



# MASTER DEVELOPMENT DRAINAGE PLAN

**LOTS 1, 2, 4, 5, 7, & 8 WESTVIEW ESTATES  
VILLAGE AT COTTONWOOD CREEK**

Tutt Blvd. & Woodmen Rd.  
Colorado Springs, CO 80924

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PREPARED FOR:  
**ENFR Management, LLC.**  
6617 N Scottsdale Rd.  
Scottsdale, AZ 85250

PREPARED BY:  
**Galloway & Company, Inc.**  
5500 Greenwood Plaza Blvd., Suite 200  
Greenwood Village, CO 80111

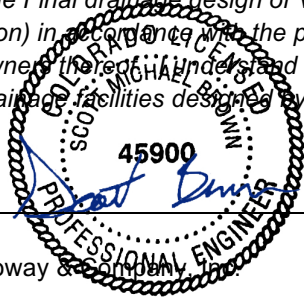
DATE:  
**December 22, 2022**

Village at Cottonwood Creek  
12/22/2022

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**ENGINEER'S STATEMENT**

*This report and plan for the Final drainage design of Village at Cottonwood Creek was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Colorado Springs Drainage Criteria Manual for the owner. I understand that the City of Colorado Springs does not and will not assume liability for drainage facilities designed by others.*



\_\_\_\_\_  
Scott Brown, PE #45900  
For and on behalf of Galloway & Company, Inc.

1/19/2023  
\_\_\_\_\_  
Date

**DEVELOPER'S CERTIFICATION**

*"ENFR Management, LLC. hereby certifies that the drainage facilities for Village at Cottonwood Creek shall be constructed according to the design presented in this report. I understand that the City of Colorado Springs does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that the City of Colorado Springs reviews drainage plans pursuant to section 7.7.906 of the City Code; but cannot, on behalf of Village at Cottonwood Creek, guarantee that final drainage design review will absolve ENFR Management, LLC. and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat does not imply approval of my engineer's drainage design."*

  
\_\_\_\_\_  
Authorized Signature  
ENFR Management, LLC.

1.19.2023  
\_\_\_\_\_  
Date

**DEVELOPER'S CERTIFICATION**

*"Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended."*

  
\_\_\_\_\_  
For City Engineer

2023/05/30  
\_\_\_\_\_  
Date

Conditions:

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## **I. INTRODUCTION**

This document is the Master Development Drainage Plan for Lots 1, 2, 4, 5, 7, & 8 Westview Estates, which consists of the vacant land in the area at the northeast corner of Powers Boulevard and Woodmen Road. It was prepared for ENFR Management, LLC. The purpose of this MDDP is to identify on and offsite drainage patterns, locate and identify tributary or downstream drainage features and facilities that impact the site and to identify which types of drainage facilities will be needed and where they will be located. Potential drainage issues associated with the proposed development will also be discussed, as well as possible solutions.

### **LOCATION**

Village at Cottonwood Creek – referred to herein as ‘site’ or ‘project site’ – consists of Lots 1, 2, 4, 5, 7, & 8 Westview Estates, and is generally located at the northeast corner of the intersection of Powers Boulevard and Woodmen Road. The project site is bordered to the north by large lot single-family development; to the south by Woodmen Road; to the east by Tutt Boulevard and an existing memory care facility; and to the west by Rustic Lane. The project site is part of the Southwest Quarter of Section 6, Township 13 South, Range 66 West of the 6<sup>th</sup> P.M., City of Colorado Springs, County of El Paso, State of Colorado. Refer to Appendix A for a vicinity map.

### **PROPOSED DEVELOPMENT**

The project site covers ±25.70 acres. The proposed improvements include 228 single-family and duplex lots, amenity areas, internal roadways, wet/dry utilities and landscaping in common areas. The site is currently undeveloped, other than several unpaved access roads and a single-family lot.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the project site consists of a mix of soil types and Hydrologic Soil Groups (HSGs) including:

- Stapleton-Bernal Sandy Loam, HSG ‘B’
- Blakeland Loamy Sand, HSG ‘A’

The predominant on-site HSG is ‘B’. Group B soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. Refer to Appendix A for soils information.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Map number 08041C0529G (map effective date December 7, 2018), the project site lies within Zone X and is outside of the 100-year and 500-year floodplains.

There are no major drainage ways or irrigation facilities onsite.

## **II. HISTORIC DRAINAGE**

### **OVERALL BASIN DESCRIPTION**

The project site is in the Cottonwood Creek Drainage Basin and was previously evaluated in the *MDDP for Powerwood Addition No. 2*, prepared by Associated Design Professionals, Inc., dated August 2003. The project site was identified for overlot grading with future uses including industrial, commercial, and multi-family development. Runoff was to be collected in a future storm sewer system and detained north of the site adjacent to Cottonwood Creek prior to entering the creek. Since the

time of the existing MDDP being written, adjacent sites have several planned developments that do not align with the existing MDDP, and therefore it no longer applies to the project site.

Other existing reports in the area include the *Preliminary/Final Drainage Report for Tutt Boulevard Filing No. 4 Woodman Road to Cowpoke Road*, prepared by Matrix Design Group, Inc. (April 2005); *Preliminary Drainage Report and Master Development Drainage Plan Amendment Tutt Boulevard Townhomes*, prepared by WSB (March 2022); and *Powers Boulevard Woodmen Road Interchange CDOT Project No. STU R200-097 Preliminary Drainage Report*, prepared by URS (February 2002). Relevant excerpts from this report have been included in Appendix A.

The *Preliminary/Final Drainage Report for Tutt Boulevard Filing No. 4 Woodman Road to Cowpoke Road*, prepared by Matrix Design Group, Inc. (April 2005), identifies drainage patterns for the development of Tutt Boulevard adjacent to the site and several lots east of Tutt Boulevard. The project site and other areas to the west of Tutt Boulevard are not addressed in this report.

The *Preliminary Drainage Report and Master Development Drainage Plan Amendment Tutt Boulevard Townhomes*, prepared by WSB (March 2022), identifies a townhome development northeast of the project site on the west side of Tutt Boulevard. This report shows a portion of the proposed project site as tributary to their development, identified in the report as Basin 100. A flared end section was included with this development to accept 0.2 cfs and 14.8 cfs respectively in the 5-year and 100-year storm events. The remainder of the proposed project site is not addressed in this report.

The *Powers Boulevard Woodmen Road Interchange CDOT Project No. STU R200-097 Preliminary Drainage Report*, prepared by URS (February 2002) identifies drainage patterns for a larger area adjacent to the intersection of Powers Boulevard and Woodmen Road. It shows a majority of the project site flowing to Woodmen Road, with a portion flowing to Powers Boulevard. Exact flows are unable to be determined from this report, and it predates the invalid MDDP for the project area.

Because the project site and surrounding areas have been modified from the original MDDP, a Historic Drainage Map has been included in Appendix D and can be used to reference the basins discussed below.

### **SUB-BASIN DESCRIPTION**

**Basin EX-A (5.37 AC, Q5 = 1.6 cfs, Q100 = 11.8 cfs)** is associated with the southern portion of the project site. It is undeveloped and comprised of unpaved access road and native soils and weeds. Runoff from this basin overland flows south where it is captured in an existing Type C inlet in landscaping north of Woodmen Road.

**Basin EX-B (7.36 AC, Q5 = 2.0 cfs, Q100 = 15.3 cfs)** is associated with the central and western portions of the project site. It is undeveloped and comprised of unpaved access road and native soils and weeds. Runoff from this basin overland flows west where it is captured in an existing Type C inlet in landscaping east of Powers Boulevard.

**Basin EX-C (5.90 AC, Q5 = 1.7 cfs, Q100 = 12.6 cfs)** is associated with the northwestern portion of the project site. It is mostly undeveloped and comprised of unpaved access road, native soils and weeds, and several structures. Runoff from this basin overland flows north where it enters an existing flow path continuing north into Cottonwood Creek.

**Basin EX-D (7.07 AC, Q5 = 1.8 cfs, Q100 = 14.3 cfs)** is associated with the northeastern portions of the project site. It is undeveloped and comprised of unpaved access road and native soils and weeds. Runoff from this basin overland flows north where it enters an existing flow path continuing north into Cottonwood Creek.

### III. DESIGN CRITERIA

#### DEVELOPMENT CRITERIA REFERENCE

The proposed MDDP was designed in accordance with the *City of Colorado Springs Drainage Criteria Manual* and the Mile High Flood District *Urban Storm Drainage Criteria Manual*.

#### HYDROLOGIC CRITERIA

Hydrology calculations were performed using Chapter 6 of the *City of Colorado Springs Drainage Criteria Manual* (May 2014, revised January 2021)

The drainage calculations were based on the criteria manual Figure 6-5 and IDF equations to determine the intensity and are listed in Table 1 below.

**Table 1 - Precipitation Data**

Return Period	One Hour Depth (in.)	Intensity (in/hr)
5-year	1.50	5.17
100-year	2.52	8.68

The rational method was used to calculate peak flows as the tributary areas are less than 100 acres. The rational method has been proven to be accurate for basins of this size and is based on the following formula:

$$Q = CIA$$

Where:

Q = Peak Discharge (cfs)

C = Runoff Coefficient

I = Runoff intensity (inches/hour)

A = Drainage area (acres)

The runoff coefficients are calculated based on land use, percent imperviousness, and design storm for each basin, as shown in the drainage criteria manual (Table 6-6). Composite percent impervious and C values were calculated using the streets, roofs, and lawns coefficients found in Table 6-6 of the manual.

#### HYDRAULIC CRITERIA

##### Street and Inlet Capacity

Street capacities will be designed for minor and major flows, the 5-year and 100-year storms, respectively, will be analyzed using the Mile High Flood District's Street and Inlet Hydraulics spreadsheet. The allowable flow is based on the regulated maximum flow spread and gutter flow line

depth, the street longitudinal and transverse slopes, the gutter geometry, the street roughness and any conveyance capacity behind the curb face. Street and inlet capacity will be designed with the final drainage report.

#### Storm Sewer

The storm drain system hydraulic analysis was completed using Bentley StormCAD V8i. This software routes flows based on the longest upstream Time of Concentration ( $t_c$ ) at each junction. Given the controlling  $t_c$ , StormCAD V8i calculates the flow at the junction with the corresponding intensity (e.g.,  $i_5$  and  $i_{100}$ ) and aggregate CA. All storm sewer pipes were sized for the 100-year storm event. Hydraulic grade lines for the storm drain system were calculated using StormCAD. Storm sewer will be designed with the final drainage report.

#### Detention and Water Quality Storage Facility

The on-site developed runoff will drain to four on-site detention ponds, Pond A, Pond B, Pond C and Pond D, which will provide Full Spectrum Detention. Proposed basins are tributary to the pond with the corresponding name. Outflows from each pond will be conveyed to the historic outfall for the corresponding basin. Each pond will provide full spectrum detention for its tributary area. The Mile High Flood District's MHFD-Detention v4.05 spreadsheet was utilized to provide required WQCV, EURV, and 100-year detention volumes which are shown in the table below. Detailed pond, outlet structure, and release rate design will be completed with the Final Drainage Report.

Required Detention Volumes			
	WQCV (ac-ft)	EURV (ac-ft)	100-year (ac-ft)
Pond A	0.130	0.306	0.265
Pond B	0.131	0.309	0.267
Pond C	0.118	0.277	0.240
Pond D	0.165	0.389	0.336

Pond volume calculations are included in Appendix C.

## **IV. FOUR STEP PROCESS**

### **1. Employ Runoff Reduction Practices**

The purpose of this step is to reduce runoff peaks and volumes from urbanizing areas through MDCIA (minimizing directly connected impervious areas). The intent of MDCIA is to reduce impervious area and route runoff from impervious areas through pervious areas to promote infiltration. The proposed development uses Low Impact Development (LID) practices to reduce runoff at the source. Rather than creating point discharges that are directly connected to impervious areas, runoff is routed through pervious areas to the extent possible. A Runoff Reduction spreadsheet is included in Appendix B and will be revised with the final drainage report. Green infrastructure will be designed with the final drainage report.

## **2. Implement BMP's That Provide a Water Quality Capture Volume with Slow Release**

This step utilizes formalized water quality capture control volume (WQCV) to slow the release of runoff from the site. Water quality for the project site is being provided by the four proposed full-spectrum detention basins. All ponds will utilize a 40 hour release rate for water quality and a 72 hour release rate for EURV. All runoff existing the site shall be treated prior to entering neighboring waterways.

## **3. Stabilize Drainageways**

This step implements stabilization to existing natural channels to accommodate developed flows while protecting infrastructure and controlling sediment loading from erosion in the drainageways. Improvements to Cottonwood Creek will be made with other developments adjacent to the creek. Release rates from the proposed ponds will be at or below the predevelopment values, therefore minimizing the impact on downstream infrastructure. Three of the downstream outlets are concrete inlets and pipes and therefore have sufficient stabilization. The fourth outfall is to the existing flow path and does not require any additional stabilization. The distance from the site outlet to the outfall point is up to 120'. All new and re-development projects are required to construct or participate in the funding of channel stabilization measures. Because this site has been platted, drainage basin fees are not due with this development.

## **4. Implement Site Specific and Other Source Control BMPs**

As this site is a residential development, the biggest source control BMP is public education which can be found on the City of Colorado Springs website and discuss topics such as: pet waste, car washing, private maintenance landscaping, fall leaves, and snow melt and deicer.

