

FINAL DRAINAGE LETTER

**7981 Fort Smith Road
Peyton, CO 80831**

LOT 593 WOODMEN HILLS FILING NO. 9
LOCATED IN SECTION 6, T 13 S, R 64 W OF THE 6TH PM
EL PASO COUNTY, STATE OF COLORADO

Prepared For:
Jerome Engel
7981 Fort Smith Road
Peyton, CO 80831

Prepared By:
Baseline Engineering Corporation
1046 Elkton Drive
Colorado Springs, Colorado 80907

Mark Sundstrom, PE
Steve Baggs, PE
JOB # 35079CS

Original Submittal: April 10, 2024

Revision Date: June 10, 2024



Engineering · Planning · Surveying

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Certification Statements

Engineer's Statement

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Steven G. Baggs, P.E. Colorado 26020

Developer's Statement

I, the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Name of Developer: _____

Authorized Signature/Date: _____

Printed Name: _____

Title: _____

Address: _____

El Paso County Certification

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Joshua Palmer, P.E.
County Engineer / ECM Administrator

Date

Introduction

Description of Project

The subject property is located at 7981 Fort Smith Road in unincorporated El Paso County. It is legally known as Lot 593 of Woodmen Hills Filing No. 9. The proposed project includes construction of a RV garage on the north side of the existing single-family dwelling. The proposed garage adds approximately 1,800 sf of impervious area. The total disturbed area is approximately 4,000 sf.

Scope and Purpose of Report

The purpose of this letter is to demonstrate that the proposed improvements do not negatively impact the adjacent properties. It also supports a Plat Note Waiver action that will remove the no-build area from the lot. Calculations were performed in compliance with the requirements set forth in the Drainage Criteria Manual County of El Paso, Colorado (hereafter referred to as the “County Manual”) and the Mile High Flood District Criteria Manuals (hereafter referred to as the “District Manual”).

Existing Drainage System

At the time of this report, grading for the building pad is complete. For the purposes of this report and in order to evaluate the impacts that the grading for the building pad has on the system, the “existing drainage” system will be evaluated as if the building pad had not been graded. The “proposed drainage” system will be evaluated with the building pad graded as-is.

The Final Drainage & Erosion Control Report for Woodmen Hills Subdivision Filing 9, Falcon, El Paso County, Colorado by URS Greiner Woodward Clyde dated October 19, 1999 (hereafter referred to as the “Master Drainage Report”) provides the drainage information for the subject property. However, the drainage basin delineated on the drainage plans and the upstream neighborhood does not accurately depict the existing conditions.

Due to the discrepancies found in the Master Drainage Report described above, a new drainage basin was delineated using Lidar contours and aerial mapping. This basin E1 was found to be 14.23 acres in size. The same runoff coefficients were

used as in the Master Drainage Report, with the 5-yr coefficient being 0.41 and the 100-yr coefficient being 0.50. The 5-yr and 100-yr flow rates were found to be 8.4 cfs and 21.1 cfs, respectively.

RUNOFF SUMMARY							
BASIN LABEL	DESIGN POINT	AREA	Imp.	C5	C100	LOCAL (CFS)	
						Q5	Q100
E1	E1	14.23	0.45	0.41	0.50	8.4	21.1

Table 1 – Runoff Summary

To evaluate the existing drainage channel, a cross section was cut at station 0+75 where no grading has been performed. The existing channel is approximately 100ft wide and 4ft deep. Refer to Table 2 provided below for the flow, depth, velocity, and Froude number associated with station 0+75 that represents the existing conditions.

Proposed Drainage System

The proposed improvements include a standalone RV garage located on the north side of the single-family dwelling. The proposed RV garage building pad extends into the existing drainage channel. The proposed drainage channel reduces the typical channel dimensions to approximately 30 ft wide and 3.4 ft deep. To evaluate the proposed improvements, a cross section at station 0+25 was created at the location of the grading that has already been performed. The existing channel lining conditions across the property are good condition native grasses with a Mannings roughness coefficient of 0.045 per Table 10-2 of the Drainage Criteria Manual, Volume 1. In the proposed condition, the portion of the channel side created by the building pad will require rock protection which together, with the native grass sections, results in a composite Mannings roughness coefficient of 0.044. The maximum velocity allowed in a grass lined channel of this type is 2.5 ft/sec and that is not exceeded on this site. Table 2, presented below, compares the flow, depth, velocity, and Froude Number associated with station 0+25 (the proposed condition) and station 0+75 (the existing condition) for both the 5-yr and 100-yr storm events.

Storm Event	Station	Flow (cfs)	Depth (in)	Velocity (ft/s)	Froude Number
5-yr	0+25 (proposed)	8.4	11.8	1.11	0.244
5-yr	0+75 (existing)	8.4	7.7	0.70	0.216
100-yr	0+25 (proposed)	21.1	18.0	1.46	0.263
100-yr	0+75 (existing)	21.1	10.8	0.96	0.233

Table 2 – Results Summary

In the 5-yr storm event, the flow depth increases by approximately 4.1 inches and the velocity in the channel increases by 0.41 ft/s. In the 100-yr storm event, the depth in the channel increases by 7.2 inches and the velocity increases by 0.5 ft/s. In both scenarios, the Froude Number remains below 0.3. The threshold for most swale stabilization techniques is a Froude Number equal to or greater than 0.8. Therefore, the swale is anticipated to be at a low risk for erosion and scour.

It is recommended that the owner/contractor implement several measures to protect the proposed structure. This includes providing positive drainage away from the structure and adding riprap protection or other stabilization techniques along the slope of the building pad to mitigate erosion of the building pad.

Impact on the adjacent neighbors should be minimal even with the RV garage. Ponding or slow progress of the runoff occurs in this area due to the relatively flat grade (0.02%) of the natural drainage way. Side lot line drainage swales will continue to direct runoff to the no build/drainage area where it will continue in its existing flow pattern. As noted in Table 2 the flow depth changes are minimal which creates minimal impact on the No-Build zone.

Conclusions

This letter summarizes the drainage improvements associated with the proposed RV garage. The proposed improvements increase the flow depth in the drainage swale by 4.1 inches and 7.2 inches for the 5-yr and 100-yr storm events, respectively. The erosion and scour potential in the drainage swale is considered low as the Froude Number remains less than 0.3 for both scenarios.

No floodplains are impacted by these improvements. No drainage requirements were found in the Master Drainage Report. The stormwater management system is designed to accommodate the 5-yr and 100-yr storm events in accordance with the District and County Manuals. The No-Build area has been modified to accommodate the RV garage building pad with minimal impact to existing drainage conditions.

References

1. **Master Drainage Report:** Final Drainage & Erosion Control Report for Woodmen Hills Subdivision Filing 9, Falcon, El Paso County, Colorado; URS Greiner Woodward Clyde; October 19, 1999.
2. **District Manual:** Mile High Flood District Criteria Manual Volumes 1, 2, & 3; Mile High Flood District, Denver, Colorado. Updated January 2016.
3. **County Manual:** Drainage Criteria Manual County of El Paso, Colorado. Revised October 31, 2018.
4. Web Soil Survey; Natural Resources Conservation Service. Accessed March 2024.

APPENDIX

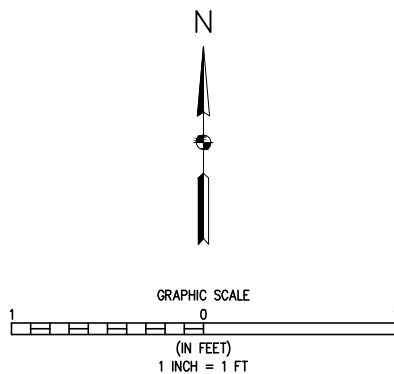
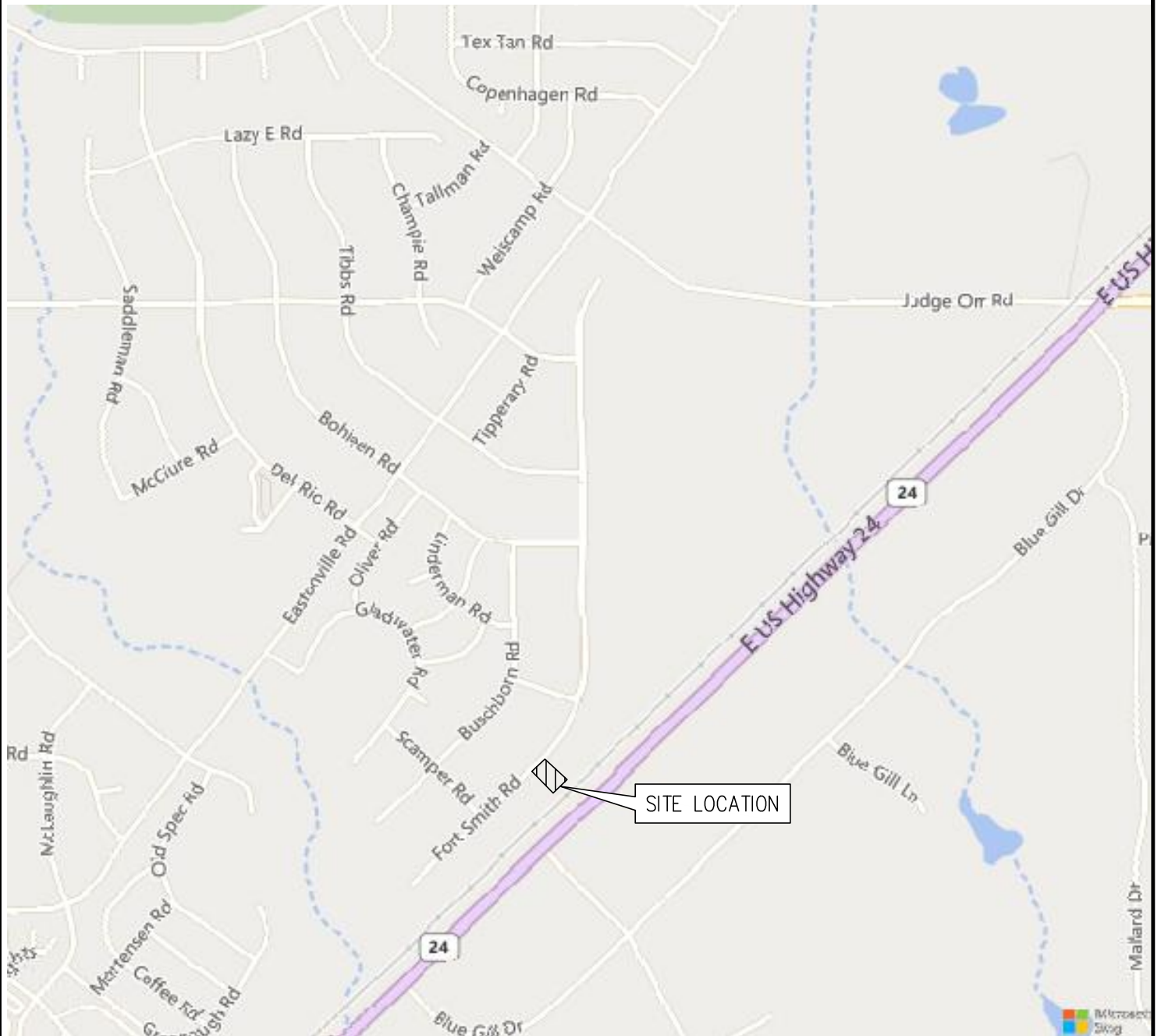
Appendix A

Vicinity Map

FEMA FIRM

VICINITY MAP

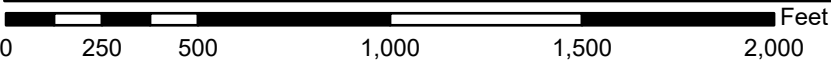
7981 FORT SMITH ROAD



National Flood Hazard Layer FIRMette



104°35'48"W 38°57'2"N



1:6,000

104°35'11"W 38°56'34"N

Basemap Imagery Source: USGS National Map 2023

Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/10/2024 at 6:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix B

NOAA Atlas Rainfall Data

Hydrologic Rational Calculations

Hydraulic Calculations



NOAA Atlas 14, Volume 8, Version 2
Location name: Peyton, Colorado, USA*
Latitude: 38.9466°, Longitude: -104.5915°
Elevation: 6885 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, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerals](#)

