

LATIGO TRAILS - FILING NO. 9

A PARCEL OF LAND LOCATED IN THE SOUTH QUARTER OF SECTION S17 TOWNSHIP 12 SOUTH, RANGE 64 WEST OF P.M., EL PASO COUNTY, STATE OF COLORADO

PUBLIC UTILITY PLAN

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS

- 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.
- 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).
- CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOIL AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
 - EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
 - CITY OF COLORADO SPRINGS/ EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
 - COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS AND BRIDGE CONSTRUCTION
 - CDOT M&S STANDARDS
- 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 VERSIONS 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.
- 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.
- CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES 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.
- 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.
- 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.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
- SIGHT VISIBILITY TRIANGLES ARE IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED IN SIGHT TRIANGLES.
- SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS AND MUTCD CRITERIA.
- 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.
- 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.
- ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.

ABBREVIATIONS

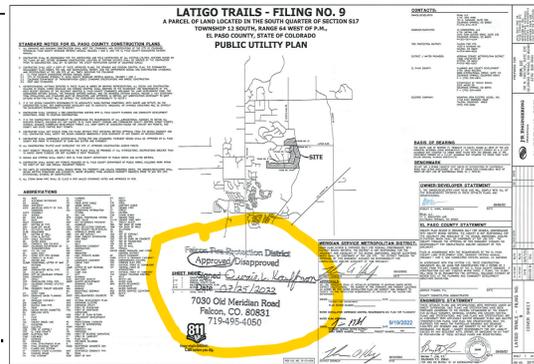
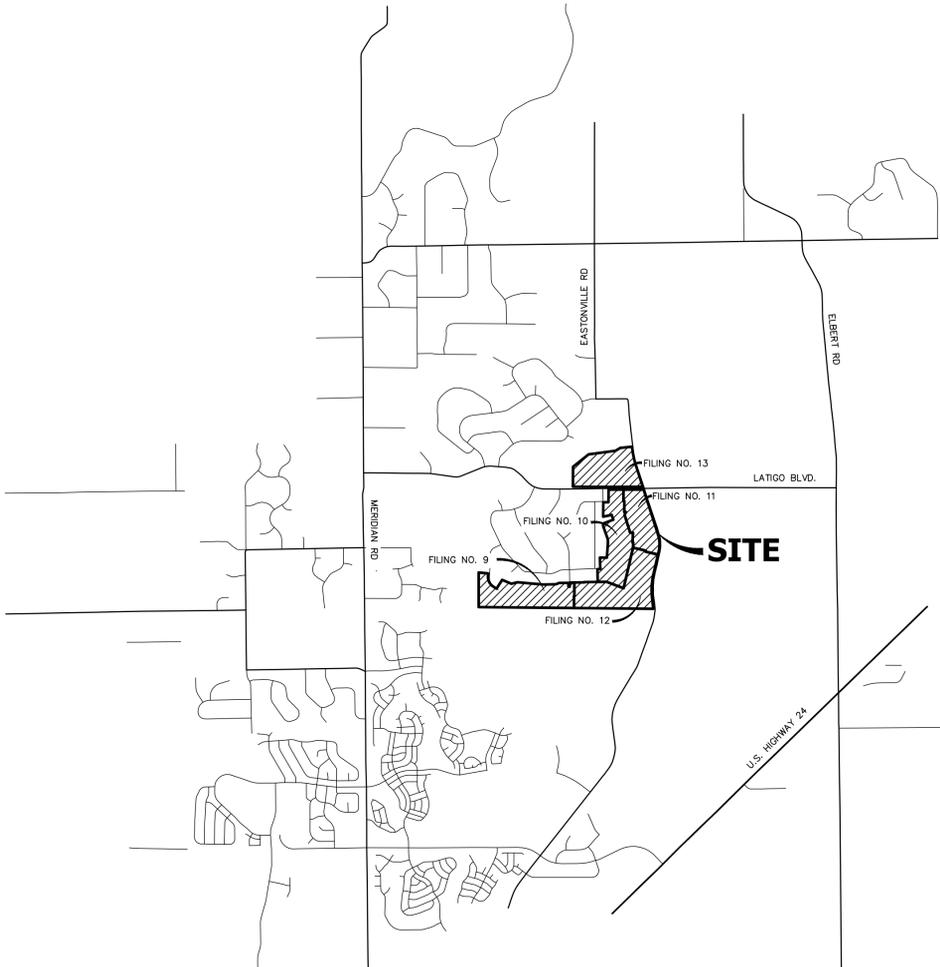
AC	ACRE	FL	FLOWLINE	RT	RIGHT
AD	ALGEBRAIC DIFFERENCE	FIL	FILING	S	SOUTH
AH	AHEAD	FO	FIBER OPTIC CABLE	STE	STEEL
ARCH	ARCHITECT	GB	GRADE BREAK	SAN	SANITARY SEWER
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	GE	GAS EASEMENT	SF	SQUARE FOOT
ASSY	ASSEMBLY	GIS	GEOGRAPHIC INFORMATION SYSTEM	ST	STREET
AVE	AVENUE	QL	QUANTITY	STA	STATION
BB	BOX BASE	GPS	GLOBAL POSITIONING SYSTEM	STM	STORM SEWER
BK	BACK	GV	GATE VALVE	SY-IN	SQUARE YARD INCH
BNDY	BOUNDARY	HBP	HOT BITUMINOUS PAVEMENT	TB	THRUST BLOCK
BOP	BOTTOM OF PIPE	HC	HANDICAP	TBC	TOP BACK OF CURB
BOV	BLOW OFF VALVE	HDC	HIGH DEFLECTION COUPLING	TBW	TOP BACK OF WALK
BFV	BUTTERFLY VALVE	HDPE	HIGH DENSITY POLYETHYLENE	TEL	TELEPHONE
BLVD	BOULEVARD	HGL	HYDRAULIC GRADE LINE	TN	TON
BW	BOTTOM OF WALL	HMA	HOT MIX ASPHALT	TOA	TOP OF ASPHALT
C&G	CURB & GUTTER	HOA	HOME OWNERS ASSOCIATION	TOB	TOP OF BOX
CTV	CABLE TELEVISION	HP	HIGH POINT	TOC	TOP OF CURB OR CONCRETE
CB	CATCH BASIN	HR	HOUR	TOF	TOP OF FOUNDATION
CBC	CONCRETE BOX CULVERT	I	INLET	TOP	TOP OF PIPE
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION	IE	IRRIGATION EASEMENT	TW	TOP OF WALL
CDS	CUL-DE-SAC	INT	INTERSECTION	TYP	TYPICAL
CF	CUBIC FOOT	IRR	IRRIGATION	UDFCD	URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CFS	CUBIC FEET PER SECOND	KB	KICK (THRUST) BLOCK	UE	UTILITY EASEMENT
CL	COMPLETE IN PLACE	LB	LOAD	U&DE	UTILITY & DRAINAGE EASEMENT
CLP	CENTER LINE	LE	LANDSCAPE EASEMENT	UGE	UNDERGROUND ELECTRIC
CLOMR	CONDITIONAL LETTER OF MAP REVISION	LF	LINEAR FOOT	VCP	VITRIFIED CLAY PIPE
CLR	CLEAR	LN	LANE	VPC	VERTICAL POINT OF CURVATURE
CLM	CORRUGATED METAL PIPE	LOMR	LETTER OF MAP REVISION	VPI	VERTICAL POINT OF INTERSECTION
CO	CLEAN OUT	LP	LOW POINT	VPT	VERTICAL POINT OF TANGENCY
COS	CITY OF COLORADO SPRINGS	LS	LUMP SUM	VTC	VEHICLE TRACKING CONTROL
CONC	CONCRETE	LT	LET	W	WEST
CR	CIRCLE	M/D	MAXIMUM DENSITY	WL	WATER LINE
CSP	CORRUGATED STEEL PIPE	MDP	MASTER DEVELOPMENT	WM	WATER MAIN
CSU	COLORADO SPRINGS UTILITIES	MDP	MASTER DEVELOPMENT	WRD	WATER RESOURCES DEPARTMENT
CT	COURT	MH	MANHOLE	WS	WATER SURFACE
CTRB	CONCRETE THRUST REDUCER	MS	MINIMUM	WSE	WATER SURFACE ELEVATION
CY	CUBIC YARD	N	NORTH	WTR	WATER
DBPS	DRAINAGE BASIN PLANNING STUDY	NRCP	NORTH-REINFORCED CONCRETE PIPE	YR	YEAR
DE	DRAINAGE EASEMENT	ODP	OFFICIAL DEVELOPMENT PLAN		
DIA	DIAMETER	OHE	OVERHEAD ELECTRIC		
DIR	DUCTILE IRON PIPE	OHU	OVERHEAD UTILITY		
DR	DRIVE	PC	POINT OF CURVATURE		
DRG	DESIGN REVIEW COMMITTEE	PCD	POINT OF COMPOUND CURVATURE		
DY	DWELLING UNITS	PCR	POINT OF CURB RETURN		
DU	DAY	PDP	PRELIMINARY DEVELOPMENT PLAN		
E	EAST	PE	PROFESSIONAL ENGINEER		
EAL	EDGE OF ASPHALT	PI	POINT OF INTERSECTION		
EGL	ENERGY GRADE LINE	PKWY	PARKWAY		
EL	ELEVATION	PL	PROPERTY LINE		
ELEC	ELECTRIC	PR	PROPOSED		
EOA	EDGE OF ASPHALT	PRC	POINT OF REVERSE CURVATURE		
EPC	EL PASO COUNTY	PT	POINT OF TANGENCY		
ERCP	ELLIPTICAL RCP	PV	PLUG VALVE		
ESMT	EASEMENT	PVC	POLYVINYL CHLORIDE		
EST	ESTIMATE	R	RADIUS		
EX	EXISTING	RCBC	REINFORCED CONCRETE BOX CULVERT		
FD	FINAL DEVELOPMENT PLAN	RCP	REINFORCED CONCRETE PIPE		
FDR	FINAL DRAINAGE REPORT	RD	ROAD		
FES	FLARED END SECTION	ROW	RIGHT OF WAY		
FF	FINISHED FLOOR ELEVATION				
FG	FINISHED GRADE				
FH	FIRE HYDRANT				

