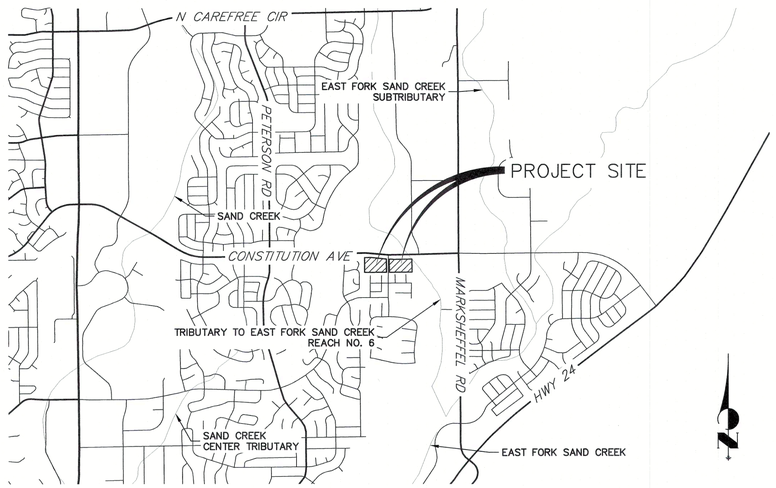
URBAN COLLECTION AT PALMER VILLAGE

SITUATED IN THE NORTHWEST QUARTER OF SECTION 5
TOWNSHIP 14 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

WATER CONSTRUCTION PLANS

CONTACTS:

OWNER/DEVELOPER	MDC HOLDINGS – RICHMOND AMERICAN HOMES 4350 S. MONACO STREET DENVER, CO 80237 JASON POCK P~(720)-977-3827
ENGINEER/SURVEYOR	JR ENGINEERING, LLC ATTN: GLENN D. ELLIS 5475 TECH CENTER DRIVE, SUITE 235 COLORADO SPRINGS, CO 80919 P~(719) 593-2593
FIRE PROTECTION DISTRICT	FALCON FIRE PROTECTION DISTRICT 730 OLD MERIDIAN ROAD PEYTON, CO 80831 TRENT HARWIG P~(719) 495-4050
WATER AND SEWER DISTRICT	CHEROKEE METRO DISTRICT 6250 PALMER PARK BLVD COLORADO SPRINGS, CO 80915 CONTACT: KEVIN BROWN P~(719) 322-4339
JURISDICTION	EL PASO COUNTY PCD P~(719)-520-6300 EL PASO COUNTY DPW P~(719)-520-6460



VICINITY MAP
SCALE: 1"=2000'

BASIS OF BEARING
BEARINGS SHOWN HEREON ARE REFERENCED TO THE NORTH LINE OF NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 5, TOWNSHIP 14 SOUTH, RANGE 65 WEST, ASSUMED TO BEAR NORTH 89°09'25" EAST BETWEEN THE MONUMENTS SHOWN HEREON.

BENCHMARK
FIMS MOUNUMENT SR06 IS A 2 INCH DIAMETER ALUMINUM CAP ON TOP OF THE SOUTH CURB OF PONY TRACKS DRIVE, APPROXIMATELY 850 FEET EASTERLY OF THE CENTERLINE OF PETERSON ROAD, 125 FEET EASTERLY OF THE EAST CURB OF BANKSIDE DRIVE, AND 10 FEET EASTERLY OF AN ELECTRICAL VAULT.

ELEVATION = 6523.04 (NGVD 29)

BUILDING DATA	
CONSTRUCTION TYPE	VB
GROSS SQUARE FOOTAGE	2,735
NON-SPRINKLED	
REQUIRED HYDRANTS	1
AVERAGE HYDRANT SPACING	500
MAX HOSE DISTANCE	250
REQUIRED FIRE FLOW	1,500 GPM

SHEET INDEX

FALCON FIRE DISTRICT APPROVAL BLOCK
ACCORDING TO THE MODELED CALCULATIONS REVIEWED BY THE GOVERNING WATER DISTRICT AND/OR COLORADO REGISTERED CIVIL ENGINEER/DESIGNER; THE THEORETICAL AVAILABLE FIRE FLOW AT NODE _____ IS _____ GALLONS PER MINUTE UNDER MAXIMUM DAILY DEMAND CONDITIONS AT 20 PSI RESIDUAL. THE ACTUAL FIRE FLOW MAY VARY DUE TO VARIOUS PARAMETERS.

UPON DETAILED REVIEW OF THE AVAILABLE WATER SUPPLY, FIRE HYDRANT LOCATIONS AND HOSE LAY DISTANCES, THESE PLANS ARE HEREBY CONSIDERED APPROVED.

FALCON FIRE DEPARTMENT

FIRE DEPARTMENT SIGNATURE: _____ DATE: 7-16-2021

NODE	FIRE FLOW (GPM)	PSI @ MDD
A	4,028	115
B	4,522	111
C	3,467	121
D	3,306	122
E	4,607	113
F	3,813	122

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

CHEROKEE METROPOLITAN DISTRICT
WATER PLAN APPROVAL
THE CHEROKEE METROPOLITAN DISTRICT RECOGNIZES THE DESIGN PROFESSIONAL OF RECORD AS THE LICENSED ENGINEER HAVING RESPONSIBILITY FOR THE SUBMITTED DESIGN AND THE DISTRICT HAS LIMITED ITS SCOPE OF REVIEW ACCORDINGLY. AS SUCH, THE APPROVAL GRANTED HEREIN IS FOR THE CONSTRUCTION OF THE FACILITIES AS REPRESENTED ON THESE DOCUMENTS. APPROVAL EXPIRES ONE (1) YEAR FROM THE DATE BELOW AND RESUBMITTAL OF THESE PLANS FOR REVIEW AND APPROVAL IS REQUIRED IF CONSTRUCTION DOES NOT BEGIN DURING THIS PERIOD.

APPROVED BY: _____ DATE: _____

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

Jason J.W. Pock — 7-16-2021
JASON POCK — DATE
MDC HOLDINGS – RICHMOND AMERICAN HOMES
4359 S. MONACO STREET
DENVER, CO 80237

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

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

IN ACCORDANCE WITH 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 Jeff Rice
El Paso County Planning and Community Development
On behalf of Elizabeth Nijkamp, Engineering Review Manager
09/07/2021 10:44:41 AM

JENNIFER IRVINE, P.E. — DATE
COUNTY ENGINEER/ECM ADMINISTRATOR

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

COLORADO REGISTERED PROFESSIONAL ENGINEER — GLENN D. ELLIS — 38861

07/15/2021 — DATE
GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

URBAN COLLECTION AT PALMER VILLAGE
COVER SHEET
WATER SYSTEM PLAN

SHEET 1 OF 10
JOB NO. 25149.01

LAYER LINETYPE LEGEND

	EXISTING	PROPOSED
PHASE LINE		
MATCH LINE		
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
R.O.W. A LINE	A	A
CENTERLINE		
CITY LIMITS		
WIRE FENCE	X	X
CHAIN LINK FENCE	O	●
WOOD FENCE	◇	◆
MASONRY FENCE	□	■
GUARDRAIL		
CONC. BARRIER		
CABLE TV	TV	TV
ELECTRIC	E	E
FIBER OPTIC	FO	FO
GAS MAIN	G	G
IRRIGATION MAIN	IRR	IRR
OIL/PETRO. MAIN	O	O
OVERHEAD UTILITY	OHU	OHU
SANITARY SEWER	S	
STORM DRAIN		
TELEPHONE	T	T
WATER MAIN	W	
RAW WATER LINE	RWL	RWL
SWALE/WATERWAY FLOWLINE		
DIVERSION DITCH		
DIVERSION CHANNEL		
MAJOR DRAINAGE BASIN		
MINOR DRAINAGE BASIN		
TOP OF SLOPE		
TOE OF SLOPE		
EDGE OF WATER		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
DEPRESSION CONT. (INDEX)	6100	6100
DEPRESSION CONT. (INTER)		
TOP OF CUTS		
TOE OF FILLS		
CUT AND FILL LINE		C/F
SILT FENCE	SF	SF
100 YEAR FLOODPLAIN	100YR	100YR
500 YEAR FLOODPLAIN	500YR	500YR
FLOODWAY	FLDWY	FLDWY
BASE FLOOD ELEVATION		
EDGE OF WETLANDS		
STONE WALL		

LANDSCAPE LEGEND

	EXISTING	PROPOSED
TREE – CONIFEROUS		
TREE – DECIDUOUS		
SHRUB/BUSH		
SHRUBS AND BUSHES		
IRRIGATION BOX		
IRRIGATION SPRINKLER		
IRRIGATION VALVE		
BOLLARD		
FLAGPOLE	FP	

UTILITIES LEGEND

	EXISTING	PROPOSED
STORM SEWER		
MANHOLE		
STORM INLET		
AREA INLET – SQUARE		
AREA INLET – ROUND		
FLARED END SECTION		
RIPRAP		
SANITARY SEWER		
LINE MARKER	Mkr San	
SERVICE MARKER		
CLEAN-OUT		
MANHOLE W/ DIRECTIONAL FLOW ARROW		
WATER LINE		
LINE MARKER	Mkr W	
SERVICE MARKER		
FIRE HYDRANT		
FIRE CONNECTION		
MANHOLE		
BEND		
BLOW-OFF VALVE		
WELL	MELL	MELL
METER		
VALVE		
REDUCER		
THRUST BLOCK		
CROSS		
PLUG W/ THRUST BLOCK		
TEE		
REVERSE ANCHOR		
ANODE		
AIR & VACUUM VALVE ASSEMBLY		
TRANSMISSION BLOW-OFF ASSEMBLY		
GAS LINE		
MARKER	Mkr G	
SERVICE MARKER		
METER		
VALVE		
PLUG		
TEE		
DRY UTILITIES		
CABLE TV MARKER	Mkr TV	
CABLE TELEVISION PEDESTAL		
ELECTRIC MARKER	Mkr E	
ELECTRIC SERVICE MARKER		
ELECTRICAL PEDESTAL		
ELECTRICAL METER		
ELECTRICAL MANHOLE		
FIBER-OPTIC MARKER	Mkr FO	
IRRIGATION PEDESTAL		
TELEPHONE MARKER	Mkr T	
TELEPHONE PEDESTAL		
TELEPHONE MANHOLE		
UTILITY POLE		
GUY ANCHOR		
GUY POLE		
MISC. UTILITIES		
VENT PIPE	VP	VP
TEST HOLE DESIGNATOR	TH# FIRM/AGENCY	

