MEADOWBROOK CROSSING FILING NO. 1

CIVIL CONSTRUCTION DRAWINGS

EL PASO COUNTY, COLORADO

GENERAL NOTES:

1. ALL NEW CONSTRUCTION TO CONFORM TO THE SPECIFICATIONS OF EL PASO COUNTY DEVELOPMENT SERVICES DEPT AND CHEROKEE METROPOLITAN DISTRICT.
2. ALL UTILITY CONSTRUCTION TO BE CONDUCTED IN CONFORMANCE WITH THE CURRENT CHEROKEE METROPOLITAN DISTRICT SPECIFICATIONS AND/OR EL PASO COUNTY SPECIFICATIONS, WHICHEVER IS GREATER.
   - 2.1. FOR UTILITY NOTES, SEE UTILITY PLAN AND/OR SERVICE PLAN.
3. PROFILE DESIGN LINES ARE BASED ON CENTERLINE, AS SHOWN, UNLESS OTHERWISE NOTED.
   - 3.1. ALL HORIZONTAL STATIONING IS BASED ON THE 'BACK OF CURB', UNLESS OTHERWISE SHOWN.
   - 3.2. ALL VERTICAL DESIGN AND TOP OF CURB ARE BASED ON THE DESIGN POINT SHOWN IN THE TYPICAL CROSS SECTION.
4. ANY ASPHALT REMOVED IS TO BE REPLACED TO MEET THE SPECIFICATIONS OF THE EL PASO COUNTY DEVELOPMENT SERVICES DEPARTMENT.
5. FOR PAVEMENT DESIGN, CURB AND GUTTER, AND SIDEWALKS SEE INDIVIDUAL PLAN AND PROFILE SHEETS. PAVEMENT DESIGN TO BE BASED ON RESISTANCE VALUE 'R' DERIVED FROM HVEEM TESTS AND ARE TO BE APPROVED BY THE ENGINEERING DIVISION OF THE EL PASO COUNTY DEVELOPMENT SERVICES DEPARTMENT PRIOR TO WORK ABOVE SUBGRADE.
6. AT INTERSECTIONS, ALL CURB RETURNS WILL HAVE 20-FOOT RADIUS UNLESS OTHERWISE NOTED.
7. EXISTING UTILITIES: THE LOCATIONS OF EXISTING UTILITIES ARE BASED UPON THE BEST AVAILABLE INFORMATION, ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATION AND VERIFICATION OF THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK. IF IT APPEARS THERE COULD BE A CONFLICT WITH ANY UTILITIES, WHETHER INDICATED ON THE PLANS OR NOT, THE CONTRACTOR IS TO NOTIFY THE ENGINEER AND OWNER IMMEDIATELY. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES WITHIN THE CONSTRUCTION AREA AND SITE. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE THE EXISTING UTILITIES.
8. WITH NOTIFICATION OF THE RESPECTIVE OWNER, ADJUST RIMS OF ALL CLEANOUTS, MANHOLES AND VALVE COVERS WITHIN PAVEMENT TO 1/4 TO 1/2 INCH BELOW THE FINISHED GRADE AND CROSS SLOPE PRIOR TO FINAL LIFT PAVING AND ADJUST TO MATCH FINISH GRADE IN UNPAVED AREAS.
9. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE EL PASO COUNTY DEVELOPMENT SERVICES DEPARTMENT AND CHEROKEE METROPOLITAN DISTRICT PRIOR TO ANY CONSTRUCTION.
10. APPROVED PLANS, ENGINEERING CRITERIA MANUAL, ETC. IS REQUIRED TO BE ON-SITE AT ALL TIMES DURING CONSTRUCTION.
11. ALL NECESSARY PERMITS, SUCH AS SWMP, ESQCP, FUGITIVE DUST, ACCESS, C.O.E. 404, ETC. SHALL BE OBTAINED PRIOR TO CONSTRUCTION.
12. ALL HANDICAP RAMPS TO BE PER EL PASO COUNTY STANDARD SD_2-40.
    - 12.1. THE CONTRACTOR SHALL COORDINATE EXACT LOCATIONS AND LAYOUT WITH THE EL PASO COUNTY DEVELOPMENT SERVICES DEPARTMENT ON THE PLACEMENT OF ANY PEDESTRIAN RAMPS PRIOR TO CONSTRUCTION OF THE CURB. PEDESTRIAN RAMP LOCATIONS ARE AS SHOWN ON THE PLANS.
13. WHERE APPROPRIATE, NEATLY SAW CUT ALL EXISTING CONCRETE AND ASPHALT. REPAIR/REPLACE ALL DISTURBED EXISTING ITEMS WITH LIKE MATERIALS AND THICKNESSES.
14. ALL DISTURBED AREAS SHALL BE REVEGETATED WITH NATIVE GRASSES WITHIN 21 DAYS OF EXCAVATION PER EROSION CONTROL PLAN.
15. THE PREPARED EROSION/SEDIMENT CONTROL PLAN IS TO BE CONSIDERED A PART OF THESE PLANS AND ITS REQUIREMENTS ADHERED TO DURING THE CONSTRUCTION OF THIS PROJECT.
16. ALL STORM SEWER PIPE LENGTHS AND SLOPES ARE FIGURED FROM CENTER OF MANHOLE, BEND OR WYE AND INSIDE FACE OF INLET. PIPE LENGTHS ARE GIVEN AS A HORIZONTAL LENGTH AND ARE APPROXIMATE.
    - 16.1. PIPE LENGTHS INCLUDE THE FLARED END SECTION.
17. ALL STORM SEWER PIPE BEDDING TO BE CLASS B BEDDING, UNLESS OTHERWISE NOTED.
18. ALL STORM SEWER PIPE SHALL BE CLASS III, WALL B UNLESS OTHERWISE SHOWN.
19. ALL WYES AND BENDS USED IN CONSTRUCTION OF STORM SEWER FACILITIES SHALL BE FACTORY FABRICATED, UNLESS APPROVED BY THE EL PASO COUNTY DEVELOPMENT SERVICES DEPARTMENT.
20. ALL RCP SECTIONS SHALL BE JOINED IN SUCH A MANNER THAT THE ENDS ARE FULLY ENTERED AND THE INNER SURFACES ARE REASONABLY FLUSH. RUBBER GASKETS SHALL BE USED ON ALL PIPE JOINTS CONFORMING TO ASTM C-443. AVERAGE JOINT GAP THAT EXCEEDS 1/2 INCH SHALL BE FILLED WITH NON-SHRINK GROUT.
21. MANHOLE RIM ELEVATIONS SHOWN ARE APPROXIMATE ONLY AND ARE NOT TO BE TAIKEN AS FINAL ELEVATIONS. RING AND COVER TO BE SET IN CENTERED CONCRETE RINGS WITH RAM-NECK FOR ADJUSTMENT TO MATCH FINAL PAVEMENT ELEV.
22. CONSTRUCTION AND MATERIALS USED IN ALL STORM AND SANITARY SEWER MANHOLES SHALL BE PER SPECIFICATIONS. STORM SEWER RADIAL DEFLECTIONS TO BE GROUTED OR INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
23. STORM SEWER MANHOLES SIZES AS FOLLOWS UNLESS OTHERWISE SHOWN:
    - 18" THRU 36" USE 48" I.D. MANHOLE
    - 42" THRU 48" USE 60" I.D. MANHOLE
    - 54" THRU 60" USE 72" I.D. MANHOLE
    - NOTE: MANHOLE SIZES TABULATED HERE SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE INCOMING LATERALS.
20. VERTICAL CURB TO BE USED BETWEEN CURB RETURNS (CR) AND AT CURB INLETS. TRANSITIONS FROM RAMP TO VERTICAL CURB SHALL BE 10-FEET UNLESS OTHERWISE APPROVED BY THE EL PASO COUNTY DEVELOPMENT SERVICES DEPARTMENT. ALL OTHER CURB & GUTTER TO BE RAMP CURB & GUTTER, UNLESS OTHERWISE SHOWN ON THE PLAN.
21. CROSS PANS TO BE PER EL PASO COUNTY STANDARD DETAIL SD_2-26.
22. CURB RETURNS SHALL BE STRAIGHT GRADED FROM CR TO CR UNLESS OTHERWISE NOTED.
23. INLETS ARE TYPE 'R' INLETS (CDOT STD M-604-12) UNLESS OTHERWISE NOTED.
24. USPS CBU MAILBOXES ARE TO BE DETERMINED BY USPS.
25. ALL SANITARY SEWER PIPE BEDDING TO BE CLASS B BEDDING, UNLESS OTHERWISE NOTED. REFER TO CHEROKEE METROPOLITAN DISTRICT STANDARDS FOR BEDDING MATERIAL REQUIREMENTS.

BENCHMARK: FIMS MONUMENT NUMBER 81, A BERNTSEN TOP SECURITY ROD WITH A 3.25-INCH DIAMETER ALUMINUM FIMS CAP (NORTH SIDE OF U.S. HWY 24 EAST OF VALLEY STREET) ELEV.=6272.26 (NVGD 1929).

BASIS OF BEARINGS: NORTH LINE OF THE SOUTH HALF OF SEC. 8, T14S, R65W OF THE 6TH P.M., MONUMENTED AT BOTH ENDS BY A 3¼" BRASS CAP IN RANGE BOX AND ASSUMED TO BEAR N89°43'13"E.

EL PASO COUNTY STANDARD NOTES:

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 DEPARTMENT (PCD) - 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 DSD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY DSD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD DEPARTMENT 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 DOT AND MUTCD CRITERIA. [IF APPLICABLE, ADDITIONAL SIGNING AND STRIPING NOTES WILL BE PROVIDED.]
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DOT, 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.

PRE-EXCAVATION CHECKLIST

- ☐ GAS AND OTHER UTILITY LINES OF RECORD SHOWN ON PLANS.
- ☐ UTILITIES CENTRAL LOCATING CALLED AT LEAST 2 BUSINESS DAYS AHEAD.
- ☐ UTILITIES LOCATED AND MARKED.
- ☐ EMPLOYEES BRIEFED ON MARKING AND COLOR CODES.*
- ☐ EMPLOYEES TRAINED ON EXCAVATION AND SAFETY PROCEDURES FOR NATURAL GAS LINES.
- ☐ WHEN EXCAVATION APPROACHES GAS LINES, EMPLOYEES EXPOSE LINES BY CAREFUL PROBING AND HAND DIGGING.

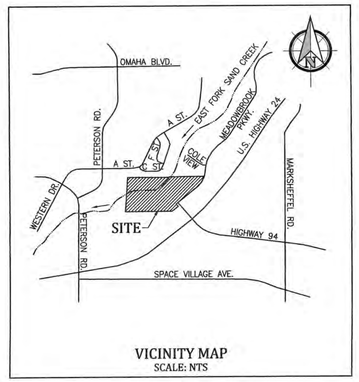
*A.G.A./A.P.W.A. STANDARD UTILITY MARKING COLOR CODE

NATURAL GAS	YELLOW	WATER	BLUE
ELECTRIC	RED	WASTEWATER	GREEN

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

ABBREVIATIONS

ASSY = ASSEMBLY	MIN = MINIMUM
BNDY = BOUNDARY	NTS = NOT TO SCALE
BOP = BOTTOM OF PIPE	OD = OUTSIDE DIAMETER
C&G = CURB & GUTTER	PC = POINT OF HORIZONTAL CURVATURE
CL = CENTERLINE	POC = POINT OF CONNECTION
CO = CLEAN OUT	PP = PROPOSED
CRA = CONCRETE REVERSE ANCHOR	PRC = POINT OF REVERSE CURVE
CR = POINT OF CURB RETURN	PROP = PROPERTY
CS = CROSS SLOPE	PT = POINT OF HORIZONTAL TANGENCY
CTB = CONCRETE THRUST BLOCK	PVC = POLY VINYL CHLORIDE PIPE
DIP = DUCTILE IRON PIPE	PVC = POINT OF VERTICAL CURVATURE
DTL = DETAIL	PVI = POINT OF VERTICAL INTERSECTION
EL = ELEVATION	PVT = POINT OF VERTICAL TANGENCY
EOA = EDGE OF ASPHALT	R = RADIUS
ESMT = EASEMENT	R, RT = RIGHT
EX = EXISTING	RCP = REINFORCED CONCRETE PIPE
FC = FACE OF CURB	RD = ROOF DRAIN (STORM LINE)
FES = FLARED END SECTION	ROW = RIGHT OF WAY
FLG = FLANGE	SHT = SHEET
FL = FLOWLINE	SS = SANITARY SEWER
GB = GRADE BREAK	STA = STATION
HP = HIGH POINT	STD = STANDARD
HORIZ = HORIZONTAL	TA = TOP OF ASPHALT
HYD = HYDRANT	TBC = TOP BACK OF CURB
ID = INSIDE DIAMETER	TC = TOP OF CURB
L, LT = LEFT	TOA = TOP OF ASPHALT
LF = LINEAR FEET	TOC = TOP OF CONCRETE
LP = LOW POINT	TOP = TOP OF PIPE
MAX = MAXIMUM	TYP = TYPICAL
MH = MANHOLE	VC = VERTICAL CURVE



VICINITY MAP
SCALE: NTS

LEGEND

- CURB & GUTTER (CURB SECTION AS SHOWN ON PLANS)
- EXISTING OR PROPOSED PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- APPROXIMATE LIMIT OF DISTURBANCE
- EXISTING CHAIN LINK FENCE
- EXISTING WOOD FENCE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING TELEPHONE PEDESTAL
- EXISTING UTILITY POLE
- EXISTING ELECTRIC BOX OR TRANSFORMER
- PROPOSED 100 YEAR FLOODPLAIN
- EXISTING WATER LINE
- EXISTING SANITARY SEWER & FLOW DIRECTION
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING GAS LINE
- PROPOSED FIRE HYDRANT, REFER TO UTILITY PLAN
- PROPOSED WATER LINE OR SERVICE AND VALVE
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED STORM SEWER PIPE AND MANHOLE
- PROPOSED STORM CURB INLET

CONTACTS

SERVICE	ENTITY	POINT OF CONTACT
DEVELOPER	MEADOWBROOK DEVELOPMENT LLC 90 SOUTH CASCADE AVENUE, SUITE 1500 COLORADO SPRINGS, CO 80903	
CIVIL ENGINEER	KIOWA ENGINEERING CORPORATION 1604 SOUTH 21ST STREET COLORADO SPRINGS, CO 80904	(719) 630-7342
JURISDICTION:	EL PASO COUNTY PLANNING & COMMUNITY DEVELOPMENT DEPARTMENT 2880 INTERNATIONAL CIRCLE, SUITE 110	(719) 520-6300
WASTEWATER & WATER:	CHEROKEE METROPOLITAN DISTRICT 6250 PALMER PARK BLVD	(719) 597-5080
FIRE:	CIMARRON HILLS FIRE DEPT 1835 TUSKEGEE PLACE	(719) 591-1960
GAS/ELEC:	SPRINGS UTILITIES 7710 DURANT DRIVE	ROBERT ESTES (719) 668-5904
PHONE:	CENTURY LINK 7925 INDUSTRY ROAD #112	PATTI MOORE (719) 278-4681
CABLE:	COMCAST 213 NORTH UNION BLVD	DALE STEWART (719) 442-4733

NOTES:
1. FILING 2 HAS NOT BEEN PLATTED AT THE TIME THIS PLAN WAS PREPARED. THE FILING 2 LOT NUMBERS ARE SUBJECT TO CHANGE DEPENDING ON THE FINAL PLAT NUMBERING.

PCD PROJECT NO. SF-17-002

CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: _____ DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

CHEROKEE METROPOLITAN DISTRICT
WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: _____ DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

INDEX OF SHEETS

1		COVER SHEET
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3		PLAN AND PROFILE - PREBLE AND BOREAL DRIVE
4		PLAN AND PROFILE - BOREAL DRIVE
5		PLAN AND PROFILE - NEWT DRIVE
6-7		PLAN AND PROFILE - MEADOWBROOK PKWY CONCEPTUAL
8		OVERALL SIGNAGE & STRIPING PLAN
9-10		STORM SEWER PLAN AND PROFILE
11-12		OVERALL GRADING AND EROSION CONTROL PLAN
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15		WATER QUALITY AREA PLAN & DETAILS
16		WATER QUALITY AREA DETAILS
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21		UTILITY SERVICES PLAN
22-23		SANITARY SEWER MAIN RELOCATION PLAN AND PROFILE
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25	DT3	DETAIL SHEET - UTILITY DETAILS
26	DT4	DETAIL SHEET - UTILITY DETAILS
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29-31		LOWER EAST FORK SAND CREEK GRADING PLAN
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34	DT5	DETAIL SHEET - CHANNEL DETAILS
35	DT6	DETAIL SHEET - CHANNEL DETAILS

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 caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications.

8/29/17

Matthew W. Buchsen, P.E. #36713 — Date: 8/29/17
For and on behalf of Kiowa Engineering Corp.

Owner/Developer's Statement:
I, the owner/developer have read and will comply with all of the requirements specified in these detailed plans and specifications.

_____ Date: 9/5/17
Danny Mientka
Meadowbrook Development LLC
90 South Cascade Ave, Suite 1500
Colorado Springs, Colorado 80903

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, and Engineering Criteria Manual as amended.

In accordance 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 Directors discretion.

Approved
By: Jennifer Irvine, County Engineer
Date: 09/13/2017
El Paso County Department of Public Works

_____ Date
Jennifer Irvine, P.E.
County Engineer / ECM Administrator

OWNER/DEVELOPER PLAN APPROVAL
The undersigned owner/developer agrees that they shall, at their expense, be solely responsible for 1) the installation of the proposed utility infrastructure in accordance with these plans, and 2) all damages and defects arising from, or related to, the installation, maintenance or operation of the public utility infrastructure from the date of preliminary acceptance until final acceptance.

Signed: _____ Date: 9/5/17
Owner/Developer

DANNY MIENTKA
Owner/Developer (Print Name)

DBA: Meadowbrook Development LLC
Address: 90 South Cascade Ave, Suite 1500
Colorado Springs, CO 80903
Phone: _____

FIRE DISTRICT APPROVAL
The number of hydrants and hydrant locations as shown on this water plan are correct and adequate to satisfy the fire protection requirements as specified by the City of Colorado Springs Fire Department.

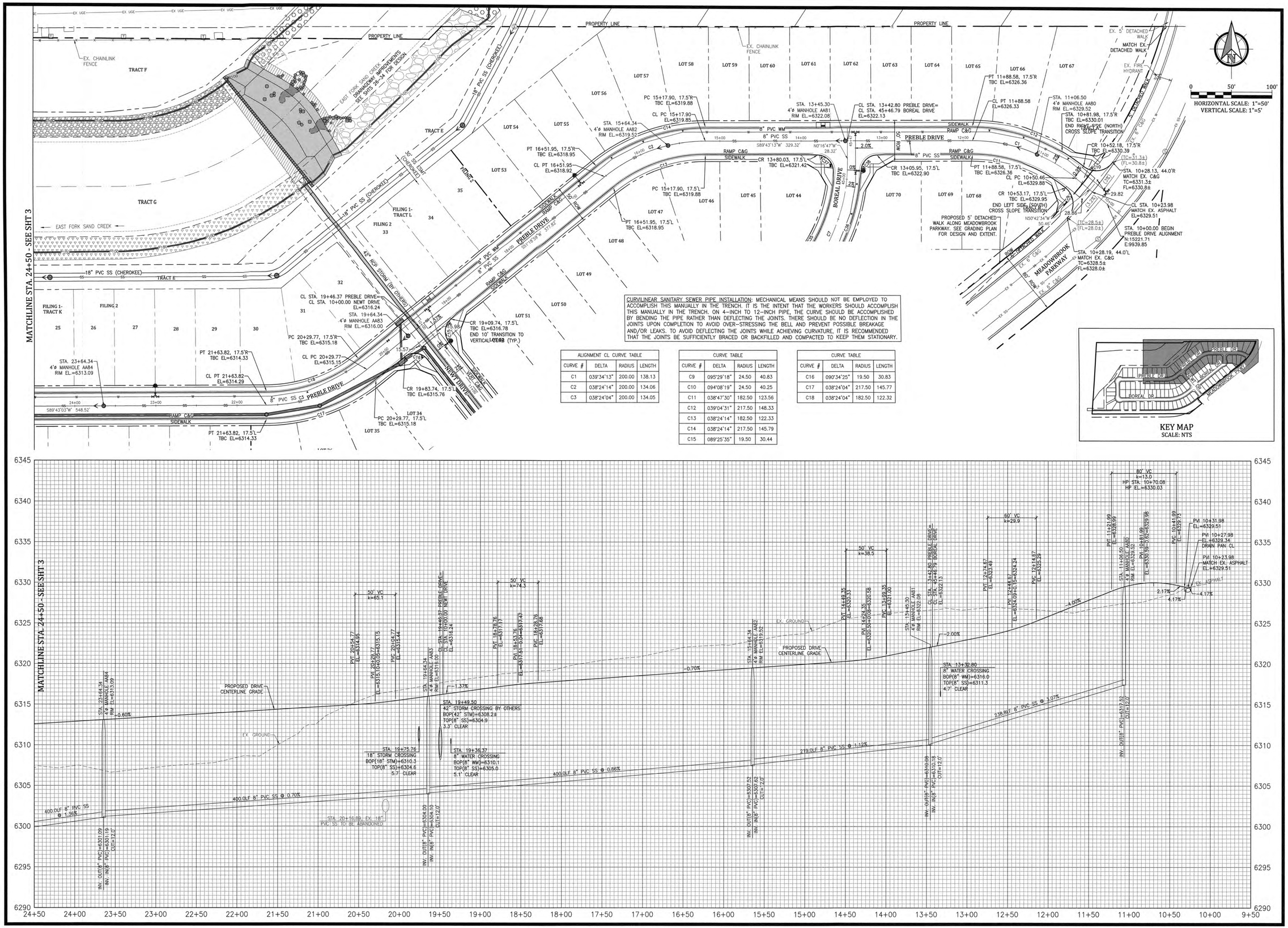
Signed: _____ Date: 8/30/17

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

MEADOWBROOK CROSSING FILING NO. 1
COVER SHEET
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET 1 OF 35 SHEETS



CURVILINEAR SANITARY SEWER PIPE INSTALLATION: MECHANICAL MEANS SHOULD NOT BE EMPLOYED TO ACCOMPLISH THIS MANUALLY IN THE TRENCH. IT IS THE INTENT THAT THE WORKERS SHOULD ACCOMPLISH THIS MANUALLY IN THE TRENCH. ON 4-INCH TO 12-INCH PIPE, THE CURVE SHOULD BE ACCOMPLISHED BY BENDING THE PIPE RATHER THAN DEFLECTING THE JOINTS. THERE SHOULD BE NO DEFLECTION IN THE JOINTS UPON COMPLETION TO AVOID OVER-STRESSING THE BELL AND PREVENT POSSIBLE BREAKAGE AND/OR LEAKS. TO AVOID DEFLECTING THE JOINTS WHILE ACHIEVING CURVATURE, IT IS RECOMMENDED THAT THE JOINTS BE SUFFICIENTLY BRACED OR BACKFILLED AND COMPACTED TO KEEP THEM STATIONARY.

ALIGNMENT CL CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH
C1	039°34'13"	200.00	138.13
C2	038°24'14"	200.00	134.06
C3	038°24'04"	200.00	134.05

CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH
C9	095°29'18"	24.50	40.83
C10	094°08'19"	24.50	40.25
C11	038°47'30"	182.50	123.56
C12	039°04'31"	217.50	148.33
C13	038°24'14"	182.50	122.33
C14	038°24'14"	217.50	145.79
C15	089°25'35"	19.50	30.44

CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH
C16	090°34'25"	19.50	30.83
C17	038°24'04"	217.50	145.77
C18	038°24'04"	182.50	122.32

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
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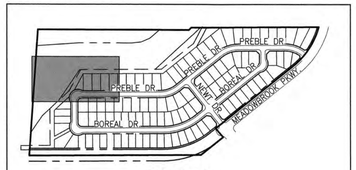
(719)630-7342

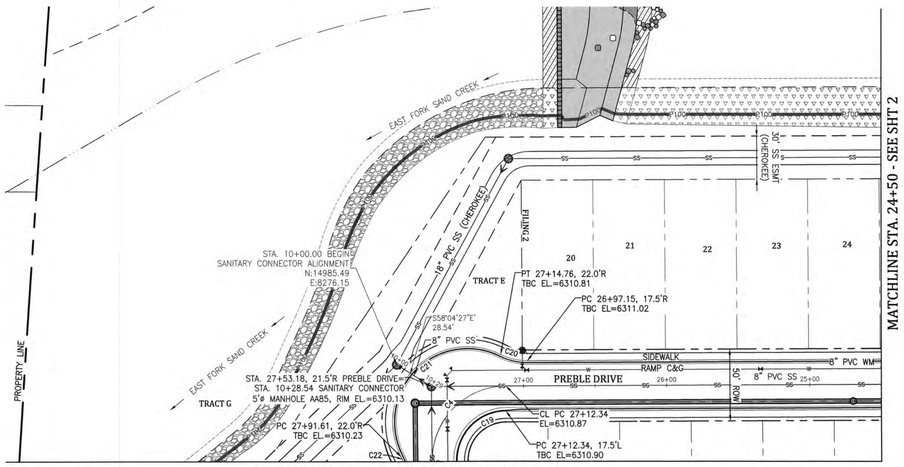
MEADOWBROOK CROSSING FILING NO. 1
PREBLE DRIVE PLAN AND PROFILE
STA. 10+00 TO STA. 24+50
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET 2 OF 35 SHEETS

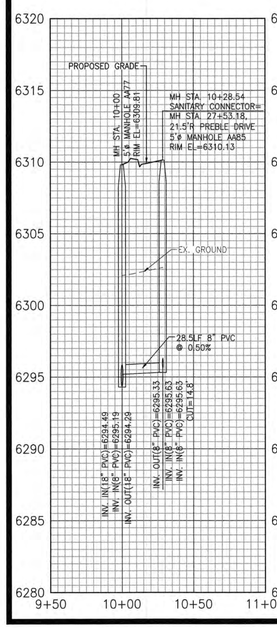


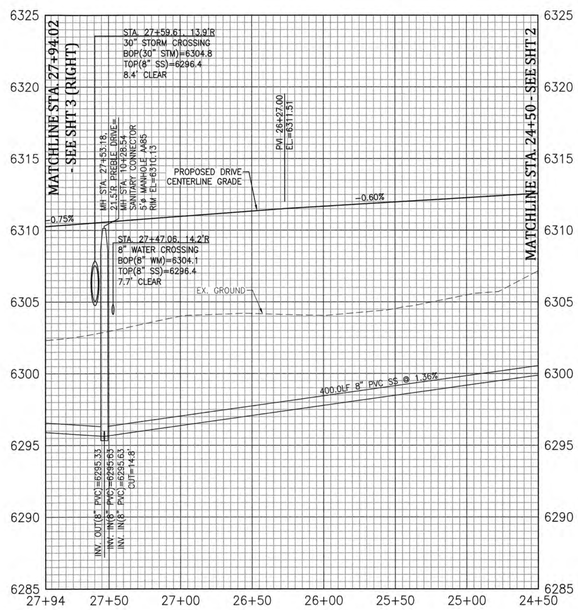
KEY MAP
SCALE: NTS

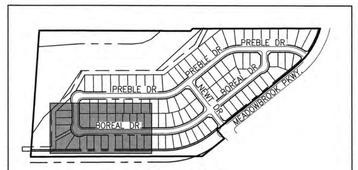


MATCHLINE STA. 27+94.02 - SEE SHT 3 (RIGHT)

ALIGNMENT CL CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C4	090°00'00"	52.00	81.68
CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C19	090°00'00"	34.50	54.19
C20	026°40'07"	41.50	19.32
C21	143°20'14"	52.50	131.34
C22	026°40'07"	41.50	19.32

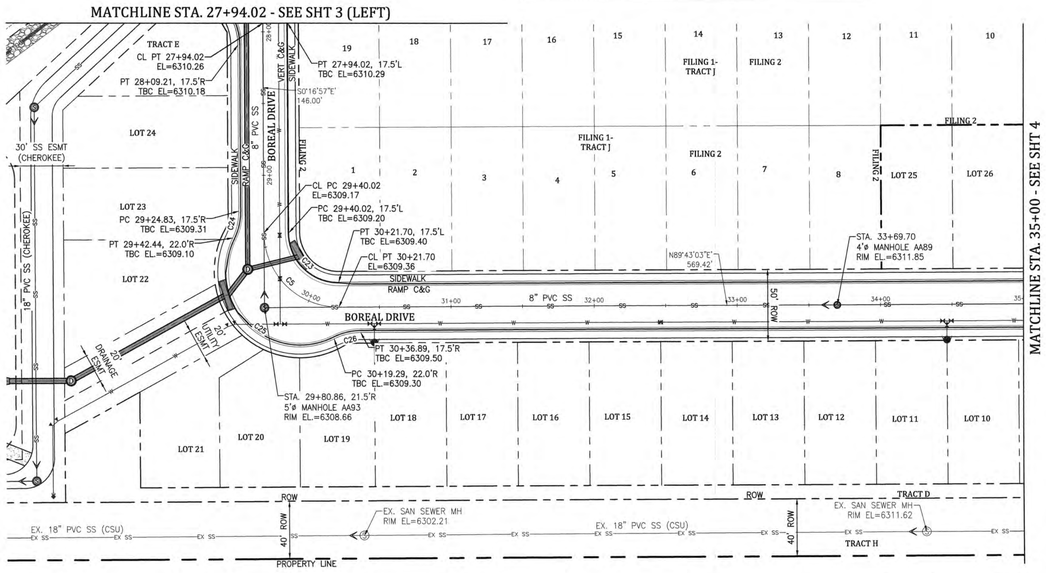




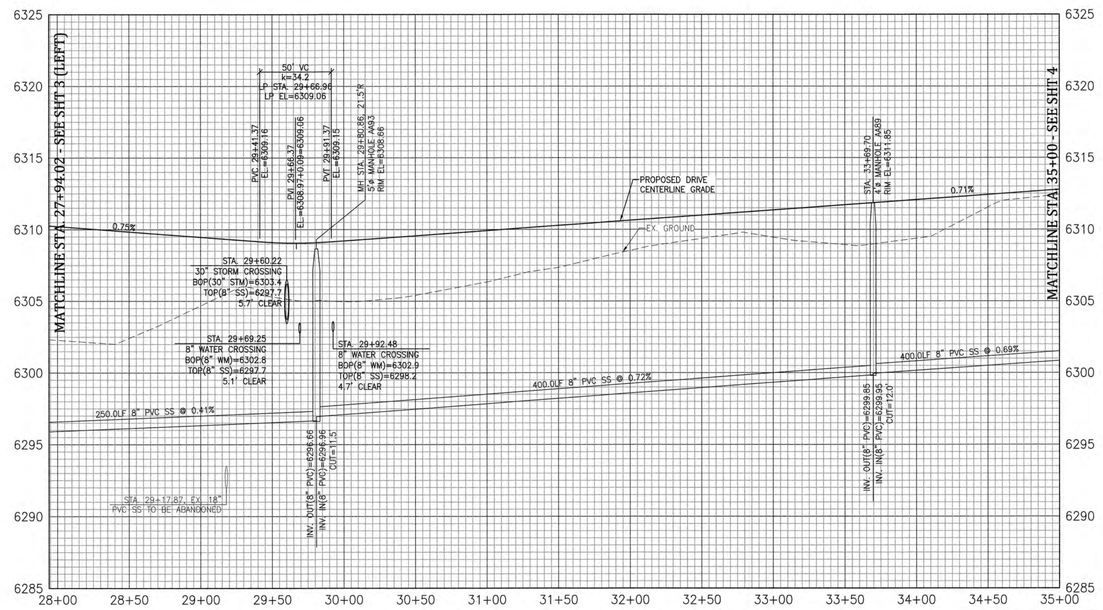


KEY MAP
SCALE: NTS

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



ALIGNMENT CL CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C5	090°00'00"	52.00	81.68
CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C23	090°00'00"	34.50	54.19
C24	026°40'07"	41.50	19.32
C25	143°20'14"	52.50	131.34
C26	026°40'07"	41.50	19.32



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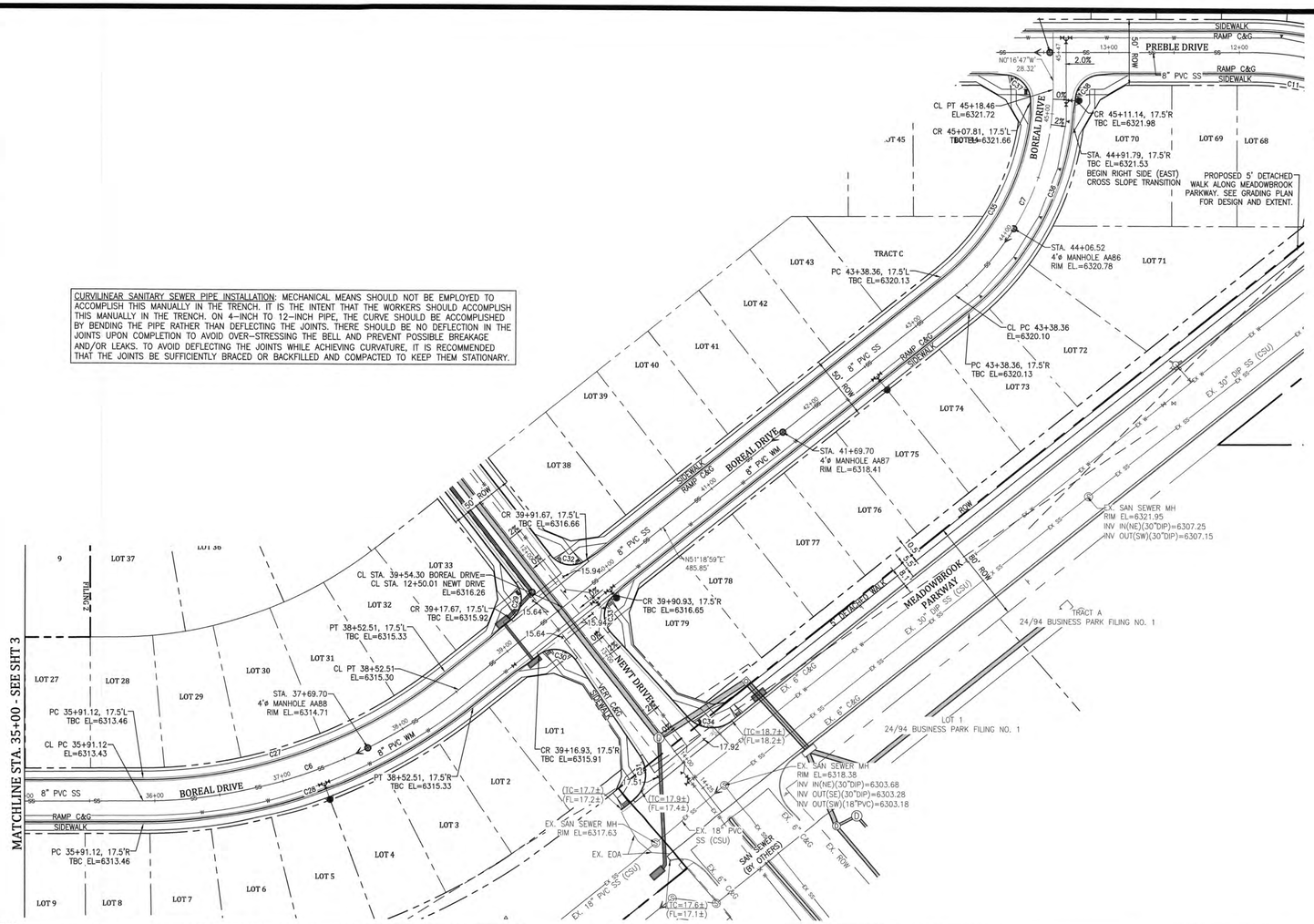
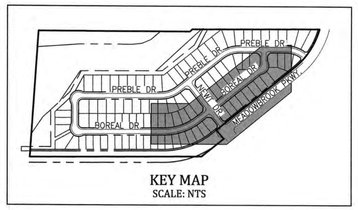
MEADOWBROOK CROSSING FILING NO. 1
PREBLE DRIVE AND BOREAL DRIVE PLAN AND PROFILE
STA. 24+50 TO STA. 35+00
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
3
OF 35 SHEETS

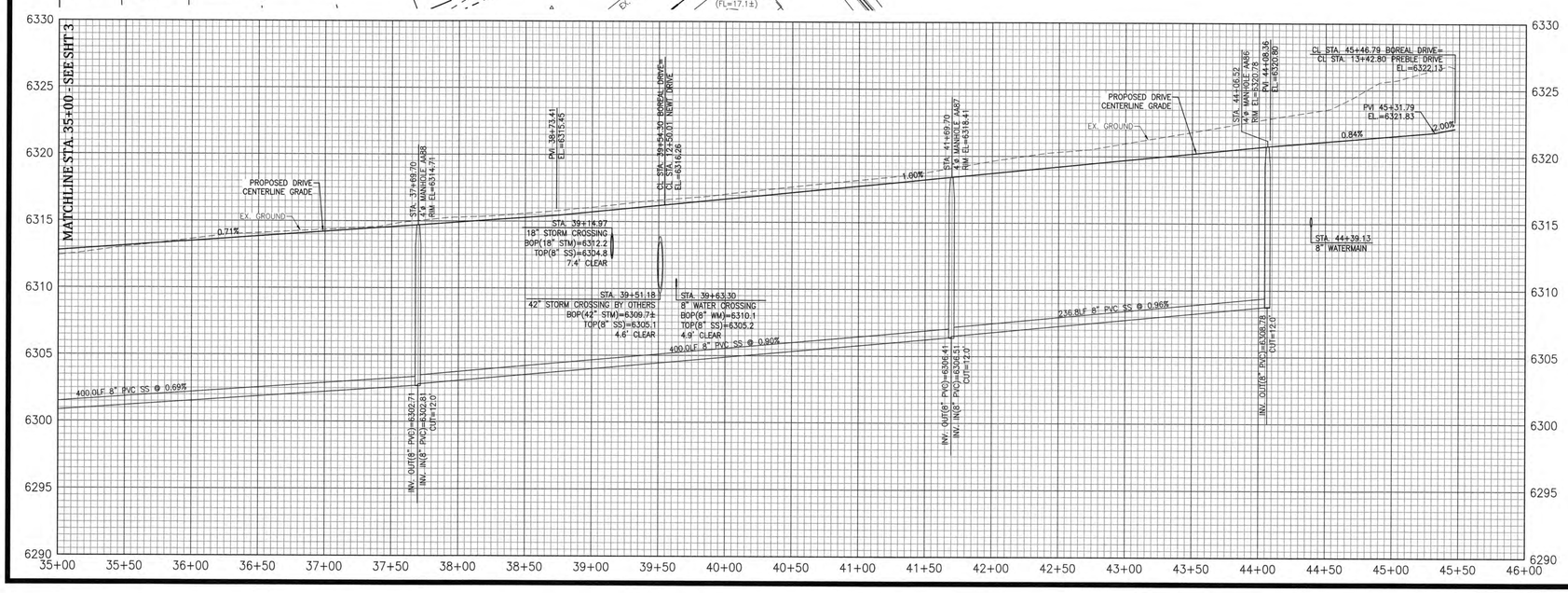
CURVILINEAR SANITARY SEWER PIPE INSTALLATION: MECHANICAL MEANS SHOULD NOT BE EMPLOYED TO ACCOMPLISH THIS MANUALLY IN THE TRENCH. IT IS THE INTENT THAT THE WORKERS SHOULD ACCOMPLISH THIS MANUALLY IN THE TRENCH. ON 4-INCH TO 12-INCH PIPE, THE CURVE SHOULD BE ACCOMPLISHED BY BENDING THE PIPE RATHER THAN DEFLECTING THE JOINTS. THERE SHOULD BE NO DEFLECTION IN THE JOINTS UPON COMPLETION TO AVOID OVER-STRESSING THE BELL AND PREVENT POSSIBLE BREAKAGE AND/OR LEAKS. TO AVOID DEFLECTING THE JOINTS WHILE ACHIEVING CURVATURE, IT IS RECOMMENDED THAT THE JOINTS BE SUFFICIENTLY BRACED OR BACKFILLED AND COMPACTED TO KEEP THEM STATIONARY.