SHEET INDEX

1	-	COVER SHEET
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4	-	OVERALL UTILITY PLAN
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8-9	-	DETAILS
9	-	TOTAL SHEETS



Know what's below.
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PCD FILE NO. SF-21-036

CONTACTS:

OWNER/DEVELOPER:	BRJM, LLC ATTN: BOB IRWIN 101 N. CASCADE, SUITE 200 COLORADO SPRINGS, CO 80903 P~719-475-7474
ENGINEER/SURVEYOR:	JR ENGINEERING, LLC ATTN: BRYAN LAW 5475 TECH CENTER DRIVE, SUITE 235 COLORADO SPRINGS, CO 80919 P~303-267-6254
FIRE PROTECTION DISTRICT:	FALCON FIRE FPD 7030 N MERIDIAN RD FALCON, CO 80831 P~719-494-4050
DISTRICT / WATER PROVIDER:	MERIDIAN SERVICE METROPOLITAN DISTRICT 11886 STAPLETON DR PEYTON, CO 80831 P~719-495-6567
EL PASO COUNTY:	PLANNING AND COUNTY DEVELOPMENT ATTN: BRAD WALTERS 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, COLORADO 80910 P ~ (719) 520-6819
	DEPARTMENT OF PUBLIC WORKS 3257 AKERS DR COLORADO SPRINGS, CO 80910 P ~ (719) 529-6460
ELECTRIC COMPANY:	MOUNTAIN VIEW ELECTRIC ASSOC., INC. 11140 EAST WOODMEN ROAD FALCON, COLORADO 80831 (719) 495-2283

BASIS OF BEARING

THE SOUTH LINE OF SECTION 17, TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM CAP STAMPED "LS 24964 2000" FLUSH WITH THE GROUND AND AT THE SOUTHWEST CORNER BY A 2-1/2" ALUMINUM CAP STAMPED "LS 25955 1996" 0.35" BELOW GROUND, BEARING N89°25'55"W.

