2023 Financial Assurance Estimate Form
(with pre-plat construction)

Updated: 12/8/2022

PROJECT INFORMATION		
Hwy. 105 / Jackson Creek Pkwy. Int. Imps. (East of Int. only)	7/5/2023	CDR-237
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)								
Earthwork								*
less than 1,000; $5,300 min		CY	$ 8.00	=	$ -		$ -	*
1,000-5,000; $8,000 min	2,000	CY	$ 6.00	=	$ 12,000.00		$ 12,000.00	*
5,001-20,000; $30,000 min		CY	$ 5.00	=	$ -		$ -	*
20,001-50,000; $100,000 min		CY	$ 3.50	=	$ -		$ -	*
50,001-200,000; $175,000 min		CY	$ 2.50	=	$ -		$ -	*
greater than 200,000; $500,000 min		CY	$ 2.00	=	$ -		$ -	*
Permanent Erosion Control Blanket	650.0	SY	$ 8.00	=	$ 5,200.00		$ 5,200.00	*
Permanent Seeding (inc. noxious weed mgmnt.) & Mulching	0.2	AC	$ 1,875.00	=	$ 375.00		$ 375.00	*
Permanent Pond/BMP (provide engineer's estimate)		EA		=	$ -		$ -	*
Concrete Washout Basin		EA	$ 1,089.00	=	$ -		$ -	
Inlet Protection	1	EA	$ 202.00	=	$ 202.00		$ 202.00	
Rock Check Dam		EA	$ 605.00	=	$ -		$ -	
Safety Fence		LF	$ 3.00	=	$ -		$ -	
Sediment Basin		EA	$ 2,132.00	=	$ -		$ -	
Sediment Trap		EA	$ 500.00	=	$ -		$ -	
Silt Fence	375	LF	$ 3.00	=	$ 1,125.00		$ 1,125.00	
Slope Drain		LF	$ 40.00		$ -		$ -	
Straw Bale		EA	$ 31.00	=	$ -		$ -	
Straw Wattle/Rock Sock	45	LF	$ 7.00	=	$ 315.00		$ 315.00	
Surface Roughening		AC	$ 250.00		$ -		$ -	
Temporary Erosion Control Blanket		SY	$ 3.00	=	$ -		$ -	
Temporary Seeding and Mulching		AC	$ 1,666.00	=	$ -		$ -	
Vehicle Tracking Control	1	EA	$ 2,867.00	=	$ 2,867.00		$ 2,867.00	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
MAINTENANCE (35% of Construction BMPs)				=	$ 1,578.15		$ 1,578.15	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)			**Section 1 Subtotal**	**=**	**$ 23,662.15**		**$ 23,662.15**	
SECTION 2 - PUBLIC IMPROVEMENTS *								
ROADWAY IMPROVEMENTS								*
Construction Traffic Control	1.0	LS	$ 5,000.00	=	$ 5,000.00		$ 5,000.00	*
Aggregate Base Course (135 lbs/cf)		Tons	$ 34.00	=	$ -		$ -	*
Aggregate Base Course (135 lbs/cf)		CY	$ 61.00		$ -		$ -	*
Asphalt Pavement (3" thick)		SY	$ 17.00		$ -		$ -	*
Asphalt Pavement (4" thick)		SY	$ 23.00		$ -		$ -	*
Asphalt Pavement (6" thick)		SY	$ 35.00		$ -		$ -	*
Asphalt Pavement (147 lbs/cf) __" thick		Tons	$ 106.00	=	$ -		$ -	*
Raised Median, Paved		SF	$ 10.00	=	$ -		$ -	*
Regulatory Sign/Advisory Sign			$ 364.00	=	$ -		$ -	*
Guide/Street Name Sign				=	$ -		$ -	*
Epoxy Pavement Marking			$ 16.00	=	$ -		$ -	*
Thermoplastic Pavement Marking			$ 28.00	=	$ -		$ -	*
Barricade - Type 3			$ 241.00	=	$ -		$ -	*
Delineator - Type I			$ 29.00	=	$ -		$ -	*
Curb and Gutter, Type A (6" Vertica			$ 35.00	=	$ -		$ -	*
Curb and Gutter, Type B (Median)			$ 35.00	=	$ -		$ -	*
Curb and Gutter, Type C (Ramp)		LF	$ 35.00	=	$ -		$ -	*
4" Sidewalk (common areas only)		SY	$ 58.00	=	$ -		$ -	*
5" Sidewalk		SY	$ 72.00	=	$ -		$ -	*
6" Sidewalk		SY	$ 87.00	=	$ -		$ -	*
8" Sidewalk		SY	$ 116.00		$ -		$ -	*
Pedestrian Ramp		EA	$ 1,390.00	=	$ -		$ -	*
Cross Pan, local (8" thick, 6' wide to include return)		LF	$ 73.00	=	$ -		$ -	*
Cross Pan, collector (9" thick, 8' wide to include return)		LF	$ 111.00		$ -		$ -	*
Curb Opening with Drainage Chase		EA	$ 1,790.00	=	$ -		$ -	*
Guardrail Type 3 (W-Beam)		LF	$ 60.00	=	$ -		$ -	*
Guardrail Type 7 (Concrete)		LF	$ 87.00	=	$ -		$ -	*
Guardrail End Anchorage		EA	$ 2,538.00	=	$ -		$ -	*
Guardrail Impact Attenuator		EA	$ 4,556.00	=	$ -		$ -	*
Sound Barrier Fence (CMU block, 6' high)		LF	$ 95.00		$ -		$ -	*
Sound Barrier Fence (panels, 6' high)		LF	$ 97.00	=	$ -		$ -	*
Electrical Conduit, Size =		LF	$ 20.00	=	$ -		$ -	*
Traffic Signal, (provide engineer's estimate)	Bond w/ CDOT	EA	$ 470,666	=				*

Include public improvements back into estimate that were provided on first review (ABC, pavement, signs, pavement markings, storm pipe, inlets, etc)

PROJECT INFORMATION		
Hwy. 105 / Jackson Creek Pkwy. Int. Imps. (East of Int. only)	7/5/2023	CDR-237
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	*
STORM DRAIN IMPROVEMENTS								*
Concrete Box Culvert (M Standard), Size (W x H)		LF		=	$ -		$ -	*
18" Reinforced Concrete Pipe		LF	$ 76.00	=	$ -		$ -	*
24" Reinforced Concrete Pipe	8	LF	$ 91.00	=	$ 728.00		$ 728.00	*
30" Reinforced Concrete Pipe		LF	$ 114.00	=	$ -		$ -	*
36" Reinforced Concrete Pipe		LF	$ 140.00	=	$ -		$ -	*
42" Reinforced Concrete Pipe		LF	$ 187.00	=	$ -		$ -	*
48" Reinforced Concrete Pipe		LF	$ 228.00	=	$ -		$ -	*
54" Reinforced Concrete Pipe		LF	$ 297.00	=	$ -		$ -	*
60" Reinforced Concrete Pipe		LF	$ 348.00	=	$ -		$ -	*
66" Reinforced Concrete Pipe		LF	$ 402.00	=	$ -		$ -	*
72" Reinforced Concrete Pipe		LF	$ 460.00	=	$ -		$ -	*
18" Corrugated Steel Pipe		LF	$ 98.00	=	$ -		$ -	*
24" Corrugated Steel Pipe		LF	$ 112.00	=	$ -		$ -	*
30" Corrugated Steel Pipe		LF	$ 143.00	=	$ -		$ -	*
36" Corrugated Steel Pipe		LF	$ 171.00	=	$ -		$ -	*
42" Corrugated Steel Pipe		LF	$ 197.00	=	$ -		$ -	*
48" Corrugated Steel Pipe		LF	$ 207.00	=	$ -		$ -	*
54" Corrugated Steel Pipe		LF	$ 304.00	=	$ -		$ -	*
60" Corrugated Steel Pipe		LF	$ 328.00	=	$ -		$ -	*
66" Corrugated Steel Pipe		LF	$ 397.00	=	$ -		$ -	*
72" Corrugated Steel Pipe		LF	$ 467.00	=	$ -		$ -	*
78" Corrugated Steel Pipe		LF	$ 537.00	=	$ -		$ -	*
84" Corrugated Steel Pipe		LF	$ 642.00	=	$ -		$ -	*
Flared End Section (FES) RCP Size = (unit cost = 6x pipe unit cost)		EA		=	$ -		$ -	*
Flared End Section (FES) CSP Size = (unit cost = 6x pipe unit cost)		EA		=	$ -		$ -	*
End Treatment- Headwall		EA		=	$ -		$ -	*
End Treatment- Wingwall		EA		=	$ -		$ -	*
End Treatment - Cutoff Wall		EA		=	$ -		$ -	*
Curb Inlet (Type R) L=5', Depth < 5'		EA	$ 6,703.00	=	$ -		$ -	*
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'		EA	$ 8,715.00	=	$ -		$ -	*
Curb Inlet (Type R) L =5', 10' ≤ Depth < 15'		EA	$ 10,092.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', Depth < 5'		EA	$ 9,224.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 5' ≤ Depth < 10'		EA	$ 9,507.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 10' ≤ Depth < 15'		EA	$ 11,901.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', Depth < 5'		EA	$ 11,995.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 5' ≤ Depth < 10'		EA	$ 12,858.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 10' ≤ Depth < 15'		EA	$ 14,061.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', Depth < 5'		EA	$ 12,783.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', 5' ≤ Depth < 10'		EA	$ 14,109.00	=	$ -		$ -	*
Grated Inlet (Type C), Depth < 5'		EA	$ 5,611.00	=	$ -		$ -	*
Grated Inlet (Type D), Depth < 5'		EA	$ 6,931.00	=	$ -		$ -	*
Storm Sewer Manhole, Box Base		EA	$ 14,061.00	=	$ -		$ -	*
Storm Sewer Manhole, Slab Base	1	EA	$ 7,734.00	=	$ 7,734.00		$ 7,734.00	*
Geotextile (Erosion Control)		SY	$ 8.00	=	$ -		$ -	*
Rip Rap, d50 size from 6" to 24"		Tons	$ 97.00	=	$ -		$ -	*
Rip Rap, Grouted		Tons	$ 115.00	=	$ -		$ -	*
Drainage Channel Construction, Size (W x H)		LF	$ -	=	$ -		$ -	*
Drainage Channel Lining, Concrete		CY	$ 689.00	=	$ -		$ -	*
Drainage Channel Lining, Rip Rap		CY	$ 135.00	=	$ -		$ -	*
Drainage Channel Lining, Grass		AC	$ 1,776.00	=	$ -		$ -	
Drainage Channel Lining, Other Stabilization				=	$ -		$ -	*
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)			**Section 2 Subtotal**	**=**	**$ 13,462.00**		**$ 13,462.00**	

PROJECT INFORMATION		
Hwy. 105 / Jackson Creek Pkwy. Int. Imps. (East of Int. only)	7/5/2023	CDR-237
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS							
Retaining Wall (Adjacent to Hwy. 105)	1	EA	$ 200,000.00	=	$ 200,000.00		$ 200,000.00
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
STORM DRAIN IMPROVEMENTS (Exception: Permanent Pond/BMP shall be itemized under Section 1)							
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"		LF	$ 78.00	=	$ -		$ -
Water Main Pipe (Ductile Iron), Size 8"		LF	$ 91.00	=	$ -		$ -
Gate Valves, 8"		EA	$ 2,247.00	=	$ -		$ -
Fire Hydrant Assembly, w/ all valves		EA	$ 7,978.00	=	$ -		$ -
Water Service Line Installation, inc. tap and valves		EA	$ 1,601.00	=	$ -		$ -
Fire Cistern Installation, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"		LF	$ 78.00	=	$ -		$ -
Sanitary Sewer Manhole, Depth < 15 feet		EA	$ 5,305.00	=	$ -		$ -
Sanitary Service Line Installation, complete		EA	$ 1,696.00	=	$ -		$ -
Sanitary Sewer Lift Station, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
LANDSCAPING IMPROVEMENTS (For subdivision specific condition of approval, or PUD)							
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
** - Section 3 is not subject to defect warranty requirements			**Section 3 Subtotal**	**=**	**$ 200,000.00**		**$ 200,000.00**

PROJECT INFORMATION		
Hwy. 105 / Jackson Creek Pkwy. Int. Imps. (East of Int. only)	7/5/2023	CDR-237
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
AS-BUILT PLANS (Public Improvements inc. Permanent WQCV BMPs)		LS		=	$ -		$ -
POND/BMP CERTIFICATION (inc. elevations and volume calculations)		LS		=	$ -		$ -

Total Construction Financial Assurance **$ 237,124.15**
(Sum of all section subtotals plus as-builts and pond/BMP certification)

Total Remaining Construction Financial Assurance (with Pre-Plat Construction) **$ 237,124.15**
(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)

Total Defect Warranty Financial Assurance **$ 6,207.40**
(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work as shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

Engineer (P.E. Seal Required)

Approved by Owner / Applicant — Date

Approved by El Paso County Engineer / ECM Administrator — Date

FINAL DRAINAGE REPORT
FOR
MONUMENT JUNCTION DEVELOPMENT
HIGHWAY 105 CORRIDOR &
JACKSON CREEK PARKWAY
INTERSECTION IMPROVEMENTS

July 2023

Prepared for:
ELITE PROPERTIES OF AMERICA, INC
2138 FLYING HORSE CLUB DR.
COLORADO SPRINGS, CO 80921

Prepared by:
CLASSIC CONSULTING
619 N. CASCADE AVE., SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job no. 1302.22

FINAL DRAINAGE REPORT FOR
MONUMENT JUNCTION DEVELOPMENT – HIGHWAY 105 CORRIDOR & JACKSON CREEK PARKWAY INTERSECTION IMPROVEMENTS

DRAINAGE REPORT STATEMENT

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 Town 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.

_____ _____
Marc A. Whorton, Colorado P.E. #37155 Date

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

Business Name: ELITE PROPERTIES OF AMERICA, INC.

By: _____

Title: _____

Address: 2138 FLYING HORSE CLUB DR.

COLORADO SPRINGS, CO 80921

TOWN OF MONUMENT:
Filed in accordance with Sections 12.13.010 of the Subdivision Ordinance for the Town of Monument, revised 1997 and 13.11.160 of the Zoning Ordinance for the Town of Monument, revised 1997.

_____ _____
For Town of Monument Date

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
(Review only for Hwy. 105 intersection design east of Jackson Creek Pkwy.)

CLASSIC CONSULTING ENGINEERS & SURVEYORS

FINAL DRAINAGE REPORT FOR
MONUMENT JUNCTION DEVELOPMENT – HIGHWAY 105 CORRIDOR &
JACKSON CREEK PARKWAY INTERSECTION IMPROVEMENTS

TABLE OF CONTENTS:

APPENDICES

CLASSIC CONSULTING ENGINEERS & SURVEYORS

PURPOSE

This document is the Final Drainage Report for the Monument Junction Development and the associated adjacent off-site improvements to Highway 105 and the intersection with Jackson Creek Parkway. The purpose of this report is to identify the existing drainage patterns in this corridor, define and detail practical solutions for the conveyance and attenuation of developed flows to minimize drainage impacts further downstream resulting from these regional roadway improvements as required by Town of Monument, El Paso County and CDOT. **Two separate reports cover the on-site aspects of the Monument Junction Development. Please reference "Monument Junction East – Phase 1 PD Site Plan" and "Monument Junction West Filing No. 1", both prepared by Classic Consulting. These reports have been approved by the Town of Monument and detail and describe all the on-site drainage design for the development.**

GENERAL DESCRIPTION

This report covers the Highway 105 corridor from the I-25 off-ramp to the Knollwood Drive intersection and the Jackson Creek Parkway improvements from Highway 105 to the high point in the road approximately 750 feet south of Highway 105. This area lies within Section 14, township 11 south, range 67 west of the 6th principal meridian, in El Paso County. This corridor is bounded on the north by CDOT property and private rural residential property, to the south by Monument Junction development and various commercial developments along Highway 105, to the east by existing Village Center at Woodmoor development and to the west by existing CDOT Right-of-way (Interstate-25).

The average soil condition reflects Hydrologic Group "D" (Alamosa Loam) as determined by the "Web Soil Survey of El Paso County Area," prepared by the Soil Conservation Service (see map in Appendix).

EXISTING DRAINAGE CONDITIONS

This corridor is entirely within the Dirty Woman Creek drainage basin. Existing slopes range from 1% to 33% and ground cover is predominantly paved roadway with native grass sideroad ditches with some trees and wetlands within the corridor. The current drainage pattern flows generally in a westerly direction towards the intersection of Highway 105 and the I-25 off-ramp where an existing 36" RCP culvert crosses the I-25 off-ramp. This natural drainageway just upstream of this facility contains wetland area within the natural channel behind the sidewalk along the south side of Highway 105. Please reference the Jurisdictional Determination (JD) Action No. SPA-2022-00180 that finds these wetlands to be non-jurisdictional. (See Appendix) The corridor east of Jackson Creek

Parkway contains an existing storm system collecting the developed street flows and the adjacent property along the south side of Highway 105.

The following off-site basins (OS-10 thru OS-18) are all along this stretch of the Highway 105 corridor east to Knollwood Drive including the intersection with Jackson Creek Parkway:

Basin OS-10 (Q_5= 3 cfs, Q_{100}= 10 cfs) consists of the off-site property within the existing Right-of-Way for Highway 105 and the I-25 off-ramp. These flows travel as sheet flow in a northerly direction directly into the sideroad ditch along the south side of Highway 105 and the east side of the I-25 off-ramp. The flows then travel as ditch flow towards the intersection with the I-25 off-ramp. The total flows at this location are described later as Design Point H10.

Basin OS-16 (Q_5= 2 cfs, Q_{100}= 5 cfs) consists of the off-site fully developed properties east of Jackson Creek Parkway and south of Highway 105. This basin consists of existing buildings, parking lot, drive aisle and landscape area. These developed flows travel into a landscape sediment area adjacent to the buildings and then directly into Basin OS-11. **Basin OS-11 (Q_5= 3 cfs, Q_{100}= 6 cfs)** consists of the off-site partially developed property due east of Jackson Creek Parkway just south of Highway 105. This basin consists of an existing building, parking lot, driveway and native planted slope adjacent to Jackson Creek Parkway. The combined developed flows travel in a westerly direction and directly into the sideroad ditch along Jackson Creek Parkway. However, the ditch on the east side of the road seems to end and these flows appear to spillover to the westerly side of the roadway (Design Point H7) as the northbound approach to the intersection with Highway 105 is superelevated due to the grade on Highway 105. At **Design Point H7 (Q_5= 5 cfs, Q_{100}= 10 cfs)** these combined flows are partially collected by an existing 10' Type R at-grade inlet **(Q_5= 4.9 cfs, Q_{100}= 7.7 cfs)** with a flow-by of **(Q_5= 0.1 cfs, Q_{100}= 2.3 cfs)**. This minor flow-by continues around the corner and then in a westerly direction down the street within Basin OS-17. The collected flows along with the upstream flows are conveyed in an existing 30" RCP storm pipe and daylight into the sideroad ditch along the south side of Highway 105.

Basin OS-12 (Q_5= 1.2 cfs, Q_{100}= 3 cfs) consists of the most easterly portion of Highway 105 at the Knollwood Drive intersection. Portions of this basin include the existing paved roadway and naturally landscaped area within the ROW. It has been assumed that the upstream facilities (east of Knollwood Dr.) capture 100% of the minor flows but approximately 0.85 cfs bypass those facilities in the major event. *(Information taken from recent "Preliminary Drainage Report Highway 105 Project A", prepared by HDR for El Paso County, dated November 2021)* Thus, the

total flows are conveyed via curb and gutter in a westerly direction towards **Design Point H4 (Q_5= 1 cfs, Q_{100}= 3.8 cfs)**. At this location, an existing 5' Type R at-grade inlet collects a portion of these flows **(Q_5= 1 cfs, Q_{100}= 2.5 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 1.3 cfs)**. This minor flow-by continues in a westerly direction down the street within Basin OS-13. The collected flows are conveyed in an existing 15" RCP storm pipe in a westerly direction under Highway 105.

Basin OS-13 (Q_5= 2 cfs, Q_{100}= 4 cfs) consists of a portion of Highway 105 west of Knollwood Drive. Portions of this basin include the existing paved roadway and naturally landscaped area within the ROW. These flows along with the minor 100 yr. flow-by from Design Point H4 are conveyed via curb and gutter in a westerly direction towards **Design Point H5**. At this location, an existing 10' Type R at-grade inlet collects a portion of these flows **(Q_5= 2 cfs, Q_{100}= 4.9 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 0.4 cfs)**. This minor flow-by continues in a westerly direction down the street within Basin OS-14. The collected flows combine with the upstream system and are conveyed in an existing 15" RCP storm pipe in a westerly direction.

Basin OS-14 (Q_5= 0.8 cfs, Q_{100}= 2 cfs) consists of a portion of Highway 105 just east of Jackson Creek Parkway. Portions of this basin include the existing paved roadway and naturally landscaped area within the ROW. These flows along with the 100 yr. flow-by from Design Point H5 are conveyed via curb and gutter in a westerly direction towards **Design Point H6**. At this location, an existing 10' Type R at-grade inlet completely collects these flows with no flow-by. The total collected flows are then conveyed in an existing 24" RCP storm pipe in a southwesterly direction.

Basin OS-15 (Q_5= 4 cfs, Q_{100}= 8 cfs) consists of the off-site partially developed property due east of Jackson Creek Parkway just south of Highway 105. This basin consists of existing buildings, parking lots, drive aisles and native undeveloped areas. These developed flows generally travel in a westerly direction towards a sediment basin up on top of the slope at the intersection with Jackson Creek Parkway. This facility does not seem to have any formal stormwater quality features but rather just a rip-rap basin with and existing 18" ADS storm outfall. This outfall conveys the flows directly into a grated inlet behind the curb along the east side of Jackson Creek Parkway. The flows are then conveyed under the roadway within an existing 30" RCP storm system. This system daylights into the sideroad ditch at the SW corner of Highway 105 and Jackson Creek Parkway.

Basin OS-17 (Q_5= 2 cfs, Q_{100}= 4 cfs) consists of a portion of Highway 105 within the intersection with Jackson Creek Parkway. The majority of this basin includes the existing paved roadway along with an area naturally landscaped

slope at the SE corner of the intersection. These flows along with the by-pass flows from Design Point H7 described above are conveyed via curb and gutter in a westerly direction towards **Design Point H8 (Q_5= 2.1 cfs, Q_{100}= 6.3 cfs)**. At this location, an existing 10' Type R at-grade inlet collects a portion of these flows **(Q_5= 2.1 cfs, Q_{100}= 5.5 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 0.8 cfs)**. This minor flow-by continues in a westerly direction down the street within Basin OS-18. The collected flows are conveyed out of the back of the inlet via a 24" RCP directly into the sideroad ditch along the south side of Highway 105.

Basin OS-18 (Q_5= 1.3 cfs, Q_{100}= 2 cfs) consists of a portion of Highway 105 just east of the intersection with the I-25 off-ramp. All of this basin includes the existing paved roadway. These flows along with the by-pass flows from Design Point H8 described above are conveyed via curb and gutter in a westerly direction towards **Design Point H9 (Q_5= 1 cfs, Q_{100}= 3 cfs)**. At this location, an existing 10' Type R sump inlet completely collects these flows. The collected flows are conveyed out of the back of the inlet via a 24" RCP directly into the sideroad ditch along the south side of Highway 105.

Design Point H10 (Q_5= 14 cfs, Q_{100}= 36 cfs) consists of the total combined flows from all the tributary upstream basins described above. At this location, the natural ditch within CDOT ROW conveys the flows to an existing 36" RCP culvert under the I-25 off-ramp. This facility seems to adequately handle these current developed flows.

PROPOSED DRAINAGE CONDITIONS

Developed runoff from the proposed off-site public roadway improvements within the Highway 105 and Jackson Creek Parkway ROW corridors will be conveyed via surface drainage and public storm sewer systems to a proposed permanent storm water quality facility located at the SE corner of the intersection of the I-25 off-ramp and Highway 105. Given that these improvements span multiple jurisdictions, the proposed facilities will be designed and installed per the latest El Paso County ECM and Town of Monument drainage criteria and detailed in this report. See the following general descriptions of the anticipated developed design points and how all the developed flows will be mitigated:

Design Point D4 (Q_5= 1.4 cfs, Q_{100}= 3.9 cfs) consists of the most easterly portion of Highway 105 at the Knollwood Drive intersection within Basin OS12D. Portions of this basin include the existing paved roadway and naturally landscaped area within the ROW and new roadway improvements proposed by El Paso County. These developed flows include the minor 100 yr. flow-by of 0.85 cfs as described in the "Preliminary Drainage Report Highway 105

Project A", prepared by HDR for El Paso County, dated November 2021. The total flows are conveyed via curb and gutter in a westerly direction towards Design Point H4. At this location, a proposed 5' Type R at-grade inlet collects a portion of these flows **(Q_5= 1.4 cfs, Q_{100}= 2.5 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 1.3 cfs)**. This minor flow-by continues in a westerly direction down the street within Basin OS13D. The collected flows are conveyed in a proposed 18" RCP storm pipe in a westerly direction under Highway 105. This proposed inlet and 18" RCP storm will be constructed as a part of the El Paso County Highway 105 Project A.

Design Point D5 (Q_5= 2 cfs, Q_{100}= 5 cfs) consists of a portion of the redeveloped Highway 105 by El Paso County. At this location, a proposed 10' Type R at-grade inlet collects a portion of these flows **(Q_5= 2 cfs, Q_{100}= 4.9 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 0.4 cfs)**. This minor flow-by continues in a westerly direction down the street within Basin OS14D. The collected flows combine with the upstream system and are conveyed in a proposed 18" RCP storm pipe in a westerly direction. This proposed inlet and 24" RCP storm will be constructed as a part of the El Paso County Highway 105 Project A.

Design Point D6 (Q_5= 4 cfs, Q_{100}= 8 cfs) consists of the off-site partially developed property due east of Jackson Creek Parkway just south of Highway 105. Basin OS-15D is the upstream basin that consists of existing buildings, parking lots, drive aisles and native undeveloped areas. These developed flows generally travel in a westerly direction and will continue to be captured by a proposed CDOT Type C inlet within their property, located behind the proposed retaining wall. Appropriate easement documents and agreements will need to be granted prior to construction. The collected flows will then be routed via a proposed 18" RCP pipe routed towards the proposed storm system within Highway 105. These flows then combine with the upstream flows described earlier and are conveyed further downstream in a westerly direction.

Design Point D7 (Q_5= 6 cfs, Q_{100}= 12 cfs) consists of a portion of the proposed Jackson Creek Parkway road improvements and a few off-site basins to the east that are tributary to this location (Basins OS-16 and OS11D). Developed flows from these basins sheet flow towards Jackson Creek Parkway and enter the roadway. This portion of the road will remain superelevated and the flows sheet flow towards the median and a proposed 10' Type R at-grade inlet. This facility collects a portion of these flows **(Q_5= 5.4 cfs, Q_{100}= 8.2 cfs)** with a flow-by of **(Q_5= 0.6 cfs, Q_{100}= 3.8 cfs)**. This flow-by continues in a northerly direction down the street within Basin OS14D. The collected flows are conveyed in a proposed 18" RCP storm pipe in a northerly direction.

Design Point D8 (Q_5= 3 cfs, Q_{100}= 8 cfs) consists of a portion of the intersection including both proposed Jackson Creek Parkway and Highway 105 road improvements. Developed flow from this basin along with the flow-by described above sheet flow towards the intersection and a proposed 10' Type R sump inlet within the median. This facility completely collects these flows with a maximum ponding elevation of 6". The collected flows combine with the routed upstream flows and are conveyed in a proposed 24" RCP storm pipe in a westerly direction.

Design Point D9 (Q_5= 2 cfs, Q_{100}= 5 cfs) consists of a portion of the proposed Jackson Creek Parkway road improvements (Basin JPC7) and the on-site basin G. Developed flows from these basins sheet flow towards Jackson Creek Parkway and enter the roadway as curb and gutter flow towards a proposed 10' Type R at-grade inlet. This facility collects a portion of these flows **(Q_5= 2 cfs, Q_{100}= 4.8 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 0.2 cfs)**. This flow-by continues in a westerly direction down the street within Basin OS17D. The collected flows are conveyed in a proposed 18" RCP storm pipe in a northerly direction.

Design Point D10 (Q_5= 3 cfs, Q_{100}= 6 cfs) consists of a portion of the proposed Highway 105 road improvements within Basin OS17D. Developed flows from this basin along with the upstream flow-by sheet flow towards Highway 105. At this location a proposed 10' Type R at-grade inlet is proposed. This facility collects a portion of these flows **(Q_5= 3 cfs, Q_{100}= 5.4 cfs)** with a flow-by of **(Q_5= 0 cfs, Q_{100}= 0.8 cfs)**. This flow-by continues in a westerly direction down the street within Basin OS18D. The collected flows are conveyed in a proposed 18" RCP storm pipe towards the proposed storm system behind the curb.

Design Point D11 (Q_5= 2 cfs, Q_{100}= 4 cfs) consists of a portion of the proposed Highway 105 road improvements within Basin OS18D. Developed flows from this basin along with the minor upstream flow-by sheet flow towards Highway 105. At this location, an existing 10' Type R sump inlet completely collects these flows. The collected flows are conveyed out of the back of the inlet via an existing 24" RCP directly into the proposed SWQ facility.

Basin H (Q_5= 0.4 cfs, Q_{100}= 1.8 cfs) consists of a small portion of the proposed commercial development that will likely be landscape area and continue to sheet flow directly into Basin OS10D. **Basin OS10D (Q_5= 0.8 cfs, Q_{100}= 4 cfs)** consists of the existing vegetated slope within CDOT ROW that sheet flows to the sideroad ditch along the east side of the I-25 off-ramp. The combined flows will continue to travel as ditch flow directly into the proposed SWQ facility.

Design Point 13 (Q_5= 18 cfs, Q_{100}= 40 cfs) consists of the total combined developed flows from all the tributary upstream basins within the Highway 105 corridor and Jackson Creek Parkway intersection described above. These developed flows compare to the pre-development flows as follows:

Developed Flows at exist. 36" RCP at I-25 off-ramp: **(Q_5 = 18 cfs, Q_{100} = 40 cfs)**

Pre-developed flows at exist. 36" RCP at I-25 off-ramp: **(Q_5 = 14 cfs, Q_{100} = 36 cfs)**

A proposed SWQ/detention facility is planned within CDOT Right-of-way to help manage the additional impervious area introduced within this roadway corridor created by the public roadway improvements. This facility is designed as an Extended Detention Basin (EDB) storm water quality facility with a full spectrum outlet box and associated forebay, micro pool, well screen, orifice plate, and 100-year outlet conveyance per the current drainage criteria manual. An IGA between CDOT and the Town of Monument will describe the ownership and maintenance responsibilities. The pond design allows for the required Water Quality Capture Volume with release though an orifice plate (Top of Micropool = 7004.50) and then the other storm events up to the 100 yr. event will be handled through a 6'x3' concrete outlet box (Top of box = 7010.00).

The following represents the required design for this facility (See Appendix):

SWQ Pond

Total tributary area: 11.84 ac.

Effective Imperviousness: 53.6%

	Estimated	Provided
Zone 1 (WQCV)	0.21 Ac.-ft.	0.21 Ac.-ft.
Zone 2 (EURV)	0.39 Ac.-ft.	0.39 Ac.-ft.
Zone 3 (100-yr.)	0.52 Ac.-ft.	0.24 Ac.-ft.
Total	1.12 Ac.-ft.	0.84 Ac.-ft.

Top of Micropool elev: 7004.50

6'x3' Conc. Outlet box with top of box height of 5.5' and exist. 36" RCP outfall pipe

Orifice Plate design: Four holes = 1-3/16" dia. spaced 16.5"

Calculations per MHFD-Detention_v4.05 spreadsheet:

Pond Peak Design Release: **(Q_2 = 0.5 cfs, Q_5 = 4.6 cfs, Q_{100} = 25.2 cfs)**

Pre-developed Release: **(Q_2 = 10 cfs, Q_5 = 14 cfs, Q_{100} = 36 cfs)**

Please reference the IGA between CDOT and the Town of Monument for details on ownership and maintenance.

DRAINAGE CRITERIA

Hydrologic calculations were performed using the Town of Monument Standards, which follow the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in May 2014. The Rational Method was used to estimate storm water runoff anticipated from design storms for the 5 year and 100-year recurrence interval for local storm inlet and pipe facility sizing. Runoff Coefficients are based on the imperviousness of the particular land use and the hydrologic soil type in accordance with Table 6-6. The average rainfall intensity, by recurrence interval found in the Intensity-Duration-Frequency (IDF) curves in Figure 6-5. (See Appendix)

The UD-BMP spreadsheet (ver. 3.07) along with the MHFD-Detention spreadsheet (ver. 4.05) were used to calculate the required volume for the EURV and 100-year release. User input 1-hour precipitation values in the UD-Detention spreadsheet were taken from Table 6-2 Volume 1 Colorado Springs Drainage Criteria Manual.

FLOODPLAIN STATEMENT

No portion of this site is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Number 08041C0278G effective date, December 7, 2018 (See Appendix).

SUMMARY

Construction of these proposed public roadway improvements will not adversely affect the surrounding developments. All drainage facilities were sized using the current Drainage Criteria and will safely discharge storm water runoff to adequate outfalls. Developed flows will be routed to the proposed SWQ/detention facility within CDOT ROW and slowly released at historic rates. All existing downstream facilities will not be significantly affected upon the construction of these public improvements.

PREPARED BY:

Classic Consulting Engineers & Surveyors, LLC

Marc A. Whorton, P.E.
Project Manager

maw/130222/Reports/FDR – MJ West Hwy 105-JCP.doc

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REFERENCES

1. City of Colorado Springs/County of El Paso Drainage Criteria Manual dated May 2014.

2. "Drainage Analysis Addendum No. 2 Village Center at Woodmoor", Classic Consulting Engineers and Surveyors, dated June 2009.

3. "Drainage Letter Amendment for the Drainage Analysis Addendum Village Center at Woodmoor", Classic Consulting Engineers and Surveyors, dated October 2010.

4. "Village Center @ Woodmoor Filing No.1" Berge-Brewer and Associates, Inc., dated January 2005.

5. "Drainage Basin Planning Study Dirty Woman Creek and Crystal Creek El Paso County," Kiowa Engineering Corporation, dated September 1993.

6. "MDDP for The Village" Classic Consulting, dated February 2020

7. "Final Drainage Report for Monument Junction East (Phase 1 PD Site Plan)", Classic Consulting, dated January 2022.

8. "Final Drainage Report for Monument Junction West Filing No. 1", Classic Consulting, dated March 2022.

9. "Preliminary Drainage Report – Highway 105 Project A for El Paso County", HDR, Inc., dated November 2021.

APPENDIX

VICINITY MAP

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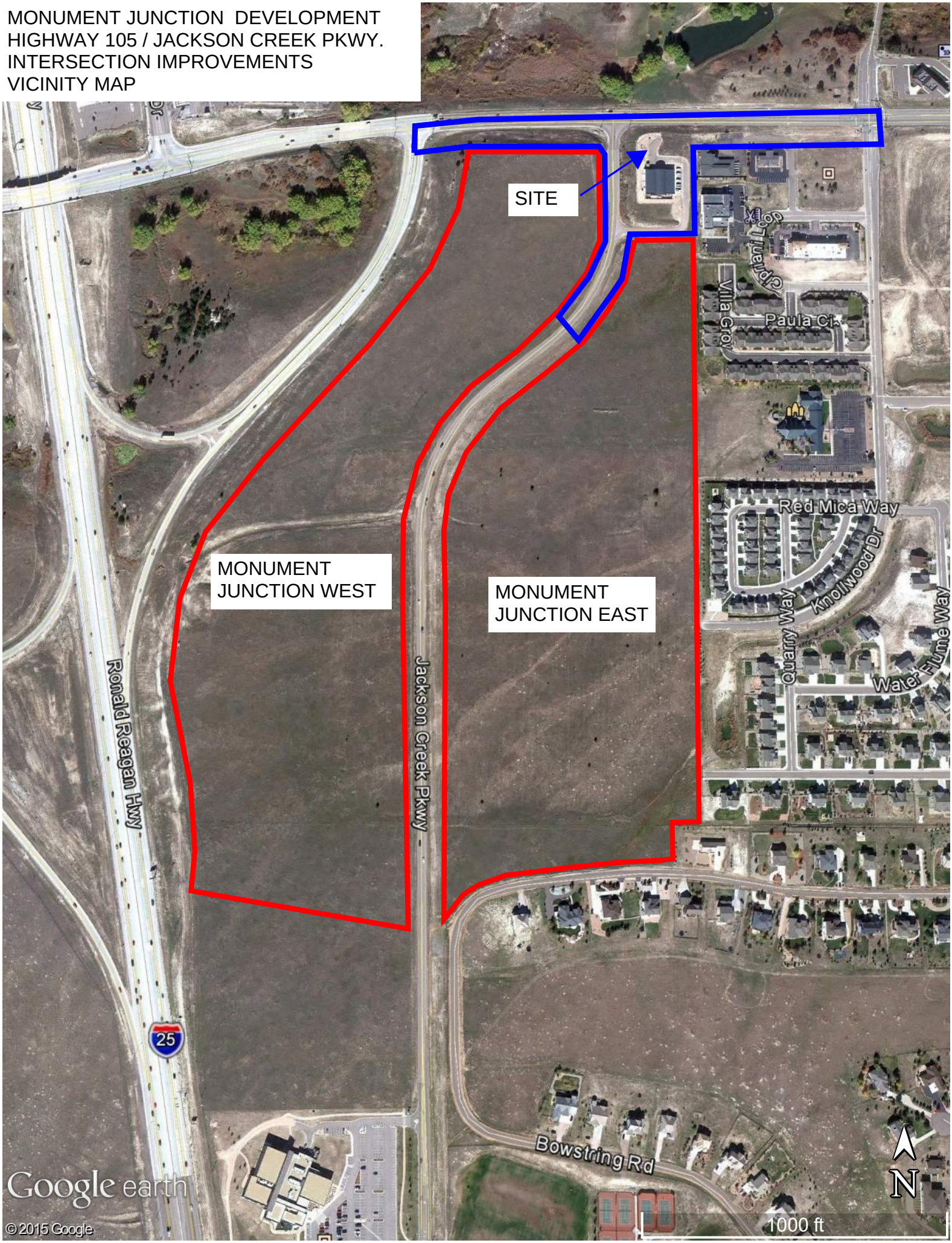
MONUMENT JUNCTION DEVELOPMENT
HIGHWAY 105 / JACKSON CREEK PKWY.
INTERSECTION IMPROVEMENTS
VICINITY MAP



SOILS MAP (S.C.S SURVEY)

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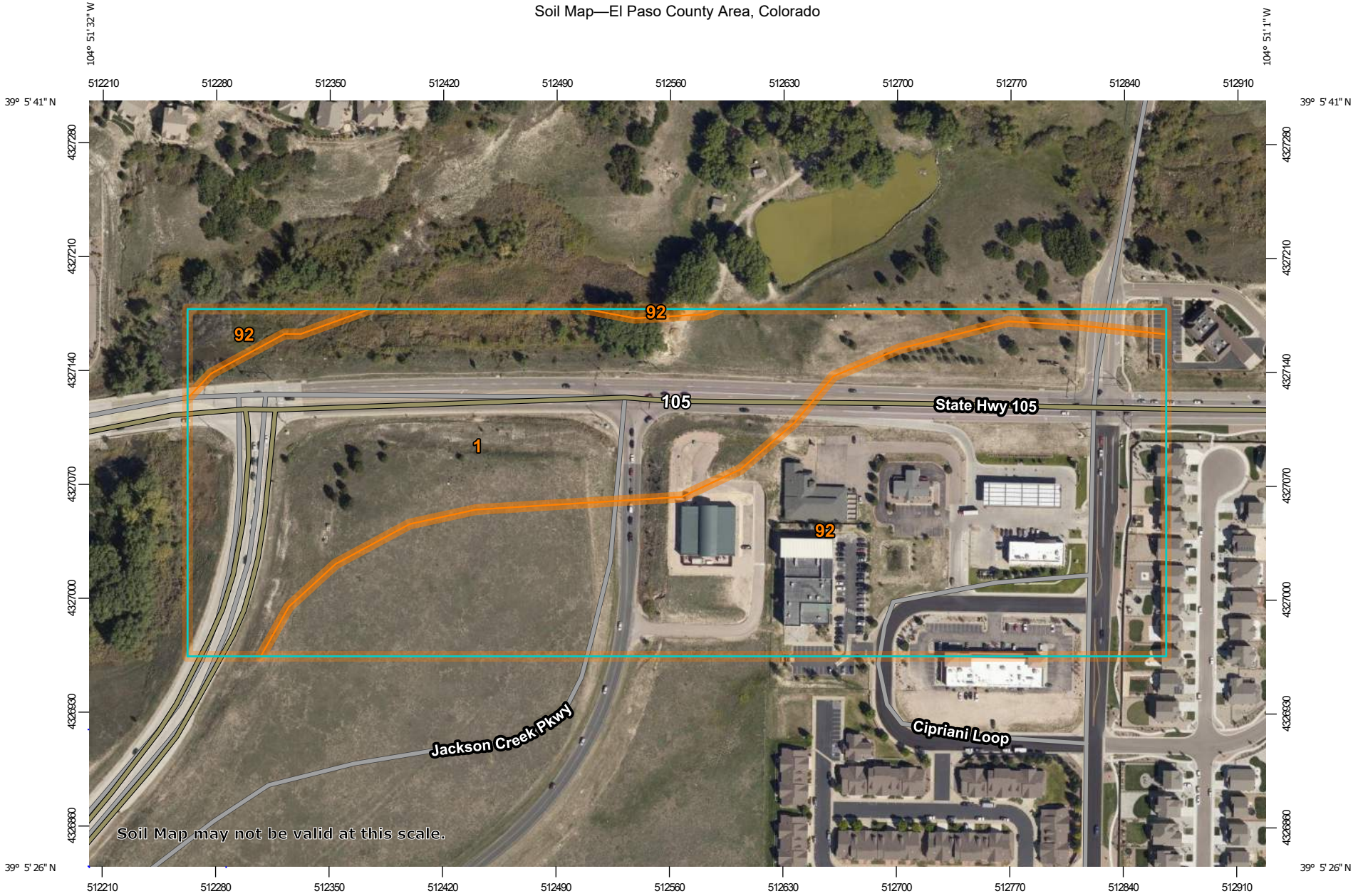

Map Scale: 1:3,320 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

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 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Alamosa loam, 1 to 3 percent slopes	13.3	41.7%
92	Tomah-Crowfoot loamy sands, 3 to 8 percent slopes	18.6	58.3%
Totals for Area of Interest		**32.0**	**100.0%**

El Paso County Area, Colorado

1—Alamosa loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3670
Elevation: 7,200 to 7,700 feet
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Alamosa and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alamosa

Setting

Landform: Flood plains, fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 6 inches: loam
Bt - 6 to 14 inches: clay loam
Btk - 14 to 33 inches: clay loam
Cg1 - 33 to 53 inches: sandy clay loam
Cg2 - 53 to 60 inches: sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Very slightly saline to strongly saline (2.0 to 16.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: R048AY241CO - Mountain Meadow
Hydric soil rating: Yes

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 19, Aug 31, 2021

El Paso County Area, Colorado

92—Tomah-Crowfoot loamy sands, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 36b9
Elevation: 7,300 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Tomah and similar soils: 50 percent
Crowfoot and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tomah

Setting

Landform: Hills, alluvial fans
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from arkose and/or residuum weathered from arkose

Typical profile

A - 0 to 10 inches: loamy sand
E - 10 to 22 inches: coarse sand
Bt - 22 to 48 inches: stratified coarse sand to sandy clay loam
C - 48 to 60 inches: coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 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: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R049XY216CO - Sandy Divide
Hydric soil rating: No

Description of Crowfoot

Setting

Landform: Alluvial fans, hills
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 12 inches: loamy sand
E - 12 to 23 inches: sand
Bt - 23 to 36 inches: sandy clay loam
C - 36 to 60 inches: coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 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: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R049XY216CO - Sandy Divide
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

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

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 19, Aug 31, 2021

F.E.M.A. MAP

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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 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
SSMC-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, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

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/.

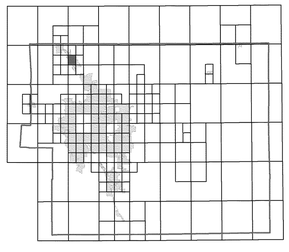
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

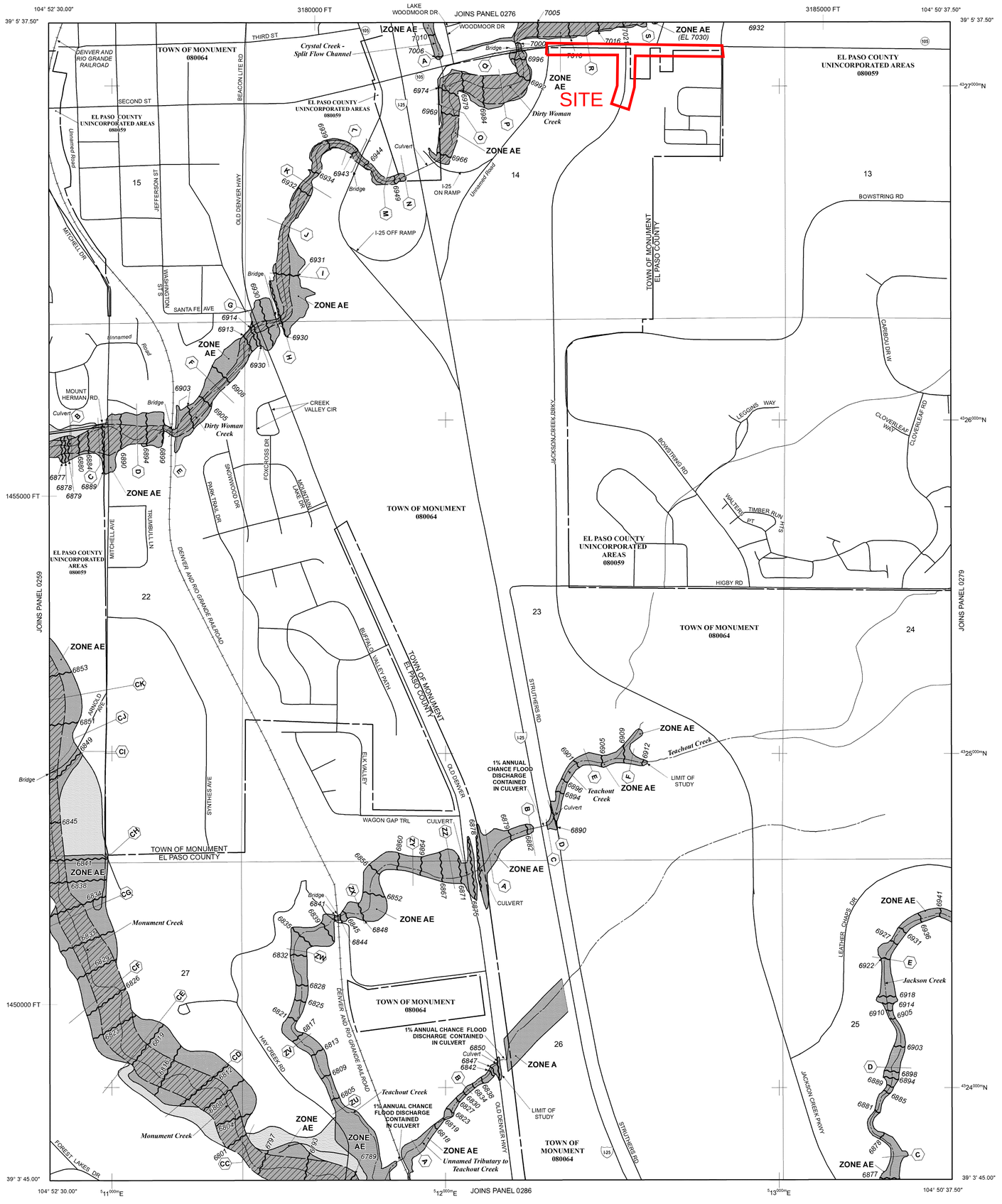
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



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.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 11 SOUTH, RANGE 67 WEST.

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 decertified. 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.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line
23 — 23 — Transect line
97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 — 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.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0278G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 278 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0278	G
MONUMENT, TOWN OF	080064	0278	G

Notice: This map was reissued on 05/15/2020 to make a correction.This version replaces any previous versions. See the Notice-to-User Letter that accompanied this correction for details.

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 08041C0278G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

JURISDICTIONAL DETERMINATION

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ALBUQUERQUE DISTRICT
SOUTHERN COLORADO REGULATORY BRANCH
201 WEST 8TH STREET, SUITE 350
PUEBLO, COLORADO 81003

June 23, 2022

Regulatory Division

SUBJECT: Jurisdictional Determination- Action No.SPA-2022-00180

Classic Communities
Attn: Steve Schlosser
2138 Flying Horse Club Drive
Colorado Springs, Colorado 80921
sschlosser@classichomes.com

Dear Mr. Schlosser:

This letter responds to your request for a jurisdictional determination (JD) for multiple aquatic resources associated with the Monument Junction-Highway 105 improvement Project. The project site is located near Dirty Woman Creek, centered at latitude 39.092991°, longitude -104.856431°, Colorado Springs, El Paso County, Colorado. We have assigned Action No. SPA-2022-00180 to your request. Please reference this number in all future correspondence concerning the site.

Based on the information provided, we concur with your aquatic resource delineation for the site, as depicted on the enclosed drawing labeled, *SPA-2022-00180, Figure 1*, prepared by Core Consultants, Inc. (enclosure 1). We have determined that the site does not contain waters of the United States that are subject to regulation under Section 404 of the Clean Water Act. The aquatic resources identified as *WT-A1 (0.169 acres), WT-A2 (0.006 acre), ST-A1 (0.003 acre), ST-A2 (0.001 acre), ST-A3 (0.001 acre), and ST-A4 (0.001 acre),* on the above drawing are man-made wetland and ditch features that were constructed in uplands, drain only uplands, and do not have relatively permanent flow. As such, these aquatic resources are not regulated by the U.S. Army Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act.

We are enclosing a copy of the *Approved Jurisdictional Determination Form* for your site (enclosure 2). A copy of this JD is also available at http://www.spa.usace.army.mil/reg/JD. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA) (enclosure 3). If you elect to appeal this approved JD, you must complete Section II of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative

Appeal Review Officer, P.O. Box 36023, 450 Golden Gate Ave, San Francisco, CA 94102 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions, please contact Senior Project Manager Kyle Zibung by email at kyle.d.zibung@usace.army.mil, or telephone at (651) 290-5877. For program information or to complete our Customer Survey, visit our website at https://www.spa.usace.army.mil/Missions/Regulatory-Program-and-Permits/.

Sincerely,

Kyle Zibung
Senior Project Manager
Southern Colorado Branch

Enclosures

cc:
Natalie Graves, Core Consultants, Inc. (ngraves@liveyourcore.com)

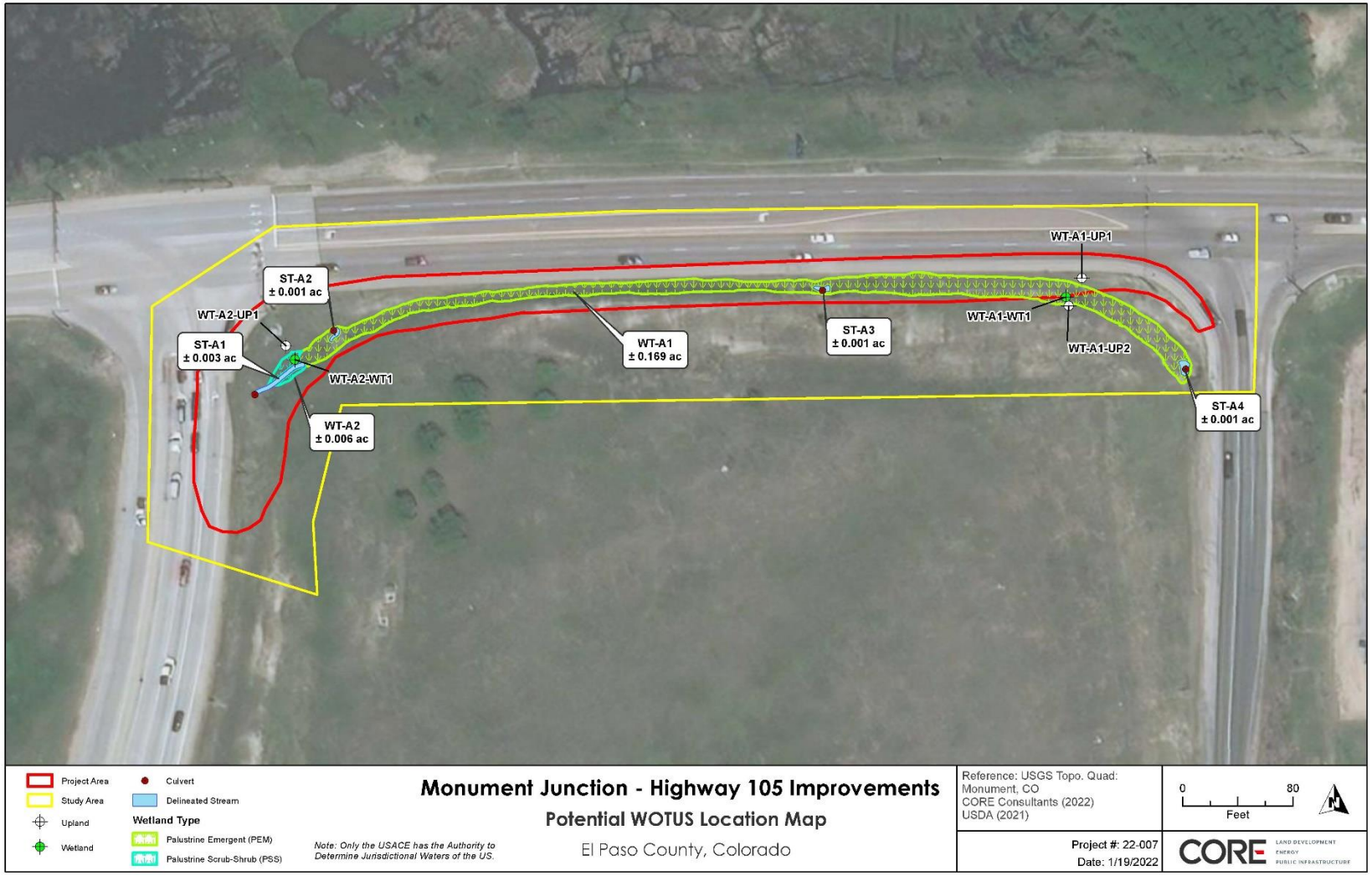


Figure 4.4 Potential WOTUS Location Map

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Classic Communities c/o Steve Schlosser	File No.: SPA-2022-00180	Date: June 23, 2022

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
→	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at *http://www.usace.army.mil/cecw/pages/reg_materials.aspx* or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Kyle Zibung
U.S. Army Corps of Engineers
201 West 8th Street, Suite 350
Pueblo, Colorado 81003

Phone: 651-290-5877
Email: kyle.d.zibung@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Thomas J. Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division
P.O. Box 36023, 450 Golden Gate Ave
San Francisco, California 94102
Phone: 415-503-6574, FAX:415-503-6646
Email: Thomas.J.Cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): June 23, 2022

B. ST PAUL, MN DISTRICT OFFICE, FILE NAME, AND NUMBER: SPA-2022-00180, Classic Communities Highway 105 AJD

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Colorado County/parish/borough: El Paso County City: Monument

Center coordinates of site (lat/long in degree decimal format): Lat. 39.092991° **N**, Long. -104.856431° **W**.