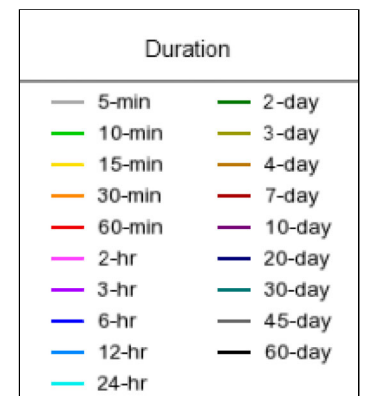
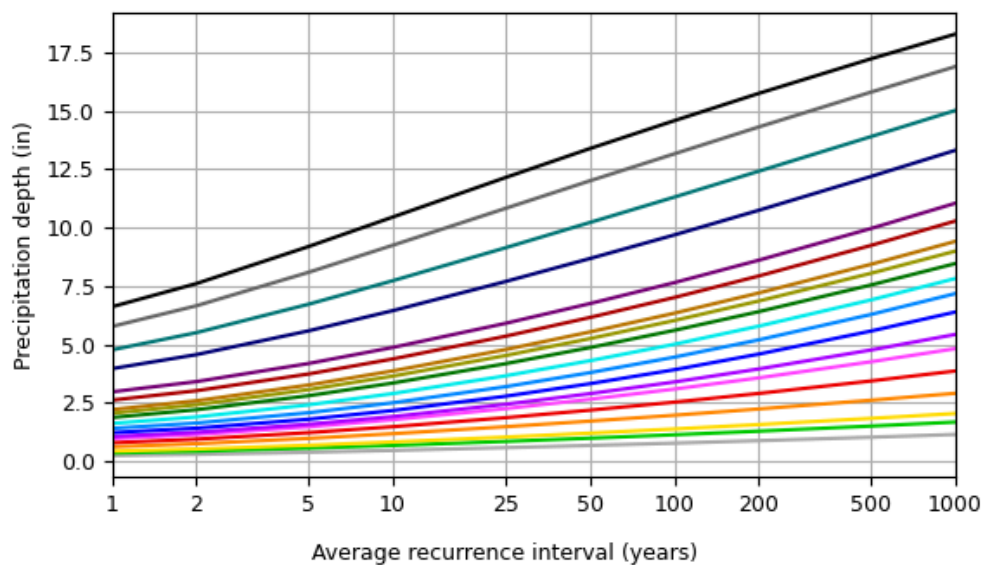
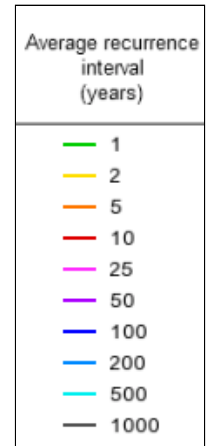
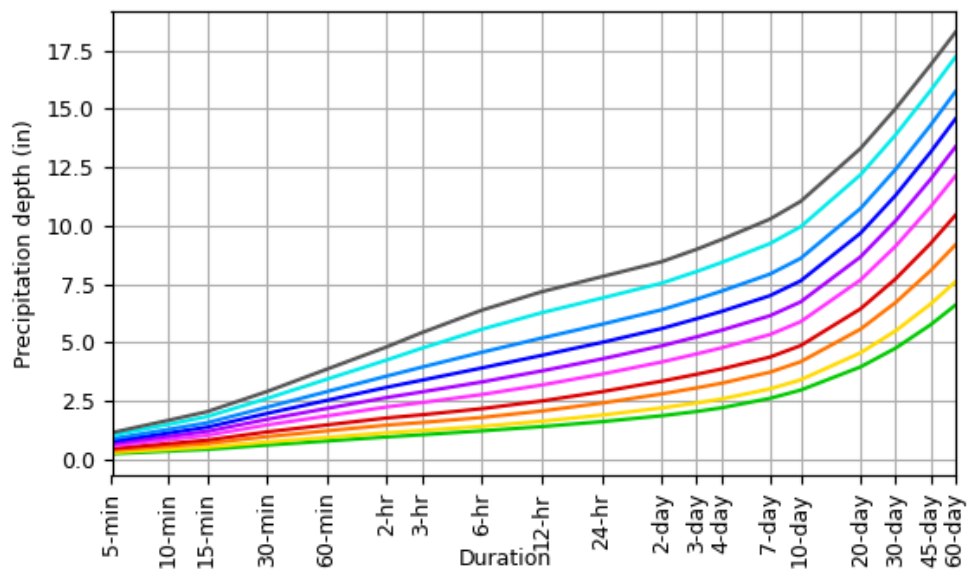
PF tabular

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	0.238 (0.192-0.298)	0.290 (0.233-0.364)	0.380 (0.304-0.478)	0.459 (0.366-0.580)	0.576 (0.445-0.758)	0.671 (0.505-0.893)	0.770 (0.560-1.05)	0.876 (0.611-1.23)	1.02 (0.686-1.47)	1.14 (0.743-1.66)
10-min	0.349 (0.280-0.437)	0.425 (0.341-0.533)	0.557 (0.446-0.700)	0.673 (0.536-0.849)	0.843 (0.652-1.11)	0.982 (0.740-1.31)	1.13 (0.821-1.54)	1.28 (0.895-1.80)	1.50 (1.00-2.15)	1.67 (1.09-2.43)
15-min	0.425 (0.342-0.533)	0.518 (0.416-0.649)	0.679 (0.543-0.853)	0.820 (0.653-1.04)	1.03 (0.795-1.35)	1.20 (0.902-1.60)	1.38 (1.00-1.88)	1.56 (1.09-2.19)	1.83 (1.22-2.63)	2.04 (1.33-2.96)
30-min	0.611 (0.491-0.765)	0.744 (0.598-0.933)	0.973 (0.779-1.22)	1.18 (0.936-1.48)	1.47 (1.14-1.94)	1.71 (1.29-2.28)	1.96 (1.43-2.68)	2.23 (1.56-3.12)	2.61 (1.74-3.74)	2.90 (1.89-4.21)
60-min	0.785 (0.631-0.983)	0.941 (0.756-1.18)	1.22 (0.976-1.53)	1.47 (1.17-1.86)	1.86 (1.44-2.46)	2.18 (1.65-2.92)	2.52 (1.84-3.46)	2.90 (2.02-4.07)	3.43 (2.30-4.94)	3.86 (2.51-5.60)
2-hr	0.959 (0.777-1.19)	1.14 (0.921-1.42)	1.47 (1.18-1.83)	1.77 (1.42-2.22)	2.24 (1.76-2.96)	2.65 (2.02-3.52)	3.08 (2.27-4.20)	3.56 (2.52-4.98)	4.25 (2.88-6.10)	4.82 (3.16-6.94)
3-hr	1.05 (0.857-1.30)	1.23 (1.00-1.53)	1.58 (1.28-1.96)	1.91 (1.54-2.38)	2.43 (1.92-3.21)	2.89 (2.22-3.84)	3.39 (2.51-4.61)	3.95 (2.80-5.51)	4.76 (3.24-6.81)	5.42 (3.58-7.79)
6-hr	1.22 (1.00-1.50)	1.41 (1.16-1.73)	1.79 (1.46-2.21)	2.17 (1.76-2.68)	2.77 (2.22-3.65)	3.31 (2.57-4.39)	3.91 (2.93-5.30)	4.58 (3.29-6.37)	5.57 (3.83-7.93)	6.38 (4.24-9.11)
12-hr	1.40 (1.16-1.70)	1.63 (1.35-1.98)	2.07 (1.70-2.53)	2.50 (2.05-3.06)	3.18 (2.56-4.15)	3.78 (2.96-4.96)	4.45 (3.36-5.98)	5.19 (3.75-7.16)	6.28 (4.36-8.87)	7.17 (4.81-10.2)
24-hr	1.61 (1.34-1.94)	1.89 (1.58-2.28)	2.41 (2.00-2.91)	2.89 (2.39-3.52)	3.65 (2.95-4.68)	4.30 (3.38-5.57)	5.00 (3.80-6.64)	5.78 (4.20-7.88)	6.90 (4.82-9.66)	7.82 (5.29-11.0)
2-day	1.87 (1.57-2.23)	2.20 (1.85-2.63)	2.80 (2.34-3.36)	3.34 (2.78-4.03)	4.17 (3.38-5.28)	4.86 (3.84-6.22)	5.60 (4.27-7.35)	6.40 (4.68-8.64)	7.54 (5.30-10.5)	8.46 (5.77-11.8)
3-day	2.05 (1.73-2.44)	2.41 (2.04-2.87)	3.06 (2.57-3.65)	3.64 (3.04-4.37)	4.51 (3.68-5.68)	5.24 (4.16-6.67)	6.02 (4.62-7.86)	6.86 (5.04-9.20)	8.04 (5.68-11.1)	8.99 (6.17-12.5)
4-day	2.20 (1.87-2.61)	2.58 (2.19-3.07)	3.26 (2.75-3.88)	3.86 (3.24-4.62)	4.77 (3.90-5.98)	5.53 (4.40-7.01)	6.33 (4.87-8.24)	7.20 (5.31-9.63)	8.42 (5.98-11.6)	9.41 (6.48-13.1)
7-day	2.61 (2.22-3.07)	3.01 (2.57-3.55)	3.73 (3.17-4.41)	4.38 (3.69-5.20)	5.34 (4.40-6.64)	6.14 (4.93-7.74)	7.00 (5.43-9.05)	7.93 (5.89-10.5)	9.23 (6.60-12.6)	10.3 (7.13-14.2)
10-day	2.96 (2.54-3.47)	3.40 (2.91-3.99)	4.18 (3.56-4.91)	4.87 (4.13-5.75)	5.89 (4.87-7.28)	6.74 (5.43-8.44)	7.64 (5.94-9.82)	8.60 (6.42-11.4)	9.96 (7.14-13.6)	11.0 (7.69-15.2)
20-day	3.96 (3.42-4.60)	4.56 (3.93-5.30)	5.57 (4.79-6.50)	6.44 (5.51-7.55)	7.68 (6.37-9.35)	8.67 (7.02-10.7)	9.68 (7.58-12.3)	10.7 (8.06-14.0)	12.2 (8.80-16.4)	13.3 (9.35-18.2)
30-day	4.76 (4.13-5.50)	5.50 (4.77-6.36)	6.71 (5.80-7.79)	7.72 (6.64-9.01)	9.12 (7.58-11.0)	10.2 (8.29-12.5)	11.3 (8.87-14.2)	12.4 (9.35-16.1)	13.9 (10.1-18.6)	15.0 (10.6-20.5)
45-day	5.76 (5.03-6.62)	6.65 (5.80-7.66)	8.08 (7.02-9.33)	9.24 (7.98-10.7)	10.8 (9.00-12.9)	12.0 (9.77-14.6)	13.2 (10.4-16.4)	14.3 (10.8-18.4)	15.8 (11.5-21.0)	16.9 (12.0-22.9)
60-day	6.60 (5.78-7.57)	7.60 (6.64-8.72)	9.18 (8.00-10.6)	10.4 (9.06-12.1)	12.1 (10.1-14.4)	13.4 (10.9-16.2)	14.6 (11.5-18.1)	15.7 (11.9-20.2)	17.2 (12.6-22.8)	18.3 (13.0-24.7)
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: 38.9466°, Longitude: -104.5915°



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Maps & aerials

Small scale terrain



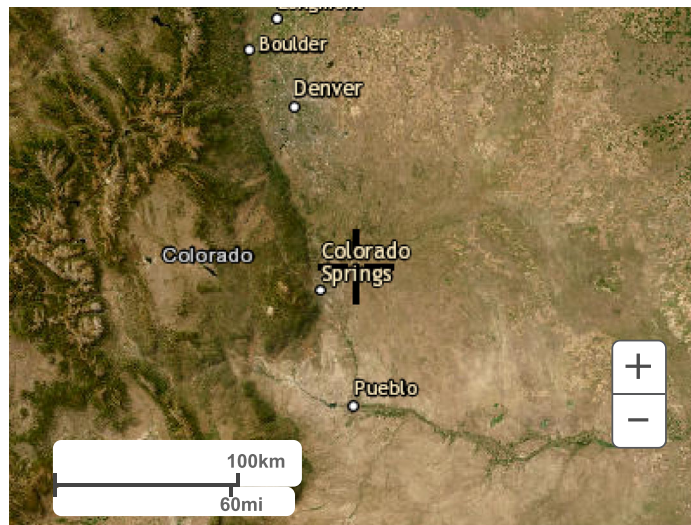
Large scale terrain



Large scale map



Large scale aerial



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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)