KEY MAP
SCALE: NTS

ALIGNMENT CL CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C6	038°24'04"	390.00	261.39
C7	051°35'46"	200.00	180.10
CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C27	038°24'04"	372.50	249.66
C28	038°24'04"	407.50	273.12
C29	089°25'35"	19.50	30.44
C30	090°34'25"	19.50	30.83
C31	085°28'12"	24.50	36.55
C32	090°34'25"	19.50	30.83
C33	089°25'35"	19.50	30.44
C34	085°57'56"	24.50	36.76
C35	048°32'43"	182.50	154.63
C36	049°29'54"	217.50	187.90
C37	093°03'03"	19.50	31.67
C38	087°54'08"	19.50	29.92



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MEADOWBROOK CROSSING FILING NO. 1
BOREAL DRIVE PLAN AND PROFILE
STA. 35+00 TO STA. 45+56.59
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
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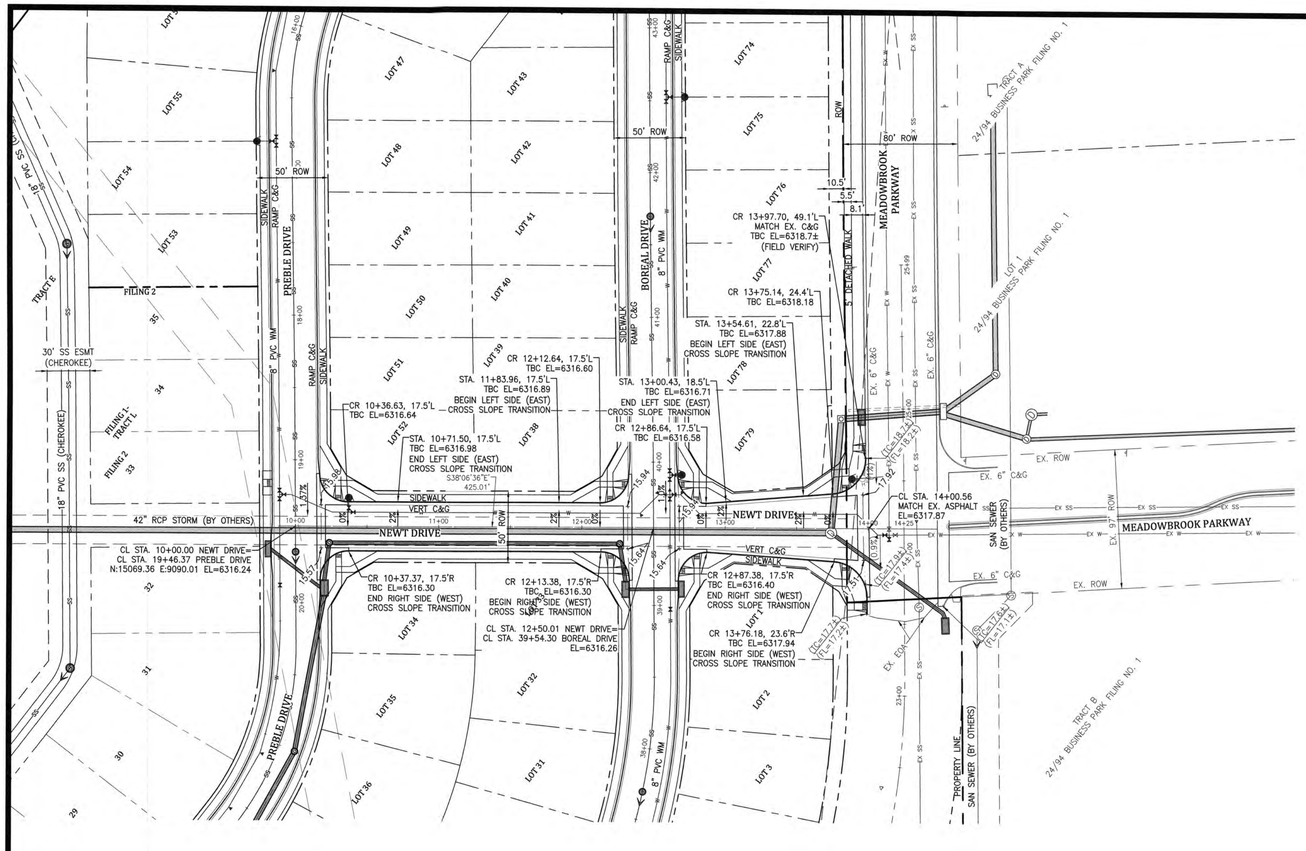
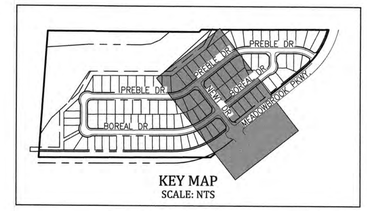
OF 35 SHEETS



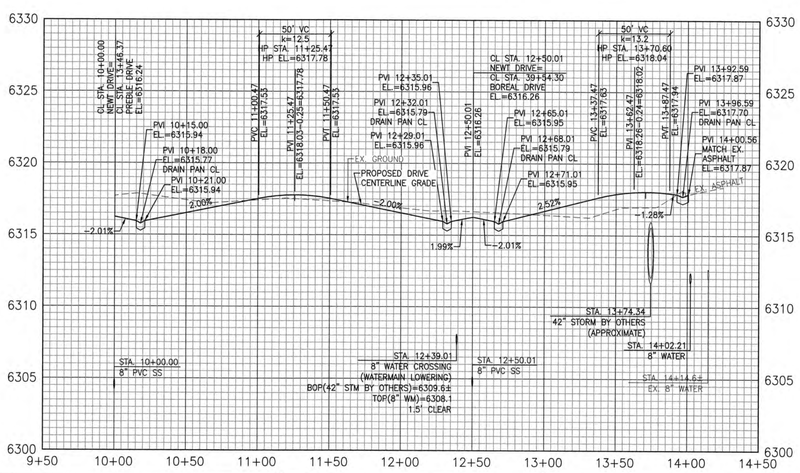
0 50' 100'

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



KEY MAP
SCALE: NTS

NOTE:
1. THE 42" RCP (BY OTHERS) MUST BE IN PLACE PRIOR TO ASPHALT PAVEMENT INSTALLATION.



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MEADOWBROOK CROSSING FILING NO. 1
NEWT DRIVE PLAN AND PROFILE
STA. 10+00 TO STA. 14+00.47
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

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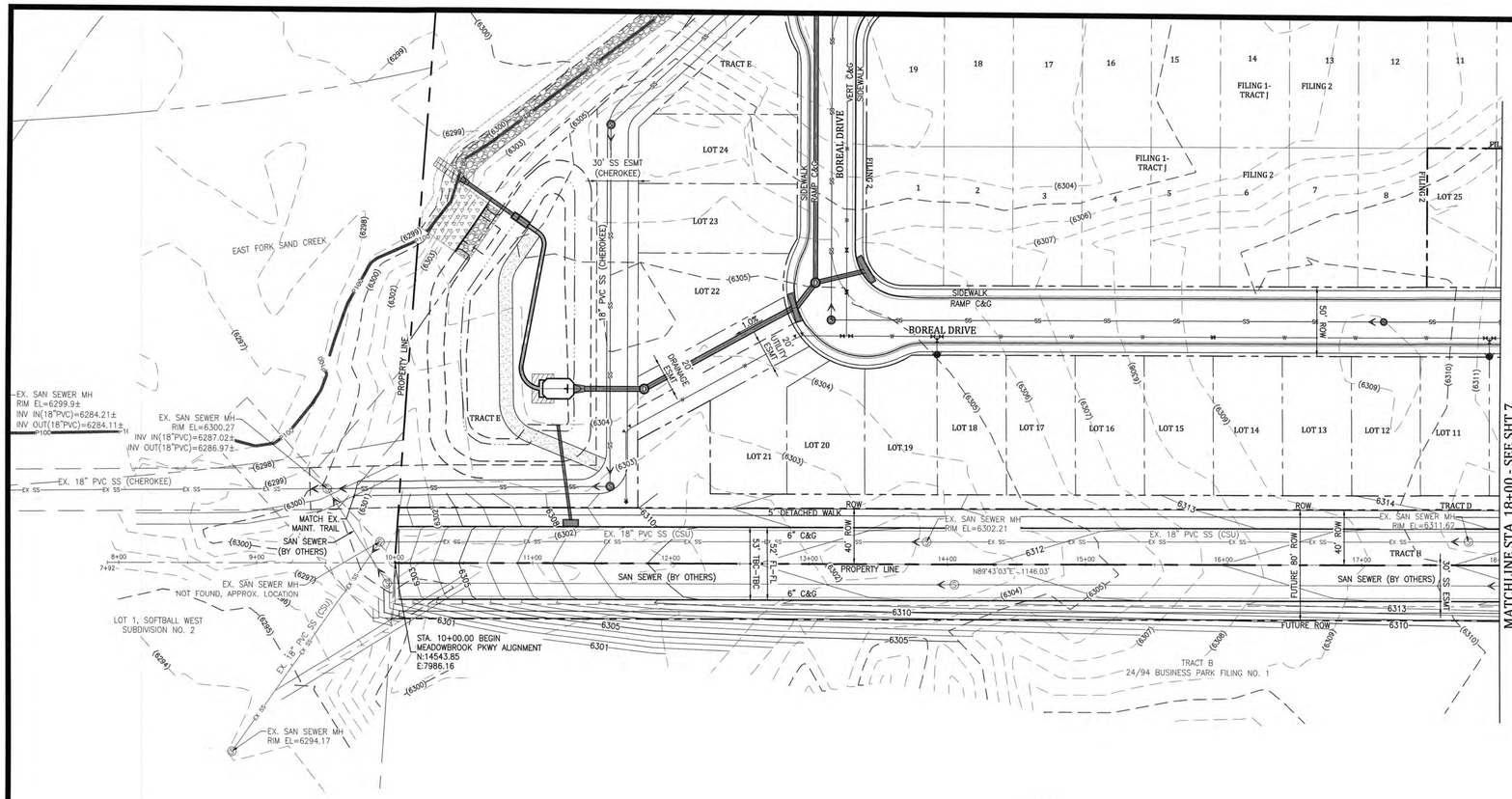
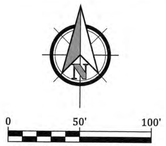
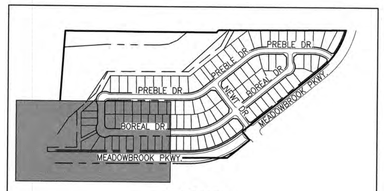
OF 35 SHEETS

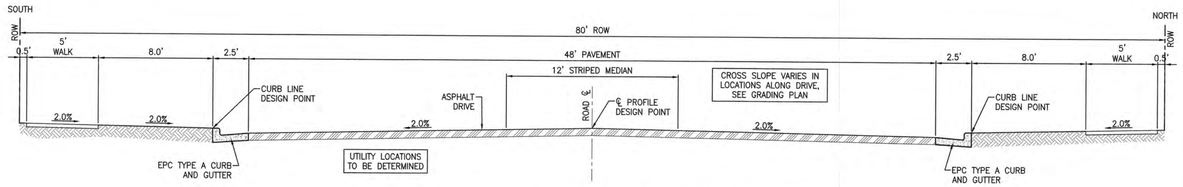




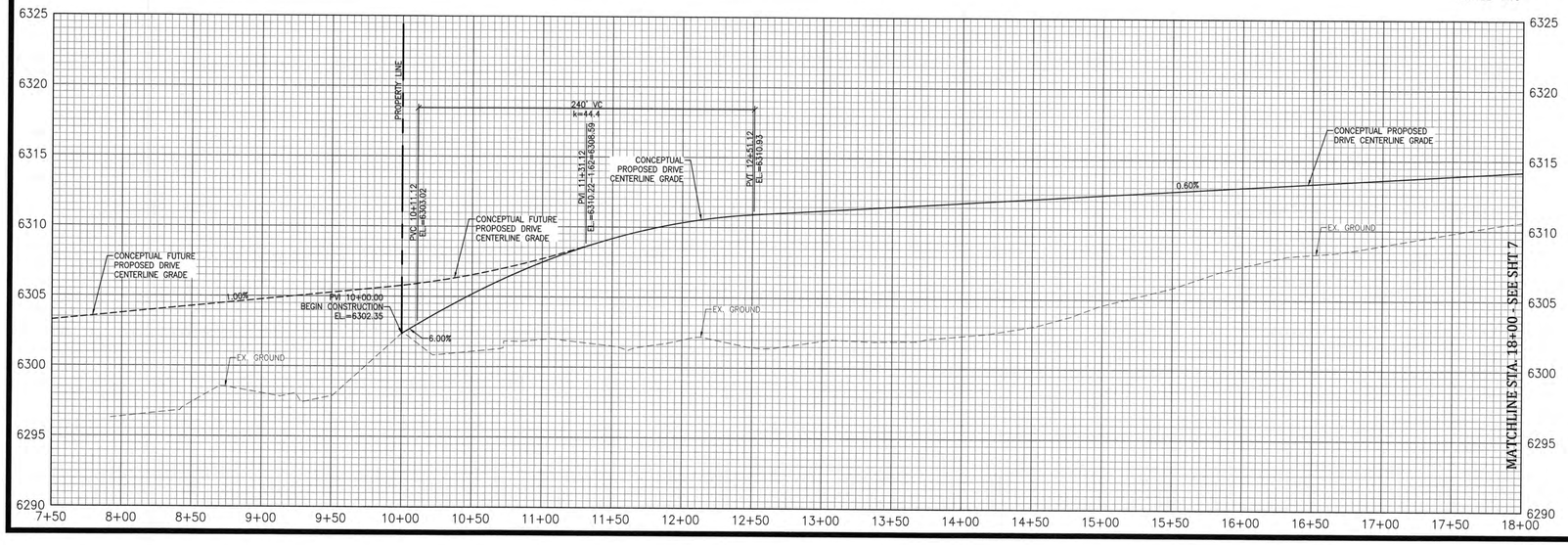


KEY MAP
SCALE: NTS

CONCEPTUAL MEADOWBROOK PARKWAY DESIGN ONLY NOT FOR CONSTRUCTION



C / DT1 TYPICAL MEADOWBROOK PARKWAY SECTION (CONCEPTUAL)
TYPICAL URBAN NON-RESIDENTIAL COLLECTOR ROADWAY
EPC SD_2-3
SCALE: NTS



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MEADOWBROOK CROSSING FILING NO. 1
MEADOWBROOK PKWY PLAN AND PROFILE- CONCEPTUAL DESIGN
STA. 10+00 TO STA. 18+00
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
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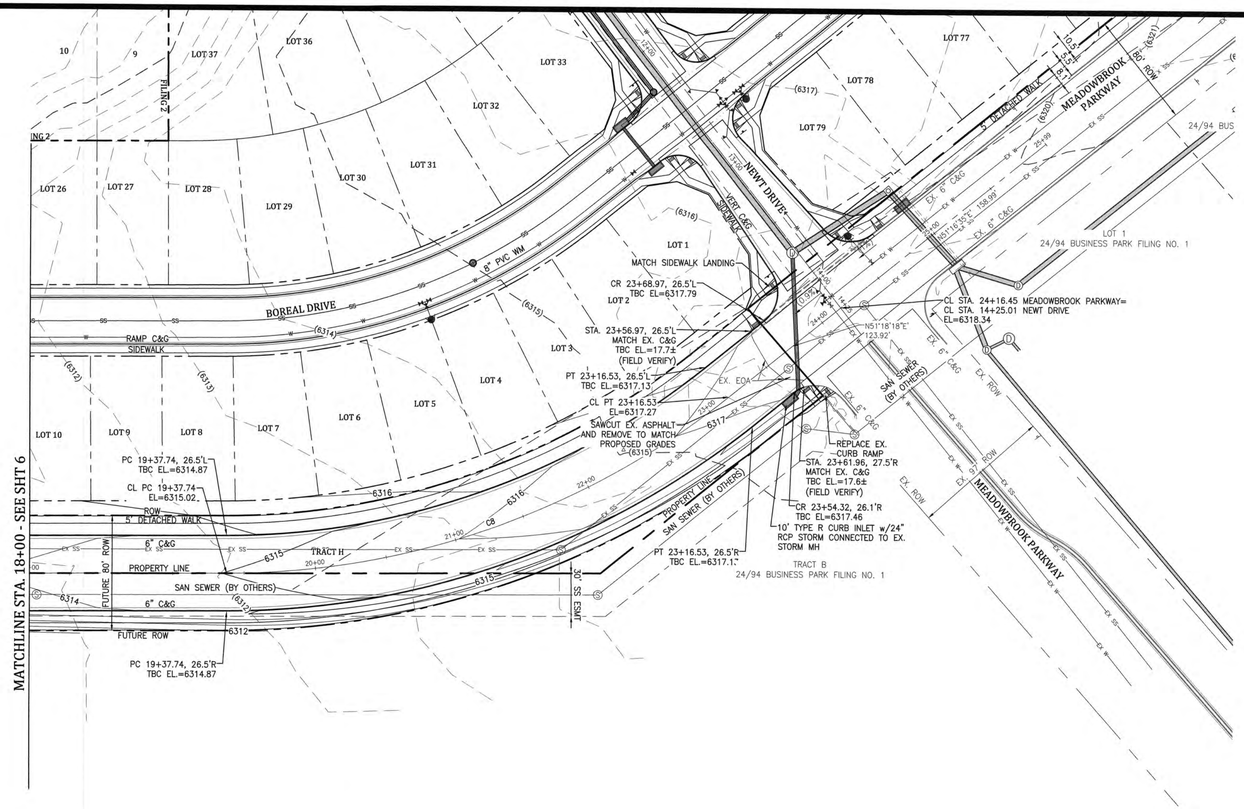
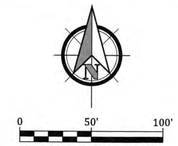
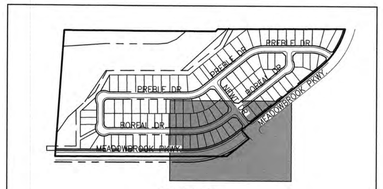
OF 35 SHEETS





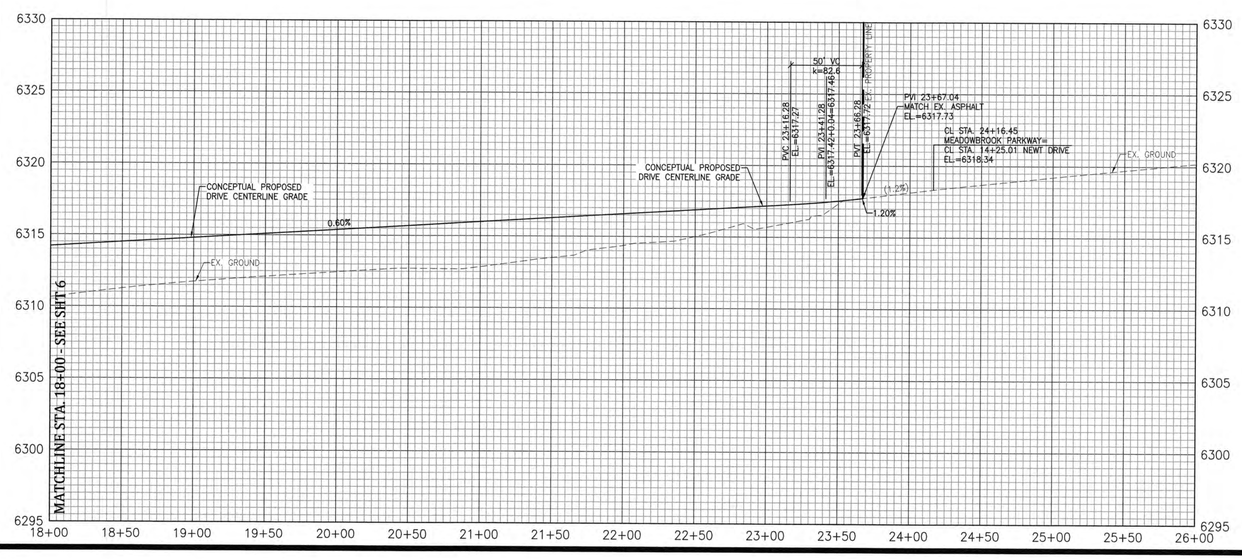
HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



KEY MAP
SCALE: NTS

CONCEPTUAL MEADOWBROOK PARKWAY DESIGN ONLY
NOT FOR CONSTRUCTION

ALIGNMENT CL CURVE TABLE			
CURVE #	DELTA	RADIUS	LENGTH
C8	038°24'45"	565.00	378.79



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MEADOWBROOK CROSSING FILING NO. 1
MEADOWBROOK PKWY PLAN AND PROFILE- CONCEPTUAL DESIGN
STA. 18+00 TO STA. 23+67.04
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

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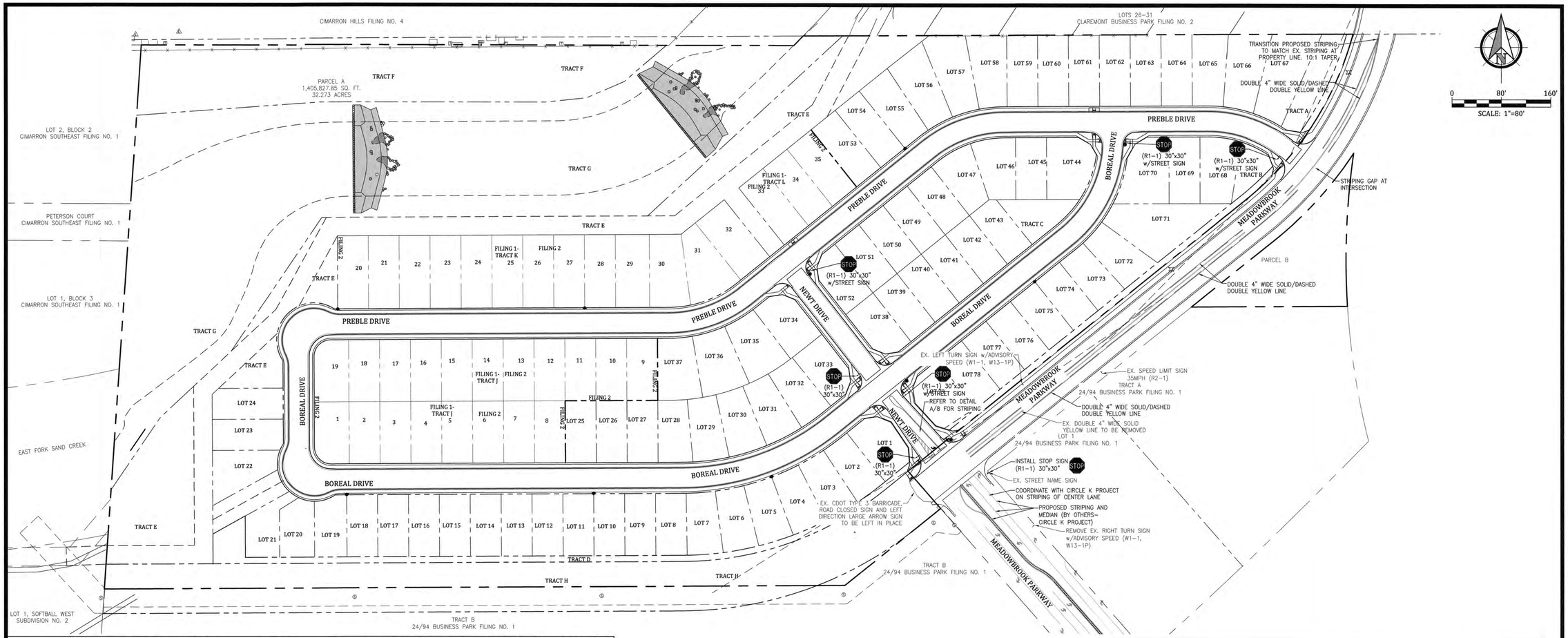
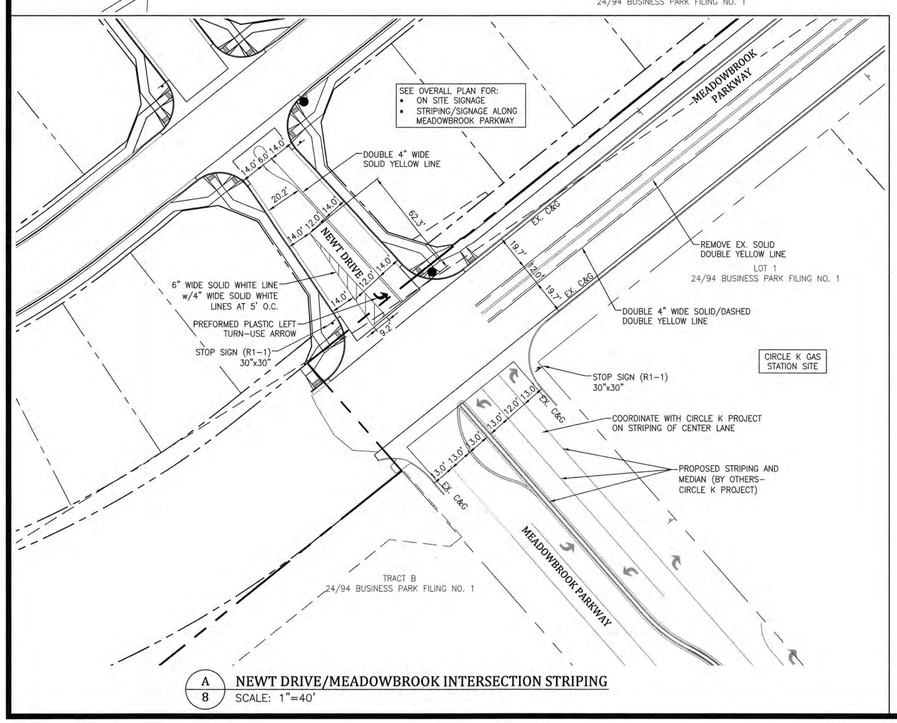
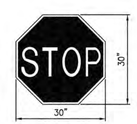
OF 35 SHEETS





A/8 NEWT DRIVE/MEADOWBROOK INTERSECTION STRIPING
SCALE: 1"=40'



STOP SIGN
R1-1

A/8 SIGN DETAILS
SCALE: NTS

SIGNING AND STRIPING NOTES:

1. ALL TRAFFIC CONTROL, TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE CURRENT COLORADO SUPPLEMENT AND THE APPROVED PLANS.
2. STOP SIGN PLACEMENT LOCATIONS SHALL BE PER SECTION 2B-9 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION AND CDoT S-614-1.
3. 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.
4. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY DEVELOPMENT SERVICES.
5. 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.
6. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
7. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
8. 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"
9. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
10. 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.
11. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
12. 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 12" WIDE AND 8' LONG PER CDOT S-627-1.
13. 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.
14. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY DEVELOPMENT SERVICES (719) 520-6819 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
15. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY PUBLIC SERVICE DEPARTMENT (PSD) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.

GENERAL NOTES:

1. BEFORE EXCAVATING, CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONUMENTATION AND/OR BENCHMARKS WHICH WILL BE DISTURBED OR DESTROYED BY CONSTRUCTION. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A REGISTERED PROFESSIONAL AUTHORIZED TO PRACTICE LAND SURVEYING.
3. APPROVAL OF THESE PLANS BY THE COUNTY DOES NOT AUTHORIZE ANY WORK TO BE PERFORMED UNTIL A PERMIT HAS BEEN ISSUED.
4. THE APPROVAL OF THESES PLANS OR ISSUANCE OF A PERMIT BY EL PASO COUNTY DOES NOT AUTHORIZE THE CONTRACTOR, SUBDIVIDER, OR OWNER TO VIOLATE ANY FEDERAL, STATE, OR CITY LAWS, ORDINANCES, REGULATIONS, OR POLICIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NEW, TEMPORARY AND EXISTING TRAFFIC SIGNS FROM THE START OF THE CONSTRUCTION PROJECT UNTIL ACCEPTANCE BY EL PASO COUNTY.
6. ALL TRAFFIC SIGNS, PAVEMENT, AND TRAFFIC SIGNALS SHALL MEET OR EXCEED M.U.T.C.D. STANDARDS.
7. THE CONTRACTOR SHALL NOT REMOVE ANY EXISTING SIGNS, PAVEMENT MARKINGS OR TRAFFIC SIGNALS DURING THE PROJECT WITHOUT AUTHORIZATION OF THE ENGINEERING INSPECTOR ASSIGNED TO THE PROJECT.
8. THE CONTRACTOR SHALL PREPARE A DETAILED TRAFFIC CONTROL PLAN, SUBMIT TO EL PASO COUNTY FOR APPROVAL, AND OBTAIN APPROPRIATE PERMITS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ZONE TRAFFIC CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING AND MAINTAINING THE TEMPORARY TRAFFIC CONTROL DEVICES THROUGHOUT THE DURATION OF THE PROJECT.

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MEADOWBROOK CROSSING FILING NO. 1
OVERALL SIGNAGE AND STRIPING PLAN
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
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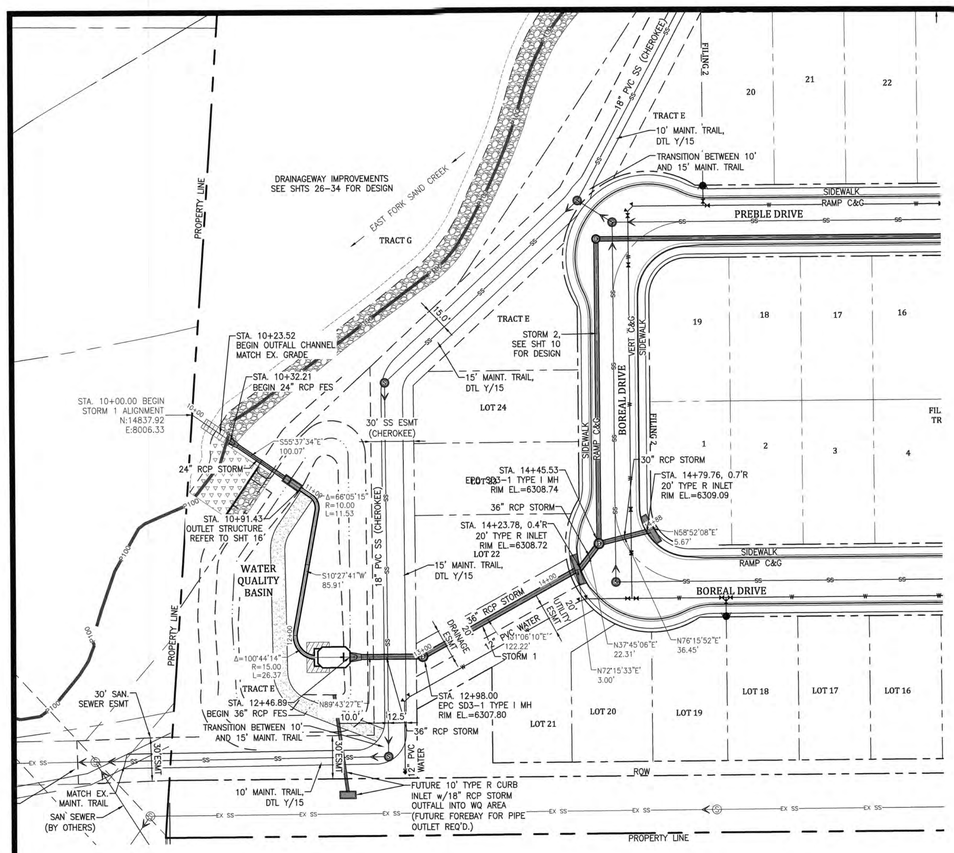
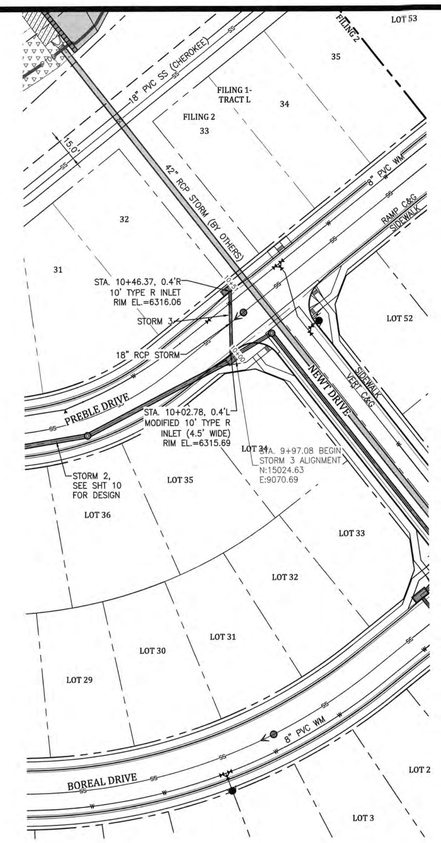
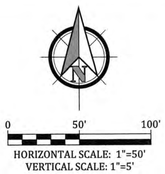
OF 35 SHEETS

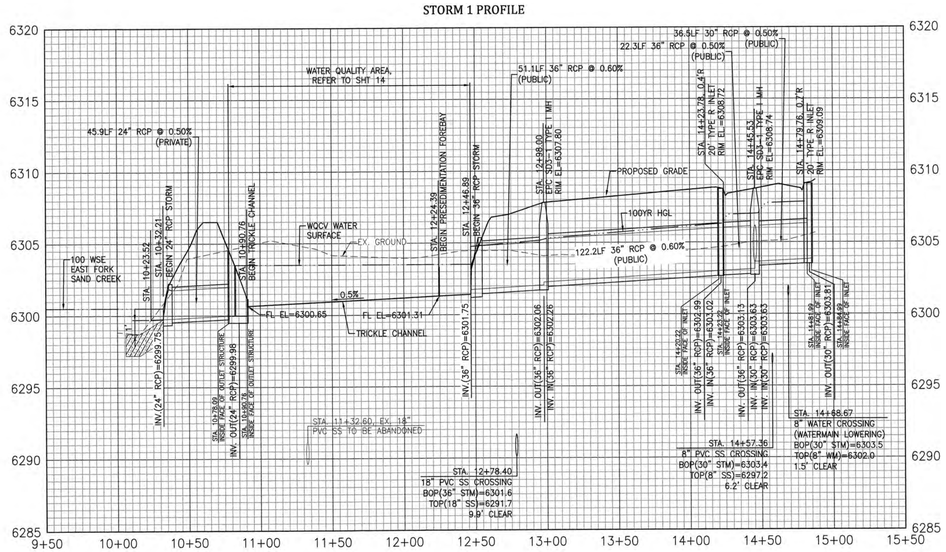




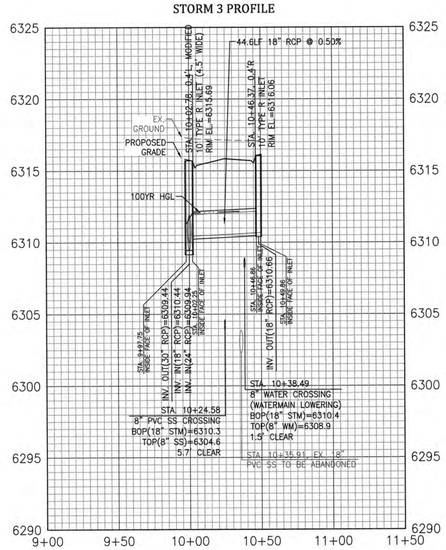


NOTES:
1. ALL STORM SEWER FACILITIES ARE PUBLIC UNLESS OTHERWISE NOTED. REFER TO STORM SEWER PROFILES FOR INDICATION OF PRIVATE OR PUBLIC.
2. WATER QUALITY BASIN FACILITY IS PRIVATE INCLUDING FOREBAY, LOW FLOW CHANNEL, OUTLET STRUCTURE, OUTLET PIPE AND SPILLWAY.

STORM 1 PROFILE



STORM 3 PROFILE



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MEADOWBROOK CROSSING FILING NO. 1

STORM SEWER PLAN AND PROFILE

EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET

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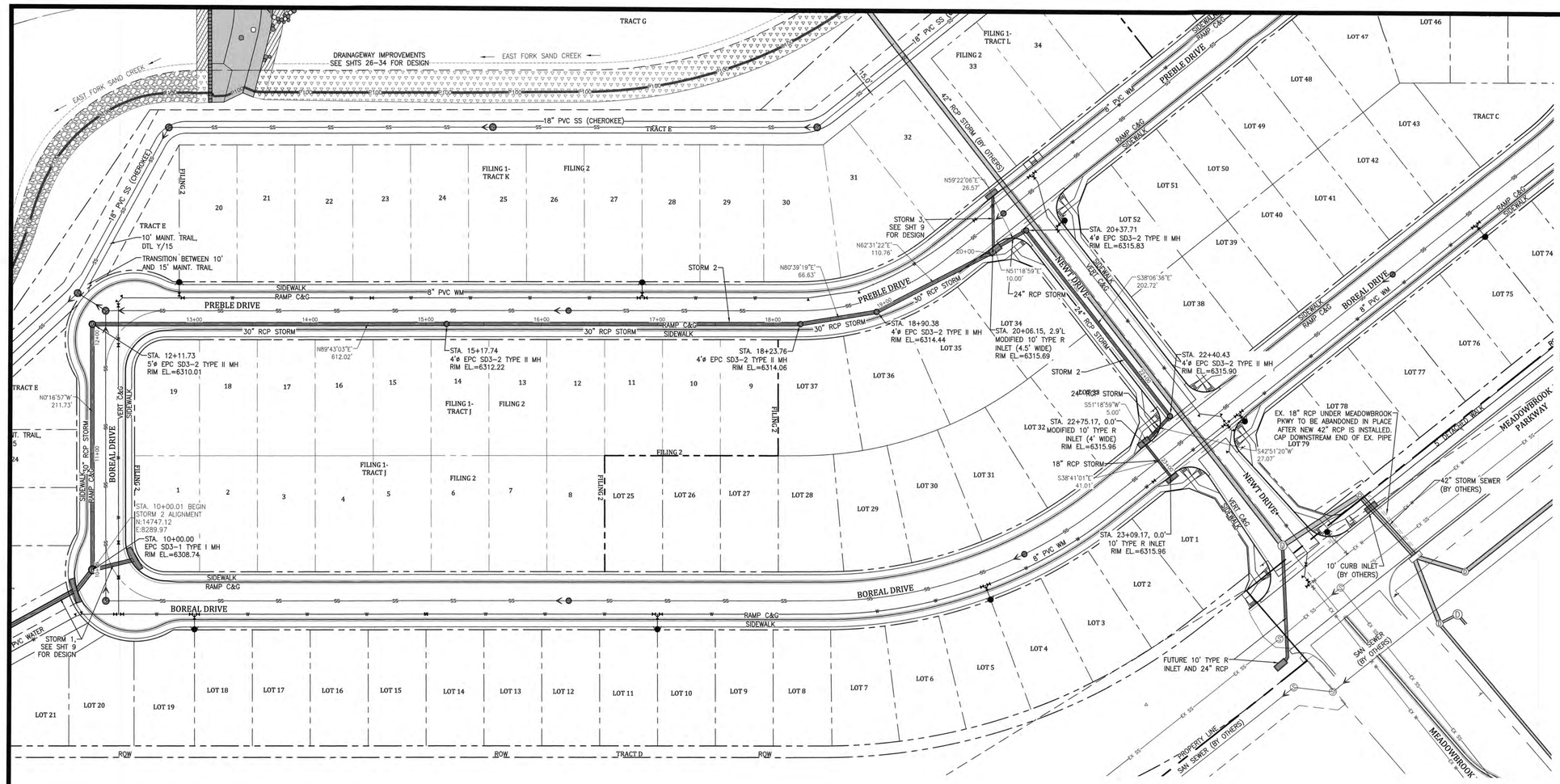
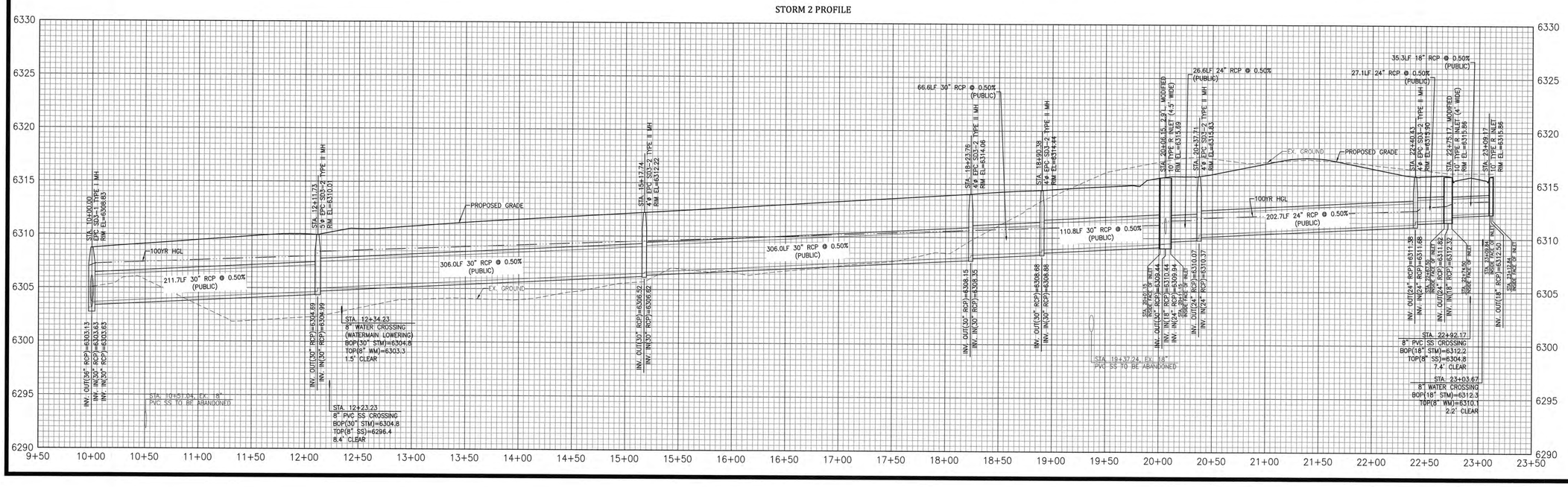


HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

NOTES:
1. ALL STORM SEWER FACILITIES ARE PUBLIC UNLESS OTHERWISE NOTED. REFER TO STORM SEWER PROFILES FOR INDICATION OF PRIVATE OR PUBLIC.
2. WATER QUALITY BASIN FACILITY IS PRIVATE INCLUDING FOREBAY, LOW FLOW CHANNEL, OUTLET STRUCTURE, OUTLET PIPE AND SPILLWAY.

