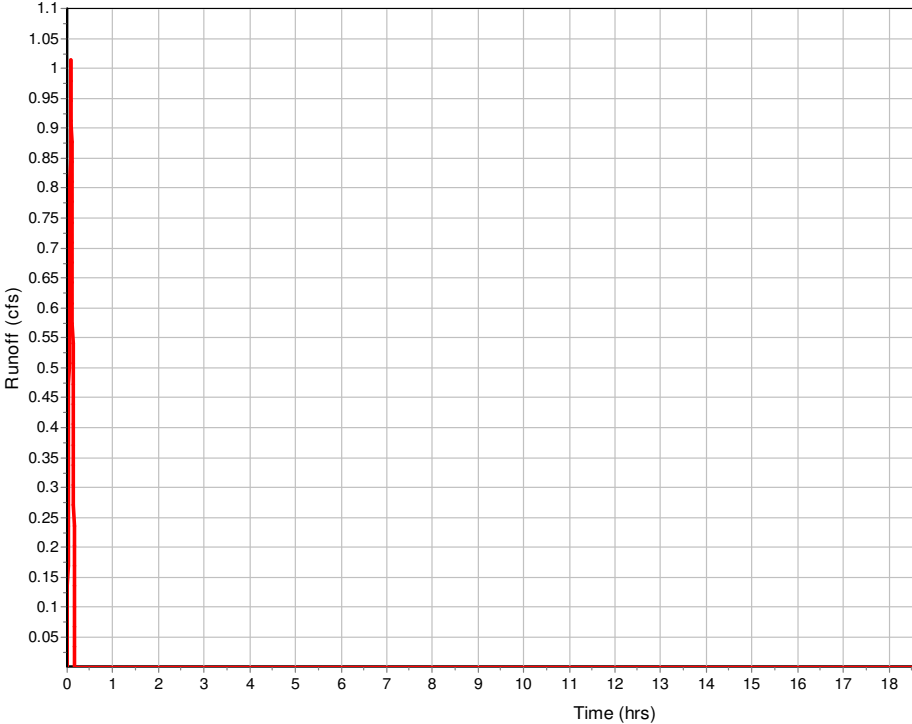
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	167.2624187	52.704	0
Slope (%) :	3.19	6.34	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.63	5.12	0
Computed Flow Time (min) :	0.77	0.17	0
Total TOC (min)3.80			

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 1.01
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:48

Runoff Hydrograph



Subbasin : Sub-CB-35

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.1	-	0.7
Composite Area & Weighted Runoff Coeff.	0.1		0.7

Time of Concentration

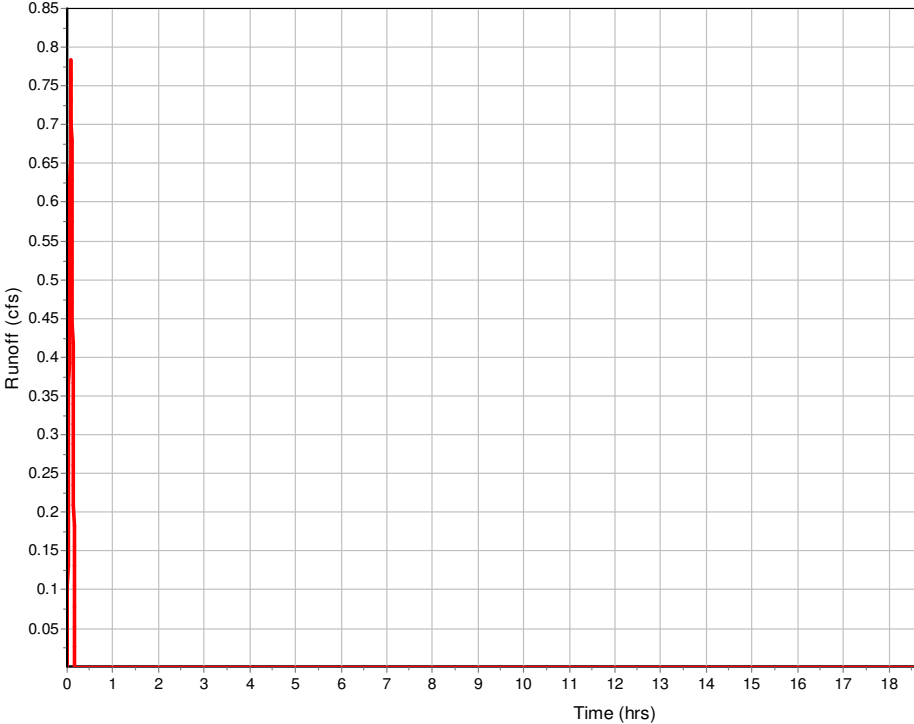
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	159.59	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.4	0	0
Total TOC (min)	3.27		

Subbasin Runoff Results

Total Rainfall (in)	0.93
Total Runoff (in)	0.65
Peak Runoff (cfs)	0.78
Rainfall Intensity	11.2
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:16

Runoff Hydrograph



Subbasin : Sub-CB-36

Input Data

Area (ac) 0.58
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.7
Composite Area & Weighted Runoff Coeff.	0.58		0.7

Time of Concentration

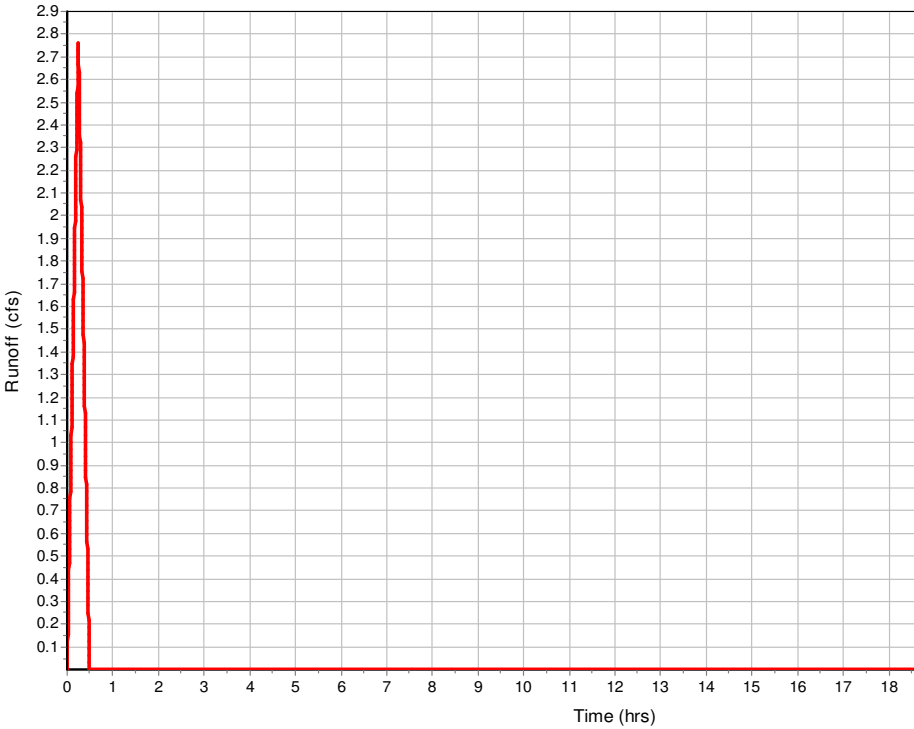
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	83	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	14.14	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	224.201193	0	0
Slope (%) :	10.46	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.57	0	0
Computed Flow Time (min) :	0.57	0	0
Total TOC (min)	14.71		

Subbasin Runoff Results

Total Rainfall (in) 1.65
 Total Runoff (in) 1.16
 Peak Runoff (cfs) 2.76
 Rainfall Intensity 6.752
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:14:43

Runoff Hydrograph



Subbasin : Sub-CB-38

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

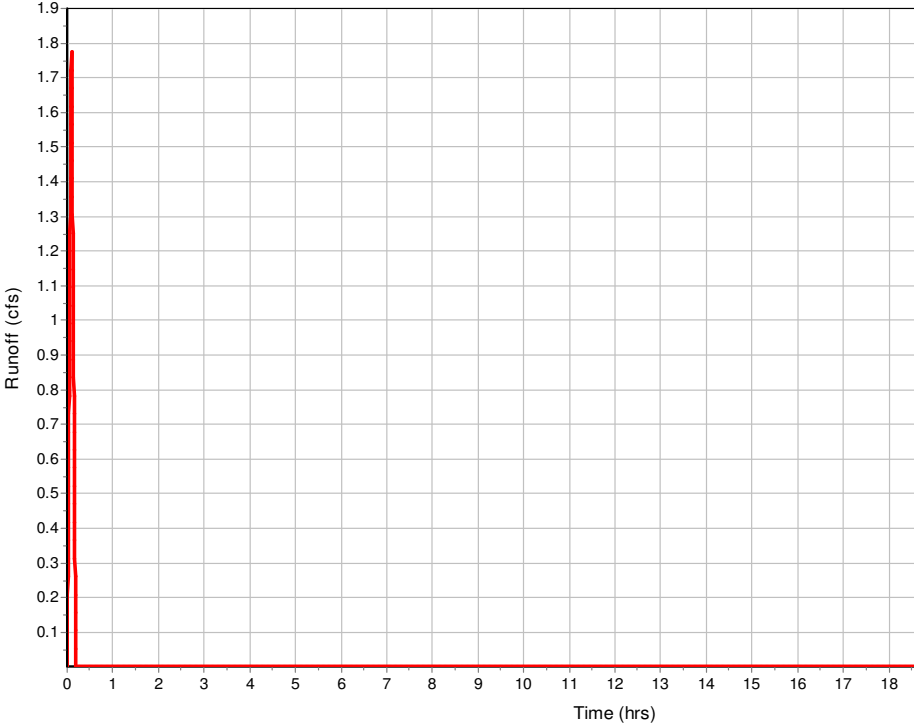
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13.00000002	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	214.8866153	184.11	0
Slope (%) :	2.45	0.75	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.18	1.76	0
Computed Flow Time (min) :	1.13	1.74	0
Total TOC (min)5.73			

Subbasin Runoff Results

Total Rainfall (in) 0.99
 Total Runoff (in) 0.7
 Peak Runoff (cfs) 1.77
 Rainfall Intensity 10.506
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:05:44

Runoff Hydrograph



Subbasin : Sub-CB-39

Input Data

Area (ac) 1.39
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.39	-	0.7
Composite Area & Weighted Runoff Coeff.	1.39		0.7

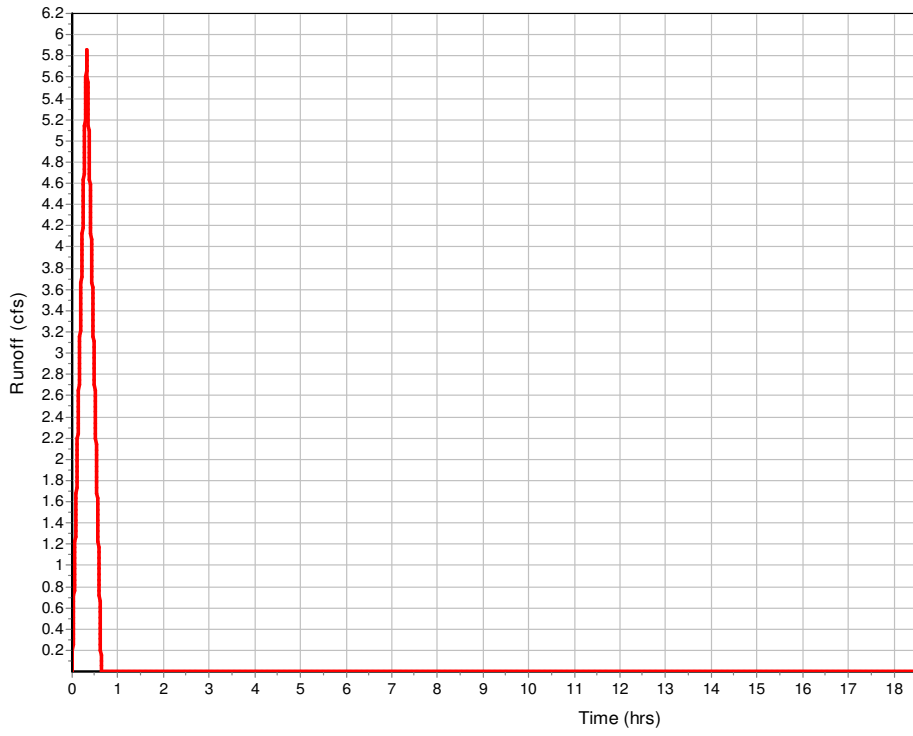
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	99.98923348	0	0
Slope (%) :	1.5	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	16.41	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	34.45719772	233.52	132.7
Slope (%) :	1.5	2.45	0.75
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	1.98	3.18	1.76
Computed Flow Time (min) :	0.29	1.22	1.26
Total TOC (min)	19.18		

Subbasin Runoff Results

Total Rainfall (in) 1.93
 Total Runoff (in) 1.35
 Peak Runoff (cfs) 5.86
 Rainfall Intensity 6.038
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:19:11

Runoff Hydrograph



Subbasin : Sub-CB-43

Input Data

Area (ac) 0.71
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.71	-	0.7
Composite Area & Weighted Runoff Coeff.	0.71		0.7

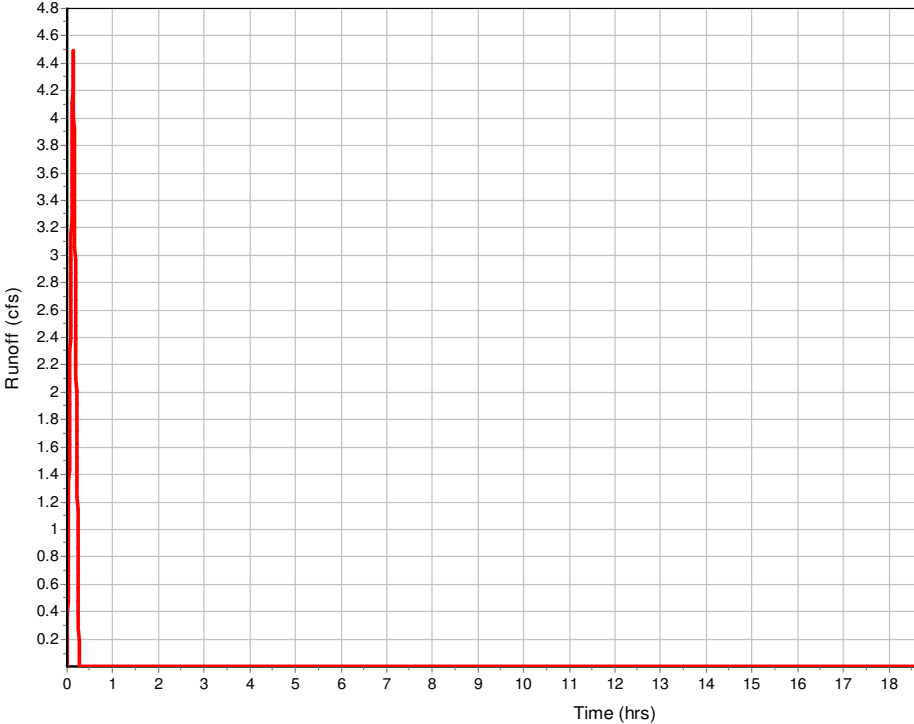
Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	93	77.84	0
Slope (%) :	10.75	1.99	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	5.29	2.87	0
Computed Flow Time (min) :	0.29	0.45	0
Total TOC (min)7.89			

Subbasin Runoff Results

Total Rainfall (in) 1.18
 Total Runoff (in) 0.83
 Peak Runoff (cfs) 4.49
 Rainfall Intensity 9.043
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:07:53

Runoff Hydrograph



Subbasin : Sub-CB-44

Input Data

Area (ac)	0.72
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.72	-	0.7
Composite Area & Weighted Runoff Coeff.	0.72		0.7

Time of Concentration

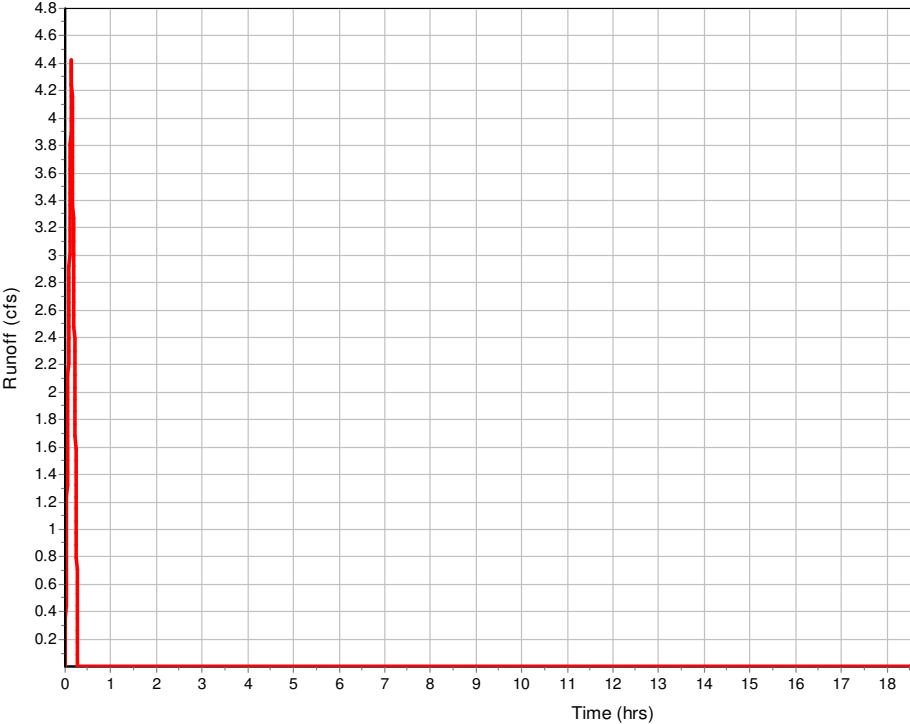
	Subarea A	Subarea B	Subarea C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	9	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	8.02	0	0
Shallow Concentrated Flow Computations			
Flow Length (ft) :	78.42	77.02	0
Slope (%) :	16.7	11.38	0
Surface Type :	Unpaved	Paved	Unpaved
Velocity (ft/sec) :	6.59	6.86	0
Computed Flow Time (min) :	0.2	0.19	0
Total TOC (min)	8.40		

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.85
Peak Runoff (cfs)	4.43
Rainfall Intensity	8.781
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:08:24

Subbasin : Sub-CB-44

Runoff Hydrograph



Subbasin : Sub-CB-6

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

	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	13	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

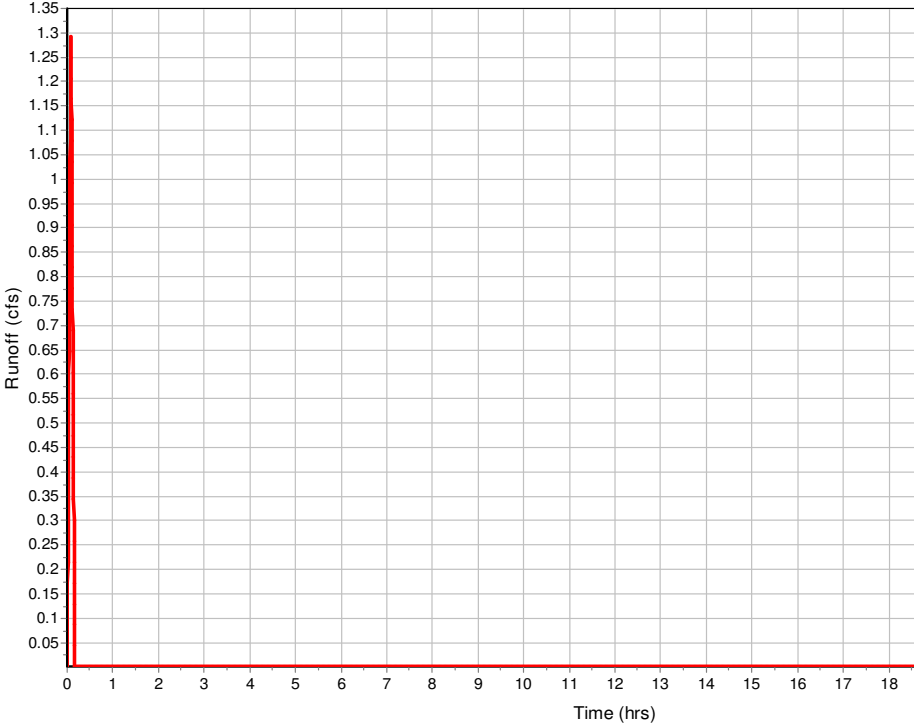
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	207.9606416	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.62	0	0
Total TOC (min)	3.48		

Subbasin Runoff Results

Total Rainfall (in)	0.93
Total Runoff (in)	0.65
Peak Runoff (cfs)	1.29
Rainfall Intensity	11.2
Weighted Runoff Coefficient	0.7
Time of Concentration (days hh:mm:ss)	0 00:03:29

Subbasin : Sub-CB-6

Runoff Hydrograph



Subbasin : Sub-CB-7

Input Data

Area (ac) 0.04
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.04	-	0.7
Composite Area & Weighted Runoff Coeff.	0.04		0.7

Time of Concentration

	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999999	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

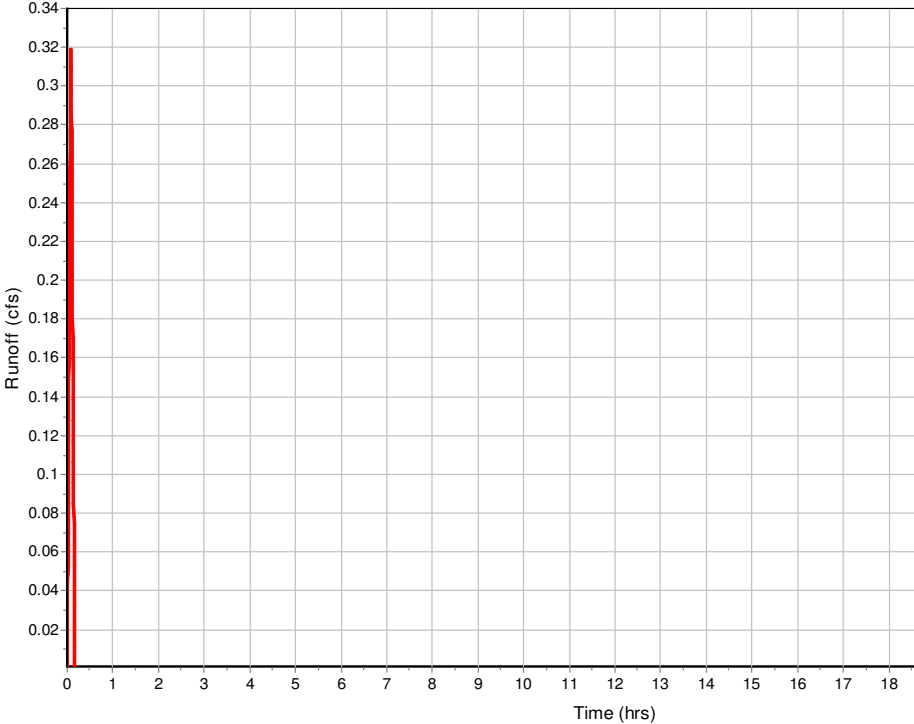
	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	68.39700153	0	0
Slope (%) :	0.85	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	1.87	0	0
Computed Flow Time (min) :	0.61	0	0
Total TOC (min)3.47			

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 0.32
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Subbasin : Sub-CB-7

Runoff Hydrograph



Subbasin : Sub-CB-9

Input Data

Area (ac) 0.36
 Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.12	-	0.7
Composite Area & Weighted Runoff Coeff.	0.12		0.7

Time of Concentration

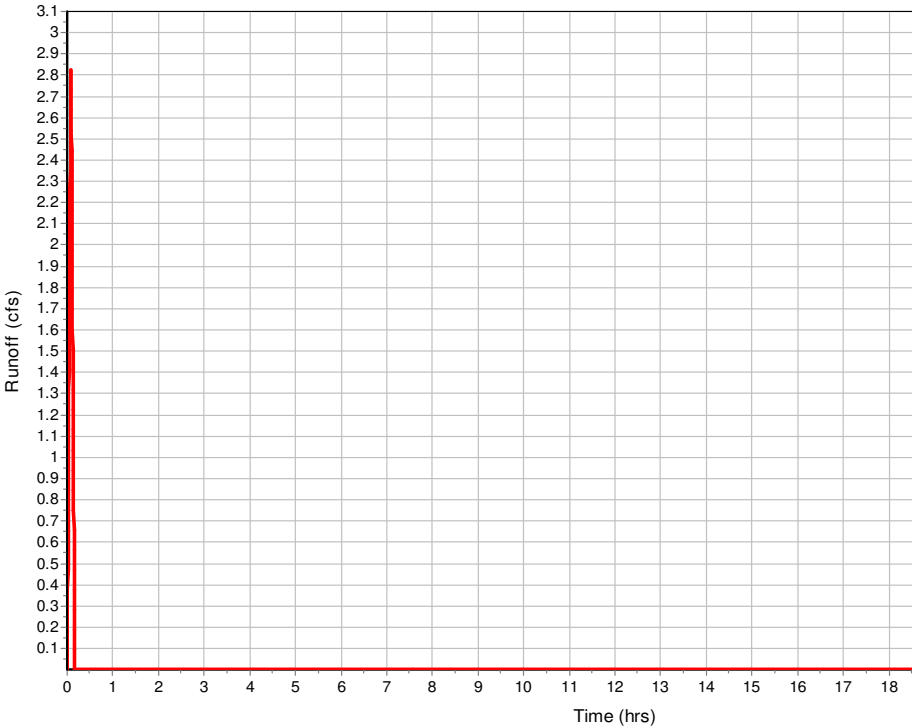
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	12.99999519	0	0
Slope (%) :	2	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	2.86	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	199.7947467	0	0
Slope (%) :	7.49	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.6	0	0
Total TOC (min)	3.46		

Subbasin Runoff Results

Total Rainfall (in) 0.93
 Total Runoff (in) 0.65
 Peak Runoff (cfs) 2.82
 Rainfall Intensity 11.2
 Weighted Runoff Coefficient 0.7
 Time of Concentration (days hh:mm:ss) 0 00:03:28

Runoff Hydrograph



Subbasin : Sub-FES-2

Input Data

Area (ac)	1.58
Weighted Runoff Coefficient	0.56

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.58	-	0.56
Composite Area & Weighted Runoff Coeff.	1.58		0.56

Time of Concentration

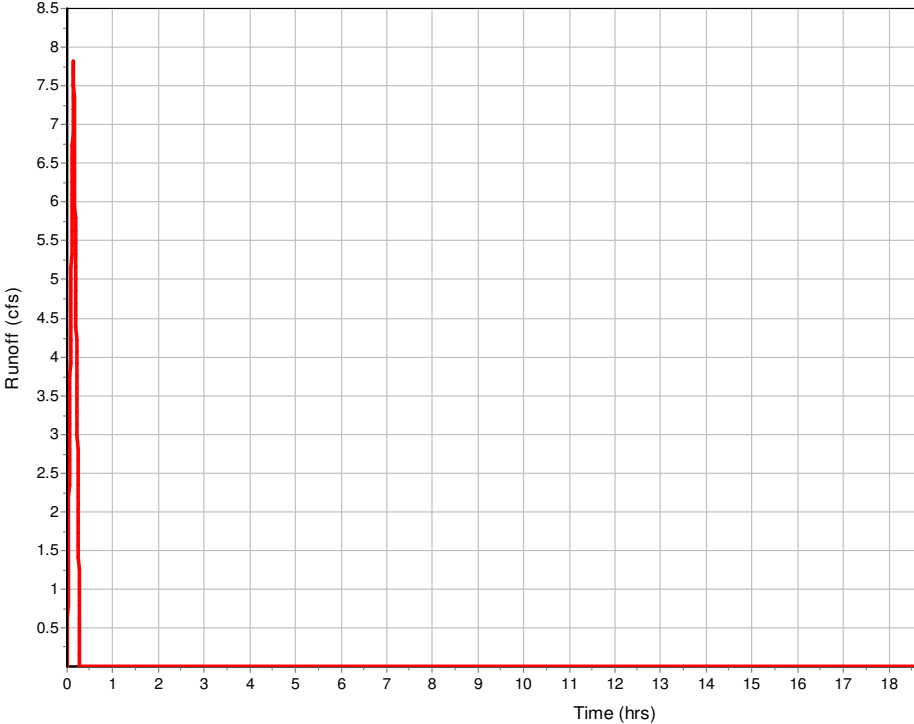
	Subarea		
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	100	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	4.35	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	7.15	0	0

	Subarea		
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	363.3701089	0	0
Slope (%) :	10	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	5.1	0	0
Computed Flow Time (min) :	1.19	0	0
Total TOC (min)	8.33		

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.69
Peak Runoff (cfs)	7.82
Rainfall Intensity	8.815
Weighted Runoff Coefficient	0.56
Time of Concentration (days hh:mm:ss)	0 00:08:20

Runoff Hydrograph



Subbasin : SUB-PIPE-35

Input Data

Area (ac) 0.36
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.36	-	0.72
Composite Area & Weighted Runoff Coeff.	0.36		0.72

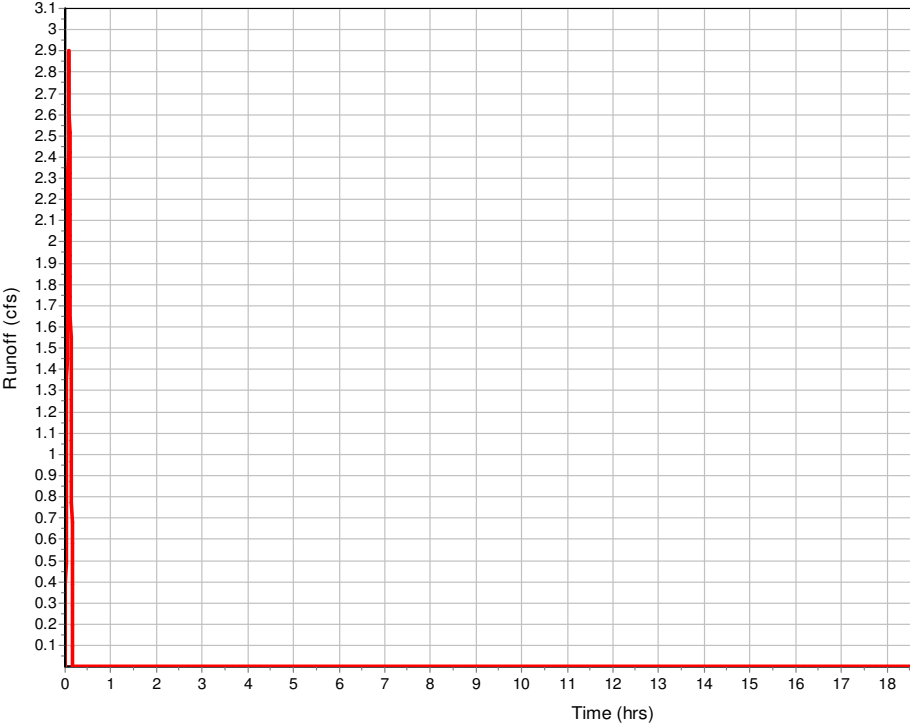
Time of Concentration

User-Defined TOC override (minutes): 2.36

Subbasin Runoff Results

Total Rainfall (in) 0.93
Total Runoff (in) 0.67
Peak Runoff (cfs) 2.9
Rainfall Intensity 11.2
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:02:22

Runoff Hydrograph



Subbasin : SUB-PIPE-36

Input Data

Area (ac) 1.26
Weighted Runoff Coefficient 0.72

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.26	-	0.72
Composite Area & Weighted Runoff Coeff.	1.26		0.72

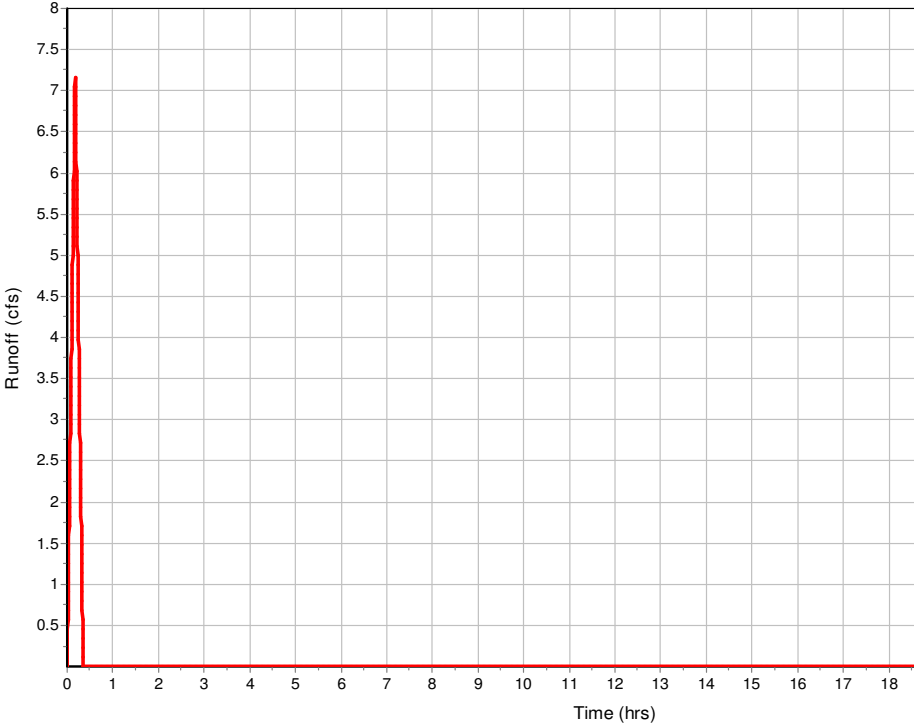
Time of Concentration

User-Defined TOC override (minutes): 10.56

Subbasin Runoff Results

Total Rainfall (in) 1.38
Total Runoff (in) 0.99
Peak Runoff (cfs) 7.16
Rainfall Intensity 7.887
Weighted Runoff Coefficient 0.72
Time of Concentration (days hh:mm:ss) 0 00:10:34

Runoff Hydrograph



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 (ft ²)	Minimum Pipe Cover (in)
1 FES-2	466.60	469.78	3.18	466.60	0.00	469.78	0.00	0.00	2.15
2 IN-PIPE-35	462.75	464.00	1.25	462.75	0.00	464.00	0.00	0.00	0.00
3 IN-PIPE36	441.30	442.80	1.50	441.30	0.00	442.80	0.00	0.00	0.00
4 JB-14	529.50	534.76	5.26	529.50	0.00	535.50	0.74	0.00	45.12
5 JB-23	515.30	519.44	4.14	515.30	0.00	519.20	-0.24	10.00	31.68

Junction Results

SN	Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	1 FI Occu
		(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days h)
1	FES-2	23.00	23.00	468.51	1.91	0.00	1.27	468.04	1.44	0 00:08	0
2	IN-PIPE-35	2.90	2.90	463.36	0.61	0.00	0.89	462.75	0.00	0 00:05	0
3	IN-PIPE36	7.15	7.15	442.59	1.29	0.00	0.29	441.39	0.09	0 00:10	0
4	JB-14	9.58	0.00	530.09	0.59	0.00	4.67	529.51	0.01	0 00:12	0
5	JB-23	3.04	0.00	515.62	0.32	0.00	3.82	515.30	0.00	0 00:05	0

Channel Input

SN Element ID	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Shape Slope (%)	Height	Width	Manning's E Roughness
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(ft)	(ft)	
1 L-SDPIPE-1	73.15	476.67	10.73	475.09	7.62	1.58	2.1600 User-Defined	0.330	14.000	0.0150
2 L-SDPIPE-13	403.61	521.86	4.36	510.72	5.72	11.14	2.7600 User-Defined	0.330	14.000	0.0150
3 L-SDPIPE-14	373.89	522.45	4.46	515.37	5.03	7.08	1.8900 User-Defined	0.330	14.000	0.0150
4 L-SDPIPE-15	83.27	471.49	3.38	464.82	0.00	6.67	8.0100 User-Defined	0.330	14.000	0.0150
5 L-SDPIPE-16	206.62	505.01	3.91	489.62	6.43	15.39	7.4500 User-Defined	0.330	14.000	0.0150
6 L-SDPIPE-18	170.54	523.17	5.39	517.57	3.45	5.60	3.2800 User-Defined	0.330	14.000	0.0150
7 L-SDPIPE-19	227.29	522.18	4.31	505.01	3.58	17.17	7.5500 User-Defined	0.330	14.000	0.0150
8 L-SDPIPE-2	62.02	476.28	9.98	475.09	7.29	1.19	1.9200 User-Defined	0.330	14.000	0.0150
9 L-SDPIPE-20	233.87	505.01	3.58	487.59	3.97	17.42	7.4500 User-Defined	0.330	14.000	0.0150
10 L-SDPIPE-21	241.61	543.67	5.17	534.06	3.86	9.61	3.9800 User-Defined	0.330	14.000	0.0150
11 L-SDPIPE-23	316.61	547.43	4.84	534.06	3.53	13.37	4.2200 User-Defined	0.500	26.000	0.0150
12 L-SDPIPE-25	202.83	549.70	3.70	532.10	0.00	17.60	8.6800 User-Defined	0.500	26.000	0.0150
13 L-SDPIPE-27	245.69	494.00	6.50	476.28	9.98	17.72	7.2100 User-Defined	0.330	14.000	0.0150
14 L-SDPIPE-28	228.18	493.47	5.63	476.67	10.73	16.80	7.3600 User-Defined	0.330	14.000	0.0150
15 L-SDPIPE-29	172.07	510.72	5.72	494.00	6.50	16.72	9.7200 User-Defined	0.330	14.000	0.0150
16 L-SDPIPE-32	98.13	549.76	5.26	540.30	0.00	9.46	9.6400 User-Defined	0.500	26.000	0.0150
17 L-SDPIPE-33	78.91	518.02	3.90	517.01	4.43	1.01	1.2800 User-Defined	0.330	14.000	0.0320
18 L-SDPIPE-34	149.42	521.36	5.08	517.01	4.43	4.35	2.9100 User-Defined	0.330	14.000	0.0320
19 L-SDPIPE-4	129.78	475.09	7.62	464.82	0.00	10.27	7.9100 User-Defined	0.330	14.000	0.0320
20 L-SDPIPE-6	214.12	489.62	6.43	475.09	7.29	14.53	6.7900 User-Defined	0.330	14.000	0.0150
21 L-SDPIPE-7	216.57	487.59	3.97	471.49	3.38	16.10	7.4300 User-Defined	0.330	14.000	0.0150

Channel Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	N
1	L-SDPIPE-1	0.00	0 00:17	3.72	0.00	0.00		0.00	0.01	0.00	
2	L-SDPIPE-13	0.00	0 00:00	4.20	0.00	0.00		0.06	0.19	0.00	
3	L-SDPIPE-14	1.73	0 00:13	3.48	0.50	0.97	6.42	0.29	0.88	0.00	
4	L-SDPIPE-15	0.82	0 00:17	7.16	0.11	1.85	0.75	0.14	0.43	0.00	
5	L-SDPIPE-16	0.01	0 00:07	6.90	0.00	0.38	9.06	0.08	0.25	0.00	
6	L-SDPIPE-18	0.54	0 00:05	4.64	0.12	8.19	0.35	0.14	0.42	0.00	
7	L-SDPIPE-19	1.18	0 00:08	6.95	0.17	3.24	1.17	0.13	0.40	0.00	
8	L-SDPIPE-2	0.00	0 00:00	3.50	0.00	0.00		0.17	0.50	0.00	
9	L-SDPIPE-20	0.53	0 00:16	6.90	0.08	1.39	2.80	0.13	0.40	0.00	
10	L-SDPIPE-21	0.00	0 00:08	5.04	0.00	0.00		0.17	0.50	0.00	
11	L-SDPIPE-23	0.03	0 00:05	19.36	0.00	0.03	175.89	0.23	0.45	0.00	
12	L-SDPIPE-25	0.03	0 00:05	27.75	0.00	1.87	1.81	0.03	0.06	0.00	
13	L-SDPIPE-27	0.00	0 00:06	6.79	0.00	0.00		0.01	0.02	0.00	
14	L-SDPIPE-28	1.02	0 00:14	6.86	0.15	4.13	0.92	0.15	0.46	0.00	
15	L-SDPIPE-29	0.33	0 00:06	7.88	0.04	3.21	0.89	0.07	0.20	0.00	
16	L-SDPIPE-32	0.20	0 00:05	28.64	0.01	2.24	0.73	0.07	0.14	0.00	
17	L-SDPIPE-33	0.36	0 00:08	2.86	0.13	0.30	4.38	0.24	0.73	0.00	
18	L-SDPIPE-34	1.20	0 00:08	4.31	0.28	0.81	3.07	0.27	0.81	0.00	
19	L-SDPIPE-4	0.00	0 00:00	7.11	0.00	0.00		0.00	0.00	0.00	
20	L-SDPIPE-6	0.84	0 00:05	6.59	0.13	0.92	3.88	0.22	0.67	0.00	
21	L-SDPIPE-7	0.76	0 00:16	6.90	0.11	1.80	2.01	0.14	0.42	0.00	

Pipe Input

SN	Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness
1	SDPIPE-1	35.55	465.94	0.00	463.00	0.00	2.94	8.2700	CIRCULAR	36.000	36.000	0.0120
2	SDPIPE-10	256.10	529.50	0.00	512.58	0.00	16.92	6.6100	CIRCULAR	18.000	18.000	0.0120
3	SDPIPE-11	67.57	530.20	0.00	529.50	0.00	0.70	1.0400	CIRCULAR	18.000	18.000	0.0120
4	SDPIPE-12	33.01	530.53	0.00	530.20	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
5	SDPIPE-13	130.50	517.50	0.00	505.00	0.00	12.50	9.5800	CIRCULAR	18.000	18.000	0.0120
6	SDPIPE-14	39.55	517.99	0.00	517.50	0.00	0.49	1.2500	CIRCULAR	18.000	18.000	0.0130
7	SDPIPE-15	64.04	468.11	0.00	467.47	0.00	0.64	1.0000	CIRCULAR	18.000	18.000	0.0130
8	SDPIPE-16	23.51	501.10	0.00	499.00	0.00	2.10	8.9300	CIRCULAR	18.000	18.000	0.0120
9	SDPIPE-17	194.21	515.30	0.00	501.00	-0.10	14.30	7.3600	CIRCULAR	18.000	18.000	0.0120
10	SDPIPE-18	49.41	517.78	0.00	515.30	0.00	2.48	5.0200	CIRCULAR	18.000	18.000	0.0130
11	SDPIPE-19	51.31	517.87	0.00	515.30	0.00	2.57	5.0100	CIRCULAR	18.000	18.000	0.0130
12	SDPIPE-2	35.82	466.30	0.00	465.94	0.00	0.36	1.0000	CIRCULAR	36.000	36.000	0.0130
13	SDPIPE-20	33.00	501.43	0.00	501.10	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0120
14	SDPIPE-21	239.80	538.50	0.00	530.20	0.00	8.30	3.4600	CIRCULAR	18.000	18.000	0.0120
15	SDPIPE-22	57.68	542.14	0.00	538.50	0.00	3.64	6.3100	CIRCULAR	18.000	18.000	0.0130
16	SDPIPE-23	44.75	542.59	0.00	542.14	0.00	0.45	1.0100	CIRCULAR	18.000	18.000	0.0130
17	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	0.0130
18	SDPIPE-27	182.53	487.50	0.00	484.31	0.00	3.19	1.7500	CIRCULAR	18.000	18.000	0.0120
19	SDPIPE-28	33.55	487.84	0.00	487.50	0.00	0.34	1.0000	CIRCULAR	18.000	18.000	0.0130
20	SDPIPE-29	167.22	505.00	0.00	487.50	0.00	17.50	10.4700	CIRCULAR	18.000	18.000	0.0120
21	SDPIPE-3	30.36	466.60	0.00	466.30	0.00	0.30	1.0000	CIRCULAR	36.000	36.000	0.0120
22	SDPIPE-30	66.71	510.34	0.00	505.00	0.00	5.34	8.0000	CIRCULAR	18.000	18.000	0.0130
23	SDPIPE-32	96.89	544.50	0.00	538.50	0.00	6.00	6.1900	CIRCULAR	18.000	18.000	0.0120
24	SDPIPE-33	77.61	514.12	0.00	512.58	0.00	1.54	1.9800	CIRCULAR	18.000	18.000	0.0150
25	SDPIPE-34	147.34	516.28	0.00	512.58	0.00	3.70	2.5100	CIRCULAR	18.000	18.000	0.0150
26	SDPIPE-4	71.93	467.47	0.00	466.75	0.81	0.72	1.0000	CIRCULAR	18.000	18.000	0.0120
27	SDPIPE-5	33.00	467.80	0.00	467.47	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	0.0130
28	SDPIPE-6	67.57	483.19	0.00	482.52	0.00	0.67	1.0000	CIRCULAR	18.000	18.000	0.0120
29	SDPIPE-7	42.68	483.62	0.00	483.19	0.00	0.43	1.0000	CIRCULAR	18.000	18.000	0.0130
30	SDPIPE-8	130.97	512.25	0.00	492.00	0.00	20.25	15.4600	CIRCULAR	24.000	24.000	0.0120
31	SDPIPE-9	33.02	512.58	0.00	512.25	0.00	0.33	1.0000	CIRCULAR	24.000	24.000	0.0130
32	SPIPE-35	30.19	462.75	0.00	462.25	0.00	0.50	1.6600	CIRCULAR	18.000	18.000	0.0150
33	SPIPE-36	31.09	441.38	0.08	441.00	0.00	0.38	1.2200	CIRCULAR	18.000	18.000	0.0150

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Frc Nun
1	SDPIPE-1	26.81	0 00:08	207.79	0.13	14.35	0.04	0.93	0.31	0.00	
2	SDPIPE-10	9.58	0 00:12	29.25	0.33	7.38	0.58	1.05	0.70	0.00	
3	SDPIPE-11	9.58	0 00:12	11.59	0.83	7.85	0.14	0.98	0.65	0.00	
4	SDPIPE-12	1.15	0 00:08	10.49	0.11	1.86	0.30	1.21	0.80	0.00	
5	SDPIPE-13	3.27	0 00:13	35.22	0.09	11.98	0.18	0.32	0.21	0.00	
6	SDPIPE-14	3.27	0 00:13	11.74	0.28	6.32	0.10	0.50	0.33	0.00	
7	SDPIPE-15	2.60	0 00:16	10.50	0.25	4.07	0.26	0.59	0.39	0.00	
8	SDPIPE-16	5.35	0 00:07	34.01	0.16	10.86	0.04	0.48	0.32	0.00	
9	SDPIPE-17	3.03	0 00:05	30.77	0.10	7.30	0.44	0.44	0.29	0.00	
10	SDPIPE-18	1.56	0 00:05	23.53	0.07	6.31	0.13	0.30	0.20	0.00	
11	SDPIPE-19	1.97	0 00:08	23.51	0.08	7.62	0.11	0.31	0.21	0.00	
12	SDPIPE-2	23.32	0 00:08	66.70	0.35	6.93	0.09	1.44	0.48	0.00	
13	SDPIPE-20	2.21	0 00:08	11.38	0.19	4.82	0.11	0.56	0.38	0.00	
14	SDPIPE-21	3.09	0 00:15	21.17	0.15	4.42	0.90	0.86	0.57	0.00	
15	SDPIPE-22	3.11	0 00:15	26.39	0.12	8.69	0.11	0.38	0.26	0.00	
16	SDPIPE-23	1.10	0 00:05	10.53	0.10	3.70	0.20	0.34	0.22	0.00	
17	SDPIPE-25	0.97	0 00:05	14.89	0.07	4.20	0.30	0.28	0.19	0.00	
18	SDPIPE-27	7.59	0 00:19	15.03	0.50	7.93	0.38	0.80	0.53	0.00	
19	SDPIPE-28	1.82	0 00:14	10.50	0.17	2.86	0.20	0.69	0.46	0.00	
20	SDPIPE-29	6.15	0 00:19	36.81	0.17	8.74	0.32	0.63	0.42	0.00	
21	SDPIPE-3	22.99	0 00:08	71.83	0.32	7.93	0.06	1.78	0.59	0.00	
22	SDPIPE-30	6.15	0 00:19	29.71	0.21	12.56	0.09	0.48	0.32	0.00	
23	SDPIPE-32	2.10	0 00:05	28.32	0.07	8.96	0.18	0.29	0.19	0.00	
24	SDPIPE-33	4.04	0 00:07	12.82	0.31	4.01	0.32	1.25	0.84	0.00	
25	SDPIPE-34	3.17	0 00:08	14.43	0.22	3.76	0.65	0.99	0.66	0.00	
26	SDPIPE-4	2.85	0 00:16	11.38	0.25	4.84	0.25	0.55	0.37	0.00	
27	SDPIPE-5	0.80	0 00:07	10.50	0.08	2.15	0.26	0.42	0.28	0.00	
28	SDPIPE-6	2.76	0 00:05	11.37	0.24	4.78	0.24	0.54	0.36	0.00	
29	SDPIPE-7	2.41	0 00:16	10.50	0.23	4.01	0.18	0.56	0.37	0.00	
30	SDPIPE-8	22.96	0 00:09	96.37	0.24	22.72	0.10	0.72	0.36	0.00	
31	SDPIPE-9	22.38	0 00:09	22.62	0.99	9.66	0.06	1.38	0.69	0.00	
32	SPIPE-35	2.89	0 00:05	11.72	0.25	4.82	0.10	0.56	0.37	0.00	
33	SPIPE-36	7.13	0 00:10	10.06	0.71	5.30	0.10	1.07	0.71	0.00	

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)	Ini Wz De	
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.62	487.59	3.97	483.62	0
2	CB-12	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.25	517.01	4.76	512.25	0
3	CB-13	FHWA HEC-22 GENERIC	N/A	On Sag	1	512.58	517.01	4.43	512.58	0
4	CB-15	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.20	534.06	3.86	530.20	0
5	CB-16	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.53	534.06	3.53	530.53	0
6	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.50	521.86	4.36	517.50	0
7	CB-19	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.99	522.45	4.46	517.99	0
8	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	465.94	476.67	10.73	465.94	0
9	CB-20	FHWA HEC-22 GENERIC	N/A	On Grade	1	468.11	471.49	3.38	468.11	0
10	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.10	505.01	3.91	501.10	0
11	CB-24	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.78	523.31	5.53	517.77	-0
12	CB-25	FHWA HEC-22 GENERIC	N/A	On Grade	1	517.87	522.17	4.30	515.81	-2
13	CB-26	FHWA HEC-22 GENERIC	N/A	On Grade	1	501.43	505.01	3.58	501.43	0
14	CB-27	FHWA HEC-22 GENERIC	N/A	On Grade	1	538.50	543.67	5.17	538.50	0
15	CB-28	FHWA HEC-22 GENERIC	N/A	On Sag	1	542.14	545.67	3.53	542.20	0
16	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	542.59	547.43	4.84	542.65	0
17	CB-3	FHWA HEC-22 GENERIC	N/A	On Grade	1	466.30	476.28	9.98	466.30	0
18	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0
19	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.70	3.70	546.00	0
20	CB-35	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.50	494.00	6.50	487.50	0
21	CB-36	FHWA HEC-22 GENERIC	N/A	On Grade	1	487.84	493.47	5.63	487.84	0
22	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	505.00	510.72	5.72	505.00	0
23	CB-39	FHWA HEC-22 GENERIC	N/A	On Sag	1	510.34	515.37	5.03	510.34	0
24	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.12	518.02	3.90	514.12	0
25	CB-6	FHWA HEC-22 GENERIC	N/A	On Sag	1	467.80	475.09	7.29	467.80	0
26	CB-7	FHWA HEC-22 GENERIC	N/A	On Grade	1	467.47	475.09	7.62	467.47	0
27	CB-9	FHWA HEC-22 GENERIC	N/A	On Grade	1	483.19	489.62	6.43	483.19	0
28	Inlet-CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	516.28	521.36	5.08	516.28	0

