

DRAINAGE LETTER
for
LOT 6 FALCON MARKETPLACE

7565 Falcon Market Place
Falcon, Colorado

December 8, 2022

PCD File No: PPR-22-049

Prepared for:

Evergreen-Meridian & Woodmen LLC
2390 E Camelback Road, #410
Phoenix, AZ 85016
Contact: Russell Perkins

Prepared by:

Drexel, Barrell & Co.
3 South Seventh Street
Colorado Springs, CO 80905
Contact: Tim McConnell, P.E.
(719) 260-0887

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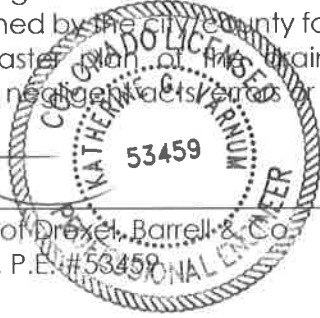
DRAINAGE LETTER
for
LOT 6, FALCON MARKETPLACE

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 or omissions on my part in preparing this report.

SIGNATURE (Affix Seal):



1/17/23

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

Date

Developer's Statement

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



1/24/23

Authorized Signature

Date

Evergreen-Meridian & Woodmen LLC
2390 E Camelback Road, #410
Phoenix, AZ 85016

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 / ECM Administrator

Date

Conditions:

DRAINAGE LETTER
for
LOT 6, 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 6 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 6 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 by Lot 5 of Falcon Marketplace to the north, Lot 7 of Falcon Marketplace to the south, Meridian Road to the east and Falcon Market Place to the west.

An ALTA and topographical field survey was completed by Drexel, Barrell & Co. dated March 10, 2022 and is used as the basis of design for the drainage improvements.

Proposed Development

The proposed development of Lot 6 is the construction of a fast-food restaurant, with associated parking and landscaping. The proposed disturbed area consists of 0.85 acres. The imperviousness of the site ($C_5=0.66$ and $C_{100}=0.77$ – reference rational calculations in the appendix) is very similar to that assumed in the approved Final Drainage Report ($C_5=0.68$ and $C_{100}=0.79$) 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), a hydrologic type A soil. 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 Zone A for the Unnamed Tributary to Black Squirrel Creek.

A LOMR to modify the floodplain was approved by FEMA, Case No. 21-08-0534P (October 7, 2021) with an effective date of 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 Basins B8 and B19 (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 detention facility Pond 2. An 18" RCP storm sewer stub has been provided to the lot for connection to the onsite storm sewer system in Falcon Market Place when development takes place.

6.0 DEVELOPED CONDITION

The proposed development consists of a fast-food restaurant and associated parking and landscaping. The proposed grading and storm system will route the majority of flows to the west where they will enter the existing 18" RCP storm sewer. All flows generated by Lot 6 will be directed towards the existing Falcon Marketplace water quality facility Pond 2 to the south. (See routing exhibit on drainage map in appendix).

A portion of this site will drain via curb and gutter flow to the south on Lot 7. This flow was anticipated with the development of Lot 7 and is further described below.

See below for basin/design point table and description:

BASIN	DP	AREA (AC)	Q5 (cfs)	Q100 (cfs)
A		0.41	1.9	3.3
B		0.17	0.1	0.4
A+B	1	0.58	1.6	3.2
C	2	0.33	1.3	2.4
D	3	0.10	0.1	0.4

Basin A covers the northwestern portion of Lot 6, including the building and the western portions of the parking lot. A crown in the drive aisle ensures that flows generated by the adjacent Lot 5 will remain offsite and be captured by the storm system design for that lot. Flows generated by this onsite basin A will travel along the curb lines to the south and west and be captured by a Type 16 combination inlet, located at a low point along the western curb line (DP-1). Flows captured by this inlet and roof drain connections from the building will continue to the north to tie into the existing storm manhole.

Basin B covers the western portion of Lot 6 adjacent to Falcon Market Place as well as the southern portion of Lot 6 that separates the Lot 6 and Lot 7 parking spaces. This area primarily drains to the north into the Lot 6 parking area where it will be captured by a Type 16 combination inlet, located at a low point along the western curb line (DP-1).