STORM 2 PROFILE



Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

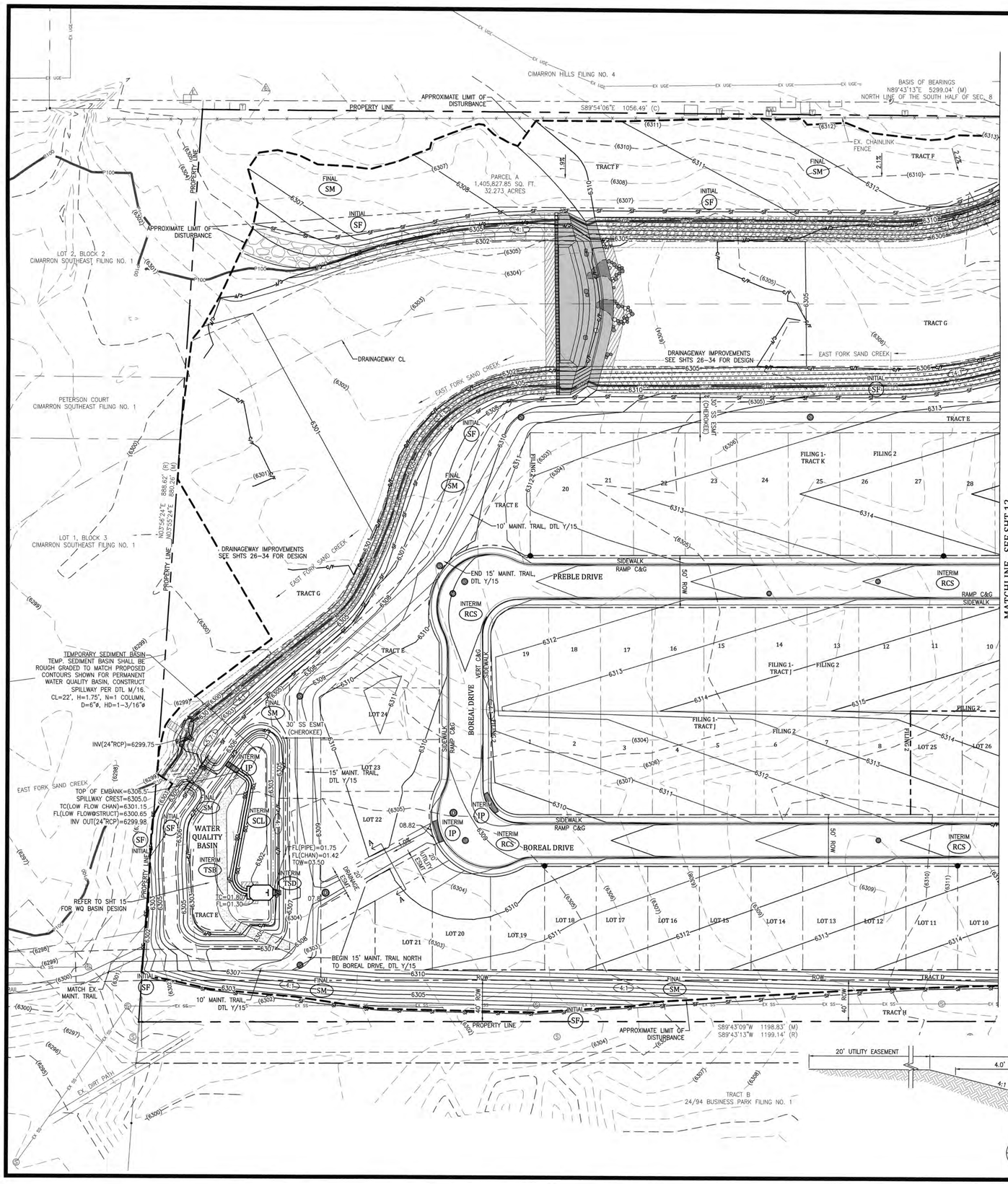
MEADOWBROOK CROSSING FILING NO. 1

STORM SEWER PLAN AND PROFILE

EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET 10 OF 35 SHEETS



0 50' 100'

SCALE: 1"=50'

SEED MIX

SEED MIX: AREAS DISTURBED BY THE EARTHWORK AND NOT RECEIVING PAVEMENT OR OTHER TREATMENT SHALL BE PERMANENTLY REVEGETATED WITH THE FOLLWOING SEED MIX. SEED OF GRASS SPECIES AS LISTED BELOW WITH NOT LESS THAN 85% GERMINATION, NOT LESS THAN 95% PURE SEED AND NOT MORE THAN 0.5% WEED SEED:

SPECIES		Percent of Mix
CREEPING OREGON GRAPE	*Mahonia repens*	15%
SOAPWEED	*Yucca glauca*	15%
SIDE OATS GRASS	*Bouteloua curtipendula*	25%
DOTTED GAYFEATHER	*Liatris punctate*	20%
BUFFALOGRASS	*Buchloe dactyloides*	25%

SEED AT NOT LESS THAN 30 PLS/ACRE

SEEDING APPLICATION: DRILL SEED 1/4" TO 1/2" INTO TOPSOIL. IN AREAS INACCESSIBLE TO A DRILL, HAND BROADCAST AT DOUBLE THE RATE AND RAKE 1/4" TO 1/2" INTO THE TOPSOIL. MULCHING APPLICATION: 1-1/2 TONS NATIVE HAY PER ACRE, MECHANICALLY CRIMPED INTO THE TOPSOIL.

LEGEND

- PROPERTY OR ROW LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING GAS LINE
- PROPOSED 100 YEAR FLOODPLAIN
- EXISTING FENCE
- (6020) EXISTING CONTOURS
- 6020 PROPOSED CONTOURS
- CUT/FILL DEMARCATION LINE
- (14.79) EXISTING SPOT ELEVATION
- 15.41 PROPOSED SPOT ELEVATION
- (2.3%) EXISTING FLOW DIRECTION AND SLOPE
- 2.3% PROPOSED FLOW DIRECTION AND SLOPE
- 4:1 PROPOSED SLOPE
- APPROXIMATE LIMIT OF DISTURBANCE
- RS ROCK SOCK
- CWA CONCRETE WASHOUT AREA
- IP INLET PROTECTION
- MSA MATERIALS STORAGE AREA
- TSD TEMPORARY SLOPE DRAIN
- TSB TEMPORARY SEDIMENT BASIN
- RCS ROUGH-CUT STREET CONTROL
- SCL SEDIMENT CONTROL LOG
- SF SILT FENCE EROSION BARRIER
- SM SEEDING AND MULCHING
- SP STOCKPILE AREA
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL

GRADING NOTES:

1. ALL EARTHWORK AND EROSION CONTROL REQUIRED OF THIS CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS AND THE COUNTY STANDARDS.
2. A GEOTECHNICAL ENGINEERING REPORT WAS PREPARED FOR THE SUBJECT SITE. THE RECOMMENDATIONS INCLUDED IN THE REPORT SHOULD BE FOLLOWED DURING CONSTRUCTION UNLESS OTHERWISE NOTED. REFER TO THE REPORT FOR SOIL BORING LOGS.
3. FILL SHOULD BE PLACED AND COMPACTED IN THIN HORIZONTAL LIFTS, USING EQUIPMENT AND PROCEDURES THAT WILL PRODUCE RECOMMENDED MOISTURE CONTENTS AND DENSITIES THROUGHOUT THE LIFT. THE PLACEMENT AND COMPACTION OF FILL AND BACKFILL SHOULD BE OBSERVED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER.
   - 3.1. FILL MATERIAL SHOULD BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS, UNLESS OTHERWISE NOTED.
   - 3.2. FILL SHOULD BE COMPACTED TO 95% OF THE MATERIALS STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698) AND TO 0 TO +2% OF THE OPTIMUM MOISTURE CONTENT FOR CLAY SOILS AND -2 TO +2% OF THE OPTIMUM MOISTURE CONTENT FOR SANDY SOILS, UNLESS OTHERWISE NOTED.
   - 3.3. ON-SITE SOILS SHOULD BE SCARIFIED TO A DEPTH OF NO LESS THAN 12 INCHES BELOW PLANNED GRADE, MOISTURE CONDITIONED AND RE-COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL REQUIREMENTS.
4. ALL SOILS USED FOR FILL AND BACKFILL MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO INSTALLATION. THE GEOTECHNICAL ENGINEER SHALL OBSERVE AND TEST THE FILL COMPACTION, APPROVE THE FILL MATERIALS AND COMMENT, AS NEEDED, ON THE METHOD OF PLACING AND COMPACTION, IN WRITING, TO THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY THE GEOTECHNICAL ENGINEER WHEN TESTS ARE TO BE MADE.
5. RUBBISH AND DEBRIS INCLUDING TIMBER, CONCRETE RUBBLE, TREES, BRUSH, AND ASPHALT SHALL NOT BE BACKFILLED ADJACENT TO ANY OF THE STRUCTURES OR BE IN THE PLACEMENT OF ANY UNCLASSIFIED FILL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND HAULING OF SUCH MATERIALS TO A SUITABLE SPOIL AREA.
6. GRADING CONTOURS SHOWN ON THIS PLAN ARE TO FINAL GRADE.
7. ALL VERTICAL SPOT ELEVATIONS SHOWN ON THE GRADING PLAN ARE FLOWLINE OF CURB (FL) OR FINISH GROUND (FG), UNLESS OTHERWISE NOTED.
   - 7.2. GRADING ABBREVIATIONS: FL=FLOWLINE, TC=TOP OF CURB, TOC=TOP OF CONCRETE, TOA=TOP OF ASPHALT, EOC=EDGE OF CONCRETE, EOA=EDGE OF ASPHALT, HP=HIGH POINT, LP=LOW POINT, FF=FINISH FLOOR ELEVATION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ADEQUATE SHORING AND/OR BRACING NECESSARY TO FACILITATE THE EXCAVATION ASSOCIATED WITH THE CONSTRUCTION OF THE WALLS, PIPELINES AND FOUNDATIONS. THE BRACING AND/OR SHORING OF EXCAVATED WALLS OR TRENCHES SHALL BE IN COMPLIANCE WITH OSHA REGULATIONS AND SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER.
9. IMMEDIATELY PUMP OR BAIL OUT WATER FOUND IN EXCAVATIONS, WHETHER RAIN OR SEEPAGE. EXCAVATIONS MUST BE KEPT FREE FROM WATER AT ALL TIMES. TAKE ALL MEASURES AND FURNISH ALL EQUIPMENT AND LABOR NECESSARY TO CONTROL THE FLOW, DRAINAGE AND ACCUMULATION OF WATER AS REQUIRED TO PERMIT COMPLETION OF THE WORK AND TO AVOID DAMAGE TO THE WORK.
10. WHEN FREEZING TEMPERATURES MAY BE EXPECTED, DO NOT EXCAVATE TO THE FULL DEPTH INDICATED UNLESS THE FOOTING OR SLABS ARE TO BE POURED IMMEDIATELY AFTER THE EXCAVATION HAS BEEN COMPLETED. IF PLACING OF CONCRETE IS DELAYED, PROTECT THE BOTTOMS OF EXCAVATIONS FROM FROST UNTIL CONCRETE IS PLACED.
11. NO FILL MATERIAL SHALL BE PLACED, SPREAD OR ROLLED WHILE IT IS FROZEN OR THAWING OR DURING UNFAVORABLE WEATHER CONDITIONS. WHEN THE WORK IN PROGRESS IS INTERRUPTED BY HEAVY RAIN, FILL OPERATIONS SHALL NOT BE RESUMED UNTIL THE GEOTECHNICAL ENGINEER INDICATES THAT THE MOISTURE CONTENT AND DENSITY OF THE PREVIOUSLY PLACED FILL ARE AS SPECIFIED.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND HAULING OF UNSUITABLE FILL MATERIALS TO A SUITABLE SPOIL AREA. EXCESS EXCAVATION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT THE CONTRACTOR'S EXPENSE. THE COST OF HAULAGE AND SPOILING OF EXCESS EXCAVATED MATERIALS SHALL BE PAID FOR AS DOCUMENTED IN THE PROJECT SPECIFICATIONS.
14. AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE ACRE OR MORE, THE OWNER OR OPERATOR OF THE CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORM WATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY CONTROL DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORM WATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY CONTROL DIVISION-PERMITS.
15. ALL EROSION CONTROL WILL BE DONE IN CONFORMANCE WITH THE COUNTY STANDARDS. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY COUNTY OR ENGINEER.
16. ALL SLOPES GREATER THAN 4:1 REQUIRE EROSION CONTROL BLANKET, NORTH AMERICAN GREEN SC150BN DOUBLE NETTED OR EQUAL AS A TEMP STABILIZATION MEASURE.
17. WATER SHALL BE USED AS A DUST PALLIATIVE AS REQUIRED AND SHALL BE INCLUDED IN THE COST FOR EARTHWORK ITEM(S).
18. STORMWATER QUALITY VOLUME CERTIFICATION: THE CONTRACTOR SHALL PROVIDE A VOLUME CERTIFICATION FOR THE STORMWATER QUALITY AREA, SIGNED AND SEALED BY A LICENSED PROFESSIONAL LAND SURVEYOR.
   - 18.1. WATER QUALITY BASIN: AT A MINIMUM, THE SURVEY SHALL INCLUDE THE OUTLET STRUCTURE FLOWLINE IN AND OUT, ORIFICE PLATE ELEVATIONS, TOP OF OUTLET STRUCTURE/ GRATE ELEVATIONS AT FRONT, MIDDLE AND BACK; SPILLWAY ELEVATION AND WIDTH, TOP OF EMBANKMENT ELEVATION AROUND WATER QUALITY BASIN; FOREBAY FLOWLINE AND TOP OF WALLS; LOW FLOW CHANNEL ELEVATIONS AND A SUFFICIENT AMOUNT OF GROUND ELEVATIONS WITHIN THE WATER QUALITY AREA TO DETERMINE THE AS-BUILT VOLUME.
19. BENCHMARK: FIMS MONUMENT NUMBER 81, A BERNTSEN TOP SECURITY ROD WITH A 3.25-INCH DIAMETER ALUMINUM FIMS CAP (NORTH SIDE OF U.S. HWY 24 EAST OF VALLEY STREET) ELEV.=6272.26 (NVGD 1929).

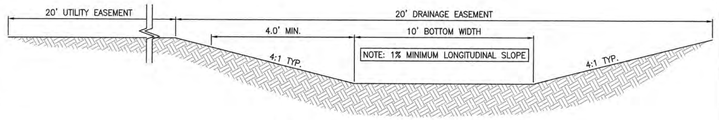
APPROXIMATE EARTHWORK QUANTITIES

CUT (EXCESS) =	21,500 CY
FILL =	116,200 CY
SHRINKAGE (10% OF FILL) =	11,600 CY
NET FILL (w/SHRINKAGE) =	106,300 CY

NOTES:
1. EARTHWORK QUANTITIES SHOWN ABOVE ARE APPROXIMATE.
2. SHRINKAGE FACTOR IS ASSUMED, CONSULT GEOTECHNICAL ENGINEER FOR SHRINKAGE FACTOR.

OPINION OF COST FOR EROSION CONTROL REQUIREMENTS

ITEM	QUANTITY	UNITS	PRICE	AMOUNT
PERMANENT SEEDING	6.50	AC	$582	$3,783.00
MULCHING	6.50	AC	$507	$3,295.50
VEHICLE TRACKING CONTROL	2	EA	$1,625	$3,250.00
INLET PROTECTION	7	EA	$153	$1,071.00
CONCRETE WASHOUT BASIN	1	EA	$776	$776.00
ROUGH CUT STREET CONTROL	3,930	LF	$2	$7,860.00
SILT FENCE	5,586	LF	$4	$22,344.00
TEMPORARY SEDIMENT BASIN	1	EA	$1,625	$1,625.00
ROCK SOCK	2	EA	$110	$220.00
SEDIMENT CONTROL LOGS	260	LF	$3	$715.00
TEMPORARY SLOPE DRAIN	1	EA	$750	$750.00
STABILIZED STAGING AREA	1,110	SY	$2	$2,220.00
			TOTAL	$47,909.50



A / 11 SECTION A-A: GRASS LINED SWALE

SCALE: NTS

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EL PASO COUNTY, COLORADO

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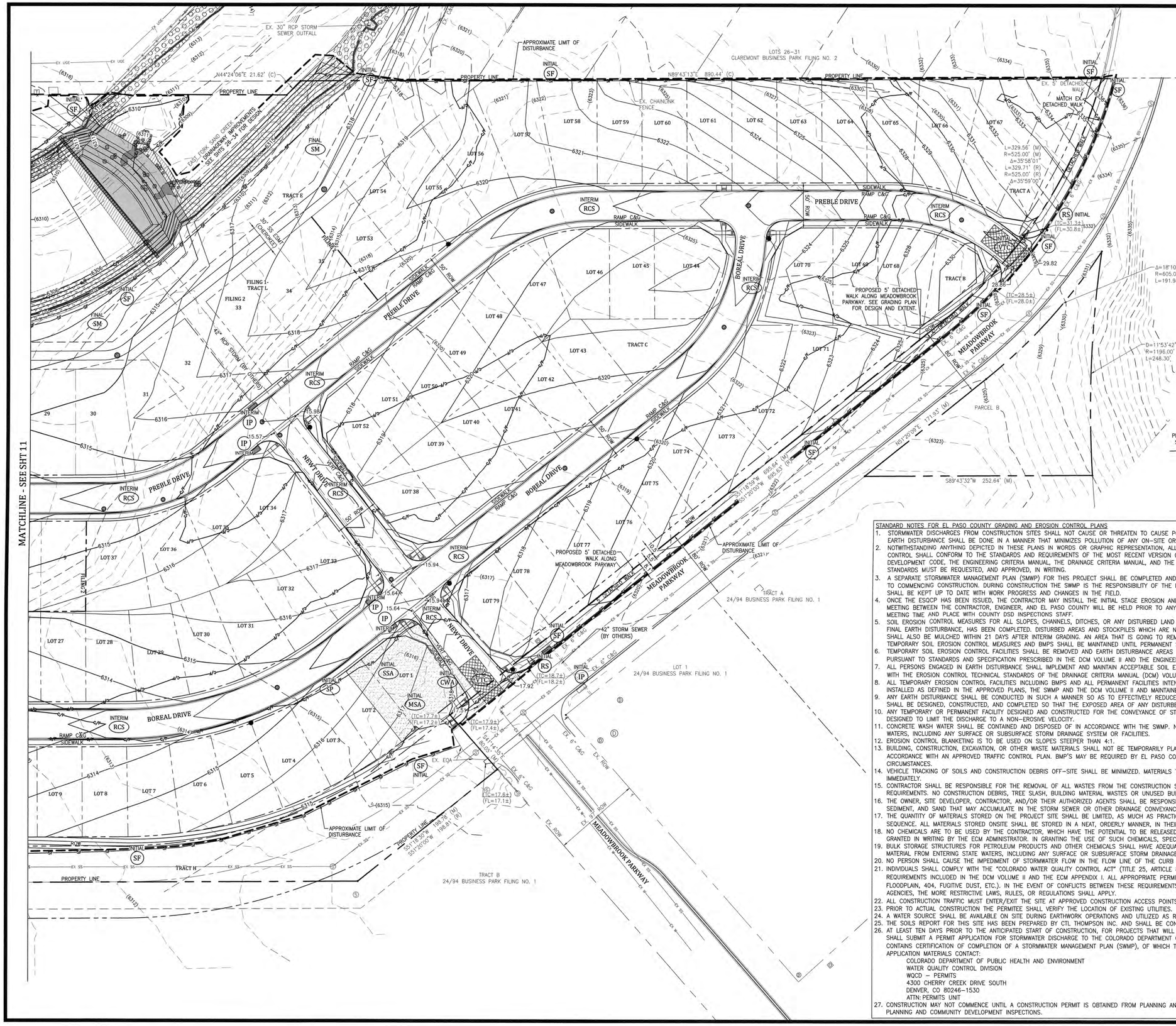
11

OF 35 SHEETS



A / 12 TYPICAL DETACHED WALK
SCALE: NTS

STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL PLANS

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF SITE WATERS, INCLUDING WETLANDS.
2. 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 TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED STORMWATER MANAGER, SHALL BE LOCATED ON SITE AT ALL TIMES AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE ESQCP HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL BMPS AS INDICATED ON THE GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY DSD INSPECTIONS STAFF.
5. SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPS SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED.
6. TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATION PRESCRIBED IN THE DCM VOLUME II AND THE ENGINEERING CRITERIA MANUAL (ECM) APPENDIX I.
7. ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMPS IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE DRAINAGE CRITERIA MANUAL (DCM) VOLUME II AND IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SWMP).
8. ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPS AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS, THE SWMP AND THE DCM VOLUME II AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION.
9. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.
10. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.
11. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
12. EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 4:1.
13. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
14. VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
16. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
17. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
18. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
19. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
20. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.
21. INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
22. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
23. PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
24. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
25. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY CTL THOMPSON INC. AND SHALL BE CONSIDERED A PART OF THESE PLANS.
26. AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:
    COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
    WATER QUALITY CONTROL DIVISION
    WQCD - PERMITS
    4300 CHERRY CREEK DRIVE SOUTH
    DENVER, CO 80246-1530
    ATTN: PERMITS UNIT
27. CONSTRUCTION MAY NOT COMMENCE UNTIL A CONSTRUCTION PERMIT IS OBTAINED FROM PLANNING AND COMMUNITY DEVELOPMENT AND A PRECONSTRUCTION CONFERENCE IS HELD WITH PLANNING AND COMMUNITY DEVELOPMENT INSPECTIONS.

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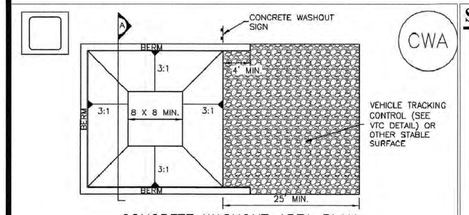
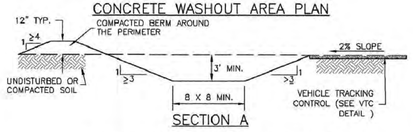


CONCRETE WASHOUT AREA PLAN



SECTION A

CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

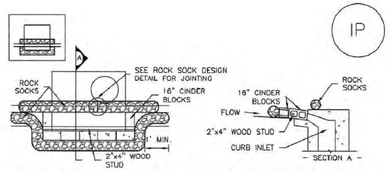
4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER–TIGHT CONTAINER AND DISPOSED OF PROPERLY.

6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

SC-6 Inlet Protection (IP)



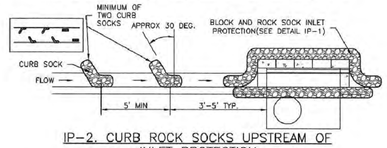
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF INLET PROTECTION.
   –TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

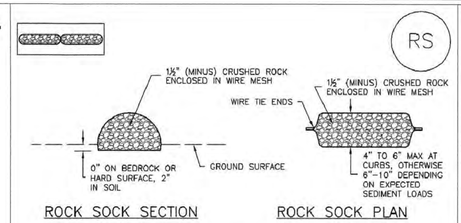
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

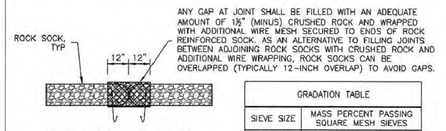
4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY. A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.



ROCK SOCK SECTION ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1½"	90 – 100
1"	20 – 55
¾"	0 – 15
⅜"	0 – 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF ROCK SOCKS.

2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).

3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½", RECOMMENDED MINIMUM ROLL WIDTH OF 48"

4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS–1. ROCK SOCK PERIMETER CONTROL

ROCK SOCK MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

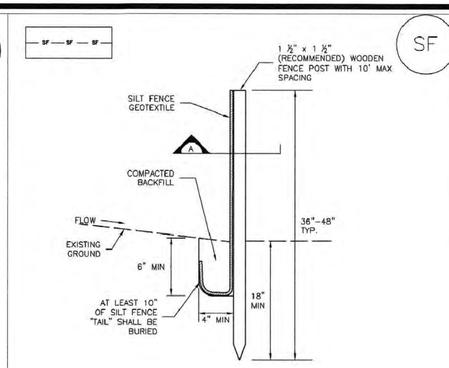
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.

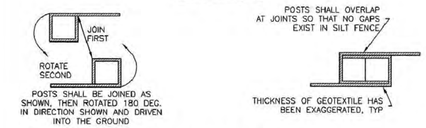
5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE ROCK SOCK.

6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.



SILT FENCE



SECTION A

SF–1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J–HOOK." THE "J–HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

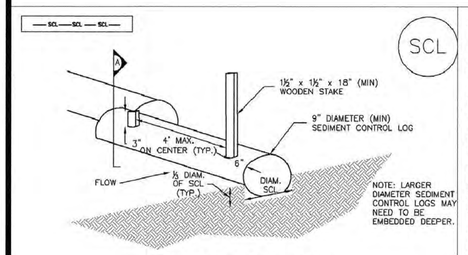
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

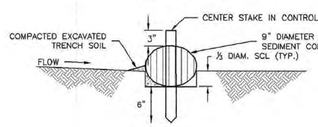
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

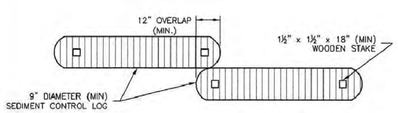
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.



SEDIMENT CONTROL LOG



SECTION A



SEDIMENT CONTROL LOG JOINTS

SCL–1. SEDIMENT CONTROL LOG

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.

2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND–DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.

4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS OR HIGH VELOCITY DRAINAGE WAYS.

5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY ⅓ OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING

6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER.

7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

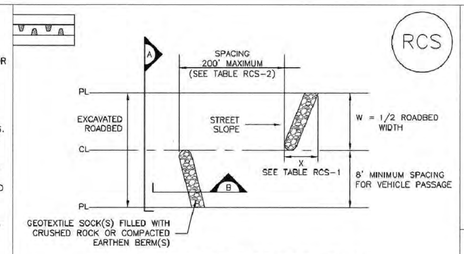
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

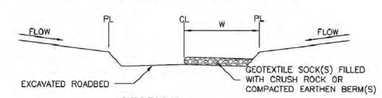
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.

5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.



ROUGH CUT STREET CONTROL PLAN



SECTION A

SECTION B

TABLE RCS–1

W (FT)	X (FT)
20–30	5
31–40	7
41–50	9
51–60	10.5
61–70	12

TABLE RCS–2

LONGITUDINAL STREET SLOPE (%)	SPACING (FT)
<2	NOT TYPICALLY NEEDED
2	200
3	200
4	150
5	100
6	50
7	25
8	25

RCS–1. ROUGH CUT STREET CONTROL

ROUGH CUT STREET CONTROL INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF ROUGH CUT STREET CONTROL MEASURES.

2. ROUGH CUT STREET CONTROL SHALL BE INSTALLED AFTER A ROAD HAS BEEN CUT IN, AND WILL NOT BE PAVED FOR MORE THAN 14 DAYS OR FOR TEMPORARY CONSTRUCTION ROADS THAT HAVE NOT RECEIVED ROAD BASE.

ROUGH CUT STREET CONTROL INSPECTION AND MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

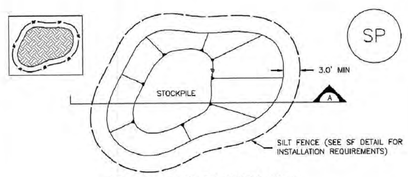
MEADOWBROOK CROSSING FILING NO. 1

EROSION CONTROL DETAILS
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
13
OF 35 SHEETS

Stockpile Management (SP) — MM-2



STOCKPILE PROTECTION PLAN

SECTION A

SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - -LOCATION OF STOCKPILES.
   - -TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

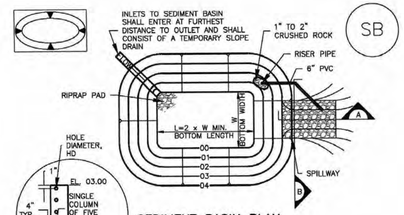
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

STOCKPILE PROTECTION MAINTENANCE NOTES

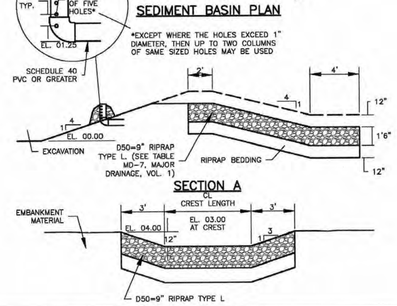
4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

Sediment Basin (SB) — SC-7



SEDIMENT BASIN PLAN



NOTE:
SEE SHEET 11 FOR TEMPORARY SEDIMENT BASIN SIZING REQUIREMENTS

TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	9/32
2	21	3	13/16
3	28	5	½
4	33 ½	6	9/16
5	38 ½	8	23/32
6	43	9	25/32
7	47 ¼	11	29/32
8	51	12	27/32
9	55	13	⅞
10	58 ¼	15	15/16
11	61	16	31/32
12	64	18	1
13	67 ½	19	1 1/16
14	70 ½	21	1 ⅛
15	73 ¼	22	1 3/16

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   DIAMETER, HD.
   - -LOCATION OF SEDIMENT BASIN.
   - -TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   - -FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   - -FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.

2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.

3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.

4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.

5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SEDIMENT BASIN MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

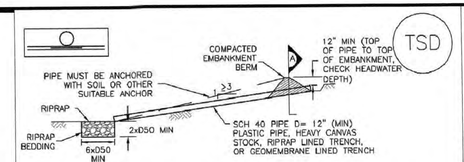
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

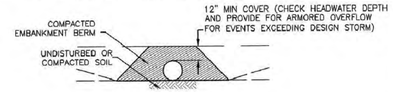
4. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).

5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.

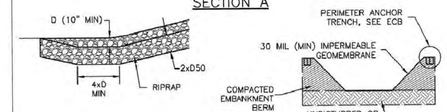
6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.



TEMPORARY SLOPE DRAIN PROFILE

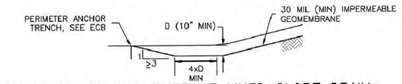


SECTION A



TERMINATION OF RIPRAP LINED SLOPE DRAIN

GEOMEMBRANE LINED SLOPE DRAIN



TERMINATION OF GEOMEMBRANE LINED SLOPE DRAIN

SLOPE DRAIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - -LOCATION AND LENGTH OF SLOPE DRAIN
   - -PIPE DIAMETER, D, AND RIPRAP SIZE, D50.

2. SLOPE DRAIN SHALL BE DESIGNED TO CONVEY PEAK RUNOFF FOR 2-YEAR 24-HOUR STORM AT A MINIMUM. FOR LONGER DURATION PROJECTS, LARGER MAY BE APPROPRIATE.

3. SLOPE DRAIN DIMENSIONS SHALL BE CONSIDERED MINIMUM DIMENSIONS; CONTRACTOR MAY ELECT TO INSTALL LARGER FACILITIES.

4. SLOPE DRAINS INDICATED SHALL BE INSTALLED PRIOR TO UPGRADIENT LAND-DISTURBING ACTIVITIES.

5. CHECK HEADWATER DEPTHS FOR TEMPORARY AND PERMANENT SLOPE DRAINS. DETAILS SHOW MINIMUM COVER; INCREASE AS NECESSARY FOR DESIGN HEADWATER DEPTH.

6. RIPRAP PAD SHALL BE PLACED AT SLOPE DRAIN OUTFALL.

7. ANCHOR PIPE BY COVERING WITH SOIL OR AN ALTERNATE SUITABLE ANCHOR MATERIAL.

SLOPE DRAIN MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

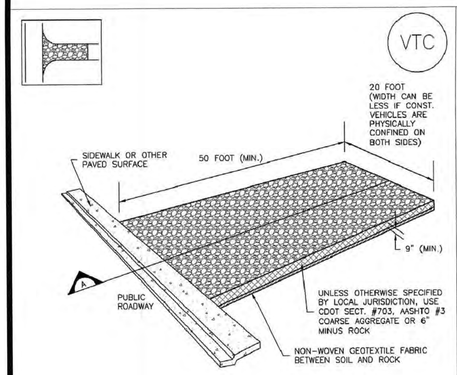
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. INSPECT INLET AND OUTLET POINTS AFTER STORMS FOR CLOGGING OR EVIDENCE OF OVERTOPPING. BREACHES IN PIPE OR OTHER CONVEYANCE SHALL BE REPAIRED AS SOON AS PRACTICABLE IF OBSERVED.

5. INSPECT RIPRAP PAD AT OUTLET FOR SIGNS OF EROSION. IF SIGNS OF EROSION EXIST, ADDITIONAL ARMORING SHALL BE INSTALLED.

6. TEMPORARY SLOPE DRAINS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED, BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION. WHEN SLOPE DRAINS ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED, MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.



SECTION A

VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   - -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   - -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

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5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

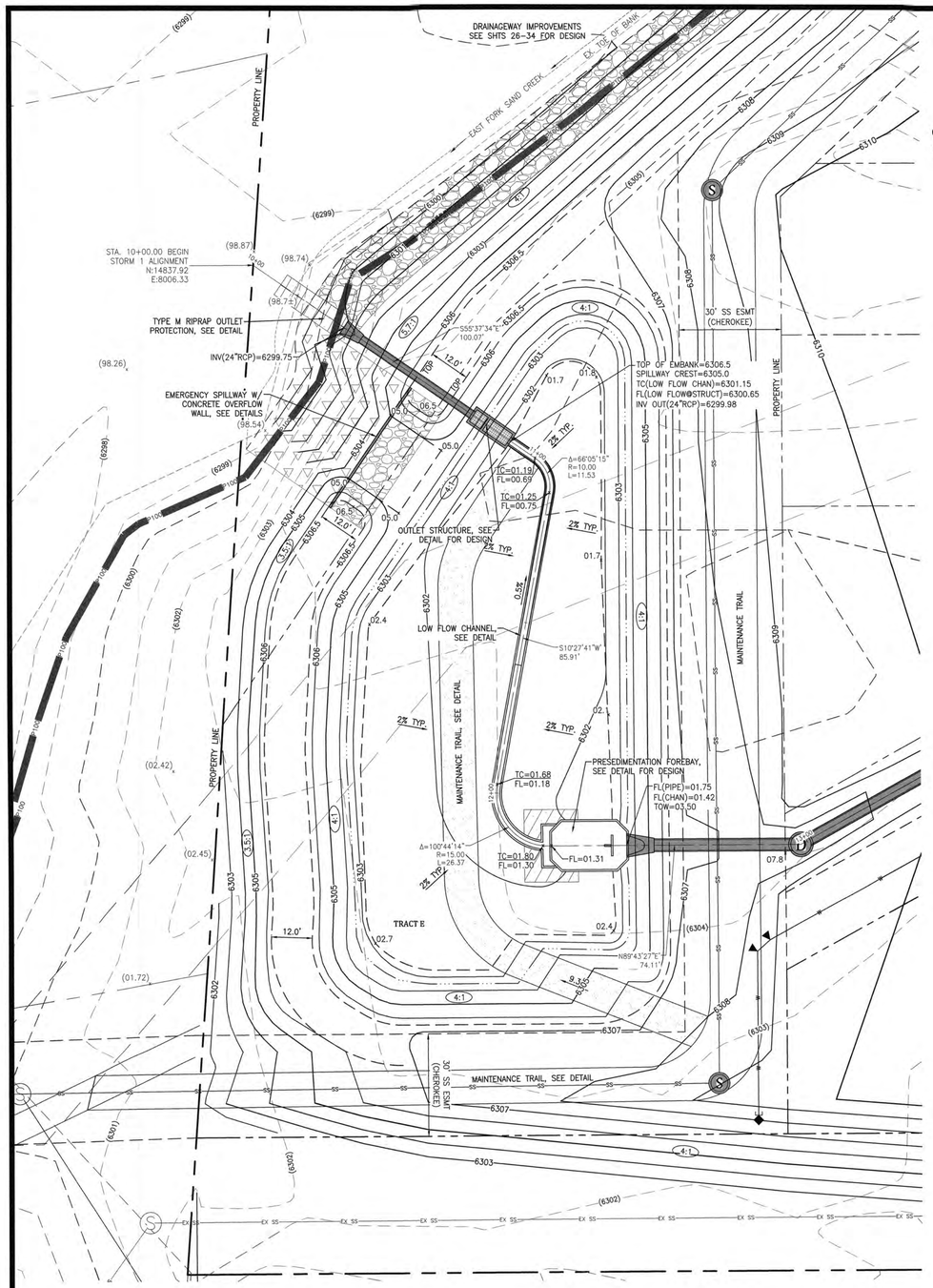
(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

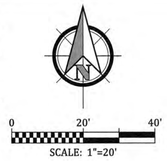
Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

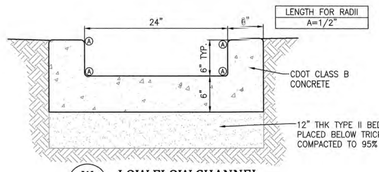
MEADOWBROOK CROSSING FILING NO. 1

EROSION CONTROL DETAILS
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	



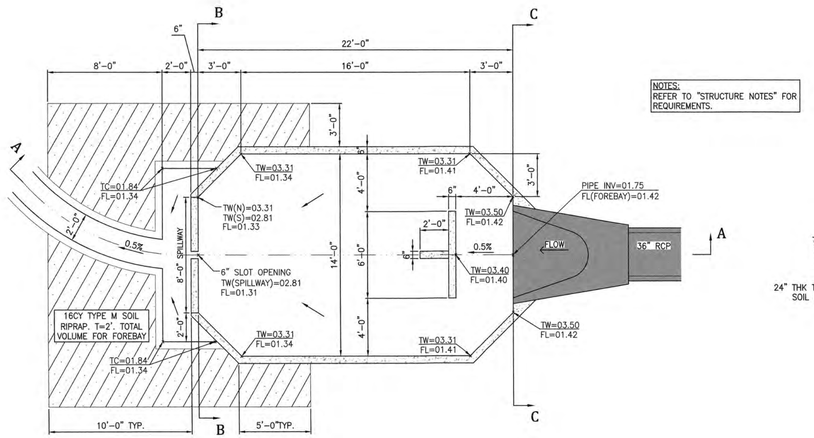




W/15 LOW FLOW CHANNEL
SCALE: 1"=1'

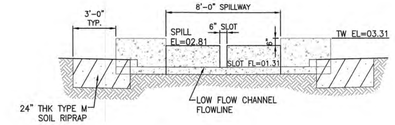
CLASSIFICATION AND GRADATION OF RIPRAP			
RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	d50* (INCHES)
TYPE VL	70–100	12	
	50–70	9	
	35–50	6	6**
	2–10	2	
TYPE L	70–100	15	
	50–70	12	
	35–50	9	9**
	2–10	3	
TYPE M	70–100	21	
	50–70	18	
	35–50	12	12**
	2–10	4	

* d50=MEAN PARTICLE SIZE (INTERMEDIATE DIMENSION) BY WEIGHT.
** MIX VL, L AND M RIPRAP WITH 35% TOPSOIL (BY VOLUME) AND BURY WITH 4–6 INCHES OF TOPSOIL, ALL VIBRATION COMPACTED & REVEGETATE.
(TABLE MD-7: CLASSIFICATION AND GRADATION OF ORDINARY RIPRAP. UDFCD, DRAINAGE CRITERIA MANUAL, VOL. 1)

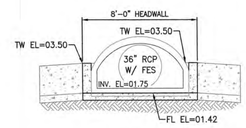


NOTES:
REFER TO "STRUCTURE NOTES" FOR REQUIREMENTS.