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	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
2 CB-12	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
3 CB-13	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
4 CB-15	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
5 CB-16	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
6 CB-18	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
7 CB-19	0.0245	0.0258	0.0150	0.0200	1.00	0.1312	8.50
8 CB-2	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
9 CB-20	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
10 CB-22	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
11 CB-24	0.1033	0.0258	0.0150	0.0200	1.00	0.1312	8.50
12 CB-25	0.1041	0.0258	0.0150	0.0200	1.00	0.1312	8.50
13 CB-26	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
14 CB-27	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
15 CB-28	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
16 CB-29	0.0574	0.0258	0.0150	0.0200	1.00	0.1312	8.50
17 CB-3	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
18 CB-31	0.0721	0.0200	0.0150	0.0200	1.50	0.1312	8.50
19 CB-32	0.0809	0.0258	0.0150	0.0200	1.00	0.1312	8.50
20 CB-35	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
21 CB-36	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
22 CB-38	0.1046	0.0258	0.0150	0.0200	1.00	0.1312	8.50
23 CB-39	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
24 CB-43	0.0199	0.0258	0.0150	0.0200	1.00	0.1312	8.50
25 CB-6	N/A	0.0258	0.0150	0.0200	1.00	0.1312	8.50
26 CB-7	0.0085	0.0258	0.0150	0.0200	1.00	0.1312	8.50
27 CB-9	0.0749	0.0258	0.0150	0.0200	1.00	0.1312	8.50
28 Inlet-CB-44	0.1138	0.0258	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)
1 CB-10	3.18	2.64	2.10	1.08	66.02	6.39	487.75	0.16	0 00:16
2 CB-12	2.48	2.48	N/A	N/A	N/A	6.50	517.34	0.33	0 00:09
3 CB-13	7.94	6.48	N/A	N/A	N/A	14.14	517.54	0.53	0 00:09
4 CB-15	6.62	6.62	N/A	N/A	N/A	12.52	534.55	0.49	0 00:12
5 CB-16	3.28	3.26	N/A	N/A	N/A	7.84	534.43	0.37	0 00:12
6 CB-18	0.96	0.96	0.96	0.00	100.00	5.03	521.98	0.12	0 00:13
7 CB-19	5.01	5.01	3.27	1.73	65.39	9.31	522.68	0.23	0 00:13
8 CB-2	2.77	1.78	2.61	0.16	94.09	9.08	476.90	0.23	0 00:08
9 CB-20	3.39	2.74	2.18	1.21	64.21	6.53	471.65	0.16	0 00:16
10 CB-22	1.09	1.09	1.05	0.04	95.92	4.31	505.12	0.11	0 00:07
11 CB-24	2.10	2.10	1.57	0.54	74.48	5.18	523.44	0.13	0 00:05
12 CB-25	3.15	3.15	1.97	1.18	62.63	5.99	522.32	0.15	0 00:08
13 CB-26	2.37	2.24	1.77	0.60	74.78	5.71	505.15	0.14	0 00:08
14 CB-27	0.69	0.69	0.69	0.00	100.00	3.80	543.76	0.09	0 00:15
15 CB-28	3.12	3.12	N/A	N/A	N/A	7.58	546.03	0.36	0 00:15
16 CB-29	1.15	1.15	1.11	0.03	97.01	4.61	547.54	0.11	0 00:05
17 CB-3	1.10	1.10	1.10	0.00	100.00	6.45	476.44	0.16	0 00:08
18 CB-31	1.35	1.35	1.16	0.19	85.78	5.44	549.48	0.11	0 00:05
19 CB-32	1.01	1.01	0.98	0.03	96.82	4.14	549.80	0.10	0 00:05
20 CB-35	0.98	0.78	0.93	0.05	95.37	3.90	494.09	0.09	0 00:19
21 CB-36	2.76	2.76	1.83	0.93	66.42	5.69	493.61	0.14	0 00:14
22 CB-38	1.77	1.77	1.41	0.36	79.52	4.83	510.84	0.12	0 00:19
23 CB-39	6.29	5.86	N/A	N/A	N/A	12.10	515.85	0.48	0 00:19
24 CB-43	4.49	4.49	4.11	0.38	91.44	9.30	518.25	0.23	0 00:09
25 CB-6	2.12	1.29	N/A	N/A	N/A	5.87	475.41	0.32	0 00:07
26 CB-7	0.32	0.32	0.32	0.00	100.00	4.08	475.19	0.10	0 00:16
27 CB-9	2.82	2.82	1.96	0.86	69.56	6.10	489.77	0.15	0 00:05
28 Inlet-CB-44	4.42	4.42	3.20	1.23	72.29	6.68	521.53	0.17	0 00:08

Detention Pond Storage Estimate



Report



Help

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 - Mod Rational - Post-Dev Basin "E" ▾

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	68,090	23.64	23.14	22,967
3					
5					
10	29,819	91,663	31.83	31.02	31,174
25	34,268	105,431	36.61	35.65	35,913
50	37,472	115,494	40.10	38.98	39,483
100	40,692	125,154	43.46	42.33	42,611

Clear

Estimate Storage

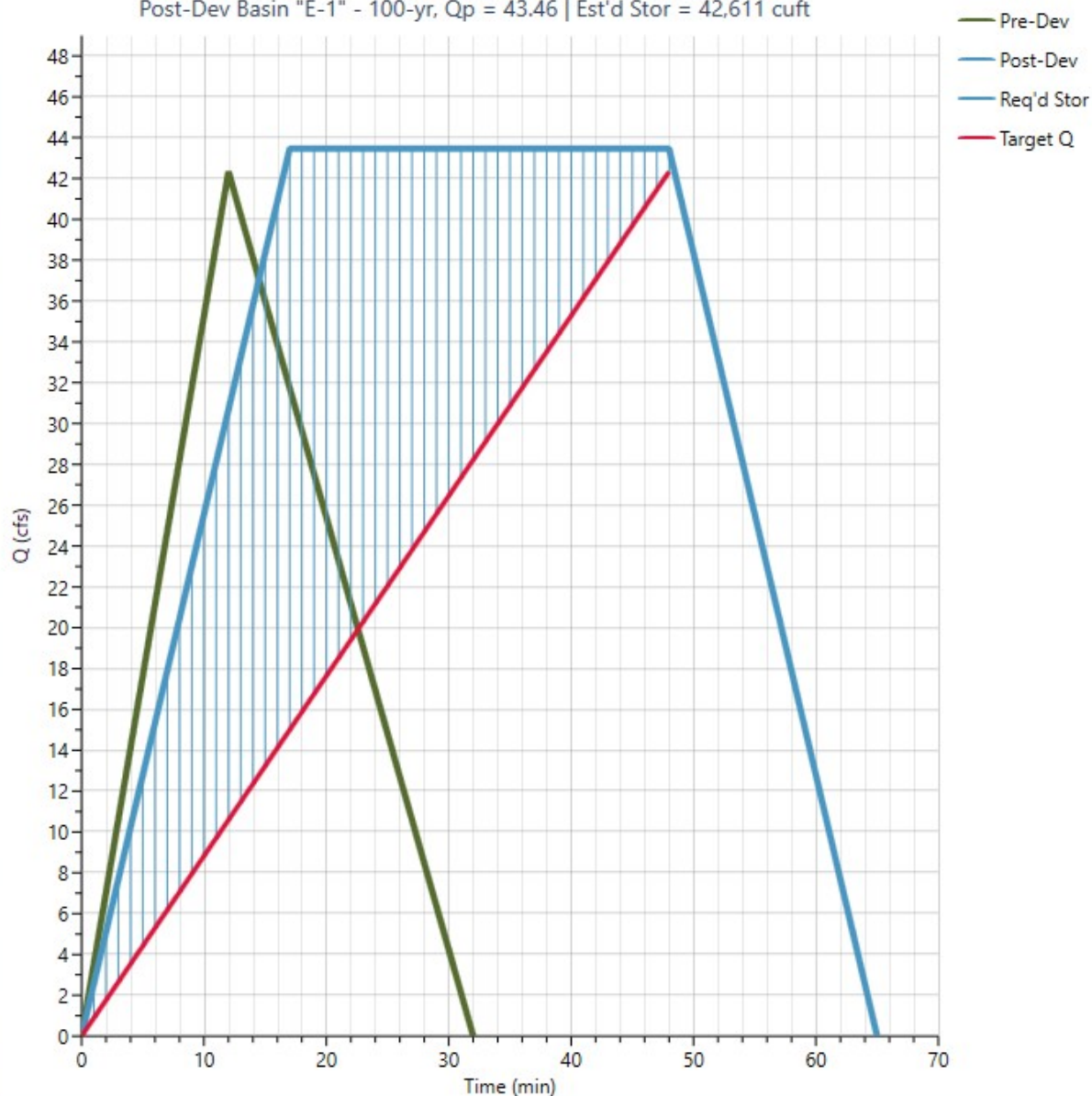
Extended Detention Storage (optional)

Zone	Description	Volume (cuft)
1	WQv	
2	CPv	
3	Custom	
4	Custom	

Clear

Apply

Post-Dev Basin "E-1" - 100-yr, Qp = 43.46 | Est'd Stor = 42,611 cuft



*Estimate Storage Step is Optional

Always skip this step

Create Pond >

Culvert Blockage Simulation



Report

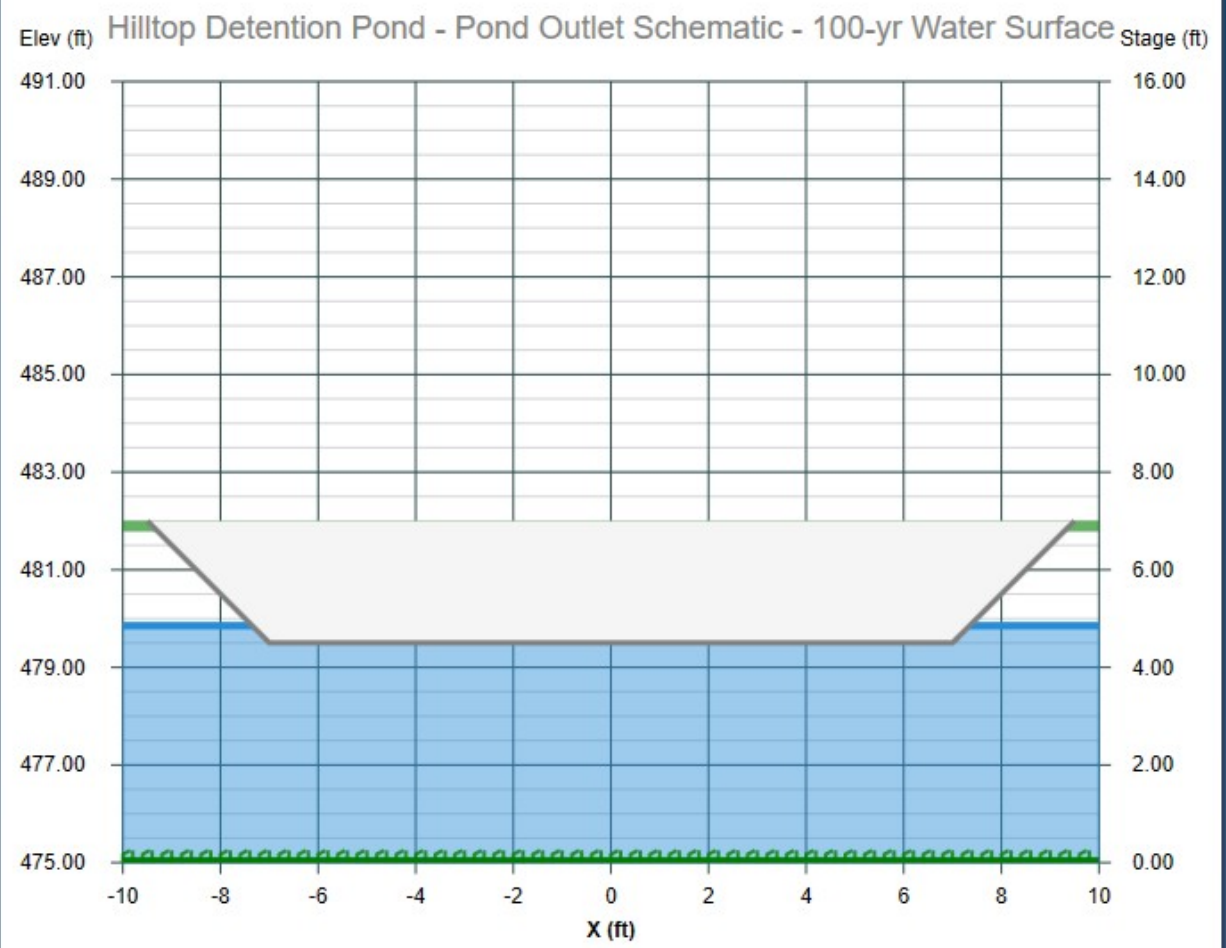


Help

Culvert	Riser	Orifice	Weir
Exfiltration	User	Perf Riser	Tailwater

Primary Culvert	Input
Outlet Structure =	Culvert
Shape =	Circular
Diameter (in) =	18
No. Barrels =	1
Invert Elev. (ft) =	475.00
Orifice Coeff. (Co) =	0.6
Length (ft) =	57.00
Barrel Slope (%) =	1.17
N-Value (n) =	0.013
Restrictor (optional)	None
Active =	<input type="checkbox"/>

Freq (Yr)	Q Targ (cfs)	Q Act (cfs)	Max Ele (ft)	Max Stor (cuft)
2	23.14	0.00	477.97	68,090
10	31.02	0.00	478.91	91,663
25	35.65	0.00	479.43	105,431
50	38.98	5.42	479.74	113,429
100	42.33	12.95	479.92	118,321



100-yr Water Surface
 Front
 Side
 Plan

Numerical Output

X = 9.22 ft Y = 482.09 ft

Pre and Post Development Hydrographs (Hydrology Studio)

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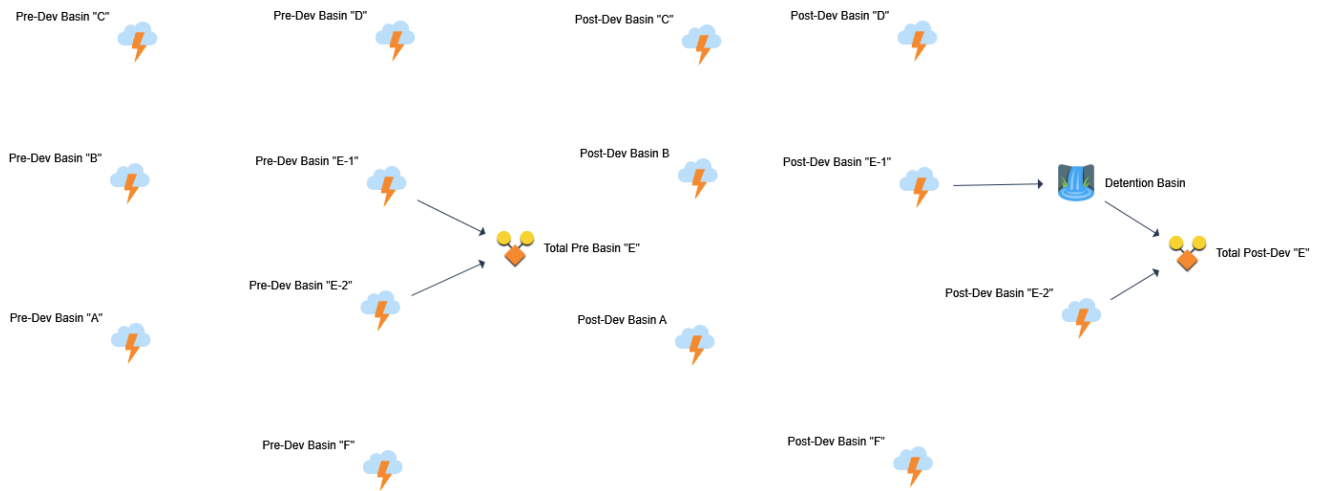
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Basin Model

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys

03-04-2026



Hydrograph by Return Period

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

File: Detention Calculation 3-4-26.hys

03-04-2026

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		8.979			12.04	13.84	15.14	16.43
10	Rational	Post-Dev Basin B		23.98			32.19	37.00	40.48	43.93
11	Rational	Post-Dev Basin "C"		16.54			22.16	25.47	27.85	30.24
12	Rational	Post-Dev Basin "D"		7.200			9.641	11.08	12.11	13.15
13	Mod Rational	Post-Dev Basin "E-1"		23.64			31.83	36.61	40.10	43.46
14	Pond Route	Detention Basin		10.07			12.42	13.61	14.43	15.18
15	Rational	Post-Dev Basin "E-2"		39.12			52.46	60.29	65.94	71.59
16	Junction	Total Post-Dev "E"		39.66			53.39	61.49	67.36	73.24
17	Rational	Post-Dev Basin "F"		24.38			32.71	37.60	41.13	44.65

Hydrograph 2-yr Summary

Project Name: Hilltop Subdivision
 File: Detention Calculation 3-4-26.hys

Hydrology Studio v 3.0.0.39

03-04-2026

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	8.979	0.23	10,069	---		
10	Rational	Post-Dev Basin B	23.98	0.30	34,576	---		
11	Rational	Post-Dev Basin "C"	16.54	0.18	14,570	---		
12	Rational	Post-Dev Basin "D"	7.200	0.13	4,614	---		
13	Mod Rational	Post-Dev Basin "E-1"	23.64	0.28	68,090	---		
14	Pond Route	Detention Basin	10.07	0.97	68,005	13	477.15	48,434
15	Rational	Post-Dev Basin "E-2"	39.12	0.22	40,738	---		
16	Junction	Total Post-Dev "E"	39.66	0.22	107,909	14, 15		
17	Rational	Post-Dev Basin "F"	24.38	0.27	31,245	---		

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

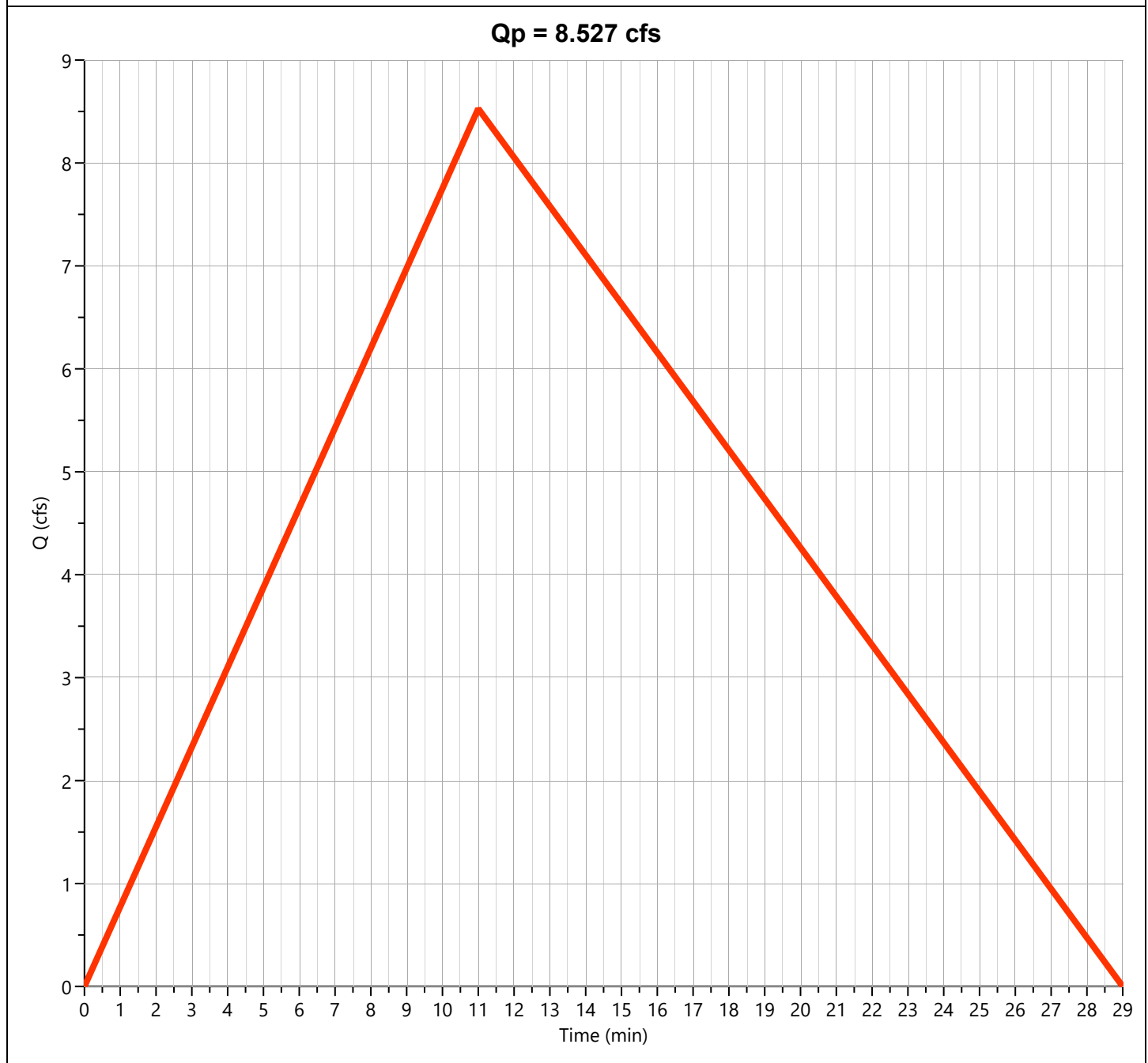
File: Detention Calculation 3-4-26.hys

03-04-2026

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

Pre-Dev Basin "A" Rational

Hyd. No. 1

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

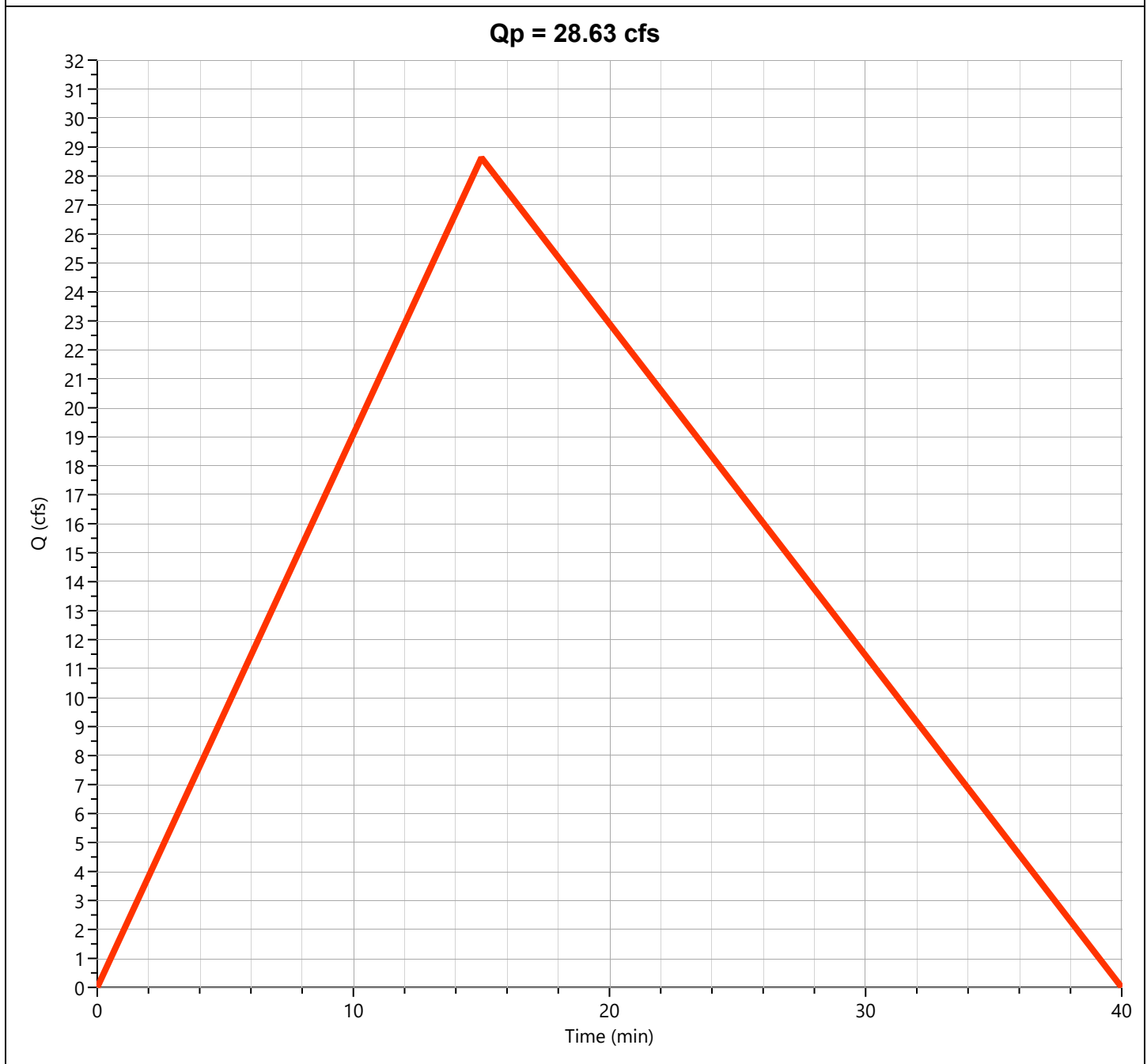
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Tc by TR55 Worksheet

Pre-Dev Basin "B" Rational

Hyd. No. 2

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

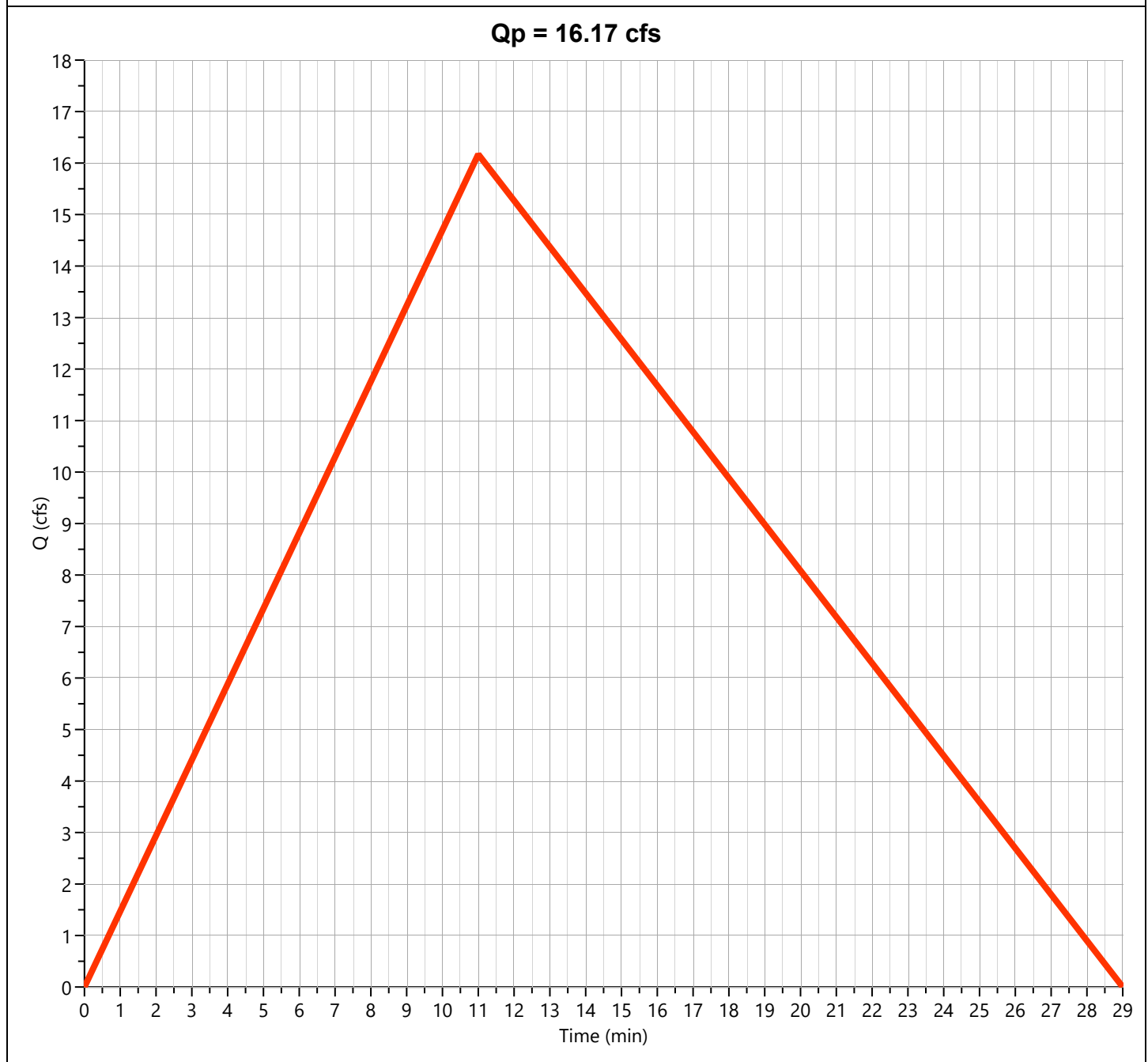
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Tc by TR55 Worksheet

Pre-Dev Basin "C" Rational

Hyd. No. 3

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

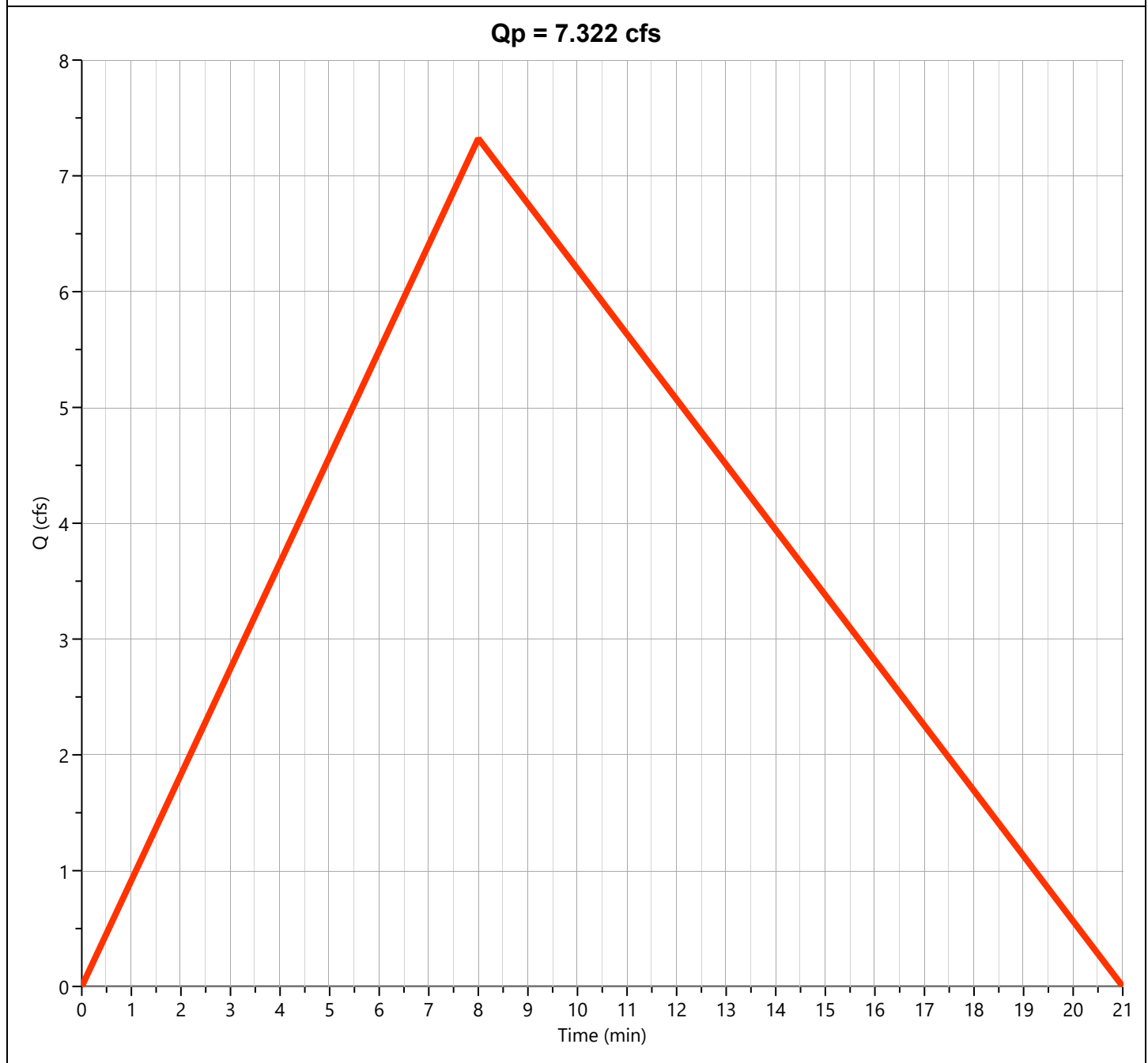
File: Detention Calculation 3-4-26.hys

03-04-2026

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

Pre-Dev Basin "D" Rational

Hyd. No. 4

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

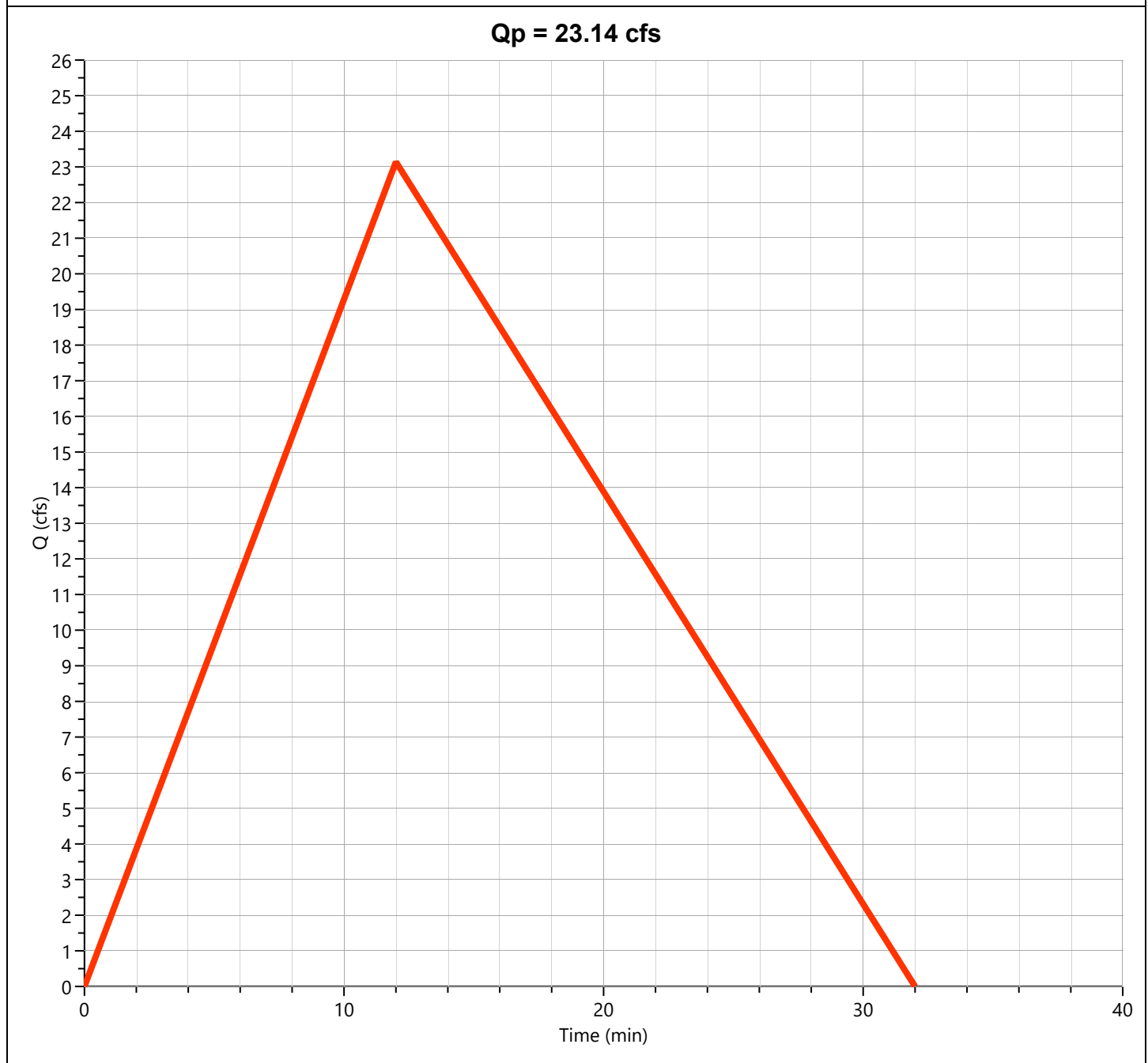
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03-04-2026

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



Tc by TR55 Worksheet

Pre-Dev Basin "E-1" Rational

Hyd. No. 5

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

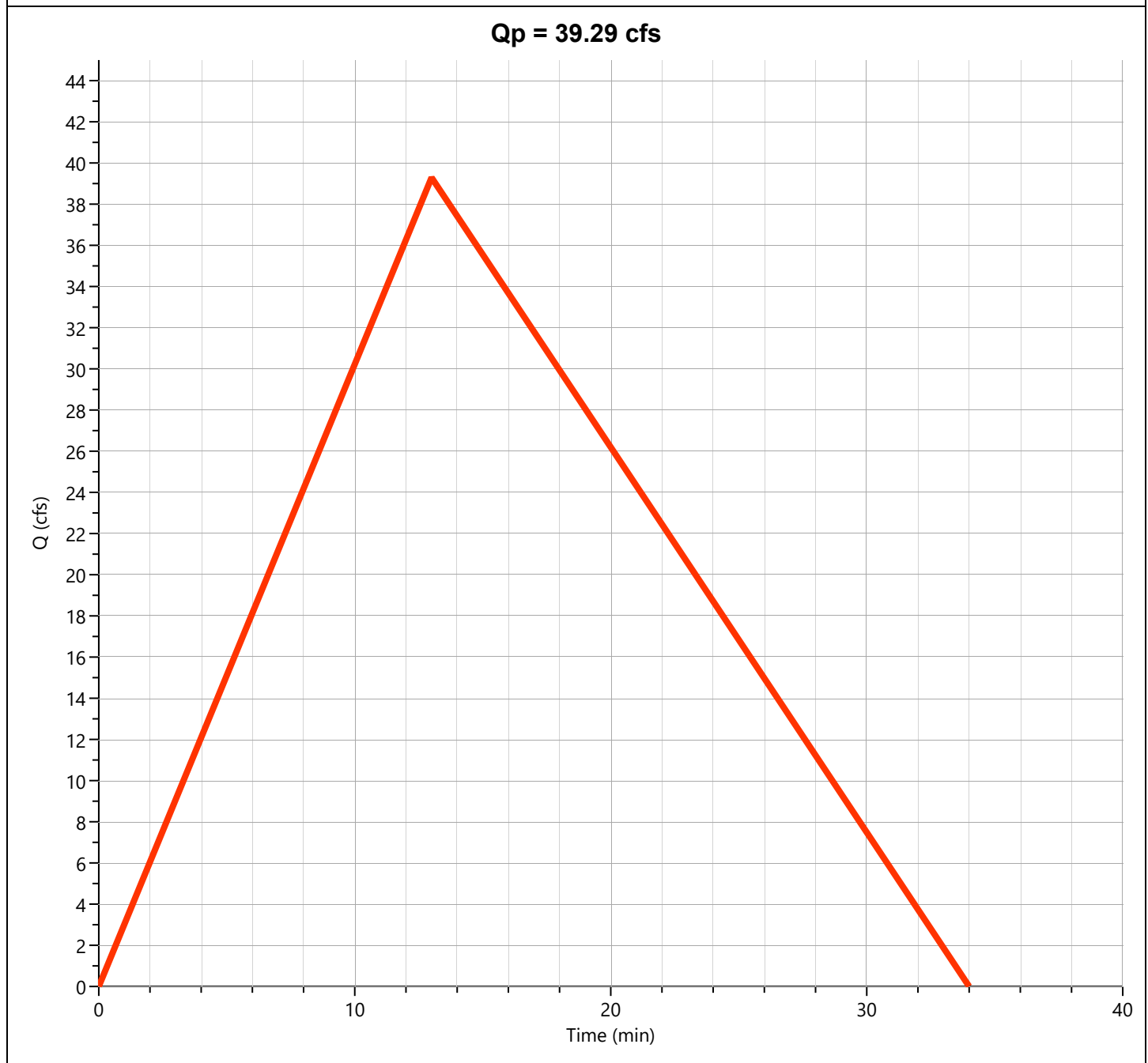
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Tc by TR55 Worksheet

Pre-Dev Basin "E-2" Rational

Hyd. No. 6

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

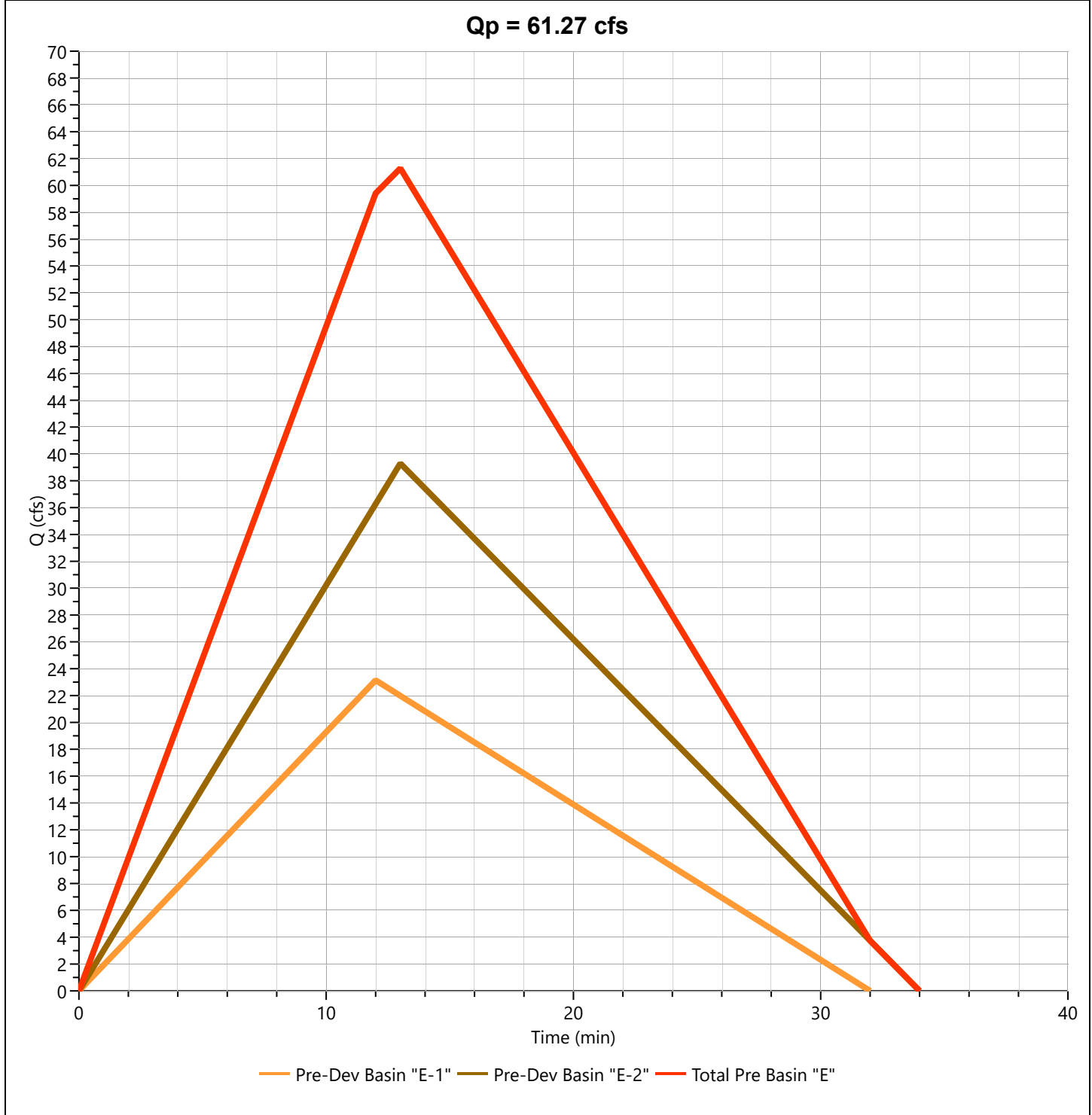
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Total Pre Basin "E"

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

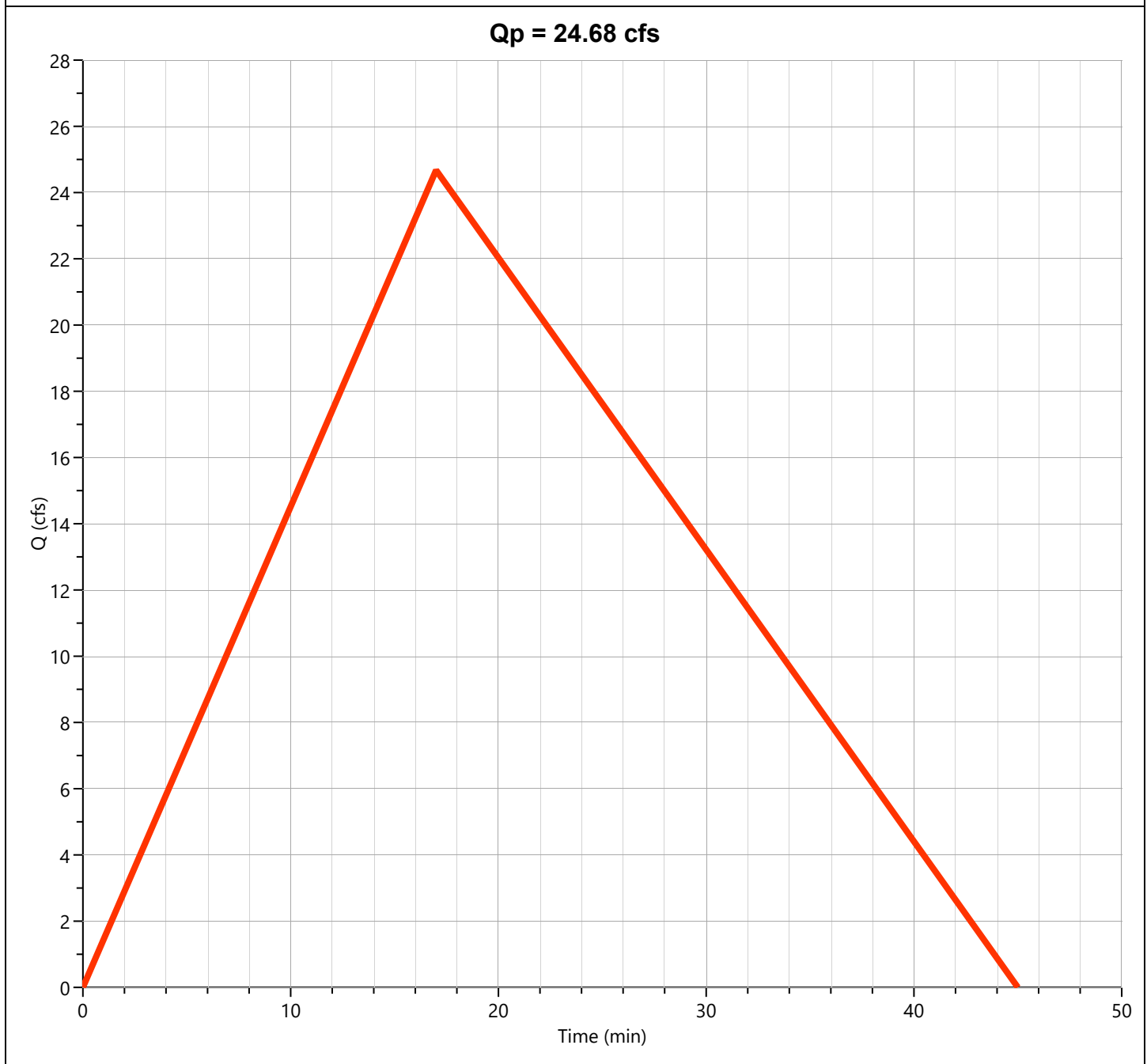
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03-04-2026

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



Tc by TR55 Worksheet

Pre-Dev Basin "F" Rational

Hyd. No. 8

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

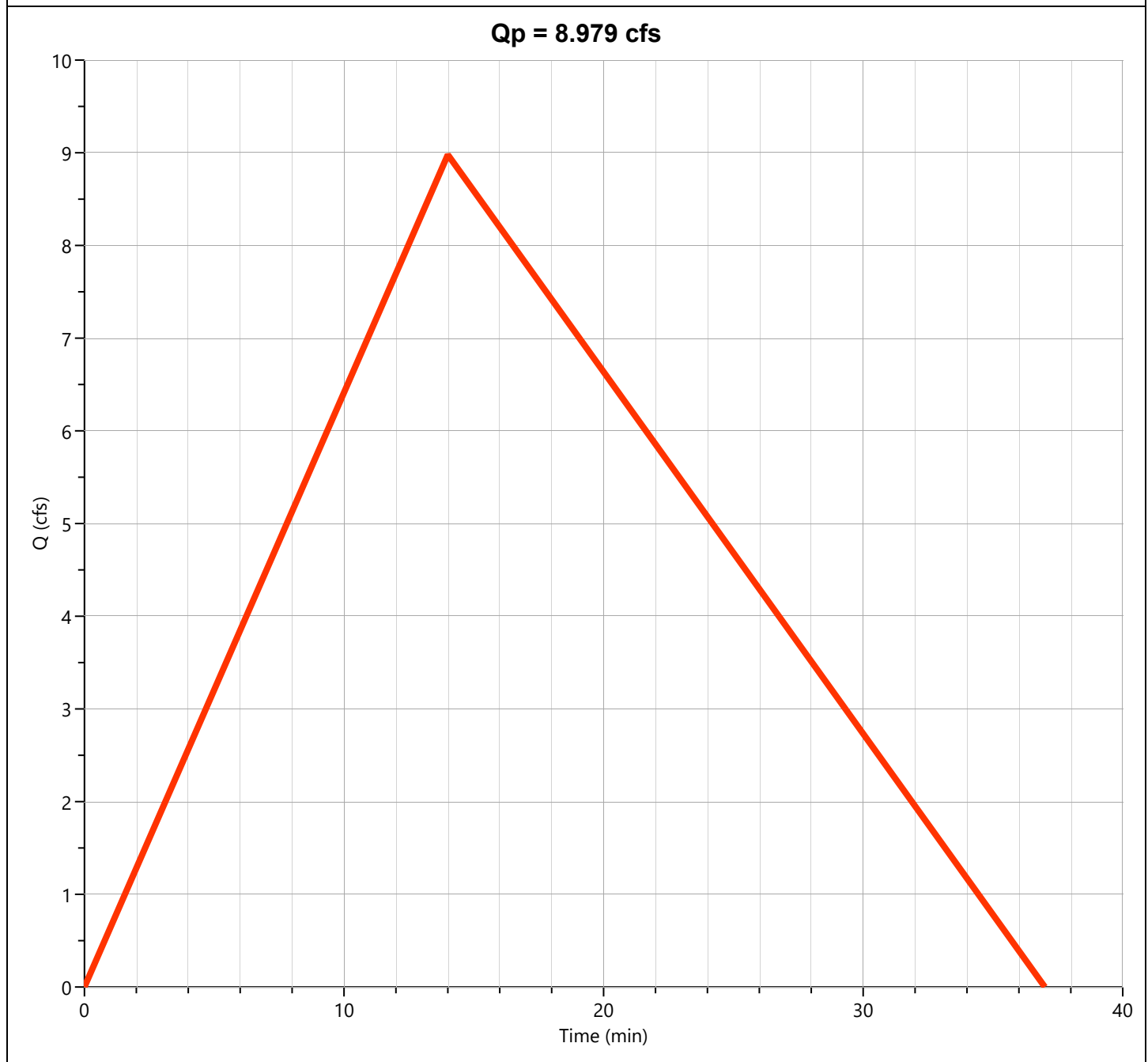
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 8.979 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.23 hrs
Time Interval	= 1 min	Runoff Volume	= 10,069 cuft
Drainage Area	= 3.53 ac	Runoff Coeff.	= 0.66
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 14.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.85 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Post-Dev Basin A Rational

Hyd. No. 9

Description	Segments			Tc (min)
	A	B	C	
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 (%)	3			
Travel Time (min)	12.44	0.00	0.00	12.44
Shallow Concentrated Flow				
Flow Length (ft)	519			
Watercourse Slope (%)	8.38	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.67			
Travel Time (min)	1.85	0.00	0.00	1.85
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				14 min

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

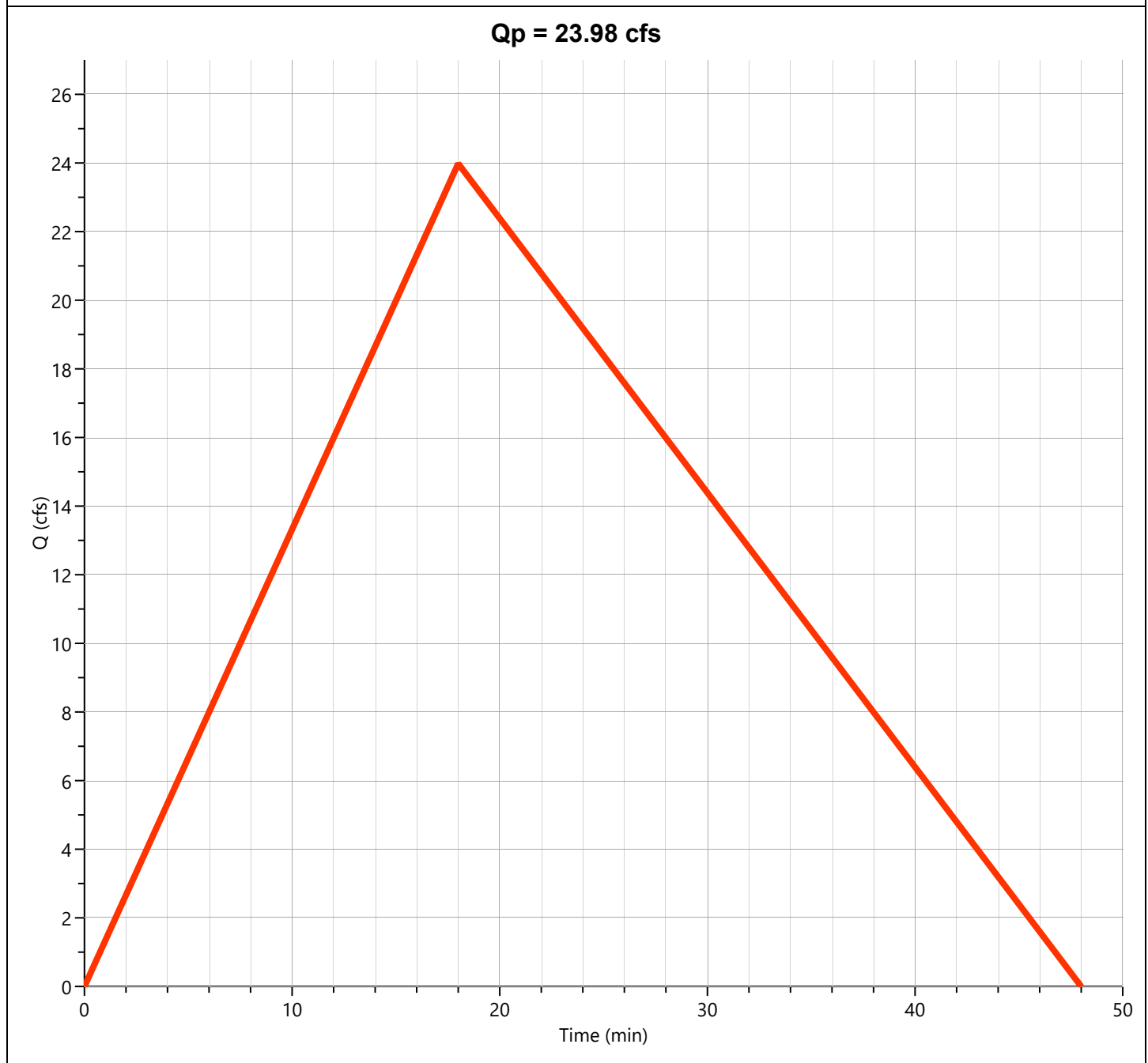
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 23.98 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.30 hrs
Time Interval	= 1 min	Runoff Volume	= 34,576 cuft
Drainage Area	= 12.45 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 18.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.44 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Post-Dev Basin B Rational