PROJECT: Ft Smith Rd
 JOB NO.: 35079
 CALC. BY: M Sundstrom
 DATE: 4/9/2024

= FORMULA CELLS
 = USER INPUT CELLS

Project Location	
User Input	▼

IDF Rainfall Data

T _d Minutes	P ₁ : 1-hour Rainfall Depths (inches)	
	Minor Storm	Major Storm
	5-Year	100-Year
	1.22	2.52
5	4.14	8.55
10	3.30	6.82
20	2.40	4.96
30	1.91	3.95
40	1.61	3.32
50	1.39	2.87
60	1.23	2.55
120	0.76	1.57

Equation 5-1 $I = (28.5 \cdot P_1) / (10 + T_d)^{0.786}$
 I = rainfall intensity (inches per hour)
 P₁ = 1-hour point rainfall depth (inches)
 T_d = storm duration (minutes)

Reference:

- 1) Urban Drainage and Flood Control District - Urban Storm Drainage Criteria Manual Volume 1, 2017
- 2) NOAA Atlas 14, Volume 8, Version 2
http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=co

PROJECT: Ft Smith Rd
 JOB NO.: 35079
 CALC. BY: M Sundstrom
 DATE: 4/9/2024



Impervious Percentages - from Urban Drainage Table 6-3

User Defined	45%	Land Use	0
Residential - 0.25 AC or less	45%	Land Use	0
Land Use	0	Land Use	0
Land Use	0	Land Use	0

SOIL TYPE: ▼ (use equation from Table 6-4)

= FORMULA CELLS
 = USER INPUT CELLS

PROPOSED COMPOSITE IMPERVIOUSNESS

Basin	Area (ac)	Weighted Impervious and C Values					Areas (ac)							
		Imp.	C ₂	C ₅	C ₁₀	C ₁₀₀	User Defined	Residential - 0.25 AC or less	Land Use	Land Use	Land Use	Land Use	Land Use	Land Use
E1	14.23	45%	-	0.41	-	0.50	14.23							

Runoff Coefficients
 obtained from Master
 Drainage Report



STANDARD FORM SF-2 TIME OF CONCENTRATION SUMMARY

Calculated By: M Sundstrom
Date: 4/9/2024

Project: Ft Smith Rd
Job No.: 35079
Checked By: xxxxxxxxxx

SUB-BASIN DATA				INITIAL/OVERLAND TIME (t _i)			TRAVEL TIME (t _i)					t _c CHECK (URBANIZED BASINS)				FINAL t _c	REMARKS
Basin	i	C _s	AREA	LENGTH	SLOPE	t _i	LENGTH	Cv	SLOPE	VEL.	t _i	COMP.	TOT. LENGTH	S _o	t _c (Equation 6-5)		
(1)	(2)	(3)	Ac	Ft	%	Min	Ft		%	FPS	Min	t _c	Ft	%	Min	Min	
E1	0.45	0.41	14.23	300	2.0	17.17	3,500	7	2.0	0.99	58.93	76.1	3,800	2.00	47.6	47.62	

Equation 6-3 $t_i = ((0.395(1.1 - C_s) \text{SQRT}(L)) / (S_o^{0.33}))$

Equation 6-5 $t_c = (26 - 17i) + (L_i / (60(14i + 9) \text{SQRT}(S_o)))$

= FORMULA CELLS
 = USER INPUT CELLS

NRCS Conveyance Factor K Table - Cv Value	
Heavy Meadow	2.5
Tillage/Field	5
Short Pasture and Lawns	7
Nearly Bare Ground	10
Grassed Waterway	15
Paved Areas and Shallow Paved Swales	20

Calculated By: M Sundstrom
Date: 4/9/2024
Checked By: xxxxxxxxxx
5-Year
1-hour rainfall= 1.22

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Project: Ft Smith Rd
Job No.: 35079
Design Storm: 5-Year

= FORMULA CELLS

= USER INPUT CELLS

BASIN	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			LENGTH (FT)	VELOCITY (FPS)	t _r (MIN)	REMARKS
	DESIGN POINT	AREA DESIGN	AREA (AC)	RUNOFF COEFF	t _c (MIN)	C * A (AC)	I (IN/HR)	Q (CFS)	t _c (MIN)	S (C * A) (CA)	I (IN/HR)	Q (CFS)	SLOPE (%)	STREET FLOW	DESIGN FLOW (CFS)	SLOPE (%)	PIPE DIAM. (IN.)				
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
E1	E1		14.23	0.41	47.6	5.83	1.44	8.4													

PROJECT: Ft Smith Rd
JOB NO.: 35079
CALC. BY: M Sundstrom
DATE: 4/9/2024



RUNOFF SUMMARY								
BASIN LABEL	DESIGN POINT	AREA	Imp.	C5	C100	LOCAL (CFS)		Notes
						Q5	Q100	
E1	E1	14.23	0.45	0.41	0.50	8.4	21.1	

= FORMULA CELLS
 = USER INPUT CELLS

Worksheet for Section 0+25 - 5yr Rev

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Discharge	8.40 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	6,881.80
0+19	6,877.92
0+25	6,878.25
0+30	6,881.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6,881.80)	(0+25, 6,878.25)	0.045
(0+25, 6,878.25)	(0+30, 6,881.33)	0.033

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	11.8 in
Roughness Coefficient	0.044
Elevation	6,878.90 ft
Elevation Range	6,877.9 to 6,881.8 ft
Flow Area	7.6 ft ²
Wetted Perimeter	12.1 ft
Hydraulic Radius	7.5 in
Top Width	11.81 ft
Normal Depth	11.8 in
Critical Depth	6.1 in
Critical Slope	0.042 ft/ft
Velocity	1.11 ft/s
Velocity Head	0.02 ft
Specific Energy	1.00 ft
Froude Number	0.244
Flow Type	Subcritical

Worksheet for Section 0+25 - 5yr Rev

GVF Input Data

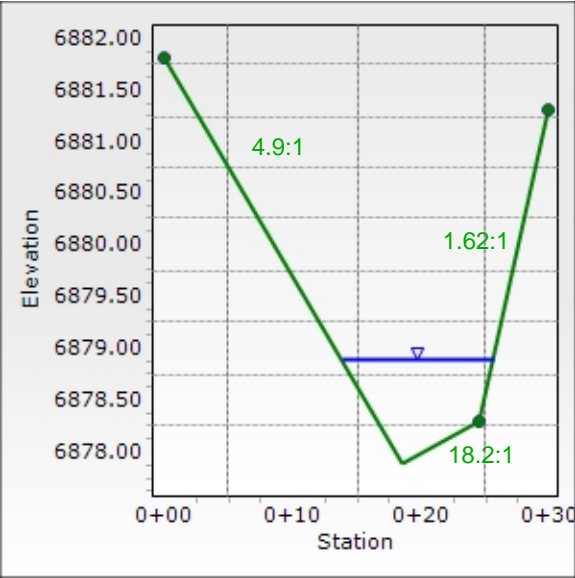
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	11.8 in
Critical Depth	6.1 in
Channel Slope	0.002 ft/ft
Critical Slope	0.042 ft/ft

Cross Section for Section 0+25 - 5yr Rev

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Normal Depth	11.8 in
Discharge	8.40 cfs



Worksheet for Section 0+75 - 5yr

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Discharge	8.40 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	6,881.73
0+21	6,878.37
0+46	6,877.75
0+83	6,879.87
1+02	6,881.84

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6,881.73)	(1+02, 6,881.84)	0.045

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	7.7 in
Roughness Coefficient	0.045
Elevation	6,878.39 ft
Elevation Range	6,877.8 to 6,881.8 ft
Flow Area	11.9 ft ²
Wetted Perimeter	36.3 ft
Hydraulic Radius	3.9 in
Top Width	36.26 ft
Normal Depth	7.7 in
Critical Depth	4.2 in
Critical Slope	0.053 ft/ft
Velocity	0.70 ft/s
Velocity Head	0.01 ft
Specific Energy	0.65 ft
Froude Number	0.216
Flow Type	Subcritical

Worksheet for Section 0+75 - 5yr

GVF Input Data

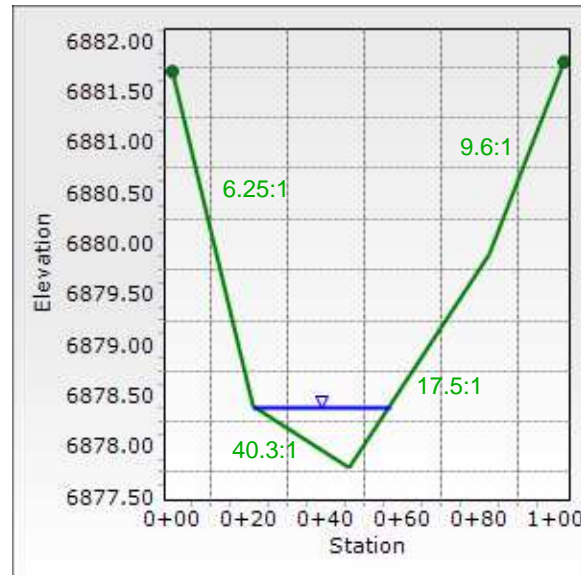
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	7.7 in
Critical Depth	4.2 in
Channel Slope	0.002 ft/ft
Critical Slope	0.053 ft/ft

Cross Section for Section 0+75 - 5yr

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Normal Depth	7.7 in
Discharge	8.40 cfs



Worksheet for Section 0+25 - 100yr Rev

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Discharge	21.10 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	6,881.80
0+19	6,877.92
0+25	6,878.25
0+30	6,881.33

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6,881.80)	(0+25, 6,878.25)	0.045
(0+25, 6,878.25)	(0+30, 6,881.33)	0.033

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	18.0 in
Roughness Coefficient	0.043
Elevation	6,879.42 ft
Elevation Range	6,877.9 to 6,881.8 ft
Flow Area	14.5 ft ²
Wetted Perimeter	15.6 ft
Hydraulic Radius	11.1 in
Top Width	15.16 ft
Normal Depth	18.0 in
Critical Depth	9.3 in
Critical Slope	0.035 ft/ft
Velocity	1.46 ft/s
Velocity Head	0.03 ft
Specific Energy	1.53 ft
Froude Number	0.263
Flow Type	Subcritical

Worksheet for Section 0+25 - 100yr Rev

GVF Input Data

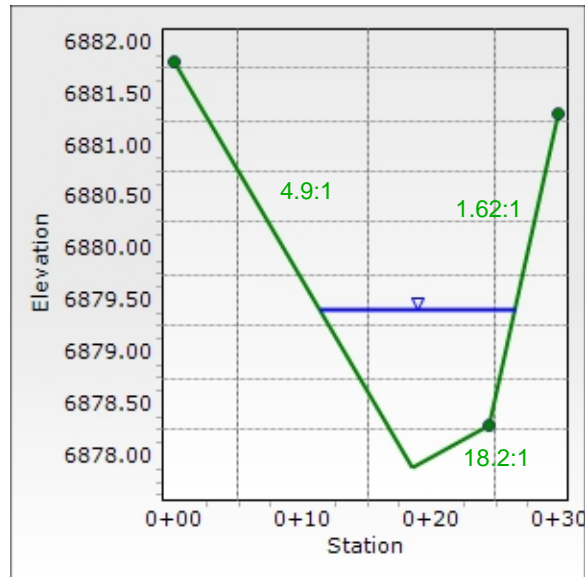
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	18.0 in
Critical Depth	9.3 in
Channel Slope	0.002 ft/ft
Critical Slope	0.035 ft/ft

Cross Section for Section 0+25 - 100yr Rev

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Normal Depth	18.0 in
Discharge	21.10 cfs



Worksheet for Section 0+75 - 100yr

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Discharge	21.10 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	6,881.73
0+21	6,878.37
0+46	6,877.75
0+83	6,879.87
1+02	6,881.84

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6,881.73)	(1+02, 6,881.84)	0.045