# **V. DRAINAGE PLAN**

## **GENERAL CONCEPT**

The proposed drainage concept is designed to safely convey the storm runoff generated from the proposed development and maintain existing regional drainage patterns. Based on the overall planning for the Village at Cottonwood Creek, the MDDP has provided four full-spectrum detention ponds. Ponds A is located in the southern portion of the site, Pond B is located in the western portion of the site, and Ponds C and D are located along the north of the site. These ponds will be designed to capture all runoff from their respective basins and release flows to their historic drainage points at or below the historic drainage rates established with the existing basins. The proposed ponds and outlet structures will be designed with the Final Drainage Report for the project site.

## **SUB-BASIN DESCRIPTION**

The proposed sub-basins reflect the existing sub-basins but have been modified to match the proposed development. The sub-basins will have the same ultimate outfall as the existing sub-basin of the same name.

**Basin A (6.15 AC, Q5 = 8.4 cfs, Q100 = 23.3 cfs)** is associated with the southern portion of the project site. Runoff from this basin will be conveyed to Pond A, and ultimately released to an existing Type C inlet in landscaping north of Woodmen Road. Basin A corresponds to Existing Basin EX-A and will release at or below the existing basin runoff rate.



**Basin B (6.20 AC, Q5 = 8.2 cfs, Q100 = 22.6 cfs)** is associated with the central and western portions of the project site. Runoff from this basin will be conveyed to Pond B, and ultimately released to an existing Type C inlet in landscaping east of Powers Boulevard. Basin B corresponds to Existing Basin EX-B and will release at or below the existing basin runoff rate.

**Basin C (5.56 AC, Q5 = 7.9 cfs, Q100 = 21.7 cfs)** is associated with the northwestern portion of the project site. Runoff from this basin will be conveyed to Pond C, and ultimately released to an existing flow path continuing north into Cottonwood Creek. Basin C corresponds to Existing Basin EX-C and will release at or below the existing basin runoff rate.

**Basin D (7.81 AC, Q5 = 10.5 cfs, Q100 = 28.8 cfs)** is associated with the northeastern portions of the project site. Runoff from this basin will be conveyed to Pond D, and ultimately released to an existing flow path continuing north into Cottonwood Creek. Basin D corresponds to Existing Basin EX-D and will release at or below the existing basin runoff rate.

### **STORMWATER CONVEYANCE FACILITIES**

Conveyance facilities to the proposed detention ponds shall be designed at a later date with the Final Drainage Report. All stormwater conveyance facilities proposed with the future development will be privately owned and maintained. Individual lots will be required to prepare Final Drainage Reports as they develop, or an amendment will need to be made to the MDDP if the project site is developed at one time.

## **VI. DRAINAGE AND BRIDGE FEES**

The project site has been previously platted and therefore no fees are due with this development.

## **VII. CONCLUSIONS**

This report for Village at Cottonwood Creek has been prepared using the criteria and methods as described in the City of Colorado Springs Drainage Criteria Manual, Volume 1. The proposed ponds will adequately provide water quality and full spectrum detention for all proposed development. They will ensure that onsite discharges do not exceed the historic, predevelopment release rates established. The downstream facilities are adequate to accept the proposed runoff from the site.

## **VIII. REFERENCES**

1. Urban Storm Drainage Criteria Manual, Urban Drainage and Flood Control District, January 2016 (with current revisions).
2. Drainage Criteria Manual, Volume 1, City of Colorado Springs, May 2014 (Revised January 2021)
3. Flood Insurance Rate Map – El Paso County, Colorado and Incorporated Areas Community Panel No. 08041C0529G, Effective December 7, 2018.
4. Soil Map – El Paso County Area, Colorado as available through the Natural Resources Conservation Service National Cooperative Soil Survey web site via Web Soil Survey 2.0.

5. Master Development Drainage Plan for Powerwood Addition No. 2, Associated Design Professionals, Inc., August 1, 2003
6. Preliminary/Final Drainage Report for Tutt Boulevard Filing No. 4 Woodman Road to Cowpoke Road, Matrix Design Group, Inc., March 2005 (Revised April 2005).
7. Preliminary Drainage Report and Master Development Drainage Plan Amendment Tutt Boulevard Townhomes, WSB, March 4, 2022 (Revised April 14, 2022).
8. Powers Boulevard Woodmen Road Interchange Project No. STU R200-097 Priliminary Drainage Report, URS, February 27, 2002.

## **IX. Appendices**

**APPENDIX A**  
**Exhibits and Figures**



VICINITY MAP  
SCALE: 1"=600'

Hydrologic Soil Group—El Paso County Area, Colorado



Soil Map may not be valid at this scale.

































Map Scale: 1:2,780 if printed on A portrait (8.5" x 11") 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 Rating Polygons**
    -  A
    -  A/D
    -  B
    -  B/D
    -  C
    -  C/D
    -  D
    -  Not rated or not available
  - Soil Rating Lines**
    -  A
    -  A/D
    -  B
    -  B/D
    -  C
    -  C/D
    -  D
    -  Not rated or not available
  - Soil Rating Points**
    -  A
    -  A/D
    -  B
    -  B/D
- Soils**
  -  C
  -  C/D
  -  D
  -  Not rated or not available
- 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: Aug 19, 2018—Sep 23, 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.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	A	0.4	1.4%
85	Stapleton-Bernal sandy loams, 3 to 20 percent slopes	B	25.6	98.6%
<b>Totals for Area of Interest</b>			<b>26.0</b>	<b>100.0%</b>

### Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, N/NGS12  
National Geodetic Survey  
SSM/C-3, #9202  
1315 East-West Highway  
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

**Base Map** information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, and Anderson Consulting Engineers, Inc. These data are current as of 2008.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

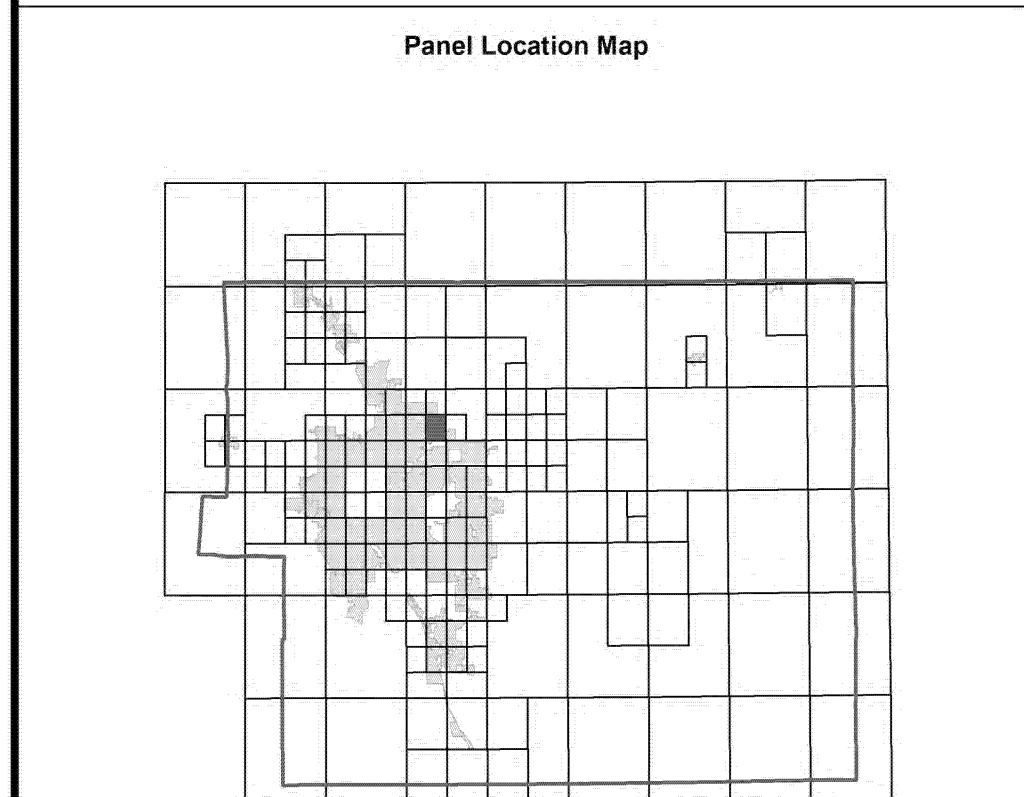
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

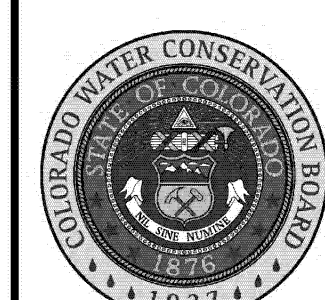
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfp>.

El Paso County Vertical Datum Offset Table	
Flooding Source	Vertical Datum Offset (ft)

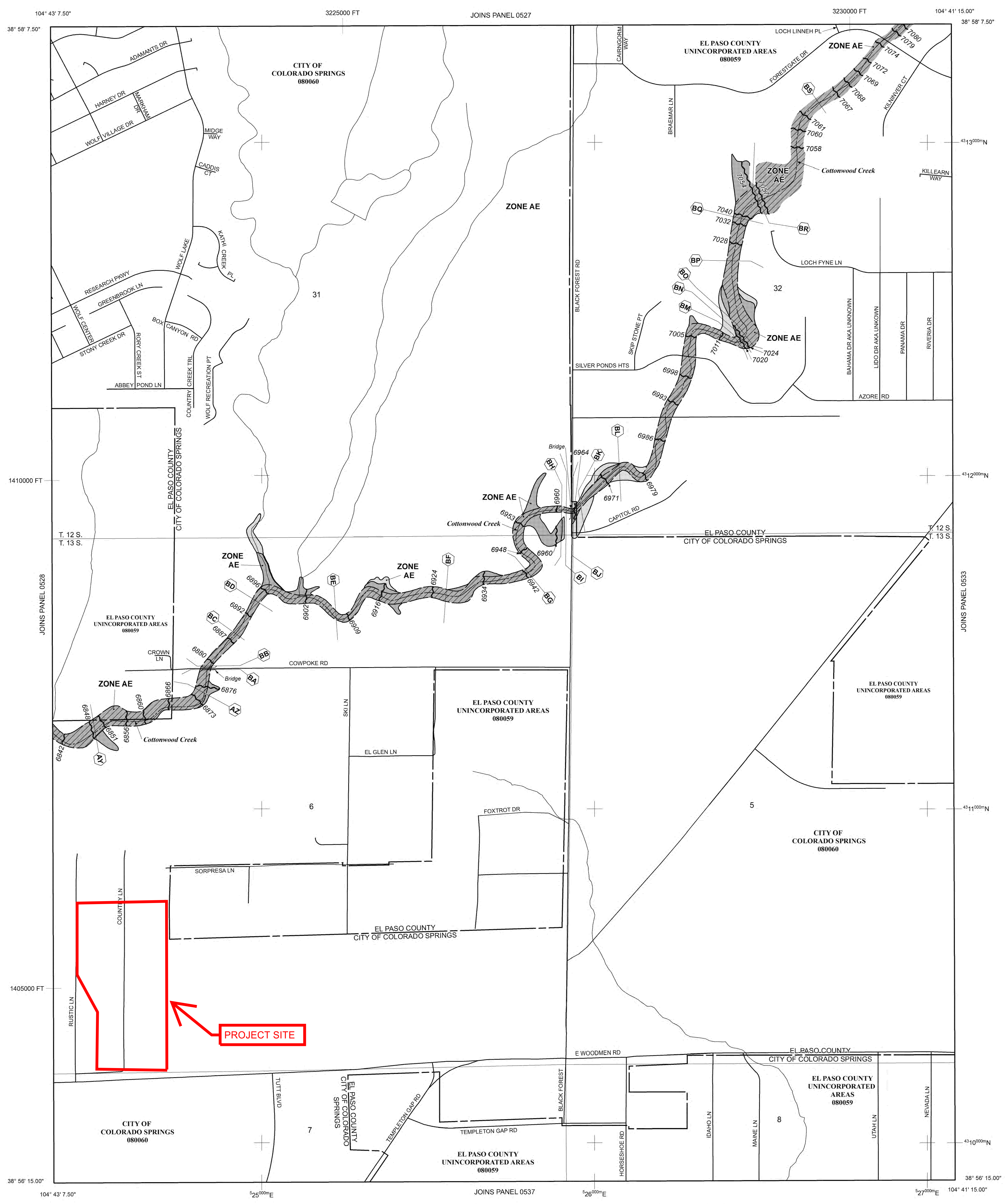
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

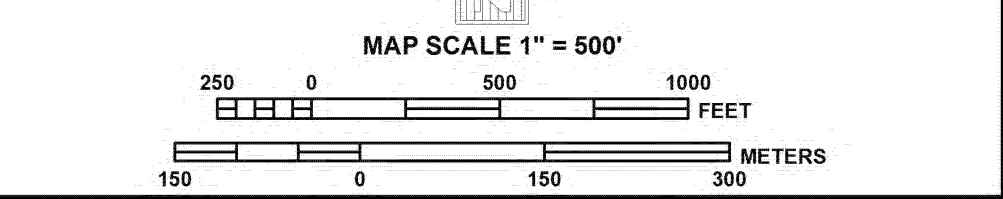



Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



**LEGEND**

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHERWISE PROTECTED AREAS (OPAs)
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet\*  
Base Flood Elevation value where uniform within zone; elevation in feet\*
- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 5000-foot grid ticks; Colorado State Plane coordinate system, central zone (FIPSZONE 5002), Lambert Conformal Conic Projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile
- MAP REPOSITORIES  
Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP  
MARCH 17, 1997
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL  
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.
- For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.
- \*To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.





