

DRAINAGE LETTER REPORT
for
LOT 1A, FALCON MARKETPLACE

7520 Falcon Market Place
Falcon, Colorado

December, 2023

PCD File No: PPR-236

Prepared for:

GOODWILL COLORADO

1460 Garden of the Gods Road
Colorado Springs, CO 80907
Contact: Benjamin Booker

Prepared by:

Drexel, Barrell & Co.

101 S Sahwatch Street, #100
Colorado Springs, CO 80903
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(719) 260-0887

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DRAINAGE LETTER REPORT
for
LOT 1A, FALCON MARKETPLACE

1.0 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 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.

SIGNATURE (Affix Seal):


For and on behalf of Drexel, Barrell & Co.
Katherine Varnum, P.E. #53459

53459


Date

12/18/23



Developer's Statement

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



12/18/2023

Authorized Signature

Date

Goodwill Colorado

1460 Garden of the Gods Road
Colorado Springs, CO 80907

El Paso County

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

By: Gilbert LaForce, P.E.
Engineering Manager
On behalf of the
ECM Administrator

Date: 01/16/2024 5:23:37 PM

El Paso County Department of Public Works



Date

Conditions:

DRAINAGE LETTER REPORT
for
LOT 1A, FALCON MARKETPLACE

2.0 PURPOSE

The purpose of this letter is to supplement the Final Drainage Report for Falcon Marketplace (approved December 19, 2019) with regards to the development of Lot 1A in order to establish that the development is in conformance with the approved drainage design.

Runoff patterns, drainage facilities and the ability to safely pass developed runoff to historic downstream facilities shall be presented.

3.0 GENERAL SITE DESCRIPTION

Location

Lot 1A Falcon Marketplace is located in Falcon, El Paso County, Colorado, within the Southeast Quarter of Section 1, Township 13 South, Range 65 West of the 6th P.M. The property is bounded to the north by the sub-regional detention facility Pond SR4, Lot 2 of Falcon Marketplace to the east, Lot 11A of Falcon Marketplace to the south, and the Courtyards at Woodmen Hills development to the west. An inundation easement for the Pond SR4 emergency spillway is located on Lot 1A. The plat for the Falcon Marketplace subdivision did not place any restriction on structures within the inundation easement. Methods to accommodate the emergency spillway flow have been incorporated into the site design and are further described below.

An ALTA and topographical field survey was completed by Drexel, Barrell & Co. dated October 7, 2021 and is used as the basis of design for the drainage improvements.

Proposed Development

The proposed development of Lot 1A is the construction of a commercial retail store, with associated parking and landscaping. The proposed disturbed area consists of 3.67 acres. The imperviousness of the site ($C_5=0.83$ and $C_{100}=0.89$) is slightly greater than that assumed in the approved Final Drainage Report for a commercial development ($C_5=0.81$ and $C_{100}=0.88$) for the overall Falcon Marketplace development, as described above.

Soils

According to the Soil Survey of El Paso County Area, Colorado, prepared by the U.S. Department of Agriculture Soil Conservation Service, the site is underlain by the Columbine gravelly sandy loam (Soil No. 19), Blakeland loamy sand (Soil No. 8) and Blakeland-Fluvaquentic Haplaquolls (Soil No. 9) all hydrologic type A soils. See appendix for Soils map.

Climate

This area of El Paso County can be described as the foothills, with total precipitation

amounts typical of a semi-arid region. Winters are generally cold and dry, and summers relatively warm and dry. Precipitation ranges from 12 to 14 inches per year, with the majority of this moisture occurring in the spring and summer in the form of rainfall.

Thunderstorms are common during the summer months.

Floodplain Statement

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 08041CO553G (December 7, 2018), no portion of the site lies within a designated floodplain. A LOMR modifying the floodplain on the property was approved by FEMA, Case No. 21-08-0534P (February 22, 2022).

4.0 DRAINAGE CRITERIA

The drainage analysis has been prepared in accordance with the current El Paso County Drainage Criteria Manual. Calculations were performed to determine runoff quantities during the 5-year and 100-year frequency storms for existing and developed conditions using the Rational Method as required for basins containing less than 100 acres.

5.0 EXISTING CONDITION

The existing condition is as described in the aforementioned approved Final Drainage Report for the overall Falcon Marketplace development, as part of Basin B14 and C5 (see appendix for drainage map excerpt). Overlot grading has been completed and access roadway, detention facilities and utility infrastructure have been installed. The site generally follows a 1%-2% grade from north to south and currently drains directly to the south towards the existing water quality detention facility Pond 2.

6.0 DEVELOPED CONDITION

The proposed development consists of a commercial retail store and associated parking and landscaping. The proposed grading and storm system will generally route all flows to the south where they will enter the existing public 30" RCP storm sewer via private storm sewer extension. Flows that do not enter the proposed storm system will be directed via sheet and curb and gutter flow towards the existing storm system installed with the overall development. See further basin and design point descriptions below.

Basin OS1 is 0.21-acres located on the south side of the adjacent Pond SR4 embankment at the north of the lot. Flows travel overland towards basin A to the south.

Basin A is 0.42-acres located on the northeast side of the proposed commercial retail building. All of the flows within this basin will sheet flow over pavement towards the northerly curb and gutter and **Design Point 1**. The flows will be captured by an existing private Type 13 combo inlet to the east of the truck turnaround. Flow from this basin appears to have been accounted for in the design of the existing inlet. The existing downstream private 18" RCP is of sufficient capacity to account for the flows.

See below for basin/design point table and description:

BASIN	DP	AREA (AC)	Q5 (cfs)	Q100 (cfs)
OS1		0.21	0.1	0.6
A		0.42	1.9	3.4
	1	0.63	1.8	3.7
B	2	0.11	0.5	0.9
C		0.52	1.9	3.6
	3	0.63	2.4	4.4
D	4	0.34	1.3	2.4
OS2		1.06	0.4	2.9
E		1.41	6.3	11.3
	5	2.47	5.9	12.7
	6	3.44	9.1	18.7
F	7	0.47	2.0	3.6
	8	3.92	10.4	20.9
G		0.19	0.6	1.1

Basin B, is 0.11-acres, to be used as a truck dock on the northern side of the proposed building. A proposed trench drain and area inlet (**Design Point 2**) will capture all of the runoff and discharge to the north via proposed private 12" PVC storm sewer.

Basin C is entirely made up by the eastern portion of the proposed commercial retail building for Lot 1. Runoff captured by this basin will be directed via roof drains (represented by **Design Point 3**) and discharged directly into the adjacent proposed private 18" RCP storm sewer.

Basin D is entirely made up by the western portion of the proposed commercial retail building for Lot 1. All runoff captured within this basin will be captured by roof drains (represented by **Design Point 4**). and discharged directly into the adjacent proposed private 18" RCP storm sewer.

Basin OS2 is 1.06-acres of open space located on the west side of the lot. Flows generated by this basin will travel overland into Basin G.

Basin E is 1.41-acres of parking lot, located directly south of the proposed building. The runoff generated by this basin will sheet flow across the parking lot to the south and east, where it will be captured by a proposed private 10' Type R sump inlet at **Design Point 5**. Flows will continue to the east via proposed 24" RCP storm sewer.

In the event of catastrophic failure of Pond SR4 to the north, the design intent of Basin E is to allow the spillway flows to pass around the proposed building. See appendix for cross-section detail and proposed flow depths along the east side of the building. A 2.5' maximum flow depth is anticipated at the easterly curb line for the full 1,016-cfs spillway design flow. The adjacent neighborhood to the west sits approximately 8-ft above the

proposed parking lot grade and as such will be unaffected by the spillway flows.

Design Point 6 represents the piped flows from DP2, DP4 and DP5 combining at a proposed private storm manhole. Flows continue on to the south from this point via proposed private 24" RCP storm sewer. A connection to the existing 30" RCP storm sewer is proposed to the southeast of this point to ensure that onsite flows reach the existing WQ facility to the south as intended in the overall Falcon Marketplace Final Drainage Report. Piped flows of $Q_5=9.1$ cfs and $Q_{100}=18.7$ cfs reach the tie in point with the existing 30" RCP.

Basin F, is 0.47-acres, located on the east side of the proposed building. Flows will travel via curb and gutter to the east and south towards **Design Point 7** and the adjacent King Soopers parking lot. Flows from this parking lot are captured by the onsite storm system before being discharged into the existing WQ detention facility to the south.

Design Point 8 represents all flows reaching the existing storm sewer system on the south end of the King Soopers parking lot. These flows ($Q_5=10.4$ cfs and $Q_{100}=20.9$) are close to those anticipated for the Design Point DP14 established by the Falcon Marketplace Final Drainage Report ($Q_5=9.1$ cfs and $Q_{100}=17.0$ cfs). The existing storm sewer system is sufficient to accommodate the minor increase in flows.

Basin G, is 0.19-acres, located on the south side of the proposed parking lot. Flows will sheet flow over pavement to the south towards Falcon Market Place, ultimately being captured by the existing curb inlet to the east before being discharged into the existing WQ facility to the south.

7.0 FOUR STEP PROCESS

This project conforms to the El Paso County Four Step Process. The process for this site focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainage ways, and implementing long-term source controls.

1. **Employ Runoff Reduction Practices:** Proposed impervious areas on this site (roofs, asphalt/sidewalk) will sheet flow across landscaped ground as much as possible to slow runoff and increase time of concentration prior to being conveyed to the proposed public streets and storm sewer system. This will minimize directly connected impervious areas within the project site.
2. **Implement BMP's that provide a Water Quality Capture Volume with slow release:** Runoff from this project will be routed through onsite storm sewer to an existing water quality basin located along the southern boundary of the Falcon Marketplace development. This will allow for the runoff to be treated for water quality before discharging into the offsite storm system.
3. **Stabilize Drainage Ways:** No drainage ways exist within the project boundaries. Runoff will enter the storm sewer system, and be directed towards the existing water quality basin along the southern boundary of the Falcon Marketplace development, this will allow for flow rate reduction and protection of downstream facilities.

4. **Implement Site Specific and Other Source Control BMP's:** Standard commercial source control will be utilized in order to minimize potential pollutants entering the storm system. Example source control measures consist of: indoor storage of household chemicals; and trash receptacles in common areas.

8.0 DRAINAGE & BRIDGE FEES

Drainage and bridge fees are not required as the site has been previously platted.

9.0 SUMMARY

Development of Lot 1A Falcon Marketplace will not adversely affect surrounding or downstream developments. The imperviousness of the site ($C_5=0.83$ and $C_{100}=0.89$) is slightly greater than that assumed in the approved Final Drainage Report ($C_5=0.81$ and $C_{100}=0.88$). Runoff values are slightly greater ($Q_5=10.4$ cfs and $Q_{100}=20.9$) than the anticipated amount ($Q_5=9.1$ cfs and $Q_{100}=17.0$ cfs), but are still within the capacity of the existing storm system, and therefore it is acceptable to state that the drainage design for Lot 1A is in conformance with the Final Drainage Report for the overall Falcon Marketplace development.