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	10.8 in
Roughness Coefficient	0.045
Elevation	6,878.65 ft
Elevation Range	6,877.8 to 6,881.8 ft
Flow Area	22.1 ft ²
Wetted Perimeter	42.4 ft
Hydraulic Radius	6.2 in
Top Width	42.37 ft
Normal Depth	10.8 in
Critical Depth	6.1 in
Critical Slope	0.047 ft/ft
Velocity	0.96 ft/s
Velocity Head	0.01 ft
Specific Energy	0.92 ft
Froude Number	0.233
Flow Type	Subcritical

Worksheet for Section 0+75 - 100yr

GVF Input Data

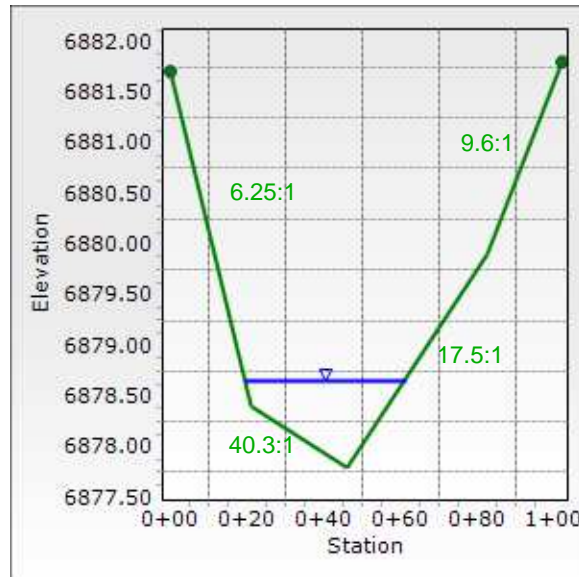
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	10.8 in
Critical Depth	6.1 in
Channel Slope	0.002 ft/ft
Critical Slope	0.047 ft/ft

Cross Section for Section 0+75 - 100yr

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.002 ft/ft
Normal Depth	10.8 in
Discharge	21.10 cfs



Appendix C

Excerpts from Master Drainage Report

**FINAL DRAINAGE &
EROSION CONTROL REPORT FOR
WOODMEN HILLS SUBDIVISION FILING 9,
FALCON, EL PASO COUNTY, COLORADO**

October 19, 1999

Prepared for:

**FALCON PROPERTIES AND INVESTMENTS, LLP
11720 Woodmen Hills Drive
Falcon, CO 80831**

Prepared by:

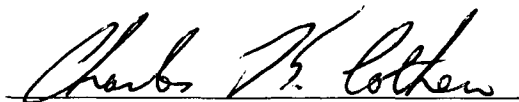
**URS GREINER WOODWARD CLYDE
8415 EXPLORER DR, SUITE 110
COLORADO SPRINGS, CO 80920**

URSGWC Project No. 67-00042363

CERTIFICATIONS

Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City/County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.



Charles K. Cothorn, PE # 24997



Developer's Statement:

I, the developer have read and will comply with all of the requirements specified in this drainage report and plan.



Falcon Properties & Investments, LLC.

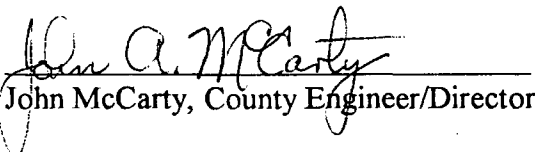
By: Butch Gabrielski

Title: Land Development Mgr.

Address: 11720 Woodmen Hills Dr.
Falcon, CO 80831

El Paso County's Statement

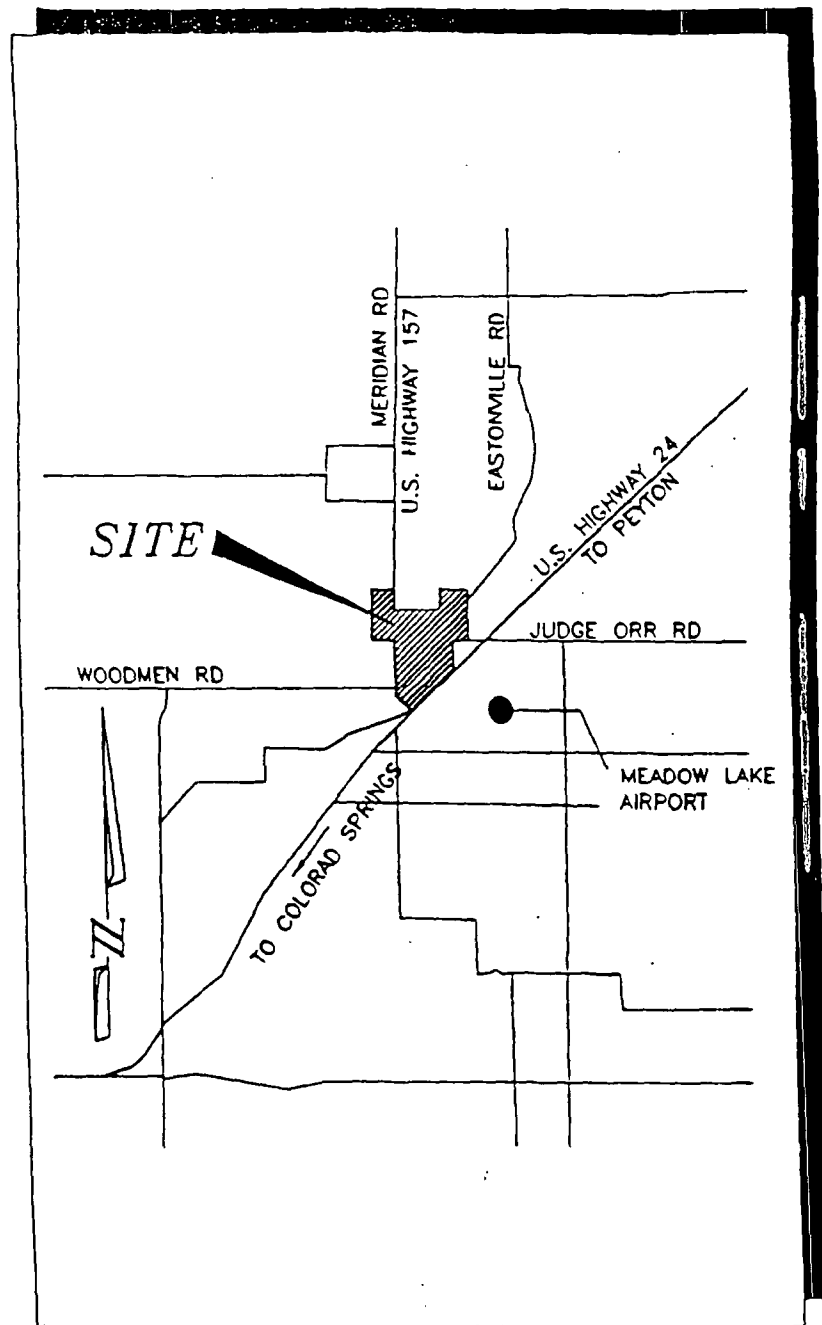
Filed in accordance with Section 51.1 of the El Paso Land Development Code, as amended.



John McCarty, County Engineer/Director

12-14-99
Date

Conditions:



VICINITY MAP

N.T.S.