Hyd. No. 10

Description	Segments			Tc (min)
	A	B	C	
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)	1025			
Watercourse Slope (%)	5.49	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.78			
Travel Time (min)	4.52	0.00	0.00	4.52
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				18 min

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

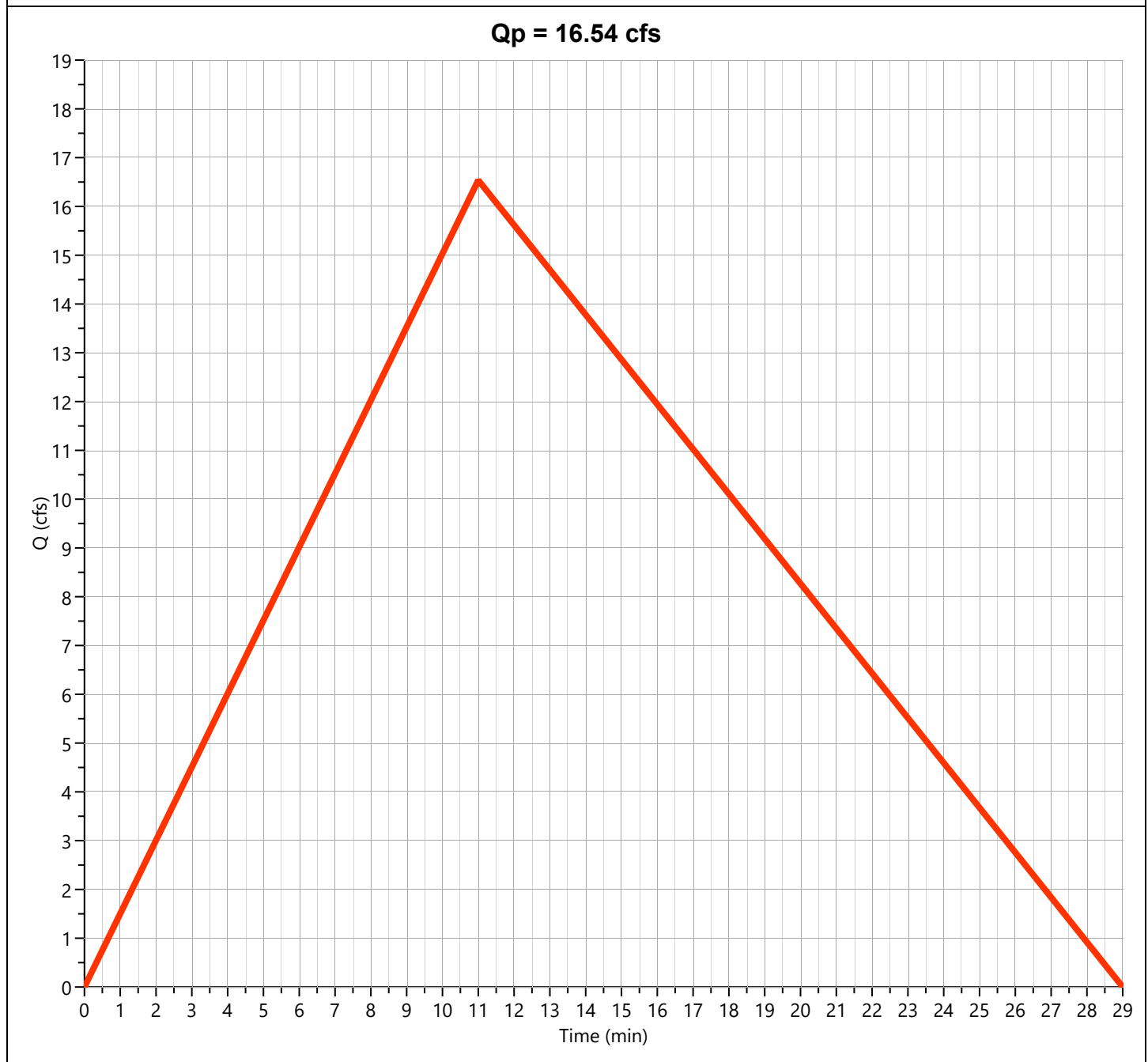
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Tc by TR55 Worksheet

Post-Dev Basin "C" Rational

Hyd. No. 11

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

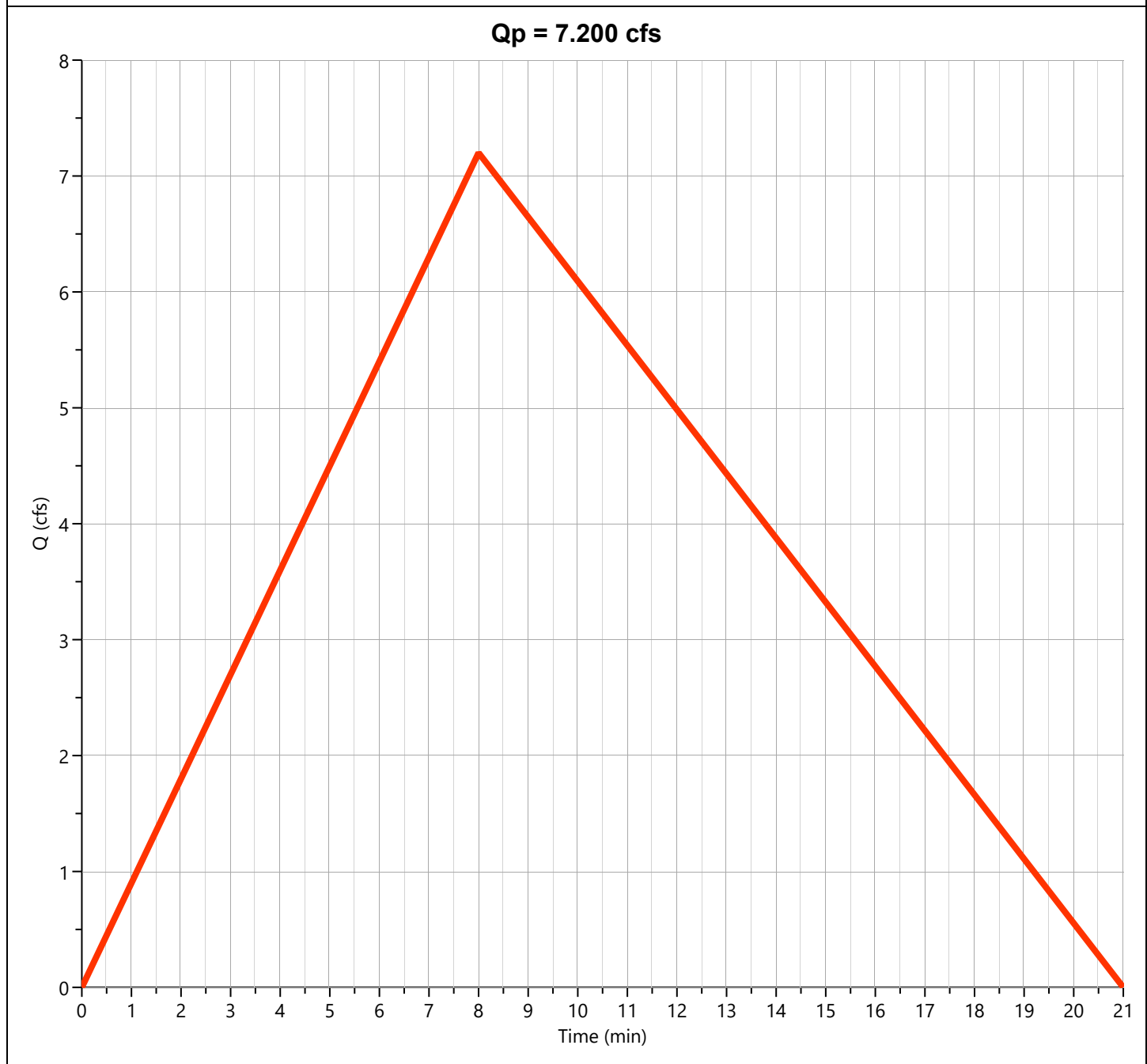
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 7.200 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 4,614 cuft
Drainage Area	= 2.59 ac	Runoff Coeff.	= 0.56
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

Post-Dev Basin "D" Rational

Hyd. No. 12

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

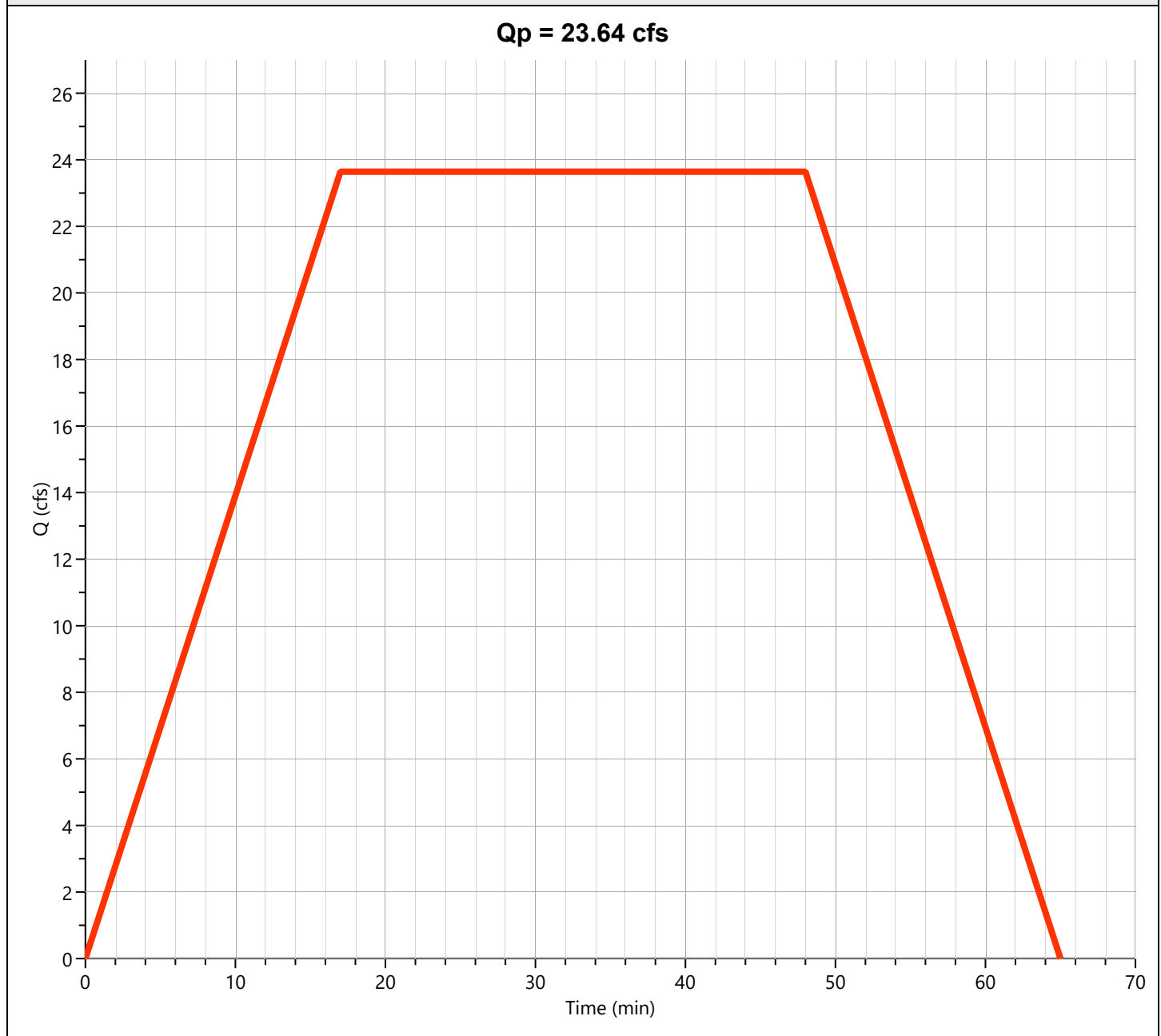
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Mod Rational	Peak Flow	= 23.64 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 68,090 cuft
Drainage Area	= 16.23 ac	Runoff Coeff.	= 0.66
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 2.21 in/hr
Freq. Corr. Factor	= 1.00	Storm Duration	= 2.82 x Tc
Target Q	= 0.000 cfs	Required Storage	= 0.000 cuft



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
 File: Detention Calculation 3-4-26.hys
 03-04-2026

Detention Basin

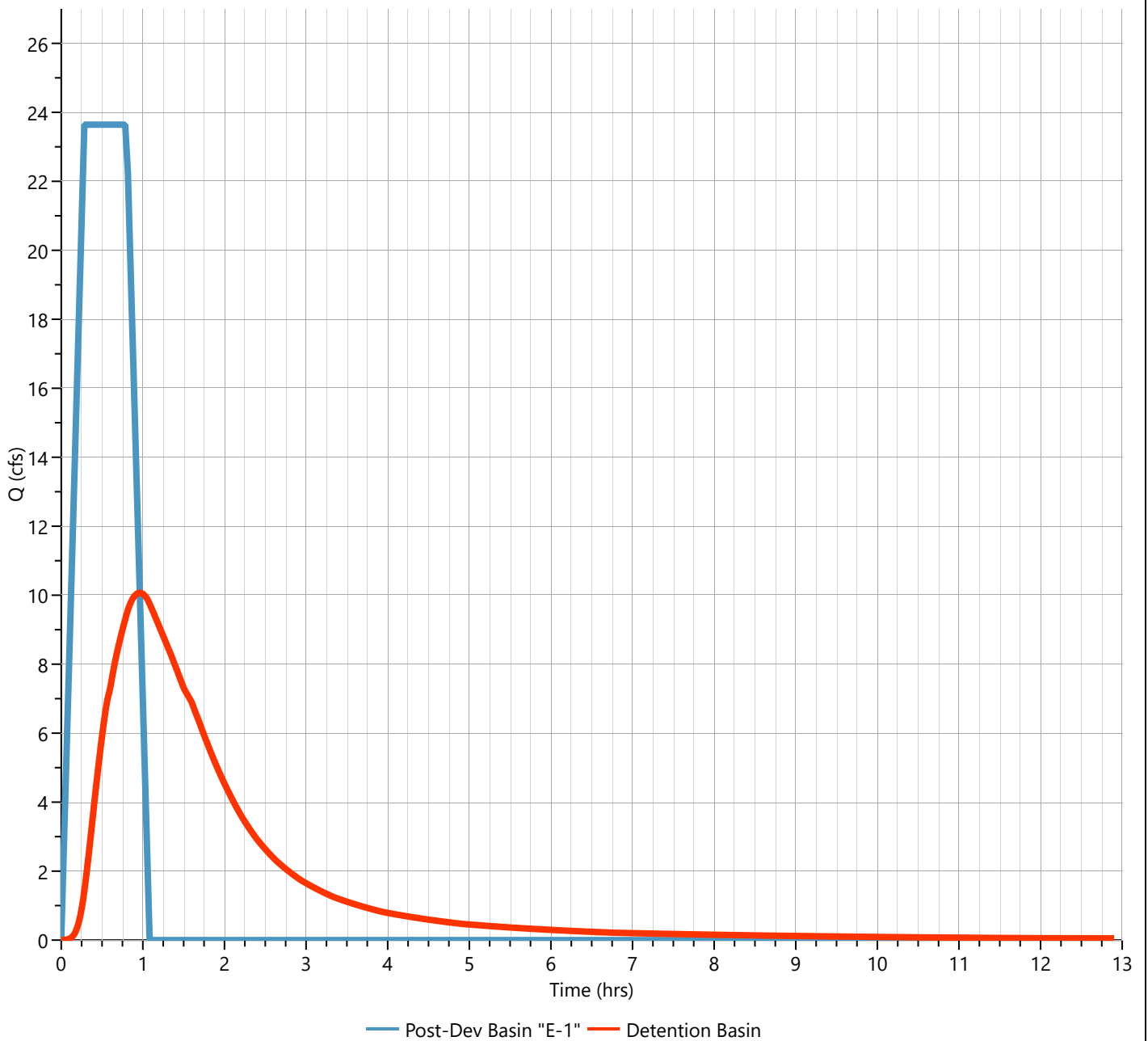
Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 10.07 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.97 hrs
Time Interval	= 1 min	Hydrograph Volume	= 68,005 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 477.15 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 48,434 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.35 hrs

Qp = 10.07 cfs



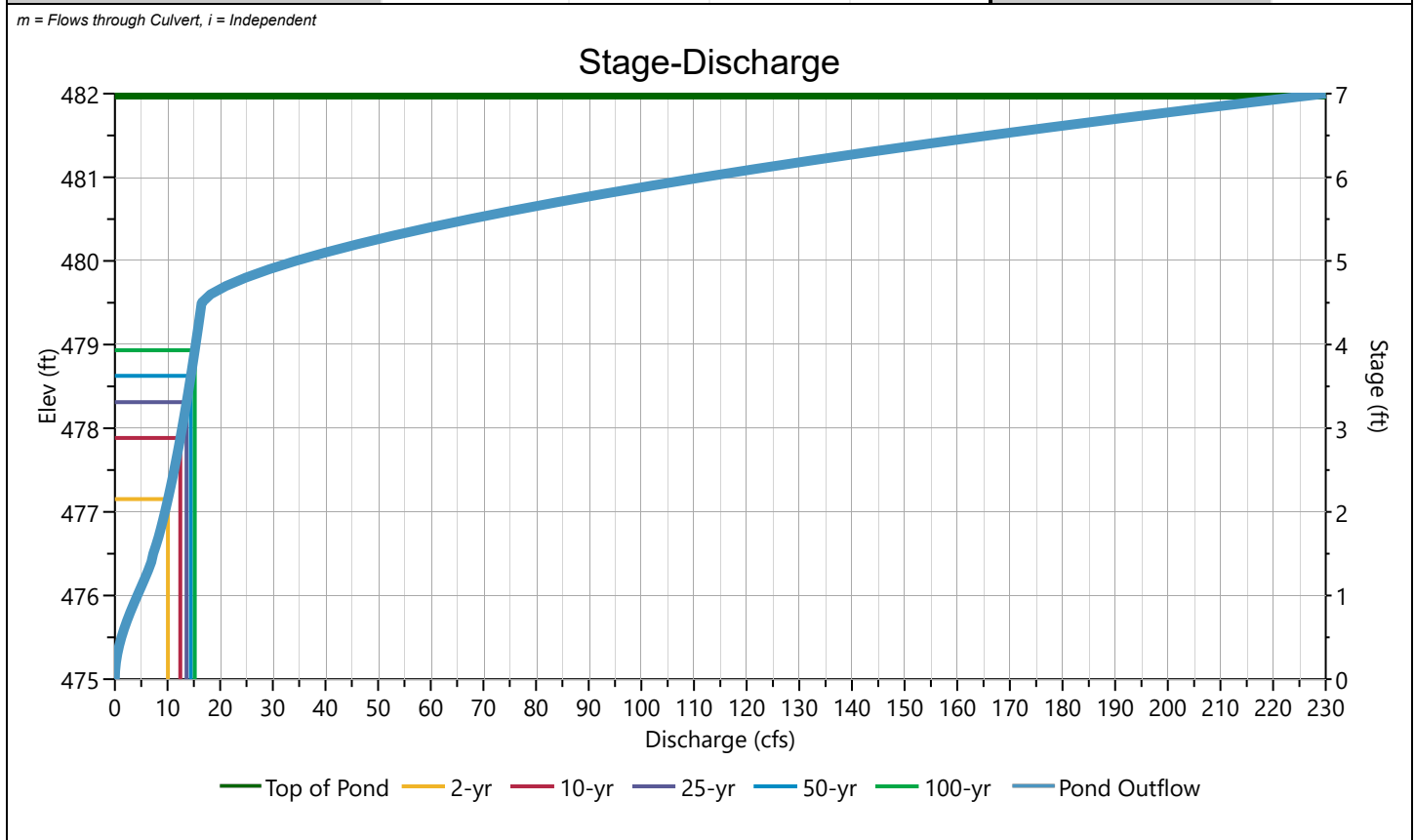
Pond Report

Hilltop Detention Pond

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Perforated Riser
		1	2	3	
Rise, in	18				Hole Diameter, in
Span, in	18				No. holes
No. Barrels	1				Invert Elevation, ft
Invert Elevation, ft	475.00				Height, ft
Orifice Coefficient, Co	0.60				Orifice Coefficient, Co
Length, ft	57				
Barrel Slope, %	1.17				
N-Value, n	0.013				
Weirs	Riser	Weir			Ancillary
Shape / Type		1 (i)	2	3	Exfiltration, in/hr
Crest Elevation, ft		Broad Crested			
Crest Length, ft		479.5			
Angle, deg		14			
Weir Coefficient, Cw		45 (1:1)			
		3.3			

m = Flows through Culvert, i = Independent



Pond Report

Hilltop Detention Pond

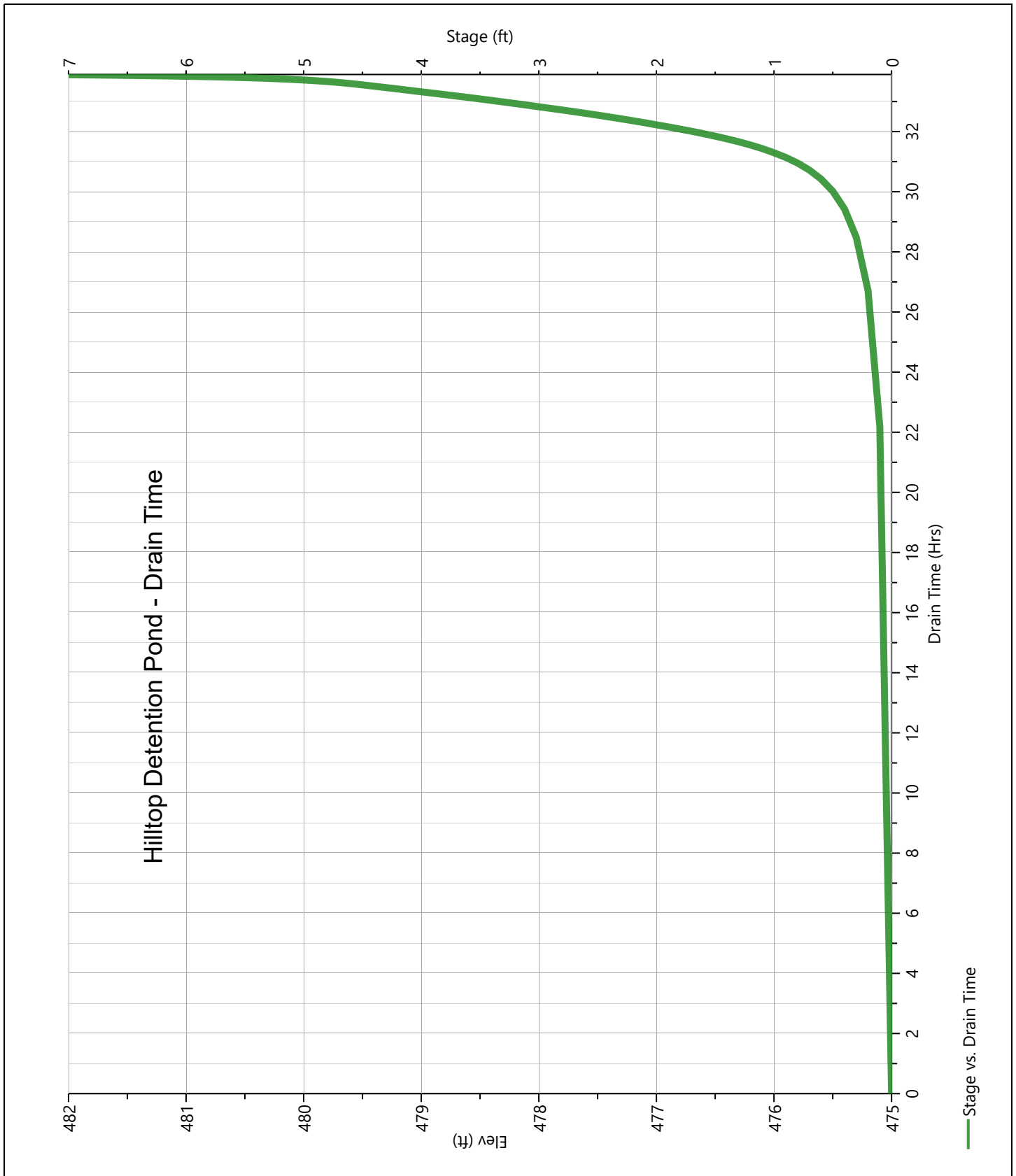
Stage-Storage-Discharge Summary

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	475.00	0.000	0.000					0.000						0.000
1.00	476.00	21,843	4.265 ic					0.000						4.265
2.00	477.00	44,773	9.512 ic					0.000						9.512
3.00	478.00	68,824	12.76 ic					0.000						12.76
4.00	479.00	94,029	15.34 ic					0.000						15.34
5.00	480.00	120,421	17.54 ic					16.80						34.34
6.00	481.00	148,035	19.49 ic					92.15						111.6
7.00	482.00	177,357	21.27 ic					208.7						230.0

Pond Report

Hilltop Detention Pond

Pond Drawdown



Hydrograph Report

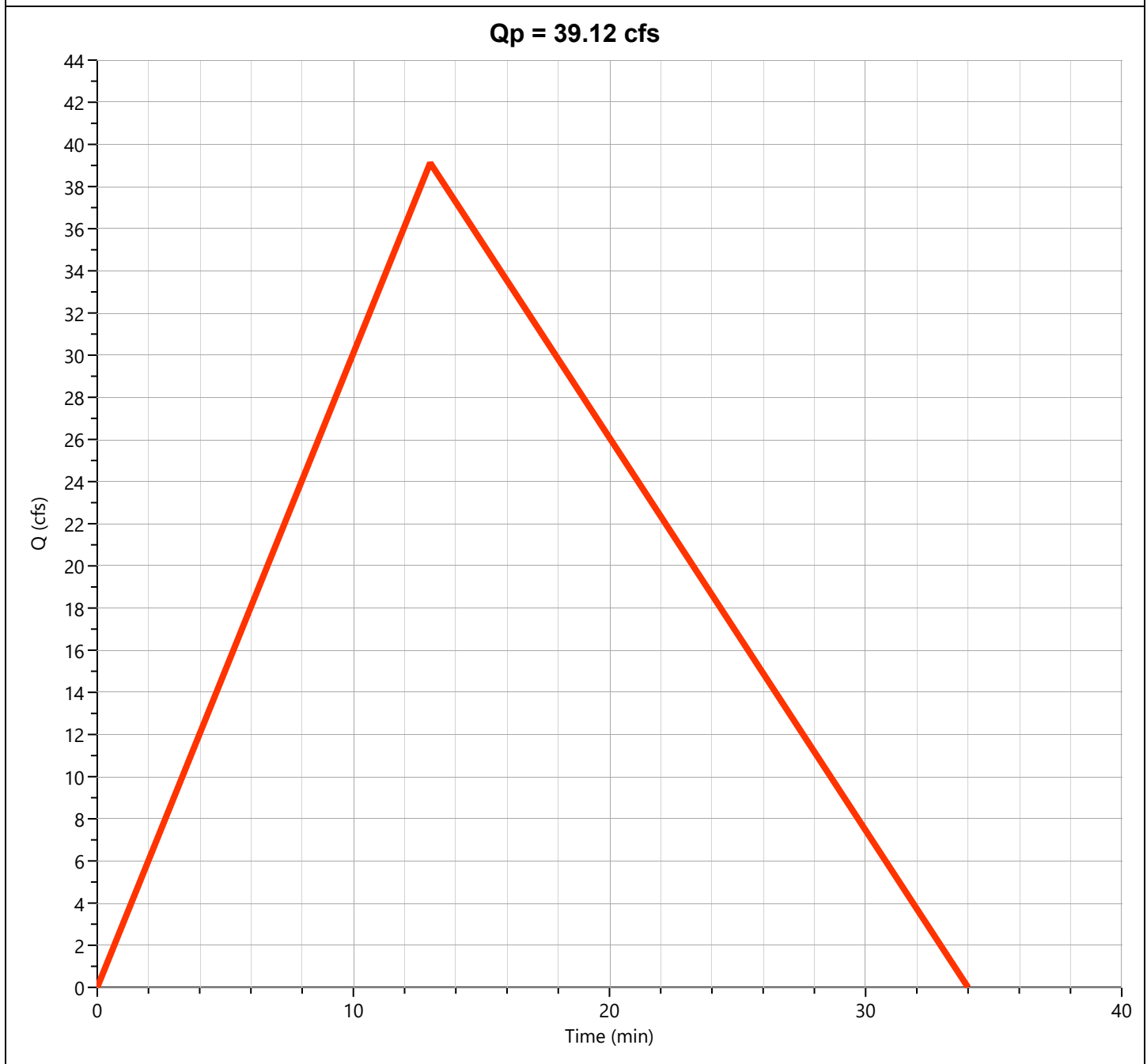
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 39.12 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 40,738 cuft
Drainage Area	= 17.53 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



Tc by TR55 Worksheet

Post-Dev Basin "E-2" Rational

Hyd. No. 15

Description	Segments			Tc (min)
	A	B	C	
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

Hydrograph Report

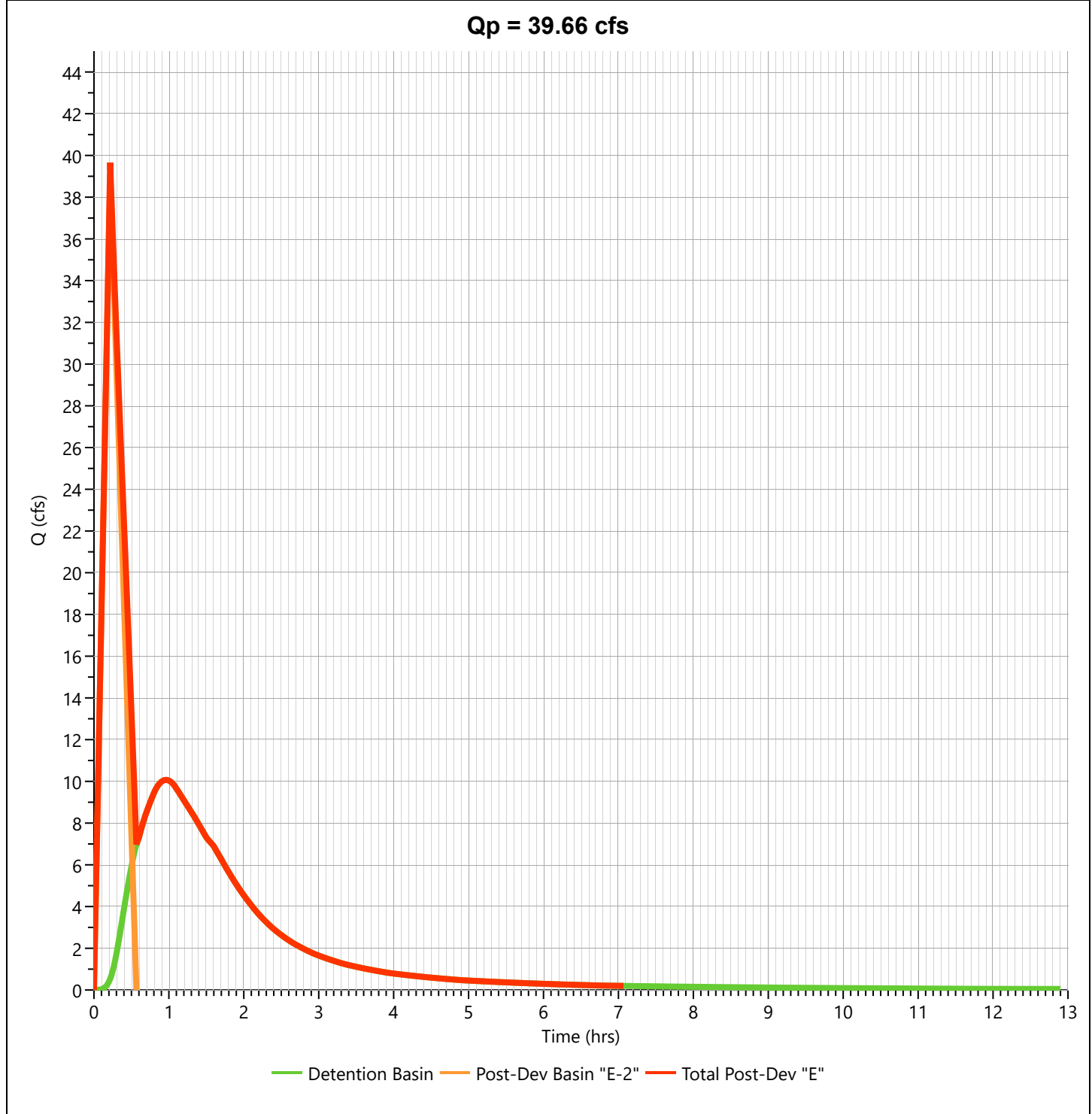
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Total Post-Dev "E"

Hyd. No. 16

Hydrograph Type	= Junction	Peak Flow	= 39.66 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 107,909 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 17.53 ac



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

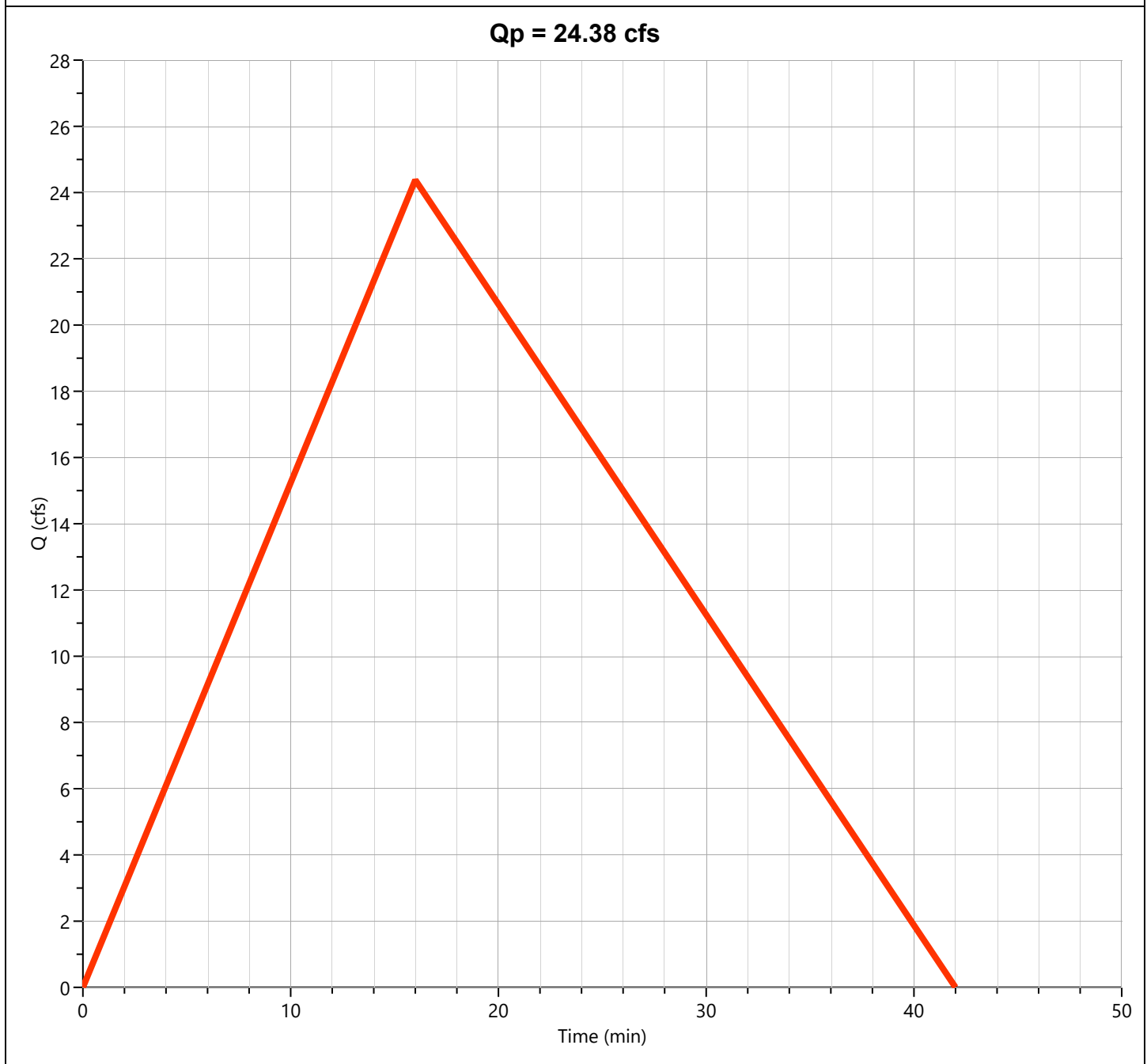
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 24.38 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 31,245 cuft
Drainage Area	= 12.0 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



Tc by TR55 Worksheet

Post-Dev Basin "F" Rational

Hyd. No. 17

Description	Segments			Tc (min)
	A	B	C	
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)	1449			
Watercourse Slope (%)	4.90	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.57			
Travel Time (min)	6.76	0.00	0.00	6.76
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

Hydrograph 10-yr Summary

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

File: Detention Calculation 3-4-26.hys

03-04-2026

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	12.04	0.23	13,505	---		
10	Rational	Post-Dev Basin B	32.19	0.30	46,411	---		
11	Rational	Post-Dev Basin "C"	22.16	0.18	19,529	---		
12	Rational	Post-Dev Basin "D"	9.641	0.13	6,178	---		
13	Mod Rational	Post-Dev Basin "E-1"	31.83	0.28	91,663	---		
14	Pond Route	Detention Basin	12.42	0.97	91,575	13	477.88	66,000
15	Rational	Post-Dev Basin "E-2"	52.46	0.22	54,628	---		
16	Junction	Total Post-Dev "E"	53.39	0.22	145,085	14, 15		
17	Rational	Post-Dev Basin "F"	32.71	0.27	41,924	---		

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

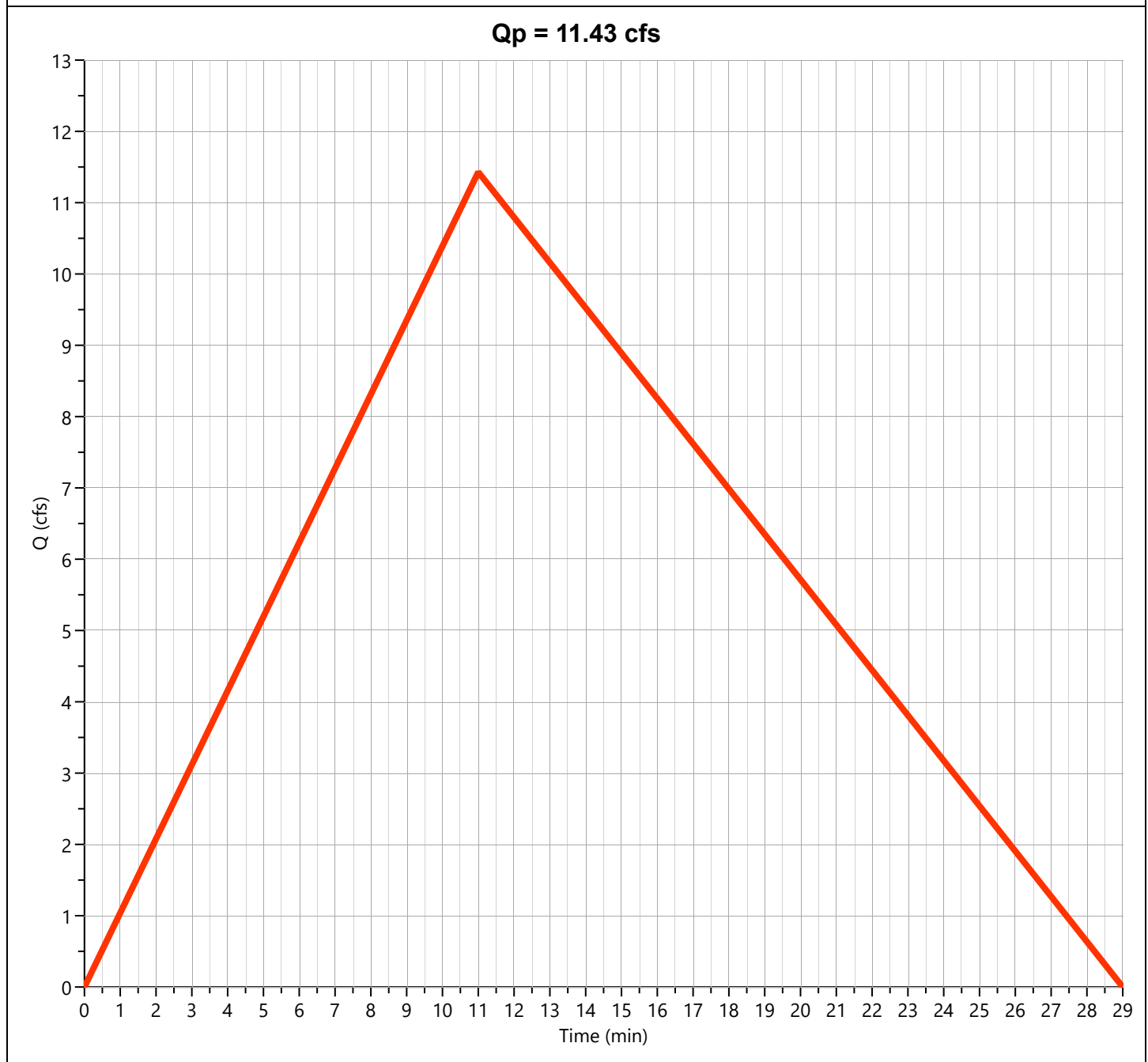
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

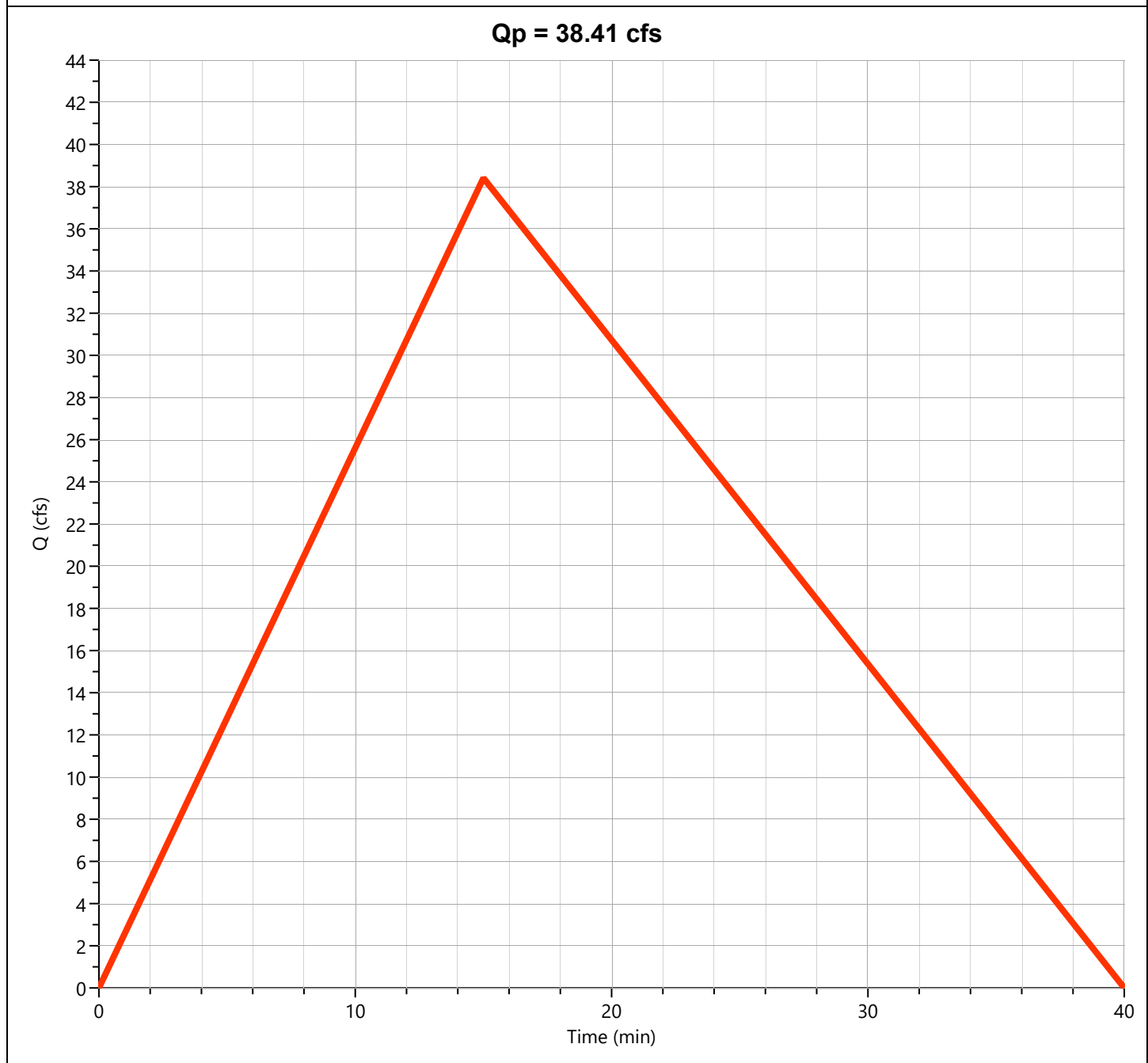
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

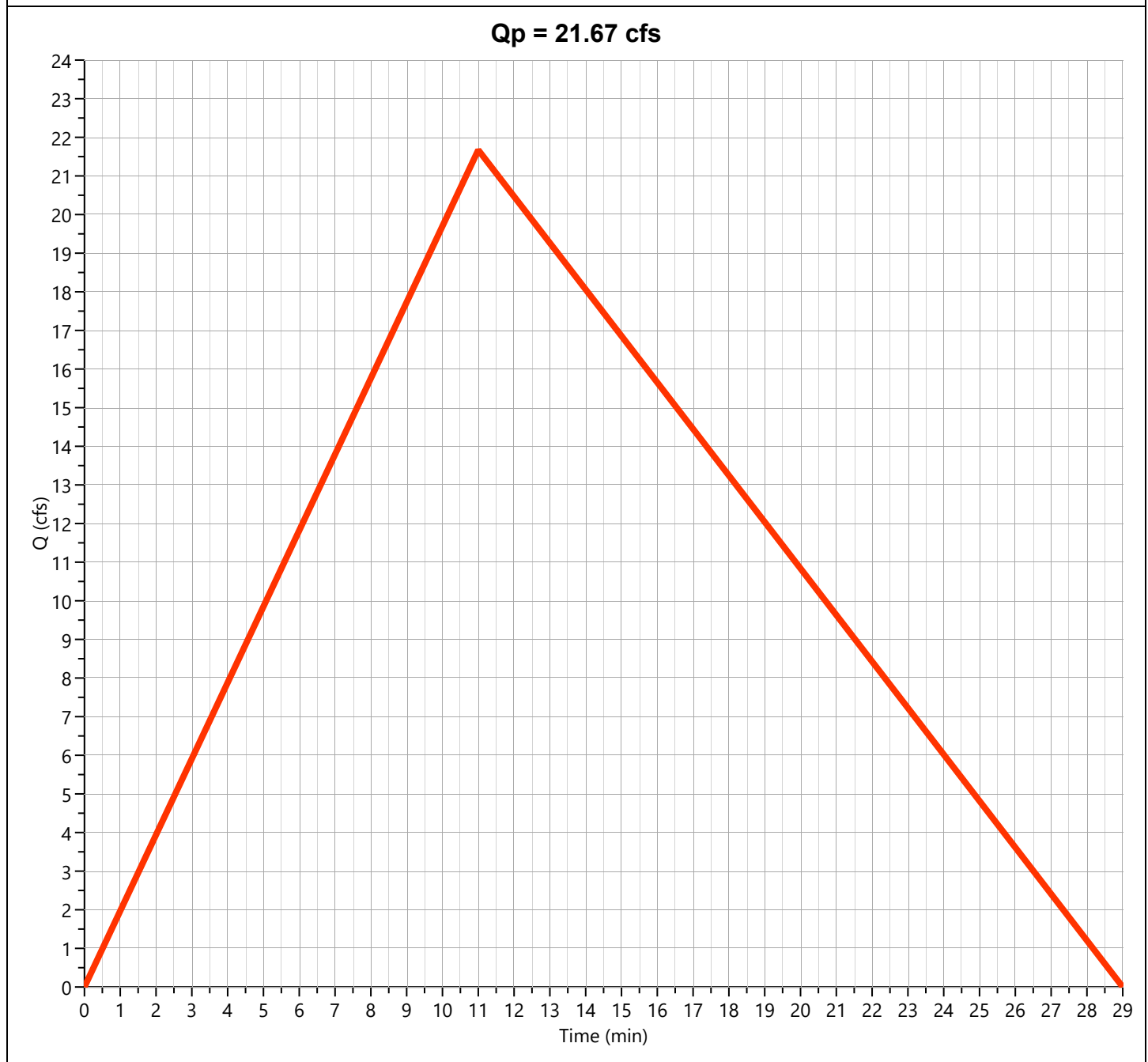
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

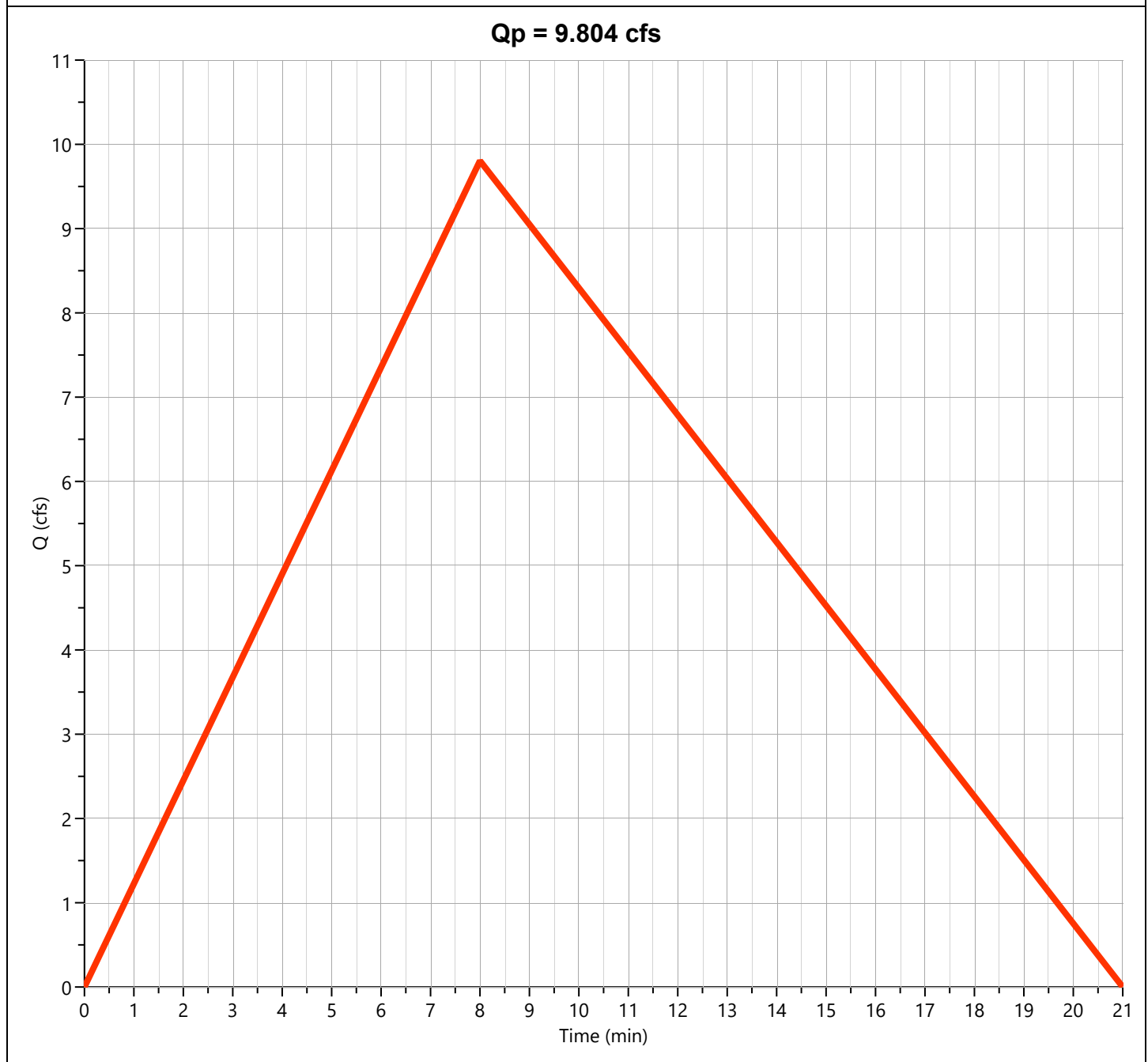
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

