WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234, FILING NO. 6

A PORTION OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 29,
TOWNSHIP 6 SOUTH, RANGE 66 WEST, 6TH PRINCIPAL MERIDIAN,
TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO
13.80 ACRES, 11 COMMERCIAL LOTS

CONTACT LIST

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COLORADO DEPARTMENT OF HEALTH
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PHONE: 303.320.8333

INTERMOUNTAIN RURAL ELECTRIC ASSOCIATION
5496 NORTH US HWY 85
P.O BOX DRAWER A
SEDALIA, CO 80135
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CONTACT: JASON JENKS

URBAN DRAINAGE FLOOD CONTROL DISTRICT (UDFCD)
2480 W. 26THA AVE.
SUITE 156–B
DENVER, CO 80211
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CONTACT: MIKE SARMENTO

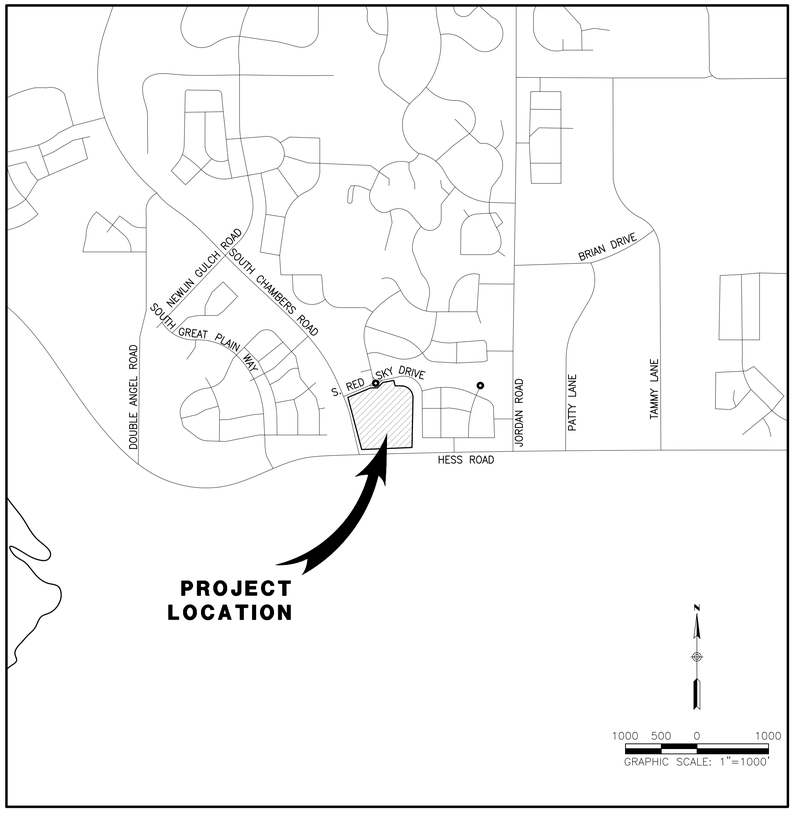
SITE BENCHMARK & BASIS OF BEARINGS:

THE PRIMARY BENCHMARK USED TO DETERMINE THE BASIS OF ELEVATIONS FOR THIS MAP IS BY GPS OBSERVATION NAVD88. A SITE BENCHMARK HAS BEEN SET AT THE NORTHWEST CORNER OF A DRAIN INLET ON CHAMBERS ROAD, APPROXIMATELY 200'± NORTH OF HESS ROAD. ELEVATION = 6075.31

THE BASIS OF BEARINGS IS THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 29 TOWNSHIP 6 SOUTH, RANGE 66 WEST, 6TH PRINCIPAL MERIDAN, BEARING SOUTH 89°15'13" WEST AS SHOWN ON FINAL PLAT DOUGLAS 234 FILING NO. 1.

SHEET INDEX

NO.	TITLE
1	COVER SHEET
2	NOTES
3	OVERALL UTILITY PLAN
4	WATER PLAN
5	WATER PLAN AND PROFILE
6	SLICEROO DR SEWER PLAN AND PROFILE
7	SEWER PLAN AND PROFILE
8–10	WATER DETAILS
11–12	SEWER DETAILS



VICINITY MAP
SCALE 1"= 1000'

NOTE:
THE BOUNDARY LINES AND TOPOGRAPHY FOR THIS PROJECT ARE BASED ON A FIELD SURVEY COMPLETED BY RICK ENGINEERING COMPANY. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY RICK ENGINEERING COMPANY AND THE CLIENT IN WRITING OF ANY DIFFERING CONDITIONS.

STATEMENT:
IT IS UNDERSTOOD AND AGREED THAT A REVIEW OF THESE PLANS AND SPECIFICATIONS BY OR ON BEHALF OF THE PARKER WATER AND SANITATION DISTRICT IS ONLY FOR PURPOSES OF THE DISTRICT AND IN NO WAY RELATES TO AN APPROVAL OF MATERIALS USED OR THE END PRODUCT OF THE DEVELOPER'S WORK. THE DEVELOPER CERTIFIES THAT IT HAS THOROUGHLY REVIEWED ALL PLANS, NOTES AND SPECIFICATIONS, EXAMINED THE PROJECT SITE AND ASCERTAINED ALL SOIL, GEOLOGICAL, GROUNDWATER AND OTHER CONDITIONS TO BE ENCOUNTERED THAT MIGHT AFFECT THE CONSTRUCTION AND FUTURE MAINTENANCE OF THE PROJECT. THE DEVELOPER FURTHER CERTIFIES THAT WORK CONTEMPLATED UNDER SUCH PLANS AND SPECIFICATIONS HAS BEEN PREPARED BY OR ON BEHALF OF THE DEVELOPER, THAT THE PROJECT IS THE RESPONSIBILITY OF THE DEVELOPER, AND THAT WORK IS UNDERTAKEN THEREON ONLY IN RELIANCE ON ITS OWN INVESTIGATION AND INFORMATION AND NOT ON ANY STATEMENTS, REPRESENTATIONS OR REPORTS IF ANY, THAT MAY HAVE BEEN MADE OR FURNISHED BY THE DISTRICT, ITS OFFICERS, AGENTS OR EMPLOYEES.

MATERIALS LIST

ITEM	QTY.
48"ø SSMH	8
8" SS PVC PIPE	1183 LF
SEWER CONNECTION	1
FIRE HYDRANT	4
8" GATE VALVE	2
LOW PT BLOW OFF	2
8"X6" TEE	4
16"X8" TEE	1
24"X8" TEE	1
8" 45° BEND	2
8" 22.5° BEND	3
8" 11.25° BEND	3
8" W PVC PIPE	1232 LF
WATER CONNECTION	2

LEGEND

	EXISTING	PROPOSED
PROPERTY BOUNDARY		
PROPERTY LINE		
RIGHT–OF–WAY		
CENTERLINE		
CURB		
CURB & GUTTER		
DAYLIGHT LINE		II
EASEMENT		
FLOWLINE		
SLOPE	TOP OF SLOPE	TOP OF SLOPE
CONTOURS		
WATER LINE	W	W
SANITARY SEWER LINE	S	S
STORM DRAIN LINE	SD	
GAS LINE	G	G
ELECTRIC LINE	E	E
FENCE–GENERAL USE		
OVERHEAD WIRES	OHE	OHE
TYPICAL LATERALS		XX
SANITARY SEWER MANHOLE	S	
STORM DRAIN MANHOLE	SD	
STORM DRAIN INLET		
FIRE HYDRANT		
WATER VALVE		
STREET LAMP		
AC PAVING		
CONCRETE		
DG TRAIL/CRUSHER FINES		

ABBREVIATION

AIR RELEASE VALVE	ARV
ASPHALT CONCRETE	AC
BEGIN CURB RETURN	BCR
BEGIN CURVE	BC
BEGIN VERTICAL CURVE	BVC
CENTERLINE	CL
END CURVE	EC
END VERTICAL CURVE	EVC
EXISTING GRADE	EG
FINISHED GRADE	FG
FINISHED SURFACE	FS
FLOW LINE	FL
GRADE BREAK	GB
HIGH POINT	HP
INVERT	INV
POINT OF CONNECTION	POC
PROPERTY LINE	PL
PUBLIC UTILITY EASEMENT	PUE
RIGHT–OF–WAY	ROW
TOP OF CURB	TC

FIRE DEPARTMENT APPROVAL
ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO WATER UTILITY STANDARDS. THE NUMBER AND LOCATIONS OF THE FIRE HYDRANTS AS SHOWN ON THE OVERALL UTILITY PLAN ARE CORRECT AS SPECIFIED BY TOWN OF PARKER, COMMUNITY DEVELOPMENT DEPARTMENT.