GENERAL CONSTRUCTION NOTES

1. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION OF SITE IMPROVEMENTS SHALL MEET OR EXCEED THE SITE WORK STANDARDS AND SPECIFICATIONS AND THE STANDARDS AND SPECIFICATIONS SET FORTH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. WHERE THERE IS CONFLICT BETWEEN THESE PLANS AND THE SPECIFICATIONS, OR ANY APPLICABLE STANDARDS, THE HIGHER QUALITY STANDARD SHALL APPLY.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS, ESPECIALLY AT THE CONNECTION POINTS AND AT POTENTIAL UTILITY CONFLICTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.
3. THE CONTRACTOR SHALL SECURE ALL APPLICABLE LICENSES AND PERMITS TO COMPLETE THE CONSTRUCTION IN COMPLIANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
4. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH EL PASO COUNTY AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH THE MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
5. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ALL PERMITS NEEDED FOR THE JOB, ON-SITE AT ALL TIMES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.
7. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED THAT COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND EL PASO COUNTY INSPECTOR IMMEDIATELY.
8. ALL REFERENCES TO ANY PUBLISHED STANDARDS SHALL REFER TO THE LATEST REVISION OF SAID STANDARD, UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH M.U.T.C.D. TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (CITY, COUNTY, OR STATE) FOR APPROVAL, PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS SHOWN ON THESE DRAWINGS OR DESIGNATED TO BE PROVIDED, INSTALLED, OR CONSTRUCTED, UNLESS SPECIFICALLY NOTED OTHERWISE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT AT THE CONSTRUCTION SITE, WHICH SHALL BE AVAILABLE TO EL PASO COUNTY AT ALL TIMES.
13. THE CONTRACTOR SHALL SEQUENCE THE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO MINIMIZE POTENTIAL UTILITY CONFLICTS. IN GENERAL, WATERLINES AND SANITARY SEWER SHOULD BE CONSTRUCTED PRIOR TO INSTALLATION OF STORM SEWER AND DRY UTILITIES.
14. NO SITE-RELATED IMPROVEMENTS MAY COMMENCE UNTIL A PRECONSTRUCTION MEETING IS HELD WITH EL PASO COUNTY AND ALL APPLICABLE PERMITS ARE OBTAINED.
15. CONTRACTOR IS TO OBTAIN COPIES OF THE SOILS REPORT FROM THE GEOTECHNICAL ENGINEER AND A COPY IS TO BE KEPT ONSITE DURING ALL EARTH WORK OPERATIONS.
16. ALL BACKFILL, SUB-BASE, AND/OR BASE COURSE MATERIAL SHALL BE COMPACTED PER COUNTY SPECIFICATIONS, AND GEOTECHNICAL ENGINEERS RECOMMENDATIONS.
17. CONCRETE USED IN CURB AND GUTTER, SIDEWALK, AND CROSSPAN CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
18. PEDESTRIAN RAMPS SHALL BE INSTALLED AT ALL INTERSECTIONS AND CONFORM TO EL PASO COUNTY ENGINEERING DIVISION, STANDARDS AND SPECIFICATIONS.

WATER PLAN NOTES

THE CONTRACTOR SHALL NOTIFY CHEROKEE METROPOLITAN DISTRICT INSPECTIONS OFFICE 719-597-5080 A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

GENERAL:

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL MEET *COLORADO SPRINGS UTILITIES' WATER LINE EXTENSION AND SERVICE STANDARDS* (*WATER LESS*) AND CHEROKEE METROPOLITAN DISTRICT EXCEPTIONS.
2. THE CONTRACTOR SHALL OBTAIN LOCATES PRIOR TO ANY EXCAVATION.
3. CHEROKEE METROPOLITAN DISTRICT DOES NOT GUARANTEE THE ACCURACY OF LOCATIONS OF EXISTING PIPELINES, HYDRANTS, VALVES AND SERVICE LINES. IF FIELD CONDITIONS ARE FOUND TO BE DIFFERENT THAN SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AND THE ENGINEER OF RECORD IMMEDIATELY.
4. NO TREES OR STRUCTURES ARE PERMITTED WITHIN FIFTEEN FEET (15') OF A WATER MAIN.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY FACILITIES AS A RESULT OF HIS ACTIONS. THE CONTRACTOR SHALL MAKE ALL THE REQUIRED REPAIRS IMMEDIATELY TO THE SATISFACTION OF CHEROKEE METROPOLITAN DISTRICT.
6. ALL FIELD STAKING SHALL COMPLY WITH THE *WATER LESS*.
7. THE CONTRACTOR SHALL MAKE THEIR BEST EFFORT TO ENSURE THAT WATER SERVICE TO ADJACENT PROPERTIES IS MAINTAINED DURING CONSTRUCTION.
8. CORROSION PROTECTION MEASURES SHALL COMPLY WITH THE *WATER LESS*.
9. NO SERVICE TAPS WILL BE ALLOWED UNTIL THE MAIN IS EXTENDED TO THE NEXT MAIN-LINE VALVE.
10. NO SERVICE TAPS SHALL BE MADE UNTIL AUTHORIZATION HAS BEEN GRANTED BY THE CHEROKEE METROPOLITAN DISTRICT INSPECTOR.
11. ALL BENDS SHALL BE FIELD STAKED PRIOR TO CONSTRUCTION AND THE STATIONING ON THE FIELD STAKES SHALL MATCH THE STATIONING ON THE PLANS.
12. FIELD MODIFICATIONS TO A FIRE SERVICE LINE OR FIRE HYDRANT DESIGN OR LOCATION MAY NEED TO BE APPROVED BY THE DESIGN ENGINEER, FALCON FIRE DEPARTMENT AND CHEROKEE METROPOLITAN DISTRICT, AS REQUIRED BY THE INSPECTOR.
13. REUSE OR SALVAGE OF ANY MATERIAL IS LEFT TO THE DISCRETION OF THE CHEROKEE METROPOLITAN DISTRICT INSPECTOR.
14. ALL TRENCH BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH EL PASO COUNTY *ENGINEERING CRITERIA MANUAL*.
15. ALL WATER SERVICE LINES SHOULD ENTER THE BUILDING WITHIN 3 FEET OF AN EXTERIOR WALL. EXPOSED WATER PLUMBING SHALL BE MINIMIZED INSIDE THE BUILDING PRIOR TO THE WATER METER AND/OR APPROVED BACKFLOW PREVENTION ASSEMBLY OR METHOD.
16. ALL WATER MAINS AND SERVICE LINES SHALL HAVE TRACER WIRE INSTALLED PER COLORADO SPRINGS UTILITIES WITH CHEROKEE METROPOLITAN DISTRICT STANDARDS

WATER PROJECT - SPECIFIC NOTES

	APPLICABLE	NOT-APPLICABLE	
1.	☐	☒	ANY EXISTING STUBS AND APPURTENANCES THAT WILL NOT BE USED SHALL BE REMOVED AND REPLACED WITH AN ACCEPTABLE SECTION OF MAIN AT THE EXPENSE OF THE CONTRACTOR.
2.	☒	☐	A CONNECTION TO AN EXISTING STUB IS PROPOSED. CHEROKEE METROPOLITAN DISTRICT DOES NOT GUARANTEE THE ACCURACY OF THE DEPTHS OR LOCATIONS OF EXISTING STUBS SHOWN ON ANY "AS-BUILT" DRAWINGS.
3.	☐	☒	A WATER STUB-OUT(S) IS/ARE PROPOSED. CHEROKEE METRO DISTRICT DOES NOT GUARANTEE THAT THE DESIGN OR INSTALLATION OF THE PROPOSED WATER STUB-OUT WILL MEET FUTURE DEVELOPMENT NEEDS.
4.	☐	☒	A WATER QUALITY PLAN HAS BEEN APPROVED FOR THIS PROJECT

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021 DATE

COLORADO REGISTERED PROFESSIONAL ENGINEER GLENN D. ELLIS 38861

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10-30-20
DESIGNED BY	MCS
DRAWN BY	MCS
CHECKED BY	

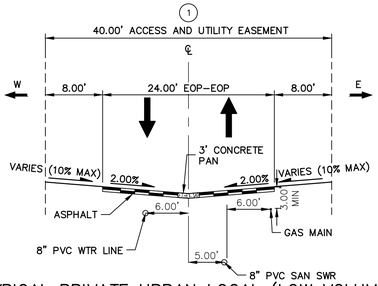
URBAN COLLECTION AT PALMER VILLAGE

LEGEND

WATER SYSTEM PLAN

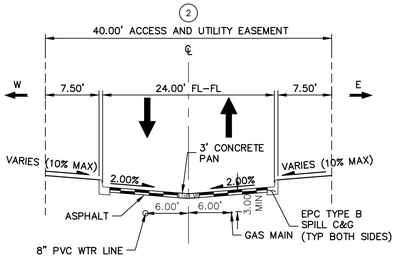
SHEET 2 OF 10

JOB NO. 25149.01



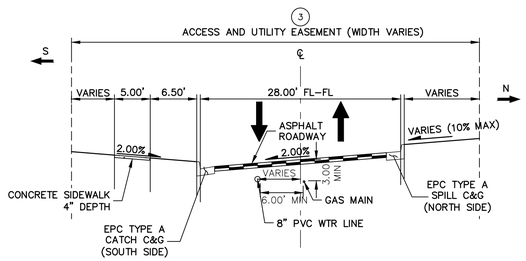
TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 1

POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: WAYFARING TREE HEIGHTS, FOUNTAIN GRASS GROVE, SERVICEBERRY GROVE, VANHOUTTE VIEW, BLUE AVENA VIEW, PURPLE FOUNTAIN POINT



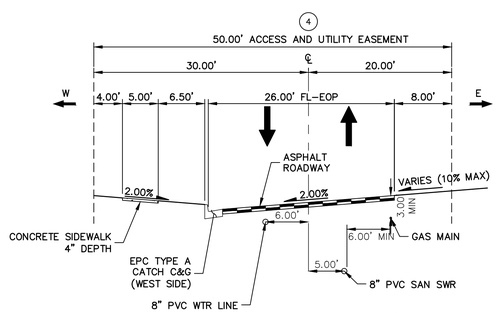
TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 2

POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: VANHOUTTE VIEW (EMERGENCY VEHICLE ACCESS)



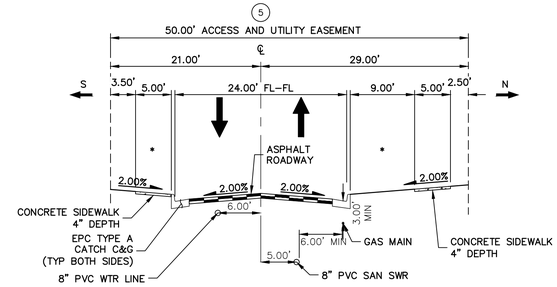
TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 3

POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: FOUNTAIN GRASS GROVE (ENTRANCE)



TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 4

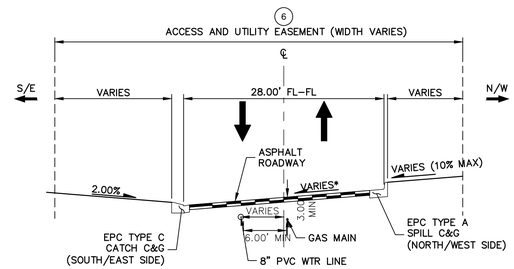
POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: FOUNTAIN GRASS GROVE (WEST SIDE)



*PARKING NOT INCLUDED IN TYPICAL SECTION FOR CLARITY PURPOSES
SEE PLANS FOR LOCATIONS OF HEAD–IN AND PARALLEL PARKING
*SEE FINAL GRADING PLANS FOR MODIFIED CROSS–SLOPE BETWEEN
STA. 1+42 AND STA. 2+80 ON WAYFARING TREE HEIGHTS

TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 5

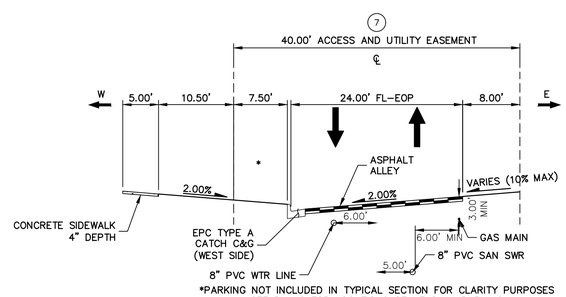
POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: WAYFARING TREE HEIGHTS, BLUE AVENA VIEW



*SLOPE TRANSITIONS FROM 2% SUPERELEVATION TO SOUTH
TO INVERTED CROWN OF TYPE 1 SECTION

TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 6

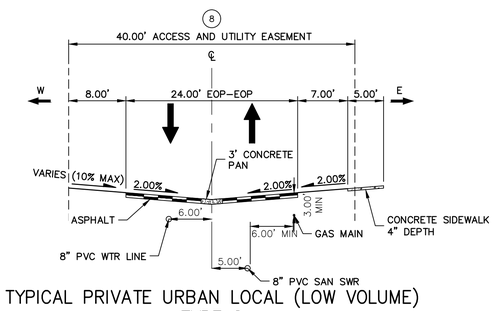
POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: FOUNTAIN GRASS GROVE (WEST SIDE)



*PARKING NOT INCLUDED IN TYPICAL SECTION FOR CLARITY PURPOSES
SEE PLANS FOR LOCATIONS OF HEAD–IN PARKING

TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 7

POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: FOERSTER GRASS VIEW



TYPICAL PRIVATE URBAN LOCAL (LOW VOLUME) TYPE 8

POSTED/DESIGN SPEED LIMIT = 20 MPH
ROADS: SERVICEBERRY GROVE

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E. — 07/15/2021 DATE
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720–977–3827

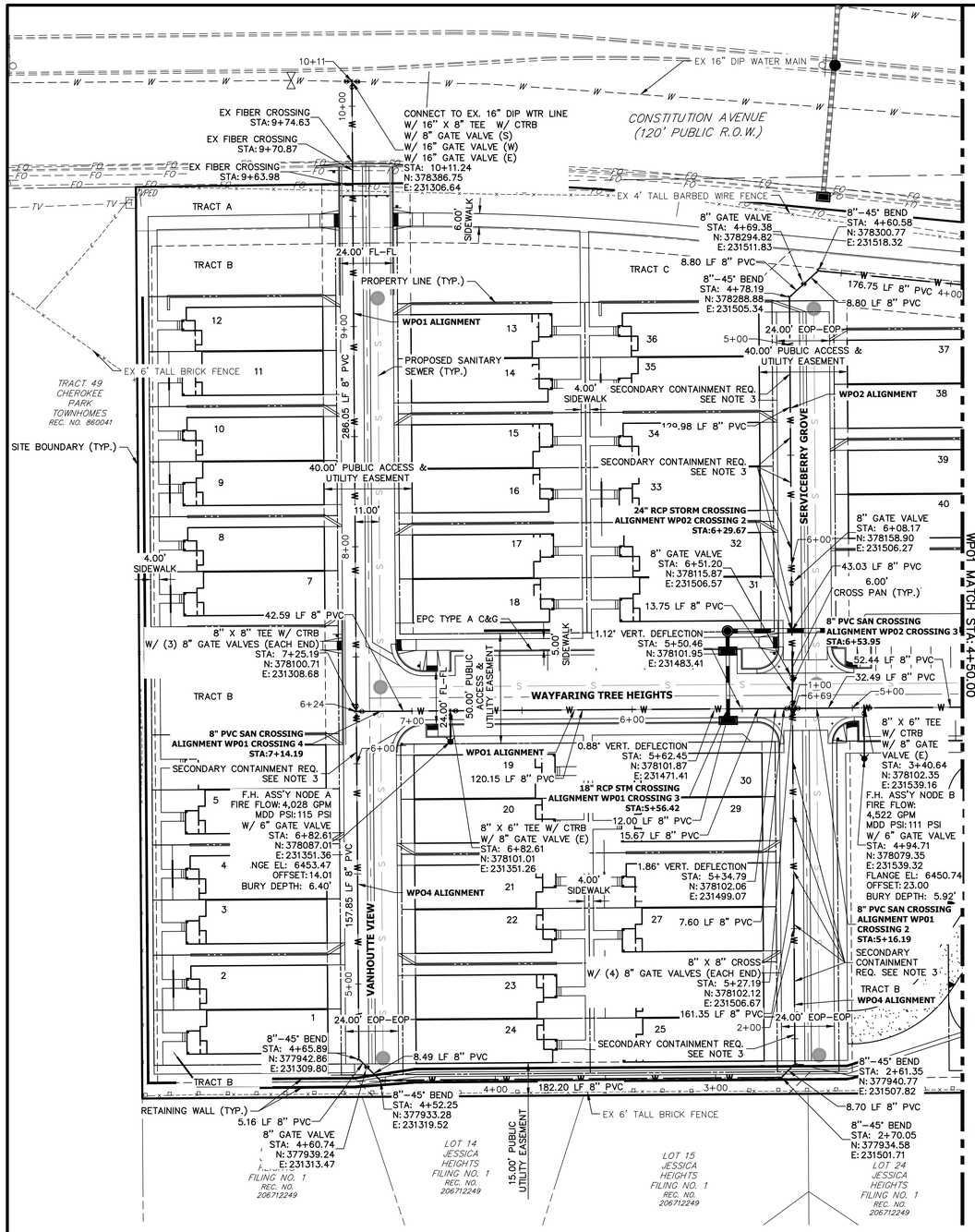
J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

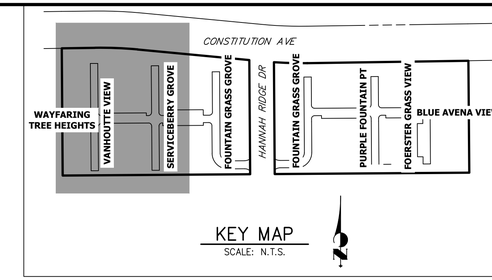
No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

URBAN COLLECTION AT PALMER VILLAGE
TYPICAL SECTIONS
WATER SYSTEM PLAN

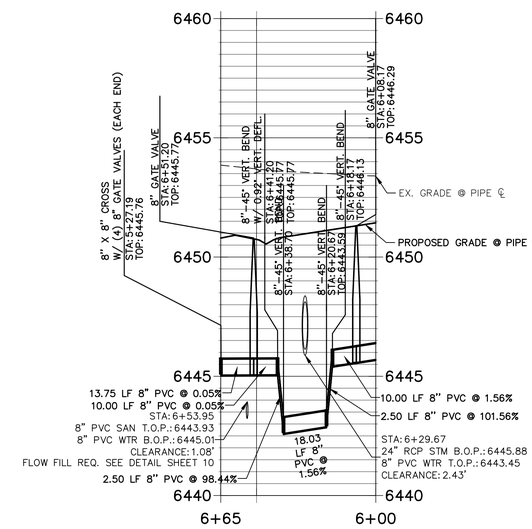
SHEET 3 OF 10
JOB NO. 25149.01



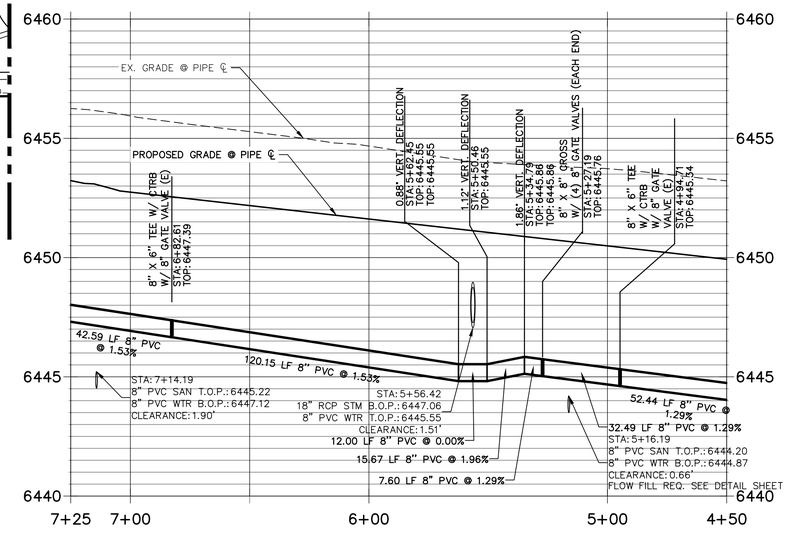


KEY MAP
SCALE: N.T.S.

WP02 CROSSINGS 2 & 3 PROFILE
STA 6+00.00 TO 6+65.00



WP01 CROSSINGS 2-4 PROFILE
STA 4+50.00 TO 7+25.00



NOTES:

1. ALL CTRB'S SHALL BE CONSTRUCTED PER CSU DETAILS A4-2 & A4-3.
2. ALL BENDS SHALL BE RESTRAINED W/ MECHANICAL JOINT RESTRAINTS (MJR) PER DETAILS A4-4 THROUGH A4-6. REQUIRED RESTRAINT LENGTHS SHALL MEET MINIMUM LENGTHS PUBLISHED IN DETAIL A4-4 FOR MAXIMUM STATIC PRESSURES BETWEEN 150 AND 200 PSI.
3. CLEARANCE BETWEEN WATER MAIN AND SANITARY SERVICE LINE WILL BE LESS THAN 1.5', SECONDARY CONTAINMENT IS REQUIRED. A MINIMUM DISTANCE OF 9 FEET IS REQUIRED BETWEEN THE CENTERLINE OF THE CROSSING AND THE FIRST PIPE JOINT. THIS MEETS THE REQUIREMENT FOR SECONDARY CONTAINMENT AS DESCRIBED IN SECTION 2.6-H.2. REFER TO JR UTILITY SERVICE PLAN FOR ADDITIONAL DETAILS.
4. ALL PROPOSED WATER LINES AND STRUCTURES ARE PUBLIC, UNLESS OTHERWISE SPECIFIED.
5. "MECHANICAL JOINT RESTRAINTS" IS ABBREVIATED AS "MJR"
6. SEE JR SANITARY SEWER PLANS FOR SANITARY SEWER DESIGN AND DETAILS.
7. SEE JR STREET, STORM, POND AND GESC PLANS FOR ASSOCIATED IMPROVEMENTS AND STORMWATER SYSTEM DESIGN.
8. THE PROPOSED WATER LINES SHALL BE INSTALLED AT CMD STANDARD DEPTH UNLESS OTHERWISE SHOWN.
9. ALL PROPOSED JOINT DEFLECTIONS REQUIRE STANDARD RESTRAINED JOINT MECHANICAL COUPLING PER CMD STANDARDS.
10. SEE JR USP PLANS FOR WATER AND SANITARY SERVICE LOCATIONS & DESIGN INFO.
11. ALL LOWERINGS SHALL BE CONSTRUCTED PER DETAIL A7-1 INCLUDING REQ. CRA'S.
12. ALL FIRE HYDRANTS SHALL BE CONSTRUCTED PER DETAIL A5-3.
13. SEE PROFILE VIEWS FOR VERTICAL DESIGN INFORMATION, INCLUDING UTILITY CROSSINGS AND CLEARANCES, PIPE SLOPES, AND BURY DEPTHS.
14. CONTRACTOR TO COORDINATE WITH THE CHEROKEE METRO DISTRICT REGARDING THE SPECIFICATIONS FOR THE SAMPLING STATION.