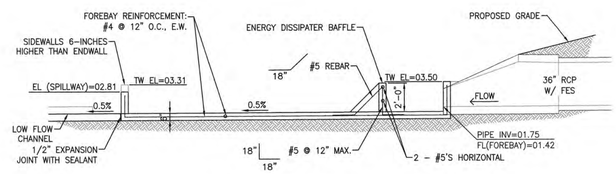
Z/15 PRESEDIMENTATION FOREBAY
PLAN VIEW
SCALE: NTS



B/15 SECTION B-B
SCALE: NTS



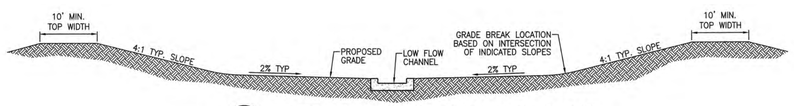
C/15 SECTION C-C
SCALE: NTS



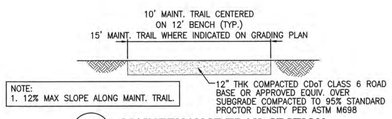
A/15 SECTION A-A
SCALE: NTS

WATER QUALITY BASIN				
	WATER SURFACE ELEV. (FT)	REQUIRED STORAGE VOLUME	RELEASE RATE	PROVIDED STORAGE VOLUME
WQCV	6303.62	0.36 AC-FT		
SPILLWAY CREST ELEVATION: 6305.00				
TOP OF EMBANKMENT MINIMUM ELEVATION: 6306.50				

NOTES:
1. AS-BUILT SURVEY AND VOLUME CERTIFICATION REQUIRED BY A LICENSED PROFESSIONAL LAND SURVEYOR, SEE GRADING NOTES.



X/15 WATER QUALITY BASIN TYPICAL CROSS SECTION
SCALE: NTS



NOTE:
1. 12% MAX SLOPE ALONG MAINT. TRAIL.

Y/15 MAINTENANCE TRAIL SECTION
SCALE: NTS

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
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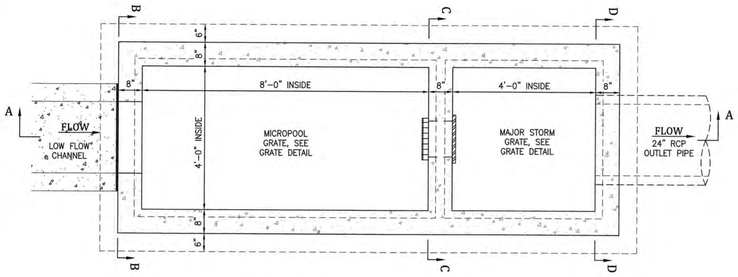
(719)630-7342

MEADOWBROOK CROSSING FILING NO. 1

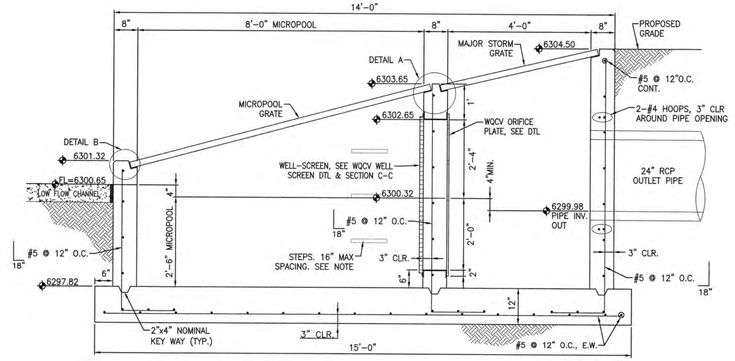
WATER QUALITY AREA PLAN
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET
15
OF 35 SHEETS



Z / 16 **OUTLET STRUCTURE DETAIL**
PLAN VIEW
SCALE: NTS

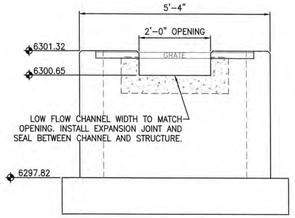


A / 16 **SECTION A-A**
SCALE: NTS

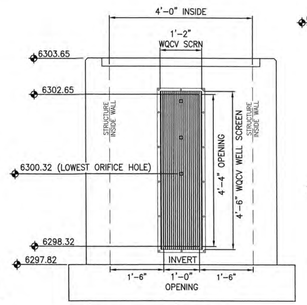
OUTLET STRUCTURE, FOREBAY, DRAIN CHANNEL AND WALL NOTES:
1. PRIOR TO CONSTRUCTION, CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL COMPONENTS OF THE OUTLET STRUCTURE.
2. GRADE 60 REINFORCING STEEL REQUIRED. SEE TABLE FOR THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS. ALL REINFORCING STEEL SHALL HAVE 2-INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE AND 3-INCH MIN CLEARANCE TO EDGE OF CONCRETE PLACED AGAINST SOIL, UNLESS OTHERWISE NOTED.

BAR SIZE	#4	#5	#6
MIN. SPLICE LENGTH	1'-3"	1'-7"	2'-0"

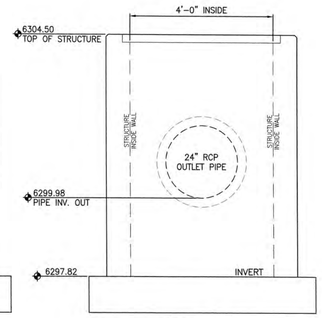
3. CONCRETE FOR THE OUTLET STRUCTURE, FOREBAY AND SPILLWAY WALL SHALL BE CDOT CLASS D CONCRETE.
4. CONCRETE FOR DRAIN CHANNELS SHALL BE CDOT CLASS B CONCRETE (CLASS D CONCRETE IS ALSO ACCEPTABLE).
5. EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213. EXPANSION JOINT MATERIAL SHALL BE 1/2" THICK, SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE AND THE JOINT SHALL BE SEALED, REFER TO DETAILS.
6. ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 3/4-INCH CHAMFER UNLESS OTHERWISE NOTED.
7. BACKFILLING AGAINST WALLS SHALL NOT COMMENCE UNTIL CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH.
8. SUBGRADE TO BE 12" THK CLEAN FILL COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM M698 UNDER STRUCTURES.
9. OUTLET STRUCTURES STEPS SHALL CONFORM TO AASHTO M199.
10. FOREBAY: CONTROL JOINTS SHALL BE INSTALLED AT 10' O.C. MAXIMUM. THE JOINTS SHALL BE SEALED WITH A JOINT SEALANT.



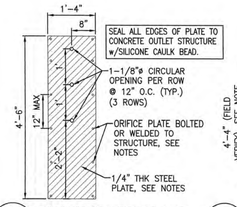
B / 16 **SECTION B-B**
SCALE: NTS



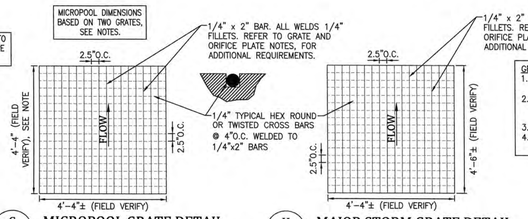
C / 16 **SECTION C-C**
SCALE: NTS



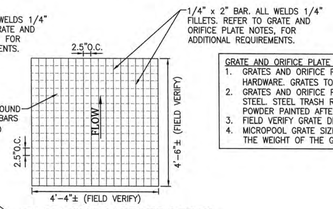
D / 16 **SECTION D-D**
SCALE: NTS



F / 16 **WQCV ORIFICE PLATE**
SCALE: NTS

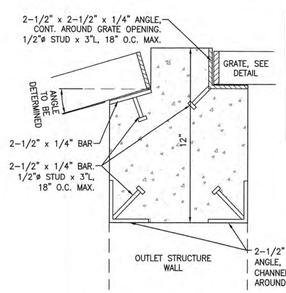


G / 16 **MICROPOOL GRATE DETAIL**
SCALE: NTS



GRATE AND ORIFICE PLATE NOTES:
1. GRATES AND ORIFICE PLATES SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE. GRATES TO BE BOLTED DOWN TO OUTLET STRUCTURE. 18" O.C.
2. GRATES AND ORIFICE PLATES SHALL BE STAINLESS STEEL, ALUMINUM OR STEEL. STEEL TRASH RACKS SHALL BE HOT DIP GALVANIZED AND HOT POWDER PAINTED AFTER GALVANIZED.
3. FIELD VERIFY GRATE DIMENSION PRIOR TO FABRICATION.
4. MICROPOOL GRATE SIZE IS SHOWN FOR MULTIPLE SECTIONS TO MINIMIZE THE WEIGHT OF THE GRATE. THE SIZE CAN VARY FROM WHAT IS SHOWN.

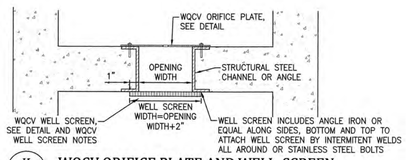
H / 16 **MAJOR STORM GRATE DETAIL**
SCALE: NTS



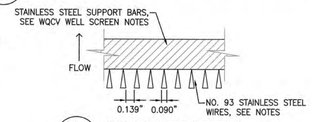
I / 16 **DETAIL A**
SCALE: NTS

WQCV WELL-SCREEN NOTES:
1. WELL-SCREEN SHALL BE STAINLESS STEEL AND ATTACHED BY INTERMITTANT WELDS OR STAINLESS STEEL BOLTS ALONG EDGE OF THE MOUNTING FRAME.
2. WQCV WELL SCREEN
   - TYPE OF SCREEN: STAINLESS STEEL #93 VEE WIRE (JOHNSON VEE WIRE TM STAINLESS STEEL SCREEN OR EQUIVALENT WITH 60% OPEN AREA)
   - SCREEN SLOT OPENING DIMENSION: 0.139" (SCREEN #93 VEE WIRE SLOT OPENING)
   - TYPE AND SIZE OF SUPPORT ROD: TE 0.074"x0.50"
   - SPACING OF SUPPORT ROD (O.C.): 1.0 INCH
   - TOTAL SCREEN THICKNESS: 0.655"
   - CARBON STEEL HOLDING FRAME TYPE: 3/4" x 1.0" ANGLE

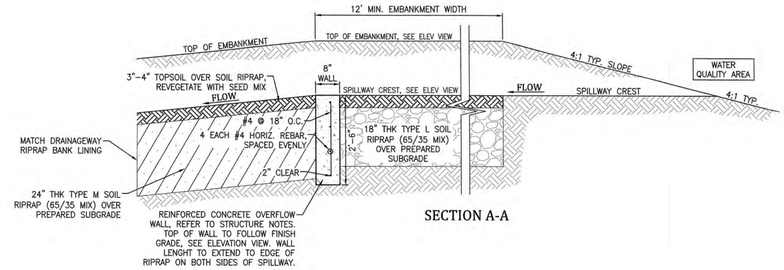
J / 16 **DETAIL B**
SCALE: NTS



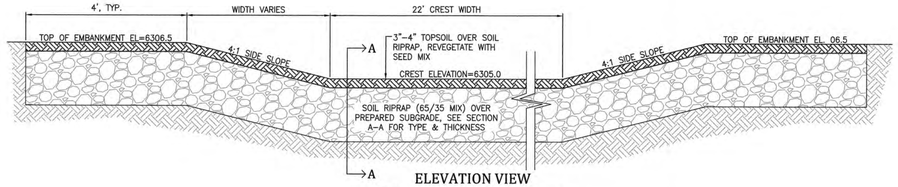
K / 16 **WQCV ORIFICE PLATE AND WELL SCREEN**
SCALE: NTS



L / 16 **WQCV WELL SCREEN**
SCALE: NTS



SECTION A-A



ELEVATION VIEW

M / 16 **EMERGENCY SPILLWAY**
SCALE: NTS

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

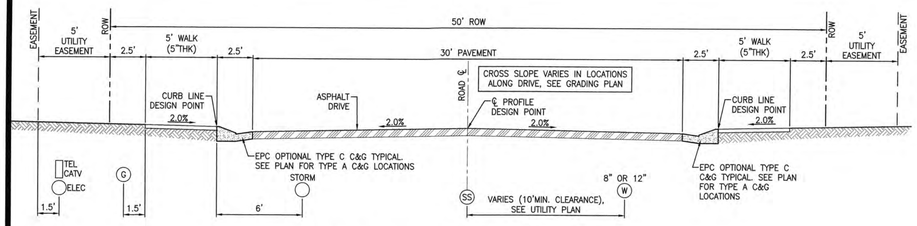
MEADOWBROOK CROSSING FILING NO. 1

WATER QUALITY AREA DETAILS

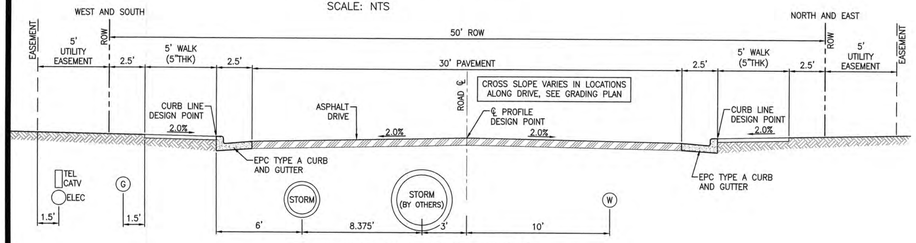
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

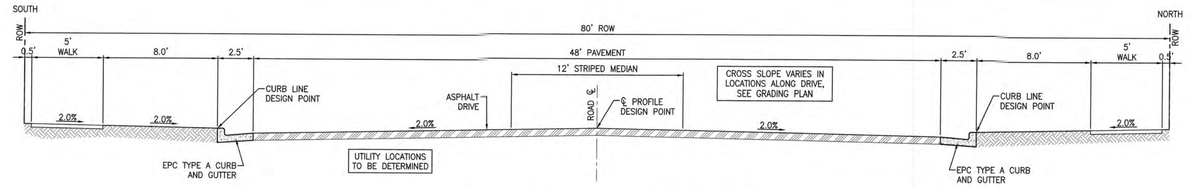
SHEET
16
OF 35 SHEETS



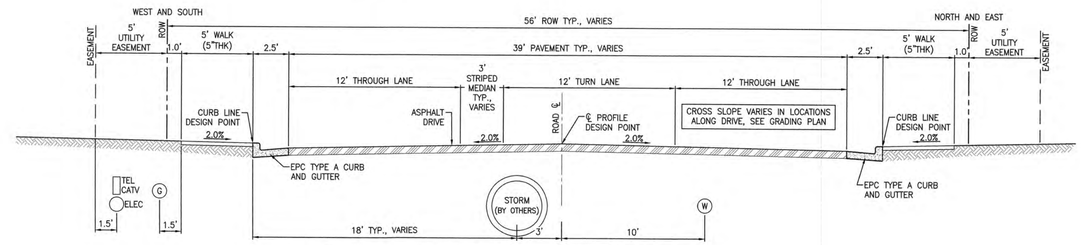
A / DT1 **TYPICAL PREBLE AND BOREAL DRIVE SECTIONS**
TYPICAL URBAN LOCAL ROADWAY
EPC SD_2-2
SCALE: NTS



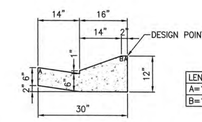
B / DT1 **TYPICAL NEWT DRIVE SECTION**
TYPICAL URBAN LOCAL ROADWAY
EPC SD_2-2
SCALE: NTS



C / DT1 **TYPICAL MEADOWBROOK PARKWAY SECTION (CONCEPTUAL)**
TYPICAL URBAN NON-RESIDENTIAL COLLECTOR ROADWAY
EPC SD_2-3
SCALE: NTS

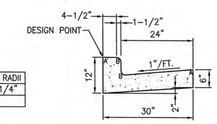


F / DT1 **TYPICAL WIDENED ENTRACNE NEWT DRIVE SECTION**
TYPICAL URBAN LOCAL ROADWAY
EPC SD_2-2
SCALE: NTS

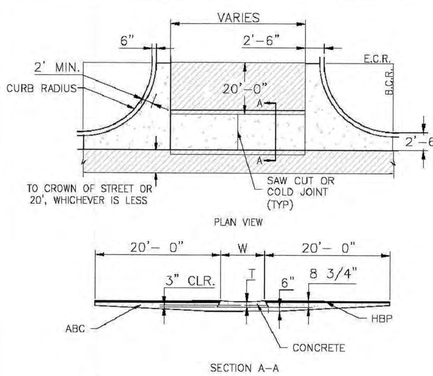


LENGTH FOR RADII
A=1/8" TO 1/4"
B=1-1/2"

D / DT1 **RAMP CURB AND GUTTER**
EPC SD_2-20, EPC OPTIONAL TYPE C
SCALE: NTS



E / DT1 **VERTICAL CURB AND GUTTER**
EPC SD_2-20, EPC TYPE A
SCALE: NTS



NOTES

1. W – WIDTH SALL BE 6' FOR LOCAL, 8' FOR COLLECTORS, AND 10' FOR ARTERIAL ROADS.

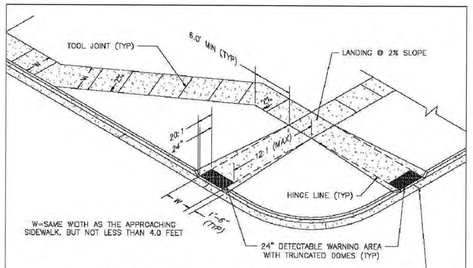
2. T – SQUARED-OFF RETURN TO BE POURED MONOLITHIC 8" PCC OR 9" FOR COLLECTORS MINIMUM WITH 6x6 – 4.4 W.W.F. OR #4 @ 18 E.W.

2. ▭ = 3" MINIMUM ASPHALT DEPTH (2 LIFTS).

3. DESIGN TO SPECIFY ELEVATIONS AT PI AND PCR

SCALE: NOT TO SCALE

8/11/11 DATE APPROVED: André P. Brackin DEPARTMENT OF TRANSPORTATION	Typical Cross Pan Layout Detail Standard Drawing	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
	REVISION DATE: 11/10/04 / FILE NAME: SD_2-26	



PEDESTRIAN RAMP NOTES

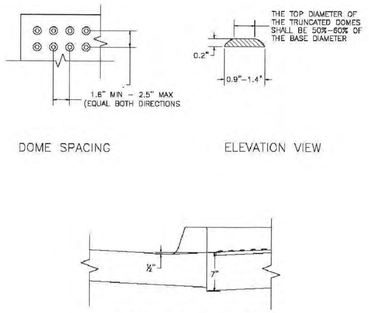
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT ENGINEERING CRITERIA MANUAL AND ADA REQUIREMENTS.
2. CONTRACTOR TO NOTIFY ENGINEERING DIVISION INSPECTION STAFF 48 HOURS PRIOR TO CONCRETE PLACEMENT.
3. PEDESTRIAN RAMP CONSTRUCTION SHALL BE A MINIMUM 4,500 PSI CONCRETE, MINIMUM 4" THICK, NON-COLORED, NON-SCORED, COARSE BROOM FINISH.
4. RAMP LOCATION AND LENGTH MAY REQUIRE MODIFICATION TO MAINTAIN THE 12:1 MAXIMUM RUNNING RAMP SLOPE AND 20:1 DETECTABLE WARNING AREA DUE TO STREET INTERSECTION GRADES AND/OR ALIGNMENTS.
5. DETECTABLE WARNING AREA SHALL START A MINIMUM OF 6" BUT NOT MORE THAN 8" FROM THE FLOWLINE OF THE CURB AT ANY POINT.
6. DETECTABLE WARNING AREA SHALL BE PREFABRICATED REDDISH INTEGRALLY COLORED TRUNCATED-DOMES.
7. THE DETECTABLE WARNING AREA SHALL BE 24" IN LENGTH AND THE FULL WIDTH OF THE RAMP.
8. RAMP WIDTH REQUIRED IS SAME AS APPROACHING SIDEWALK, 4' MINIMUM.
9. ALL RAMPS WILL BE PERPENDICULAR TO TRAFFIC WITH THE EXCEPTION OF MID-BLOCK OR TERMINAL RAMPS WHICH MAY BE PARALLEL, SUBJECT TO APPROVAL.
10. AVOID PLACING DRAINAGE STRUCTURES, TRAFFIC SIGNAL/SIGNAGE, UTILITIES/JUNCTION BOXES, OR OTHER OBSTRUCTIONS WITHIN PROPOSED RAMP AREAS.

GENERAL NOTES

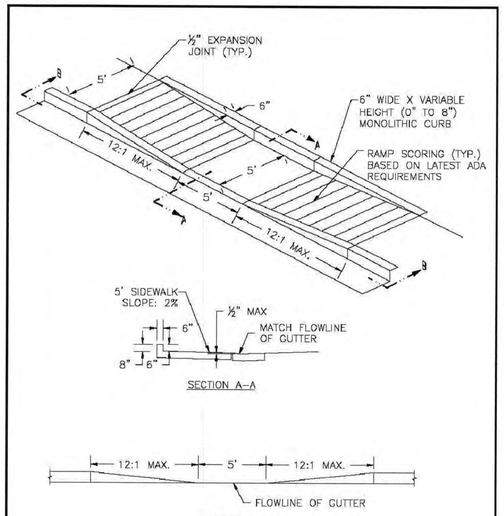
1. WHERE THE 1'-6" FLARED SIDE(S) OF A PERPENDICULAR CURB RAMP IS (ARE) CONTIGUOUS WITH A PEDESTRIAN OR HARD SURFACE AREA, THE MAXIMUM FLARE SLOPE SHALL NOT EXCEED 10:1.
2. PEDESTRIAN WALKWAY AND/OR LOCATION OF EXISTING OR FUTURE PEDESTRIAN RAMPS ON OPPOSITE CORNERS SHALL BE REVIEWED BEFORE CONSTRUCTING NEW RAMPS.
3. AT MARKED PEDESTRIAN CROSSINGS, THE BOTTOM OF THE RAMPS, EXCLUSIVE OF THE FLARE SIDES, SHALL BE TOTALLY CONTAINED WITHIN THE MARKINGS.

7/9/09 DATE APPROVED: André P. Brackin DEPARTMENT OF TRANSPORTATION	Pedestrian Intersection Ramp Standard Drawing	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
	REVISION DATE: 1/18/11 / FILE NAME: SD_2-41	

TRUNCATED DOME DETAILS



1/1/08 DATE APPROVED: John A. McCarty DEPARTMENT OF TRANSPORTATION	Truncated Dome Details Standard Drawing	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
	REVISION DATE: 7/09/07 / FILE NAME: SD_2-42	



SCALE: NOT TO SCALE

8/11/11 DATE APPROVED: André P. Brackin DEPARTMENT OF TRANSPORTATION	Parallel Pedestrian Ramp Detail Standard Drawing	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
	REVISION DATE: 11/10/04 / FILE NAME: SD_2-50	

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

MEADOWBROOK CROSSING FILING NO. 1

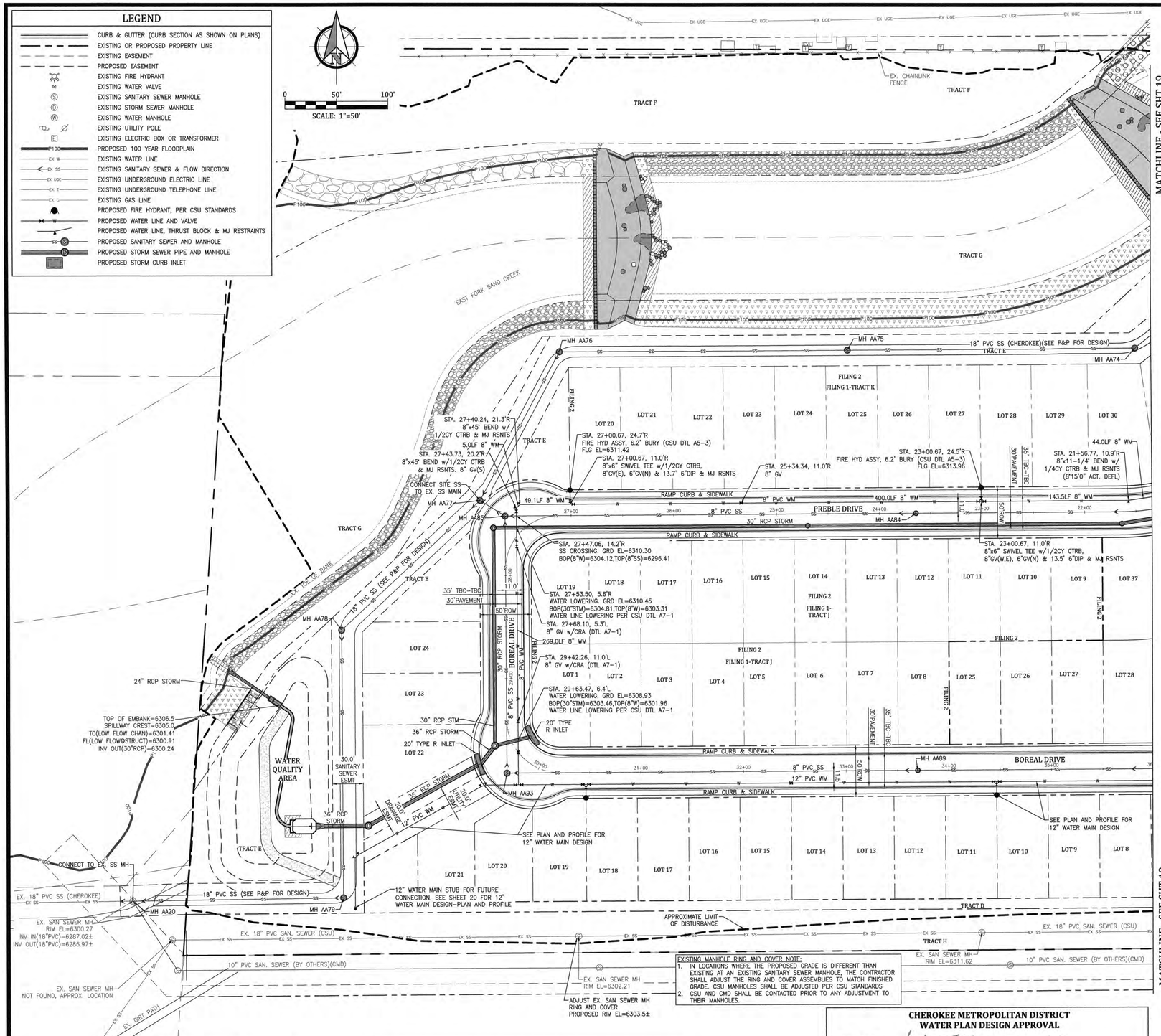
DETAIL SHEET
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET DT1

LEGEND

- CURB & GUTTER (CURB SECTION AS SHOWN ON PLANS)
- EXISTING OR PROPOSED PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING WATER MANHOLE
- EXISTING UTILITY POLE
- EXISTING ELECTRIC BOX OR TRANSFORMER
- PROPOSED 100 YEAR FLOODPLAIN
- EXISTING WATER LINE
- EXISTING SANITARY SEWER & FLOW DIRECTION
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING GAS LINE
- PROPOSED FIRE HYDRANT, PER CSU STANDARDS
- PROPOSED WATER LINE AND VALVE
- PROPOSED WATER LINE, THRUST BLOCK & MJ RESTRAINTS
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED STORM SEWER PIPE AND MANHOLE
- PROPOSED STORM CURB INLET



EXISTING MANHOLE RING AND COVER NOTE:
1. IN LOCATIONS WHERE THE PROPOSED GRADE IS DIFFERENT THAN EXISTING AT AN EXISTING SANITARY SEWER MANHOLE, THE CONTRACTOR SHALL ADJUST THE RING AND COVER ASSEMBLIES TO MATCH FINISHED GRADE. CSU MANHOLES SHALL BE ADJUSTED PER CSU STANDARDS.
2. CSU AND CMD SHALL BE CONTACTED PRIOR TO ANY ADJUSTMENT TO THEIR MANHOLES.

FIRE FLOW INFORMATION

IFC APPENDIX IIIB

BLDG CONSTRUCTION TYPE:	V–B
NFPA FIRE SPRINKLER SYSTEM TYPE:	NO
BUILDING FIRE AREA:	3,000 sf
FIRE FLOW REQUIRED:	1,500 gpm

IFC APPENDIX IIIC

MIN # OF HYDRANTS:	1
AVE HYDRANT SPACING:	500 FT
MAXIMUM HOSE LAY DISTANCE	250 FT

NOTES:
1. ALL WATER AND SANITARY SEWER WORK SHALL COMPLY WITH THE CHEROKEE METRO DISTRICT REQUIREMENTS ALONG WITH COLORADO SPRINGS UTILITIES WATER LINE EXTENSION & SERVICE STANDARDS (CURRENT EDITION) AND COLORADO SPRINGS UTILITIES WASTEWATER LINE EXTENSION & SERVICE STANDARDS (CURRENT EDITION).
2. PROPOSED SITE WATER MAIN TO BE 8–INCH AWWA C900 DR–14 PVC PIPE IN ACCORDANCE WITH CHEROKEE METROPOLITAN DISTRICT STANDARDS UNLESS OTHERWISE NOTED.
3. MINIMUM WATER MAIN RADIUS SHALL BE 286–FT.
4. MINIMUM COVER OVER WATER MAIN & SERVICES AND SANITARY SEWER MAIN & SERVICES IS 5.0–FEET.
5. FILING 2 HAS NOT BEEN PLATTED AT THE TIME THIS PLAN WAS PREPARED. THE FILING 2 LOT NUMBERS ARE SUBJECT TO CHANGE DEPENDING ON THE FINAL PLAT NUMBERING.

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

CHEROKEE METROPOLITAN DISTRICT WATER PLAN DESIGN APPROVAL

APPROVED BY: Jennifer Smith DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

CHEROKEE METROPOLITAN DISTRICT WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: Jennifer Smith DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

GENERAL NOTES – CHEROKEE METROPOLITAN DISTRICT:
1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH CHEROKEE METROPOLITAN DISTRICT STANDARDS AND SPECIFICATIONS AND THE CITY OF COLORADO SPRINGS CONSTRUCTION STANDARDS UNLESS NOTED OTHERWISE. IN THE EVENT OF CONFLICTING STANDARDS CHEROKEE METROPOLITAN DISTRICT STANDARDS SHALL GOVERN.
2. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS AS SET FORTH BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
3. THE CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE PROVISIONS OF THE APPLICABLE AGENCY HAVING JURISDICTION OVER THE ROADWAY WHICH MAY INCLUDE, BUT IS NOT LIMITED TO, THE EL PASO COUNTY PUBLIC SERVICES DIVISION, CITY OF COLORADO SPRINGS, AND/OR THE COLORADO DEPARTMENT OF TRANSPORTATION.
4. ALL STREET SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE AGENCY HAVING JURISDICTION OVER THE ROADWAY.
5. SHOP DRAWING SUBMITTALS SHALL BE MADE FOR ALL MATERIALS TO BE INCORPORATED INTO THIS PROJECT.
6. THE CONTRACTOR IS TO UNDERTAKE HIS WORK IN ACCORDANCE WITH OSHA'S CONFINED SPACE ENTRY REQUIREMENTS.
7. THE SUBGRADE UNDERNEATH ALL STRUCTURES SHALL BE ADEQUATELY STABILIZED.
8. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM ALL STRUCTURES. FINAL GRADING IS SUBJECT TO REVIEW AND APPROVAL.
9. THE CONTRACTOR'S WARRANTY SHALL EXTEND FOR A TWO–YEAR PERIOD FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

WATER SYSTEM CONSTRUCTION NOTES – CHEROKEE METROPOLITAN DISTRICT:
1. ALL WATER SYSTEM MAINS PIPE MATERIAL SHALL BE POLYVINYL CHLORIDE (PVC) CLASS 305 (DR–14) PER AWWA C–900 AND ASTM D2241 SPECIFICATIONS, EXCEPT WHERE NOTED. SPECIFICALLY, SECTIONS OF WATER PIPE THAT CROSS UNDER MAJOR DRAINAGE WAYS (SAND CREEK) OR MAJOR THOROUGHFARES SHALL BE DUCTILE IRON PIPE.
2. ALL FITTINGS SHALL BE CONSTRUCTED OF GRAY–IRON MATERIAL AND FURNISHED WITH MECHANICAL JOINT ENDS. ALL FITTINGS SHALL HAVE A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL BE WRAPPED WITH A 8–MIL THICKNESS POLYETHYLENE MATERIAL PER AWWA STANDARD C105.
3. ALL WATER PIPES SHALL BE INSTALLED AT A MINIMUM DEPTH OF FIVE (5) FEET BELOW FINISHED GRADE.
4. ALL BENDS, TEE, FIRE HYDRANTS, BLOW–OFFS, AND PLUGS AT DEAD END MAINS SHALL BE INSTALLED WITH CONCRETE THRUST BLOCKS.
5. FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL PIPES, FITTINGS, VALVES, APPURTENANCES, MATERIALS AND LABOR THAT ARE NECESSARY TO INSTALL A COMPLETE AND USEABLE FIRE HYDRANT. FIRE HYDRANT ASSEMBLIES TO CONFORM TO THE OPEN RIGHT CONVENTION. FIRE HYDRANT ASSEMBLIES SHALL BE ONE OF THE FOLLOWING TYPES:
   a. MUELLER CENTURION, MODEL A–473
   b. KENNEDY VALVE
   c. AMERICAN AVK
   d. OR ENGINEER/DISTRICT APPROVED EQUAL.
6. VALVE BOXES SHALL BE TYLER SLIP; TYPE "C" CAST IRON VALVE BOX ASSEMBLY SERIES 6860 WITH NO. 160 OVAL BASE OR APPROVED EQUAL.
7. CONTRACTOR SHALL PRESSURE TEST AND DISINFECT THE SYSTEM PRIOR TO CONNECTING TO EXISTING MAINS.
8. ALL WATER SYSTEM COMPONENTS SHALL BE FLUSHED AND CHLORINATED PER AWWA C–601, "DISINFECTING WATER MAINS" PRIOR TO ACCEPTANCE. THE CONTRACTOR SHALL PRODUCE A 25 MG/L SOLUTION BY ADHERING CHLORINE TABLETS TO THE PIPE SECTION WITH PERMATEX CLEAR TRV INSIDE THE SYSTEM. CHLORINATION SHALL OCCUR PRIOR TO HYDROSTATIC TESTING. THE CONTRACTOR SHALL OBTAIN A BACTERIOLOGICAL SAMPLE AFTER THE SYSTEM HAS BEEN FLUSHED. A CLEAN BACTERIOLOGICAL SAMPLE MUST BE OBTAINED PRIOR TO THE SYSTEM BEING PLACED INTO SERVICE.
9. HYDROSTATIC TESTING: ALL WATER SYSTEM MAINS SHALL BE FIELD PRESSURE TESTED TO A MINIMUM OF 150 PSI OR 1½ TIMES THE STATIC OPERATING PRESSURE, WHICH EVER IS GREATER. MAXIMUM ALLOWABLE LEAKAGE FOR EACH SECTION OF PIPE BETWEEN LINE VALVES SHALL NOT EXCEED THE FOLLOWING: *10 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY.
10. ALL VALVES SHALL CONFORM TO OPEN LEFT CONVENTION PER CHEROKEE METROPOLITAN DISTRICT STANDARDS. SERVICE LINE STOP VALVES/BOXES SHALL BE LOCATED A MINIMUM OF 7 FEET BEYOND THE PROPERTY LINE OR PER THE SERVICE DETAIL ON THE UTILITY SERVICE PLAN. ALL OTHER VALVES SHALL BE LOCATED PER THESE PLANS.
11. WHEN IT IS NECESSARY TO RAISE OR LOWER WATER MAINS AT OTHER UTILITY CROSSINGS THE CONTRACTOR SHALL INSURE A MINIMUM CLEARANCE OF 18" WHERE POSSIBLE BETWEEN THE OUTSIDE DIAMETER OF PIPES.
12. WHILE CONSTRUCTING THE WATER SYSTEM THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT LEAST ONE "APPROVED FOR CONSTRUCTION: SET OF UPDATED PLANS AT ALL TIMES. APPROVED FIELD MODIFICATIONS TO PLAN SETS SHALL BE CLEARLY IDENTIFIED IN RED INK ON THE PLANS BY THE CONTRACTOR PER FIELD CONSTRUCTION. THESE AS–BUILT CHANGES SHALL BE DATED AND SUBMITTED TO THE ENGINEER OF RECORD. THE ENGINEER OF RECORD SHALL PREPARE A COMPLETE SET OF "AS CONSTRUCTED" DRAWINGS AND DELIVER THE SETS TO THE CHEROKEE METROPOLITAN DISTRICT PRIOR TO FINAL ACCEPTANCE OF THE WATER SYSTEM.
13. COMPACTION TESTING RESULTS OF ALL TRENCHES AND BEDDING MATERIAL SHALL BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO ACCEPTANCE OF THE WATER SYSTEM.
14. PRIOR TO TAPPING ANY EXISTING WATER MAIN THE CONTRACTOR SHALL SUBMIT AND RECEIVE APPROVAL FOR SAID TAP IN ACCORDANCE WITH THE CHEROKEE METROPOLITAN DISTRICT STANDARDS.
15. PVC PIPE MUST BE PRESSURIZED PRIOR TO TAPPING.
16. THE WATER SYSTEM CONTRACTOR SHALL INSTALL ALL IRRIGATION TAPS AND METERS PER THESE PLANS.
17. FIRE FLOW DEMAND IS 1500 GPM FOR A 3 HOUR DURATION AT A 20–PSI MINIMUM RESIDUAL MAIN LINE PRESSURE.
18. ALL NONMETALLIC PIPES SHALL HAVE A TRACER WIRE ATTACHED TO ITS TOP DURING CONSTRUCTION. THE TRACER WIRE SHALL BE #12 AWG INSULATED COPPER WIRE WITH NO. 12 TYPE COPPER CONNECTORS AND SHALL BE PERMANENTLY AFFIXED TO THE TOP OF THE PIPE USING TAPE AT 4' INTERVALS. THE TRACER WIRE SHALL ALSO BE PERMANENTLY CONNECTED TO ALL FIRE HYDRANT TEE, METALLIC PIPE BENDS, MAIN VALVE AND OTHER METALLIC FITTINGS AND APPURTENANCES. ALL POINTS OF CONNECTION SHALL BE PROTECTED FROM CORROSION BY AN EPOXY OR SILICON COATING. GROUND TRACER WIRES TO SURFACE AT ALL VALVE BOXES.
19. THE CONTRACTOR ASSUMES RESPONSIBILITY FOR THE PROTECTION OF ALL UTILITIES DURING THE WORK. PRIOR TO ANY EXCAVATION, CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT (800) 922–1987 AT LEAST TWO WORKING DAYS PRIOR TO DIGGING.
20. ALL VALVES SHALL BE INSTALLED IN ACCORDANCE WITH COLORADO SPRINGS STANDARDS EXCEPT FOR NOTE 10 ABOVE. SPACING SHALL BE EQUIDISTANT FROM TEES, ELBOWS, BENDS AND OTHER APPURTENANCES AT 3 FOOT WHERE POSSIBLE.
21. HIGH DEFLECTION COUPLINGS ARE NOT TO BE USED.
22. TAPS WILL NOT BE RELEASE UNTIL THE FOLLOWING CONDITIONS ARE MET:
   a. WATER AND SEWER LINES ARE INSTALLED AND PRESSURE TESTED TO THE DISTRICT STANDARDS. ALL 2X4 MARKERS ARE INTACT AND PAINTED FOR SERVICES.
   b. AS CONSTRUCTED DRAWINGS HAVE BEEN SUBMITTED TO THE DISTRICT. DRAWINGS TO INCLUDE ANY CHANGES FROM CONSTRUCTION DRAWINGS. THE LENGTH, DEPTH, GRADE AND LOCATION OF ALL SEWER SERVICES. THE LENGTH DEPTH AND LOCATION OF WATER SERVICES.
   c. ALL ELECTRIC AND GAS UTILITIES ARE INSTALLED.
   d. THE FIRST LIFT OF HOT MIX ASPHALT MUST BE INSTALLED.
23. CONTRACTOR IS TO NOTIFY CHEROKEE METROPOLITAN DISTRICTS' INSPECTOR 24 HOURS PRIOR TO ALL STORM SEWER CRITICAL CROSSING OVER WATER AND SEWER LINES, TO VERIFY CLEARANCE.
24. FIRE HYDRANTS MUST BE PAINTED, BLUE CAPS AND BONNETS; WHITE BARREL SECTIONS. COLOR CODES ARE AS FOLLOWS: CHEROKEE BLUE, PRODUCT NUMBER 58155; CHEROKEE WHITE, PRODUCT NUMBER 58101, BOTH GLOSS OIL BASE EXTERIOR DEVOE–BAROX. CAN BE PURCHASED AT THE PAINT SPOT 5849 PALMER PARK BLVD COLORADO SPRINGS, CO 80915, OR EQUAL BRAND.
25. CURVILINEAR PIPELINE ALIGNMENTS IN PVC MATERIAL PIPELINES REQUIRE BENDING OF THE PIPE UTILIZING NECESSARY BRACING & BACKFILLING IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS. THERE SHALL BE NO DEFLECTION AT THE JOINTS OF PVC PIPELINES.