BENCHMARK

PP-07: NO. 4 REBAR LOCATED 1615' SOUTH OF INTERSECTION OF EASTONVILLE ROAD AND LATIGO BOULEVARD. 19' WEST OF 28508.7293/18266.5893, WEST OF RIGHT-OF-WAY LINE OF EASTONVILLE ROAD. EL = 7076.92

OWNER/DEVELOPER STATEMENT

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

ROBERT C. IRWIN, MANAGER DATE 09/09/22

BRJM, LLC
17 S. WAHSATCH AVE.
COLORADO SPRINGS, CO 80903

EL PASO COUNTY STATEMENT

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 EOM 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 DIRECTORS DISCRETION.

Approved

By: **Gilbert LaForce, P.E.**
Engineering Manager
Date: 08/16/2023 5:19:49 PM

JOSHUA PALMER, P.E.
COUNTY ENGINEER/ECM ADM El Paso County Department of Public Works

ENGINEER'S STATEMENT

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT 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 PLAN 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 CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

BRYAN T. LAW, P.E.
COLORADO P.E. 25043
FOR AND ON BEHALF OF JR ENGINEERING, LLC DATE 09/09/22

MERIDIAN SERVICE METROPOLITAN DISTRICT:

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

Shirley G. [Signature] DATE 09/19/2022
DISTRICT ENGINEER

APPROVALS

ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO MERIDIAN RANCH METRO DISTRICT SPECIFICATIONS. THE NUMBER OF FIRE HYDRANTS AND HYDRANT LOCATIONS AS SHOWN ON THIS WATER INSTALLATION PLAN ARE CORRECT AND ADEQUATE TO SATISFY THE FIRE PROTECTION REQUIREMENTS AS SPECIFIED BY THE FALCON FIRE DEPARTMENT.

SIGNED _____ DATE _____
FALCON FIRE DEPARTMENT
PLAN REVIEW NUMBER: _____

WATER INSTALLATION CORROSION CONTROL REQUIREMENTS: SEE PLAN FOR PLACEMENT

WATER PLAN APPROVAL
SIGNED *J. [Signature]* DATE 9/19/2022

MERIDIAN SERVICE METRO DISTRICT
WORK ORDER NUMBER: N/A PROJECT NUMBER: N/A

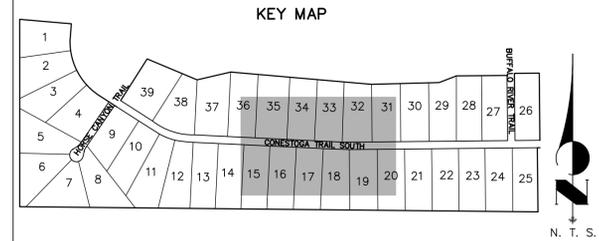
Shirley G. [Signature] DATE 09/19/2022
DISTRICT ENGINEER

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, OR ENGINEERING APPROVES THEIR USE, THESE DRAWINGS ARE DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
BRJM, LLC
101 N. CASCADE, SUITE 200
COLORADO SPRINGS, CO 80903
ATTN: BOB IRWIN
P~(719)-475-7474

J.R. ENGINEERING
A Western Company
Central 303-740-9888 • Colorado Springs 719-588-2583
Fort Collins 970-491-9888 • www.jrengineering.com

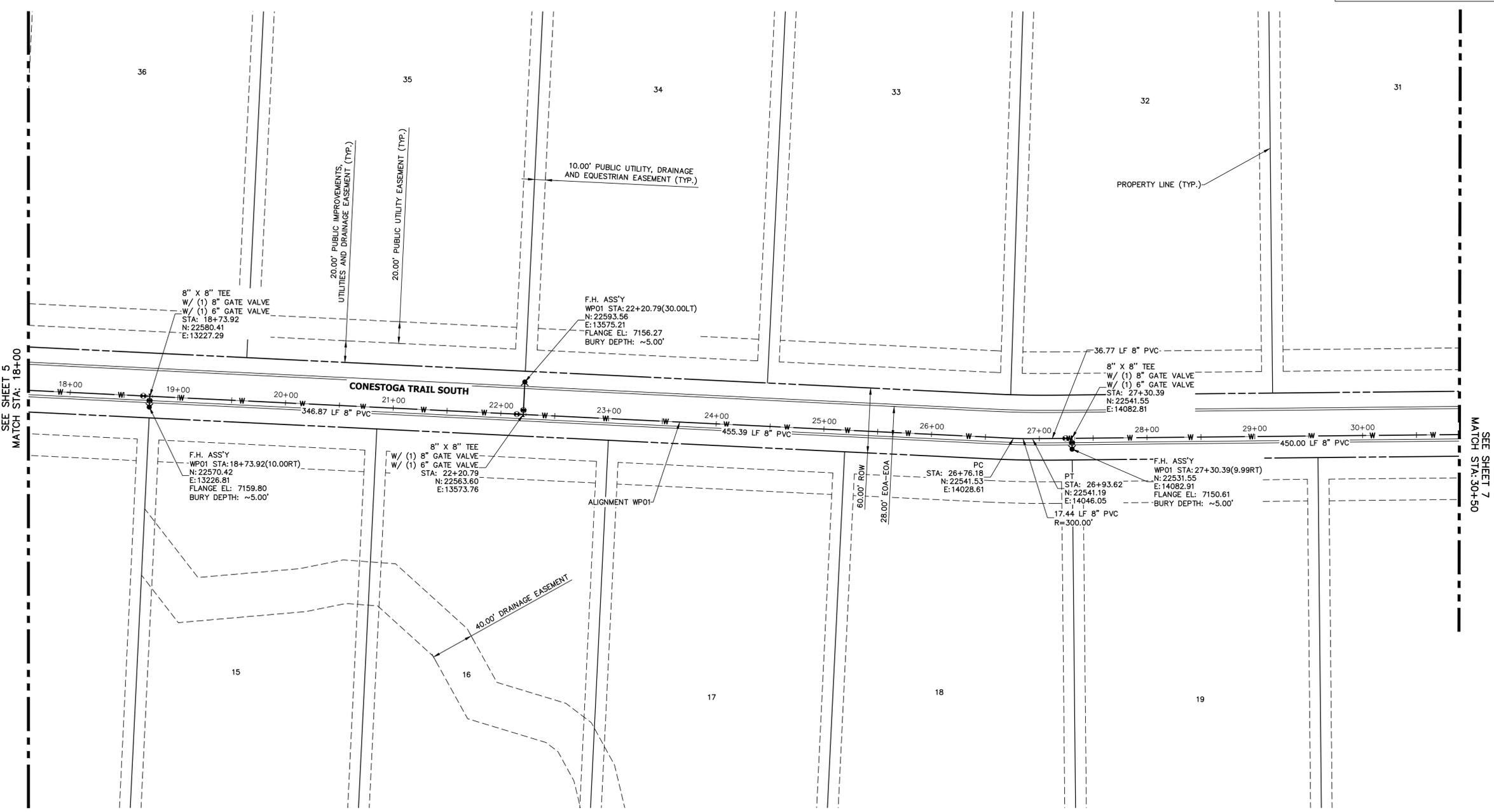
BY	DATE								
	REVISION	No.							
H-SCALE	N/A								
	V-SCALE	N/A							
DATE	09/07/22								
DESIGNED BY	QNL								
DRAWN BY	QNL								
CHECKED BY									
LATIGO TRAILS - FILING NO.	9								
COVER SHEET									
SHEET	1	OF	9						
JOB NO.	25175.02								



UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, OR ENGINEERING APPROVES THEIR USE, THESE DRAWINGS ARE DESIGNATED BY WRITTEN AUTHORIZATION.

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- WATER PIPE NOTES**
1. ALL WATER LINES ARE OWNED AND MAINTAINED BY MERIDIAN SERVICE METROPOLITAN DISTRICT (MSMD) UNLESS OTHERWISE NOTED.
 2. ALL CURVILINEAR PIPE MUST BE ACCOMPLISHED BY HIGH DEFLECTION COUPLERS.
 3. ALL HORIZONTAL BENDS, TEES, AND CROSSES REQUIRE CONCRETE THRUST REACTION BLOCKS (CTRB). SEE CSU DETAILS A4-2 AND A4-3.
 4. ALL HORIZONTAL AND VERTICAL DEFLECTIONS TO BE ACCOMPLISHED WITH HIGH DEFLECTION (HD) COUPLINGS.
 5. ALL VERTICAL BENDS REQUIRE MECHANICAL JOINT RESTRAINTS (MJR). SEE CSU DETAIL A4-4.
 6. SEE FIRE HYDRANT DETAIL DEPICTING THE PLACEMENT ON SHEET 9.

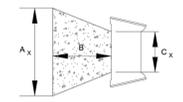
THE LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE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

ENGINEER'S STATEMENT
 PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING
 [Signature]
 25043
 09/09/22
 BRYAN T. LAW, P.E.
 COLORADO P.E. 25043
 FOR AND ON BEHALF OF JR ENGINEERING, LLC

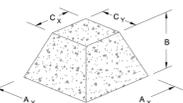
LATIO TRAILS - FILING NO. 9	WATER DISTRIBUTION PLAN	DESIGNED BY	QNL
		DRAWN BY	QNL
SHEET 6 OF 9	JOB NO. 25175.02		

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THRUST BLOCK DIMENSIONS and VOLUMES - PVC & DIP 250 psi									
MAN SIZE (IN)	TYPE OF FITTING	MINIMUM BEARING SURFACE AREA (FT ²)	MINIMUM A ₁ (IN)	MINIMUM A ₂ (IN)	MINIMUM C ₁ (IN)	MINIMUM C ₂ (IN)	MINIMUM R (IN)	APPROXIMATE VOLUME (CU FT)	APPROXIMATE VOLUME (CU YD)
4	11.25° BEND	1.00	1.00	1.00	0.25	0.33	2.00	0.25	
4	22.5° BEND	2.00	1.41	1.41	0.21	0.33	2.00	0.25	
4	45° BEND	3.50	1.87	1.87	0.42	0.33	2.00	0.25	
4	TEE & DEAD END	4.75	2.18	2.18	0.87	0.33	2.00	0.25	
6	11.25° BEND	2.00	1.41	1.41	0.25	0.30	2.00	0.25	
6	22.5° BEND	3.75	1.84	1.84	0.30	0.30	2.00	0.25	
6	45° BEND	7.25	2.69	2.69	0.58	0.30	2.00	0.25	
6	TEE & DEAD END	9.50	3.08	3.08	0.83	0.30	2.00	0.25	
8	11.25° BEND	3.25	1.80	1.80	0.34	0.47	2.00	0.25	
8	22.5° BEND	6.50	2.55	2.55	0.48	0.47	2.00	0.25	
8	45° BEND	12.50	3.07	3.07	0.87	0.47	2.00	0.25	
8	TEE & DEAD END	16.25	4.64	4.64	1.08	0.47	2.00	0.25	