Fig 1 - dmap on 12/2/98

URS Greiner Woodward Clyde

8415 Explorer Dr, Suite 110
 Colorado Springs, CO 80915
 719.531.0001 fax: 719.531.0007

VICINITY MAP

FIGURE

1

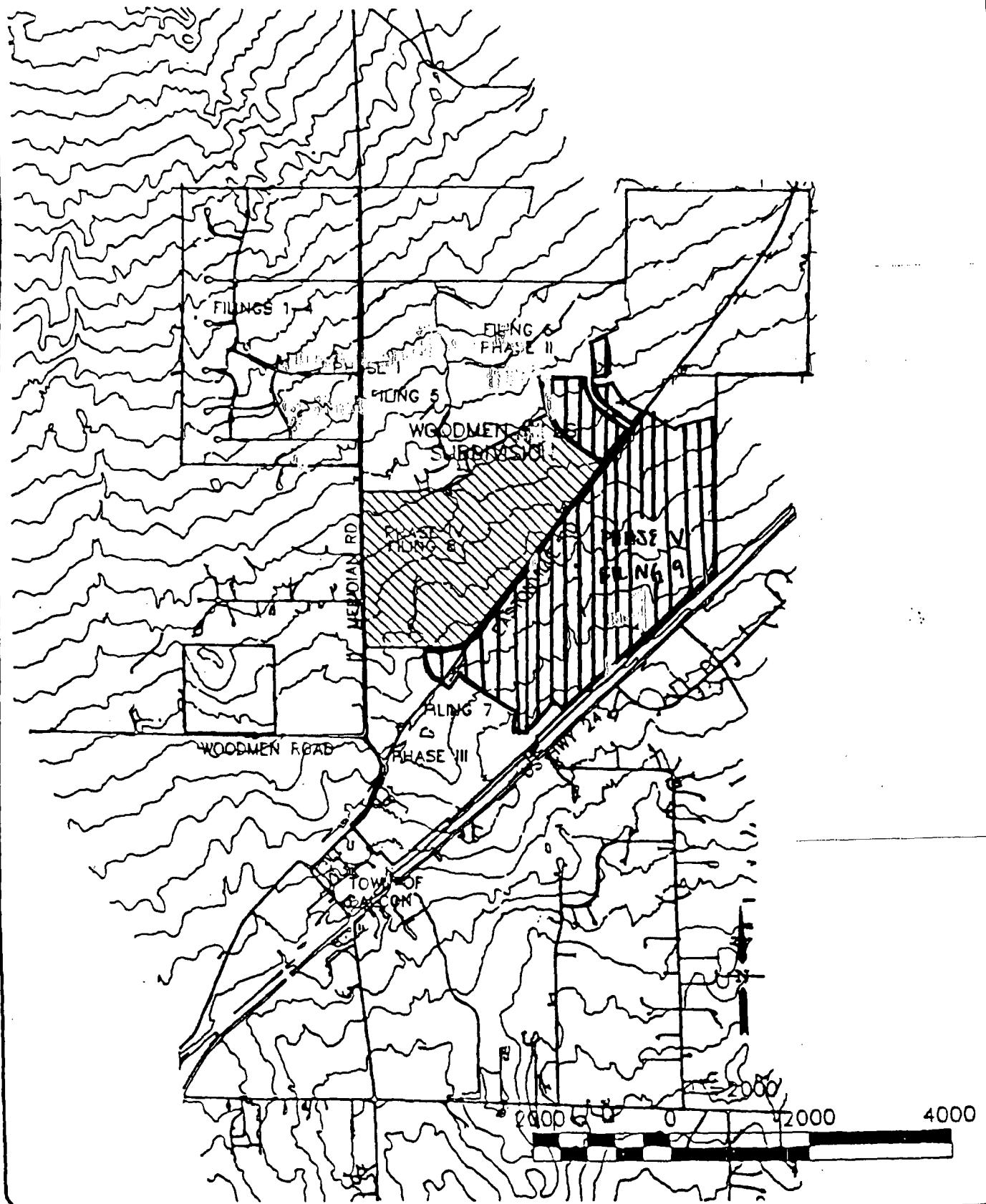


Fig 2 - SUBDIVISION.dwg 12/7/98

U'S Breiner Woodward Clyde

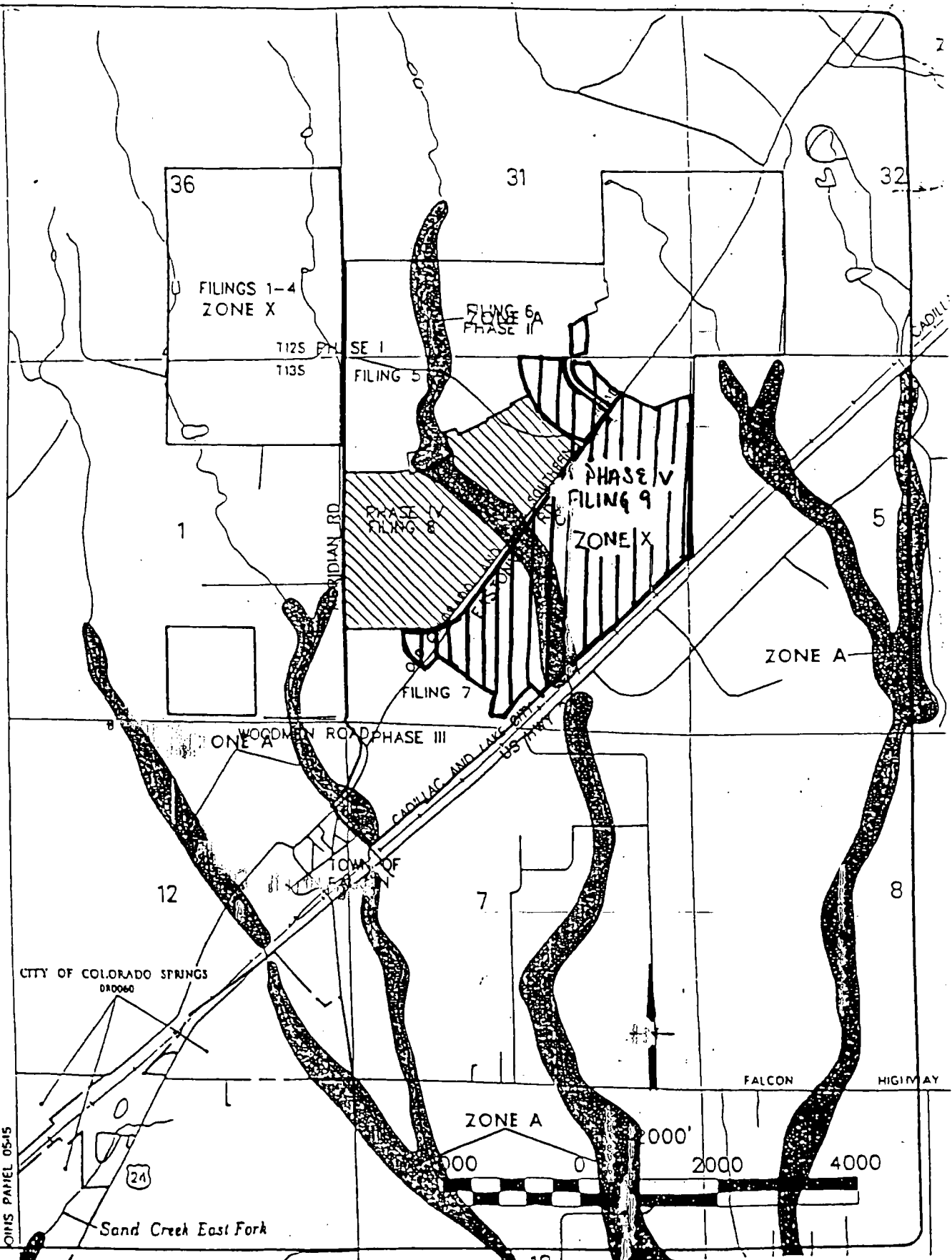
6415 Explorer Dr, Suite 110
 Colorado Springs, CO 80915
 719.531.0001 fax 719.531.0007

PROJ NO. 6742238.08

WOODMEN HILLS SUBDIVISION

FIGURE

2



URS Greiner Woodward Clyde

8415 Explorer Dr, Suite 110
Colorado Springs, CO 80915
719.531.0001 fax: 719.531.0007

PROJ NO. 8742238.08

WOODMEN HILLS SUBDIVISION FEMA FLOOD INSURANCE RATE MAP

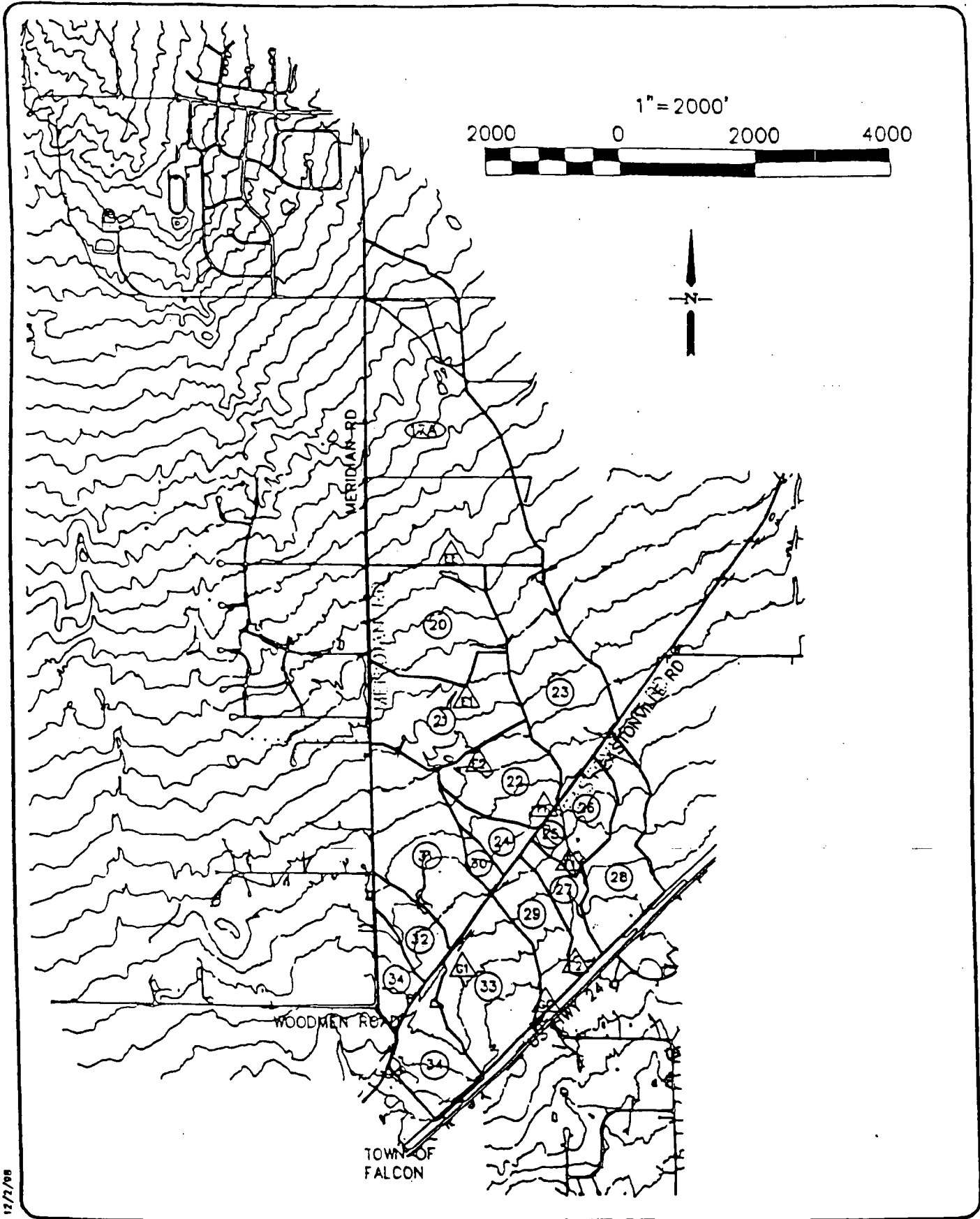
FIGURE
3



URS Bralner Woodward Clyde
 8415 Explorer Dr. Suite 110
 Colorado Springs, CO 80915
 719.531.0001 fax: 719.531.0007