SANITARY SEWER CONSTRUCTION NOTES – CHEROKEE METROPOLITAN DISTRICT:
1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH CHEROKEE METROPOLITAN DISTRICT STANDARD AND THE CITY OF COLORADO SPRINGS CONSTRUCTION STANDARDS UNLESS NOTED OTHERWISE. IN THE EVENT OF CONFLICTING STANDARDS CHEROKEE METROPOLITAN DISTRICT STANDARDS SHALL GOVERN.
2. SANITARY SEWER PIPE SHALL CONFORM TO ASTM D3034 SDR35 PVC.
3. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING INVERTS PRIOR TO INSTALLATION OF NEW SANITARY SEWER SYSTEM.
4. THE PIPELINE INSTALLATION SHALL GENERALLY BE UNDERTAKEN FROM THE DOWNHILL PORTION OF THE PROJECT PROCEEDING UPHILL.
5. THE CONTRACTOR ASSUMES RESPONSIBILITY FOR THE PROTECTION OF ALL UTILITIES DURING THE WORK. PRIOR TO ANY EXCAVATION, CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 OR (800) 922–1987 AT LEAST TWO WORKING DAYS PRIOR TO DIGGING.
6. INFILTRATION AND EXFILTRATION TESTS CONDUCTED BY AND AT THE EXPENSE OF THE CONTRACTOR SHALL BE PERFORMED ON A REPRESENTATIVE PORTION OF THE PROJECT IN ACCORDANCE WITH SECTION 7.04 OF THE CITY OF COLORADO SPRINGS CONSTRUCTION STANDARDS.
7. ALL SANITARY SEWER MANHOLES, LIDS, BASES AND OTHER APPURTENANCES SHALL BE IN ACCORDANCE WITH (IAW) COLORADO SPRINGS DETAILS STANDARD MANHOLE DETAIL 1. EXCEPT AS NOTED ON THESE PLANS. WHERE REQUIRED ON THESE PLANS, WATER TIGHT MANHOLES, LIDS AND CONNECTIONS SHALL BE PROVIDED IAW COLORADO SPRINGS STANDARDS.
8. THE SANITARY SEWER PIPELINE SHALL BE INSTALLED IN STRAIGHT ALIGNMENTS BETWEEN MANHOLES UNLESS OTHERWISE APPROVED BY THE CHEROKEE METROPOLITAN DISTRICT.
9. WHERE NECESSARY, THE CONTRACTOR SHALL PROVIDE 3 DEGREE BENDS ON ALL CURVILINEAR SANITARY SEWER PIPE.
10. SANITARY SEWER SERVICE LINES SHALL BE LOCATED PER THE DETAIL ON THE UTILITY SERVICE PLAN, OR AT THE DIRECTION OF THE CONSTRUCTION MANAGER.
11. OVERLOT GRADING AND STREET SUBGRADE MUST BE WITHIN ± ONE (1) FOOT PRIOR TO ANY UTILITY INSTALLATION.
12. WHILE CONSTRUCTING THE SANITARY SEWER SYSTEM THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT LEAST ONE "APPROVED FOR CONSTRUCTION" SET OF UPDATED PLANS AT ALL TIMES. APPROVED FILED MODIFICATIONS TO PLAN SETS SHALL BE CLEARLY IDENTIFIED IN RED INK ON THE PLANS BY THE CONTRACTOR PER FIELD CONSTRUCTION. THESE AS–BUILT CHANGES SHALL BE DATED AND SUBMITTED TO THE ENGINEER OF RECORD. THE ENGINEER OF RECORD SHALL PREPARE A COMPLETE SET OF "AS CONSTRUCTED" DRAWINGS AND DELIVER THE SETS TO THE CHEROKEE METROPOLITAN DISTRICT PRIOR TO FINAL ACCEPTANCE OF THE SANITARY SEWER SYSTEM.
13. CONTRACTOR TO CONSTRUCT ALL MANHOLES AND STRUCTURES TO FINISHED GRADE.
14. FLAT TOP LIDS ON PRECAST CONCRETE MANHOLES ARE REQUIRED FOR ALL MANHOLES 5.0 FEET AND LESS IN DEPTH. ECCENTRIC CONES ARE TO BE INSTALLED ON ALL MANHOLES WITH DEPTHS GREATER THAN 5.0 FEET.
15. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING WASTEWATER PIPELINES OR MANHOLES AS A RESULT OF THEIR CONSTRUCTION ACTIVITY.
16. ALL PIPELINES SHALL BE "AS BUILT" SURVEYED AND "AS BUILT" DRAWINGS SUBMITTED TO THE CHEROKEE METROPOLITAN DISTRICT FOR REVIEW AND ACCEPTANCE.
17. MANHOLE ENTRY PERMIT: THE CHEROKEE METROPOLITAN DISTRICT WILL AUTHORIZE THE CONTRACTOR TO ENTER DISTRICT–OWNED MANHOLES, HOWEVER, THE DISTRICT WILL NOT ISSUE AN "ENTRY PERMIT" TO THE CONTRACTOR FOR ANY CONFINED SPACE. PRIOR TO ANY ENTRY, THE CONTRACTOR SHALL PROVIDE HIS OWN PERSONNEL CAPABLE AND QUALIFIED TO ISSUE AN ENTRY PERMIT AND SHALL BE EQUIPPED FOR ENTRY INTO CONFINED SPACES. THE CHEROKEE METROPOLITAN DISTRICT WILL ASSUME NO RESPONSIBILITY FOR THE CONTRACTOR'S ENTRY INTO DISTRICT–OWNED MANHOLES.
18. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO ACCEPTANCE BY THE DISTRICT, TWO (2) COPIES OF "AS–CONSTRUCTED" PLANS AND TWO (2) SETS OF ELECTRONIC DATA FILES OF THE PLANS SHALL BE SUBMITTED TO THE DISTRICT FOR RECORD.
   a. THE TWO (2) COPIES SHALL BE COMPLETE WITH ALL "AS–CONSTRUCTED" INFORMATION TOGETHER WITH A CERTIFICATION BY THE PARTY RESPONSIBLE FOR CONSTRUCTION THAT ALL DATA THEREON IS ACCURATE AND REPRESENTS ACTUAL CONSTRUCTED CONDITIONS.
   b. THE TWO PLAN SETS SHALL BE SUBMITTED ON SHEETS THAT ARE 24" X 36" IN SIZE.
   c. THE PLAN SET SHALL BE ON A DURABLE MEDIA THAT CAN BE RUN THROUGH PHOTOCOPYING EQUIPMENT.
   d. THE TWO ELECTRONIC DATA FORMATS SHALL BE SUBMITTED. THE FIRST ELECTRONIC DATA FILE SET SHALL BE IN AUTOCAD 2006 OR NEWER FORMAT WITH NO EXTERNAL REFERENCE DRAWINGS. ALL EXTERNAL REFERENCES MUST BE BOUND INTO THE DRAWING SET. THE SECOND SET OF ELECTRONIC DATA FILES SHALL BE IN ADOBE ACROBAT .PDF FORMAT.
   e. "AS–CONSTRUCTED" PLANS SHALL BE SUBMITTED WITHIN TWO WEEKS OF COMPLETION OF THE WATER AND/OR SANITARY SEWER UTILITIES.
   f. NO AUTHORIZATION TO CONNECT TO THE SYSTEM OR DISCHARGE TO THE SYSTEM WILL BE ALLOWED UNTIL THE "AS–CONSTRUCTED" DOCUMENTS HAVE BEEN RECEIVED AND ACCEPTED BY THE DISTRICT.
   g. ALL PLANS, SPECIFICATIONS AND SUPPORTING DOCUMENTS SHALL BE PREPARED BY OR UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF COLORADO. ALL PLANS AND SPECIFICATIONS SHALL BEAR THE SEAL AND SIGNATURE OF SAID LICENSED PROFESSIONAL ENGINEER.
19. TRACER WIRE IS TO BE INSTALLED WITH ALL SANITARY SEWER MAIN LINES AND SERVICES (FROM MAIN LINE TO THE BUILDING STRUCTURE). ALL NONMETALLIC PIPES SHALL HAVE A TRACER WIRE ATTACHED TO ITS TOP DURING CONSTRUCTION. THE TRACER WIRE SHALL BE #12 AWG INSULATED COPPER WIRE WITH NO. 12 TYPE COPPER CONNECTORS AND SHALL BE PERMANENTLY AFFIXED TO THE TOP OF THE PIPE USING TAPE AT 4' INTERVALS. ALL POINTS OF CONNECTION SHALL BE PROTECTED FROM CORROSION BY AN EPOXY OR SILICON COATING. ROUTE TRACER WIRE TO SURFACE AT ALL MANHOLES AND CLEANOUT LOCATIONS.
20. NEW SERVICE LINE TAPS ON NEW MAINS SHALL BE MADE WITH AN IN–LINE WYE FITTING INSTALLED ON THE MAIN POSITIONING THE SERVICE LINE BRACH IN THE UPPER QUADRANT OF THE PIPE.

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

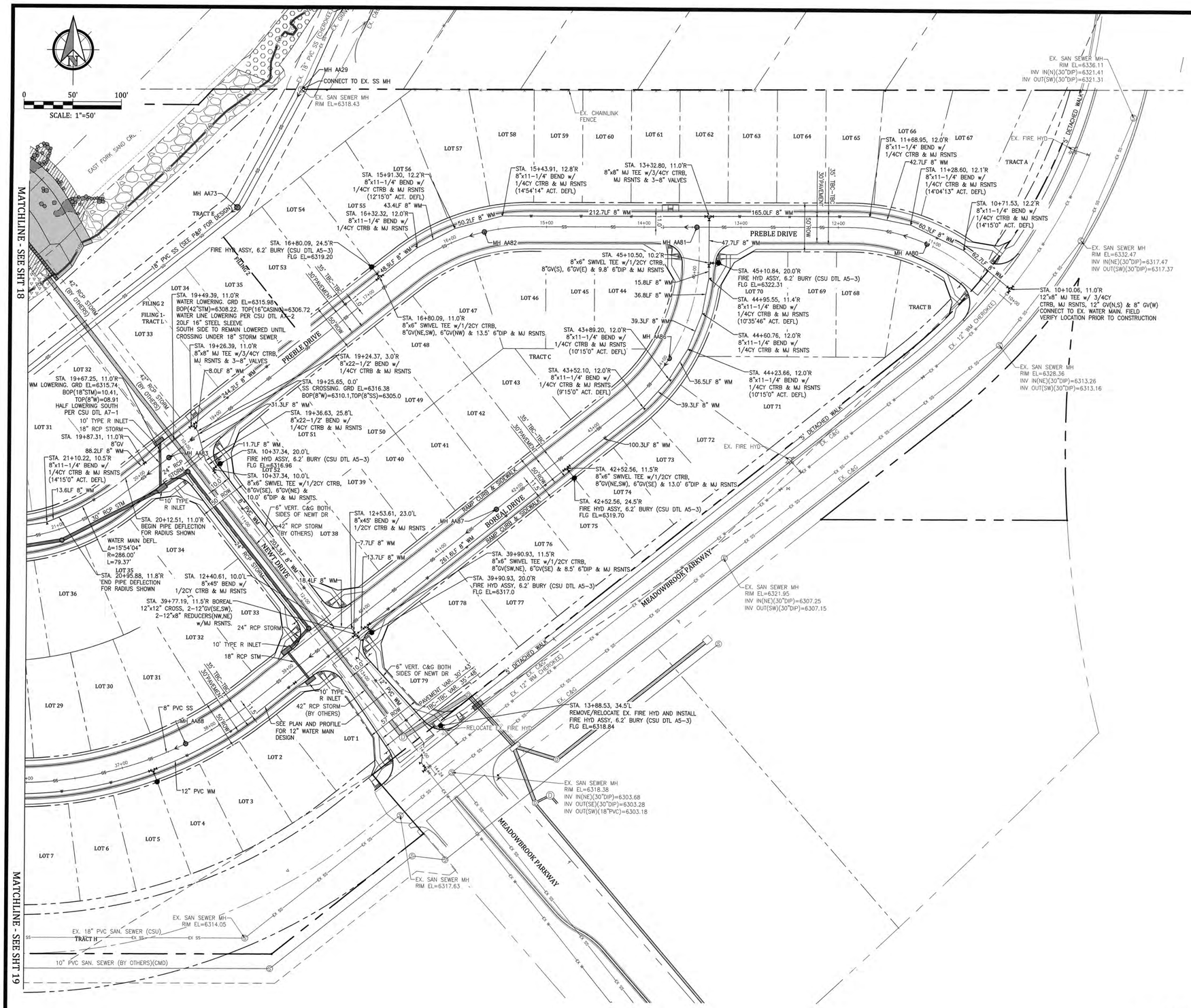
MEADOWBROOK CROSSING FILING NO. 1

UTILITY PLAN

EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET 18 OF 35 SHEETS



NOTES:
1. FILING 2 HAS NOT BEEN PLATTED AT THE TIME THIS PLAN WAS PREPARED. THE FILING 2 LOT NUMBERS ARE SUBJECT TO CHANGE DEPENDING ON THE FINAL PLAT NUMBERING.

CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: Jonathan Smith DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

CHEROKEE METROPOLITAN DISTRICT
WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: Jonathan Smith DATE: 09/05/17

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MEADOWBROOK CROSSING FILING NO. 1

UTILITY PLAN
EL PASO COUNTY, COLORADO

Project No.:	16039
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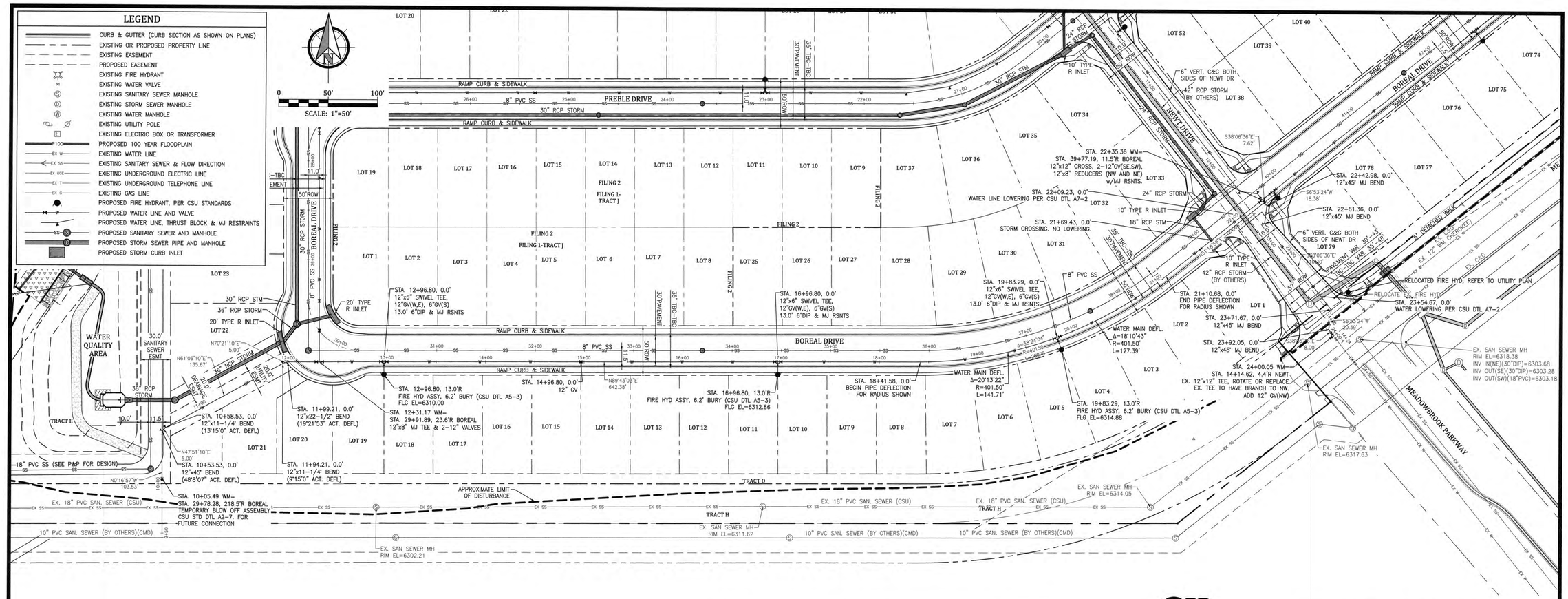
SHEET 19 OF 35 SHEETS



CURVILINEAR WATER PIPE INSTALLATION: MECHANICAL MEANS SHOULD NOT BE EMPLOYED TO ACCOMPLISH THIS MANUALLY IN THE TRENCH. IT IS THE INTENT THAT THE WORKERS SHOULD ACCOMPLISH THIS MANUALLY IN THE TRENCH. ON 4-INCH TO 12-INCH PIPE, THE CURVE SHOULD BE ACCOMPLISHED BY BENDING THE PIPE RATHER THAN DEFLECTING THE JOINTS. THERE SHOULD BE NO DEFLECTION IN THE JOINTS UPON COMPLETION TO AVOID OVER-STRESSING THE BELL AND PREVENT POSSIBLE BREAKAGE AND/OR LEAKS. TO AVOID DEFLECTING THE JOINTS WHILE ACHIEVING CURVATURE, IT IS RECOMMENDED THAT THE JOINTS BE SUFFICIENTLY BRACED OR BACKFILLED AND COMPACTED TO KEEP THEM STATIONARY.

NOTES:
1. CONTRACTOR TO FIELD VERIFY ELEVATIONS AT TIE IN LOCATIONS PRIOR TO CONSTRUCTION.
2. WATER LINE LOWERINGS TO BE PER CSU STD DTL A7-2. RESTRAINED JOINTS WITHIN LOWERING.
3. THREE (3) 12" MJ RESTRAINTS ON EACH VERTICAL BEND (CSU DTL A4-6 & A4-4).
4. ALL ELEVATIONS ARE TO TOP OF PIPE, UNLESS OTHERWISE NOTED.
5. FILING 2 HAS NOT BEEN PLATTED AT THE TIME THIS PLAN WAS PREPARED. THE FILING 2 LOT NUMBERS ARE SUBJECT TO CHANGE DEPENDING ON THE FINAL PLAT NUMBERING.

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CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: Christopher Smith DATE: 09/05/17

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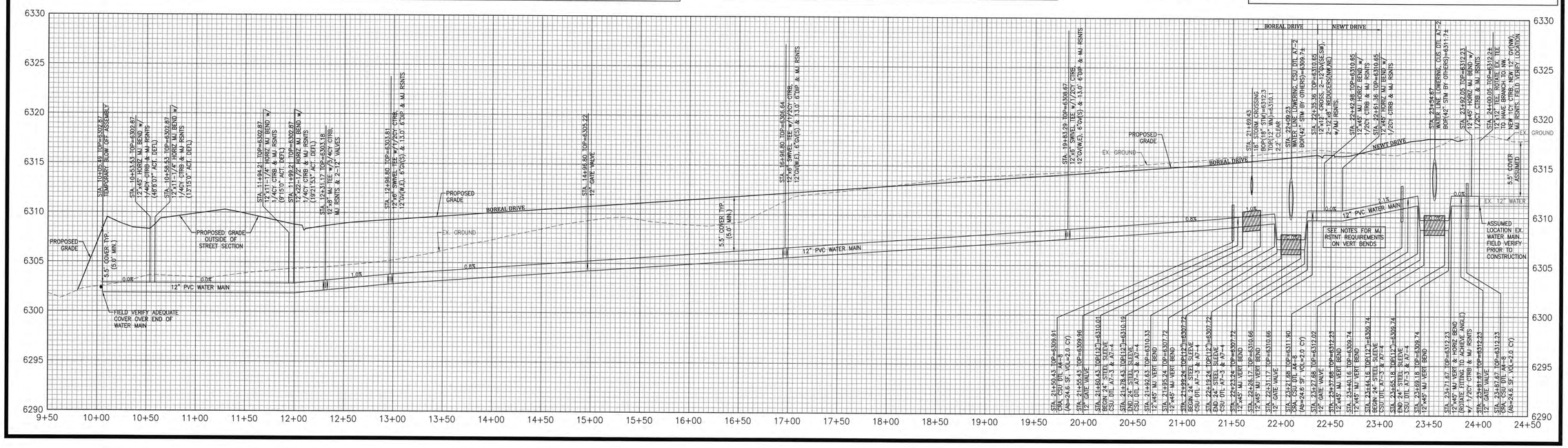

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MEADOWBROOK CROSSING FILING NO. 1

WATER MAIN PLAN AND PROFILE

EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
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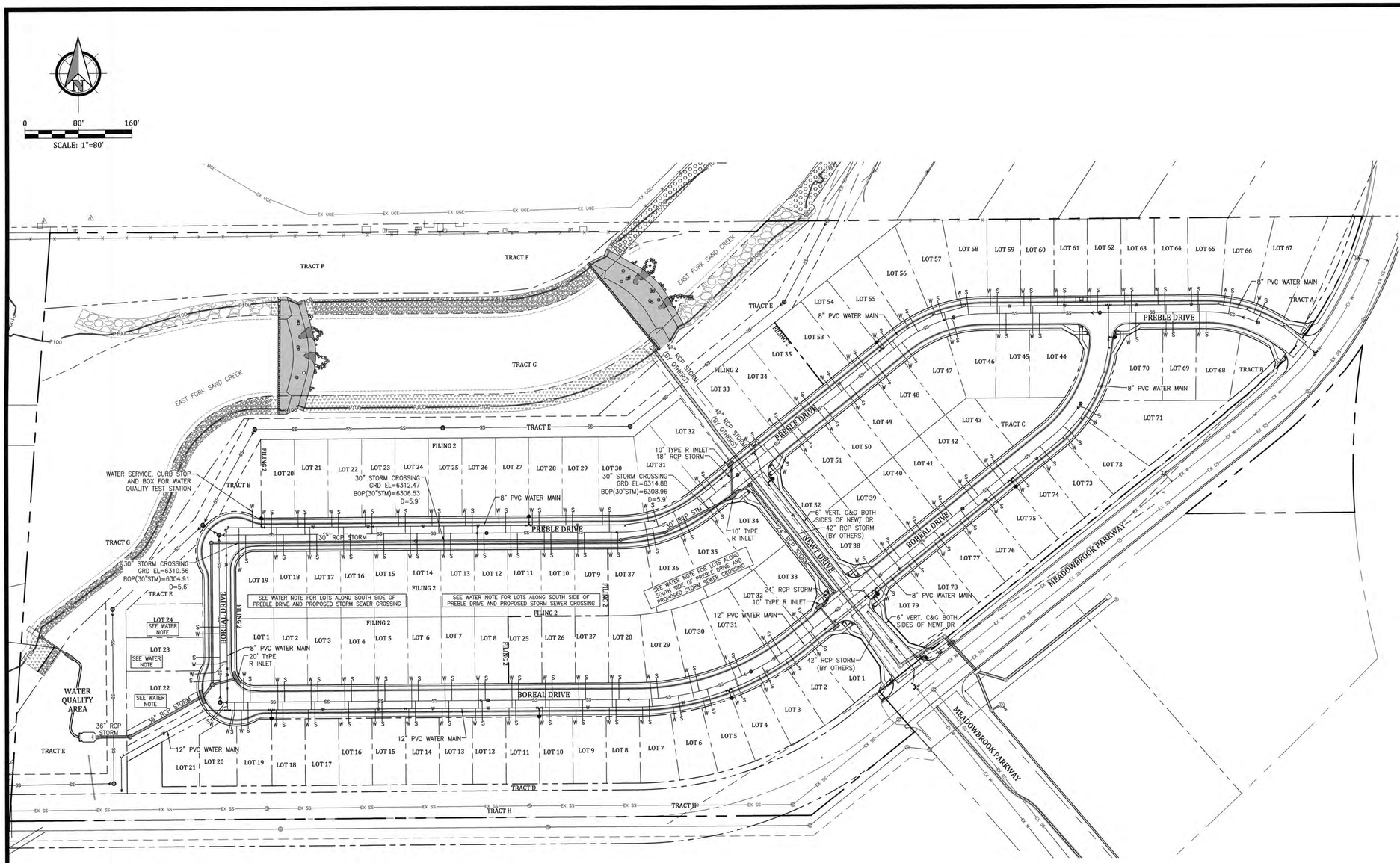
Revisions:	

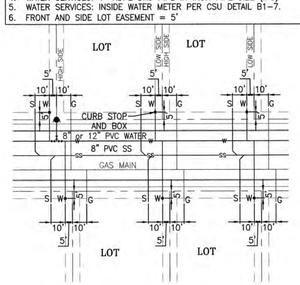
SHEET 20 OF 35 SHEETS



LEGEND

- CURB & GUTTER (CURB SECTION AS SHOWN ON PLANS)
- EXISTING OR PROPOSED PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING WATER MANHOLE
- EXISTING UTILITY POLE
- EXISTING ELECTRIC BOX OR TRANSFORMER
- PROPOSED 100 YEAR FLOODPLAIN
- EXISTING WATER LINE
- EXISTING SANITARY SEWER & FLOW DIRECTION
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING GAS LINE
- PROPOSED FIRE HYDRANT, PER CSU STANDARDS
- PROPOSED WATER LINE AND VALVE
- PROPOSED WATER LINE, THRUST BLOCK & MJ RESTRAINTS
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED STORM SEWER PIPE AND MANHOLE
- PROPOSED STORM CURB INLET
- PROPOSED WATER AND SANITARY SERVICE

NOTES:
1. WASTEWATER AND WATER SERVICE CONSTRUCTION TO BE PER CSU STDS.
2. CONTRACTOR TO USE CAUTION WHEN CROSSING OTHER UTILITIES AND MAINTAIN 18" MIN. SEPARATION TO SERVICES.
3. WASTEWATER SERVICES: 4" PVC @ 2.08% MIN. SLOPE.
4. WATER SERVICES: 1" HDPE DR9 PIPE IN IRON PIPE SIZE (IPS)
5. WATER SERVICES: INSIDE WATER METER PER CSU DETAIL B1-7.
6. FRONT AND SIDE LOT EASEMENT = 5'



A — UTILITY SERVICE TYPICAL DETAIL
SCALE: NTS

NOTES:
1. ALL WATER AND SANITARY SEWER WORK SHALL COMPLY WITH THE CHEROKEE METRO DISTRICT REQUIREMENTS ALONG WITH COLORADO SPRINGS UTILITIES WATER LINE EXTENSION & SERVICE STANDARDS (CURRENT EDITION) AND COLORADO SPRINGS UTILITIES WASTEWATER LINE EXTENSION & SERVICE STANDARDS (CURRENT EDITION).
2. MINIMUM COVER OVER WATER MAIN & SERVICES AND SANITARY SEWER MAIN & SERVICES IS 5.0-FEET.
3. SANITARY SERVICE CONNECTIONS TO MAIN SHALL BE 5-FT MINIMUM FROM OUTSIDE EDGE OF MANHOLE AND 2-FT MINIMUM BETWEEN CONNECTIONS.
4. WATER SERVICE TAPS SHALL BE 36-INCHES FROM ANOTHER WATER TAP ON THE SAME SIDE OF THE PIPE OR 18 INCHES ON OPPOSITE SIDES OF THE PIPE.
5. FILING 2 HAS NOT BEEN PLATTED AT THE TIME THIS PLAN WAS PREPARED. THE FILING 2 LOT NUMBERS ARE SUBJECT TO CHANGE DEPENDING ON THE FINAL PLAT NUMBERING.

WATER NOTE – WATER SERVICE CROSSING STORM SEWER NOTE:
1. WATER SERVICES FOR FILING 1-LOTS 34-37 AND 22-24; AND FILING 2-LOTS 9-19 CROSS THE PROPOSED STORM SEWER. THE WATER SERVICES SHALL BE INSTALLED UNDER THE STORM DRAIN PIPE. IN THESE CASES, A 4"ø STEEL OR DUCTILE IRON SLEEVE SHALL BE INSTALLED TO ACCOMMODATE THE WATER SERVICE. THE SLEEVE SHALL BE INSTALLED WITH A MINIMUM CLEAR SEPARATION OF 18" BETWEEN THE SLEEVE AND THE STORM SEWER PIPE, EXTENDED A MINIMUM OF 9' TO EACH SIDE OF THE STORM SEWER PIPE AND INCLUDE END SEALS IN ACCORDANCE WITH CDPHE REQUIREMENTS.

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CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: _____ DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

CHEROKEE METROPOLITAN DISTRICT
WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: _____ DATE: 09/05/17

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Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
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MEADOWBROOK CROSSING FILING NO. 1

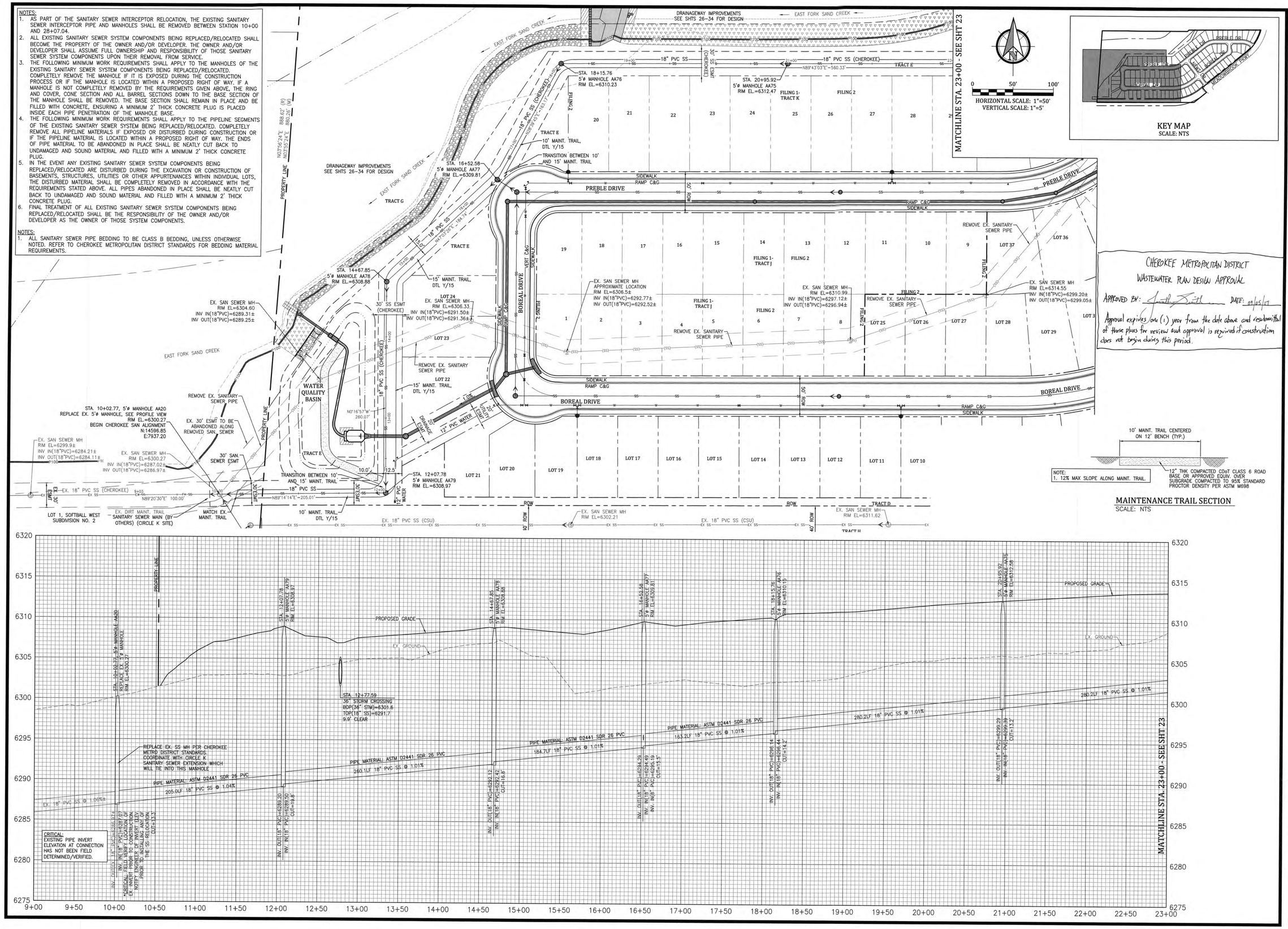
UTILITY SERVICE PLAN
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET 21 OF 35 SHEETS

NOTES:
1. AS PART OF THE SANITARY SEWER INTERCEPTOR RELOCATION, THE EXISTING SANITARY SEWER INTERCEPTOR PIPE AND MANHOLES SHALL BE REMOVED BETWEEN STATION 10+00 AND 28+07.04.
2. ALL EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED SHALL BECOME THE PROPERTY OF THE OWNER AND/OR DEVELOPER. THE OWNER AND/OR DEVELOPER SHALL ASSUME FULL OWNERSHIP AND RESPONSIBILITY OF THOSE SANITARY SEWER SYSTEM COMPONENTS UPON THEIR REMOVAL FROM SERVICE.
3. THE FOLLOWING MINIMUM WORK REQUIREMENTS SHALL APPLY TO THE MANHOLES OF THE EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED. COMPLETELY REMOVE THE MANHOLE IF IT IS EXPOSED DURING THE CONSTRUCTION PROCESS OR IF THE MANHOLE IS LOCATED WITHIN A PROPOSED RIGHT OF WAY. IF A MANHOLE IS NOT COMPLETELY REMOVED BY THE REQUIREMENTS GIVEN ABOVE, THE RING AND COVER, CONE SECTION AND ALL BARREL SECTIONS DOWN TO THE BASE SECTION OF THE MANHOLE SHALL BE REMOVED. THE BASE SECTION SHALL REMAIN IN PLACE AND BE FILLED WITH CONCRETE, ENSURING A MINIMUM 2' THICK CONCRETE PLUG IS PLACED INSIDE EACH PIPE PENETRATION OF THE MANHOLE BASE.
4. THE FOLLOWING MINIMUM WORK REQUIREMENTS SHALL APPLY TO THE PIPELINE SEGMENTS OF THE EXISTING SANITARY SEWER SYSTEM BEING REPLACED/RELOCATED. COMPLETELY REMOVE ALL PIPELINE MATERIALS IF EXPOSED OR DISTURBED DURING CONSTRUCTION OR IF THE PIPELINE MATERIAL IS LOCATED WITHIN A PROPOSED RIGHT OF WAY. THE ENDS OF PIPE MATERIAL TO BE ABANDONED IN PLACE SHALL BE NEATLY CUT BACK TO UNDAMAGED AND SOUND MATERIAL AND FILLED WITH A MINIMUM 2' THICK CONCRETE PLUG.
5. IN THE EVENT ANY EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED ARE DISTURBED DURING THE EXCAVATION OR CONSTRUCTION OF BASEMENTS, STRUCTURES, UTILITIES OR OTHER APPURTENANCES WITHIN INDIVIDUAL LOTS, THE DISTURBED MATERIAL SHALL BE COMPLETELY REMOVED IN ACCORDANCE WITH THE REQUIREMENTS STATED ABOVE. ALL PIPES ABANDONED IN PLACE SHALL BE NEATLY CUT BACK TO UNDAMAGED AND SOUND MATERIAL AND FILLED WITH A MINIMUM 2' THICK CONCRETE PLUG.
6. FINAL TREATMENT OF ALL EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED SHALL BE THE RESPONSIBILITY OF THE OWNER AND/OR DEVELOPER AS THE OWNER OF THOSE SYSTEM COMPONENTS.

NOTES:
1. ALL SANITARY SEWER PIPE BEDDING TO BE CLASS B BEDDING, UNLESS OTHERWISE NOTED. REFER TO CHEROKEE METROPOLITAN DISTRICT STANDARDS FOR BEDDING MATERIAL REQUIREMENTS.



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MEADOWBROOK CROSSING FILING NO. 1
SANITARY SEWER MAIN RELOCATION PLAN AND PROFILE
STA. 10+02.77 TO STA. 23+00
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
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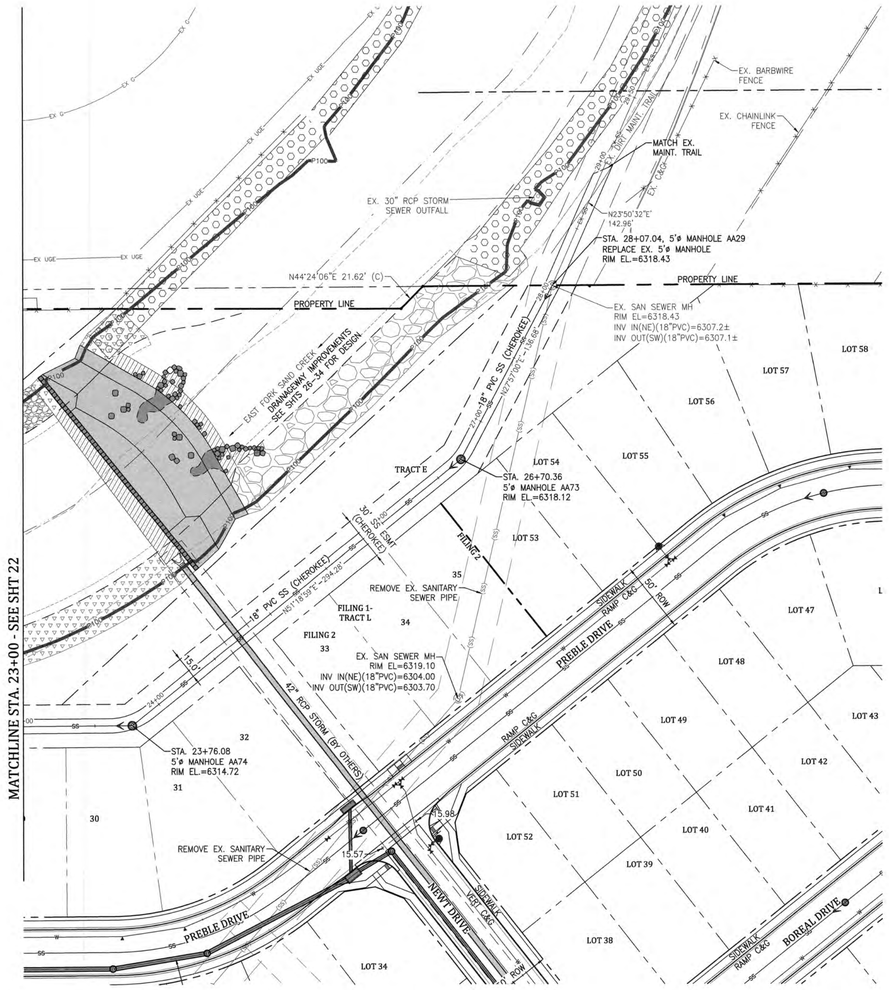
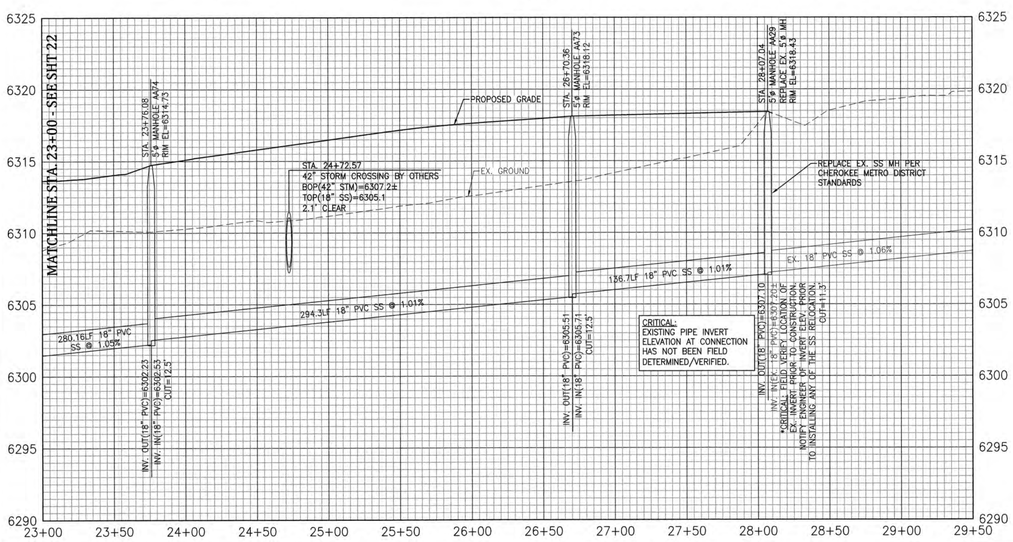
Revisions:	

SHEET 22 OF 35 SHEETS





NOTES:

1. AS PART OF THE SANITARY SEWER INTERCEPTOR RELOCATION, THE EXISTING SANITARY SEWER INTERCEPTOR PIPE AND MANHOLES SHALL BE REMOVED BETWEEN STATION 10+00 AND 28+07.04.
2. ALL EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED SHALL BECOME THE PROPERTY OF THE OWNER AND/OR DEVELOPER. THE OWNER AND/OR DEVELOPER SHALL ASSUME FULL OWNERSHIP AND RESPONSIBILITY OF THOSE SANITARY SEWER SYSTEM COMPONENTS UPON THEIR REMOVAL FROM SERVICE.
3. THE FOLLOWING MINIMUM WORK REQUIREMENTS SHALL APPLY TO THE MANHOLES OF THE EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED. COMPLETELY REMOVE THE MANHOLE IF IT IS EXPOSED DURING THE CONSTRUCTION PROCESS OR IF THE MANHOLE IS LOCATED WITHIN A PROPOSED RIGHT OF WAY. IF A MANHOLE IS NOT COMPLETELY REMOVED BY THE REQUIREMENTS GIVEN ABOVE, THE RING AND COVER, CONE SECTION AND ALL BARREL SECTIONS DOWN TO THE BASE SECTION OF THE MANHOLE SHALL BE REMOVED. THE BASE SECTION SHALL REMAIN IN PLACE AND BE FILLED WITH CONCRETE, ENSURING A MINIMUM 2' THICK CONCRETE PLUG IS PLACED INSIDE EACH PIPE PENETRATION OF THE MANHOLE BASE.
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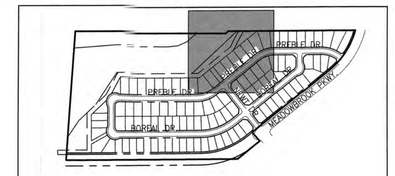
5. IN THE EVENT ANY EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED ARE DISTURBED DURING THE EXCAVATION OR CONSTRUCTION OF BASEMENTS, STRUCTURES, UTILITIES OR OTHER APPURTENANCES WITHIN INDIVIDUAL LOTS, THE DISTURBED MATERIAL SHALL BE COMPLETELY REMOVED IN ACCORDANCE WITH THE REQUIREMENTS STATED ABOVE. ALL PIPES ABANDONED IN PLACE SHALL BE NEATLY CUT BACK TO UNDAMAGED AND SOUND MATERIAL AND FILLED WITH A MINIMUM 2' THICK CONCRETE PLUG.
6. FINAL TREATMENT OF ALL EXISTING SANITARY SEWER SYSTEM COMPONENTS BEING REPLACED/RELOCATED SHALL BE THE RESPONSIBILITY OF THE OWNER AND/OR DEVELOPER AS THE OWNER OF THOSE SYSTEM COMPONENTS.