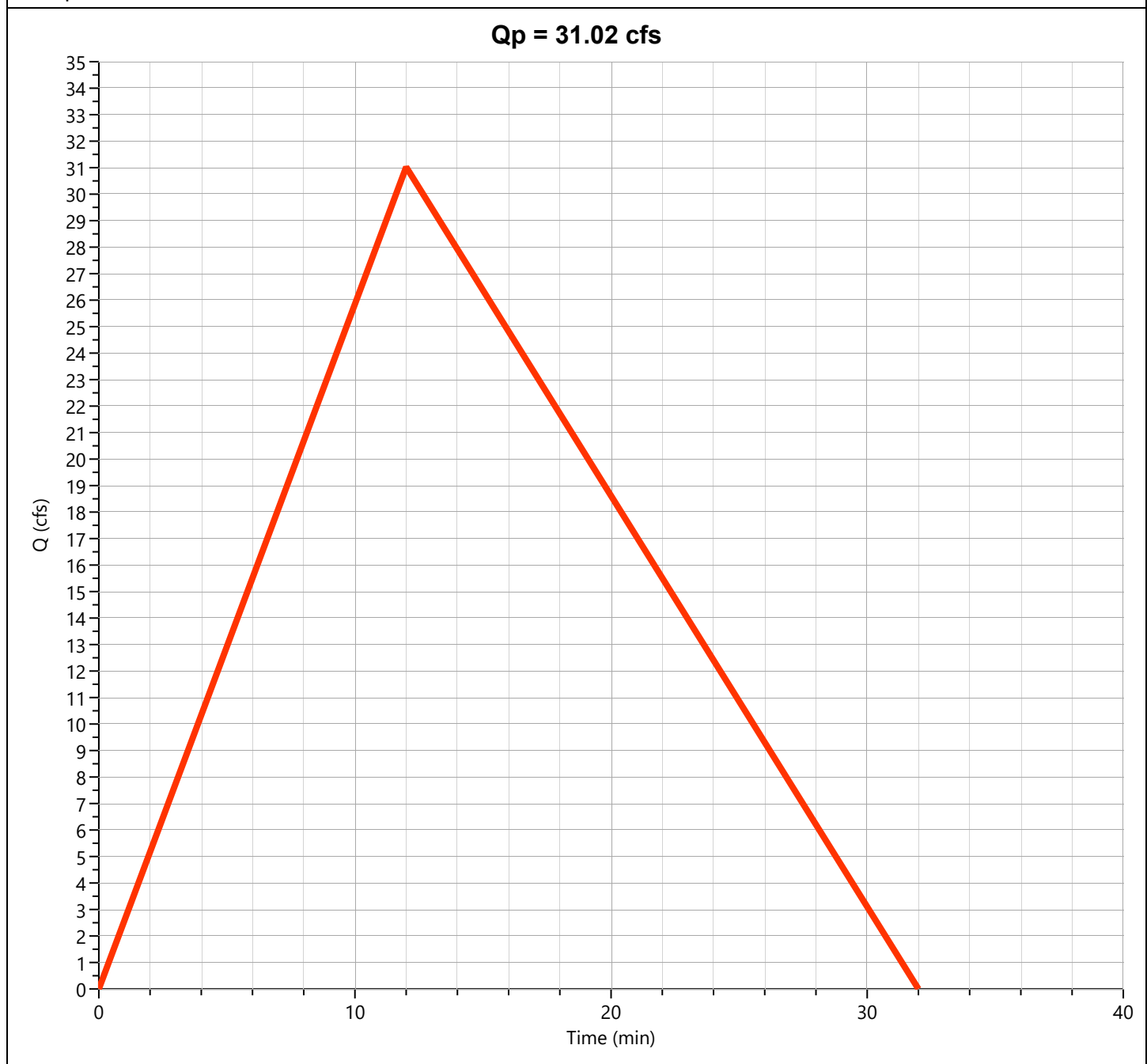
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

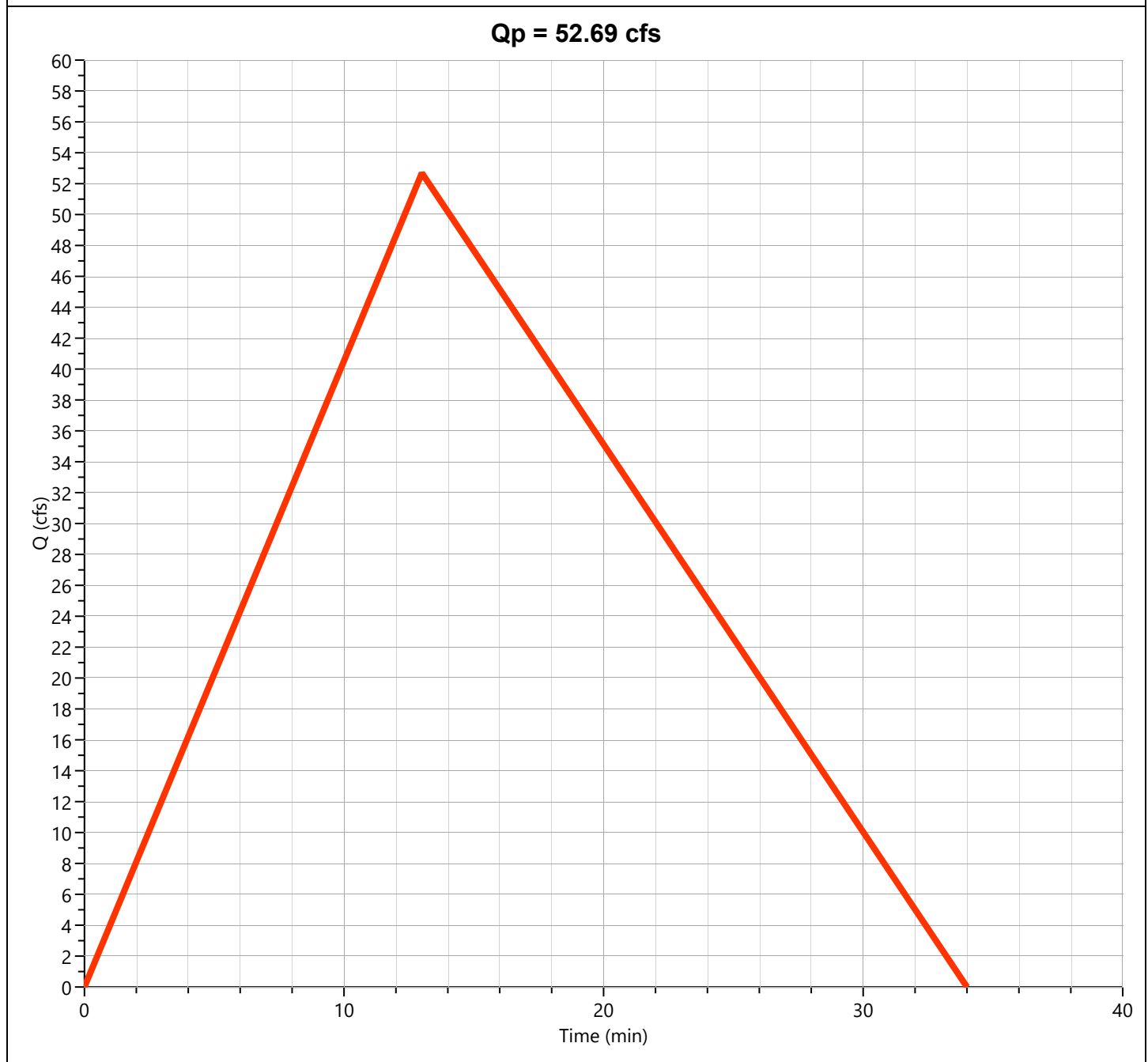
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03-04-2026

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



Hydrograph Report

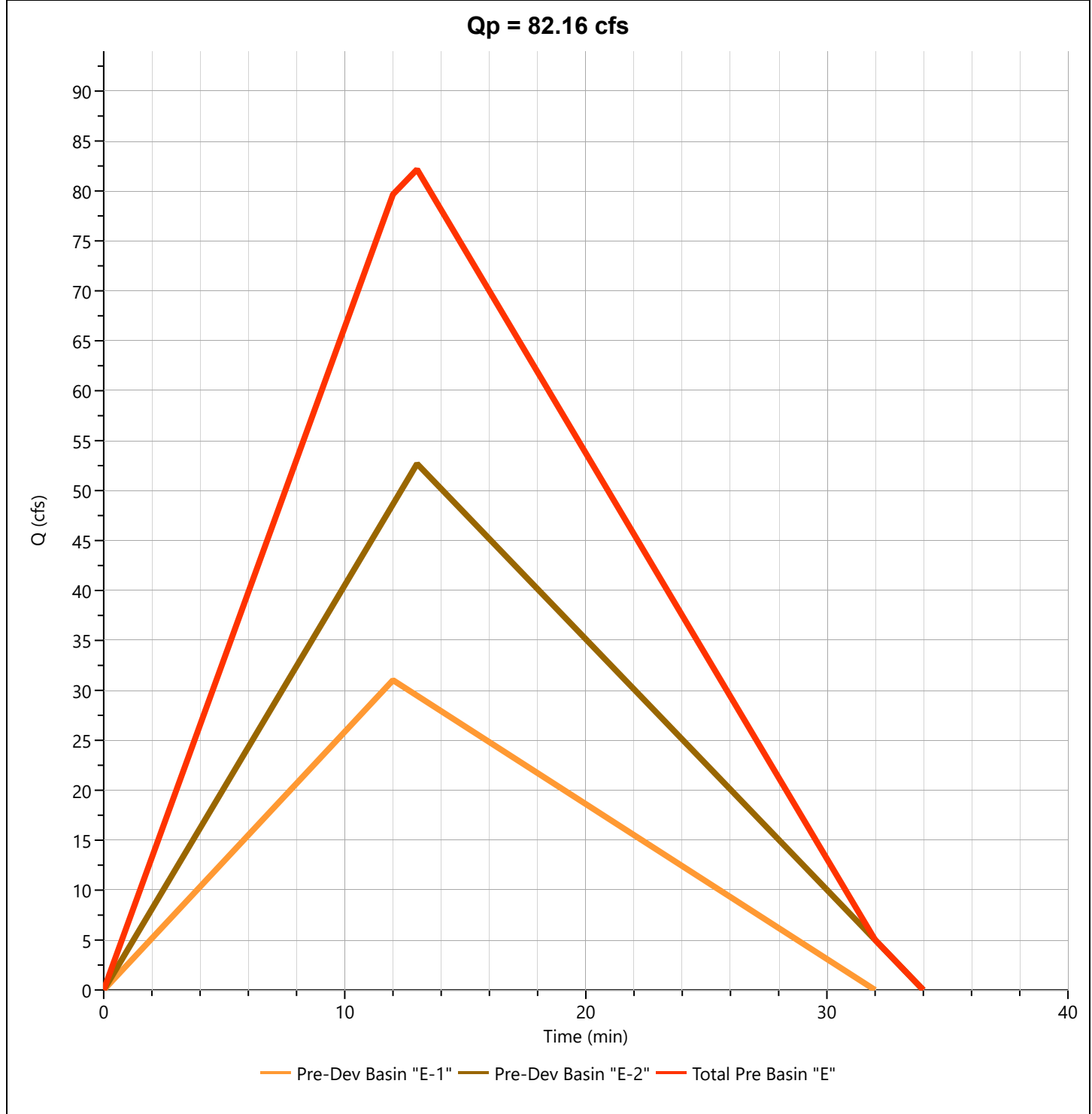
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

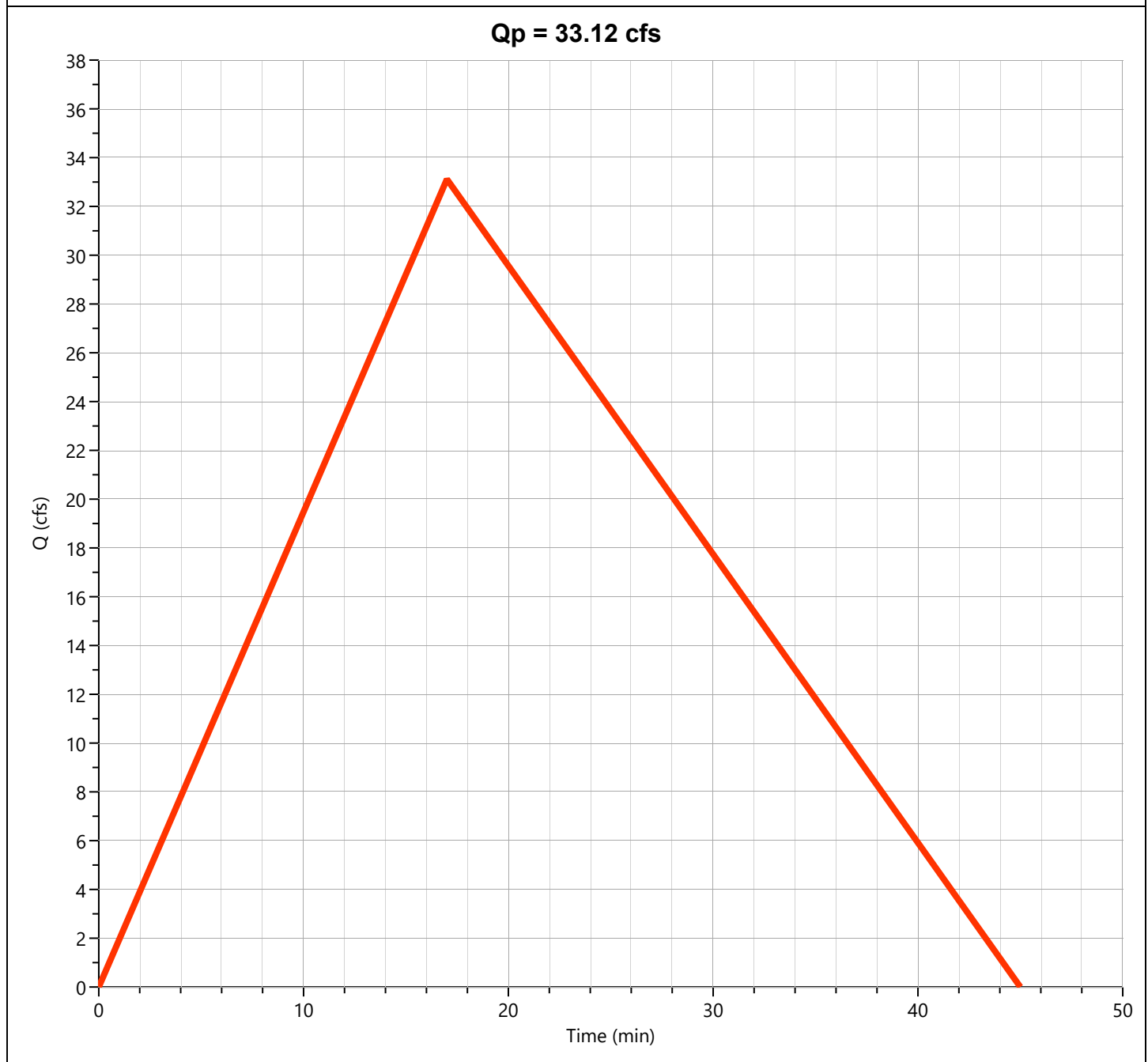
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

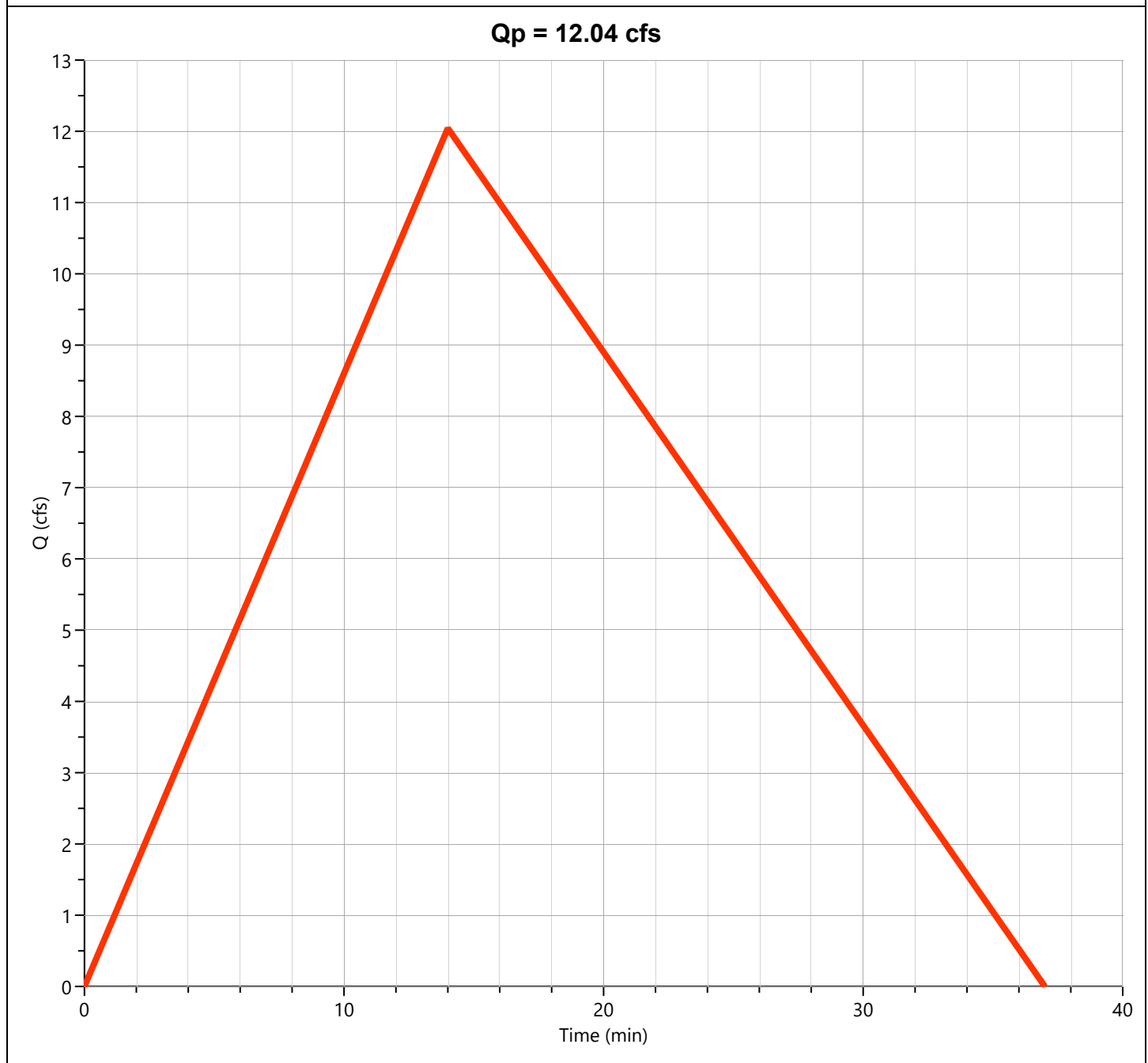
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03-04-2026

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 12.04 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.23 hrs
Time Interval	= 1 min	Runoff Volume	= 13,505 cuft
Drainage Area	= 3.53 ac	Runoff Coeff.	= 0.66
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 14.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.17 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

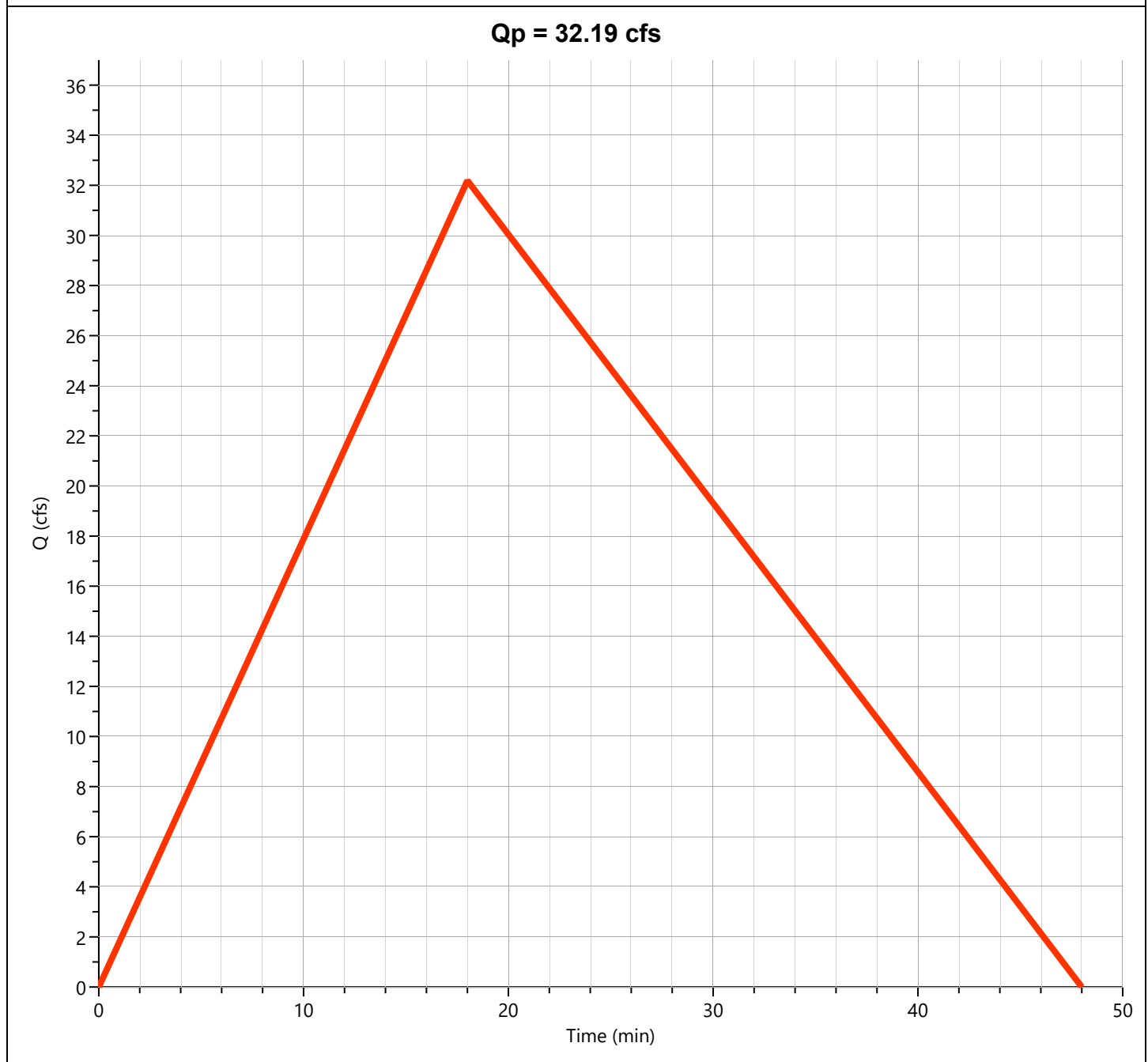
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 32.19 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.30 hrs
Time Interval	= 1 min	Runoff Volume	= 46,411 cuft
Drainage Area	= 12.45 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 18.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

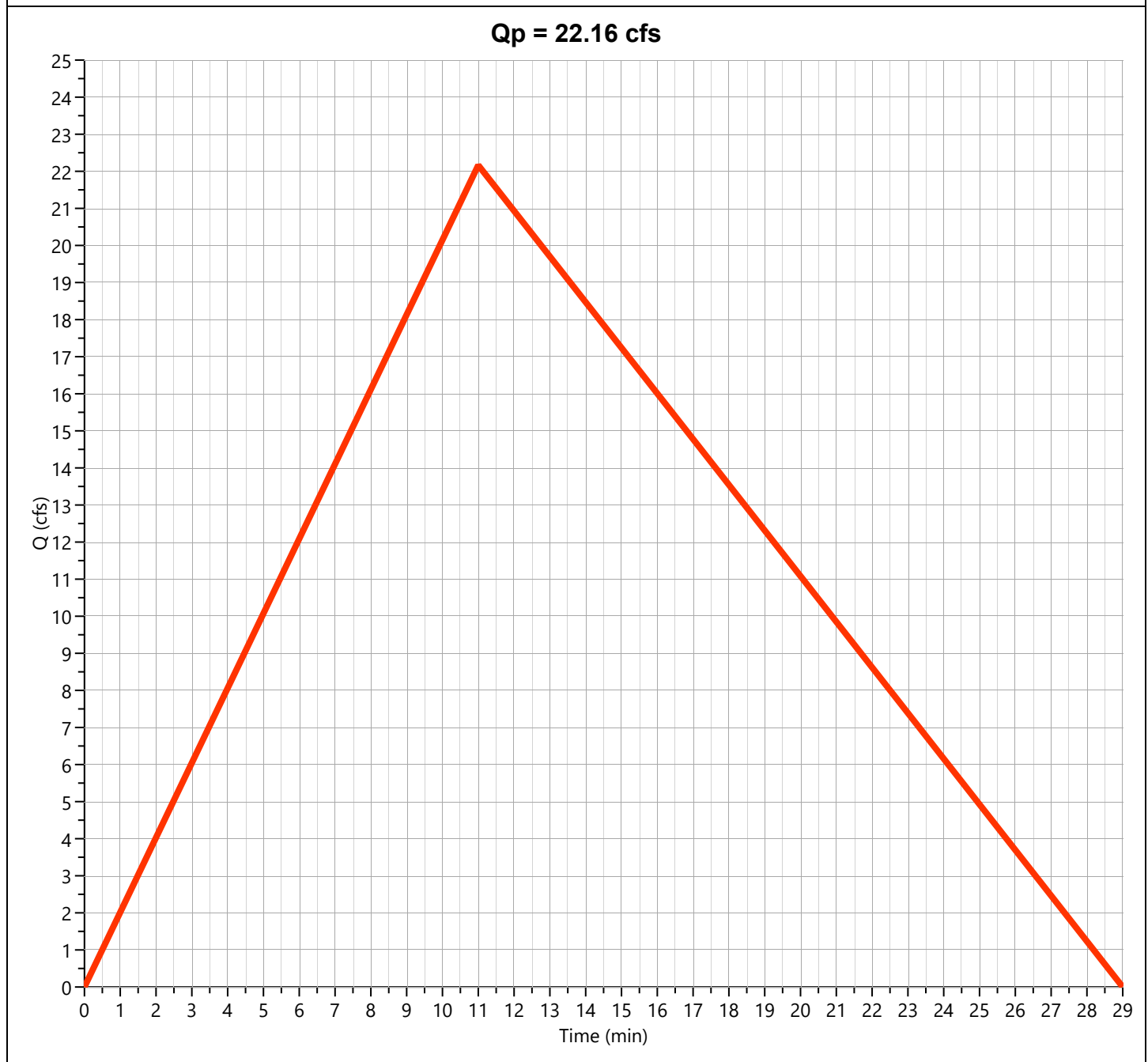
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

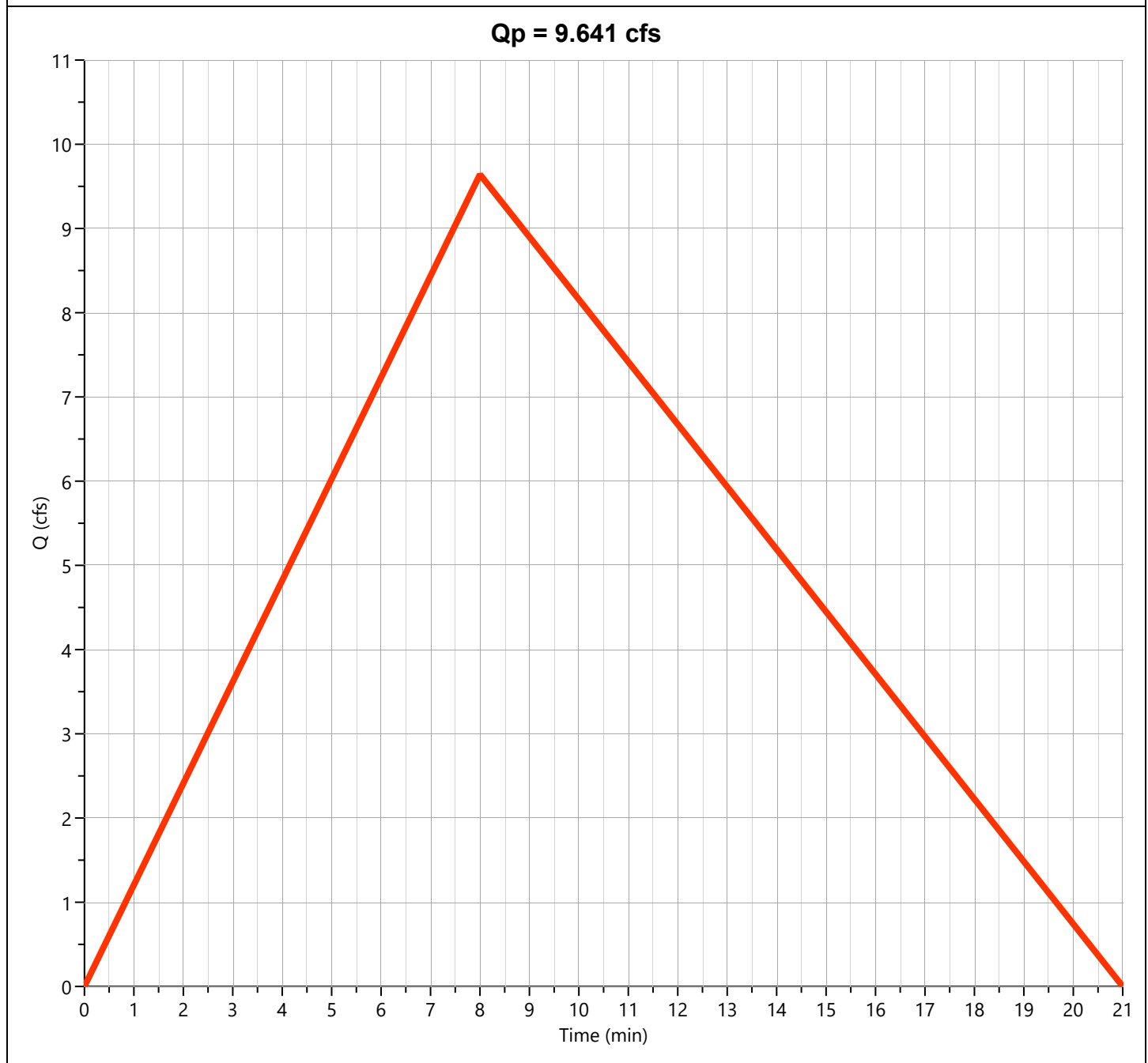
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 9.641 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 6,178 cuft
Drainage Area	= 2.59 ac	Runoff Coeff.	= 0.56
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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

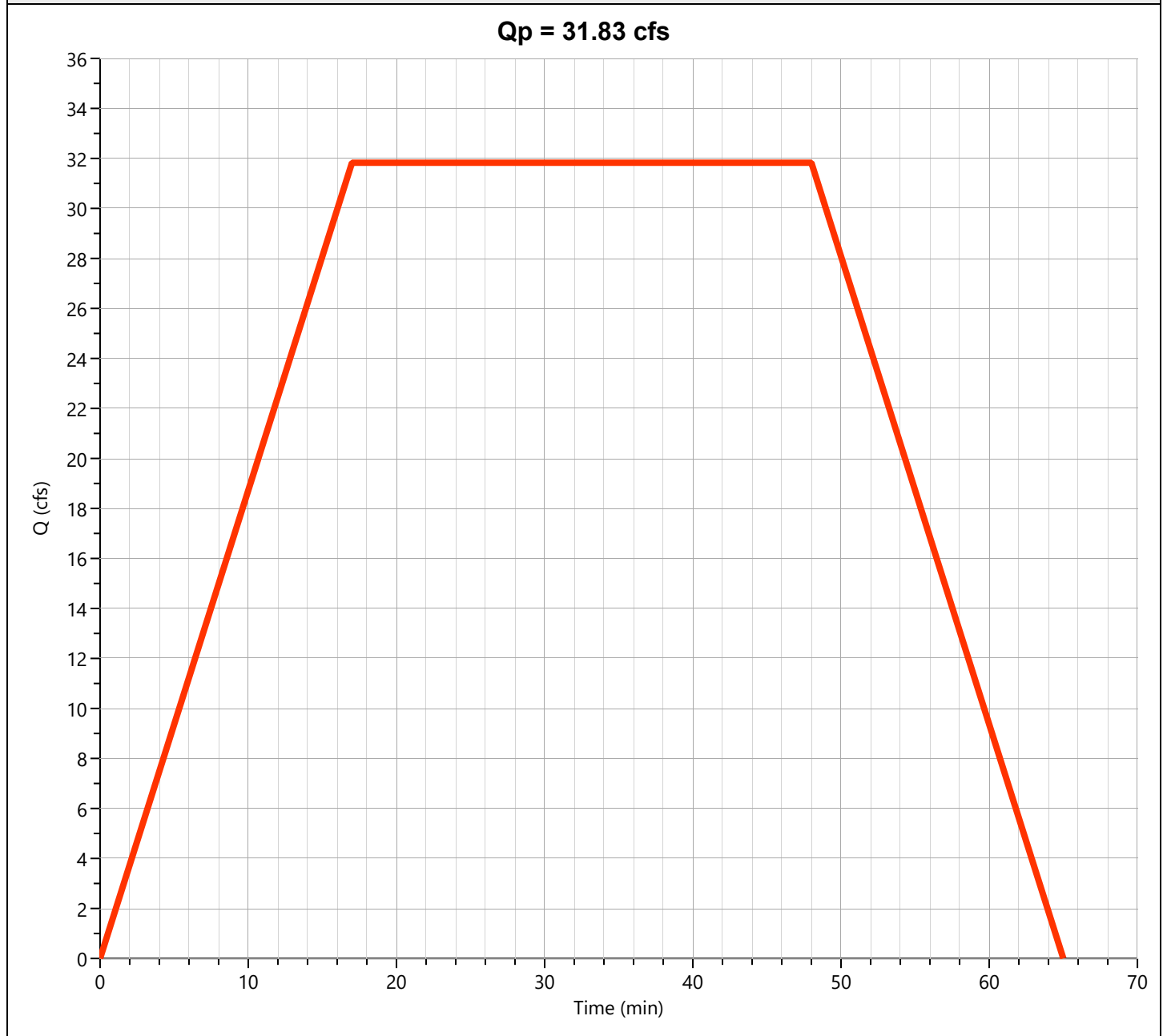
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Mod Rational	Peak Flow	= 31.83 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 91,663 cuft
Drainage Area	= 16.23 ac	Runoff Coeff.	= 0.66
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 2.97 in/hr
Freq. Corr. Factor	= 1.00	Storm Duration	= 2.82 x Tc
Target Q	= 0.000 cfs	Required Storage	= 0.000 cuft



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

File: Detention Calculation 3-4-26.hys

03-04-2026

Detention Basin

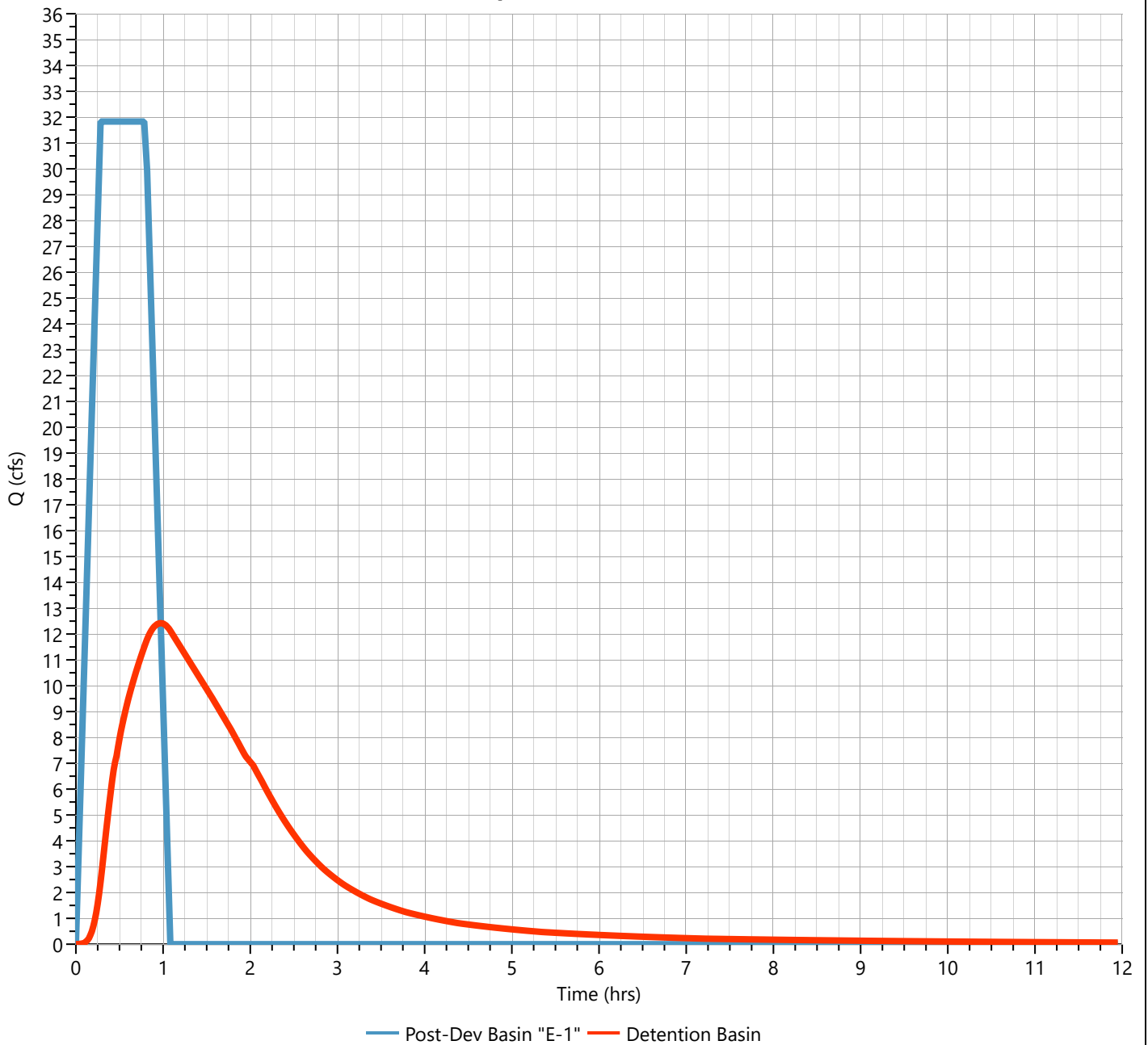
Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 12.42 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.97 hrs
Time Interval	= 1 min	Hydrograph Volume	= 91,575 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 477.88 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 66,000 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.34 hrs

Qp = 12.42 cfs



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

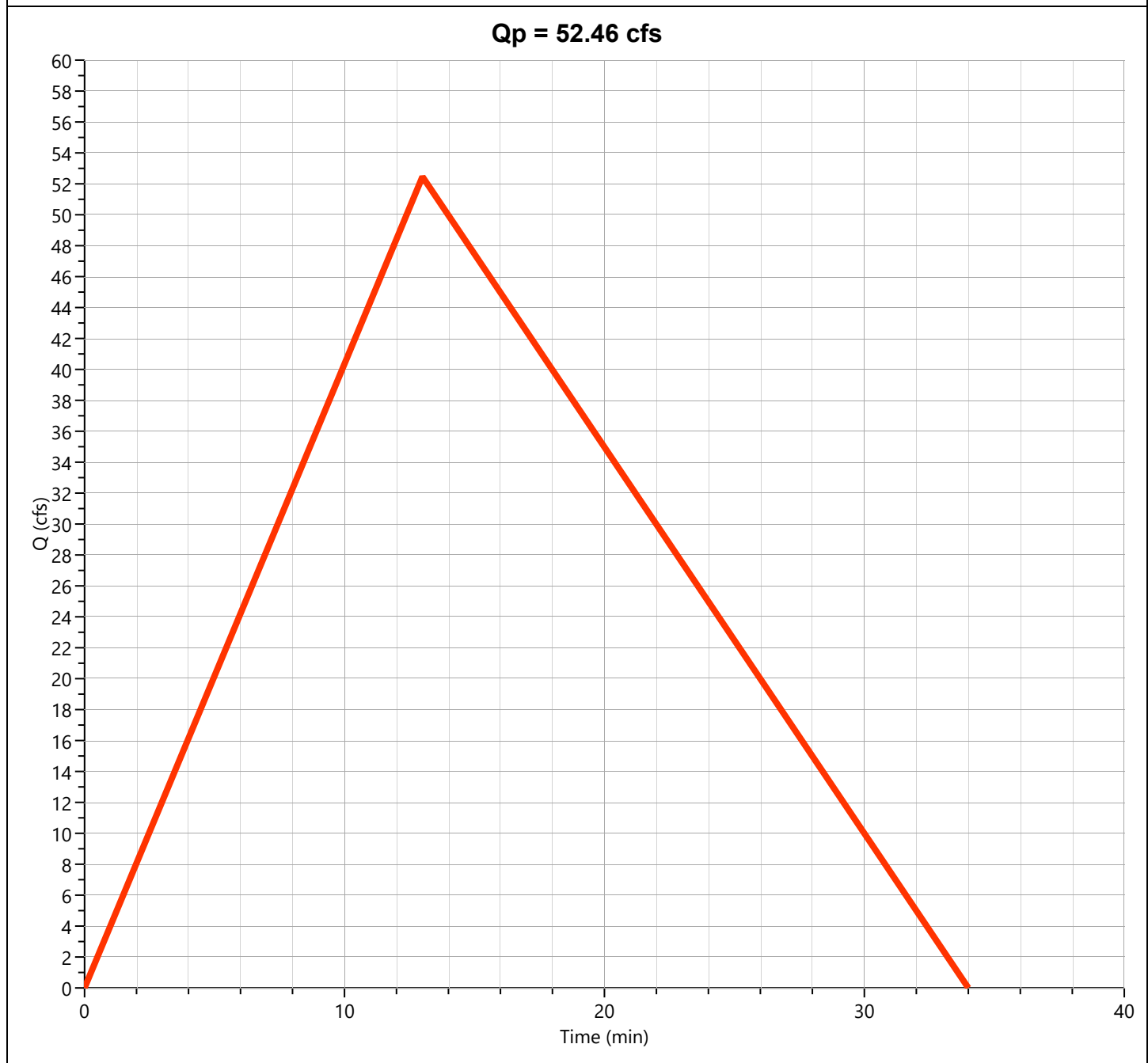
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 52.46 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 54,628 cuft
Drainage Area	= 17.53 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



Hydrograph Report

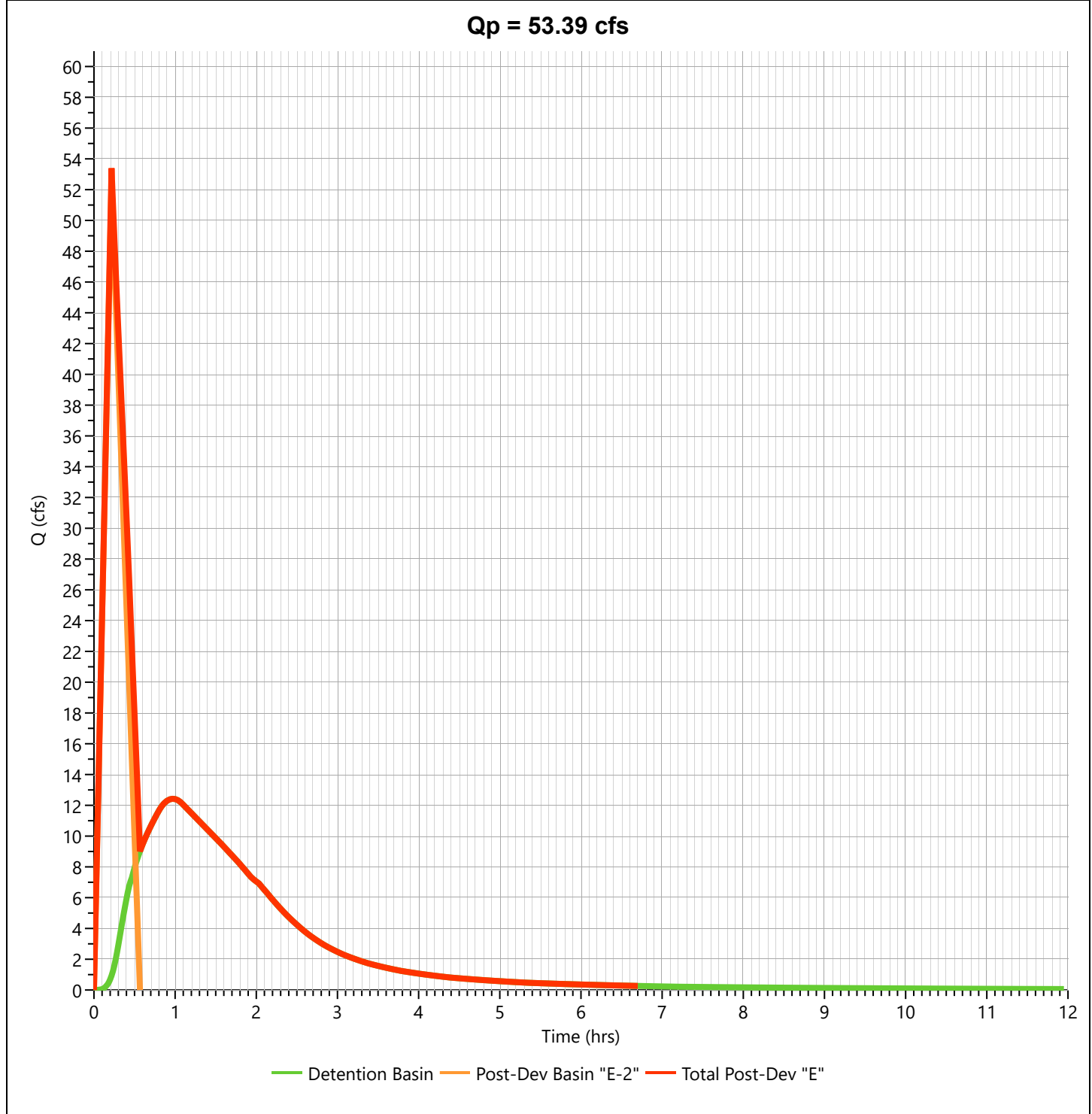
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Total Post-Dev "E"

Hyd. No. 16

Hydrograph Type	= Junction	Peak Flow	= 53.39 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 145,085 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 17.53 ac



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

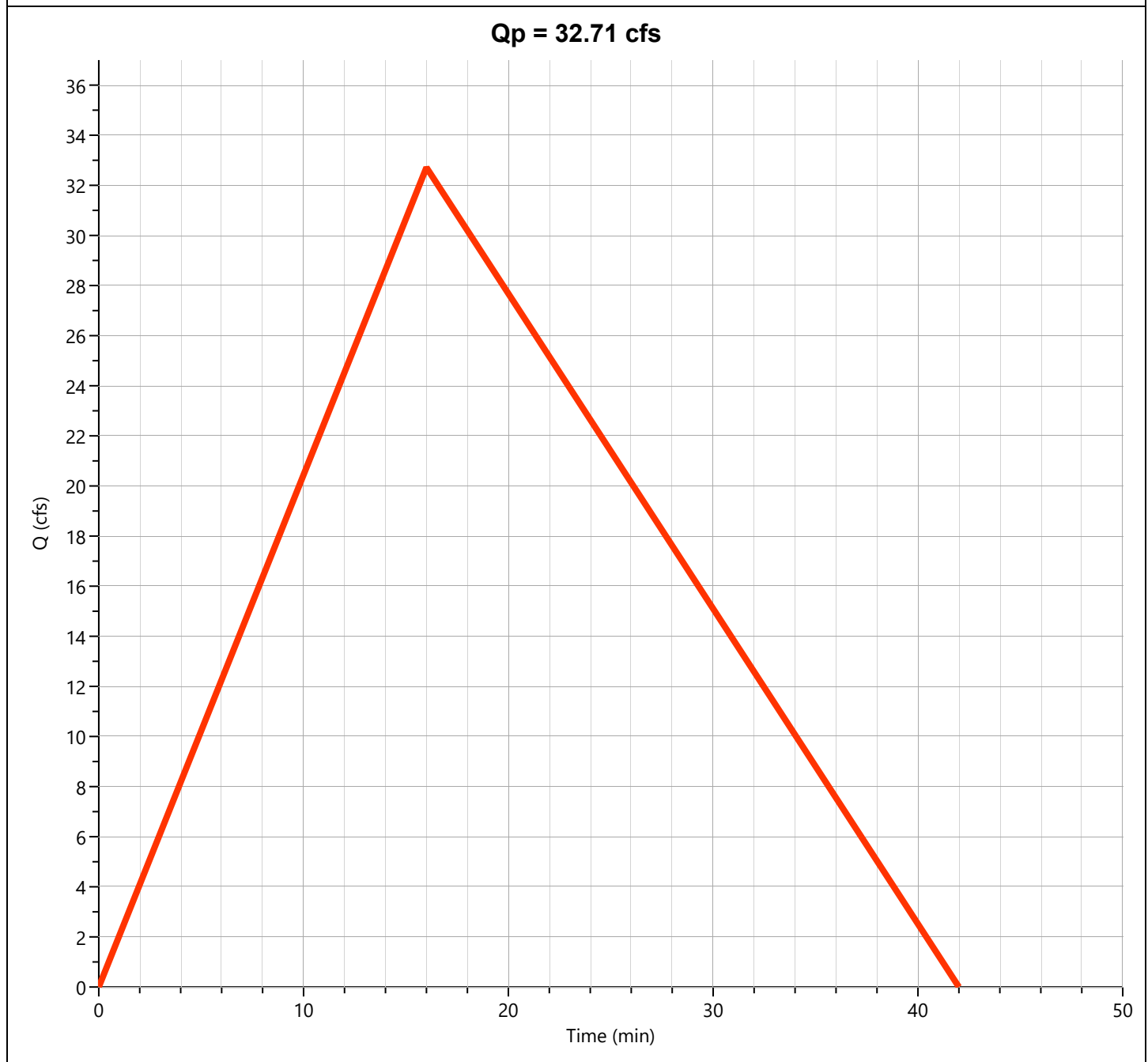
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 32.71 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 41,924 cuft
Drainage Area	= 12.0 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



Hydrograph 25-yr Summary

Project Name: Hilltop Subdivision
 File: Detention Calculation 3-4-26.hys

Hydrology Studio v 3.0.0.39

03-04-2026

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	13.84	0.23	15,521	---		
10	Rational	Post-Dev Basin B	37.00	0.30	53,350	---		
11	Rational	Post-Dev Basin "C"	25.47	0.18	22,441	---		
12	Rational	Post-Dev Basin "D"	11.08	0.13	7,098	---		
13	Mod Rational	Post-Dev Basin "E-1"	36.61	0.28	105,431	---		
14	Pond Route	Detention Basin	13.61	0.98	105,341	13	478.31	76,654
15	Rational	Post-Dev Basin "E-2"	60.29	0.22	62,782	---		
16	Junction	Total Post-Dev "E"	61.49	0.22	166,838	14, 15		
17	Rational	Post-Dev Basin "F"	37.60	0.27	48,189	---		