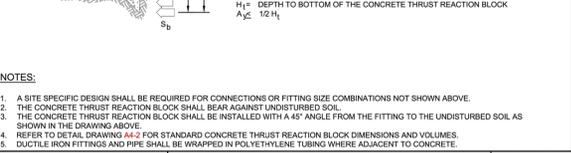
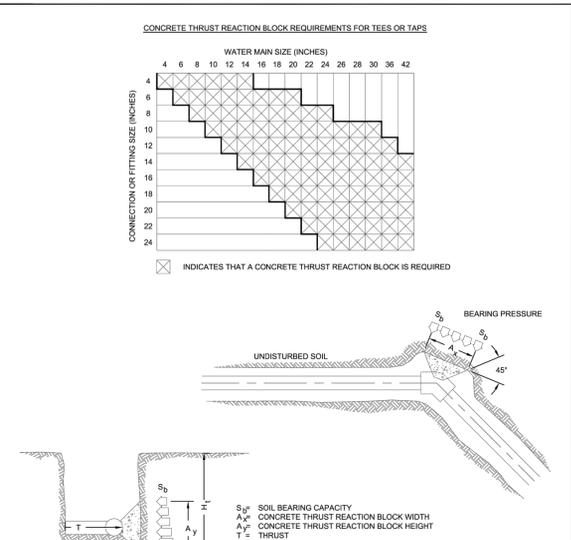
THRUST BLOCK DIMENSIONS and VOLUMES - PVC (Maximum Static Pressure = 170 psi)									
MAN SIZE (IN)	TYPE OF FITTING	MINIMUM BEARING SURFACE AREA (FT ²)	MINIMUM A ₁ (IN)	MINIMUM A ₂ (IN)	MINIMUM C ₁ (IN)	MINIMUM C ₂ (IN)	MINIMUM R (IN)	APPROXIMATE VOLUME (CU FT)	APPROXIMATE VOLUME (CU YD)
12	11.25° BEND	4.75	2.18	2.18	0.43	1.00	2.00	0.25	
12	22.5° BEND	9.25	3.04	3.04	0.64	1.00	2.00	0.25	
12	45° BEND	18.50	4.82	4.82	1.00	1.00	2.00	0.25	
12	TEE & DEAD END	23.50	6.42	6.42	1.48	1.00	2.48	1.00	
16	11.25° BEND	6.50	2.83	2.83	0.44	1.33	2.00	0.50	
16	22.5° BEND	13.00	4.27	4.27	0.66	1.33	2.00	0.75	
16	45° BEND	21.00	5.07	5.07	1.00	1.33	2.44	1.00	
16	TEE & DEAD END	26.50	6.86	6.86	1.33	1.33	2.44	1.00	



THRUST BLOCK DIMENSIONS and VOLUMES - DIP (Maximum Static Pressure = 250 psi)									
MAN SIZE (IN)	TYPE OF FITTING	MINIMUM BEARING SURFACE AREA (FT ²)	MINIMUM A ₁ (IN)	MINIMUM A ₂ (IN)	MINIMUM C ₁ (IN)	MINIMUM C ₂ (IN)	MINIMUM R (IN)	APPROXIMATE VOLUME (CU FT)	APPROXIMATE VOLUME (CU YD)
12	11.25° BEND	4.75	2.09	2.09	0.43	1.00	2.00	0.25	
12	22.5° BEND	9.25	3.06	3.06	0.64	1.00	2.00	0.25	
12	45° BEND	18.25	4.77	4.77	1.00	1.00	2.00	0.25	
12	TEE & DEAD END	24.25	6.36	6.36	1.48	1.00	2.48	1.00	
16	11.25° BEND	6.50	2.83	2.83	0.44	1.33	2.00	0.50	
16	22.5° BEND	13.00	4.27	4.27	0.66	1.33	2.00	0.75	
16	45° BEND	21.00	5.07	5.07	1.00	1.33	2.44	1.00	
16	TEE & DEAD END	26.50	6.87	6.87	1.33	1.33	2.44	1.00	

NOTES:
 1. THE MINIMUM BEARING SURFACE AREAS SHOWN ARE BASED ON A MAX STATIC PIPE PRESSURE OF 170/250 POUNDS PER SQUARE INCH PLUS A SAFETY FACTOR OF 1.5 AND AN ALLOWABLE SOIL BEARING CAPACITY OF 1500 POUNDS PER SQUARE FOOT. BEARING SURFACE AREA IS ROUNDED UP TO THE NEAREST 0.25 SQUARE FEET. REFERENCE DRAWINGS A4-2 AND A4-1.
 2. THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING ASSUMPTIONS BASED ON ACTUAL SITE CONDITIONS. IF SITE CONDITIONS VARY FROM THE ASSUMPTIONS THE DESIGN ENGINEER SHALL PROVIDE A SITE SPECIFIC DESIGN IN ACCORDANCE WITH AWWA M20, PVC PIPE - DESIGN AND INSTALLATION AND AWWA M41, DUCTILE-IRON PIPE AND FITTINGS. SITE SPECIFIC DESIGNS INCLUDING GEOTECHNICAL INFORMATION SHALL BE SUBMITTED TO COLORADO SPRINGS UTILITIES FOR REVIEW.
 3. THE MINIMUM BEARING SURFACE AREA AND APPROXIMATE VOLUME OF CONCRETE SHALL BE SHOWN ON THE CONSTRUCTION PLANS FOR ALL CONCRETE THRUST BLOCKS.
 4. THE APPROXIMATE VOLUMES SHOWN ARE BASED ON THE MINIMUM BEARING SURFACE AREA AND THE MINIMUM TRENCH DIMENSIONS. THE APPROXIMATE VOLUME IS FOR REFERENCE ONLY.
 5. THESE CHARTS MAY ONLY BE USED IF THE BLOCK HEIGHT (H) IS EQUAL TO OR LESS THAN ONE HALF THE TOTAL DEPTH (D) FROM THE FINISHED GRADE TO THE BOTTOM OF THE BLOCK.
 6. A SITE SPECIFIC DESIGN SHALL BE REQUIRED FOR PIPES LARGER THAN 18 INCHES OR MAX STATIC PIPE PRESSURES GREATER THAN 250 POUNDS PER SQUARE INCH. THE DESIGN ENGINEER HAS THE OPTION OF PROVIDING A SITE SPECIFIC DESIGN FOR PIPES SMALLER THAN 18 INCHES OR MAX STATIC PRESSURES LESS THAN 250 POUNDS PER SQUARE INCH.
 7. ALL CALCULATIONS SHALL BE PROVIDED TO COLORADO SPRINGS UTILITIES FOR REVIEW.

