

**DRAINAGE LETTER**  
for  
**LOT 2, OWL MARKETPLACE FILING NO. 1**

Falcon, Colorado

**January, 2025**

**PCD File No: PPR-2434**

Prepared for:

**BurgerWorks, LLC**  
809 N. John Redditt  
Lufkin, TX 75904  
Contact: William Tamminga  
(936) 632-8296

Prepared by:

**Drexel, Barrell & Co.**  
101 Sawatch Street, STE #100  
Colorado Springs, CO 80903  
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(719) 260-0887

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**DRAINAGE LETTER**  
for  
**LOT 2, OWL 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. Date  
Katherine Varnum, P.E. #53459

**Developer's Statement**

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

\_\_\_\_\_  
Authorized Signature Date  
BHRE Investments, LLC  
450 N McClintock Drive  
Chandler, AZ 85226

**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. Date  
County Engineer / ECM Administrator

Conditions:

**DRAINAGE LETTER**  
for  
**LOT 2, OWL MARKETPLACE FILING NO. 1**

**2.0 PURPOSE**

The purpose of this letter is to supplement the Final Drainage Report for Owl Marketplace Filing No. 1 with regards to the development of Lot 2 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 2 Owl Marketplace Filing No. 1 is located in Falcon, El Paso County, Colorado, within the Southeast Quarter of Section 1, Township 13 South, Range 65 West of the 6<sup>th</sup> P.M. The property is bounded by Lot 1 and Lot 3 of Owl Marketplace to the south and north respectively, Meridian Road to the east, and Meridian Park Drive to the west.

Proposed Development

The proposed development of Lot 2 is the construction of a commercial fast-food restaurant building, with associated parking and landscaping. The proposed disturbed area consists of 0.99-acres. The imperviousness of the site will increase with this development but is less than that assumed in the approved Final Drainage Report for the overall Owl 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 08041C0553G (December 7, 2018), a portion of the site lies within Zone A of the effective floodplain.

A CLOMR to modify the effective floodplain was approved by FEMA, Case No. 22-08-0669R (December 21, 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 as Basin C in the Owl Marketplace Final Drainage Report (see appendix for drainage map excerpt). Overlot grading is currently underway, with roadway and utility installation anticipated to be in place before approval of this document. Runoff generated by this site will be collected by the onsite private 18" RCP storm sewer stub and directed to existing sub-regional Pond SR4 offsite to the southwest.

This drainage analysis is intended to establish that the proposed development of this site aligns with that assumed by the design for the overall development. A comparison will be made between the two developed conditions, rather than between developed and existing. See further discussion below.

#### **6.0 DEVELOPED CONDITION**

The proposed development consists of a fast-food restaurant building, and associated parking and landscaping. The proposed grading will route flows to the southwest where they will be collected by the onsite private 18" RCP storm sewer stub and directed to existing sub-regional Pond SR4 offsite to the southwest. This pond was designed with the future development of Owl Marketplace and will be able to accommodate the proposed runoff.

See below for basin/design point table and description:

<b>BASIN</b>	<b>DP</b>	<b>AREA (AC)</b>	<b>Q5 (cfs)</b>	<b>Q100 (cfs)</b>
A	DP1	0.08	0.4	0.7
B	DP2	0.14	0.5	1.0
C		0.13	0.6	1.0
	DP3	0.27	1.1	2.0
OS1		0.12	0.1	0.5
D		0.59	2.7	4.7
	DP4	0.98	3.7	6.8
	DP5	1.06	4.0	7.4
E		0.06	0.1	0.3

Although the existing condition of the site conveys runoff onto the project site, the Owl Marketplace Final Drainage Report plans for the developed condition of each of the lots within Owl Marketplace to contain the flows within their respective properties. As such, no offsite flow to the north has been considered as part of this analysis.

**Basin A** represents the roof of the proposed fast-food restaurant building. All rainfall that is captured within this area will be directed towards the roof drains along the northern edge of the roof. This roof drain system will capture the  $Q_5=0.4$  cfs and  $Q_{100}=0.7$  cfs of runoff and discharge into the proposed roof drain system at **Design Point 1**.

**Basin B** is 0.14-acres of drive-thru lane directly north of the proposed fast-food building. All of the runoff generated within this area will be channeled via curb and gutter to the west, where they will flow into Basin C at **Design-Point 2** with runoff rates of  $Q_5=0.5$  cfs and  $Q_{100}=1.0$  cfs.

**Basin C** runs along the western side of the proposed restaurant building. Runoff from this 0.13-acre basin will combine with flows from basin B and travel via curb and gutter south towards **Design-Point 3**. The flowrates generated within this basin will total  $Q_5=0.6$  cfs and  $Q_{100}=1.0$  cfs.

**Basin OS1** is located directly east of the property. This 0.06-acre basin will generate runoff rates of  $Q_5=0.1$  cfs and  $Q_{100}=0.5$  cfs, that will sheet flow directly into basin D.

**Basin D** covers 0.59-acres at the central and southern portions of the site. Runoff rates of  $Q_5=2.7$  cfs and  $Q_{100}=4.7$  cfs will be generated by this basin. Flows will combine with those from Basin OS1 and Design Point 3, and be directed south and west towards a proposed private 5' Type R sump inlet at **Design Point 4**. Coordination with the lot developer to the south indicates that a crowned drive-aisle between Lots 1 and 2 is proposed. The anticipated grading is displayed accordingly on the drainage map.