_____
FIRE CODE OFFICIAL OR DESIGNATED REPRESENTATIVE DATE

NOTE: UNDERGROUND FIRE LINE (UFL) SUBMITTAL DOCUMENTS MUST MEET THE REQUIREMENTS OF NFPA 24 WHEN SUBMITTING FOR REVIEW

WATER/SANITARY SEWER APPROVAL
THE DISTRICT INSPECTOR MUST BE NOTIFIED AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. CALL PARKER WATER AND SANITATION DISTRICT AT 303–841–4627/ THE DISTRICT WILL PROVIDE PERIODIC INSPECTIONS OF THE WORK. 24 HOUR NOTICE TO THE INSPECTOR IS REQUIRED FOR SCHEDULING INSPECTIONS. ANY WORK ACCOMPLISHED WITHOUT THE APPROVAL OF THE INSPECTOR WILL BE SUBJECT TO REJECTION.

REVIEWED FOR CONFORMANCE TO PARKER WATER AND SANITATION DISTRICT STANDARDS.

BY:_____
(DISTRICT REPRESENTATIVE)

DATE SIGNED _____

APPROVED FOR CONSTRUCTION:
PARKER WATER AND SANITATION DISTRICT

BY:_____
(DISTRICT ENGINEER)

DATE SIGNED _____

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

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Sacramento - San Luis Obispo - Phoenix
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ROBERT K. PITCH
48704
PROFESSIONAL ENGINEER

Know what's below. Call before you dig.

REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE:	NTS
DATE:	9/15/2020
DRAWN BY:	WD
CHECKED BY:	JS
JOB NO:	D01173–A

COVER SHEET

PROJECT NO.
D01173–A
DRAWING NO.
1
SHEET NO. 1 OF 12 SHEETS

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GENERAL NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE PWSD ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST VERSION.
2. THE CONTRACTOR SHALL CONTACT ALL APPROPRIATE UTILITY COMPANIES AND THE TOWN OF PARKER, DOUGLAS COUNTY AND OTHER NEIGHBORING CITIES AND TOWNS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY EXISTING UTILITY (INCLUDING DEPTHS) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION. ALL EXISTING UTILITIES SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. DAMAGED UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
3. ALL ITEMS SHOWN ON THE PLANS AS EXISTING ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE ACTUAL LOCATIONS MAY VARY FROM THE PLANS, ESPECIALLY IN THE CASE OF UNDERGROUND UTILITIES. WHENEVER THE CONTRACTOR DISCOVERS A DISCREPANCY IN LOCATIONS CONTACT THE PWSD IMMEDIATELY.
4. PWSD ENGINEER AND OTHER APPROVING AGENCIES ARE TO BE NOTIFIED 48 HOURS PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL OBTAIN, AT HIS EXPENSE, ALL PERMITS NECESSARY TO PERFORM THE PROPOSED WORK.
6. ALL CONCRETE SHALL BE A MINIMUM OF CLASS A, 6 SACK, TYPE II, 3000–POUND COMPRESSION STRENGTH.
7. THE DESIGN ENGINEER SHALL SUBMIT ONE (1) SET OF "AS–BUILT" DRAWINGS AND ELECTRONIC FILES TO THE DISTRICT ENGINEER FOR APPROVAL BY DISTRICT. AFTER APPROVAL HAS BEEN GRANTED BY THE DISTRICT ENGINEER, FULL SIZED PRINTS SHALL BE TRANSMITTED TO THE PWSD OFFICE.
8. NO WORK SHALL BE BACKFILLED UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE DISTRICT ENGINEER OR REPRESENTATIVE OF THE DISTRICT ENGINEER. ALL BACKFILL MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY. COMPACTION TESTS MUST BE SUBMITTED TO DISTRICT ENGINEER PRIOR TO PROBATIONARY ACCEPTANCE.
9. TRENCHES SHALL BE EXCAVATED AND THE PIPE EXPOSED FOR THE INSPECTION AT ANY LOCATION ON THE PROJECT IF SO ORDERED BY THE INSPECTOR.
10. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF LINES (WATER AND SEWER) FOR UP TO TWO (2) YEARS FROM THE DATE OF PROBATIONARY ACCEPTANCE OF LINES BY THE DISTRICT. ANY MALFUNCTION DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE CONTRACTOR TO THE SATISFACTION OF THE DISTRICT ENGINEER AT NO COST TO THE DISTRICT.
11. SURFACE GRADES ARE TO BE WITHIN PLUS OR MINUS ONE FOOT OF FINISHED GRADE AND VERIFICATION OF COMPACTION RESULTS OBTAINED PRIOR TO THE INSTALLATION OF WATER AND SEWER LINES. RESULTS MAY BE SUBMITTED TO THE DISTRICT ENGINEER.
12. ALL SERVICES WILL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:
    "X" FOR SANITARY SERVICE SEWERS
    "V" FOR WATER SERVICES
13. NO TREES ALLOWED IN EASEMENTS OR WITHIN 8' OF WATER OR SANITARY SEWER MAINS IN RIGHT OF WAY.
14. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE (1) SIGNED COPY OF THE PLANS WHICH HAVE BEEN APPROVED BY THE PWSD AND THE DISTRICT ENGINEER AND ONE (1) COPY OF THE LATEST PWSD SPECIFICATION MANUAL.

WATER SYSTEM NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE PWSD ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. ALL WATER MAINS SHALL BE PER PWSD MATERIALS SPECIFICATIONS. ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL BE SUITABLE FOR CHLORINATED AND CHLORAMINATED WATER.
3. ALL BENDS, PLUGS, REDUCERS AND FIRE HYDRANTS TO BE RODDED OR MEGA–LUGGED. ALL FITTINGS SHALL BE WRAPPED PER PWSD MATERIALS SPECIFICATIONS.
4. THERE SHALL BE A MINIMUM COVER OF 4.5 FEET OVER ALL WATER MAINS.
5. FIRE HYDRANTS SHALL CONFORM TO AWWA C–502 "DRY BARREL FIRE HYDRANTS" PIPE HYDRANT ASSEMBLIES PER PWSD SPECIFICATIONS.
6. ALL BENDS, TEES, FIRE HYDRANTS, BLOW–OFFS, AND PLUGS AT DEAD END MAINS SHALL BE PROTECTED FROM THRUST WITH CONCRETE THRUST BLOCKS.
7. PRECAUTIONS SHALL BE TAKEN TO PROTECT THE INTERIOR OF PIPES, FITTINGS, AND VALVES AGAINST CONTAMINATION. ALL OPENINGS IN THE PIPELINE SHALL BE CLOSED WITH WATERTIGHT PLUGS WHEN PIPE LAYING IS STOPPED AT THE CLOSE OF THE DAY'S WORK OR FOR OTHER REASONS, SUCH AS REST BREAKS OR MEAL PERIODS.
8. VALVES IN STREETS ARE TO BE LOCATED AT PROPERTY LINE EXTENSIONS EXCEPT FOR TAPPING TEES; WHERE AN ADDITIONAL VALVE SHALL BE PLACED ON THE TAPPING TEE. OTHER LOCATIONS SHOWN ON THE PLANS.
9. WHEN NECESSARY TO LOWER OR RAISE WATER LINES AT STORM DRAINS AND OTHER UTILITY CROSSING, A MINIMUM CLEARANCE OF 1.5 FEET SHALL BE MAINTAINED BETWEEN OUTSIDE OF PIPES.
10. THE CONTRACTOR SHALL NOTIFY THE PWSD AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION. IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START UP, THE CONTRACTOR MUST NOTIFY THE DISTRICT ENGINEER 48 HOURS PRIOR TO RE–START.
11. PIPE BEDDING SHALL BE A CLEAN, WELL–GRADED SAND OR SQUEEGEE SAND IN ACCORDANCE WITH PWSD STANDARDS AND SPECIFICATIONS, LATEST REVISION.
12. THE CONTRACTOR SHALL NOTIFY THE PUBLIC UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO PROCEEDING WITH THE EXCAVATION. ALL WORK PERFORMED IN THE AREA OF THE PUBLIC UTILITIES SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS OF THESE AGENCIES.
13. COMPACTION OF ALL TRENCHES MUST BE ATTAINED IN ACCORDANCE WITH THE SOIL REPORTS AND COMPACTION TEST RESULTS SUBMITTED TO THE DISTRICT ENGINEER PRIOR TO PROBATIONARY ACCEPTANCE.
14. AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION, A PRE–CONSTRUCTION MEETING WILL BE HELD AT THE OFFICE OF THE DISTRICT ENGINEER AND ATTENDED BY THE CONTRACTOR, DESIGN ENGINEER, AND REPRESENTATIVE OF OTHER APPROVING AGENCIES.
15. CHLORINATION AND FLUSHING: ALL WATER MAINS SHALL BE TESTED PER THE REQUIREMENTS OF THE PWSD SPECIFICATIONS CHLORINATION OF FINISHED PIPELINE COMPLETED BEFORE HYDROSTATIC TESTING.
16. HYDROSTATIC TESTING: ALL WATER MAINS SHALL BE TESTED PER THE REQUIREMENTS OF THE PWSD SPECIFICATIONS UP TO MINIMUM OF 150 PSI IN THE PRESENCE OF A PWSD INSPECTOR/ENGINEER.