**PANEL 0529G**

## FIRM

### FLOOD INSURANCE RATE MAP

### EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

**PANEL 529 OF 1300**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	08060	0529	G
EL PASO COUNTY	08059	0529	G

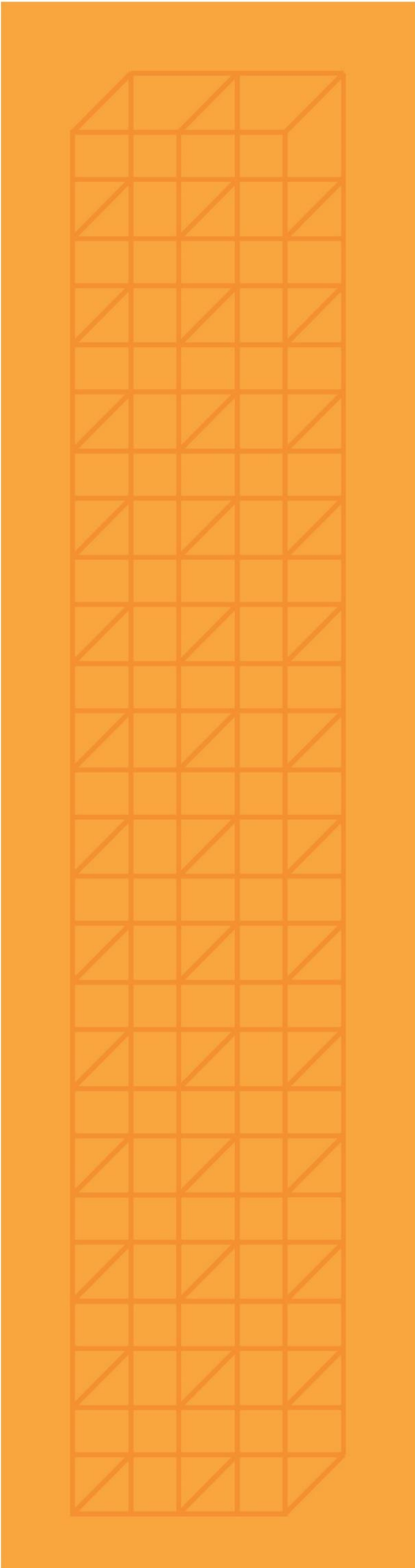
Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**08041C0529G**

**MAP REVISED**  
**DECEMBER 7, 2018**

Federal Emergency Management Agency

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 65 WEST, AND TOWNSHIP 13 SOUTH, RANGE 65 WEST.



# Preliminary Drainage Report and Master Development Drainage Plan Amendment

## Tutt Boulevard Townhomes

Colorado Springs, Colorado

*Revised: April 14, 2022  
March 4, 2022*

Prepared for (Owner & Developer):  
DR Horton Homes  
9555 S Kingston Ct.,  
Englewood, CO 80112

Prepared by (Engineer)  
WSB  
5660 Greenwood Plaza Blvd Suite 111,  
Greenwood Village, CO 80111

City of Colorado Springs Project No. STM-REV22-0229  
WSB Project No. 019380-000



## 3.0 Drainage Design Criteria

This section summarizes the drainage design and development criteria used for the site.

### 3.1 Development Criteria

The drainage studies and criteria utilized for this report include:

- Cottonwood Creek Drainage Basin Planning Study by Matrix Design Group
- Mile High Flood Districts' Urban Storm Drainage Criteria Manual, Volumes 1-3
- The City of Colorado Springs Drainage Criteria Manual, Volume 1

There are several challenges and constraints for the Tutt Townhomes development:

- Intercepting, routing, and detaining developed runoff on site before entering the Cottonwood Creek Development.
- Routing off-site runoff through the Tutt Townhomes development

### 3.2 Hydrologic Criteria

- Use the Rational Method to analyze the on-site watershed
- Use Manning's equation for preliminary pipe sizing
- The minor flood event is the 5-year and the major flood event is the 100-year event.
- Detention and water quality volumes and detention pond release rates were calculated using MHFD criteria.
- Rainfall data used for the Tutt Townhome development is from NOAA Atlas 14.

## 4.0 Drainage Facility Design

This section discusses the proposed stormwater infrastructure on the project site.

### 4.1 Conveyance System for On-Site & Off-Site Runoff

The proposed conveyance system follows historical patterns for the property. The general concept is to convey storm water via swales, storm sewers, and roadways towards the adjacent drainage system within the Cottonwood Creek Development and ultimately to Cottonwood Creek.

Grass lined swales convey flow from pervious and rear lot areas towards impervious areas within the site. Curb and gutter within roadway sections then convey flow towards the storm sewer system where discharge is detained within one of the two extended detention basins and released to the adjacent off-site storm sewer system.

One off-site watershed is tributary to the site. The off-site sub-basin consists of vacant open space with varying slopes from 4-8%. The proposed method for routing the off-site discharge is through a trunk storm sewer line that runs through the site and connects to the 36" storm sewer stub at the outfall of the site in the Cottonwood Creek development.

The site is comprised of three on-site sub-basins. The sub-basins consist of multi-family townhomes, private roadway sections, and interspersed open space. The sub-basins are split and directly routed to two separate detention ponds where they are detained and treated for water quality. Both detention ponds release discharge into the trunk storm sewer line that runs through the site ultimately being routed to the northwest corner of the property and through the Cottonwood Creek developments' stormwater system.

A detailed summary table of the sites' design points can be referenced below.

Design Point	Area (ac)	Imp. (%)	5-Year (cfs)	100-Year (cfs)
1 (Off-Site)	7.1	2%	0.2	14.8
2	4.3	51%	6.7	22.6
3	8.2	57%	14.0	44.2

## 4.2 Stormwater Storage Facilities

The project will make use of two on-site full spectrum detention ponds to attenuate runoff from the site. The on-site detention facilities will provide detention and water quality treatment in accordance with the City of Colorado Springs Drainage Criteria as well as the Master Drainage Plan. The proposed storage facilities will include energy dissipation, a forebay, trickle channel, outlet structure, as well as access for maintenance vehicles. The upstream detention pond, Pond A, will outfall into the trunk storm sewer line that runs through the site ultimately discharging into the 36" storm sewer outfall in the Cottonwood Creek development. The downstream detention pond, Pond B, will directly outfall into the 36" storm sewer stub in the Cottonwood Creek Development. A summary of each full spectrum detention facility is shown below.

Facility	Drainage Area (acres)	% Imperviousness	V100 (acre feet)*	Release Rate (cfs)**
Full Spectrum Detention Pond A	4.3	51%	0.47	6.1
Full Spectrum Detention Pond B	8.2	57%	1.20	11.8

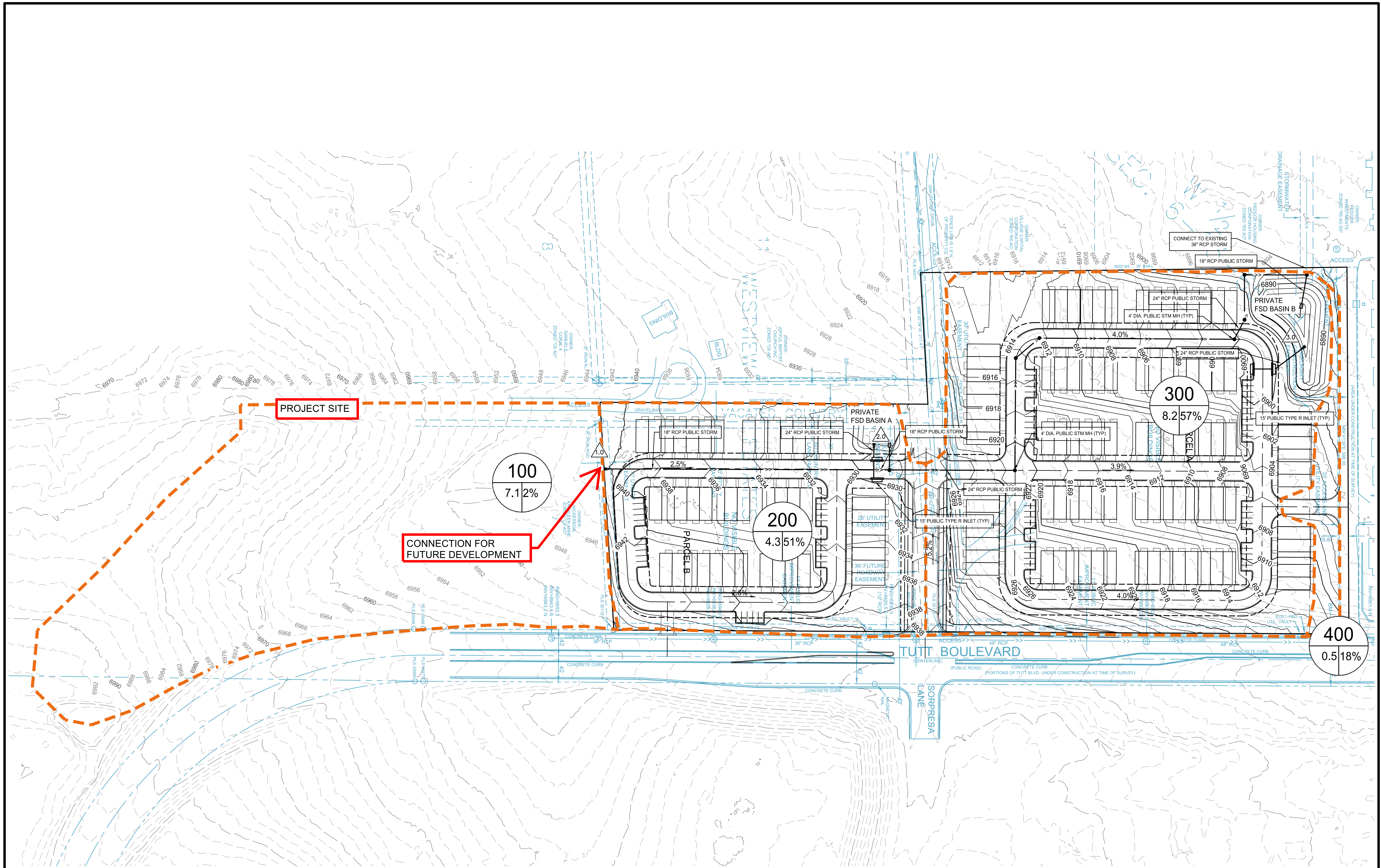
\* Volume is determined from the MHFD UD Detention Worksheet

\*\*The 100-yr release rate is determined by the outlet pipe restrictor plate design which is sized by the MHFD to release at 90% of the predevelopment 100-year peak runoff rate.

The project implements low impact development & green infrastructure measures throughout the site to reduce runoff volumes and reduce impacts on surrounding developments. Runoff reduction measures include:

- Routing roof drain discharge to pervious areas along side and rear lots to promote disconnecting impervious areas.
- Non directly connected impervious areas such as sidewalks, driveways, and paths will direct runoff towards open space and through a series of grass lined swales to promote infiltration into the soils.
- Grass lined swales route runoff towards two on-site extended detention basins which also promote infiltration and slowly release the WQCV.

NO.	DATE	DESCRIPTION



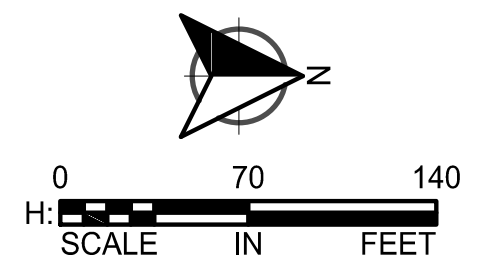
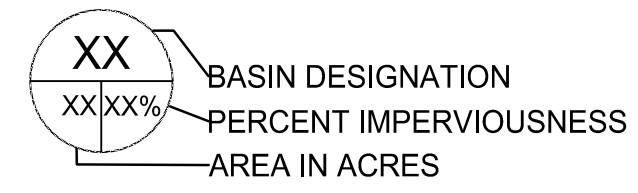
DRAINAGE MAP

TUTT BLVD TOWNHOMES  
 DR HORTON

Table 1  
 Summary of Design Points  
 Tut Townhomes

Design Point	Area (ac)	Imp. (%)	5-Year (cfs)	100-Year (cfs)
1	7.1	2%	0.2	14.8
2	4.3	51%	6.7	22.6
3	8.2	57%	14.0	44.2

LEGEND:  
 SUB-BASIN LABEL  
 PROPOSED BASIN BOUNDARY



# DRAINAGE PLANS ASSOCIATED WITH POWERS BOULEVARD WOODMEN ROAD INTERCHANGE CDOT PROJECT NO. STU R200-097 PRELIMINARY DRAINAGE REPORT

CALL UTILITY NOTIFICATION  
CENTER OF COLORADO  
1-800-922-1987  
CALL 3 BUSINESS DAYS IN ADVANCE  
BEFORE YOU DIG, GRADE OR EXCAVATE  
FOR THE MARKING OF UNDERGROUND  
MEMBER UTILITIES.