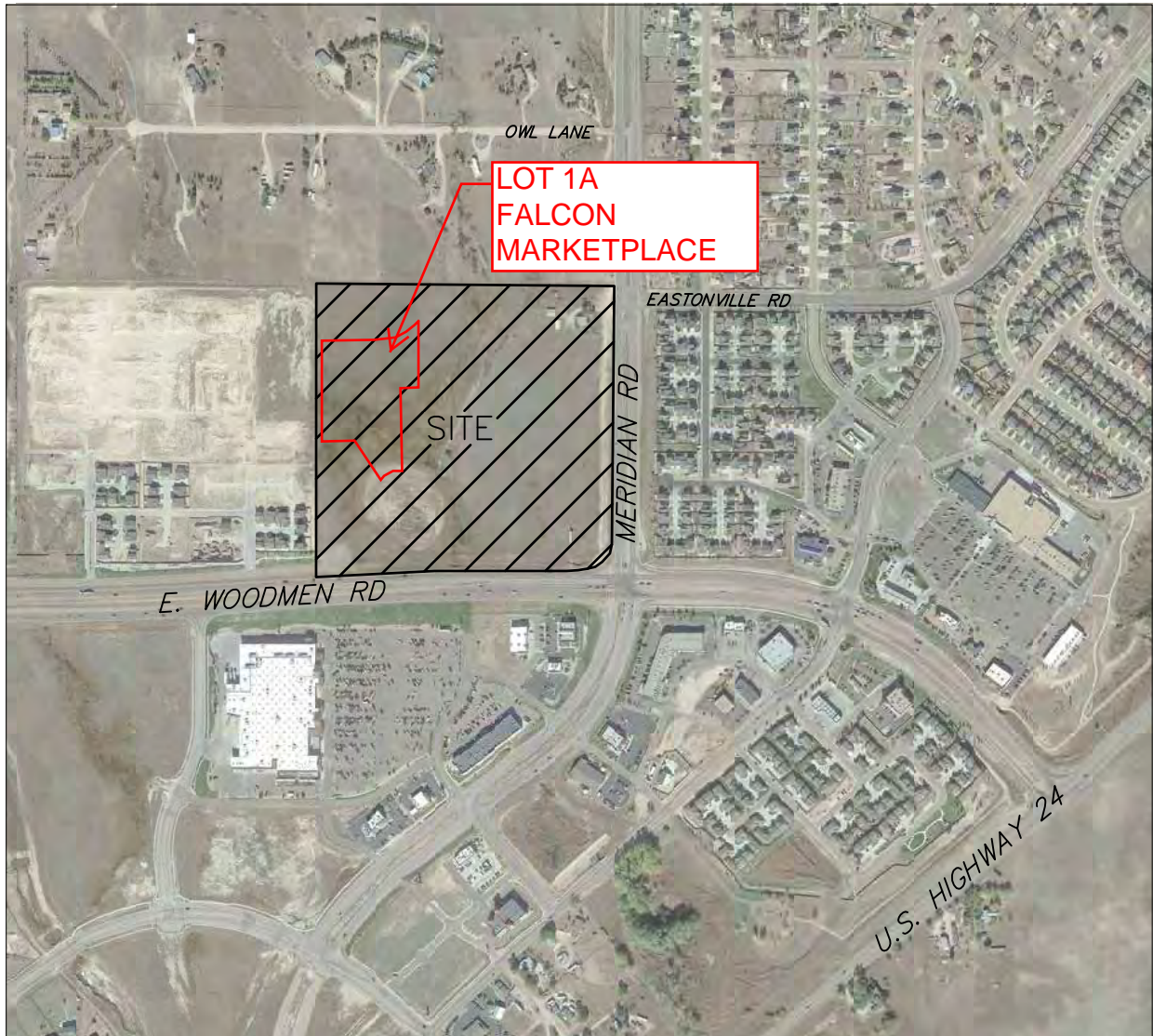
The downstream existing water quality facility is functioning as intended and was designed to treat flows generated by this property.

10.0 REFERENCES

The sources of information used in the development of this study are listed below:

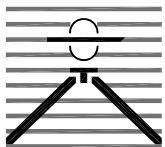
1. El Paso County Drainage Criteria Manual, 10-31-2018.
2. El Paso County Land Development Code, 5-25-2023.
3. Final Drainage Report for Falcon Marketplace (Drexel, Barrell & Co.) 12-19-2019.

Appendix



Vicinity Map

NTS



FALCON MARKETPLACE VICINITY MAP

Drexel, Barrell & Co.
Engineers • Surveyors

DATE:
8/29/23

JOB NO:
20988-13

DWG. NO.

VMAP

SHEET 1 OF 1

National Flood Hazard Layer FIRMette



104°37'2"W 38°56'49"N



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
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		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 **1/20/2023 at 6:16 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.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

104°36'24"W 38°56'21"N


Custom Soil Resource Report Soil Map



Custom Soil Resource Report


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 1:24,000.

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: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

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

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

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
8	Blakeland loamy sand, 1 to 9 percent slopes	0.1	2.2%
9	Blakeland-Fluvaquentic Haplaquolls	1.7	51.1%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	1.6	46.7%
Totals for Area of Interest		3.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v
Elevation: 4,600 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills
Landform position (three-dimensional): Side slope, talus
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock and/or eolian deposits
derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

9—Blakeland-Fluvaquentic Haplaquolls

Map Unit Setting

National map unit symbol: 36b6

Elevation: 3,500 to 5,800 feet

Mean annual precipitation: 13 to 17 inches

Mean annual air temperature: 46 to 55 degrees F

Frost-free period: 110 to 165 days

Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 60 percent

Fluvaquentic haplaquolls and similar soils: 38 percent

Minor components: 2 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills

Landform position (three-dimensional): Side slope, talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium derived from arkose and/or eolian deposits
derived from arkose

Typical profile

A - 0 to 11 inches: loamy sand

AC - 11 to 27 inches: loamy sand

C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95
to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Description of Fluvaquentic Haplaquolls

Setting

Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 12 inches: variable
H2 - 12 to 60 inches: stratified very gravelly sand to loam

Properties and qualities

Slope: 1 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: R048AY241CO - Mountain Meadow
Hydric soil rating: Yes

Minor Components

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fans, fan terraces, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 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: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales

Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

PROJECT INFORMATION

PROJECT: Lot 1A Falcon Marketplace
 PROJECT NO: 20988-13
 DESIGN BY: KGV
 REV. BY: TDM
 AGENCY: El Paso County
 REPORT TYPE: Final
 DATE: 11/15/2023
 Soil Type: A



Drexel, Barrell & Co.

			C2*	C5*	C10*	C100*	% IMPERV
Landscape				0.08		0.35	0
Roofing				0.73		0.81	90
Paving				0.90		0.95	100

*C-Values and Basin Imperviousness based on Table 5-1, El Paso County Drainage Criteria Manual Vol 1

PROPOSED

SUB-BASIN	SURFACE DESIGNATION		AREA	COMPOSITE RUNOFF COEFFICIENTS				% IMPERV
			ACRE	C2	C5	C10	C100	
OS1	Landscape		0.21		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		0.00		0.90		0.95	100
	WEIGHTED AVERAGE				0.08		0.35	0%
TOTAL OS1			0.21					
OS2	Landscape		1.06		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		0.00		0.90		0.95	100
	WEIGHTED AVERAGE				0.08		0.35	0%
TOTAL OS2			1.06					
A	Landscape		0.00		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		0.42		0.90		0.95	100
	WEIGHTED AVERAGE				0.90		0.95	100%
TOTAL A			0.42					
B	Landscape		0.00		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		0.11		0.90		0.95	100
	WEIGHTED AVERAGE				0.90		0.95	100%
TOTAL B			0.11					
C	Landscape		0.00		0.08		0.35	0
	Roofing		0.52		0.73		0.81	90
	Paving		0.00		0.90		0.95	100
	WEIGHTED AVERAGE				0.73		0.81	90%
TOTAL C			0.52					
D	Landscape		0.00		0.08		0.35	0
	Roofing		0.34		0.73		0.81	90
	Paving		0.00		0.90		0.95	100
	WEIGHTED AVERAGE				0.73		0.81	90%
TOTAL D			0.34					
E	Landscape		0.04		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		1.37		0.90		0.95	100
	WEIGHTED AVERAGE				0.88		0.93	97%
TOTAL E			1.41					
F	Landscape		0.05		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		0.42		0.90		0.95	100
	WEIGHTED AVERAGE				0.81		0.89	89%
TOTAL F			0.47					
G	Landscape		0.03		0.08		0.35	0
	Roofing		0.00		0.73		0.81	90
	Paving		0.16		0.90		0.95	100
	WEIGHTED AVERAGE				0.78		0.86	85%
TOTAL G			0.19					

PROJECT INFORMATION

PROJECT: Lot 1A Falcon Marketplace
 PROJECT NO: 20988-13
 DESIGN BY: KGV
 REV. BY: TDM
 AGENCY: El Paso County
 REPORT TYPE: Final
 DATE: 12/17/2023



RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF

PROPOSED TIME OF CONCENTRATION STANDARD FORM SF-2

SUB-BASIN DATA					INITIAL/OVERLAND TIME (t_i)			TRAVEL TIME (t_t)				TIME OF CONC. t_c		FINAL t_c
BASIN	DESIGN PT:	C_5	C_{100}	AREA	LENGTH	SLOPE	t_i	LENGTH	SLOPE	VEL.	t_t	COMP.	MINIMUM	
				Ac	Ft	%	Min	Ft	%	FPS	Min	t_c	t_c	Min
OS1		0.08	0.35	0.21	20	2.0	6.8	20	33.0	6.0	0.1	6.8	5	6.8
A		0.90	0.95	0.42	20	2.3	1.3	195	0.8	3.2	1.0	2.3	5	5.0
OS1+A	1	0.63	0.75	0.63	From OS1		6.8	50	0.5	3.0	0.3	7.1	5	7.1
B	2	0.90	0.95	0.11	20	0.5	2.1	1.5	5.0	6.2	0.0	2.1	5	5.0
C		0.73	0.81	0.52	5	0.5	1.9	168	0.5	3.0	0.9	2.9	5	5.0
DP2+BASIN C	3	0.76	0.83	0.63	From DP2		5.0	110	1.7	4.8	0.4	5.4	5	5.4
D	4	0.73	0.81	0.34	5	0.5	1.9	135	0.5	3.0	0.8	2.7	5	5.0
OS2		0.08	0.35	1.06	20	2.0	6.8	20	33.0	6.0	0.1	6.8	5	6.8
E		0.88	0.93	1.41	30	1.3	2.1	525	0.5	3.0	2.9	5.0	5	5.0
BASIN OS2+BASIN E	5	0.53	0.68	2.47	From OS2		6.8	175	0.5	3.0	1.0	7.8	5	7.8
DP3+DP4+DP5	6	0.60	0.72	3.44	From DP5		7.8	45	0.6	6.8	0.1	7.9	5	7.9
F	7	0.81	0.89	0.47	60	1.6	3.6	225	1.8	4.9	0.8	4.3	5	5.0
DP6+F	8	0.62	0.74	3.92	From DP6		7.9	225	1.0	3.5	1.1	9.0	5	9.0
G		0.78	0.86	0.19	60	0.5	5.9	783	0.9	3.4	3.8	9.7	5	9.7

PROJECT INFORMATION

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Drexel, Barrell & Co.

RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF

PROPOSED	RUNOFF 5 YR STORM				P1=		1.50
			DIRECT RUNOFF				
BASIN (S)	DESIGN POINT	AREA (AC)	RUNOFF COEFF	t _c (MIN)	C * A	I (IN/HR)	Q (CFS)
OS1		0.21	0.08	6.8	0.02	4.68	0.1
A		0.42	0.90	5.0	0.38	5.10	1.9
OS1+A	1	0.63	0.63	7.1	0.40	4.62	1.8
B	2	0.11	0.90	5.0	0.10	5.10	0.5
C		0.52	0.73	5.0	0.38	5.10	1.9
DP2+BASIN C	3	0.63	0.76	5.4	0.48	5.01	2.4
D	4	0.34	0.73	5.0	0.25	5.10	1.3
OS2		1.06	0.08	6.8	0.08	4.68	0.4
E		1.41	0.88	5.0	1.24	5.10	6.3
BASIN OS2+BASIN E	5	2.47	0.53	7.8	1.32	4.48	5.9
DP3+DP4+DP5	6	3.44	0.60	7.9	2.05	4.46	9.1
F	7	0.47	0.81	5.0	0.39	5.10	2.0
DP6+F	8	3.92	0.62	9.0	2.43	4.27	10.4
G		0.19	0.78	9.7	0.15	4.15	0.6

PROJECT INFORMATION

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Drexel, Barrell & Co.

RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF

PROPOSED	RUNOFF		100 YR STORM		P1=		2.52
BASIN (S)	DESIGN POINT	AREA (AC)	DIRECT RUNOFF		C * A	I (IN/HR)	Q (CFS)
OS1		0.21	0.35	6.8	0.07	7.86	0.6
A		0.42	0.95	5.0	0.40	8.58	3.4
OS1+A	1	0.63	0.75	7.1	0.47	7.76	3.7
B	2	0.11	0.95	5.0	0.11	8.58	0.9
C		0.52	0.81	5.0	0.42	8.58	3.6
DP2+BASIN C	3	0.63	0.83	5.4	0.53	8.41	4.4
D	4	0.34	0.81	5.0	0.27	8.58	2.4
OS2		1.06	0.35	6.8	0.37	7.86	2.9
E		1.41	0.93	5.0	1.32	8.57	11.3
BASIN OS2+BASIN E	5	2.47	0.68	7.8	1.69	7.53	12.7
DP3+DP4+DP5	6	3.44	0.72	7.9	2.49	7.50	18.7
F	7	0.47	0.89	5.0	0.42	8.58	3.6
DP6+F	8	3.92	0.74	9.0	2.91	7.17	20.9
G		0.19	0.86	9.7	0.16	6.97	1.1

Worksheet

Worksheet for Irregular Channel

**CROSS-SECTION ALONG WEST SIDE
OF BUILDING INTENDED TO CARRY
SPILLWAY FLOWS. THIS IS WORST
CASE FOR FULL SPILLWAY OVERFLOW
CAPACITY - 1,016-CFS**

Project Description	
Worksheet	Irregular Channel
Flow Element	Irregular Channel
Method	Manning's Formu
Solve For	Channel Depth

Input Data	
Slope	005000 ft/ft
Discharge	1,016.00 cfs

Options	
Current Roughness Method	aved Lotter's Method
Open Channel Weighting	aved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.016
Water Surface Elev.	93.20 ft
Elevation Range	91.69 to 95.00
Flow Area	106.0 ft²
Wetted Perimeter	59.96 ft
Top Width	57.67 ft
Actual Depth	2.51 ft
Critical Elevation	93.50 ft
Critical Slope	0.003100 ft/ft
Velocity	9.58 ft/s
Velocity Head	1.43 ft
Specific Energy	94.63 ft
Froude Number	1.25
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+11	0.035
0+11	0+63	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	95.00
0+11	91.29
0+16	91.19
0+16	90.69
0+58	91.63
0+58	92.13
0+63	92.23
0+63	95.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	Irregular Channel
Flow Element	Irregular Channel
Method	Manning's Formul
Solve For	Channel Depth
Section Data	
Mannings Coefficient	0.016
Slope	0.005000 ft/ft
Water Surface Elev.	93.20 ft
Elevation Range	91.69 to 95.00
Discharge	1,016.00 cfs

CROSS-SECTION ALONG WEST SIDE
OF BUILDING INTENDED TO CARRY
SPILLWAY FLOWS. THIS IS WORST
CASE FOR FULL SPILLWAY OVERFLOW
CAPACITY - 1,016-CFS

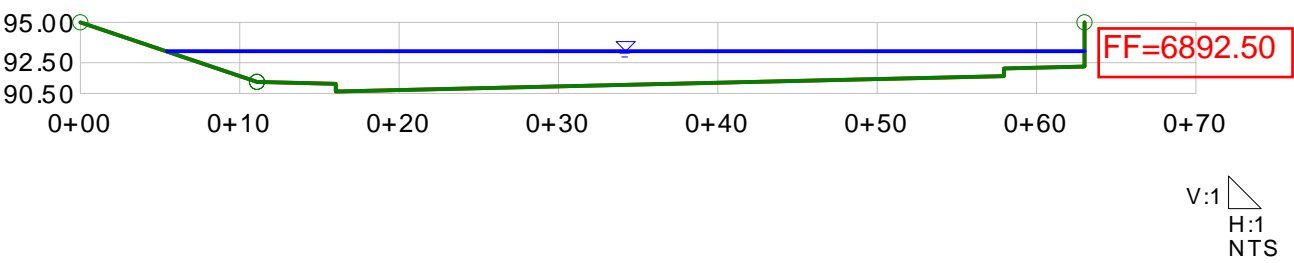
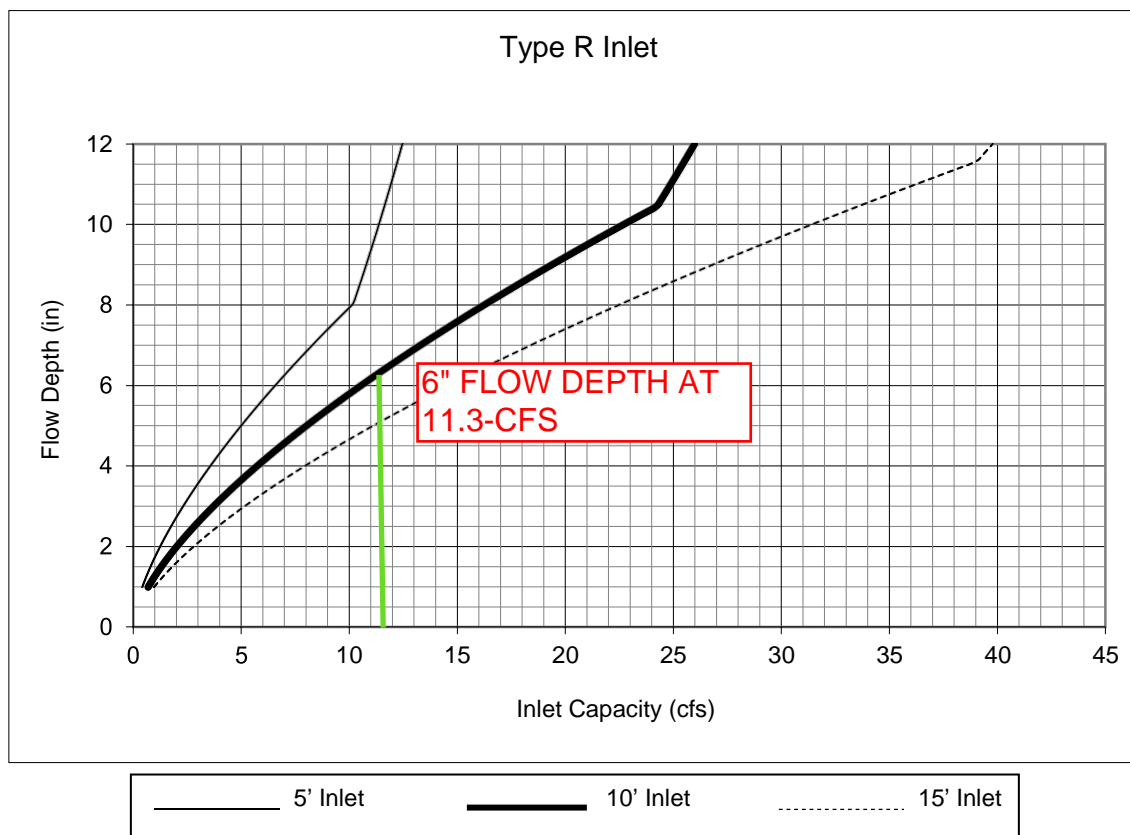


Figure 8-11. Inlet Capacity Chart Sump Conditions , Curb Opening (Type R) Inlet**Notes:**

1. The standard inlet parameters must apply to use this chart.

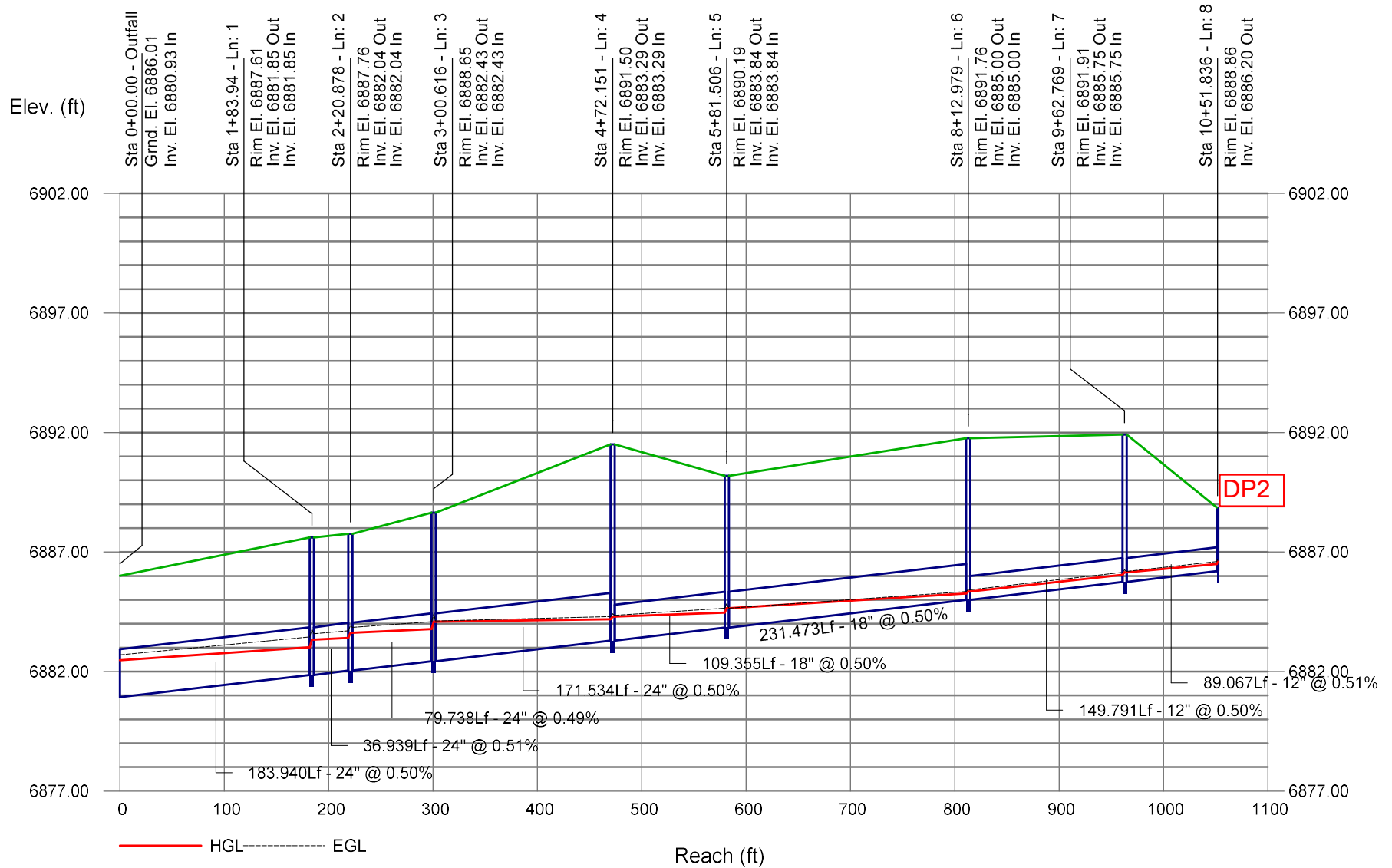
Line No.	Line ID	Flow Rate (cfs)	Line Size (in)	Line Type	Line Length (ft)	Invert Dn (ft)	Invert Up (ft)	Line Slope (%)	HGL Up (ft)	HGL Dn (ft)	Minor Loss (ft)	HGL Jnct (ft)	Vel Ave (ft/s)	Line No.	Energy Loss (ft)		
1	1	10.00	24	Cir	183.940	6880.93	6881.85	0.50	6883.02	6882.47	0.32	6883.34	4.56	1	0.742		
2	2	10.00	24	Cir	36.939	6881.85	6882.04	0.51	6883.40	6883.34	0.22	6883.63	4.19	2	0.115		
3	3	10.00	24	Cir	79.738	6882.04	6882.43	0.49	6883.78	6883.63	0.31	6884.09	4.09	3	0.239		
4	4	3.70	24	Cir	171.534	6882.43	6883.29	0.50	6884.18	6884.09	0.12	6884.30	2.03	4	0.184		
5	5	2.40	18	Cir	109.355	6883.29	6883.84	0.50	6884.47	6884.30	0.18	6884.65	2.65	5	0.297		
6	6	0.50	18	Cir	231.473	6883.84	6885.00	0.50	6885.26	6884.65	0.09	6885.35	1.45	6	0.674		
7	7	0.50	12	Cir	149.791	6885.00	6885.75	0.50	6886.05	6885.35	0.10	6886.15	2.30	7	0.716		
8	8	0.50	12	Cir	89.067	6885.75	6886.20	0.51	6886.50	6886.15	0.10	6886.60	2.14	8	0.373		
9	9	1.30	18	Cir	176.182	6883.29	6884.17	0.50	6884.62	6884.30	0.13	6884.75	1.97	9	0.432		
10	10	6.30	24	Cir	41.163	6882.43	6882.64	0.51	6884.10	6884.09	0.10	6884.21	2.41	10	0.042		
Project File 5YR.stm													Number of lines: 10			Date: 11/15/2023	
NOTES: ** Critical depth																	