**Design Point 5** represents the pipe flow downstream of the proposed curb inlet at Design Point 4. Flows of  $Q_5=4.0$  cfs and  $Q_{100}=7.4$  cfs will discharge via private 18" RCP storm sewer into the offsite storm system. This flow rate is consistent with that anticipated by the original Final Drainage Report for Basin C ( $Q_5=4.5$  cfs and  $Q_{100}=8.2$  cfs).

**Basin E** covers 0.06-acres that is not tributary to the onsite storm system. Minimal flows of  $Q_5=0.1$  cfs and  $Q_{100}=0.3$  cfs generated by this basin will discharge directly into Meridian Park Drive and travel south to be intercepted by the existing public 10' Type R inlet 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, accounting for water quality capture volume treatment (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 be captured by onsite roadways and storm sewer systems as

much as possible to slow runoff and increase time of concentration prior to being conveyed to the existing detention pond. This will minimize directly connected impervious areas within the project site.

2. **Implement CM's that provide a Water Quality Capture Volume with slow release:** Runoff from this project will be routed through the sub-regional detention facility Pond SR4 immediately to the southwest of the Owl Marketplace property.
3. **Stabilize Drainage Ways:** The existing tributary that bisects the site and subsequent floodplain will be modified by installing a 10'x6' box culvert to intercept the upstream flows and direct towards the existing sub-regional detention facility SR4 to the southwest.
4. **Implement Site Specific and Other Source Control CM'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 2 Owl Marketplace will not adversely affect surrounding or downstream developments. The imperviousness established by Final Drainage Report for Owl Marketplace for Basin C was 95%, the imperviousness calculation for this development is 78%. Therefore, it is acceptable to state the drainage design for Lot 2 is in conformance with the Final Drainage Report for the overall Owl Marketplace development.

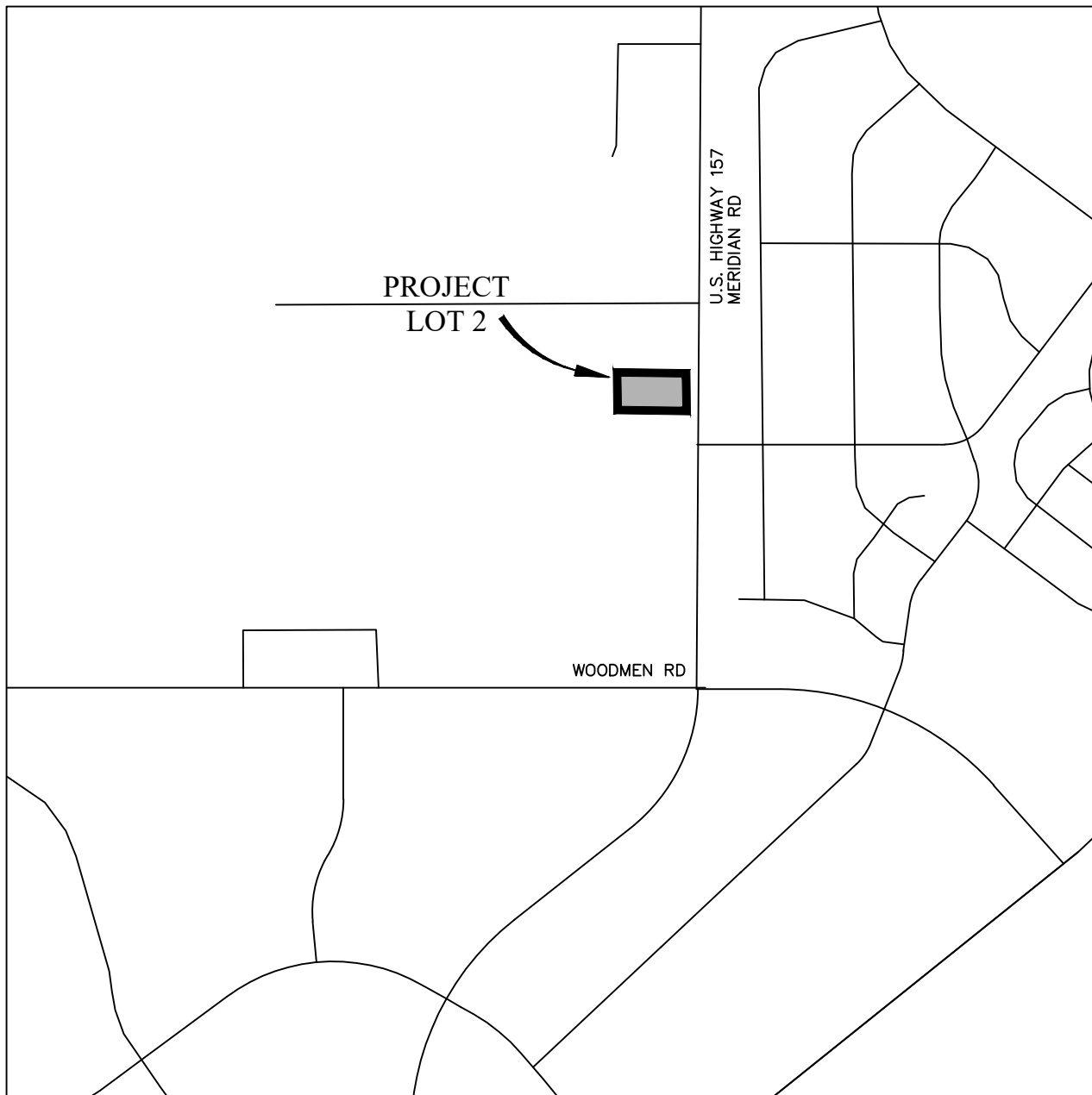
## **10.0 REFERENCES**

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

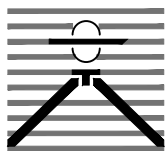
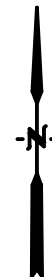
1. El Paso County Drainage Criteria Manual, 10-31-2018.
2. Final Drainage Report for Owl Marketplace Filing No. 1 (Drexel, Barrell & Co.)
3. Final Drainage Letter for Lot 1, Owl Marketplace Filing No. 1 (Galloway & Co.)