Universal Transverse Mercator: 15

Name of nearest waterbody:

Name of watershed or Hydrologic Unit Code (HUC): 07020007

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: June 22, 2022

☒ Field Determination. Date(s): June 8, 2022

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are no"*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area.

1. **Waters of the U.S.:** N/A

2. **Non-regulated waters/wetlands (check if applicable):**[1]

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **The review area for this determination is comprised of two linear wetlands labeled as WT-A1 (0.169 acres) and WT-A2 (0.006 acre) and four linear stream segments labeled as ST-A1 (0.003 acre), ST-A2 (0.001 acre), ST-A3 (0.001 acre), and ST-A4 (0.001 acre) in the February 2022, Core Consultants, Inc. Wetland Delineation Report. In 2005, the entire review area was graded for roadway improvements to Highway 105 and the I-25 interchange, thereby creating all six linear aquatic resources evaluated by this determination. Based on an analysis of multiple years of aerial photography, USDA web soil survey data, USGS topographic maps, USGS NHD, NWI mapping, February 2022, Core Consultants, Inc. Wetland Delineation Report, and a June 22, 2002 site visit, the Corps has determined that all six aquatic resources are linear roadside drainage features constructed in uplands during grading for the Highway 105 and the I-25 interchange projects. In accordance with Corps Regulations at 33 CFR Part 328.3(b) and associated Rapanos Guidance, the aforementioned aquatic features are not within the Corps jurisdiction because they were constructed in uplands, drain only uplands, and do not have relatively permanent flow.**

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs: N/A

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY): N/A

C. SIGNIFICANT NEXUS DETERMINATION: N/A

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY): N/A

[1] Supporting documentation is presented in Section III.F.

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY): N/A

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
- ☐ Other (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: February 2022, Core Consultants, Inc. Wetland Delineation Report
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☒ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
  - ☒ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24k-Monument
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey
- ☒ National wetlands inventory map(s). Cite name: National Wetland Inventory
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): Site Photos contained in Feb 2022 Core Consultants, Inc. Wetland Delineation Report
  or ☒ Other (Name & Date): Google Earth- 1999, 2004, 2005, 2006, 2008, 2010, 2011, 2015, 2017, 2019, 2020
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Applicable/supporting case law:
- ☐ Applicable/supporting scientific literature:
- ☐ Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

HYDROLOGIC / HYDRAULIC CALCULATIONS

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

For Colorado Springs and much of the Fountain Creek watershed, the 1-hour depths are fairly uniform and are summarized in Table 6-2. Depending on the location of the project, rainfall depths may be calculated using the described method and the NOAA Atlas maps shown in Figures 6-6 through 6-17.

Table 6-2. Rainfall Depths for Colorado Springs

Return Period	1-Hour Depth	6-Hour Depth	24-Hour Depth
2	1.19	1.70	2.10
5	1.50	2.10	2.70
10	1.75	2.40	3.20
25	2.00	2.90	3.60
50	2.25	3.20	4.20
100	2.52	3.50	4.60

Where Z= 6,840 ft/100

These depths can be applied to the design storms or converted to intensities (inches/hour) for the Rational Method as described below. However, as the basin area increases, it is unlikely that the reported point rainfalls will occur uniformly over the entire basin. To account for this characteristic of rain storms an adjustment factor, the Depth Area Reduction Factor (DARF) is applied. This adjustment to rainfall depth and its effect on design storms is also described below. The UDFCD UD-Rain spreadsheet, available on UDFCD's website, also provides tools to calculate point rainfall depths and Intensity-Duration-Frequency curves[2] and should produce similar depth calculation results.

2.2 Design Storms

Design storms are used as input into rainfall/runoff models and provide a representation of the typical temporal distribution of rainfall events when the creation or routing of runoff hydrographs is required. It has long been observed that rainstorms in the Front Range of Colorado tend to occur as either short-duration, high-intensity, localized, convective thunderstorms (cloud bursts) or longer-duration, lower-intensity, broader, frontal (general) storms. The significance of these two types of events is primarily determined by the size of the drainage basin being studied. Thunderstorms can create high rates of runoff within a relatively small area, quickly, but their influence may not be significant very far downstream. Frontal storms may not create high rates of runoff within smaller drainage basins due to their lower intensity, but tend to produce larger flood flows that can be hazardous over a broader area and extend further downstream.

- **Thunderstorms**: Based on the extensive evaluation of rain storms completed in the Carlton study (Carlton 2011), it was determined that typical thunderstorms have a duration of about 2 hours. The study evaluated over 300,000 storm cells using gage-adjusted NEXRAD data, collected over a 14-year period (1994 to 2008). Storms lasting longer than 3 hours were rarely found. Therefore, the results of the Carlton study have been used to define the shorter duration design storms.

  To determine the temporal distribution of thunderstorms, 22 gage-adjusted NEXRAD storm cells were studied in detail. Through a process described in a technical memorandum prepared by the City of Colorado Springs (City of Colorado Springs 2012), the results of this analysis were interpreted and normalized to the 1-hour rainfall depth to create the distribution shown in Table 6-3 with a 5 minute time interval for drainage basins up to 1 square mile in size. This distribution represents the rainfall

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis--Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_t) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_t) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

Table 6-7. Conveyance Coefficient, C_v

Type of Land Surface	C_v
Heavy meadow	2.5
Tillage/field	5
Riprap (not buried)*	6.5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

* For buried riprap, select C_v value based on type of vegetative cover.

The travel time is calculated by dividing the flow distance (in feet) by the velocity calculated using Equation 6-9 and converting units to minutes.

The time of concentration (t_c) is then the sum of the overland flow time (t_i) and the travel time (t_t) per Equation 6-7.

3.2.3 First Design Point Time of Concentration in Urban Catchments

Using this procedure, the time of concentration at the first design point (typically the first inlet in the system) in an urbanized catchment should not exceed the time of concentration calculated using Equation 6-10. The first design point is defined as the point where runoff first enters the storm sewer system.

$$t_c = \frac{L}{180} + 10 \qquad \text{(Eq. 6-10)}$$

Where:

t_c = maximum time of concentration at the first design point in an urban watershed (min)

L = waterway length (ft)

Equation 6-10 was developed using the rainfall-runoff data collected in the Denver region and, in essence, represents regional "calibration" of the Rational Method. Normally, Equation 6-10 will result in a lesser time of concentration at the first design point and will govern in an urbanized watershed. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream drainageway reaches.

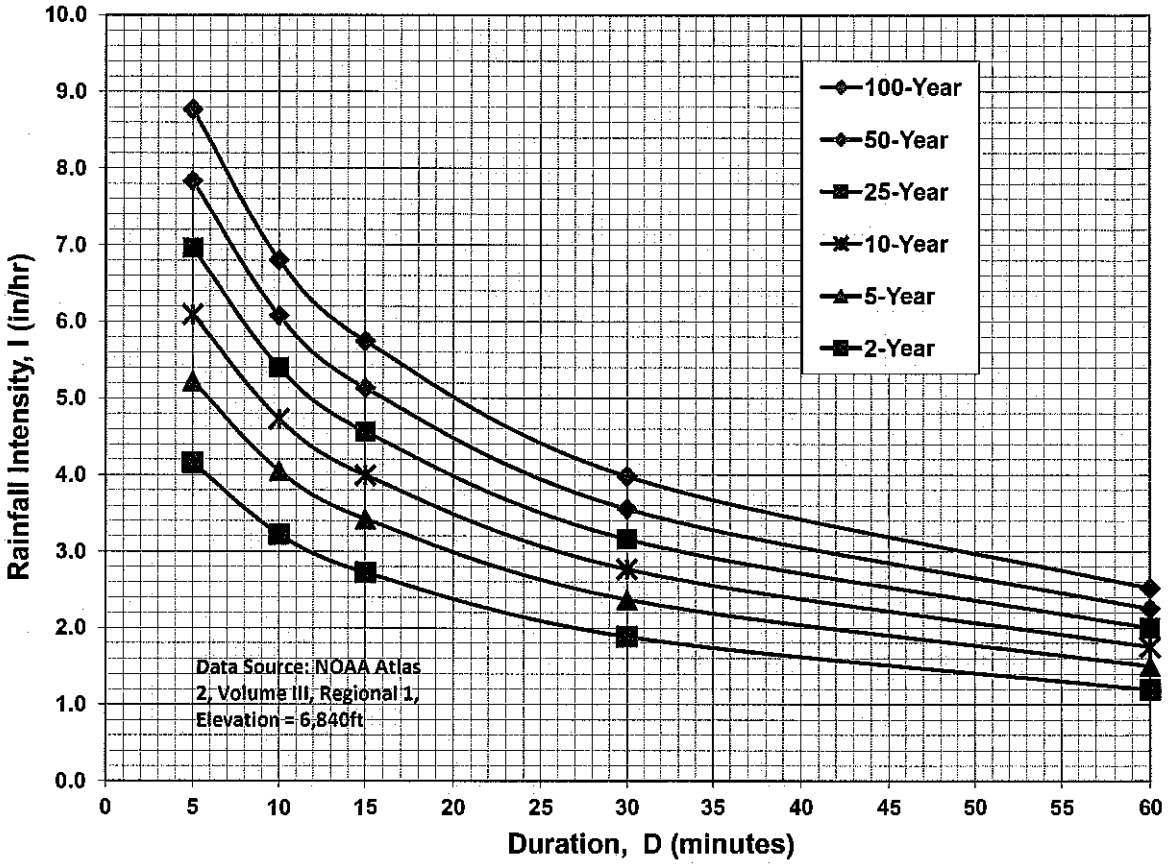
3.2.4 Minimum Time of Concentration

If the calculations result in a t_c of less than 10 minutes for undeveloped conditions, it is recommended that a minimum value of 10 minutes be used. The minimum t_c for urbanized areas is 5 minutes.

3.2.5 Post-Development Time of Concentration

As Equation 6-8 indicates, the time of concentration is a function of the 5-year runoff coefficient for a drainage basin. Typically, higher levels of imperviousness (higher 5-year runoff coefficients) correspond to shorter times of concentration, and lower levels of imperviousness correspond to longer times of

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$I_{100} = -2.52 \ln(D) + 12.735$

$I_{50} = -2.25 \ln(D) + 11.375$

$I_{25} = -2.00 \ln(D) + 10.111$

$I_{10} = -1.75 \ln(D) + 8.847$

$I_{5} = -1.50 \ln(D) + 7.583$

$I_{2} = -1.19 \ln(D) + 6.035$

Note: Values calculated by equations may not precisely duplicate values read from figure.

JOB NAME: *MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)*
JOB NUMBER: *1302.22*
DATE: *02/24/23*
CALCULATED BY: *MAW*

FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

		DEVELOPED AREA/IMPERVIOUS AREA				LANDSCAPE/UNDEVELOPED AREAS				WEIGHTED			WEIGHTED CA			IMPERVIOUSNESS
BASIN	TOTAL AREA (AC)	AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	%
G	0.20	0.05	0.79	0.81	0.88	0.15	0.03	0.09	0.36	0.22	0.27	0.49	**0.04**	**0.05**	**0.10**	25%
H	0.57	0.05	0.79	0.81	0.88	0.52	0.03	0.09	0.36	0.10	0.15	0.41	**0.06**	**0.09**	**0.23**	10%
OS-10	4.10	0.60	0.89	0.90	0.96	3.50	0.03	0.09	0.36	0.16	0.21	0.45	**0.64**	**0.86**	**1.84**	16%
OS10D	2.00	0.10	0.89	0.90	0.96	1.90	0.03	0.09	0.36	0.07	0.13	0.39	**0.15**	**0.26**	**0.78**	7%
OS-11	1.70	0.80	0.89	0.90	0.96	0.90	0.02	0.08	0.35	0.43	0.47	0.64	**0.73**	**0.79**	**1.08**	45%
OS11D	1.70	1.20	0.89	0.90	0.96	0.50	0.03	0.09	0.36	0.64	0.66	0.78	**1.08**	**1.13**	**1.33**	71%
OS-12	0.51	0.27	0.89	0.90	0.96	0.24	0.03	0.09	0.36	0.49	0.52	0.68	**0.25**	**0.26**	**0.35**	54%
OS12D	0.58	0.31	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.49	0.52	0.68	**0.28**	**0.30**	**0.39**	54%
OS-13	0.67	0.40	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.54	0.57	0.72	**0.36**	**0.38**	**0.48**	61%
OS13D	0.67	0.40	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.54	0.57	0.72	**0.36**	**0.38**	**0.48**	61%
OS-14	0.28	0.15	0.89	0.90	0.96	0.13	0.03	0.09	0.36	0.49	0.52	0.68	**0.14**	**0.15**	**0.19**	55%
OS14D	0.86	0.72	0.89	0.90	0.96	0.14	0.03	0.09	0.36	0.75	0.77	0.86	**0.65**	**0.66**	**0.74**	84%
OS-15	1.60	1.20	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.68	0.70	0.81	**1.08**	**1.12**	**1.30**	76%
OS15D	1.60	1.20	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.68	0.70	0.81	**1.08**	**1.12**	**1.30**	76%
OS-16	1.00	0.70	0.89	0.90	0.96	0.30	0.02	0.08	0.35	0.63	0.65	0.78	**0.63**	**0.65**	**0.78**	67%
OS-17	0.53	0.43	0.89	0.90	0.96	0.10	0.03	0.09	0.36	0.73	0.75	0.85	**0.39**	**0.40**	**0.45**	82%
OS17D	1.00	0.60	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.55	0.58	0.72	**0.55**	**0.58**	**0.72**	61%
OS-18	0.30	0.30	0.89	0.90	0.96	0.00	0.03	0.09	0.36	0.89	0.90	0.96	**0.27**	**0.27**	**0.29**	100%
OS18D	0.78	0.43	0.89	0.90	0.96	0.35	0.03	0.09	0.36	0.50	0.54	0.69	**0.39**	**0.42**	**0.54**	56%
OS-19	0.18	0.00	0.89	0.90	0.96	0.18	0.03	0.09	0.36	0.03	0.09	0.36	**0.01**	**0.02**	**0.06**	2%
OS-20	0.11	0.01	0.89	0.90	0.96	0.10	0.03	0.09	0.36	0.11	0.16	0.41	**0.01**	**0.02**	**0.05**	10%
JCP7	0.59	0.50	0.89	0.90	0.96	0.09	0.03	0.09	0.36	0.76	0.78	0.87	**0.45**	**0.46**	**0.51**	85%
EX2	0.56	0.56	0.03	0.09	0.36	0.00	0.03	0.09	0.36	0.03	0.09	0.36	**0.02**	**0.05**	**0.20**	2%
EX3	1.80	1.80	0.03	0.09	0.36	0.00	0.03	0.09	0.36	0.03	0.09	0.36	**0.05**	**0.16**	**0.65**	2%
Exist. Trib. to Pond	**13.05**															**37.5%**
Dev. Trib. to Pond	**11.84**															**53.6%**
Dev. Trib. to Forebay	**8.49**															**67.2%**

JOB NAME: ***MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)***
JOB NUMBER: ***1302.22***
DATE: ***02/24/23***
CALC'D BY: ***MAW***

Return Period	1-Hour Depth
2	1.19
5	1.50
10	1.75
25	2.00
50	2.25
100	2.52

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

Table 6-7. Conveyance Coefficient, C_v

Type of Land Surface	C_v
Heavy meadow	2.5
Tillage/field	5
Riprap (not buried)* $t_c = \frac{L}{180} + 10$	6.5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

*For buried riprap, select C_v value based on type of vegetative cover.

FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

BASIN	WEIGHTED			OVERLAND				STREET / CHANNEL FLOW				Tc	INTENSITY			TOTAL FLOWS		
	CA(2)	CA(5)	CA(100)	C(5)	Length (ft)	Height (ft)	Tc (min)	Length (ft)	Slope (%)	Velocity (fps)	Tc (min)	TOTAL (min)	I(2) (in/hr)	I(5) (in/hr)	I(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
G	0.04	0.05	0.10	0.09	30	1.5	5.9					5.9	3.93	4.93	8.27	0.17	**0.3**	**0.8**
H	0.06	0.09	0.23	0.09	40	2	6.8					6.8	3.76	4.71	7.91	0.2	**0.4**	**1.8**
OS-10	0.64	0.86	1.84	0.09	65	2	10.1	950	3.5%	1.9	8.5	18.6	2.56	3.20	5.37	2	**3**	**10**
OS10D	0.15	0.26	0.78	0.09	65	2	10.1	950	3.5%	1.9	8.5	18.6	2.56	3.20	5.37	0.4	**0.8**	**4**
OS-11	0.73	0.79	1.08	0.08	100	2	14.7	500	4.0%	2.0	4.2	18.8	2.54	3.18	5.34	1.9	**3**	**6**
OS11D	1.08	1.13	1.33	0.09	100	2	14.5	300	4.0%	2.0	2.5	17.0	2.66	3.33	5.59	3	**4**	**7**
OS-12	0.25	0.26	0.35	0.09	40	2	6.8	200	3.5%	3.7	0.9	7.7	3.61	4.53	7.60	0.9	**1.2**	**3**
OS12D	0.28	0.30	0.39	0.09	40	2	6.8	200	3.5%	3.7	0.9	7.7	3.61	4.53	7.60	1.0	**1.4**	**3.0**
OS-13	0.36	0.38	0.48	0.09	25	3	4.0	240	5.5%	4.7	0.9	5.0	4.12	5.17	8.68	1.5	**2**	**4**
OS13D	0.36	0.38	0.48	0.09	25	3	4.0	250	3.5%	3.7	1.1	5.1	4.09	5.13	8.61	1.5	**2**	**4**
OS-14	0.14	0.15	0.19	0.09	30	10	3.1	170	5.5%	4.7	0.6	5.0	4.12	5.17	8.68	0.6	**0.8**	**2**
OS14D	0.65	0.66	0.74	0.09	30	10	3.1	190	5.5%	4.7	0.7	5.0	4.12	5.17	8.68	3	**3**	**6**
OS-15	1.08	1.12	1.30	0.09	180	12	13.1	100	3.0%	1.7	1.0	14.0	2.89	3.62	6.08	3	**4**	**8**
OS15D	1.08	1.12	1.30	0.09	180	12	13.1	80	3.0%	3.5	0.4	13.5	2.94	3.68	6.18	3	**4**	**8**
OS-16	0.63	0.65	0.78	0.08	100	4	11.7	130	1.5%	1.2	1.8	13.4	2.94	3.69	6.19	1.9	**2**	**5**

JOB NAME: ***MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)***
JOB NUMBER: ***1302.22***
DATE: ***02/24/23***
CALC'D BY: ***MAW***

Return Period	1-Hour Depth
2	1.19
5	1.50
10	1.75
25	2.00
50	2.25
100	2.52

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

Table 6-7. Conveyance Coefficient, C_v

Type of Land Surface	C_v
Heavy meadow	2.5
Tillage/field	5
Riprap (not buried)*	6.5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

$$t_c = \frac{L}{180} + 10$$

*For buried riprap, select C_v value based on type of vegetative cover.

FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

BASIN	WEIGHTED CA(2)	WEIGHTED CA(5)	WEIGHTED CA(100)	OVERLAND C(5)	OVERLAND Length (ft)	OVERLAND Height (ft)	OVERLAND Tc (min)	STREET / CHANNEL FLOW Length (ft)	STREET / CHANNEL FLOW Slope (%)	STREET / CHANNEL FLOW Velocity (fps)	STREET / CHANNEL FLOW Tc (min)	Tc TOTAL (min)	INTENSITY I(2) (in/hr)	INTENSITY I(5) (in/hr)	INTENSITY I(100) (in/hr)	TOTAL FLOWS Q(2) (cfs)	TOTAL FLOWS Q(5) (cfs)	TOTAL FLOWS Q(100) (cfs)
OS-17	0.39	0.40	0.45	0.09	60	14	5.0	380	5.0%	4.5	1.4	6.4	3.82	4.80	8.05	1.5	**2**	**4**
OS17D	0.55	0.58	0.72	0.09	60	14	5.0	380	5.0%	4.5	1.4	6.4	3.82	4.80	8.05	2	**3**	**6**
OS-18	0.27	0.27	0.29	0.09	15	0.5	4.7	280	2.0%	2.8	1.6	6.4	3.83	4.80	8.06	1.0	**1.3**	**2**
OS18D	0.39	0.42	0.54	0.09	90	4	10.6	260	2.0%	2.8	1.5	12.1	3.07	3.84	6.45	1.2	**1.6**	**3**
OS-19	0.01	0.02	0.06	0.09	80	3.2	10.3	380	5.0%	4.5	1.4	11.7	3.10	3.89	6.53	0.02	**0.1**	**0.4**
OS-20	0.01	0.02	0.05	0.09	50	3	7.1					7.1	3.70	4.63	7.78	0.0	**0.1**	**0.4**
JCP7	0.45	0.46	0.51	0.09	20	0.6	5.7	300	4.5%	4.2	1.2	6.9	3.74	4.70	7.88	2	**2**	**4**
EX2	0.02	0.05	0.20	0.09	50	2	8.2					8.2	3.54	4.43	7.44	0.1	**0.2**	**1.5**
EX3	0.05	0.16	0.65	0.09	260	5	23.7					23.7	2.27	2.84	4.76	0.1	**0.5**	**3**

JOB NAME: *MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)*
JOB NUMBER: *1302.22*
DATE: *07/20/23*
CALCULATED BY: *MAW*

FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow		Inlet Size
					I(5)	I(100)	Q(5)	Q(100)	
H1	OS-1 thru OS-8	6.48	15.46	33.4	2.32	3.89	15	60	EXIST. 60" RCP CULVERT
H2	DP H1, OS-9, EX-1	9.17	25.43	39.4	2.07	3.48	19	88	EXIST. CDOT OUTFALL
H3	EX4	1.49	5.98	35.7	2.22	3.73	3	22	EXIST. SIDE ROAD DITCH
H4	OS-12	0.26	0.46	7.7	4.53	7.60	1	3	EXIST. 5' TYPE R AT-GRADE INLET
H5	OS-13, Flow-by from H4	0.38	0.63	5.0	5.17	8.68	2	5	EXIST. 10' TYPE R AT-GRADE INLET
H6	OS-14, Flow-by from H5	0.15	0.24	5.0	5.17	8.68	1	2	EXIST. 10' TYPE R AT-GRADE INLET
H7	OS-11 and OS-16	1.45	1.86	18.8	3.18	5.34	5	10	EXIST. 10' TYPE R AT-GRADE INLET
H8	OS-17, Flow-by from H7	0.42	0.73	6.4	4.80	8.05	2	6	EXIST. 10' TYPE R AT-GRADE INLET
H9	OS-18, Flow-by from H8	0.27	0.41	6.4	4.80	8.06	1	3	EXIST. 10' TYPE R AT-GRADE INLET
H10	**EX2, EX3, OS-10 thru OS-18**	**5.09**	**7.60**	**23.7**	**2.84**	**4.76**	**14**	**36**	**EXIST. 36" RCP CDOT CULVERT**

JOB NAME: *MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)*
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FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow		Inlet Size
					I(5)	I(100)	Q(5)	Q(100)	
D4	OS12D, 0.85 CFS 100Yr Flow-by from upstream	0.30	0.51	7.7	4.53	7.60	1.4	3.9	PROP. 5' TYPE R AT-GRADE INLET
D5	OS13D, Flow-by from D4	0.38	0.63	5.0	5.17	8.68	2	5	PROP. 10' TYPE R AT-GRADE INLET
D6	OS15D	1.12	1.30	13.5	3.68	6.18	4	8	PROP. CDOT TYPE C INLET
D7	OS11D, OS-16, OS-19, OS-20	1.81	2.22	17.0	3.33	5.59	6	12	PROP. 10' TYPE R AT-GRADE INLET
D8	OS14D, Flow-by from D5&D7	0.84	1.47	17.0	3.33	5.59	3	8	PROP. 10' TYPE R SUMP INLET
D9	JCP7, G	0.51	0.61	6.9	4.70	7.88	2	5	PROP. 10' TYPE R AT-GRADE INLET
D10	OS17D, Flow-by from D9	0.58	0.74	6.4	4.80	8.05	3	6	PROP. 10' TYPE R AT-GRADE INLET
D11	OS18D, Flow-by from D10	0.42	0.64	12.1	3.84	6.45	2	4	EXIST. 10' TYPE R SUMP INLET
13	**G, H, JCP7, OS10D thru OS15D, OS-16, OS17D, OS18D, OS-19, OS-20**	**5.87**	**8.01**	**21.1**	**3.01**	**5.05**	**18**	**40**	**SWQ FACILITY in CDOT ROW**

JOB NAME: ***MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)***
JOB NUMBER: ***1302.22***
DATE: ***07/20/23***
CALCULATED BY: ***MAW***

* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow		Pipe Size*
					I(5)	I(100)	Q(5)	Q(100)	
H1	Inlet Capture at DP-H4	0.26	0.24	7.7	4.53	7.60	1	2	Exist. 15" RCP
H2	PR-H1, Inlet Capture at DP-H5	0.65	0.77	7.8	4.51	7.57	3	6	Exist. 15" RCP
H3	PR-H2, Inlet Capture at DP-H6	0.80	1.01	7.9	4.49	7.54	4	8	Exist. 24" RCP
H4	OS-15	1.12	1.30	14.0	3.62	6.08	4	8	Exist. 18" ADS
H5	PR-H3, PR-H4, Portion of OS-11 and OS-16	3.20	3.95	18.8	3.18	5.34	10	21	Exist. 30" RCP
H6	Inlet Capture at DP-H8	0.42	0.64	6.4	4.80	8.05	2	5	Exist. 24" RCP
H7	Inlet Capture at DP-H9	0.27	0.41	6.4	4.80	8.06	1	3	Exist. 24" RCP

JOB NAME: ***MONUMENT JUNCTION DEVELOPMENT (HWY. 105 & JCP INT. IMPS.)***
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* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow		Pipe Size*
					I(5)	I(100)	Q(5)	Q(100)	
1	Inlet Capture at D4	0.30	0.33	7.7	4.53	7.60	1.4	2.5	PROP. 18" RCP
2	PR-1, Inlet Capture at D5	0.69	0.92	7.7	4.53	7.60	3	7	PROP. 24" RCP
3	CDOT Type C Inlet Capture at D6	1.12	1.30	13.5	3.68	6.18	4	8	PROP. 18" RCP
4	PR-2, PR-3	1.80	2.22	13.7	3.66	6.15	7	14	PROP. 24" RCP
5	Inlet Capture at D7	1.63	1.51	17.0	3.33	5.59	5	8	PROP. 18" RCP
6	PR-5, Inlet Capture at D8	2.47	2.98	17.0	3.33	5.59	8	17	PROP. 24" RCP
7	PR-6, Inlet Capture at D9	2.98	3.56	17.0	3.33	5.59	10	20	PROP. 24" RCP
8	PR-4, PR-7	4.79	5.77	17.2	3.32	5.56	16	32	PROP. 30" RCP
9	Inlet Capture at D10	0.58	0.66	6.4	4.80	8.05	3	5	PROP. 18" RCP
10	PR-8, PR9	5.36	6.43	17.4	3.30	5.54	18	36	PROP. 30" RCP
11	Inlet Capture at D11	0.42	0.64	12.1	3.84	6.45	2	4	EXIST. 18" RCP

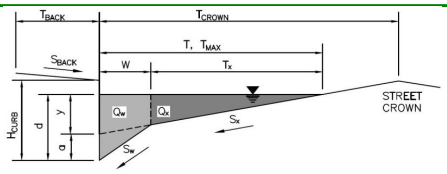
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: H4



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	35.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.035	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**3.6**	**13.7**	**cfs**

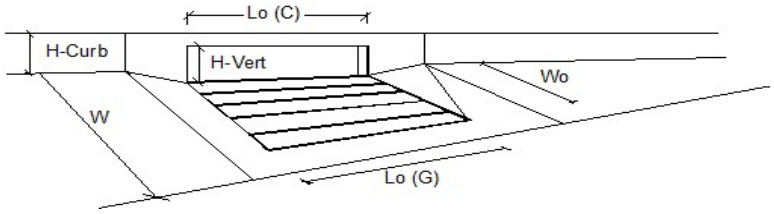
Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Unresolved:
Include calculation for drainage swale along top of retaining wall to show that it is sized to handle the flow.

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.0**	**2.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**66**	**%**

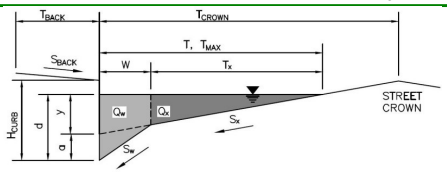
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: H5



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	4.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.056	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

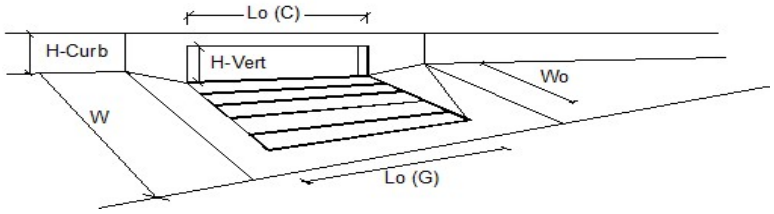
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.5**	**11.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.0**	**4.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.4**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**93**	**%**

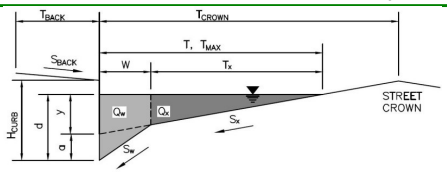
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: H6



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	4.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	28.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.057	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

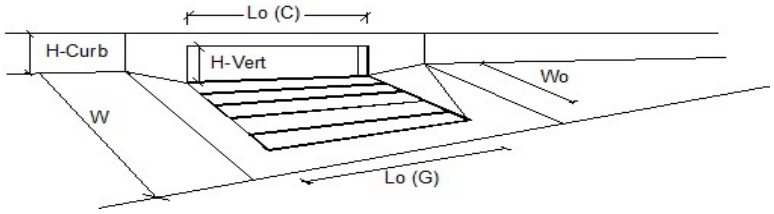
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.5**	**11.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.0**	**2.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100**	**%**

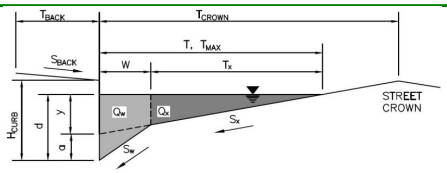
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: H7



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	8.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	14.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.040	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.020	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	14.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	5.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

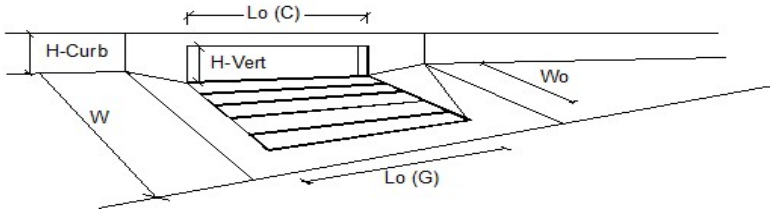
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**7.4**	**10.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**4.9**	**7.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**2.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**97**	**77**	**%**

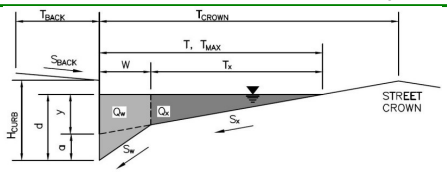
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: H8



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	30.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

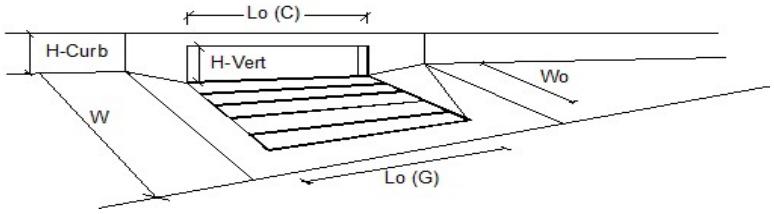
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**2.8**	**15.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.1**	**5.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**87**	**%**

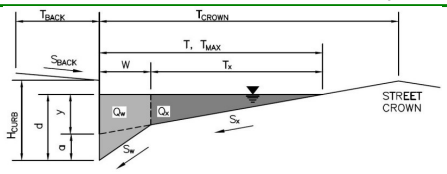
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: H9



Gutter Geometry (Enter data in the blue cells)

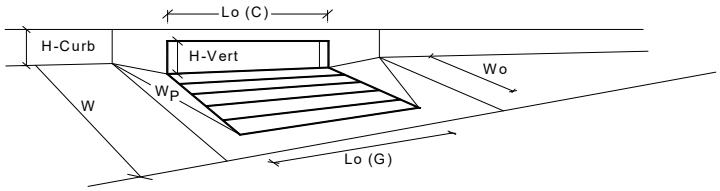
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	6.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	38.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.8	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	3.8	6.0	inches
Grate Information			MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L_o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.15	0.33	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.36	0.57	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	0.77	0.93	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
			MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)		**Q_a =**	**2.1**	**8.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		$Q_{PEAK\ REQUIRED}$ =	1.0	2.8	cfs

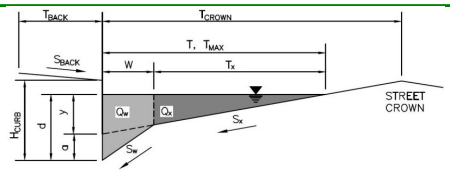
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: D4



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	50.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.035	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

Unresolved:
Per road profiles in CD set, street slope is approximately 5.5%

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

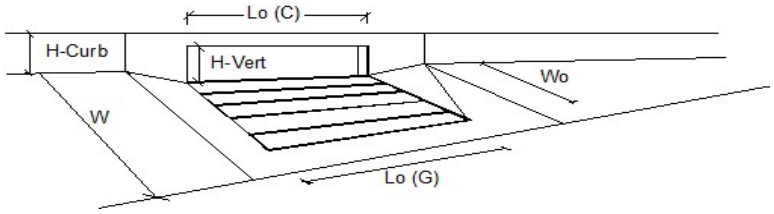
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**3.6**	**13.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.4**	**2.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**97**	**66**	**%**

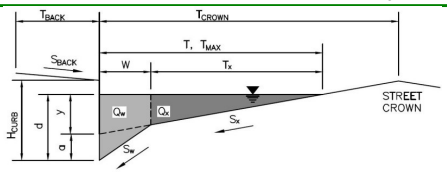
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: D5



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	4.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	42.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.056	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

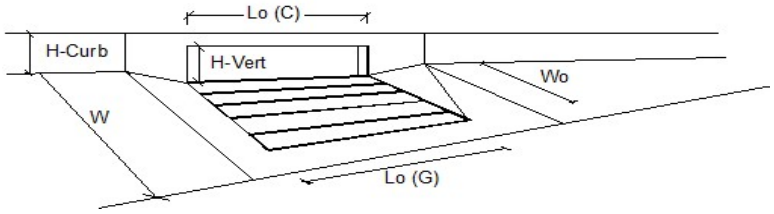
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.5**	**11.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

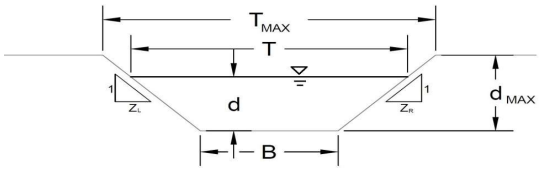
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.0**	**4.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.4**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**93**	**%**

Version 4.06 Released August 2018

AREA INLET IN A SWALE

MONUMENT JUNCTION WEST FILING NO. 1

D6



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.035	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	5.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	10.00	10.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.50	1.50	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	16.9	16.9	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.63	0.63	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	4.0	8.0	cfs
Water Depth	d =	0.28	0.42	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Version 4.06 Released August 2018

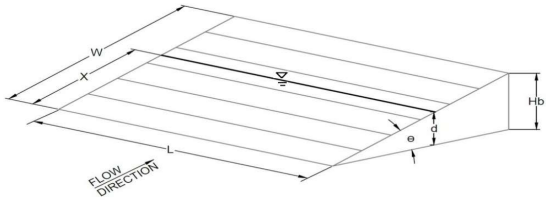
AREA INLET IN A SWALE

MONUMENT JUNCTION WEST FILING NO. 1

D6

Inlet Design Information (Input)

Type of Inlet: CDOT Type C (Depressed) — Inlet Type = CDOT Type C (Depressed)



Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	feet
Length of Grate	L =	3.00	feet
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	feet
Clogging Factor	C_f =	0.50	
Grate Discharge Coefficient	C_d =	0.84	
Orifice Coefficient	C_o =	0.56	
Weir Coefficient	C_w =	1.81	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	1.28	1.42	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**16.1**	**16.9**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

Warning 04: Froude No. exceeds USDCM Volume I recommendation.

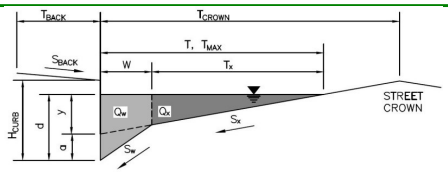
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: D7



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.100	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	42.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.035	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.040	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

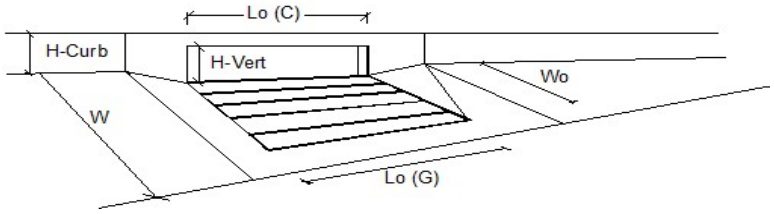
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**4.5**	**11.7**	**cfs**

WARNING: MINOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MINOR & MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**5.4**	**8.2**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.6**	**3.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**90**	**68**	**%**

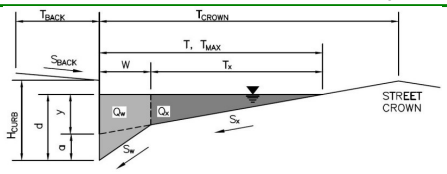
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION WEST FILING NO. 1

Inlet ID: D8



Gutter Geometry (Enter data in the blue cells)

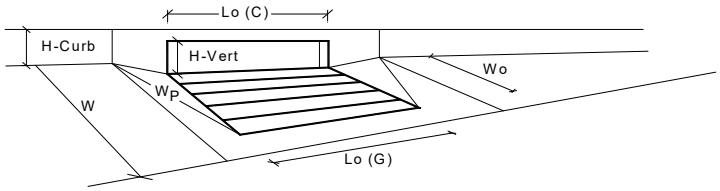
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	3.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.100	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	42.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.045	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	18.0	18.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	6.0	inches
Grate Information			MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L_o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.42	0.42	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.57	0.57	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	0.93	0.93	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
			MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)		**Q_a =**	**10.0**	**10.0**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		$Q_{PEAK\ REQUIRED}$ =	3.6	9.8	cfs

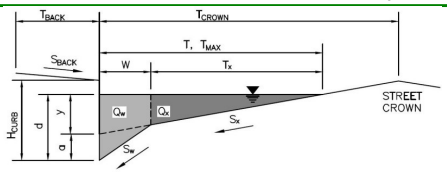
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: D9



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	10.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	25.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.025	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.040	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

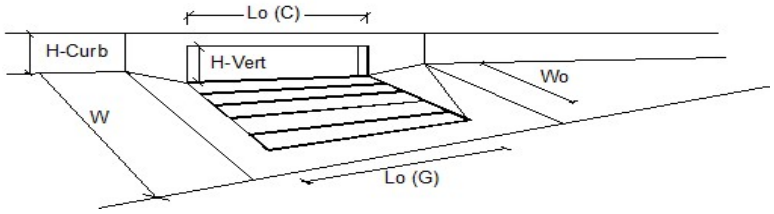
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**3.6**	**11.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.0**	**4.8**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.2**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**95**	**%**

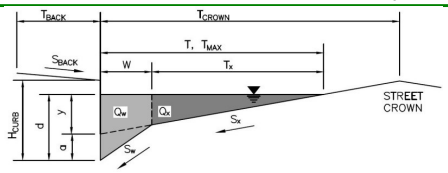
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: D10



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	10.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	48.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

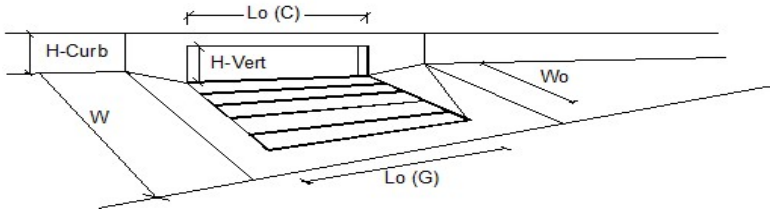
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**3.3**	**14.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.06 Released August 2018



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**3.0**	**5.4**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**88**	**%**

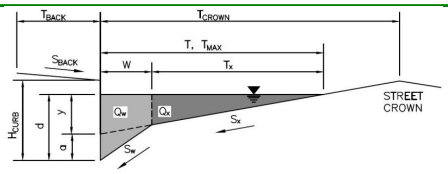
Version 4.06 Released August 2018

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: MONUMENT JUNCTION - HWY. 105/JCP INT. IMPS.

Inlet ID: D11



Gutter Geometry (Enter data in the blue cells)

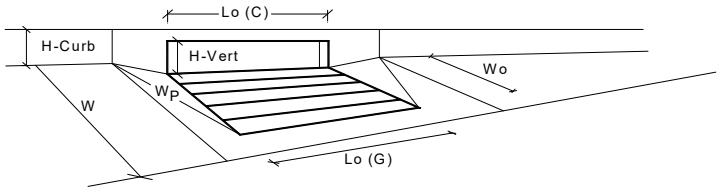
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	5.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	48.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	14.0	25.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	3.4	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

Version 4.06 Released August 2018



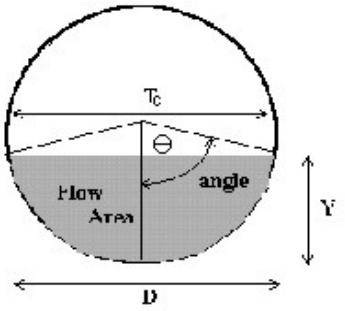
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.57	0.57	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	0.93	0.93	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**8.3**	**8.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	1.6	3.8	cfs

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 1



Design Information (Input)			
Pipe Invert Slope	So =	0.0100	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	18.00	inches
Design discharge	Q =	2.50	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	10.53	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.23	radians
Flow area	An =	0.51	sq ft
Top width	Tn =	1.41	ft
Wetted perimeter	Pn =	1.84	ft
Flow depth	Yn =	0.50	ft
Flow velocity	Vn =	4.88	fps
Discharge	Qn =	2.50	cfs
Percent of Full Flow	Flow =	23.7%	of full flow
Normal Depth Froude Number	Fr_n =	1.43	supercritical

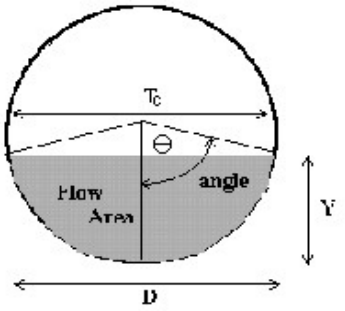
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.37	radians
Critical flow area	Ac =	0.66	sq ft
Critical top width	Tc =	1.47	ft
Critical flow depth	Yc =	0.60	ft
Critical flow velocity	Vc =	3.80	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 1



Design Information (Input)			
Pipe Invert Slope	So =	0.0536	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	18.00	inches
Design discharge	Q =	2.50	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	24.38	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	0.97	radians
Flow area	An =	0.28	sq ft
Top width	Tn =	1.24	ft
Wetted perimeter	Pn =	1.45	ft
Flow depth	Yn =	0.32	ft
Flow velocity	Vn =	8.89	fps
Discharge	Qn =	2.50	cfs
Percent of Full Flow	Flow =	10.3%	of full flow
Normal Depth Froude Number	Fr_n =	3.28	supercritical

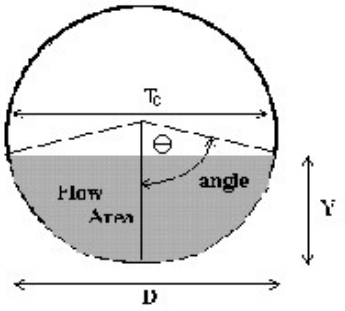
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.37	radians
Critical flow area	Ac =	0.66	sq ft
Critical top width	Tc =	1.47	ft
Critical flow depth	Yc =	0.60	ft
Critical flow velocity	Vc =	3.80	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 2



Design Information (Input)			
Pipe Invert Slope	So =	0.0568	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	24.00	inches
Design discharge	Q =	7.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	3.14	sq ft
Full-flow wetted perimeter	Pf =	6.28	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	54.06	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.03	radians
Flow area	An =	0.59	sq ft
Top width	Tn =	1.72	ft
Wetted perimeter	Pn =	2.06	ft
Flow depth	Yn =	0.49	ft
Flow velocity	Vn =	11.86	fps
Discharge	Qn =	7.00	cfs
Percent of Full Flow	Flow =	12.9%	of full flow
Normal Depth Froude Number	Fr_n =	3.56	supercritical

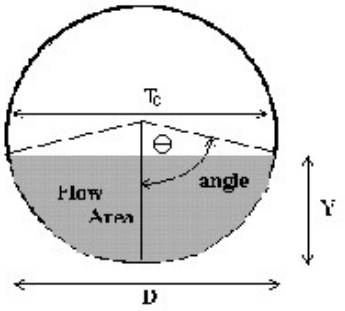
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.51	radians
Critical flow area	Ac =	1.45	sq ft
Critical top width	Tc =	2.00	ft
Critical flow depth	Yc =	0.94	ft
Critical flow velocity	Vc =	4.83	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 3



Design Information (Input)			
Pipe Invert Slope	So =	0.0100	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	18.00	inches
Design discharge	Q =	8.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	10.53	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.88	radians
Flow area	An =	1.22	sq ft
Top width	Tn =	1.43	ft
Wetted perimeter	Pn =	2.82	ft
Flow depth	Yn =	0.98	ft
Flow velocity	Vn =	6.56	fps
Discharge	Qn =	8.00	cfs
Percent of Full Flow	Flow =	76.0%	of full flow
Normal Depth Froude Number	Fr_n =	1.25	supercritical

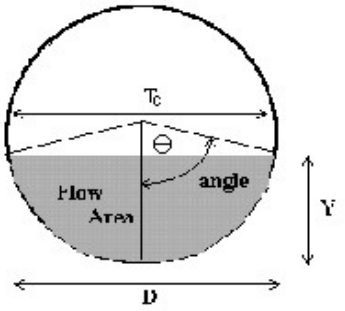
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.05	radians
Critical flow area	Ac =	1.38	sq ft
Critical top width	Tc =	1.33	ft
Critical flow depth	Yc =	1.10	ft
Critical flow velocity	Vc =	5.78	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 4



Design Information (Input)			
Pipe Invert Slope	So =	0.0763	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	24.00	inches
Design discharge	Q =	14.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	3.14	sq ft
Full-flow wetted perimeter	Pf =	6.28	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	62.66	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.21	radians
Flow area	An =	0.87	sq ft
Top width	Tn =	1.87	ft
Wetted perimeter	Pn =	2.41	ft
Flow depth	Yn =	0.64	ft
Flow velocity	Vn =	16.07	fps
Discharge	Qn =	14.00	cfs
Percent of Full Flow	Flow =	22.3%	of full flow
Normal Depth Froude Number	Fr_n =	4.15	supercritical

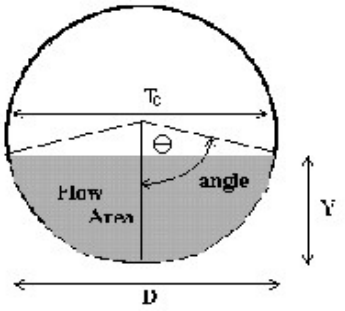
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.93	radians
Critical flow area	Ac =	2.25	sq ft
Critical top width	Tc =	1.88	ft
Critical flow depth	Yc =	1.35	ft
Critical flow velocity	Vc =	6.22	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 5



Design Information (Input)			
Pipe Invert Slope	So =	0.0448	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	18.00	inches
Design discharge	Q =	8.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	22.29	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.40	radians
Flow area	An =	0.69	sq ft
Top width	Tn =	1.48	ft
Wetted perimeter	Pn =	2.10	ft
Flow depth	Yn =	0.62	ft
Flow velocity	Vn =	11.58	fps
Discharge	Qn =	8.00	cfs
Percent of Full Flow	Flow =	35.9%	of full flow
Normal Depth Froude Number	Fr_n =	2.98	supercritical

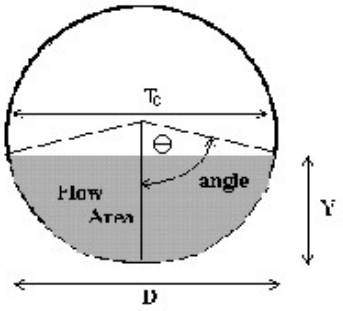
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.05	radians
Critical flow area	Ac =	1.38	sq ft
Critical top width	Tc =	1.33	ft
Critical flow depth	Yc =	1.10	ft
Critical flow velocity	Vc =	5.78	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 6



Design Information (Input)			
Pipe Invert Slope	So =	0.0307	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	24.00	inches
Design discharge	Q =	17.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	3.14	sq ft
Full-flow wetted perimeter	Pf =	6.28	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	39.74	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.48	radians
Flow area	An =	1.40	sq ft
Top width	Tn =	1.99	ft
Wetted perimeter	Pn =	2.97	ft
Flow depth	Yn =	0.91	ft
Flow velocity	Vn =	12.16	fps
Discharge	Qn =	17.00	cfs
Percent of Full Flow	Flow =	42.8%	of full flow
Normal Depth Froude Number	Fr_n =	2.56	supercritical

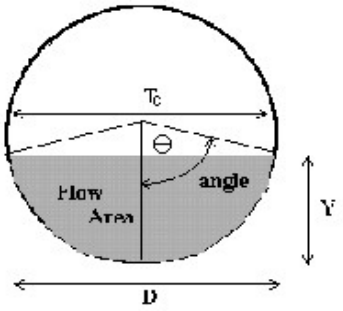
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.08	radians
Critical flow area	Ac =	2.50	sq ft
Critical top width	Tc =	1.75	ft
Critical flow depth	Yc =	1.49	ft
Critical flow velocity	Vc =	6.79	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 7



Design Information (Input)			
Pipe Invert Slope	So =	0.1140	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	24.00	inches
Design discharge	Q =	20.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	3.14	sq ft
Full-flow wetted perimeter	Pf =	6.28	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	76.59	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.26	radians
Flow area	An =	0.98	sq ft
Top width	Tn =	1.91	ft
Wetted perimeter	Pn =	2.53	ft
Flow depth	Yn =	0.70	ft
Flow velocity	Vn =	20.51	fps
Discharge	Qn =	20.00	cfs
Percent of Full Flow	Flow =	26.1%	of full flo
Normal Depth Froude Number	Fr_n =	5.05	supercritical

Per ECM section 3.3.1.J.8 maximum storm sewer velocity is 18 fps. Please revise

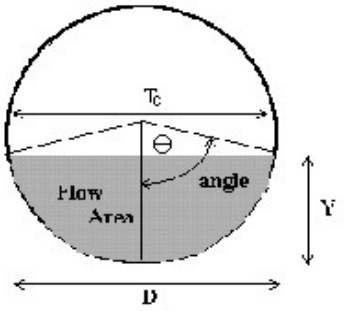
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.22	radians
Critical flow area	Ac =	2.70	sq ft
Critical top width	Tc =	1.59	ft
Critical flow depth	Yc =	1.61	ft
Critical flow velocity	Vc =	7.40	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 8



Design Information (Input)			
Pipe Invert Slope	So =	0.0065	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	30.00	inches
Design discharge	Q =	32.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	33.16	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	2.19	radians
Flow area	An =	4.16	sq ft
Top width	Tn =	2.04	ft
Wetted perimeter	Pn =	5.47	ft
Flow depth	Yn =	1.97	ft
Flow velocity	Vn =	7.69	fps
Discharge	Qn =	32.00	cfs
Percent of Full Flow	Flow =	96.5%	of full flow
Normal Depth Froude Number	Fr_n =	0.95	subcritical

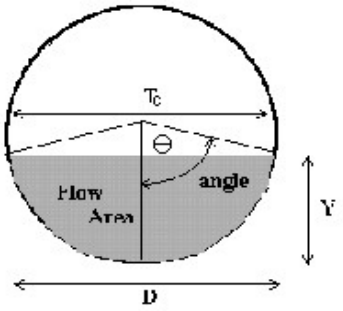
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.14	radians
Critical flow area	Ac =	4.06	sq ft
Critical top width	Tc =	2.10	ft
Critical flow depth	Yc =	1.93	ft
Critical flow velocity	Vc =	7.88	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 9



Design Information (Input)			
Pipe Invert Slope	So =	0.0100	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	18.00	inches
Design discharge	Q =	5.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	10.53	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.54	radians
Flow area	An =	0.85	sq ft
Top width	Tn =	1.50	ft
Wetted perimeter	Pn =	2.31	ft
Flow depth	Yn =	0.73	ft
Flow velocity	Vn =	5.88	fps
Discharge	Qn =	5.00	cfs
Percent of Full Flow	Flow =	47.5%	of full flow
Normal Depth Froude Number	Fr_n =	1.38	supercritical

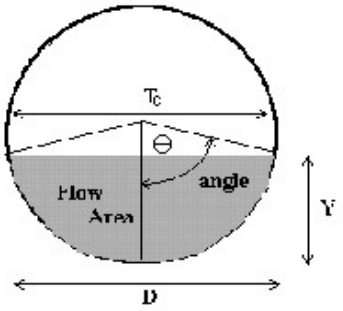
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.72	radians
Critical flow area	Ac =	1.05	sq ft
Critical top width	Tc =	1.48	ft
Critical flow depth	Yc =	0.86	ft
Critical flow velocity	Vc =	4.77	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 10



Design Information (Input)			
Pipe Invert Slope	So =	0.0080	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	30.00	inches
Design discharge	Q =	36.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	36.79	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	2.22	radians
Flow area	An =	4.21	sq ft
Top width	Tn =	2.00	ft
Wetted perimeter	Pn =	5.54	ft
Flow depth	Yn =	2.00	ft
Flow velocity	Vn =	8.54	fps
Discharge	Qn =	36.00	cfs
Percent of Full Flow	Flow =	97.9%	of full flow
Normal Depth Froude Number	Fr_n =	1.04	supercritical

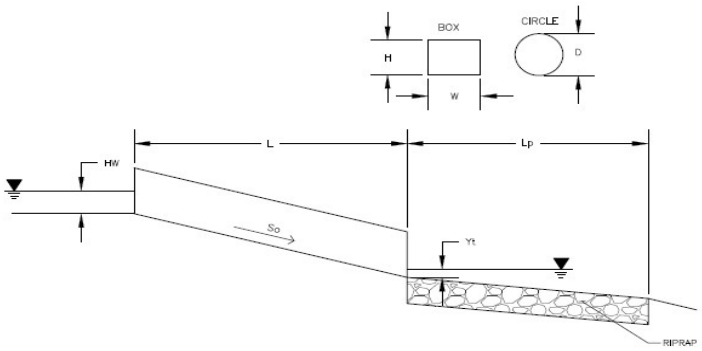
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.25	radians
Critical flow area	Ac =	4.28	sq ft
Critical top width	Tc =	1.95	ft
Critical flow depth	Yc =	2.03	ft
Critical flow velocity	Vc =	8.41	fps
Critical Depth Froude Number	Fr_c =	1.00	

DETERMINATION OF CULVERT HEADWATER AND OUTLET PROTECTION

MHFD-Culvert, Version 4.00 (May 2020)

Project: **MONUMENT JUNCTION - HWY. 105 / JCP INT. IMPROVEMENTS**

ID: **30" RCP STORMWATER QUALITY OUTFALL**



Soil Type:

Choose One:
- ○ Sandy
- ◉ Non-Sandy

Design Information:			
Design Discharge	Q =	36	cfs
Circular Culvert:			
Barrel Diameter in Inches	D =	30	inches
Inlet Edge Type (Choose from pull-down list)		Square Edge Projecting	
OR:			
Box Culvert:		**OR**	
Barrel Height (Rise) in Feet	H (Rise) =		ft
Barrel Width (Span) in Feet	W (Span) =		ft
Inlet Edge Type (Choose from pull-down list)			
Number of Barrels	# Barrels =	1	
Inlet Elevation	Elev IN =	7013.25	ft
Outlet Elevation **OR** Slope	Elev OUT =	7012.75	ft
Culvert Length	L =	100	ft
Manning's Roughness	n =	0.013	
Bend Loss Coefficient	k_b =	0	
Exit Loss Coefficient	k_x =	1	
Tailwater Surface Elevation	$Y_{t,\ Elevation}$ =		ft
Max Allowable Channel Velocity	V =	7	ft/s

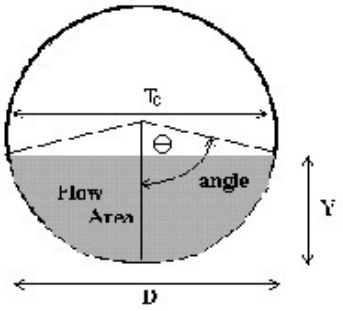
Calculated Results:			
Culvert Cross Sectional Area Available	A =	4.91	ft^2
Culvert Normal Depth	Y_n =	2.50	ft
Culvert Critical Depth	Y_c =	2.03	ft
Froude Number	Fr =	-	**Pressure flow!**
Entrance Loss Coefficient	k_e =	0.20	
Friction Loss Coefficient	k_f =	0.92	
Sum of All Loss Coefficients	k_s =	2.12	ft
Headwater:			
Inlet Control Headwater	HW_I =	3.85	ft
Outlet Control Headwater	HW_O =	3.54	ft
Design Headwater Elevation	**HW =**	**7017.10**	**ft**
Headwater/Diameter OR Headwater/Rise Ratio	**HW/D =**	**1.54**	**HW/D > 1.5!**
Outlet Protection:			
Flow/(Diameter^2.5)	Q/D^2.5 =	3.64	$ft^{0.5}/s$
Tailwater Surface Height	Y_t =	1.00	ft
Tailwater/Diameter	Yt/D =	0.40	
Expansion Factor	1/(2*tan(Θ)) =	3.82	
Flow Area at Max Channel Velocity	A_t =	5.14	ft^2
Width of Equivalent Conduit for Multiple Barrels	W_{eq} =	-	ft
Length of Riprap Protection	**L_p =**	**11**	**ft**
Width of Riprap Protection at Downstream End	**T =**	**6**	**ft**
Adjusted Diameter for Supercritical Flow	Da =	-	ft
Minimum Theoretical Riprap Size	d_{50} min=	8	in
Nominal Riprap Size	d_{50} nominal=	9	in
MHFD Riprap Type	**Type =**	**L**	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: Pipe Run 11



Design Information (Input)			
Pipe Invert Slope	So =	0.0100	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	18.00	inches
Design discharge	Q =	4.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	10.53	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.42	radians
Flow area	An =	0.72	sq ft
Top width	Tn =	1.48	ft
Wetted perimeter	Pn =	2.14	ft
Flow depth	Yn =	0.64	ft
Flow velocity	Vn =	5.55	fps
Discharge	Qn =	4.00	cfs
Percent of Full Flow	Flow =	38.0%	of full flow
Normal Depth Froude Number	Fr_n =	1.40	supercritical

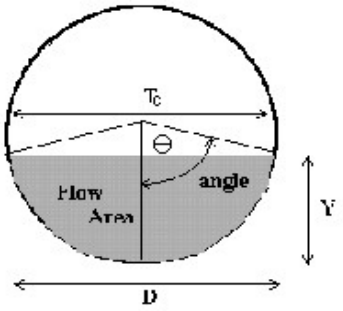
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.59	radians
Critical flow area	Ac =	0.91	sq ft
Critical top width	Tc =	1.50	ft
Critical flow depth	Yc =	0.77	ft
Critical flow velocity	Vc =	4.41	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: MONUMENT JUNCTION DEVELOPMENT - HWY. 105 & JCP INT. IMPS.