WOODMEN HILLS SUBDIVISION SOILS MAP

FIGURE
 4



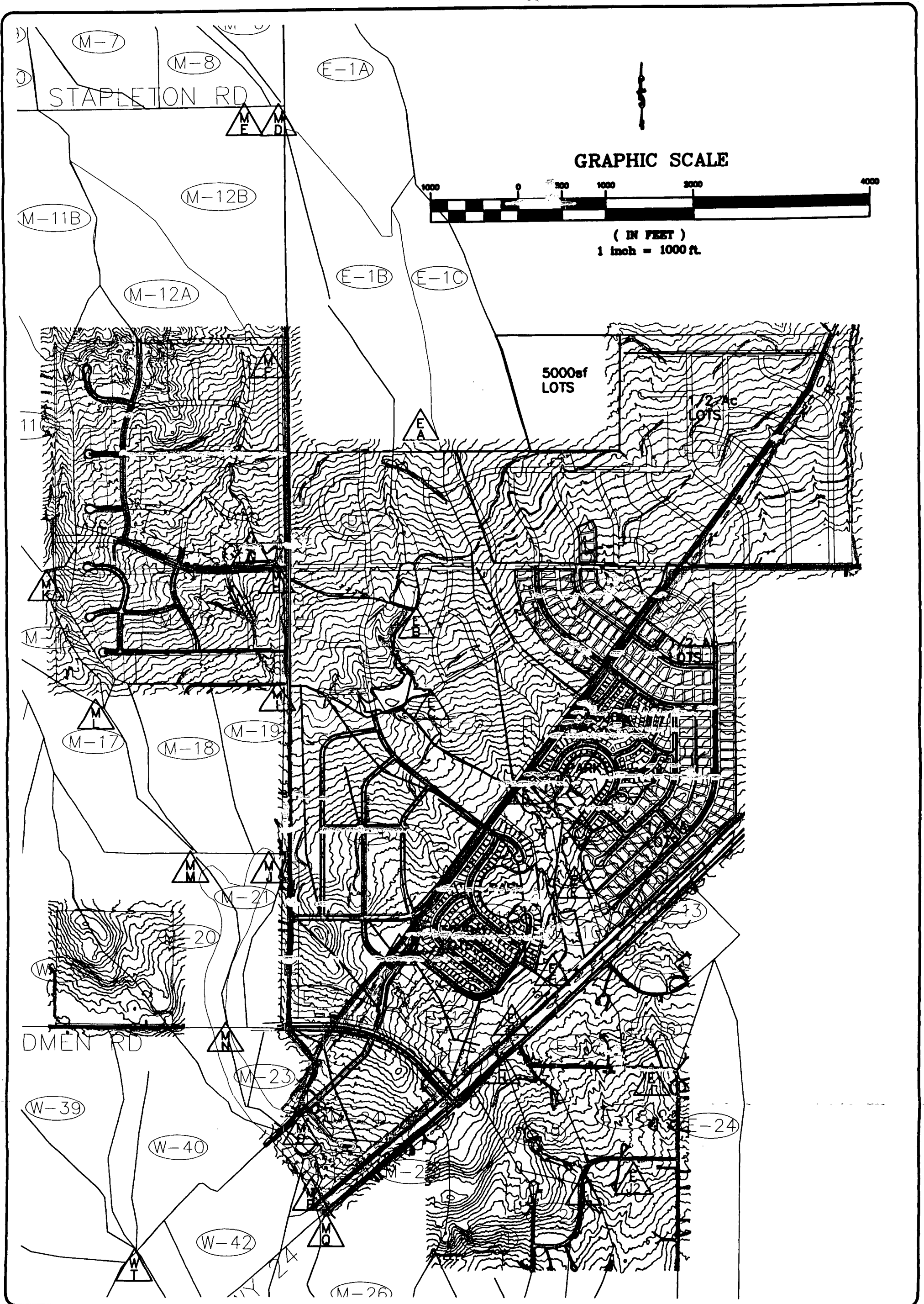
URS Brøker Woodward Clyde

8415 Explorer Dr, Suite 110
 Colorado Springs, CO 80915
 719.531.0001 fax: 719.531.0007

WOODMEN HILLS SUBDIVISION HISTORIC BASINS

FIGURE

5



URS Greiner Woodward Clyde

8415 Explorer Dr, Suite 110
Colorado Springs, CO 80915
719.531.0001 fax: 719.531.0007

PROJ NO. 6742363.09

WOODMEN HILLS SUBDIVISION DEVELOPED CONDITION BASINS

FIGURE

6

Woodmen Hills Flng 88 Part 2

Preliminary Drainage Calculations

Average Channel Velocity

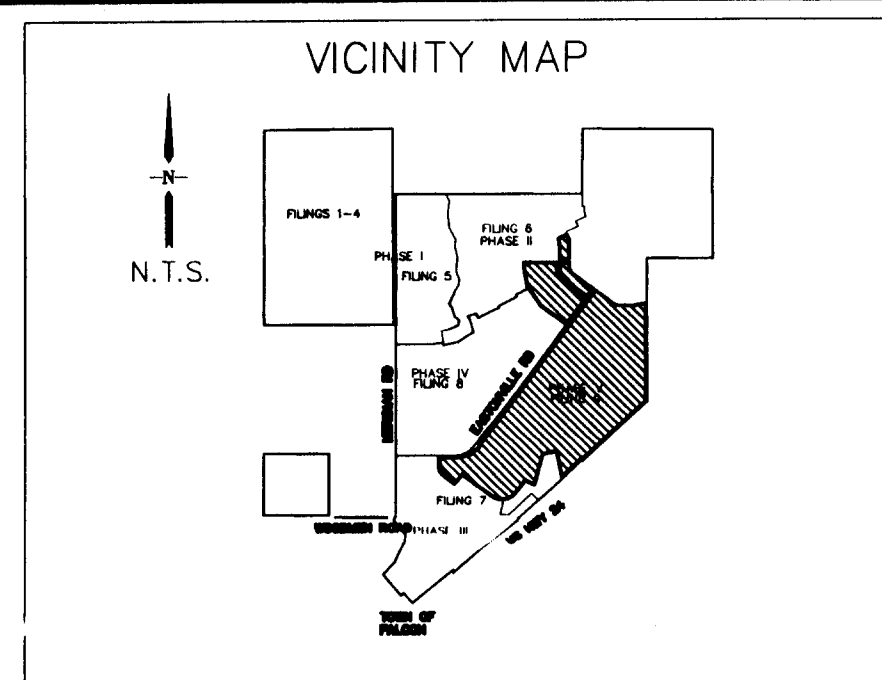
Average Slope

5 ft/s

0.02 ft/ft

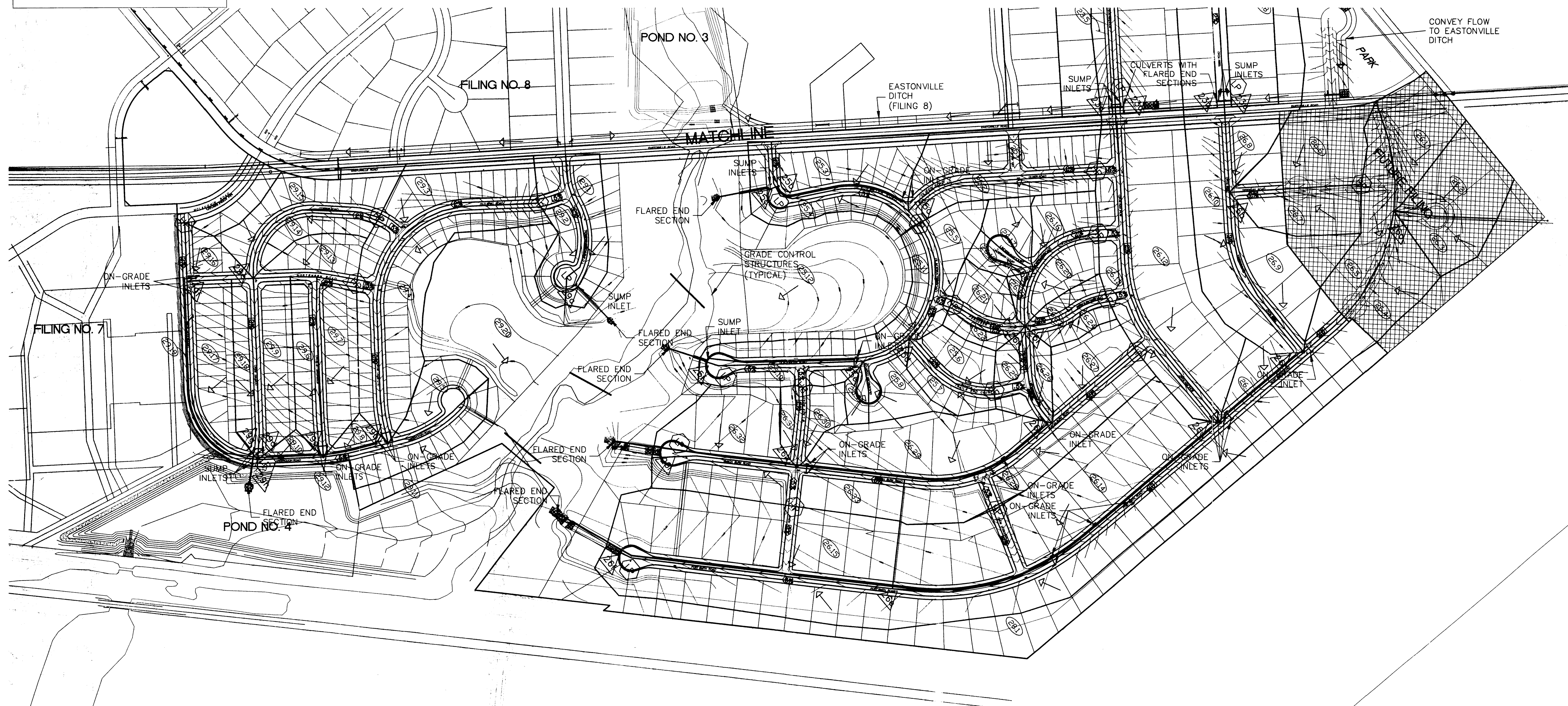
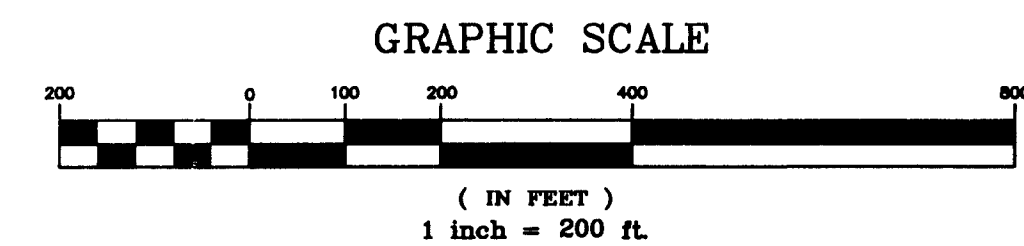
(If Elevations are used, this will be ignored)

Reach	Total Area sq	Total Area acres	Surface Type 1			Surface Type 2			Surface Type 3			Surface Type 4			Average Area/Initial Length		True Initial Length ft	Channel Flow Length ft	True Channel Length ft	High Point Elevation	Low Point Elevation	Average Slope	Initial To	Channel Total		IS In/hr	Q5 cfs	100 In/hr	Q100 cfs	
			C5	C100	Area	C5	C100	Area	C5	C100	Area	C5	C100	Area	C5	C100								To	Tc					Tc
26.1	110104	2.53	0.00	0.05	11920	0.35	0.45	98184							0.41	0.50	540.00	300.00	0.00	240.00	8632.00	8621.00	0.020	17.84	0.00	17.84	3.25	3.38	5.80	7.14
26.2	113127	2.60	0.00	0.05	4416	0.35	0.45	108711							0.37	0.47	305.00	300.00	210.00	8629.00	8621.00	0.018	20.37	0.70	21.07	2.89	2.78	5.04	6.15	
26.3	82718	1.84	0.00	0.05	4416	0.35	0.45	58303							0.39	0.49	190.00	190.00	210.00	8625.00	8621.00	0.010	18.33	0.70	19.03	3.05	1.71	5.30	3.70	
26.4	858003	15.12	0.00	0.05	85328	0.35	0.45	593475							0.40	0.50	270.00	270.00	3810.00	8620.00	8664.00	0.014	19.23	12.70	31.93	2.35	14.38	4.08	30.87	
26.5	125548	2.88	0.00	0.05	22580	0.35	0.45	102960							0.45	0.54	155.00	155.00	870.00	8620.00	8630.00	0.018	12.51	3.23	15.75	3.45	4.48	5.90	9.18	
26.6	146154	3.22	0.00	0.05	8896	0.35	0.45	131260							0.38	0.48	815.00	300.00	165.00	8626.00	8618.00	0.018	19.17	0.55	19.72	3.05	3.78	5.30	8.22	
26.7	92339	2.12	0.00	0.05	8896	0.35	0.45	93443							0.40	0.50	240.00	240.00	335.00	8622.00	8618.00	0.010	19.91	1.12	21.02	2.89	2.47	5.04	5.32	
26.8	52133	1.20	0.00	0.05	8672	0.35	0.45	43458							0.44	0.53	273.00	275.00	55.00	8624.00	8618.00	0.024	15.20	0.18	15.38	3.45	1.92	5.90	3.78	
26.9	142381	3.27	0.00	0.05	12208	0.35	0.45	130183							0.40	0.49	445.00	300.00	150.00	8619.00	8609.00	0.017	19.15	0.50	19.65	3.05	3.98	5.30	8.54	
26.10	180219	4.14	0.00	0.05	21424	0.35	0.45	158704							0.42	0.51	195.00	195.00	985.00	8622.00	8609.00	0.011	17.31	3.28	20.59	2.95	5.07	5.15	10.85	
26.11	43598	0.99	0.00	0.05	8738	0.35	0.45	36352							0.44	0.53	330.00	300.00	0.00	8607.00	8600.00	0.021	16.74	0.00	16.74	3.35	1.44	5.75	3.00	
26.12	349547	8.02	0.00	0.05	26180	0.35	0.45	323387							0.39	0.49	835.00	300.00	795.00	8622.00	8600.00	0.015	19.89	2.85	22.54	2.83	8.88	4.83	18.28	
26.13	125085	2.87	0.00	0.05	26180	0.35	0.45	38338	0.35	0.45	80587				0.54	0.63	100.00	100.00	1280.00	8622.00	8600.00	0.016	8.94	4.27	13.20	3.71	5.77	8.38	11.53	
26.14	440433	10.11	0.00	0.05	26528	0.35	0.45	413805							0.38	0.48	525.00	300.00	1185.00	8601.00	8601.00	0.012	21.95	3.88	25.83	2.85	10.27	4.80	22.33	
26.15	354977	8.15	0.00	0.05	23200	0.35	0.45	331777							0.39	0.48	440.00	300.00	880.00	8604.00	8605.00	0.015	20.38	2.87	23.25	2.77	8.71	7.05	8.95	
26.16	59341	1.36	0.00	0.05	5800	0.35	0.45	63741							0.63	0.72	280.00	280.00	125.00	8617.00	8605.00	0.031	9.74	0.42	10.15	4.10	3.51	5.90	5.02	
26.17	45897	1.05	0.00	0.05	4258	0.35	0.45	47357							0.65	0.74	105.00	105.00	180.00	8606.00	8605.00	0.004	11.88	0.53	12.41	3.84	1.41	8.59	2.78	
26.18	24581	0.58	0.00	0.05	4258	0.35	0.45	27771							0.68	0.77	85.00	85.00	115.00	8603.00	8600.00	0.015	8.34	0.38	8.72	5.02	0.92	8.81	1.79	
26.19	11808	0.27	0.00	0.05	3120	0.35	0.45	91812							0.64	0.74	210.00	210.00	280.00	8612.00	8600.00	0.024	9.17	0.93	10.10	4.10	3.88	7.05	7.25	
26.20	80792	1.80	0.00	0.05	6880	0.35	0.45	45080							0.63	0.73	200.00	200.00	185.00	8602.00	8600.00	0.005	15.57	0.85	16.22	3.35	2.43	5.75	4.81	
26.21	50180	1.15	0.00	0.05	5120	0.35	0.45	24070							0.65	0.74	100.00	100.00	240.00	8602.00	8600.00	0.008	8.88	0.80	10.78	4.10	1.79	7.05	3.51	
26.22	28190	0.67	0.00	0.05	5120	0.35	0.45	24070							0.67	0.76	130.00	130.00	250.00	8610.00	8600.00	0.028	8.87	0.83	7.50	4.79	2.01	8.22	3.82	
26.23	27420	0.63	0.00	0.05	8224	0.35	0.45	27481							0.66	0.75	125.00	125.00	270.00	8606.00	8600.00	0.015	8.08	0.80	8.89	4.58	2.31	7.83	4.52	
26.24	33716	0.77	0.00	0.05	8224	0.35	0.45	27481							0.65	0.74	145.00	145.00	245.00	8608.00	8607.00	0.003	15.98	0.92	16.79	3.35	2.43	5.75	4.75	
26.25	48581	1.12	0.00	0.05	7970	0.35	0.45	40811	0.35	0.45	17404				0.53	0.62	105.00	105.00	250.00	8604.00	8607.00	0.020	8.71	0.83	9.55	4.33	1.55	7.44	3.10	
26.26	28488	0.68	0.00	0.05	7980	0.35	0.45	7980	0.35	0.45	88107				0.42	0.52	205.00	205.00	285.00	8605.00	8607.00	0.018	15.42	0.95	16.37	3.35	2.58	5.75	5.45	
26.27	79870	1.83	0.00	0.05	8798	0.35	0.45	88107							0.41	0.50	205.00	205.00	1105.00	8602.00	8606.00	0.012	17.31	3.88	20.98	2.85	5.18	5.15	11.10	
26.28	188407	4.28	0.00	0.05	20000	0.35	0.45	188407							0.42	0.52	340.00	300.00	805.00	8621.00	8602.00	0.044	13.32	2.02	15.34	3.45	7.31	5.90	15.34	
26.29	217840	5.00	0.00	0.05	14980	0.35	0.45	31380	0.35	0.45	171300				0.58	0.68	225.00	225.00	185.00	8608.00	8602.00	0.015	12.84	0.82	13.28	3.71	2.13	8.38	4.74	
26.30	42538	0.98	0.00	0.05	8200	0.35	0.45	20118	0.35	0.45	8225				0.42	0.52	110.00	110.00	230.00	8607.00	8602.00	0.015	11.84	0.77	12.41	3.84	2.13	8.59	4.48	
26.31	58888	1.31	0.00	0.05	5200	0.35	0.45	48088	0.35	0.45	116488				0.41	0.51	375.00	300.00	140.00	8607.00	8616.00	0.021	17.29	0.47	17.75	3.25	4.33	5.80	8.22	
26.32	140708	3.23	0.00	0.05	8352	0.35	0.45	18887	0.35	0.45	116488				0.40	0.50	270.00	270.00	815.00	8604.00	8616.00	0.007	23.77	2.72	26.49	2.80	4.07	4.51	8.74	
26.33	170128	3.91	0.00	0.05	15808	0.35	0.45	184318							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020	0.00	0.00	5.00	5.25	8.00	9.00	8.00	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00</																				