Both basins A and B channel their flows to design point 1 (DP-1), a type 16 combo inlet. These flows combine at the inlet before being directed north through a 12" PVC pipe where they then discharge to the west via existing private 18" storm sewer. This location is referenced on the existing conditions map at DP8, flows anticipated at this location were $Q_5=3.5$ cfs and $Q_{100}=6.9$ cfs, discharge flows actually reaching this location are $Q_5=1.6$ cfs and $Q_{100}=3.2$ cfs at DP1 for Lot 6, and $Q_5=2.3$ cfs and $Q_{100}=4.5$ cfs from Lot 5. The existing 18" storm sewer is sufficient to accommodate the additional minor flows. Flows ultimately discharge into the existing water quality facility (Pond 2) to the south.

Basin C (DP-2) covers the eastern portion of the Lot 6 parking lot. Flows will follow the curb line on either side of the roadway and travel south into Lot 7. Per the approved Final Drainage Letter for Lot 7 Falcon Marketplace, anticipated flow from this lot was $Q_5=2.4$ cfs and $Q_{100}=4.3$ cfs. The actual flow entering Lot 7 as a result of Lot 6 grading will be reduced to $Q_5=1.3$ cfs and $Q_{100}=2.4$ cfs. These flows will be captured by the onsite storm system installed with the development of Lot 7, and will be directed towards the existing water quality facility (Pond 2) to the south.

Basin D (DP-3) covers the eastern portion of Lot 6 adjacent to Meridian Road. This area drains directly towards Meridian Road, but is captured downstream by a curb chase where it is directed towards the onsite Pond 2 for water quality treatment. This area, with the exception of the existing sidewalk will remain impervious.

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 6 Falcon Marketplace will not adversely affect surrounding or downstream developments. The runoff coefficients established by Final Drainage Report for Falcon Marketplace for Basin B8 were $C_5=0.68$ and $C_{100}=0.79$, the combined runoff coefficients for Basins A-D for this development are slightly lower at $C_5=0.66$ and $C_{100}=0.77$, therefore, it is acceptable to state that the drainage design for Lot 6 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:

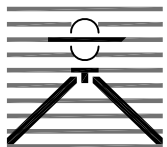
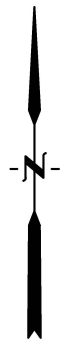
1. El Paso County Drainage Criteria Manual, 10-31-2018.
2. Final Drainage Report for Falcon Marketplace (Drexel, Barrell & Co.) 12-19-2019.
3. Drainage Letter for Lot 7, Falcon Marketplace (Drexel, Barrell & Co.) 10-17-2021.
4. El Paso County Engineering Criteria Manual, 10-14-2020

Appendix



Vicinity Map

NTS



FALCON MARKETPLACE VICINITY MAP

Drexel, Barrell & Co.
Engineers • Surveyors

DATE:
8/18/16

DWG. NO.