## Appendix





*Vicinity Map*  
Not to scale



**LOT 2 OWL MARKETPLACE  
EL PASO COUNTY, CO  
VICINITY MAP**

**Drexel, Barrell & Co.**  
Engineers • Surveyors

DATE:  
9-20-2024

JOB NO:  
21611-02CSCV

DWG. NO.

**VMAP**

SHEET 1 OF 1

# Custom Soil Resource Report Soil Map




Map Scale: 1:592 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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 21, Aug 24, 2023

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
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	1.4	100.0%
<b>Totals for Area of Interest</b>		<b>1.4</b>	<b>100.0%</b>

## 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.

## Custom Soil Resource Report

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

### 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

## Custom Soil Resource Report

### **Other soils**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

### **Pleasant**

*Percent of map unit:* 1 percent

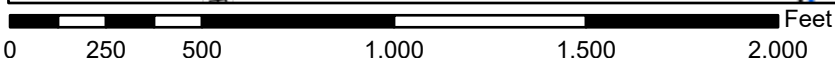
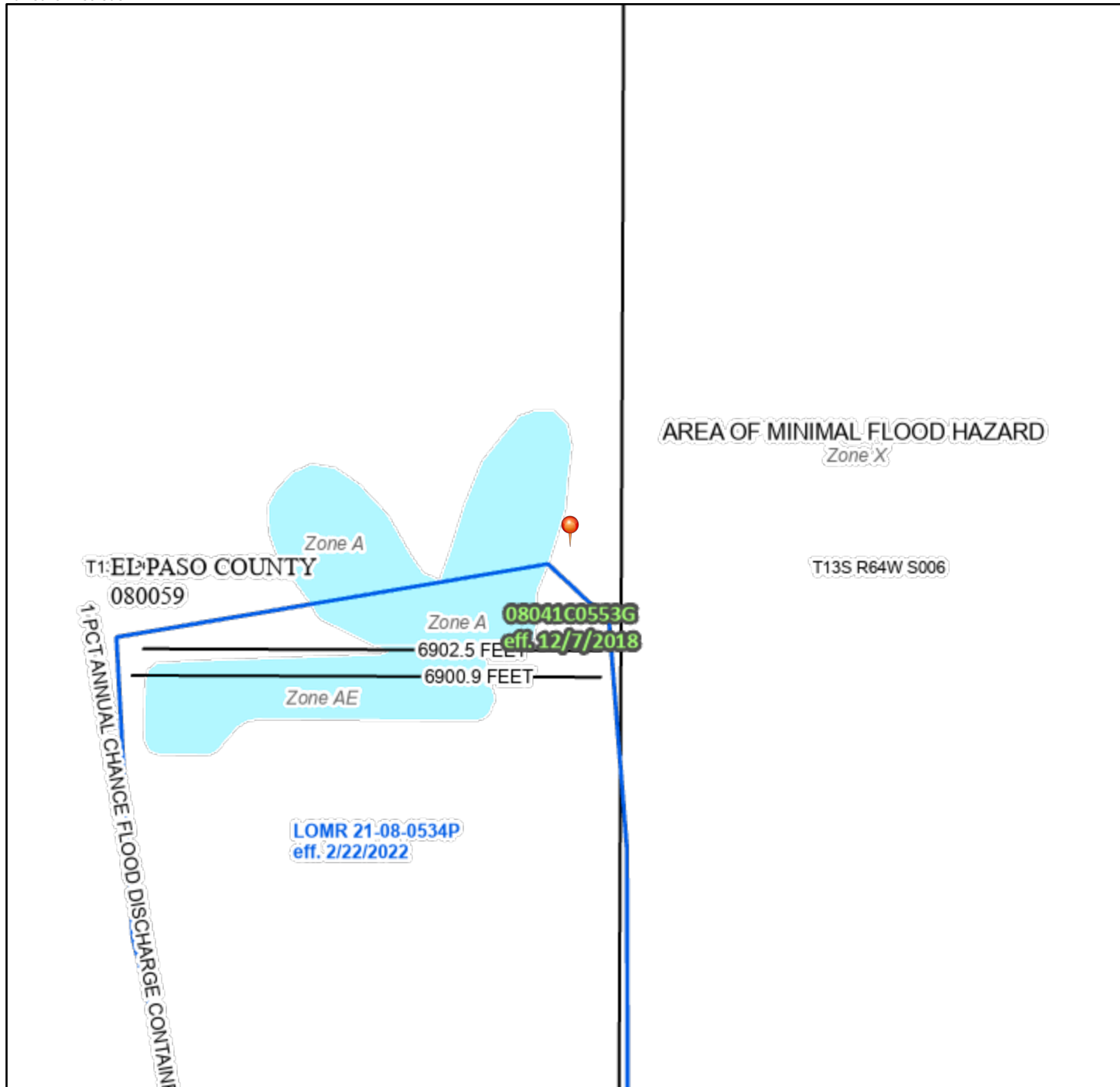
*Landform:* Depressions

*Hydric soil rating:* Yes

# National Flood Hazard Layer FIRMette



104°36'49"W 38°56'57"N



1:6,000 104°36'11"W 38°56'29"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) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		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 <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
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 **12/13/2023 at 3:27 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.