Pipe ID: EXIST. 36" RCP CULVERT



Design Information (Input)			
Pipe Invert Slope	So =	0.0100	ft/ft
Pipe Manning's n-value	n =	0.0130	
Pipe Diameter	D =	36.00	inches
Design discharge	Q =	40.00	cfs

Full-Flow Capacity (Calculated)			
Full-flow area	Af =	7.07	sq ft
Full-flow wetted perimeter	Pf =	9.42	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	66.88	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.69	radians
Flow area	An =	4.05	sq ft
Top width	Tn =	2.98	ft
Wetted perimeter	Pn =	5.06	ft
Flow depth	Yn =	1.67	ft
Flow velocity	Vn =	9.88	fps
Discharge	Qn =	40.00	cfs
Percent of Full Flow	Flow =	59.8%	of full flow
Normal Depth Froude Number	Fr_n =	1.49	supercritical

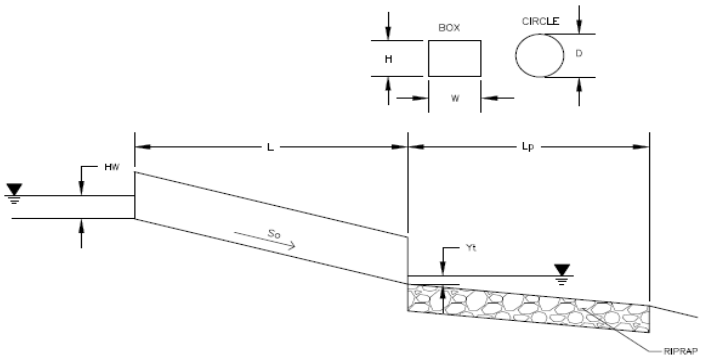
Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.95	radians
Critical flow area	Ac =	5.17	sq ft
Critical top width	Tc =	2.78	ft
Critical flow depth	Yc =	2.06	ft
Critical flow velocity	Vc =	7.73	fps
Critical Depth Froude Number	Fr_c =	1.00	

DETERMINATION OF CULVERT HEADWATER AND OUTLET PROTECTION

MHFD-Culvert, Version 4.00 (May 2020)

Project: **MONUMENT JUNCTION - HWY. 105 / JCP INT. IMPROVEMENTS**

ID: **Exist. 36" RCP CDOT Outfall**



Soil Type:
Choose One:
○ Sandy
◉ Non-Sandy

Supercritical Flow! Using Adjusted Diameter to calculate protection type.

Design Information:

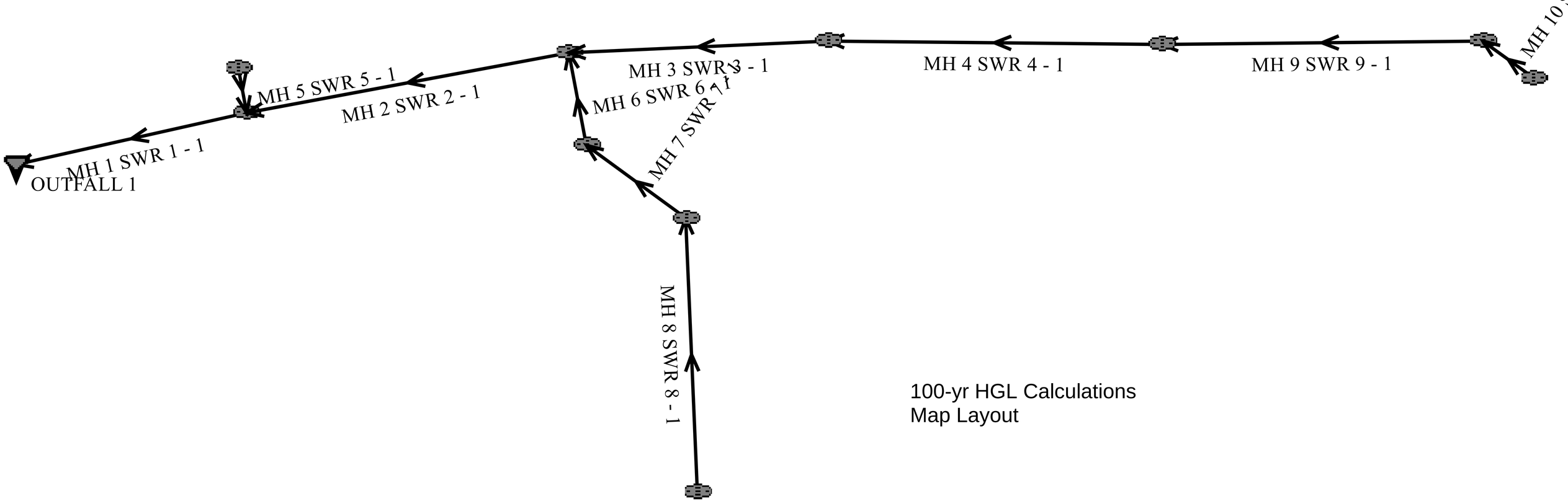
Design Discharge	Q =	25.2	cfs
Circular Culvert:			
Barrel Diameter in Inches	D =	36	inches
Inlet Edge Type (Choose from pull-down list)		Square Edge Projecting	
OR:		**OR**	
Box Culvert:			
Barrel Height (Rise) in Feet	H (Rise) =		ft
Barrel Width (Span) in Feet	W (Span) =		ft
Inlet Edge Type (Choose from pull-down list)			
Number of Barrels	# Barrels =	1	
Inlet Elevation	Elev IN =	7003.8	ft
Outlet Elevation **OR** Slope	So =	0.01	ft/ft
Culvert Length	L =	116	ft
Manning's Roughness	n =	0.013	
Bend Loss Coefficient	k_b =	0	
Exit Loss Coefficient	k_x =	1	
Tailwater Surface Elevation	$Y_{t,\ Elevation}$ =		ft
Max Allowable Channel Velocity	V =	7	ft/s

Calculated Results:

Culvert Cross Sectional Area Available	A =	7.07	ft^2
Culvert Normal Depth	Y_n =	1.28	ft
Culvert Critical Depth	Y_c =	1.62	ft
Froude Number	Fr =	1.58	**Supercritical!**
Entrance Loss Coefficient	k_e =	0.20	
Friction Loss Coefficient	k_f =	0.83	
Sum of All Loss Coefficients	k_s =	2.03	ft
Headwater:			
Inlet Control Headwater	HW_I =	2.40	ft
Outlet Control Headwater	HW_O =	N/A	ft
Design Headwater Elevation	**HW =**	**7006.20**	**ft**
Headwater/Diameter OR Headwater/Rise Ratio	**HW/D =**	**0.80**	

Outlet Control Headwater Approximation Method Inaccurate for Low Flow - Backwater Calculations Required

Outlet Protection:			
Flow/(Diameter^2.5)	Q/D^2.5 =	1.62	$ft^{0.5}/s$
Tailwater Surface Height	Y_t =	1.20	ft
Tailwater/Diameter	Yt/D =	0.40	
Expansion Factor	1/(2*tan(Θ)) =	6.11	
Flow Area at Max Channel Velocity	A_t =	3.60	ft^2
Width of Equivalent Conduit for Multiple Barrels	W_{eq} =	-	ft
Length of Riprap Protection	**L_p =**	**9**	**ft**
Width of Riprap Protection at Downstream End	**T =**	**5**	**ft**
Adjusted Diameter for Supercritical Flow	Da =	2.14	ft
Minimum Theoretical Riprap Size	d_{50} min=	4	in
Nominal Riprap Size	d_{50} nominal=	6	in
MHFD Riprap Type	**Type =**	**VL**	



100-yr HGL Calculations
Map Layout

System Input Summary

Rainfall Parameters

Rainfall Return Period: 100
Rainfall Calculation Method: Table

Time	Intensity
5	8.68
10	6.93
20	5.19
30	4.16
40	3.44
60	2.42
120	0.67

Rational Method Constraints

Minimum Urban Runoff Coeff.: 0.20
Maximum Rural Overland Len. (ft): 500
Maximum Urban Overland Len. (ft): 300
Used UDFCD Tc. Maximum: Yes

Sizer Constraints

Minimum Sewer Size (in): 18.00
Maximum Depth to Rise Ratio: 0.90

Maximum Flow Velocity (fps): 18.0
Minimum Flow Velocity (fps): 2.0

Backwater Calculations:

Tailwater Elevation (ft): 7013.75

Manhole Input Summary:

		Given Flow		Sub Basin Information						
Element Name	**Ground Elevation (ft)**	**Total Known Flow (cfs)**	**Local Contribution (cfs)**	**Drainage Area (Ac.)**	**Runoff Coefficient**	**5yr Coefficient**	**Overland Length (ft)**	**Overland Slope (%)**	**Gutter Length (ft)**	**Gutter Velocity (fps)**
OUTFALL 1	7016.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 1 SWR 1 - 1	7020.91	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 5 SWR 5 - 1	7017.60	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 2 SWR 2 - 1	7026.36	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 3 SWR 3 - 1	7036.03	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 4 SWR 4 - 1	7044.17	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 9 SWR 9 - 1	7059.12	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 10 SWR 10 - 1	7059.50	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 6 SWR 6 - 1	7026.36	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 7 SWR 7 - 1	7030.00	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MH 8 SWR 8 - 1	7037.20	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manhole Output Summary:

	Local Contribution					Total Design Flow				
Element Name	Overland Time (min)	Gutter Time (min)	Basin Tc (min)	Intensity (in/hr)	Local Contrib (cfs)	Coeff. Area	Intensity (in/hr)	Manhole Tc (min)	Peak Flow (cfs)	Comment
OUTFALL 1	0.00	0.00	0.00	0.00	0.00	54.92	0.66	0.38	36.00	
MH 1 SWR 1 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.00	
MH 5 SWR 5 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	
MH 2 SWR 2 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.00	
MH 3 SWR 3 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.00	
MH 4 SWR 4 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	
MH 9 SWR 9 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	
MH 10 SWR 10 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	
MH 6 SWR 6 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	
MH 7 SWR 7 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.00	
MH 8 SWR 8 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	

Sewer Input Summary:

		Elevation			Loss Coefficients			Given Dimensions		
Element Name	Sewer Length (ft)	Downstream Invert (ft)	Slope (%)	Upstream Invert (ft)	Mannings n	Bend Loss	Lateral Loss	Cross Section	Rise (ft or in)	Span (ft or in)
MH 1 SWR 1 - 1	166.16	7012.75	0.5	7013.58	0.013	0.03	1.00	CIRCULAR	30.00 in	30.00 in

MH 5 SWR 5 - 1	3.17	7014.58	1.0	7014.61	0.013	1.32	0.00	CIRCULAR	18.00 in	18.00 in
MH 2 SWR 2 - 1	256.17	7014.08	0.5	7015.36	0.013	0.05	1.00	CIRCULAR	30.00 in	30.00 in
MH 3 SWR 3 - 1	187.50	7015.87	7.6	7030.16	0.013	0.05	1.00	CIRCULAR	24.00 in	24.00 in
MH 4 SWR 4 - 1	145.36	7030.66	5.7	7038.92	0.013	0.05	1.00	CIRCULAR	18.00 in	18.00 in
MH 9 SWR 9 - 1	275.71	7039.42	5.4	7054.20	0.013	0.83	0.00	CIRCULAR	18.00 in	18.00 in
MH 10 SWR 10 - 1	7.53	7054.70	1.1	7054.78	0.013	0.38	1.00	CIRCULAR	18.00 in	18.00 in
MH 6 SWR 6 - 1	41.85	7015.86	11.4	7020.63	0.013	0.83	1.00	CIRCULAR	24.00 in	24.00 in
MH 7 SWR 7 - 1	69.88	7021.13	3.1	7023.28	0.013	0.94	1.00	CIRCULAR	24.00 in	24.00 in
MH 8 SWR 8 - 1	200.00	7023.78	4.5	7032.73	0.013	0.05	1.00	CIRCULAR	18.00 in	18.00 in

Unresolved:
Per storm profiles in CD set, pipe size is 24".

Sewer Flow Summary:

	Full Flow Capacity		Critical Flow		Normal Flow						
Element Name	**Flow (cfs)**	**Velocity (fps)**	**Depth (in)**	**Velocity (fps)**	**Depth (in)**	**Velocity (fps)**	**Froude Number**	**Flow Condition**	**Flow (cfs)**	**Surcharged Length (ft)**	**Comment**
MH 1 SWR 1 - 1	29.08	5.92	30.00	7.33	30.00	7.33	0.00	Pressurized	36.00	166.16	
MH 5 SWR 5 - 1	10.53	5.96	10.32	4.77	8.73	5.88	1.38	Pressurized	5.00	3.17	
MH 2 SWR 2 - 1	29.08	5.92	30.00	6.52	30.00	6.52	0.00	Pressurized	32.00	256.17	

MH 3 SWR 3 - 1	62.62	19.93	16.17	6.22	7.71	16.06	4.14	Supercritical Jump	14.00	18.03	
MH 4 SWR 4 - 1	25.11	14.21	12.29	5.45	6.50	12.17	3.40	Supercritical	7.00	0.00	
MH 9 SWR 9 - 1	24.39	13.80	7.18	3.80	3.89	8.89	3.28	Supercritical	2.50	0.00	
MH 10 SWR 10 - 1	10.83	6.13	7.18	3.80	5.88	4.98	1.47	Supercritical	2.50	0.00	
MH 6 SWR 6 - 1	76.58	24.38	19.27	7.40	8.37	20.51	5.05	Supercritical Jump	20.00	11.11	Velocity is Too High
MH 7 SWR 7 - 1	39.79	12.66	17.83	6.79	10.96	12.17	2.56	Supercritical	17.00	0.00	
MH 8 SWR 8 - 1	22.28	12.61	13.15	5.78	7.46	11.57	2.98	Supercritical	8.00	0.00	

Per ECM section 3.3.1.J.8 maximum storm sewer velocity is 18 fps. Please revise

- A Froude number of 0 indicates that pressured flow occurs (adverse slope or undersized pipe
- If the sewer is not pressurized, full flow represents the maximum gravity flow in the sewer.
- If the sewer is pressurized, full flow represents the pressurized flow conditions.

Sewer Sizing Summary:

			Existing		Calculated		Used			
Element Name	**Peak Flow (cfs)**	**Cross Section**	**Rise**	**Span**	**Rise**	**Span**	**Rise**	**Span**	**Area (ft^2)**	**Comment**
MH 1 SWR 1 - 1	36.00	CIRCULAR	30.00 in	30.00 in	33.00 in	33.00 in	30.00 in	30.00 in	4.91	Existing height is smaller than the suggested height.

										Existing width is smaller than the suggested width. Exceeds max. Depth/Rise
MH 5 SWR 5 - 1	5.00	CIRCULAR	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	1.77	
MH 2 SWR 2 - 1	32.00	CIRCULAR	30.00 in	30.00 in	33.00 in	33.00 in	30.00 in	30.00 in	4.91	Existing height is smaller than the suggested height. Existing width is smaller than the suggested width. Exceeds max. Depth/Rise
MH 3 SWR 3 - 1	14.00	CIRCULAR	24.00 in	24.00 in	18.00 in	18.00 in	24.00 in	24.00 in	3.14	
MH 4 SWR 4 - 1	7.00	CIRCULAR	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	1.77	
MH 9 SWR 9 - 1	2.50	CIRCULAR	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	1.77	
MH 10 SWR 10 - 1	2.50	CIRCULAR	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	1.77	
MH 6 SWR 6 - 1	20.00	CIRCULAR	24.00 in	24.00 in	18.00 in	18.00 in	24.00 in	24.00 in	3.14	
MH 7 SWR 7 - 1	17.00	CIRCULAR	24.00 in	24.00 in	18.00 in	18.00 in	24.00 in	24.00 in	3.14	
MH 8 SWR 8 - 1	8.00	CIRCULAR	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	18.00 in	1.77	

- Calculated diameter was determined by sewer hydraulic capacity rounded up to the nearest commercially available size.
- Sewer sizes should not decrease downstream.
- All hydraulics where calculated using the 'Used' parameters.

Grade Line Summary:

Tailwater Elevation (ft): 7013.75

	Invert Elev.		Downstream Manhole Losses		HGL		EGL		
Element Name	Downstream (ft)	Upstream (ft)	Bend Loss (ft)	Lateral Loss (ft)	Downstream (ft)	Upstream (ft)	Downstream (ft)	Friction Loss (ft)	Upstream (ft)
MH 1 SWR 1 - 1	7012.75	7013.58	0.00	0.00	7015.25	7016.52	7016.08	1.27	7017.36
MH 5 SWR 5 - 1	7014.58	7014.61	0.16	0.00	7017.40	7017.40	7017.52	0.01	7017.53
MH 2 SWR 2 - 1	7014.08	7015.36	0.03	0.18	7016.91	7018.46	7017.57	1.55	7019.12
MH 3 SWR 3 - 1	7015.87	7030.16	0.02	0.35	7019.18	7031.51	7019.48	12.62	7032.11
MH 4 SWR 4 - 1	7030.66	7038.92	0.01	0.06	7031.58	7039.94	7033.50	6.90	7040.40
MH 9 SWR 9 - 1	7039.42	7054.20	0.03	0.00	7039.97	7054.80	7040.97	14.05	7055.02
MH 10 SWR 10 - 1	7054.70	7054.78	0.01	0.00	7055.19	7055.38	7055.58	0.03	7055.60
MH 6 SWR 6 - 1	7015.86	7020.63	0.52	0.03	7019.04	7022.24	7019.67	3.42	7023.09
MH 7 SWR 7 - 1	7021.13	7023.28	0.43	0.17	7022.84	7024.77	7024.34	1.14	7025.48
MH 8 SWR 8 - 1	7023.78	7032.73	0.02	0.14	7024.92	7033.83	7026.48	7.87	7034.35

- Bend and Lateral losses only apply when there is an outgoing sewer. The system outfall, sewer #0, is not considered a sewer.
- Bend loss = Bend K * V_fi ^ 2/(2*g)
- Lateral loss = V_fo ^ 2/(2*g)- Junction Loss K * V_fi ^ 2/(2*g).
- Friction loss is always Upstream EGL - Downstream EGL.

STORMWATER QUALITY CALCULATIONS

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018)

Designer: Marc A. Whorton, P.E.
Company: Classic Consulting
Date: July 20, 2023
Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.
Location: SWQ Facility in CDOT ROW

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 53.6 %

B) Tributary Area's Imperviousness Ratio ($i = I_a / 100$) — i = 0.536

C) Contributing Watershed Area — Area = 11.840 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = 0.42 in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- (●) Water Quality Capture Volume (WQCV)
- ( ) Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time
($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area$) — V_{DESIGN} = ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN}/0.43))$) — $V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired) — $V_{DESIGN\ USER}$ = 0.121 ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
- i) Percentage of Watershed consisting of Type A Soils — HSG_A = %
- ii) Percentage of Watershed consisting of Type B Soils — HSG_B = %
- iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
— $EURV_{DESIGN}$ = ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired) — $EURV_{DESIGN\ USER}$ = ac-f t

2. Basin Shape: Length to Width Ratio
(A basin length to width ratio of at least 2:1 will improve TSS reduction.) — L : W = 2.0 : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred) — Z = 3.00 ft / ft
DIFFICULT TO MAINTAIN, INCREASE WHERE POSSIBLE

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations: Concrete Forebay

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 3% of the WQCV) — V_{FMIN} = 0.004 ac-ft

B) Actual Forebay Volume — V_F = 0.004 ac-ft

C) Forebay Depth (D_F = 18 inch maximum) — D_F = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = 36.00 cfs

ii) Forebay Discharge Design Flow ($Q_F = 0.02 * Q_{100}$) — Q_F = 0.72 cfs

E) Forebay Discharge Design

Choose One
- ( ) Berm With Pipe
- (●) Wall with Rect. Notch
- ( ) Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches) — Calculated D_P = in

G) Rectangular Notch Width — Calculated W_N = 5.0 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer: Marc A. Whorton, P.E.
Company: Classic Consulting
Date: July 20, 2023
Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.
Location: SWQ Facility in CDOT ROW

6. Trickle Channel		
A) Type of Trickle Channel	Choose One: ○ Concrete ◉ Soft Bottom	PROVIDE A CONSISTENT LONGITUDINAL SLOPE FROM FOREBAY TO MICROPOOL WITH NO MEANDERING. RIPRAP AND SOIL RIPRAP LINED CHANNELS ARE NOT RECOMMENDED.
F) Slope of Trickle Channel	S = 0.0200 ft / ft	MINIMUM DEPTH OF 1.5 FEET
7. Micropool and Outlet Structure		
A) Depth of Micropool (2.5-feet minimum)	D_M = 2.5 ft	
B) Surface Area of Micropool (10 ft^2 minimum)	A_M = 48 sq ft	
C) Outlet Type	Choose One: ◉ Orifice Plate ○ Other (Describe):	
D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention)	$D_{orifice}$ = 1.19 inches	
E) Total Outlet Area	A_{ot} = 4.36 square inches	
8. Initial Surcharge Volume		
A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches)	D_{IS} = 6 in	
B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV)	V_{IS} = 16 cu ft	
C) Initial Surcharge Provided Above Micropool	V_s = 24.0 cu ft	
9. Trash Rack		
A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$	A_t = 150 square inches	
B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.)	*S.S. Well Screen with 60% Open Area*	
Other (Y/N): N		
C) Ratio of Total Open Area to Total Area (only for type 'Other')	User Ratio =	
D) Total Water Quality Screen Area (based on screen type)	A_{total} = 250 sq. in.	
E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E)	H= 5.5 feet	
F) Height of Water Quality Screen (H_{TR})	H_{TR}= 94 inches	
G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended)	$W_{opening}$ = 12.0 inches	VALUE LESS THAN RECOMMENDED MIN. WIDTH. WIDTH HAS BEEN SET TO 12 INCHES.

Design Procedure Form: Extended Detention Basin (EDB)

Designer: Marc A. Whorton, P.E.
Company: Classic Consulting
Date: July 20, 2023
Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.
Location: SWQ Facility in CDOT ROW

10. Overflow Embankment

A) Describe embankment protection for 100-year and greater overtopping: Buried Rip-Rap

B) Slope of Overflow Embankment
(Horizontal distance per unit vertical, 4:1 or flatter preferred)
Ze = 50.00 ft / ft

11. Vegetation

Choose One
- ○ Irrigated
- ◉ Not Irrigated

12. Access

A) Describe Sediment Removal Procedures

Notes:

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018)

Designer: Marc A. Whorton, P.E.
Company: Classic Consulting
Date: July 20, 2023
Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.
Location: SWQ Facility - Forebay Sizing

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 67.2 %

B) Tributary Area's Imperviousness Ratio ($i = I_a / 100$) — i = 0.672

C) Contributing Watershed Area — Area = 8.490 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = 0.42 in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- (●) Water Quality Capture Volume (WQCV)
- ( ) Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time
($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area$)
V_{DESIGN} = ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN}/0.43))$)
$V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)
$V_{DESIGN\ USER}$ = 0.121 ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
i) Percentage of Watershed consisting of Type A Soils — HSG_A = %
ii) Percentage of Watershed consisting of Type B Soils — HSG_B = %
iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
$EURV_{DESIGN}$ = ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired)
$EURV_{DESIGN\ USER}$ = ac-f t

2. Basin Shape: Length to Width Ratio
(A basin length to width ratio of at least 2:1 will improve TSS reduction.)
L : W = 2.0 : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes
(Horizontal distance per unit vertical, 4:1 or flatter preferred)
Z = 3.00 ft / ft
DIFFICULT TO MAINTAIN, INCREASE WHERE POSSIBLE

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:
Concrete Forebay

5. Forebay

A) Minimum Forebay Volume
(V_{FMIN} = 3% of the WQCV)
V_{FMIN} = 0.004 ac-ft

B) Actual Forebay Volume
V_F = 0.004 ac-ft

C) Forebay Depth
(D_F = 18 inch maximum)
D_F = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge
Q_{100} = 36.00 cfs

ii) Forebay Discharge Design Flow
($Q_F = 0.02 * Q_{100}$)
Q_F = 0.72 cfs

E) Forebay Discharge Design

Choose One
- ( ) Berm With Pipe
- (●) Wall with Rect. Notch
- ( ) Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches)
Calculated D_P = in

G) Rectangular Notch Width
Calculated W_N = 5.0 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer: Marc A. Whorton, P.E.
Company: Classic Consulting
Date: July 20, 2023
Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.
Location: SWQ Facility - Forebay Sizing

6. Trickle Channel

A) Type of Trickle Channel — Choose One: ○ Concrete ◉ Soft Bottom

F) Slope of Trickle Channel — S = 0.0200 ft / ft

PROVIDE A CONSISTENT LONGITUDINAL SLOPE FROM FOREBAY TO MICROPOOL WITH NO MEANDERING. RIPRAP AND SOIL RIPRAP LINED CHANNELS ARE NOT RECOMMENDED. MINIMUM DEPTH OF 1.5 FEET

7. Micropool and Outlet Structure

A) Depth of Micropool (2.5-feet minimum) — D_M = ft

B) Surface Area of Micropool (10 ft^2 minimum) — A_M = sq ft

C) Outlet Type — Choose One: ◉ Orifice Plate ○ Other (Describe):

D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention) — $D_{orifice}$ = inches

E) Total Outlet Area — A_{ot} = square inches

8. Initial Surcharge Volume

A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches) — D_{IS} = in

B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV) — V_{IS} = 16 cu ft

C) Initial Surcharge Provided Above Micropool — V_s = cu ft

9. Trash Rack

A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$ — A_t = square inches

B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.)

Other (Y/N):

C) Ratio of Total Open Area to Total Area (only for type 'Other') — User Ratio =

D) Total Water Quality Screen Area (based on screen type) — A_{total} = sq. in.

E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E) — H= feet

F) Height of Water Quality Screen (H_{TR}) — H_{TR}= inches

G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended) — $W_{opening}$ = inches

Design Procedure Form: Extended Detention Basin (EDB)

Designer: Marc A. Whorton, P.E.
Company: Classic Consulting
Date: July 20, 2023
Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.
Location: SWQ Facility - Forebay Sizing

10. Overflow Embankment

A) Describe embankment protection for 100-year and greater overtopping: Buried Rip-Rap

B) Slope of Overflow Embankment
(Horizontal distance per unit vertical, 4:1 or flatter preferred)
Ze = 4.00 ft / ft

11. Vegetation

Choose One
- ○ Irrigated
- ◉ Not Irrigated

12. Access

A) Describe Sediment Removal Procedures

Notes:

DETENTION FACILITY CALCULATIONS

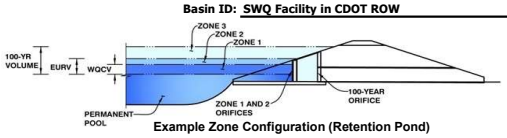
CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.05 (January 2022)

Project: **Monument Junction Development - Hwy. 105 & JCP Int. Imps.**

Basin ID: **SWQ Facility in CDOT ROW**



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	11.84	acres
Watershed Length =	1,200	ft
Watershed Length to Centroid =	600	ft
Watershed Slope =	0.050	ft/ft
Watershed Imperviousness =	53.60%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.213	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.604	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.673	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	0.955	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	1.195	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	1.472	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	1.723	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	2.026	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 3.85 in.) =	3.392	acre-feet	3.85	inches
Approximate 2-yr Detention Volume =	0.535	acre-feet		
Approximate 5-yr Detention Volume =	0.786	acre-feet		
Approximate 10-yr Detention Volume =	0.896	acre-feet		
Approximate 25-yr Detention Volume =	0.965	acre-feet		
Approximate 50-yr Detention Volume =	0.998	acre-feet		
Approximate 100-yr Detention Volume =	1.124	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.213	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.390	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.520	acre-feet
Total Detention Basin Volume =	1.124	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

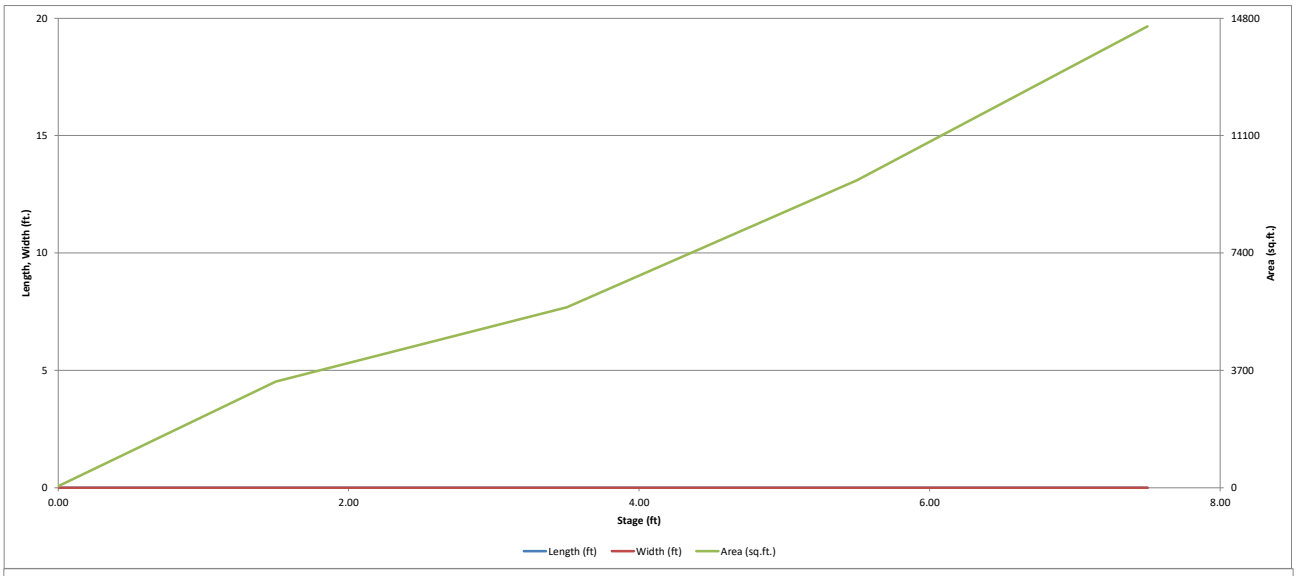
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

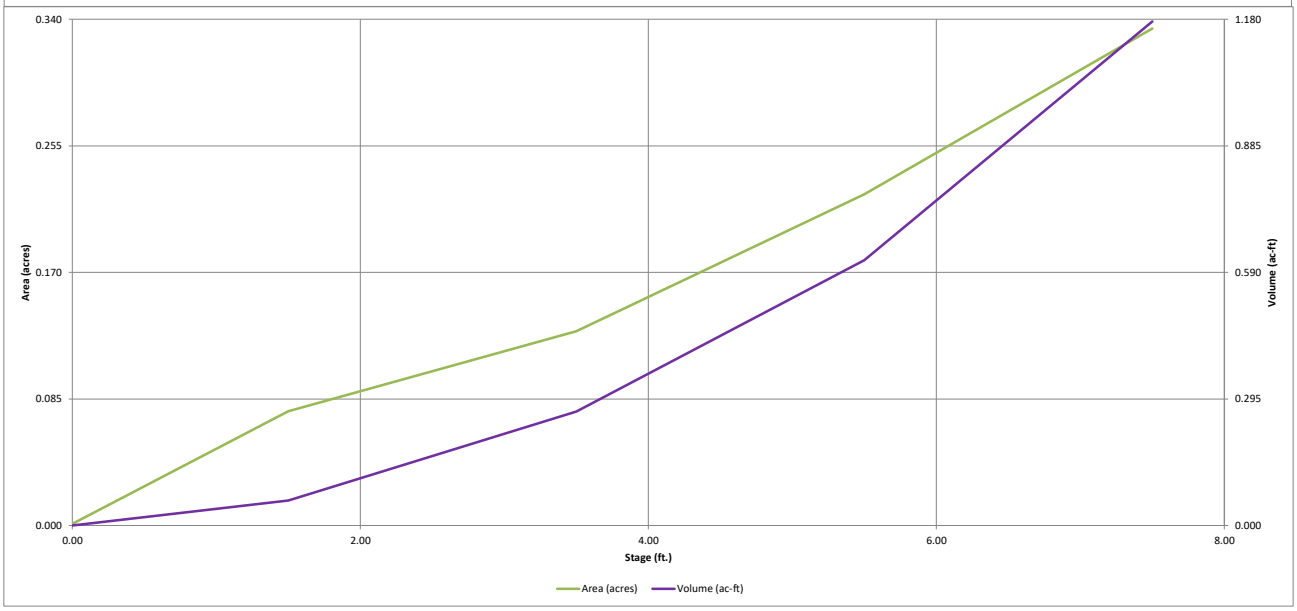
Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	48	0.001		
7006	--	1.50	--	--	--	3,347	0.077	2,546	0.058
7008	--	3.50	--	--	--	5,688	0.131	11,581	0.266
7010	--	5.50	--	--	--	9,690	0.222	26,959	0.619
7012	--	7.50	--	--	--	14,548	0.334	51,197	1.175

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.05 (January 2022)



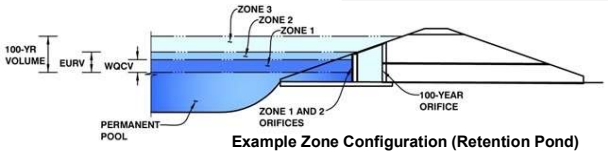


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.05 (January 2022)

Project: Monument Junction Development - Hwy. 105 & JCP Int. Imps.

Basin ID: SWQ Facility in CDOT ROW



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	3.09	0.213	Orifice Plate
Zone 2 (EURV)	5.44	0.390	Orifice Plate
Zone 3 (100-year)	7.35	0.520	Weir&Pipe (Restrict)
Total (all zones)		1.124	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Centroid of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	7.569E-03	ft^2
Depth at top of Zone using Orifice Plate =	5.50	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	16.50	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	1.09	sq. inches (diameter = 1-3/16 inches)	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.40	2.80	4.20				
Orifice Area (sq. inches)	1.09	1.09	1.09	1.09				

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected			Not Selected	Not Selected	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	N/A	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	N/A	N/A	feet
Vertical Orifice Diameter =	N/A	N/A	inches				

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe)

	Zone 3 Weir	Not Selected			Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	5.50	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	5.50	N/A	feet
Overflow Weir Front Edge Length =	6.00	N/A	feet	Overflow Weir Slope Length =	3.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	1.77	N/A	
Horiz. Length of Weir Sides =	3.00	N/A	feet	Overflow Grate Open Area w/o Debris =	12.53	N/A	ft^2
Overflow Grate Type =	Type C Grate	N/A		Overflow Grate Open Area w/ Debris =	6.26	N/A	ft^2
Debris Clogging % =	50%	N/A	%				

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected			Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.70	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	7.07	N/A	ft^2
Outlet Pipe Diameter =	36.00	N/A	inches	Outlet Orifice Centroid =	1.50	N/A	feet
Restrictor Plate Height Above Pipe Invert =	36.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	3.14	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	6.50	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.51	feet
Spillway Crest Length =	30.00	feet	Stage at Top of Freeboard =	8.01	feet
Spillway End Slopes =	3.00	H:V	Basin Area at Top of Freeboard =	0.33	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	1.18	acre-ft

Calculated Parameters for Spillway

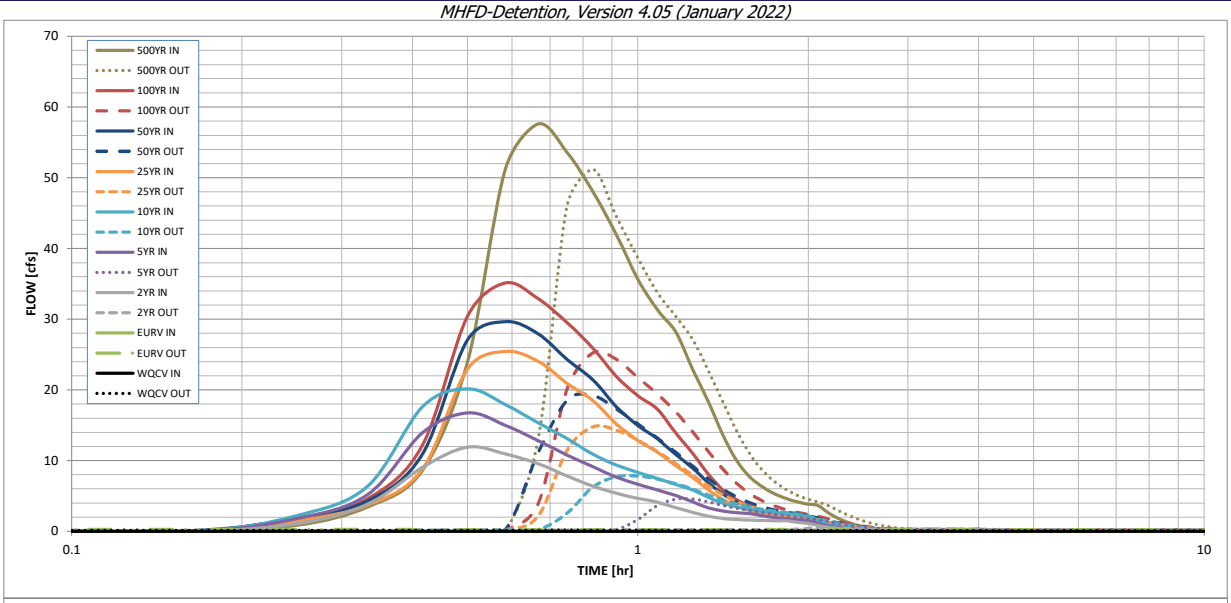
Routed Hydrograph Results

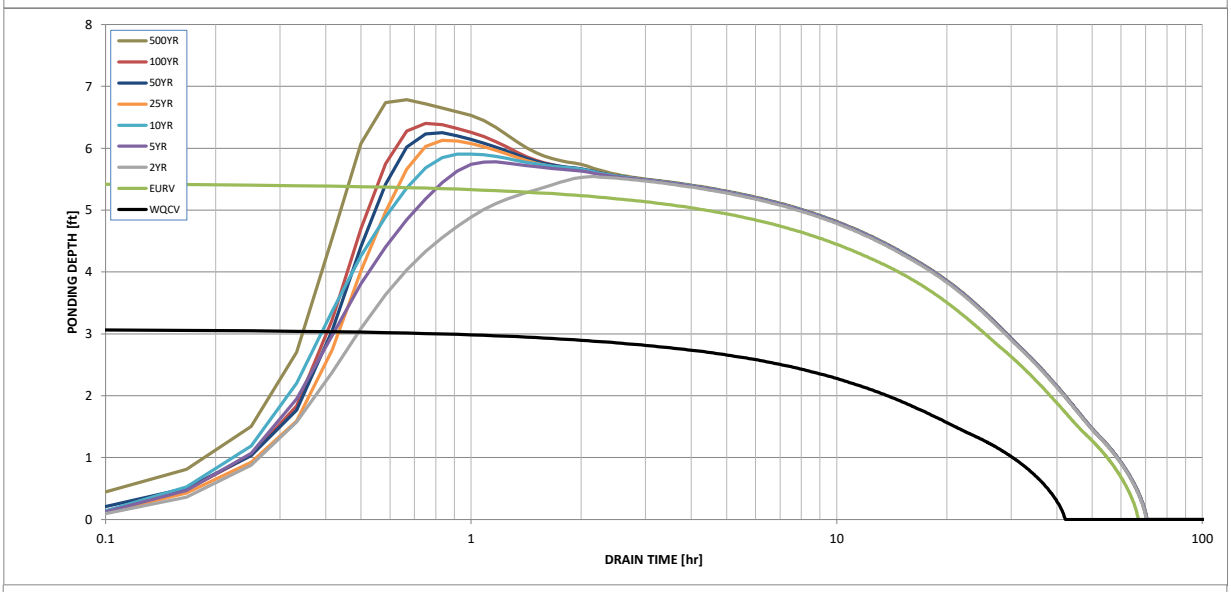
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

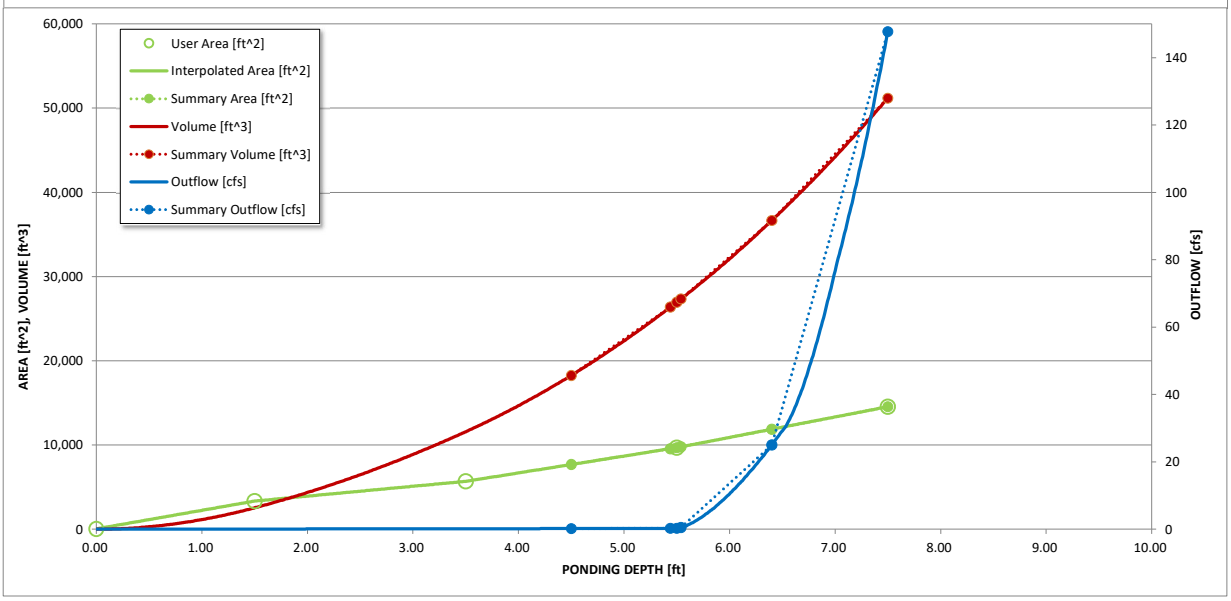
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.85
CUHP Runoff Volume (acre-ft) =	0.213	0.604	0.673	0.955	1.195	1.472	1.723	2.026	3.392
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.673	0.955	1.195	1.472	1.723	2.026	3.392
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	2.6	5.4	7.5	11.5	14.2	17.5	31.7
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A	10.0	14.0	20.0	27.0	30.0	36.0	
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.84	1.18	1.69	2.28	2.53	3.04	2.68
Peak Inflow Q (cfs) =	N/A	N/A	11.9	16.8	20.2	25.4	29.7	35.1	57.6
Peak Outflow Q (cfs) =	0.1	0.3	0.5	4.6	7.8	14.8	19.2	25.2	51.2
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.3	0.4	0.5	0.6	0.7	1.6
Structure Controlling Flow =	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Overflow Weir 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	0.02	0.3	0.6	1.2	1.5	2.0	2.9
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	38	58	61	58	56	53	51	49	42
Time to Drain 99% of Inflow Volume (hours) =	**40**	63	66	65	64	63	62	61	56
Maximum Ponding Depth (ft) =	3.08	5.44	5.54	5.78	5.91	6.13	6.25	6.40	6.79
Area at Maximum Ponding Depth (acres) =	0.12	0.22	0.22	0.24	0.24	0.26	0.26	0.27	0.29
Maximum Volume Stored (acre-ft) =	0.213	0.606	0.626	0.683	0.712	0.768	0.801	0.842	0.949

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.05 (January 2022)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01	0.85
	0:15:00	0.00	0.00	1.11	1.81	2.23	1.50	1.86	1.83	3.46
	0:20:00	0.00	0.00	3.84	5.19	6.38	3.70	4.30	4.62	8.62
	0:25:00	0.00	0.00	9.05	13.93	17.60	8.81	10.91	12.17	23.92
	0:30:00	0.00	0.00	11.92	16.76	20.16	22.94	27.05	30.39	51.17
	0:35:00	0.00	0.00	10.94	15.00	17.92	25.45	29.66	35.13	57.60
	0:40:00	0.00	0.00	9.56	12.83	15.35	24.05	27.92	32.89	53.60
	0:45:00	0.00	0.00	7.81	10.80	13.12	20.93	24.30	29.53	48.00
	0:50:00	0.00	0.00	6.41	9.13	10.90	18.49	21.42	25.87	41.94
	0:55:00	0.00	0.00	5.38	7.67	9.37	15.18	17.62	21.91	35.64
	1:00:00	0.00	0.00	4.69	6.67	8.35	12.86	14.96	19.17	31.30
	1:05:00	0.00	0.00	4.13	5.84	7.48	11.21	13.06	17.26	28.20
	1:10:00	0.00	0.00	3.36	5.07	6.62	9.29	10.87	13.89	22.87
	1:15:00	0.00	0.00	2.68	4.16	5.84	7.61	8.94	11.01	18.28
	1:20:00	0.00	0.00	2.13	3.32	4.80	5.85	6.85	8.06	13.45
	1:25:00	0.00	0.00	1.81	2.87	3.97	4.46	5.23	5.78	9.81
	1:30:00	0.00	0.00	1.67	2.64	3.44	3.51	4.13	4.39	7.57
	1:35:00	0.00	0.00	1.59	2.48	3.07	2.90	3.42	3.54	6.19
	1:40:00	0.00	0.00	1.54	2.17	2.80	2.51	2.95	2.97	5.24
	1:45:00	0.00	0.00	1.51	1.94	2.62	2.24	2.63	2.58	4.60
	1:50:00	0.00	0.00	1.48	1.77	2.49	2.06	2.42	2.31	4.15
	1:55:00	0.00	0.00	1.28	1.65	2.31	1.94	2.27	2.12	3.83
	2:00:00	0.00	0.00	1.13	1.50	2.04	1.85	2.17	2.01	3.65
	2:05:00	0.00	0.00	0.83	1.10	1.48	1.36	1.59	1.47	2.67
	2:10:00	0.00	0.00	0.60	0.79	1.05	0.97	1.13	1.05	1.91
	2:15:00	0.00	0.00	0.43	0.56	0.75	0.69	0.81	0.76	1.37
	2:20:00	0.00	0.00	0.30	0.39	0.52	0.49	0.57	0.54	0.97
	2:25:00	0.00	0.00	0.21	0.26	0.36	0.33	0.39	0.37	0.67
	2:30:00	0.00	0.00	0.14	0.17	0.24	0.23	0.27	0.26	0.46
	2:35:00	0.00	0.00	0.08	0.11	0.16	0.15	0.18	0.17	0.30
	2:40:00	0.00	0.00	0.05	0.07	0.09	0.09	0.11	0.10	0.18
	2:45:00	0.00	0.00	0.02	0.03	0.04	0.04	0.05	0.05	0.09
	2:50:00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03
	2:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.05 (January 2022)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.
The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]
Micropool Elev.	4.50	7,689	0.177	18,270	0.419	0.21
EURV	5.44	9,570	0.220	26,381	0.606	0.26
	5.50	9,690	0.222	26,959	0.619	0.26
5-yr.	5.54	9,787	0.225	27,349	0.628	0.49
100-yr.	6.40	11,876	0.273	36,664	0.842	25.05
	7.50	14,548	0.334	51,197	1.175	147.73