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

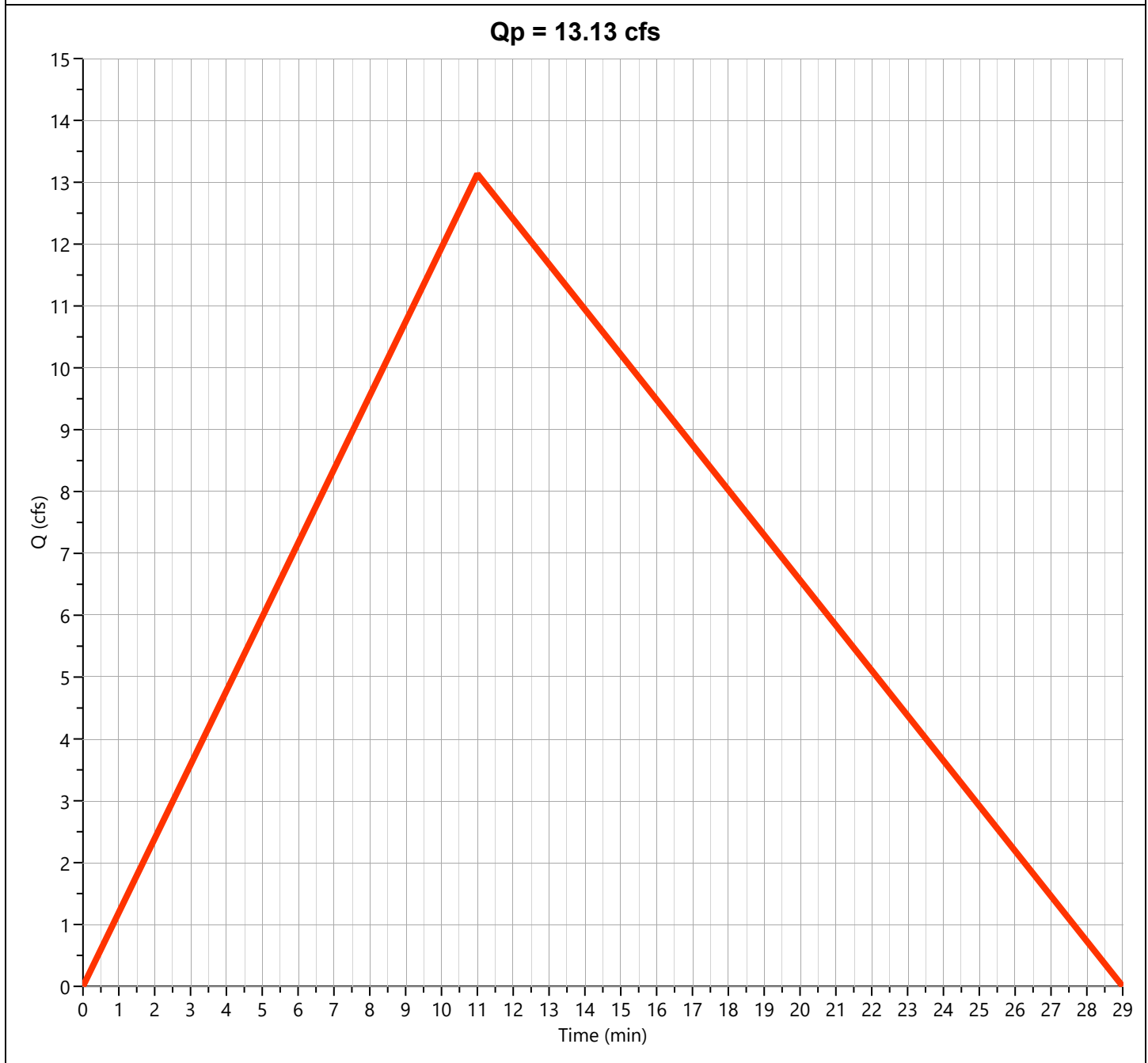
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

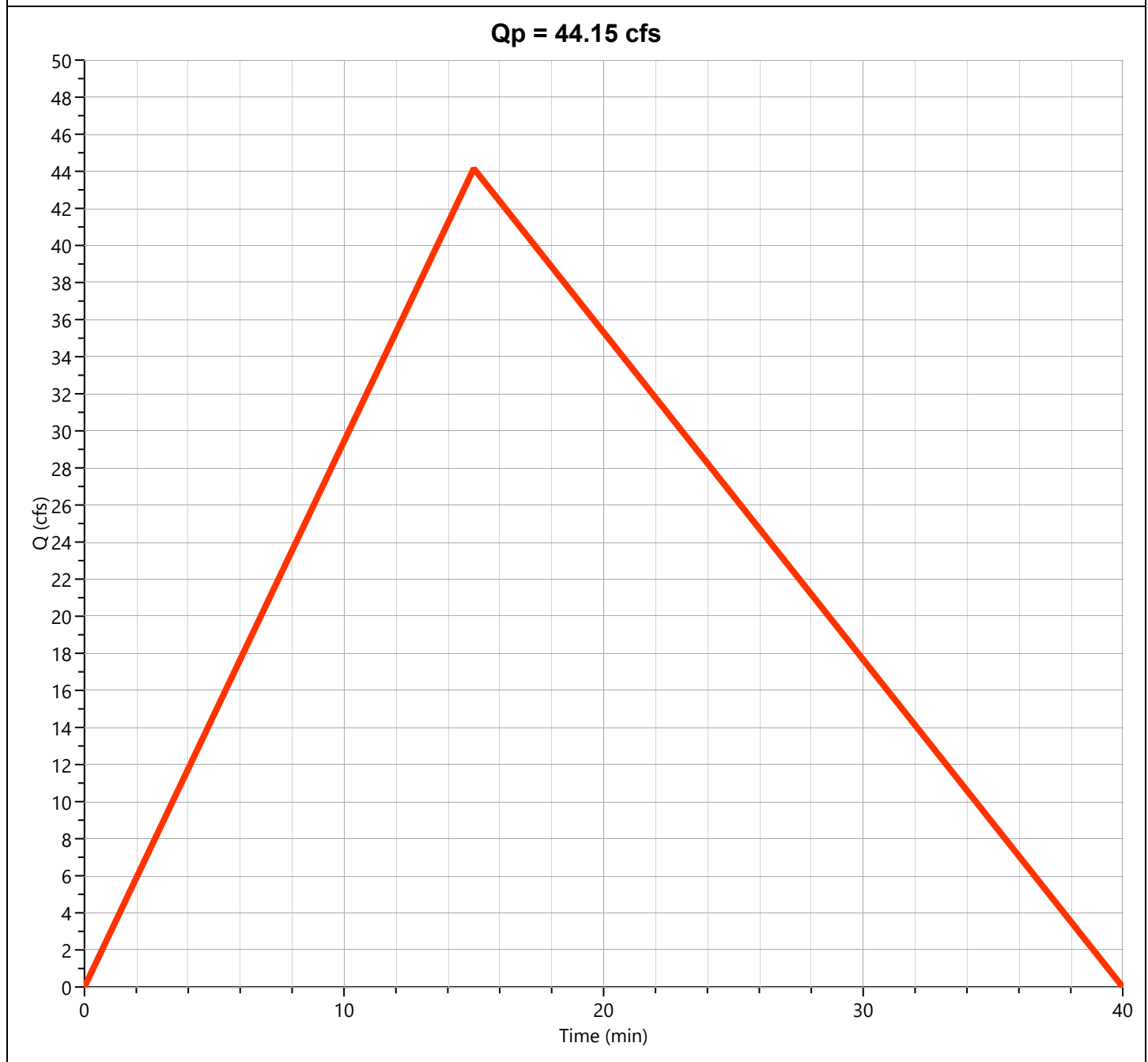
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

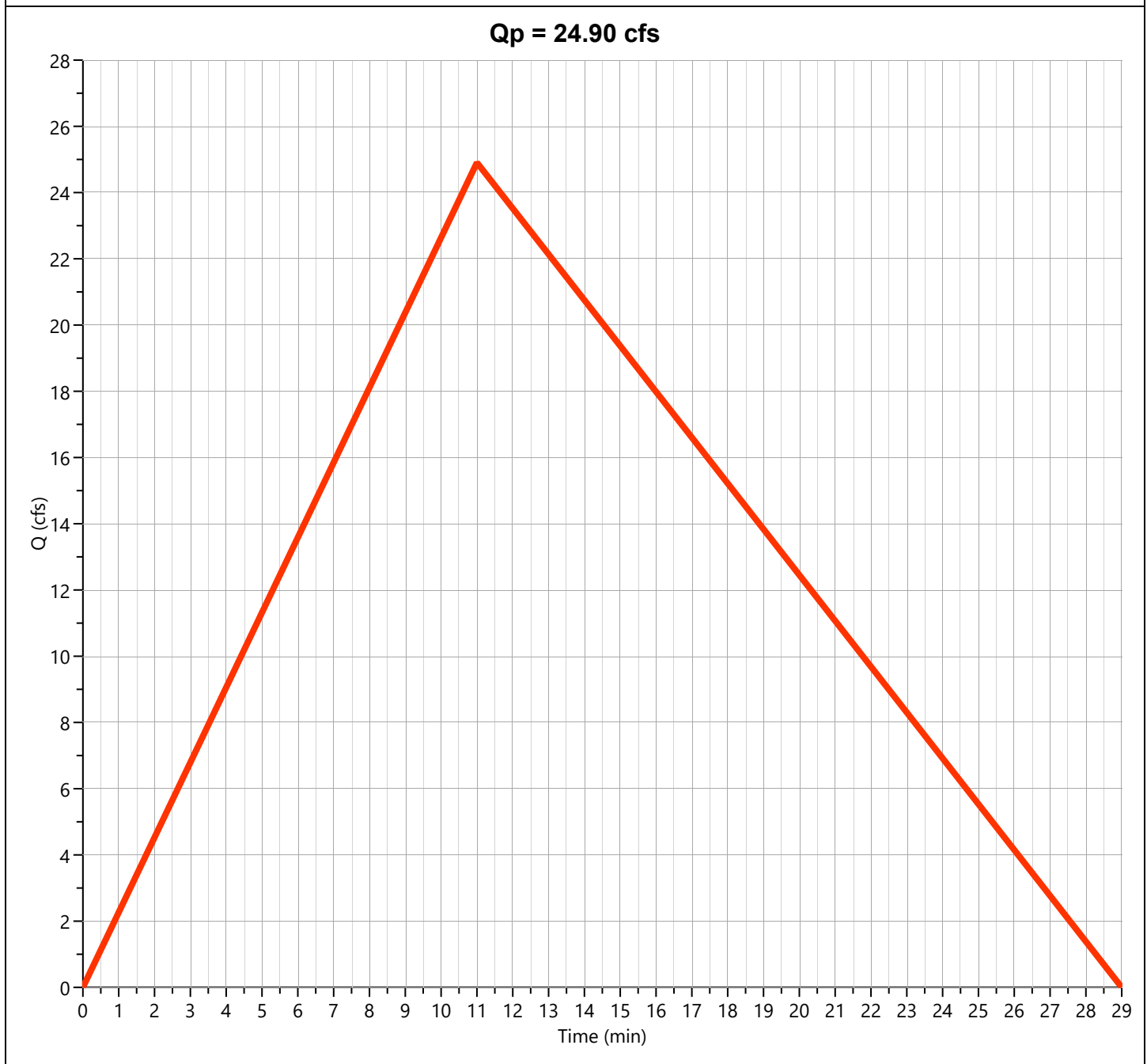
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

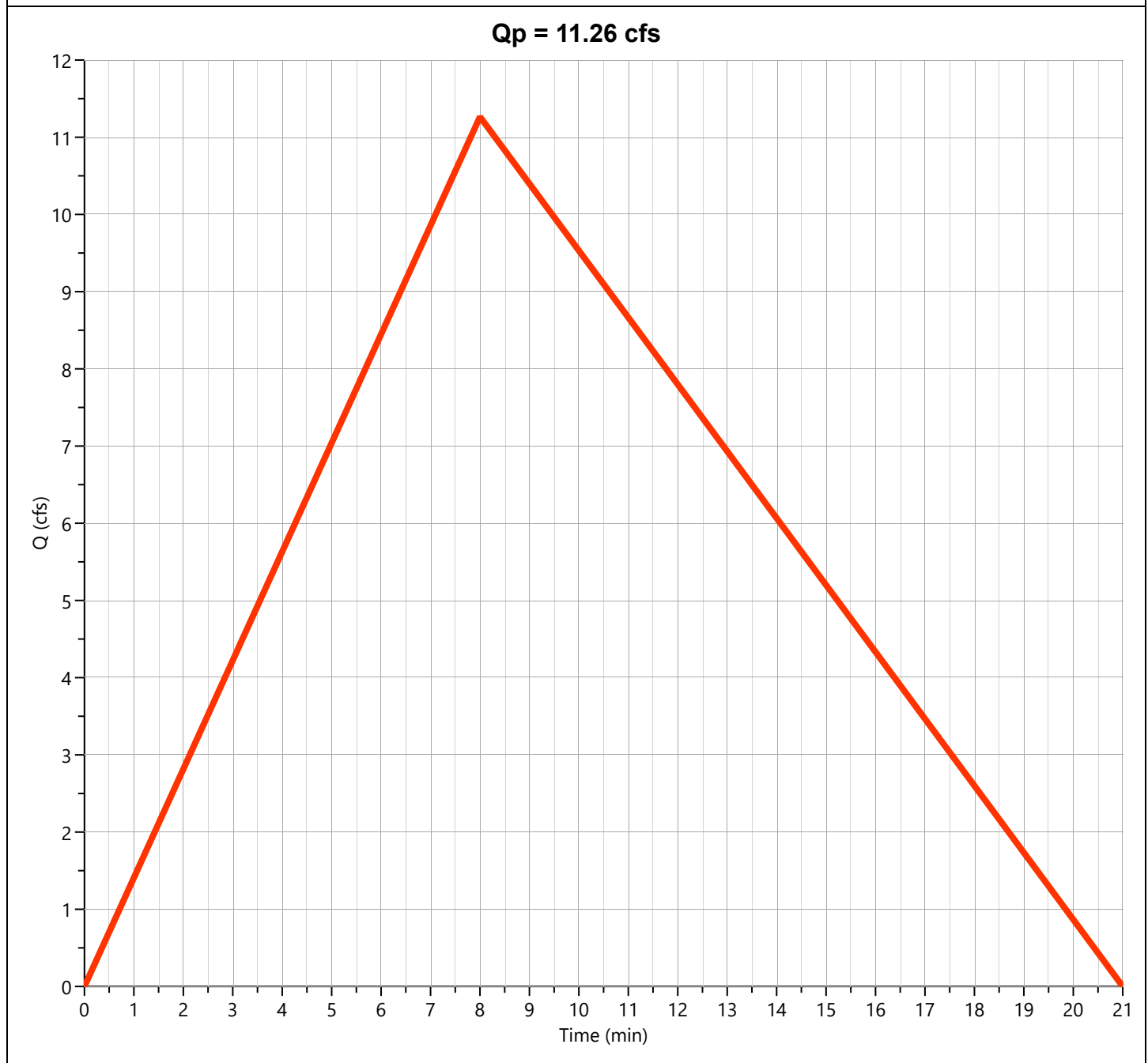
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

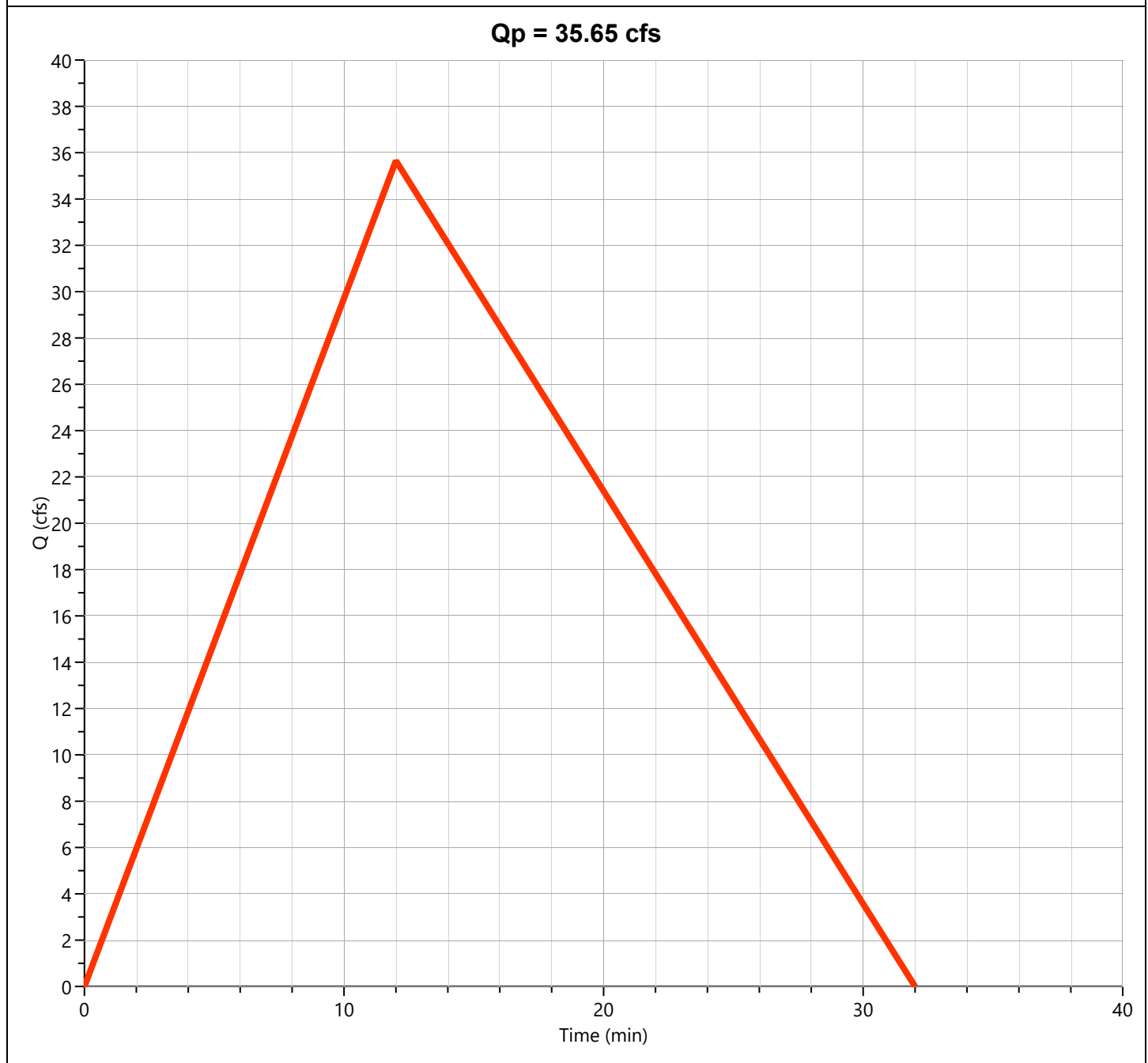
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

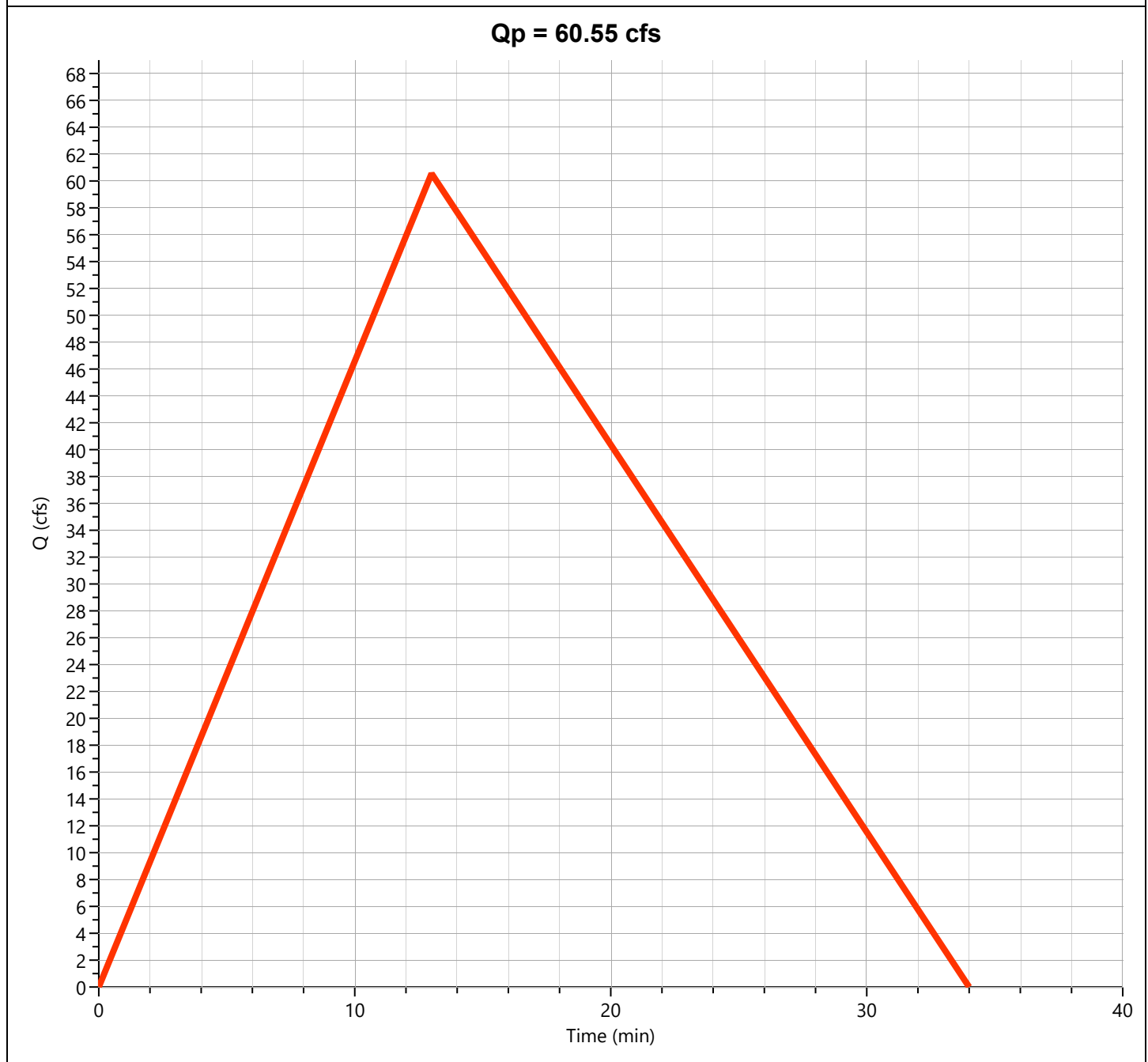
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

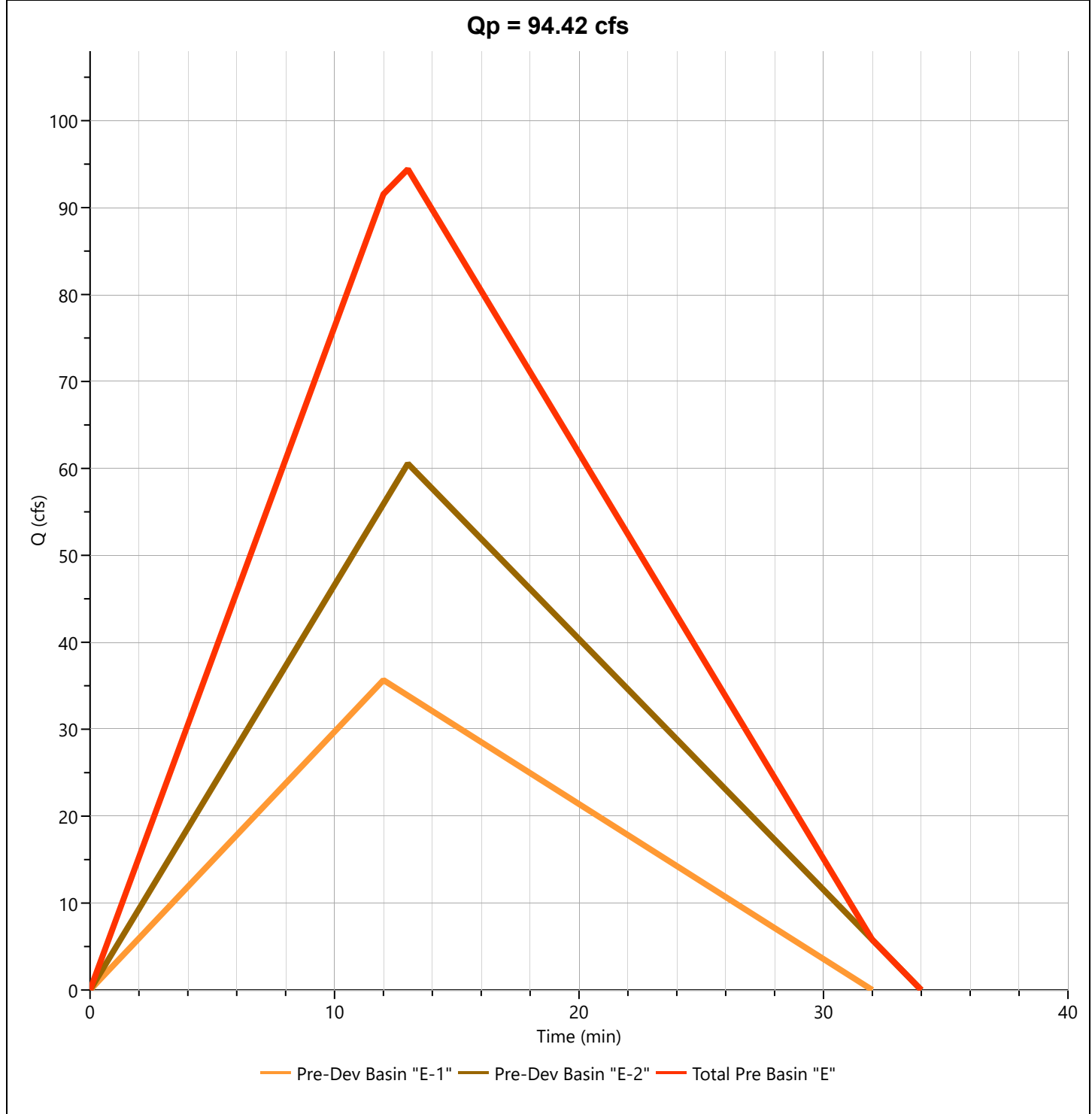
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

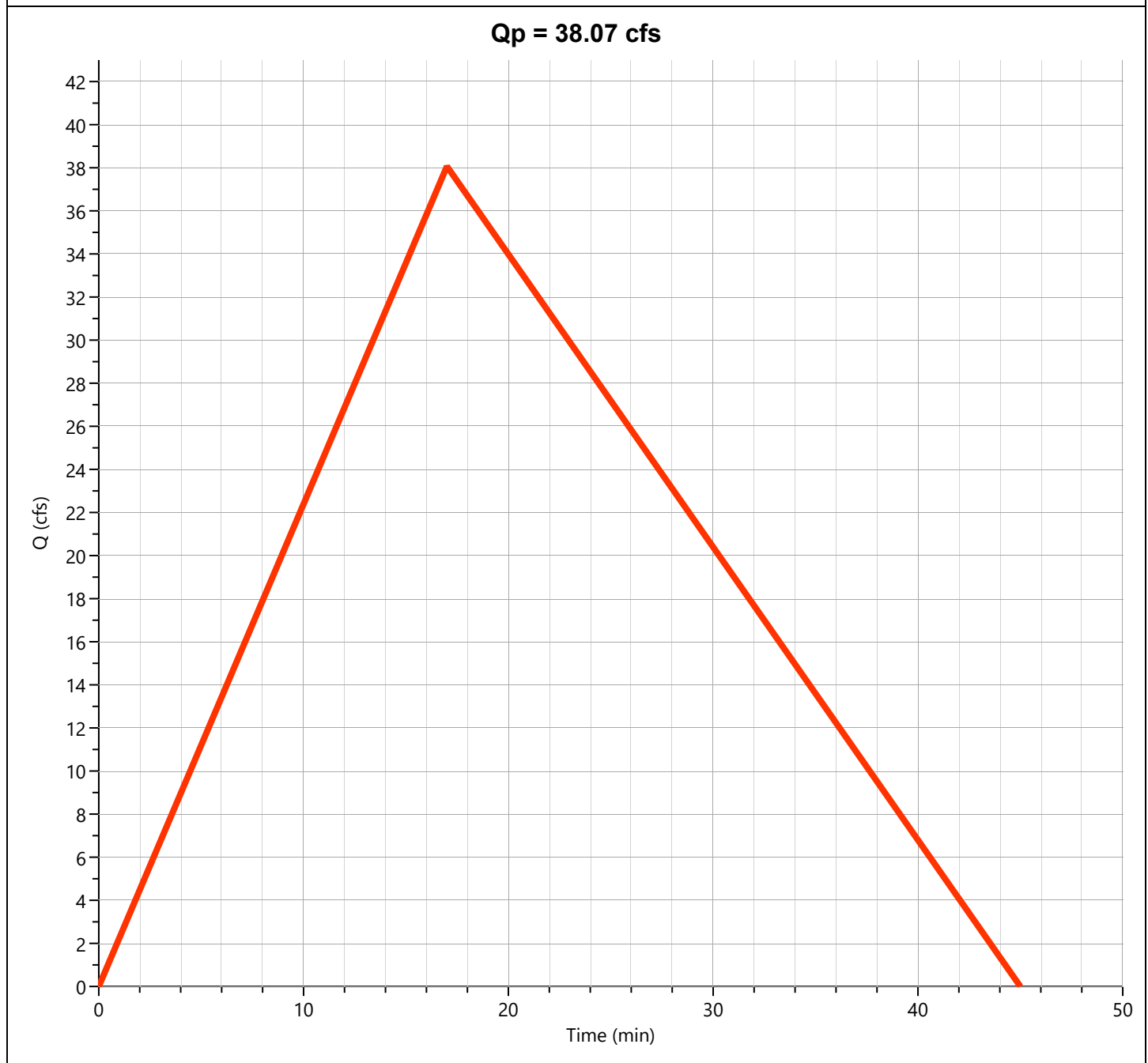
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

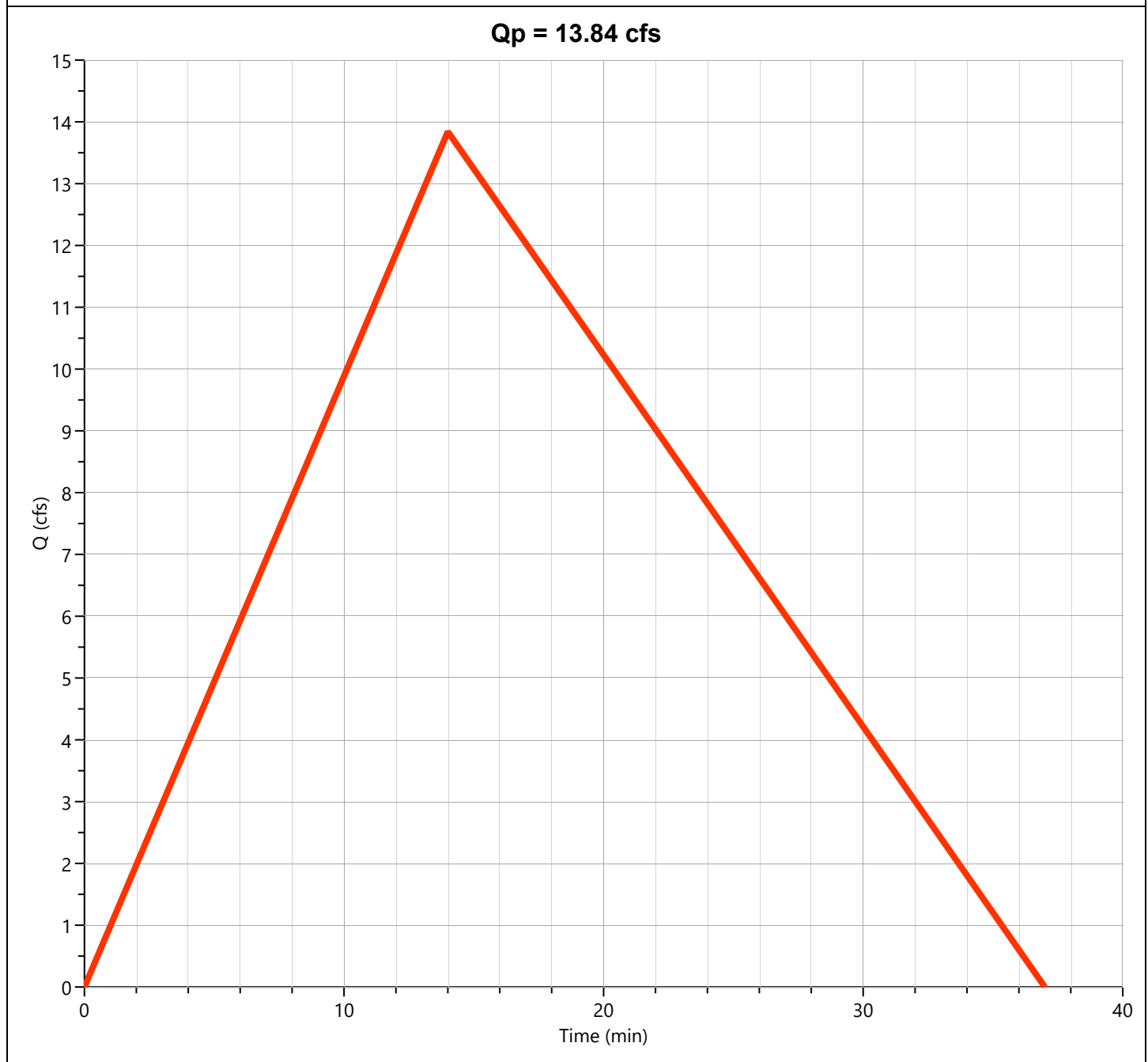
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03-04-2026

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 13.84 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.23 hrs
Time Interval	= 1 min	Runoff Volume	= 15,521 cuft
Drainage Area	= 3.53 ac	Runoff Coeff.	= 0.66
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 14.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.94 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

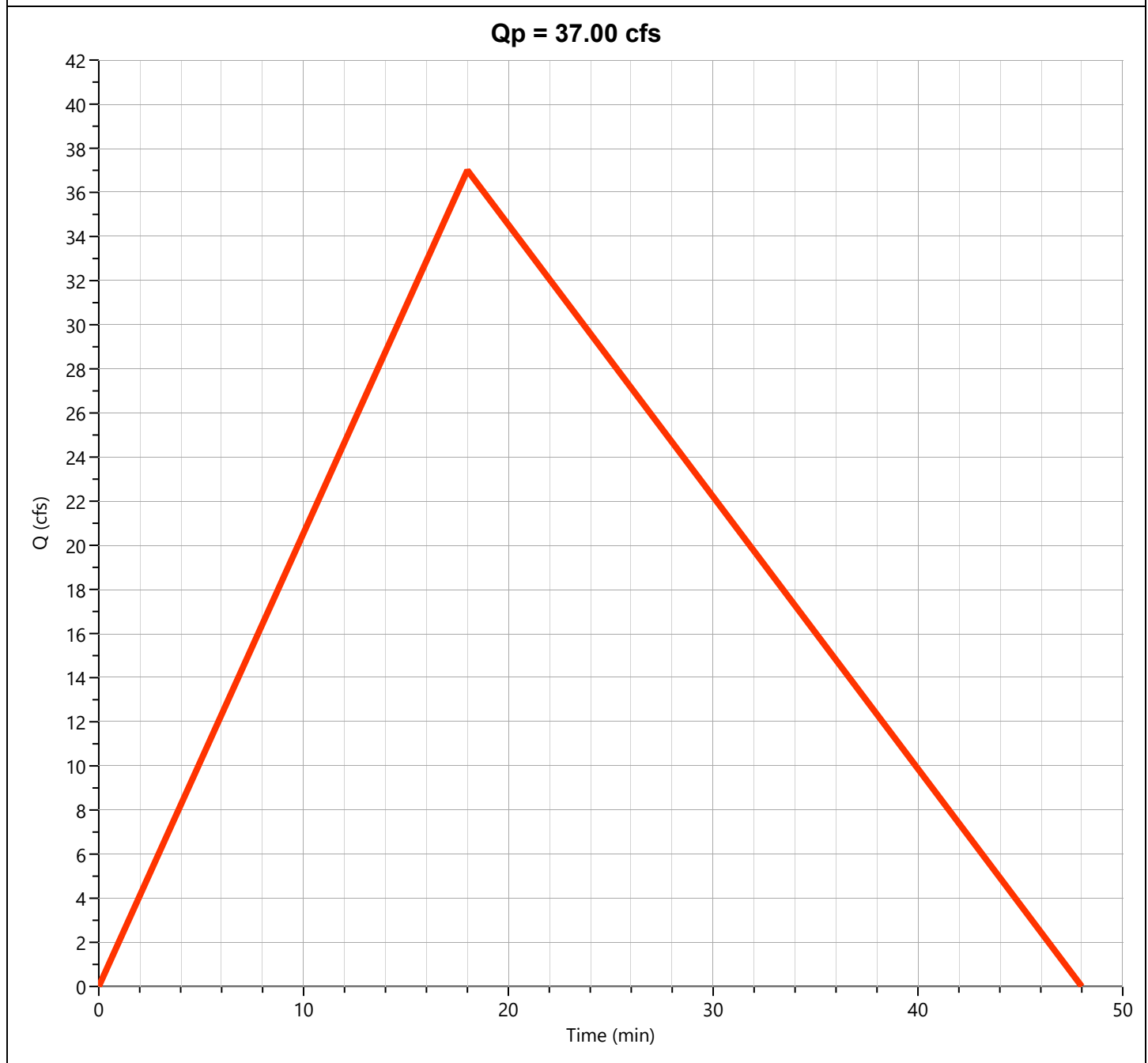
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03-04-2026

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 37.00 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.30 hrs
Time Interval	= 1 min	Runoff Volume	= 53,350 cuft
Drainage Area	= 12.45 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 18.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.31 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

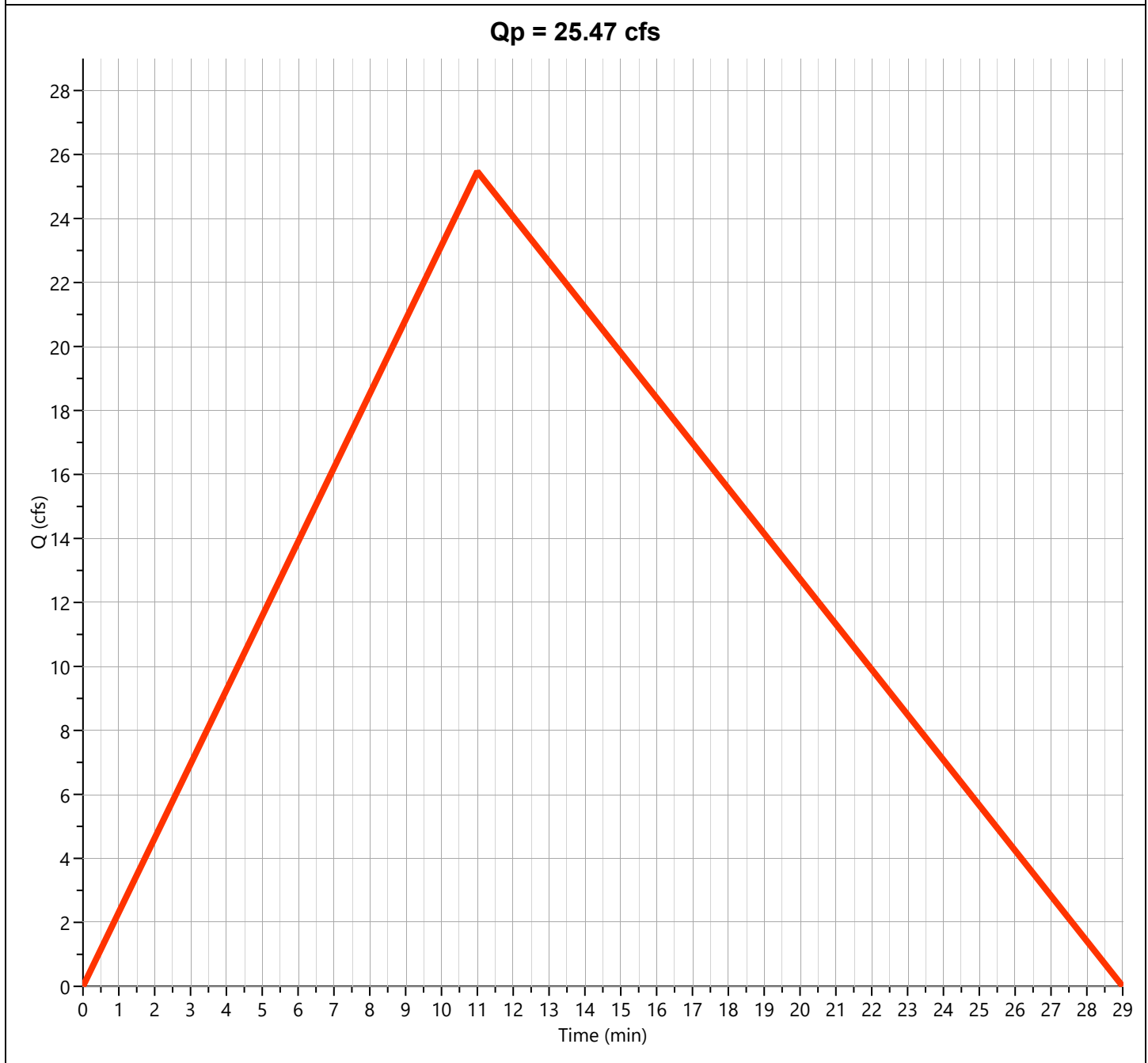
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

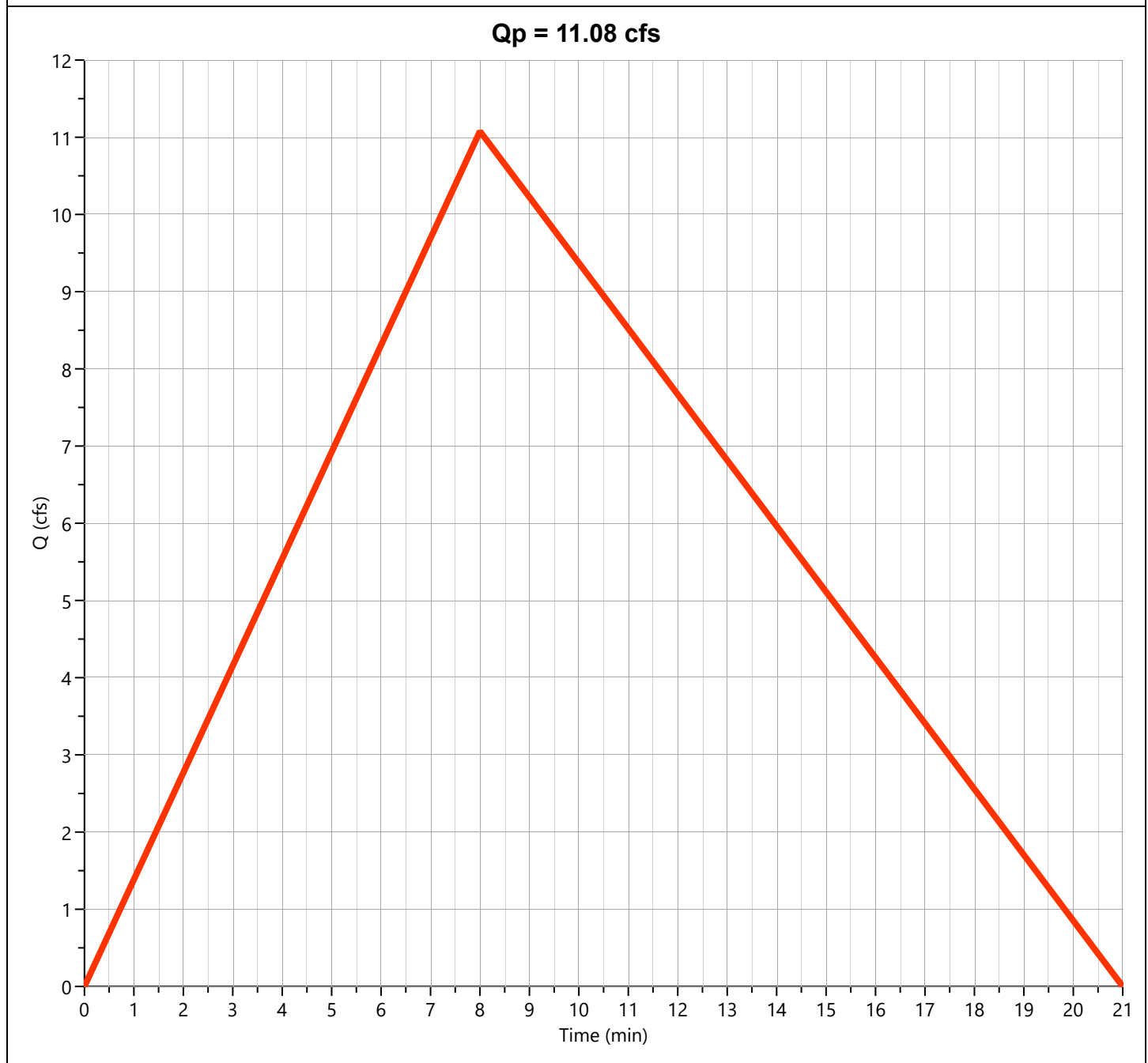
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03-04-2026

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 11.08 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,098 cuft
Drainage Area	= 2.59 ac	Runoff Coeff.	= 0.56
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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

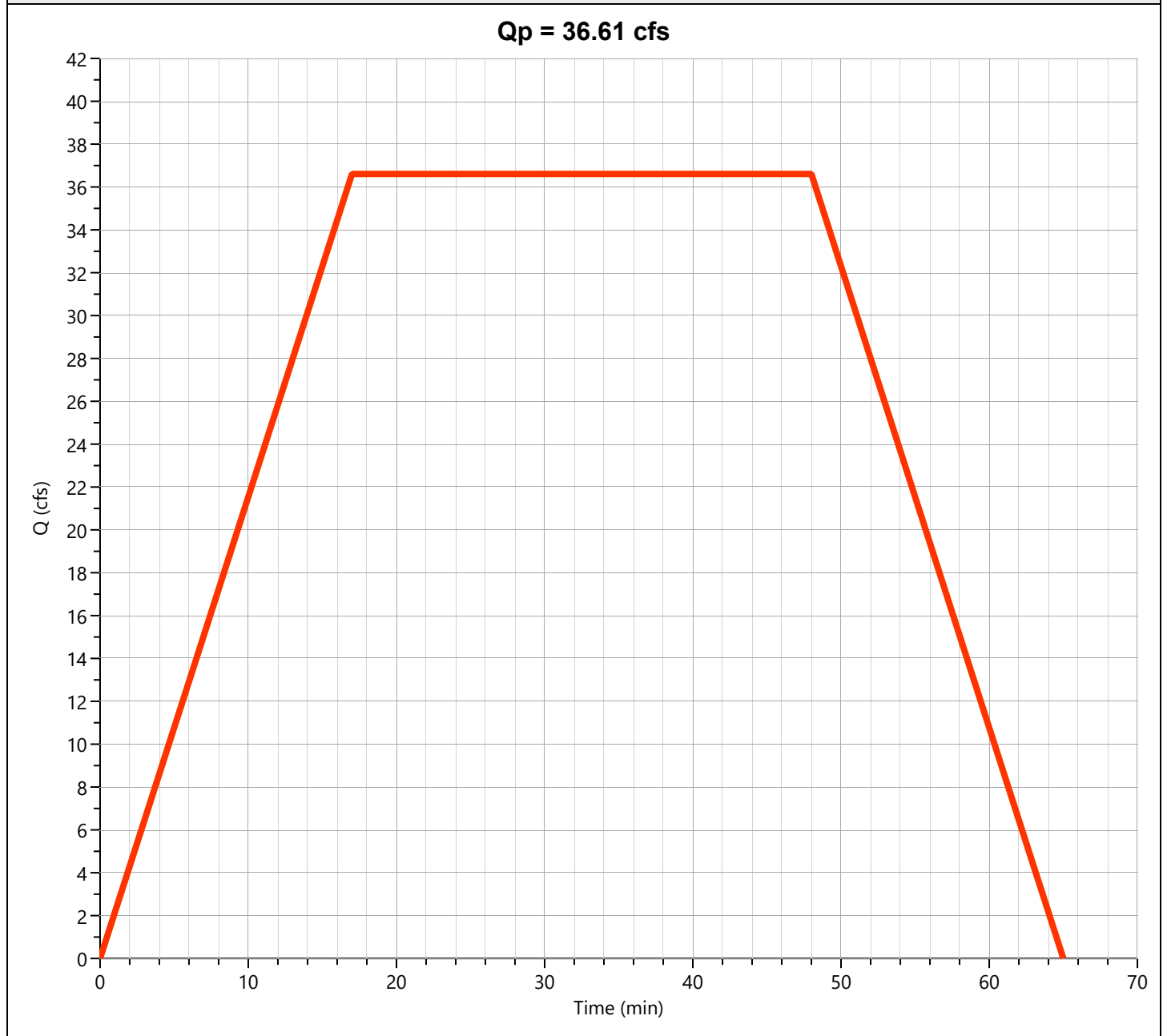
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03-04-2026

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Mod Rational	Peak Flow	= 36.61 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 105,431 cuft
Drainage Area	= 16.23 ac	Runoff Coeff.	= 0.66
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.42 in/hr
Freq. Corr. Factor	= 1.00	Storm Duration	= 2.82 x Tc
Target Q	= 0.000 cfs	Required Storage	= 0.000 cuft



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
 File: Detention Calculation 3-4-26.hys
 03-04-2026

Detention Basin

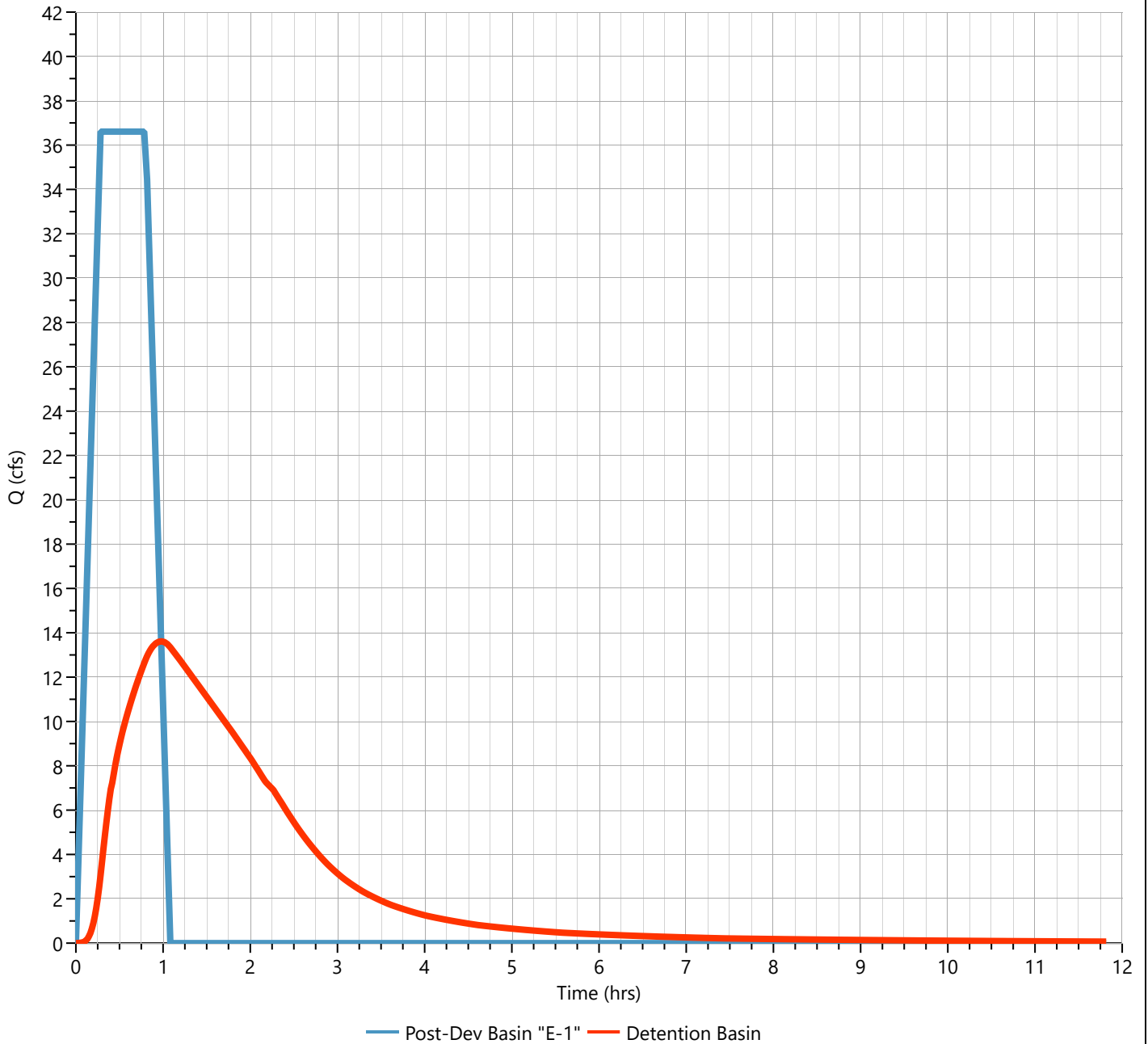
Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 13.61 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.98 hrs
Time Interval	= 1 min	Hydrograph Volume	= 105,341 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 478.31 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 76,654 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.35 hrs