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	24	10.00	6880.93	6882.47	1.54	2.60	3.85	0.23	6882.70	0.257	183.940	6881.85	6883.02	1.17	1.90	5.26	0.43	6883.45	0.550	0.403	0.742	0.75	0.32
2	24	10.00	6881.85	6883.34	1.49	2.51	3.99	0.25	6883.59	0.278	36.939	6882.04	6883.40	1.36	2.28	4.39	0.30	6883.70	0.348	0.313	0.115	0.75	0.22
3	24	10.00	6882.04	6883.63	1.59	2.67	3.74	0.22	6883.85	0.241	79.738	6882.43	6883.78	1.35	2.25	4.44	0.31	6884.09	0.357	0.299	0.239	1.00	0.31
4	24	3.70	6882.43	6884.09	1.65	2.78	1.33	0.03	6884.11	0.031	171.534	6883.29	6884.18	0.89	1.36	2.73	0.12	6884.30	0.184	0.107	0.184	1.00	0.12
5	18	2.40	6883.29	6884.30	1.01	1.26	1.90	0.06	6884.35	0.096	109.355	6883.84	6884.47	0.63	0.70	3.41	0.18	6884.65	0.447	0.272	0.297	1.00	0.18
6	18	0.50	6883.84	6884.65	0.81	0.21	0.51	0.00	6884.65	0.008	231.473	6885.00	6885.26	0.26**	0.21	2.38	0.09	6885.35	0.574	0.291	0.674	1.00	0.09
7	12	0.50	6885.00	6885.35	0.35	0.19	2.02	0.06	6885.42	0.322	149.791	6885.75	6886.05	0.30**	0.19	2.58	0.10	6886.15	0.634	0.478	0.716	1.00	0.10
8	12	0.50	6885.75	6886.15	0.40	0.19	1.71	0.05	6886.19	0.203	89.067	6886.20	6886.50	0.30**	0.19	2.58	0.10	6886.60	0.634	0.419	0.373	1.00	0.10
9	18	1.30	6883.29	6884.30	1.01	1.26	1.03	0.02	6884.32	0.028	176.182	6884.17	6884.62	0.45	0.45	2.91	0.13	6884.75	0.462	0.245	0.432	1.00	0.13
10	24	6.30	6882.43	6884.09	1.65	2.78	2.27	0.08	6884.17	0.088	41.163	6882.64	6884.10	1.46	2.46	2.56	0.10	6884.21	0.115	0.102	0.042	1.00	0.10
Project File 5YR.stm														Number of lines: 10					Run Date: 11/15/2023				
Notes: ; ** Critical depth. ; c = cir e = ellip b = box																							