JOB NO:
20988-00

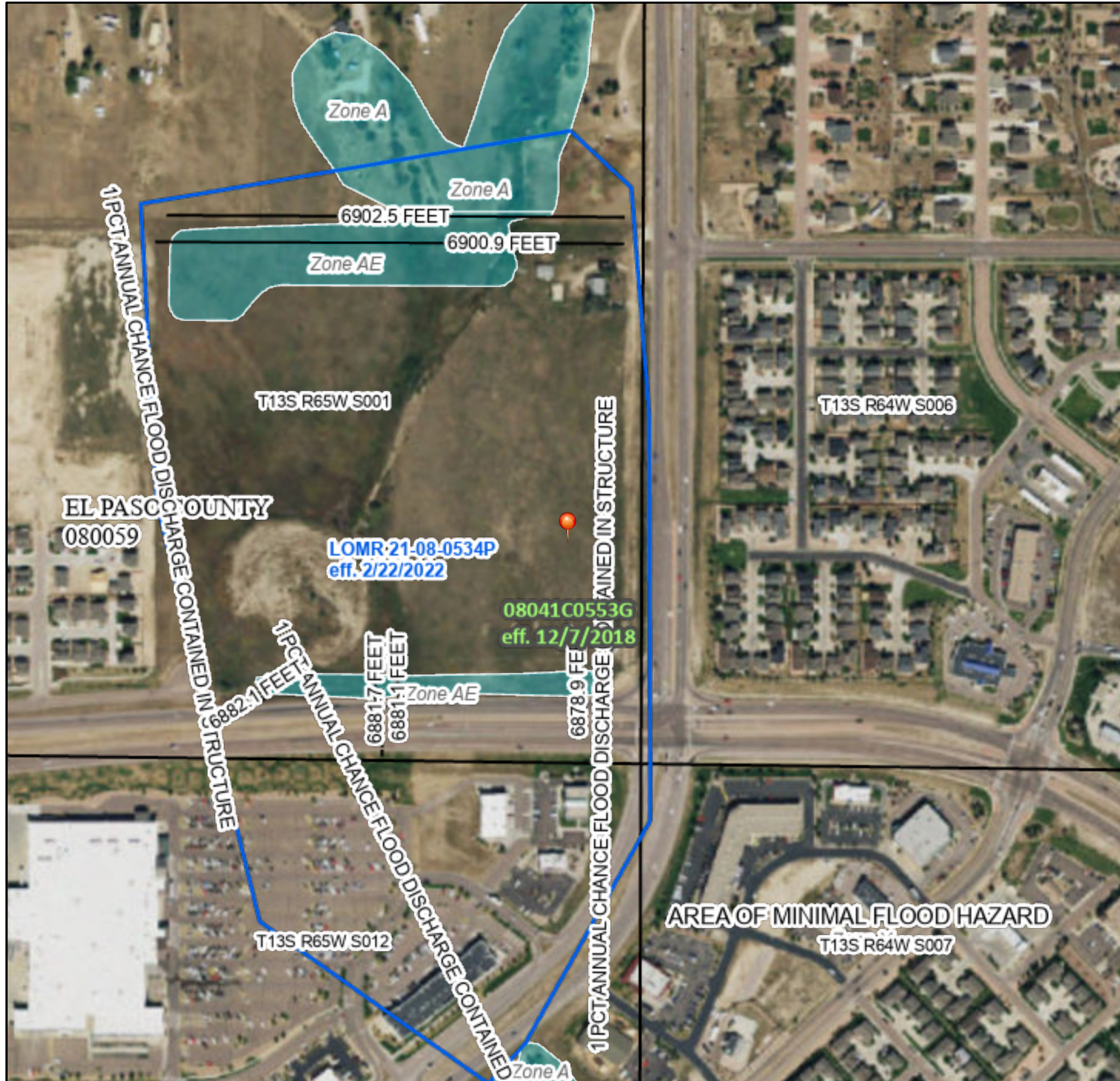
VMAP

SHEET 1 OF 1

National Flood Hazard Layer FIRMette



104°36'50"W 38°56'45"N



Legend

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

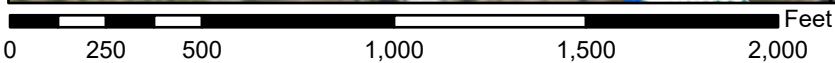
- | | | |
|------------------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
Zone A, V, A99 |
| | | With BFE or Depth Zone AE, AO, AH, VE, AR |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual 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 |
| | | 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 |
| | | Hydrographic Feature |
| 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 **11/14/2022 at 11:30 AM** 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.



1:6,000

104°36'12"W 38°56'17"N

Custom Soil Resource Report Soil Map



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 19, Aug 31, 2021

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	1.2	3.4%
9	Blakeland-Fluvaquentic Haplaquolls	16.2	44.1%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	19.2	52.5%
Totals for Area of Interest		36.6	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

Custom Soil Resource Report

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

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

Pleasant

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

Other soils

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

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: Flood plains, fan terraces, fans
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

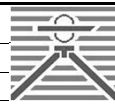
Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

PROJECT INFORMATION								
PROJECT:	Lot 6 Falcon Marketplace							
PROJECT NO:	20988-12							
DESIGN BY:	KGV							
REV. BY:	TDM							
AGENCY:	El Paso County							
REPORT TYPE:	Final							
DATE:	11/14/2022							
Soil Type: A								
				C2*	C5*	C10*	C100*	% IMPERV
Open Space					0.08		0.35	0
Commercial Development					0.81		0.88	90
Asphalt/Sidewalk/Roof					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		
A	Open Space	0.01		0.08		0.35	0	
	Commercial Development	0.00		0.81		0.88	90	
	Asphalt/Sidewalk/Roof	0.40		0.90		0.95	100	
	WEIGHTED AVERAGE			0.88		0.94	98%	
TOTAL A		0.41						
B	Open Space	0.17		0.08		0.35	0	
	Commercial Development	0.00		0.81		0.88	90	
	Asphalt/Sidewalk/Roof	0.00		0.90		0.95	100	
	WEIGHTED AVERAGE			0.08		0.35	0%	
TOTAL B		0.17						
C	Open Space	0.04		0.08		0.35	0	
	Commercial Development	0.00		0.81		0.88	90	
	Asphalt/Sidewalk/Roof	0.29		0.90		0.95	100	
	WEIGHTED AVERAGE			0.80		0.88	88%	
TOTAL C		0.33						
D	Open Space	0.08		0.08		0.35	0	
	Commercial Development	0.00		0.81		0.88	90	
	Asphalt/Sidewalk/Roof	0.02		0.90		0.95	100	
	WEIGHTED AVERAGE			0.27		0.49	23%	
TOTAL D		0.10						
	Overall Site	1.01		0.66		0.77	71%	



Drexel, Barrell & Co.