# PROJECT INFORMATION

**PROJECT:** Lot 2 Owl Marketplace  
**PROJECT NO:** 21611-02  
**DESIGN BY:** CGH  
**REV. BY:** KGV  
**AGENCY:** El Paso County  
**REPORT TYPE:** Final  
**DATE:** 1/7/2025  
**Soil Type:** A



Drexel, Barrell & Co.

	C2*	C5*	C10*	C100*	% IMPERV
<b>Open Space</b>		0.08		0.35	0
<b>Commercial Development</b>		0.81		0.88	90
<b>Asphalt/Sidewalk/Roof</b>		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 ACRE	COMPOSITE RUNOFF COEFFICIENTS				% IMPERV
			C2	C5	C10	C100	
<b>A</b>	Open Space	0.00		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.08		0.90		0.95	100
	WEIGHTED AVERAGE			0.90		0.95	100%
<b>TOTAL A</b>		0.08					
<b>B</b>	Open Space	0.03		0.08		0.35	0
	Commercial Development	0.00		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.11		0.90		0.95	100
	WEIGHTED AVERAGE			0.72		0.82	78%
<b>TOTAL B</b>		0.14					
<b>C</b>	Open Space	0.00		0.08		0.35	0
	Commercial Development	0.03		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.10		0.90		0.95	100
	WEIGHTED AVERAGE			0.88		0.93	98%
<b>TOTAL C</b>		0.13					
<b>OS1</b>	Open Space	0.10		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			0.24		0.47	20%
<b>TOTAL OS1</b>		0.12					
<b>D</b>	Open Space	0.00		0.08		0.35	0
	Commercial Development	0.10		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.49		0.90		0.95	100
	WEIGHTED AVERAGE			0.88		0.94	98%
<b>TOTAL D</b>		0.59					
<b>E</b>	Open Space	0.04		0.08		0.35	0
	Commercial Development	0.01		0.81		0.88	90
	Asphalt/Sidewalk/Roof	0.01		0.90		0.95	100
	WEIGHTED AVERAGE			0.37		0.56	35%
<b>TOTAL E</b>		0.06					
<b>TOTAL IMPERVIOUSNESS</b>		1.11		0.78		0.86	85%

## PROJECT INFORMATION

PROJECT: Lot 2 Owl Marketplace  
 PROJECT NO: 21611-02  
 DESIGN BY: CGH  
 REV. BY: KGV  
 AGENCY: El Paso County  
 REPORT TYPE: Final  
 DATE: 1/7/2025



## 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	HT	SLOPE	$t_i$	LENGTH	SLOPE	VEL.	$t_t$	COMP.	MINIMUM	
				Ac	Ft	FT	%	Min	Ft	%	FPS	Min	$t_c$	$t_c$	Min
A	DP1	0.90	0.95	0.08	50		0.5	3.3	60	0.5	1.4	0.7	4.0	5	<b>5.0</b>
B	DP2	0.72	0.82	0.14	30		2.0	3.1	208	1.6	2.5	1.4	4.4	5	<b>5.0</b>
C		0.88	0.93	0.13	30		2.4	1.7	132	1.7	2.6	0.8	2.5	5	<b>5.0</b>
DP2+C	DP3	0.80	0.87	0.27	From DP2			5.0	150	3.0	3.5	0.7	5.7	5	<b>5.7</b>
OS1		0.24	0.47	0.12	40		17.4	3.9	150	3.0	3.5	0.7	4.6	5	<b>5.0</b>
D		0.88	0.94	0.59	40		1.2	2.4	370	1.9	2.8	2.2	4.6	5	<b>5.0</b>
OS1+D+DP3	DP4	0.77	0.85	0.98	From DP3			5.7	50	1.6	2.5	0.3	6.1	5	<b>6.1</b>
DP1+DP4	DP5	0.78	0.86	1.06	From DP1			6.1	50	1.0	8.0	0.1	6.2	5	<b>6.2</b>
E		0.37	0.56	0.06	35		2.2	6.2	75	1.7	2.6	0.5	6.7	5	<b>6.7</b>

**PROJECT INFORMATION**

PROJECT: Lot 2 Owl Marketplace  
 PROJECT NO: 21611-02  
 DESIGN BY: CGH  
 REV. BY: KGV  
 AGENCY: El Paso County  
 REPORT TYPE: Final  
 DATE: 1/7/2025



**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 <sub>c</sub> (MIN)			
A	DP1	0.08	0.90	5.0	0.07	5.10	0.4
B	DP2	0.14	0.72	5.0	0.10	5.10	0.5
C		0.13	0.88	5.0	0.11	5.10	0.6
DP2+C	DP3	0.27	0.80	5.7	0.22	4.93	1.1
OS1		0.12	0.24	5.0	0.03	5.10	0.1
D		0.59	0.88	5.0	0.52	5.10	2.7
OS1+D+DP3	DP4	0.98	0.77	6.1	0.75	4.85	3.7
DP1+DP4	DP5	1.06	0.78	6.2	0.83	4.82	4.0
E		0.06	0.37	6.7	0.02	4.70	0.1