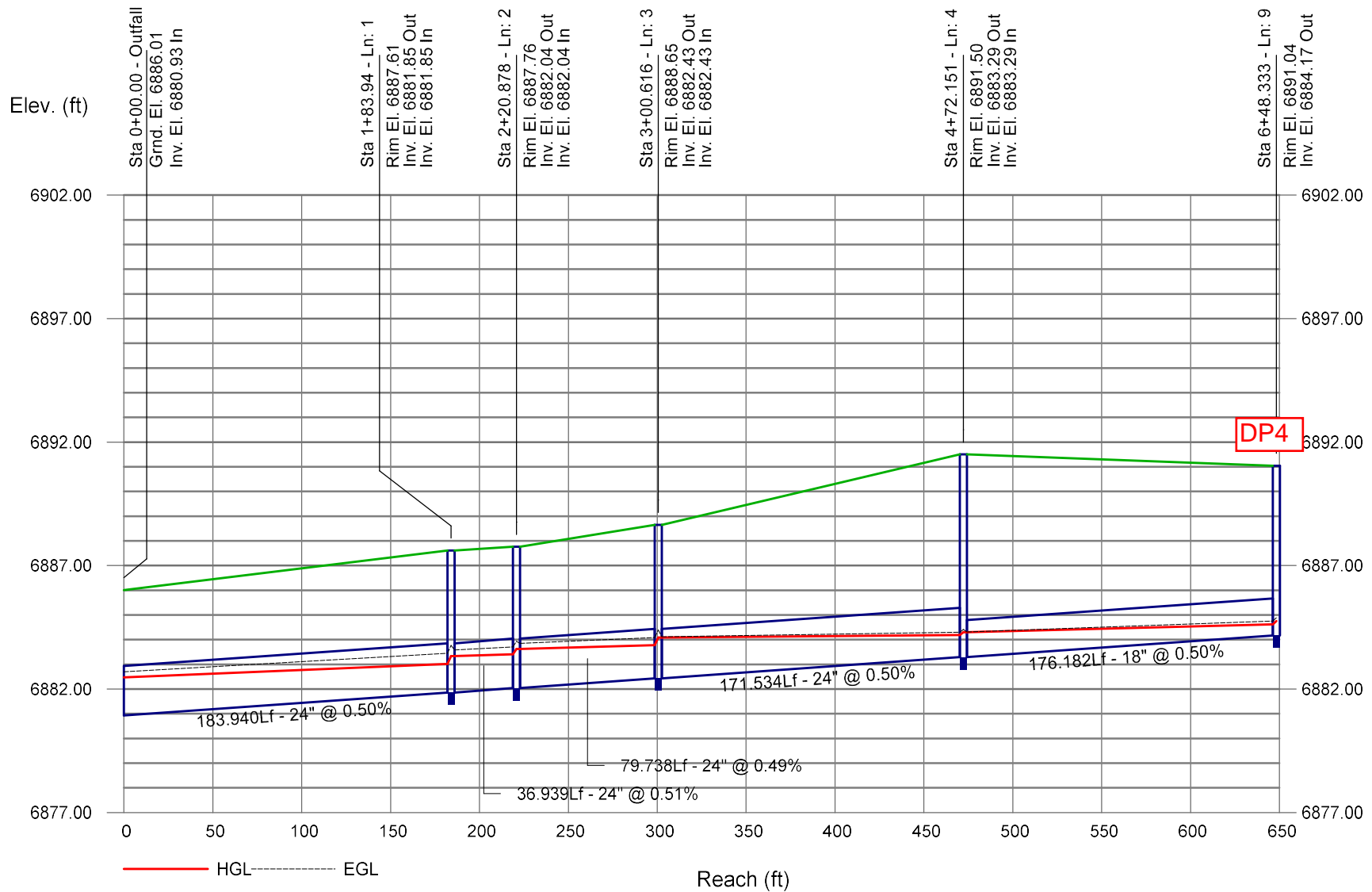
Storm Sewer Profile

Proj. file: 5YR.stm

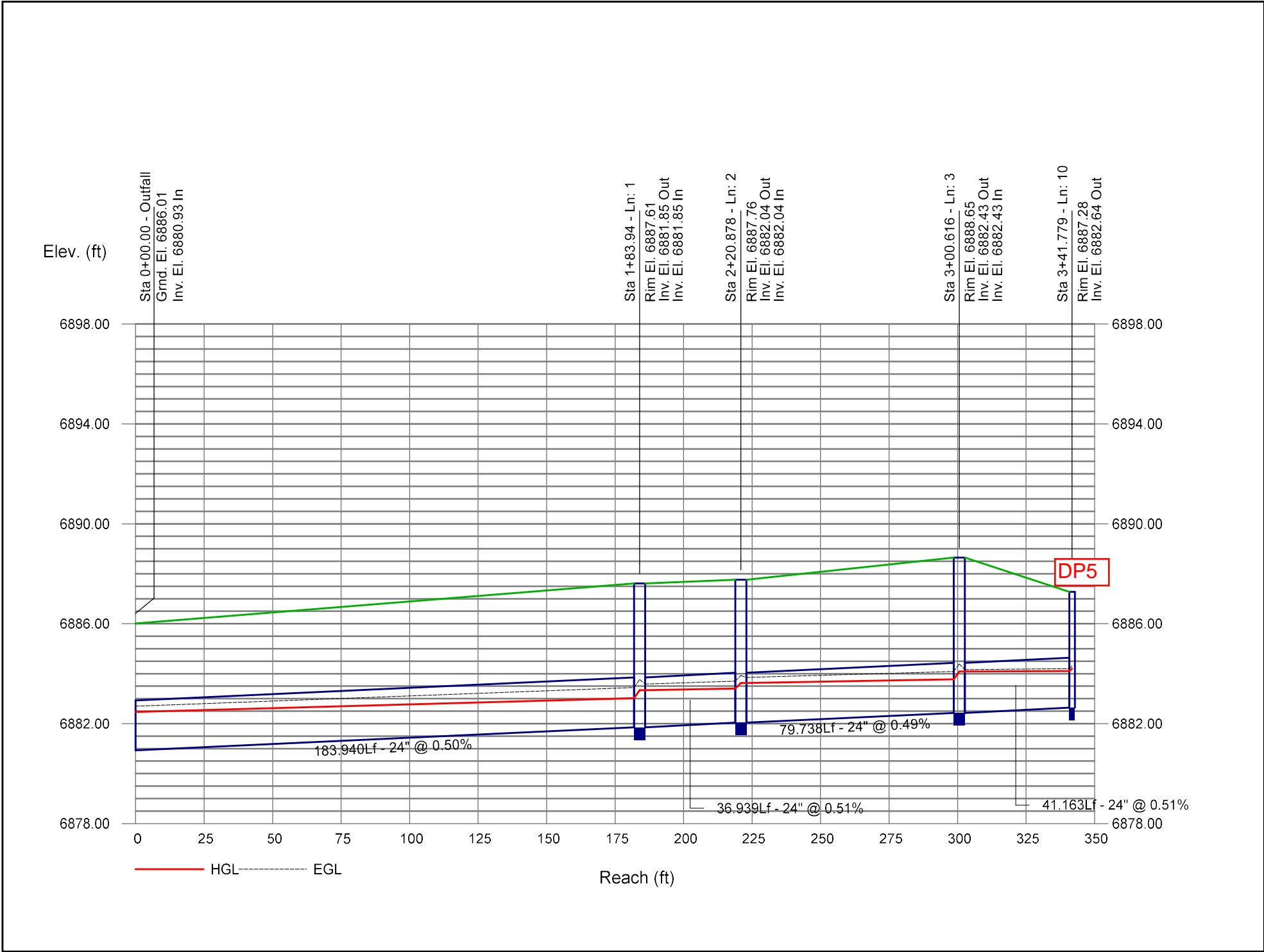


Storm Sewer Profile

Proj. file: 5YR.stm



Storm Sewer Profile



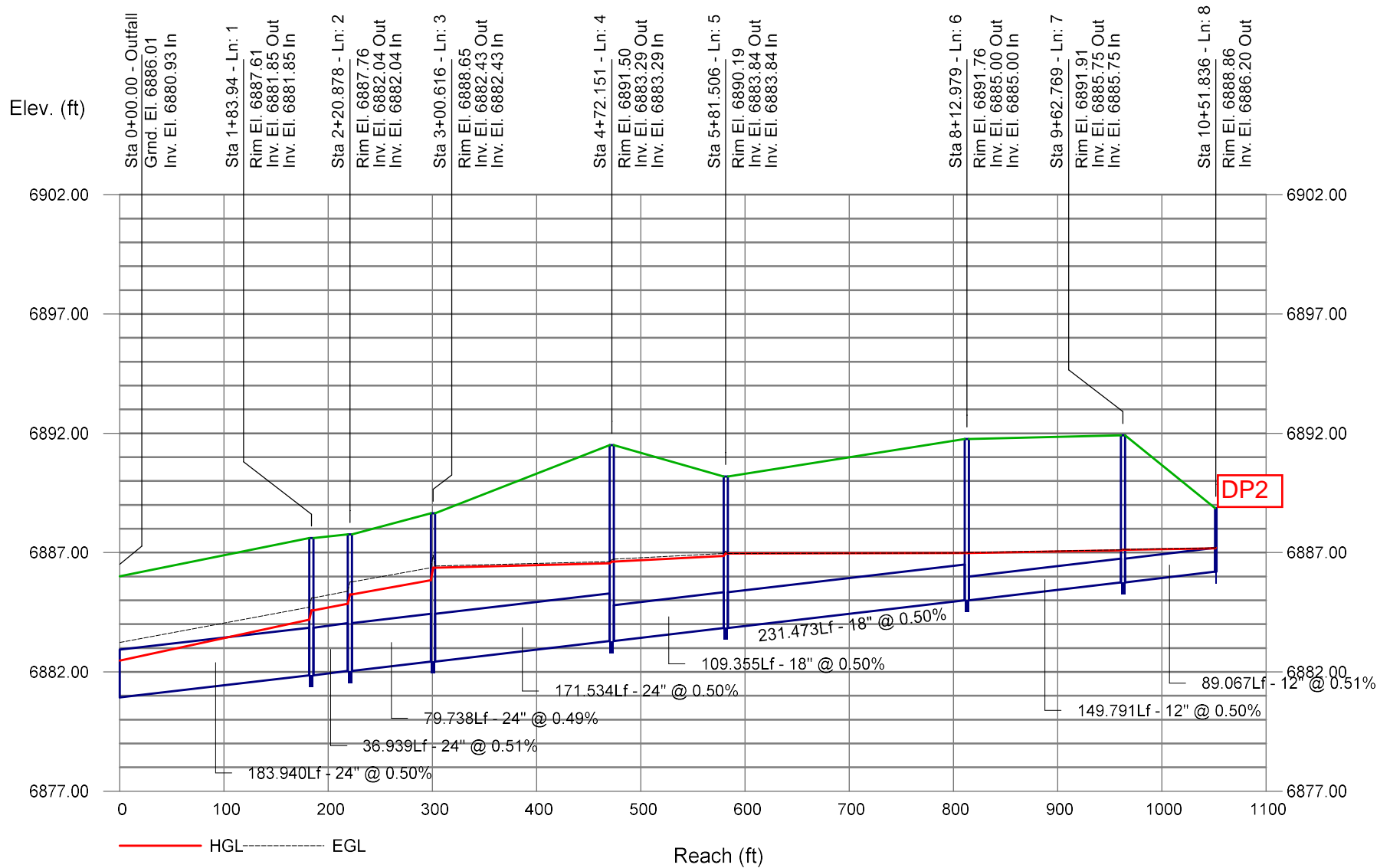
Line No.	Line ID	Flow Rate (cfs)	Line Size (in)	Line Type	Line Length (ft)	Invert Dn (ft)	Invert Up (ft)	Line Slope (%)	HGL Up (ft)	HGL Dn (ft)	Minor Loss (ft)	HGL Jnct (ft)	Vel Ave (ft/s)	Line No.	Energy Loss (ft)		
1	1	18.20	24	Cir	183.940	6880.93	6881.85	0.50	6884.19	6882.47	0.39	6884.58	6.40	1	1.473		
2	2	18.20	24	Cir	36.939	6881.85	6882.04	0.51	6884.85	6884.58	0.39	6885.25	5.79	2	0.277		
3	3	18.20	24	Cir	79.738	6882.04	6882.43	0.49	6885.84	6885.25	0.52	6886.37	5.79	3	0.599		
4	4	6.90	24	Cir	171.534	6882.43	6883.29	0.50	6886.55	6886.37	0.07	6886.63	2.20	4	0.185		
5	5	4.50	18	Cir	109.355	6883.29	6883.84	0.50	6886.86	6886.63	0.10	6886.96	2.55	5	0.233		
6	6	0.90	18	Cir	231.473	6883.84	6885.00	0.50	6886.98	6886.96	0.00	6886.98	0.51	6	0.020		
7	7	0.90	12	Cir	149.791	6885.00	6885.75	0.50	6887.10	6886.98	0.02	6887.12	1.15	7	0.111		
8	8	0.90	12	Cir	89.067	6885.75	6886.20	0.51	6887.18	6887.12	0.02	6887.20	1.15	8	0.062		
9	9	2.40	18	Cir	176.182	6883.29	6884.17	0.50	6886.73	6886.63	0.03	6886.76	1.36	9	0.107		
10	10	11.30	24	Cir	41.163	6882.43	6882.64	0.51	6886.49	6886.37	0.20	6886.69	3.60	10	0.119		
Project File: 100YR.stm													Number of lines: 10			Date: 11/15/2023	
NOTES: ** Critical depth																	

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	24	18.20	6880.93	6882.47	1.54	2.60	7.01	0.76	6883.23	0.851	183.94	6881.85	6884.19	2.00	3.14	5.79	0.52	6884.71	0.751	0.801	1.473	0.75	0.39
2	24	18.20	6881.85	6884.58	2.00	3.14	5.79	0.52	6885.10	0.751	36.939	6882.04	6884.85	2.00	3.14	5.79	0.52	6885.38	0.751	0.751	0.277	0.75	0.39
3	24	18.20	6882.04	6885.25	2.00	3.14	5.79	0.52	6885.77	0.751	79.738	6882.43	6885.84	2.00	3.14	5.79	0.52	6886.37	0.751	0.751	0.599	1.00	0.52
4	24	6.90	6882.43	6886.37	2.00	3.14	2.20	0.08	6886.44	0.108	171.534	6883.29	6886.55	2.00	3.14	2.20	0.07	6886.63	0.108	0.108	0.185	1.00	0.07
5	18	4.50	6883.29	6886.63	1.50	1.77	2.55	0.10	6886.73	0.213	109.355	6883.84	6886.86	1.50	1.77	2.55	0.10	6886.96	0.213	0.213	0.233	1.00	0.10
6	18	0.90	6883.84	6886.96	1.50	1.77	0.51	0.00	6886.96	0.009	231.473	6885.00	6886.98	1.50	1.77	0.51	0.00	6886.98	0.009	0.009	0.020	1.00	0.00
7	12	0.90	6885.00	6886.98	1.00	0.79	1.15	0.02	6887.00	0.074	149.791	6885.75	6887.10	1.00	0.79	1.15	0.02	6887.12	0.074	0.074	0.111	1.00	0.02
8	12	0.90	6885.75	6887.12	1.00	0.79	1.15	0.02	6887.14	0.074	89.067	6886.20	6887.18	0.98	0.78	1.15	0.02	6887.20	0.066	0.070	0.062	1.00	0.02
9	18	2.40	6883.29	6886.63	1.50	1.77	1.36	0.03	6886.66	0.061	176.182	6884.17	6886.73	1.50	1.77	1.36	0.03	6886.76	0.061	0.061	0.107	1.00	0.03
10	24	11.30	6882.43	6886.37	2.00	3.14	3.60	0.20	6886.57	0.290	41.163	6882.64	6886.49	2.00	3.14	3.60	0.20	6886.69	0.290	0.290	0.119	1.00	0.20
Project File: 100YR.stm														Number of lines: 10					Run Date: 11/15/2023				
; c = cir e = ellip b = box																							