PROJECT INFORMATION

PROJECT: Lot 6 Falcon Marketplace
 PROJECT NO: 20988-12
 DESIGN BY: KGV
 REV. BY: TDM
 AGENCY: El Paso County
 REPORT TYPE: Final
 DATE: 11/14/2022



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 _s	C ₁₀₀	AREA	LENGTH	HT	SLOPE	t _i	LENGTH	HT	SLOPE	VEL.	t _t	COMP.	MINIMUM	
				Ac	Ft	FT	%	Min	Ft	FT	%	FPS	Min	t _c	t _c	Min
A		0.88	0.94	0.41	50	1	3.5	1.9	214	1.5	1.9	5.9	0.6	2.5	5	5.0
B		0.08	0.35	0.17	50	1	4.0	8.5	105	1	1.5	4.2	0.4	8.9	5	8.9
A+B	1	0.65	0.76	0.58					120	1	1.5	5.9	0.3	9.3	5	9.3
C	2	0.80	0.88	0.33	50	1	2.9	2.8	180		2.9	5.6	0.5	3.3	5	5.0
D	3	0.27	0.49	0.10	20	0.2	5.2	4.0	70		5.9	3.8	0.3	4.3	5	5.0

PROJECT INFORMATION

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RATIONAL METHOD CALCULATIONS FOR STORM WATER RUNOFF

PROPOSED RUNOFF 5 YR STORM P1= 1.50

BASIN (S)	DESIGN POINT	AREA (AC)	DIRECT RUNOFF		C * A	I (IN/HR)	Q (CFS)
			RUNOFF COEFF	t _c (MIN)			
A		0.41	0.88	5.0	0.36	5.10	1.9
B		0.17	0.08	8.9	0.01	4.28	0.1
A+B	1	0.58	0.65	9.3	0.38	4.22	1.6
C	2	0.33	0.80	5.0	0.26	5.10	1.3
D	3	0.10	0.27	5.0	0.03	5.10	0.1