KEY MAP
SCALE: NTS

CHEROKEE METROPOLITAN DISTRICT
WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: Timothy Smith DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

Kiowa Engineering Corporation
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MEADOWBROOK CROSSING FILING NO. 1
SANITARY SEWER MAIN RELOCATION PLAN AND PROFILE
STA. 23+00 TO STA. 28+07.04
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
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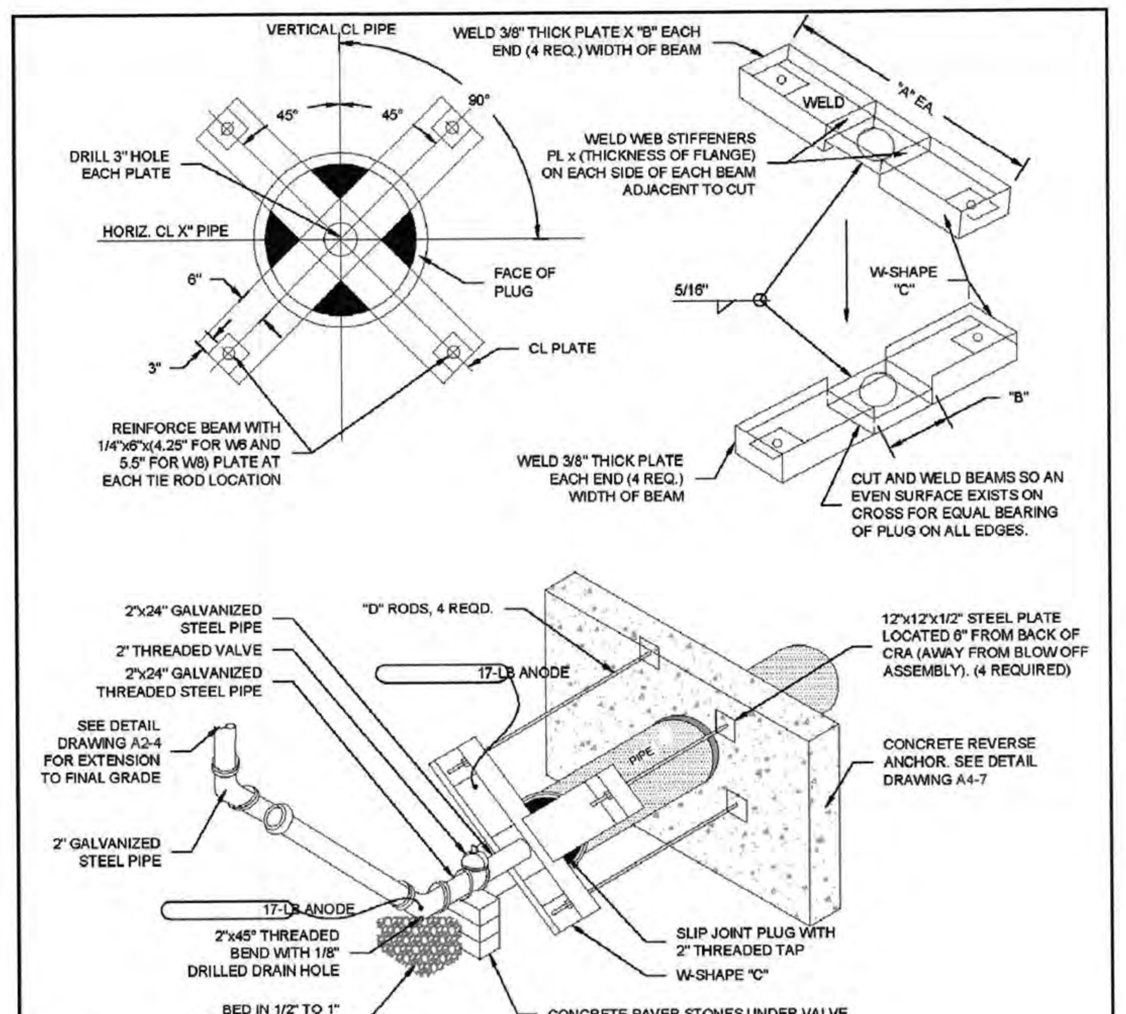
Revisions:	

SHEET
23
OF 35 SHEETS



NOTES:

1. REFER TO DETAIL DRAWING A2-8 FOR ALL DIMENSIONS AND SIZES FOR BLOW-OFF ASSEMBLY.
2. IF APPROPRIATE LOCATION FOR DISCHARGED WATER CANNOT BE REACHED BY ROLLING THE BEND ADDITIONAL BENDS MAY BE REQUIRED BY THE COLORADO SPRINGS UTILITIES INSPECTOR.
3. COAT TIE RODS, BEAMS AND GALVANIZED STEEL PIPE. SEE DETAIL DRAWING A8-11.
4. ENTIRE BLOW-OFF ASSEMBLY MUST BE ADEQUATELY SUPPORTED, CONCRETE PAVER STONES MAY BE REQUIRED.
5. PIPE DOPE APPROVED FOR USE IN POTABLE WATER SYSTEMS MUST BE USED ON ALL THREADED FITTINGS.
6. TEMPORARY BLOW-OFF VALVE ASSEMBLIES SHALL BE INSPECTED BY THE COLORADO SPRINGS UTILITIES INSPECTOR PRIOR TO BACKFILL. BACKFILL COMPACTION TO BE SAME AS AS PIPE COMPACTION SPECIFICATIONS.
7. ALL BLOW OFF PIPING IS 2" GALVANIZED PIPE AND MUST BE RATED TO 250 PSI AND CONFORM TO NSF-61 SPECIFICATIONS. ALL BLOW OFF PIPING LARGER THAN 2" MUST BE SPECIFIED AND APPROVED BY COLORADO SPRINGS UTILITIES.
8. SEE DETAIL DRAWINGS A2-5 AND A2-6 FOR MECHANICAL JOINT PLUG OR LINE CAP PIPE TERMINATION.
9. ALL HOLES IN STEEL SHALL BE OVERSIZED HOLES.
10. THERE SHALL BE NO SERVICE LINES CONNECTED BETWEEN THE LAST ISOLATION VALVE AND THE TEMPORARY BLOW-OFF ASSEMBLY.
11. MAINS GREATER THAN 16" SHALL BE DESIGNED BY THE DESIGN ENGINEER AND REVIEWED AND APPROVED BY COLORADO SPRINGS UTILITIES.

Colorado Springs Utilities
It's how we're all connected

TEMPORARY BLOW-OFF ASSEMBLIES- 12" AND GREATER MAINS WITH SJ PLUGS

A2-7
DATED 03/2014

TEMPORARY BLOW-OFF ASSEMBLY SIZING FOR 12" AND GREATER PIPE

DIMENSIONS FROM DETAIL DRAWING A2-7							
MAIN PIPE DIA. (IN.)	STATIC PRESSURE RANGE (P.S.I.)	"A" (IN)	"B" (IN)	"C" (W-SHAPE)	"D" ROD SIZE (IN)	BLOW-OFF PIPE SIZE (IN)	NUMBER OF RODS REQUIRED
12	100 101-150 151-200 201-250	36 36 36 36	6" 6-1/4" 6-1/4" 8"	W6 x 16 W6 x 20 W6 x 20 W8 x 28	5/8 3/4 7/8 1	2 2 2 2	4
16	100 101-150 151-200 201-250	40 40 40 40	6" 8" 8" 8-1/8"	W6 x 20 W8 x 28 W8 x 35 W8 x 40	7/8 1 1-1/8 1-1/4	2 2 2 2	4

NOTES:

1. ALL W-SHAPES SHALL BE FABRICATED FROM ASTM A992 GD 50.
2. ALL RODS SHALL BE MIN. GRADE A307 .
3. A 50% SURGE FACTOR HAS BEEN INCLUDED IN DESIGN.
4. THE DESIGN ENGINEER SHALL DESIGN THE BLOW-OFF ASSEMBLY FOR SIZES AND PRESSURES GREATER THAN THOSE SHOWN IN THE TABLE. DESIGN CALCULATIONS MUST BE SUBMITTED TO COLORADO SPRINGS UTILITIES FOR REVIEW.

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TEMPORARY BLOW-OFF ASSEMBLY DIMENSION DATA FOR 12" OR GREATER PIPE

A2-8
DATED 03/2014

THRUST BLOCK DIMENSIONS and VOLUMES - PVC & DIP 250 psi

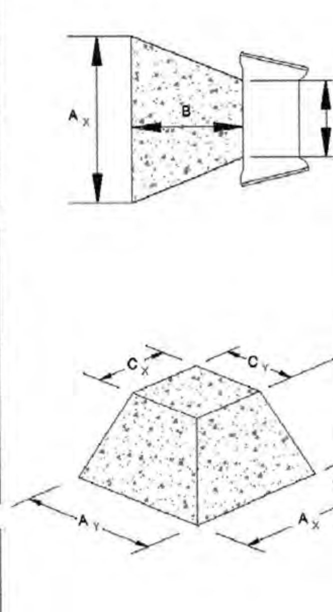
MAIN SIZE (in.)	TYPE OF FITTING	MINIMUM BEARING SURFACE AREA (ft^2)	MINIMUM A_X(ft)	MINIMUM A_Y(ft)	MINIMUM C_X(ft)	MINIMUM C_Y(ft)	MINIMUM B (ft)	APPROXIMATE VOLUME (yd^3)
4	11.25° BEND	1.00	1.00	1.00	0.25	0.33	2.00	0.25
4	22.5° BEND	2.00	1.41	1.41	0.21	0.33	2.00	0.25
4	45° BEND	3.50	1.87	1.87	0.42	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	0.50	2.00	0.25
6	22.5° BEND	3.75	1.94	1.94	0.38	0.50	2.00	0.25
6	45° BEND	7.25	2.69	2.69	0.58	0.50	2.00	0.25
6	TEE & DEAD END	9.50	3.08	3.08	0.83	0.50	2.00	0.50
8	11.25° BEND	3.25	1.80	1.80	0.34	0.67	2.00	0.25
8	22.5° BEND	6.50	2.55	2.55	0.48	0.67	2.00	0.25
8	45° BEND	12.50	3.57	3.50	0.87	0.67	2.00	0.50
8	TEE & DEAD END	16.25	4.64	3.50	1.08	0.67	2.00	0.75

THRUST BLOCK DIMENSIONS and VOLUMES - PVC (Maximum Static Pressure = 170 psi)

MAIN SIZE (in.)	TYPE OF FITTING	MINIMUM BEARING SURFACE AREA (ft^2)	MINIMUM A_X(ft)	MINIMUM A_Y(ft)	MINIMUM C_X(ft)	MINIMUM C_Y(ft)	MINIMUM B (ft)	APPROXIMATE VOLUME (yd^3)
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	0.50
12	45° BEND	18.00	4.92	3.66	1.00	1.00	2.00	0.75
12	TEE & DEAD END	23.50	6.42	3.66	1.46	1.00	2.48	1.00
16	11.25° BEND	8.00	2.83	2.83	0.44	1.33	2.00	0.50
16	22.5° BEND	16.00	4.27	3.75	0.66	1.33	2.00	0.75
16	45° BEND	31.00	8.27	3.75	1.00	1.33	3.84	1.75
16	TEE & DEAD END	40.50	10.80	3.75	1.82	1.33	4.44	3.00

THRUST BLOCK DIMENSIONS and VOLUMES - DIP (Maximum Static Pressure = 250 psi)

MAIN SIZE (in.)	TYPE OF FITTING	MINIMUM BEARING SURFACE AREA (ft^2)	MINIMUM A_X(ft)	MINIMUM A_Y(ft)	MINIMUM C_X(ft)	MINIMUM C_Y(ft)	MINIMUM B (ft)	APPROXIMATE VOLUME (yd^3)
12	11.25° BEND	6.75	2.60	2.60	0.43	1.00	2.00	0.50
12	22.5° BEND	13.50	3.69	3.66	0.64	1.00	2.00	0.50
12	45° BEND	26.25	7.17	3.66	1.00	1.00	3.09	1.50
12	TEE & DEAD END	34.25	9.36	3.66	1.46	1.00	3.95	2.25
16	11.25° BEND	11.75	3.43	3.43	0.44	1.33	2.00	0.50
16	22.5° BEND	23.25	6.20	3.75	0.66	1.33	2.77	1.00
16	45° BEND	45.50	12.13	3.75	1.00	1.33	5.57	4.00
16	TEE & DEAD END	59.50	15.87	3.75	1.82	1.33	6.88	6.50



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 AWWA M-23 AND M-41.
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 M-23, PVC PIPE - DESIGN AND INSTALLATION AND AWWA M-41, 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. CONCRETE MIX SHALL BE PER MATERIAL CHAPTER 4.
4. THE APPROXIMATE VOLUMES SHOWN ARE BASED ON THE MINIMUM BEARING SURFACE AREA AND THE MINIMUM TRENCH DIMENSIONS. THE APPROXIMATE VOLUME IS ROUNDED UP TO THE NEAREST 0.25 CUBIC YARDS.
5. THESE CHARTS MAY ONLY BE USED IF THE BLOCK HEIGHT (Ay) IS EQUAL TO OR LESS THAN ONE HALF THE TOTAL DEPTH (HI) FROM THE FINISHED GRADE TO THE BOTTOM OF THE BLOCK. THE MINIMUM DIMENSIONS SHOWN ARE BASED ON A PIPE DEPTH OF 5 FEET. SEE DETAIL DRAWING A4-3.
6. A SITE SPECIFIC DESIGN SHALL BE REQUIRED FOR PIPES LARGER THAN 16 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 16 INCHES OR MAX STATIC PRESSURES LESS THAN 250 POUNDS PER SQUARE INCH.
7. ALL CALCULATIONS SHALL BE PROVIDED TO COLORADO SPRINGS UTILITIES FOR REVIEW.

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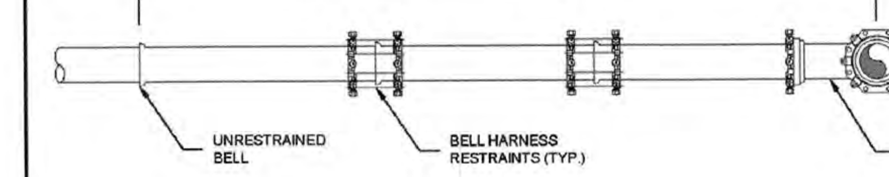
CONCRETE THRUST REACTION BLOCKS

A4-2
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)		
MAX. STATIC PRESSURE (PSI)		<100	100-150	150-200	<100	100-150	150-200	<100	100-150	150-200	<100	100-150	150-200
6 INCH	DUCTILE IRON AND PVC	6	9	12	3	5	6	2	3	3	49	73	97
8 INCH	DUCTILE IRON AND PVC	8	12	16	4	6	8	2	3	4	63	94	125
12 INCH	DUCTILE IRON AND PVC	12	17	23	6	8	11	3	4	6	89	133	177
16 INCH	DUCTILE IRON AND PVC	15	22	29	7	11	14	4	5	7	USE CONCRETE REVERSE ANCHOR	USE CONCRETE REVERSE ANCHOR	USE CONCRETE REVERSE ANCHOR
20 INCH	DUCTILE IRON AND PVC	18	26	35	9	13	17	4	6	8			
24 INCH	DUCTILE IRON AND PVC	20	30	40	10	15	20	5	7	10			
30 INCH	DUCTILE IRON AND PVC	24	36	48	12	18	24	6	9	12			
36 INCH	DUCTILE IRON AND PVC	28	42	56	14	20	27	7	10	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 5 FEET OF GROUND COVER AND SOIL COMPACTED ACCORDING TO CHAPTER 5 OF THESE WATER LESS. IF THE DEPTH IS LESS THAN 5 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 1/8 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.

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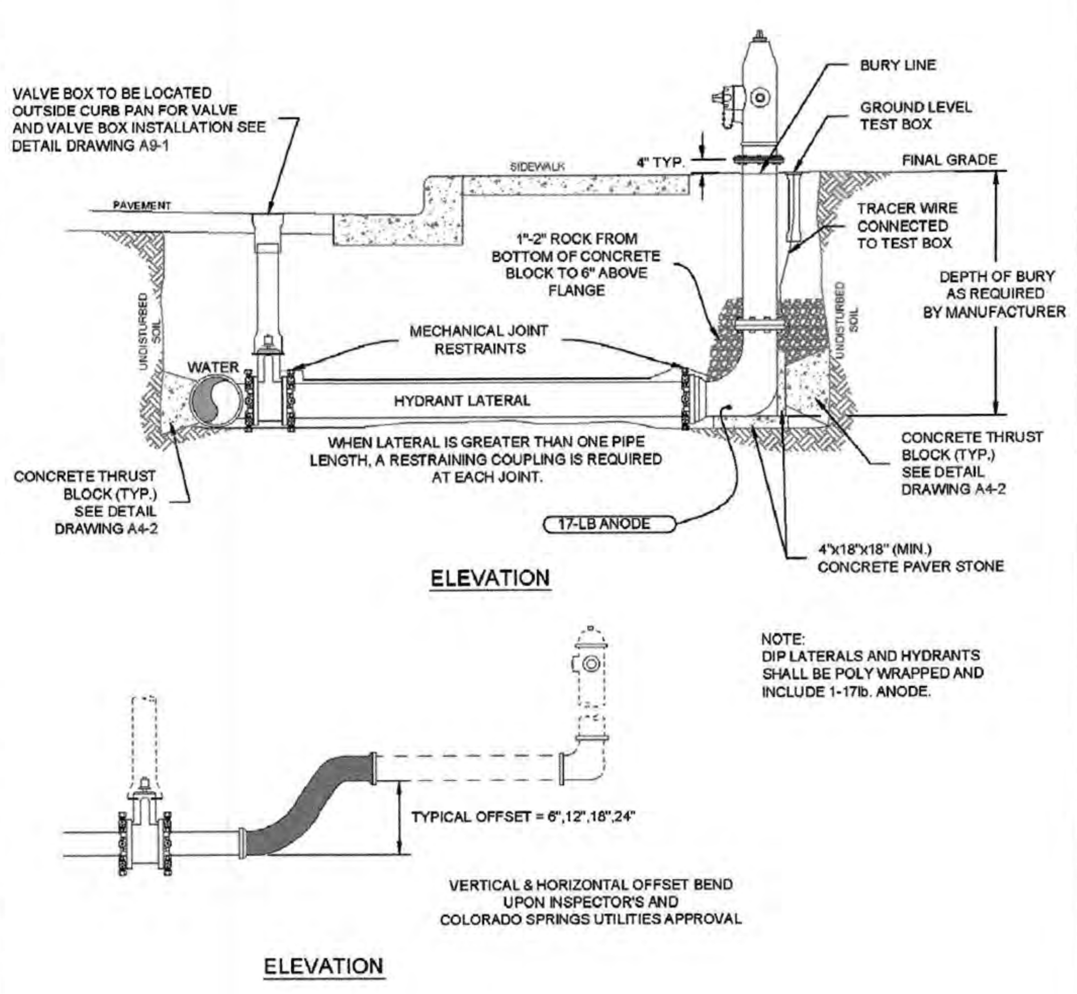
RESTRAINED PIPE LENGTH (FEET) W/MECHANICAL JOINT RESTRAINTS

A4-4
DATED 03/2014



NOTES:

1. MECHANICAL JOINT RESTRAINTS SHALL BE INSTALLED PER DETAIL DRAWINGS A4-4, A4-5, & CHAPTER 5.
2. TRACER WIRE AND GROUND LEVEL TEST BOX TO BE INSTALLED WITH EACH FIRE HYDRANT. PLACE TEST BOX WITHIN 6" FROM THE HYDRANT.
3. REFERENCE DETAIL DRAWINGS A5-1 & A5-2 FOR FIRE HYDRANT LOCATION.
4. INSTALLATION OF A PRIVATE FIRE HYDRANT WILL REQUIRE A SECONDARY VALVE INSTALLED AT THE PROPERTY LINE.
5. HYDRANT BASE BLOCK SHALL BE PLACED ON UNDISTURBED EARTH.
6. DO NOT BLOCK WEEP HOLE WITH POLYWRAP.
7. COVER DRAIN ROCK WITH POLYWRAP PRIOR TO BACKFILL.
8. FOR HDPE HYDRANT CONNECTION SEE DETAIL DRAWING A10-9.
9. FOR PRIVATE FIRE HYDRANTS A SECONDARY VALVE SHALL BE INSTALLED ON THE PROPERTY LINE OR RIGHT-OF WAY LINE.

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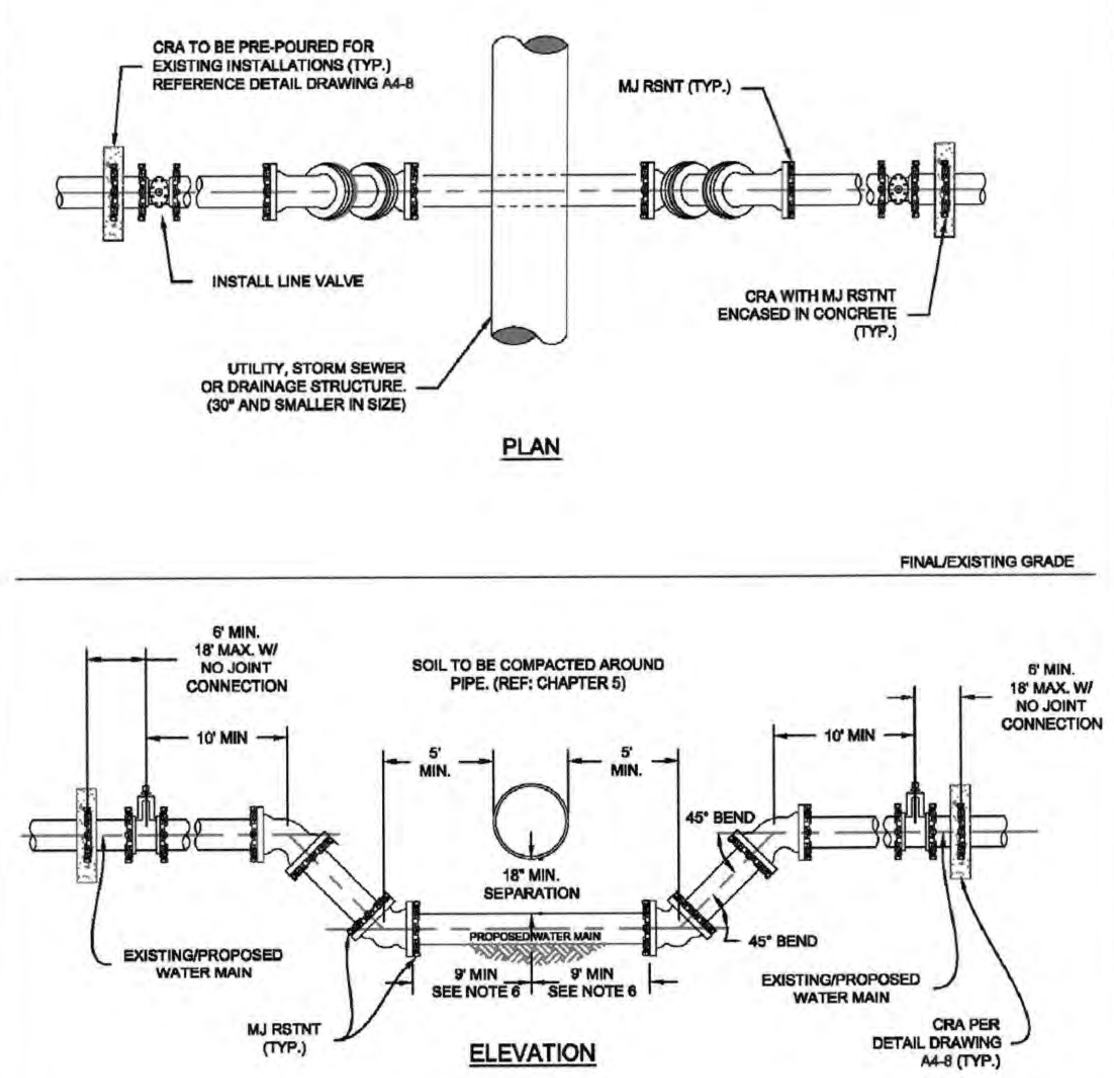
FIRE HYDRANT INSTALLATION

A5-3
DATED 03/2014



NOTES:

1. ALL DUCTILE IRON FITTINGS AND PIPE SHALL BE CATHODICALLY PROTECTED PER SECTION 2.6.I.
2. ALL FITTINGS SHALL HAVE MJ RESTRAINTS IN ACCORDANCE WITH CHAPTER 5.
3. EXAMPLE CAN VARY DUE TO SITE CONDITIONS AND COLORADO SPRINGS UTILITIES INSPECTOR'S DIRECTION.
4. RESTRAINED JOINTS ARE REQUIRED WITHIN LOWERING.
5. NO TAPS OR TEES ARE ALLOWED WITHIN THE LOWERING.
6. WHERE WATER MAIN CROSSES UNDER STORM SEWER, WASTEWATER OR NON-POTABLE WATER INFRASTRUCTURE, A MINIMUM OF 9 FEET REQUIRED BETWEEN THE CENTERLINE OF THE CROSSING AND THE FIRST JOINT. THIS MEETS THE REQUIREMENTS FOR SECONDARY CONTAINMENT AS DESCRIBED IN SECTION 2.6-H.2.

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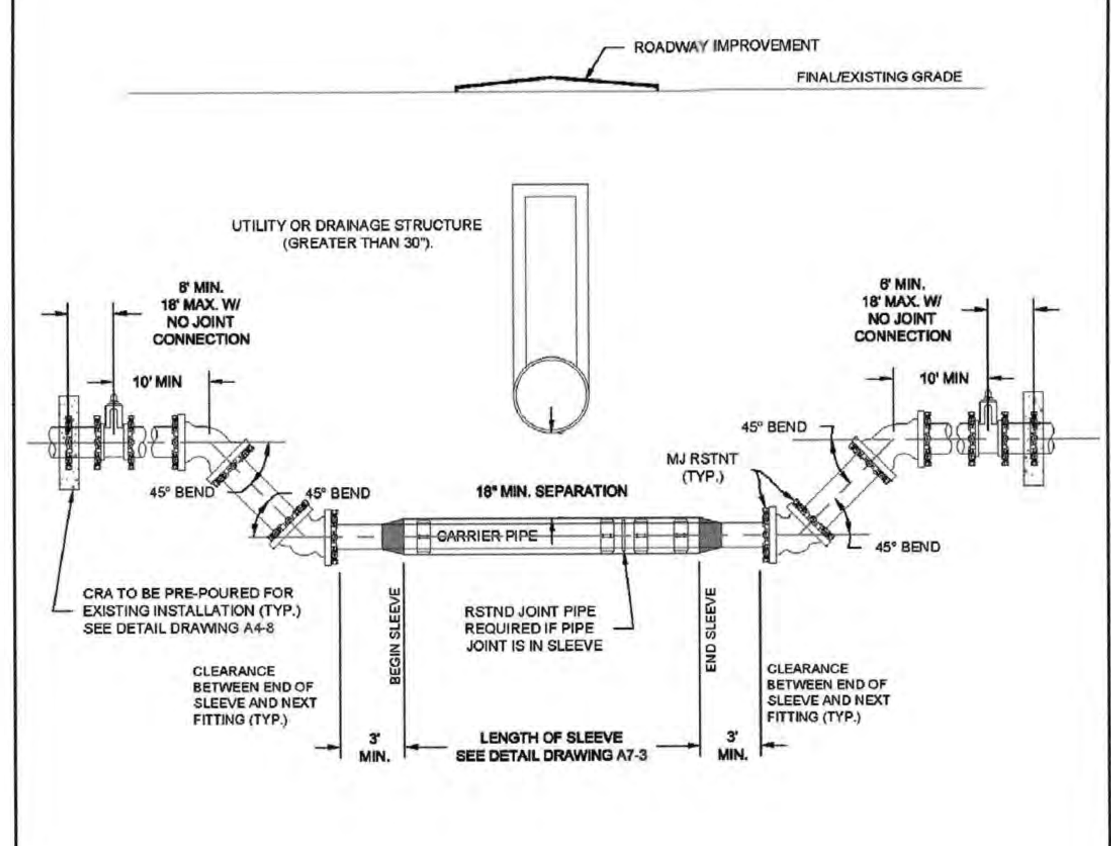
LOWERING DETAIL UTILITY CROSSING 30" & SMALLER

A7-1
DATED 01/2016



NOTES:

1. ALL DUCTILE IRON FITTINGS AND PIPE SHALL BE CATHODICALLY PROTECTED PER SECTION 2.6.I.
2. ALL FITTINGS SHALL HAVE MJ RESTRAINTS IN ACCORDANCE WITH CHAPTER 6.
3. EXAMPLE CAN VARY DUE TO SITE CONDITIONS AND COLORADO SPRINGS UTILITIES INSPECTOR'S DIRECTION.
4. RESTRAINED JOINTS ARE REQUIRED WITHIN LOWERING.
5. NO TAPS OR TEES ARE ALLOWED WITHIN THE LOWERING.
6. WHERE WATER MAIN CROSSES UNDER STORM SEWER, WASTEWATER OR NON-POTABLE WATER INFRASTRUCTURE, REFERENCE SECTION 2.6-H.2.

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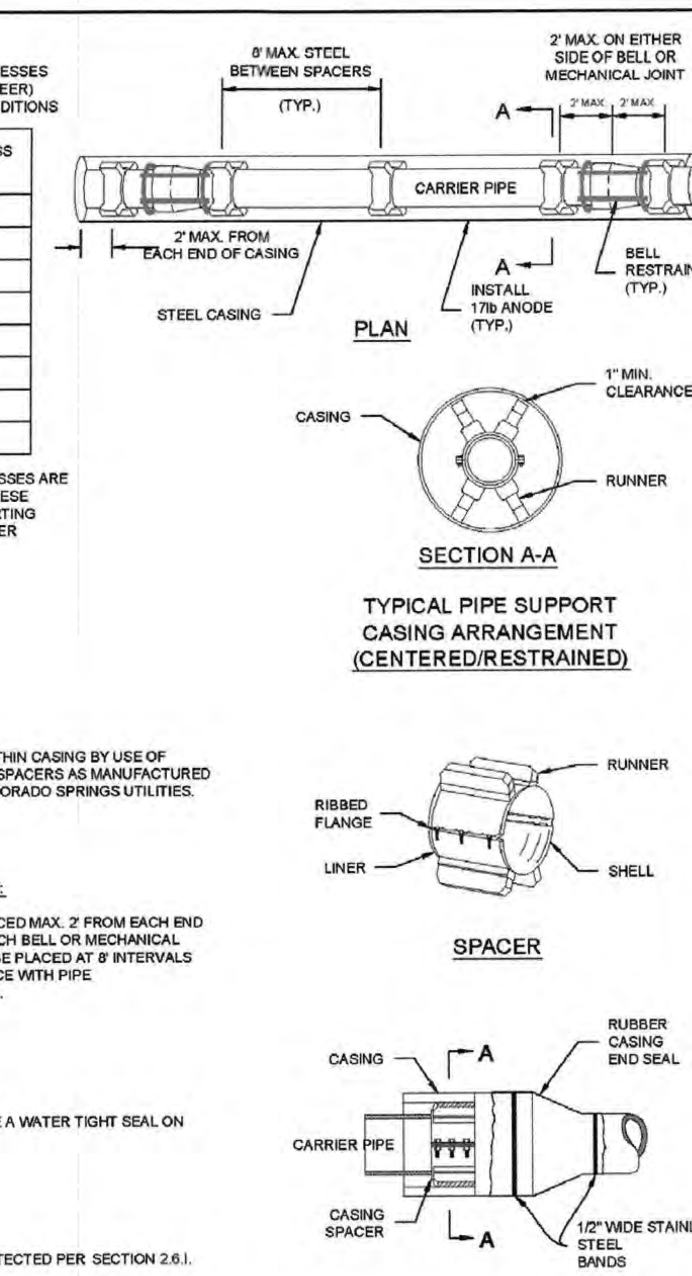
LOWERING DETAIL W/CASING UTILITY CROSSING GREATER THAN 30"

A7-2
DATED 08/2015

CASING PIPE MINIMUM SIZES AND THICKNESSES (TO BE VERIFIED BY THE DESIGN ENGINEER) BASED ON ACTUAL LOADING AND SITE CONDITIONS

CASING PIPE NOMINAL SIZE (IN)	MIN. THICKNESS (IN)
12	0.250
14	0.312
16	0.312
18	0.312
20	0.375
24	0.500
32	0.500
36	0.625

CASING PIPE MINIMUM SIZES AND THICKNESSES ARE BASED ON E80 LOADING. VARIANCES TO THESE MINIMUMS MAY BE ALLOWED WITH SUPPORTING CALCULATIONS FROM THE DESIGN ENGINEER



CARRIER PIPE:

1. CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF APPROVED STAINLESS STEEL CASING SPACERS AS MANUFACTURED BY APPROVED MANUFACTURER BY COLORADO SPRINGS UTILITIES. (REFERENCE CHAPTER 2)

PLACEMENT OF SPACERS ON CARRIER PIPE:

1. GENERAL - ONE SPACER SHALL BE PLACED MAX. 2' FROM EACH END OF CASING AND ON EITHER SIDE OF EACH BELL OR MECHANICAL JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 8' INTERVALS WITHIN THE CASING, OR IN ACCORDANCE WITH PIPE MANUFACTURERS RECOMMENDATIONS.

END SEALS:

1. END SEALS SHALL BE USED TO ENSURE A WATER TIGHT SEAL ON EITHER END OF THE CASING.

CATHODIC PROTECTION:

1. CASING SHALL BE CATHODICALLY PROTECTED PER SECTION 2.6.I.

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TYPICAL STEEL CASING INSTALLATION

A7-4
DATED 08/2015

CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: Jonathan Smith DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

CHEROKEE METROPOLITAN DISTRICT
WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: Jonathan Smith DATE: 09/05/17

Approval expires one (1) year from the date above and resubmittal of these plans for review and approval is required if construction does not begin during this period.

Celebrating 30 years
Kiowa Engineering Corporation
1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

MEADOWBROOK CROSSING FILING NO. 1

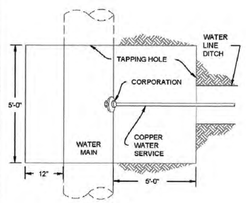
UTILITY DETAILS
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

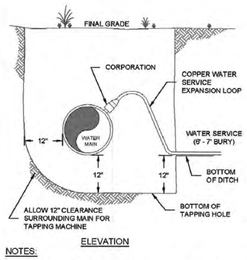
SHEET
DT2

TAPPING DETAIL FOR 3/4" AND 1" CONNECTION

SERVICE TAPS 3/4" & 1"
CORPORATION ONLY (DIRECT TAPPING).



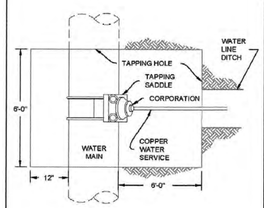
PLAN VIEW



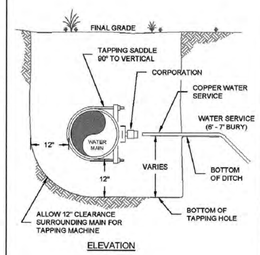
ELEVATION

TAPPING DETAIL FOR 1 1/2" AND 2" CONNECTION

SERVICE TAPS 1 1/2" & 2"
TAPPING SADDLE.



PLAN VIEW



ELEVATION

NOTES:

1. TRENCH WALLS AND SHORING SHALL COMPLY WITH OSHA STANDARDS.
2. FOR HDPE TAPS USE A SIDEWALL FUSION TAPPING SADDLE CONFIGURATION AT 90° SEE SECTION 6.7.B.
3. TO BE READ IN CONJUNCTION WITH SECTION 2.7.C AND SECTION 5.21-E.
4. WHERE COMPACTION CANNOT BE ACHIEVED UNDER THE WATER MAIN FLOWFILL SHALL BE USED.
5. SEE DETAIL DRAWING A8-10 FOR CATHODIC PROTECTION.

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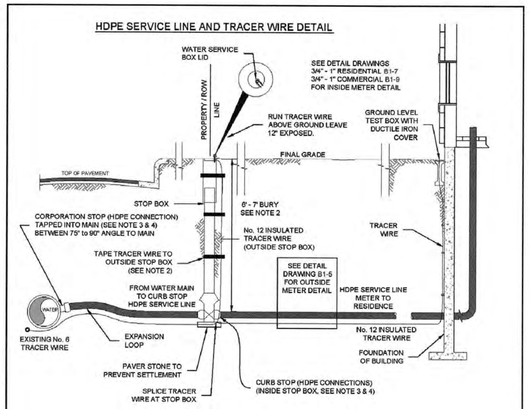
TAPPING DETAILS 3/4" THRU 2" FOR TYPE "K" COPPER | B1-1 | DATED 09/2014

HDPE SERVICE LINE AND TRACER WIRE DETAIL



WATER SERVICE LINE NOTES:

1. NO. 12 INSULATED TRACER WIRE SHALL BE PLACED ALONG SERVICE LINE AND SHALL BE A CONTINUOUS (WITHOUT SPLICES) LENGTH, WITH THE EXCEPTION OF THE SPLICE AT THE STOP BOX WHICH SHALL BE MADE WITH A COPPER CRIMP OR SPLIT BOLT CONNECTOR.
2. FOR GREEN MOUNTAIN FALLS SEE SECTION 2.6.H.1 DEPTH OF BURY.
3. WHEN A NEW HDPE SERVICE IS CONNECTED TO A PVC MAIN, THE SERVICE LINE TRACER WIRE SHALL BE CONNECTED TO THE MAINS TRACER WIRE WITH A COPPER CRIMP OR SPLIT-BOLT CONNECTOR. THE TRACER WIRE IS THEN TAPED ALONG THE SERVICE LINE IN AT LEAST 3 LOCATIONS NOT TO EXCEED 10' SPACING. AT THE CURB BOX, THE TRACER WIRE WILL BE TAPED TO THE OUTSIDE OF THE CURB BOX IN AT LEAST THREE PLACES AND BROUGHT TO THE EXISTING GRADE ADJACENT TO THE CURB BOX COVER. 12" OF TRACER WIRE SHALL BE EXPOSED ABOVE GROUND THEN THE TRACER WIRE WILL BE SPLICED AT THE STOP BOX AND TAPED TO THE SERVICE LINE UNTIL IT REACHES THE FOUNDATION WALL. THE TRACER WIRE SHALL FOLLOW THE FOUNDATION WALL AND TERMINATE IN A GROUND LEVEL TEST BOX NO MORE THAN 12" FROM THE FOUNDATION WALL.
4. STIFFENERS SHALL BE INSTALLED WITHIN THE HDPE SERVICE LINE AT THE CONNECTION POINTS OF THE FITTINGS.
5. SEE DETAIL DRAWING B1-16 FOR COMMERCIAL INSTALLATION OF OUTSIDE METER BACKFLOW PREVENTION ASSEMBLY.
6. THE FINAL LOCATION OF THE GROUND LEVEL TEST BOX SHALL BE 12" FROM THE FOUNDATION OR THE SAME DISTANCE FROM THE FOUNDATION AS THE WASTEWATER SERVICE LINE CLEANOUT.