## PROJECT INFORMATION

PROJECT: Lot 2 Owl Marketplace  
 PROJECT NO: 21611-02  
 DESIGN BY: CGH  
 REV. BY: KGV  
 AGENCY: El Paso County  
 REPORT TYPE: Final  
 DATE: 1/7/2025

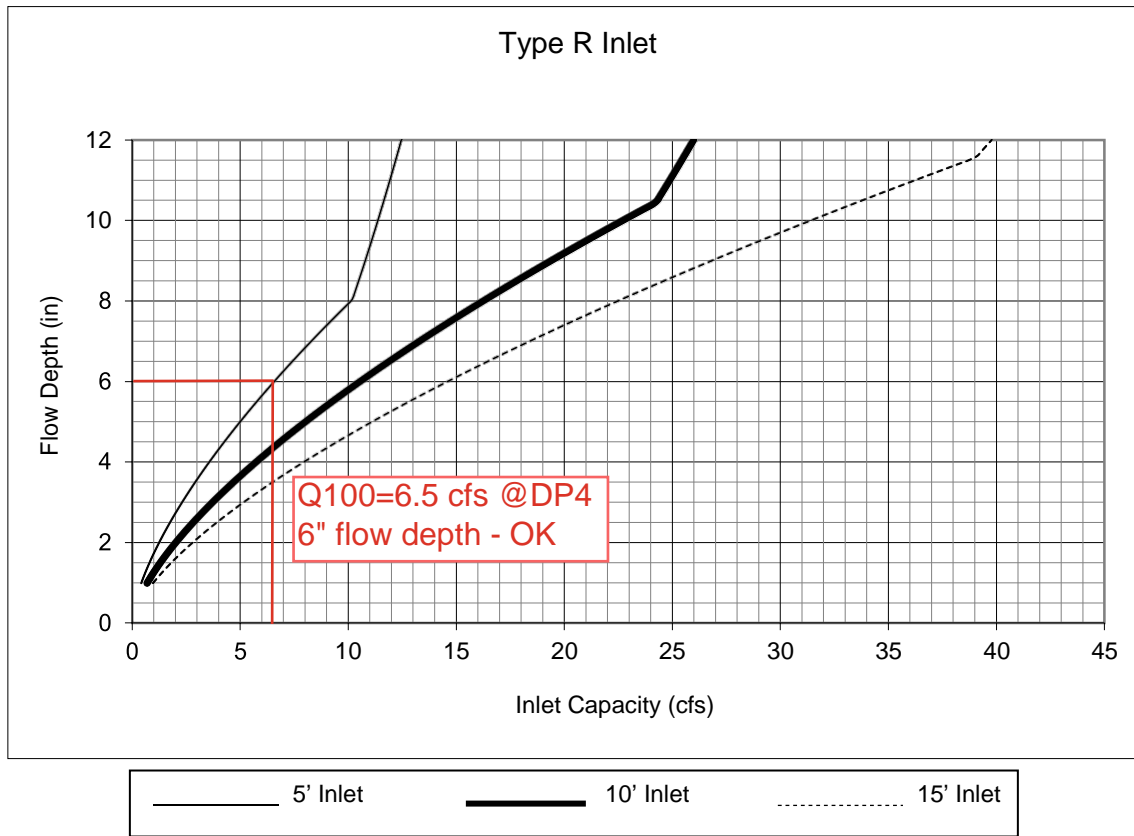


Drexel, Barrell & Co.

## 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)
			RUNOFF COEFF	t <sub>c</sub> (MIN)			
A	DP1	0.08	0.95	5.0	0.08	8.58	0.7
B	DP2	0.14	0.82	5.0	0.12	8.58	1.0
C		0.13	0.93	5.0	0.12	8.58	1.0
DP2+C	DP3	0.27	0.87	5.7	0.24	8.27	2.0
OS1		0.12	0.47	5.0	0.06	8.58	0.5
D		0.59	0.94	5.0	0.55	8.58	4.7
OS1+D+DP3	DP4	0.98	0.85	6.1	0.83	8.15	6.8
DP1+DP4	DP5	1.06	0.86	6.2	0.91	8.11	7.4
E		0.06	0.56	6.7	0.04	7.90	0.3