Qp = 13.61 cfs



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

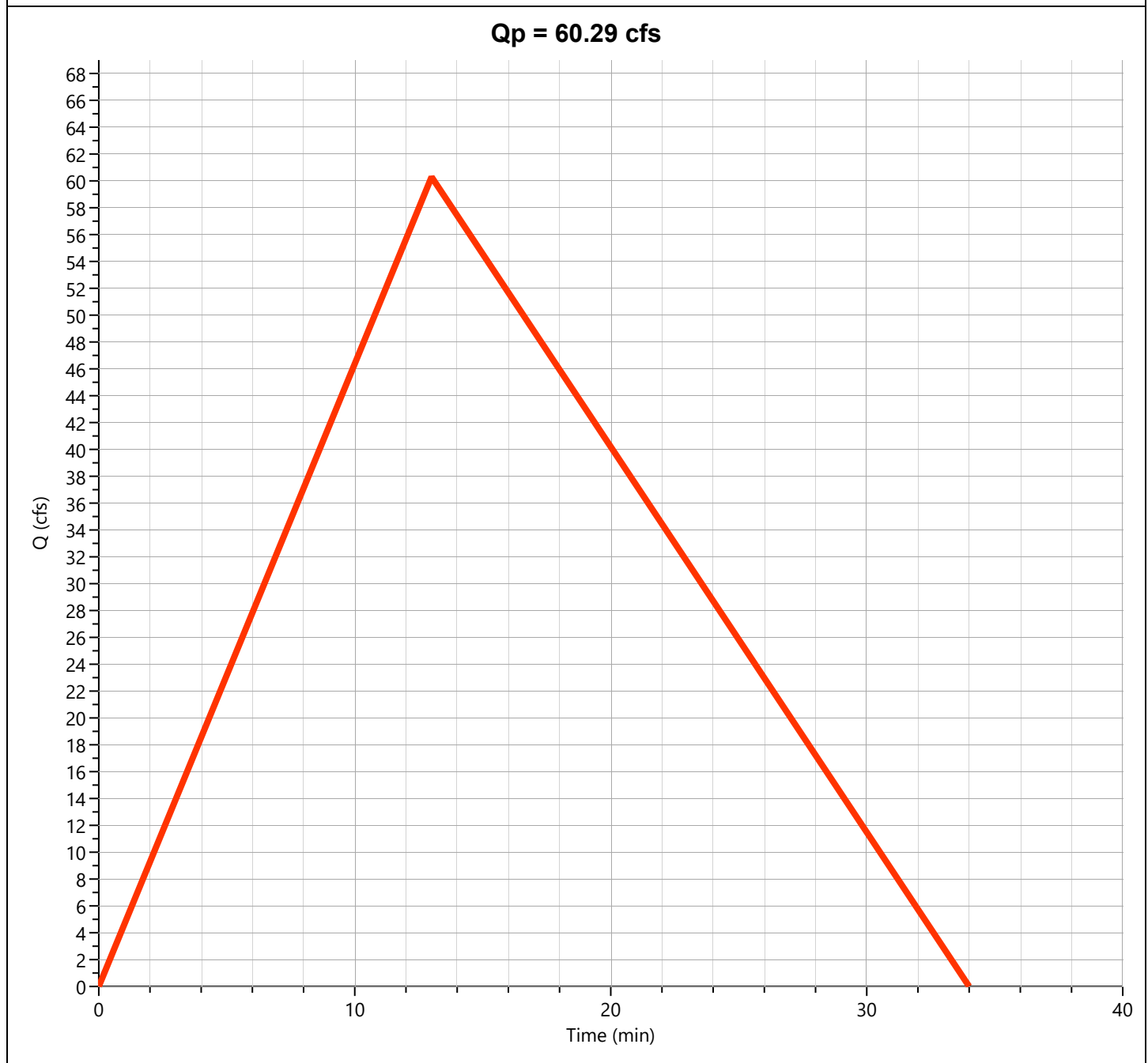
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03-04-2026

Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 60.29 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 62,782 cuft
Drainage Area	= 17.53 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



Hydrograph Report

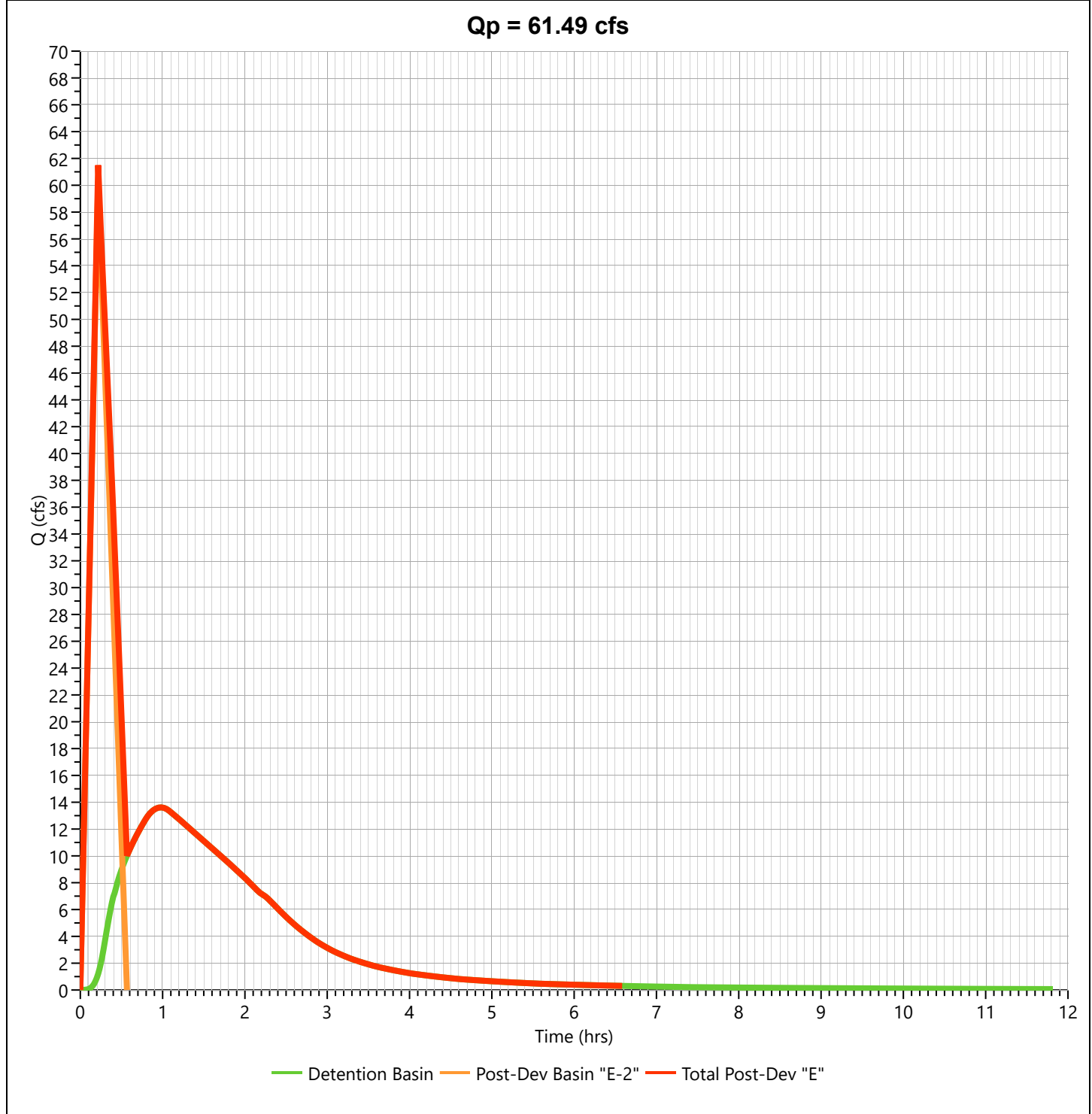
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Total Post-Dev "E"

Hyd. No. 16

Hydrograph Type	= Junction	Peak Flow	= 61.49 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 166,838 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 17.53 ac



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

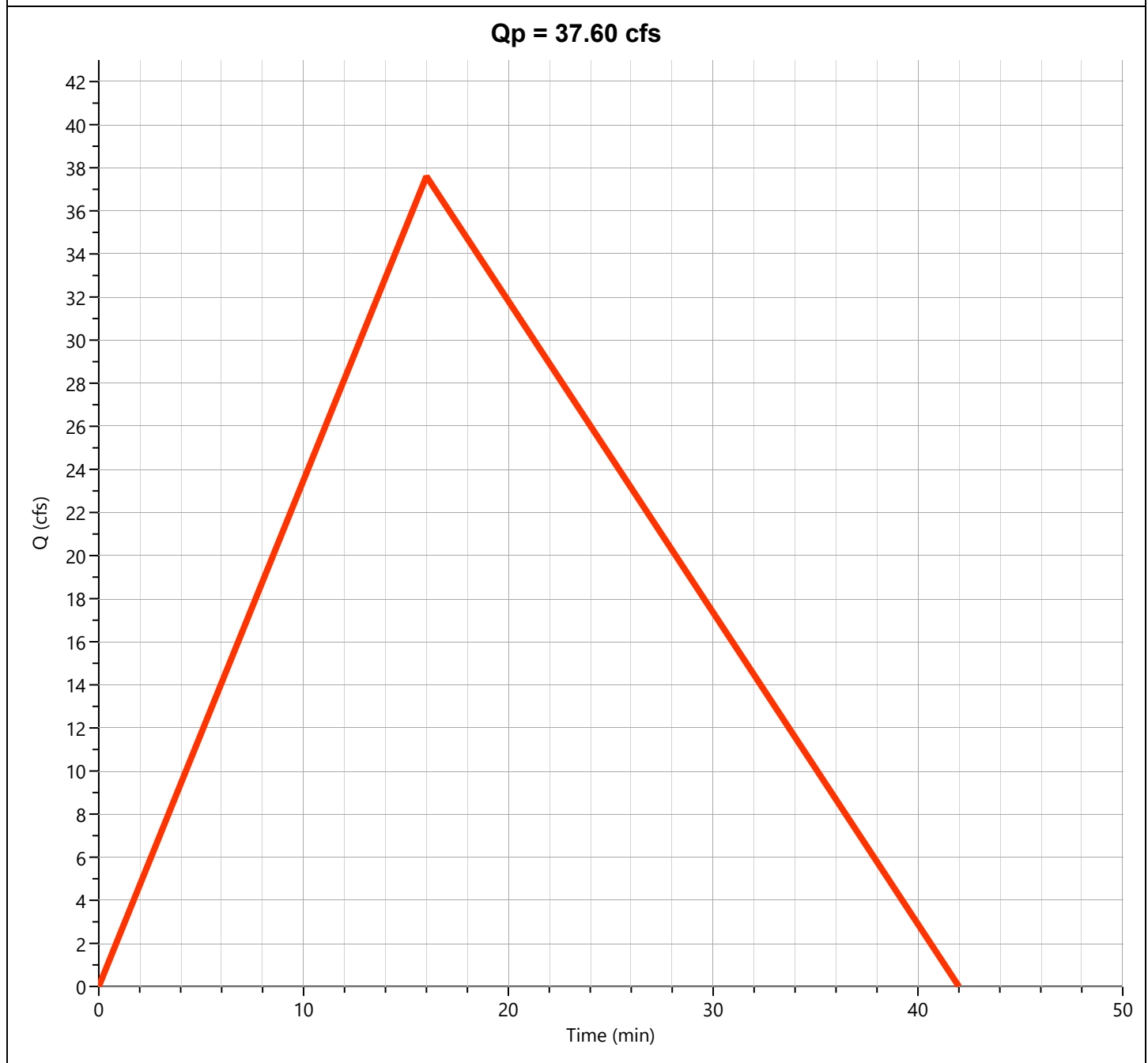
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 37.60 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 48,189 cuft
Drainage Area	= 12.0 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



Hydrograph 50-yr Summary

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

File: Detention Calculation 3-4-26.hys

03-04-2026

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	15.14	0.23	16,976	---		
10	Rational	Post-Dev Basin B	40.48	0.30	58,368	---		
11	Rational	Post-Dev Basin "C"	27.85	0.18	24,537	---		
12	Rational	Post-Dev Basin "D"	12.11	0.13	7,757	---		
13	Mod Rational	Post-Dev Basin "E-1"	40.10	0.28	115,494	---		
14	Pond Route	Detention Basin	14.43	0.98	115,403	13	478.63	84,597
15	Rational	Post-Dev Basin "E-2"	65.94	0.22	68,659	---		
16	Junction	Total Post-Dev "E"	67.36	0.22	182,657	14, 15		
17	Rational	Post-Dev Basin "F"	41.13	0.27	52,714	---		

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

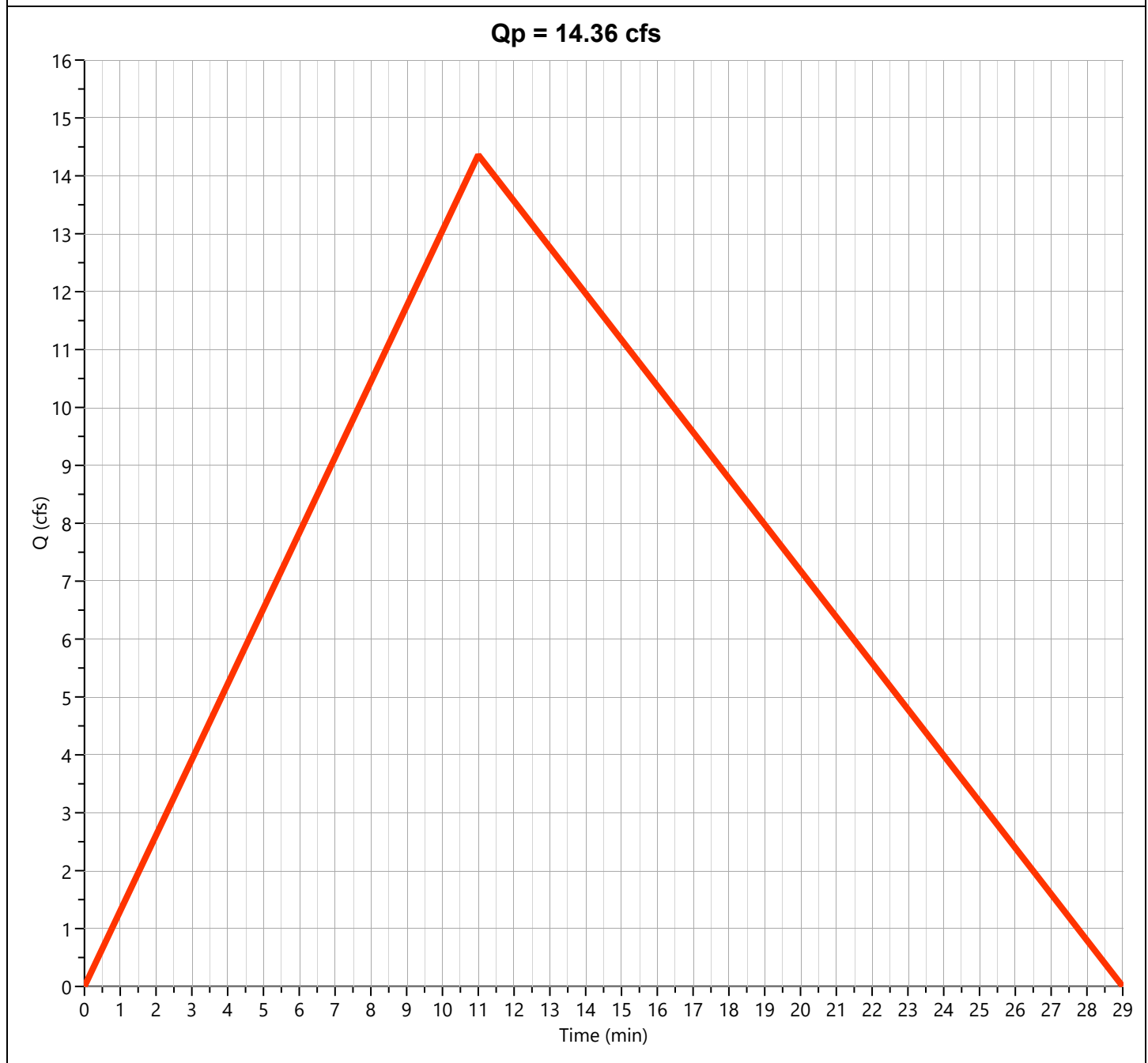
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

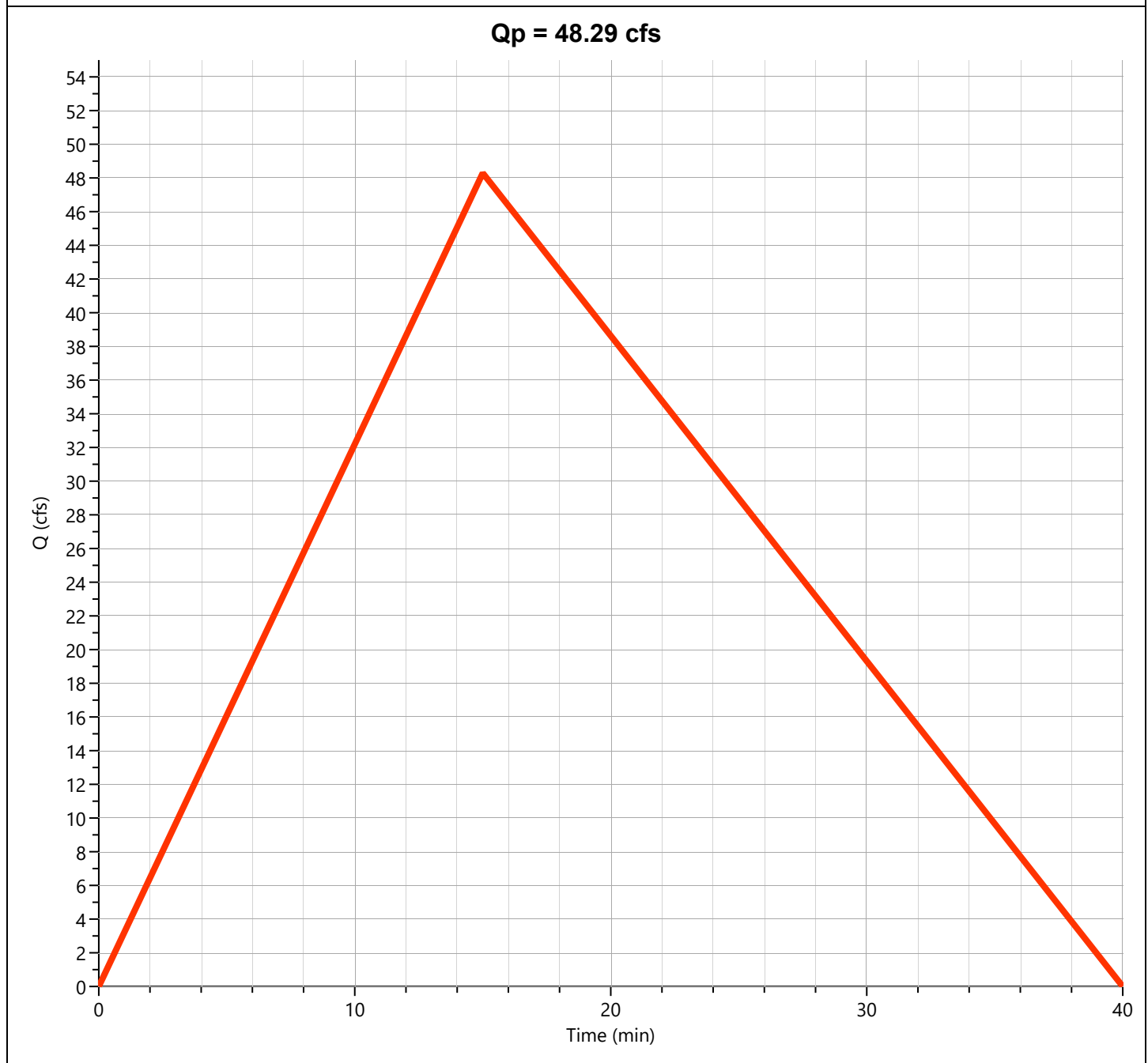
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

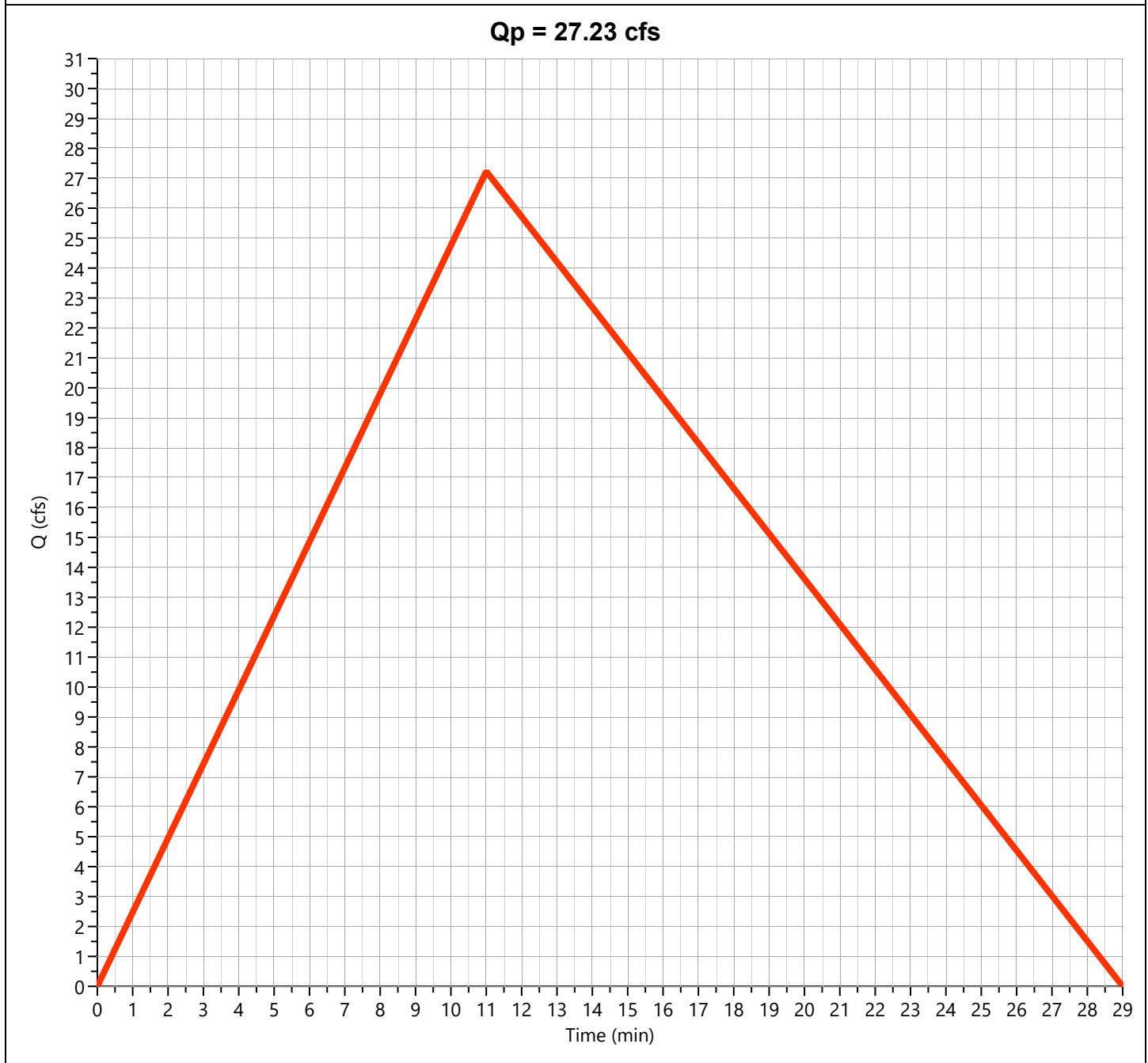
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

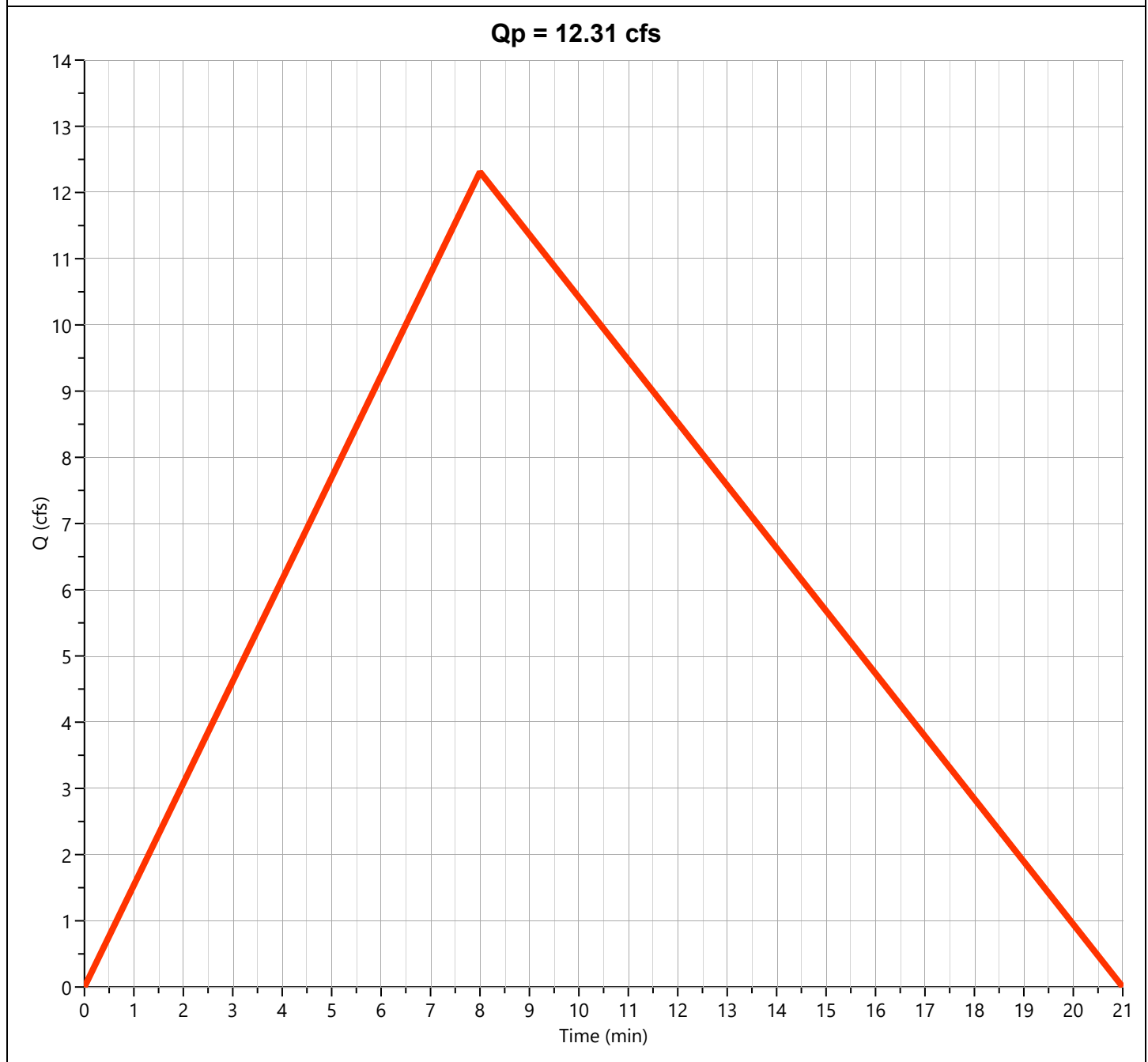
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

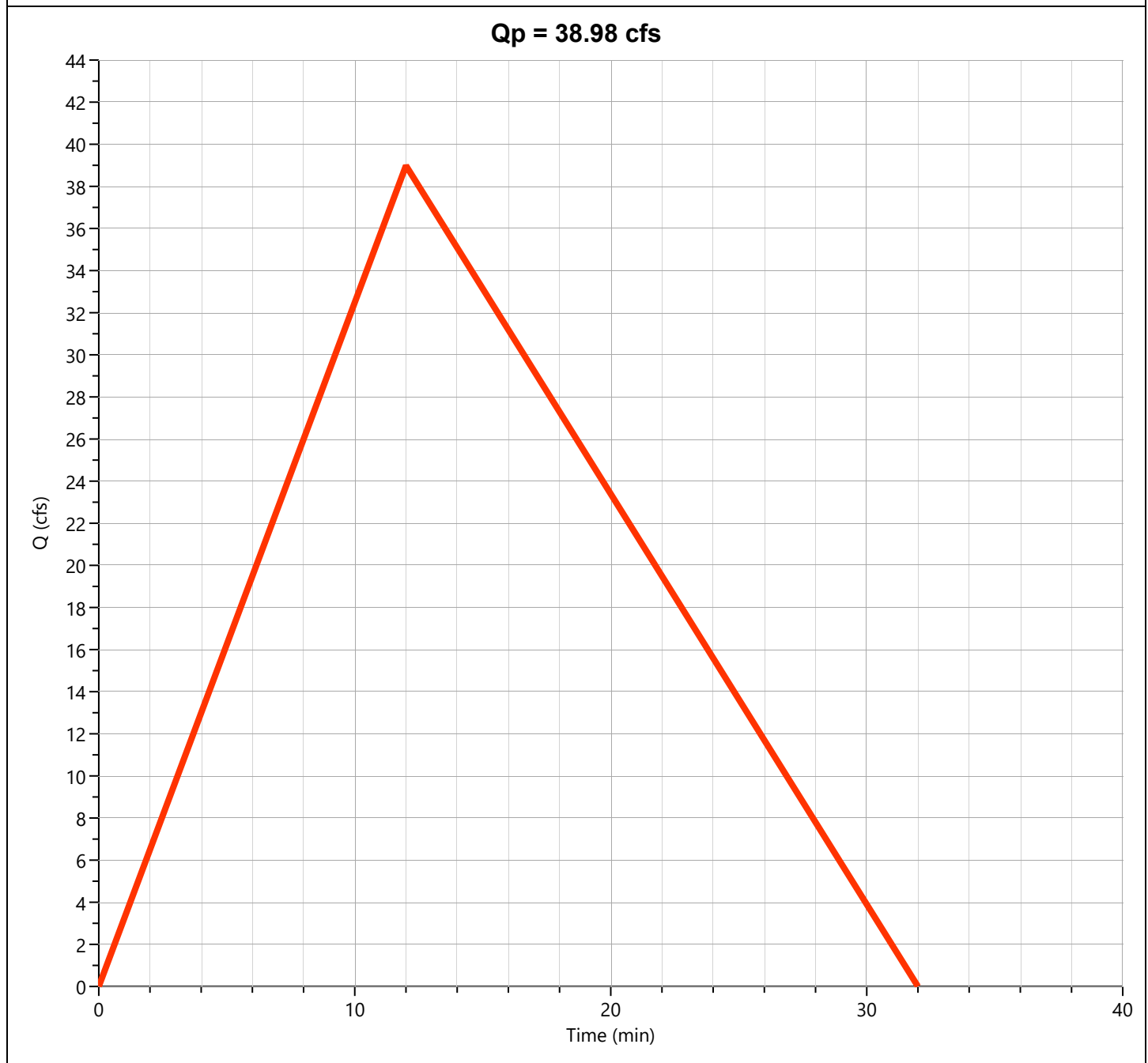
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

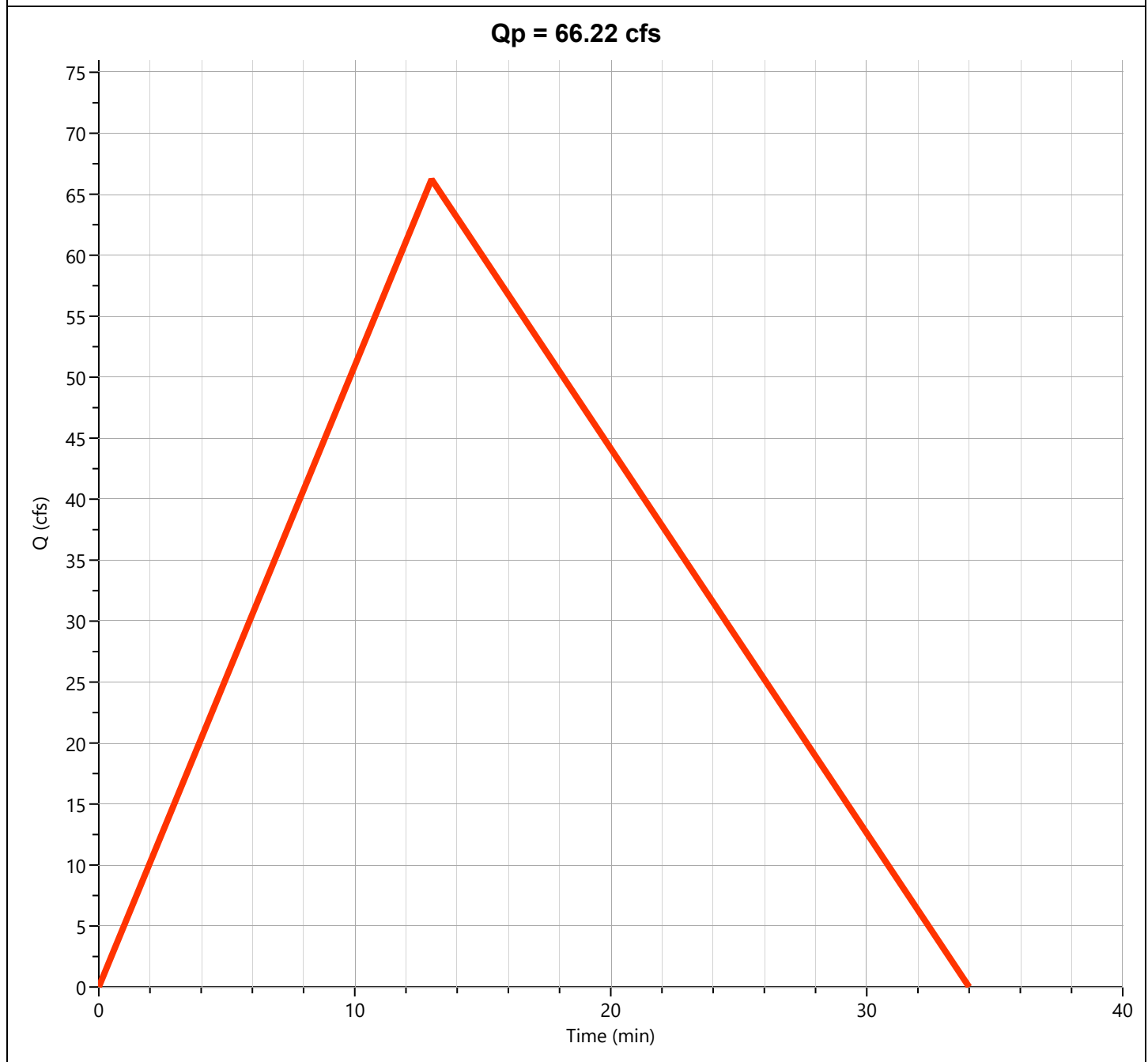
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

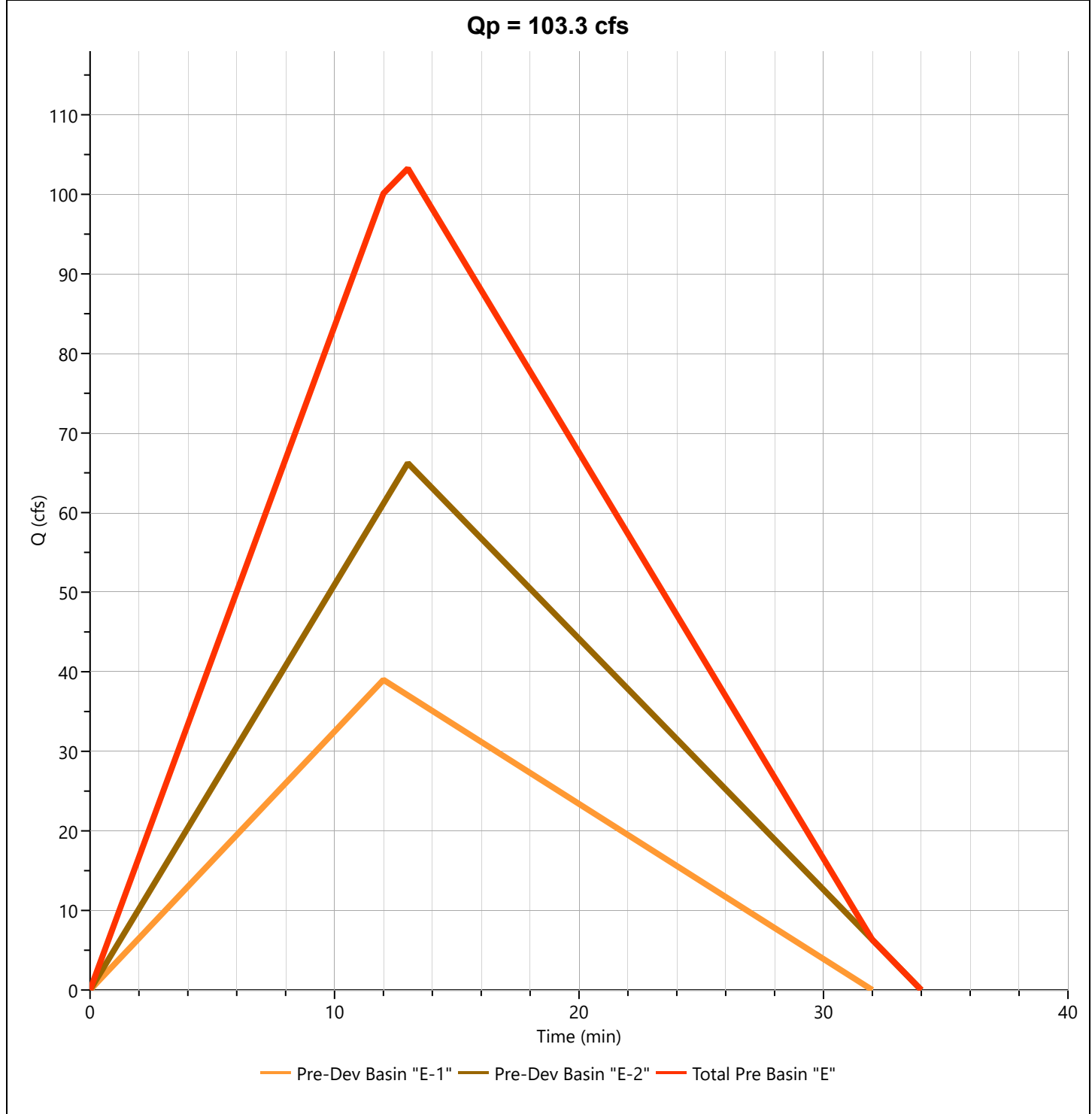
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

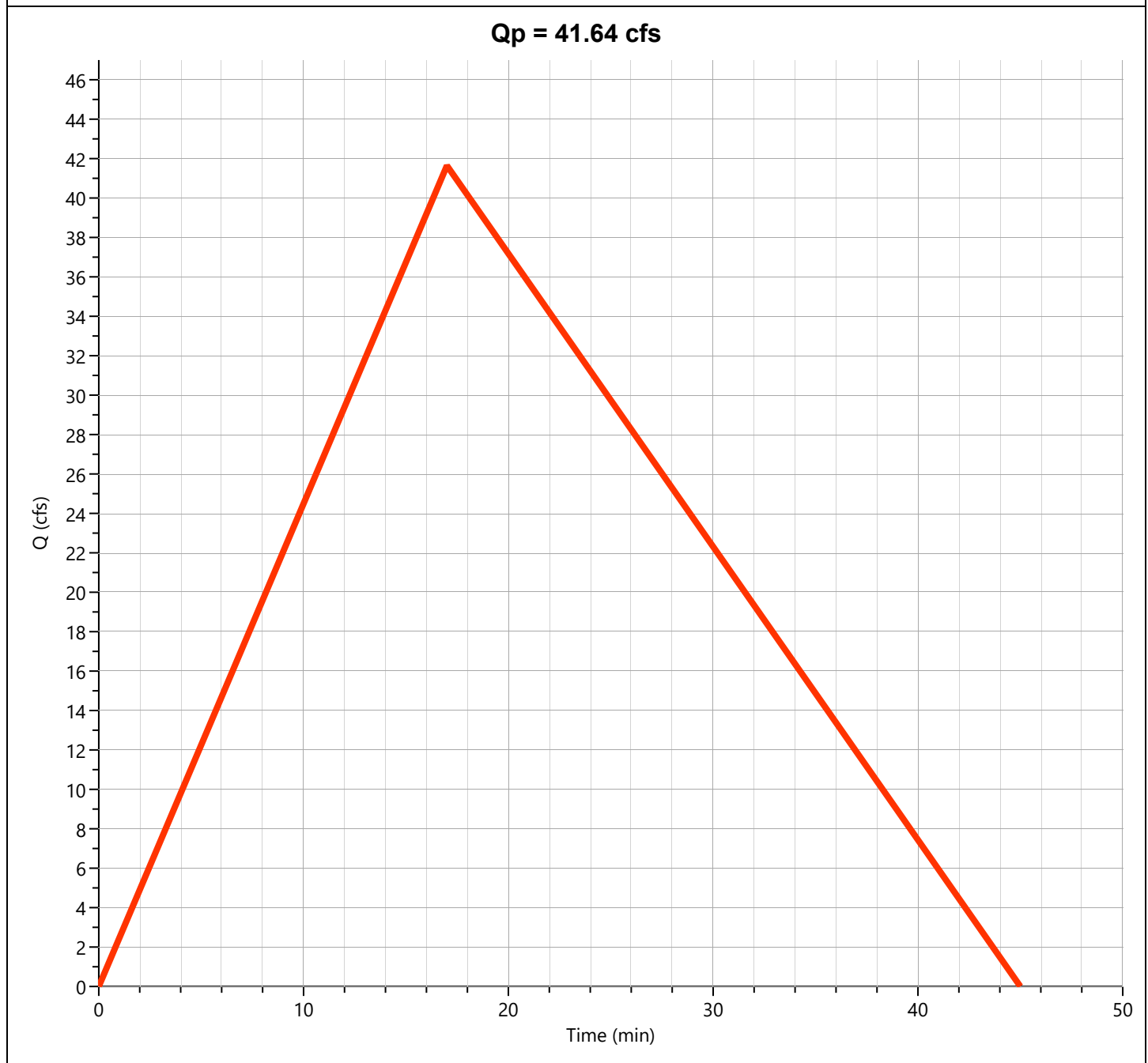
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

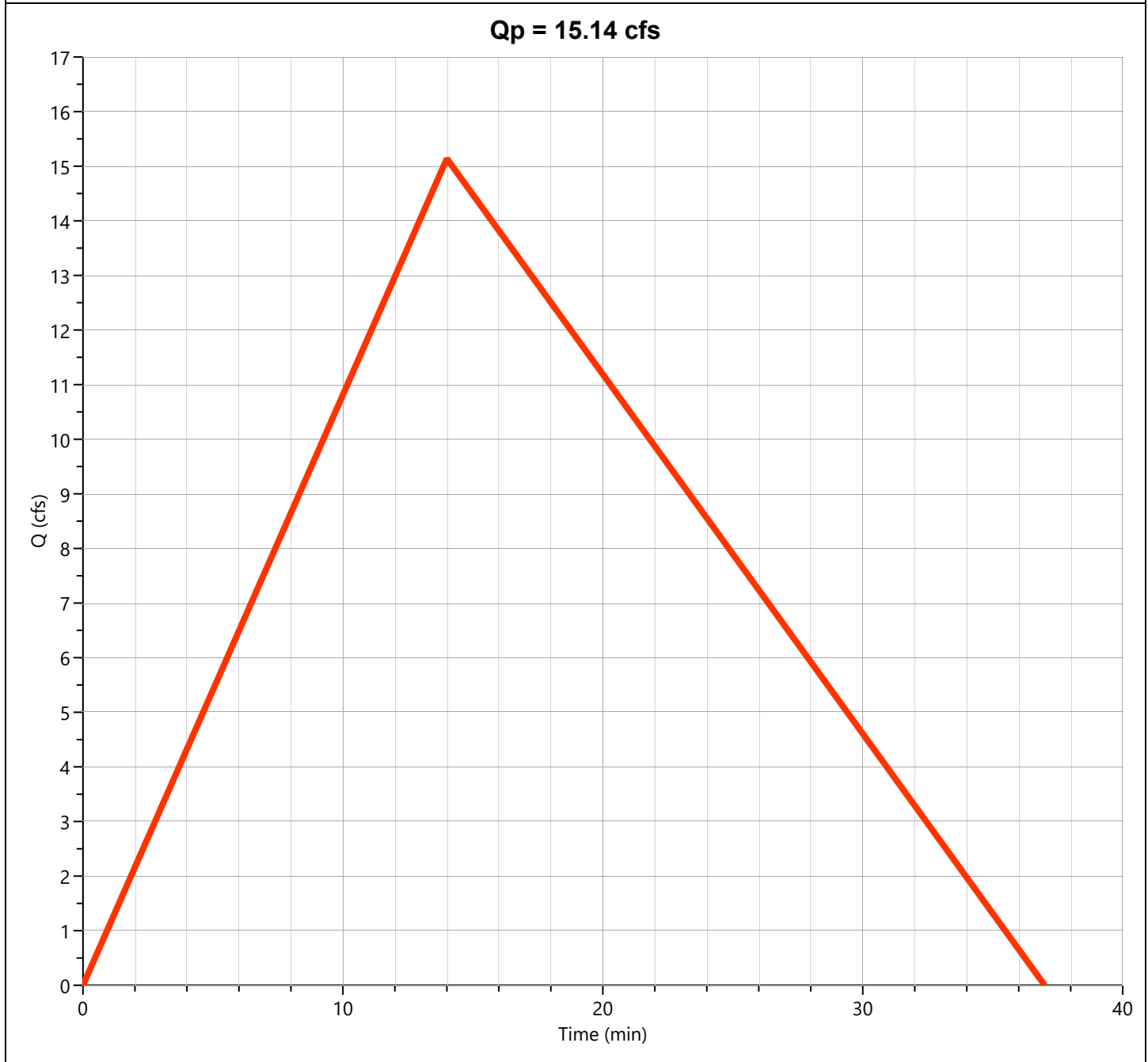
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 15.14 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.23 hrs
Time Interval	= 1 min	Runoff Volume	= 16,976 cuft
Drainage Area	= 3.53 ac	Runoff Coeff.	= 0.66
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 14.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.50 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

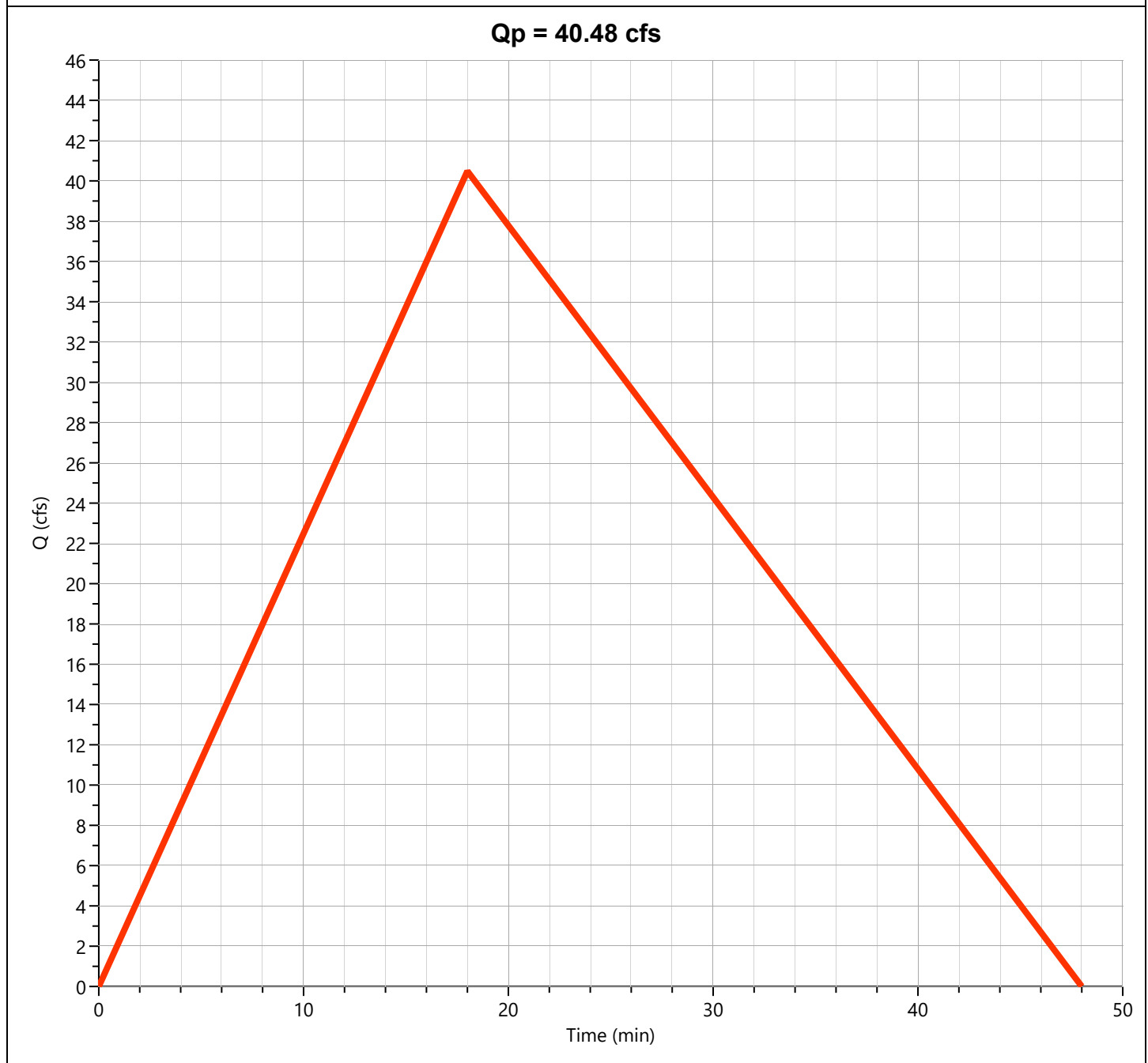
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 40.48 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.30 hrs
Time Interval	= 1 min	Runoff Volume	= 58,368 cuft
Drainage Area	= 12.45 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 18.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.81 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

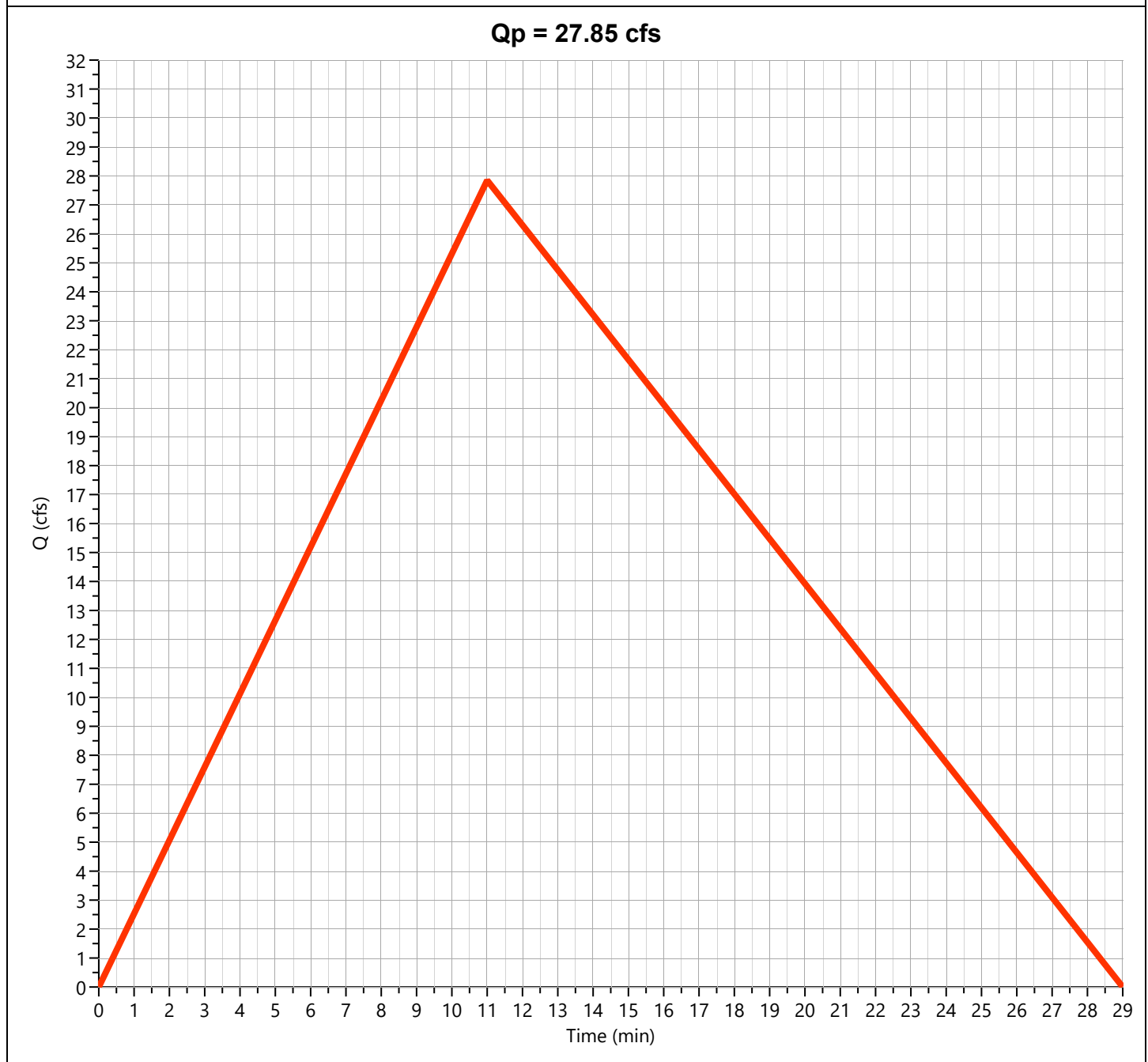
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