SANITARY SEWER SYSTEM NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE PWSD ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. ALL SEWER MAINS SHALL BE PVC, ASTM D–3034, SDR 35 OR APPROVED EQUAL. ALL SEWER MAIN SIZE IS 8" DIAMETER UNLESS OTHERWISE NOTED.
3. SEWER LINES SHALL BE INSTALLED 5.0 FEET SOUTH OR WEST OF STREET CENTERLINE. SEWER LINES SHALL BE 10 FEET FROM WATER LINES EXCEPT WHEN CROSSING EACH OTHER. SEWER LINES. SEWER LINES WHICH CROSS LESS THAN 1.50 FEET VERTICALLY FROM THE WATER MAIN SHALL BE ENCASED IN CONCRETE AS PER PWSD SPECIFICATIONS. USE RUBBER GASKETS FOR PVC ENCASEMENT.
4. SEWER RIM ELEVATIONS SHOWN ARE APPROPRIATE ONLY AND ARE NOT TO BE TAKEN AS FINAL ELEVATIONS. RING AND COVER SHALL BE SET IN CENTERED CONCRETE RINGS WITH RAM–NECK FOR ADJUSTMENT TO MATCH FINAL PAVEMENT ELEVATIONS.
5. THE CONTRACTOR AND SURVEY CREW SHALL VERIFY ELEVATIONS OF EXISTING SEWER LINES AND MANHOLES TO BE TIED TO PRIOR TO CONSTRUCTION OR STAKING OF SANITARY SEWER.
6. NO UNDERDRAIN SYSTEM WILL BE ALLOWED TO BE PLACED IN MAINLINE OR SEWER SERVICE TRENCHES.
7. SEWER SERVICE TEES FOR EACH UNIT SHALL BE STAKED BY A SURVEY CREW AND FURNISHED AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL FURNISHED OR INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL FURNISH THE THE ENGINEER "AS CONSTRUCTED" LOCATION OF TEES. SEWER WYES SHALL BE USED RATHER THAN TEES.
8. ALL MANHOLES SHALL BE 48 INCHES IN DIAMETER WITH 24–INCH RING AND COVER, ECCENTRIC CONE UNLESS OTHERWISE SPECIFIED. ALL MANHOLES SHALL HAVE SHAPED INVERTS.
9. PIPE BEDDING SHALL BE CLASS "B" AND SHALL CONFORM TO ASTM C–33 OR D–448 GRADATION NO. 6 OR NO. 67.
10. AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION, A PRE–CONSTRUCTION MEETING WILL BE HELD AT THE OFFICE OF THE DISTRICT ENGINEER AND ATTENDED BY THE CONTRACTOR AND REPRESENTATIVES OF THE OTHER APPROVING AGENCIES. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE DISTRICT ENGINEER TO SCHEDULE THIS MEETING.
11. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE (1) SIGNED COPY OF THE PLANS WHICH HAVE BEEN APPROVED BY THE PWSD AND THE DISTRICT ENGINEER AND ONE (1) COPY OF THE LATEST PWSD SPECIFICATION MANUAL.
12. ALL SEWER LINES SHALL BE TESTED IN ACCORDANCE WITH THE PWSD STANDARDS AND SPECIFICATIONS PRIOR TO ACCEPTANCE OR ANY CONNECTION TO AN EXISTING SEWER LINE.
13. PRIOR TO STARTING WORK WHERE SEWER MAIN IS TO BE CONNECTED TO EXISTING PWSD SEWER SYSTEMS. THE NEAREST MANHOLE TO THE POINT OF TIE–IN SHALL BE PLUGGED WITH A PLUMBER'S PLUG ON THE INLET SIDE BY THE CONTRACTOR. THIS PLUG SHALL REMAIN IN PLACE UNTIL FINAL PROBATIONARY ACCEPTANCE BY PWSD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PUMPING AND CLEANING THESE MANHOLES AND REMOVING THE PLUG WHEN INSTRUCTED BY THE DISTRICT.
14. PRIOR TO PROBATIONARY ACCEPTANCE WALKTHROUGH, THE CONTRACTOR SHALL JET CLEAN THE ENTIRE SANITARY SEWER SYSTEM AND PUMP OUT AT THE PLUGGED MANHOLE.

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

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COLORADO LICENSED
ROBERT K. FITCH
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PROFESSIONAL ENGINEER

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REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE:	NTS
DATE:	9/15/2020
DRAWN BY:	WD
CHECKED BY:	JS
JOB NO:	D01173–A