FINAL DRAINAGE PLAN SHEET 1 OF 2

WOODMEN HILLS SUBDIVISION FILING No. 9



LEGEND

25.12

SUB-BASIN



FLOW
DIRECTION



DESIGN
POINTS



HIGH POINT /
LOW POINT



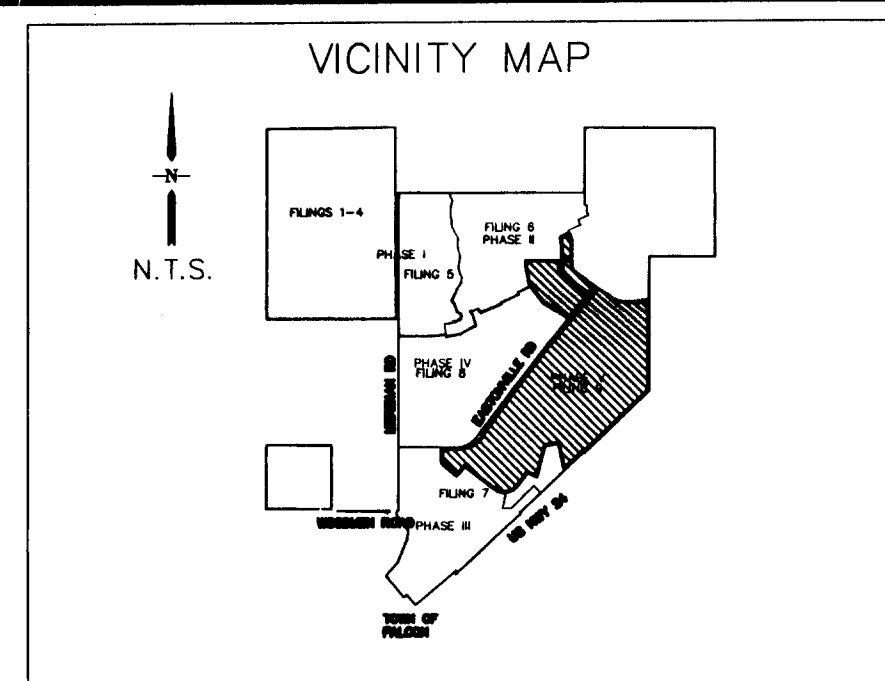
ESTIMATED
STREET
SLOPE

WOODMEN HILLS
ROOM TO GROW

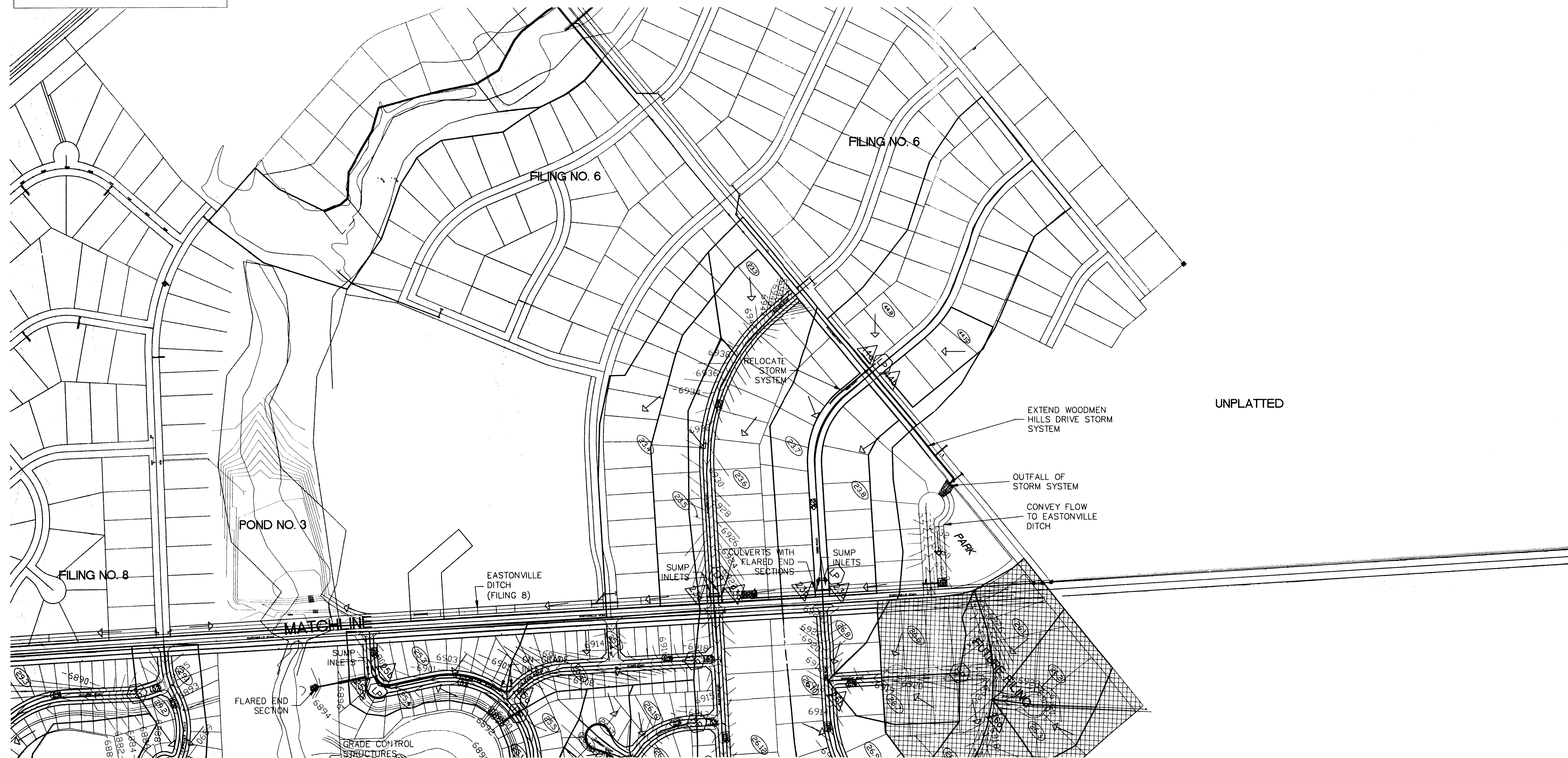
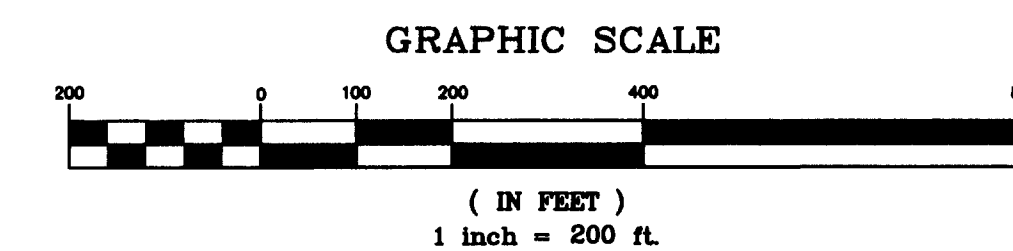
URS Greiner Woodward Clyde

8415 EXPLORER DRIVE, STE 110
COLORADO SPRINGS, CO 80920
(719) 531-0001

SHEET 1 OF 2



FINAL DRAINAGE PLAN SHEET 2 OF 2 WOODMEN HILLS SUBDIVISION FILING No. 9



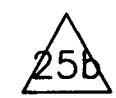
LEGEND

(25.12)

SUB-BASIN



FLOW
DIRECTION



DESIGN
POINTS



HIGH POINT /
LOW POINT



ESTIMATED
STREET
SLOPE

WOODMEN HILLS
ROOM TO GROW

URS Greiner Woodward Clyde

8415 EXPLORER DRIVE, STE 110
COLORADO SPRINGS, CO 80920
(719) 531-0001

SHEET 2 OF 2

Appendix D

Drainage Plans

R:\35079CS FT Smith Rd Drainage Letter\Drawings\Drainage Maps\35079CS_Overall Drainage Map.dwg, 6/5/2024 9:56:46 AM, Alan Lunsford



LEGEND

EXISTING LINETYPES

81

5280

PROPOSED LINETYPES

81

5280

MINOR CONTOUR (1' INTERVAL)

MAJOR CONTOUR (5' INTERVAL)

DRAINAGE BOUNDARY

EXISTING SYMBOLS

PROPOSED SYMBOLS

FLOW DIRECTION

DESIGN POINT DESIGNATION

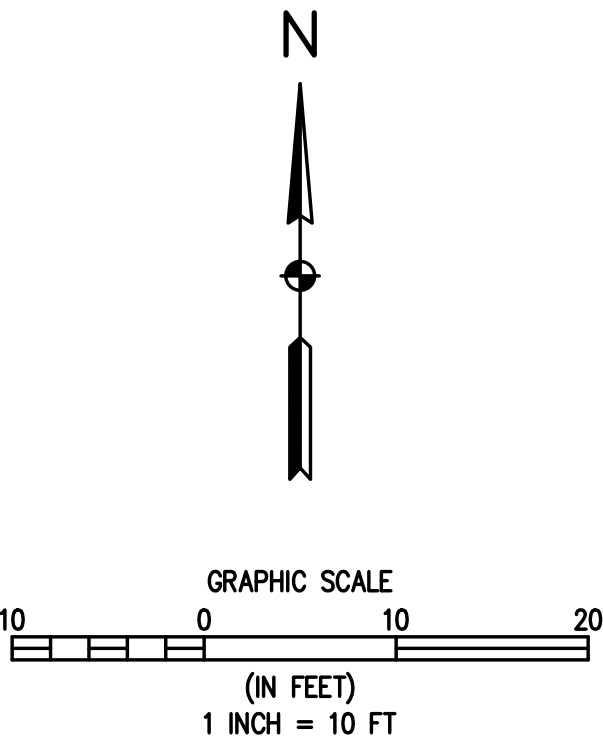
A = BASIN DESIGNATION

B = BASIN AREA (ac)