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

30 15 0 30
HORIZONTAL
ORIGINAL SCALE: 1" = 30'
VERTICAL
ORIGINAL SCALE: 1" = 3'

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021
DATE

COLORADO REGISTERED PROFESSIONAL ENGINEER GLENN D. ELLIS 38861

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1"=30'
V-SCALE	1"=3'
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

URBAN COLLECTION AT PALMER VILLAGE

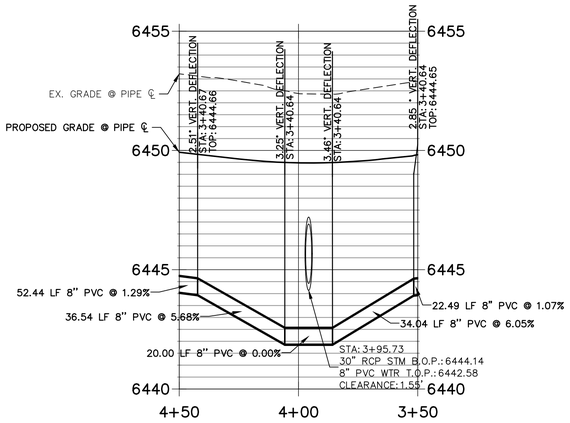
WATER DISTRIBUTION PLAN

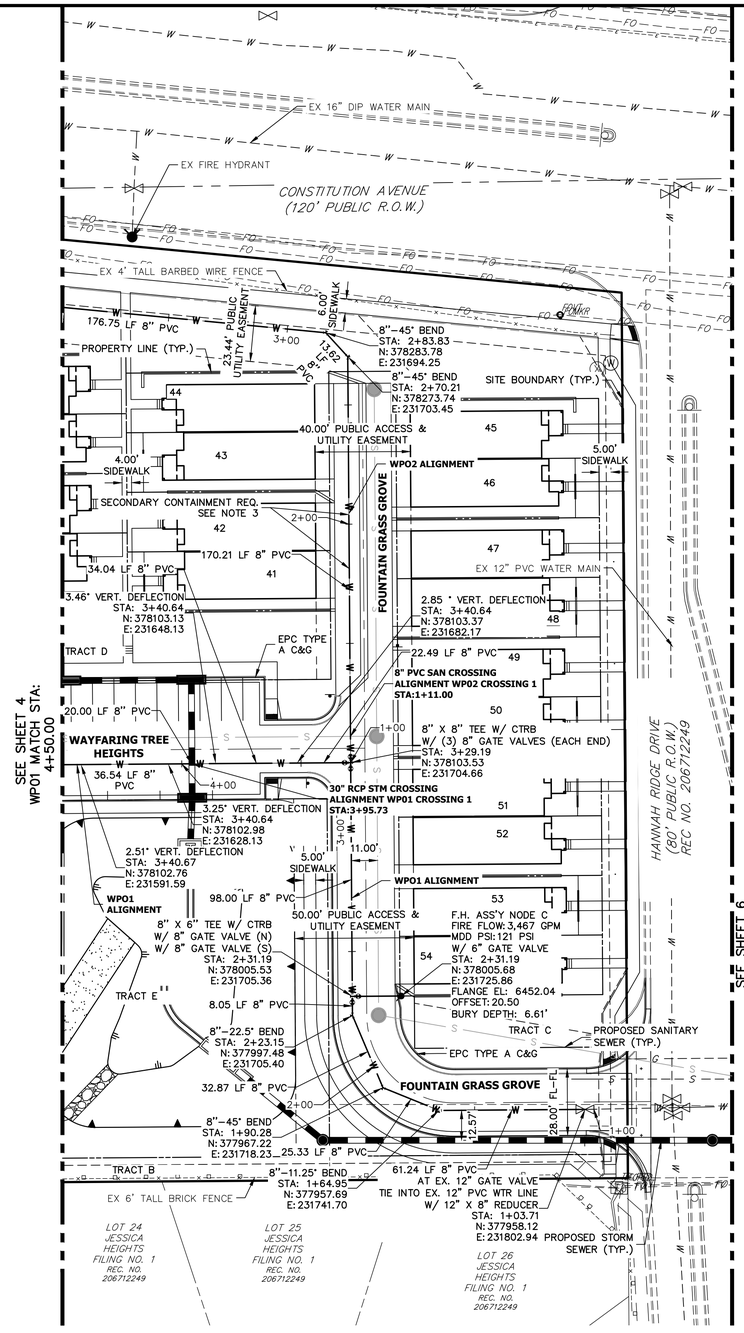
WATER SYSTEM PLAN

SHEET 4 OF 10

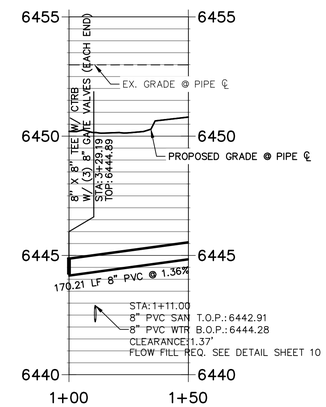
JOB NO. 25149.01

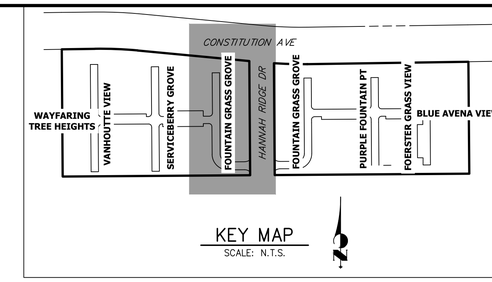
WP01 CROSSING 1 PROFILE
STA 3+50.00 TO 4+50.00





WP02 CROSSING 1 PROFILE
STA 1+00.00 TO 1+50.00





NOTES:

1. ALL CTRB'S SHALL BE CONSTRUCTED PER CSU DETAILS A4-2 & A4-3.
2. ALL BENDS SHALL BE RESTRAINED W/ MECHANICAL JOINT RESTRAINTS (MJR) PER DETAILS A4-4 THROUGH A4-6. REQUIRED RESTRAINT LENGTHS SHALL MEET MINIMUM LENGTHS PUBLISHED IN DETAIL A4-4 FOR MAXIMUM STATIC PRESSURES BETWEEN 150 AND 200 PSI.
3. CLEARANCE BETWEEN WATER MAIN AND SANITARY SERVICE LINE WILL BE LESS THAN 1.5', SECONDARY CONTAINMENT IS REQUIRED. A MINIMUM DISTANCE OF 9 FEET IS REQUIRED BETWEEN THE CENTERLINE OF THE CROSSING AND THE FIRST PIPE JOINT. THIS MEETS THE REQUIREMENT FOR SECONDARY CONTAINMENT AS DESCRIBED IN SECTION 2.6-H.2. REFER TO JR UTILITY SERVICE PLAN FOR ADDITIONAL DETAILS.
4. ALL PROPOSED WATER LINES AND STRUCTURES ARE PUBLIC, UNLESS OTHERWISE SPECIFIED.
5. "MECHANICAL JOINT RESTRAINTS" IS ABBREVIATED AS "MJR"
6. SEE JR SANITARY SEWER PLANS FOR SANITARY SEWER DESIGN AND DETAILS.
7. SEE JR STREET, STORM, POND AND GESC PLANS FOR ASSOCIATED IMPROVEMENTS AND STORMWATER SYSTEM DESIGN.
8. THE PROPOSED WATER LINES SHALL BE INSTALLED AT CMD STANDARD DEPTH UNLESS OTHERWISE SHOWN.
9. ALL PROPOSED JOINT DEFLECTIONS REQUIRE STANDARD RESTRAINED JOINT MECHANICAL COUPLING PER CMD STANDARDS.
10. SEE JR USP PLANS FOR WATER AND SANITARY SERVICE LOCATIONS & DESIGN INFO.
11. ALL LOWERINGS SHALL BE CONSTRUCTED PER DETAIL A7-1 INCLUDING REQ. CRA'S.
12. ALL FIRE HYDRANTS SHALL BE CONSTRUCTED PER DETAIL A5-3.
13. SEE PROFILE VIEWS FOR VERTICAL DESIGN INFORMATION, INCLUDING UTILITY CROSSINGS AND CLEARANCES, PIPE SLOPES, AND BURY DEPTHS.
14. CONTRACTOR TO COORDINATE WITH THE CHEROKEE METRO DISTRICT REGARDING THE SPECIFICATIONS FOR THE SAMPLING STATION.

30 15 0 30
HORIZONTAL
ORIGINAL SCALE: 1" = 30'
VERTICAL
ORIGINAL SCALE: 1" = 3'