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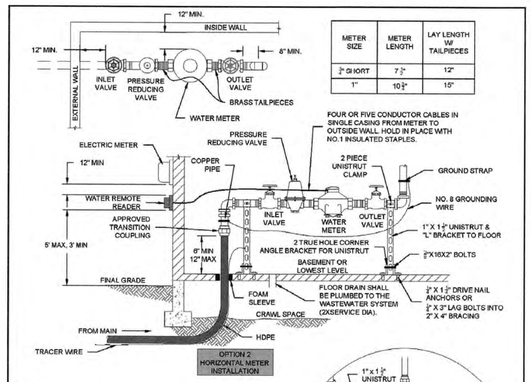
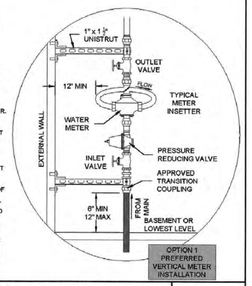
TYPICAL INSTALLATION FOR HDPE SERVICE LINE AND STOP BOX | B1-6 | DATED 08/2015



METER SIZE	METER LENGTH	LAY LENGTH W TAILPIECES
3/4" OR SHORT	7 1/2"	12"
1"	10 1/2"	15"

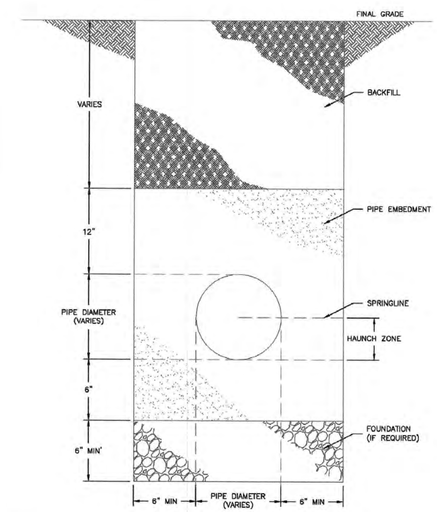
NOTES:

1. THE METER SHALL BE PROVIDED AND INSTALLED BY COLORADO SPRINGS UTILITIES.
2. THE METER MUST BE INSTALLED HORIZONTALLY WITH THE CLEARANCE DIMENSIONS AS SHOWN ABOVE AND ONE SIDE OF THE METER SHALL BE FREE FROM ANY OBSTRUCTION. 3' MIN. CLEARANCE IS REQUIRED ABOVE THE METER.
3. GAS FLEX LINE SERVICES SHALL BE LOCATED A MINIMUM OF 18" FROM THE METER INSTALLATION.
4. BRASS INLET AND OUTLET VALVES SHALL BE INSTALLED ON EACH SIDE OF THE METER. INLET AND OUTLET VALVES SHALL BE FULL OPENING. GATE OR BALL VALVES WHICH CLOSE IN DIRECTION OF FLOW.
5. METERS TO BE INSTALLED INSIDE A RESIDENCE MUST BE LOCATED IN THE BASEMENT OR LOWER LEVEL OF THE STRUCTURE. METERS SHALL NOT BE INSTALLED IN CRAWL SPACES OR DESIGNED STORAGE AREAS.
6. REFERENCE SECTION 2.7.J (WATER METERS).
7. GROUNDING IS REQUIRED TO ELIMINATE POTENTIAL FOR DISCHARGE OF STATIC ELECTRICITY CAUSED BY FLOW OF NATER THROUGH PIPING. GROUNDING STRAP NOT REQUIRED ON PREFABRICATED INSTALLATIONS.
8. PGX PIPE IS NOT APPROVED FOR USE BEFORE THE METER.
9. AN APPROVED TRANSITION COUPLING SHALL BE INSTALLED A MIN OF 5" AND A MAX OF 12" FROM THE FLOOR. COPPER SHALL BE USED THROUGHOUT THE METER INSTALLATION. A MINIMUM OF 5' OF COPPER IS REQUIRED AFTER THE METER EXCEPT WHERE A MANIFOLD (MANIBLOCK) SYSTEM IS USED DIRECTLY AFTER THE METER AND IS SUPPORTED.
10. IF A BACKFLOW PREVENTION ASSEMBLY IS REQUIRED IT SHALL BE LOCATED BEFORE THE FIRST BRANCH LINE. SEE DETAIL DRAWING B1-5.
11. REMOTE READER WIRE SHALL EXIT THE BUILDING THROUGH A DEDICATED HOLE FOR REMOTE READER WIRE USE ONLY.
12. THE METER SHALL BE SECURED WITH UNISTRUT BEFORE AND AFTER THE INLET AND OUTLET VALVES AS SHOWN. UNISTRUT SHALL BE ANCHORED TO THE COPPER PIPE.
11. ALL FITTINGS IN THE METER INSTALLATION SHALL BE SOLDERED, FLANGED OR THREADED. THE BACKFLOW PREVENTER SHALL BE SOLDERED OR FLANGED.



Colorado Springs Utilities — It's how we're all connected

TYPICAL INSTALLATION FOR 3/4" THRU 1" METERS INSIDE RESIDENTIAL HDPE SERVICE | B1-7 | DATED 05/2014



NOTE:

1. TRENCH BACKFILL SHALL CONFORM TO THE SPECIFICATIONS OF THE AUTHORITY HAVING JURISDICTION

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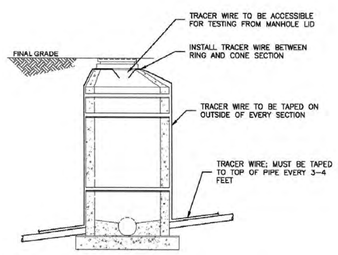
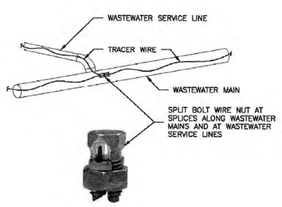
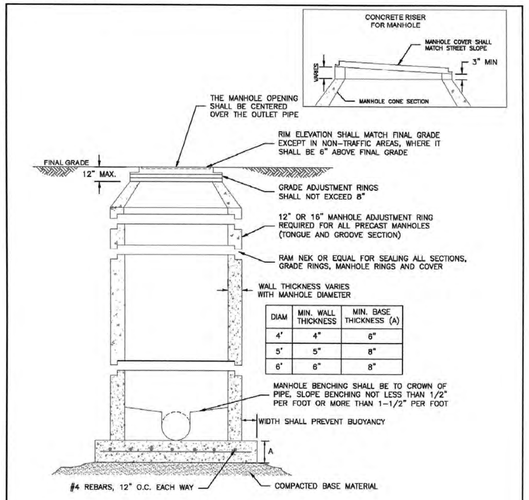
TYPICAL TRENCH SECTION | C2-1 | DATED 3/2015





Colorado Springs Utilities — It's how we're all connected

TRACER WIRE ON PVC OR HDPE PIPE | C2-3 | DATED 3/2015



DIAM	MIN. WALL THICKNESS	MIN. BASE THICKNESS (A)
4'	4"	6"
5'	5"	8"
6'	6"	8"

NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI @ 28 DAYS AND DESIGNED FOR HS-20 LOADING CONDITIONS.
2. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED.
3. FOR CAST IN PLACE MANHOLES, DO NOT DROP CONCRETE A DISTANCE OF MORE THAN 5' UNLESS APPROVED BY COLORADO SPRINGS UTILITIES.
4. 3/4" CRUSHED ROCK REQUIRED UNDER BASE TO A DEPTH OF 6" UP TO SPRINGLINE OF PIPE, 2'-3' RADIUS AROUND BASE.
5. ALL STEPS SHALL BE REMOVED FOLLOWING CONSTRUCTION.
6. STRUCTURAL REINFORCEMENT SHALL COMPLY TO ASTM C-478. ASTM C-478 SHALL BE STAMPED ON THE OUTSIDE OF THE MANHOLE.

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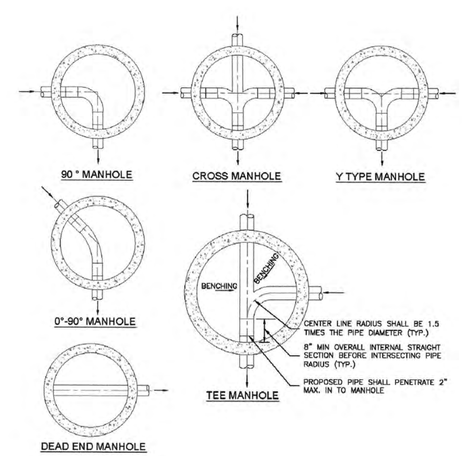
STANDARD CONCRETE MANHOLE | C3-1 | DATED 3/2015

TYPICAL INTERSECTING PIPE MANHOLE LAYOUTS



NOTES:

1. SEE DETAIL DRAWING C3-1 FOR MANHOLE REQUIREMENTS.
2. LAYOUTS SHOWN ARE FOR 8"-12" PIPES; LAYOUTS FOR LARGER DIAMETER PIPELINES AND MANHOLES SHALL BE DESIGNED BY THE DESIGN ENGINEER AND APPROVED BY COLORADO SPRINGS UTILITIES.
3. TO BE READ IN CONJUNCTION WITH CHAPTER 2, MANHOLE SIZES.

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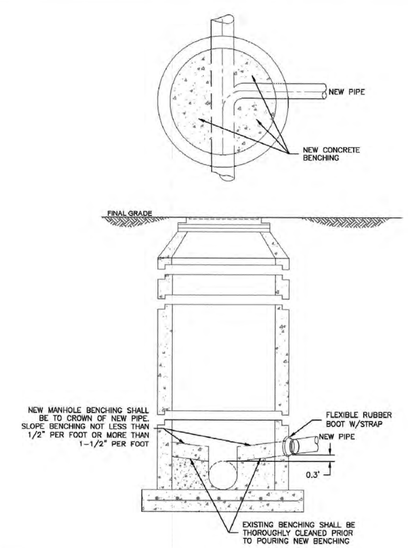
TYPICAL MANHOLE LAYOUTS AND INTERSECTIONS | C3-2 | DATED 3/2015



NOTES:

1. SEE DETAIL DRAWING C3-1 FOR MANHOLE REQUIREMENTS.

Colorado Springs Utilities — It's how we're all connected

CORE DRILLING INTO AN EXISTING MANHOLE | C3-3 | DATED 3/2015

CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: [signature] DATE: 09/05/17

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CHEROKEE METROPOLITAN DISTRICT
WASTEWATER PLAN DESIGN APPROVAL

APPROVED BY: [signature] DATE: 09/05/17

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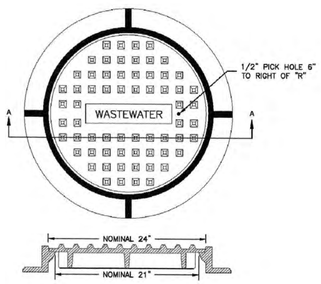
Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

MEADOWBROOK CROSSING FILING NO. 1

UTILITY DETAILS
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET DT3



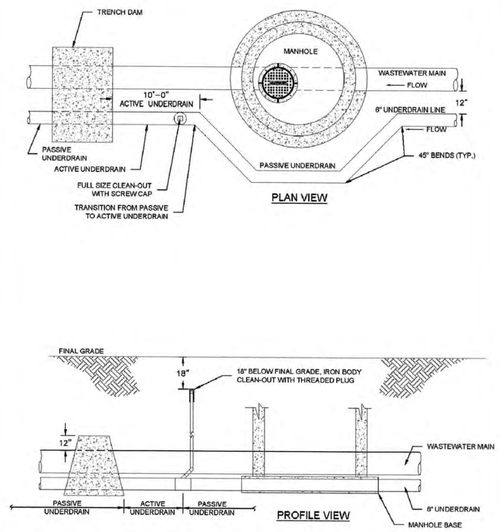
SECTION A-A
COVER SECTION

NOTES:

1. SEE CHAPTER 4 FOR ADDITIONAL INFORMATION AND SPECIFIC DIMENSIONS.

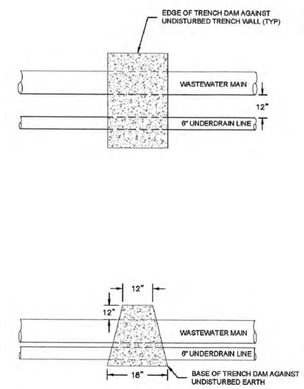
Colorado Springs Utilities — It's how we're all connected

STANDARD MANHOLE RING AND COVER IN TRAFFIC AREAS — C3-9 — DATED 5/2015



Colorado Springs Utilities — It's how we're all connected

PASSIVE GROUNDWATER UNDERDRAIN SCHEMATIC — C6-1 — DATED 5/2015

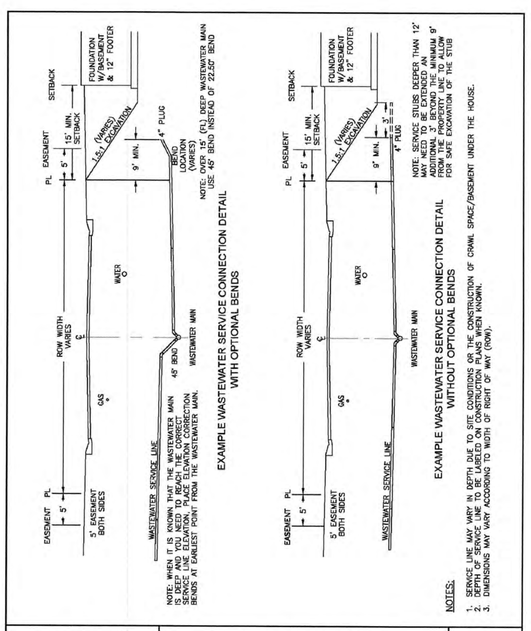


NOTES:

1. TRENCH DAMS ARE REQUIRED AT THE TRANSITION FROM ACTIVE UNDERDRAINS TO PASSIVE UNDERDRAINS.

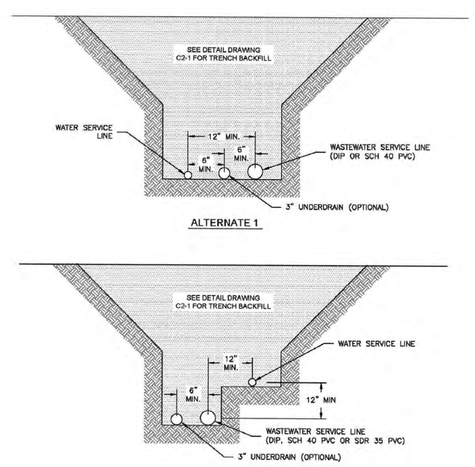
Colorado Springs Utilities — It's how we're all connected

UNDERDRAIN TRENCH DAM — C6-2 — DATED 5/2015



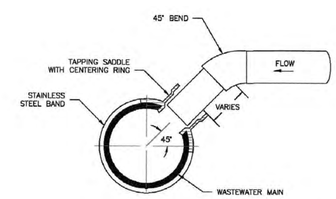
Colorado Springs Utilities — It's how we're all connected

EXAMPLE OF A SERVICE WITH A BASEMENT — D1-2 — DATED 5/2015



Colorado Springs Utilities — It's how we're all connected

TYPICAL COMMON SERVICE TRENCH SECTION — D1-5 — DATED 5/2015



TYPICAL WASTEWATER SERVICE TAPPING SADDLE

NOTES:

1. WHEN THE WASTEWATER MAIN IS VCP, USE THE SDR 35 PVC SADDLE WITH A LARGER SKIRT. SADDLE SHALL BE ONE NOMINAL SIZE LARGER THAN THE WASTEWATER MAIN.
2. PIPE WILL BE CUT WITH AN O.D. HOLE SAW OR TAPPING MACHINE. A 4-1/2" O.D. HOLE SAW SHALL BE USED FOR 4" TAPS AND A 6-1/2" O.D. HOLE SAW SHALL BE USED FOR 6" TAPS.
3. ONLY 4" AND 6" TAP SIZES ARE ALLOWED.
4. WASTEWATER TAPPING SADDLES SHALL HAVE A CENTERING RING.
5. A GASKET SHALL BE USED TO ENSURE AN AIRTIGHT SEAL BETWEEN THE SADDLE AND THE PIPE.

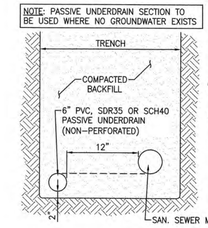
Colorado Springs Utilities — It's how we're all connected

TYPICAL WASTEWATER SERVICE LINE TAPPING METHOD — D1-6 — DATED 5/2015

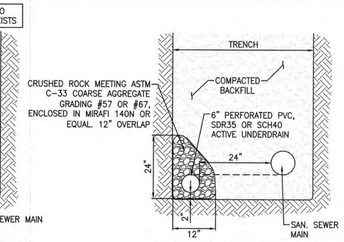
UNDERDRAIN NOTES:

1. THE NEED FOR AN UNDERDRAIN WILL BE BASED ON FIELD CONDITIONS AND DETERMINATION OF THE GEOTECHNICAL ENGINEER.
2. GEOTECHNICAL ENGINEER TO DETERMINE EXTENT OF ACTIVE/PASSIVE UNDERDRAIN DEPENDING UPON CONDITIONS ENCOUNTERED DURING CONSTRUCTION.
   2.1. SOLID DRAIN PIPE WILL BE USED IN AREAS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
3. ENGINEERING FABRIC (MIRAFI 140N) TO HAVE A MINIMUM 12-INCH OVERLAP ABOVE UNDERDRAIN GRANULAR FILL.
4. UNDERDRAIN PIPE TO BE CONSTRUCTED WITH THE TOP OF PIPE EQUAL TO OR BELOW THE BOTTOM OF THE SANITARY SEWER PIPE.
5. THE CONNECTION BETWEEN THE ACTIVE AND PASSIVE PORTIONS OF THE UNDERDRAIN SYSTEM IS TO BE CONSTRUCTED WITH A NON-PERMEABLE BARRIER SO THAT ALL COLLECTED GROUNDWATER IS DIRECTED INTO THE PASSIVE PIPE SECTION.
6. ACTIVE UNDERDRAIN PIPE REQUIRED FOR 10-FT DOWNSTREAM OF EACH MANHOLE WHERE UNDERDRAINS ARE INSTALLED.
7. OUTFALL FOR UNDERDRAIN PIPE SHALL DRAIN INTO A STORM SEWER OR DRAINAGEWAY. IF THE PIPE DRAINS TO THE DRAINAGEWAY OR SURFACE, CONCRETE SHALL BE PLACE AROUND THE OUTLET TO MINIMIZE THE CHANCE OF THE PIPE OUTLET BEING BURIED.

NOTE: PASSIVE UNDERDRAIN SECTION TO BE USED WHERE NO GROUNDWATER EXISTS



PASSIVE UNDERDRAIN DETAIL
SCALE: NTS



ACTIVE UNDERDRAIN DETAIL
SCALE: NTS

CHEROKEE METROPOLITAN DISTRICT
WATER PLAN DESIGN APPROVAL

APPROVED BY: Scott Smith DATE: 09/05/17

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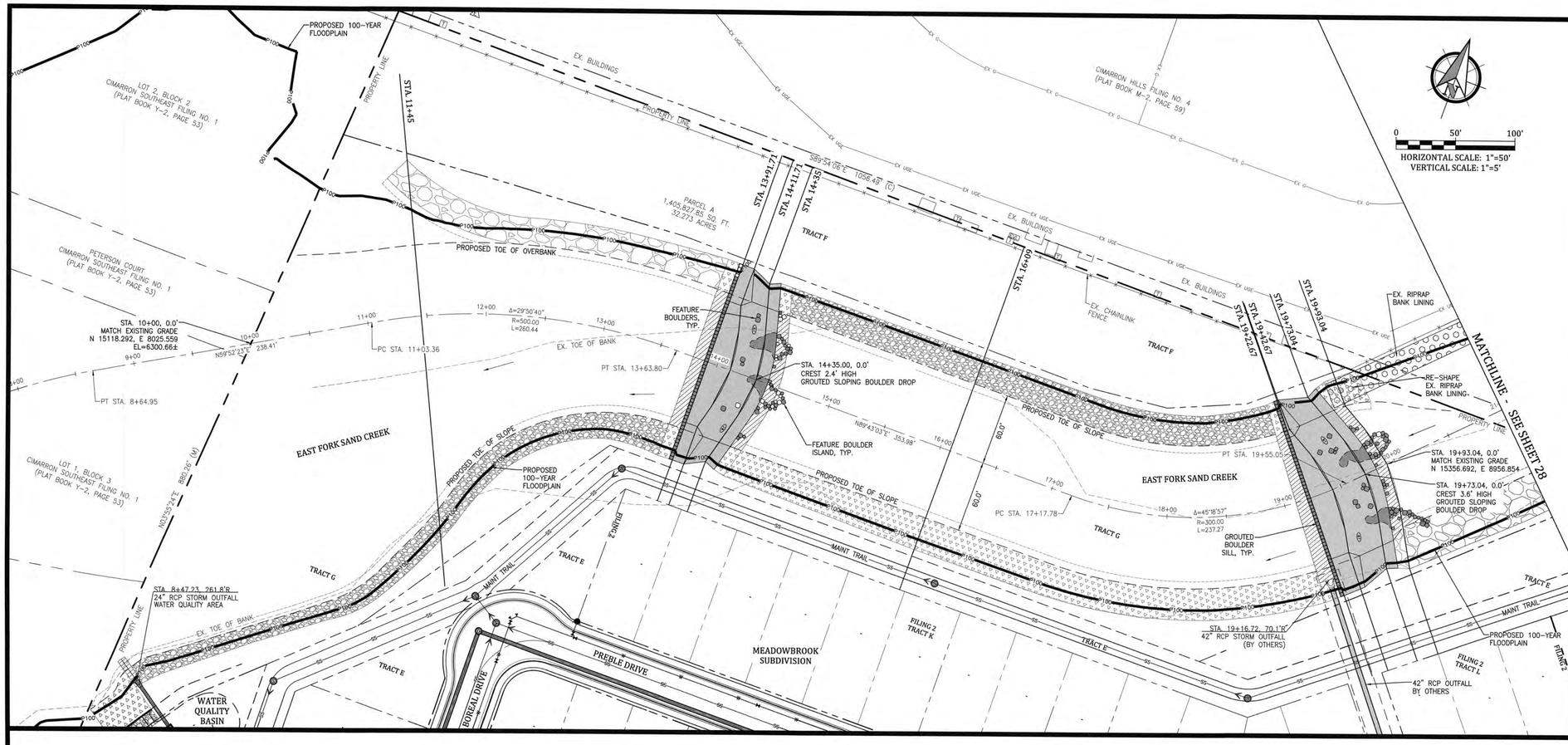
MEADOWBROOK CROSSING FILING NO. 1

UTILITY DETAILS

EL PASO COUNTY, COLORADO

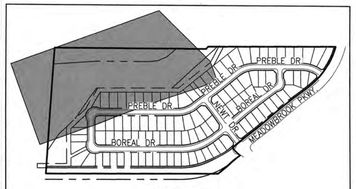
Project No.:	16039
Date:	August 22, 2017
Design:	ELS
Drawn:	ELS
Check:	MWE
Revisions:	

SHEET DT4 / 26 OF 35 SHEETS

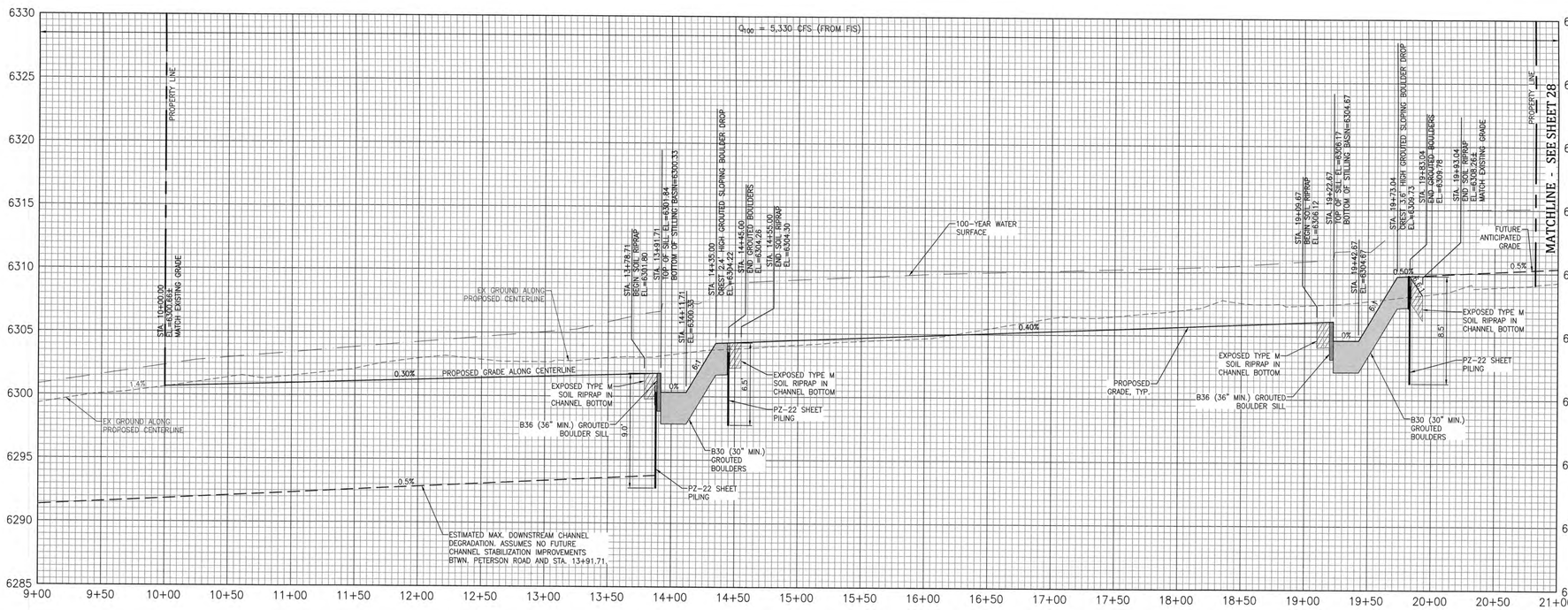


LEGEND

- EXISTING PROPERTY LINE
- SECTION LINE
- EXISTING LOT LINE
- PROPOSED LOT LINE
- PROPOSED TRACT BOUNDARY
- PROPOSED EASEMENT
- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED 100-YEAR FLOODPLAIN
- EXISTING FENCE
- EXISTING BUILDING TO REMAIN
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EX. SANITARY SEWER TO BE REMOVED OR RELOCATED
- EXISTING STORM SEWER
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- EXISTING GAS LINE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING TELEPHONE PEDESTAL
- EXISTING ELECTRIC VAULT OR TRANSFORMER
- EXISTING ELECTRIC METER
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED WATER LINE OR SERVICE AND VALVE
- PROPOSED WATER LINE AND THRUST BLOCK
- PROPOSED STORM SEWER PIPE AND MANHOLE
- PROPOSED STORM CURB INLET
- EXISTING RIPRAP
- EXPOSED TYPE M SOIL RIPRAP
- BURIED TYPE L SOIL RIPRAP
- BURIED TYPE M SOIL RIPRAP
- BURIED TYPE H SOIL RIPRAP
- GROUTED BOULDERS
- FEATURE BOULDERS



KEY MAP
SCALE: NTS



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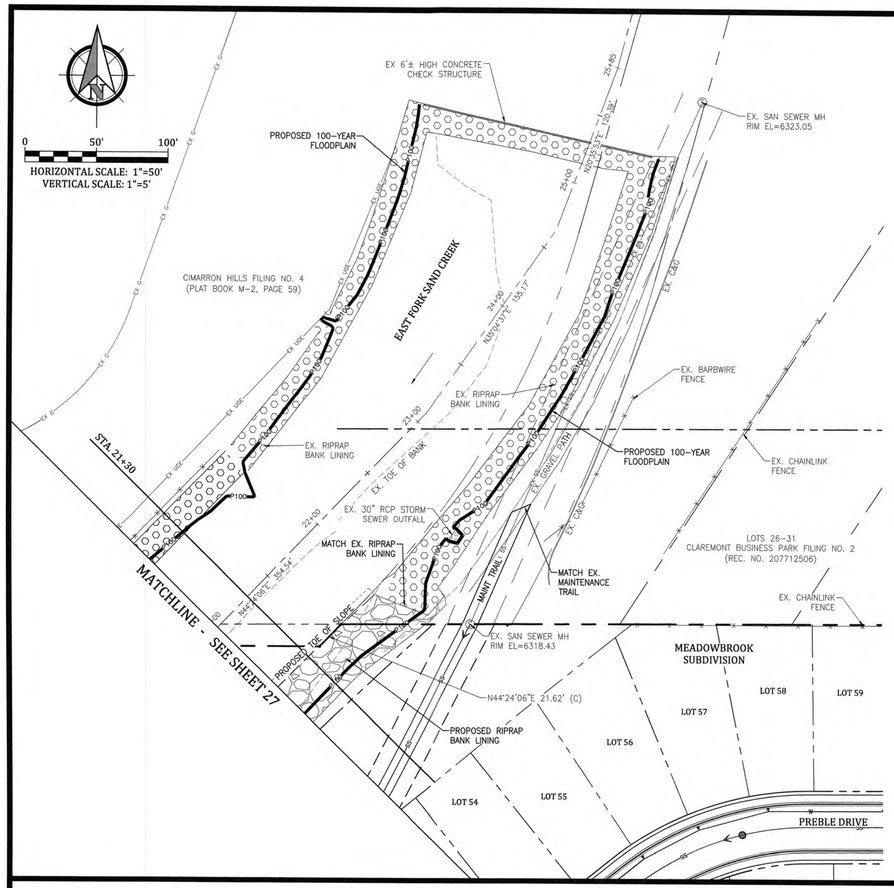
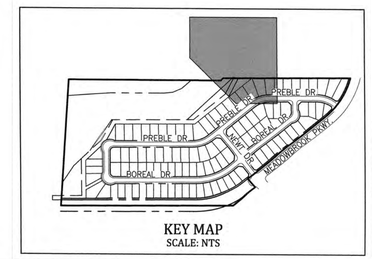
MEADOWBROOK CROSSING FILING NO. 1
LOWER EAST FORK SAND CREEK PLAN AND PROFILE
STA. 9+00 TO STA. 21+00
EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	CJC
Drawn:	CJC
Check:	MWE
Revisions:	

SHEET
27
OF 35 SHEETS





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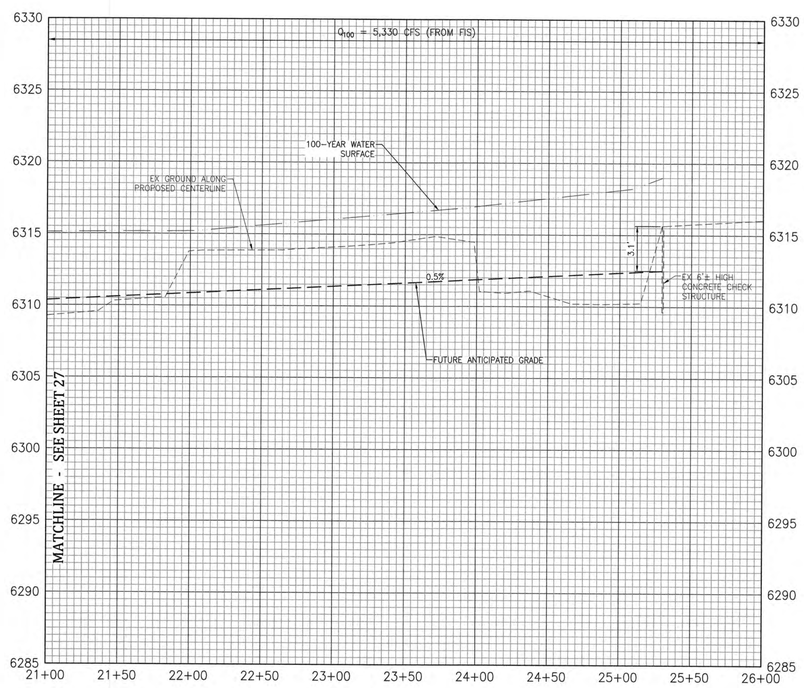

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Project No.:	16039
Date:	August 22, 2017
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Revisions:	

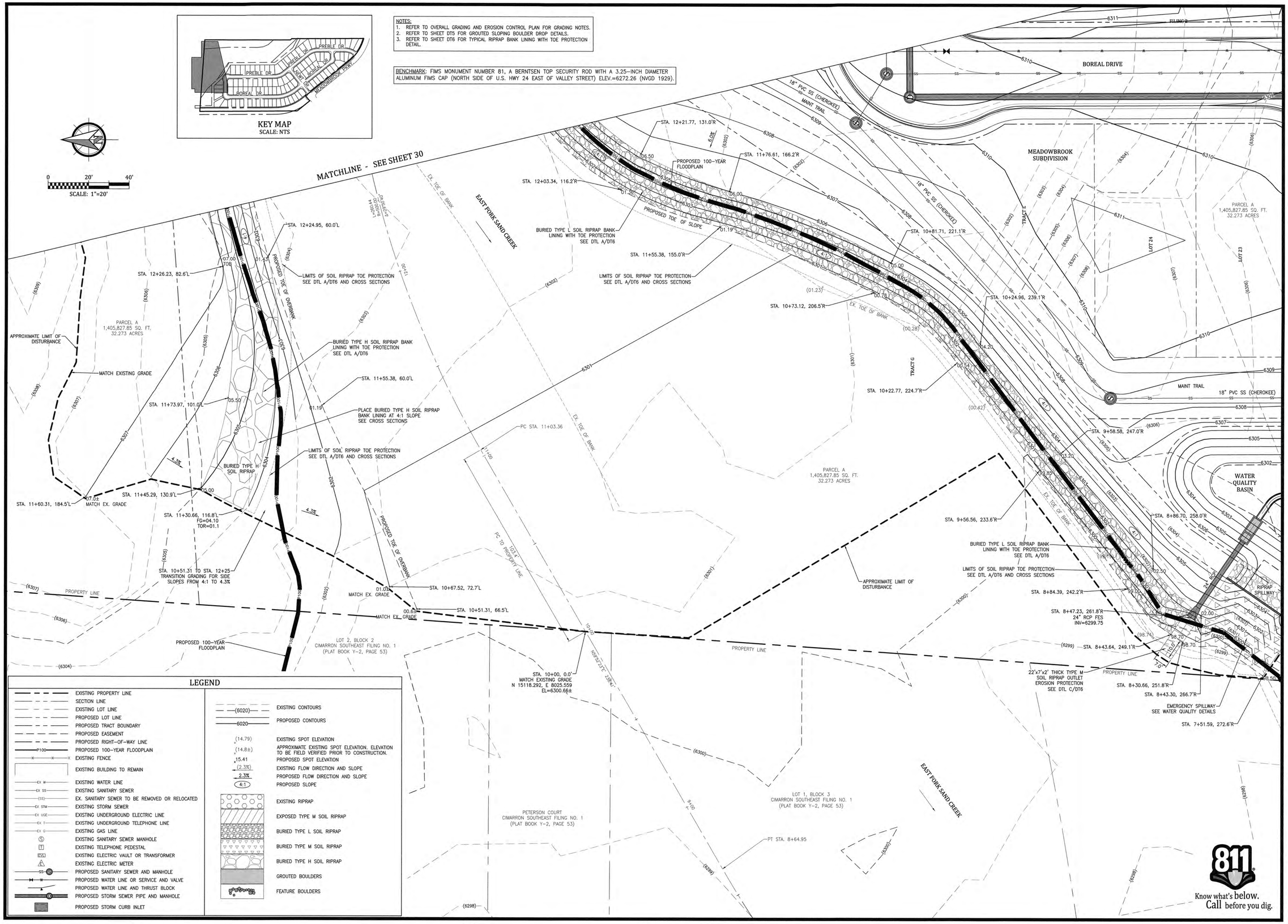
SHEET
28
OF 35 SHEETS

NOTES:
1. REFER TO OVERALL GRADING AND EROSION CONTROL PLAN FOR GRADING NOTES.
2. REFER TO SHEET DT5 FOR GROUTED SLOPING BOULDER DROP DETAILS.
3. REFER TO SHEET DT6 FOR TYPICAL RIPRAP BANK LINING WITH TOE PROTECTION DETAIL.

BENCHMARK: FIMS MONUMENT NUMBER 81, A BERNTSEN TOP SECURITY ROD WITH A 3.25-INCH DIAMETER ALUMINUM FIMS CAP (NORTH SIDE OF U.S. HWY 24 EAST OF VALLEY STREET) ELEV.=6272.26 (NVGD 1929).