PROJECT INFORMATION

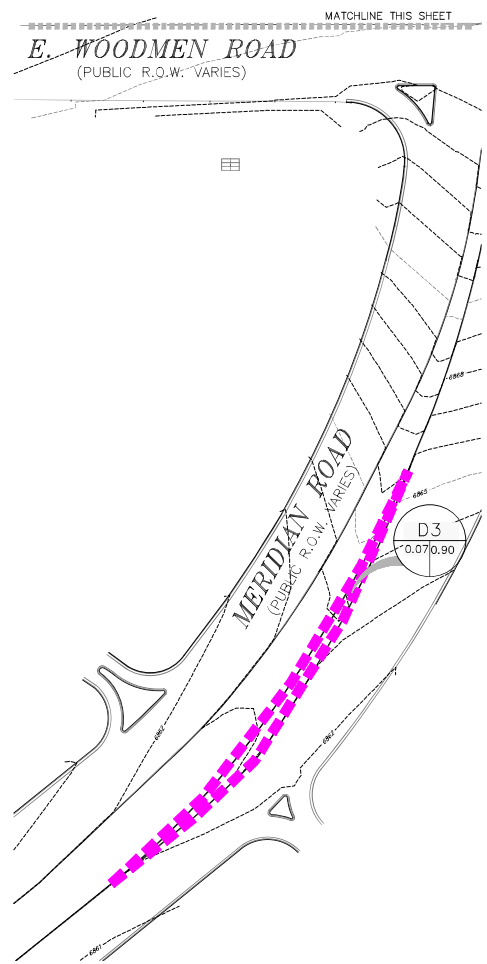
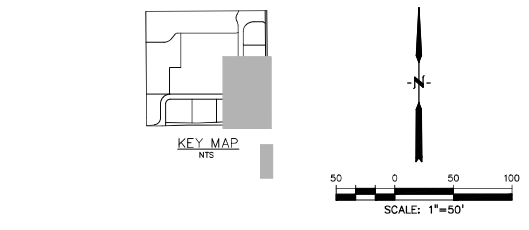
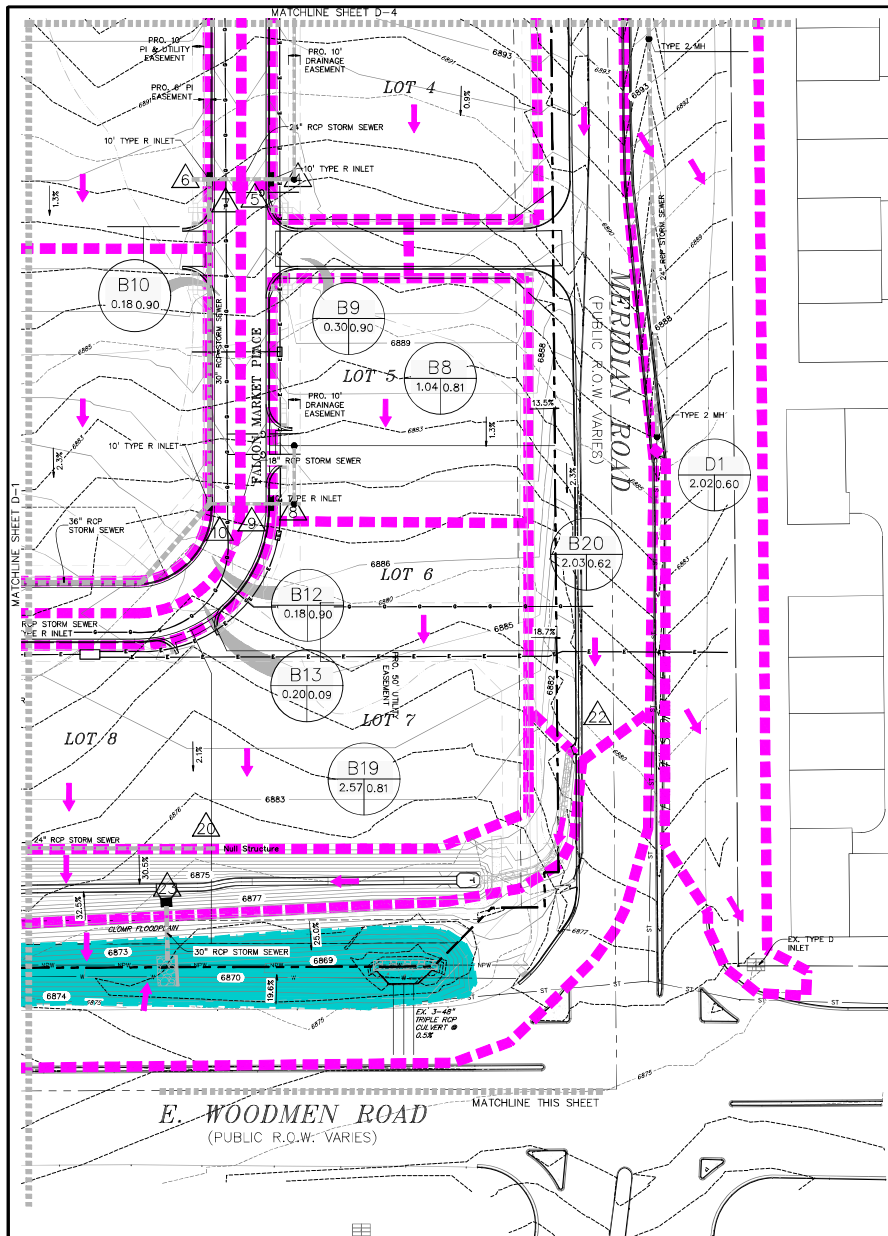
PROJECT: Lot 6 Falcon Marketplace
 PROJECT NO: 20988-12
 DESIGN BY: KGV
 REV. BY: TDM
 AGENCY: El Paso County
 REPORT TYPE: Final
 DATE: 11/14/2022



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)
			RUNOFF COEFF	t _c (MIN)			
A		0.41	0.94	5.0	0.38	8.58	3.3
B		0.17	0.35	8.9	0.06	7.19	0.4
A+B	1	0.58	0.76	9.3	0.44	7.09	3.2
C	2	0.33	0.88	5.0	0.29	8.58	2.4
D	3	0.10	0.49	5.0	0.05	8.58	0.4