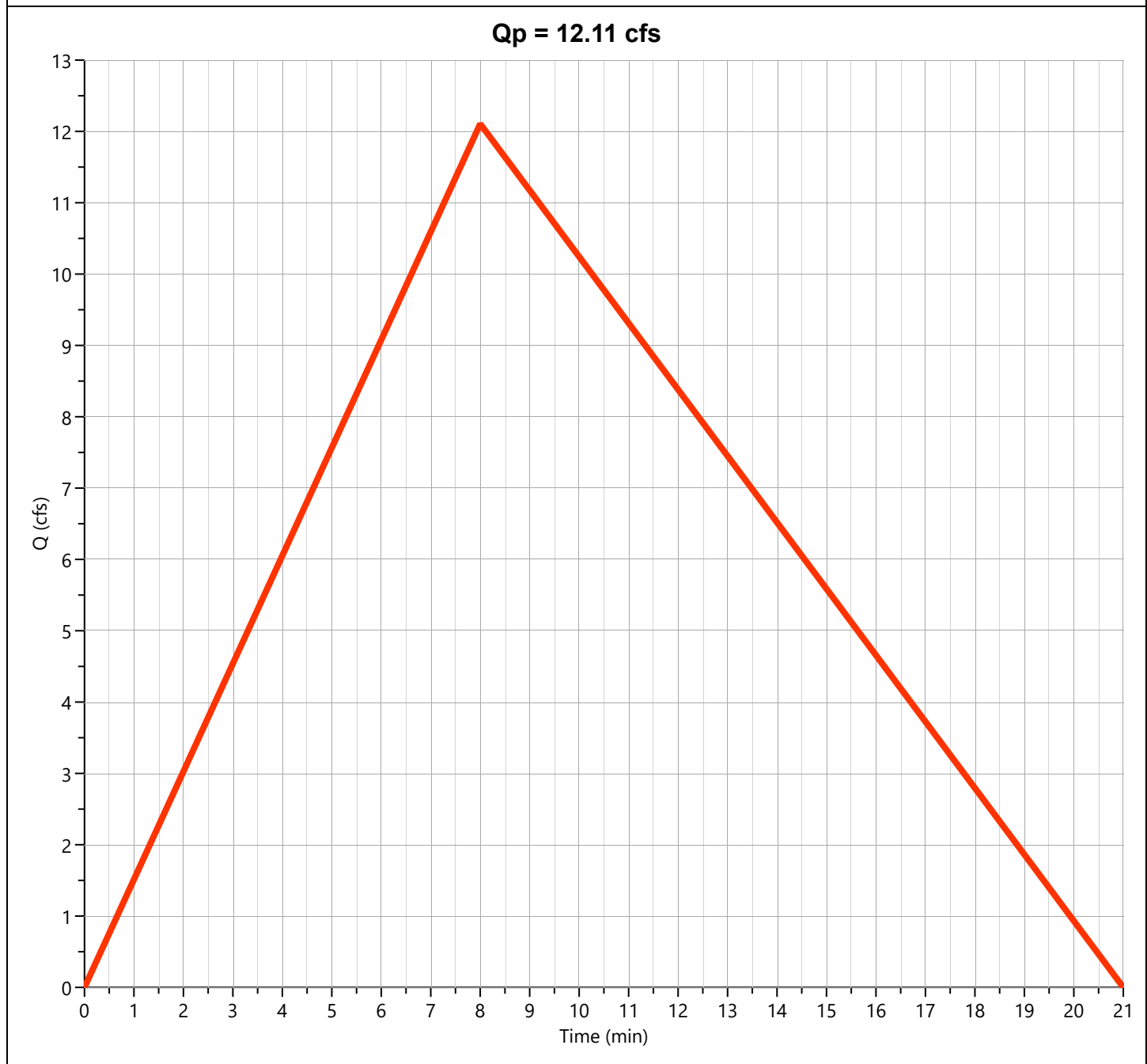
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 12.11 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,757 cuft
Drainage Area	= 2.59 ac	Runoff Coeff.	= 0.56
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



Hydrograph Report

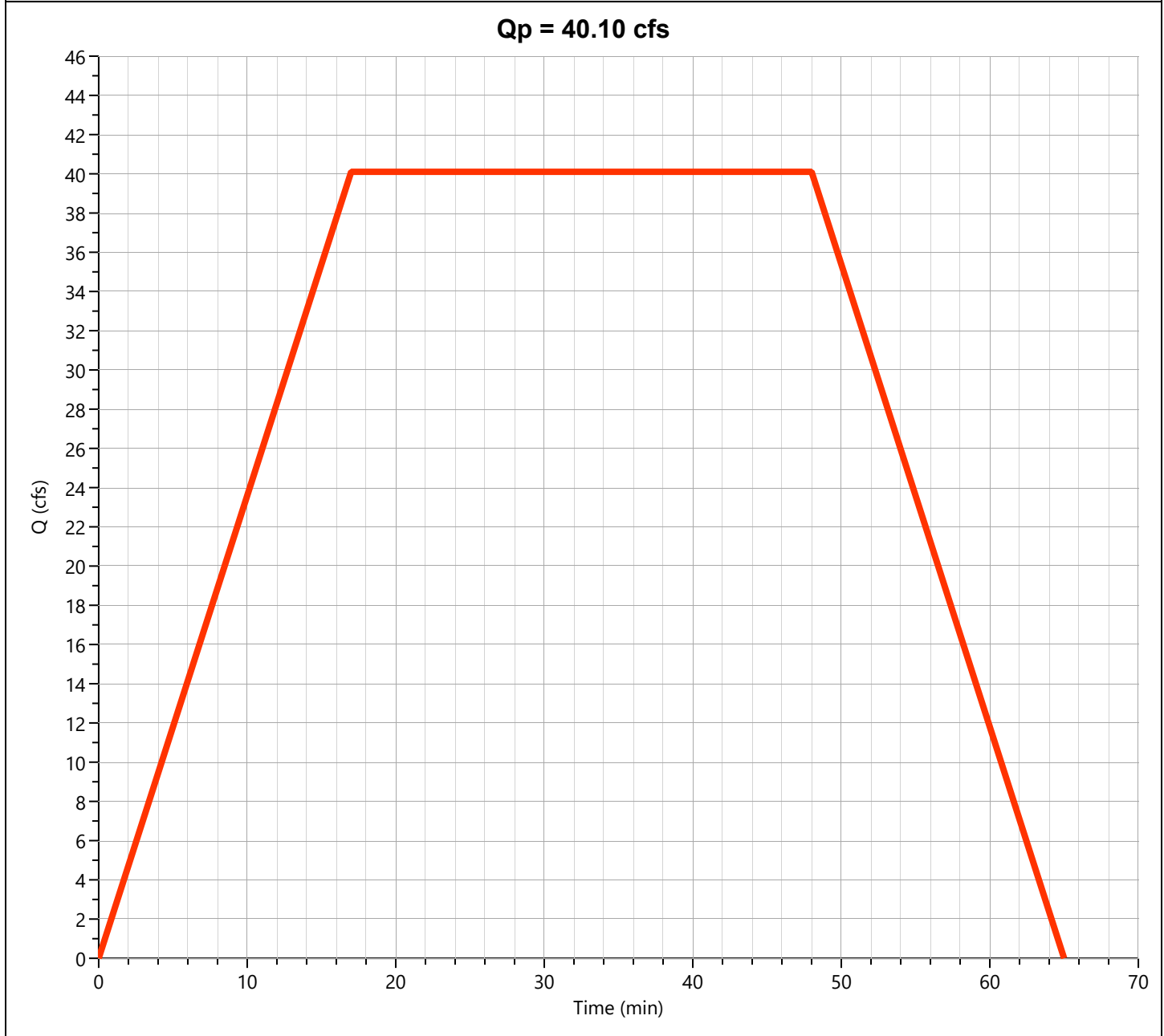
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Mod Rational	Peak Flow	= 40.10 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 115,494 cuft
Drainage Area	= 16.23 ac	Runoff Coeff.	= 0.66
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.74 in/hr
Freq. Corr. Factor	= 1.00	Storm Duration	= 2.82 x Tc
Target Q	= 0.000 cfs	Required Storage	= 0.000 cuft



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
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Detention Basin

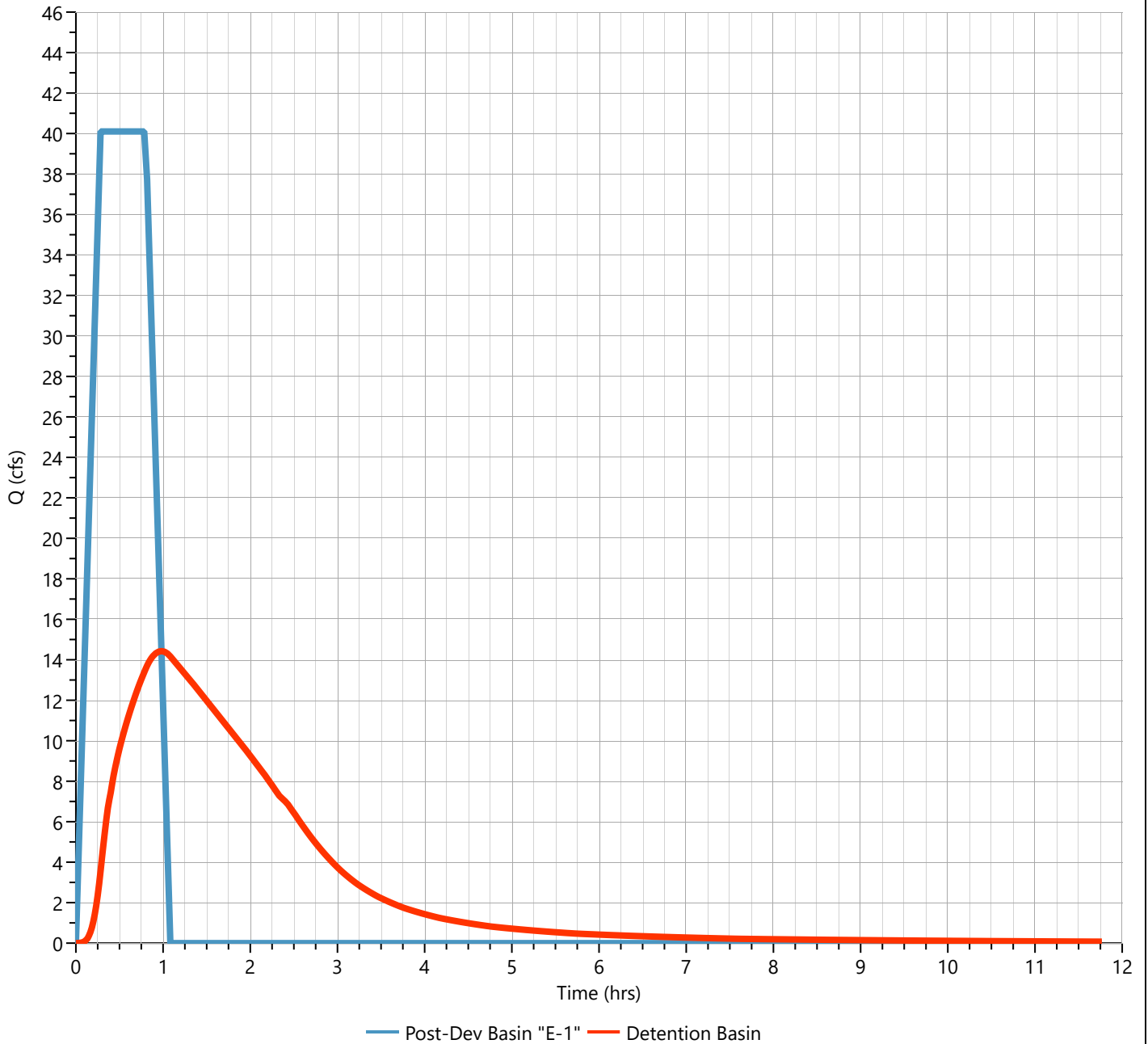
Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 14.43 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.98 hrs
Time Interval	= 1 min	Hydrograph Volume	= 115,403 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 478.63 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 84,597 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.37 hrs

Qp = 14.43 cfs



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

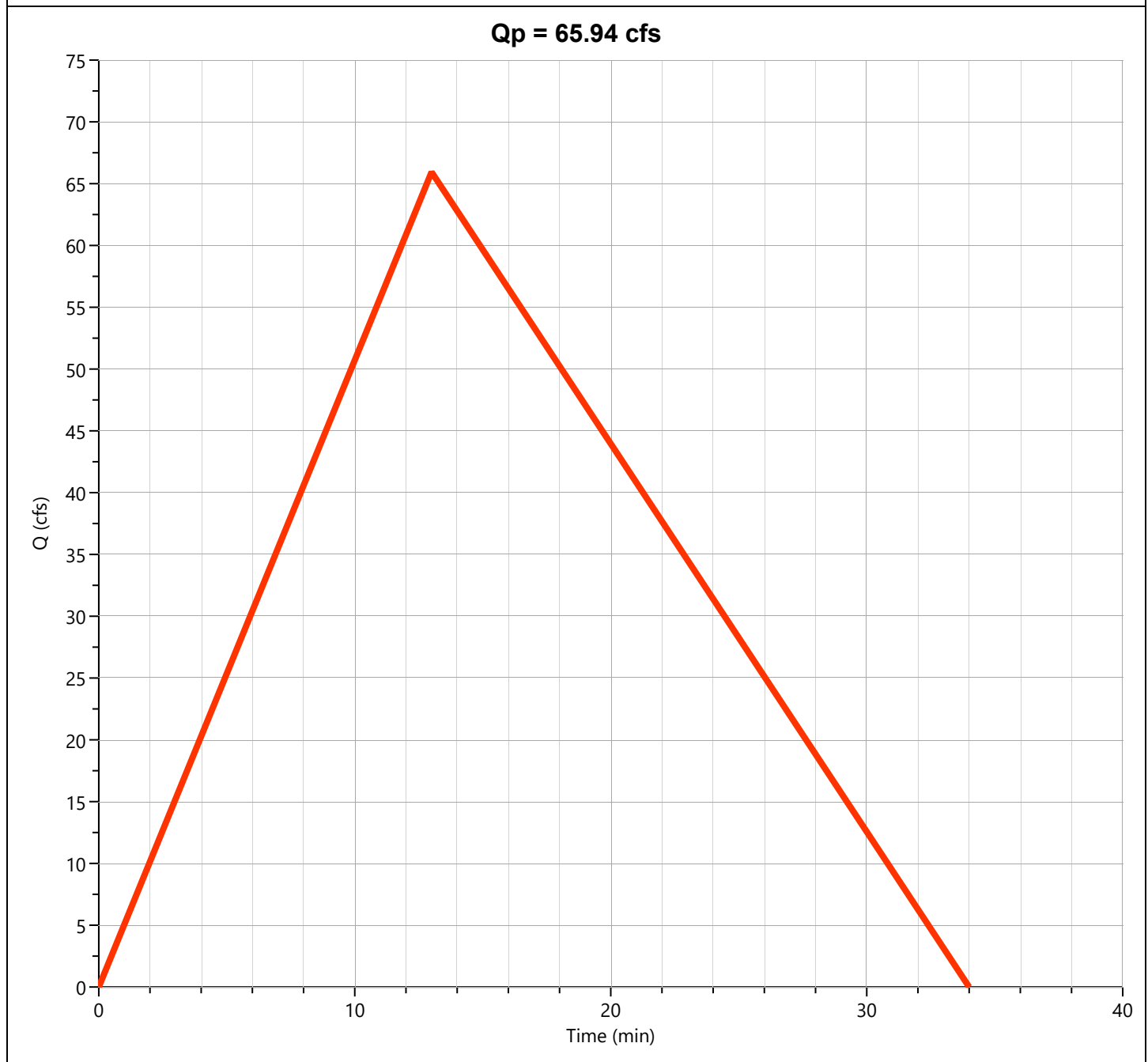
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 65.94 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 68,659 cuft
Drainage Area	= 17.53 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



Hydrograph Report

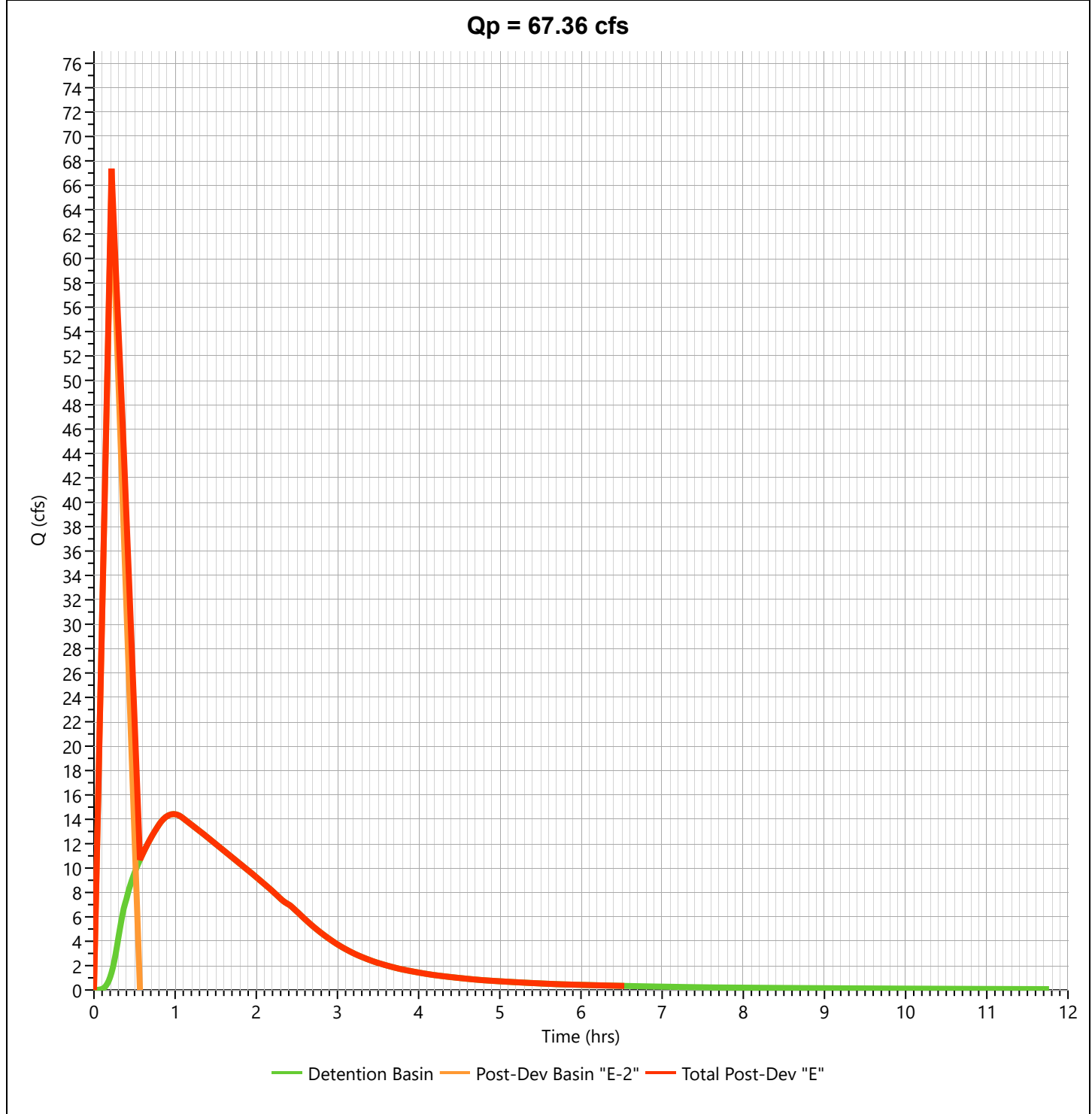
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Total Post-Dev "E"

Hyd. No. 16

Hydrograph Type	= Junction	Peak Flow	= 67.36 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 182,657 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 17.53 ac



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

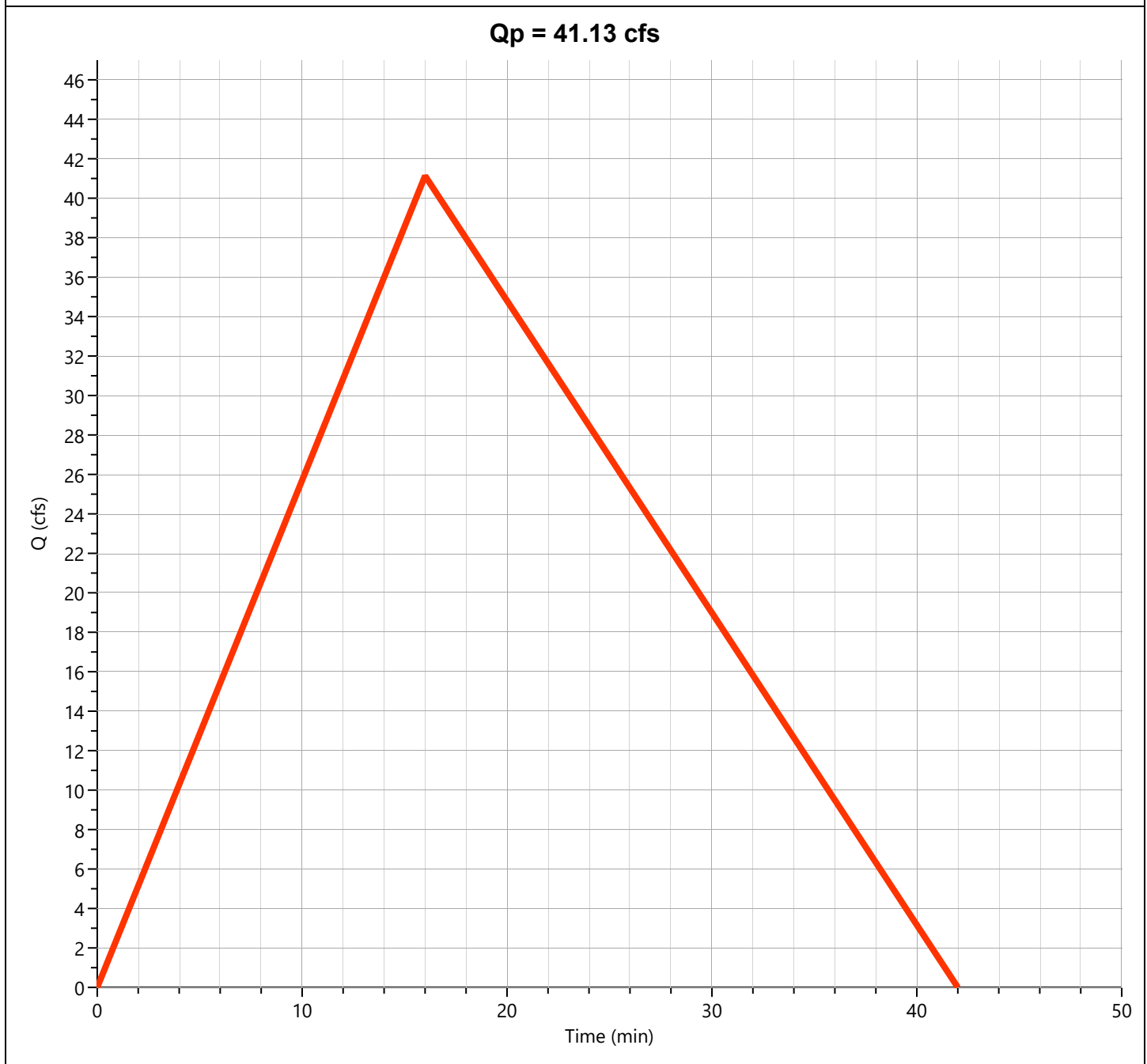
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 41.13 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 52,714 cuft
Drainage Area	= 12.0 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



Hydrograph 100-yr Summary

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

File: Detention Calculation 3-4-26.hys

03-04-2026

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	16.43	0.23	18,430	---		
10	Rational	Post-Dev Basin B	43.93	0.30	63,344	---		
11	Rational	Post-Dev Basin "C"	30.24	0.18	26,649	---		
12	Rational	Post-Dev Basin "D"	13.15	0.13	8,429	---		
13	Mod Rational	Post-Dev Basin "E-1"	43.46	0.28	125,154	---		
14	Pond Route	Detention Basin	15.18	0.98	125,061	13	478.93	92,311
15	Rational	Post-Dev Basin "E-2"	71.59	0.22	74,550	---		
16	Junction	Total Post-Dev "E"	73.24	0.22	198,086	14, 15		
17	Rational	Post-Dev Basin "F"	44.65	0.27	57,218	---		

Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

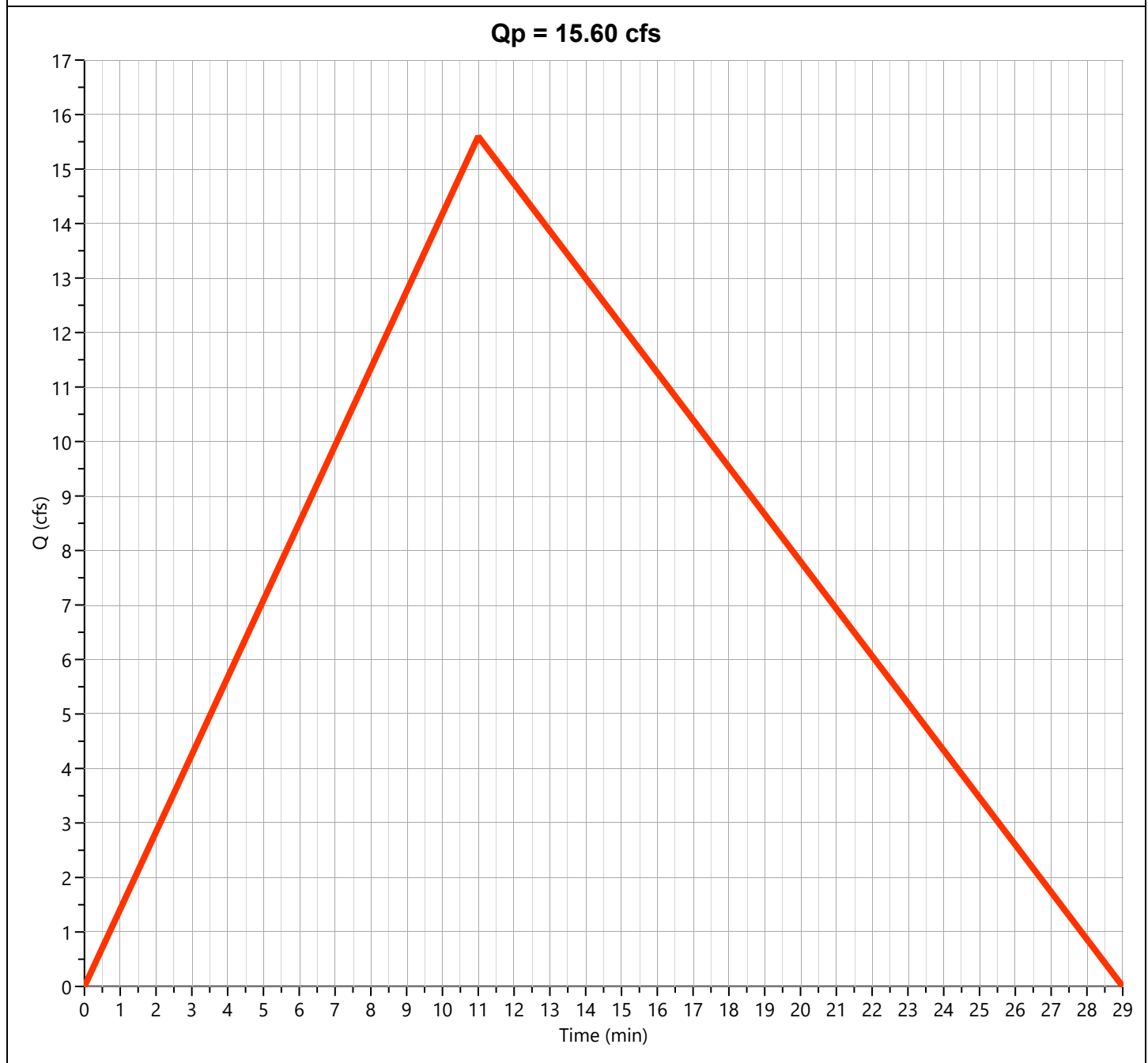
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

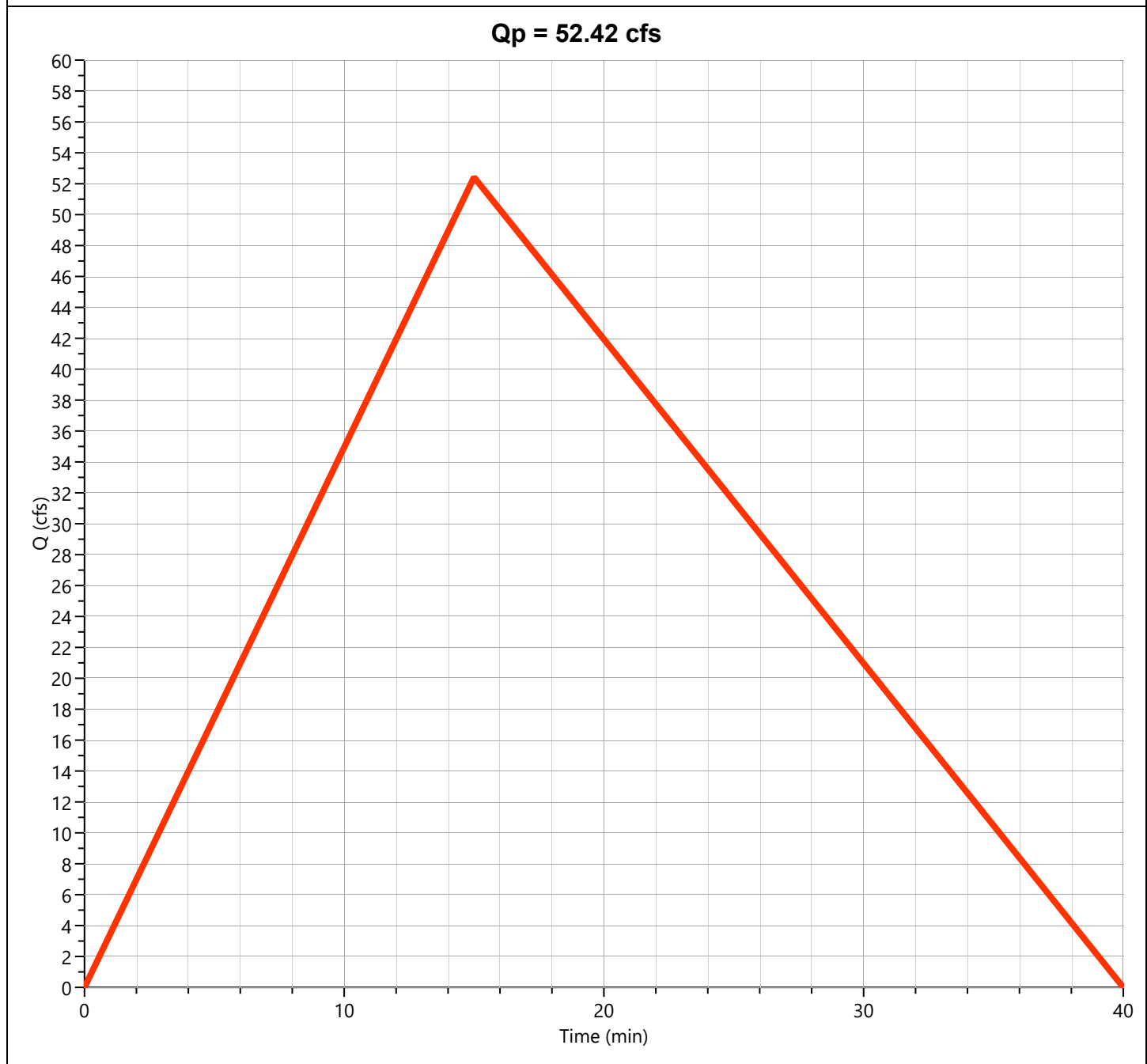
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

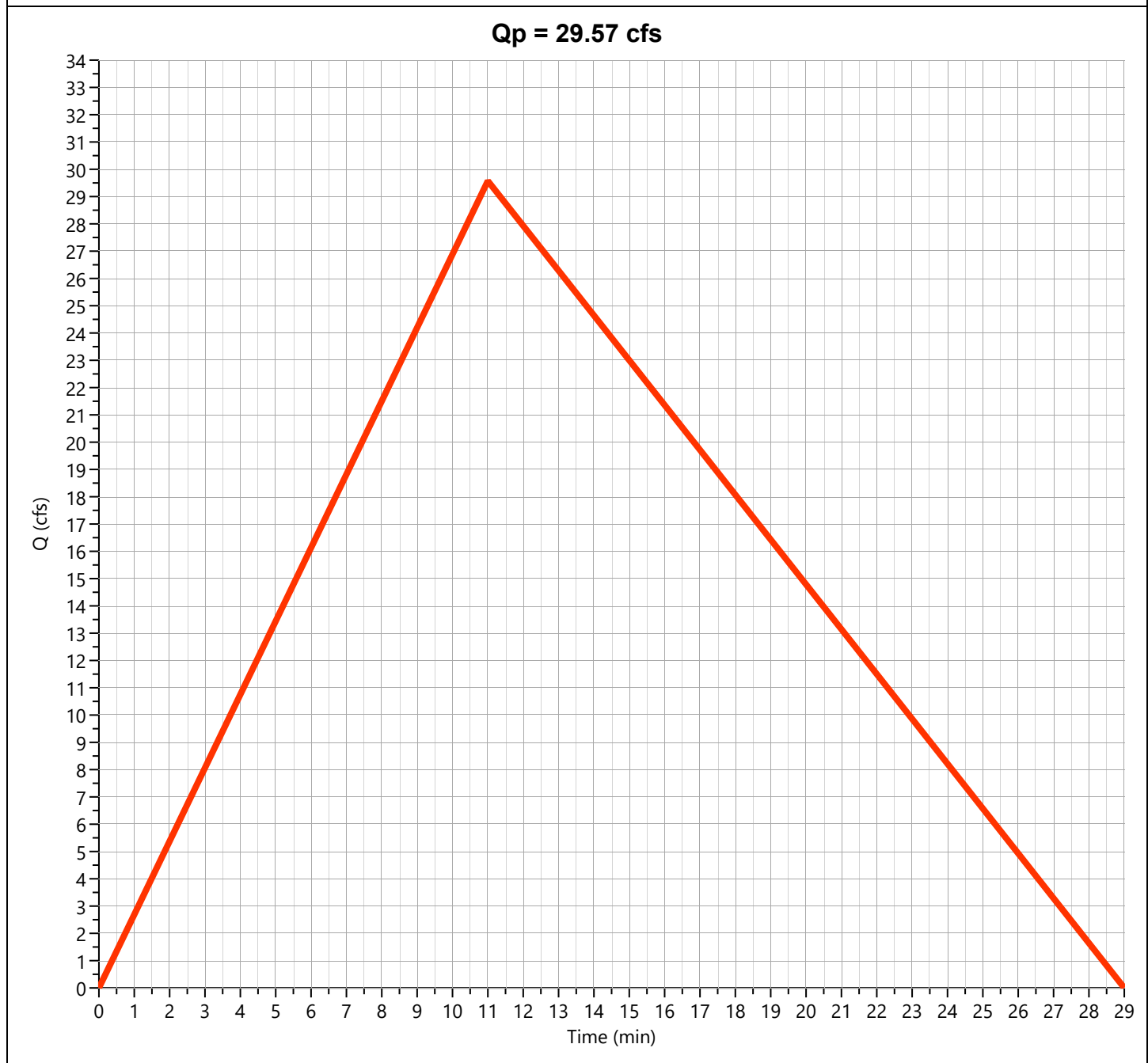
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

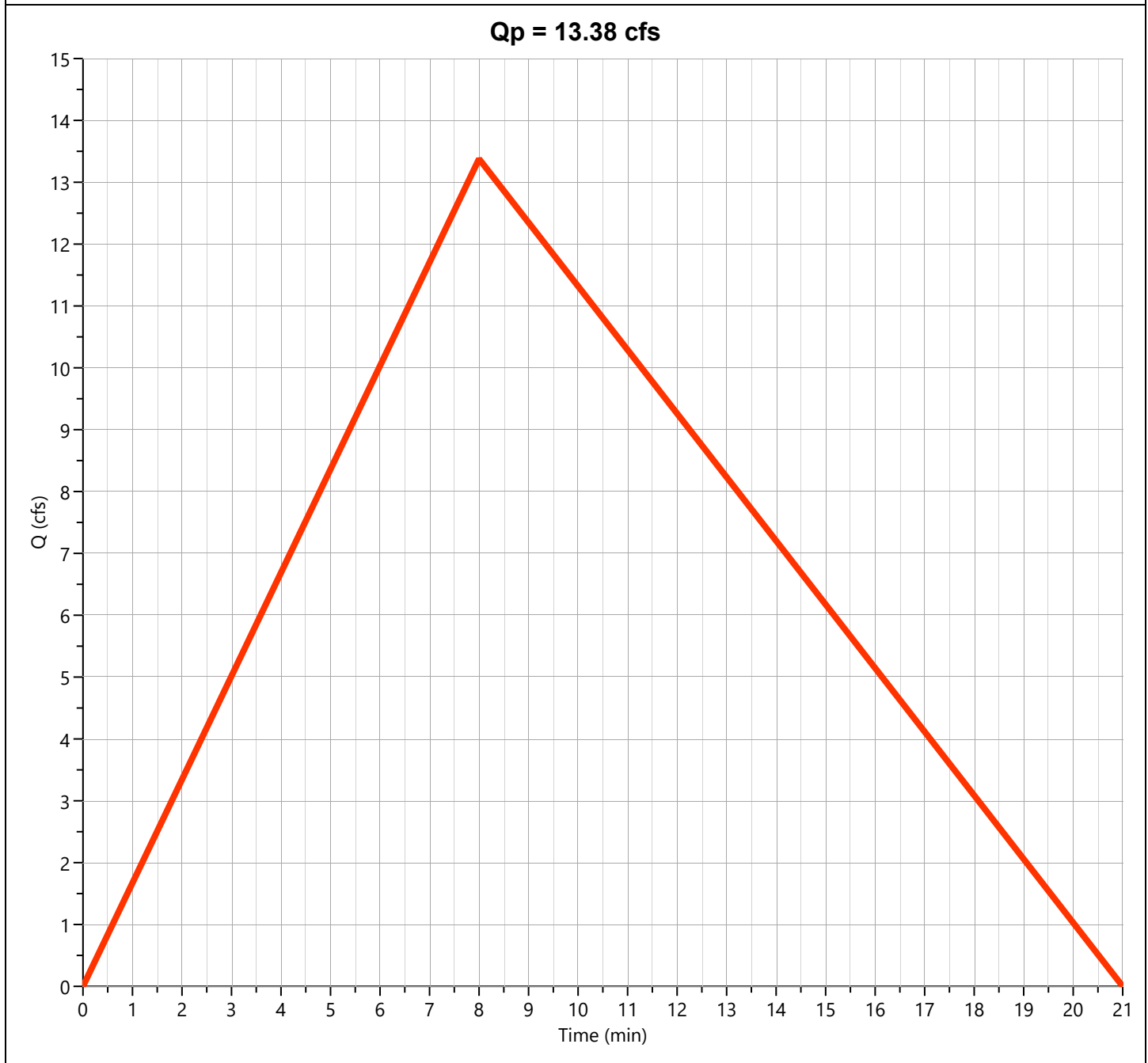
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

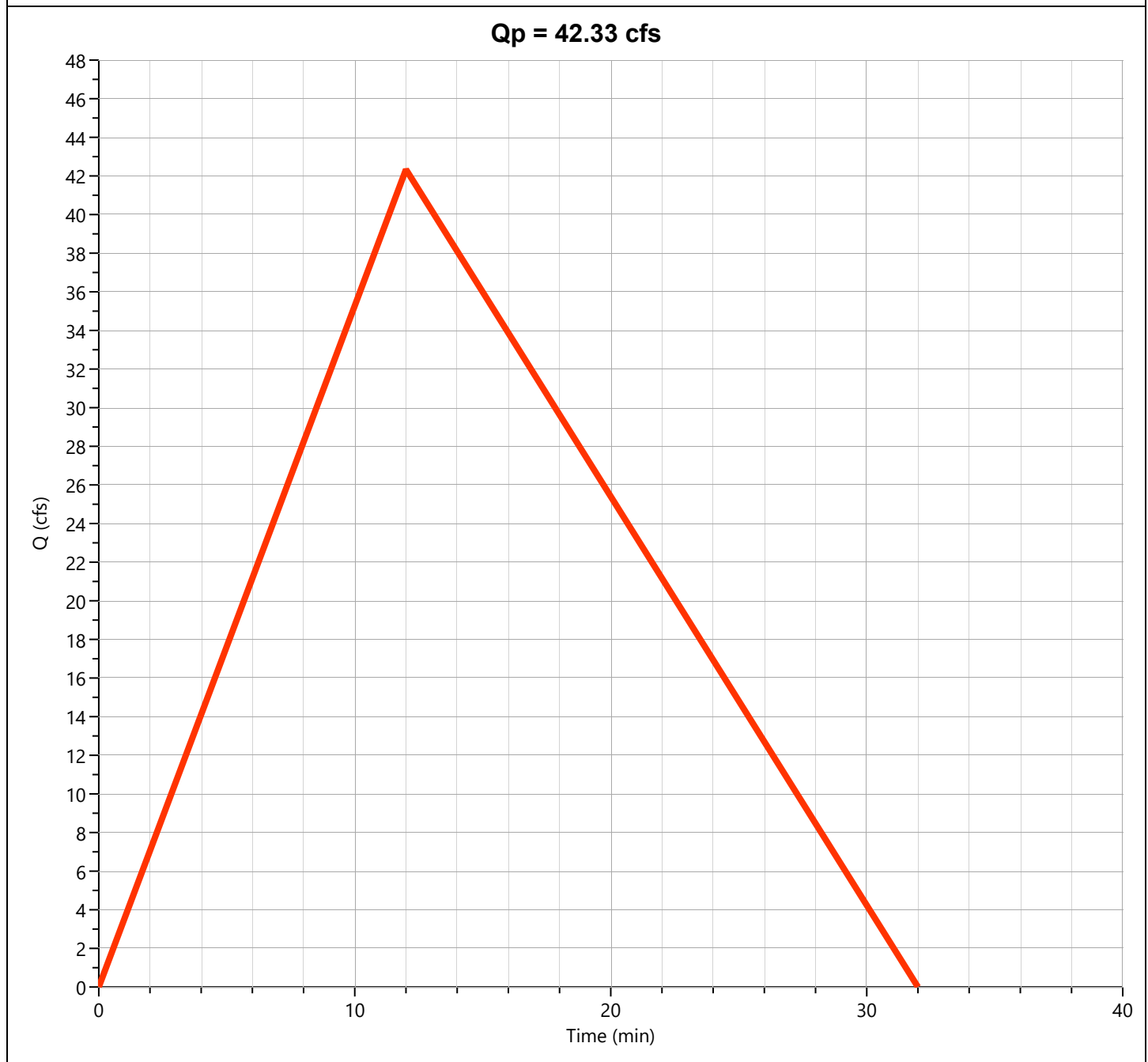
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

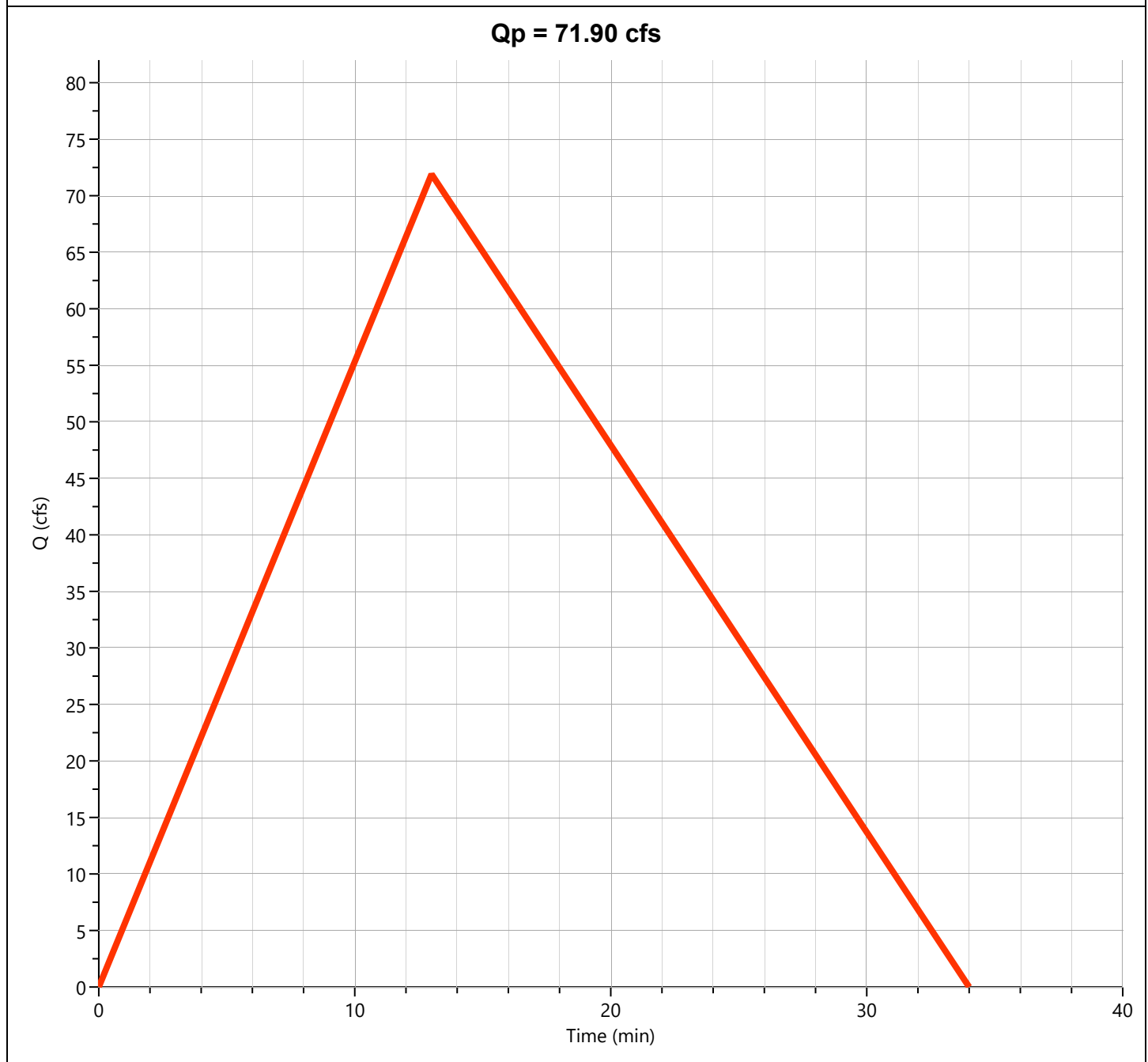
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

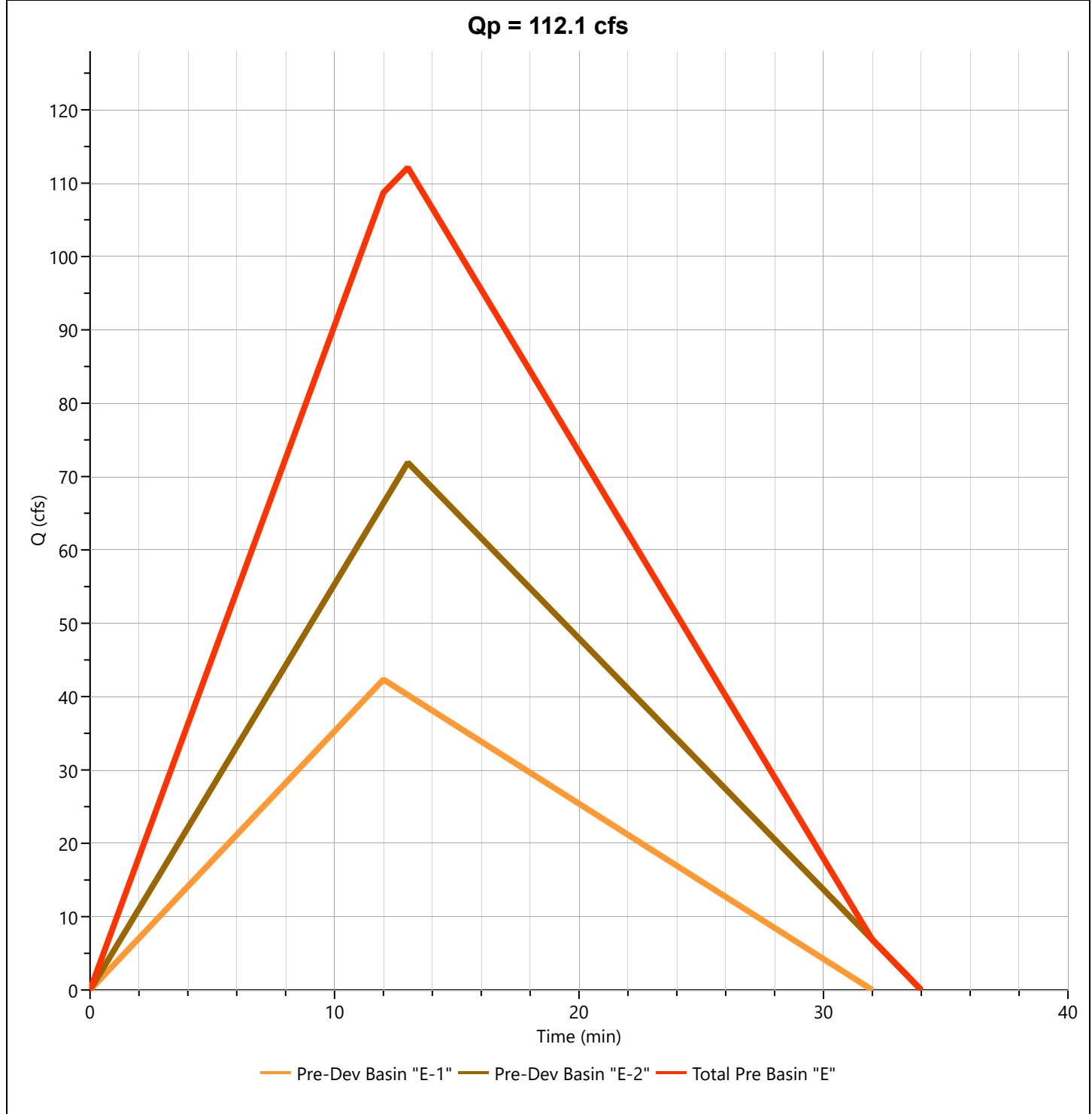
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

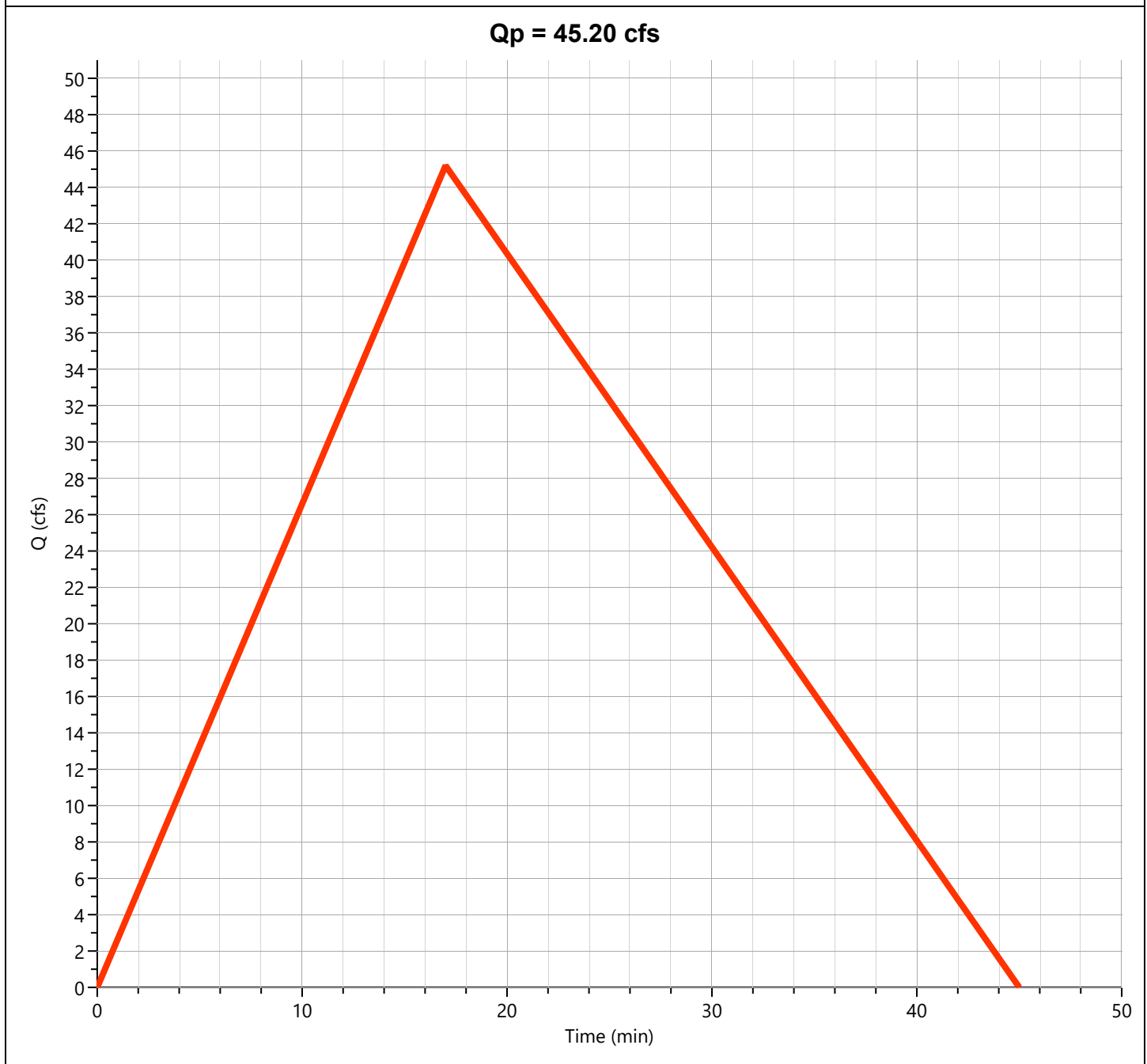
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03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