NOTES

PROJECT NO.
D01173–A
DRAWING NO.
2
SHEET NO. 2 OF 12 SHEETS

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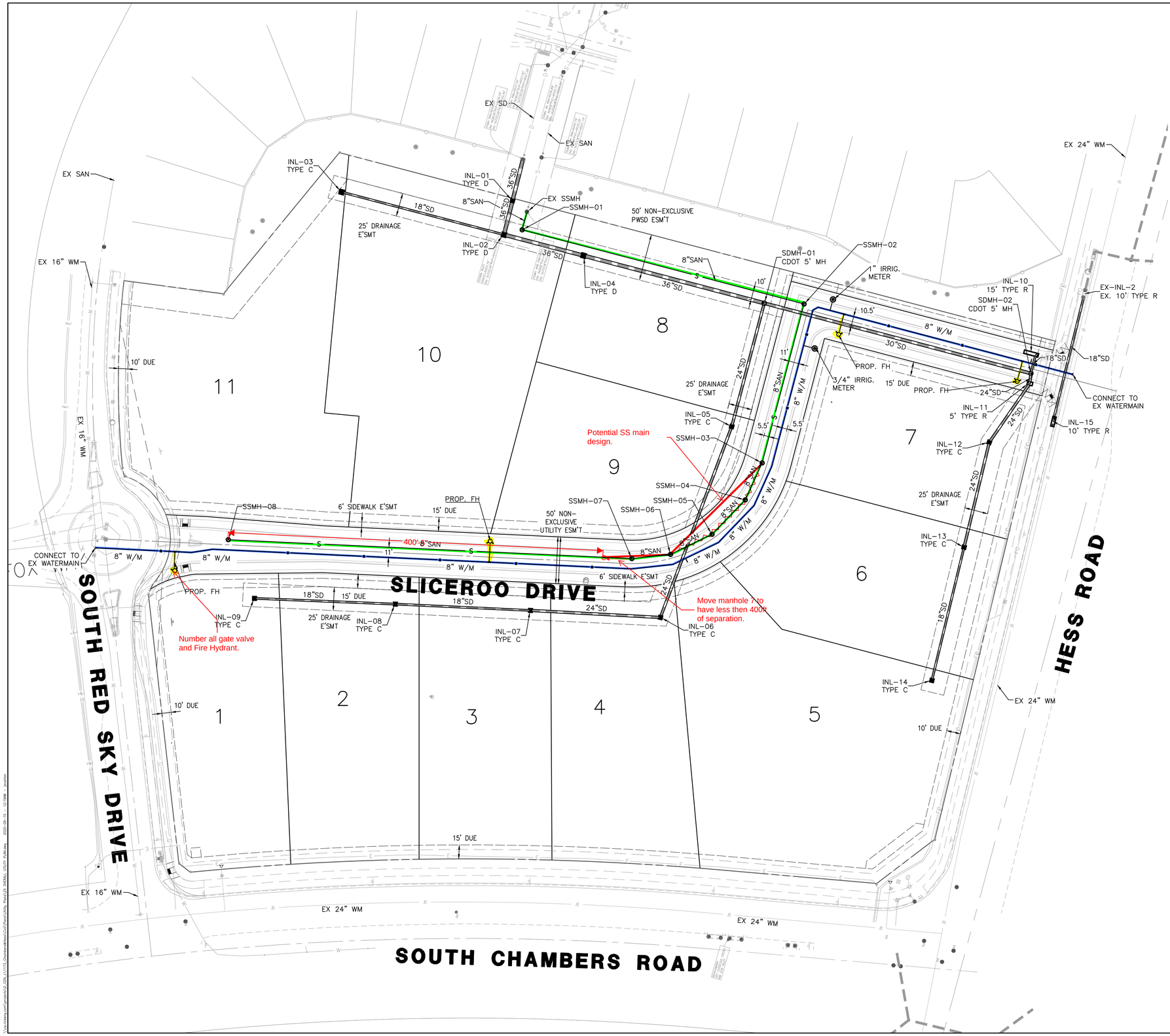

NOTES

1. THE PROPOSED UTILITY CONNECTION WILL REQUIRE A TOWN RIGHT-OF-WAY PERMIT PRIOR TO COMMENCING WORK. THE TOWN PREFERS CONNECTIONS TO BE BORED TO THE EXTENT POSSIBLE, AND ANY STREET CUT ALLOWED BY THE TOWN WILL BE REQUIRED TO BE PATCHED ACCORDING TO THE TOWN'S CONSTRUCTION STANDARDS AND DETAILS. THE LIMITS OF PATCHING WILL BE DETERMINED BY THE TOWN AT THE TIME OF CONSTRUCTION. THE TOWN OF PARKER DOES NOT ALLOW ROADWAY CLOSURES FOR UTILITY WORK.

TOWN OF PARKER APPROVAL

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER.

_____

TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS DATE

FIRE DEPARTMENT APPROVAL

ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO DISTRICT STANDARDS. THE NUMBER AND LOCATIONS OF THE FIRE HYDRANTS AS SHOWN ON THE OVERALL UTILITY PLAN ARE CORRECT AS SPECIFIED BY THE SOUTH METRO FIRE PROTECTION DISTRICT.

_____

SIGNATURE OF FIRE CHIEF OR DESIGNATED REPRESENTATIVE

_____

DATE

50 25 0 50

GRAPHIC SCALE: 1"=50'

WATER & SEWER IMPROVEMENT PLANS FOR DOUGLAS 234 FILING NO. 6

DOUGLAS COUNTY, COLORADO

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ENGINEERING COMPANY
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48704
PROFESSIONAL ENGINEER

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REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE:	1" = 50'
DATE:	9/15/2020
DRAWN BY:	WD
CHECKED BY:	JS
JOB NO:	D01173-A

OVERALL UTILITY PLAN

PROJECT NO. D01173-A

DRAWING NO. 3

SHEET NO. 3 OF 12 SHEETS

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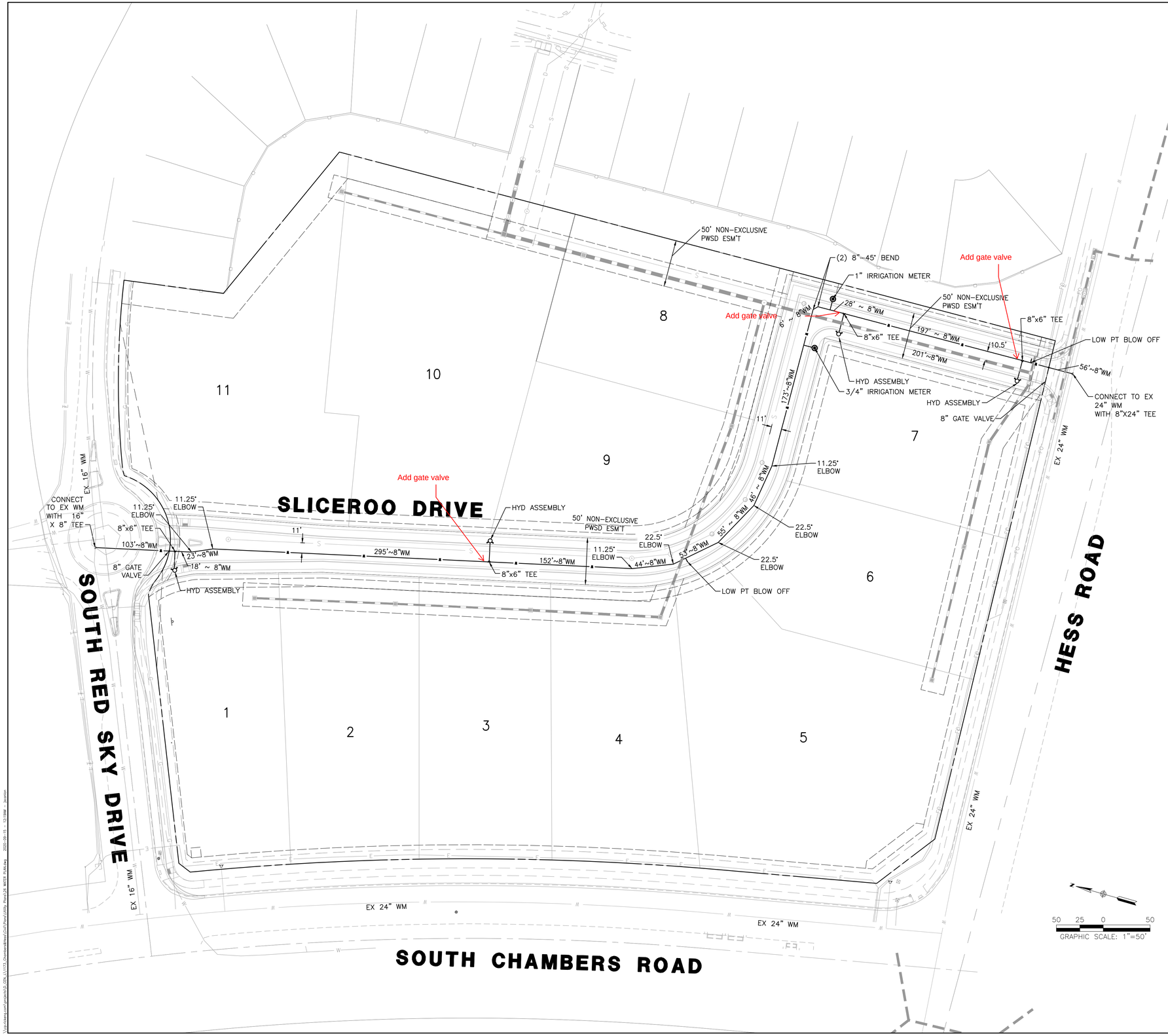

DISTRICT POLICIES & INSTALLATION NOTES FOR WATER SERVICES:

INSTALLATION NOTES: WATER

1. ACCEPTABLE PIPE MATERIALS SHALL BE K-COPPER TUBING. (3/4" MIN)
2. APPROVED BEDDING TO BE SQUEEGEE.
3. ONLY ONE COUPLING WILL BE ALLOWED BETWEEN THE STUB-IN AND BUILDING. COMPRESSION COUPLINGS WILL NOT BE ALLOWED ON NEW CONSTRUCTION. SILVER SOLDERED JOINTS MUST BE USED ON SERVICES LARGER THAN 3/4". SILVER SOLDERED JOINTS MUST BE INSPECTED BY PWSD PRIOR TO BURIAL. FLARED COUPLINGS WILL BE ALLOWED ON ALL SERVICES 3/4" AND SMALLER.
4. A WATER SERVICE WHICH CROSSES A SEWER SERVICE CAN DO SO ONLY AT A 45-90° ANGLE. WATER SERVICES SHALL BE LOCATED AT A MINIMUM OF 18" ABOVE SEWER SERVICE.
5. WATER SERVICE FOUNDATION PENETRATIONS SHALL BE WATERPROOFED USING MASTIC OR OTHER APPROVED METHOD, CRAWLSPACE REQUIRES CONTINUOUS COPPER WITH A 1" BURY.
6. CURB STOP MUST BE PLUMB AND CENTERED OVER THE NUT. IT SHOULD BE STRAPPED TO THE METER PIT (RESIDENTIAL INSTALLATIONS) OR CENTERED OVER THE EASEMENT LINE (COMMERCIAL INSTALLATIONS). THE ASSEMBLY MUST BE AT OR SLIGHTLY ABOVE FINISHED GRADE.
7. MOVED CURB BOXES MUST BE INSPECTED BY PWSD PRIOR TO BURIAL.
8. WATERLINE MUST BE ATTACHED TO A SUPPORT BOARD THAT IS MOUNTED TO THE WALL.
9. NO VOIDS ALLOWED UNDER WATERLINES FROM STOP BOX TO FOUNDATION.
10. CURBSTOP BOXES AND METER PITS CANNOT BE IN DRIVEWAYS.
11. ONLY 3/4" (JUMPER) PIPES (RESIDENCES) ARE ALLOWED. (JUMPER) PIPES WILL BE REMOVED PRIOR TO METER SET DATE.
12. ALL SERVICES WILL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:
    "X" FOR SANITARY SEWER SERVICE
    "V" FOR WATER SERVICES
13. NO SPLICES OR FLARED COUPLINGS ALLOWED ON SERVICES LARGER THAN 3/4". SILVER SOLDERED JOINTS MUST BE USED IN MOVING STOPBOXES ON SERVICES LARGER THAN 3/4". SILVER SOLDERED JOINTS MUST BE INSPECTED BY PWSD PRIOR TO BURIAL. FLARED COUPLINGS WILL BE ALLOWED ON ALL SERVICES 3/4" AND SMALLER.

INSPECTION POLICY:

1. ALL SERVICE INSPECTIONS MUST BE SCHEDULED AT LEAST 24 HOURS IN ADVANCE OF THE REQUESTED INSPECTION.
2. SERVICE INSPECTIONS WILL OCCUR BETWEEN 1:00 PM AND 3:00 PM SPECIFIC INSPECTION TIMES ARE NOT AVAILABLE.
3. IF THE CONTRACTOR IS NOT READY FOR INSPECTION WHEN THE INSPECTOR ARRIVES AT THE SITE OR THE SERVICE FAILS, A RE-INSPECTION WILL HAVE TO BE SCHEDULED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE AND A RE-INSPECTION FEE CHARGED.
4. SHOULD THE SERVICE LINES BE DAMAGED BY LATER CONSTRUCTION, AN INSPECTION OF THE REPAIR WILL BE REQUIRED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE.
5. THE CONTRACTOR SHALL LEAVE ALL PIPE AND FITTINGS EXPOSED FOR THE INSPECTOR TO OBSERVE. INSPECTORS WILL NOT ENTER ANY EXCAVATIONS TO CHECK MATERIALS. THE TOP LAYER OF BEDDING CAN BE ADDED AFTER THE INSPECTION HAS BEEN COMPLETED.
6. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
7. LOTS WITHOUT BUILDING ADDRESSES BEFORE DISTRICT INSPECTION OR METER SET WILL FAIL AUTOMATICALLY.
8. CONTRACTOR MUST BE PRESENT AT TIME OF INSPECTION, UNLESS COORDINATED WITH DISTRICT INSPECTOR.

NOTES

1. THE PROPOSED UTILITY CONNECTION WILL REQUIRE A TOWN RIGHT-OF-WAY PERMIT PRIOR TO COMMENCING WORK. THE TOWN PREFERS CONNECTIONS TO BE BORED TO THE EXTENT POSSIBLE, AND ANY STREET CUT ALLOWED BY THE TOWN WILL BE REQUIRED TO BE PATCHED ACCORDING TO THE TOWN'S CONSTRUCTION STANDARDS AND DETAILS. THE LIMITS OF PATCHING WILL BE DETERMINED BY THE TOWN AT THE TIME OF CONSTRUCTION. THE TOWN OF PARKER DOES NOT ALLOW ROADWAY CLOSURES FOR UTILITY WORK.

WATER & SEWER IMPROVEMENT PLANS FOR DOUGLAS 234 FILING NO. 6

DOUGLAS COUNTY, COLORADO

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020
Tucson - San Diego - Riverside - Orange
Sacramento - San Luis Obispo - Phoenix
rickengineering.com

COLORADO LICENSED
ROBERT K. FITCH
48704
PROFESSIONAL ENGINEER

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

REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE:	1" = 50'
DATE:	9/15/2020
DRAWN BY:	WD
CHECKED BY:	JS
JOB NO:	D01173-A

WATER PLAN

PROJECT NO. D01173-A
DRAWING NO. 4
SHEET NO. 4 OF 12 SHEETS

PRELIMINARY
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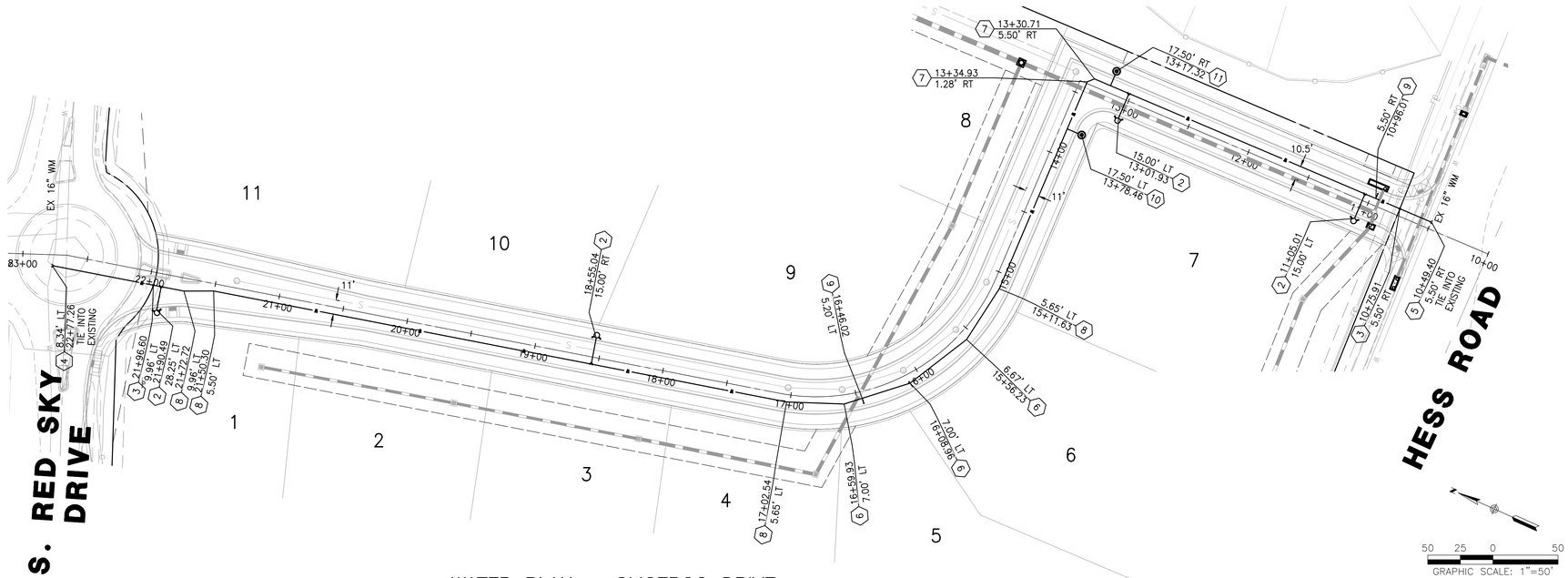
I:\Engineering\Projects\D_STR_L\1173_Chambers&Hess\Civil\Plans\Utility Plans\D6 WATER PLAN.dwg 2020-09-15 - 11:19AM - jackson