Colorado Springs Utilities
 CONCRETE THRUST REACTION BLOCKS
 A4-2
 DATED 03/2014



NOTES:
 1. A SITE SPECIFIC DESIGN SHALL BE REQUIRED FOR CONNECTIONS OR FITTING SIZE COMBINATIONS NOT SHOWN ABOVE.
 2. THE CONCRETE THRUST REACTION BLOCK SHALL BEAR AGAINST UNDISTURBED SOIL.
 3. THE CONCRETE THRUST REACTION BLOCK SHALL BE INSTALLED WITH A 45° ANGLE FROM THE FITTING TO THE UNDISTURBED SOIL AS SHOWN IN THE DRAWING ABOVE.
 4. REFER TO DETAIL DRAWING A4-2 FOR STANDARD CONCRETE THRUST REACTION BLOCK DIMENSIONS AND VOLUMES.
 5. DUCTILE IRON FITTINGS AND PIPE SHALL BE WRAPPED IN POLYETHYLENE TUBING WHERE ADJACENT TO CONCRETE.

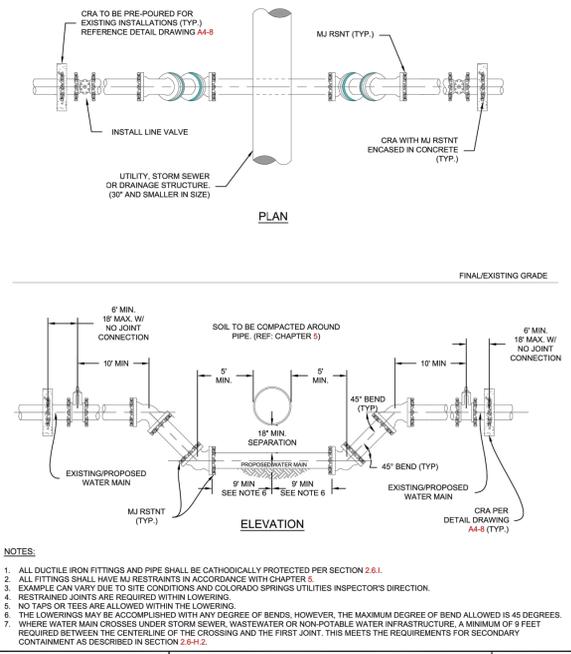
Colorado Springs Utilities
 CONCRETE THRUST REACTION BLOCKS
 A4-3
 DATED 03/2014

L = MINIMUM RESTRAINED PIPE LENGTH (FEET)				
PIPE DIAMETER	45° BEND	22-1/2° BEND	11-1/4° BEND	DEAD END VALVE OR PLUG TO INCLUDE IN LINE VALVES (SEE NOTE 9)
6 INCH DUCTILE IRON AND PVC	6	9	12	3
8 INCH DUCTILE IRON AND PVC	8	12	16	4
12 INCH DUCTILE IRON AND PVC	12	17	23	6
16 INCH DUCTILE IRON AND PVC	15	22	29	7
20 INCH DUCTILE IRON AND PVC	18	26	35	9
24 INCH DUCTILE IRON AND PVC	20	30	40	10
30 INCH DUCTILE IRON AND PVC	24	36	48	12
36 INCH DUCTILE IRON AND PVC	28	42	56	14

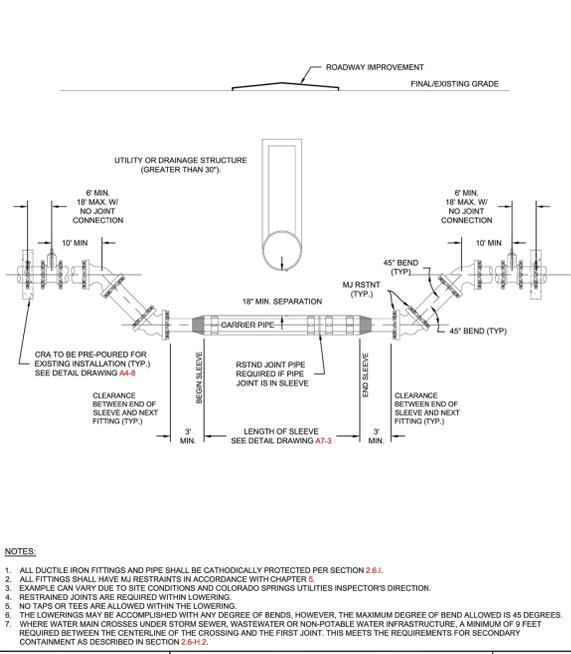


NOTES:
 1. PRESSURE GREATER THAN 200 PSI REQUIRE SPECIAL DESIGN APPROVED BY SPRINGS UTILITIES. APPROVED BY COLORADO SPRINGS UTILITIES.
 2. LENGTH IS BASED ON MINIMUM 6 FEET OF GRADE COVER AND SOIL COMPACTED TO CONDITIONS OF THESE WATER LINES. IF THE DEPTH IS LESS THAN 6 FEET RESTRAINED LENGTH MUST BE DESIGNED BY THE DESIGN ENGINEER.
 3. APPROVED METHODS OF RESTRAINED PIPE BEYOND INITIAL FITTING SHALL BE IN ACCORDANCE WITH CHAPTER 4.
 4. RESTRAINED PIPE LENGTH APPLIES TO CONDITIONS WHERE NO CONCRETE THRUST REACTION BLOCK IS PRESENT.
 5. CALCULATIONS ARE BASED ON A POORLY GRADED SANDS, GRAVEL AND GRAVEL-SAND MIXTURE, LITTLE OR NO FINES, TYPE 4 BEDDING CONDITIONS - PIPE BEDDED IN SAND, GRAVEL OR CRUSHED STONE TO A DEPTH OF 18 PIPE DIAMETER (4" MIN.), FACTOR OF SAFETY 2.1.
 6. FIGURES ARE BASED ON DIP WRAPPED IN POLYETHYLENE MATERIAL.
 7. MEASUREMENTS ARE IN FEET.
 8. USE CRA FOR DOWN TURNING BENDS.
 9. RESTRAINED LENGTH FOR DEAD END MAY BE USED AT THE DISCRETION OF COLORADO SPRINGS UTILITIES.