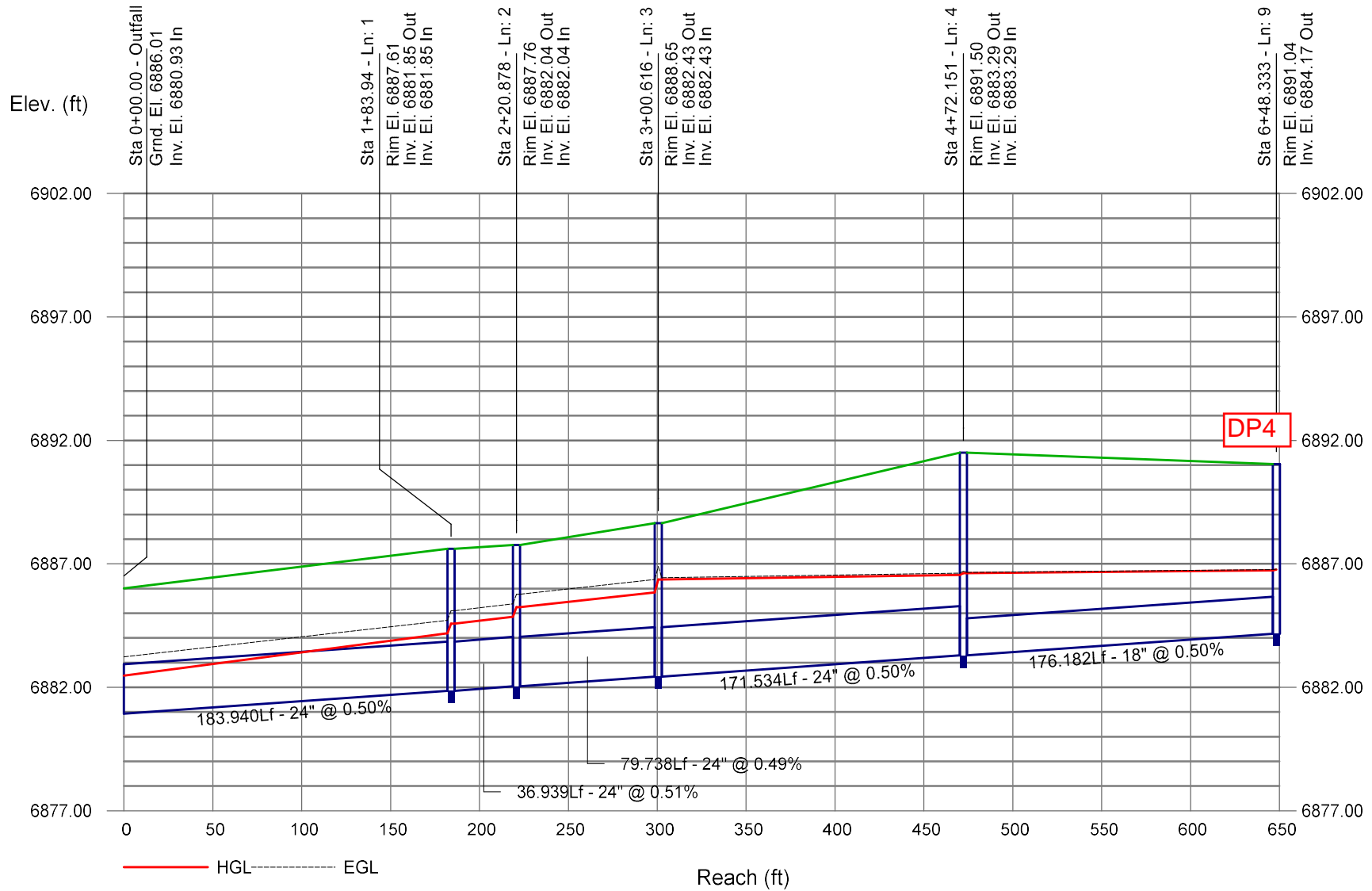
Storm Sewer Profile

Proj. file: 100YR.stm

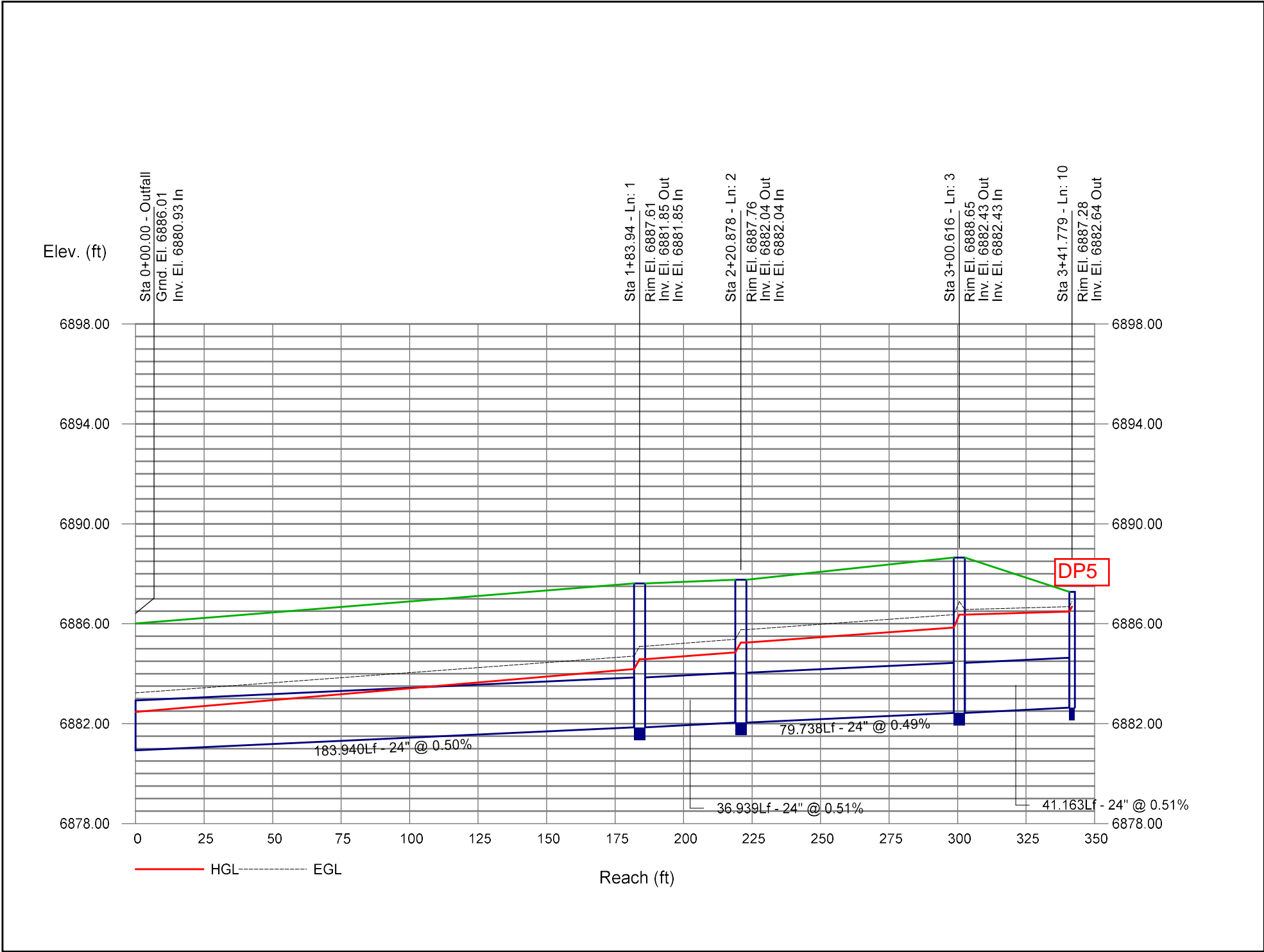


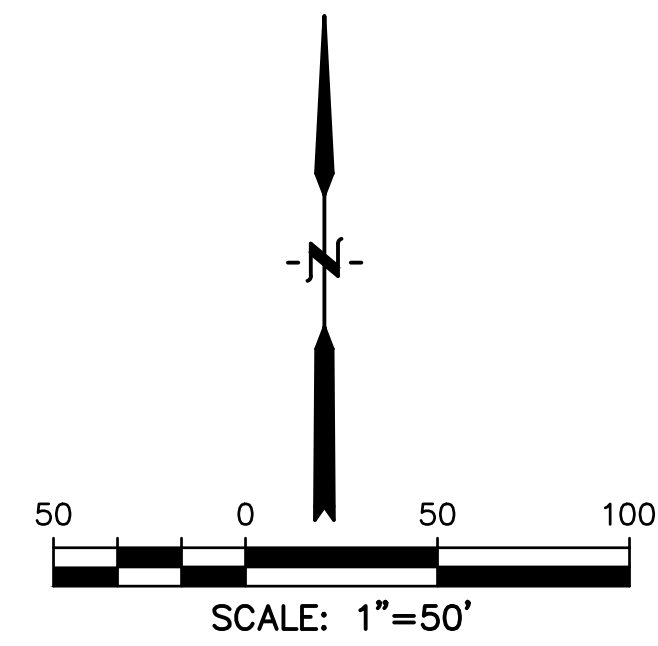
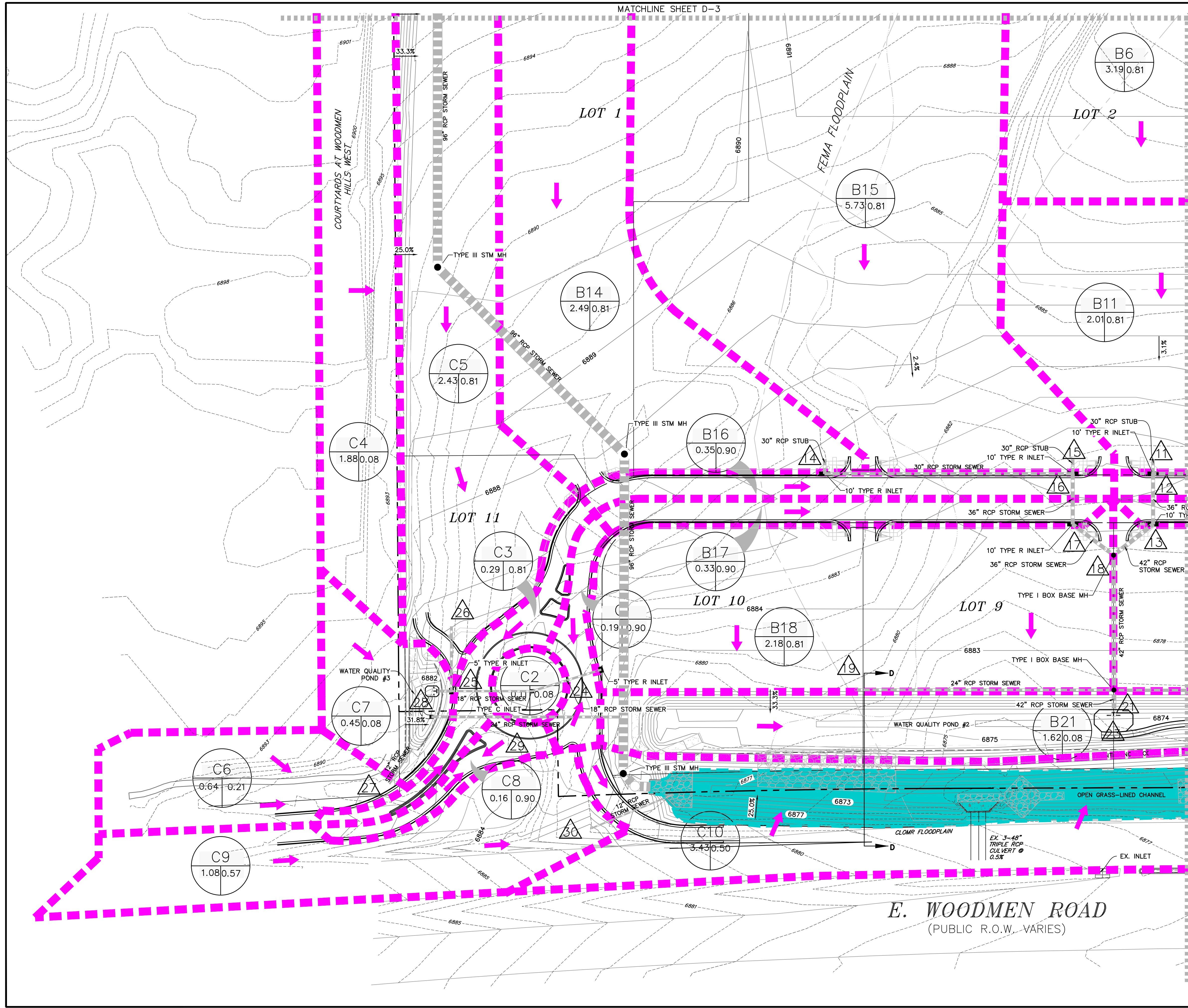
Storm Sewer Profile

Proj. file: 100YR.stm



Storm Sewer Profile





RUNOFF SUMMARY

BASIN	DP	Area (Ac.)	Q _s (CFS)	Q ₁₀₀ (CFS)
A1	DP1	1.79	3.4	7.7
A2		0.06	0.0	0.2
	DP2	1.85	3.4	7.7
A3		4.82	1.4	10.2
	DP3	6.57	4.6	17.4
B4	DP4	2.35	9.7	17.7
B5		0.61	2.8	5.0
	DP5	2.96	12.4	22.6
B6	DP6	3.19	13.1	24.0
B7		0.44	2.0	3.6
	DP7	6.59	27.4	30.3
B8	DP8	1.04	4.3	7.8
B9		0.30	1.4	2.5
	DP9	1.35	5.7	10.3
B10		0.18	0.8	1.4
	DP10	8.11	33.8	41.9
B11	DP11	2.01	8.3	15.1
B12		0.18	0.8	1.5
	DP12	10.30	41.9	57.1
B13		0.20	0.9	1.6
	DP13	10.50	42.6	58.4
B14	DP14	2.49	9.9	18.0
B15	DP15	5.73	22.2	40.5
B16		0.35	1.6	2.9
	DP16	8.56	33.2	60.6
B17		0.33	1.5	2.7