CONSTRUCTION NOTES

1. WATER SERVICE CONNECTION PER PWSD STD DTL W1.2
2. FIRE HYDRANT ASSEMBLY PER PWSD STD DTL W2.5
3. 8" GATE GALVE
4. 16"X8" TEE
5. 24"X8" TEE
6. 22.5° BEND AND THRUST BLOCK
7. 45° BEND AND THRUST BLOCK
8. 11.25° BEND AND THRUST BLOCK
9. LOW POINT BLOW OFF PER PWSD STD DTL W3.8
10. 3/4" IRRIGATION METER PER PWSD STD DTL W5.10
11. 1" IRRIGATION METER PWSD STD DTL W5.10

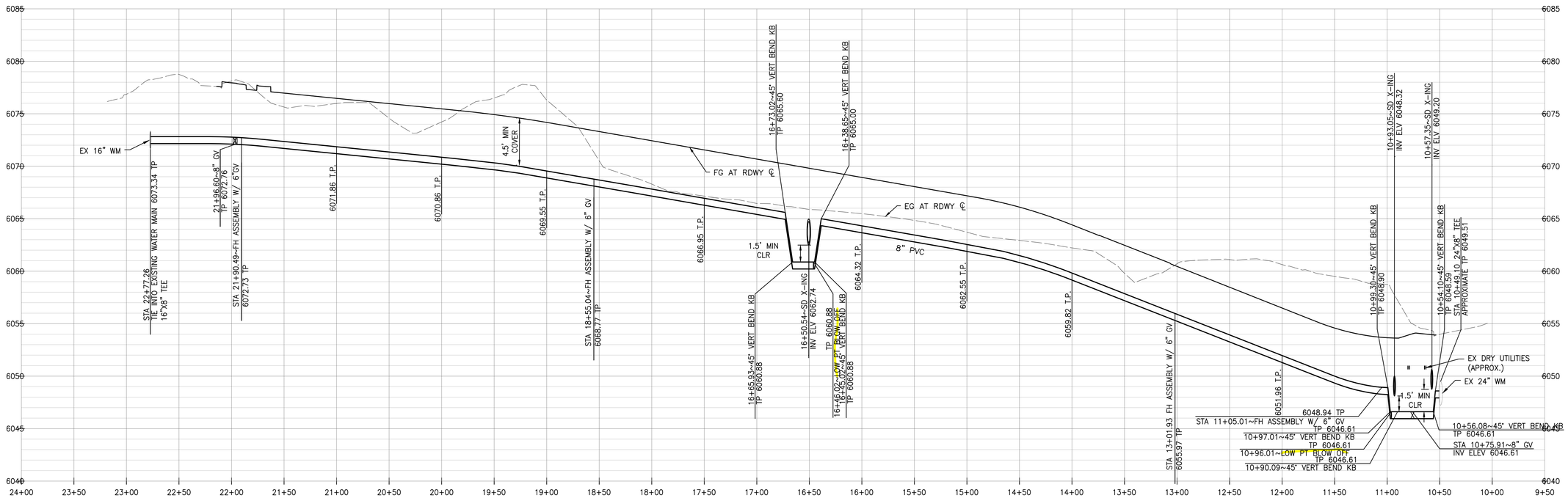


WATER PLAN – SLICEROO DRIVE

SCALE: HORIZ. 1" = 50'

GENERAL NOTES

1. EXISTING WATER MAIN DEPTH UNKNOWN, EXISTING ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL CONFIRM THE EXISTING WATER MAIN DEPTH BENEATH ALL PROPOSED STREET IMPROVEMENTS PRIOR TO CONSTRUCTION. ANY AREAS WHERE THE EXISTING WATER MAIN DEPTH WILL BE LESS THAN 4.5' AS A RESULT OF THE PROPOSED IMPROVEMENTS WILL REQUIRE A WATER MAIN LOWERING. THE CONTRACTOR SHALL HAVE A PARKER WATER & SANITATION DISTRICT INSPECTOR ON SITE FOR ANY POTHOLING FOR THE EXISTING WATER MAIN DEPTH.



WATER PROFILE – SLICEROO DRIVE

SCALE: HORIZ. 1"=50', VERT. 1"=5'

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

RICK
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CHECKED BY:	JS
JOB NO:	D01173-A

WATER PLAN & PROFILE

PROJECT NO.
D01173-A
DRAWING NO.
5
SHEET NO. 5 OF 12 SHEETS

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DISTRICT POLICIES & INSTALLATION NOTES FOR SEWER SERVICES:

INSTALLATION NOTES:

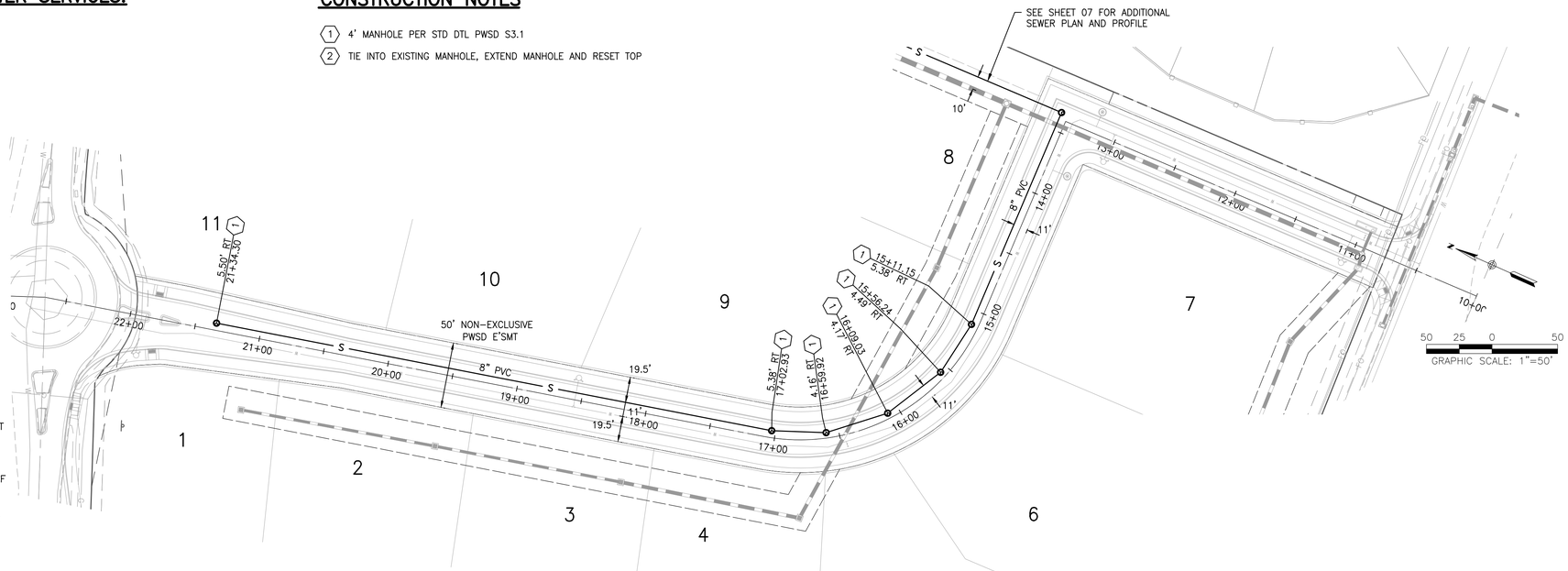
1. ACCEPTABLE PIPE MATERIALS ARE TO BE SDR 35 PVC PIPE, ABS PIPE AND PVC SCHEDULE 40 PIPE. APPROVED BEDDING IS TO BE SQUEEGEE.
2. NO-HUB CLAMPS SHALL BE USED TO JOIN 2 MALE PIPE ENDS WITH A MAXIMUM DEFLECTION OF 3°.
3. MINIMUM GRADE SHALL BE 2%.
4. INSTALLATION SHALL NOT INCLUDE MORE THAN 3 BENDS. 90° BENDS ARE NOT ALLOWED. SOLVENT WELDED PIPE WILL NOT BE ALLOWED.
5. CLEAN-OUTS SHALL BE INSTALLED AT 100' INTERVALS AND EVERY CHANGE IN DIRECTION. CLEAN-OUTS ARE NOT REQUIRED FOR SERVICES LESS THAN 100' UNLESS THERE ARE CHANGES IN DIRECTION. PROVIDE DUAL CLEAN-OUT WITHIN 5 FEET OF FOUNDATION.
6. STRESSING THE PIPE BETWEEN FITTINGS WILL NOT BE ALLOWED.
7. SEWER SERVICE LINE SHALL NOT BE LOCATED UNDER CONCRETE SURFACE.
8. ALL SERVICES SHALL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:
   "X" FOR SANITARY SEWER SERVICE
   "Y" FOR WATER SERVICES