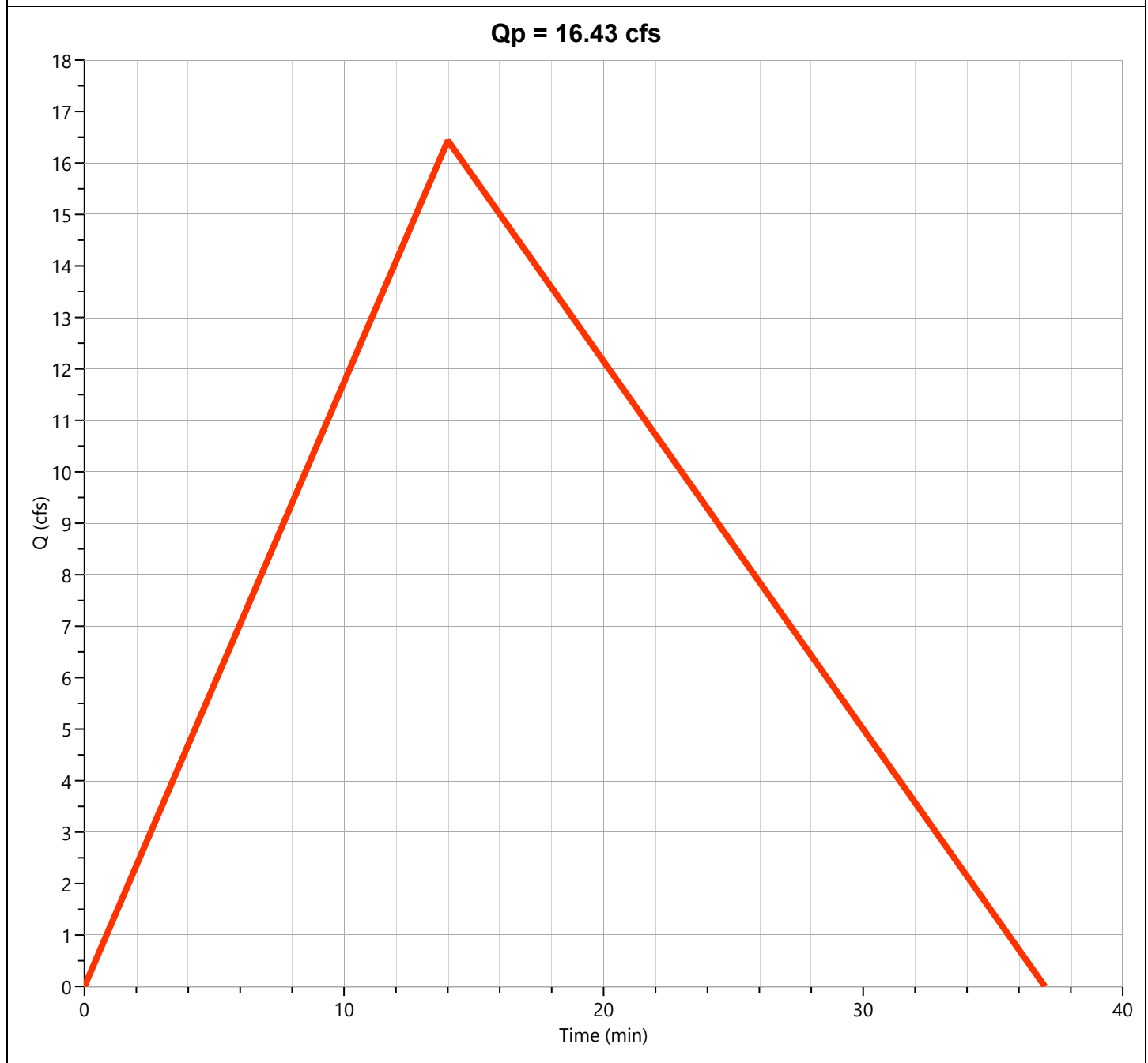
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03-04-2026

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 16.43 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.23 hrs
Time Interval	= 1 min	Runoff Volume	= 18,430 cuft
Drainage Area	= 3.53 ac	Runoff Coeff.	= 0.66
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 14.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.05 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

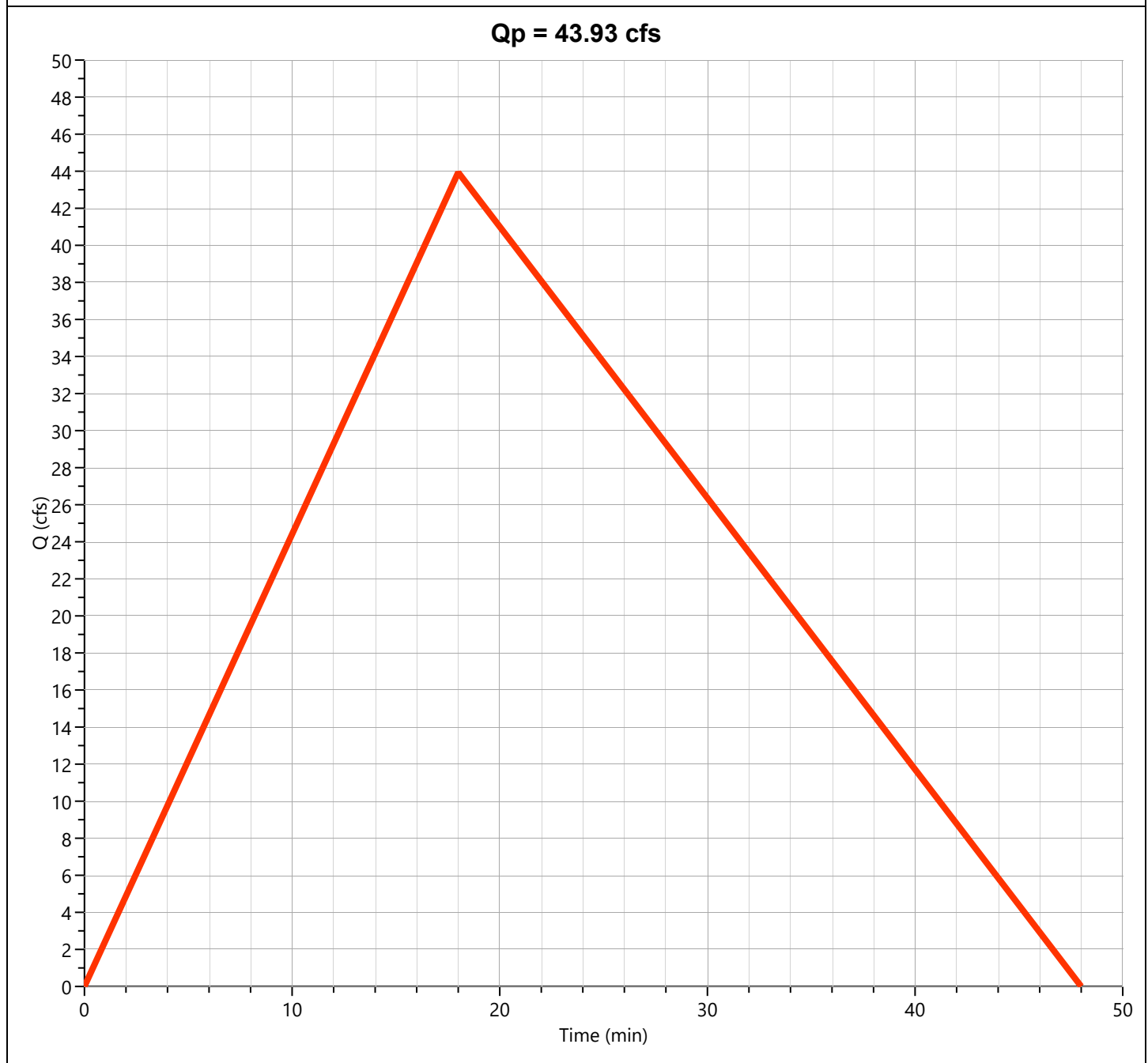
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03-04-2026

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 43.93 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.30 hrs
Time Interval	= 1 min	Runoff Volume	= 63,344 cuft
Drainage Area	= 12.45 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 18.0 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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

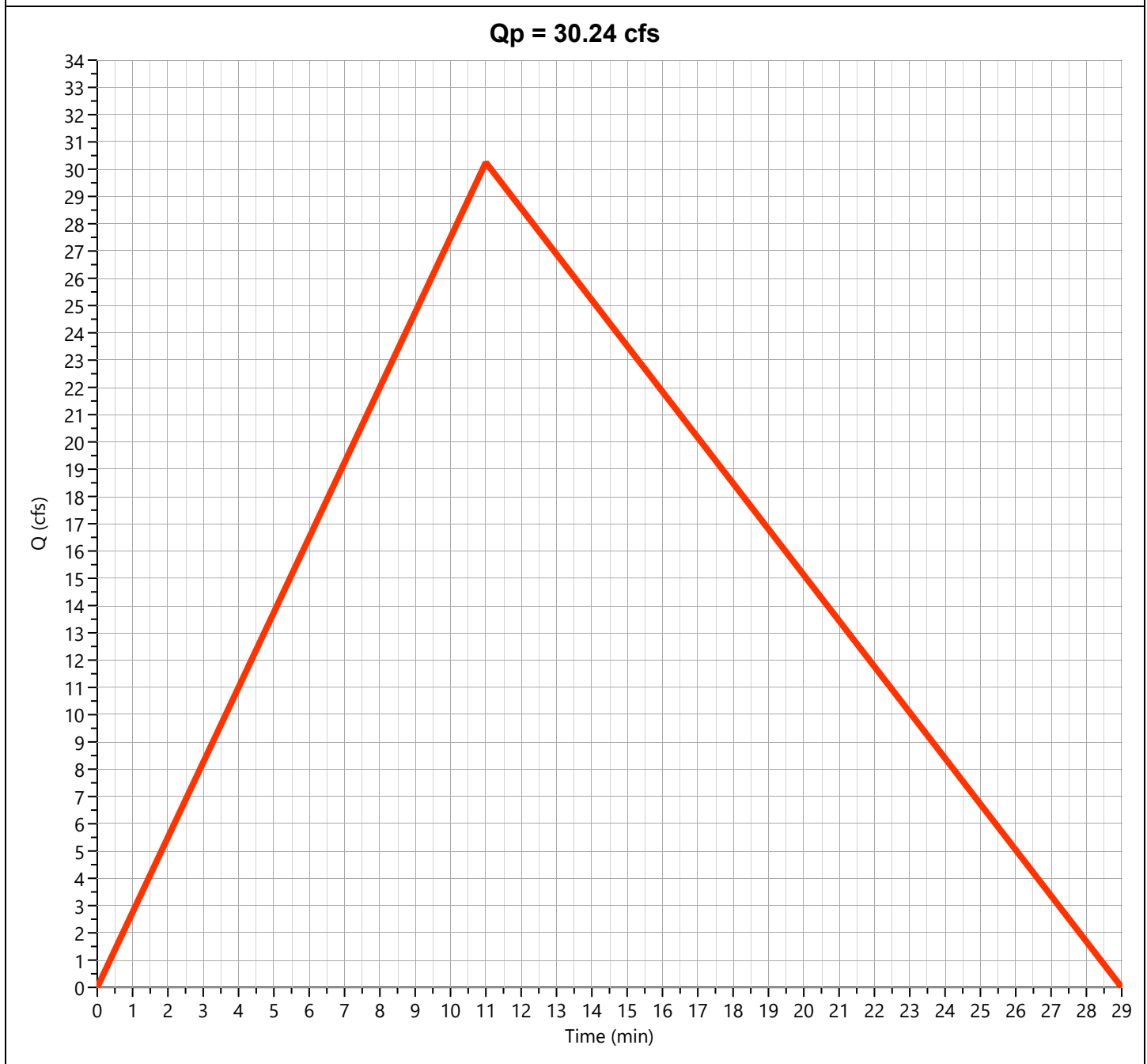
File: Detention Calculation 3-4-26.hys

03-04-2026

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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

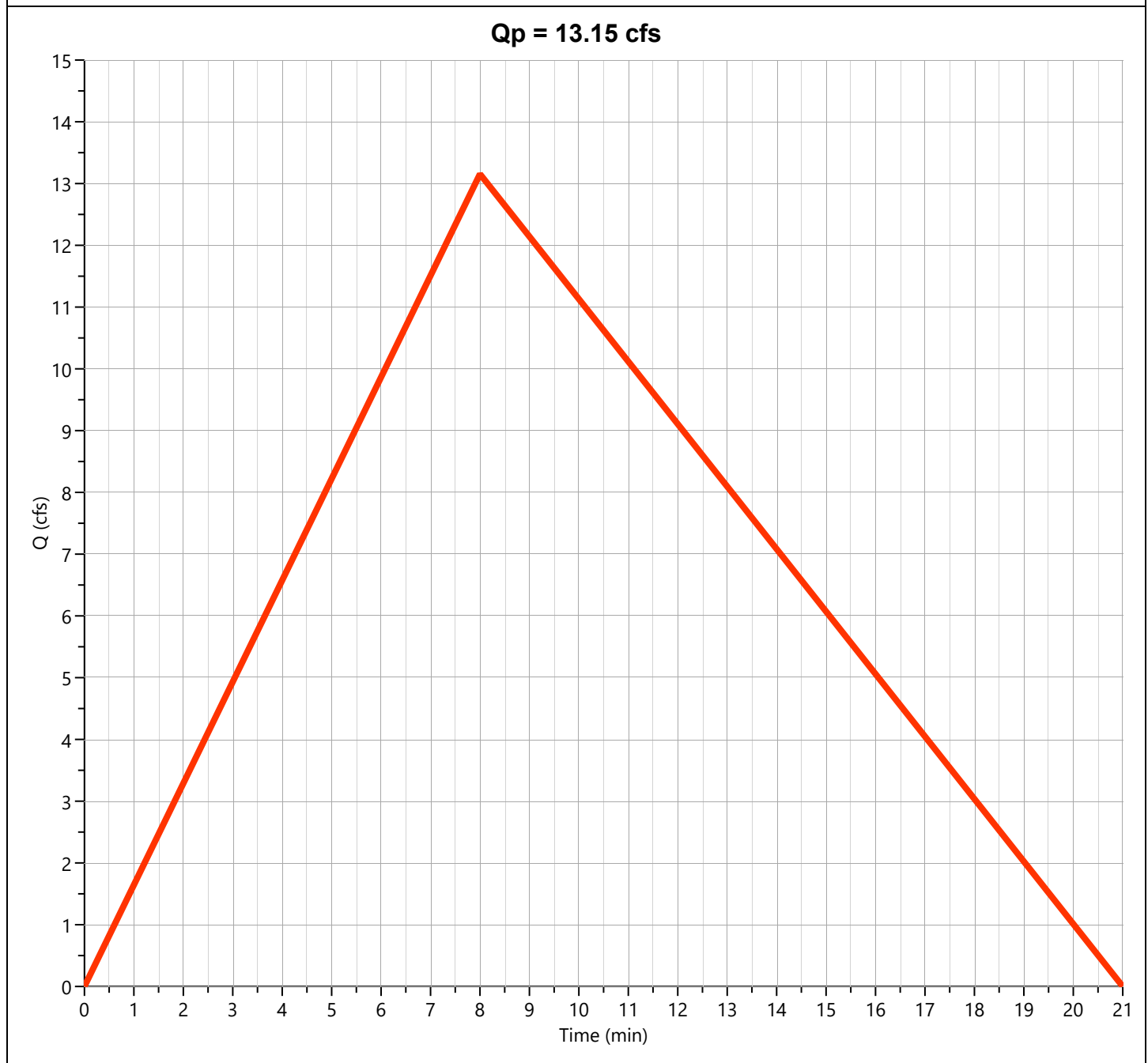
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 13.15 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 8,429 cuft
Drainage Area	= 2.59 ac	Runoff Coeff.	= 0.56
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



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

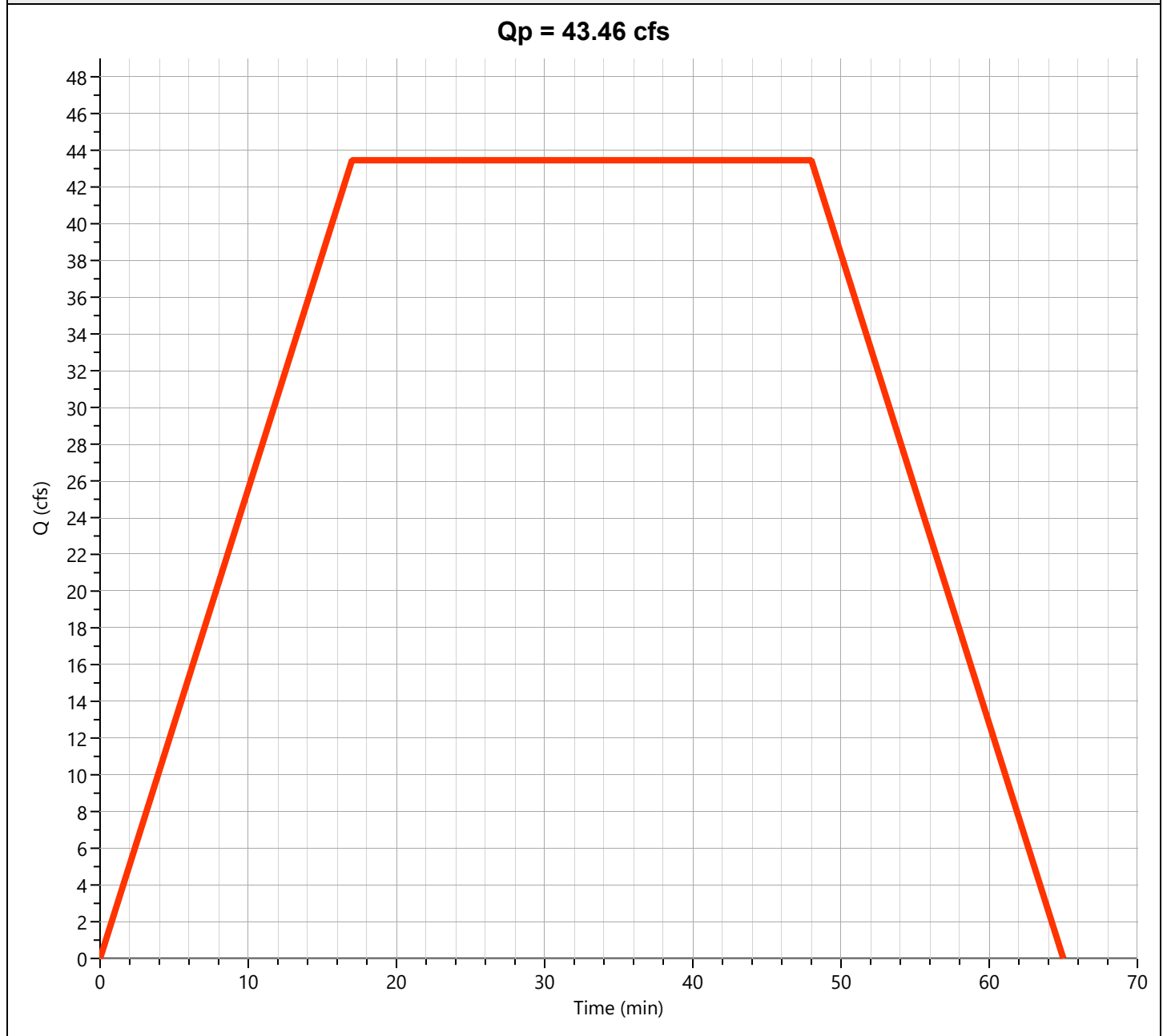
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03-04-2026

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Mod Rational	Peak Flow	= 43.46 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 125,154 cuft
Drainage Area	= 16.23 ac	Runoff Coeff.	= 0.66
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.06 in/hr
Freq. Corr. Factor	= 1.00	Storm Duration	= 2.82 x Tc
Target Q	= 0.000 cfs	Required Storage	= 0.000 cuft



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

File: Detention Calculation 3-4-26.hys

03-04-2026

Detention Basin

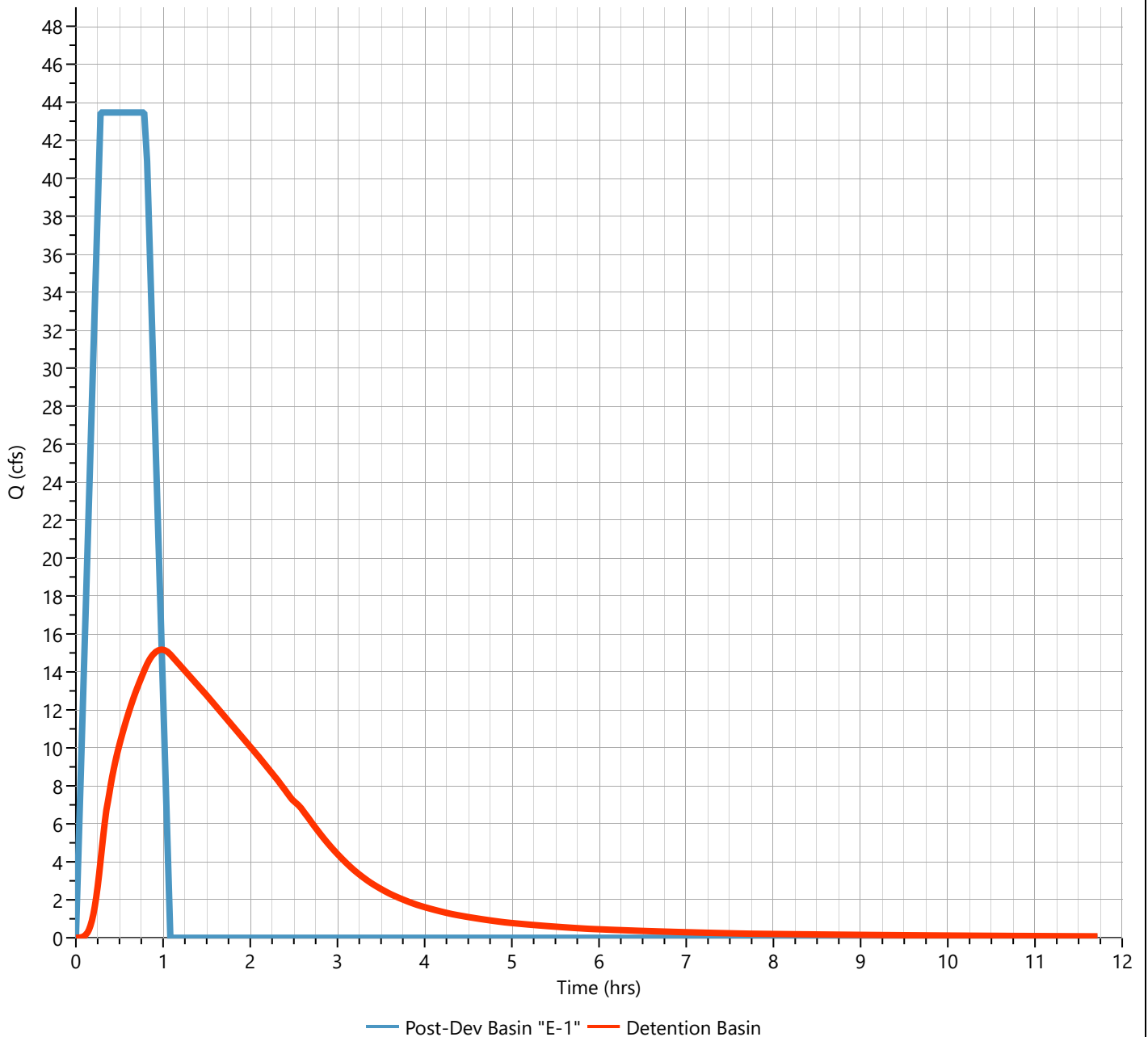
Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 15.18 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.98 hrs
Time Interval	= 1 min	Hydrograph Volume	= 125,061 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 478.93 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 92,311 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.39 hrs

Qp = 15.18 cfs



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

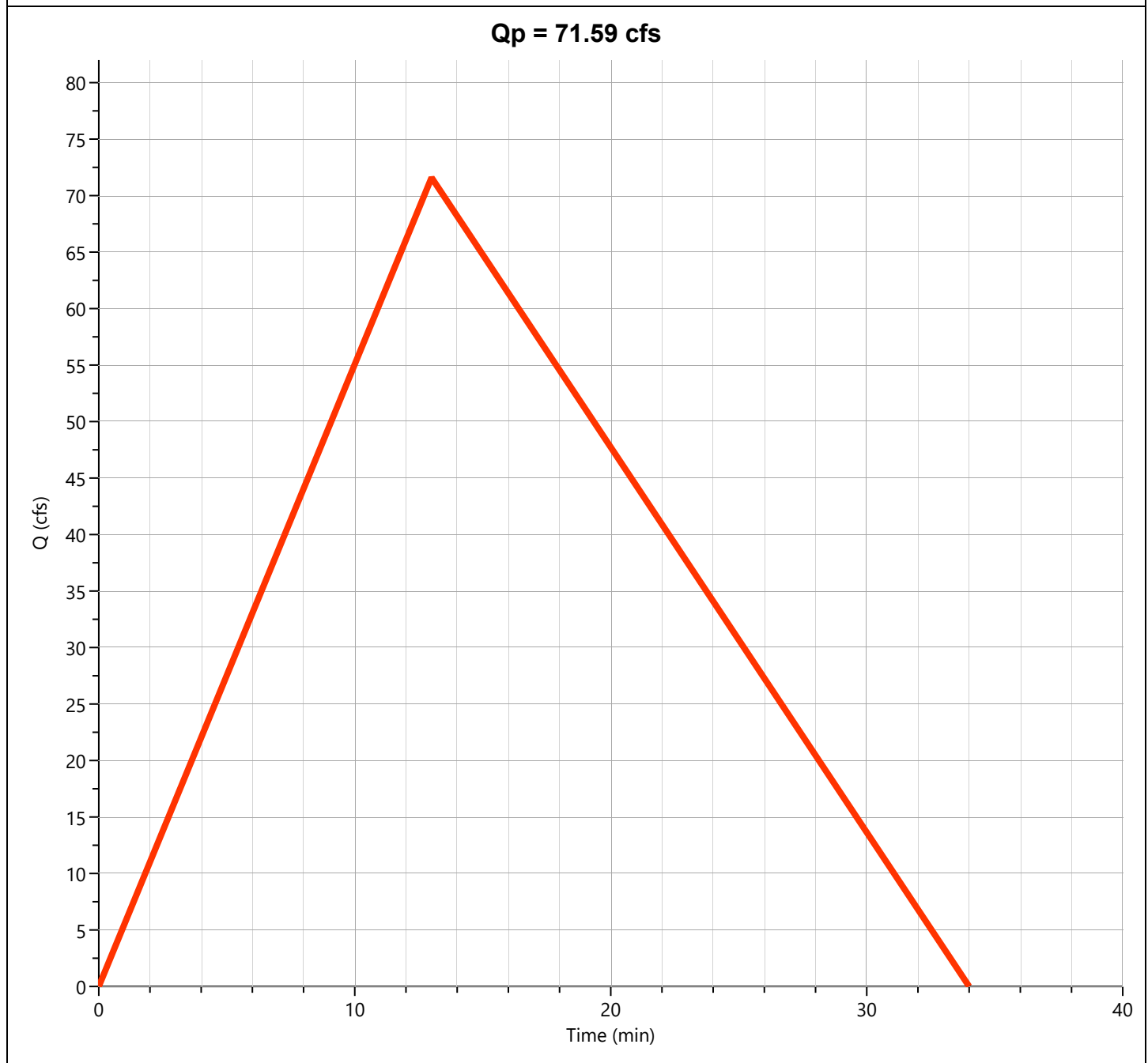
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 71.59 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 74,550 cuft
Drainage Area	= 17.53 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



Hydrograph Report

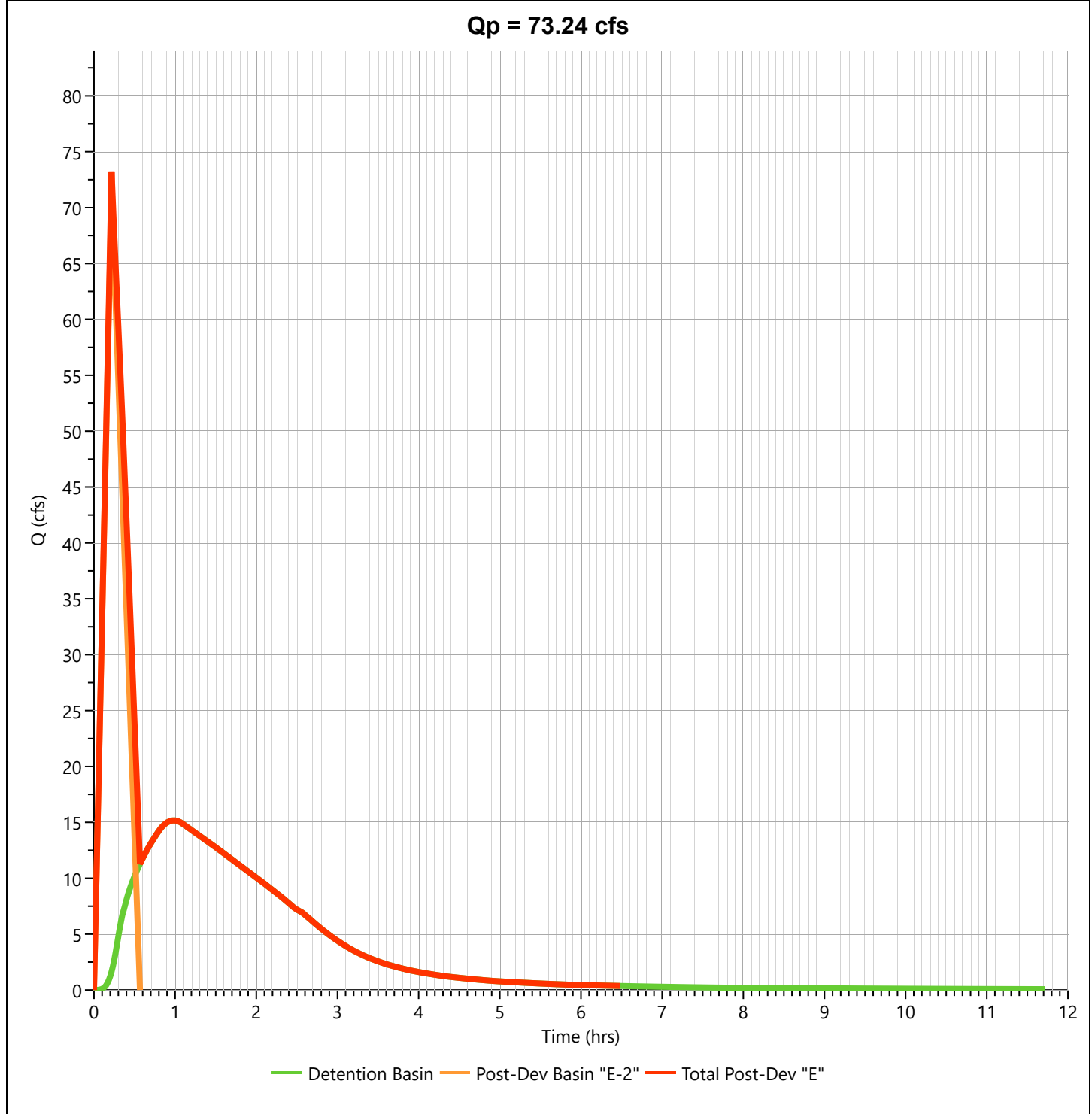
Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision
File: Detention Calculation 3-4-26.hys
03-04-2026

Total Post-Dev "E"

Hyd. No. 16

Hydrograph Type	= Junction	Peak Flow	= 73.24 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 198,086 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 17.53 ac



Hydrograph Report

Hydrology Studio v 3.0.0.39

Project Name: Hilltop Subdivision

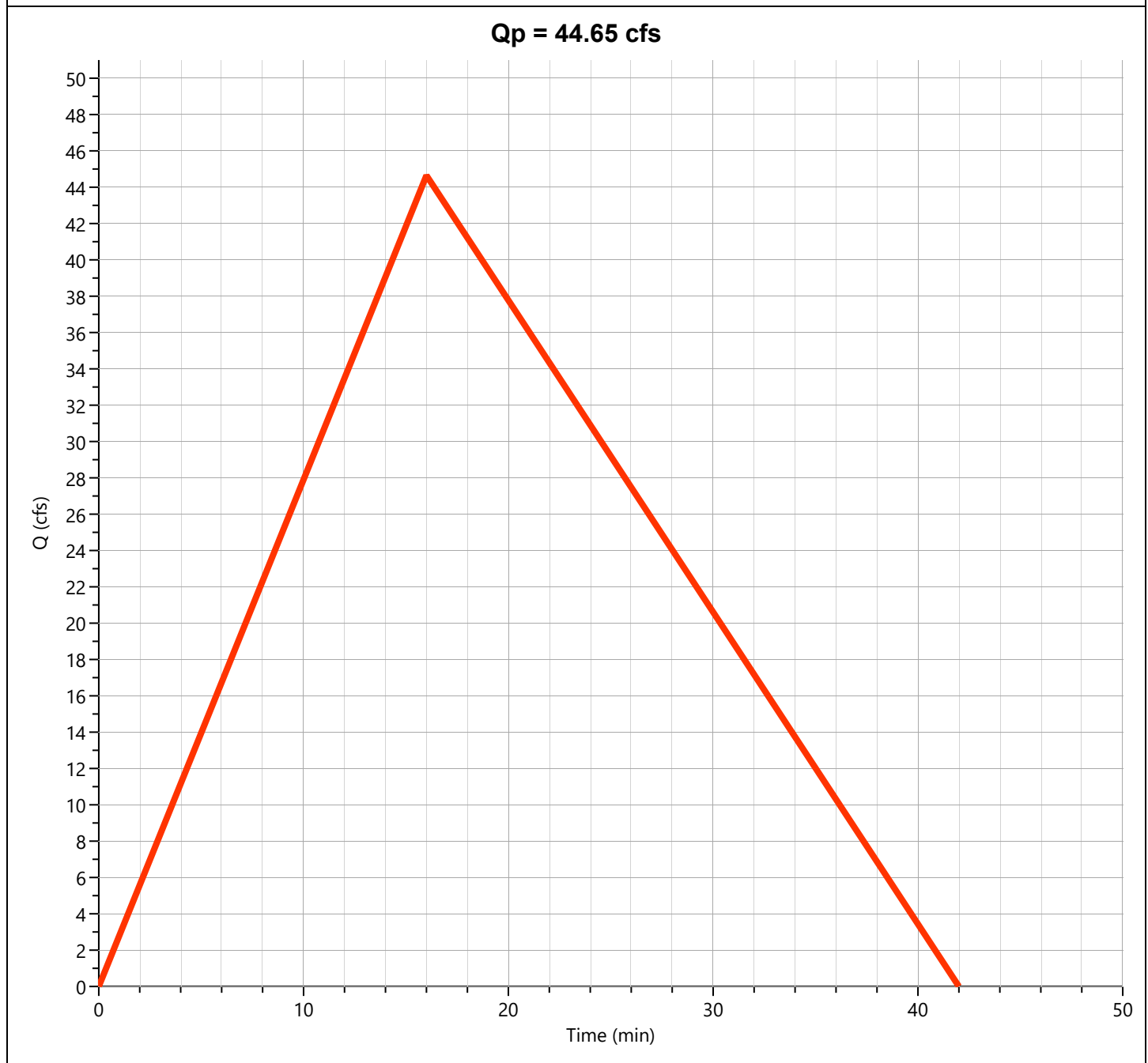
File: Detention Calculation 3-4-26.hys

03-04-2026

Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 44.65 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 57,218 cuft
Drainage Area	= 12.0 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



**DEVELOPMENT REVIEW COMMITTEE
STAFF COMMENTS
02/02/2026**

2. Dead-end fire apparatus access road on the north side is longer than 150 feet and will require an approved area for turning fire apparatus around. [503.2.5] Examples can be found in AFPC Appendix D.
3. Knox key box needs to be installed near the front entrance in an approved location 60 - 66 inches above the ground.
4. FDC must be within 100 feet of a fire hydrant. [507.5.1.1] FDC can be building mounted or remote.

4. Hilltop Manor Subdivision - Preliminary Plat

Utilities

1. 12" water line will need to be brought up to 2015 WW specifications with DI **Please refer to revised plans.**
2. Half Street improvements on Hilltop, 12" water line will need to be relocated **with DI. Please refer to revised plans.**
3. Locate and Survey valves, emergency connections from the Salem water line. Possibly located on Tract A and Lot 15. **Please refer to revised plans**
4. Verify sewer capacity- **Currently working with the City.**
Please label sewer in green and water in blue. **Please refer to revised plans.**

Streets

Due to the condition of the Hilltop Road half-street improvements will have to be made to the center line of the road. **Please refer to revised plans.**

1. A geotechnical report will be required for the subdivision and Hilltop Road. **Owner has provided. Refer to revised submittal.**

Street light and Street Signage plan will be required including, Stop Signs, Street Placard Signs and No Parking signs. **Please refer to revised plans.**

Stormwater

1. Submit Stormwater Application and pay Stormwater Impact Fee.
This will be submitted in a timely manner.
2. Large Scale ADEQ permit with approved SWPPP submitted to City of Bryant
This will be submitted to ADEQ and City of Bryant prior to commencing grading activities.
3. Notice of Coverage
This will be provided as soon as issued by ADEQ.
4. 78 Lots included in subdivision, Stormwater Review Fee will be \$1,950.00
Noted. The Developer will be made aware of these fees.

5. Silt Fence will require wire mesh, current detail does not call for wire mesh.
Please refer to revised plans.

Engineering

1. General Comment?
 - a. It is recommended that the developer/ Engineer schedule a meeting with City Staff to review this project. **Meet was made and attended by staff, developer, and engineer.**
 - b. What is the design speed that was used on the streets? **25 mph.**
 - c. Pre-Construction Meeting required. After approval is received and before construction commences, schedule a meeting with Bryant Public Works.
Noted.
2. Drawing 2 of 24 - Overall Street & Drainage Plan
 - a. Show drainage arrows in the direction of flow. **Please see revised plans.**
 - b. Are any new ditches planned? If so, provide details and label them on the plans. If needed, show a profile of the ditch. **Please see revised plans.**
 - c. Only show the curb inlet or junction box name, nothing else in the notes for each structure. Detailed information is shown in the Road Plan & Profile sheets. **Please see revised plans.**
 - d. Shade or hatch the park area and provide a bolder label. **Please see revised plans.**
 - e. Will there be any fencing around the park? **Yes**
 - f. Will there be any fencing around the outfall of the pond? **Yes**
 - g. Is it the intention that this pond be a wet detention basin (see comments on drawing 10 of 24)? **Wet detention basin. Please see revised plans.**
3. Drawings 3 thru 7 of 24 - Road Plan & Profiles
 - a. Label roads (show road names) **County is currently reviewing proposed street names. These will be added as soon as verified.**
 - b. Move CB-15 & CB-16 to low point of vertical curve **Please see revised plans.**
 - c. Does CB-15 & CB-16 have adequate opening length? **Yes. Refer to drainage report.**
 - d. Make sure that CB-28 is in low point of radius. **Please see revised plans.**
 - e. Does CB-27, CB-32, CB-31, CB-29 have an extension? **Yes**
 - f. Will there be a barricade at the north end of Road 1? **We felt the City would have a gate for access to the water tank.**
 - g. Show handicap ramps where sidewalks cross the streets. **Please see revised plans.**
 - h. Label sanitary sewer on the street profile (show manhole name, reference the sanitary sewer plan & profile sheet that it is on) **We always show sanitary sewer in our street/drainage profiles to prevent conflicts during construction. However, we don't add labels due to confusion between drainage slopes and sewer slopes.**
 - i. Do all inlets on grades have proper opening length? **Yes. Please reference drainage report.**
 - j. Label the quantity and area of riprap, type of riprap, and reference to detail at the flared end section. **Please see revised plans.**
4. Drawing 8 of 24 - Hilltop Road Widening (check spelling) Plan & Profile
 - a. Same comments as above. **Noted.**

- b. Saw cut edge of existing pavement, match elevation and grade, and provide a smooth transition to the widening section. **Noted.**
- c. Tapers at each end of the widening. **Noted. Please see revised plans.**
- d. Rechanelize ditch where stormwater being released. **Noted. Please see revised plans.**
- e. Specify asphalt type on typical section. **Noted. Please see revised plans.**
- f. Place note on the typical section that says that the construction of the widening will meet City of Bryant Street Specifications. **Noted. Please see revised plans.**
- g. See fire department comments. **Noted.**

- 5. Drawing 9 - Road 3 P&P (Shouldn't this say "Emergency Access Road Profile"?)
 - a. Allowing flow over the road? Why not a culvert? **Please see revised plans.**
 - b. Ditches to direct drainage away from the road? **Please see revised plans.**
 - c. **Road designed to meet Fire Department requirements?** **Yes. Designed per state fire code to 20' wide to support 80,000 lbs.**

6. Drawing 10 of 24 - Detention Outflow Plan and Profile

- a. Is this a Detention Basin or a Retention Basin? **Retention**
- b. Basin must have a control structure, not just an outflow pipe. (Section 1000.5.6) **Please see revised plans.**
- c. If the basin is a detention basin then a trickle channel is to be constructed (Section 1000.5.6) **Please see revised plans.**
- d. Slopes in the basin must not exceed 3-ft horizontal to 1-ft vertical (Section 1000.5.3.) **Please see revised plans.**
- e. Label the high water elevation in the basin (must be a minimum of 2-ft below any adjacent structure, and must have a minimum of 1-ft of freeboard). **Please see revised plans.**
- f. Provide scour protection from the flared end sections to the bottom of the pond. Provide details of the scour protection to be provided for each discharge point into the pond. **Please see revised plans.**
- g. Provide detailed information regarding the maintenance plan and schedule for the pond (i.e. regular inspections, sediment removal, repairs, etc.) (Section 1000.8). Include mosquito control into the maintenance plan. **Stormwater Pond Maintenance plan to be provided.**
- h. Provide scour protection below the spillway (Section 1000.5.2) **Please see revised plans.**
- i. There appears to be a lower "pond" on the drawing. Unless all of the control for the runoff is in the upper pond then place another control structure in this pond as well. **All of the control will be handled in the retention pond. There is no lower pond. Only existing grade used to channel flow.**
- j. Provide cross sections of the pond(s). **Please reference retention pond profile (sheet 10).**

- k. Provide details of the overflow spillway which meet the requirements of Section 1000.5.2. **Please see revised plans.**
 - l. Bermuda sod is required to stabilize the pond slopes (Section 1000.5.8) **Noted.**
 - m. Easement/ Right of Way to be shown on the plat for pond access by the owner and the City (Section 1000.5.9). **Noted. This will be conveyed to the City with the final plat.**
 - n. Minimize pond leakage around any penetrating pipes. **Noted.**
 - o. What landscaping is going to be used around the pond/ park area (See Section 1000.6)?
Bermuda sod with an effort not to disturb native trees. Fencing to be installed.
 - p. What safety measures are to be provided for the pond area (See Section 1000.7)? **Since this is designated as a park area, a detailed plan showing what safety measures are planned for that area. This area will be designated part of the overall park area and green space for the subdivision, however, public use/recreation areas are planned for tract 2.**
7. Drawing 11 of 24 - Overall Utility Plan
- a. Reference utility comments above. **Noted. Please see revised plans.**
 - b. Provide analysis of existing sanitary sewer (EX-SSMH-1) to demonstrate it can handle the additional flow. **This is always provided by the municipality's engineering department as they are most familiar with the system.**
 - c. Provide modeling of water system. **This is also typically provided by the municipality. The 78 lot development we are proposing will not exceed the volume/pressures allowed by the proposed 8" water mains. The hydraulics of the City system outside the development should be on file with the City Engineer and not the responsibility of the Developer.**
 - d. Provide details showing adequate protection of existing 12" water main. **A water line relocation project will be performed concurrently with this development.**
8. Drawings 12 thru 18 of 24 - Sewer Plan & Profiles
- a. How will new sewer be tied into the existing manhole. **Typical industry standard doghouse manhole.**
 - b. Show street names. **Noted. Please see revised plans.**
9. Drawing 19 of 24 - Erosion Control Plan
- i. Label the materials to be installed for each phase. **Noted. Please see revised plans.**
 - ii. Show a schedule or sequence of construction on the plan (See Sections 1102.2 ,1104.4.9 and 1105.13) **Noted. Please see revised plans.**
 - iii. Show soil loss calculations (See Section 1103) **Noted.**
 - iv. Include an inspection and maintenance plan (Section 1104.4.7) **This is included in the SWPPP per ADEQ requirements.**

- v. Verify proper application of silt fencing is shown on the plan. (Maximum 3 ft height) See Section 1105.2 in the Stormwater Management Manual.
 - 1. Maximum allowable slope lengths contributing runoff to a silt fence (Table 1100-1)
 - 2. Maximum drainage area contributing flow to a silt fence shall not exceed 0.5 acres per 100-ft of fence.
 - 3. Place silt fences below the toe of exposed and erodible slopes
 - 4. Show the replacement schedule for silt fences in the schedule/ sequence.
 - 5. Show material specifications for silt fence, wire mesh, etc. All materials to meet the City of Bryant specifications.
 - 6. Add notes on the silt fence detail which shows compliance with Section 1100.5.
 - 7. Show materials specifications for the silt fence, posts, etc.
 - 8. Place silt fence around the pond where runoff is contributing to the pond.

It is noted and required that all stormwater maintenance and controls are in accordance with City of Bryant and ADEQ standards and specifications.

- vi. Are there any sedimentation traps planned?
Sediment traps will be installed on an “as needed” basis. This is one of the measures utilized often on our projects when needed.
- vii. If it is the intent to use the pond as a sedimentation basin a proper filtration system should be installed at the basin outfall. If it is the intent to build the outfall structure the structure must be protected with silt fencing and other materials as deemed necessary to reduce the release of sediment laden water downstream. **Noted.**
- viii. See Sections 1105.7 of the Bryant Stormwater Management Manual, including Exhibits 1100-26 thru 1100-30. **Noted.**
- ix. What materials are planned to be utilized during construction for areas that require temporary stabilization (any areas that are not worked for more than 14 calendar days)? Vegetation and mulching. **Please refer to erosion control plan/notes.**
- x. **Show in the notes that existing vegetation that is established will be preserved.**
- xi. Show a list of any other erosion control structures/ materials that may be utilized during the construction phase as required to

minimize soil loss. **Please refer to erosion control plan/notes.**

5 of 6

- xii. Add a note that the ECP 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. Added note to "install supplemental measures as needed to contain runoff" but does not list specific erosion control measures. **Please refer to erosion control plan/notes.**

10. Drawing 20 of 24

- a. Reference these details to show which type of curb inlet is being used.

11. Drawing 21 thru 24 - Utility Details

- a. No comments

12. Drainage Calculations

- a. No comments

Planning

1. Is the 4 acre open area the park land that is to be dedicated to the City according to the Midtown Settlement agreement? The drainage plan for water headed to the pond will need to be designed so that the property can be usable as park land. There will need to be a document drawn up to quitclaim the property to the City of Bryant based on the legal description. **Developer is currently working with the City regarding this matter.**
2. Lots 39, 40, and 41 do not meet the minimum lot size for an R-2 lot. Must be 9,000SF in size.
Noted. Please see revised plan.
3. The open area 4 acre tract and the tract next to the water tower need to be labeled as Tracts. **Noted. Please see revised plan.**
4. Cross sections for local street or the Half street improvements are not shown. **Noted. Please see revised plan.**
5. Sidewalks are shown with 3ft of greenspace on either side, Sidewalk should be 6ft from
6. the back of the curb along the edge of the ROW. **Noted. Please see revised plan.**
ADA Ramps/crosswalks will be required at each of the intersections. None are shown on the plans. **Noted. Please see revised plan.**
7. Preliminary Plat Subdivision Review and Preliminary Plat stormwater review fees have been paid. **Noted.**

Fire Maximum grade is 10%. Road-3 Profile shows grade as 10.41%. Road 4 Profile

1. shows 10.90%. Road Profile 5 shows 10.465. [D103.2]
Fire apparatus access roads, including gravel road, must be capable of supporting
2. the imposed load of a fire apparatus weighing up to 75,000 lbs. [D102.1]
Noted. Please see revised plans.



54'

20'

69''

3'

Letta's Flower Cart

OPEN
FLORIST

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Use table below to enter information regarding each sign for approval. Please use each letter to reference each sign rendering in packet.

SIGN	Type (Façade, Pole, Monument, other)	Dimensions (Height, Length, Width)	Sqft (Measurement standards found on Pg.7 of Sign Code)	Façade Width (Linear Ft of building façade where wall sign is being installed)	Height	
					To Top	To Bottom
A	Wall	3'x20'x8"	60	54'	16'	13'
B						
C						
D						
E						
F						



Job Ticket Number: 8493
 Salesperson: Ronny Skipper
 Start Date: 03/04/2026

Customer/Folder: Arkansas Medicare Center
 File: AMC_Gemini_Letters_Proof
 Last Revision:

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Seiz Sign Company 1231 Central Ave. Hot Springs, AR 71901 Phone: 501-623-3181 Fax: 501-623-4594 www.seizsigns.com



Production
 Designer: Rebecca Brister - graphics3@seizsigns.com
 Quantity: 1
 Substrate: Gemini
 Production Notes:

Conditions & Approval
 1. The client is responsible for content accuracy. Please proof the text, dimensions, and layout carefully. 2. Colors are representative only. There are variations in color between sign printing and paper printers. 3. All designs presented are the sole property of Seiz Sign Company, and may not be reproduced in part or whole without written permission from Seiz Sign Company. 4. By signing below you agree that all artwork is correct and give Seiz Sign Company permission to begin production.

Client Approval _____ Date _____

Use table below to enter information regarding each sign for approval. Please use each letter to reference each sign rendering in packet.

SIGN	Type (Façade, Pole, Monument, other)	Dimensions (Height, Length, Width)	Sqft (Measurement standards found on Pg.7 of Sign Code)	Façade Width (Linear Ft of building façade where wall sign is being installed)	Height	
					To Top	To Bottom
A	Wall	34" x 165"	38.5	20		
B						
C						
D						
E						
F						



City of Bryant, Arkansas
Community Development
210 SW 3rd Street Bryant, AR 72022
501-943-0943

SIGN PERMIT APPLICATION

Applicants are advised to read the Sign Ordinance prior to completing and signing this form. The Sign Ordinance is available at www.cityofbryant.com under the Planning and Community Development tab.

Note: Electrical Permits may be Required. Please contact the Community Development Office for more information.

Date: 4/1/2026

Sign Co. or Sign Owner

Name Ryan Vaught
Address 23920 I-30 N
City, State, Zip Bryant, AR 72022
Phone 501-416-7404
Email Address info@501pyro.com

Property Owner

Name R & R Properties
Address PO BOX 337
City, State, Zip BRYANT AR 72089
Phone _____
Email Address _____

GENERAL INFORMATION

Name of Business Diamond State Pyro LLC DBA 501 Pyro
Address/Location of sign 23920 I-30 N
Zoning Classification C-3

Please use following page to provide details on the signs requesting approval. Along with information provided on this application, a **Site Plan showing placement of sign(s) and any existing sign(s) on the property is required** to be submitted. **Renderings of the sign(s) showing the correct dimensions is also required** to be submitted with the application. A thirty-five dollar (\$35) per sign payment will be collected at the time of permit issuance. According to the Sign Ordinance a fee for and sign variance or special sign permit request shall be one hundred dollars (\$100). Additional documentation may be required by Sign Administrator.

READ CAREFULLY BEFORE SIGNING

I _____, do hereby certify that all information contained within this application is true and correct. I fully understand that the terms of the Sign Ordinance supersede the Sign Administrator's approval and that all signs must fully comply with all terms of the Sign Ordinance regardless of approval. I further certify that the proposed sign is authorized by the owner of the property and that I am authorized by the property owner to make this application. I understand

that no sign may be placed in public right of way. I understand that I must comply with all Building and Electrical Codes and that it is my responsibility to obtain all necessary permits.

Use table below to enter information regarding each sign for approval. Please use each letter to reference each sign rendering.

SIGN	Type (Façade, Pole, Monument, other)	Dimensions (Height, Length, Width)	Sqft (Measured in whole as rectangle)	Height of Sign (Measured from lot surface)		Column for Admin Certifying Approval
				Top of Sign	Bottom of Sign	
A	Facade	30"x13'x3"	33	13'2"	10'8"	
B	Pole	4'x8'	32'	12'	8'	
C						
E						
F						
G						

501 PYRO
Exterior building signage



existing



4'x4' custom routed ACM panels
with digital prints

Client:
501 Pyro

Date:
3.16.26

Project:
Exterior signage

Proof #:
1

NOTE:

Please carefully & thoroughly examine the attached layout for the correct content, spelling, numbers, punctuation & location of colors and other design elements. (Note that the colors shown are an approximation and are not intended for color matching.) All design elements other than color are exactly what will be fabricated and/or printed. Client shall bear all costs of any desired corrections communicated to LA Designs after the Client approves the attached layout.

LA Designs will not commence production of the Project(s) until receipt of Client's approval of the attached layout. Any delay in Client's approval may result in a delay of the completion of the Project(s).

Approved as is: _____
(Ready for Production)

Not approved: _____
(Changes needed & send new proof)

Signature _____

Date _____

Email approval with Proof # indicated will be accepted as approval.

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8'(w) x 4'(h)



Client:
501-PYRO

Date:
3.11.26

Project:
Street sign

Proof #:
1

NOTE:

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Approved as is: _____
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