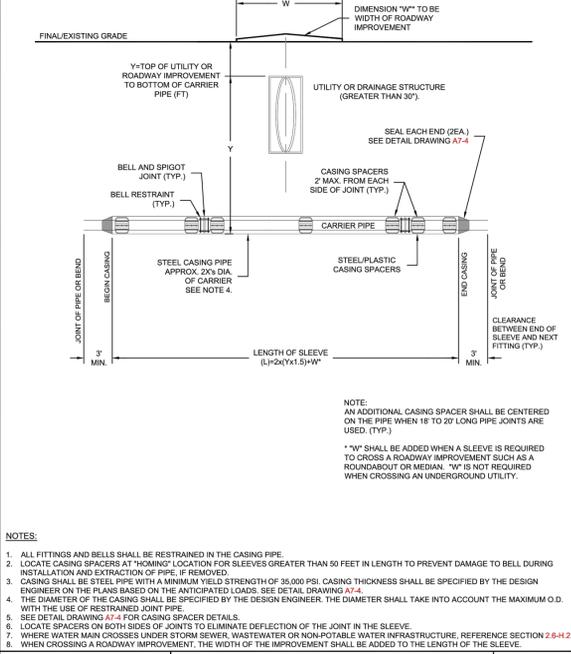
Colorado Springs Utilities
 RESTRAINED PIPE LENGTH (FEET) W/MECHANICAL JOINT RESTRAINTS
 A4-4
 DATED 03/2014



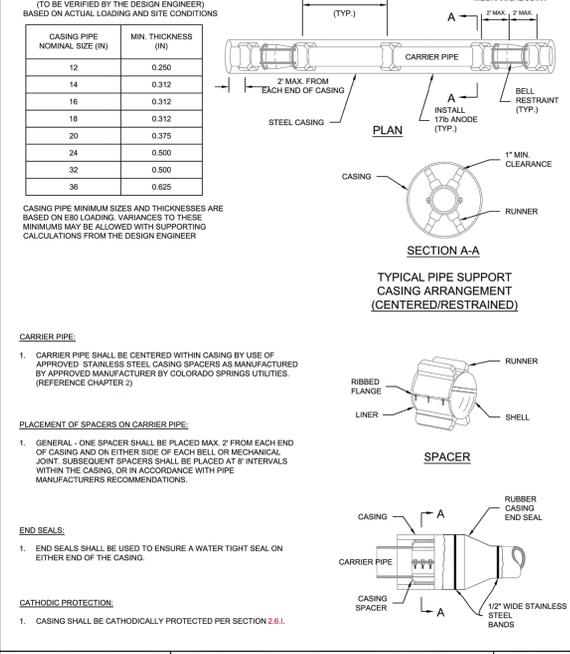
Colorado Springs Utilities
 LOWERING DETAIL UTILITY CROSSING 30° & SMALLER
 A7-1
 DATED 06/2020



Colorado Springs Utilities
 LOWERING DETAIL W/CASING UTILITY CROSSING GREATER THAN 30°
 A7-2
 DATED 06/2020



Colorado Springs Utilities
 TYPICAL STEEL CASING INSTALLATION
 A7-3
 DATED 06/2015



Colorado Springs Utilities
 TYPICAL STEEL CASING INSTALLATION
 A7-4
 DATED 06/2015

Colorado Springs Utilities
 LOWERING DETAIL UTILITY CROSSING 30° & SMALLER
 A7-1
 DATED 06/2020

Colorado Springs Utilities
 LOWERING DETAIL W/CASING UTILITY CROSSING GREATER THAN 30°
 A7-2
 DATED 06/2020

Colorado Springs Utilities
 TYPICAL STEEL CASING INSTALLATION
 A7-3
 DATED 06/2015

Colorado Springs Utilities
 TYPICAL STEEL CASING INSTALLATION
 A7-4
 DATED 06/2015

PREPARED FOR
 UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE AGENCIES, OR ENGINEERING APPROVES THEIR USE. THESE DRAWINGS ARE DESIGNATED BY WRITTEN AUTHORIZATION.
 BRUM, LLC
 101 N. CASCADE, SUITE 200
 COLORADO SPRINGS, CO 80903
 ATTN: BOB IRWIN
 P~(719)-475-7474