RUNOFF SUMMARY

BASIN	DP	Area (Ac)	Q ₁ (CFS)	Q ₂ (CFS)	Q ₃ (CFS)
A1	DP1	1.81	3.4	3.4	7.7
A2	DP2	1.81	3.4	3.4	7.7
B3	DP3	6.63	4.6	17.3	
B4	DP4	2.35	7.5	14.6	
B5	DP5	0.63	2.8	5.1	
B6	DP6	2.99	10.0	19.3	
B7	DP7	3.18	12.8	23.6	
B8	DP8	0.46	2.0	3.7	
B9	DP9	6.63	23.8	28.0	
B10	DP10	1.81	3.5	6.9	
B11	DP11	0.18	0.8	1.4	
B12	DP12	6.16	29.2	38.1	
B13	DP13	2.01	7.8	14.6	
B14	DP14	0.18	0.8	1.5	
B15	DP15	10.35	38.4	51.9	
B16	DP16	0.20	0.9	1.6	
B17	DP17	5.73	20.3	36.0	
B18	DP18	0.35	1.6	2.9	
B19	DP19	8.56	30.6	57.1	
B20	DP20	0.33	1.5	2.7	

BASIN	DP	Area (Ac)	Q ₁ (CFS)	Q ₂ (CFS)	Q ₃ (CFS)
B21	DP21	8.89	31.9	59.3	
B22	DP22	19.44	52.1	86.2	
B23	DP23	2.48	7.8	15.0	
B24	DP24	2.57	10.1	18.8	
B25	DP25	24.19	67.6	117.5	
B26	DP26	2.03	5.6	11.4	
B27	DP27	1.62	0.5	4.0	
B28	DP28	27.85	67.4	121.8	
B29	DP29	0.35	1.3	2.6	
B30	DP30	0.23	0.8	1.5	
B31	DP31	0.58	2.0	3.8	
B32	DP32	1.88	0.6	4.2	
B33	DP33	2.19	6.9	13.8	
B34	DP34	4.08	5.4	13.7	
B35	DP35	0.64	0.5	1.9	
B36	DP36	0.45	0.2	1.2	
B37	DP37	5.57	1.4	16.3	
B38	DP38	0.19	0.7	1.3	
B39	DP39	1.14	2.5	5.5	
B40	DP40	1.33	3.1	6.6	
B41	DP41	3.43	7.3	16.2	
B42	DP42	2.62	4.1	8.8	
B43	DP43	0.07	0.3	0.6	
B44	DP44	0.07	0.3	0.6	
B45	DP45	32.50	10.3	30.2	

PREPARED BY:

DREXEL, BARRELL & CO.
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 BOULDER • COLORADO SPRINGS

CLIENT:
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 8117 PRESTON ROAD, SUITE 120
 DAVIS, TEXAS 75735
 (214) 416-9520

DRAINAGE PLAN FOR
FALCON MARKETPLACE
 FALCON, COLORADO

ISSUE	DATE
INITIAL ISSUE	6-28-19
REVISED	7-19-19
DESIGNED BY:	TDM
DRAWN BY:	KGV
CHECKED BY:	TDM
FILE NAME:	