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

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021
DATE

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

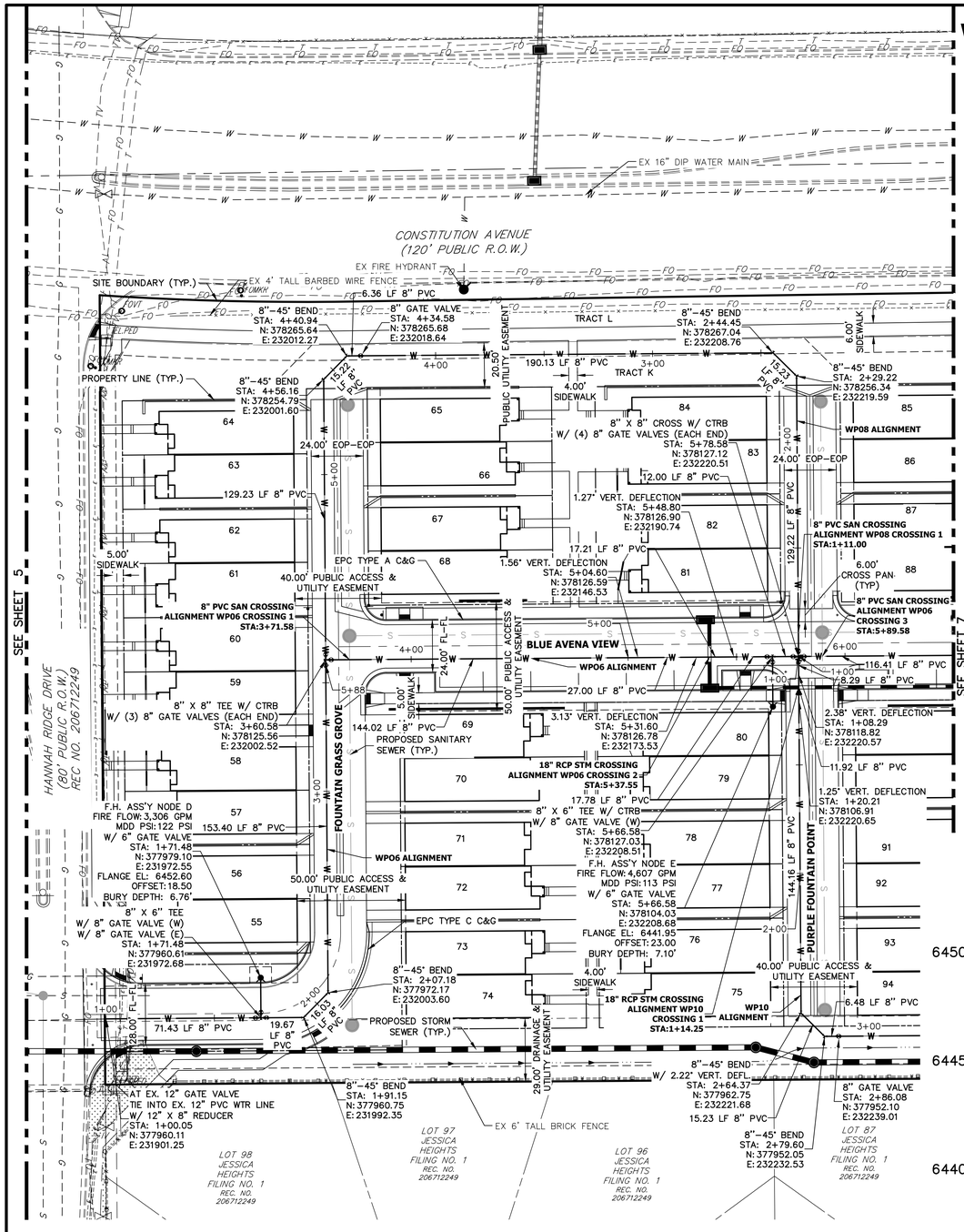
No.	REVISION	BY	DATE

H-SCALE	1"=30'
V-SCALE	1"=3'
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

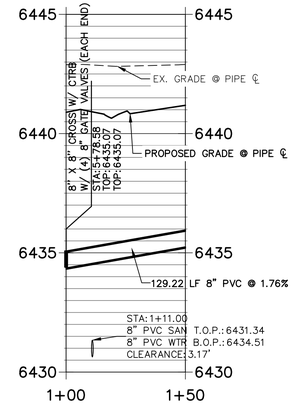
URBAN COLLECTION AT PALMER VILLAGE
WATER DISTRIBUTION PLAN
WATER SYSTEM PLAN

SHEET 5 OF 10
JOB NO. 25149.01

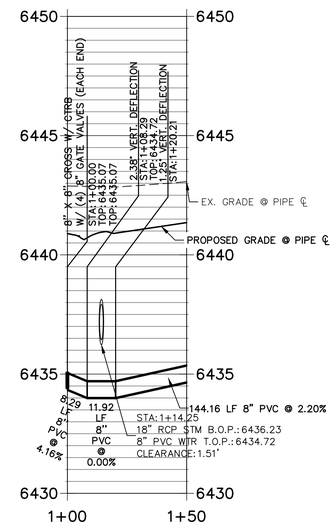
SF-20-028 EPC 9/7/2021



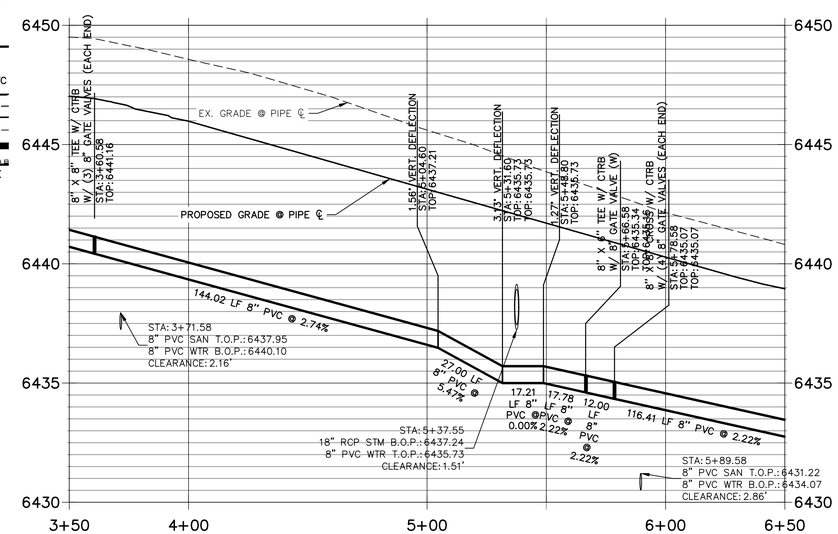
WP08 CROSSING 1 PROFILE
STA 1+00.00 TO 1+50.00

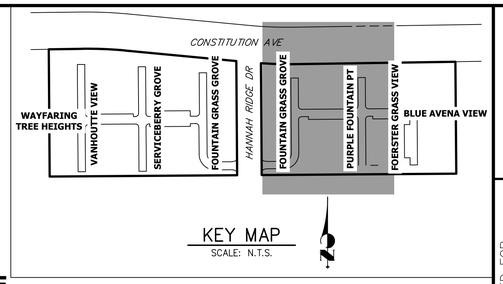


WP10 CROSSING 1 PROFILE
STA 1+00.00 TO 1+50.00



WP06 CROSSINGS 1-3 PROFILE
STA 3+50.00 TO 6+50.00





NOTES:

1. ALL CTRB'S SHALL BE CONSTRUCTED PER CSU DETAILS A4-2 & A4-3.
2. ALL BENDS SHALL BE RESTRAINED W/ MECHANICAL JOINT RESTRAINTS (MJR) PER DETAILS A4-4 THROUGH A4-6. REQUIRED RESTRAINT LENGTHS SHALL MEET MINIMUM LENGTHS PUBLISHED IN DETAIL A4-4 FOR MAXIMUM STATIC PRESSURES BETWEEN 150 AND 200 PSI.
3. CLEARANCE BETWEEN WATER MAIN AND SANITARY SERVICE LINE WILL BE LESS THAN 1.5', SECONDARY CONTAINMENT IS REQUIRED. A MINIMUM DISTANCE OF 9 FEET IS REQUIRED BETWEEN THE CENTERLINE OF THE CROSSING AND THE FIRST PIPE JOINT. THIS MEETS THE REQUIREMENT FOR SECONDARY CONTAINMENT AS DESCRIBED IN SECTION 2.6-H.2. REFER TO JR UTILITY SERVICE PLAN FOR ADDITIONAL DETAILS.
4. ALL PROPOSED WATER LINES AND STRUCTURES ARE PUBLIC, UNLESS OTHERWISE SPECIFIED.
5. "MECHANICAL JOINT RESTRAINTS" IS ABBREVIATED AS "MJR"
6. SEE JR SANITARY SEWER PLANS FOR SANITARY SEWER DESIGN AND DETAILS.
7. SEE JR STREET, STORM, POND AND GESC PLANS FOR ASSOCIATED IMPROVEMENTS AND STORMWATER SYSTEM DESIGN.
8. THE PROPOSED WATER LINES SHALL BE INSTALLED AT CMD STANDARD DEPTH UNLESS OTHERWISE SHOWN.
9. ALL PROPOSED JOINT DEFLECTIONS REQUIRE STANDARD RESTRAINED JOINT MECHANICAL COUPLING PER CMD STANDARDS.
10. SEE JR USP PLANS FOR WATER AND SANITARY SERVICE LOCATIONS & DESIGN INFO.
11. ALL LOWERINGS SHALL BE CONSTRUCTED PER DETAIL A7-1 INCLUDING REQ. CRA'S.
12. ALL FIRE HYDRANTS SHALL BE CONSTRUCTED PER DETAIL A5-3.
13. SEE PROFILE VIEWS FOR VERTICAL DESIGN INFORMATION, INCLUDING UTILITY CROSSINGS AND CLEARANCES, PIPE SLOPES, AND BURY DEPTHS.
14. CONTRACTOR TO COORDINATE WITH THE CHEROKEE METRO DISTRICT REGARDING THE SPECIFICATIONS FOR THE SAMPLING STATION.

Know what's below. Call before you dig.

HORIZONTAL ORIGINAL SCALE: 1" = 30'
VERTICAL ORIGINAL SCALE: 1" = 3'

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021
DATE

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

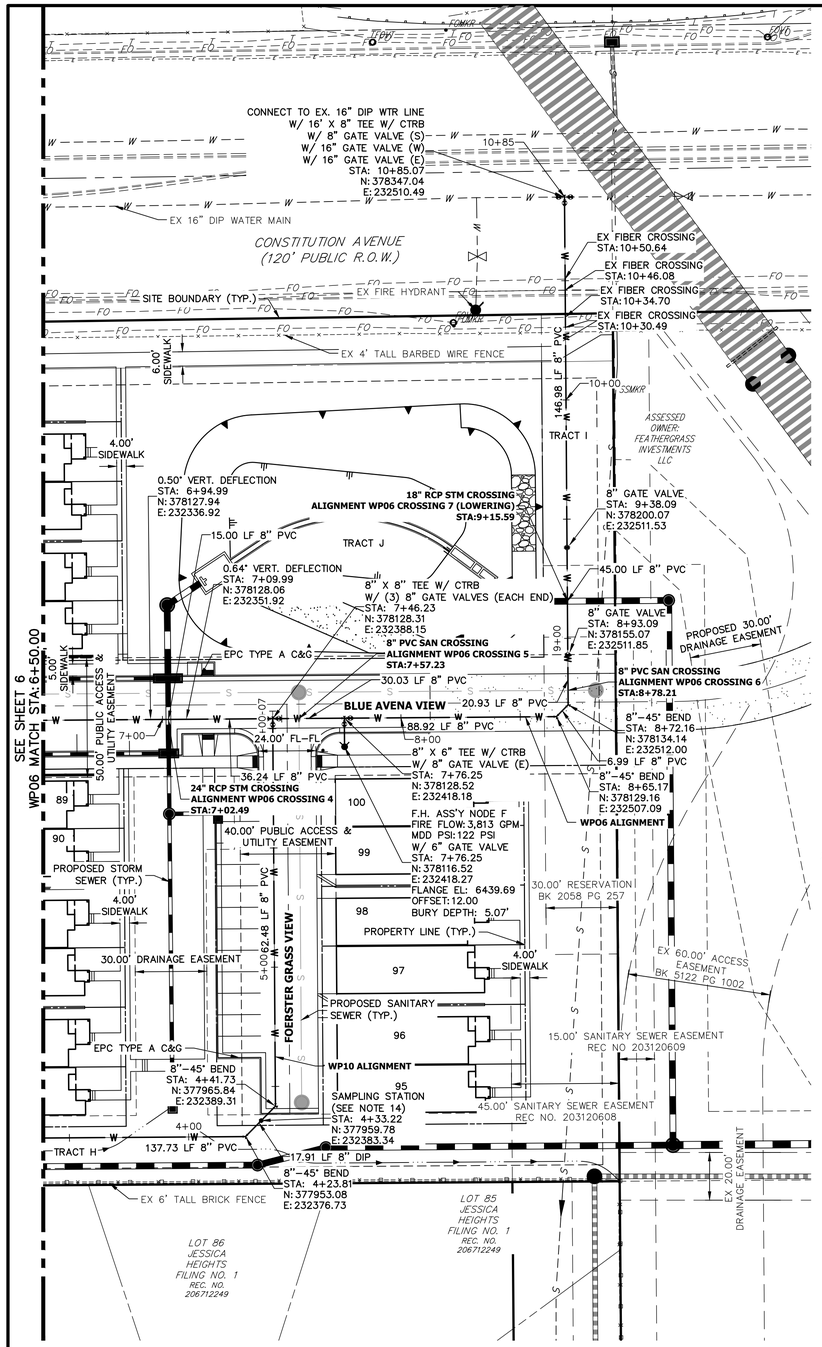
No.	REVISION	BY	DATE

H-SCALE	1"=30'
V-SCALE	1"=3'
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