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

DRAINAGE MAPS

Unresolved:
On both maps, indicate what facilities are public and/or private

FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

BASIN	TOTAL AREA (AC)	DEVELOPED AREA/IMPERVIOUS AREA				LANDSCAPE/UNDEVELOPED AREAS				WEIGHTED			WEIGHTED CA			IMPERVIOUSNESS
		AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	**CA(2)**	**CA(5)**	**CA(100)**	**%**
OS-10	4.10	0.60	0.89	0.90	0.96	3.50	0.03	0.09	0.36	0.16	0.21	0.45	**0.64**	**0.86**	**1.84**	16%
OS-11	1.70	0.80	0.89	0.90	0.96	0.90	0.02	0.08	0.35	0.43	0.47	0.64	**0.73**	**0.79**	**1.08**	45%
OS-12	0.51	0.27	0.89	0.90	0.96	0.24	0.03	0.09	0.36	0.49	0.52	0.68	**0.25**	**0.26**	**0.35**	54%
OS-13	0.67	0.40	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.54	0.57	0.72	**0.36**	**0.38**	**0.48**	61%
OS-14	0.28	0.15	0.89	0.90	0.96	0.13	0.03	0.09	0.36	0.49	0.52	0.68	**0.14**	**0.15**	**0.19**	55%
OS-15	1.60	1.20	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.68	0.70	0.81	**1.08**	**1.12**	**1.30**	76%
OS-16	1.00	0.70	0.89	0.90	0.96	0.30	0.02	0.08	0.35	0.63	0.65	0.78	**0.63**	**0.65**	**0.78**	67%
OS-17	0.53	0.43	0.89	0.90	0.96	0.10	0.03	0.09	0.36	0.73	0.75	0.85	**0.39**	**0.40**	**0.45**	82%
OS-18	0.30	0.30	0.89	0.90	0.96	0.00	0.03	0.09	0.36	0.89	0.90	0.96	**0.27**	**0.27**	**0.29**	100%
EX2	0.56	0.56	0.03	0.09	0.36	0.00	0.03	0.09	0.36	0.03	0.09	0.36	**0.02**	**0.05**	**0.20**	2%
EX3	1.80	1.80	0.03	0.09	0.36	0.00	0.03	0.09	0.36	0.03	0.09	0.36	**0.05**	**0.16**	**0.65**	2%
Exist. Trib. to Pond	**13.05**															

FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

BASIN	WEIGHTED			OVERLAND				STREET / CHANNEL FLOW				Tc	INTENSITY			TOTAL FLOWS		
	CA(2)	CA(5)	CA(100)	C(5)	Length *(ft)*	Height *(ft)*	Tc *(min)*	Length *(ft)*	Slope *(%)*	Velocity *(fps)*	Tc *(min)*	TOTAL *(min)*	I(2) *(in/hr)*	I(5) (in/hr)	I(100) (in/hr)	Q(2) *(cfs)*	Q(5) *(cfs)*	Q(100) *(cfs)*
OS-10	0.64	0.86	1.84	0.09	65	2	10.1	950	3.5%	1.9	8.5	18.6	2.56	3.20	5.37	2	**3**	**10**
OS-11	0.73	0.79	1.08	0.08	100	2	14.7	500	4.0%	2.0	4.2	18.8	2.54	3.18	5.34	1.9	**3**	**6**
OS-12	0.25	0.26	0.35	0.09	40	2	6.8	200	3.5%	3.7	0.9	7.7	3.61	4.53	7.60	0.9	**1.2**	**3**
OS-13	0.36	0.38	0.48	0.09	25	3	4.0	240	5.5%	4.7	0.9	5.0	4.12	5.17	8.68	1.5	**2**	**4**
OS-14	0.14	0.15	0.19	0.09	30	10	3.1	170	5.5%	4.7	0.6	5.0	4.12	5.17	8.68	0.6	**0.8**	**2**
OS-15	1.08	1.12	1.30	0.09	180	12	13.1	100	3.0%	1.7	1.0	14.0	2.89	3.62	6.08	3	**4**	**8**
OS-16	0.63	0.65	0.78	0.08	100	4	11.7	130	1.5%	1.2	1.8	13.4	2.94	3.69	6.19	1.9	**2**	**5**
OS-17	0.39	0.40	0.45	0.09	60	14	5.0	380	5.0%	4.5	1.4	6.4	3.82	4.80	8.05	1.5	**2**	**4**
OS-18	0.27	0.27	0.29	0.09	15	0.5	4.7	280	2.0%	2.8	1.6	6.4	3.83	4.80	8.06	1.0	**1.3**	**2**
EX2	0.02	0.05	0.20	0.09	50	2	8.2					8.2	3.54	4.43	7.44	0.1	**0.2**	**1.5**
EX3	0.05	0.16	0.65	0.09	260	5	23.7					23.7	2.27	2.84	4.76	0.1	**0.5**	**3**

FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity I(5)	Intensity I(100)	Flow Q(5)	Flow Q(100)	Inlet Size
H4	OS-12	0.26	0.46	7.7	4.53	7.60	1	3	EXIST. 5' TYPE R AT-GRADE INLET
H5	OS-13, Flow-by from H4	0.38	0.63	5.0	5.17	8.68	2	5	EXIST. 10' TYPE R AT-GRADE INLET
H6	OS-14, Flow-by from H5	0.15	0.24	5.0	5.17	8.68	1	2	EXIST. 10' TYPE R AT-GRADE INLET
H7	OS-11 and OS-16	1.45	1.86	18.8	3.18	5.34	5	10	EXIST. 10' TYPE R AT-GRADE INLET
H8	OS-17, Flow-by from H7	0.42	0.73	6.4	4.80	8.05	2	6	EXIST. 10' TYPE R AT-GRADE INLET
H9	OS-18, Flow-by from H8	0.27	0.41	6.4	4.80	8.06	1	3	EXIST. 10' TYPE R AT-GRADE INLET
H10	**EX2, EX3, OS-10 thru OS-18**	**5.09**	**7.60**	**23.7**	**2.84**	**4.76**	**14**	**36**	**EXIST. 36" RCP CDOT CULVERT**

FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity I(5)	Intensity I(100)	Flow Q(5)	Flow Q(100)	Pipe Size*
H1	Inlet Capture at DP-H4	0.26	0.24	7.7	4.53	7.60	1	2	Exist. 15" RCP
H2	PR-H1, Inlet Capture at DP-H5	0.65	0.77	7.8	4.51	7.57	3	6	Exist. 15" RCP
H3	PR-H2, Inlet Capture at DP-H6	0.80	1.01	7.9	4.49	7.54	4	8	Exist. 24" RCP
H4	OS-15	1.12	1.30	14.0	3.62	6.08	4	8	Exist. 18" ADS
H5	PR-H3, PR-H4, Portion of OS-11 and OS-16	3.20	3.95	18.8	3.18	5.34	10	21	Exist. 30" RCP
H6	Inlet Capture at DP-H8	0.42	0.64	6.4	4.80	8.05	2	5	Exist. 24" RCP
H7	Inlet Capture at DP-H9	0.27	0.41	6.4	4.80	8.06	1	3	Exist. 24" RCP

LEGEND

DESCRIPTION	SYMBOL
EXISTING GROUND CONTOUR	6910
PROPOSED FINISHED CONTOUR	6910
BASIN BOUNDARY	
DESIGN POINT	3
BASIN IDENTIFIER / AREA IN ACRES	BB 10.0
EXISTING DIRECTION OF FLOW	
EXIST. STORM SEWER	
TRIBUTARY AREA TO 36" CULVERT	

100 50 0 100 200

SCALE: 1" = 100'

CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

MONUMENT JUNCTION DEVELOPMENT
HWY. 105 & JACKSON CREEK INT. IMPS.
FINAL DRAINAGE REPORT
PRE-DEVELOPED DRAINAGE MAP

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE	DATE 03/16/22
DRAWN BY	MAW	(H) 1"= 100'	SHEET 1 OF 2
CHECKED BY		(V) 1"= N/A	JOB NO. 1302.22

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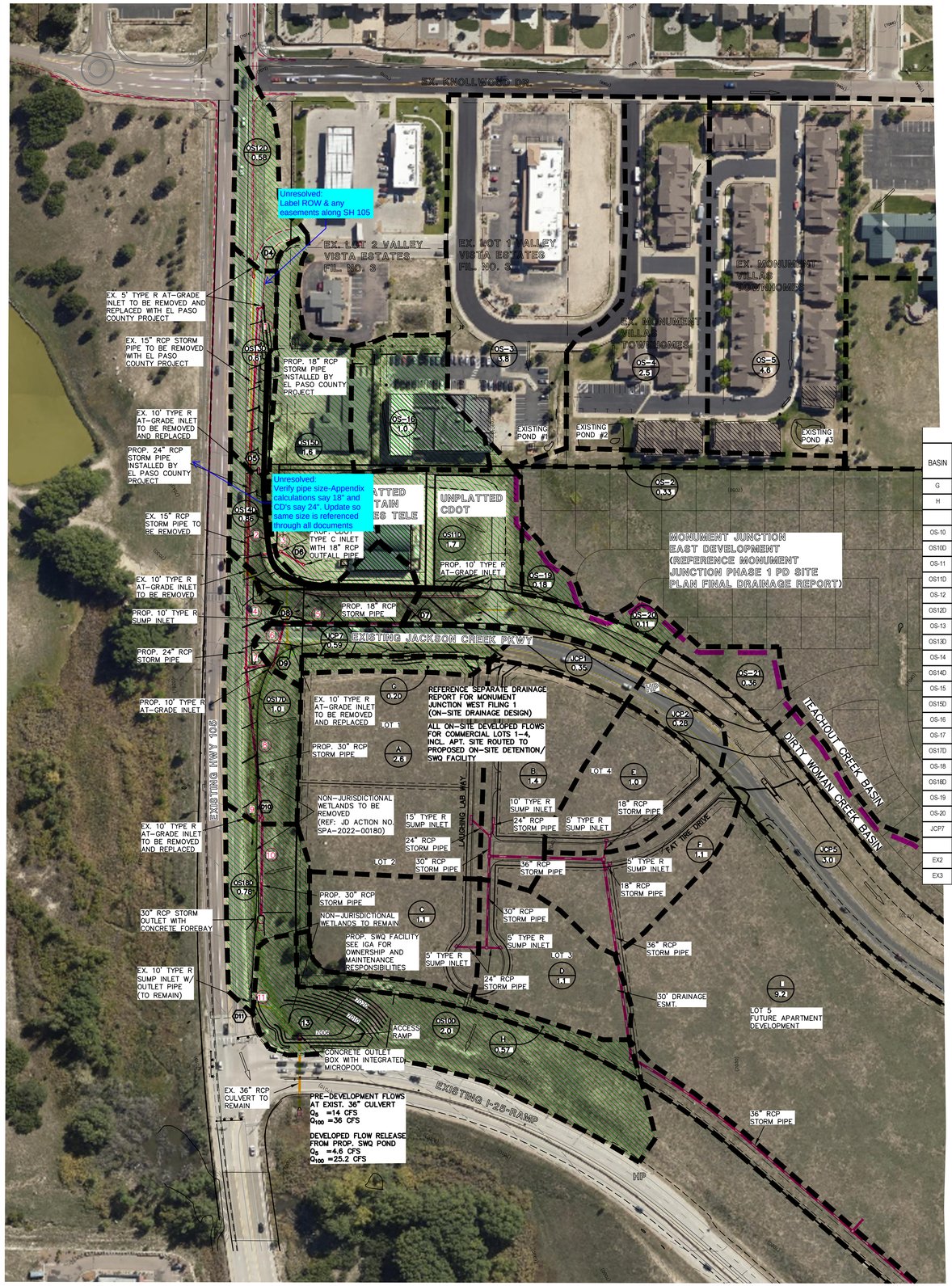

FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

BASIN	TOTAL AREA (AC)	DEVELOPED AREA/IMPERVIOUS AREA				LANDSCAPE/UNDEVELOPED AREAS				WEIGHTED			WEIGHTED CA			IMPERVIOUSNESS
		AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	%
G	0.20	0.05	0.79	0.81	0.88	0.15	0.03	0.09	0.36	0.22	0.27	0.49	**0.04**	**0.05**	**0.10**	25%
H	0.57	0.05	0.79	0.81	0.88	0.52	0.03	0.09	0.36	0.10	0.15	0.41	**0.06**	**0.09**	**0.23**	10%
OS-10	4.10	0.60	0.89	0.90	0.96	3.50	0.03	0.09	0.36	0.16	0.21	0.45	**0.64**	**0.86**	**1.84**	16%
OS10D	2.00	0.10	0.89	0.90	0.96	1.90	0.03	0.09	0.36	0.07	0.13	0.39	**0.15**	**0.26**	**0.78**	7%
OS-11	1.70	0.80	0.89	0.90	0.96	0.90	0.02	0.08	0.35	0.43	0.47	0.64	**0.73**	**0.79**	**1.08**	45%
OS11D	1.70	1.20	0.89	0.90	0.96	0.50	0.03	0.09	0.36	0.64	0.66	0.78	**1.08**	**1.13**	**1.33**	71%
OS-12	0.51	0.27	0.89	0.90	0.96	0.24	0.03	0.09	0.36	0.49	0.52	0.68	**0.25**	**0.26**	**0.35**	54%
OS12D	0.58	0.31	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.49	0.52	0.68	**0.28**	**0.30**	**0.39**	54%
OS-13	0.67	0.40	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.54	0.57	0.72	**0.36**	**0.38**	**0.48**	61%
OS13D	0.67	0.40	0.89	0.90	0.96	0.27	0.03	0.09	0.36	0.54	0.57	0.72	**0.36**	**0.38**	**0.48**	61%
OS-14	0.28	0.15	0.89	0.90	0.96	0.13	0.03	0.09	0.36	0.49	0.52	0.68	**0.14**	**0.15**	**0.19**	55%
OS14D	0.86	0.72	0.89	0.90	0.96	0.14	0.03	0.09	0.36	0.75	0.77	0.86	**0.65**	**0.66**	**0.74**	84%
OS-15	1.60	1.20	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.68	0.70	0.81	**1.08**	**1.12**	**1.30**	76%
OS15D	1.60	1.20	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.68	0.70	0.81	**1.08**	**1.12**	**1.30**	76%
OS-16	1.00	0.70	0.89	0.90	0.96	0.30	0.02	0.08	0.35	0.63	0.65	0.78	**0.63**	**0.65**	**0.78**	67%
OS-17	0.53	0.43	0.89	0.90	0.96	0.10	0.03	0.09	0.36	0.73	0.75	0.85	**0.39**	**0.40**	**0.45**	82%
OS17D	1.00	0.60	0.89	0.90	0.96	0.40	0.03	0.09	0.36	0.55	0.58	0.72	**0.55**	**0.58**	**0.72**	61%
OS-18	0.30	0.30	0.89	0.90	0.96	0.00	0.03	0.09	0.36	0.89	0.90	0.96	**0.27**	**0.27**	**0.29**	100%
OS18D	0.78	0.43	0.89	0.90	0.96	0.35	0.03	0.09	0.36	0.50	0.54	0.69	**0.39**	**0.42**	**0.54**	56%
OS-19	0.18	0.00	0.89	0.90	0.96	0.18	0.03	0.09	0.36	0.03	0.09	0.36	**0.01**	**0.02**	**0.06**	2%
OS-20	0.11	0.01	0.89	0.90	0.96	0.10	0.03	0.09	0.36	0.11	0.16	0.41	**0.01**	**0.02**	**0.05**	10%
JCP7	0.59	0.50	0.89	0.90	0.96	0.09	0.03	0.09	0.36	0.76	0.78	0.87	**0.45**	**0.46**	**0.51**	85%
EX2	0.56	0.56	0.03	0.09	0.36	0.00	0.03	0.09	0.36	0.03	0.09	0.36	**0.02**	**0.05**	**0.20**	2%
EX3	1.80	1.80	0.03	0.09	0.36	0.00	0.03	0.09	0.36	0.03	0.09	0.36	**0.05**	**0.16**	**0.65**	2%
Exist. Trib. to Pond	**13.05**															**37.5%**
Dev. Trib. to Pond	**11.84**															**53.6%**
Dev. Trib. to Forebay	**8.49**															**67.2%**

FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

BASIN	WEIGHTED			OVERLAND				STREET / CHANNEL FLOW				Tc	INTENSITY			TOTAL FLOWS		
	CA(2)	CA(5)	CA(100)	C(5)	Length (ft)	Height (ft)	Tc (min)	Length (ft)	Slope (%)	Velocity (fps)	Tc (min)	TOTAL (min)	I(2) (in/hr)	I(5) (in/hr)	I(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
G	0.04	0.05	0.10	0.09	30	1.5	5.9					5.9	3.93	4.93	8.27	0.17	**0.3**	**0.8**
H	0.06	0.09	0.23	0.09	40	2	6.8					6.8	3.76	4.71	7.91	0.2	**0.4**	**1.8**
OS-10	0.64	0.86	1.84	0.09	65	2	10.1	950	3.5%	1.9	8.5	18.6	2.56	3.20	5.37	2	**3**	**10**
OS10D	0.15	0.26	0.78	0.09	65	2	10.1	950	3.5%	1.9	8.5	18.6	2.56	3.20	5.37	0.4	**0.8**	**4**
OS-11	0.73	0.79	1.08	0.08	100	2	14.7	500	4.0%	2.0	4.2	18.8	2.54	3.18	5.34	1.9	**3**	**6**
OS11D	1.08	1.13	1.33	0.09	100	2	14.5	300	4.0%	2.0	2.5	17.0	2.66	3.33	5.59	3	**4**	**7**
OS-12	0.25	0.26	0.35	0.09	40	2	6.8	200	3.5%	3.7	0.9	7.7	3.61	4.53	7.60	0.9	**1.2**	**3**
OS12D	0.28	0.30	0.39	0.09	40	2	6.8	200	3.5%	3.7	0.9	7.7	3.61	4.53	7.60	1.0	**1.4**	**3.0**
OS-13	0.36	0.38	0.48	0.09	25	3	4.0	240	5.5%	4.7	0.9	5.0	4.12	5.17	8.68	1.5	**2**	**4**
OS13D	0.36	0.38	0.48	0.09	25	3	4.0	250	3.5%	3.7	1.1	5.1	4.09	5.13	8.61	1.5	**2**	**4**
OS-14	0.14	0.15	0.19	0.09	30	10	3.1	170	5.5%	4.7	0.6	5.0	4.12	5.17	8.68	0.6	**0.8**	**2**
OS14D	0.65	0.66	0.74	0.09	30	10	3.1	190	5.5%	4.7	0.7	5.0	4.12	5.17	8.68	3	**3**	**6**
OS-15	1.08	1.12	1.30	0.09	180	12	13.1	100	3.0%	1.7	1.0	14.0	2.89	3.62	6.08	3	**4**	**8**
OS15D	1.08	1.12	1.30	0.09	180	12	13.1	80	3.0%	3.5	0.4	13.5	2.94	3.68	6.18	3	**4**	**8**
OS-16	0.63	0.65	0.78	0.08	100	4	11.7	130	1.5%	1.2	1.8	13.4	2.94	3.69	6.19	1.9	**2**	**5**
OS-17	0.39	0.40	0.45	0.09	60	14	5.0	380	5.0%	4.5	1.4	6.4	3.82	4.80	8.05	1.5	**2**	**4**
OS17D	0.55	0.58	0.72	0.09	60	14	5.0	380	5.0%	4.5	1.4	6.4	3.82	4.80	8.05	2	**3**	**6**
OS-18	0.27	0.27	0.29	0.09	15	0.5	4.7	280	2.0%	2.8	1.6	6.4	3.83	4.80	8.06	1.0	**1.3**	**2**
OS18D	0.39	0.42	0.54	0.09	90	4	10.6	260	2.0%	2.8	1.5	12.1	3.07	3.84	6.45	1.2	**1.6**	**3**
OS-19	0.01	0.02	0.06	0.09	80	3.2	10.3	380	5.0%	4.5	1.4	11.7	3.10	3.89	6.53	0.02	**0.1**	**0.4**
OS-20	0.01	0.02	0.05	0.09	50	3	7.1					7.1	3.70	4.63	7.78	0.0	**0.1**	**0.4**
JCP7	0.45	0.46	0.51	0.09	20	0.6	5.7	300	4.5%	4.2	1.2	6.9	3.74	4.70	7.88	2	**2**	**4**
EX2	0.02	0.05	0.20	0.09	50	2	8.2					8.2	3.54	4.43	7.44	0.1	**0.2**	**1.5**
EX3	0.05	0.16	0.65	0.09	260	5	23.7					23.7	2.27	2.84	4.76	0.1	**0.5**	**3**

FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity I(5)	Intensity I(100)	Flow Q(5)	Flow Q(100)	Inlet Size
13	**G, H, JCP7, OS10D thru OS15D, OS-16, OS17D, OS18D**	**5.84**	**7.90**	**21.1**	**3.01**	**5.05**	**18**	**40**	**CDOT SWQ FACILITY**
D4	OS12D, 0.85 CFS 100Yr Flow-by from upstream	0.30	0.51	7.7	4.53	7.60	1.4	3.9	PROP. 5' TYPE R AT-GRADE INLET
D5	OS13D, Flow-by from D4	0.38	0.63	5.0	5.17	8.68	2	5	PROP. 10' TYPE R AT-GRADE INLET
D6	OS15D	1.12	1.30	13.5	3.68	6.18	4	8	PROP. CDOT TYPE C INLET
D7	OS11D, OS-16, OS-19, OS-20	1.81	2.22	17.0	3.33	5.59	6	12	PROP. 10' TYPE R AT-GRADE INLET
D8	OS14D, Flow-by from D5&D7	0.84	1.47	17.0	3.33	5.59	3	8	PROP. 10' TYPE R SUMP INLET
D9	JCP7, G	0.51	0.61	6.9	4.70	7.88	2	5	PROP. 10' TYPE R AT-GRADE INLET
D10	OS17D, Flow-by from D8	0.58	0.74	6.4	4.80	8.05	3	6	PROP. 10' TYPE R AT-GRADE INLET
D11	OS18D, Flow-by from D9	0.42	0.64	12.1	3.84	6.45	2	4	EXIST. 10' TYPE R SUMP INLET

FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity I(5)	Intensity I(100)	Flow Q(5)	Flow Q(100)	Pipe Size*
1	Inlet Capture at D4	0.30	0.33	7.7	4.53	7.60	1.4	2.5	PROP. 15" RCP
2	PR-1, Inlet Capture at D5	0.69	0.92	7.7	4.53	7.60	3	7	PROP. 18" RCP
3	CDOT Type C Inlet Capture at D6	1.12	1.30	13.5	3.68	6.18	4	8	PROP. 18" RCP
4	PR-2, PR-3	1.80	2.22	13.7	3.66	6.15	7	14	PROP. 24" RCP
5	Inlet Capture at D7	1.63	1.51	17.0	3.33	5.59	5	8	PROP. 18" RCP
6	PR-5, Inlet Capture at D8	2.47	2.98	17.0	3.33	5.59	8	17	PROP. 24" RCP
7	PR-6, Inlet Capture at D9	2.98	3.56	17.0	3.33	5.59	10	20	PROP. 24" RCP
8	PR-4, PR-7	4.79	5.77	17.2	3.32	5.56	16	32	PROP. 30" RCP
9	Inlet Capture at D10	0.58	0.66	6.4	4.80	8.05	3	5	PROP. 18" RCP
10	PR-8, PR9	5.36	6.43	17.4	3.30	5.54	18	36	PROP. 30" RCP
11	Inlet Capture at D11	0.42	0.64	12.1	3.84	6.45	2	4	EXIST. 18" RCP

LEGEND

DESCRIPTION	SYMBOL
EXISTING GROUND CONTOUR	6910
PROPOSED FINISHED CONTOUR	6910
MAJOR BASIN BOUNDARY	
BASIN BOUNDARY	
DESIGN POINT	3
PIPE ROUTING	5
BASIN IDENTIFIER / AREA IN ACRES	BB 10.0
EXISTING DIRECTION OF FLOW	
PROPOSED DIRECTION OF FLOW	
EXIST. STORM SEWER	
PROPOSED STORM SEWER	
TRIBUTARY AREA TO CDOT FACILITY	

N

100 50 0 100 200

SCALE: 1" = 100'

CLASSIC CONSULTING SM

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Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

MONUMENT JUNCTION DEVELOPMENT
HWY. 105 & JACKSON CREEK INT. IMPS.
FINAL DRAINAGE REPORT
DEVELOPED DRAINAGE MAP

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	03/16/22
DRAWN BY	MAW	(H) 1"= 100'		SHEET	2 OF 2
CHECKED BY		(V) 1"= N/A		JOB NO.	1302.22

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STATE HIGHWAY 105 / JACKSON CREEK PARKWAY - PHASE 2

COUNTY OF EL PASO, TOWN OF MONUMENT, STATE OF COLORADO

CONSTRUCTION PLANS

FEBRUARY 2023

Comments provided by DPW Capital Projects

Comments provided by DPW Development Services

EL PASO COUNTY GENERAL CONSTRUCTION NOTES:

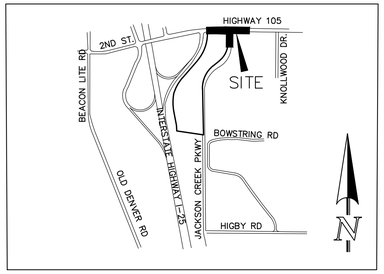
1. THE LOCATION OF EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND MAY NOT INCLUDE ALL UTILITIES. THE EXCAVATION CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATED AND PRESERVE ANY AND ALL UTILITIES.
2. BEFORE COMMENCING ANY EXCAVATION, CALL **1-800-922-1987** FOR EXISTING UTILITY LOCATIONS.
3. THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
4. ALL BACKFILL, SUB-BASE AND/OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED TO THE SOILS ENGINEER'S RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (PCD).
5. ALL STATIONING IS CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE CENTERLINE UNLESS OTHERWISE INDICATED.
6. THE CONTRACTOR SHALL REVEGETATE ALL DISTURBED AREAS AS SOON AS POSSIBLE AND EROSION CONTROL SHALL BE INSTALLED AND MAINTAINED IN A FUNCTIONAL MANNER AT ALL TIMES. DEVELOPER RESPONSIBLE FOR MAINTAINING DISTURBED AREAS UNTIL REVEGETATION IS COMPLETE.
7. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES. REPAIR SHALL CONFORM TO THE EPC ECM APPENDIX K – 1.2C.
8. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
9. BUILDING CONTRACTORS WILL BE RESPONSIBLE FOR CONSTRUCTING POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES.
10. ASPHALT THICKNESS AND BASE COURSE THICKNESS (COMPACTED) FOR ROADS SHALL BE PER DESIGN REPORT BY OWNER'S GEOTECHNICAL ENGINEER. OWNER'S GEOTECHNICAL ENGINEER TO BE ON SITE AT TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROADS. PAVEMENT DESIGN SHALL BE APPROVED BY PLANNING AND COMMUNITY DEVELOPMENT PRIOR TO CONSTRUCTION.
11. THE CONTRACTOR SHALL REVEGETATE ALL DISTURBED AREAS WITHIN 21 DAYS OF SUBSTANTIAL GRADING COMPLETION. EROSION CONTROL SHALL BE INSTALLED AND MAINTAINED IN A FUNCTIONAL MANNER AT ALL TIMES. DEVELOPER IS RESPONSIBLE FOR MAINTAINING DISTURBED AREAS UNTIL REVEGETATION IS COMPLETE.
12. TYPE M RIP-RAP WITH 4" OF TYPE II GRANULAR BEDDING AND MIRAFI 180N OR EQUAL MAY BE SUBSTITUTED WHERE TYPE L RIP-RAP WITH MIRAFI FW 700 OR EQUAL IS SPECIFIED
13. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN COMPLIANCE WITH ANY AND ALL APPLICABLE EL PASO COUNTY STANDARDS.

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS:

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
   a. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   b. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
   c. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
   d. CDOT M & S STANDARDS
4. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
5. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ONSITE AND OFFSITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
6. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT – INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
8. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS III RCP OR CLASS IV WITH WATER TIGHT JOINTS WHERE CALLED OUT, UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
11. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
12. SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
13. SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS AND MUTCD CRITERIA.
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

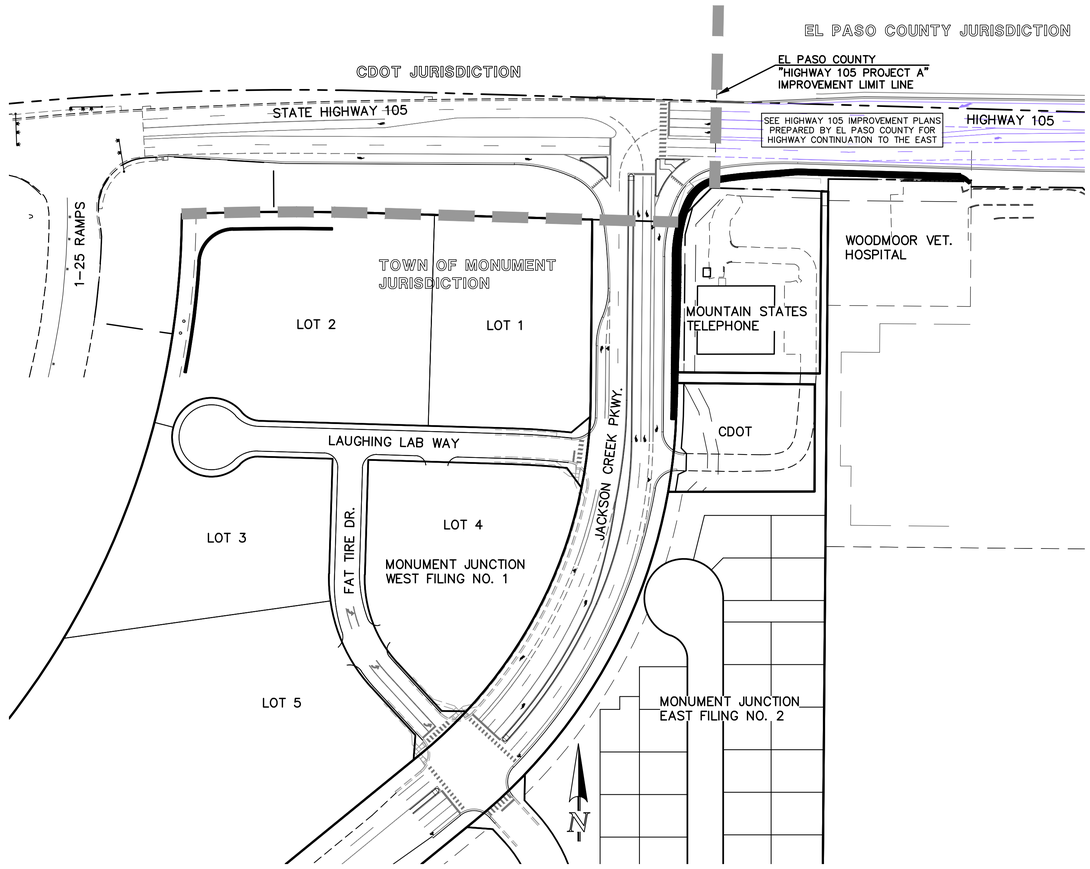
EL PASO COUNTY SIGNING AND STRIPING NOTES:

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "D" SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING 4" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 6" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS."
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75" X 1.75" SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614-8 REGARDING USE OF THE P2 TUBULAR STEEL POST SLIPBASE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
11. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH TAPERED LEADING EDGES PER CDOT STANDARD S-627-1. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LINES SHALL BE 24" WIDE AND 9' LONG.
12. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDOT S-627-1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT **(719) 520-6819** PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.



VICINITY MAP
N.T.S.

SHEET INDEX



KEY MAP
1" = 100'

AGENCIES

DEVELOPER:	ELITE PROPERTIES OF AMERICA, INC. 2138 FLYING HORSE CLUB DR. COLORADO SPRINGS, CO 80921 MR. STEVE SCHLOSSER, (719) 592-9333
CIVIL ENGINEER:	CLASSIC CONSULTING 619 N. CASCADE AVENUE, SUITE 200 COLORADO SPRINGS, COLORADO 80903 MR. MARC A. WHORTON, P.E. (719) 785-2802
COLORADO DEPARTMENT OF TRANSPORTATION, PERMIT REVIEW:	REGION 2 – ACCESS 5615 WILLS BOULEVARD PUEBLO, COLORADO 81008 MS. MICHELLE REGALDO (719) 546-5416
COLORADO DEPARTMENT OF TRANSPORTATION, NORTH PROGRAM	REGION 2 – NORTH PROGRAM 1480 QUAIL LAKE LOOP ROAD, SUITE A COLORADO SPRINGS, COLORADO 80906 MR. ANDY STECKLEIN, P.E. (719) 227-3264
COLORADO DEPARTMENT OF TRANSPORTATION, ENVIRONMENTAL / ROW	REGION 2 – ACCESS 5615 WILLS BOULEVARD PUEBLO, COLORADO 81008 MR. GABRIEL COSYLEON (719) 562-5528 (ENV. MANAGER) MR. AMBER BILLINGS (719) 227-5725 (ROW MANAGER)
COUNTY ENGINEERING:	EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, COLORADO 80910 MR. GILBERT LAFORCE (719) 520-7945
GAS COMPANY:	BLACKHILLS ENERGY 37 WIDEFIELD BOULEVARD WIDEFIELD, COLORADO 80911 MR. GEORGE M. PETERSON, (719) 392-3491
ELECTRIC COMPANY:	MOUNTAIN VIEW ELECTRIC P.O. BOX 1600 LIMON, COLORADO 80828 MR. LES ULFERS, (719) 495-2283
TELEPHONE COMPANY:	U.S. WEST COMMUNICATIONS (LOCATORS) (800) 922-1987

APPROVALS:

DESIGN ENGINEER'S STATEMENT:

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY DIRECTLY CAUSED BY THE NEGLIGENT ACTS, ERRORS, OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

MARC A WHORTON, COLORADO P.E. #37155 DATE
FOR AND ON THE BEHALF OF CLASSIC CONSULTING ENGINEERS & SURVEYORS

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN AND ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

STEVE SCHLOSSER DATE

TOWN OF MONUMENT APPROVAL:

THESE PLANS HAVE BEEN REVIEWED BY TOWN OF MONUMENT STAFF AND FOUND TO BE IN GENERAL COMPLIANCE WITH TOWN STANDARDS. IT IS THE RESPONSIBILITY OF THE SITE ENGINEER AND GENERAL CONTRACTOR TO ENSURE CONSTRUCTION IS IN COMPLIANCE WITH THESE PLANS AND IN CONFORMANCE WITH THE TOWN OF MONUMENT ORDINANCES AND REGULATIONS. THE SPECIFICATIONS, STANDARDS, AND INTENT OF THE TOWN OF MONUMENT ORDINANCES, REGULATIONS AND THE CITY OF COLORADO SPRINGS DRAINAGE CRITERIA MANUALS VOLUMES 1 AND 2 SHALL PREVAIL IN ANY INSTANCES WHERE THESE PLANS DIFFER FROM THOSE REQUIREMENTS. THE DEVELOPMENT SERVICES DEPARTMENT SHALL BE NOTIFIED IF ANY CHANGES NEED TO BE MADE.

THIS REVIEW IS ONLY FOR THE PROPOSED CONSTRUCTION ON JACKSON CREEK PARKWAY.

SIGNED _____ DATE _____
TOWN OF MONUMENT

EL PASO COUNTY:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2 AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

THIS REVIEW IS ONLY FOR THE PROPOSED CONSTRUCTION IN HIGHWAY 105, EAST OF JACKSON CREEK PARKWAY.

JOSHUA PALMER, P.E. DATE
COUNTY ENGINEER / ECM ADMINISTRATOR

EDARP PROJECT NUMBER: CDR237

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY COMMENTS	5/11/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
TITLE SHEET

CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=VARIES		SHEET	1 OF 26
CHECKED BY		(V) 1"= N/A		JOB NO.	1302.22

N:\1302.22\DRAWINGS\CONSTRUCTION\SHEET-01-TITLE SHEET.dwg, 7/14/2023 11:13:19 AM, rsingan, 1:1

CDOT GENERAL NOTES

1. ALL CONSTRUCTION MATERIALS, TECHNIQUES, AND PROCEDURES WITHIN THE HIGHWAY LIMITS SHALL BE IN CONFORMANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD CONSTRUCTION AS SET FORTH IN THE LATEST "M & S" STANDARDS MANUAL.
2. A FULLY EXECUTED COMPLETE COPY OF THE ACCESS PERMITS AND A VALID NOTICE TO PROCEED TO CONSTRUCTION MUST BE ON THE JOB SITE WITH THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION.
3. ANY ADDITIONAL PERMITS AND CLEARANCES REQUIRED BY OTHER FEDERAL, STATE, AND LOCAL GOVERNMENT AGENCIES IS THE RESPONSIBILITY OF THE OWNER/DEVELOPER.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF HIGHWAY CONSTRUCTION. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
5. THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
6. ALL STATIONING IS CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE CENTERLINE UNLESS OTHERWISE INDICATED.
7. FIVE WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION, THE OWNER/CONTRACTOR MUST CONTACT MR. RON YOUNG (719) 289–8718, CDOT ACCESS/TRAFFIC MANAGER, TO COORDINATE CONSTRUCTION.
8. WORK SHALL BEGIN AFTER 8:30 AM AND ALL EQUIPMENT SHALL BE OUT OF THE RIGHT–OF–WAY BEFORE 3:00 PM DURING SCHOOL HOURS/DAYS. NO WORK IS ALLOWED WITHIN THE HIGHWAY RIGHT–OF–WAY ON WEEKENDS OR STATE/FEDERAL HOLIDAYS. NO CONSTRUCTION VEHICLES SHALL BE PARKED, OR CONSTRUCTION MATERIALS STOCKPILED IN THE HIGHWAY RIGHT–OF–WAY OVERNIGHT. NO PRIVATE VEHICLES MAY BE PARKED IN THE HIGHWAY RIGHT–OF–WAY AT ANY TIME DURING CONSTRUCTION.
9. TWO WAY TRAFFIC SHALL BE MAINTAINED THROUGHOUT THE WORK AREA AT ALL TIMES.
10. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.). THE SHEETING FOR THE SIGNS BE HIGHWAY INTENSITY SHEETING (ASTM TYPE IV RETRO REFLECTIVE SHEETING).
11. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES 1' FROM EXISTING EDGE OF PAVEMENT. NEW SURFACING FOR THE ACCESS AND THE HIGHWAY WIDENING SHALL BE A FULL DEPTH TOTAL OF 7 INCHES OF COMPACTED HOT MIX ASPHALT (HMA), GRAD–S(100), PG. 58–28 OR PG. 64–22 (WITH 1% LIME) PLACED IN 3 LIFTS, OVER 12 INCHES OF CEMENT TREATED SUBGRADE, OVER COMPACTED RANDOM FILL SUBGRADE WITH A MINIMUM R–VALUE OF 17 CONFIRMED WITH R2 MATERIALS.
12. PLACEMENT AND COMPACTION OF HOT MIX ASPHALT (HMA) SHALL COMPLY WITH SECTION 401 OF THE 2005 CDOT STANDARD SPECIFICATIONS AS WELL AS THE LATEST CDOT STANDARD SPECIAL PROVISIONS.
13. PLACEMENT AND COMPACTION OF SUB–GRADE, EMBANKMENTS, AND BACKFILLS SHALL COMPLY WITH SECTION 203 OF THE CDOT STANDARD SPECIFICATIONS AS WELL AS THE LATEST CDOT STANDARD SPECIAL PROVISIONS.
14. SOIL PREPARATION INCLUDING TOPSOIL, SEEDING, AND MULCHING IS REQUIRED WITHIN THE HIGHWAY RIGHT–OF–WAY ON ALL DISTURBED AREAS NOT SURFACED AND THOSE AREAS BEYOND THE HIGHWAY THAT MAY ERODE AND SEND DEBRIS INTO THE HIGHWAY RIGHT–OF–WAY.
15. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
16. WIDENED AREAS OF THE ROADWAY SHALL BE A MINIMUM OF 20–YEAR DESIGN LIFE.
17. OVERLAY OF EXISTING PAVEMENT SHALL ALSO BE A MINIMUM OF 20–YEAR DESIGN LIFE TO AVOID DIFFERING MAINTENANCE ISSUES BETWEEN THE OVERLAY SECTION AN THE NEW PAVEMENT WIDENING.
18. WATER SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED. COST OF WATER SHALL BE INCLUDED IN THE WORK.
19. THIS DESIGN IS IN FULL COMPLIANCE WITH SECTION 4 OF THE STATE HIGHWAY ACCESS CODE, 2 CCR 601–1 EXCEPT FOR THE FOLLOWING APPROVED VARIANCES: NONE
20. THIS DESIGN IS IN FULL COMPLIANCE WITH TITLE II ADA ACCESSIBILITY REQUIREMENTS EXCEPT FOR THE FOLLOWING APPROVED VARIANCES: NONE

COLORADO DEPARTMENT OF TRANSPORTATION:

CDOT PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH THE CDOT DESIGN CRITERIA. CDOT IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. CDOT THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

EL PASO COUNTY TRAFFIC SIGNAL NOTES

1. THE CONTRACTOR HALL PROVIDE, FOR REVIEW, BY THE ENGINEER, A COMPLETE TRAFFIC SIGNAL MATERIAL SUBMITTAL PACKAGE THAT CONTAINS, ALL OF THE PROPOSED TRAFFIC SIGNAL EQUIPMENT, INCLUDING MATERIAL SPECIFICATIONS AND DESCRIPTIONS THAT WILL BE NECESSARY TO COMPLETE THE TRAFFIC SIGNAL WORK. THE CONTRACTOR SHALL ALLOW FOR A MINIMUM THREE-WEEK SUBMITTAL REVIEW PERIOD AND SHALL NOT ORDER ANY SIGNAL EQUIPMENT UNTIL AFTER A REVIEW OF ALL SUBMITTALS HAVE BEEN COMPLETED BY THE ENGINEER AND VERIFIED BY THE CONTRACTOR.
2. FUNCTIONAL AND OPERATIONAL RESPONSIBILITY FOR ALL NEWLY INSTALLED AND EXISTING TRAFFIC SIGNAL EQUIPMENT WILL BECOME THE RESPONSIBILITY OF THE CONTRACTOR UNTIL FINAL ACCEPTANCE OF THE PROJECT. THE CONTRACTOR SHALL CONSIDER THIS WORK INCIDENTAL TO THE OVERALL WORK BEING PERFORMED AND SHALL BE INCLUDED AS PART OF THE PROJECT.
3. SEE COLORADO DEPARTMENT OF TRANSPORTATION SIGNAL DETAILS FOR CONSTRUCTION/ INSTALLATION DETAILS NOT SHOWN ON THESE PLANS.
4. ALL SIGNAL EQUIPMENT REMOVED BY THE CONTRACTOR SHALL BE SALVAGED AND BECOME THE PROPERTY OF EL PASO COUNTY. THE SALVAGED EQUIPMENT SHALL BE DELIVERED AS DIRECTED BY THE ENGINEER. DELIVERY OF THE SIGNAL EQUIPMENT WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE WORK FOR REMOVAL OF TRAFFIC SIGNAL EQUIPMENT.
5. OVERHEAD STREET NAME SIGN DESIGN AND LAYOUT INFORMATION SHALL BE PER THE STREET MANE SIGN DETAIL CONTAINED IN THE PROJECT PLAN.
6. TRAFFIC SIGNS MOUNTED ON SIGNAL POLES, MAST ARMS, AND PEDESTALS SHALL BE MOUNTED USING BANDING, ALUMINUM CHANNELS, AND BACKING ZEES PER APPLICABLE COOT STANDARD PLANS, OR SIMILAR RIGID SIGN BRACING MOUNTING ASSEMBLY.
7. ONCE THE PROFESSIONAL ENGINEERING CONSULTANT HAS COMPLETED ALL TRAFFIC SIGNAL CONTROLLER TIMING DEVELOPMENT AND CONTROLLER PROGRAMMING, THE CONTRACTOR WILL COORDINATE THE DELIVERY DATE OF THE PROGRAMMED TRAFFIC SIGNAL CONTROLLER FOR REVIEW OF EPC DEPARTMENT OF PUBLIC WORKS, HIGHWAY DIVISION SIGNAL SHOP AND ALLOW FOR A MINIMUM TWO-WEEK REVIEW PERIOD, AFTER WHICH TIME THE CONTRACTOR MAY MAKE ARRANGEMENTS FOR PICKING UP THE SIGNAL CONTROLLER.
8. CONTROLLER CABINET SHALL BE FURNISHED WITH A "BEST" DOOR LOCK KIT LOCK AND CODE IS "BEST": 5L6R LEFT AND RIGHT.
9. CONDUIT IS TO BE REPLACED IN THE EVENT THAT EXISTING CONDUIT IS DAMAGED AND AS DIRECTED BY THE ENGINEER.
10. ELECTRICAL SERVICE DISCONNECT BOXES SHALL BE LOCKABLE AND WEATHER PROOF WITH NEMA TYPE CIRCUIT BREAKER. ENCLOSURES SHALL BE PROVIDED AT THE CONNECTION POINT OF EACH POWER SOURCE OR POINT OF SERVICE AS DIRECTED BY THE ENGINEER.
11. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL WIRING REQUIRED TO COMPLETE THE INSTALLATION AND ESTABLISH THE FUNCTIONALITY OF ALL TRAFFIC SIGNAL EQUIPMENT.
12. ALL INCIDENTAL ITEMS NOT SHOWN IN THE SUMMARY OF APPROXIMATE QUANTITIES OR TABULATION OF SIGNAL EQUIPMENT SHALL BE CONSIDERED TO BE INCLUDED AS PART OF THE TRAFFIC SIGNAL INSTALLATION AND WILL NOT BE MEASURED AND PAID FOR SEPARATELY. ALL QUANTITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ECESSARY TO COMPLETE THE CONSTRUCTION SHOWN ON THESE PLANS.
13. THE SIGNAL SHALL NOT BE TURNED ON OR STARTED UNTIL DIRECTED BY THE ENGINEER. PRIOR TO SIGNAL ACTIVATION, THE ENGINEER SHALL CONFIRM THAT THE APPROPRIATE PAVEMENT MARKINGS AND SIGNING ARE IN PLACE AND THAT ALL WORK NECESSARY FOR PROPER SIGNAL OPERATION HAS BEEN COMPLETED.
14. THE SIGNAL CONTROLLER SHALL BE A MACCAIN 2070 FLEX ATC CONTROLLER AND THE CONFLICT MONITOR SHALL BE MODEL 2010 ECLIP W/ ETHERNET PORT (EDI). THE CONTROLLER CABINET SHALL BE A COOT SPECIFICATION MODEL 332D WITH BATTERY BACKUP AND AUX RACK AND SHALL CONTAIN ANTI-GRAFFITI SILVER FINISH COATING. THE CABINET SHALL BE MOUNTED ON A CAST-IN-PLACE CONCRETE FOUNDATION PER APPLICABLE COOT'S STANDARDS STANDARD PLAN AND THE CABINET SHALL BE POSITIONED SUCH THAT, WITH THE FRONT DOOR OPEN, BOTH THE CONTROLLER DISPLAY AND THE SIGNAL INSTALLATION BE VISIBLE.
15. LUMINAIRES SHALL CONSIST OF AN ASSEMBLY THAT UTILIZES LEDS AS THE LIGHT SOURCE. IN ADDITION, A COMPLETE LUMINAIRE SHALL CONSIST OF A HOUSING, LED ARRAY, AND ELECTRONIC DRIVER (POWER SUPPLY). ALL LUMINAIRES SHALL BE WIRED 120 VOLTS AC WITH MULTI-TAP HEADS. THE LED FIXTURE MUST HAVE A COLOR TEMPERATURE OF 4100K (+/- SOOK), MUST BE DESIGNED TO OPERATE AT A TEMPERATURE RANGE OF -40"F TO 105"F (-40"C TO 40° C), AND PROVIDE A MINIMUM OF 70,000 HOURS OF OPERATION. LUMINAIRES SHALL BE E-LIGHT-STAR LED STREET LIGHT, OR APPROVED EQUAL. THE CONTRACTOR SHALL PROVIDE A RECOMMENDATION FOR TYPE OF THE STREET LIGHT BASED ON THE CONSTRUCTION PLANS AND MANUFACTURER'S SPECIFICATIONS, TO BE APPROVED BY THE ENGINEER. THE FIXTURE MUST BE CAST ALUMINUM, PROVIDED WITH FUSING, SURGE SUPPRESSION AND MUST BE UL LISTED FOR WET LOCATIONS. THE FIXTURE MUST HAVE AN INTERNAL, WEATHER-TIGHT LED DRIVE. NO ACTIVE COOLING FEATURES (FANS, ETC.) WILL BE ALLOWED. THE FINISHED SHALL MATCH THE EXTENSION ARM SHAFTS. THE LUMINAIRES WILL BE INSTALLED ON 15 FOOT EXTENSION ARM SHAFTS AT NOMINAL HEIGHT OF 40 FEET AND SHALL BE WELDED TO THE SIGNAL POLE PER CDOT TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS STANDARD PLAN S-614-40. LUMINAIRE ARM SHAFT SHALL BE IN ACCORDANCE WITH THE PROJECT PLANS.
16. THE INTERSECTION DETECTION SYSTEM {MICROWAVE RADAR) CONTRACT ITEM INCLUDES DEVICE INSTALLATION (I.E., DETECTOR UNIT, HARDWARE, WIRING, PROCESSOR MODULE, ETC.), AND VERIFICATION OF SUCCESSFUL IN-FIELD DETECTION ZONE OPERATION BASED ON SEVERAL VEHICLE ACTUATIONS IN ALL DETECTION ZONES.
17. THE CONTRACTOR SHALL COORDINATE THE SCHEDULES OF THE CONTRACTED PROFESSIONAL ENGINEERING CONSULTANT AND THE EPC DEPARTMENT OF PUBLIC WORKS, HIGHWAY DIVISION TRAFFIC SIGNAL STAFF FOR SCHEDULING THE ON-SITE FIELD IMPLEMENTATION OF ALL TRAFFIC SIGNAL TIMING AND OPERATIONAL PROGRAMMING, VEHICLE DETECTION ZONE PLACEMENT, AND DETECTION EQUIPMENT POSITIONING. THIS WORK SHALL BE SCHEDULED NEAR THE END OF THE PROJECT, PRIOR TO PROJECT ACCEPTANCE, AND ONLY AFTER ALL FINAL PAVEMENT MARKINGS, SIGNING, AND TRAFFIC SIGNAL WORK HAS BEEN COMPLETED.
18. THE MICROWAVE RADAR DETECTION SYSTEM SHALL UTILIZE MS SEDCO INTERSECTOR TC-CK1-SBE WITH INTERFACE BOARD.
19. PEDESTRIAN SIGNAL HEAD INSTALLATION SHALL INCLUDE ALUMINUM AND POWDER COATED GLOSS BLACK SIGNAL HEAD WITH APPROVED LED COUNTDOWN DISPLAY, ALUMINUM OPEN VISOR WITH THE OUTSIDE POWDER COATED GLOSS BLACK, PUSHBUTTON, AND INSTRUCTIONAL R10-3E COUNTDOWN PEDESTRIAN ACTUATION SIGN. PUSHBUTTONS SHALL BE POLERA NAVIGATOR S 2-WIRE PUSH BUTTONS, SPECIFIED AS INS2 5 UN 1-B-BD-ES, OR APPROVED EQUIVALENT. CUSTOM MESSAGING SHALL NOT INTERFERE WITH TRADITIONAL NON-VISUAL FORMATS SPECIFIED IN 4E OF THE MUTCD AND SHALL ONLY PROVIDE ADDITIONAL INFORMATION AS DIRECTED BY THE ENGINEER.
20. ALL TRAFFIC SIGNAL POLES, MAST ARMS, PEDESTALS, AND LUMINAIRE ARMS SHALL HAVE A GLOSS BLACK COAT FINISH OVER HOT DIP GALVANIZED BASE COAT, INSTALLED IN ACCORDANCE WITH THE PAINT MANUFACTURER'S INSTRUCTIONS.
21. ALL SIGNAL POLE AND CONTROLLER LOCATIONS SHOWN ARE APPROXIMATE ONLY. MAST ARMS SHALL BE OF SUFFICIENT LENGTH AND DESIGN TO ALLOW PROPER PLACEMENT OF SIGNAL HEADS AND OVERHEAD SIGNING PER THE PLANS. ACTUAL LOCATIONS SHALL BE STAKED IN THE FIELD AND FIELD VERIFIED BY THE ENGINEER PRIOR TO DRILLING, EXCAVATION, AND ORDERING THE SIGNAL EQUIPMENT AND MAST ARMS. THE LOCATION OF EACH SIGNAL POLE FOUNDATION SHALL BE POTHOLED PRIOR TO DRILLING TO CONFIRM WHETHER OR NOT ANY UTILITY CONFLICTS EXIST.
22. LATERAL OFFSETS FROM THE NEAR EDGE OF TRAFFIC SIGNAL POLES, PEDESTALS, AND CABINETS TO THE FACE OF CURB OR EDGE OF PAVED SHOULDER SHOULD BE AT LEAST SIX FEET, HOWEVER, A MINIMUM LATERAL OFFSET OF AT LEAST FOUR FEET MAY BE PROVIDED FOR CURB OFFSETS. IF NO PAVED SHOULDER EXISTS, A MINIMUM LATERAL OFFSET OF AT LEAST EIGHT FEET SHOULD BE PROVIDED FROM THE EDGE OF PAVEMENT FOR AN AUXILIARY LANE AND A MINIMUM LATERAL OFFSET OF AT LEAST TWELVE FEET SHOULD BE PROVIDED FROM THE EDGE OF PAVEMENT FOR A THROUGH LANE.
23. SHOULD THE CONTRACTOR ENCOUNTER WATER IN THE CAISSON, ANY DE-WATERING METHODS AND NECESSARY PERMITS SHALL BE INCLUDED IN THE COST OF THE CAISSON AND WILL BE CONSIDERED INCIDENTAL TO THE WORK.
24. ALL TRAFFIC SIGNAL COMPONENT PULL BOXES SHALL BE PRE-CAST HIGH DENSITY POLYMER CONCRETE (HDPC) MATERIAL WITH THE FOLLOWING SIZES: 36 INCH X 48 INCH X 18 INCH FOR THE PULL BOX ADJACENT TO THE CONTROLLER CABINET FOUNDATION AND 24 INCH X 36 INCH X 18 INCH FOR THE REMAINING PULL BOXES.
25. TRAFFIC PULL BOX LOCATIONS SHOWN IN THE PROJECT PLANS ARE APPROXIMATE. ACTUAL LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER. PULL BOXES SHALL BE FLUSH WITH THE FINISHED GROUND SURFACE AND SHALL NOT BE PLACED IN AREAS THAT ARE SUSCEPTIBLE TO WATER RUNOFF OR STANDING WATER. CONDUIT RUNS BETWEEN PULL BOXES SHALL NOT EXCEED APPROXIMATELY 200 FEET AND PULL BOXES SHALL NOT BE LOCATED IN HANDICAP RAMPS, PEDESTRIAN LANDING AREAS, SIDEWALKS, PRIMARY SIDEWALK PATHS, OR ROADWAY PAVEMENT AREAS.