C = 100-YR C-FACTOR

D = 5-YR C-FACTOR

RUNOFF SUMMARY						
BASIN LABEL	DESIGN POINT	AREA	Imp.	C5	C100	LOCAL (CFS)
						Q5 Q100
E1	E1	14.23	0.45	0.41	0.50	8.4 21.1



1
D1

OVERALL DRAINAGE PLAN

BASELINE

Engineering - Planning - Surveying
1046 ELKTON DRIVE • COLORADO SPRINGS, COLORADO 80907
P: 719.531.6200 • F: 719.531.6266 • www.baselinecorp.com

DESIGNED BY
MAS

DRAWN BY
LAR

CHECKED BY
NUN

DATE

PREPARED BY

REVISION DESCRIPTION

JEROME ENGEL

EL PASO COUNTY

FT SMITH RD DRAINAGE LETTER

7981 FORT SMITH RD

OVERALL DRAINAGE PLAN

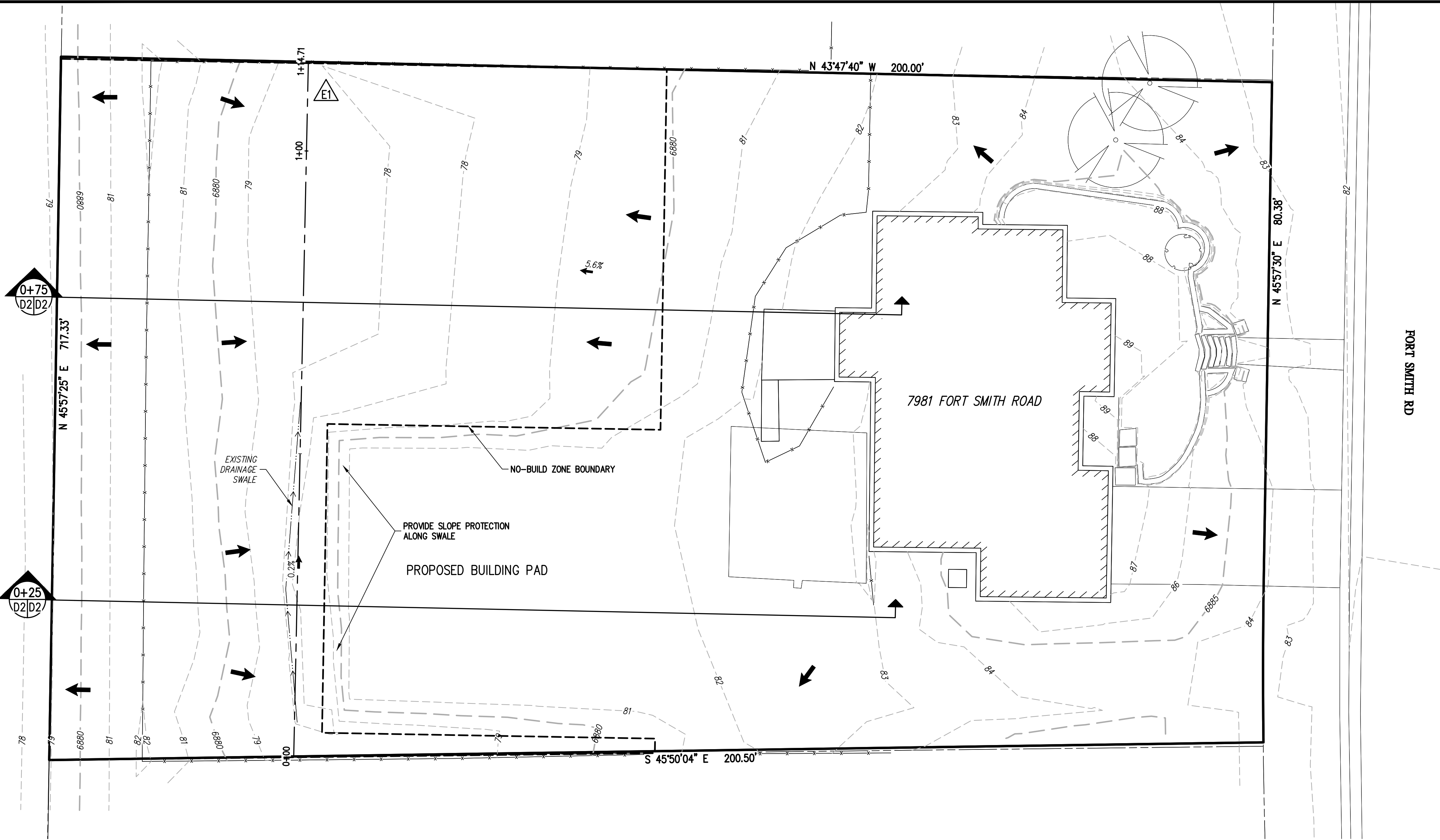
TOWN OF PEYTON

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF	
BASELINE CORPORATION	
INITIAL SUBMITTAL	XX/XX/XX
DRAWING SIZE	24" X 36"
SURVEY FIRM	XX/XX/XX
RECORD	XX/XX/XX
JOB NO.	C35079CS
DRAWING NAME	35079CS_Overall Drainage Map.dwg
SHEET	1 OF XX

D1

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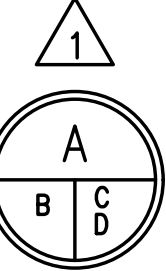
LEGEND

EXISTING LINETYPES	PROPOSED LINETYPES	
81	81	MINOR CONTOUR (1' INTERVAL)
5280	5280	MAJOR CONTOUR (5' INTERVAL)
		PROPERTY BOUNDARY
		LOT LINE
		EDGE OF ASPHALT
		EDGE OF GRAVEL
		WIRE FENCE
		EDGE OF BUILDING
		DITCH FLOWLINE
		DRAINAGE BOUNDARY

EXISTING SYMBOLS

PROPOSED SYMBOLS

FLOW DIRECTION, TYPICALLY ON PAVED SURFACES



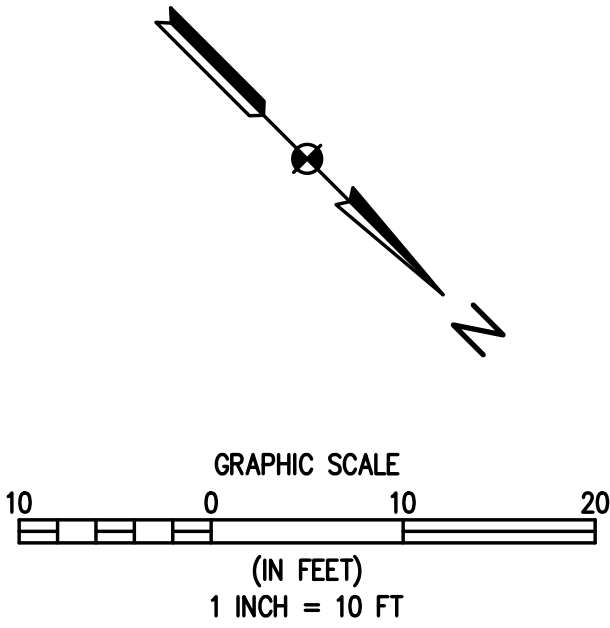
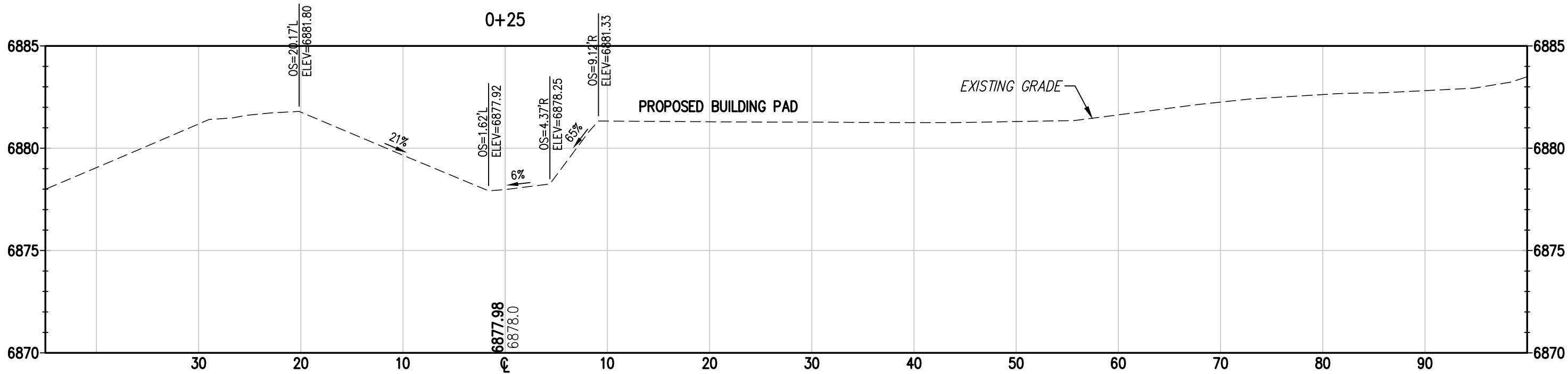
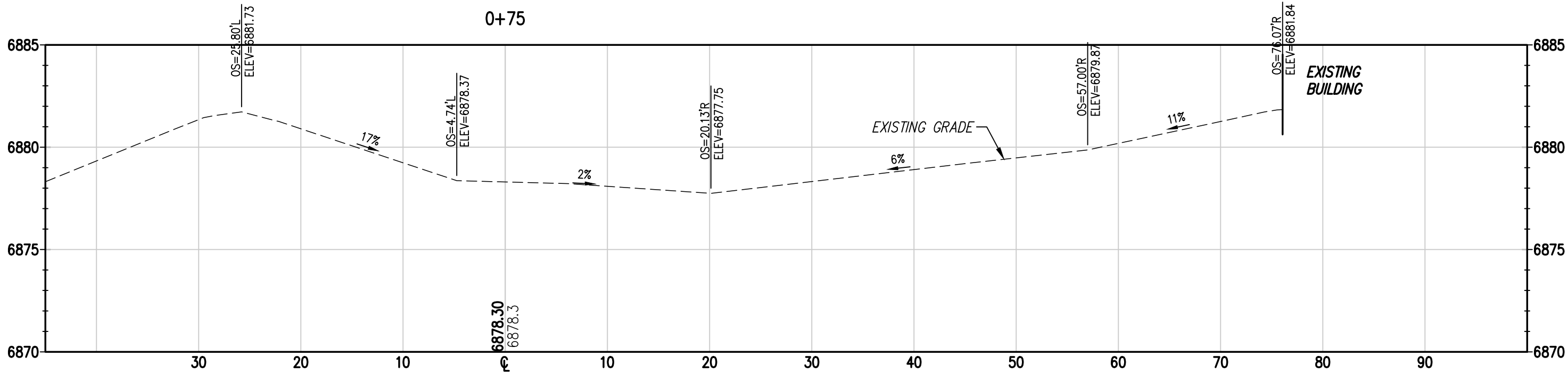
DESIGN POINT DESIGNATION

A = BASIN DESIGNATION
B = BASIN AREA (ac)
C = 100-YR C-FACTOR
D = 5-YR C-FACTOR

RUNOFF SUMMARY

BASIN LABEL	DESIGN POINT	AREA	Imp.	C5	C100	LOCAL (CFS)	
						Q5	Q100
E1	E1	14.23	0.45	0.41	0.50	8.4	21.1

FORT SMITH RD



1
D2
PROPOSED DRAINAGE PLAN

BASELINE

Engineering - Planning - Surveying
1046 ELKTON DRIVE • COLORADO SPRINGS, COLORADO 80907
P: 719.531.6200 • F: 719.531.6266 • www.baselinecorp.com

DESIGNED BY MAS
DRAWN BY LAR
CHECKED BY NJN

DATE
PREPARED BY

REVISION DESCRIPTION

JEROME ENGEL
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FT SMITH RD DRAINAGE LETTER
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TOWN OF PEYTON
PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
BASELINE CORPORATION
INITIAL SUBMITTAL XX/XX/XX
DRAWING SIZE 24" X 36"
SURVEY FIRM BEC SURVEY DATE XX/XX/XX
JOB NO. C35079CS
DRAWING NAME 35079CS_Drainage Maps.dwg
SHEET 2 OF XX
D2