### LINE BE NOTES

BE1 POWERS STA: 485+00.00 99.73'RT  
REQ'D 68.54LF OF 24" RCP W/  
TYPE C INLET  
(SEE PROFILE LINE BE)

BE2 POWERS STA: 484+48.25 108.00'LT  
REQ'D 211.55LF OF 24" RCP (CLASS IV)  
W/ TYPE C INLET  
(SEE PROFILE LINE BE)

### LINE BF NOTES

BF1 RAMP E STA: 914+17.02 117.71'RT  
REQ'D 89.69LF OF 18" RCP (CLASS IV)  
W/ TYPE C INLET  
(SEE PROFILE LINE BF)

### LINE BA NOTES

BA5 POWERS STA: 490+26.65 98.57'RT  
REQ'D 491.09LF OF 30" RCP W/  
TYPE C INLET (SPECIAL) - W=3.75'  
(SEE PROFILE LINE BA)

BA6 RAMP E STA: 913+97.99 26.00'RT  
REQ'D 490.56LF OF 30" RCP W/  
TYPE C INLET (SPECIAL) - W=4.75'  
(SEE PROFILE LINE BA)

### REMOVAL NOTES

R4 REMOVE EXISTING  
24" RCP (78.22LF) W/  
CORRESPONDING FES

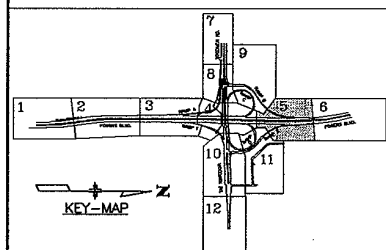
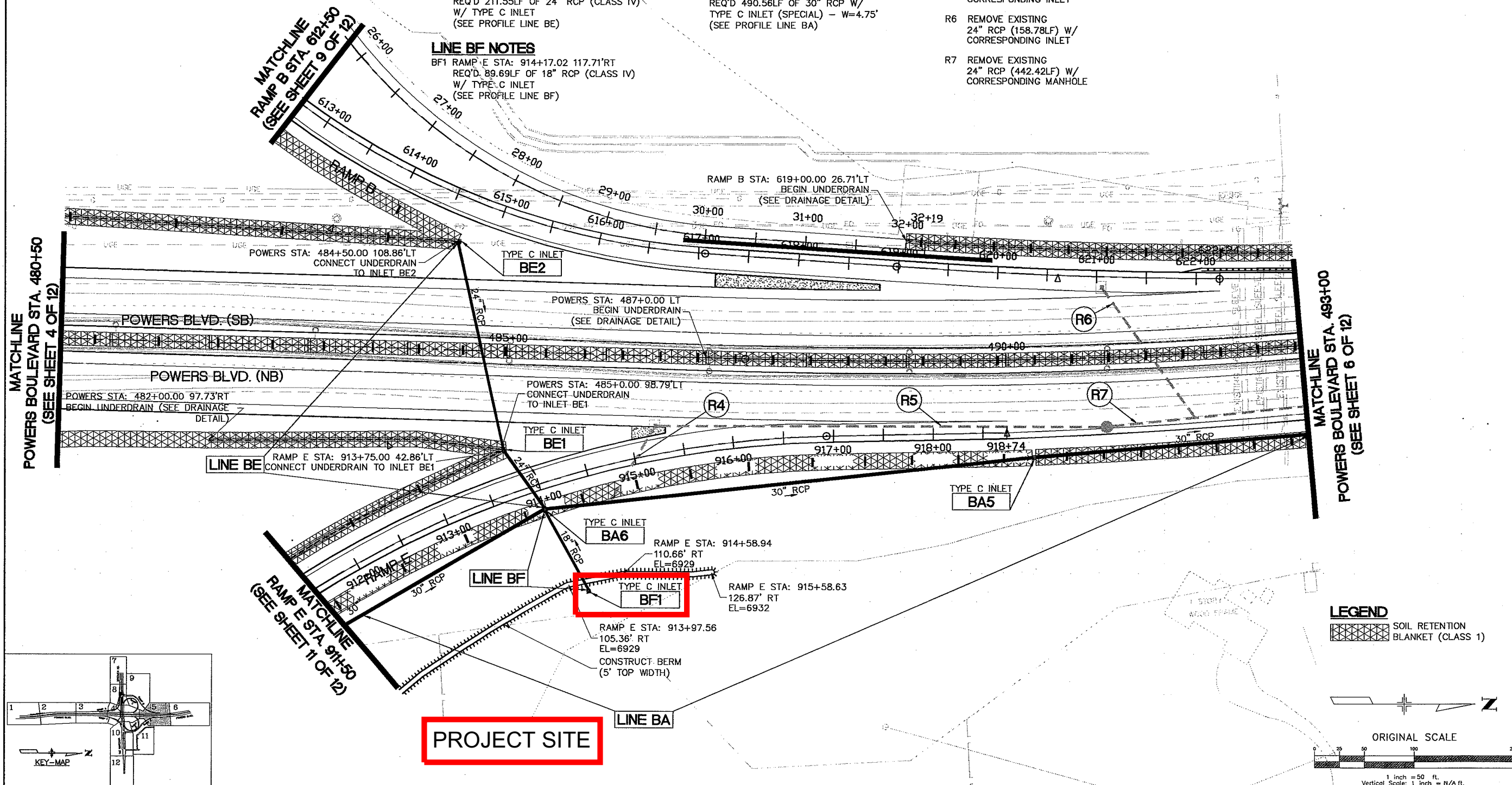
R5 REMOVE EXISTING  
24" RCP (446.11LF) W/  
CORRESPONDING INLET

R6 REMOVE EXISTING  
24" RCP (158.78LF) W/  
CORRESPONDING INLET

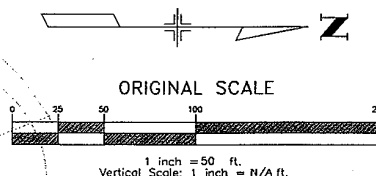
R7 REMOVE EXISTING  
24" RCP (442.42LF) W/  
CORRESPONDING MANHOLE

### NOTES

1. SEE INTERSECTION DETAILS FOR MORE INFORMATION AT INTERSECTIONS.
2. SEE GEOMETRIC LAYOUT SHEETS FOR ADDITIONAL HORIZONTAL CONTROL INFORMATION.
3. SEE GORE DETAIL SHEETS FOR MORE INFORMATION ON THE GORE AREAS.



**LEGEND**  
SOIL RETENTION  
BLANKET (CLASS 1)



Computer File Information		Index of Revisions		 URS 9960 Federal Drive, Suite 300 Colorado Springs, CO. 80921 (719) 531-0001 Fax (719) 531-0007 MSA	As Constructed		<b>DRAINAGE PLAN</b> <b>POWERS BOULEVARD</b>		Project No./Code		
Creation Date:	12/30/02	Initials:	JJM		No Revisions:	01-15-09			STU R200-097		
Last Modification Date:	05/12/06	Initials:	JWC		Revised:		Designer:	EDE	Structure	13129	
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Drawing File Name:	shpl-drainage.dwg					SheetSubset:		Subset Sheets:	5 of 12	Sheet Number	257
Acad. Ver.	LDD2	Scale:	1"=50'	Units:	Feet						

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FOR THE MARKING OF UNDERGROUND  
MEMBER UTILITIES.

**NOTES**

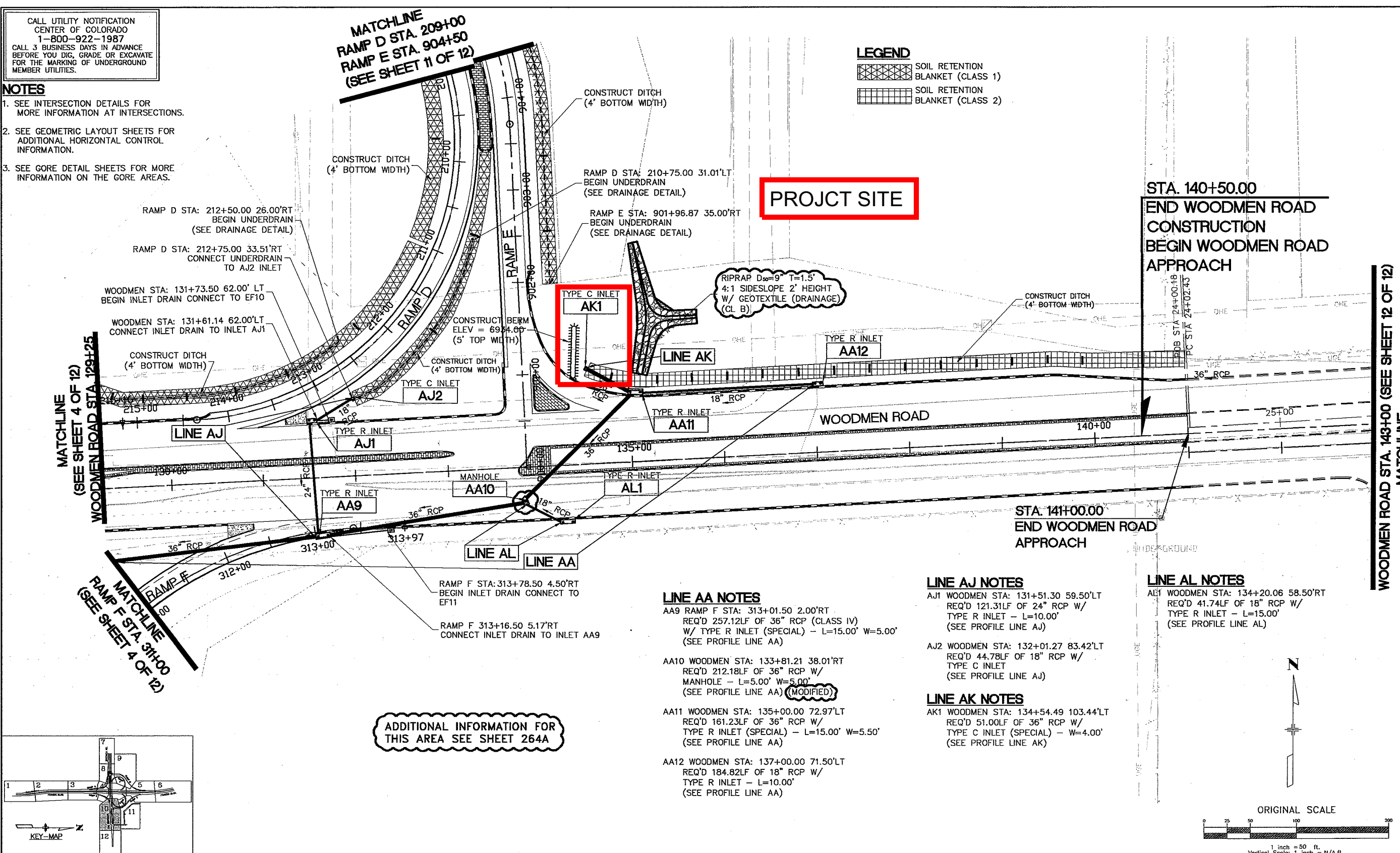
1. SEE INTERSECTION DETAILS FOR MORE INFORMATION AT INTERSECTIONS.
2. SEE GEOMETRIC LAYOUT SHEETS FOR ADDITIONAL HORIZONTAL CONTROL INFORMATION.
3. SEE GORE DETAIL SHEETS FOR MORE INFORMATION ON THE GORE AREAS.