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



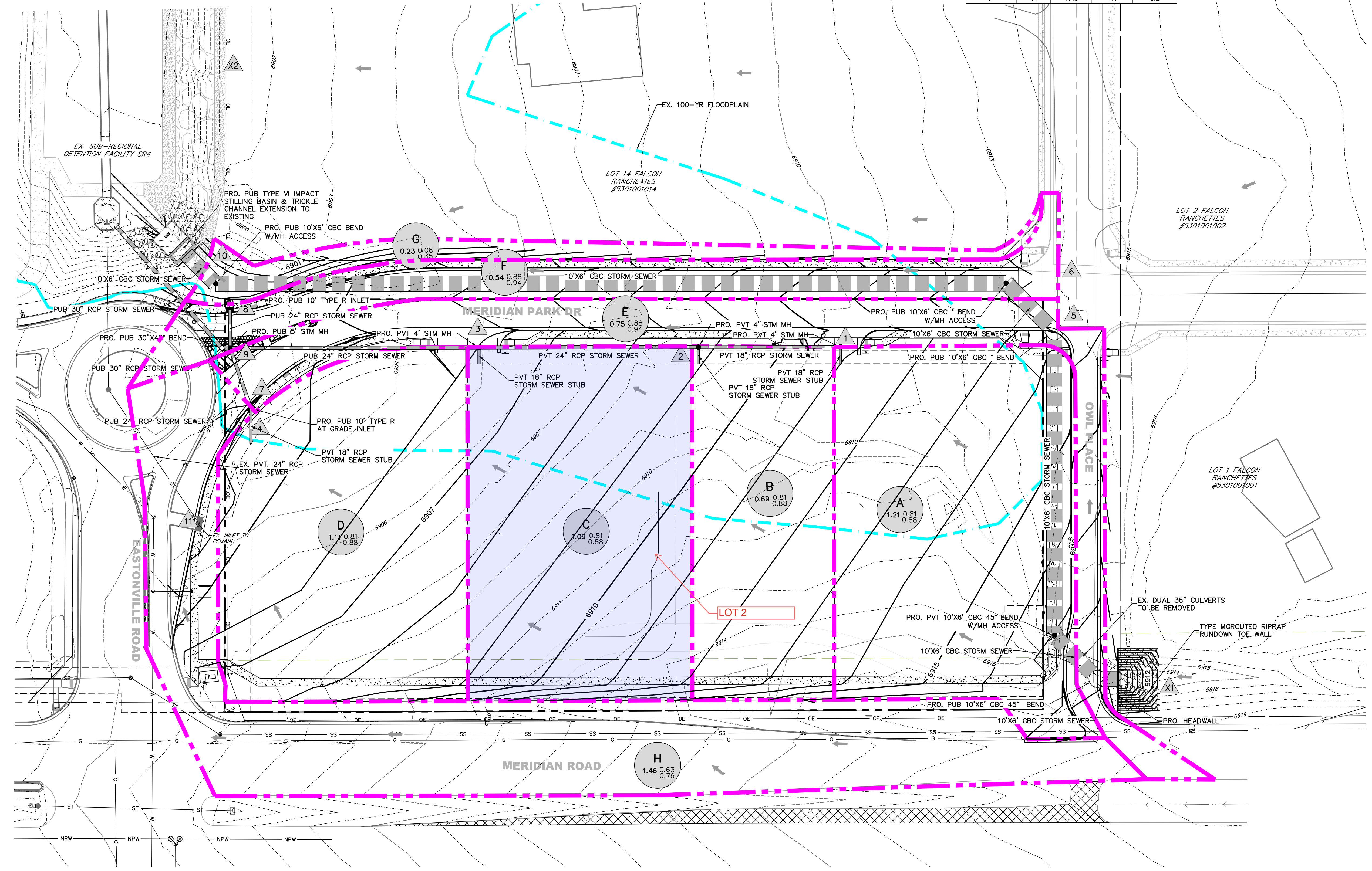
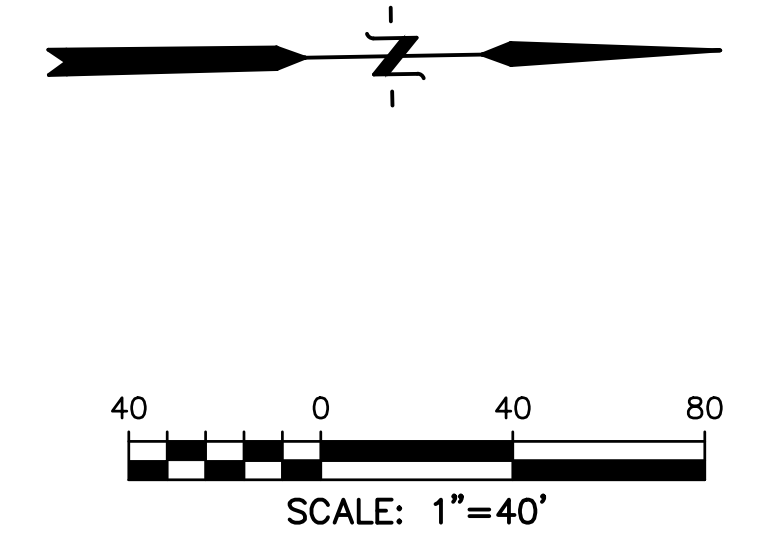
Notes:

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

**LEGEND**

- - - - - EX. MINOR CONTOUR
- - - - - EX. MAJOR CONTOUR
- - - - - PR. MINOR CONTOUR
- - - - - PR. MAJOR CONTOUR
- ST — EX. STORM DRAIN
- FLOODPLAIN BOUNDARY
- BASIN BOUNDARY
- ← FLOW DIRECTION
- △ DESIGN POINT
- BASIN
- C5
- C100

DEVELOPED				
BASIN	DP	Area (Ac.)	Q <sub>5</sub> (CFS)	Q <sub>100</sub> (CFS)
A	1	1.21	5.0	9.1
B	2	0.69	2.8	5.2
C	3	1.09	4.5	8.2
D	4	1.11	4.6	8.4
E	5	0.00	0.6	1.5
F	6	0.50	1.0	2.1
G	7	0.75	3.0	5.5
H	8	1.86	7.8	14.6
	9	0.54	2.4	4.3
	10	0.54	3.4	6.4
	11	5.38	22.1	40.9
	12	0.23	0.1	0.6
	13	1.46	4.1	8.2



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 CHANDLER, AZ 85226  
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DRAINAGE PLANS FOR:  
**OWL MARKETPLACE**  
 FALCON, COLORADO