KEY MAP
SCALE: NTS

0 20' 40'
SCALE: 1"=20'



LEGEND

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- PROPOSED STORM CURB INLET
- (6020) EXISTING CONTOURS
- 6020 PROPOSED CONTOURS
- (14.79) EXISTING SPOT ELEVATION
- (14.8±) APPROXIMATE EXISTING SPOT ELEVATION. ELEVATION TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
- 15.41 PROPOSED SPOT ELEVATION
- (2.3%) EXISTING FLOW DIRECTION AND SLOPE
- 2.3% PROPOSED FLOW DIRECTION AND SLOPE
- 4:1 PROPOSED SLOPE
- EXISTING RIPRAP
- EXPOSED TYPE M SOIL RIPRAP
- BURIED TYPE L SOIL RIPRAP
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MEADOWBROOK CROSSING FILING NO. 1
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CITY OF COLORADO SPRINGS, COLORADO

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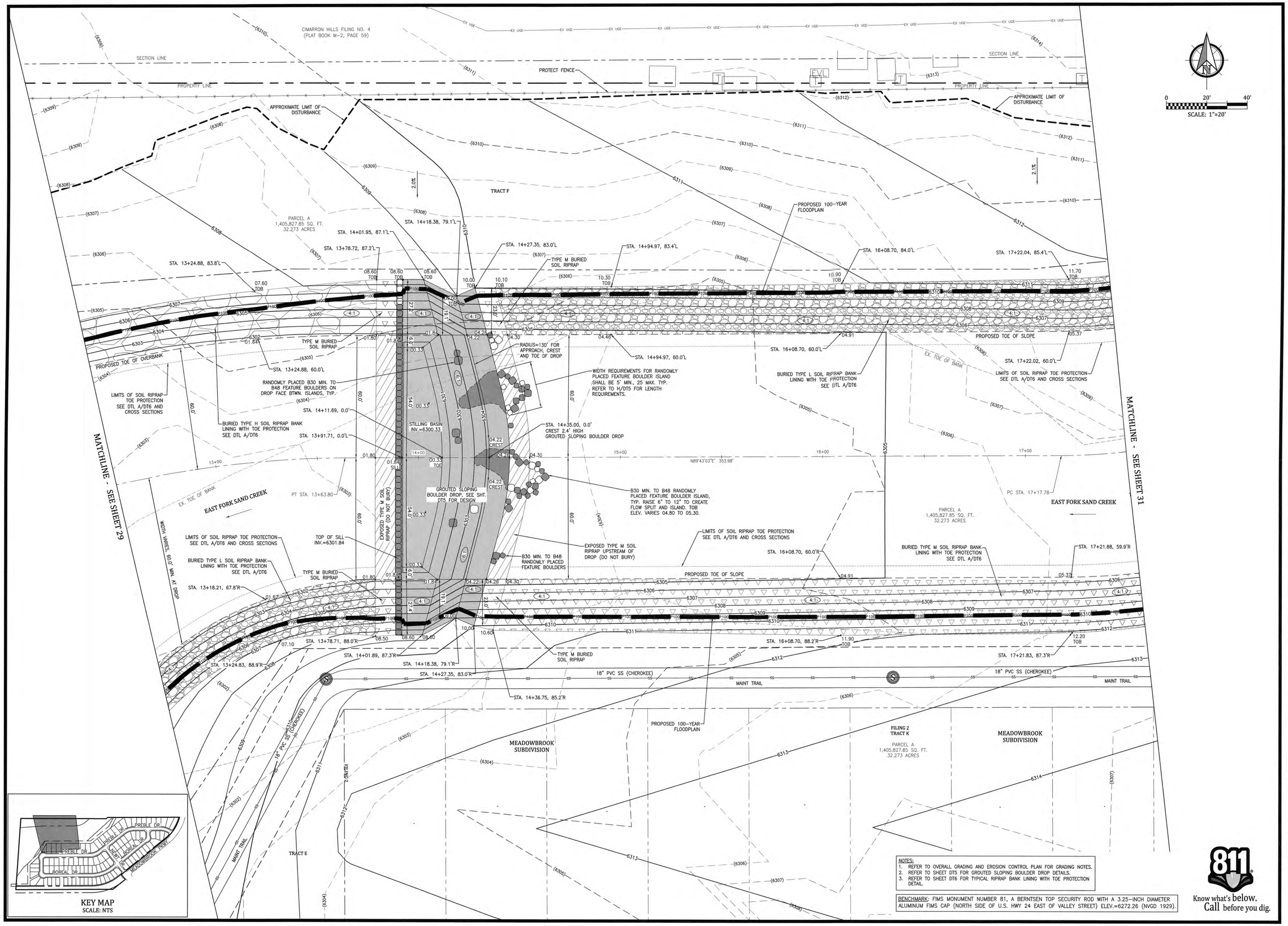
29
OF 35 SHEETS



KEY MAP
SCALE: NTS

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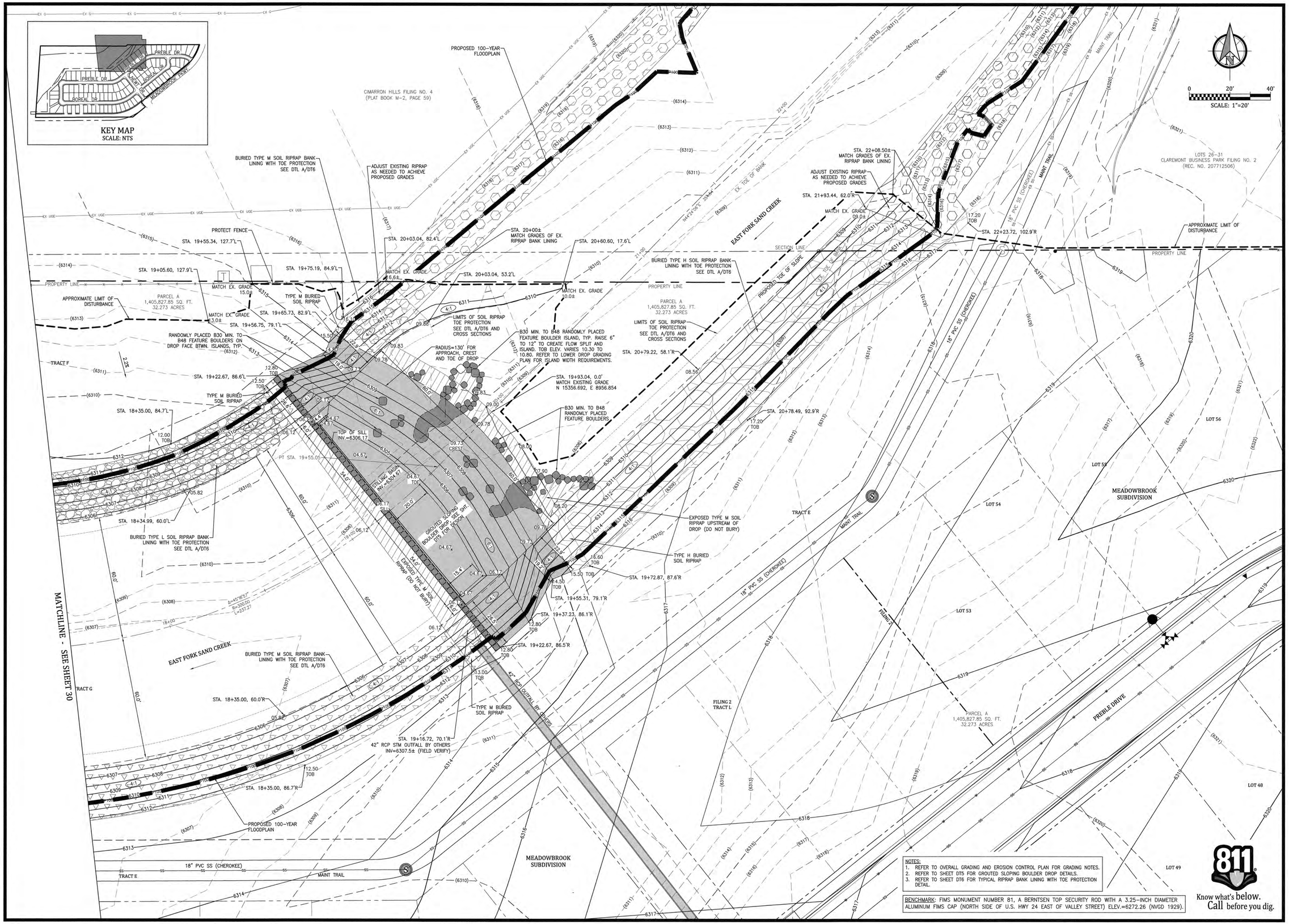

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MEADOWBROOK CROSSING FILING NO. 1
LOWER EAST FORK SAND CREEK GRADING PLAN
STA. 17+50 TO STA. 22+50
CITY OF COLORADO SPRINGS, COLORADO

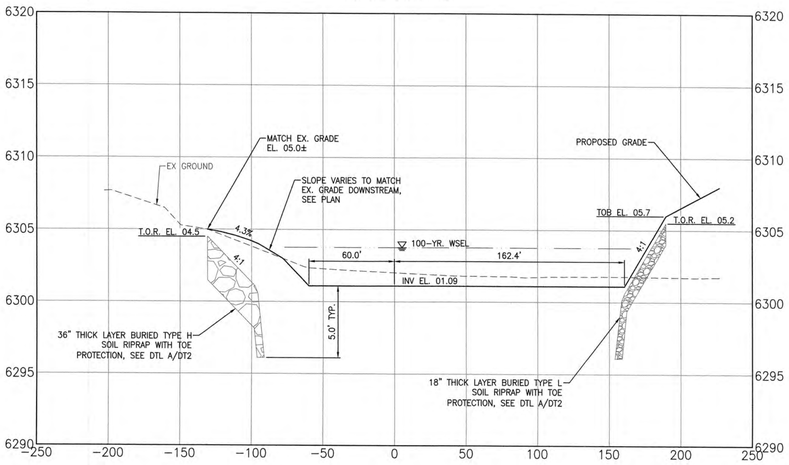
Project No.:	16039
Date:	August 22, 2017
Design:	CJC
Drawn:	CJC
Check:	MWE
Revisions:	

SHEET
31
OF 35 SHEETS

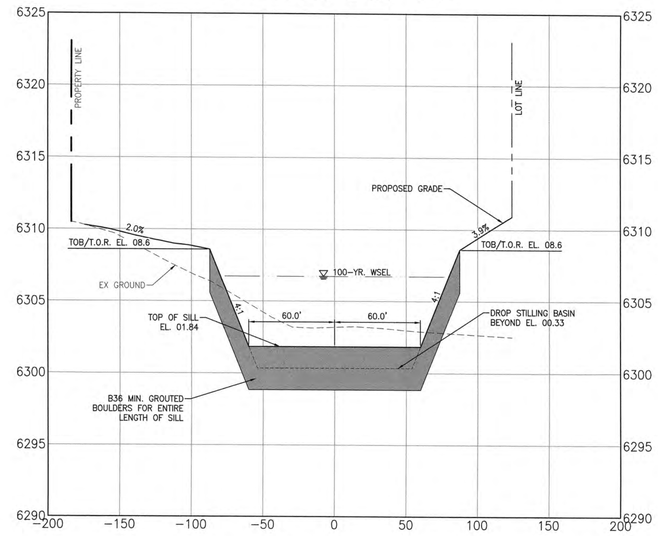
SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

NOTES:
1. ALL CROSS SECTIONS FACING UPSTREAM.
2. REFER TO CHANNEL PLAN AND PROFILES FOR CROSS SECTION LOCATIONS.

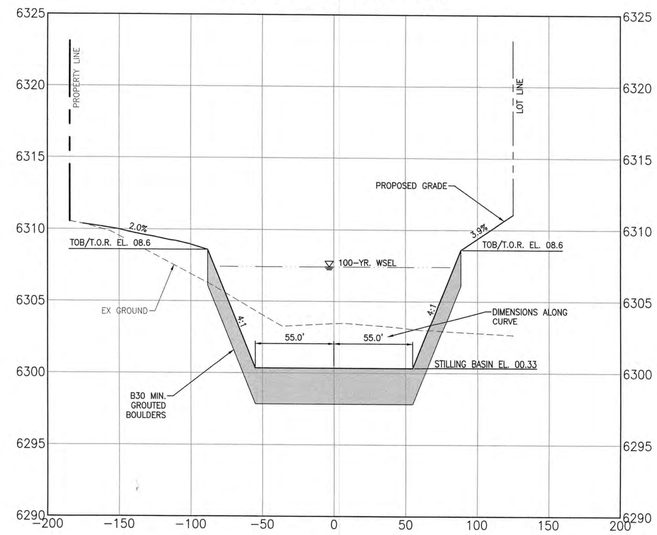
STA. 11+45



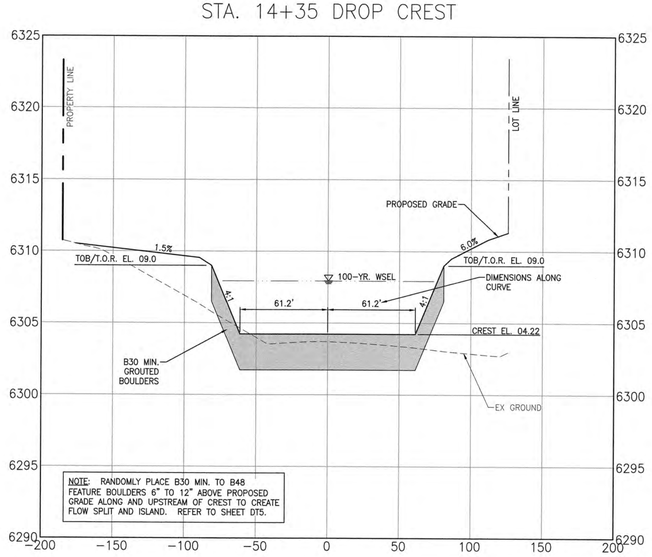
STA. 13+92 DROP SILL



STA. 14+12 DROP TOE

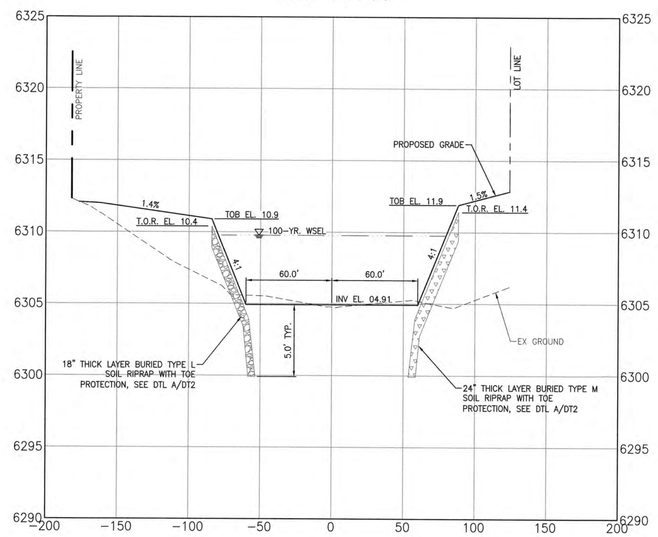


STA. 14+35 DROP CREST

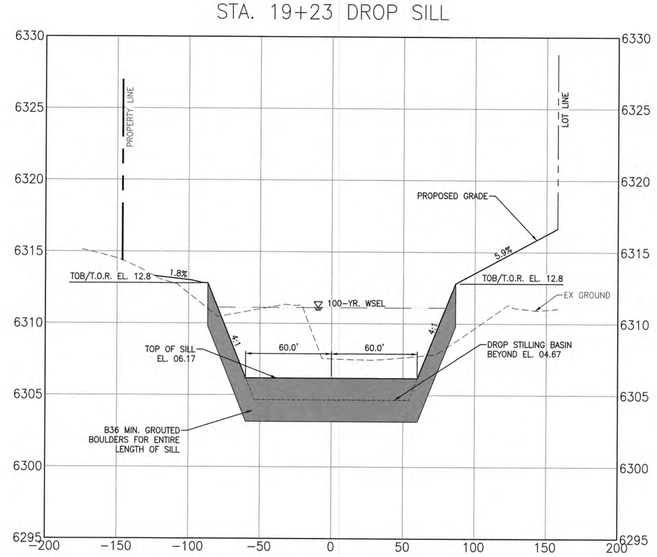


NOTE: RANDOMLY PLACE B30 MIN. TO B48 FEATURE BOULDERS 6" TO 12" ABOVE PROPOSED GRADE ALONG AND UPSTREAM OF CREST TO CREATE FLOW SPLIT AND ISLAND. REFER TO SHEET DT5.

STA. 16+09



STA. 19+23 DROP SILL



Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

MEADOWBROOK CROSSING FILING NO. 1

CHANNEL CROSS SECTIONS
CITY OF COLORADO SPRINGS, COLORADO

Project No.:	16039
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SCALE:
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

NOTES:
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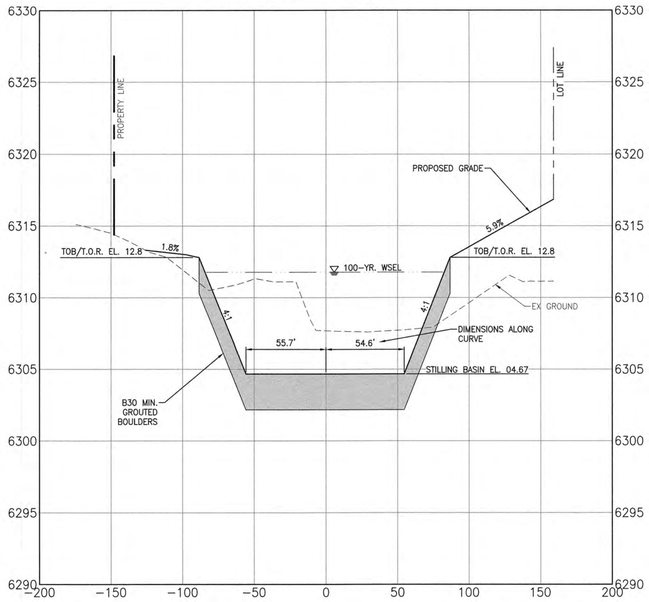
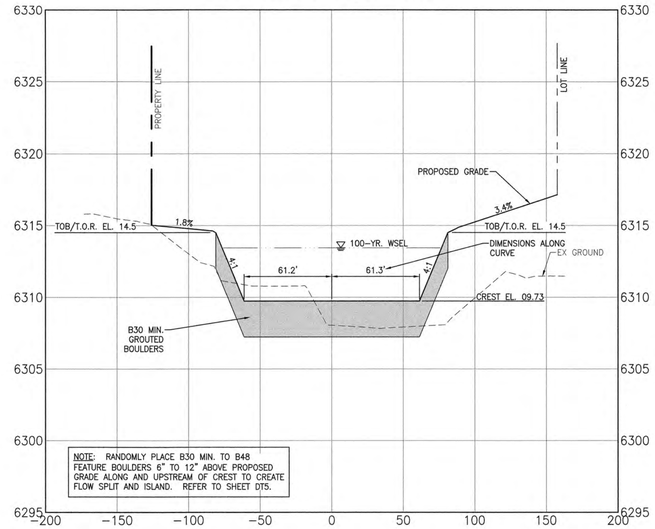
2. REFER TO CHANNEL PLAN AND PROFILES FOR CROSS SECTION LOCATIONS.

STA. 19+43 DROP TOE

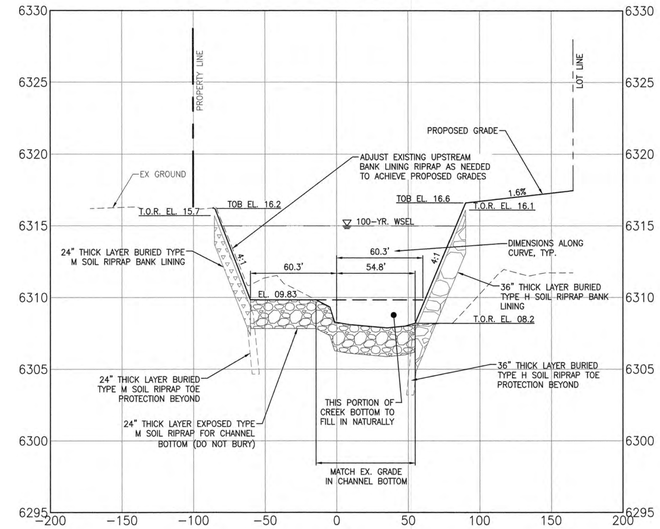


STA. 19+73 DROP CREST

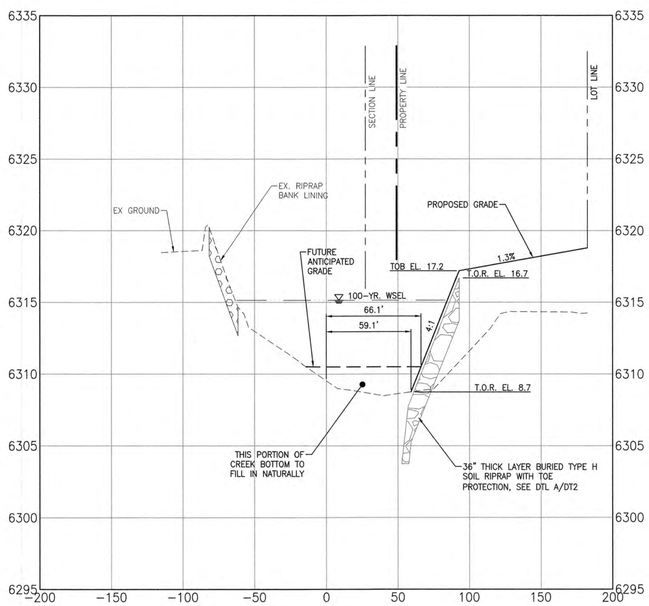


NOTE: RANDOMLY PLACE B30 MIN. TO B48 FEATURE BOULDERS 6" TO 12" ABOVE PROPOSED GRADE ALONG AND UPSTREAM OF CREST TO CREATE FLOW SPLIT AND ISLAND. REFER TO SHEET DT5.

STA. 19+93 MATCH EXISTING GRADE



STA. 21+30



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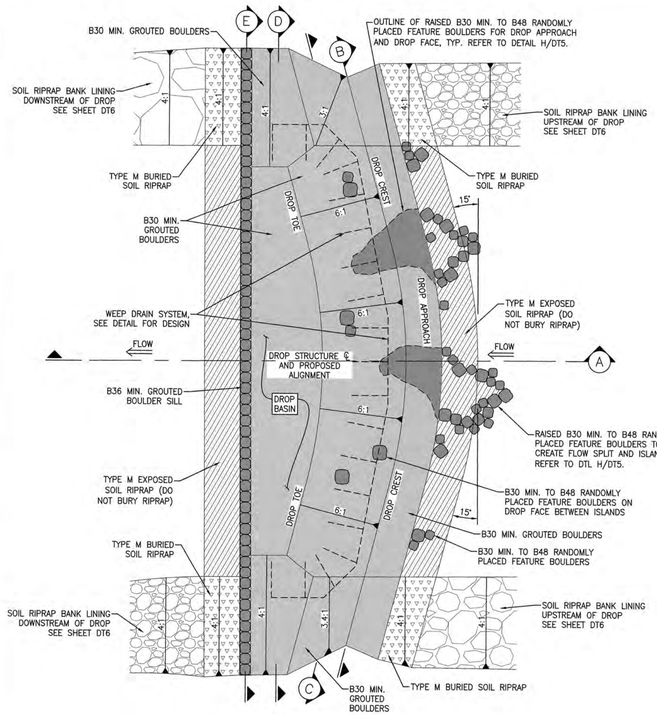
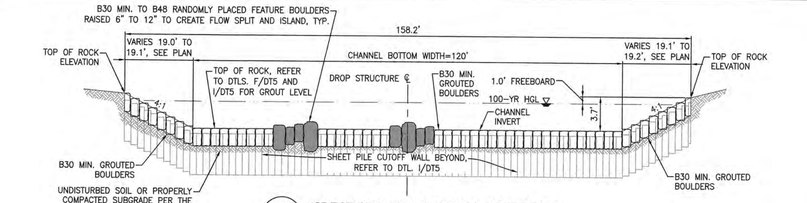
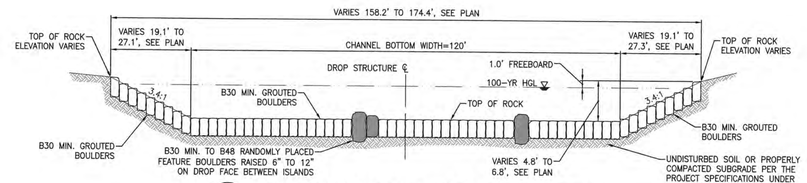


Z / DT5 DROP STRUCTURE PLAN
SCALE: 1"=20'

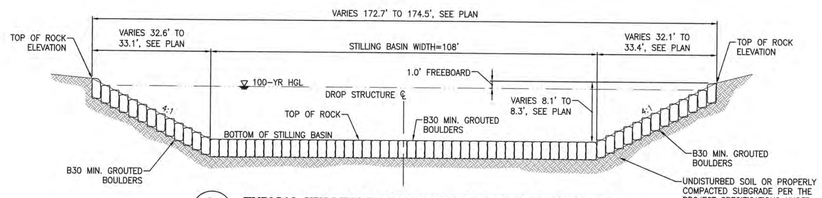


B / DT5 CREST SECTION-LOOKING UPSTREAM
SECTION B-B
SCALE: NTS

NOTE: DIMENSIONS SHOWN FOR DROP SECTIONS B, C AND D ARE TAKEN PERPENDICULAR TO CHANNEL CENTERLINE (NOT ALONG CURVE).



C / DT5 TYPICAL DROP FACE SECTION-LOOKING UPSTREAM
SECTION C-C
SCALE: NTS



D / DT5 TYPICAL STILLING BASIN SECTION-LOOKING UPSTREAM
SECTION D-D
SCALE: NTS

GENERAL NOTES:
1. CONTRACTOR TO CONTACT ENGINEER TO REVIEW REPRESENTATIVE BOULDERS AND RIPRAP FOR APPROVAL PRIOR TO DELIVERY TO SITE.
2. ENGINEER SHALL BE CONTACTED TO OBSERVE SUBGRADE PRIOR TO PLACEMENT OF RIPRAP AND BOULDERS.
3. ENGINEER SHALL BE CONTACTED TO OBSERVE BOULDER PLACEMENT PRIOR TO GROUT PLACEMENT.
4. ALTHOUGH THE COUNTY OR ENGINEER SHALL PROVIDE FIELD OBSERVATION, CONTRACTOR HAS FULL RESPONSIBILITY OF CONFORMING WITH THE PROJECT DRAWINGS AND SPECIFICATIONS. ANY REWORK COST SHALL BE BORNE BY THE CONTRACTOR.

GROUT MATERIAL SPECIFICATIONS:
1. ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3200 PSI.
2. ONE CUBIC YARD OF GROUT SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
3. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
4. THE AGGREGATE SHALL BE COMPRISED OF 70% FINE AGGREGATE (NATURAL SAND) AND 30% COARSE AGGREGATE (⅜-INCH MAXIMUM ROCK).
5. THE GROUT SLUMP SHALL BE 4-INCHES TO 6-INCHES.
6. AIR ENTRAINMENT SHALL BE 5.5%-7.5%.
7. TO CONTROL SHRINKAGE AND CRACKING, 1.5 POUNDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT.
8. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED WHEN SPECIFIED BY CONTRACT.

GROUT PLACEMENT SPECIFICATIONS:
1. CLEAN BOULDERS BY BRUSHING AND WASHING BEFORE GROUTING TO IMPROVE THE BOND BETWEEN THE GROUT AND BOULDERS.
2. GROUT SHALL BE DELIVERED BY MEANS OF A LOW PRESSURE (LESS THAN 10 PSI) CONCRETE PUMP USING A 2-INCH DIAMETER NOZZLE.
3. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS GROUT FILLS, WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
4. AFTER GROUT PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED WITH A WET BROOM.
   4.1. REMOVE ALL GROUT SPLATTER FROM EXPOSED FACES OF ROCK IMMEDIATELY DURING OR FOLLOWING GROUTING OPERATIONS.
   4.2. NO GROUT WILL BE ALLOWED TO REMAIN ON THE EXPOSED BOULDER FACES. SANDBLASTING MAY BE REQUIRED TO REMOVE GROUT SPLATTER OR SPILLS THAT ARE ALLOWED TO DRY AND HARDEN ON THE BOULDER FACES.
5. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
6. ALL FINISHED GROUT SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C-309.
7. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAN 40°F OR GREATER THAN 90°F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT.

CLASSIFICATION OF BOULDERS

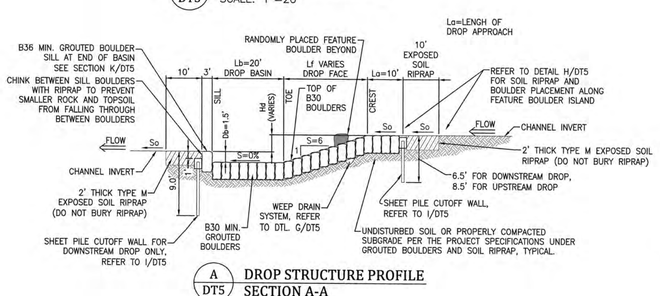
BOULDER CLASSIFICATION	NOMINAL SIZE AND RANGE IN SMALLEST DIMENSION OF INDIVIDUAL ROCK BOULDERS (INCHES)	MAXIMUM RATIO OF LARGEST TO SMALLEST ROCK DIMENSION OF INDIVIDUAL BOULDERS
B24	24 [22-26]	2.00 [44"-52" MAX.]
B30	30 [28-32]	2.00 [56"-64" MAX.]
B36	36 [34-38]	1.75 [60"-67" MAX.]
B42	42 [40-44]	1.65 [66"-73" MAX.]
B48	48 [45-51+]	1.50 [68"-77" MAX.]

(TABLE MD-8: CLASSIFICATION OF BOULDERS. UDFCD, DRAINAGE CRITERIA MANUAL, VOL. 1)

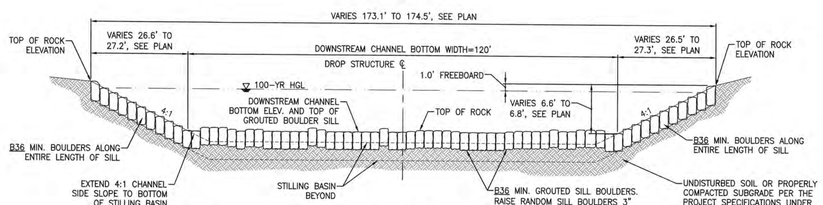
CLASSIFICATION AND GRADATION OF RIPRAP

RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	d50* (INCHES)
TYPE VL	70-100	12	
	50-70	9	
	35-50	6	6**
	2-10	2	
TYPE L	70-100	15	
	50-70	12	
	35-50	9	9**
	2-10	3	
TYPE M	70-100	21	
	50-70	18	
	35-50	12	12**
	2-10	4	
TYPE H	100	21	
	50-70	24	
	35-50	18	18
	2-10	6	
TYPE VH	100	42	
	50-70	33	
	35-50	24	24
	2-10	9	

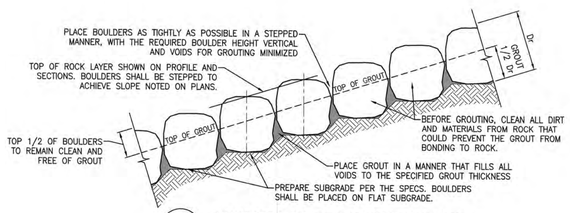
* d50=MEAN PARTICLE SIZE (INTERMEDIATE DIMENSION) BY WEIGHT.
** MIX VL, L AND M RIPRAP WITH 35% TOPSOIL (BY VOLUME) AND BURY WITH 4-6 INCHES OF TOPSOIL, ALL VIBRATION COMPACTED & REVEGETATE.
(TABLE MD-7: CLASSIFICATION AND GRADATION OF ORDINARY RIPRAP. UDFCD, DRAINAGE CRITERIA MANUAL, VOL. 1)



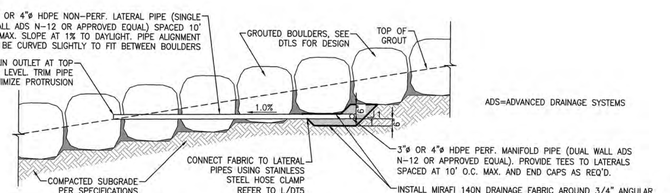
A / DT5 DROP STRUCTURE PROFILE
SECTION A-A
SCALE: NTS



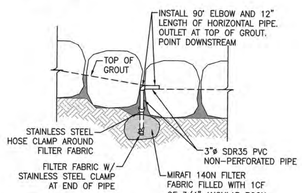
E / DT5 TYPICAL DROP BASIN SECTION ALONG SILL-LOOKING UPSTREAM
SECTION E-E
SCALE: NTS



F / DT5 GROUTED BOULDER PLACEMENT DETAIL
SCALE: NTS



G / DT5 WEEP DRAIN SYSTEM DETAIL
SCALE: NTS

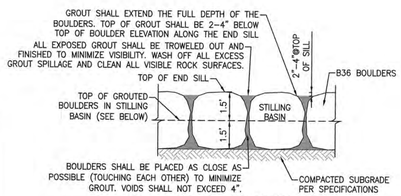


L / DT5 SINGLE WEEP DRAIN DETAIL
SCALE: NTS

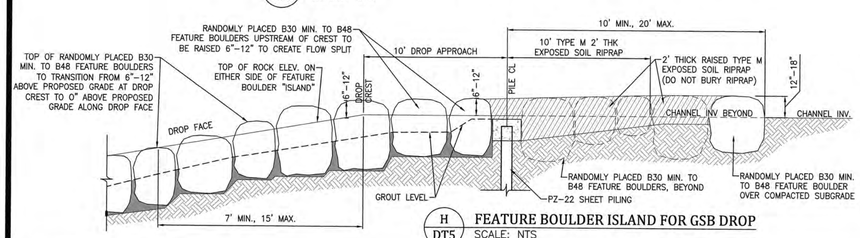
SHEETPILE CONCRETE CAP NOTES:
1. PRIOR TO CONSTRUCTION, CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR THE CONCRETE CAP AND SHEET PILE.
2. GRADE 60 REINFORCING STEEL REQUIRED. SEE TABLE FOR THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS. ALL REINFORCING STEEL SHALL HAVE A TWO-INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE, UNLESS OTHERWISE NOTED.

BAR SIZE	#4	#5	#6
MIN. SPLICE LENGTH	1'-3"	1'-7"	2'-0"

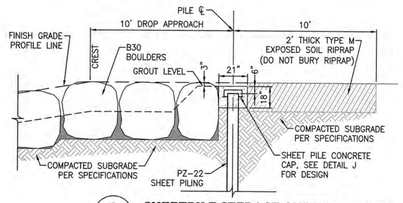
3. CONCRETE FOR THE CAP SHALL BE CDOT CLASS D CONCRETE. CAP MAY ALSO BE 3200 PSI GROUT PLACED MONOLITHICALLY WITH THE GROUT PLACED FOR BOULDERS.
4. ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 3/4-INCH CHAMFER UNLESS OTHERWISE NOTED.
5. SUBGRADE BELOW CAP SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM M698 UNDER STRUCTURE.



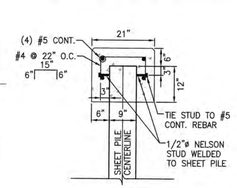
ELEVATION-END SILL

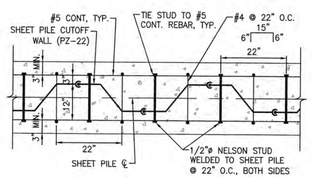


H / DT5 FEATURE BOULDER ISLAND FOR GSB DROP
SCALE: NTS

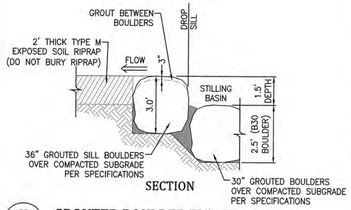


I / DT5 SHEETPILE SEEPAGE CUTOFF DETAIL
SCALE: NTS





J / DT5 SHEETPILE CONCRETE CAP DETAIL
SCALE: NTS



SECTION

K / DT5 GROUTED BOULDER END SILL DETAIL
SCALE: NTS

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Celebrating 30 years
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MEADOWBROOK CROSSING FILING NO. 1

CHANNEL DETAILS

EL PASO COUNTY, COLORADO

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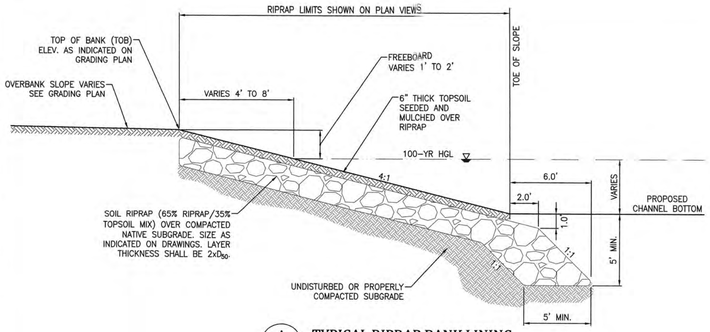
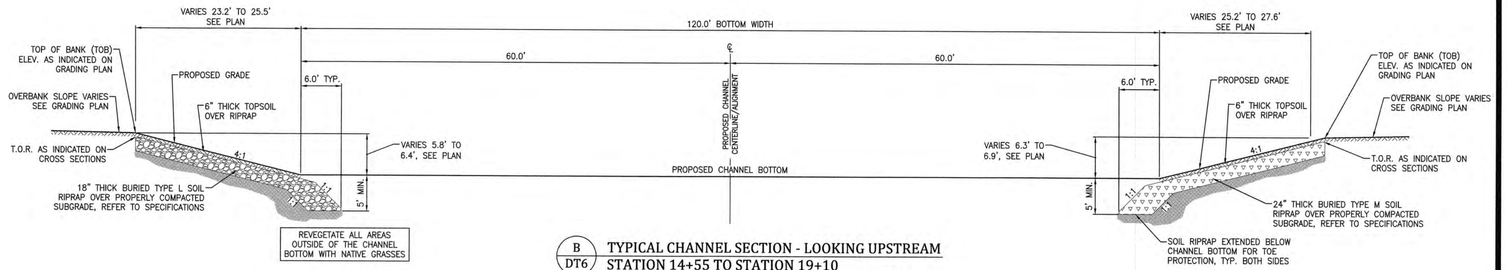
SHEET DT5



A / DT6 **TYPICAL RIPRAP BANK LINING WITH TOE PROTECTION DETAIL**
SCALE: 1"=5'

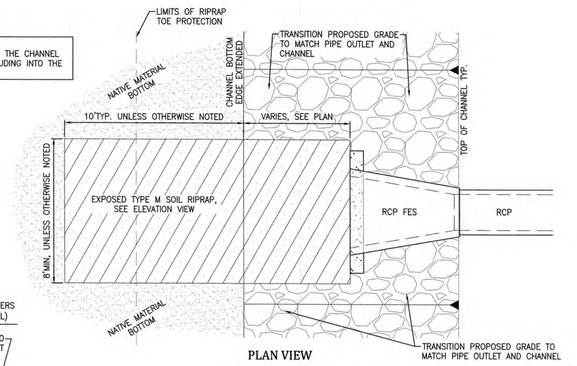


B / DT6 **TYPICAL CHANNEL SECTION - LOOKING UPSTREAM STATION 14+55 TO STATION 19+10**
SCALE: 1"=10'

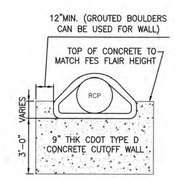
SOIL RIPRAP

1. THE SOIL MATERIAL SHALL BE NATIVE OR TOPSOIL AND MIXED WITH SIXTY FIVE PERCENT (65%) RIPRAP AND THIRTY FIVE PERCENT (35%) SOIL BY VOLUME. SOIL RIPRAP SHALL CONSIST OF A UNIFORM MIXTURE OF SOIL AND RIPRAP WITHOUT VOIDS.
2. CONTRACTOR SHALL COOPERATE WITH ENGINEER IN OBTAINING AND PROVIDING SAMPLES OF ALL SPECIFIED MATERIALS.
3. CONTRACTOR SHALL SUBMIT CERTIFIED LABORATORY TEST CERTIFICATES FOR ALL ITEMS REQUIRED FOR SOIL RIPRAP.
4. RIPRAP USED SHALL BE THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL CONFORM TO TABLE SHOWN.
5. THE RIPRAP DESIGNATION AND TOTAL THICKNESS OF RIPRAP SHALL BE AS SHOWN ON THE DRAWINGS. THE MAXIMUM STONE SIZE SHALL NOT BE LARGER THAN THE THICKNESS OF THE RIPRAP.
6. NEITHER WIDTH NOR THICKNESS OF A SINGLE STONE OF RIPRAP SHALL BE LESS THAN ONE-THIRD (⅓) OF ITS LENGTH.
7. THE SPECIFIC GRAVITY OF THE RIPRAP SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.
8. MINIMUM DENSITY FOR ACCEPTABLE RIPRAP SHALL BE ONE HUNDRED AND SIXTY FIVE (165) POUNDS PER CUBIC FOOT.
9. RIPRAP SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE-DRY BASIS, IN ACCORDANCE WITH AASHTO T85.
10. THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN FORTY PERCENT (40%) AFTER FIVE HUNDRED (500) REVOLUTIONS WHEN TESTED IN ACCORDANCE WITH AASHTO T96.
11. THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN (10%) AFTER FIVE (5) CYCLES WHEN TESTED IN ACCORDANCE WITH AASHTO T104 FOR LEDGE ROCK USING SODIUM SULFATE.
12. THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER TWELVE (12) CYCLES OF FREEZING AND THAWING WHEN TESTED IN ACCORDANCE WITH AASHTO T103 FOR LEDGE ROCK, PROCEDURE A. ROCK SHALL BE FREE FROM CALCITE INTRUSIONS.
13. RUBBLE FOR USE AS SOIL/RIPRAP SHALL BE GRADED TO MEET THE EQUIVALENT ROCK RIPRAP GRADATION. RUBBLE PROPOSED FOR USE IN PLACE OF ROCK RIPRAP SHALL BE STOCKPILED FOR OBSERVATION BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE WORK. ROUNDED RIPRAP (RIVER ROCK) IS NOT ACCEPTABLE, UNLESS SPECIFICALLY DESIGNATED ON THE DRAWINGS.
14. GRADATION: EACH LOAD OF RIPRAP SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE LARGEST SIZE SPECIFIED.
    - 14.1. STONES SMALLER THAN THE TWO TO TEN PERCENT (2%-10%) SIZE WILL NOT BE PERMITTED IN AN AMOUNT EXCEEDING TEN PERCENT (10%) BY WEIGHT OF EACH LOAD.
    - 14.2. CONTROL OF GRADATION SHALL BE BY VISUAL INSPECTION. HOWEVER IN THE EVENT THE ENGINEER DETERMINES THE RIPRAP TO BE UNACCEPTABLE, THE ENGINEER SHALL PICK TWO (2) RANDOM TRUCKLOADS TO BE DUMPED AND CHECKED FOR GRADATION. MECHANICAL EQUIPMENT AND LABOR NEEDED TO ASSIST IN CHECKING GRADATION SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

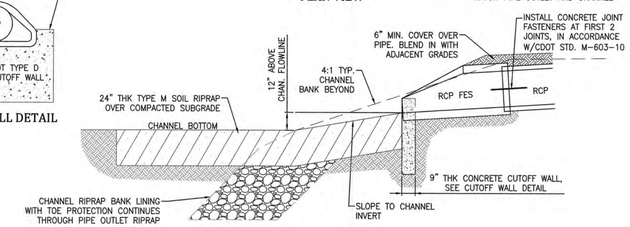
NOTE:
1. PIPE OUTLET TO BE RECESSED INTO THE CHANNEL BANK TO MINIMIZE THE PIPE PROTRUDING INTO THE TYPICAL CHANNEL SECTION.



PLAN VIEW



CUTOFF WALL DETAIL



ELEVATION VIEW

C / DT6 **FES PIPE OUTLET w/CONCRETE CUTOFF WALL AND JOINT RESTRAINTS**
SCALE: NTS

Kiowa Engineering Corporation
Celebrating 30 years
1604 South 21st Street
Colorado Springs, Colorado 80904
(719)630-7342

MEADOWBROOK CROSSING FILING NO. 1

CHANNEL DETAILS

EL PASO COUNTY, COLORADO

Project No.:	16039
Date:	August 22, 2017
Design:	CJC
Drawn:	CJC
Check:	MWE
Revisions:	

SHEET DT6

35 OF 35 SHEETS