INSPECTION POLICY:

1. ALL SERVICE INSPECTIONS MUST BE SCHEDULED AT LEAST 24 HOURS IN ADVANCE OF THE REQUESTED INSPECTION.
2. IF THE CONTRACTOR IS NOT READY FOR INSPECTION WHEN THE INSPECTOR ARRIVES AT THE SITE, A RE-INSPECTION WILL HAVE TO BE SCHEDULED IN ACCORDANCE WITH NOTE 1 ABOVE AND A RE-INSPECTION FEE CHARGED.
3. SHOULD THE SERVICE LINES BE DAMAGED BY LATER CONSTRUCTION, AN INSPECTION OF THE REPAIR WILL BE REQUIRED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE.
4. THE CONTRACTOR SHALL LEAVE ALL PIPE AND FITTINGS EXPOSED FOR THE INSPECTOR TO OBSERVE. INSPECTORS WILL NOT ENTER ANY EXCAVATIONS TO CHECK MATERIALS. THE TOP LAYER OF BEDDING CAN BE ADDED AFTER THE INSPECTION HAS BEEN COMPLETED.
5. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
6. LOTS WITHOUT BUILDING ADDRESSES OR LOT AND BLOCK NUMBERS BEFORE DISTRICT INSPECTION OR METER SET WILL FAIL AUTOMATICALLY.
7. CONTRACTOR MUST BE PRESENT AT TIME OF INSPECTION, UNLESS COORDINATED WITH DISTRICT INSPECTOR.

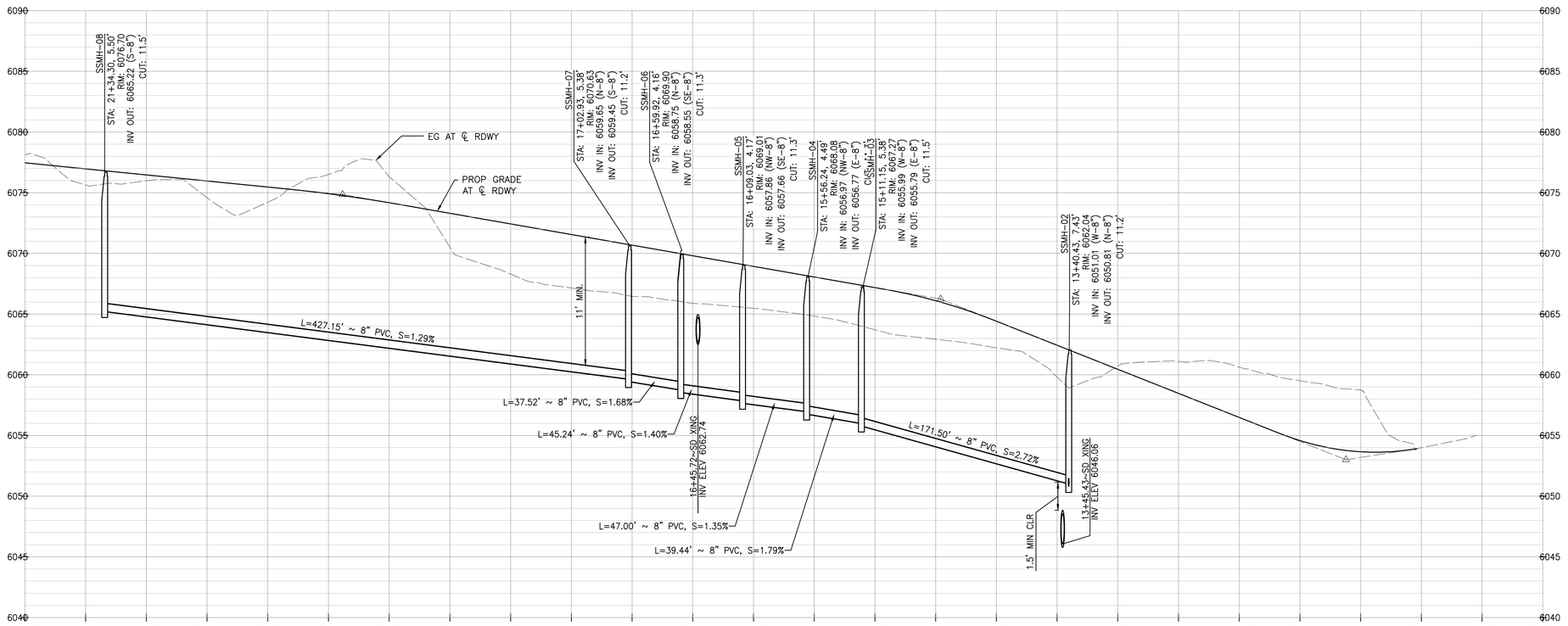
CONSTRUCTION NOTES

1. 4' MANHOLE PER STD DTL PWSD S3.1
2. TIE INTO EXISTING MANHOLE, EXTEND MANHOLE AND RESET TOP



SEWER PLAN – SLICEROO DRIVE

SCALE: HORIZ. 1" = 50'



SEWER PROFILE – SLICEROO DRIVE

SCALE: HORIZ. 1"=50', VERT. 1"=5'