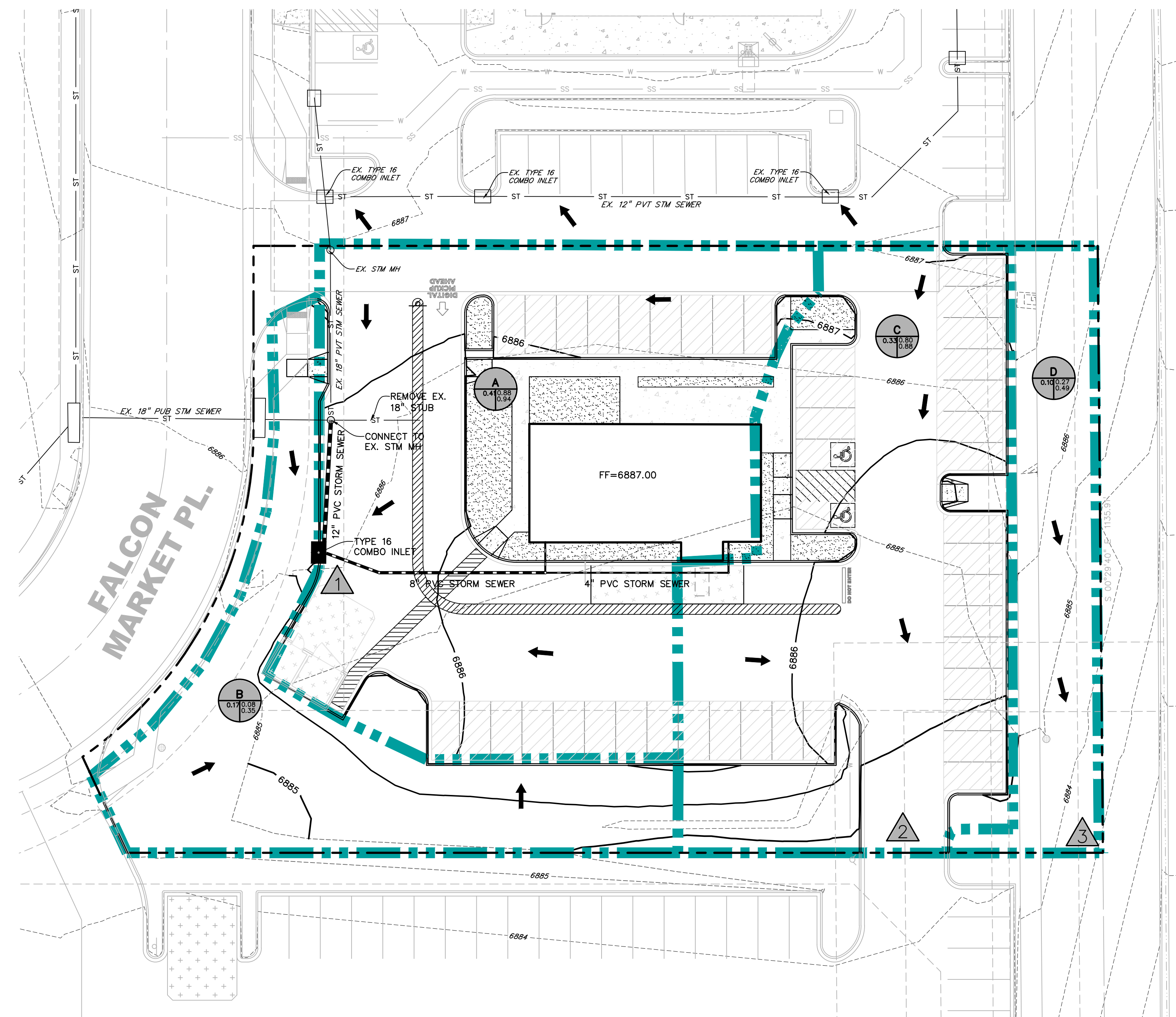
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF DREXEL, BARRELL & CO.
 DRAWING SCALE:
 HORIZONTAL: 1"=50'
 VERTICAL: N/A

PROPOSED DRAINAGE CONDITIONS

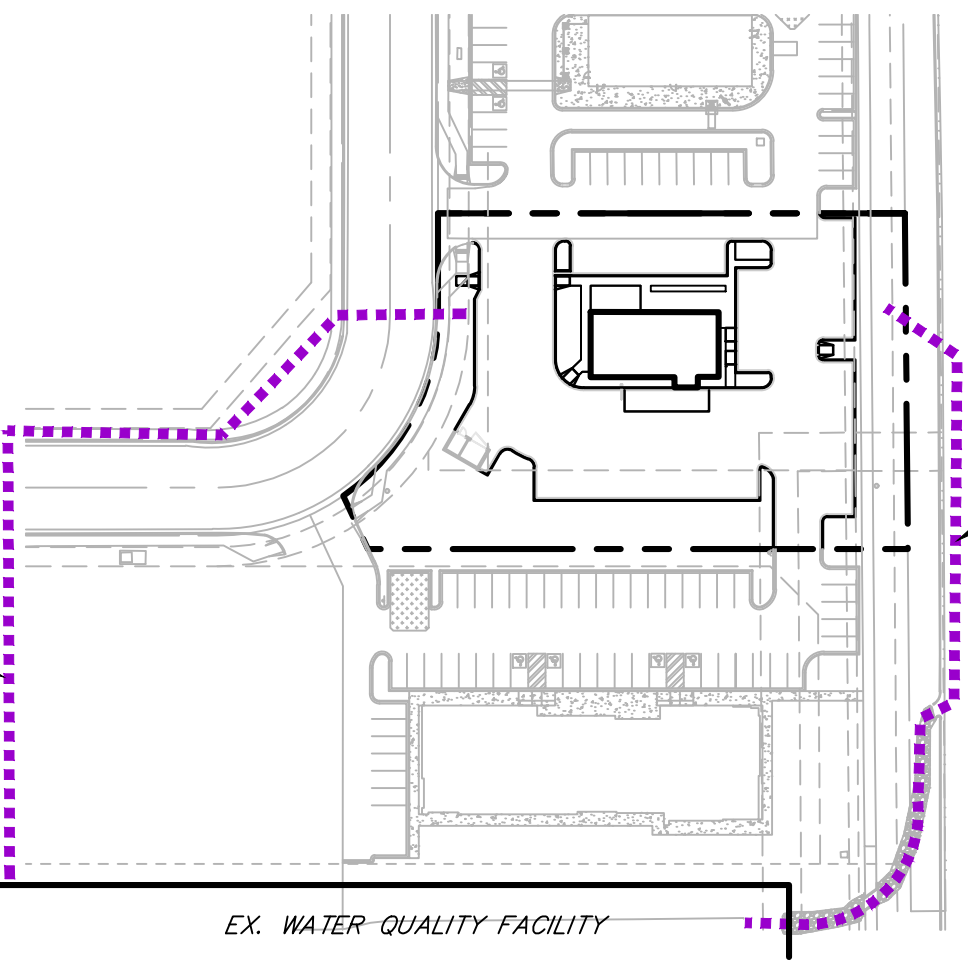
PROJECT NO. 201988-00CSSV
 DRAWING NO.