BASIN	DP	Area (Ac.)	Q _s (CFS)	Q ₁₀₀ (CFS)
DP17		8.59	34.5	62.8
DP18		19.40	56.7	93.2
B18	DP19	2.18	9.0	16.4
B19	DP20	2.57	10.6	19.4
	DP21	24.15	73.9	124.7
B20	DP22	2.03	5.6	11.4
B21		1.62	0.5	4.0
	DP23	27.80	72.1	126.6
C1	DP24	0.19	0.9	1.6
C2		0.11	0.0	0.3
C3		0.29	1.3	2.4
	DP25	0.59	1.9	3.6
C4		1.88	0.6	4.2
C5		2.43	10.0	18.3
	DP26	4.31	7.6	16.7
C6	DP27	0.64	0.5	1.9
C7		0.45	0.2	1.2
	DP28	5.54	9.5	21.2
C8	DP29	0.16	0.7	1.3
C9		1.08	2.6	5.4
	DP30	1.24	3.2	6.5
C10		3.43	7.3	16.2
D1		2.62	4.1	8.8
D2		0.07	0.3	0.6
D3		0.07	0.3	0.6
DPO1		32.50	10.3	30.2

PREPARED BY:

DREXEL, BARRELL & CO.
Engineers • Surveyors
3 SOUTH 7TH STREET
COLORADO SPGS, COLORADO 80905
CONTACT: TIM D. McCONNELL, P.E.
(719)260-0887
BOULDER • COLORADO SPRINGS

CLIENT:

HUMMEL INVESTMENTS, LLC
8117 PRESTON ROAD, SUITE 120
DALLAS, TEXAS 75225
(214) 416-9820

DRAINAGE PLAN FOR

FALCON
MARKETPLACE
FALCON, COLORADO

ISSUE	DATE
INITIAL ISSUE	4-17-19
DESIGNED BY:	TDM
DRAWN BY:	KGW
CHECKED BY:	TDM
FILE NAME:	

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF DREXEL, BARRELL & CO.

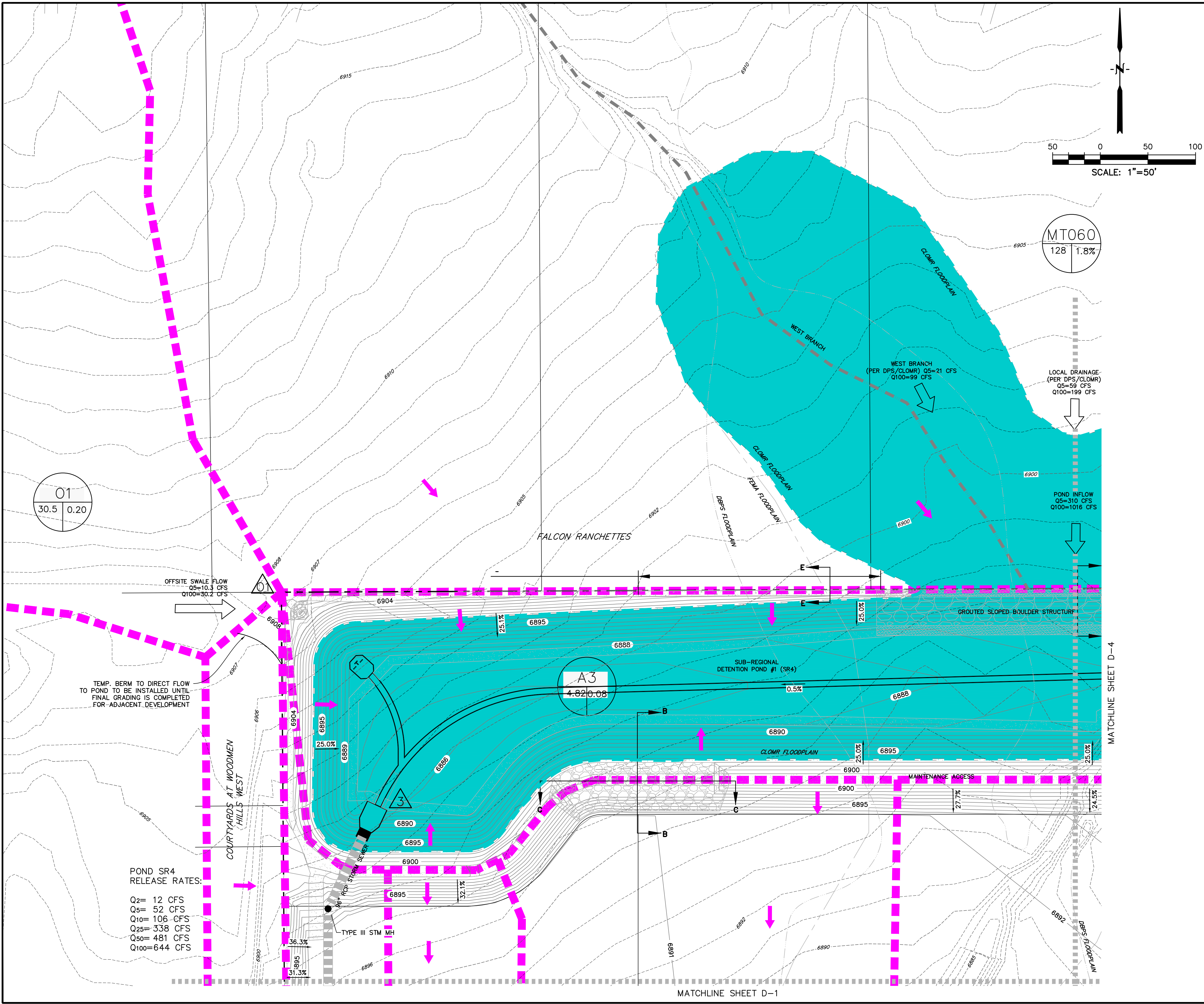
DRAWING SCALE:
HORIZONTAL: 1"=50'
VERTICAL: N/A

PROPOSED
DRAINAGE
CONDITIONS

PROJECT NO. 20988-00CSCV
DRAWING NO.

D-1

SHEET: 1 OF 5



POND SR4
RELEASE RATES:
Q2= 12 CFS
Q5= 52 CFS
Q10= 106 CFS
Q25= 338 CFS
Q50= 481 CFS
Q100=644 CFS

RUNOFF SUMMARY

BASIN	DP	Area (Ac.)	Q ₅ (CFS)	Q ₁₀₀ (CFS)
A1	DP1	1.79	3.4	7.7
A2		0.06	0.0	0.2
	DP2	1.85	3.4	7.7
A3		4.82	1.4	10.2
B4	DP3	6.67	4.6	17.4
B5	DP4	2.35	9.7	17.7
	DP5	0.61	2.8	5.0
B6	DP6	2.96	12.4	22.6
B7		0.44	2.0	3.6
B8	DP7	6.59	27.4	30.3
B9	DP8	1.04	4.3	7.8
	DP9	0.30	1.4	2.5
B10		1.35	5.7	10.3
	DP10	0.18	0.8	1.4
B11		8.11	33.8	41.9
B12	DP11	2.01	8.3	15.1
		0.18	0.8	1.5
	DP12	10.30	41.9	57.1
B13		0.20	0.9	1.6
	DP13	10.50	42.6	58.4
B14	DP14	2.49	9.9	18.0
B15	DP15	5.73	22.2	40.5
B16		0.35	1.6	2.9
	DP16	8.56	33.2	60.6
B17		0.33	1.5	2.7

BASIN	DP	Area (Ac.)	Q ₅ (CFS)	Q ₁₀₀ (CFS)
	DP17	8.89	34.5	62.8
	DP18	19.40	56.7	93.2
B18	DP19	2.18	9.0	16.4
B19	DP20	2.57	10.6	19.4
	DP21	24.15	73.9	124.7
B20	DP22	2.03	5.6	11.4
B21		1.62	0.5	4.0
	DP23	27.80	72.1	126.6
C1	DP24	0.19	0.9	1.6
C2		0.11	0.0	0.3
C3		0.29	1.3	2.4
	DP25	0.59	1.9	3.6
C4		1.88	0.6	4.2
C5		2.43	10.0	18.3
	DP26	4.31	7.6	16.7
C6	DP27	0.64	0.5	1.9
C7		0.45	0.2	1.2
	DP28	5.54	9.5	21.2
C8	DP29	0.16	0.7	1.3
C9		1.08	2.6	5.4
	DP30	1.24	3.2	6.5
C10		3.43	7.3	16.2
D1		2.62	4.1	8.8
D2		0.07	0.3	0.6
D3		0.07	0.3	0.6
	DPO1	32.50	10.3	30.2

PREPARED BY:



DREXEL, BARRELL & CO.
Engineers • Surveyors
3 SOUTH 7TH STREET
COLORADO SPGS, COLORADO 80905
CONTACT: TIM D. McCONNELL, P.E.
(719)260-0887
BOULDER • COLORADO SPRINGS

CLIENT:

HUMMEL INVESTMENTS, LLC
8117 PRESTON ROAD, SUITE 120
DALLAS, TEXAS 75225
(214) 416-9820

DRAINAGE PLAN FOR

FALCON
MARKETPLACE
FALCON, COLORADO

ISSUE	DATE
INITIAL ISSUE	4-17-19
DESIGNED BY:	TDM
DRAWN BY:	KGV
CHECKED BY:	TDM
FILE NAME:	

PREPARED UNDER MY DIRECT
SUPERVISION FOR AND ON BEHALF
OF DREXEL, BARRELL & CO.