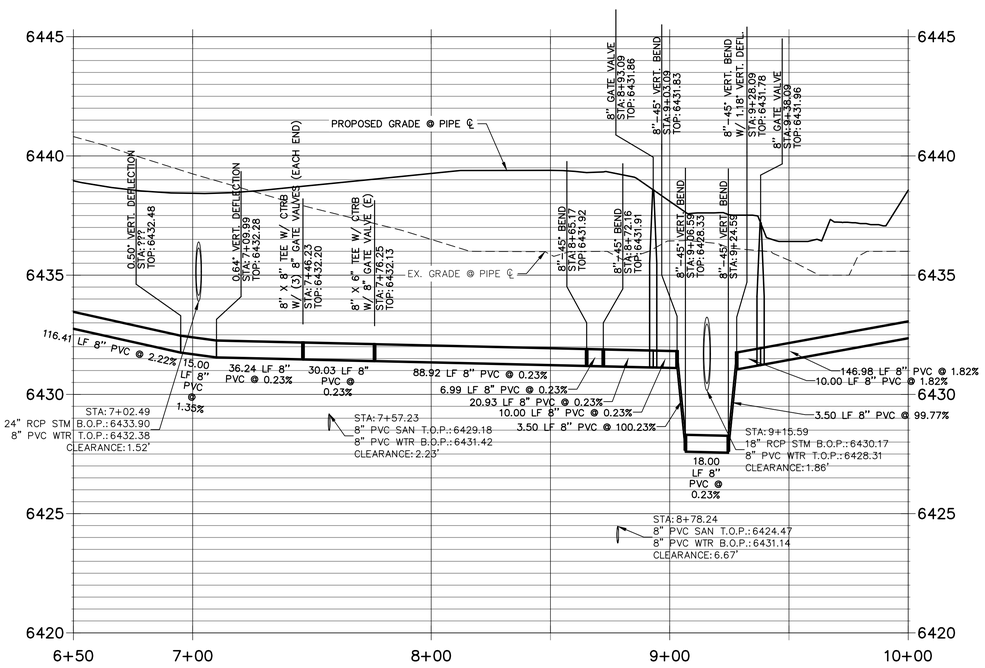
URBAN COLLECTION AT PALMER VILLAGE
WATER DISTRIBUTION PLAN
WATER SYSTEM PLAN

SHEET 6 OF 10
JOB NO. 25149.01

SF-20-028 EPC 9/7/2021

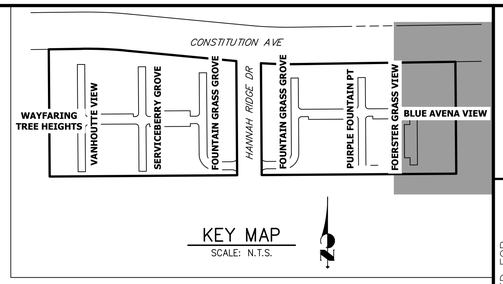


WP06 CROSSINGS 4-7 PROFILE
STA 6+50.00 TO 10+00.00



NOTES:

1. ALL CTRB'S SHALL BE CONSTRUCTED PER CSU DETAILS A4–2 & A4–3.
2. ALL BENDS SHALL BE RESTRAINED W/ MECHANICAL JOINT RESTRAINTS (MJR) PER DETAILS A4–4 THROUGH A4–6. REQUIRED RESTRAINT LENGTHS SHALL MEET MINIMUM LENGTHS PUBLISHED IN DETAIL A4–4 FOR MAXIMUM STATIC PRESSURES BETWEEN 150 AND 200 PSI.
3. CLEARANCE BETWEEN WATER MAIN AND SANITARY SERVICE LINE WILL BE LESS THAN 1.5', SECONDARY CONTAINMENT IS REQUIRED. A MINIMUM DISTANCE OF 9 FEET IS REQUIRED BETWEEN THE CENTERLINE OF THE CROSSING AND THE FIRST PIPE JOINT. THIS MEETS THE REQUIREMENT FOR SECONDARY CONTAINMENT AS DESCRIBED IN SECTION 2.6–H.2. REFER TO JR UTILITY SERVICE PLAN FOR ADDITIONAL DETAILS.
4. ALL PROPOSED WATER LINES AND STRUCTURES ARE PUBLIC, UNLESS OTHERWISE SPECIFIED.
5. "MECHANICAL JOINT RESTRAINTS" IS ABBREVIATED AS "MJR"
6. SEE JR SANITARY SEWER PLANS FOR SANITARY SEWER DESIGN AND DETAILS.
7. SEE JR STREET, STORM, POND AND GESC PLANS FOR ASSOCIATED IMPROVEMENTS AND STORMWATER SYSTEM DESIGN.
8. THE PROPOSED WATER LINES SHALL BE INSTALLED AT CMD STANDARD DEPTH UNLESS OTHERWISE SHOWN.
9. ALL PROPOSED JOINT DEFLECTIONS REQUIRE STANDARD RESTRAINED JOINT MECHANICAL COUPLING PER CMD STANDARDS.
10. SEE JR USP PLANS FOR WATER AND SANITARY SERVICE LOCATIONS & DESIGN INFO.
11. ALL LOWERINGS SHALL BE CONSTRUCTED PER DETAIL A7–1 INCLUDING REQ. CRA'S.
12. ALL FIRE HYDRANTS SHALL BE CONSTRUCTED PER DETAIL A5–3.
13. SEE PROFILE VIEWS FOR VERTICAL DESIGN INFORMATION, INCLUDING UTILITY CROSSINGS AND CLEARANCES, PIPE SLOPES, AND BURY DEPTHS.
14. CONTRACTOR TO COORDINATE WITH THE CHEROKEE METRO DISTRICT REGARDING THE SPECIFICATIONS FOR THE SAMPLING STATION.



KEY MAP
SCALE: N.T.S.

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720–977–3827

J·R ENGINEERING
A Westrian Company
Centennial 303–740–9393 • Colorado Springs 719–593–2593
Fort Collins 970–491–9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H–SCALE	1"=30'
V–SCALE	1"=3'
DATE	10–30–20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

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

30 15 0 30
HORIZONTAL ORIGINAL SCALE: 1" = 30'
VERTICAL ORIGINAL SCALE: 1" = 3'

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

COLORADO REGISTERED PROFESSIONAL ENGINEER
GLENN D. ELLIS
38861
07/15/2021
DATE

URBAN COLLECTION AT PALMER VILLAGE
WATER DISTRIBUTION PLAN
WATER SYSTEM PLAN

SHEET 7 OF 10
JOB NO. 25149.01

PER SLIP JOINT OF DIP PIPE

PIPE DATA	MFRS. DEFL.	DESIGN DEFLECTION (80% MAX.)		APPROX. RADIUS FOR DEFLECTING CURVES WITHOUT BENDS	
PIPE SIZE		(HORZ. DEFL.)	(VERT. DEFL.)	20'L	18'L
4" 6" 8" 10" 12"	5°00'	4°00'	6.99%	286'	258'
14" 16"	4°00'	3°12'	5.59%	358'	322'
18" 20" 24" 30" 36"	3°00'	2°24'	4.19%	477'	430'
42"	2°00'	1°36'	2.79%	716'	645'

DATA FOR DIP PIPE

SHADED COLUMN IS MANUFACTURERS REFERENCE ONLY

PER SLIP JOINT OF PVC PIPE W/HIGH DEFLECTION COUPLINGS

PIPE DATA	MFRS. TOTAL JOINT DEFL.W/ COUPL.	DESIGN DEFLECTION (80% MAX.)		MIN. RADIUS FOR DEFLECTING CURVES WITH HIGH DEFL. COUPLINGS
PIPE SIZE		(HORZ. DEFL.)	(VERT. DEFL.)	20L
CLASS 305 (DR-14) 4"	5°00'	4°00'	6.99%	286'
CLASS 305 (DR-14) 6"	5°00'	4°00'	6.99%	286'
CLASS 305 (DR-14) 8"	5°00'	4°00'	6.99%	286'
CLASS 305 (DR-14) 12"	5°00'	4°00'	6.99%	286'
CLASS 235 (DR-18) 16"	NO DEFLECTION COUPLINGS FOR 16" OR GREATER			

DATA FOR PVC PIPE

SHADED COLUMN IS MANUFACTURERS REFERENCE ONLY

NOTES:

1. COLORADO SPRINGS UTILITIES USES A 1.25 SAFETY FACTOR TO AVOID OVER DEFLECTION OF THE PIPE.
2. SLIP JOINT PVC PIPE SHALL NOT BE DEFLECTED WITHOUT THE USE OF HIGH DEFLECTION COUPLINGS (HDC).

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

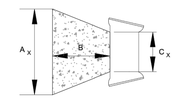
MAXIMUM PIPELINE DEFLECTION DATA FOR DIP AND PVC PIPE

A4-1

DATED 03/2014

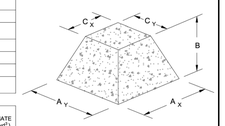
THRUST BLOCK DIMENSIONS and VOLUMES - PVC & DIP 250 psi

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	0.67	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	0.67	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	3.64	1.75
16	TEE & DEAD END	40.50	10.80	3.75	1.92	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	1.92	1.33	6.98	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 (Ht) 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.

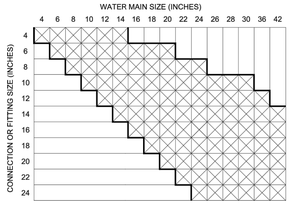
Colorado Springs Utilities — It's how we're all connected

CONCRETE THRUST REACTION BLOCKS

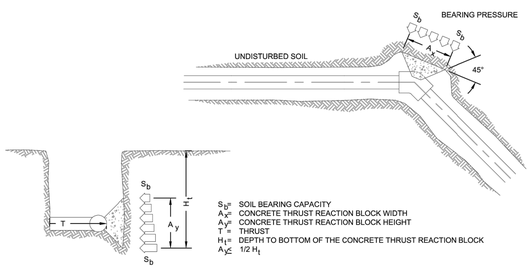
A4-2

DATED 03/2014

CONCRETE THRUST REACTION BLOCK REQUIREMENTS FOR TEES OR TAPS



INDICATES THAT A CONCRETE THRUST REACTION BLOCK IS REQUIRED



NOTES:

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

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

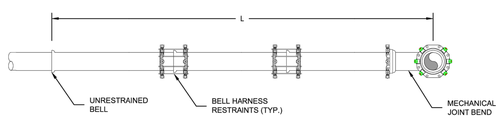
CONCRETE THRUST REACTION BLOCKS

A4-3

DATED 03/2014

L = MINIMUM RESTRAINED PIPE LENGTH (FEET)

PIPE DIAMETER		45° BEND			22-1/2° BEND			11-1/4° BEND			DEAD END VALVE OR PLUG, TO INCLUDE IN-LINE VALVES (SEE NOTE 9)		
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:

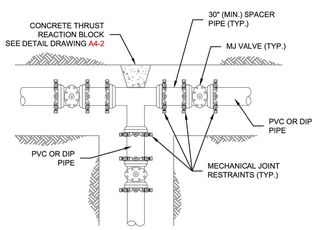
1. PRESSURE GREATER THAN 200 PSI REQUIRE SPECIAL DESIGN APPROVED BY SPRINGS UTILITIES. APPROVED BY COLORADO SPRINGS UTILITIES.
2. LENGTH IS BASED ON MINIMUM 5 FEET OF GROUND COVER AND SOIL COMPACTED ACCORDING TO CHAPTER 5 OF THESE WATER LESS. IF THE DEPTH IS LESS THAN 5 FEET RESTRAINED LENGTH MUST BE 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.