**MATCHLINE**  
RAMP D STA. 209+00  
RAMP E STA. 904+50  
(SEE SHEET 11 OF 12)

**LEGEND**

- SOIL RETENTION BLANKET (CLASS 1)
- SOIL RETENTION BLANKET (CLASS 2)

**PROJECT SITE**



**MATCHLINE**  
(SEE SHEET 4 OF 12)  
WOODMEN ROAD STA. 129+25

**MATCHLINE**  
(SEE SHEET 4 OF 12)  
RAMP F STA. 311+00

**MATCHLINE**  
WOODMEN ROAD STA. 143+00 (SEE SHEET 12 OF 12)

ADDITIONAL INFORMATION FOR THIS AREA SEE SHEET 264A

**LINE AA NOTES**

- AA9 RAMP F STA: 313+01.50 2.00'RT  
REQ'D 257.12LF OF 36" RCP (CLASS IV)  
W/ TYPE R INLET (SPECIAL) - L=15.00' W=5.00'  
(SEE PROFILE LINE AA)
- AA10 WOODMEN STA: 133+81.21 38.01'RT  
REQ'D 212.18LF OF 36" RCP W/  
MANHOLE - L=5.00' W=5.00'  
(SEE PROFILE LINE AA) (MODIFIED)
- AA11 WOODMEN STA: 135+00.00 72.97'LT  
REQ'D 161.23LF OF 36" RCP W/  
TYPE R INLET (SPECIAL) - L=15.00' W=5.50'  
(SEE PROFILE LINE AA)
- AA12 WOODMEN STA: 137+00.00 71.50'LT  
REQ'D 184.82LF OF 18" RCP W/  
TYPE R INLET - L=10.00'  
(SEE PROFILE LINE AA)

**LINE AJ NOTES**

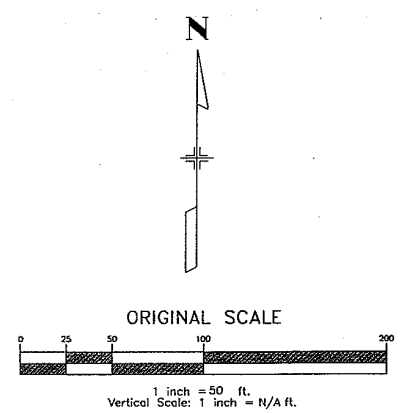
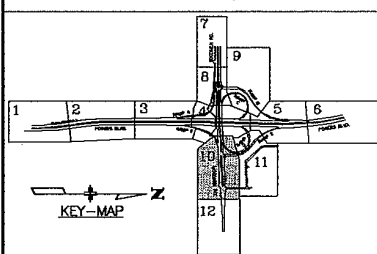
- AJ1 WOODMEN STA: 131+51.30 59.50'LT  
REQ'D 121.31LF OF 24" RCP W/  
TYPE R INLET - L=10.00'  
(SEE PROFILE LINE AJ)
- AJ2 WOODMEN STA: 132+01.27 83.42'LT  
REQ'D 44.78LF OF 18" RCP W/  
TYPE C INLET  
(SEE PROFILE LINE AJ)


**LINE AK NOTES**

- AK1 WOODMEN STA: 134+54.49 103.44'LT  
REQ'D 51.00LF OF 36" RCP W/  
TYPE C INLET (SPECIAL) - W=4.00'  
(SEE PROFILE LINE AK)

**LINE AL NOTES**

- AL1 WOODMEN STA: 134+20.06 58.50'RT  
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TYPE R INLET - L=15.00'  
(SEE PROFILE LINE AL)



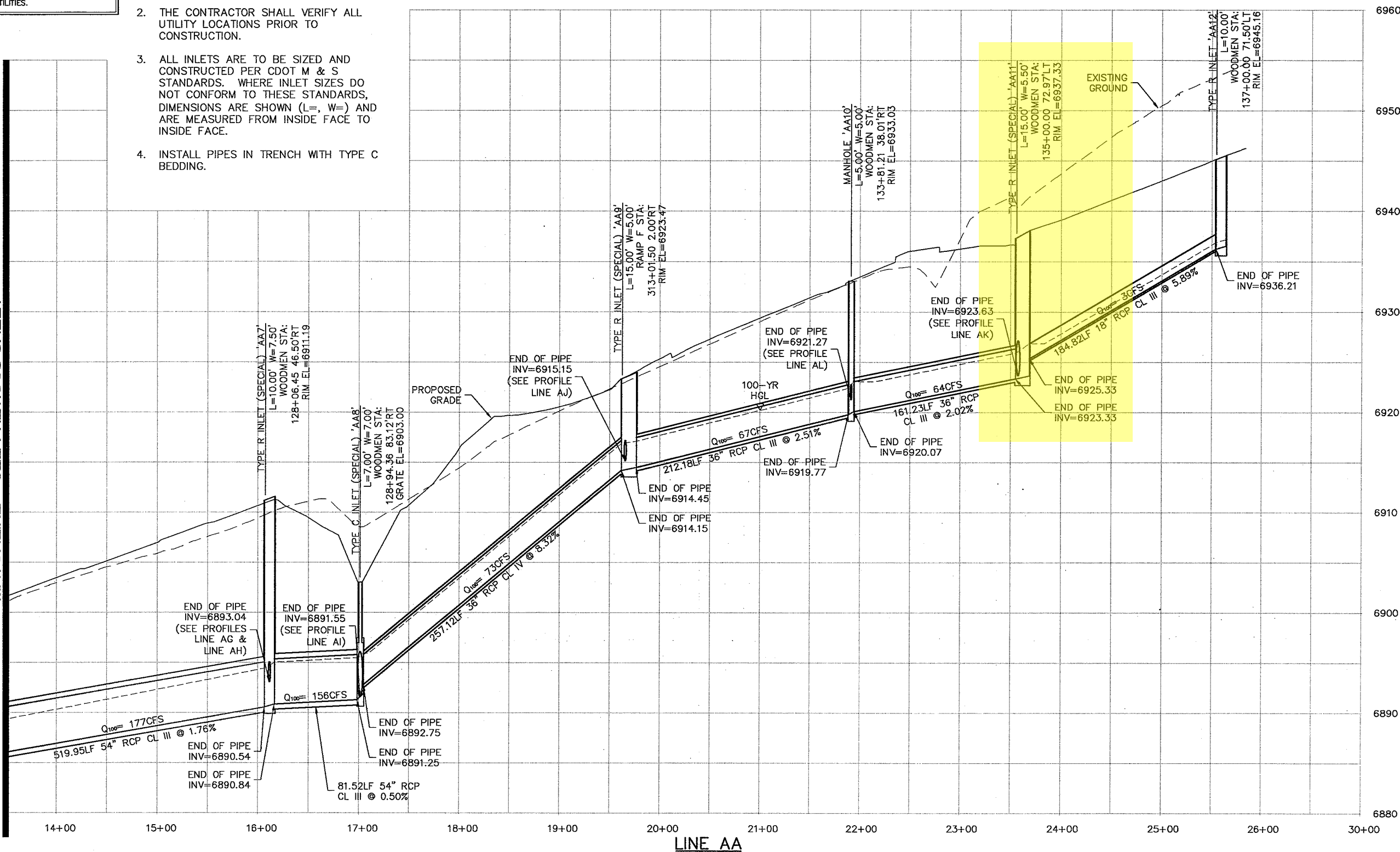
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Creation Date:	12/30/02	Initials:	JJM		No Revisions:		<b>WOODMEN ROAD</b>		STU R200-097		
Last Modification Date:	10/20/06	Initials:	LVS		Revised: 01-15-09		Designer:	EDE	Structure Numbers:	13129	
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Drawing File Name:	shpl-drainage.dwg					SheetSubset:					
Acad. Ver.	LDD2	Scale:	1"=50'	Units:	Feet						

CALL UTILITY NOTIFICATION  
CENTER OF COLORADO  
1-800-922-1987  
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MEMBER UTILITIES.

NOTES:


1. ALL PIPELINE ELEVATIONS SHOWN ARE TO THE INVERT OF PIPE UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
3. ALL INLETS ARE TO BE SIZED AND CONSTRUCTED PER CDOT M & S STANDARDS. WHERE INLET SIZES DO NOT CONFORM TO THESE STANDARDS, DIMENSIONS ARE SHOWN (L=, W=) AND ARE MEASURED FROM INSIDE FACE TO INSIDE FACE.
4. INSTALL PIPES IN TRENCH WITH TYPE C BEDDING.

MATCHLINE - SEE PREVIOUS SHEET



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Last Modification Date:	05/12/06 Initials: JWC
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Index of Revisions	
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DEPARTMENT OF TRANSPORTATION  
Region 2

**URS**  
9960 Federal Drive, Suite 300  
Colorado Springs, CO. 80921  
(719) 531-0001  
Fax (719) 531-0007

MSA

As Constructed		STORM DRAIN PROFILES	
No Revisions:	01-XX-09	LINE AA	
Revised:		Designer:	EDE
Void:		Detailer:	JJM
		SheetSubset:	2 of 11

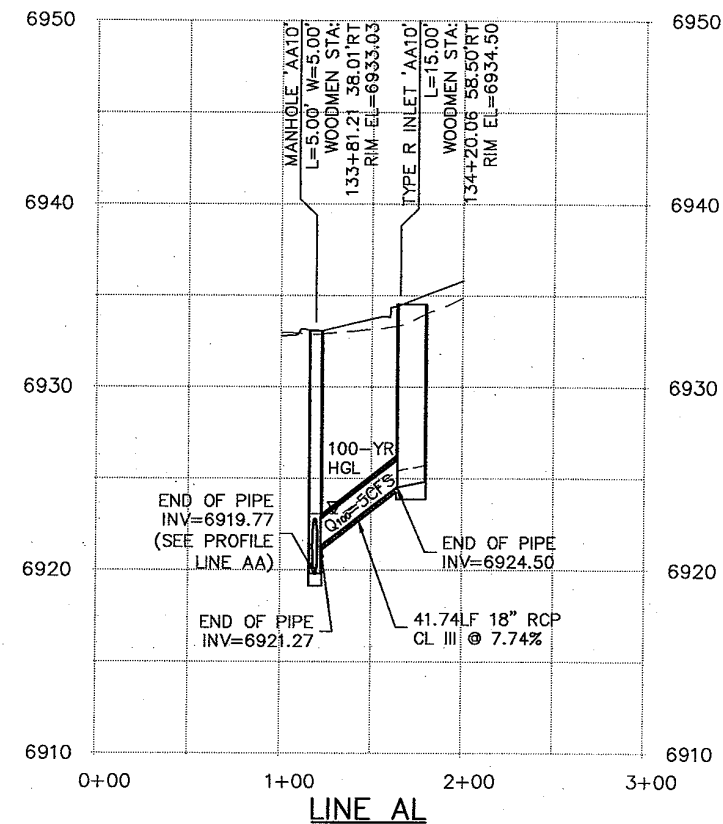
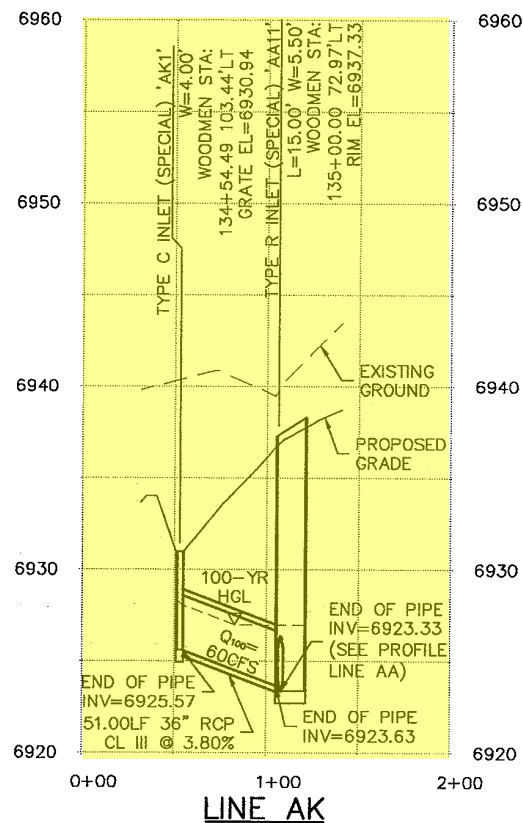
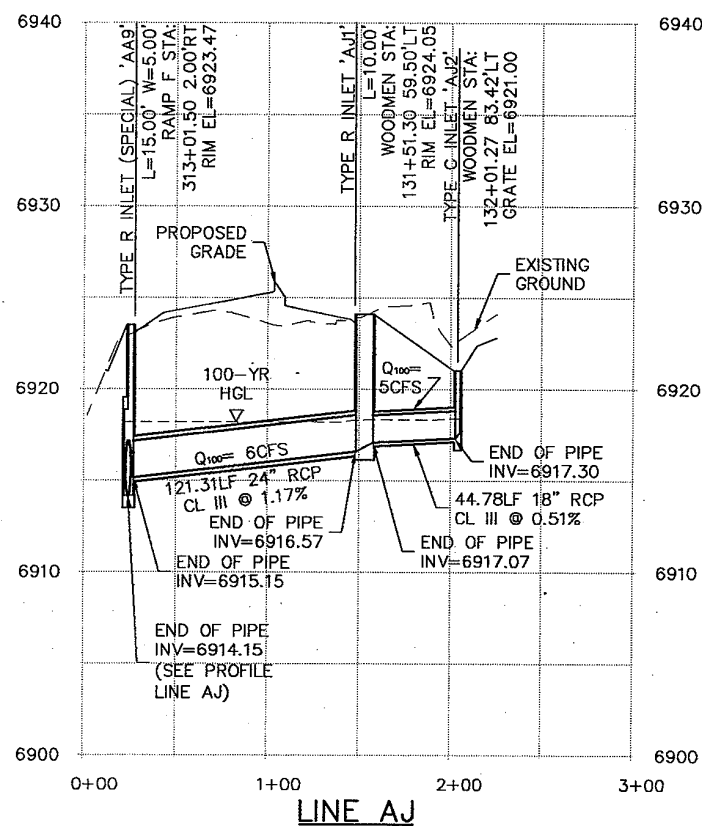
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13129	
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4. INSTALL PIPES IN TRENCH WITH TYPE C BEDDING.