EL PASO COUNTY TRAFFIC SIGNAL NOTES (CONT.)

26. THE CONDUIT NUMBER AND SIZES FOR TYPICAL CONDUIT RUNS INCLUDE THE FOLLOWING FOR A PREEMINENT MAST ARM SIGNAL INSTALLATION.
    A. BETWEEN THE SIGNAL POLE FOUNDATION AND ADJACENT SIGNAL POLE PULL BOX: TWO (2) 2 INCH AND ONE (1) 3 INCH.
    B. BETWEEN SIGNAL PULL BOXES: TWO (2) 2 INCH AND THREE (3) 3 INCH.
    C. BETWEEN THE CONTROLLER CABINET FOUNDATION AND ADJACENT PULL BOX: THREE (3) 2 INCH AND FOUR (4) 3 INCH.
    D. BETWEEN THE SECONDARY SERVICE PEDESTAL METER FOUNDATION AND THE CONTROLLER CABINET FOUNDATION ONE (1) 2 INCH FOR THE ELECTRICAL SERVICE FEED.
27. ALL CONDUIT AND FITTINGS SHALL BE SCHEDULE 80 PVC AND ALL CONDUIT SHALL HAVE A PULL ROPE LEFT IN THEM WHEN CONSTRUCTION IS COMPLETED. ALL CONDUIT ENTERING THE CABINET FOUNDATION AND PULL BOXES SHALL HAVE BELL END STYLE COUPLINGS ON ALL CONDUIT ENDS.
28. ALL CONDUIT THAT IS DIRECTIONALLY BORED SHALL BE A MINIMUM OF THREE FEET BELOW THE EXISTING PAVEMENT. THIS WORK SHALL AVOID DISTURBING OR DAMAGING EXISTING FACILITIES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROMPT RECONSTRUCTION, ALTERATION, REPAIR OR MAINTENANCE OF HIGHWAY PROPERTY, AS NECESSARY, TO REPAIR DAMAGE CAUSED BY THE ACCOMMODATION OF THE UTILITY, AND TO RESTORE THE HIGHWAY TO PRE-EXISTING OR BETTER CONDITIONS.
29. ALL SIGNAL CABLE SHALL BE CONTINUOUS FROM CONNECTIONS MADE IN THE HANDHOLE COMPARTMENT OF THE SIGNAL POLE BASE TO THE TERMINAL COMPARTMENT OF THE CONTROLLER CABINET AND SHALL CONTAIN NO SPLICES. EACH SIGNAL HEAD SHALL CONTAIN SEPARATE AND CONTINUOUS SIGNAL CABLE FROM THE SIGNAL HEAD TO THE ABOVE GROUND HANDHOLE AT THE BASE OF THE SIGNAL POLE AND SHALL CONTAIN NO SPLICES.
30. A SEPARATE AND CONTINUOUS 21 CONDUCTOR CABLE SHALL RUN FROM THE CONTROLLER CABINET TO THE HANDHOLE AT EACH SIGNAL POLE AND SHALL CONTAIN NO SPLICES.
31. ALL SIGNS MOUNTED ON SIGNAL POLES, MAST ARMS, AND PEDESTALS SHALL BE MOUNTED USING BANDING ALUMINUM CHANNELS, AND BACKING ZEES PER CDOT TYPICAL POLE MOUNT SIGN INSTALLATIONS STANDARD PLAN S-614-20, OR SIMILAR RIGID SIGN BRACING MOUNTING ASSEMBLY, AS DIRECTED BY THE ENGINEER. MAST ARM SIGNS THAT REQUIRE Z-BRACKETS SHALL BE MOUNTED ON ASTRO-STYLE BRACKETS AND RISERS. THE COST OF ALL HARDWARE FITTINGS, TOOLS, AND EQUIPMENT NECESSARY FOR A COMPLETE INSTALLATION OF MAST ARM SIGNS WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
32. ALL CONDUCTORS AND CABINET WIRING SHALL BE COLOR CODED AND PERMANENTLY TAGGED PER ENGINEER DIRECTION AND IN ACCORDANCE WITH THE SIGNAL PHASE NUMBERING AND DETECTION ZONE PHASE NUMBERING INFORMATION CONTAINED IN THE PROJECT PLANS.

33\. ALL VEHICLE SIGNAL HEADS SHALL HAVE APPROVED 12 INCH LED INDICATIONS AND SHALL BE ALUMINUM WITH POWDER COATED GLOSS BLACK FINISH AND SHALL CONTAIN 12 INCH ALUMINUM TUNNEL VISORS WITH THE OUTSIDE POWDER COATED GLOSS BLACK. ALL VEHICLE SIGNAL HEADS SHALL HAVE ALUMINUM LOUVERED BACK PLATES WITH POWDER COATED GLOSS BLACK FINISH AND YELLOW RETRO REFLECTIVE BORDER. MAST ARM SIGNAL HEADS SHALL USE ASTRO- TYPE MOUNTING ASSEMBLIES AND SHALL BE INSTALLED APPROXIMATELY LEVEL WITH ONE ANOTHER AT A 17 TO 19 FOOT VERTICAL CLEARANCE ABOVE THE HIGH POINT OF THE PAVEMENT GRADE.

33\. FINAL VEHICLE DIRECTION ZONE PLACEMENT AND DIMENSIONS, IN ACCORDANCE WITH THE PROJECT PLAN, AND FINAL SIGNAL PROGRAMMING SHALL BE COMPLETED IN THE FIELD AND THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR COORDINATING AND SCHEDULING THIS WORK.

34\. ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS THAT HAVE NOT BEEN PLACED IN SERVICE SHALL BE COVERED WITH PREFABRICATED WEATHER RESISTANT NYLON FORM FITTING SIGNAL FACE COVER MATERIAL. THE SIGNAL FACE SHALL REMAIN COMPLETELY COVERED UNTIL THE SIGNAL HEAD IS PLACED IN SERVICE AND IS FULLY FUNCTIONAL AND OPERATIONAL.

35\. ALL DETECTION EQUIPMENT, DETECTION ZONES, AND SIGNAL TIMING OPERATION SHALL BE CONFIRMED IN THE FIELD BY THE PROFESSIONAL ENGINEERING CONSULTANT TO BE ACHIEVING SATISFACTORY TRAFFIC SIGNAL OPERATION.

36\. COMMUNICATION SYSTEM SHALL BE A DYMEC ETHERNET SWITCH KY-3170EMX AND CELLULAR MODEM MICROHARD BULLET LTE, WITH CITEL SURGE SUPPRESSION ON ALL THESE COMPONENTS.

38\. THE CONTRACTED PROFESSIONAL ENGINEERING TRAFFIC SIGNAL TIMING, CONTROLLER PROGRAMMING AND OPERATION AND OVERALL TRAFFIC SIGNAL OPERATIONAL CONSULTANT SERVICES THAT ARE TO BE RETAINED BY THE OWNER/ DEVELOPER/ DISTRICT SHALL INCLUDE, BUT NOT BE LIMITED TO:

- A. DEVELOPING ALL TRAFFIC SIGNAL TIMING AND ALL OPERATIONAL PARAMETERS FOR ACHIEVING ISOLATED, FULL-ACTUATED VEHICLE AND PEDESTRIAN INTERSECTION OPERATION AND, WHEN DOCUMENTED TO BE NECESSARY, COORDINATED SIGNAL SYSTEM TIMING PLAN OPERATION DURING VARIOUS TIMES OF THE DAY.
- B. PROGRAMMING ALL SIGNAL TIMING PARAMETERS INTO THE TRAFFIC SIGNAL CONTROLLER.
- C. FIELD IMPLEMENTING AND FINE-TUNING/ ADJUSTING ALL TRAFFIC SIGNAL TIMING PARAMETERS, INCLUDING FOLLOW-UP FIELD REVIEWS AS MAY BE NECESSARY.
- D. DEVELOPING, PROGRAMMING, FIELD IMPLEMENTING, AND FINE-TUNING ALL VEHICLE DETECTION ZONE DIMENSIONS, ZONE LOCATIONS, AND OPERATIONAL PARAMETERS.

ALL OF THE AFOREMENTIONED CONTRACTED PROFESSIONAL ENGINEERING TRAFFIC SIGNAL OPERATIONAL CONSULTANT SERVICED DELIVERABLES SHALL BE CONSISTENT WITH NATIONAL PUBLICATIONS, INCLUDING BUT NOT LIMITED TO: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) LATEST EDITION/ REVISION, FHWA-HOP-08-024 "TRAFFIC SIGNAL TIMING MANUAL" (JUNE 2008), FHWA-HRT-04-091 "SIGNALIZED INTERSECTIONS: INFORMATIONS GUIDE" (AUGUST 2004), FHWA-HOP-06-006 "TRAFFIC CONTROL SYSTEMS HANDBOOK" (OCTOBER 2005), FHWA-DTFH61-01-C-00183 "SIGNAL TIMING PROCESS FINAL REPORT" (DECEMBER 2003), NCHRP REPORT 731 "GUIDELINES FOR TIMING YELLOW AND ALL-RED INTERVALS AT SIGNALIZED INTERSECTIONS" (2012), NCHRP REPORT 812 "SIGNAL TIMING MANUAL SECOND EDITION" (2015)

TOWN OF MONUMENT GENERAL NOTES:

1. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION OF SITE IMPROVEMENTS SHALL MEET OR EXCEED THE SITE WORK STANDARDS AND SPECIFICATIONS AND THE STANDARDS AND SPECIFICATIONS SET FORTH IN THE TOWN OF MONUMENT MUNICIPAL CODE CRITERIA, AND APPLICABLE STANDARDS, AND APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. WHERE THERE IS CONFLICT BETWEEN THESE PLANS AND THE SPECIFICATIONS, OR ANY APPLICABLE STANDARDS, THE HIGHER QUALITY STANDARD SHALL APPLY. ALL WORK WITHIN PUBLIC R.O.W. OR EASEMENTS SHALL BE INSPECTED AND APPROVED BY THE TOWN OF MONUMENT INSPECTOR. THE TOWN WILL ALSO INSPECT ALL WORK ON PRIVATE PROPERTY.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS, ESPECIALLY AT THE CONNECTION POINTS AND AT POTENTIAL UTILITY CONFLICTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE TOWN OF MONUMENT AND ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL NOTIFY THE TOWN INSPECTOR AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL PUBLIC IMPROVEMENTS.
4. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE TOWN AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH THE MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
5. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ALL PERMITS NEEDED FOR THE JOB, ON–SITE AT ALL TIMES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.
7. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND THE TOWN INSPECTOR IMMEDIATELY.
8. ALL REFERENCES TO ANY PUBLISHED STANDARDS SHALL REFER TO THE LATEST REVISION OF SAID STANDARD, UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH M.U.T.C.D. TO THE TOWN OF MONUMENT FOR APPROVAL, PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT–OF–WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS SHOWN ON THESE DRAWINGS OR DESIGNATED TO BE PROVIDED, INSTALLED, OR CONSTRUCTED, UNLESS SPECIFICALLY NOTED OTHERWISE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS–BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT AT THE CONSTRUCTION SITE, WHICH SHALL BE AVAILABLE TO THE TOWN OF MONUMENT DEVELOPMENT SERVICES DEPARTMENT INSPECTOR AT ALL TIMES. A REPRODUCIBLE SET OF AS–BUILT DRAWINGS MUST BE FURNISHED TO THE TOWN OF MONUMENT AT THE COMPLETION OF THE PROJECT, PRIOR TO FINAL APPROVAL BY THE TOWN AND AS A CONDITION FOR OBTAINING A CERTIFICATE OF OCCUPANCY.
13. DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE ENGINEER–OF–RECORD FOR CLARIFICATION, AND ANNOTATE THE DIMENSION ON THE AS–BUILT RECORD DRAWINGS.
14. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS ARE STABILIZED WITH HARD SURFACE OR LANDSCAPING.
15. THE CONTRACTOR SHALL SEQUENCE THE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO MINIMIZE POTENTIAL UTILITY CONFLICTS. IN GENERAL, STORM SEWER AND SANITARY SEWER SHOULD BE CONSTRUCTED PRIOR TO INSTALLATION OF WATER LINES AND DRY UTILITIES.
16. NO SITE–RELATED IMPROVEMENTS MAY COMMENCE UNTIL A PRE–CONSTRUCTION MEETING IS HELD WITH THE TOWN OF MONUMENT AND ALL APPLICABLE PERMITS ARE OBTAINED.
17. THE DEVELOPER MUST IDENTIFY TO THE TOWN OF MONUMENT, PRIOR TO THE START OF ANY WORK, A QUALIFIED PLAN PERSON RESPONSIBLE FOR REVIEWING AND MONITORING ALL OPERATIONS IN ORDER TO PREVENT OR MINIMIZE THE IMPACT OF VIBRATION, NOISE, DUST, DRAINAGE, AND EROSION DAMAGE, AND OTHER FORMS OF POLLUTION ON NEARBY PROPERTY AND THE PUBLIC AS A WHOLE. THE DEVELOPER MUST WRITE TO THE OWNERS/OCCUPANTS OF PROPERTIES WITHIN AT LEAST 100 YARDS OF THE LIMITS OF THE WORKSITE, INFORMING THEM OF THE NATURE AND TIMING OF THE PROJECT AND PROVIDING CONTACT DETAILS FOR COMPLAINTS. THE TOWN, PRIOR TO THE COMMENCEMENT OF THE PROJECT, MUST APPROVE A COPY OF THE LETTER, MAILING LIST, AND DELIVERY DATES.
18. ***TOWN OF MONUMENT DISCLAIMER***
    THE APPROVAL OF THESE SITE CONSTRUCTION PLANS PRIOR TO SITE PLAN APPROVAL DOES NOT IN ANY WAY OBLIGATE THE TOWN TO
    APPROVE SUBSEQUENT SUBMITTALS (I.E., SITE PLANS AND PLATS), AND THE TOWN HAS NO LIABILITY IN ANY FORM DUE TO ITS ACTIONS
    IN THE APPROVAL OF THESE SITE CONSTRUCTION PLANS.

TOWN OF MONUMENT CONSTRUCTION NOTES:

1. THE TOWN OF MONUMENT DESIGN CRITERIA & CONSTRUCTION SPECIFICATIONS MANUAL IS CONSIDERED PART OF THIS CONSTRUCTION DRAWING SET. THIS DESIGN AND PLAN SET IS INCOMPLETE WITHOUT THIS SPECIFICATIONS MANUAL. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL AND BE FAMILIAR WITH IT FOR ALL CONSTRUCTION ACTIVITIES. A COPY CAN BE OBTAINED FROM THE TOWN BY CALLING (719)–499–3375.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN COMPLIANCE WITH THE TOWN CRITERIA AND CONSTRUCTION SPECIFICATION MANUAL AND TOWN OF MONUMENT MUNICIPAL CODE AND SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF MONUMENT INSPECTOR.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO ACTUAL CONSTRUCTION. ALL EXISTING UTILITIES SHOWN ARE BASED ON INFORMATION OF RECORD. THE CONTRACTOR IS RESPONSIBLE TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE EXISTING UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS AND AGREES TO ACCEPT FULL RESPONSIBILITY FOR FAILURE TO LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
4. THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING IMPROVEMENTS TO BE MET BY THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION. ANY SIGNIFICANT DISCREPANCIES FOUND BETWEEN THIS PLAN SET AND ACTUAL FIELD CONDITIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER OF RECORD FOR APPROPRIATE ACTION.
5. THE CONTRACTOR IS ADVISED THAT ALL EXISTING CONDITIONS OUTSIDE THE AREA OF WORK SHALL BE PROTECTED, IF DAMAGE OCCURS DURING CONSTRUCTION, IT WILL BE REPLACED IN THE ORIGINAL EXISTING CONDITION AT THE CONTRACTOR'S EXPENSE.
6. CONCRETE USED FOR CONSTRUCTION OF CURB AND GUTTER, SIDEWALK, AND CROSSPANS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 P.S.I. AFTER 28 DAYS.
7. ALL DISTURBED PAVEMENT EDGES WILL BE CUT TO NEAT LINES. THE THICKNESS OF ANY REPLACED ASPHALT AND BASE COURSE SHALL EQUAL OR EXCEED THE EXISTING THICKNESS.
8. WHEN ABUTTING NEW PAVEMENT TO EXISTING, OR TO REMOVE ANY BROKEN OR CRACKED PAVEMENT, SAWCUT EXISTING PAVEMENT TO A STRAIGHT EDGE AND AT A RIGHT ANGLE, OR AS APPROVED BY THE TOWN INSPECTOR.
9. FINAL GRADING OF CURBS AND PAVING SHALL PROVIDE POSITIVE DRAINAGE. STANDING WATER POCKETS OR PONDING WILL NOT BE ACCEPTABLE.
10. WHERE REMOVAL OF EXISTING CURB, GUTTER, SIDEWALK, OR PAVEMENT IS REQUIRED, THE CONTRACTOR SHALL SAWCUT AND/OR REMOVE TO THE NEAREST JOINT. CURB, GUTTER, AND SIDEWALK SHOWN AS EXISTING ON THESE PLANS IS NOT TO BE REMOVED UNLESS OTHERWISE NOTED. IF ANY OF THE EXISTING CURB, GUTTER, OR SIDEWALK IS DAMAGED BY THE CONTRACTOR, THEN IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
11. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND ROUTING DURING CONSTRUCTION, IF REQUIRED. TWO–WAY TRAFFIC SHALL BE MAINTAINED THROUGH THE WORK AREA AT ALL TIMES.
12. ALL DISTURBED AREAS THAT ARE TO REMAIN UNCOVERED FOR A PERIOD GREATER THAN 2 MONTHS SHALL BE RESEEDED AND WATERED UNTIL STABLE VEGETATION IS ESTABLISHED.
13. AT LEAST ONE SIGNED AND STAMPED SET OF THESE CONSTRUCTION DRAWINGS SHALL BE KEPT ON–SITE AT ALL TIMES.

48 HOURS BEFORE YOU DIG,
CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY COMMENTS	5/12/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

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STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
STANDARD NOTES

DESIGNED BY PRA	SCALE	DATE 02–23–23	
DRAWN BY PRA	(H) 1"=VARIES	SHEET 2 OF 26	
CHECKED BY	(V) 1"= N/A	JOB NO. 1302.22	

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COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 31, 2019

UPDATE THIS SHEET AS APPLICABLE

Revised on April 14, 2023

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

THE M&S STANDARD PLANS USED TO DESIGN THIS PROJECT ARE INDICATED BY A MARKED BOX ■, AND WILL BE ATTACHED TO THE PLANS. ALL OTHER M&S STANDARD PLANS ARE STILL ELIGIBLE FOR USE IN CONSTRUCTION IF APPROVED BY AN APPROPRIATE CDOT ENGINEER.

Computer File Information		Sheet Revisions	
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Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Construction Engineering Services JBK

STANDARD PLANS LIST

Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO.
STANDARDS PLANS LIST
Standard Sheet No. 1 of 1
Project Sheet Number:

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER CDOT COMMENTS	5/18/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PRWY. – PHASE 2 CONSTRUCTION PLANS

CDOT STANDARD PLAN SHEET

CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"= N/A		SHEET	3 OF 26
CHECKED BY		(V) 1"= N/A		JOB NO.	1302.22

EXISTING TRAFFIC LIGHT POLE AND APPURTENANT ELECTRICAL WIRING/BOXES TO REMAIN

BEGIN EXISTING ASPHALT MILLING AT PAVEMENT TRANSITION FROM CONCRETE TO ASPHALT

PROPOSED 1' SAWCUT LINE, REMOVE AND DISPOSE OF EXISTING C&G AND SIDEWALK

EXISTING SANITARY SEWER MAIN

EXISTING ASPHALT MILLING WITHIN THIS GRAY HATCHED AREA

EXISTING TRAFFIC LIGHT POLES AND APPURTENANT ELECTRICAL WIRING/BOXES TO BE REMOVED

EL PASO COUNTY "HIGHWAY 105 PROJECT A" IMPROVEMENT LIMIT LINE

PROPOSED RETAINING WALL DISTURBANCE NOTE: EXISTING UTILITIES WITHIN THIS HATCHED AREA SHALL BE REMOVED AND RELOCATED/RE-ROUTED (SEE PLANS FROM WOODMOOR UTILITY DISTRICT FOR WATER & SANITARY SEWER RELOCATION)

NOTE: WOODMOOR UTILITY DISTRICT WILL COORDINATE RELOCATIONS FOR EXIST. SANITARY AND WATER MAIN FACILITIES.

NOTE: EXISTING PAVEMENT MARKINGS WILL BE REMOVED WITH MILLING OPERATIONS (TYPICAL)

EXISTING CURB SHOWN AS DASHED RED TO BE REMOVED WITH THE EL PASO COUNTY "HIGHWAY 105 PROJECT A"

KNOLLWOOD DRIVE

STATE HIGHWAY 105

HIGHWAY 105

SEE HIGHWAY 105 IMPROVEMENT PLANS PREPARED BY EL PASO COUNTY FOR HIGHWAY CONTINUATION TO THE EAST

EXISTING CONCRETE PAVEMENT

EXISTING CONCRETE SIDEWALK AND CURB AND GUTTER TO REMAIN

END EXISTING ASPHALT MILLING

PROPOSED 1' SAWCUT LINE, REMOVE AND DISPOSE OF EXISTING C&G

EXISTING INLET TO BE REMOVED

EXISTING ASPHALT PAVEMENT, CONCRETE SIDEWALK AND CONCRETE CURB AND GUTTER TO BE REMOVED AND DISPOSED OF WITHIN THIS HATCHED AREA

EXISTING INLET & RCP TO BE REMOVED

EXISTING TRAFFIC LIGHT POLE AND APPURTENANT ELECTRICAL WIRING/BOXES TO BE REMOVED

PROPOSED SAWCUT LINE, BEGIN EXISTING C&G AND SIDEWALK REMOVAL

EXISTING RCP TO BE REMOVED

EXISTING INLET & RCP TO BE REMOVED

EXISTING FIBER OPTIC BOX TO BE REMOVED AND RELOCATED

EXISTING TRAFFIC LIGHT POLES AND APPURTENANT ELECTRICAL WIRING/BOXES TO BE REMOVED

EXISTING INLET & RCP TO BE REMOVED

EXISTING RETAINING WALL TO BE REMOVED (SOLID LINES & HATCH)

EXISTING ELECTRIC BOX TO REMAIN UNDISTURBED

EXISTING INLET & RCP TO REMAIN

EXISTING RETAINING WALL TO REMAIN

EXISTING RCP TO REMAIN

I-25 ON-RAMP

I-25 OFF-RAMP

LOT 2

MONUMENT JUNCTION WEST FILING NO. 1

LOT 1

NOTE: MONUMENT JUNCTION DEVELOPER WILL COORDINATE RELOCATIONS FOR EXIST. FIBER LINES, GAS AND ELEC. FACILITIES.

JACKSON CREEK PARKWAY

UNPLATTED MOUNTAIN STATES TELEPHONE

PROPOSED RETAINING WALL DISTURBANCE NOTE: EXISTING UTILITIES WITHIN THIS HATCHED AREA SHALL BE REMOVED AND RELOCATED/RE-ROUTED

TRACT H

UNPLATTED CDOT

UNPLATTED WOODMOOR VETERINARY HOSPITAL

EXISTING ASPHALT PARKING AND C&G TO BE REMOVED (WITHIN RETAINING WALL DISTURBANCE HATCH) REPLACE ASPHALT PARKING, C&G AND ADD GUARDRAIL)

EXISTING ASPHALT PARKING AND C&G TO BE REMAIN (SHADED LINES)

VALLEY VISTA ESTATES FILING NO. 3, LOT 3

VALLEY VISTA ESTATES FILING NO. 3, LOT 4

BASED ON RECENT DISCUSSIONS WITH EL PASO COUNTY STAFF AND THEIR CHOSEN CONTRACTOR FOR THE "HIGHWAY 105 PROJECT A" IT APPEARS THAT CONSTRUCTION TIMING FOR BOTH PROJECTS ALONG THE SOUTH SIDE OF HWY. 105 BETWEEN JACKSON CREEK PKWY. AND KNOLLWOOD DR. WILL LIKELY BE EARLY ~~SECOND~~ QUARTER OF 2024.

THIRD

EXISTING RCP CULVERT TO BE REMOVED

ACCESS DRIVE

LAUGHING LAB WAY

ORIGINAL EXISTING ASPHALT PAVEMENT SECTION TO BE REMOVED AND DISPOSED OF WITHIN THIS HATCHED AREA

LOT 4

EXISTING CURB AND SIDEWALK TO REMAIN

EXISTING ASPHALT MILLING WITHIN THIS GRAY HATCHED AREA, THIS ASPHALT PAVEMENT SECTION RECENTLY CONSTRUCTED WITH JACKSON CREEK PARKWAY INTERIM IMPROVEMENTS

EXISTING ASPHALT REMOVAL WITHIN THIS GREEN HATCHED AREA, THIS ASPHALT PAVEMENT SECTION RECENTLY CONSTRUCTED WITH JACKSON CREEK PARKWAY INTERIM IMPROVEMENTS TO BE SAWCUT AND REMOVED TO CONSTRUCT PROPOSED MEDIAN C&G

FAT TIRE DRIVE

EXISTING CURB AND SIDEWALK TO REMAIN

BEGIN EXISTING ASPHALT PAVEMENT MILLING AT JACKSON CREEK PARKWAY.

EXISTING ASPHALT REMOVAL WITHIN THIS GREEN HATCHED AREA, THIS ASPHALT PAVEMENT SECTION RECENTLY CONSTRUCTED WITH JACKSON CREEK PARKWAY INTERIM IMPROVEMENTS TO BE SAWCUT AND REMOVED TO CONSTRUCT PROPOSED MEDIAN C&G

FAT TIRE DRIVE

MATCH LINE INTO TOWN OF MONUMENT (JACKSON CREEK PARKWAY PROJECT) SEE DESIGN BY FELSBURG, HOLT & ULLEVIG ENGINEERING

N

60 30 0 60 120

SCALE: 1" = 60'

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS

811

UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC SM CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

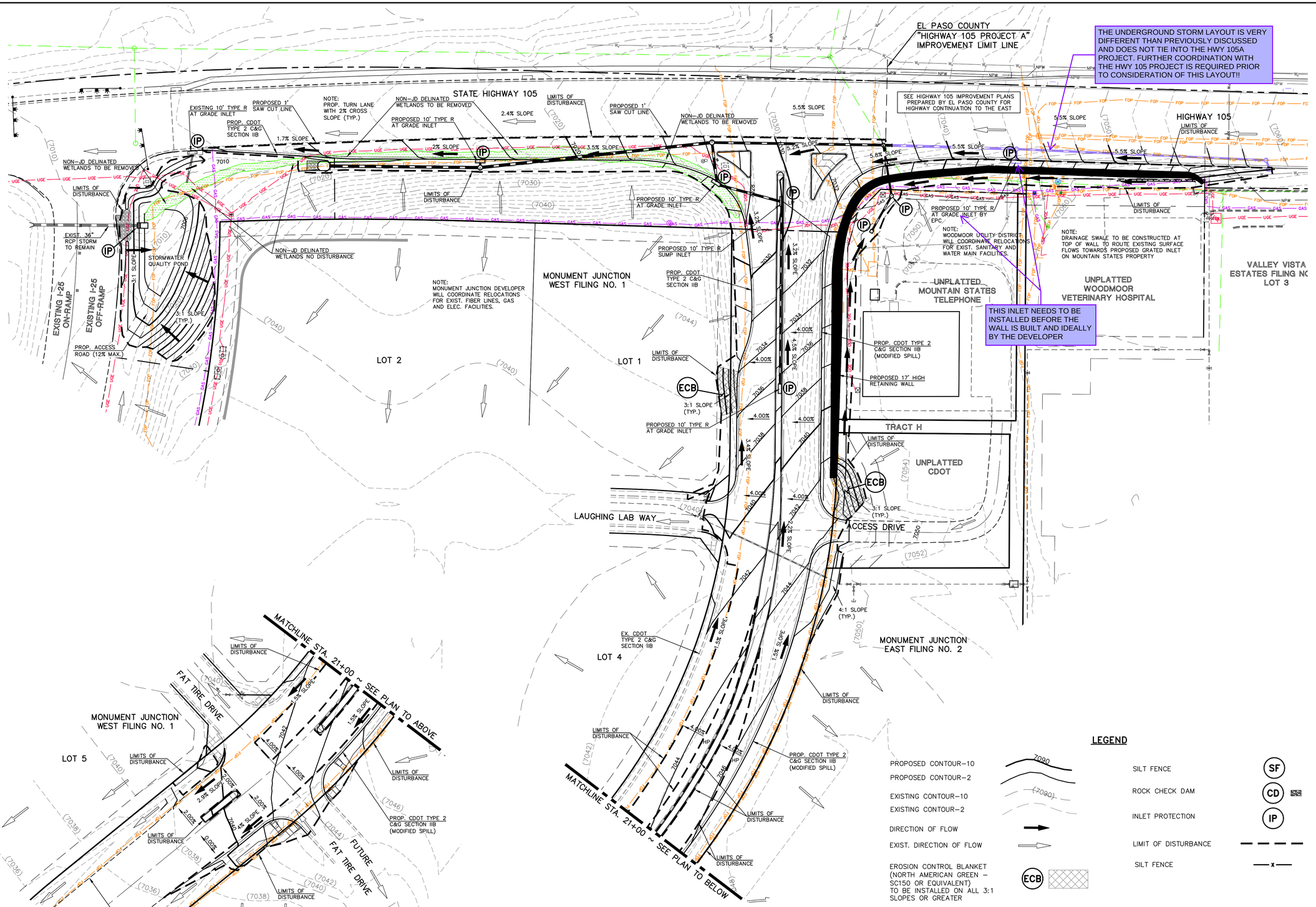
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENT PLANS

DEMOLITION PLAN

CLASSIC CONSULTING ENGINEERS & SURVEYORS

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	60'	SHEET	4 OF 26
CHECKED BY		(V) 1"=	N/A	JOB NO.	1302.22



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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 — DATE

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Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. - PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENTS PLANS
GRADING & EROSION CONTROL PLAN

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	5 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

N:\1302\22\DRAWINGS\CONSTRUCTION\SHEET-05-GEC PLAN.dwg, 7/20/2023 10:11:03 AM, WWhorton, 1:1

THE UNDERGROUND STORM SHOWN ON THIS PAGE SHOWS A COMPLETELY DIFFERENT LAYOUT THAN PAGE 5- GEC PLAN.

STATE HIGHWAY 105

EL PASO COUNTY
"HIGHWAY 105 PROJECT A"
IMPROVEMENT LIMIT LINE

HIGHWAY 105

EXIST. CURB LINE

PROP. CURB LINE

RIGHT-OF-WAY LINE

TW=7048.14
BW=7037.84

TW=7048.00
BW=7036.39

TW=7048.00
BW=7034.37

TW=7048.00
BW=7032.81

TW=7048.00
BW=7032.40

TW=7048.00
BW=7032.46

TW=7049.23
BW=7032.94

TW=7050.75
BW=7033.65

TW=7052.05
BW=7034.48

TW=7052.63
BW=7035.38

TW=7053.07
BW=7036.28

TW=7053.44
BW=7037.18

TW=7053.25
BW=7038.08

TW=7053.05
BW=7038.96

TW=7052.93
BW=7039.78

TW=7052.88
BW=7040.55

TW=7052.55
BW=7041.26

TW=7052.37
BW=7041.94

TW=7044.24
BW=7042.75

TW=7051.15
BW=7041.02

TW=7052.30
BW=7042.76

TW=7054.72
BW=7045.06

TW=7056.72
BW=7047.25

TW=7059.34
BW=7049.45

TW=7060.53
BW=7050.55

TW=7062.61
BW=7052.75

TW=7062.65
BW=7054.95

TW=7049.42
BW=7039.24

TW=7051.81
BW=7041.89

TW=7053.60
BW=7043.96

TW=7050.29
BW=7040.13

TW=7055.75
BW=7046.16

TW=7058.02
BW=7048.35

TW=7061.58
BW=7051.65

TW=7062.57
BW=7053.85

TW=7063.84
BW=7062.00

NOTE:
WOODMOOR UTILITY DISTRICT WILL COORDINATE RELOCATIONS FOR EXIST. SANITARY AND WATER MAIN FACILITIES.

NOTE:
MONUMENT JUNCTION DEVELOPER WILL COORDINATE RELOCATIONS FOR EXIST. FIBER LINES, GAS AND ELEC. FACILITIES.

TEMP. CONST. ESMT.

PERM. WALL ESMT.

WALL CONSTRUCTION EXCAVATION LINE

PROPERTY LINE

EXISTING ASPHALT PARKING AND C&G TO BE REMOVED (WITHIN RETAINING WALL DISTURBANCE HATCH) REPLACE ASPHALT PARKING, C&G AND ADD GUARDRAIL)

UNPLATTED
WOODMOOR
VETERINARY HOSPITAL

VALLEY VISTA
ESTATES FILING NO. 3,
LOT 3

UNPLATTED
MOUNTAIN STATES
TELEPHONE

EXIST. BLDG.

TEMP. CONST. ESMT.

WALL CONSTRUCTION EXCAVATION LINE

PROPERTY LINE

TRACT H

UNPLATTED
CDOT

MONUMENT JUNCTION
WEST FILING NO. 1

LOT 1

JACKSON CREEK PKWY.

RIGHT-OF-WAY LINE

PROP. SIDEWK.

N

50 25 0 50 100

SCALE: 1" = 50'

48 HOURS BEFORE YOU DIG,
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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING ENGINEERS & SURVEYORS SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

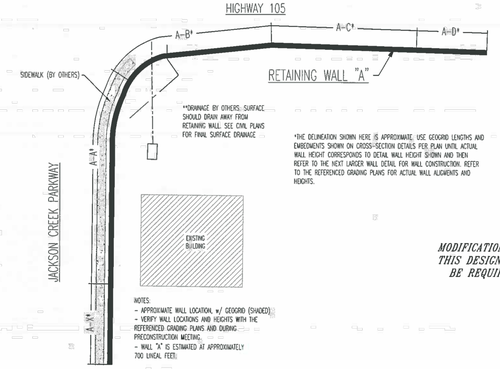
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENT PLANS
RETAINING WALL PLAN

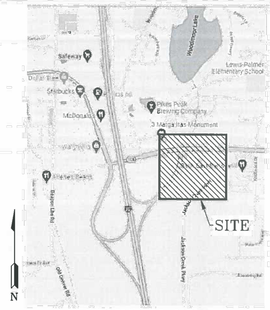
DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	6 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

N:\1302\22\DRAWINGS\CONSTRUCTION\SHEET-06-07-RETAINING WALL PLANS.DWG, 7/10/2023 3:17:53 PM, noragon, 1:1

REDI-ROCK RETAINING WALL
JACKSON CREEK PARKWAY & STATE HIGHWAY 105



CONCEPTUAL PLAN VIEW
N.T.S.



VICINITY MAP
N.T.S.

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.

PLAN SHEET NO.	INDEX OF SHEETS
1	PLAN & COVER SHEET
2	GENERAL NOTES & DETAILS
3	WALL "A" ELEVATION & SECTIONS
4	WALL "A" SECTIONS

NOTE: THIS DESIGN WAS BASED ON CONSTRUCTION PLANS BY CLASSIC CONSULTING ENGINEERS & SURVEYORS, AND THE SUBSURFACE SOILS INVESTIGATION BY ENTECH ENGINEERING, INC., DATED OCTOBER 20, 2022, ENTECH JOB NO. 221459. CONTRACTOR TO VERIFY RETAINING WALL DESIGN TO FINAL PLANS. IF THE RETAINED SOILS DIFFER FROM OUR ASSUMED SOIL TYPES, THEN THE ENGINEER MUST BE NOTIFIED AND MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.

Unresolved:
Include calculation in drainage report to show that swale is sized to adequately handle flow

COLORADO LICENSED PROFESSIONAL ENGINEER 11-10-22 STATE OF COLORADO P.E.

REVISIONS	BY:

ENTECH ENGINEERING, INC. 505 ELDEN ST. #200 HERNDON (PARCEL 2), VA 20147 (719) 531-5599

REDI-ROCK RETAINING WALL
PLAN & COVER SHEET
JACKSON CREEK PKWY & STATE HWY 105
MONUMENT, CO
FOR: CLASSIC COMMUNITIES

DRAWN BY:	AAH
DESIGNED BY:	AAH
CHECKED BY:	
DATE:	11/10/2022
SCALE:	N.T.S.
JOB NO.:	221459
SHEET NO.	1 OF 4 SHEETS

GENERAL NOTES

A. GENERAL CONDITIONS

1. These notes shall be read in conjunction with the drawings. In the event of a conflict, notify the Engineer for clarification.
2. Before executing anything herein shown, examine actual job conditions. Report any discrepancy, dimensional or otherwise, and any other error, omission, or difficulty affecting the work to the Engineer for review.
3. These retaining wall plans have been prepared to represent specific design parameters. It is the responsibility of the Project Owner/General Contractor to resolve construction problems due to changed conditions encountered during the progress of any portion of the work. The Project Owner/General Contractor is responsible for contacting the Engineer prior to making any changes to this design. This design addresses local retaining wall stability including internal and external stability and does not include a slope or global stability analysis for areas beyond the retaining wall.
4. Groundwater at footing level was not considered in the design of this retaining wall. If groundwater is encountered, contact the Engineer immediately.
5. The Owner or his representative reserve the right to inspect any material, fabrication, or workmanship at any time in the field or shop for conformance to the specifications, general notes, and drawings.
6. All details and sections are intended to be typical and shall be construed to apply to any similar situation elsewhere, except where a different detail is shown.
7. The Contractor shall make submittals as noted herein to the Engineer in a timely manner as to allow a ten business day review period. Quantities and dimensions are the responsibility of the Contractor. The Contractor shall make resubmittals as necessary until the concurrence of the Engineer and his Consultants is obtained.
8. Substitutions will not be considered by the Engineer or his Consultants unless submitted two weeks prior to time of installation, and complete documentation is provided substantiating compliance with the Contract Documents. Submit product data and samples as required. Substitutions will not be considered when acceptance will require substantial revision of the Contract Documents. The Engineer and his Consultants will determine acceptability of proposed substitutions.
9. The Contractor shall obtain a copy of and understand all applicable manufacturer's specifications. If discrepancies occur between manufacturer's specifications and those shown on the details, contact the Engineer immediately.
10. Backfill areas shall be sloped to avoid ponding water and to allow for surface drainage to flow away from the walls.
11. This design is valid only for the proposed retaining wall at the specified address. This retaining wall has been designed according to the grading plans by Classic Consulting Engineers & Surveyors, and the Subsurface Soils Investigation by Entech Engineering, Inc., dated October 20, 2022, Entech Job No. 221459.

B. BLOCK UNITS

1. Redi-Rock PC. It shall be the contractors responsibility to ensure that all units are erected in undamaged condition. Units with cracks or other imperfections which, in the opinion of the Engineer, are unacceptable shall not be placed in the wall. Rejected units shall be removed from the site with no additional compensation.

C. WALL LAYOUT AND BASE PREPERATION

1. Excavation to sound soil material shall be made at the base of the wall. Expansive Material may be encountered. Based on information obtained in the Subsurface Soils Investigation, expansive material should be removed and replaced per the recommendations provided in the Subsurface Soils Investigation. Unless shown otherwise, the benches shall be made horizontal in the line of the wall.
2. Contractor shall provide sufficient notice to the Engineer for observations, testing, and approval of the excavation prior to placing the granular bedding. If structural fill is used to obtain base elevation, the base soil shall be compacted to a minimum 95% of the Modified Proctor Dry Density (AASHTO T-180).
3. Finished base excavation shall be within 0.5 inches of the base elevation and shall include vertical steps where the base of the wall is to step.

D. LEVELING PAD

1. After approval of a base soil, a continuous gravel pad (see plans) shall be placed below the first course of the concrete block to be used as a leveling pad. This pad shall consist of a minimum of 6-inch deep, UNCL, CDOT No. 57 or 67 coarse aggregate (CDOT Standard Specifications Table 703-2). The wall is initiated by placing the first course of concrete block directly onto the leveling pad.

E. WALL UNIT INSTALLATION

1. The units in the base course shall be checked for level alignment.
2. Capstones used on the top course shall be attached with adhesive on a clean, dry surface as specified by the Manufacturer.

F. DRAINAGE MATERIAL PLACEMENT

1. Place and compact drainage fill material behind wall units.
2. Material shall consist of No. 57 or 67 coarse aggregate (CDOT Standard Specifications Table 703-2).
3. Maximum stacked vertical height of wall units prior to fill placement shall not exceed 2 courses.

G. BACKFILL MATERIAL

1. Backfill materials used behind the wall shall consist of select granular structural backfill, compliant with CDOT Class 1 backfill requirements or CDOT 57 or 67 Aggregate per plans.*
2. Backfill materials shall be placed in lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 95% of the Modified Proctor Dry Density (AASHTO T-180).

H. LOW PERMEABLE SOIL CAP

1. Soil used for low permeable soils cap such as clayey sand (SC) soils or import approved by the engineer. Materials shall be placed in lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 95% of the Modified Proctor Dry Density (AASHTO T-180).
2. 4" of topsoil is to be placed on top of the impermeable layer. The top 6" from the surface down shall be tilled or mixed to ensure cohesion of the impermeable and topsoil layers.

I. CONSTRUCTION PRECAUTIONS

1. During construction, Contractor shall slope last backfill lift of each day away from wall units and shall not allow runoff from adjacent areas to enter construction area.
2. Construction excavation shall comply with OSHA standards and regulations.

J. PRECONSTRUCTION

1. Contractor must schedule a preconstruction meeting with the Engineer prior to the initiation of any excavation, with at least 24 hours of advanced notice.

K. WALL GEOMETRY

1.	Design Wall Height (Ft):	See Plans
2.	Embedment Wall Height (Ft):	See Plans
3.	Exposed Wall Design Height (Ft):	See Plans
4.	Wall Inclination (Deg.):	See Plans

L. SEGMENTAL UNIT DATA - VERIFY w/ MANUFACTURER SPECS.

1.	Segmental Unit Name:	Redi-Rock 28"
2.	Cap Height (inches):	18
3.	Unit Height (Hu)(inches):	18
4.	Unit Width (Wu)(inches):	27.75
5.	Unit Length (inches):	46
6.	Setback (inches):	9.75
7.	Weight (pcf):	130
8.	Segmental Unit Name:	Redi-Rock 41"
9.	Cap Height (inches):	18
10.	Unit Height (Hu)(inches):	18
11.	Unit Width (Wu)(inches):	40.75
12.	Unit Length (inches):	46
13.	Setback (inches):	9.75
14.	Weight (pcf):	130
15.	Segmental Unit Name:	Redi-Rock 60"
16.	Cap Height (inches):	18
17.	Unit Height (Hu)(inches):	18
18.	Unit Width (Wu)(inches):	59.75
19.	Unit Length (inches):	46
20.	Setback (inches):	9.75
21.	Weight (pcf):	130

M. GEOSYNTHETIC REINFORCEMENT

Supplier:	n/a
Product Name:	n/a

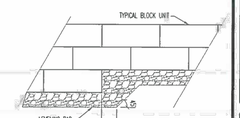
N. WALL GRADES

1.	Top Slope:	See Plans
2.	Toe Slope:	See Plans

O. RETAINING WALL DESIGN PARAMETERS

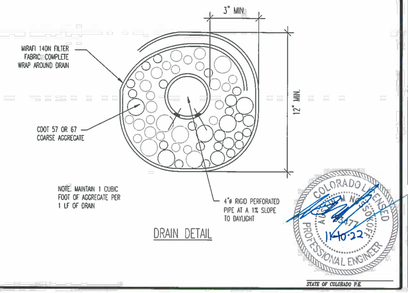
1. Distributed Surcharges
   a. Live Load (psf): 100 Pedestrian (As Req'd)
2. Minimum Factors of Safety
   a. External Stability
      1. Sliding 1.5
      2. Overturning 2.0
      3. Bearing Capacity 2.0
   b. Internal Stability
      1. Overstress 1.5
      2. Pullout 1.5

SOIL DATA				
Soil Zone	Description	Cohesion (C) (psf)	Friction Angle (Deg.)	Unit Weight (pcf)
Structural Soil	Silty Sand	0.00	32.00	120.00
Retained Soil	Silty Sand	0.00	32.00	120.00
Leveling Pad Soil	Gravel	0.00	36.00	125.00
Foundation Soil	Silty Sand	0.00	32.00	120.00



GRAVEL LEVELING PAD STEP

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.



DRAIN DETAIL

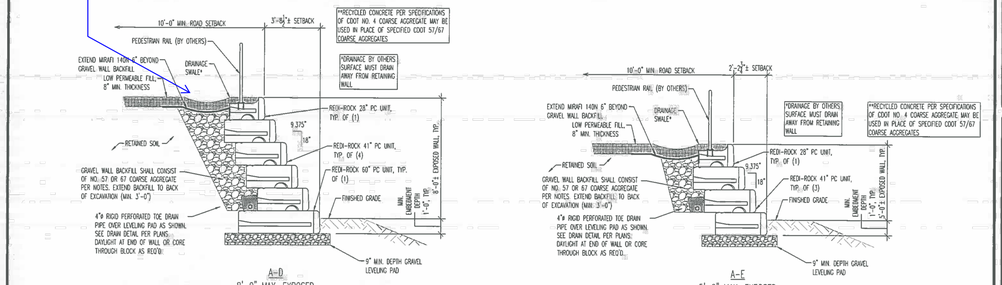
COLORADO LICENSED PROFESSIONAL ENGINEER 11-10-22 STATE OF COLORADO P.E.

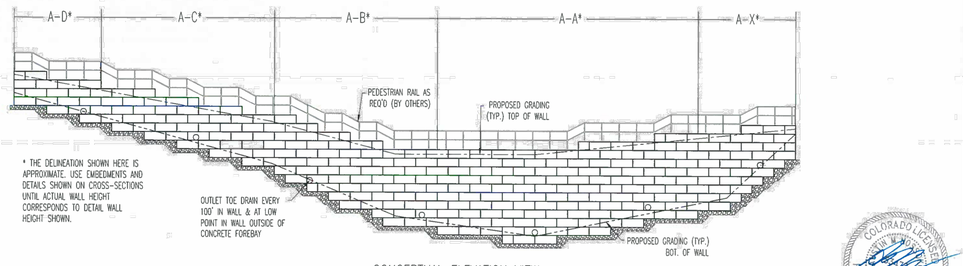
REVISIONS	BY:

ENTECH ENGINEERING, INC. 505 ELDEN ST. #200 HERNDON (PARCEL 2), VA 20147 (719) 531-5599

REDI-ROCK RETAINING WALL
PLAN & COVER SHEET
JACKSON CREEK PKWY & STATE HWY 105
MONUMENT, CO
FOR: CLASSIC COMMUNITIES

DRAWN BY:	AAH
DESIGNED BY:	AAH
CHECKED BY:	
DATE:	11/10/2022
SCALE:	N.T.S.
JOB NO.:	221459
SHEET NO.	2 OF 4 SHEETS





CONCEPTUAL ELEVATION VIEW
DRAWN @ 5H:1V
NOT TO SCALE

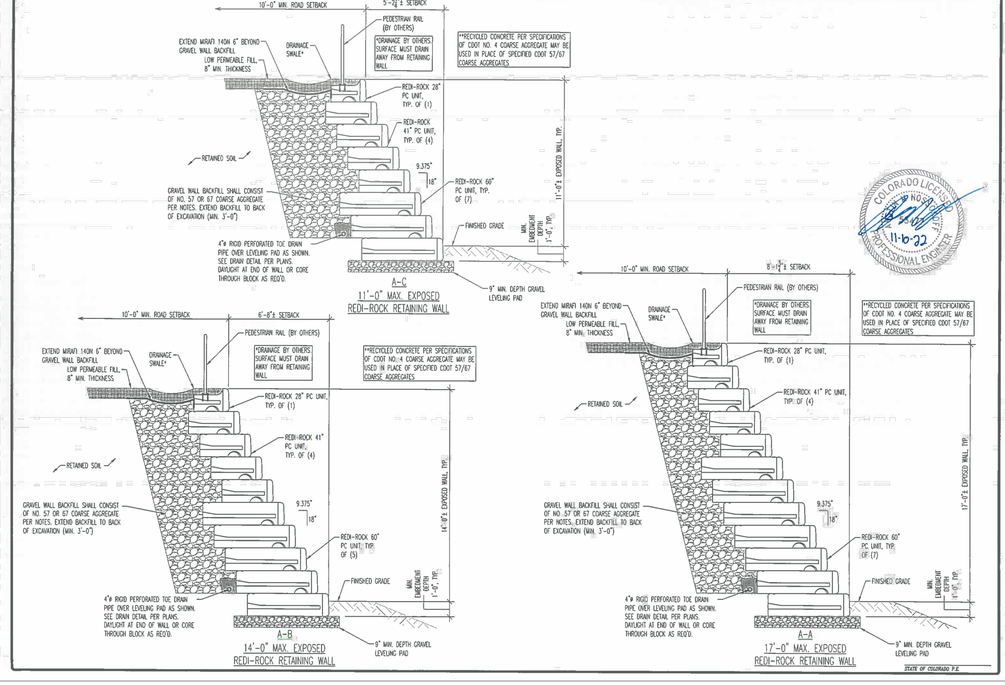
COLORADO LICENSED PROFESSIONAL ENGINEER 11-10-22 STATE OF COLORADO P.E.

REVISIONS	BY:

ENTECH ENGINEERING, INC. 505 ELDEN ST. #200 HERNDON (PARCEL 2), VA 20147 (719) 531-5599

REDI-ROCK RETAINING WALL
WALL "A" ELEVATION & SECTIONS
JACKSON CREEK PKWY & STATE HWY 105
MONUMENT, CO
FOR: CLASSIC COMMUNITIES

DRAWN BY:	AAH
DESIGNED BY:	AAH
CHECKED BY:	
DATE:	11/10/2022
SCALE:	N.T.S.
JOB NO.:	221459
SHEET NO.	3 OF 4 SHEETS



REVISIONS	BY:

ENTECH ENGINEERING, INC. 505 ELDEN ST. #200 HERNDON (PARCEL 2), VA 20147 (719) 531-5599

REDI-ROCK RETAINING WALL
WALL "A" SECTIONS
JACKSON CREEK PKWY & STATE HWY 105
MONUMENT, CO
FOR: CLASSIC COMMUNITIES

DRAWN BY:	AAH
DESIGNED BY:	AAH
CHECKED BY:	
DATE:	11/10/2022
SCALE:	N.T.S.
JOB NO.:	221459
SHEET NO.	4 OF 4 SHEETS

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

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NO.	REVISION	DATE

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

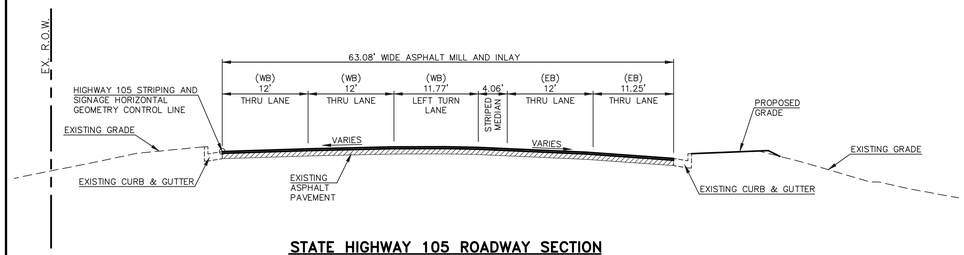
CLASSIC SM
CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
RETAINING WALL DETAILS

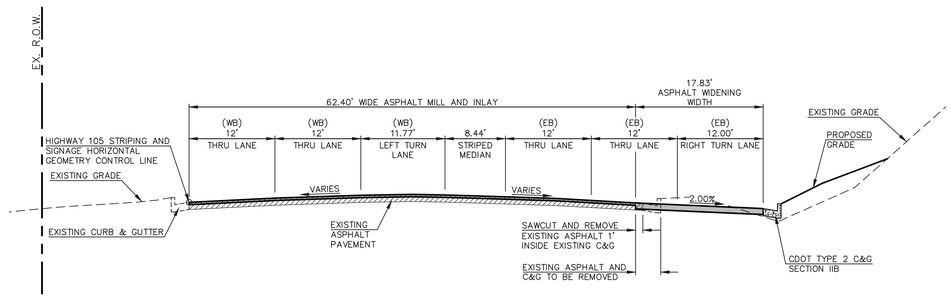
CLASSIC CONSULTING ENGINEERS & SURVEYORS

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	7 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

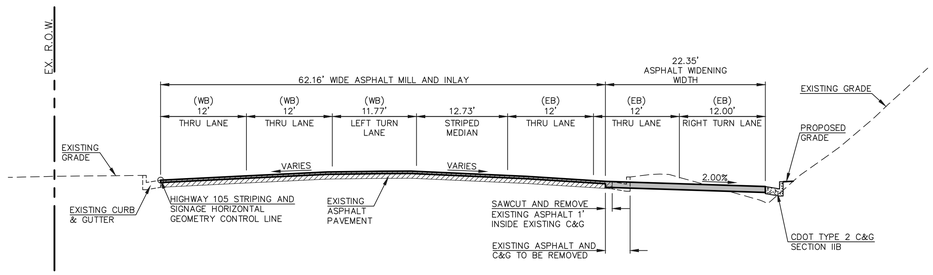
N:\13022\DRAWINGS\CONSTRUCTION\SHEET-06-07-RETAINING WALL PLANS.DWG, 7/10/2023 4:16:22 PM, ratnagiri, 1:1



STATE HIGHWAY 105 ROADWAY SECTION
STA. 0+32.32
SCALE: 1"=10' (H), 1"=5' (V)



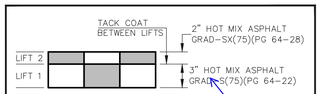
STATE HIGHWAY 105 ROADWAY SECTION
STA. 1+97.85
SCALE: 1"=10' (H), 1"=5' (V)



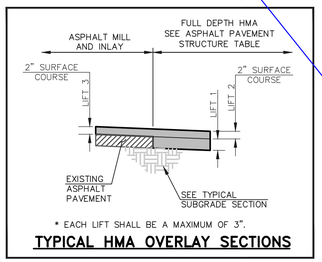
STATE HIGHWAY 105 ROADWAY SECTION
STA. 3+38.75
SCALE: 1"=10' (H), 1"=5' (V)

HOT MIX ASPHALT PAVEMENT STRUCTURE TABLE

TOTAL HOT MIX ASPHALT DEPTH		5.0"
# OF LIFTS		2
HOT MIX ASPHALT BINDER COURSE GRAD-S(75) (PG 64-22)	LIFT 1	3.0"
HOT MIX ASPHALT SURFACE COURSE GRAD-SX(75) (PG 64-28)	LIFT 2	2.0"



TYPICAL HOT MIX ASPHALT PAVEMENT LIFT SECTION



* EACH LIFT SHALL BE A MAXIMUM OF 3".