D-2

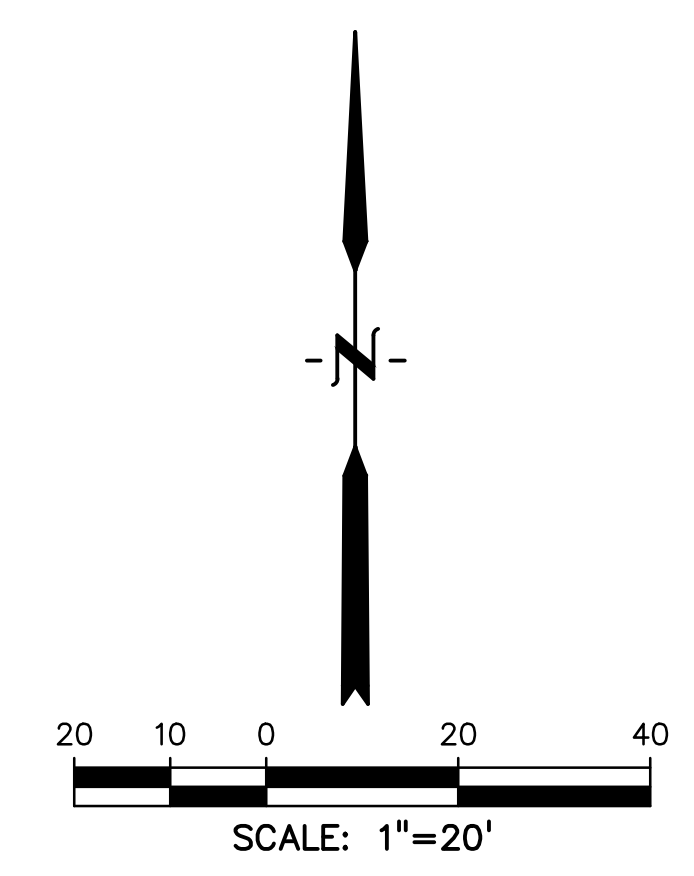
SHEET: 2 OF 5



SITE DRAINAGE PLAN

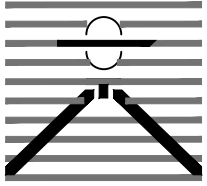


FLOW ROUTING
SCALE: 1"=100'



LEGEND

- PROPOSED INTERMEDIATE CONTOUR 5522
- PROPOSED INDEX CONTOUR 5520
- EX. INTERMEDIATE CONTOUR 5364
- EX. INDEX CONTOUR 5365
- DIRECTION OF FLOW ↑
- HIGH POINT HP
- LOW POINT LP
- PROPOSED INLET —
- PROPOSED MANHOLE ●
- — — — — BASIN BOUNDARY
- ← FLOW DIRECTION
- △ DESIGN POINT
- BASIN
AREA (ACRE) X AREA C100

PREPARED BY:

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 BOULDER • COLORADO SPRINGS • GREELEY

CLIENT:

DRAINAGE MAPPING PLANS FOR:
LOT 6, FALCON MARKETPLACE
 EL PASO COUNTY, COLORADO

ISSUE	DATE
INITIAL ISSUE	09/02/2022
LATEST ISSUE	11/14/2022
DESIGNED BY:	KGV
DRAWN BY:	SDM
CHECKED BY:	TDM
FILE NAME:	20988-12-DRN

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF DREXEL, BARRELL & CO.
 DRAWING SCALE:
 HORIZONTAL: 1" = 20"
 VERTICAL: N/A

PROPOSED DRAINAGE PLAN
 PROJECT NO. 20988-12CSCV
 DRAWING NO.

DRN
 SHEET: 1 OF 1