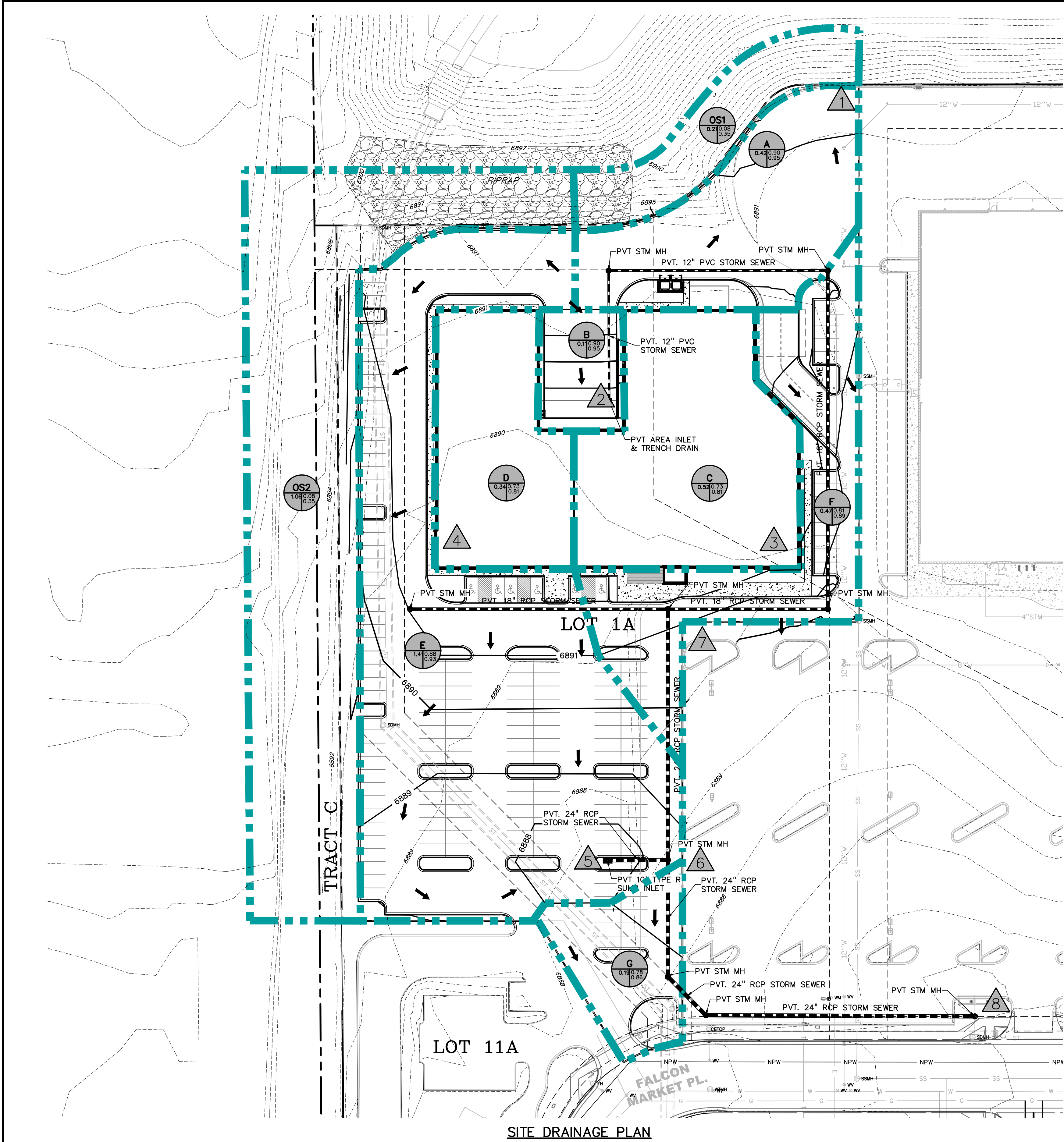
DRAWING SCALE:
HORIZONTAL: 1"=50'
VERTICAL: N/A

PROPOSED
DRAINAGE
CONDITIONS

PROJECT NO. 20988-00CSCV
DRAWING NO.

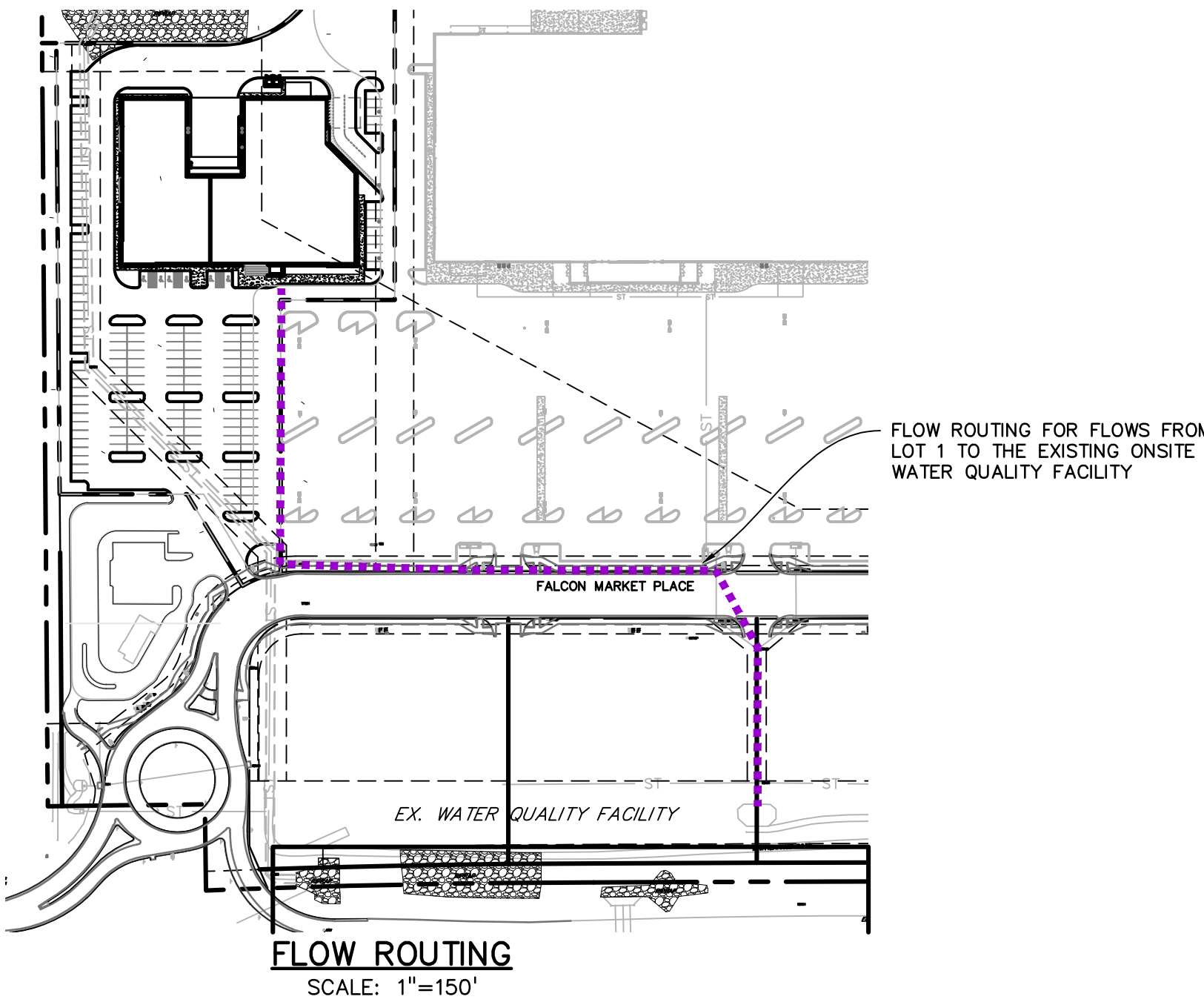
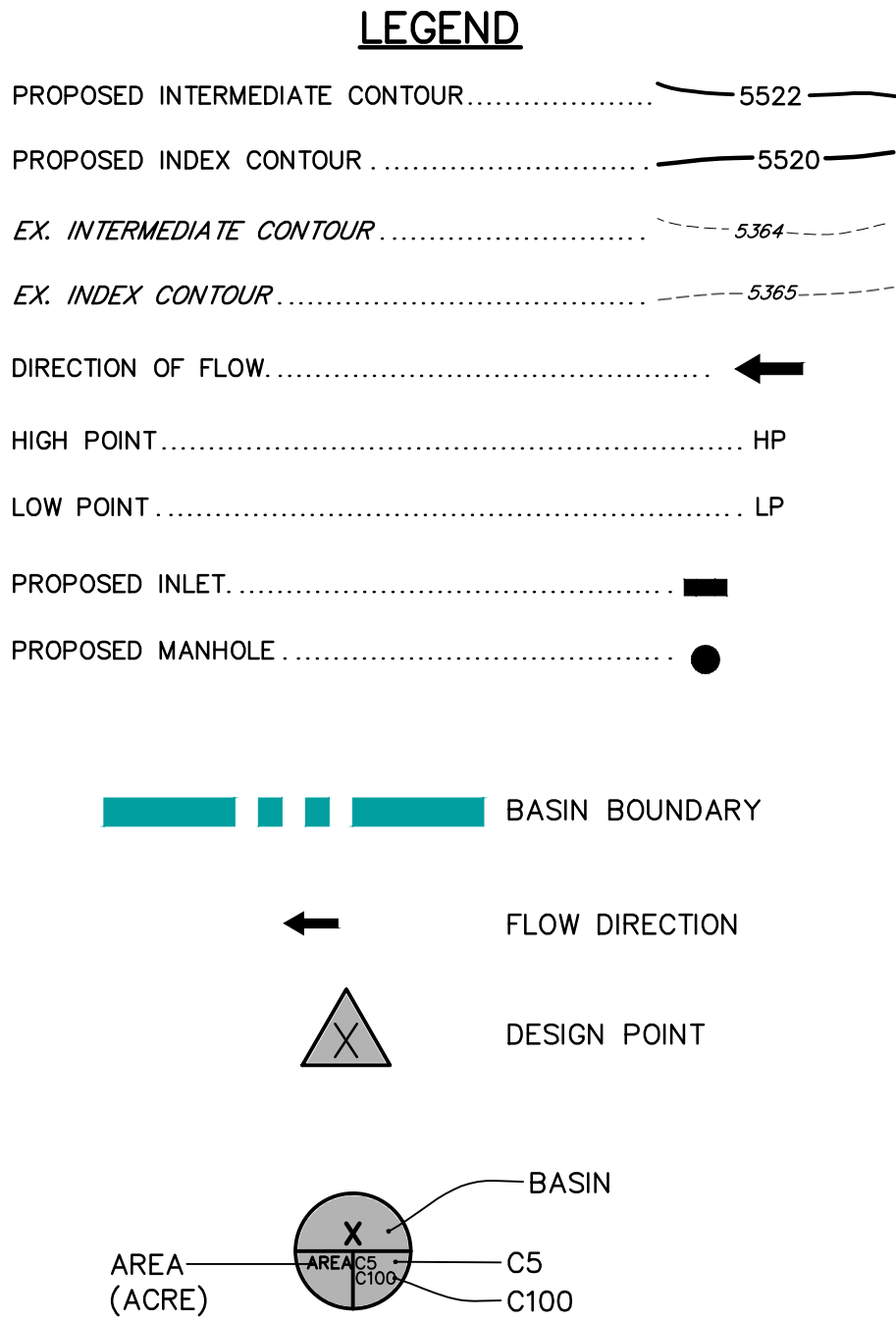
D-3

SHEET: 3 OF 5



SITE DRAINAGE PLAN

BASIN	DP	AREA (AC)	Q5 (cfs)	Q100 (cfs)
OS1		0.21	0.1	0.6
A		0.42	1.9	3.4
B	1	0.63	1.8	3.7
B	2	0.11	0.5	0.9
C		0.52	1.9	3.6
C	3	0.63	2.4	4.4
D	4	0.34	1.3	2.4
OS2		1.06	0.4	2.9
E		1.41	6.3	11.3
	5	2.47	5.9	12.7
	6	3.44	9.1	18.7
F	7	0.47	2.0	3.6
	8	3.92	10.4	20.9
G		0.19	0.6	1.1



FLOW ROUTING
SCALE: 1"=150'

PREPARED BY:

DREXEL, BARRELL & CO.
Engineers • Surveyors
101 SAWATCH ST., SUITE 100
COLORADO SPGS, COLORADO 80903
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COLORADO SPRINGS • LAFAYETTE

CLIENT:

EVERGREEN
MERIDIAN &
WOODMEN, LLC
2390 E CAMELBACK RD.,
SUITE #410
PHOENIX, AZ 85016

DRAINAGE PLANS FOR:

LOT 1A, FALCON
MARKETPLACE
EL PASO COUNTY, COLORADO

ISSUE	DATE
INITIAL ISSUE	09/15/23
REVISED	12/17/23
DESIGNED BY:	KGV
DRAWN BY:	CGH
CHECKED BY:	TDM
FILE NAME:	20988-13-DRN

PREPARED UNDER MY DIRECT
SUPERVISION FOR AND ON BEHALF
OF DREXEL, BARRELL & CO.

DRAWING SCALE:
HORIZONTAL: 1" = 40"
VERTICAL: N/A

PROPOSED
DRAINAGE
PLAN

PROJECT NO. 20988-13CSCV
DRAWING NO.

DRN

SHEET: 1 OF 1