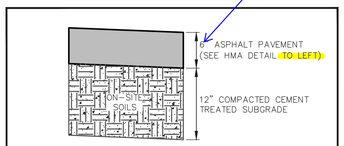
TYPICAL HMA OVERLAY SECTIONS

SUBGRADE NOTES:

SUBGRADE FOR CUT CONDITIONS:
IF SUBGRADE IS R >/= 17, THEN PERFORM CEMENT TREATED SUBGRADE ON TOP 12 INCHES.

IF SUBGRADE IS R < 17, THEN OVER EXCAVATE 24 INCHES AND REPLACE WITH R >/= 17 MATERIAL AND PERFORM CEMENT TREATED SUBGRADE ON TOP 12 INCHES.
[RECONDITIONING IS SPECIFIED IN SECTION 306 OF THE CDOT STANDARD SPECIFICATIONS].

SUBGRADE FOR FILL CONDITIONS:
ALL FILL SHALL BE R >/= 17 MATERIAL WITH 12 INCHES OF CEMENT TREATED SUBGRADE ON TOP OF FILL MATERIAL.

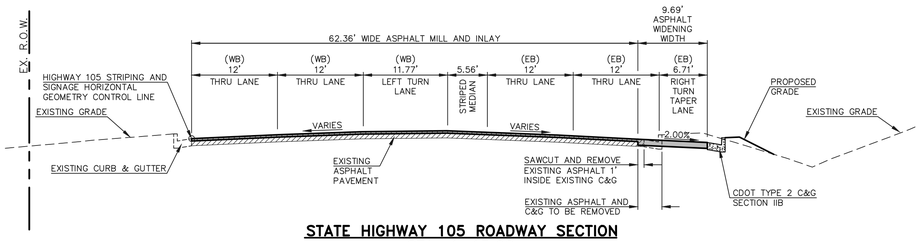


1. REFERENCE PAVEMENT RECOMMENDATIONS JACKSON CREEK PARKWAY AND U.S. STATE HIGHWAY 105 – GEOTECHNICAL RECOMMENDATION REPORT BY ENTECH ENGINEERING, INC. "ENTECH JOB NO.: 230008" DATED FEBRUARY 20, 2023 FOR INFORMATION ON SUBGRADE PREPARATION

TYPICAL PAVEMENT SECTION

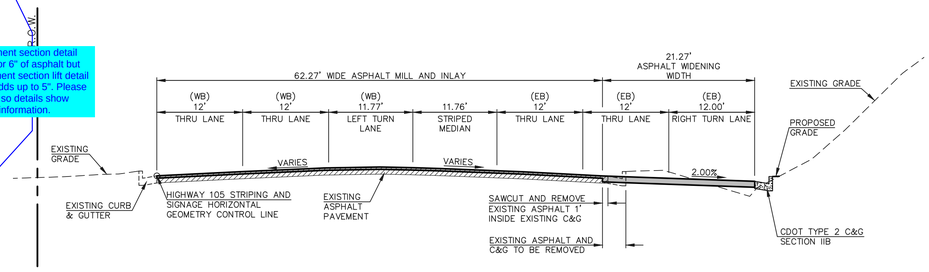
HIGHWAY 105 TYPICAL SECTION NOTES

1. BREAK POINTS IN SLOPES SHALL BE ROUNDED BY THE CONTRACTOR FOR A PLEASING APPEARANCE DURING CONSTRUCTION.
2. SEE HIGHWAY 105 IMPROVEMENT PLANS (SHEETS 9, 10 AND 17) FOR ADDITIONAL INFORMATION ON THE ROADWAY SECTION DIMENSIONS.
3. A TWO-INCH OVERLAY OF THE ROADWAY IN AREAS OF RECONSTRUCTION AND/OR RE-STRIPING IS REQUIRED. THE WIDTH OF THE OVERLAY SHALL ENCOMPASS ALL LANES CONTIGUOUS TO AREAS OF RECONSTRUCTION AND/OR RE-STRIPING.
4. SEE PAVEMENT RECOMMENDATIONS JACKSON CREEK PARKWAY AND U.S. STATE HIGHWAY 105 – GEOTECHNICAL RECOMMENDATION REPORT BY ENTECH ENGINEERING, INC. "ENTECH JOB NO.: 230008" DATED FEBRUARY 20, 2023 FOR INFORMATION ON SUBGRADE PREPARATION.
5. THE CONTRACTOR SHALL VERIFY ALL SUBGRADE CONDITIONS IN CUT AREAS PRIOR TO PREPARATION AND PAVING.
6. FOR FILL CONDITIONS, THE CONTRACTOR SHALL VERIFY SUBGRADE CONDITIONS THROUGH COMPACTION AND DENSITY TESTING PRIOR TO PAVING.
7. SMOOTHNESS CATEGORY SHALL BE CATEGORY 2.

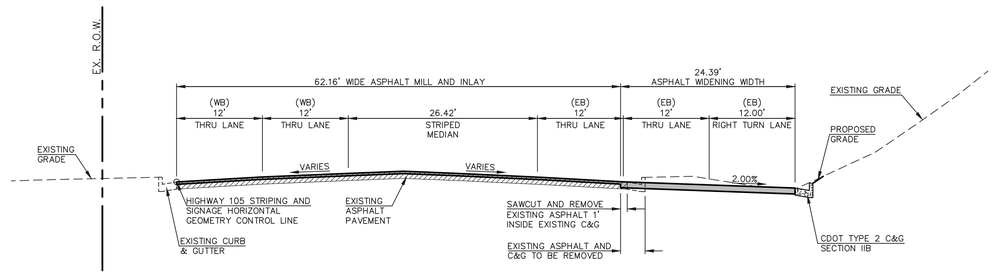


STATE HIGHWAY 105 ROADWAY SECTION
STA. 1+15.00
SCALE: 1"=10' (H), 1"=5' (V)

Pavement section detail calls for 6" of asphalt but pavement section lift detail only adds up to 5". Please revise so details show same information.



STATE HIGHWAY 105 ROADWAY SECTION
STA. 2+99.16
SCALE: 1"=10' (H), 1"=5' (V)



STATE HIGHWAY 105 ROADWAY SECTION
STA. 4+39.51
SCALE: 1"=10' (H), 1"=5' (V)

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NO.	REVISION	DATE
1	ADDED SECTION SHEET PER CDOT COMMENTS	7/10/23

REVIEW:

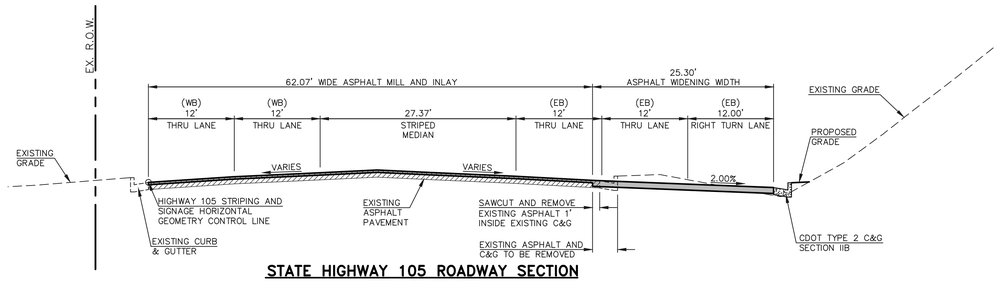
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

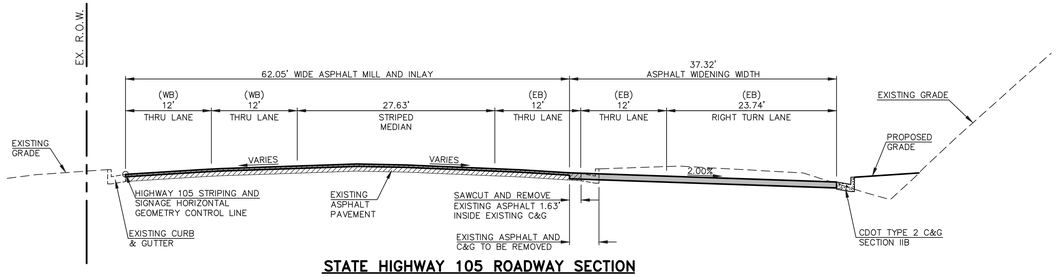
CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
HIGHWAY 105 ROADWAY SECTIONS

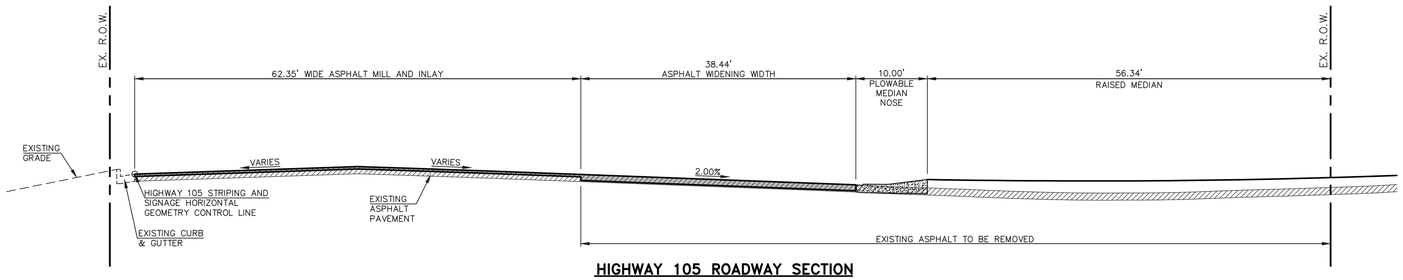
DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	8 OF 26
CHECKED BY		(V) 1"=	N/A	JOB NO.	1302.22



STATE HIGHWAY 105 ROADWAY SECTION
STA. 5+19.93
SCALE: 1"=10' (H), 1"=5' (V)



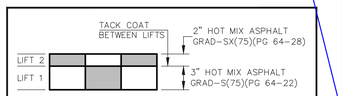
STATE HIGHWAY 105 ROADWAY SECTION
STA. 5+88.43
SCALE: 1"=10' (H), 1"=5' (V)



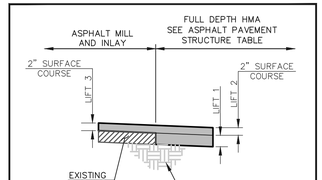
HIGHWAY 105 ROADWAY SECTION
STA. 6+84.96
SCALE: 1"=10' (H), 1"=5' (V)

HOT MIX ASPHALT PAVEMENT STRUCTURE TABLE

TOTAL HOT MIX ASPHALT DEPTH		5.0"
# OF LIFTS		2
HOT MIX ASPHALT BINDER COURSE GRAD-S(75) (PG 64-22)	LIFT 1	3.0"
HOT MIX ASPHALT SURFACE COURSE GRAD-SX(75) (PG 64-28)	LIFT 2	2.0"



TYPICAL HOT MIX ASPHALT PAVEMENT LIFT SECTION



* EACH LIFT SHALL BE A MAXIMUM OF 3".

TYPICAL HMA OVERLAY SECTIONS

SUBGRADE NOTES:

SUBGRADE FOR CUT CONDITIONS:
IF SUBGRADE IS R >/= 17, THEN PERFORM CEMENT TREATED SUBGRADE ON TOP 12 INCHES.

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[RECONDITIONING IS SPECIFIED IN SECTION 306 OF THE CDOT STANDARD SPECIFICATIONS].

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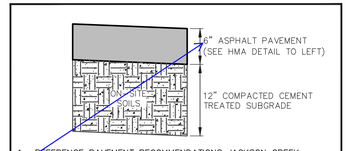
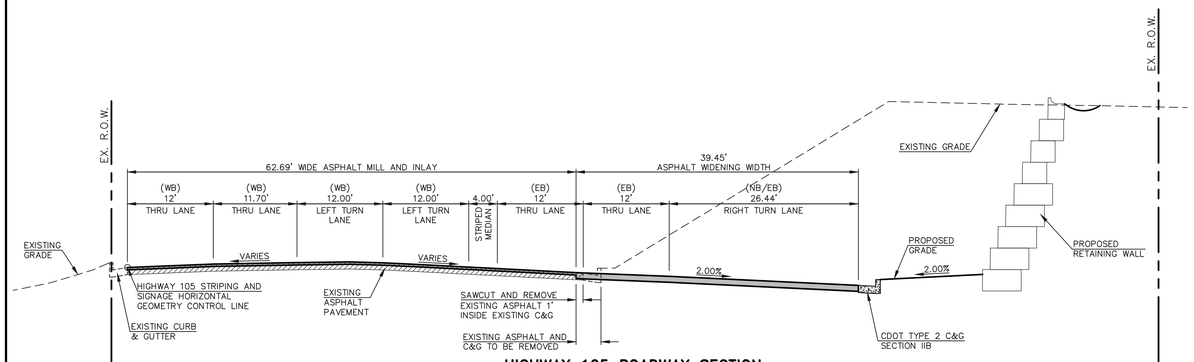


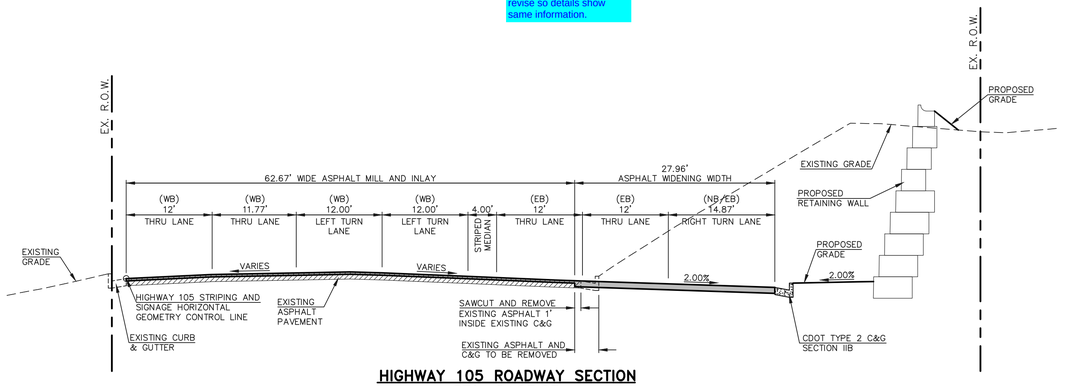
1. REFERENCE PAVEMENT RECOMMENDATIONS JACKSON CREEK PARKWAY AND U.S. STATE HIGHWAY 105 – GEOTECHNICAL RECOMMENDATION REPORT BY ENTECH ENGINEERING, INC. "ENTECH JOB NO.: 230008" DATED FEBRUARY 20, 2023 FOR INFORMATION ON SUBGRADE PREPARATION

TYPICAL PAVEMENT SECTION

Pavement section detail calls for 6" of asphalt but pavement section lift detail only adds up to 5". Please revise so details show same information.



HIGHWAY 105 ROADWAY SECTION
STA. 7+74.97
SCALE: 1"=10' (H), 1"=5' (V)



HIGHWAY 105 ROADWAY SECTION
STA. 8+03.25
SCALE: 1"=10' (H), 1"=5' (V)

HIGHWAY 105 TYPICAL SECTION NOTES

FIX PAGE NUMBERS

1. BREAK POINTS IN SLOPES SHALL BE ROUNDED BY THE CONTRACTOR FOR A PLEASING APPEARANCE DURING CONSTRUCTION.
2. SEE HIGHWAY 105 IMPROVEMENT PLANS (SHEETS 9, 10 AND 17) FOR ADDITIONAL INFORMATION ON THE ROADWAY SECTION DIMENSIONS.
3. A TWO-INCH OVERLAY OF THE ROADWAY IN AREAS OF RECONSTRUCTION AND/OR RE-STRIPING IS REQUIRED. THE WIDTH OF THE OVERLAY SHALL ENCOMPASS ALL LANES CONTIGUOUS TO AREAS OF RECONSTRUCTION AND/OR RE-STRIPING.
4. SEE PAVEMENT RECOMMENDATIONS JACKSON CREEK PARKWAY AND U.S. STATE HIGHWAY 105 – GEOTECHNICAL RECOMMENDATION REPORT BY ENTECH ENGINEERING, INC. "ENTECH JOB NO.: 230008" DATED FEBRUARY 20, 2023 FOR INFORMATION ON SUBGRADE PREPARATION.
5. THE CONTRACTOR SHALL VERIFY ALL SUBGRADE CONDITIONS IN CUT AREAS PRIOR TO PREPARATION AND PAVING.
6. FOR FILL CONDITIONS, THE CONTRACTOR SHALL VERIFY SUBGRADE CONDITIONS THROUGH COMPACTION AND DENSITY TESTING PRIOR TO PAVING.
7. SMOOTHNESS CATEGORY SHALL BE CATEGORY 2.

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NO.	REVISION	DATE
1	ADDED SECTION SHEET PER CDOT COMMENTS	7/10/23

REVIEW:

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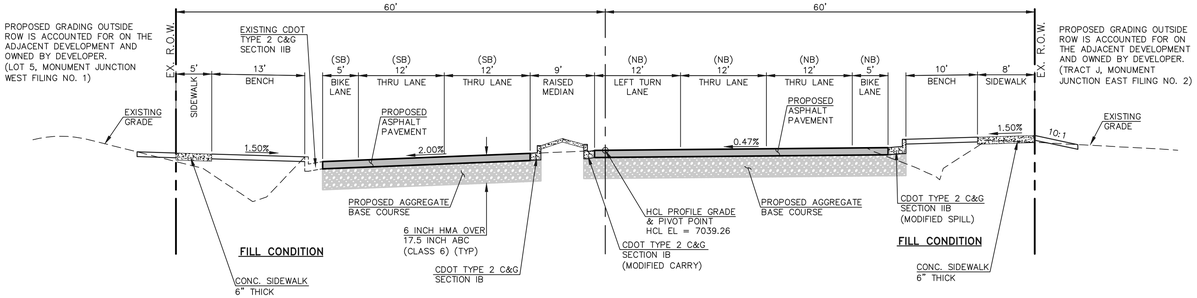
MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
HIGHWAY 105 ROADWAY SECTIONS

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	9 OF 26
CHECKED BY		(V) 1"=	N/A	JOB NO.	1302.22

N:\1302\DRAWINGS\CONSTRUCTION\SHEET-09-105 ROADWAY-SEC2.dwg, 7/11/2023 12:47:18 PM, mrogan, 1:1



JACKSON CREEK PARKWAY SECTION
STA. 18+73.48
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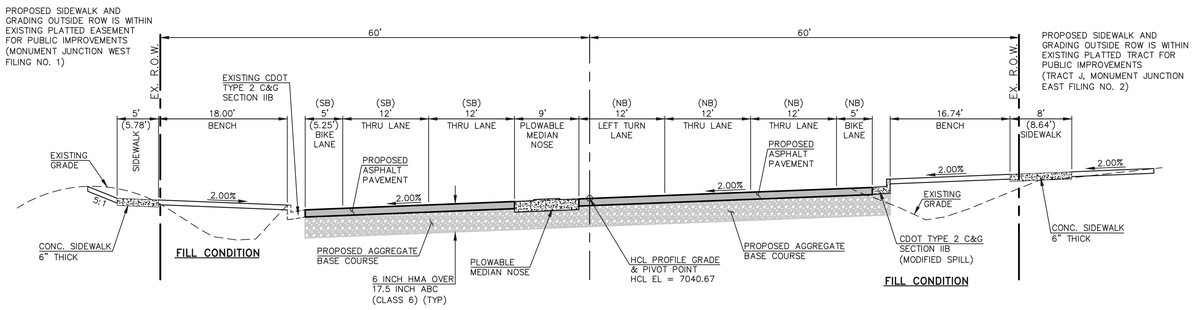
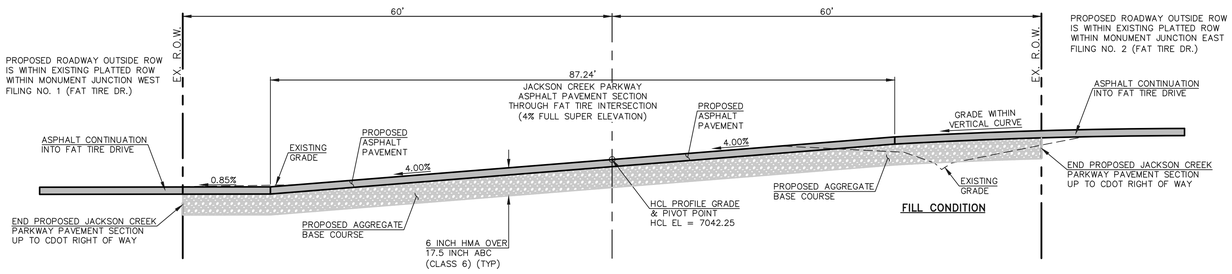
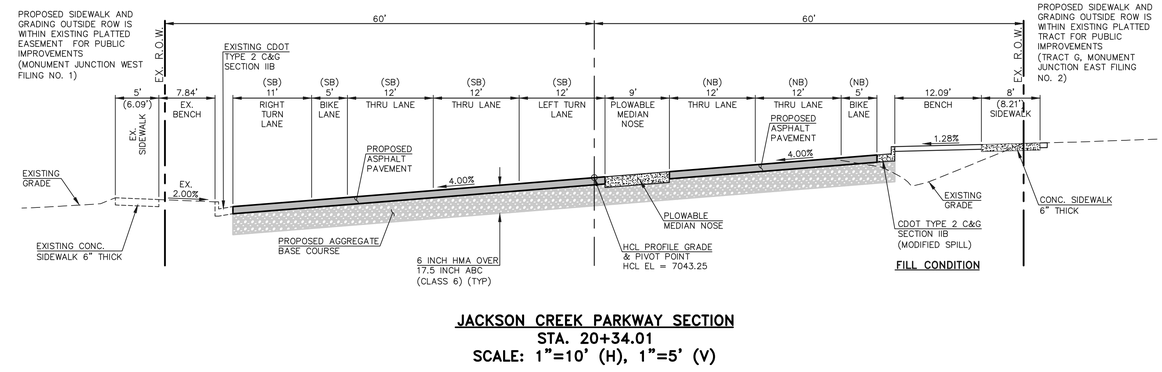


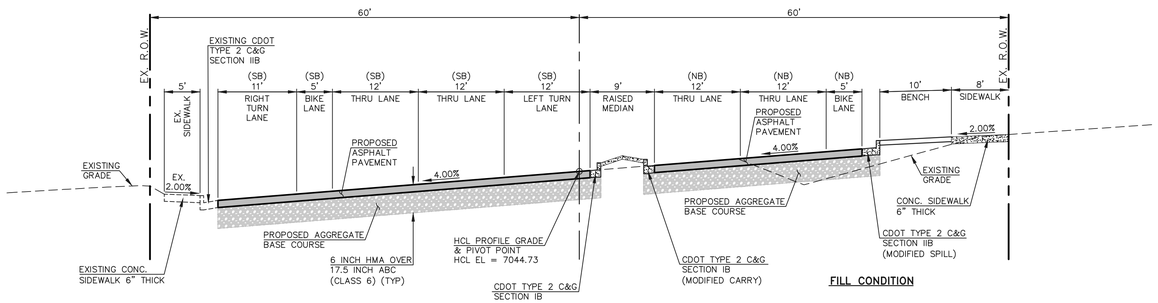
JACKSON CREEK PARKWAY SECTION
STA. 19+22.22
SCALE: 1"=10' (H), 1"=5' (V)



JACKSON CREEK PARKWAY SECTION
STA. 19+84.20
SCALE: 1"=10' (H), 1"=5' (V)



JACKSON CREEK PARKWAY SECTION
STA. 20+34.01
SCALE: 1"=10' (H), 1"=5' (V)



JACKSON CREEK PARKWAY SECTION
STA. 22+63.43
SCALE: 1"=10' (H), 1"=5' (V)

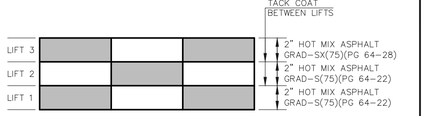
TYPICAL SECTION NOTES

1. BREAK POINTS IN SLOPES SHALL BE ROUNDED BY THE CONTRACTOR FOR A PLEASING APPEARANCE DURING CONSTRUCTION.
2. SEE JACKSON CREEK PARKWAY IMPROVEMENT PLANS (SHEETS 12, 13 AND 17) FOR ADDITIONAL INFORMATION ON THE ROADWAY SECTION DIMENSIONS.
3. A TWO-INCH OVERLAY OF THE ROADWAY IN AREAS OF RECONSTRUCTION AND/OR RE-STRIPING IS REQUIRED. THE WIDTH OF THE OVERLAY SHALL ENCOMPASS ALL LANES CONTIGUOUS TO AREAS OF RECONSTRUCTION AND/OR RE-STRIPING.
4. SEE PROPOSED JACKSON CREEK PARKWAY WIDENING, HIGHWAY 105 TO HIGBY ROAD – GEOTECHNICAL EVALUATION REPORT (DRAFT) BY VIVID ENGINEERING GROUP "VIVID PROJECT NO.: D21-2-456" DATED 2-18-2022 FOR INFORMATION ON SUBGRADE PREPARATION.
5. THE CONTRACTOR SHALL VERIFY ALL SUBGRADE CONDITIONS IN CUT AREAS PRIOR TO PREPARATION AND PAVING.
6. FOR FILL CONDITIONS, THE CONTRACTOR SHALL VERIFY SUBGRADE CONDITIONS THROUGH COMPACTION AND DENSITY TESTING PRIOR TO PAVING.
7. SMOOTHNESS CATEGORY SHALL BE CATEGORY 2.

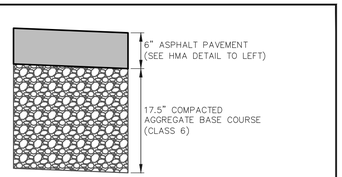
HOT MIX ASPHALT PAVEMENT STRUCTURE TABLE

TOTAL HOT MIX ASPHALT DEPTH		6.0"
# OF LIFTS		3
HOT MIX ASPHALT BINDER COURSE GRAD-S(75) (PG 64-22)	LIFT 1	2.0"
	LIFT 2	2.0"
HOT MIX ASPHALT SURFACE COURSE GRAD-SX(75) (PG 64-28)	LIFT 3	2.0"

Asphalt lift is different than previous sheets. Please revise to same detail or clearly state where different lift sections are happening within plan.



TYPICAL HOT MIX ASPHALT PAVEMENT LIFT SECTION



1. REFERENCE GEOTECHNICAL EVALUATION REPORT (DRAFT) DATED 2/18/2022 PREPARED BY VIVID ENGINEERING GROUP AND PAVEMENT RECOMMENDATIONS FOR SUBGRADE TREATMENT, AGGREGATE BASE COURSE AND HOT MIX ASPHALT CONSTRUCTION RECOMMENDATIONS.

TYPICAL PAVEMENT SECTION

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
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UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER JACOBS COMMENTS	5/17/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

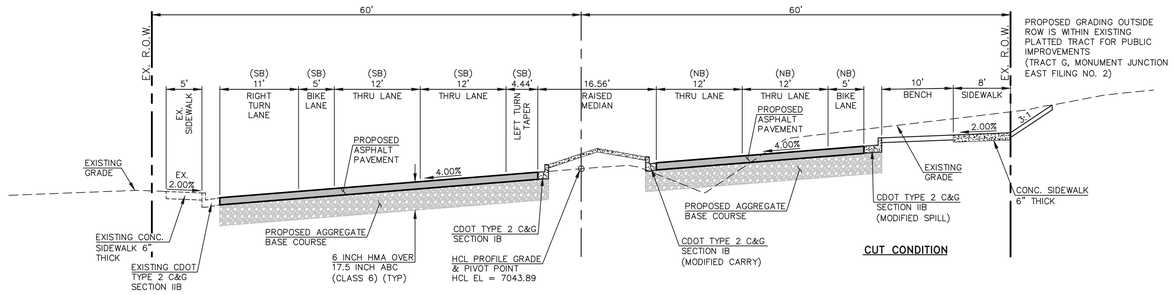
MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

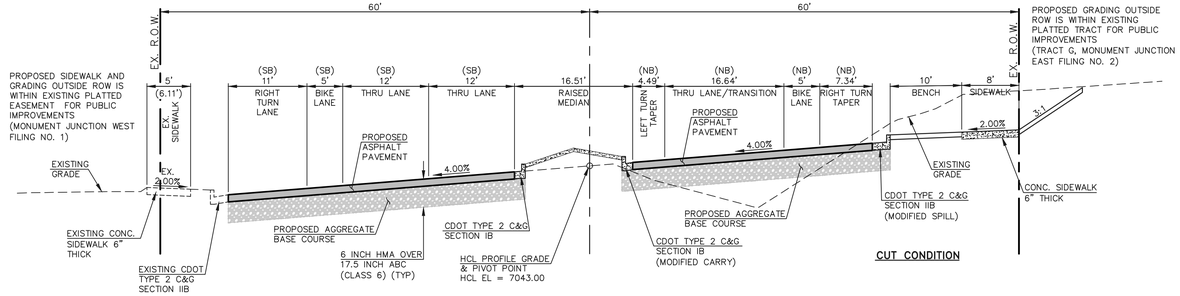
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
JACKSON CREEK PKWY. ROADWAY SECTIONS

CLASSIC CONSULTING

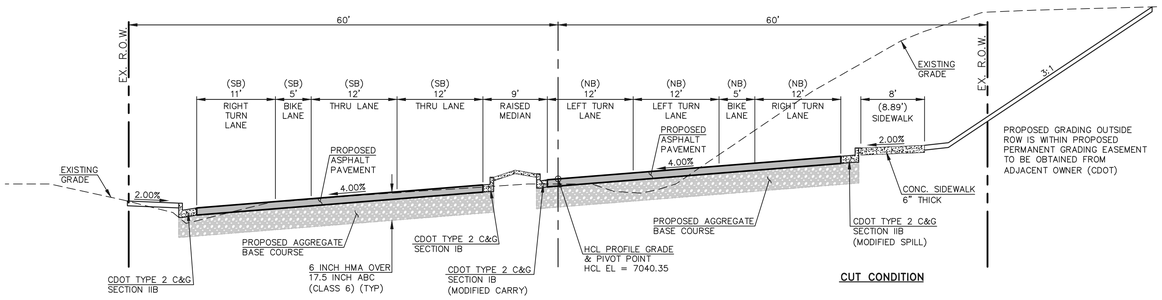
DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"= 50'		SHEET 10	OF 26
CHECKED BY		(V) 1"= N/A		JOB NO.	1302.22



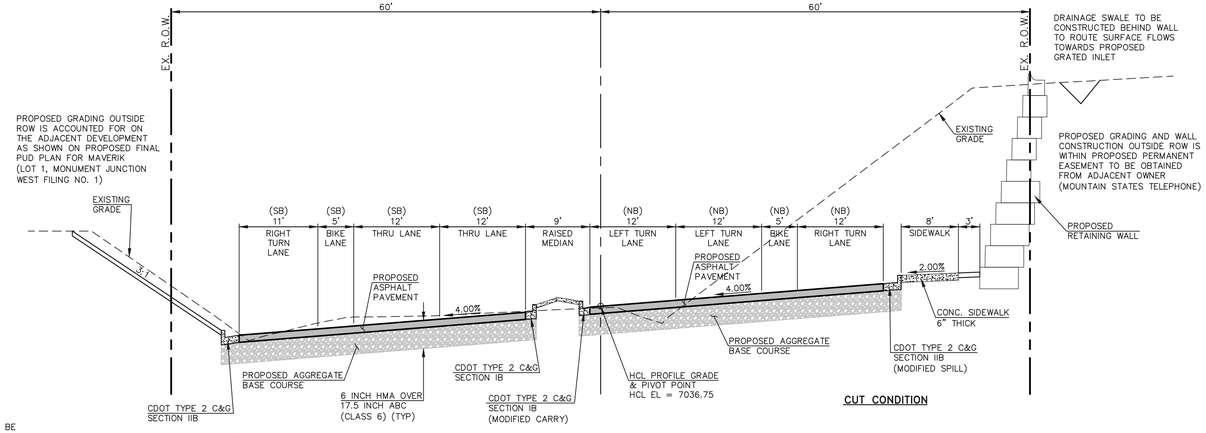
JACKSON CREEK PARKWAY SECTION
STA. 23+55.45
SCALE: 1"=10' (H), 1"=5' (V)



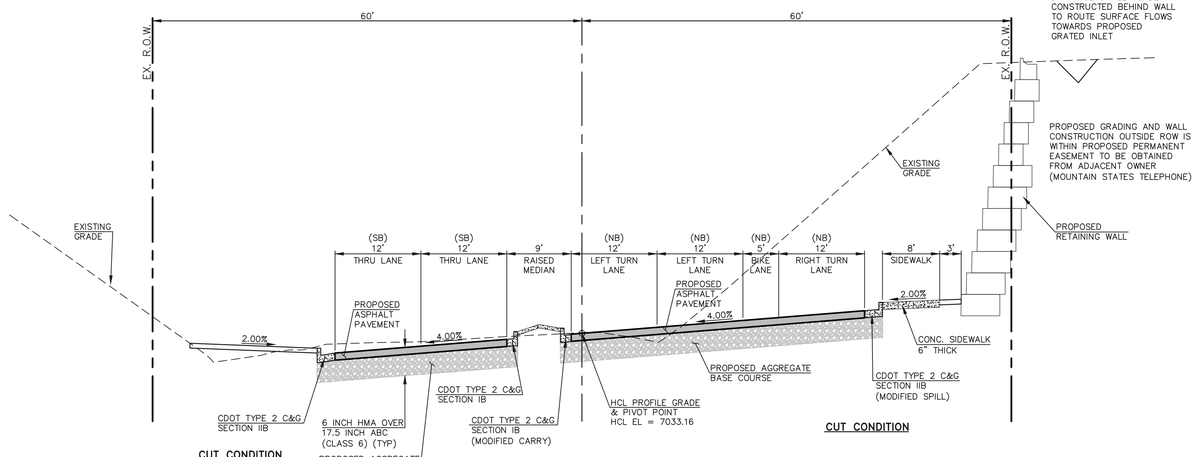
JACKSON CREEK PARKWAY SECTION
STA. 24+09.60
SCALE: 1"=10' (H), 1"=5' (V)



JACKSON CREEK PARKWAY SECTION
STA. 25+26.86
SCALE: 1"=10' (H), 1"=5' (V)



JACKSON CREEK PARKWAY SECTION
STA. 26+29.82
SCALE: 1"=10' (H), 1"=5' (V)



JACKSON CREEK PARKWAY SECTION
STA. 27+10.22
SCALE: 1"=10' (H), 1"=5' (V)

TYPICAL SECTION NOTES

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HOT MIX ASPHALT PAVEMENT STRUCTURE TABLE

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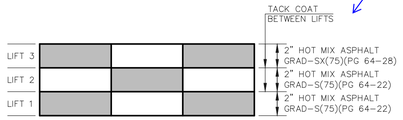
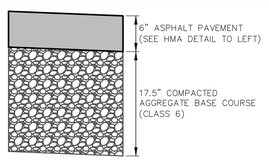
# OF LIFTS		3
HOT MIX ASPHALT BINDER COURSE GRAD-S(75) (PG 64-22)	LIFT 1	2.0"
	LIFT 2	2.0"
HOT MIX ASPHALT SURFACE COURSE GRAD-SX(75) (PG 64-28)	LIFT 3	2.0"

Asphalt lift is different than previous sheets. Please revise to same detail or clearly state where different lift sections are happening within plan.



TYPICAL HOT MIX ASPHALT PAVEMENT LIFT SECTION



1. REFERENCE GEOTECHNICAL EVALUATION REPORT (DRAFT) DATED 2/18/2022 PREPARED BY VIVID ENGINEERING GROUP AND PAVEMENT RECOMMENDATIONS FOR SUBGRADE TREATMENT, AGGREGATE BASE COURSE AND HOT MIX ASPHALT CONSTRUCTION RECOMMENDATIONS.

TYPICAL PAVEMENT SECTION

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NO.	REVISION	DATE
1	REVISED PER JACOBS COMMENTS	5/17/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

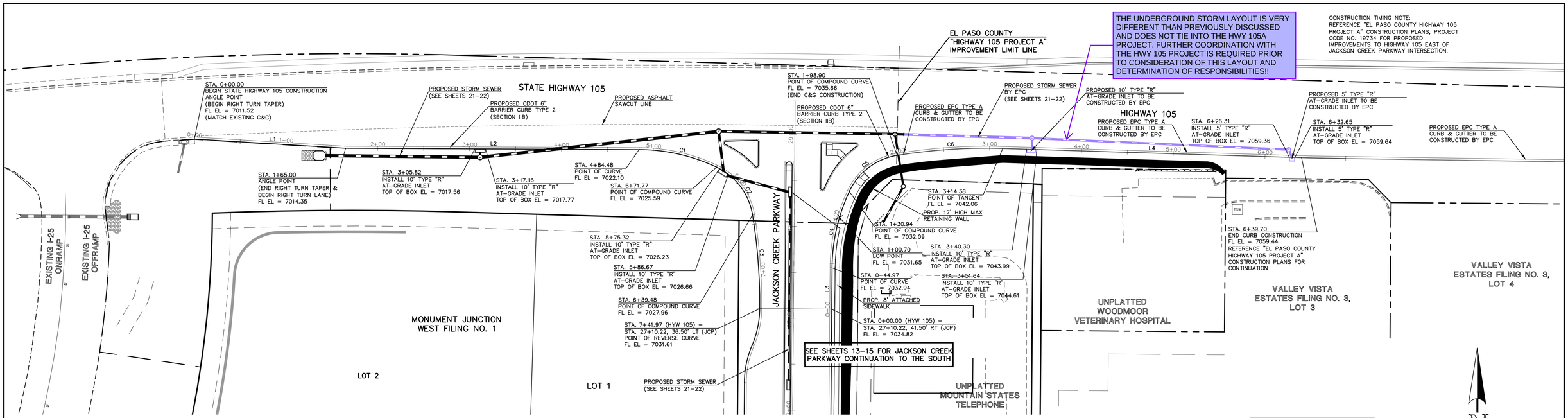
MARC A. WHORTON, COLORADO P.E. #37155 — DATE

CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
JACKSON CREEK PKWY. ROADWAY SECTIONS

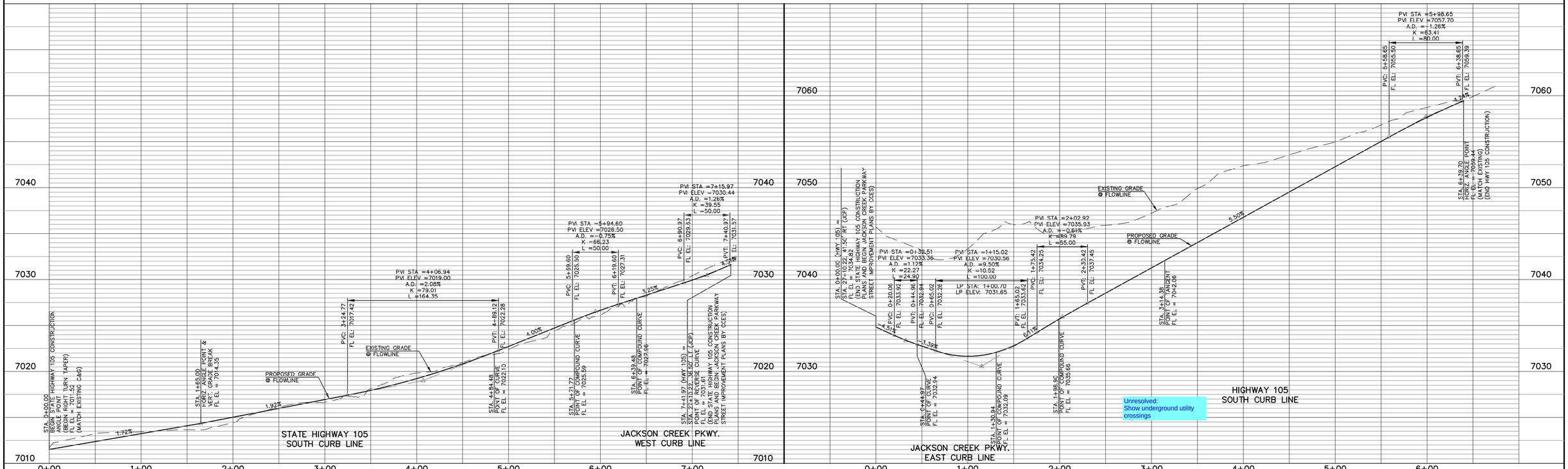
CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE	DATE 02-23-23
DRAWN BY	PRA	(H) 1"= 50'	SHEET 11 OF 26
CHECKED BY		(V) 1"= N/A	JOB NO. 1302.22



CURB & GUTTER FLOWLINE LINE TABLE		
LINE	LENGTH	BEARING
L1	165.00	S86°32'12"E
L2	319.48	S89°43'56"E
L3	44.97	N00°28'50"E
L4	325.31	S88°14'20"E

CURB & GUTTER FLOWLINE CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	87.30	200.00	25°00'31"
C2	67.70	70.00	55°24'58"
C3	102.50	600.00	09°47'16"
C4	85.98	200.00	24°37'52"
C5	67.95	70.00	55°37'17"
C6	115.49	600.00	11°01'41"



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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

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619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

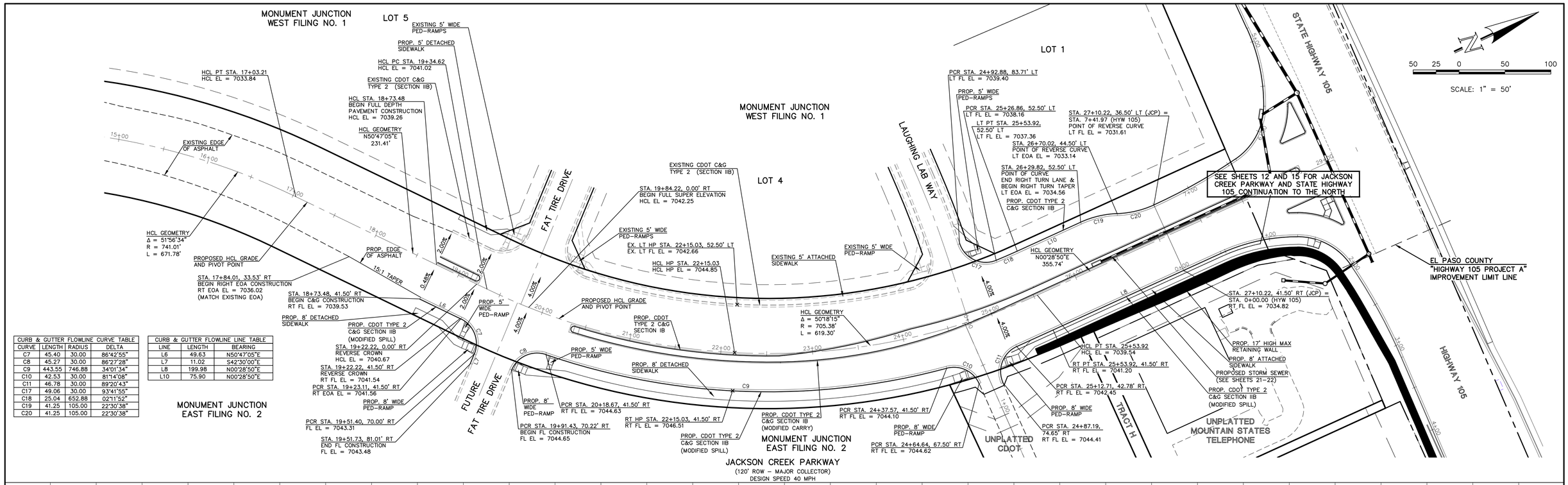
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENT PLANS
HIGHWAY 105 PLAN & PROFILE

CLASSIC CONSULTING ENGINEERS & SURVEYORS

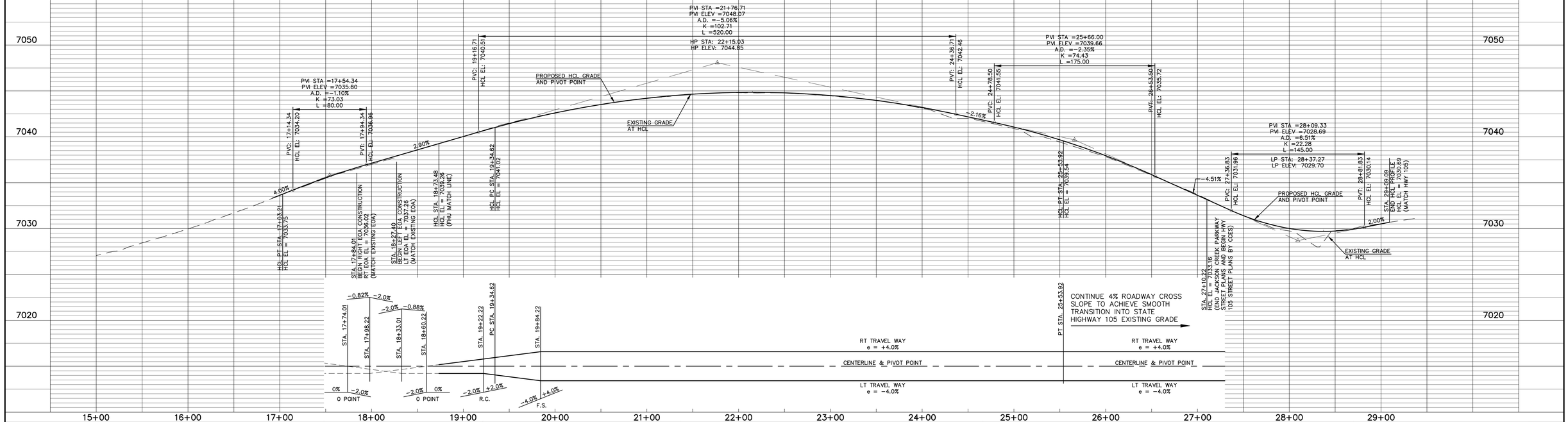
DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	12 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

N:\13022\DRAWINGS\CONSTRUCTION\SHEET-12-9-01.dwg, 7/14/2023 11:03:19 AM, nmagon, 1:1



CURB & GUTTER FLOWLINE CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C7	45.40	30.00	86°42'55"
C8	45.27	30.00	86°27'28"
C9	443.55	746.88	34°01'34"
C10	42.53	30.00	81°14'08"
C11	46.78	30.00	89°20'43"
C17	49.06	30.00	93°41'55"
C18	25.04	652.88	02°11'52"
C19	41.25	105.00	22°30'38"
C20	41.25	105.00	22°30'38"

CURB & GUTTER FLOWLINE LINE TABLE		
LINE	LENGTH	BEARING
L6	49.63	N50°47'05"E
L7	11.02	S42°30'00"E
L8	199.98	N00°28'50"E
L10	75.90	N00°28'50"E



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Colorado Springs, Colorado 80903 (719)785-0799(Fax)

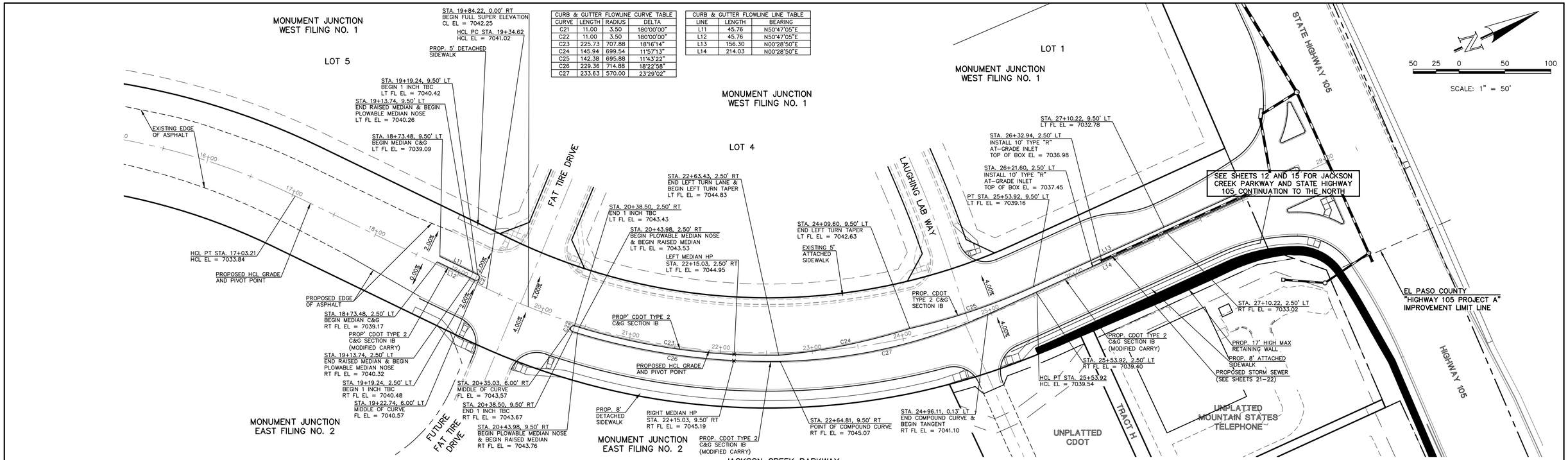
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

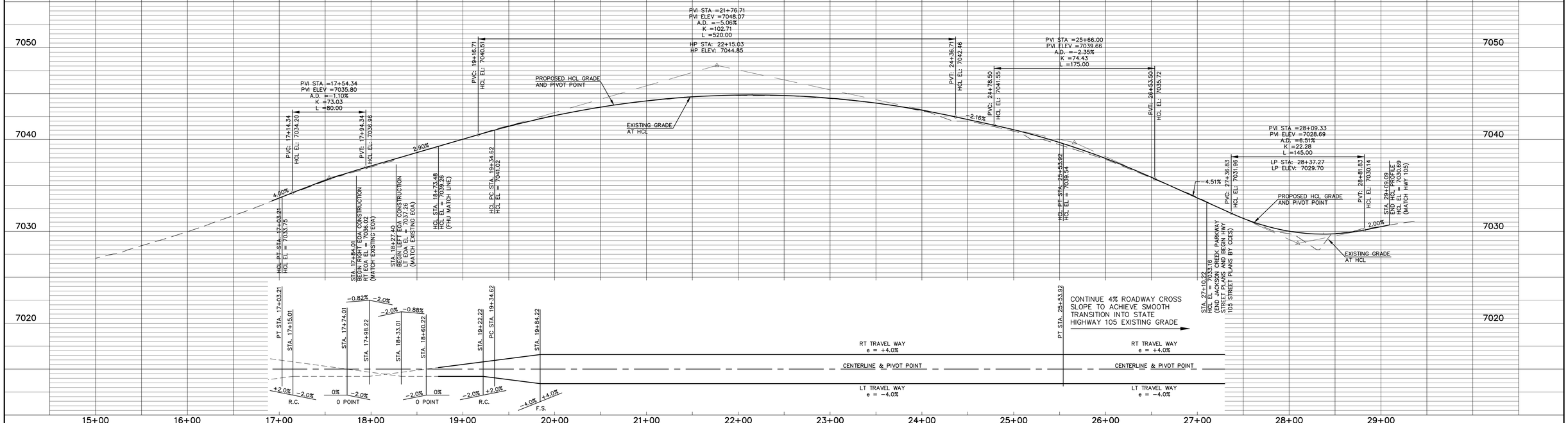
ROADWAY IMPROVEMENT PLANS
JACKSON CREEK PKWY. PLAN & PROFILE

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	13 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.21

CURB & GUTTER FLOWLINE CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C21	11.00	3.50	180°00'00"
C22	11.00	3.50	180°00'00"
C23	225.73	707.88	18°16'14"
C24	145.94	699.54	11°57'13"
C25	142.38	695.88	11°43'22"
C26	229.36	714.88	18°22'58"
C27	233.63	570.00	23°29'02"

CURB & GUTTER FLOWLINE LINE TABLE		
LINE	LENGTH	BEARING
L11	45.76	N50°47'05"E
L12	45.76	N50°47'05"E
L13	156.30	N00°28'50"E
L14	214.03	N00°28'50"E





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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

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MARC. A. WHORTON, COLORADO P.E. #37155 — DATE

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619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799(Fax)

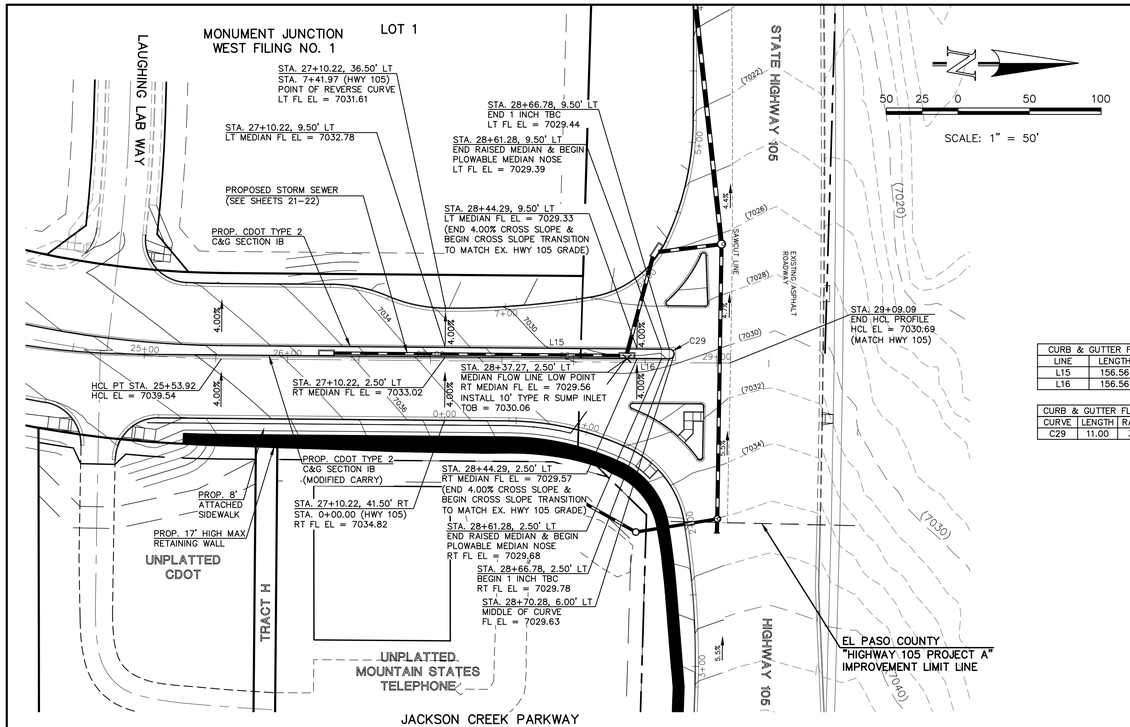
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENT PLANS