ISSUE	DATE
INITIAL ISSUE	9-29-2023
RESUBMITTAL	3-11-2024

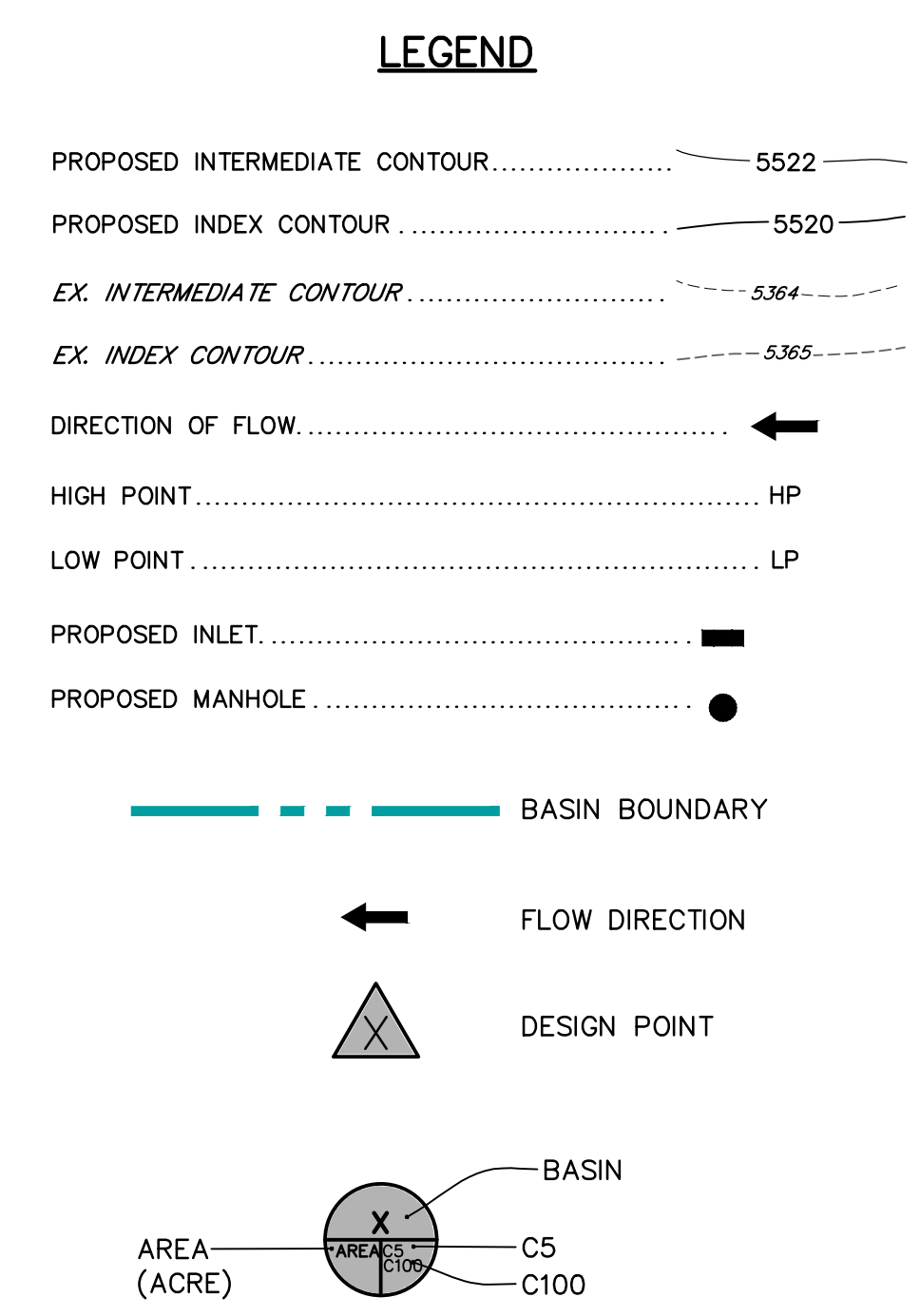
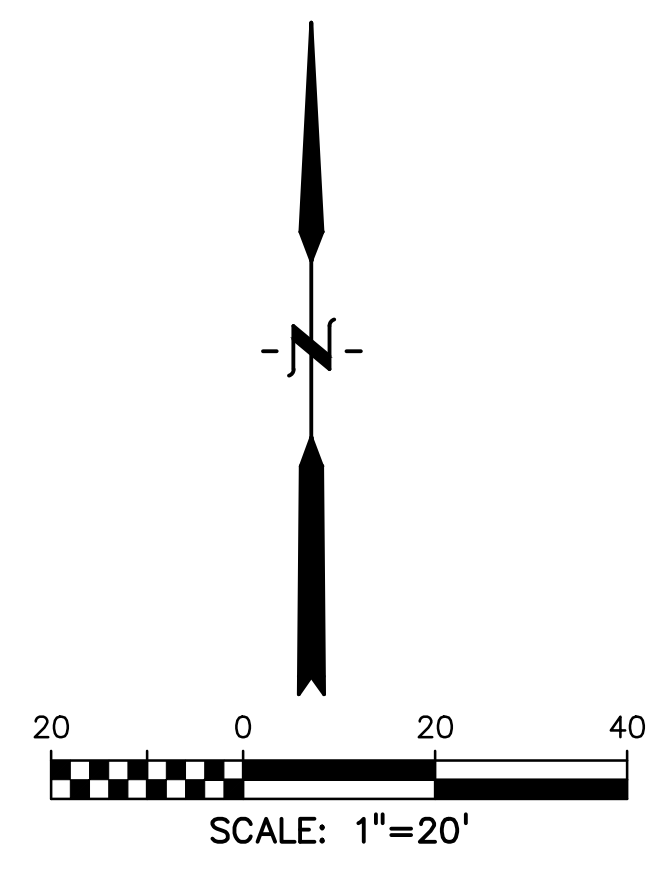
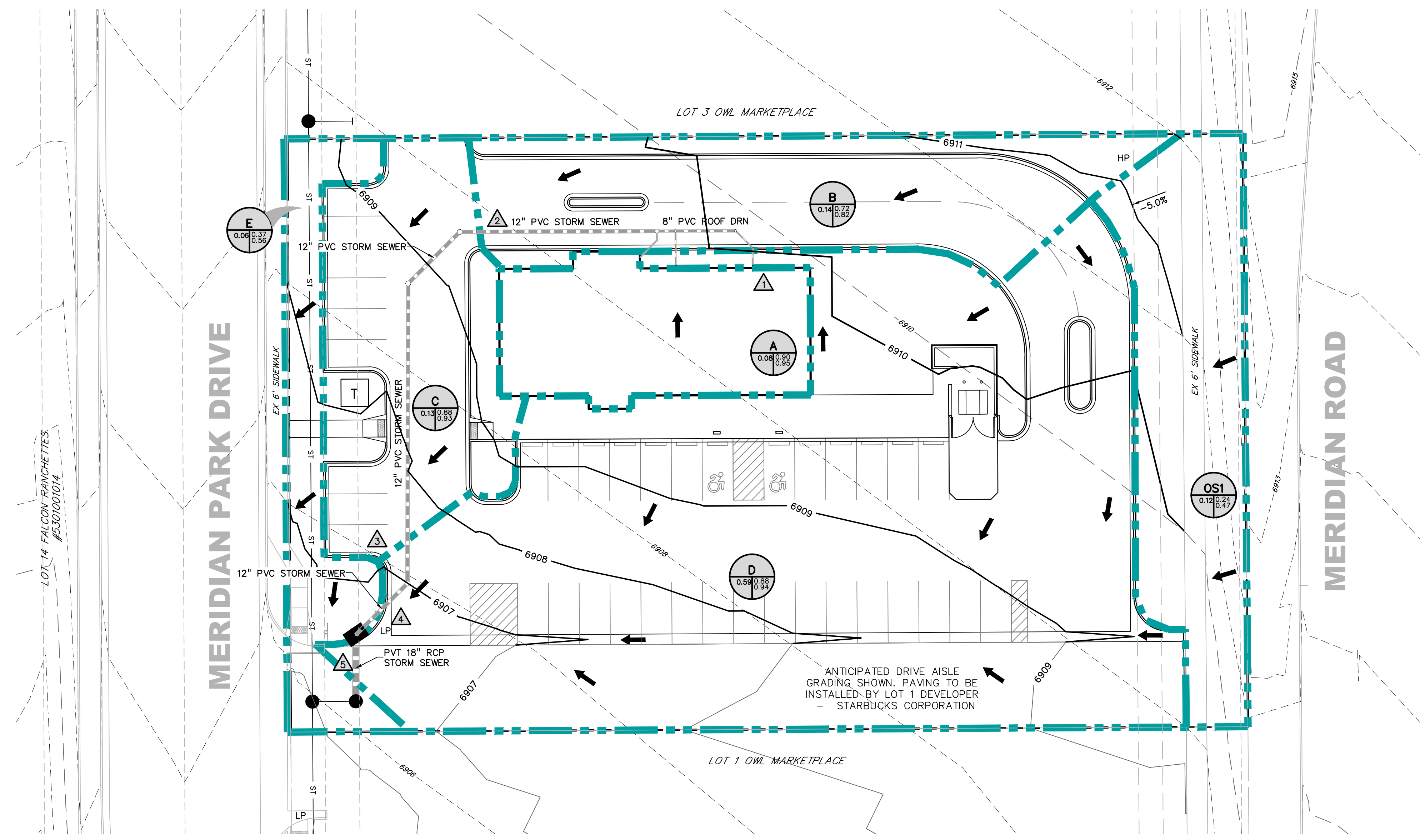
DESIGNED BY: KGV  
 DRAWN BY: CGH  
 CHECKED BY: TDM  
 FILE NAME: 21611-DRN-PP

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF DREXEL, BARRELL & CO.  
 DRAWING SCALE:  
 HORIZONTAL: 1" = 40"  
 VERTICAL: N/A

**PROPOSED DRAINAGE MAP**

PROJECT NO. 21611-01CSCV  
 DRAWING NO.

**DRN**



BASIN	DP	AREA (AC)	Q5 (cfs)	Q100 (cfs)
A	DP1	0.08	0.4	0.7
B	DP2	0.14	0.5	1.0
C	DP3	0.13	0.6	1.0
	DP3	0.27	1.1	2.0
OS1		0.12	0.1	0.5
D		0.59	2.7	4.7
	DP4	0.98	3.7	6.8
	DP5	1.06	4.0	7.4
E		0.06	0.1	0.3

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DRAINAGE PLANS FOR:  
**LOT 2, OWL MARKETPLACE**  
 EL PASO COUNTY, COLORADO

ISSUE	DATE
INITIAL ISSUE	09/20/2024
RESUBMITTAL	1/8/2025

DESIGNED BY: CGH  
 DRAWN BY: CGH  
 CHECKED BY: KGV  
 FILE NAME: 21611-02-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. 21611-02CSCV  
 DRAWING NO.

**DRN**  
 SHEET: 1 OF 1