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Acad. Ver. LDD2	Scale: 1"=5'V, 50'H Units: Feet

Index of Revisions	
(R-)	
(R-)	
(R-)	
(R-)	



**URS**  
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 Colorado Springs, CO. 80921  
 (719) 531-0001  
 Fax (719) 531-0007

MSA

As Constructed
No Revisions: 01-XX-09
Revised:
Void:

**STORM DRAIN PROFILES  
 LINES AJ - AL**

Designer:	EDE	Structure Numbers
Detailer:	JJM	
SheetSubset:		Subset Sheets: 6 of 11

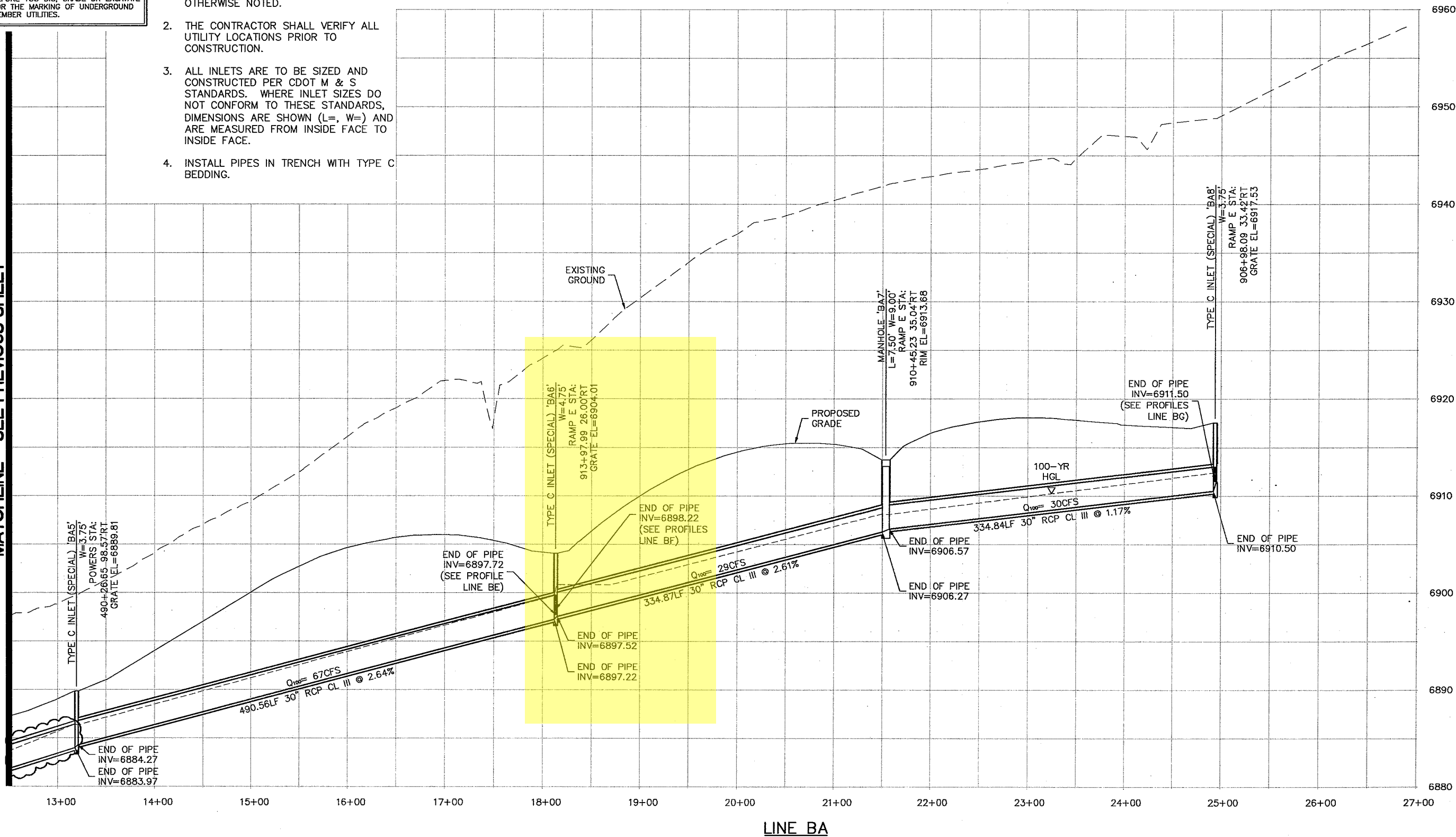
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CALL UTILITY NOTIFICATION  
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 1-800-922-1987  
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 MEMBER UTILITIES.

NOTES:

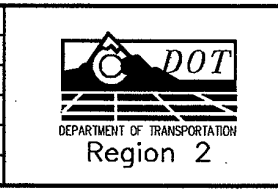
1. ALL PIPELINE ELEVATIONS SHOWN ARE TO THE INVERT OF PIPE UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
3. ALL INLETS ARE TO BE SIZED AND CONSTRUCTED PER CDOT M & S STANDARDS. WHERE INLET SIZES DO NOT CONFORM TO THESE STANDARDS, DIMENSIONS ARE SHOWN (L=, W=) AND ARE MEASURED FROM INSIDE FACE TO INSIDE FACE.
4. INSTALL PIPES IN TRENCH WITH TYPE C BEDDING.

MATCHLINE - SEE PREVIOUS SHEET



Computer File Information	
Creation Date:	12/18/02 Initials: JJM
Last Modification Date:	05/12/06 Initials: JWC
Full Path:	6742618\CAD\PLNSHTS\DRAINAGE\
Drawing File Name:	shdr-profiles.dwg
Acad. Ver. LDD2	Scale: 1"=5'V, 50'H Units: Feet

Index of Revisions	
(R-)	
(R-)	
(R-)	
(R-)	
(R-)	



**URS**  
 9960 Federal Drive, Suite 300  
 Colorado Springs, CO. 80921  
 (719) 531-0001  
 Fax (719) 531-0007

As Constructed	
No Revisions:	
Revised:	01-XX-09
Void:	

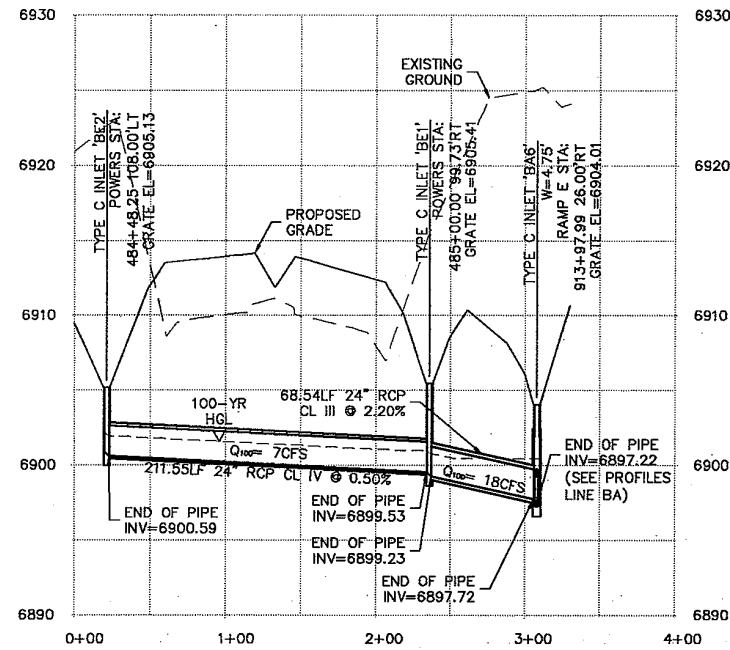
STORM DRAIN PROFILES LINE BA		
Designer:	EDE	Structure Numbers
Detailer:	JJM	
Sheet/Subset:		Subset Sheets: 8 of 11

Project No./Code	
STU R200-097	
13129	
Sheet Number	272

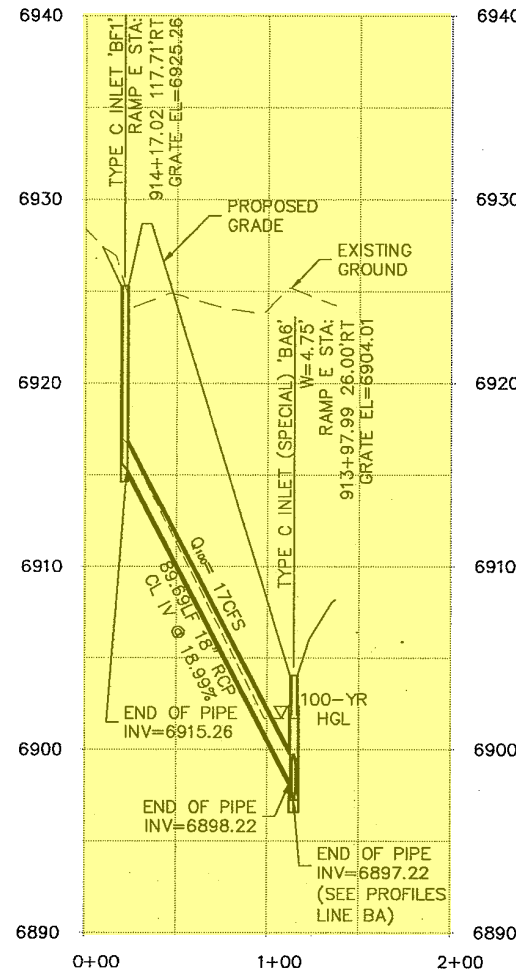
CALL UTILITY NOTIFICATION  
CENTER OF COLORADO  
1-800-922-1987  
CALL 3 BUSINESS DAYS IN ADVANCE  
BEFORE YOU DIG, GRADE OR EXCAVATE  
FOR THE MARKING OF UNDERGROUND  
MEMBER UTILITIES.

NOTES:

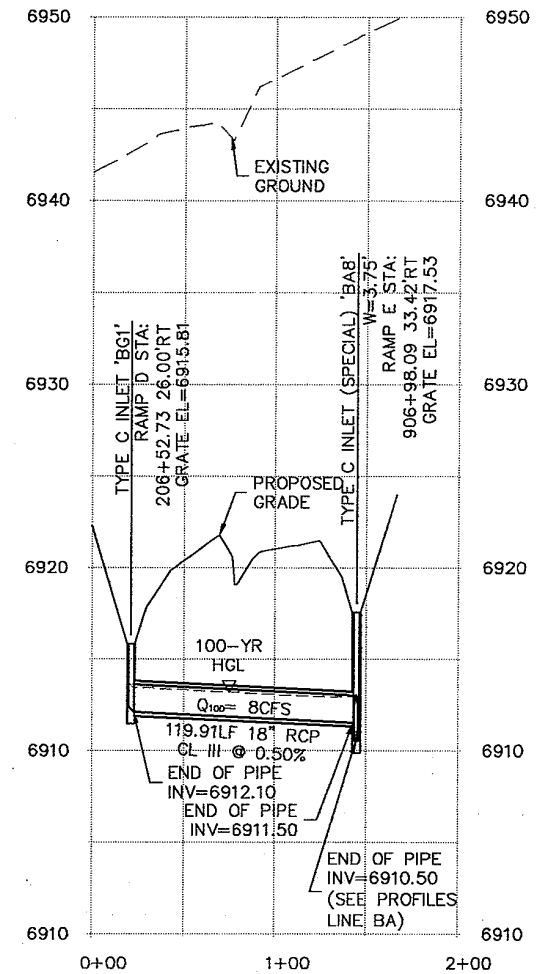
1. ALL PIPELINE ELEVATIONS SHOWN ARE TO THE INVERT OF PIPE UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
3. ALL INLETS ARE TO BE SIZED AND CONSTRUCTED PER CDOT M & S STANDARDS. WHERE INLET SIZES DO NOT CONFORM TO THESE STANDARDS, DIMENSIONS ARE SHOWN (L=, W=) AND ARE MEASURED FROM INSIDE FACE TO INSIDE FACE.
4. INSTALL PIPES IN TRENCH WITH TYPE C BEDDING.



LINE BE



LINE BF



LINE BG

Computer File Information	
Creation Date:	12/18/02 Initials: JJM
Last Modification Date:	05/12/06 Initials: JWC
Full Path:	6742618\CAD\PLNSHTS\DRAINAGE\
Drawing File Name:	shdr-profiles.dwg
Acad. Ver. LDD2	Scale: 1"=5'V, 50'H Units: Feet

Index of Revisions	
(R-)	
(R-)	
(R-)	
(R-)	



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Colorado Springs, CO. 80921  
(719) 531-0001  
Fax (719) 531-0007

MSA

As Constructed
No Revisions: 01-XX-09
Revised:
Void:

STORM DRAIN PROFILES LINES BE - BG		
Designer:	EDE	Structure Numbers
Detailer:	JJM	
Sheet Subset:		Subset Sheets: 10 of 11

Project No./Code	STU R200-097
	13129
Sheet Number	274

**APPENDIX B**  
**Hydrologic Computations**

**COMPOSITE % IMPERVIOUS CALCULATIONS**

**EXISTING CONDITIONS**

**Subdivision:** \_\_\_\_\_  
**Location:** CO, Colorado Springs

**Project Name:** Village at Cottonwood Creek  
**Project No.:** EMP000001  
**Calculated By:** DDJ  
**Checked By:** SMB  
**Date:** 6/24/22

Basin ID	Total Area (ac)	Gravel Roads			Undeveloped/ Greenbelts, Agriculture			Roofs			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
EX-A	5.37	80	0.22	3.3	2	5.37	2.0	90	0.00	0.00	5.3
EX-B	7.36	80	0.29	3.2	2	7.36	2.0	90	0.00	0.00	5.2
EX-C	5.90	80	0.09	1.2	2	5.79	2.0	90	0.11	1.70	4.9
EX-D	7.07	80	0.13	1.5	2	7.07	2.0	90	0.00	0.00	3.5

**COMPOSITE % IMPERVIOUS CALCULATIONS**

**EXISTING CONDITIONS**

Subdivision: \_\_\_\_\_  
Location: CO, Colorado Springs

Project Name: Village at Cottonwood Creek  
Project No.: EMP000001  
Calculated By: DDJ  
Checked By: SMB  
Date: 6/24/22