JACKSON CREEK PKWY. RAISED MEDIAN PLAN

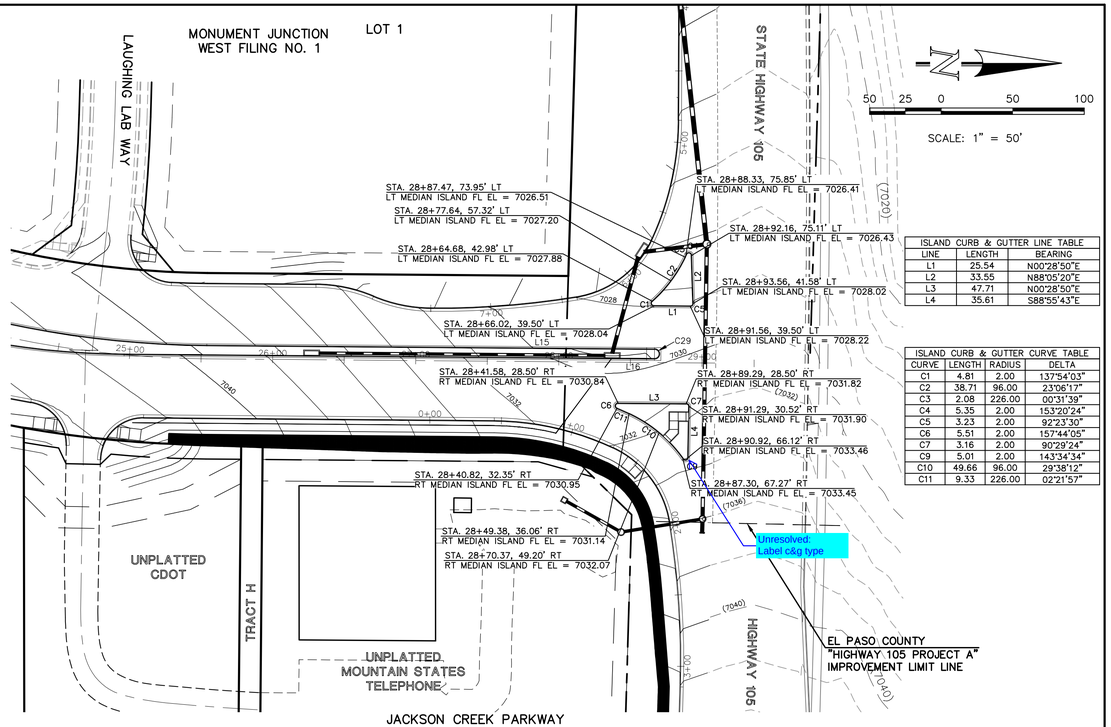
DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	14 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

V:\1302\2\DRAWINGS\CONSTRUCTION\SHEET-14-SH-03.dwg, 7/19/2023 3:29:02 PM, rongmn, 1:1



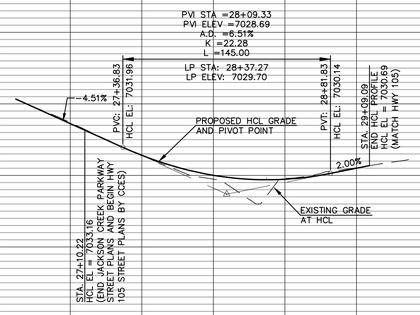
CURB & GUTTER FLOWLINE LINE TABLE		
LINE	LENGTH	BEARING
L15	156.56	N00°28'50"E
L16	156.56	N00°28'50"E

CURB & GUTTER FLOWLINE CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C29	11.00	3.50	180°00'00"



ISLAND CURB & GUTTER LINE TABLE		
LINE	LENGTH	BEARING
L1	25.54	N00°28'50"E
L2	33.55	N88°05'20"E
L3	47.71	N00°28'50"E
L4	35.61	S88°55'43"E

ISLAND CURB & GUTTER CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	4.81	2.00	137°54'03"
C2	38.71	96.00	23°06'17"
C3	2.08	226.00	00°31'39"
C4	5.35	2.00	153°20'24"
C5	3.23	2.00	92°23'30"
C6	5.51	2.00	157°44'05"
C7	3.16	2.00	90°29'24"
C9	5.01	2.00	143°34'34"
C10	49.66	96.00	29°38'12"
C11	9.33	226.00	02°21'57"



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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

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MARC. A. WHORTON, COLORADO P.E. #37155 — DATE

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ENGINEERS & SURVEYORS
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STATE HIGHWAY 105 / JACKSON CREEK PKWY. - PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENT PLANS
INTERSECTION RAISED MEDIAN PLAN

DESIGNED BY	PRA	SCALE		DATE	02-23-23
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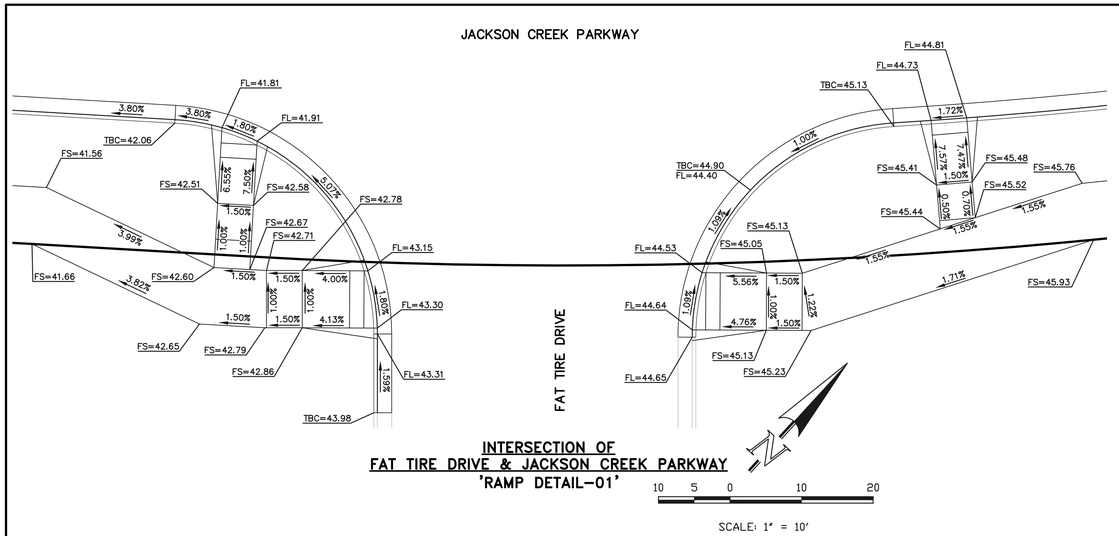
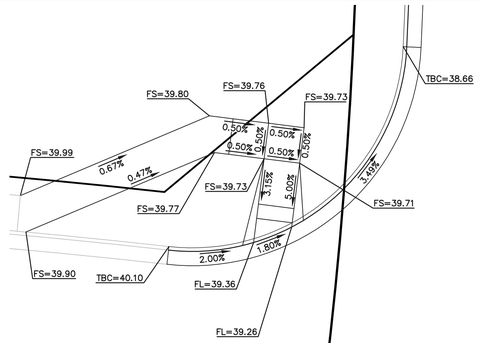
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

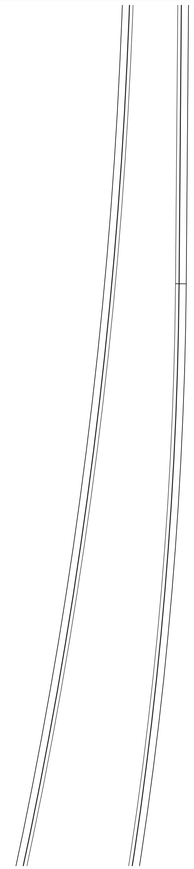


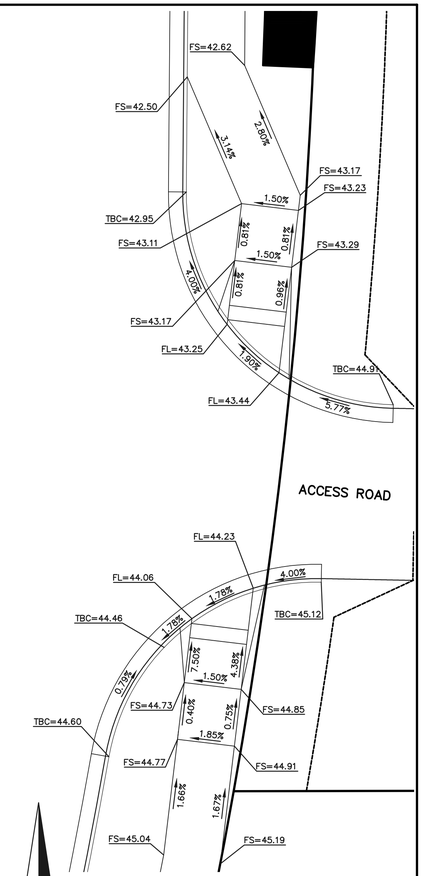
INTERSECTION OF
FAT TIRE DRIVE & JACKSON CREEK PARKWAY
'RAMP DETAIL–01'

10 5 0 10 20

SCALE: 1" = 10'



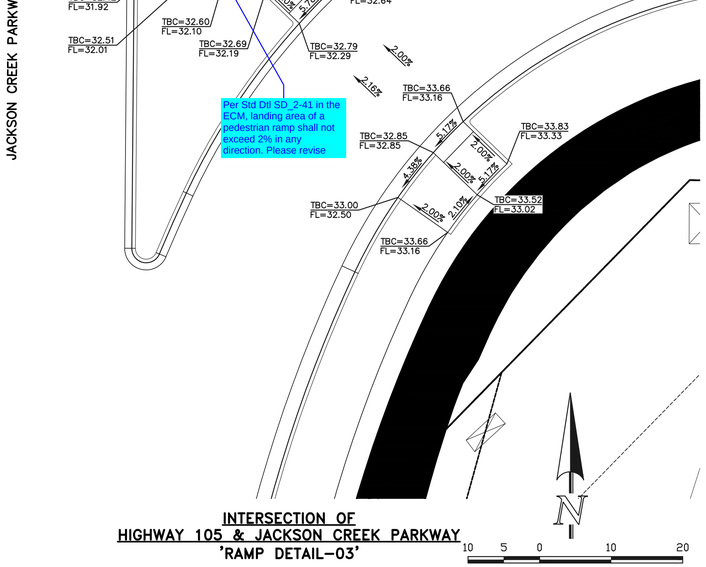




INTERSECTION OF
LAUGHING LAB WAY & JACKSON CREEK PARKWAY
'RAMP DETAIL–02'

10 5 0 10 20

SCALE: 1" = 10'



INTERSECTION OF
HIGHWAY 105 & JACKSON CREEK PARKWAY
'RAMP DETAIL–03'

10 5 0 10 20

SCALE: 1" = 10'

48 HOURS BEFORE YOU DIG,
CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

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NO.	REVISION	DATE
1	ADDED PEDRAMP DETAIL SHEET TO PLAN	6–23–23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

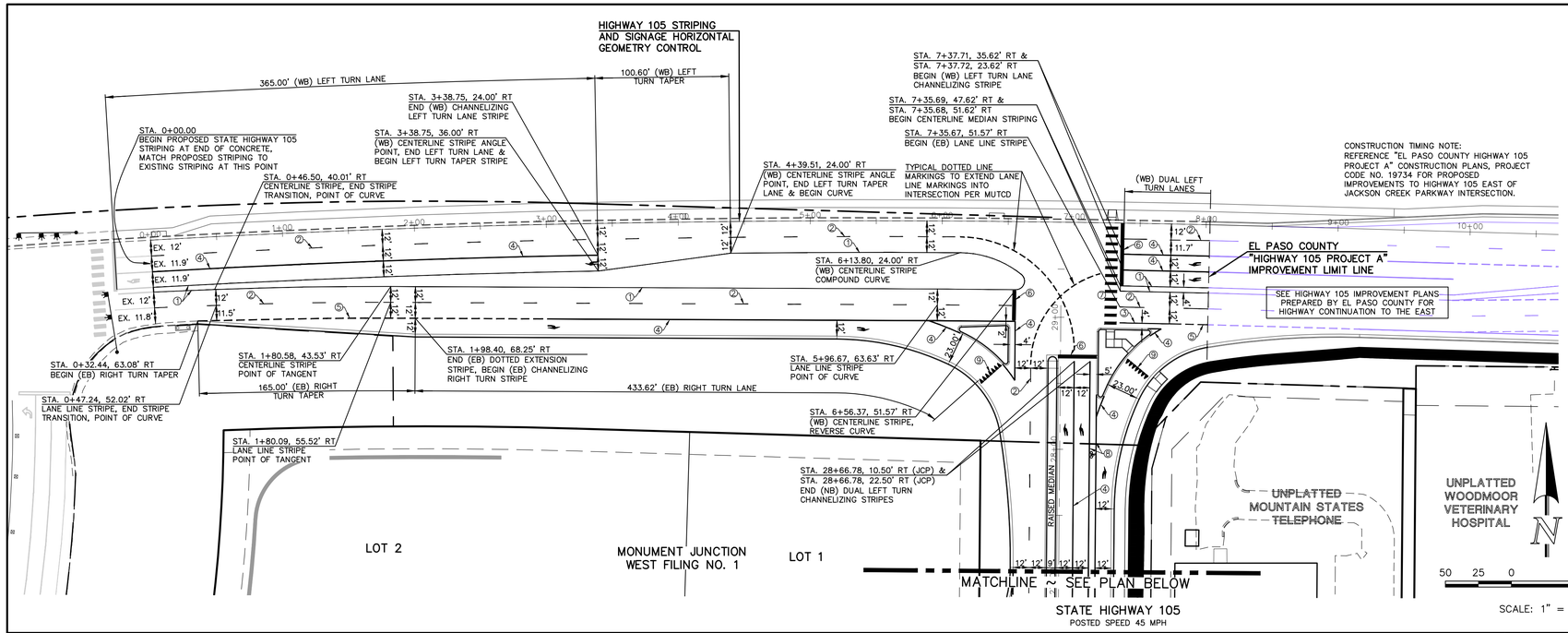
MARC A. WHORTON, COLORADO P.E. #37155 — DATE

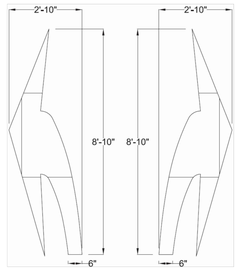
CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785–0790
Colorado Springs, Colorado 80903 (719)785–0799(Fax)

STATE HIGHWAY/ JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
PEDESTRIAN RAMP DETAILS

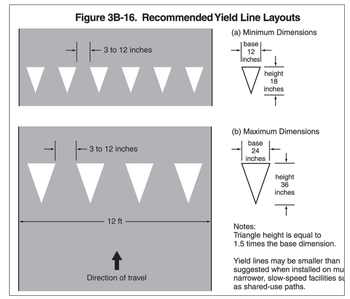
DESIGNED BY	PRA	SCALE	DATE 6–23–23
DRAWN BY	PRA	(H) 1"= 10'	SHEET 16 OF 26
CHECKED BY		(V) 1"= N/A	JOB NO. 1302.22

N:\1302\2\DRAWINGS\CONSTRUCTION\SHEET-16-PEDRAMP DETAILS.dwg, 7/12/2023 9:49:40 AM, ronagan, 1:1

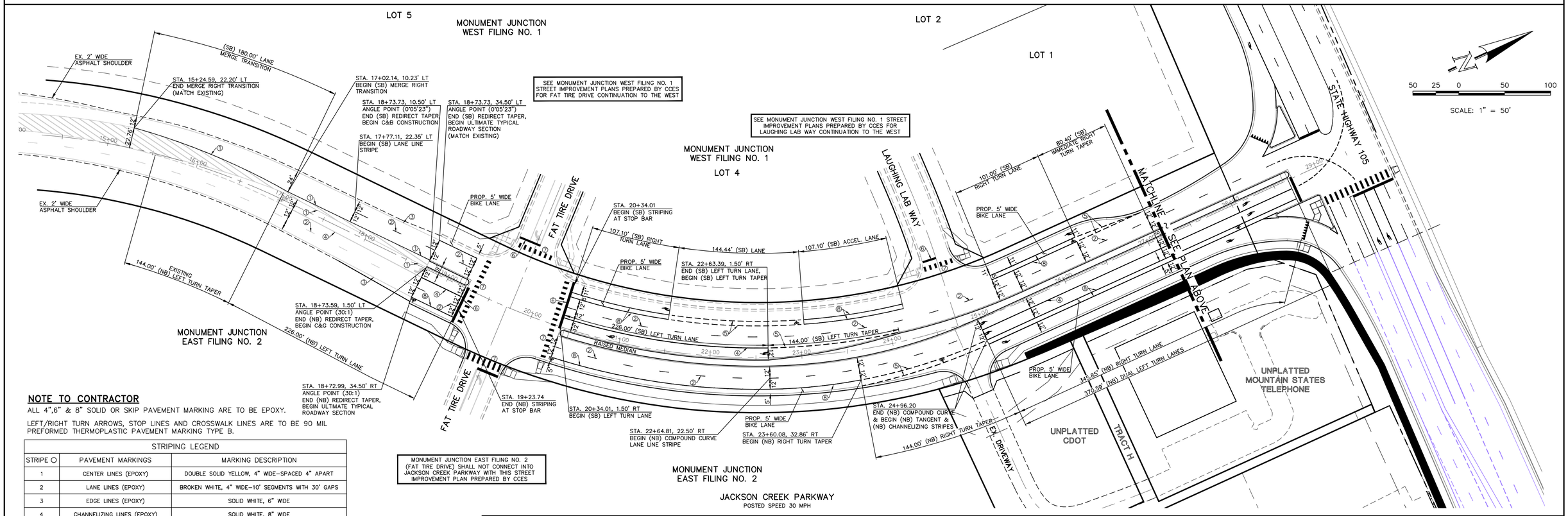




PAVEMENT MARKING DETAIL FOR NARROW TURN ARROWS



PAVEMENT MARKING DETAIL FOR YIELD LINE PER MUTCD



NOTE TO CONTRACTOR

ALL 4",6" & 8" SOLID OR SKIP PAVEMENT MARKING ARE TO BE EPOXY.

LEFT/RIGHT TURN ARROWS, STOP LINES AND CROSSWALK LINES ARE TO BE 90 MIL PREFORMED THERMOPLASTIC PAVEMENT MARKING TYPE B.

STRIPING LEGEND		
STRIPE #	PAVEMENT MARKINGS	MARKING DESCRIPTION
1	CENTER LINES (EPOXY)	DOUBLE SOLID YELLOW, 4" WIDE-SPACED 4" APART
2	LANE LINES (EPOXY)	BROKEN WHITE, 4" WIDE-10' SEGMENTS WITH 30' GAPS
3	EDGE LINES (EPOXY)	SOLID WHITE, 6" WIDE
4	CHANNELIZING LINES (EPOXY)	SOLID WHITE, 8" WIDE
5	DOTTED LANE LINES (EPOXY)	BROKEN WHITE, 6" WIDE-3' SEGMENTS WITH 12' GAPS
6	STOP LINES (THERMO PLASTIC)	SOLID WHITE, 24" WIDE
7	CROSSWALK LINES (THERMO PLASTIC)	SOLID WHITE, 24" WIDE, 9' LONG, 48" GAPS
8	BIKE LANE CHANNELIZING LINES (EPOXY)	SOLID WHITE, 6" WIDE
9	YIELD PAVEMENT MARKINGS (EPOXY)	SEE DETAIL AT TOP RIGHT OF PLAN

*NOTE: ALL STRIPING INSTALLATION SHALL BE PER COLORADO DEPARTMENT OF TRANSPORTATION "M&S STANDARDS" STANDARD PLAN NO. S-627-1

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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC SM CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

ROADWAY IMPROVEMENT PLANS
STRIPING PLAN

CLASSIC CONSULTING ENGINEERS & SURVEYORS

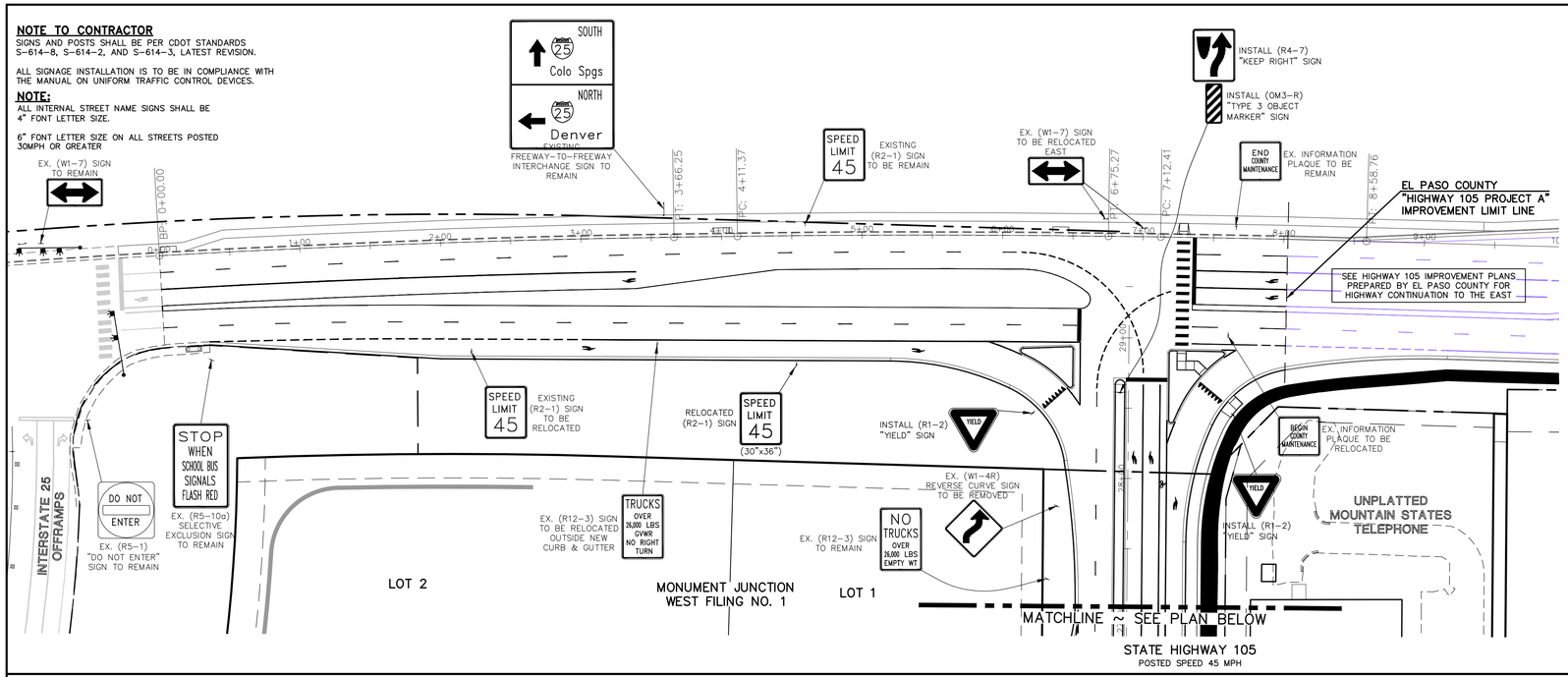
DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	17 OF 26
CHECKED BY		(V) 1"=	N/A	JOB NO.	1302.22

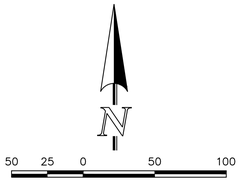
NOTE TO CONTRACTOR
SIGNS AND POSTS SHALL BE PER CDOT STANDARDS S-614-8, S-614-2, AND S-614-3, LATEST REVISION.

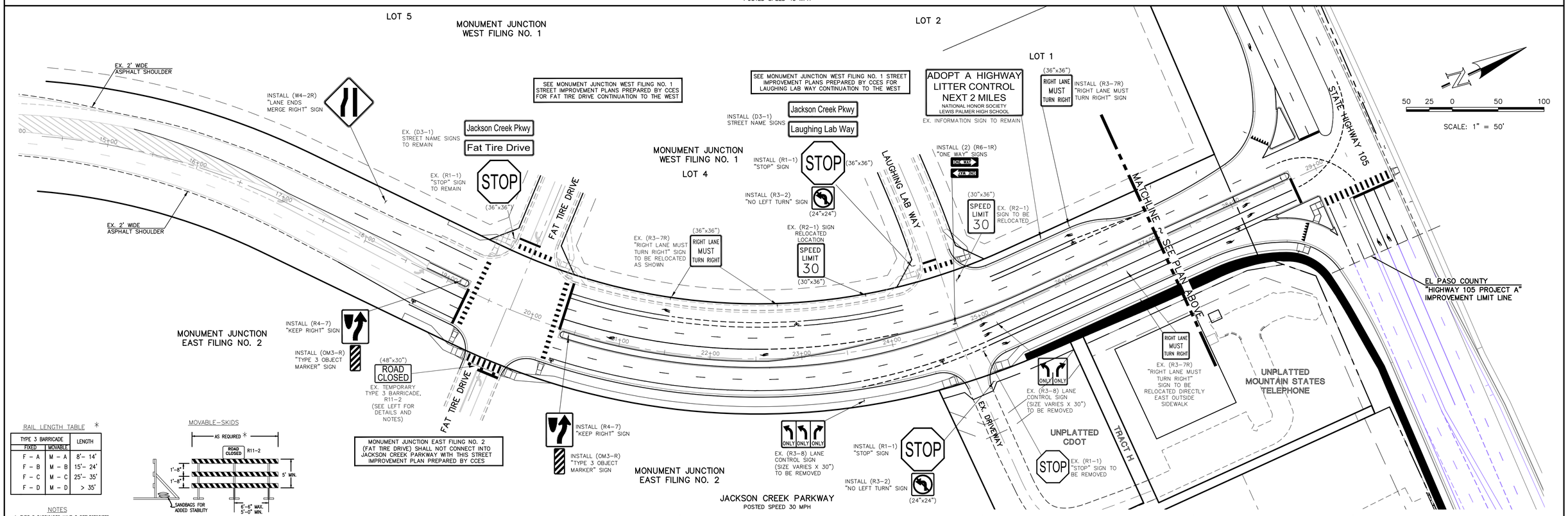
ALL SIGNAGE INSTALLATION IS TO BE IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

NOTE:
ALL INTERNAL STREET NAME SIGNS SHALL BE 4" FONT LETTER SIZE.

6" FONT LETTER SIZE ON ALL STREETS POSTED 30MPH OR GREATER







RAIL LENGTH TABLE *

TYPE 3 BARRICADE		LENGTH
FIXED	MOVABLE	
F - A	M - A	8'- 14'
F - B	M - B	15'- 24'
F - C	M - C	25'- 35'
F - D	M - D	> 35'

NOTES
1. TYPE 3 BARRICADES HAVE 3 RETLECTORIZED RAIL FACES IF FACING TRAFFIC IN ONE DIRECTION AND 6 IF FACING TRAFFIC IN TWO DIRECTIONS.
2. THE PORTION OF THE POST ABOVE THE GROUND LINE SHALL BE PAINTED IN ACCORDANCE WITH THE APPROPRIATE GENERAL NOTE.
3. DETACHABLE EXTENSION WING RAILS FOR BYPASSING OF CONSTRUCTION EQUIPMENT ARE PERMITTED, WHEN NECESSARY, ON FIXED OR MOVABLE TYPE 3 BARRICADES. THE LENGTH SHALL BE ADEQUATE TO CLOSE THE SHOULDER AS REQUIRED.

MOVABLE-SKIDS

MOVABLE-HINGED

TYPICAL TYPE 3 BARRICADES

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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

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MARC. A. WHORTON, COLORADO P.E. #37155 — DATE

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Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. - PHASE 2 CONSTRUCTION PLANS

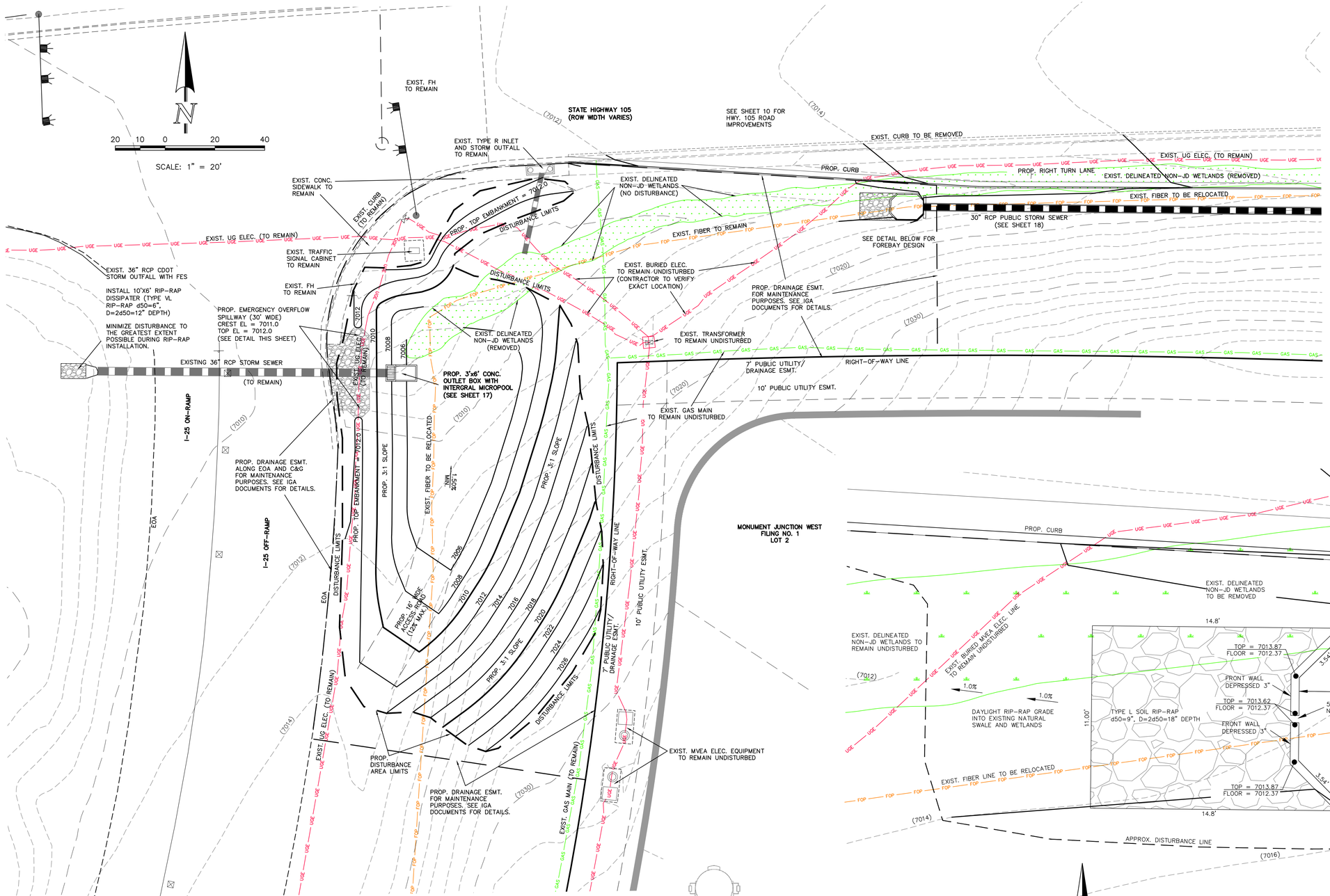
ROADWAY IMPROVEMENT PLANS

SIGNAGE PLAN

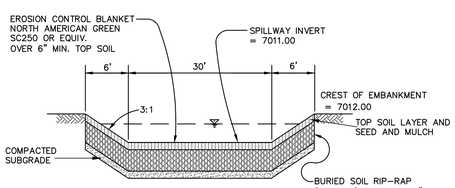
CLASSIC CONSULTING ENGINEERS & SURVEYORS

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	18 OF 26
CHECKED BY		(V) 1"=	N/A	JOB NO.	1302.22

N:\1302\2\DRAWINGS\CONSTRUCTION\SHEET-18-SIGNAGE-01.dwg, 7/14/2023 10:46:29 AM, rmagon, 1:1

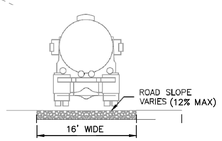


STORMWATER QUALITY FACILITY



EMERGENCY SPILLWAY CROSS SECTION

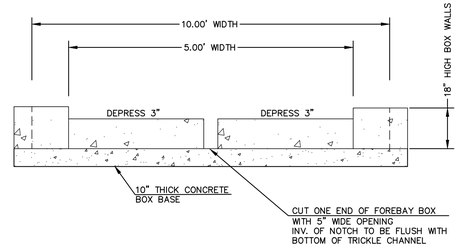
SCALE: N.T.S.



12" LAYER OF AGGREGATE BASE COURSE OR CRUSHED GRAVEL OVER COMPACTED SUBGRADE

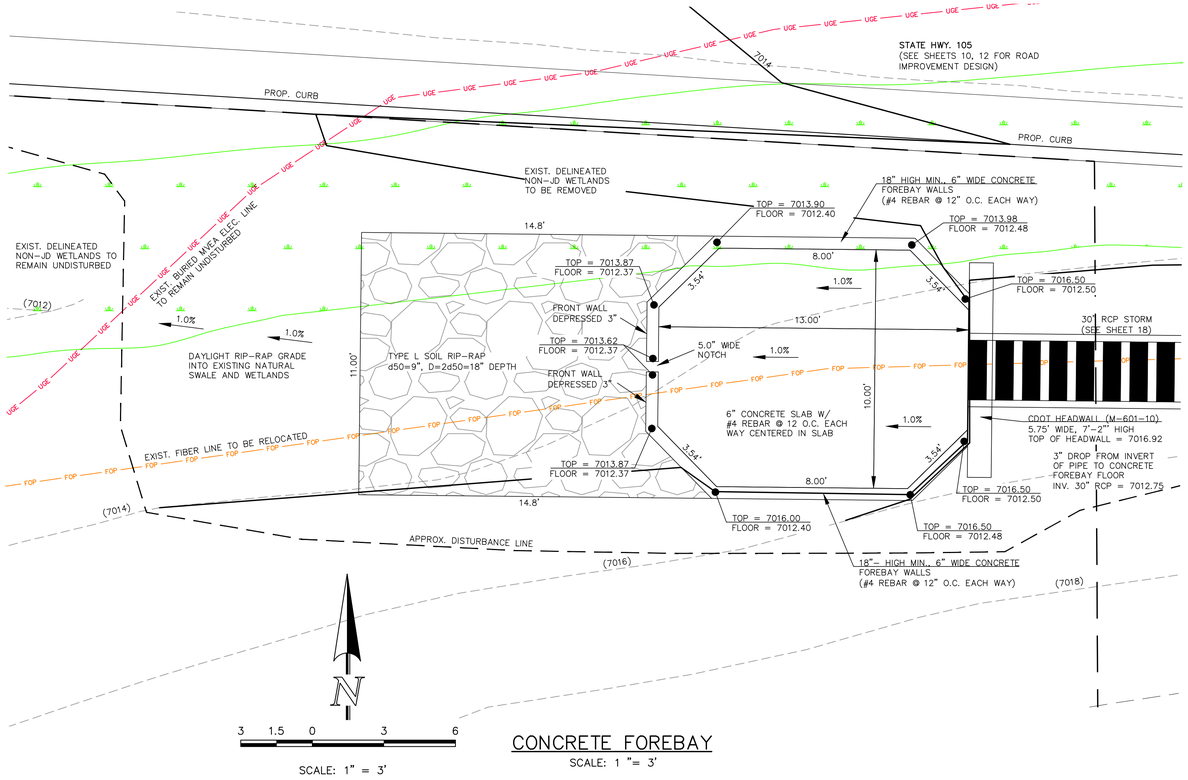
ACCESS ROAD

NOTE:
REFERENCE IGA BETWEEN CDOT AND TOWN OF MONUMENT FOR PROPOSED POND OWNERSHIP AND MAINTENANCE RESPONSIBILITIES.



CONCRETE FOREBAY NOTCH

N.T.S



CONCRETE FOREBAY

SCALE: 1" = 3'

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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

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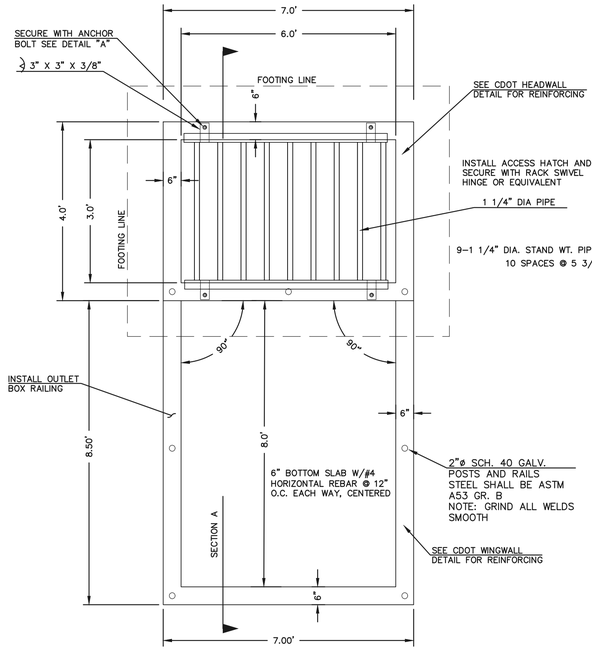
MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING ENGINEERS & SURVEYORS SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

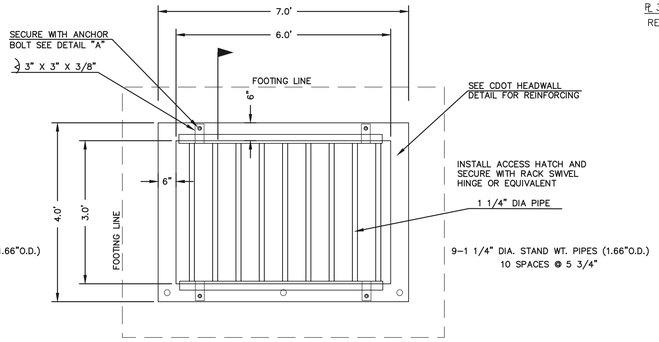
STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

STORMWATER QUALITY FACILITY
POND PLAN AND FOREBAY DETAIL

DESIGNED BY	MAW	SCALE	DATE 02-23-23
DRAWN BY	MAW	(H) 1"= 20'	SHEET 19 OF 26
CHECKED BY		(V) 1"= N/A	JOB NO. 1302.22



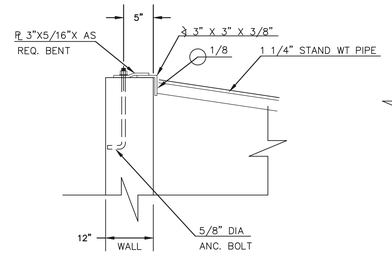
CONCRETE MICROPOOL
SCALE 1" = 2'

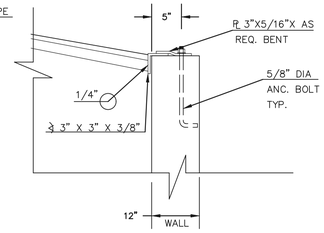


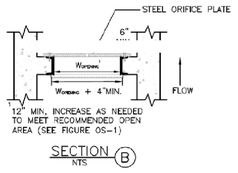
3'X6' OUTLET BOX OVERFLOW TRASH RACK
SCALE 1" = 2'

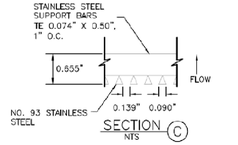
NOTES:

1. WELD PLATES EMBEDS MAY BE SUBSTITUTED.
2. DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH AASHTO STANDARDS.
3. HANDRAIL DESIGN SHALL BE COMPATIBLE WITH THE DESIGN OF THE WINGWALLS AND HEADWALLS.
4. RAILING POSTS SHALL BE SET TO NORMAL TO GRADE. RAILS SHALL RUN PARALLEL TO THE SLOPES OF TOPS OF THE WALLS.
5. ALL RAILS SHALL HAVE EXPANSION JOINTS SPACED AT 40'-0 MAX. JOINT ENDS SHALL BE FREE OF ANY SHARP EDGES OR CORNERS.

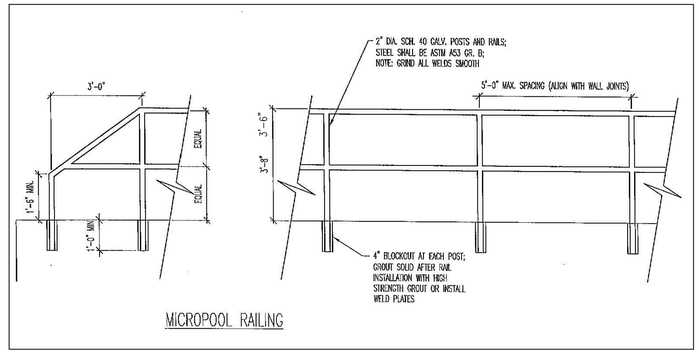




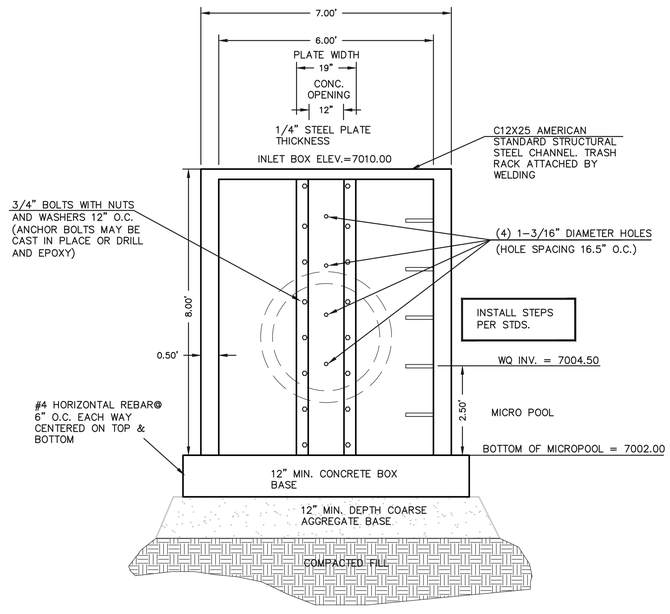




R VALUE = (NET OPEN AREA)/(GROSS RACK AREA) = 0.50



OUTLET BOX RAILING
N.T.S.



3'X6' OUTLET BOX ORIFICE PLATE
SCALE 1" = 2'

(ALL MATERIALS PER CDOT SPECIFICATIONS)

ORIFICE PLATE NOTES:

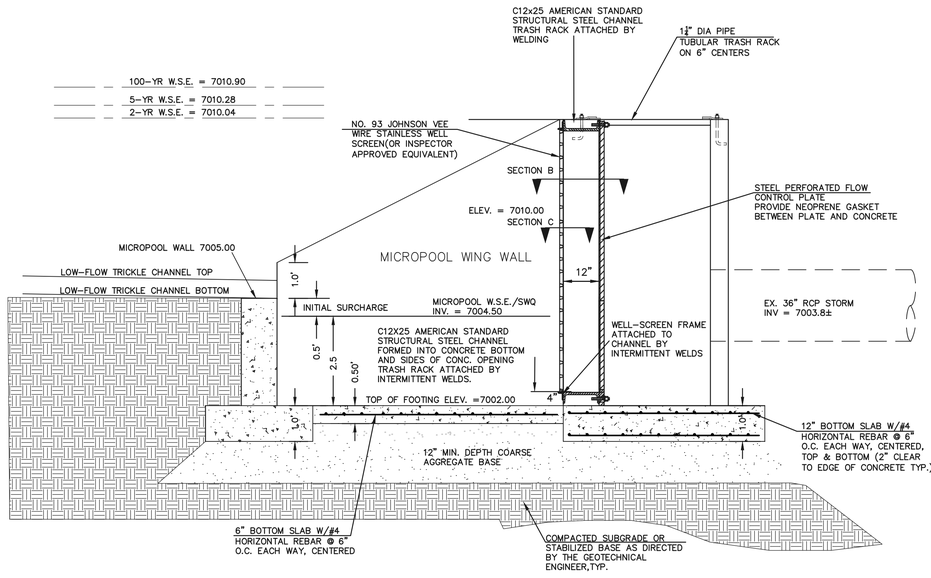
1. INSTALL HOLES AS SHOWN ON DETAIL TO LEFT.
2. PROVIDE GASKET MATERIAL BETWEEN THE ORIFICE PLATE AND CONCRETE
3. ALL STAINLESS STEEL USED TO BE GALVANIZED.

EURV AND WQCV TRASH RACKS:

4. WELL-SCREEN TRASH RACKS SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED BY INTERMITTENT WELDS ALONG THE EDGE OF THE MOUNTING FRAME.
5. BAR GRATE TRASH RACKS SHALL BE ALUMINUM AND SHALL BE BOLTED USING STAINLESS STEEL HARDWARE.
6. STRUCTURAL DESIGN OF TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF RACK

OVERFLOW TRASH RACKS:

1. ALL TRASH RACKS SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS
2. TRASH RACKS SHALL BE STAINLESS STEEL, ALUMINUM, OR STEEL. STEEL TRASH RACKS SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.
3. TRASH RACKS SHALL BE DESIGNED SUCH THAT THE DIAGONAL DIMENSION OF EACH OPENING IS SMALLER THAN THE DIAMETER OF THE OUTLET PIPE.
4. STRUCTURAL DESIGN OF THE TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.



3'X6' OUTLET BOX MICRO POOL SECTION A
SCALE 1" = 2'

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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING ENGINEERS & SURVEYORS SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

STORMWATER QUALITY FACILITY
OUTLET BOX DETAILS

CLASSIC CONSULTING ENGINEERS & SURVEYORS

DESIGNED BY	MAW	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"= N/A		SHEET	20 OF 26
CHECKED BY		(V) 1"= N/A		JOB NO.	1302.22

THE UNDERGROUND STORM LAYOUT IS VERY DIFFERENT THAN PREVIOUSLY DISCUSSED AND DOES NOT TIE INTO THE HWY 105A PROJECT. FURTHER COORDINATION WITH THE HWY 105 PROJECT IS REQUIRED PRIOR TO CONSIDERATION OF THIS LAYOUT AND DETERMINATION OF RESPONSIBILITIES!!

STATE HIGHWAY 105

NOTE: EXIST. STORM INLET AND PIPE TO REMAIN

NOTE: EXIST. BURIED UTILITIES TO REMAIN

NOTE: EXIST. 36" RCP STORM PIPE TO REMAIN

NOTE: SEE SHEET 16 FOR SWQ POND PLAN

PROP. SWQ OUTLET BOX WITH MIRCOPOOL

STA. 0+00.00 (STORM RUN 1) BEGIN 30" RCP STORM SEWER CDOT HEADWALL (M-601-10)

STA. 0+02.50 (STORM RUN 1-LAT 1) INSTALL 5' DIA. TYPE II MANHOLE

EXIST. BURIED ELEC. LINE TO REMAIN

EXIST. GAS LINE TO REMAIN

NOTE: EXIST. STORM INLET AND PIPE TO BE REMOVED

(WEST) INLET TOP OF BOX EL = 7017.56

STA. 0+05.67 (STORM RUN 1-LAT 1) INSTALL 10' TYPE R AT-GRADE INLET

(EAST) INLET TOP OF BOX EL = 7017.77

PROP. 30" RCP STORM (S89°23'19"E 166.16')

PROP. CURB

STA. 1+66.16 (STORM RUN 1) INSTALL 5' DIA. TYPE II MANHOLE

STA. 1+71.16 (STORM RUN 1) INSTALL 5' DIA. TYPE II MANHOLE

NOTE: EXIST. FIBER LINE TO BE RELOCATED BY OTHERS (STA: 0+00-2+50)

STA. 4+32.33 (STORM RUN 1) INSTALL 5' DIA. TYPE II MANHOLE

STA. 4+27.33 (STORM RUN 1) INSTALL 5' DIA. TYPE II MANHOLE

PROP. 30" RCP STORM (N83°48'26"E 256.18')

NOTE: EXIST. FIBER LINE AND ELEC. FACILITIES TO BE RELOCATED BY OTHERS

NOTE: EXIST. STORM FACILITIES AND PIPING TO BE REMOVED

JACKSON CREEK PKWY.

PROP. 24" RCP STORM (S88°18'38"E 8.00')

PROP. 24" RCP STORM (S89°06'49"E 187.50')

STA. 6+31.83 (STORM RUN 1) INSTALL 24" RCP PLUG END STORM RUN 1 CONSTRUCTION

STA. 6+19.83 (STORM RUN 1) INSTALL 4' DIA. TYPE II MANHOLE

STA. 6+23.83 (STORM RUN 1) INSTALL 4' DIA. TYPE II MANHOLE

PROPOSED STORM SEWER (SEE SHEET 22)

PROP. REDI-ROCK RETAINING WALL

NOTE: WOODMOOR UTILITY DISTRICT WILL COORDINATE RELOCATIONS FOR EXIST. SANITARY AND WATER MAIN FACILITIES.

NOTE: MONUMENT JUNCTION DEVELOPER WILL COORDINATE RELOCATIONS FOR EXIST. FIBER LINES, GAS AND ELEC. FACILITIES.

FUTURE 18" RCP STORM BY COUNTY PROJECT

NOTE: EXIST. STORM PIPE AND INLET TO BE REMOVED WITH COUNTY PROJECT

PROP. REDI-ROCK RETAINING WALL

STA. 6+23.83 (STORM RUN 1) INSTALL 4' DIA. TYPE II MANHOLE

PROPOSED STORM SEWER (SEE SHEET 22)

MONUMENT JUNCTION WEST FILING NO. 1 LOT 2

MONUMENT JUNCTION WEST FILING NO. 1 LOT 1

UNPLATTED MOUNTAIN STATES TELEPHONE

UNPLATTED WOODMOOR VETERINARY HOSPITAL

VALLEY VISTA ESTATES FILING NO. 3, LOT 3

VALLEY VISTA ESTATES FILING NO. 3, LOT 4

N

50 25 0 50 100

SCALE: 1" = 50'

STATE HIGHWAY 105 – STORM SEWER RUN 1

STATE HIGHWAY 105 STORM SEWER RUN 1

STATE HIGHWAY 105 STORM SEWER RUN 1

STATE HIGHWAY 105 STORM SEWER RUN 1 – LAT 1

EXISTING GRADE ℄ CENTERLINE OF PIPE

PROPOSED GRADE ℄ CENTERLINE OF PIPE

PROPOSED CONCRETE FOREBAY

166.16 L.F. ~ 30" RCP STORM SEWER @ 0.50%

256.17 L.F. ~ 30" RCP STORM SEWER @ 0.50%

187.50 L.F. ~ 24" RCP STORM SEWER @ 1.63%

145.36 L.F. ~ 24" RCP STORM SEWER @ 5.68%

278.71 L.F. ~ 18" RCP STORM SEWER @ 5.36%

8.00 L.F. ~ 24" RCP STORM STUB @ 5.68%

7.53 L.F. ~ 18" RCP STORM STUB @ 1.00%

3.17 L.F. ~ 18" RCP STORM SEWER @ 1.00%

FUTURE 24" RCP STORM EXTENSION BY EL PASO COUNTY

FUTURE 18" RCP STORM EXTENSION BY EL PASO COUNTY

Fix overlapping text.

Missing HGL line

100-YR. HGL

StormCAD in FDR appendix shows pipe size as 18". Please coordinate between 2 documents to show same pipe size.

STA. 0+00.00 BEGIN 30" RCP STORM SEWER CDOT HEADWALL (M-601-10) TOP HEADWALL EL = 7016.92 INV. OUT = 7012.75

STA. 1+66.16 INSTALL 5' DIA. TYPE II MANHOLE RIM = 7020.91 18" INV IN(N) = 7014.58 30" INV IN(E) = 7014.08 30" INV OUT(W) = 7013.58 CUT = 7.33'

STA. 1+71.16 INSTALL 5' DIA. TYPE II MANHOLE 30" INV IN(E) = 7014.08

STA. 2+61.76 EX. COMMUNICATION LINE CROSSING EX. COMMUNICATION LINE CONFLICT, RELOCATE EX. COMM.

STA. 3+99.09 EX. ELECTRIC LINE CROSSING BOP (ELEC)= 7022.62 TOP (30") = 7018.01 CLEAR = 4.61'

STA. 4+51.51 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7024.51 TOP (24") = 7019.57 CLEAR = 4.94'

STA. 4+25.36 INSTALL 4' DIA. TYPE II MANHOLE RIM = 7026.36 24" INV IN(S) = 7015.86 30" INV OUT(W) = 7015.36 CUT = 11.00'

STA. 4+32.33 INSTALL 5' DIA. TYPE II MANHOLE 24" INV IN(E) = 7015.89

STA. 5+89.70 – STA. 6+00.94 EX. STORM SEWER CROSSING, EX. STORM SEWER CONFLICT TO BE REMOVED PRIOR TO PROPOSED STORM SEWER CONSTRUCTION

STA. 5+65.34 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7030.61 TOP (24") = 7028.25 CLEAR = 2.36'

STA. 6+10.50 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7033.69 TOP (24") = 7031.70 CLEAR = 1.99'

STA. 6+19.83 INSTALL 4' DIA. TYPE II MANHOLE RIM = 7036.03 18" INV IN(S) = 7033.16 30" INV OUT(W) = 7030.16 CUT = 5.87'

STA. 6+23.83 INSTALL 4' DIA. TYPE II MANHOLE 24" INV IN(E) = 7030.86

STA. 6+31.83 INSTALL 24" RCP PLUG 24" INV = 7031.11

STA. 7+69.19 INSTALL 4' DIA. TYPE II MANHOLE RIM = 7044.17 18" INV IN(S) = 7039.42 24" INV OUT(W) = 7038.92 CUT = 5.25'

STA. 7+73.19 INSTALL 4' DIA. TYPE II MANHOLE 18" INV IN(E) = 7038.42

STA. 7+87.66 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7043.43 TOP (18") = 7041.90 CLEAR = 1.53'

STA. 7+92.55 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7042.92 TOP (18") = 7041.63 CLEAR = 1.29'

STA. 8+00.53 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7044.71 TOP (18") = 7042.59 CLEAR = 2.12'

STA. 10+50.97 EX. COMMUNICATION LINE CROSSING EX. COMMUNICATION LINE CONFLICT, RELOCATE EX. COMM.