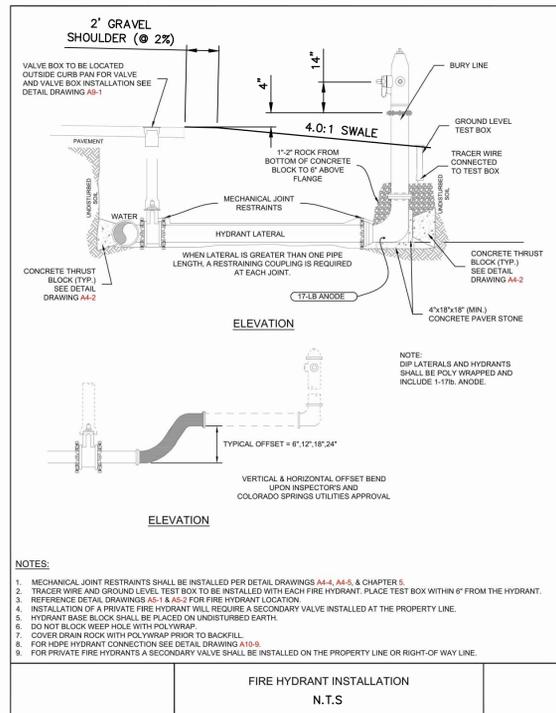
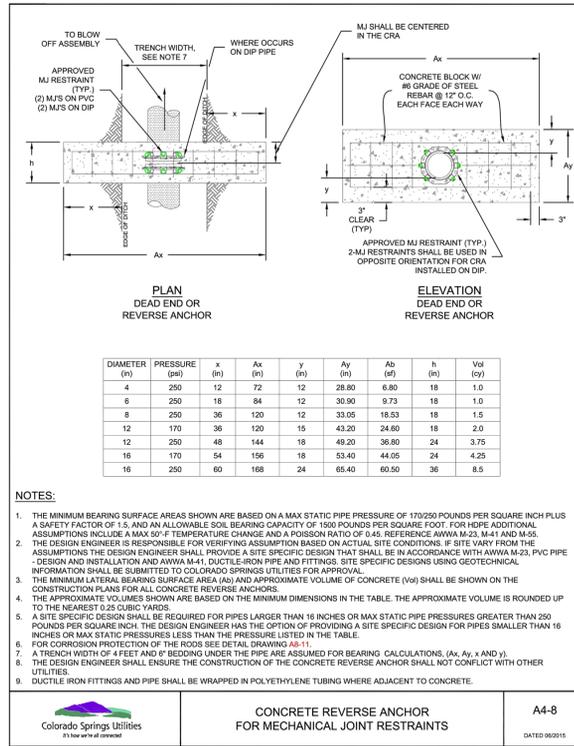
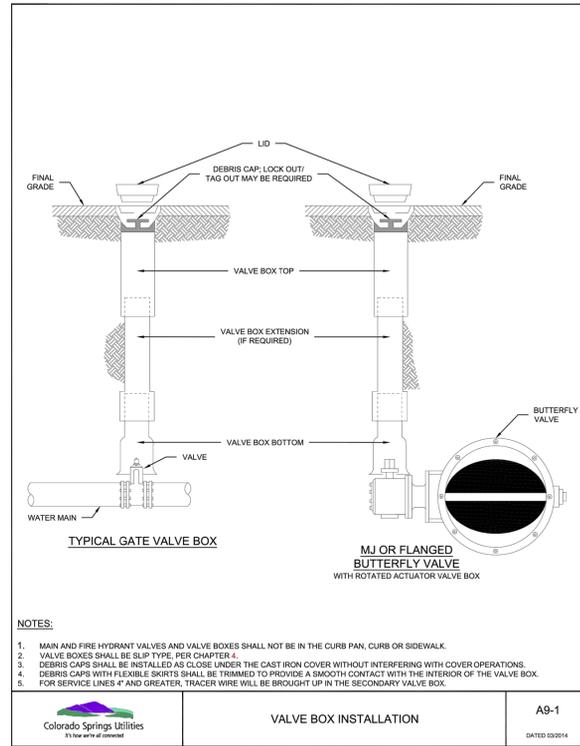
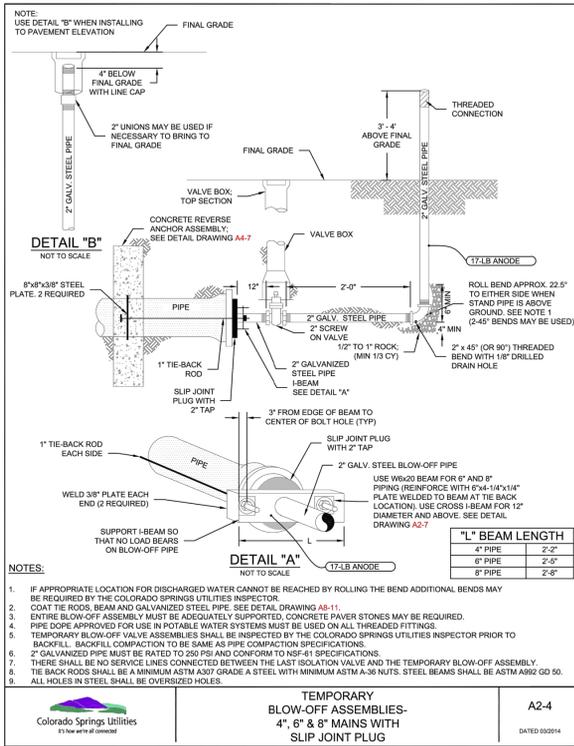
J.R. ENGINEERING
 A Westman Company
 Centennial 303-740-9383 • Colorado Springs 719-583-2593
 Fort Collins 970-491-9888 • www.jrengineering.com

LATIGO TRAILS - FILING NO. 9
 DETAILS
 SHEET 8 OF 9
 JOB NO. 25175.02

BY DATE
 No. REVISION
 H-SCALE N/A
 V-SCALE N/A
 DATE 09/07/22
 DESIGNED BY N/A
 DRAWN BY QNL
 CHECKED BY

ENGINEER'S STATEMENT
 STANDARD DETAILS SHOWN WERE REVIEWED ONLY AS TO THEIR APPLICATION ON THIS PROJECT
 [Signature]
 25043
 09/09/22
 BRYAN T. LAW, P.E.
 COLORADO P.E. 25043
 FOR AND ON BEHALF OF JR ENGINEERING, LLC





UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
BRUM, LLC
 101 N. CASCADE, SUITE 200
 COLORADO SPRINGS, CO 80903
 ATTN: BOB IRWIN
 P~(719)-475-7474

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LATIGO TRAILS - FILING NO. 9
 DETAILS

SHEET 9 OF 9
 JOB NO. 25175.02



ENGINEER'S STATEMENT
 STANDARD DETAILS SHOWN WERE REVIEWED ONLY AS TO THEIR APPLICATION ON THIS PROJECT

[Signature]
 BRYAN T. LAW, P.E.
 COLORADO P.E. 25043
 FOR AND ON BEHALF OF JR ENGINEERING, LLC

25043
 09/09/22