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

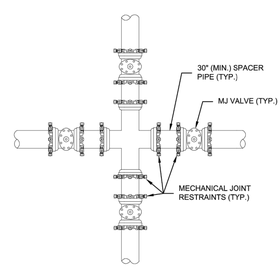
RESTRAINED PIPE LENGTH (FEET) W/MECHANICAL JOINT RESTRAINTS

A4-4

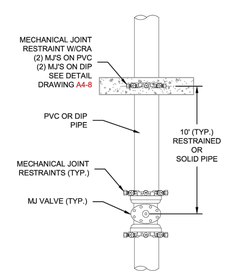
DATED 03/2014



TEE INSTALLATION



CROSS INSTALLATION



IN LINE VALVE INSTALLATION

NOTES:

1. MECHANICAL JOINT RESTRAINTS SHALL BE APPROVED ACCORDING TO CHAPTER 4 FOR DIP AND PVC PIPE.
2. DUCTILE IRON FITTINGS AND PIPE SHALL BE WRAPPED IN POLYETHYLENE TUBING WHERE ADJACENT TO CONCRETE.

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

VALVE AND FITTINGS W/ MECHANICAL JOINT RESTRAINTS

A4-5

DATED 06/2015

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

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

URBAN COLLECTION AT PALMER VILLAGE

DETAILS

WATER SYSTEM PLAN

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

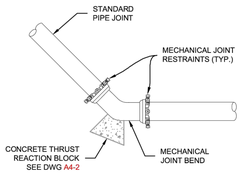
GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021 DATE

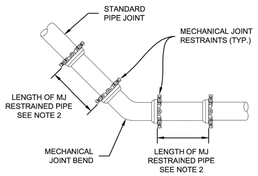
SHEET 8 OF 10

JOB NO. 25149.01

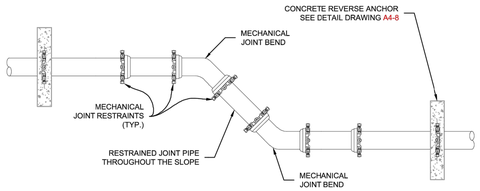
SF-20-028 EPC 9/7/2021



HORIZONTAL BENDS W/MJ RESTRAINTS AND CTRB



HORIZONTAL BENDS W/MJ RESTRAINTS WITHOUT CTRB



VERTICAL BENDS W/ CONCRETE REVERSE ANCHORS ON SLOPES 10% OR GREATER

NOTES:

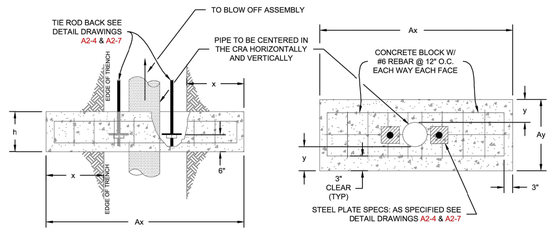
1. MECHANICAL JOINT RESTRAINTS SHALL BE APPROVED ACCORDING TO CHAPTER 4 FOR DIP AND PVC PIPE.
2. LENGTH OF PIPE REQUIRING JOINT RESTRAINT SHALL BE DETERMINED FROM CHART ON DETAIL DRAWING A4-4.
3. DUCTILE IRON FITTINGS AND PIPE SHALL BE WRAPPED IN POLYETHYLENE TUBING WHERE ADJACENT TO CONCRETE.

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

BEND CONFIGURATIONS AND RESTRAINTS

A4-6

DATED 06/2015



PLAN
DEAD END OR REVERSE ANCHOR

ELEVATION
DEAD END OR REVERSE ANCHOR

DIAMETER (in)	PRESSURE (psi)	x (in)	Ax (in)	y (in)	Ay (in)	Ab (sf)	h (in)	Vol (cy)
4	250	12	72	12	28.80	6.80	18	0.5
6	250	18	84	12	30.90	9.73	18	0.75
8	250	36	120	12	33.05	18.53	18	1.0
12	170	36	120	15	43.20	24.60	18	1.5
12	250	48	144	18	49.20	36.80	24	2.0
16	170	54	156	18	53.40	44.05	24	2.5
16	250	60	168	24	65.40	60.50	36	4.0

NOTES:

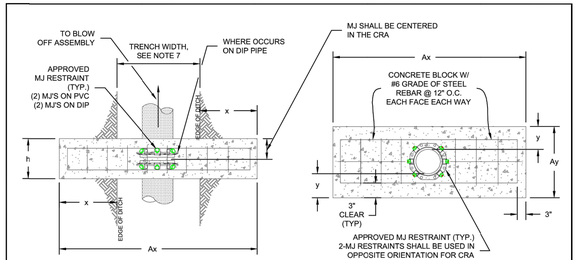
1. THE MINIMUM BEARING SURFACE AREAS SHOWN ARE BASED ON A MAX STATIC PIPE PRESSURE OF 170/250 POUNDS PER SQUARE INCH PLUS A SAFETY FACTOR OF 1.5, AND AN ALLOWABLE SOIL BEARING CAPACITY OF 1500 POUNDS PER SQUARE FOOT. REFERENCE AWWA M-23 AND M-41.
2. THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING ASSUMPTION 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 LATERAL BEARING SURFACE AREA (Ab) AND APPROXIMATE VOLUME OF CONCRETE (Vol) SHALL BE SHOWN ON THE CONSTRUCTION PLANS FOR ALL CONCRETE REVERSE ANCHORS.
4. THE APPROXIMATE VOLUMES SHOWN ARE BASED ON THE MINIMUM DIMENSIONS IN THE TABLE. APPROXIMATE VOLUME IS ROUNDED UP TO THE NEAREST 0.25 CUBIC YARDS.
5. 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 THE PRESSURE LISTED IN THE TABLE.
6. FOR CORROSION PROTECTION OF THE RODS SEE DETAIL DRAWING A8-11.
7. A TRENCH WIDTH OF 4 FEET AND 6" BEDDING UNDER THE PIPE ARE ASSUMED FOR BEARING CALCULATIONS, (Ax, Ay, x AND y).
8. THE DESIGN ENGINEER SHALL ENSURE THE CONSTRUCTION OF THE CONCRETE REVERSE ANCHOR SHALL NOT CONFLICT WITH OTHER UTILITIES.
9. DUCTILE IRON FITTINGS AND PIPE SHALL BE WRAPPED IN POLYETHYLENE TUBING WHERE ADJACENT TO CONCRETE.

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

CONCRETE REVERSE ANCHOR DIMENSIONS FOR TIE ROD RESTRAINT

A4-7

DATED 03/2014



PLAN
DEAD END OR REVERSE ANCHOR

ELEVATION
DEAD END OR REVERSE ANCHOR

DIAMETER (in)	PRESSURE (psi)	x (in)	Ax (in)	y (in)	Ay (in)	Ab (sf)	h (in)	Vol (cy)
4	250	12	72	12	28.80	6.80	18	1.0
6	250	18	84	12	30.90	9.73	18	1.0
8	250	36	120	12	33.05	18.53	18	1.5
12	170	36	120	15	43.20	24.60	18	2.0
12	250	48	144	18	49.20	36.80	24	3.75
16	170	54	156	18	53.40	44.05	24	4.25
16	250	60	168	24	65.40	60.50	36	8.5

NOTES:

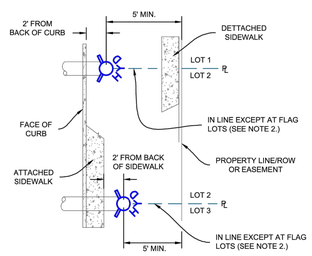
1. THE MINIMUM BEARING SURFACE AREAS SHOWN ARE BASED ON A MAX STATIC PIPE PRESSURE OF 170/250 POUNDS PER SQUARE INCH PLUS A SAFETY FACTOR OF 1.5, AND AN ALLOWABLE SOIL BEARING CAPACITY OF 1500 POUNDS PER SQUARE FOOT. FOR HDPE ADDITIONAL ASSUMPTIONS INCLUDE A MAX 50°-F TEMPERATURE CHANGE AND A POISSON RATIO OF 0.45. REFERENCE AWWA M-23, M-41 AND M-55.
2. THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING ASSUMPTION BASED ON ACTUAL SITE CONDITIONS. IF SITE VARY FROM THE ASSUMPTIONS THE DESIGN ENGINEER SHALL PROVIDE A SITE SPECIFIC DESIGN THAT SHALL BE IN ACCORDANCE WITH AWWA M-23, PVC PIPE - DESIGN AND INSTALLATION AND AWWA M-41, DUCTILE-IRON PIPE AND FITTINGS. SITE SPECIFIC DESIGNS USING GEOTECHNICAL INFORMATION SHALL BE SUBMITTED TO COLORADO SPRINGS UTILITIES FOR APPROVAL.
3. THE MINIMUM LATERAL BEARING SURFACE AREA (Ab) AND APPROXIMATE VOLUME OF CONCRETE (Vol) SHALL BE SHOWN ON THE CONSTRUCTION PLANS FOR ALL CONCRETE REVERSE ANCHORS.
4. THE APPROXIMATE VOLUMES SHOWN ARE BASED ON THE MINIMUM DIMENSIONS IN THE TABLE. THE APPROXIMATE VOLUME IS ROUNDED UP TO THE NEAREST 0.25 CUBIC YARDS.
5. 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 THE PRESSURE LISTED IN THE TABLE.
6. FOR CORROSION PROTECTION OF THE RODS SEE DETAIL DRAWING A8-11.
7. A TRENCH WIDTH OF 4 FEET AND 6" BEDDING UNDER THE PIPE ARE ASSUMED FOR BEARING CALCULATIONS, (Ax, Ay, x AND y).
8. THE DESIGN ENGINEER SHALL ENSURE THE CONSTRUCTION OF THE CONCRETE REVERSE ANCHOR SHALL NOT CONFLICT WITH OTHER UTILITIES.
9. DUCTILE IRON FITTINGS AND PIPE SHALL BE WRAPPED IN POLYETHYLENE TUBING WHERE ADJACENT TO CONCRETE.