STA. 9+59.46 EX. COMMUNICATION LINE CROSSING BOP (COMM)= 7051.71 TOP (18") = 7051.11 CLEAR = 0.60'

STA. 10+48.99 INSTALL 5' DIA. TYPE II MANHOLE RIM = 7059.24 18" INV OUT(W) = 7054.20 CUT = 4.92'

STA. 10+52.90 INSTALL 5' DIA. TYPE II MANHOLE 18" INV IN(S) = 7054.70

STA. 10+60.43 INSTALL 5' TYPE R AT-GRADE INLET SEE PLAN VIEW FOR TOP OF BOX ELEVATIONS 18" INV OUT = 7054.78

STA. 0+02.50 INSTALL 5' DIA. TYPE II MANHOLE RIM = 7020.91 18" INV IN(N) = 7014.58 30" INV IN(E) = 7014.08 30" INV OUT(W) = 7013.58 CUT = 7.33'

STA. 0+05.80 EX. COMMUNICATION LINE CROSSING EX. COMMUNICATION LINE CONFLICT, RELOCATE EX. COMM.

STA. 0+05.67 INSTALL 10' TYPE R AT-GRADE INLET SEE PLAN VIEW FOR TOP OF BOX ELEVATIONS 18" INV OUT(N) = 7014.61

7050 7060 7040 7030 7020 7010 7000

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS

811

UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING ENGINEERS & SURVEYS SM

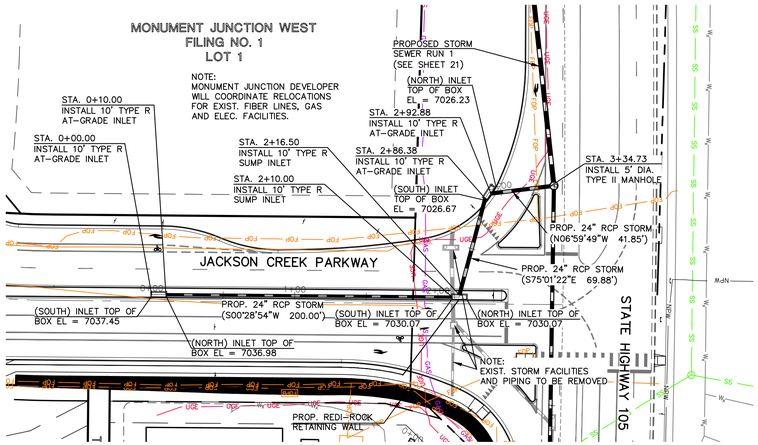
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

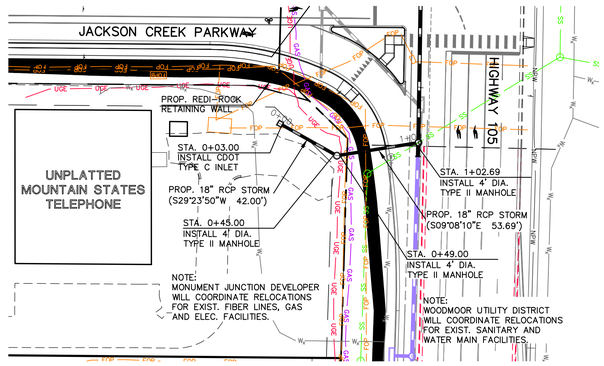
STORM SEWER PLAN & PROFILE

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	21 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

N:\13022\DRAWINGS\CONSTRUCTION\SHEET-21-STORM-01.dwg, 7/14/2023 10:33:11 AM, ningm, 1:1



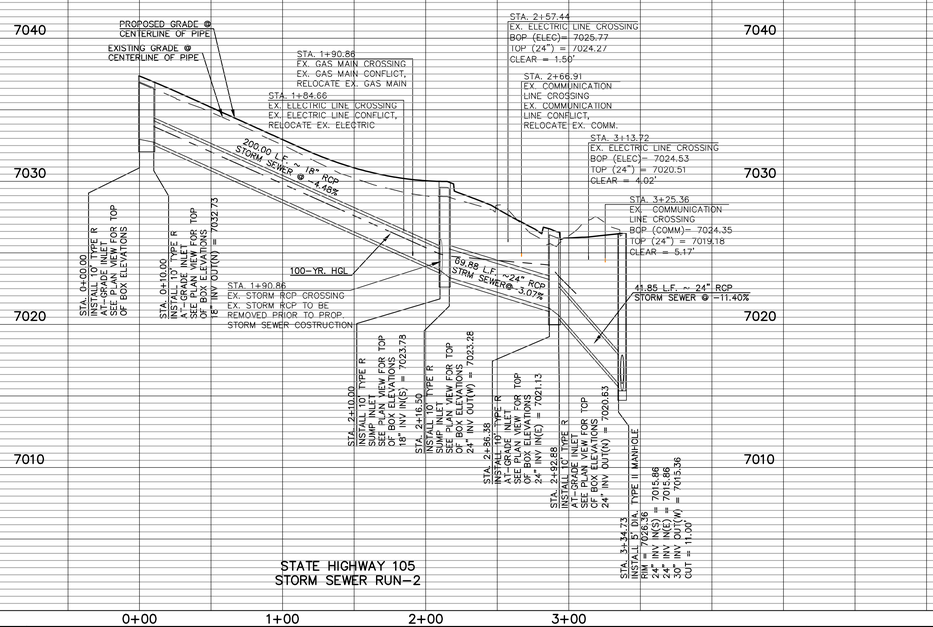
STATE HIGHWAY 105
STORM SEWER RUN-2



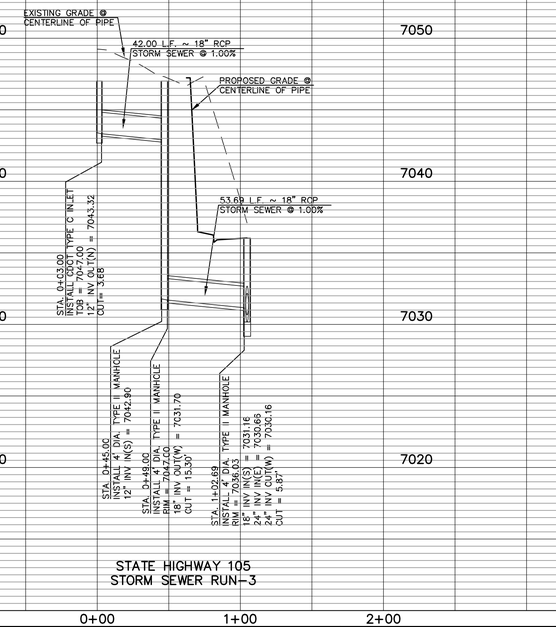
STATE HIGHWAY 105
STORM SEWER RUN-3

50 25 0 50 100

SCALE: 1" = 50'



STATE HIGHWAY 105
STORM SEWER RUN-2



STATE HIGHWAY 105
STORM SEWER RUN-3

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NO.	REVISION	DATE
1	REVISED PER CDOT/COUNTY/TOWN OF MONUMENT COMMENTS	7/10/23

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 — DATE

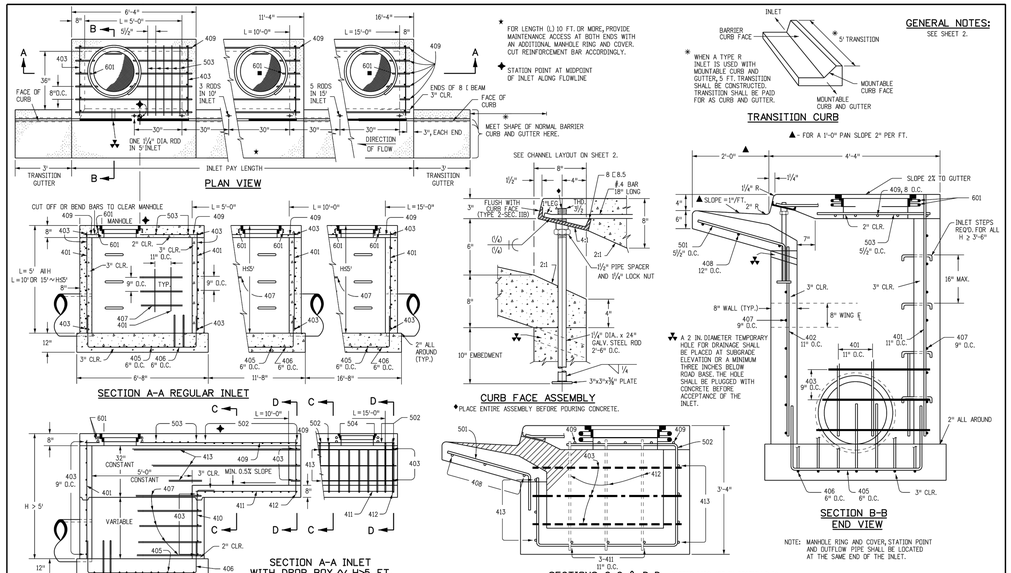
CLASSIC SM
CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799(Fax)

STATE HIGHWAY 105 /JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS

STORM SEWER PLAN & PROFILE

DESIGNED BY	PRA	SCALE		DATE	02-23-23
DRAWN BY	PRA	(H) 1"=	50'	SHEET	22 OF 26
CHECKED BY		(V) 1"=	5'	JOB NO.	1302.22

N:\13022\DRAWINGS\CONSTRUCTION\SHEET-22-STORM-02.dwg, 7/14/2023 10:36:45 AM, ronsym, 1:1



GENERAL NOTES:

SEE SHEET 2.

Computer File Information		Sheet Revisions	
Creation Date: 07/31/19		Date:	Comments
Designer Initials: JBK	RDX		
Last Modification Date: 07/31/19	RDX		
Detailer Initials: LTA	RDX		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	RDX		

Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Project Development Branch JBK

CURB INLET TYPE R

STANDARD PLAN NO.
M-604-12
Standard Sheet No. 1 of 2
Project Sheet Number:

Issued by the Project Development Branch: July 31, 2019

MARK	BAR # OR SIZE	O.C. SPACING	TYPE	ALL INLETS		INLETS: H ≤ 5 FT.				INLETS: H > 5 FT.			
				L = 5 FT.		L = 10 FT.		L = 15 FT.		L = 10 FT.		L = 15 FT.	
				NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
401	4	11"	II	15	*	21	*	26	*	11	*	11	*
402	4	11"	II	7	*	13	*	18	*	7	*	7	*
403	4	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"
405	4	6"	VI	1⁄2	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"
406	4	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407	4	9"	II	*	5'-10"	*	10'-10"	*	15'-10"	*	5'-10"	*	5'-10"
408	4	12"	II	3	6'-10"	3	11'-10"	3	16'-0"	3	11'-10"	3	16'-0"
409	4	8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"
410	4	11"	VII							3	5'-2"	3	10'-2"
411	4	11"	II							3	5'-2"	3	10'-2"
412	4	11"	II							3	7'-9"	3	7'-9"
413	4	9"	II							7	10'-10"	7	15'-10"
500	5	5½"	IV	1⁄2	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"
502	5	5½"	III							11	11'-5"	17	11'-5"
503	5	5½"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"
504	5	5½"	IX									5	8'-4"
601	6	7½"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"
■ R.B.5				1 2 BARS, 3 RODS	5'-10"	1 4 BARS, 3 RODS	10'-10"	1 8 BARS, 5 RODS	15'-10"	1 4 BARS, 3 RODS	10'-10"	1 8 BARS, 5 RODS	15'-10"

* VARIABLE REFER TO TABLE TWO.
■ INCLUDE #4, 18 IN. BARS (SEE CHANNEL LAYOUT).

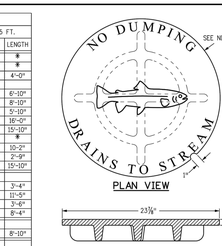
REGULAR INLETS | DROP BOX INLETS

TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

"H"	LENGTH			NO. REQ'D. REGULAR		NO. REQ'D. DROP BOX		L = 5 FT.		L = 10 FT.		L = 15 FT.	
	401	402	410	403	407	403	407	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-2"	2'-2"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	334	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3'-5"	16	13	15	6	4.4	375	6.9	607	7.4	850
6'-0"	5'-8"	4'-8"	3'-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4'-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4'-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1005
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

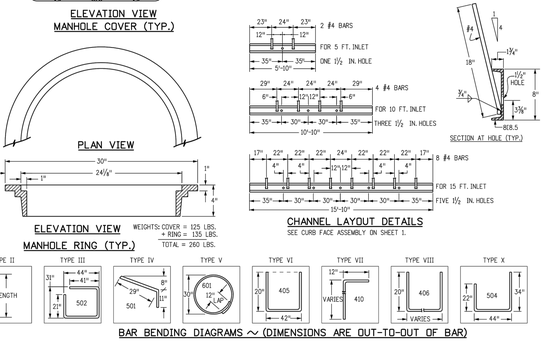
NOTES: FOR L = 5 FT., L = 10 FT., AND L = 15 FT.
REGULAR INLETS: TOTAL QUANTITIES NEEDED ARE OUTSIDE THE HEAVY BLACK LINE.
DROP BOX INLETS: TOTAL QUANTITIES NEEDED ARE INSIDE THE HEAVY BLACK LINE.
STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL CHANNEL.

TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"



GENERAL NOTES

1. CONCRETE SHALL BE CLASS B; INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 INCHES THICK.
3. INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 199.
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾ OF A INCH. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 INCH MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE GRADE 60 AND EPOXY COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06.
9. SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
11. ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.



BAR BENDING DIAGRAMS ~ (DIMENSIONS ARE OUT-TO-OUT OF BAR)

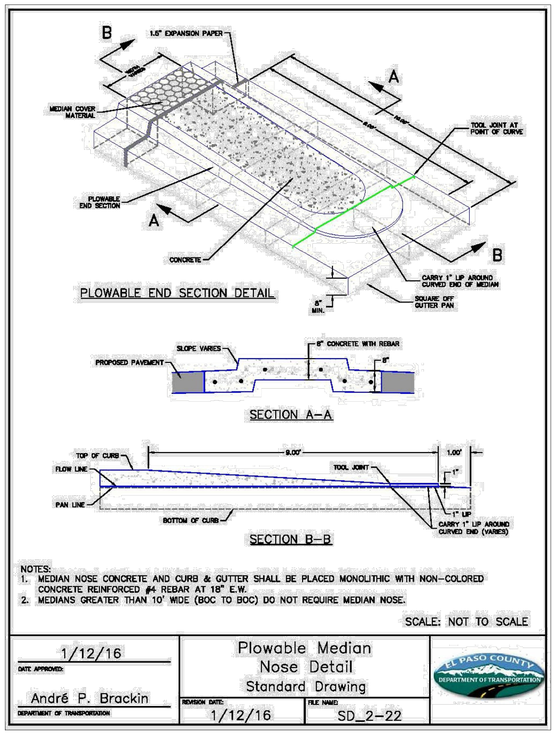
Computer File Information		Sheet Revisions	
Creation Date: 07/31/19		Date:	Comments
Designer Initials: JBK	RDX		
Last Modification Date: 07/31/19	RDX		
Detailer Initials: LTA	RDX		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	RDX		

Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Project Development Branch JBK

CURB INLET TYPE R

STANDARD PLAN NO.
M-604-12
Standard Sheet No. 2 of 2
Project Sheet Number:

Issued by the Project Development Branch: July 31, 2019

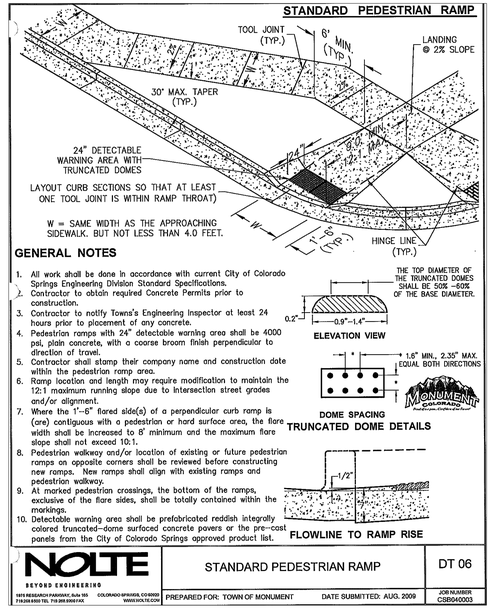


NOTES:
1. MEDIAN NOSE CONCRETE AND CURB & GUTTER SHALL BE PLACED MONOLITHIC WITH NON-COLORED CONCRETE REINFORCED #4 REBAR AT 18" E.W.
2. MEDIANS GREATER THAN 10' WIDE (BOC TO BOC) DO NOT REQUIRE MEDIAN NOSE.

SCALE: NOT TO SCALE

1/12/16	Plowable Median Nose Detail Standard Drawing	
DATE APPROVED:		
André P. Brackin	REVISION DATE: 1/12/16	FILE NAME: SD_2-22
DEPARTMENT OF TRANSPORTATION		

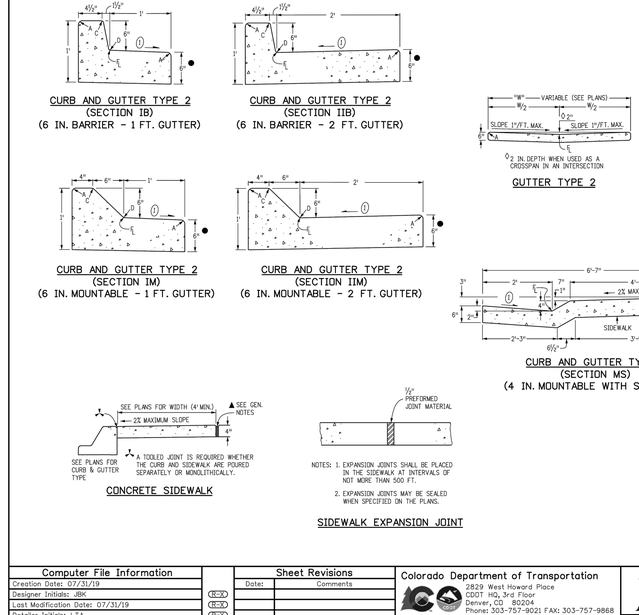
EL PASO COUNTY DEPARTMENT OF TRANSPORTATION



GENERAL NOTES

1. All work shall be done in accordance with current City of Colorado Springs Engineering Division Standard Specifications.
2. Contractor to obtain required Concrete Permits prior to construction.
3. Contractor to notify Towns's Engineering Inspector at least 24 hours prior to placement of any concrete.
4. Pedestrian ramps with 24" detectable warning area shall be 4000 psi, plain concrete, with a coarse broom finish perpendicular to direction of travel.
5. Contractor shall stamp their company name and construction date within the pedestrian ramp area.
6. Ramp location and length may require modification to maintain the 12:1 maximum running slope due to intersection street grades and/or alignment.
7. Where the 1'-0" flared side(s) of a perpendicular curb ramp is (are) contiguous with a pedestrian or hard surface area, the flare width shall be increased to 8' minimum and the maximum flare slope shall not exceed 10:1.
8. Pedestrian walkway and/or location of existing or future pedestrian ramps on opposite corners shall be reviewed before constructing new ramps. New ramps shall align with existing ramps and pedestrian walkway.
9. At marked pedestrian crossings, the bottom of the ramps, exclusive of the flare sides, shall be totally contained within the markings.
10. Detectable warning area shall be prefabricated reddish integrally colored truncated-dome surfaced concrete pavers or the pre-cast panels from the City of Colorado Springs approved product list.

NOLTE BEYOND ENGINEERING	STANDARD PEDESTRIAN RAMP	DT 06
1675 RESEARCH PARKWAY, Suite 105 COLORADO SPRINGS, CO 80920 719.593.9559 TEL 719.268.0564 FAX WWW.NOLTE.COM	PREPARED FOR: TOWN OF MONUMENT	DATE SUBMITTED: AUG. 2009 JOB NUMBER CSB040003



GENERAL NOTES

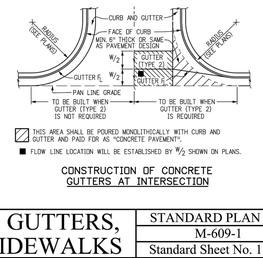
1. ON ROADWAY CURVES WITH A RADIUS OF 1,900 FT. OR LESS, CURBS AND GUTTERS ARE TO BE PLACED ON THE ARC OF THE CURVE, UNLESS OTHERWISE NOTED ON THE PLANS. A MAXIMUM CHORD LENGTH OF 10 FT. MAY BE USED WHEN THE CURVE RADIUS IS GREATER THAN 1,900 FT.
2. CONCRETE SHALL BE CLASS B.
3. PROFILE GRADE OF CURBS AND GUTTERS SHALL BE LOCATED AT THE FLOW LINE.
4. CURB TYPE 4 (KEY-WAY) MAY BE USED IN LIEU OF CURB AND GUTTER TYPE 2 (SECTIONS IB AND IM) UNLESS OTHERWISE SPECIFIED ON THE PLANS.
5. GUTTER CROSS SLOPES MAY BE ADJUSTED TO FACILITATE DRAINAGE FOR PROFILE GRADES AS SHOWN ON THE PLANS.
6. THICKNESS OF CURB AND GUTTER SECTION SHALL MATCH CONCRETE PAVEMENT THICKNESS IF SHOWN ON THE PLANS. CURB AND GUTTER SHALL BE CLASS P CONCRETE IF PLACED MONOLITHICALLY WITH CONCRETE PAVEMENT.
7. INCREASE SIDEWALK THICKNESS TO 6 IN. AT LOCATIONS SHOWN ON THE PLANS.
8. MINIMUM SIDEWALK WIDTH IS 4 FT.

▲ EXPANSION JOINTS SHALL BE INSTALLED WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURE. EXPANSION JOINT MATERIAL SHALL BE ½ IN. THICK AND SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE.

① GUTTER CROSS SLOPES SHALL BE ½ IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB (WITH EXCEPTION TO IMMEDIATELY ADJACENT TO CURB RAMPS - SEE STANDARD PLAN M-608-1 FOR SLOPE REQUIREMENTS).

● WHEN TIE BARS ARE REQUIRED, THE GUTTER THICKNESS SHALL BE INCREASED TO THE PAVEMENT THICKNESS (T). BARS SHALL BE EPOXY-COATED #4 CONFORMING TO AASHTO M 284 AND SPACED AT 3 FT. INTERVALS. THEY SHALL BE INSERTED ½ AND 1½ LENGTH INTO THE GUTTER.

LEGEND FOR RADII
A =½" TO ¼"
B =1"
C =1½"
D =½" TO 2"



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Creation Date: 07/31/19		Date:	Comments
Designer Initials: JBK	RDX		
Last Modification Date: 07/31/19	RDX		
Detailer Initials: LTA	RDX		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	RDX		

Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Project Development Branch JBK

CURB, GUTTERS, AND SIDEWALKS

STANDARD PLAN NO.
M-609-1
Standard Sheet No. 1 of 4
Project Sheet Number:

Issued by the Project Development Branch: July 31, 2019

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC. A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC SM CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

STATE HIGHWAY 105 / JACKSON CREEK PKWY. – PHASE 2 CONSTRUCTION PLANS
ROADWAY IMPROVEMENT PLANS
DETAIL SHEET

CLASSIC CONSULTING ENGINEERS & SURVEYORS

DESIGNED BY	PRA	SCALE	DATE 02-23-23
DRAWN BY	PRA	(H) 1"= 50'	SHEET 23 OF 26
CHECKED BY		(V) 1"= 5'	JOB NO. 1302.22

N:\13022\DRAWINGS\CONSTRUCTION\SHEET-23-DETAILS.dwg, 7/14/2023 10:38:00 AM, rsingen, 1:1

TABULATION OF TRAFFIC SIGNAL ITEMS

CDOT ITEM NO.	ITEM DESCRIPTION	UNITS	TOTAL	NOTES
202-00828	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	L S	1	REFER TO THE REMOVAL ITEMS AND QUANTITIES BELOW
FOR INFORMATION ONLY	REMOVAL OF TRAFFIC SIGNAL POLE	EACH	4	RETURN TO EL PASO COUNTY
	REMOVAL OF TRAFFIC SIGNAL HEAD	EACH	12	
	REMOVAL OF TRAFFIC SIGNAL CONTROLLER AND CABINET	EACH	1	
	REMOVAL OF LUMINAIRE	EACH	4	
	REMOVAL OF STREET NAME SIGN	EACH	3	
	REMOVAL OF LANE USE/OPERATION SIGN	EACH	2	
	REMOVAL OF SPAN WIRE CABLE	LF	320	
210-00479	RESET RADIO COMMUNICATION ANTENNA	EACH	1	
503-00036	DRILLED SHAFT (36 INCH)	LF	60	CDOT STD. S-614-40A FOOTING
613-00206	2 INCH ELECTRICAL CONDUIT (BORED)	LF	400	SCHEDULE 80
613-00306	3 INCH ELECTRICAL CONDUIT (BORED)	LF	800	SCHEDULE 80
613-01200	2 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	155	SCHEDULE 80
613-01300	3 INCH ELECTRICAL CONDUIT (PLASTIC)	LF	190	SCHEDULE 80
613-07003	TYPE THREE PULL BOX	EACH	4	SIGNAL POLE AND CONTROLLER PULL BOXES
613-07004	TYPE FOUR PULL BOX	EACH	1	HOME RUN PULL BOX
613-10000	WIRING	L S	1	SIGNAL AND LIGHTING
613-13004	LUMINAIRE (LED) (4,000 LUMENS)	EACH	4	
613-50109	METER POWER PEDESTAL	EACH	1	
614-00011	SIGN PANEL (CLASS I)	SF	40	
614-70150	PEDESTRIAN SIGNAL FACE (16) (COUNTDOWN)	EACH	2	LED TYPE, POLYCARBONATE, YELLOW INCOLOR
614-70336	TRAFFIC SIGNAL FACE (12-12-12)	EACH	15	LED TYPE, POLYCARBONATE, YELLOW INCOLOR
614-72855	TRAFFIC SIGNAL CONTROLLER CABINET	EACH	1	
614-72860	PEDESTRIAN PUSH BUTTON	EACH	1	PUSH BUTTON STATION, R10-3e SIGN AND ANY NECESSARY EXTENDER
614-72863	PEDESTRIAN PUSH BUTTON POST ASSEMBLY	EACH	2	CDOT STD. S-614-45, INCLUDES R10-3e SIGNS
614-72866	FIRE PREEMPTION UNIT AND TIMER	EACH	1	INCLUDES 2 PREEMPTION UNITS
614-72886	INTERSECTION DETECTION SYSTEM (CAMERA)	EACH	2	
614-81000	TRAFFIC SIGNAL-LIGHT POLE STEEL	EACH	1	
614-81125	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-25 FOOT MAST ARM)	EACH	1	CDOT STD. S-614-40A
614-81145	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-45 FOOT MAST ARM)	EACH	1	CDOT STD. S-614-40A
614-81155	TRAFFIC SIGNAL-LIGHT POLE STEEL (1-55 FOOT MAST ARM)	EACH	1	CDOT STD. S-614-40A
614-86248	TRAFFIC SIGNAL CONTROLLER (TYPE 2070LC)	EACH	1	

PRINT DATE: 05/5/2023 11:26 AM
FILE NAME: T121234-01SIG-TAB01.DWG
HORIZ. SCALE: N/A VERT. SCALE: N/A

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Phone: 719.314.1800
www.FHUENG.com

SHEET REVISIONS

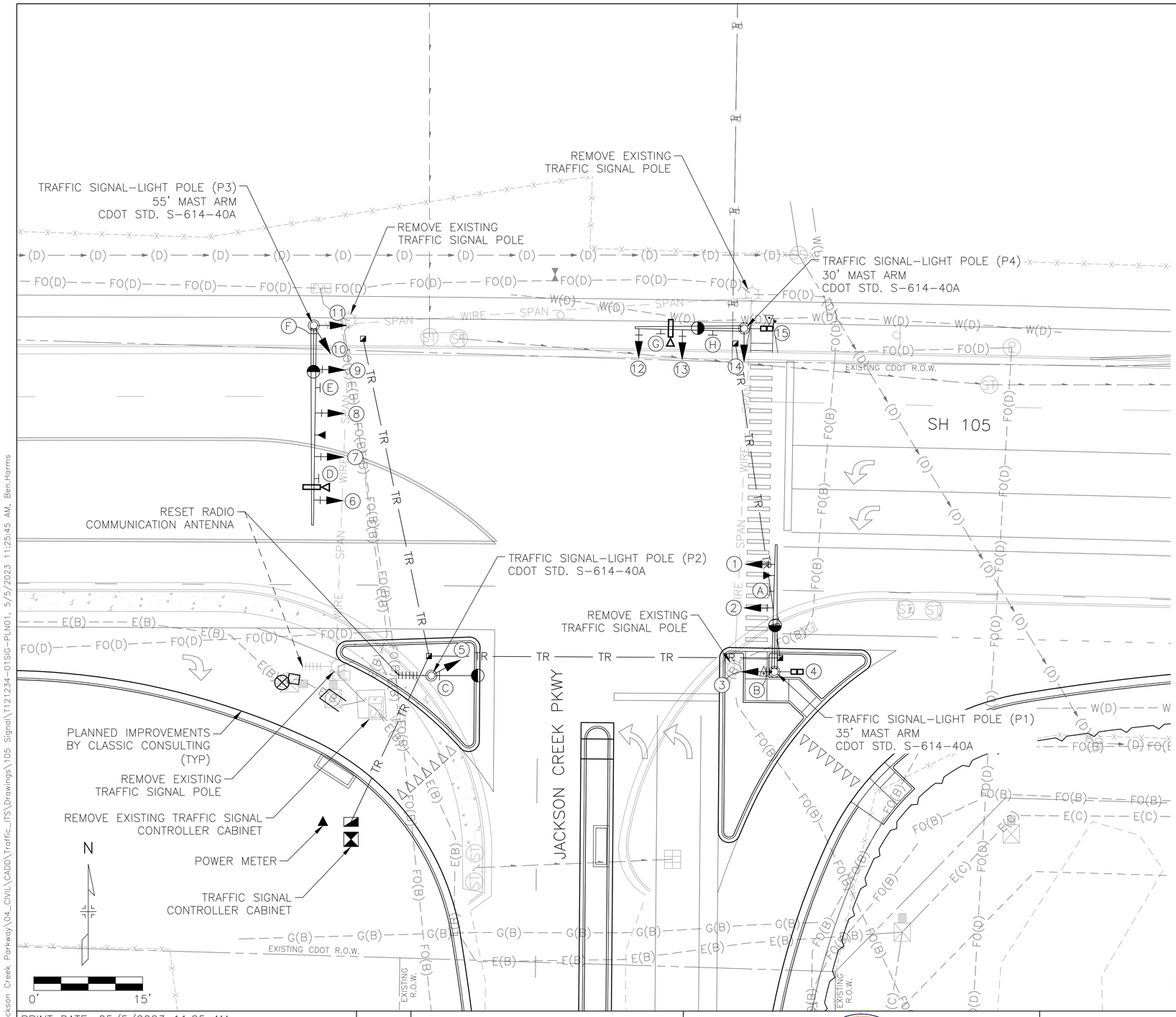
R-X	DATE	COMMENTS	INITIALS

AS CONSTRUCTED
NO. REVISIONS:
REVISED:
VOID:

JACKSON CREEK PARKWAY
TRAFFIC SIGNAL TABULATIONS
STATE HIGHWAY 105

DESIGNER: BJH
DETAILER: BEN.HARMS
SHEET SUBSET: TRAFFIC
STRUCTURE NUMBERS
SHEET SUBSET: TT-01 OF 1

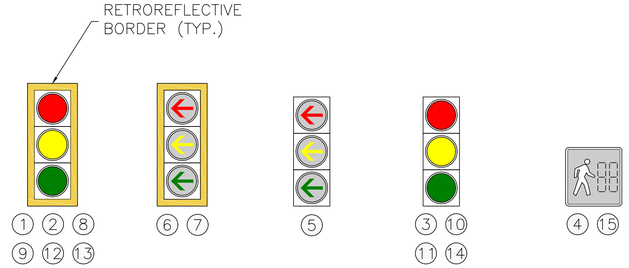
PROJECT NO./CODE
121234-01



TRAFFIC SIGNAL SYMBOLS

- TRAFFIC SIGNAL POLE AND MAST ARM
- PEDESTRIAN PUSH BUTTON POLE
- LUMINAIRE
- TRAFFIC SIGNAL HEAD
- TRAFFIC SIGNAL HEAD & BACKPLATE
- PEDESTRIAN SIGNAL HEAD
- SIGNAL CONTROLLER CABINET
- (TYPE 3) (TYPE 4) PULL BOX
- TR TR SIGNAL CONDUITS
- VEHICLE DETECTOR CAMERA
- PED PUSH BUTTON & SIGN
- FIRE PREEMPTION UNIT
- RADIO COMMUNICATION ANTENNA

PROPOSED SIGNAL HEADS



① ② ⑧ ⑨ ⑫ ⑬ ⑥ ⑦ ⑤ ③ ⑩ ⑪ ⑭ ④ ⑮

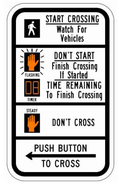
PROPOSED SIGNS

18R9–3a

Ⓑ Ⓒ Ⓕ

36R3–8 (LL)

Ⓓ Ⓖ



R10–3e
(9"x15")
1 – RIGHT ARROW
1 – LEFT ARROW

D3–1
12"X36"
Ⓗ

D3–1
12"X72"
Ⓐ Ⓔ

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

PRINT DATE: 05/5/2023 11:25 AM	R–X	SHEET REVISIONS	AS CONSTRUCTED
FILE NAME: T121234–01SIG–PLN01.DWG		DATE / COMMENTS / INITIALS	NO. REVISIONS:
HORIZ. SCALE: 1" = 15' VERT. SCALE: N/A			REVISED:
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EST. 1879 MONUMENT COLORADO

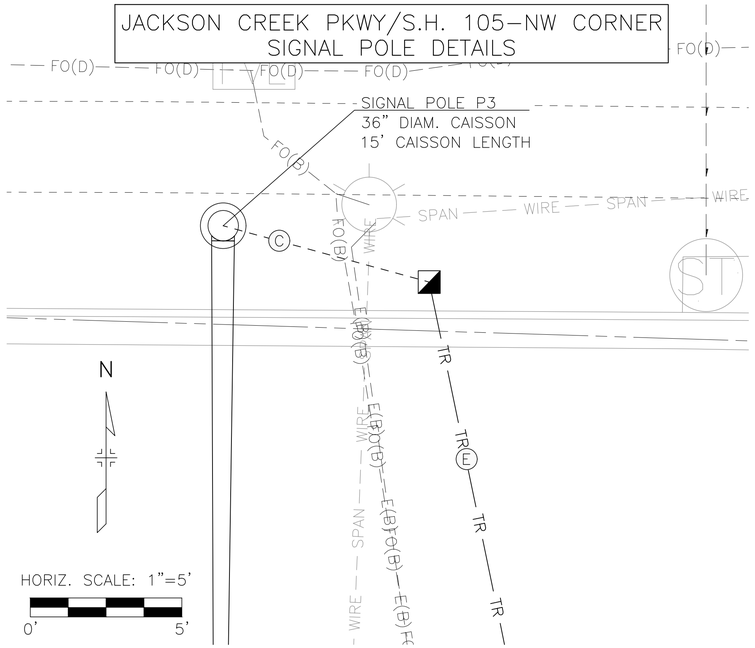
JACKSON CREEK PARKWAY
TRAFFIC SIGNAL PLAN
STATE HIGHWAY 105

DESIGNER:	BJH	STRUCTURE NUMBERS	
DETAILER:	BEN.HARMS		
SHEET SUBSET:	TRAFFIC	SHEET SUBSET:	TS–01 OF 2

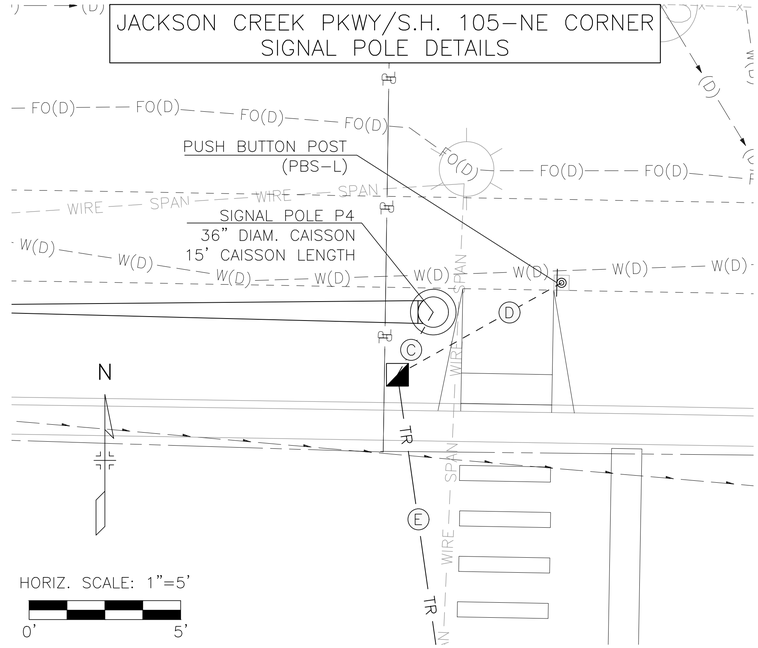
PROJECT NO./CODE: 121234–01

S:\121234–01 – Jackson Creek Parkway\04_CIVIL\CADD\Traffic_ITS\Drawings\105 Signal\T121234–01SIG–PLN01. 5/5/2023 11:25:45 AM, Ben.Harms

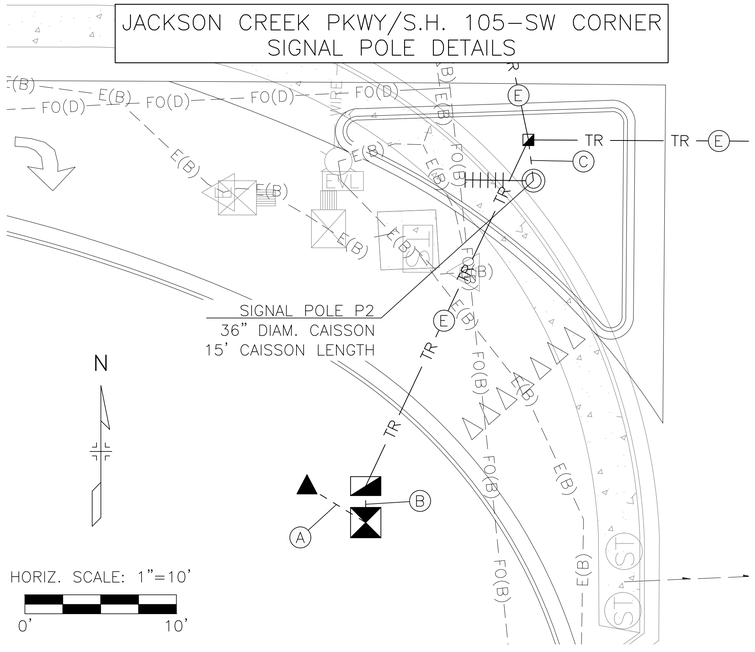
JACKSON CREEK PKWY/S.H. 105–NW CORNER SIGNAL POLE DETAILS



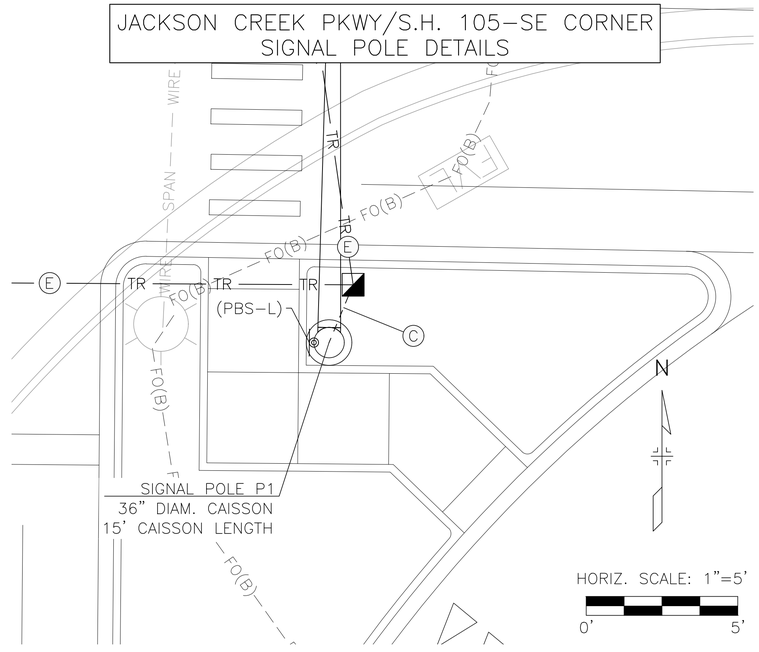
JACKSON CREEK PKWY/S.H. 105–NE CORNER SIGNAL POLE DETAILS



JACKSON CREEK PKWY/S.H. 105–SW CORNER SIGNAL POLE DETAILS



JACKSON CREEK PKWY/S.H. 105–SE CORNER SIGNAL POLE DETAILS



LEGEND

(PBS–R/L = PED PUSH BUTTON STATION WITH R10–3e RIGHT OR LEFT SIGN

- PULL BOX (TYPE 4) (24"X36"X24")
- PULL BOX (TYPE 3) (17"X30"X12")
- —— TR —— TRAFFIC SIGNAL CONDUIT STREET CROSSINGS
- - - - - - - - TRAFFIC SIGNAL CONDUIT PULL BOX CONNECTIONS

SIGNAL CONDUITS

(A)	POWER METER:	1–2"	(TRENCHED)
(B)	CONTROLLER	1–2" AND 4–3"	(TRENCHED)
(C)	SIGNAL POLES	1–2" AND 2–3"	(TRENCHED)
(D)	PUSH BUTTON POST	2–2"	(TRENCHED)
(E)	STREET CROSSINGS	1–2" AND 2–3"	(BORED)

NOTE:
PULL BOX AND CONDUIT LOCATIONS ARE APPROXIMATE ONLY. TO THE EXTENT POSSIBLE, THE CONTRACTOR SHALL INSTALL PULL BOXES OUTSIDE OF SIDEWALK AREAS; HOWEVER, IF PULL BOXES NEED TO BE PLACED WITHIN SIDEWALKS, THEY SHALL BE INSTALLED FLUSH WITH THE FINISHED SURFACE AND THE LIDS SHALL HAVE AN ANTI–SKID SURFACE TREATMENT. PULL BOXES SHALL NOT BE INSTALLED IN ANY CURB RAMPS.

SCHEDULE OF TRAFFIC SIGNAL POLES

TRAFFIC SIGNAL POLE			STAKING LOCATION AND CAISSON DETAILS			
POLE ID	MAST ARM	LUMMINAIRE ARM	NORTHING	EASTING	DIAMETER	DEPTH
P1	35 FT	15 FT ARM	1459419.60	3183115.91	36 IN	15 FT
P2	–	15 FT ARM	1459418.55	3183021.45	36 IN	15 FT
P3	55 FT	15 FT ARM	1459515.01	3182989.04	36 IN	15 FT
P4	30 FT	15 FT ARM	1459514.13	3183107.67	36 IN	15 FT

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PRINT DATE: 05/5/2023 11:25 AM
FILE NAME: T121234–01SIG–PLN02.DWG
HORIZ. SCALE: VARIES VERT. SCALE: N/A

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(R–X)

SHEET REVISIONS

DATE	COMMENTS	INITIALS

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NO. REVISIONS:
REVISED:
VOID:

JACKSON CREEK PARKWAY
TRAFFIC SIGNAL POLE DETAILS
STATE HIGHWAY 105

DESIGNER: BJH
DETAILER: BEN.HARMS
SHEET SUBSET: TRAFFIC
STRUCTURE NUMBERS
SHEET SUBSET: TS–02 OF 2

PROJECT NO./CODE
121234–01

S:\121234–01 – Jackson Creek Parkway\04_CIVIL\CADD\Traffic_ITS\Drawings\105 Signal\T121234–01SIG–PLN02. 5/5/2023 11:25:29 AM. Ben.Harms

Document1.pdf Markup Summary

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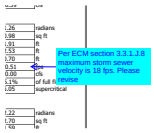

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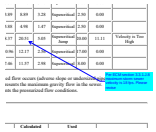
Per ECM section 3.3.1.J.8 maximum storm sewer velocity is 18 fps. Please revise

8/11/2023 12:59:53 PM (1)



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Per ECM section 3.3.1.J.8 maximum storm sewer velocity is 18 fps. Please revise

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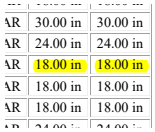

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AR	24.00 in	24.00 in
AR	18.00 in	18.00 in
AR	18.00 in	18.00 in
AR	18.00 in	18.00 in

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Page Label: 97
Author: CDurham
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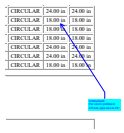

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Author: CDurham
Date: 8/11/2023 1:03:19 PM
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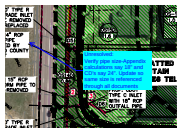
Per storm profiles in CD set, pipe size is 24".

8/11/2023 1:09:23 PM (1)



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Unresolved:
Verify pipe size-Appendix calculations say 18" and CD's say 24". Update so same size is referenced through all documents

8/11/2023 1:09:46 PM (1)

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Date: 8/11/2023 1:09:46 PM
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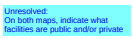
Label ROW & any easements along SH 105

8/11/2023 1:10:53 PM (1)



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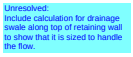
On both maps, indicate what facilities are public and/or private

8/11/2023 1:13:26 PM (1)



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Include calculation for drainage swale along top of retaining wall to show that it is sized to handle the flow.

8/11/2023 1:30:46 PM (1)

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UPDATE THIS SHEET AS APPLICABLE

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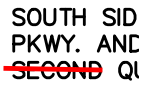

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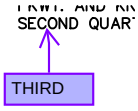

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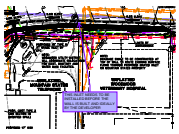
THIRD

8/11/2023 1:56:42 PM (1)



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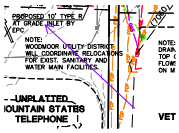
THIS INLET NEEDS TO BE INSTALLED BEFORE THE WALL IS BUILT AND IDEALLY BY THE DEVELOPER

8/11/2023 1:57:05 PM (1)



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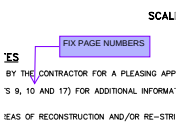

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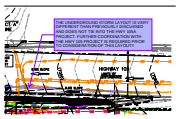
FIX PAGE NUMBERS

8/11/2023 2:30:17 PM (1)



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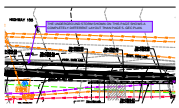
Page Label: [1] LAYOUT1
Author: EPCDPW-Werre
Date: 8/11/2023 2:30:17 PM
Status:
Color:
Layer:
Space:

THE UNDERGROUND STORM LAYOUT IS VERY DIFFERENT THAN PREVIOUSLY DISCUSSED AND DOES NOT TIE INTO THE HWY 105A PROJECT. FURTHER COORDINATION WITH THE HWY 105 PROJECT IS REQUIRED PRIOR TO CONSIDERATION OF THIS LAYOUT!!

8/11/2023 2:30:56 PM (1)



Subject: Callout
Page Label: [1] LAYOUT1
Author: EPCDPW-Werre
Date: 8/11/2023 2:30:56 PM
Status:
Color:
Layer:
Space:

THE UNDERGROUND STORM SHOWN ON THIS PAGE SHOWS A COMPLETELY DIFFERENT LAYOUT THAN PAGE 5- GEC PLAN.

8/11/2023 2:32:05 PM (1)

Subject: Callout
Page Label: [1] SI-01
Author: EPCDPW-Werre
Date: 8/11/2023 2:32:05 PM
Status:
Color:
Layer:
Space:

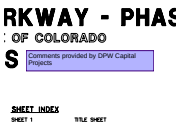
THE UNDERGROUND STORM LAYOUT IS VERY DIFFERENT THAN PREVIOUSLY DISCUSSED AND DOES NOT TIE INTO THE HWY 105A PROJECT. FURTHER COORDINATION WITH THE HWY 105 PROJECT IS REQUIRED PRIOR TO CONSIDERATION OF THIS LAYOUT AND DETERMINATION OF RESPONSIBILITIES!!

8/11/2023 2:38:36 PM (1)

Subject: Callout
Page Label: [1] STORM-1
Author: EPCDPW-Werre
Date: 8/11/2023 2:38:36 PM
Status:
Color:
Layer:
Space:

THE UNDERGROUND STORM LAYOUT IS VERY DIFFERENT THAN PREVIOUSLY DISCUSSED AND DOES NOT TIE INTO THE HWY 105A PROJECT. FURTHER COORDINATION WITH THE HWY 105 PROJECT IS REQUIRED PRIOR TO CONSIDERATION OF THIS LAYOUT AND DETERMINATION OF RESPONSIBILITIES!!

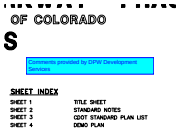
8/14/2023 8:28:34 AM (1)



Subject: Text Box
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 8:28:34 AM
Status:
Color:
Layer:
Space:

Comments provided by DPW Capital Projects

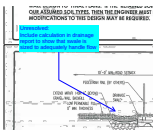
8/14/2023 8:28:46 AM (1)



Subject: Text Box
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 8:28:46 AM
Status:
Color:
Layer:
Space:

Comments provided by DPW Development Services

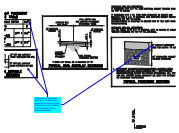
8/14/2023 9:21:12 AM (1)



Subject: Callout
Page Label: [1] LAYOUT2
Author: CDurham
Date: 8/14/2023 9:21:12 AM
Status:
Color:
Layer:
Space:

Unresolved:
Include calculation in drainage report to show that swale is sized to adequately handle flow

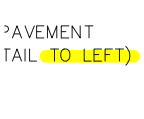
8/14/2023 9:25:46 AM (1)



Subject: Callout
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:25:46 AM
Status:
Color:
Layer:
Space:

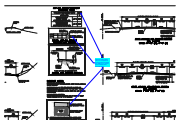
Pavement section detail calls for 6" of asphalt but pavement section lift detail only adds up to 5". Please revise so details show same information.

8/14/2023 9:27:14 AM (1)



Subject: Highlight
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:27:14 AM
Status:
Color:
Layer:
Space:

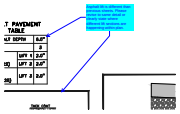
8/14/2023 9:27:39 AM (1)



Subject: Callout
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:27:39 AM
Status:
Color:
Layer:
Space:

Pavement section detail calls for 6" of asphalt but pavement section lift detail only adds up to 5". Please revise so details show same information.

8/14/2023 9:29:31 AM (1)



Subject: Callout
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:29:31 AM
Status:
Color:
Layer:
Space:

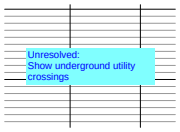
Asphalt lift is different than previous sheets. Please revise to same detail or clearly state where different lift sections are happening within plan.

8/14/2023 9:29:50 AM (1)

Subject: Callout
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:29:50 AM
Status:
Color:
Layer:
Space:

Asphalt lift is different than previous sheets. Please revise to same detail or clearly state where different lift sections are happening within plan.

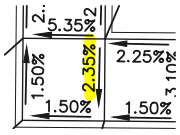
8/14/2023 9:32:29 AM (1)



Subject: Text Box
Page Label: [1] SI-01
Author: CDurham
Date: 8/14/2023 9:32:29 AM
Status:
Color:
Layer:
Space:

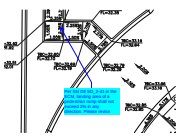
Unresolved:
Show underground utility crossings

8/14/2023 9:39:09 AM (1)



Subject: Highlight
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:39:09 AM
Status:
Color:
Layer:
Space:

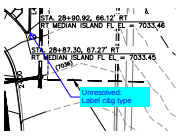
8/14/2023 9:40:17 AM (1)



Subject: Callout
Page Label: [1] Layout1
Author: CDurham
Date: 8/14/2023 9:40:17 AM
Status:
Color:
Layer:
Space:

Per Std Dtl SD_2-41 in the ECM, landing area of a pedestrian ramp shall not exceed 2% in any direction. Please revise

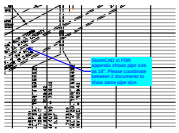
8/14/2023 9:41:38 AM (1)



Subject: Callout
Page Label: [1] SI-04
Author: CDurham
Date: 8/14/2023 9:41:38 AM
Status:
Color:
Layer:
Space:

Unresolved:
Label c&g type

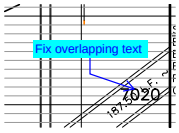
8/14/2023 9:58:30 AM (1)



Subject: Callout
Page Label: [1] STORM-1
Author: CDurham
Date: 8/14/2023 9:58:30 AM
Status:
Color:
Layer:
Space:

StormCAD in FDR appendix shows pipe size as 18". Please coordinate between 2 documents to show same pipe size.

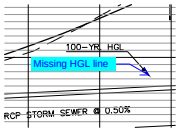
8/14/2023 9:59:29 AM (1)



Subject: Callout
Page Label: [1] STORM-1
Author: CDurham
Date: 8/14/2023 9:59:29 AM
Status:
Color:
Layer:
Space:

Fix overlapping text

8/14/2023 9:59:46 AM (1)



Subject: Callout
Page Label: [1] STORM-1
Author: CDurham
Date: 8/14/2023 9:59:46 AM
Status:
Color:
Layer:
Space:

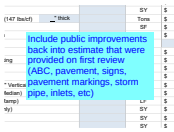
Missing HGL line

8/14/2023 10:56:31 AM (1)

Subject: Callout
Page Label: 62
Author: CDurham
Date: 8/14/2023 10:56:31 AM
Status:
Color:
Layer:
Space:

Unresolved:
Per road profiles in CD set, street slope is approximately 5.5%

8/14/2023 11:01:42 AM (1)



Subject: Text Box
Page Label: 1
Author: CDurham
Date: 8/14/2023 11:01:42 AM
Status:
Color:
Layer:
Space:

Include public improvements back into estimate that were provided on first review (ABC, pavement, signs, pavement markings, storm pipe, inlets, etc)