Basin ID	Total Area (ac)	Paved Roads			Undeveloped/Lawns			Roofs			Composite C <sub>5</sub>	Composite C <sub>100</sub>
		C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)		
EX-A	5.37	0.59	0.70	0.22	0.09	0.36	5.37	0.73	0.81	0.00	0.11	0.39
EX-B	7.36	0.59	0.70	0.29	0.09	0.36	7.36	0.73	0.81	0.00	0.11	0.39
EX-C	5.90	0.59	0.70	0.09	0.09	0.36	5.79	0.73	0.81	0.11	0.11	0.38
EX-D	7.07	0.59	0.70	0.13	0.09	0.36	7.07	0.73	0.81	0.00	0.10	0.37

**STANDARD FORM SF-2  
TIME OF CONCENTRATION**

**EXISTING CONDITIONS**

Subdivision: \_\_\_\_\_  
Location: CO, Colorado Springs

Project Name: Village at Cottonwood Creek  
Project No.: EMP000001  
Calculated By: DDJ  
Checked By: SMB  
Date: 6/24/22

SUB-BASIN						INITIAL/OVERLAND			TRAVEL TIME					T <sub>c</sub> CHECK			FINAL
DATA						(T <sub>i</sub> )			(T <sub>t</sub> )					(URBANIZED BASINS)			(T <sub>c</sub> )
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C <sub>100</sub>	C <sub>s</sub>	L (FT)	S (%)	T <sub>i</sub> (MIN)	L (FT)	S (%)	C <sub>v</sub>	VEL. (FPS)	T <sub>t</sub> (MIN)	COMP. T <sub>c</sub> (MIN)	TOTAL LENGTH (FT)	Urbanized T <sub>c</sub> (MIN)	T <sub>c</sub> (MIN)
EX-A	5.37	B	5.3	0.39	0.11	300	9.0	15.1	460	6.5	20.0	5.1	1.5	16.6	Site is not urbanized		16.6
EX-B	7.36	B	5.2	0.39	0.11	300	6.5	16.8	510	4.0	20.0	4.0	2.1	19.0		19.0	
EX-C	5.90	B	4.9	0.38	0.11	300	8.0	15.7	325	6.0	20.0	4.9	1.1	16.8		16.8	
EX-D	7.07	B	3.5	0.37	0.10	300	9.0	15.3	585	3.8	20.0	3.9	2.5	17.8		17.8	

**NOTES:**

$T_i = (0.395 * (1.1 - C_s) * (L)^{0.5}) / ((S)^{0.33})$ , S in ft/ft

$T_t = L / 60V$  (Velocity From Fig. 501)

Velocity  $V = C_v * S^{0.5}$ , S in ft/ft

T<sub>c</sub> Check =  $10 + L / 180$

For Urbanized basins a minimum T<sub>c</sub> of 5.0 minutes is required.

For non-urbanized basins a minimum T<sub>c</sub> of 10.0 minutes is required

**STANDARD FORM SF-3**  
**STORM DRAINAGE SYSTEM DESIGN**

(RATIONAL METHOD PROCEDURE) EXISTING CONDITIONS

Subdivision: \_\_\_\_\_  
 Location: CO, Colorado Springs \_\_\_\_\_  
 Design Storm: 2-Year \_\_\_\_\_

Project Name: Village at Cottonwood Creek \_\_\_\_\_  
 Project No.: EMP000001 \_\_\_\_\_  
 Calculated By: DDJ \_\_\_\_\_  
 Checked By: SMB \_\_\_\_\_  
 Date: 6/24/22 \_\_\_\_\_

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C* A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C* A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tc (min)	
	A	EX-A	5.37	0.11	16.6	0.59	2.69	1.6													Sheet flows southwest to an existing Type C inlet
	B	EX-B	7.36	0.11	19.0	0.81	2.53	2.0													Sheet flows west to an existing Type C inlet
	C	EX-C	5.90	0.11	16.8	0.65	2.68	1.7													Sheet flows north
	D	EX-D	7.07	0.10	17.8	0.71	2.61	1.9													Sheet flows north



**STANDARD FORM SF-3**  
**STORM DRAINAGE SYSTEM DESIGN**  
(RATIONAL METHOD PROCEDURE) EXISTING CONDITIONS

Subdivision: \_\_\_\_\_  
 Location: CO, Colorado Springs \_\_\_\_\_  
 Design Storm: 100-Year \_\_\_\_\_

Project Name: Village at Cottonwood Creek \_\_\_\_\_  
 Project No.: EMP000001 \_\_\_\_\_  
 Calculated By: DDJ \_\_\_\_\_  
 Checked By: SMB \_\_\_\_\_  
 Date: 6/24/22 \_\_\_\_\_

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	A	EX-A	5.37	0.39	16.6	2.09	5.65	11.8													Sheet flows southwest to an existing Type C inlet
	B	EX-B	7.36	0.39	19.0	2.87	5.32	15.3													Sheet flows west to an existing Type C inlet
	C	EX-C	5.90	0.38	16.8	2.24	5.62	12.6													Sheet flows north
	D	EX-D	7.07	0.37	17.8	2.62	5.48	14.4													Sheet flows north

**COMPOSITE % IMPERVIOUS CALCULATIONS**

**PROPOSED CONDITIONS**

**Subdivision:** \_\_\_\_\_  
**Location:** CO, Colorado Springs

**Project Name:** Village at Cottonwood Creek  
**Project No.:** EMP000001  
**Calculated By:** DDJ  
**Checked By:** SMB  
**Date:** 6/24/22

Basin ID	Total Area (ac)	Paved Roads			Undeveloped/Lawns			Roofs			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
A	6.15	Assume 1/8 acre or less lots									65.0
B	6.20	Assume 1/8 acre or less lots									65.0
C	5.56	Assume 1/8 acre or less lots									65.0
D	7.81	Assume 1/8 acre or less lots									65.0

**COMPOSITE % IMPERVIOUS CALCULATIONS**

**PROPOSED CONDITIONS**

Subdivision: \_\_\_\_\_  
Location: CO, Colorado Springs

Project Name: Village at Cottonwood Creek  
Project No.: EMP000001  
Calculated By: DDJ  
Checked By: SMB  
Date: 6/24/22

Basin ID	Total Area (ac)	Paved Roads			Undeveloped/Lawns			Roofs			Composite C <sub>5</sub>	Composite C <sub>100</sub>
		C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)		
A	6.15	Assume 1/8 acre or less									0.45	0.59
B	6.20	Assume 1/8 acre or less									0.45	0.59
C	5.56	Assume 1/8 acre or less									0.45	0.59
D	7.81	Assume 1/8 acre or less									0.45	0.59

**STANDARD FORM SF-2  
TIME OF CONCENTRATION  
PROPOSED CONDITIONS**

Subdivision: \_\_\_\_\_  
Location: CO, Colorado Springs

Project Name: Village at Cottonwood Creek  
Project No.: EMP000001  
Calculated By: DDJ  
Checked By: SMB  
Date: 6/24/22

SUB-BASIN						INITIAL/OVERLAND			TRAVEL TIME					T <sub>c</sub> CHECK			FINAL
DATA						(T <sub>i</sub> )			(T <sub>t</sub> )					(URBANIZED BASINS)			(T <sub>c</sub> )
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C <sub>100</sub>	C <sub>s</sub>	L (FT)	S (%)	T <sub>i</sub> (MIN)	L (FT)	S (%)	C <sub>v</sub>	VEL (FPS)	T <sub>t</sub> (MIN)	COMP. T <sub>c</sub> (MIN)	TOTAL LENGTH (FT)	Urbanized T <sub>c</sub> (MIN)	T <sub>c</sub> (MIN)
A	6.15	B	65.0	0.59	0.45	80	2.0	8.4	650	2.0	20.0	2.8	3.8	12.3	730.0	14.1	12.3
B	6.20	B	65.0	0.59	0.45	80	2.0	8.4	850	2.0	20.0	2.8	5.0	13.5	930.0	15.2	13.5
C	5.56	B	65.0	0.59	0.45	80	2.0	8.4	500	2.0	20.0	2.8	2.9	11.4	580.0	13.2	11.4
D	7.81	B	65.0	0.59	0.45	80	2.0	8.4	780	2.0	20.0	2.8	4.6	13.0	860.0	14.8	13.0

**NOTES:**

$T_i = (0.395 * (1.1 - C_s) * L^{0.5}) / (S^{0.33})$ , S in ft/ft

$T_t = L / 60V$  (Velocity From Fig. 501)

Velocity  $V = C_v * S^{0.5}$ , S in ft/ft

T<sub>c</sub> Check =  $10 + L / 180$

For Urbanized basins a minimum T<sub>c</sub> of 5.0 minutes is required.

For non-urbanized basins a minimum T<sub>c</sub> of 10.0 minutes is required

**STANDARD FORM SF-3**  
**STORM DRAINAGE SYSTEM DESIGN**

(RATIONAL METHOD PROCEDURE) PROPOSED CONDITIONS

Subdivision: \_\_\_\_\_  
 Location: CO, Colorado Springs \_\_\_\_\_  
 Design Storm: 2-Year \_\_\_\_\_

Project Name: Village at Cottonwood Creek \_\_\_\_\_  
 Project No.: EMP000001 \_\_\_\_\_  
 Calculated By: DDJ \_\_\_\_\_  
 Checked By: SMB \_\_\_\_\_  
 Date: 6/24/22 \_\_\_\_\_

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C* A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C* A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tc (min)	
	A	A	6.15	0.45	12.3	2.77	3.05	8.4													Runoff directed to Pond A
	B	B	6.20	0.45	13.5	2.79	2.94	8.2													Runoff directed to Pond B
	C	C	5.56	0.45	11.4	2.50	3.14	7.9													Runoff directed to Pond C
	D	D	7.81	0.45	13.0	3.51	2.98	10.5													Runoff directed to Pond D

STANDARD FORM SF-3  
STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE) PROPOSED CONDITIONS

Subdivision: \_\_\_\_\_  
Location: CO, Colorado Springs \_\_\_\_\_  
Design Storm: 100-Year \_\_\_\_\_

Project Name: Village at Cottonwood Creek \_\_\_\_\_  
Project No.: EMP000001 \_\_\_\_\_  
Calculated By: DDJ \_\_\_\_\_  
Checked By: SMB \_\_\_\_\_  
Date: 6/24/22 \_\_\_\_\_

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
	A	A	6.15	0.59	12.3	3.63	6.42	23.3												Runoff directed to Pond A	
	B	B	6.20	0.59	13.5	3.66	6.18	22.6												Runoff directed to Pond B	
	C	C	5.56	0.59	11.4	3.28	6.60	21.6												Runoff directed to Pond C	
	D	D	7.81	0.59	13.0	4.61	6.26	28.9												Runoff directed to Pond D	

**Design Procedure Form: Runoff Reduction**

UD-BMP (Version 3.07, March 2018)

Sheet 1 of 1

**Designer:** DDJ  
**Company:** Galloway & Company  
**Date:** August 11, 2022  
**Project:** Village at Cottonwood Creek  
**Location:** Lots 1, 2, 4, 5, 7, & 8 Westview Estates

**SITE INFORMATION (User Input in Blue Cells)**

WQCV Rainfall Depth = 0.60 inches  
 Depth of Average Runoff Producing Storm,  $d_6$  = 0.43 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM Vol. 3)

Area Type	DCIA	SPA	DCIA	SPA	DCIA	SPA	DCIA	SPA				
Area ID												
Downstream Design Point ID	A	A	B	B	C	C	D	D				
Downstream BMP Type	EDB	EDB	EDB	EDB	EDB	EDB	EDB	EDB				
DCIA (ft <sup>2</sup> )	174,131	--	175,547	--	157,426	--	221,132	--				
UIA (ft <sup>2</sup> )	--	--	--	--	--	--	--	--				
RPA (ft <sup>2</sup> )	--	--	--	--	--	--	--	--				
SPA (ft <sup>2</sup> )	--	93,763	--	94,525	--	84,768	--	119,071				
HSG A (%)	--	6%	--	0%	--	0%	--	0%				
HSG B (%)	--	94%	--	100%	--	100%	--	100%				
HSG C/D (%)	--	0%	--	0%	--	0%	--	0%				
Average Slope of RPA (ft/ft)	--	--	--	--	--	--	--	--				
UIA:RPA Interface Width (ft)	--	--	--	--	--	--	--	--				

**CALCULATED RUNOFF RESULTS**

Area ID												
UIA:RPA Area (ft <sup>2</sup> )	--	--	--	--	--	--	--	--				
L / W Ratio	--	--	--	--	--	--	--	--				
UIA / Area	--	--	--	--	--	--	--	--				
Runoff (in)	0.50	0.00	0.50	0.00	0.50	0.00	0.50	0.00				
Runoff (ft <sup>3</sup> )	7255	0	7314	0	6559	0	9214	0				
Runoff Reduction (ft <sup>3</sup> )	0	4688	0	4726	0	4238	0	5954				

**CALCULATED WQCV RESULTS**

Area ID												
WQCV (ft <sup>3</sup> )	7255	0	7314	0	6559	0	9214	0				
WQCV Reduction (ft <sup>3</sup> )	0	0	0	0	0	0	0	0				
WQCV Reduction (%)	0%	0%	0%	0%	0%	0%	0%	0%				
Untreated WQCV (ft <sup>3</sup> )	7255	0	7314	0	6559	0	9214	0				

**CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)**

Downstream Design Point ID	A	B	C	D								
DCIA (ft <sup>2</sup> )	174,131	175,547	157,426	221,132								
UIA (ft <sup>2</sup> )	0	0	0	0								
RPA (ft <sup>2</sup> )	0	0	0	0								
SPA (ft <sup>2</sup> )	93,763	94,525	84,768	119,071								
Total Area (ft <sup>2</sup> )	267,894	270,072	242,194	340,204								
Total Impervious Area (ft <sup>2</sup> )	174,131	175,547	157,426	221,132								
WQCV (ft <sup>3</sup> )	7,255	7,314	6,559	9,214								
WQCV Reduction (ft <sup>3</sup> )	0	0	0	0								
WQCV Reduction (%)	0%	0%	0%	0%								
Untreated WQCV (ft <sup>3</sup> )	7,255	7,314	6,559	9,214								

**CALCULATED SITE RESULTS (sums results from all columns in worksheet)**

Total Area (ft <sup>2</sup> )	1,120,363
Total Impervious Area (ft <sup>2</sup> )	728,236
WQCV (ft <sup>3</sup> )	30,343
WQCV Reduction (ft <sup>3</sup> )	0
WQCV Reduction (%)	0%
Untreated WQCV (ft <sup>3</sup> )	30,343

**APPENDIX C**  
**Pond Computations**



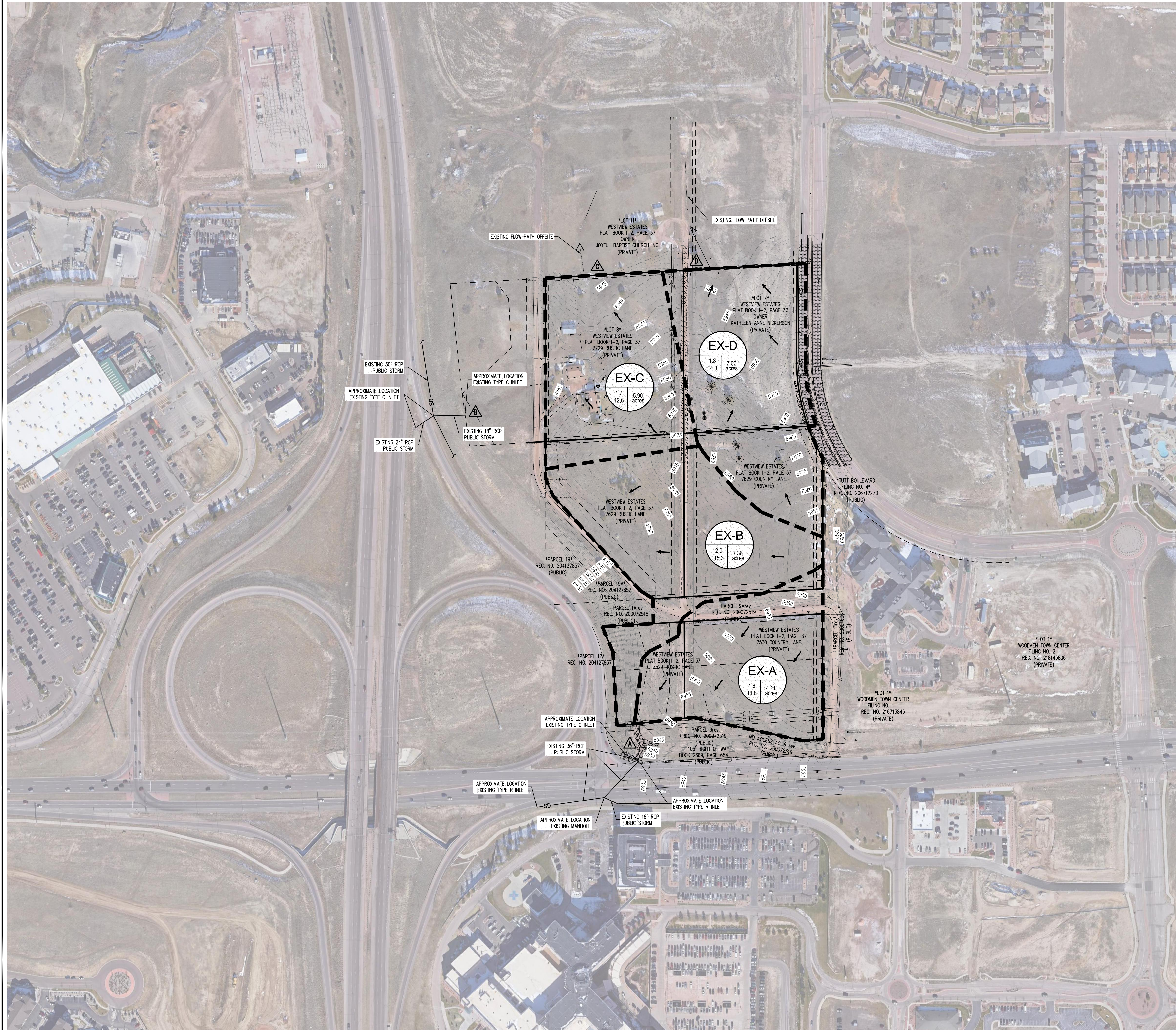








**APPENDIX D**  
**Drainage Map**



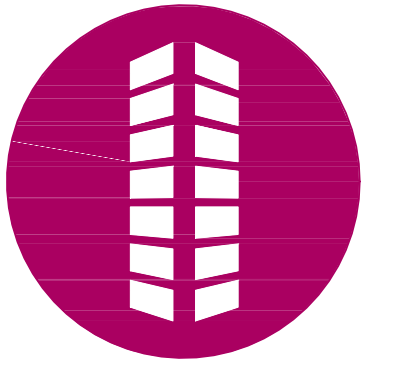
**LEGEND**

- EXISTING PROPERTY LINE
  - EXISTING ADJACENT PROPERTY LINE
  - - - 6940 EXISTING MAJOR CONTOUR
  - - - EXISTING MINOR CONTOUR
  - BASIN BOUNDARY
  - - - PROPOSED RUNOFF FLOW PATH
- 
- (A) BASIN DESIGNATION
  - (0.13, 0.41) 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
  - (4.21) BASIN AREA IN ACRES
  - (1.8, 2.0, 1.7, 1.8) 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
  - (∆) DESIGN POINT

BASIN SUMMARY TABLE						
Tributary Sub-basin	Area (acres)	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)
EX-A	5.37	0.11	0.39	16.61	1.6	11.8
EX-B	7.36	0.11	0.39	18.96	2.0	15.3
EX-C	5.90	0.11	0.38	16.81	1.7	12.6
EX-D	7.07	0.10	0.37	17.77	1.8	14.3

**PRELIMINARY**  
 NOT FOR BIDDING  
 NOT FOR CONSTRUCTION

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VILLAGE AT COTTONWOOD CREEK  
 MDDP  
 NEC POWERS BOULEVARD & WOODMEN ROAD  
 COLORADO SPRINGS, CO 80924

#	Date	Issue / Description	Init.

Project No: EMP000001  
 Drawn By: DDJ  
 Checked By: SMV  
 Date: 08/12/22

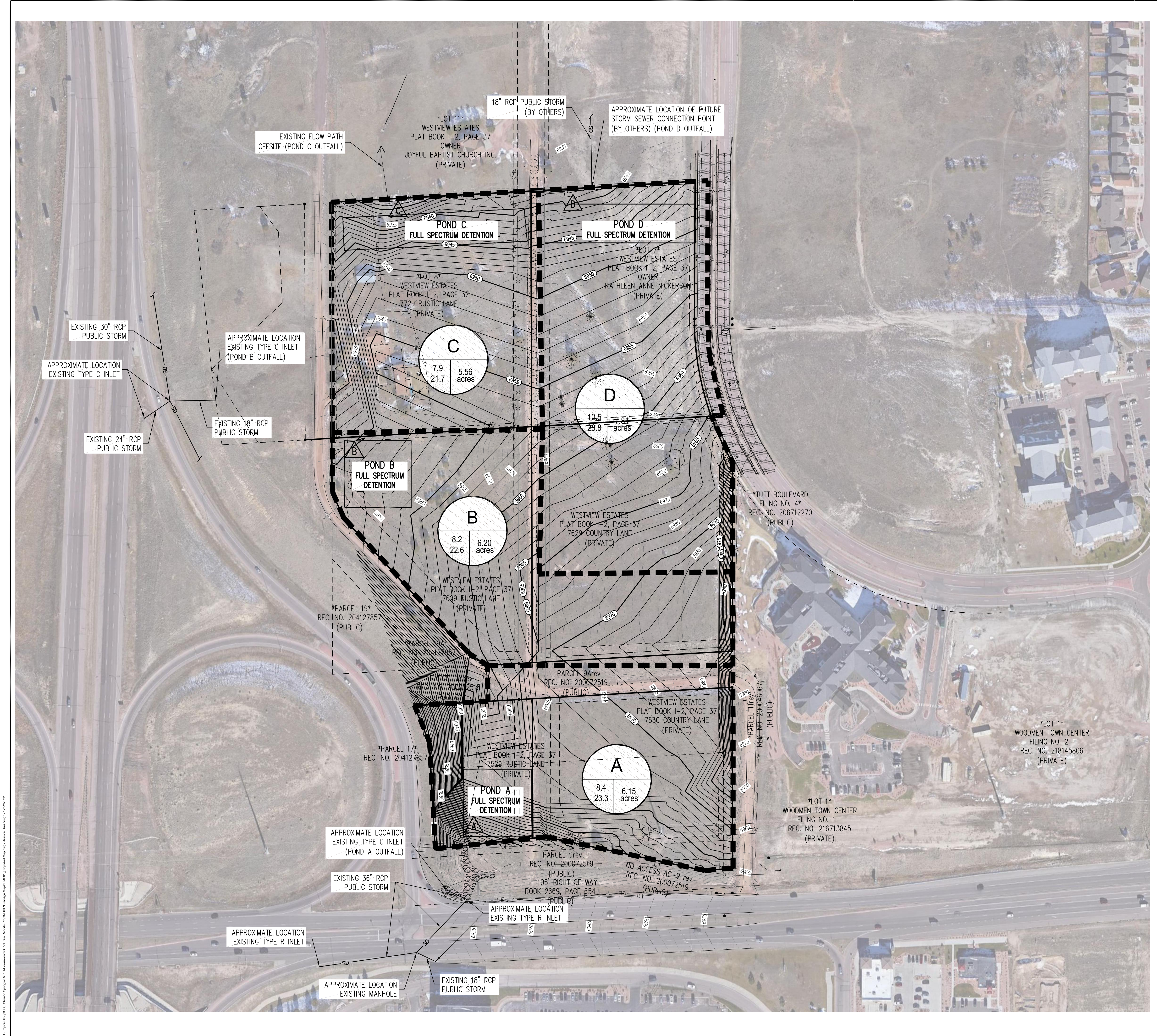
**CAUTION - NOTICE TO CONTRACTOR**

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.

2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



HISTORIC DRAINAGE MAP



N  
0 25 50 100  
SCALE: 1"=100'

**LEGEND**

- EXISTING PROPERTY LINE
- - - - EXISTING ADJACENT PROPERTY LINE
- 6940 — EXISTING MAJOR CONTOUR
- 6940 — EXISTING MINOR CONTOUR
- 6940 — PROPOSED MAJOR CONTOUR
- 6930 — PROPOSED MINOR CONTOUR
- — BASIN BOUNDARY
- >->- PROPOSED RUNOFF FLOW PATH

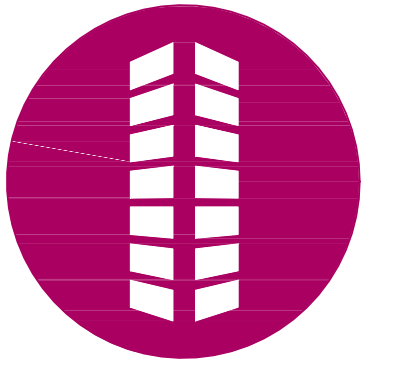
**A**

- BASIN DESIGNATION
- 0.13, 0.41, 4.21, 8.075 5-YEAR RUNOFF IN CUBIC FEET PER SECOND
- BASIN AREA IN ACRES
- △ 100-YEAR RUNOFF IN CUBIC FEET PER SECOND
- △ DESIGN POINT

BASIN SUMMARY TABLE						
Tributary Sub-basin	Area (acres)	C <sub>s</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q <sub>s</sub> (cfs)	Q <sub>100</sub> (cfs)
A	6.15	0.45	0.59	12.28	8.4	23.3
B	6.20	0.45	0.59	13.46	8.2	22.6
C	5.56	0.45	0.59	11.40	7.9	21.7
D	7.81	0.45	0.59	13.05	10.5	28.8

**PRELIMINARY**  
 NOT FOR BIDDING  
 NOT FOR CONSTRUCTION

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VILLAGE AT COTTONWOOD CREEK  
MDDP

NEC POWERS BOULEVARD & WOODMEN ROAD  
COLORADO SPRINGS, CO 80924

#	Date	Issue / Description	Int.

Project No: EMP000001  
 Drawn By: DDJ  
 Checked By: SWS  
 Date: 08/12/22

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**811**  
Know what's below. Call before you dig.