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

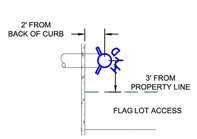
CONCRETE REVERSE ANCHOR FOR MECHANICAL JOINT RESTRAINTS

A4-8

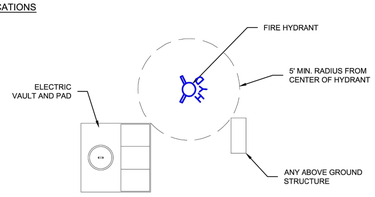
DATED 06/2015



LOT LINE LOCATIONS



FLAG LOT LOCATIONS



PAD AND VAULT ACCESS CLEARANCES

NOTES:

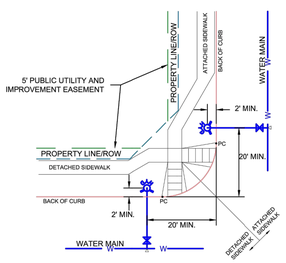
1. HYDRANT NOZZLE SHALL BE POSITIONED AT RIGHT ANGLES TO THE NEAREST CURB. IF NO CURB OR SIDEWALK EXIST, NOZZLE SHALL BE PLACED AT RIGHT ANGLE TO STREET OR ALLEY.
2. HYDRANTS INSTALLED AT FLAG LOT LINES SHALL BE OFFSET 3' FROM THE LOT LINE.
3. HYDRANTS SHALL BE PLACED A MINIMUM OF 5.0 FEET FROM ANY UTILITY OR DRAINAGE STRUCTURE. (TO BE COORDINATED WITH JOINT TRENCH INSTALLATION).
4. EASEMENTS MUST BE PROVIDED FOR ANY PUBLIC HYDRANT WHICH IS CLOSER THAN 5.0 FEET INSIDE THE RIGHT-OF-WAY LINE.
5. A SAFE WORKING CLEARANCE IS NECESSARY FOR THE FIRE DEPARTMENT TO IDENTIFY, ATTACH HOSES TO AND OPERATE A FIRE HYDRANT IN CASE OF AN EMERGENCY. A 3 FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS EXCEPT AS OTHERWISE REQUIRED OR APPROVED BY THE COLORADO SPRINGS FIRE DEPARTMENT.
6. FIRE HYDRANTS SHALL BE INSTALLED WITH CLEARANCES PER THE MOST CURRENT APPROVED IFC.

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

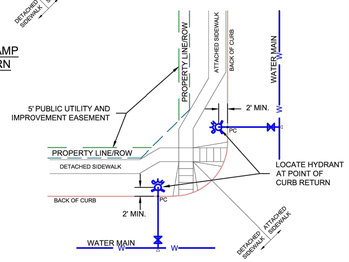
FIRE HYDRANT LOCATIONS

A5-1

DATED 03/2014



STANDARD PEDESTRIAN RAMP LAYOUT FOR CURB RETURN RADIUS 20' OR LESS



STANDARD PEDESTRIAN RAMP LAYOUT FOR CURB RETURN RADIUS 25' OR GREATER

NOTES:

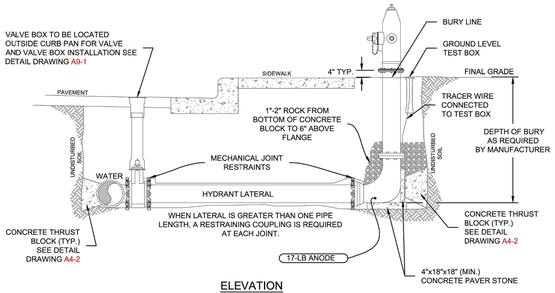
1. THE FIRE HYDRANT SHALL BE LOCATED BEHIND THE POINT OF CURB RETURN FOR CURB RETURN RADIUS 25 FEET OR GREATER.
2. WHERE THE CURB RETURN RADIUS IS 20 FEET OR LESS THE CENTER OF THE HYDRANT SHALL BE LOCATED 20 FEET OFF OF THE BACK OF CURB OF THE INTERSECTING STREET.
3. IN ALL CASES THE FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 2 FEET OUTSIDE OF THE PEDESTRIAN RAMP OR SIDEWALK.
4. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER OR THE DEVELOPER'S ENGINEER TO VERIFY THAT PROPOSED HYDRANT LOCATIONS WILL NOT CONFLICT WITH ANY OTHER UTILITIES, FACILITIES, PEDESTRIAN RAMP INSTALLATIONS, DRAINAGE FACILITIES, PROPOSED PROPERTY STRUCTURES OR IMPROVEMENTS PRIOR TO BEGINNING CONSTRUCTION.

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

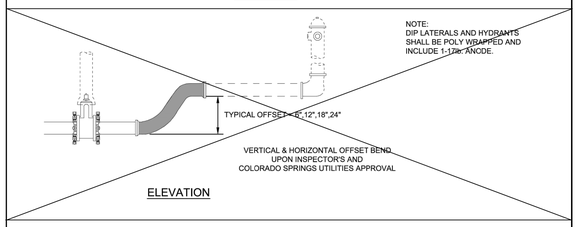
FIRE HYDRANT LOCATIONS

A5-2

DATED 03/2014



ELEVATION



ELEVATION

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.

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

FIRE HYDRANT INSTALLATION

A5-3

DATED 03/2014

Know what's below. Call before you dig.

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

URBAN COLLECTION AT PALMER VILLAGE

DETAILS

WATER SYSTEM PLAN

SHEET 9 OF 10

JOB NO. 25149.01

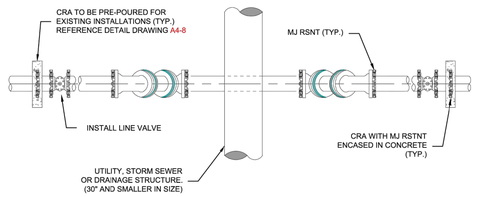
ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

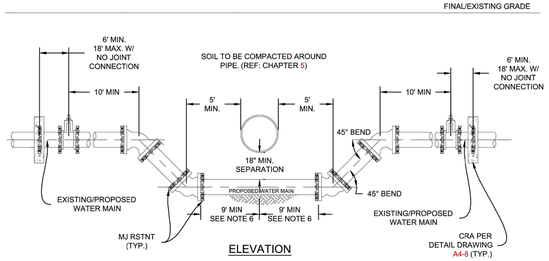
GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021
DATE

SF-20-028 EPC 9/7/2021



PLAN



ELEVATION

NOTES:

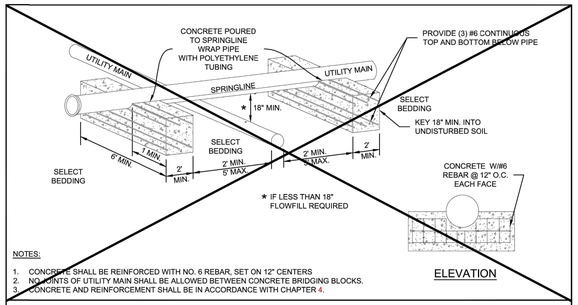
1. ALL DUCTILE IRON FITTINGS AND PIPE SHALL BE CATHODICALLY PROTECTED PER SECTION 2.6.I.
2. ALL FITTINGS SHALL HAVE MJ RESTRAINTS IN ACCORDANCE WITH CHAPTER 5.
3. EXAMPLE CAN VARY DUE TO SITE CONDITIONS AND COLORADO SPRINGS UTILITIES INSPECTOR'S DIRECTION.
4. RESTRAINED JOINTS ARE REQUIRED WITHIN LOWERING.
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.

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

LOWERING DETAIL
UTILITY CROSSING 30" & SMALLER

A7-1

DATED 06/2015

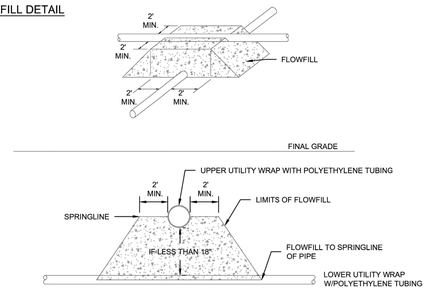


NOTES:

1. CONCRETE SHALL BE REINFORCED WITH NO. 6 REBAR, SET ON 12" CENTERS
2. NO JOINTS OF UTILITY MAIN SHALL BE ALLOWED BETWEEN CONCRETE BRIDGING BLOCKS.
3. CONCRETE AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH CHAPTER 4.

ELEVATION

FLOWFILL DETAIL



NOTES:

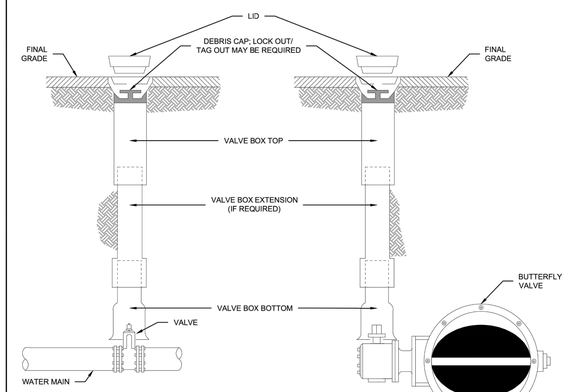
1. ALL FLOWABLE-FILL SHALL BE IN CONFORMANCE WITH CHAPTER 4.
2. SEE SECTION 2.6.H FOR UTILITY CROSSING STANDARDS.

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

PIPE BRIDGING DETAIL
W/CONCRETE CRADLES

A7-6

DATED 03/2014



TYPICAL GATE VALVE BOX

MJ OR FLANGED BUTTERFLY VALVE
WITH ROTATED ACTUATOR VALVE BOX

NOTES:

1. MAIN AND FIRE HYDRANT VALVES AND VALVE BOXES SHALL NOT BE IN THE CURB PAN, CURB OR SIDEWALK.
2. VALVE BOXES SHALL BE SLIP TYPE, PER CHAPTER 4.
3. DEBRIS CAPS SHALL BE INSTALLED AS CLOSE UNDER THE CAST IRON COVER WITHOUT INTERFERING WITH COVER OPERATIONS.
4. DEBRIS CAPS WITH FLEXIBLE SKIRTS SHALL BE TRIMMED TO PROVIDE A SMOOTH CONTACT WITH THE INTERIOR OF THE VALVE BOX.
5. FOR SERVICE LINES 4" AND GREATER, TRACER WIRE WILL BE BROUGHT UP IN THE SECONDARY VALVE BOX.

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

VALVE BOX INSTALLATION

A9-1

DATED 03/2014

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

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

PREPARED FOR
MDC HOLDINGS
RICHMOND AMERICAN HOMES
4350 S. MONACO STREET
DENVER, CO 80237
ATTN: JASON POCK
720-977-3827

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10-30-20
DESIGNED BY	APL
DRAWN BY	APL
CHECKED BY	

URBAN COLLECTION AT PALMER VILLAGE

DETAILS

WATER SYSTEM PLAN

SHEET 10 OF 10

JOB NO. 25149.01

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

GLENN D. ELLIS, P.E.
COLORADO P.E. 38861
FOR AND ON BEHALF OF JR ENGINEERING, LLC

07/15/2021
DATE

SF-20-028 EPC 9/7/2021