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

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JOB NO:	D01173-A

SLICEROO DR SEWER PLAN & PROFILE

PROJECT NO. D01173-A
DRAWING NO. 6
SHEET NO. 6 OF 12 SHEETS

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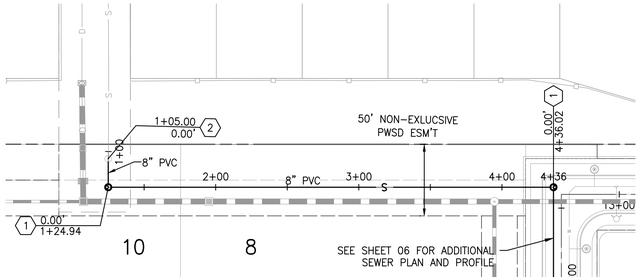
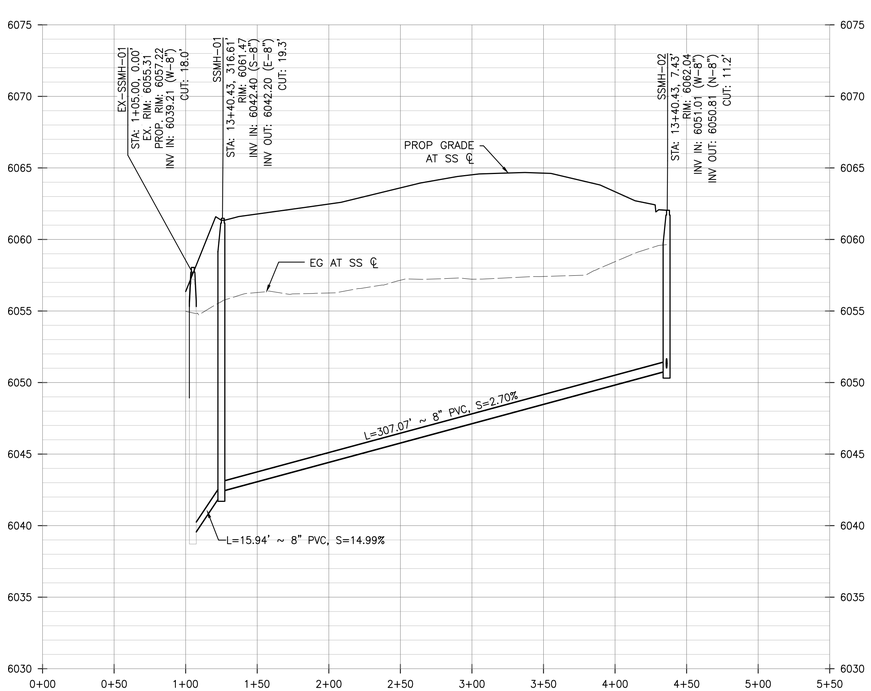


SEWER PLAN

SCALE: HORIZ. 1" = 50'



SEWER PROFILE

SCALE: HORIZ. 1"=50', VERT. 1"=5'

DISTRICT POLICIES & INSTALLATION NOTES FOR SEWER SERVICES:

INSTALLATION NOTES:

1. ACCEPTABLE PIPE MATERIALS ARE TO BE SDR 35 PVC PIPE, ABS PIPE AND PVC SCHEDULE 40 PIPE. APPROVED BEDDING IS TO BE SQUEEGEE.
2. NO-HUB CLAMPS SHALL BE USED TO JOIN 2 MALE PIPE ENDS WITH A MAXIMUM DEFLECTION OF 3°.
3. MINIMUM GRADE SHALL BE 2%.
4. INSTALLATION SHALL NOT INCLUDE MORE THAN 3 BENDS. 90° BENDS ARE NOT ALLOWED. SOLVENT WELDED PIPE WILL NOT BE ALLOWED.
5. CLEAN-OUTS SHALL BE INSTALLED AT 100' INTERVALS AND EVERY CHANGE IN DIRECTION. CLEAN-OUTS ARE NOT REQUIRED FOR SERVICES LESS THAN 100' UNLESS THERE ARE CHANGES IN DIRECTION. PROVIDE DUAL CLEAN-OUT WITHIN 5 FEET OF FOUNDATION.
6. STRESSING THE PIPE BETWEEN FITTINGS WILL NOT BE ALLOWED.
7. SEWER SERVICE LINE SHALL NOT BE LOCATED UNDER CONCRETE SURFACE.
8. ALL SERVICES SHALL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:
   "X" FOR SANITARY SEWER SERVICE
   "Y" FOR WATER SERVICES

INSPECTION POLICY:

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3. SHOULD THE SERVICE LINES BE DAMAGED BY LATER CONSTRUCTION, AN INSPECTION OF THE REPAIR WILL BE REQUIRED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE.
4. THE CONTRACTOR SHALL LEAVE ALL PIPE AND FITTINGS EXPOSED FOR THE INSPECTOR TO OBSERVE. INSPECTORS WILL NOT ENTER ANY EXCAVATIONS TO CHECK MATERIALS. THE TOP LAYER OF BEDDING CAN BE ADDED AFTER THE INSPECTION HAS BEEN COMPLETED.
5. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
6. LOTS WITHOUT BUILDING ADDRESSES OR LOT AND BLOCK NUMBERS BEFORE DISTRICT INSPECTION OR METER SET WILL FAIL AUTOMATICALLY.
7. CONTRACTOR MUST BE PRESENT AT TIME OF INSPECTION, UNLESS COORDINATED WITH DISTRICT INSPECTOR.

CONSTRUCTION NOTES

1. 4' MANHOLE PER STD DTL PWSD S3.1
2. TIE INTO EXISTING MANHOLE, EXTEND MANHOLE & RESET MANHOLE TOP

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

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DATE:	9/15/2020
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CHECKED BY:	JS
JOB NO:	D01173-A

SEWER PLAN & PROFILE

PROJECT NO.
D01173-A
DRAWING NO.
7
SHEET NO. 7 OF 12 SHEETS

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INSPECTION POLICY:

1. ALL SERVICE INSPECTIONS MUST BE SCHEDULED AT LEAST 24 HOURS IN ADVANCE OF THE REQUESTED INSPECTION.
2. SERVICE INSPECTIONS WILL OCCUR BETWEEN 1:00 P.M. AND 3:00 P.M. SPECIFIC INSPECTION TIMES ARE NOT AVAILABLE.
3. IF THE CONTRACTOR IS NOT READY FOR INSPECTION WHEN THE INSPECTOR ARRIVES AT THE SITE OR SERVICE FAILS, A RE-INSPECTION WILL HAVE TO BE SCHEDULED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE AND A RE-INSPECTION FEE CHARGED.
4. SHOULD THE SERVICE LINES BE DAMAGED BY LATER CONSTRUCTION, AN INSPECTION OF THE REPAIR WILL BE REQUIRED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE.
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6. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
7. LOTS WITHOUT BUILDING ADDRESSES BEFORE DISTRICT INSPECTION OR METER SET WILL FAIL AUTOMATICALLY.
8. CONTRACTOR MUST BE PRESENT AT TIME OF INSPECTION. UNLESS COORDINATED WITH DISTRICT INSPECTOR.

INSTALLATION NOTES:

WATER

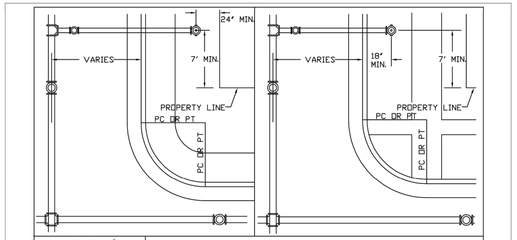
1. ACCEPTABLE PIPE MATERIALS SHALL BE K-COPPER TUBING. (3/4" MIN.)
2. APPROVED BEDDING TO BE SQUEEGEE.
3. ONLY ONE COUPLING WILL BE ALLOWED BETWEEN THE STUB-IN AND BUILDING. COMPRESSION COUPLINGS WILL NOT BE ALLOWED ON NEW CONSTRUCTION. SILVER SOLDERED JOINTS MUST BE USED ON SERVICES LARGER THAN 3/4". SILVER SOLDERED JOINTS MUST BE INSPECTED BY PWSD PRIOR TO BURIAL. FLARED COUPLINGS WILL BE ALLOWED ON ALL SERVICES 3/4" AND SMALLER.
4. A WATER SERVICE WHICH CROSSES A SEWER SERVICE CAN DO SO ONLY AT A 45-90° ANGLE. WATER SERVICES SHALL BE LOCATED A MINIMUM OF 18" ABOVE SEWER SERVICE.
5. WATER SERVICE FOUNDATION PENETRATIONS SHALL BE WATERPROOFED USING MASTIC OR OTHER APPROVED METHOD, CRAWL SPACE REQUIRES CONTINOUS COPPER WITH A 1' BURY.
6. CURB STOP MUST BE PLUMB AND CENTERED OVER THE NUT. IT SHOULD BE STRAPPED TO THE METER PIT (RESIDENTIAL INSTALLATIONS) OR CENTERED OVER THE EASEMENT LINE (COMMERCIAL INSTALLATIONS). THE ASSEMBLY MUST BE AT OR SLIGHTLY ABOVE FINISHED GRADE.
7. MOVED CURB BOXES MUST BE INSPECTED BY PWSD PRIOR TO BURIAL.
8. WATERLINE MUST BE ATTACHED TO A SUPPORT BOARD THAT IS MOUNTED TO THE WALL.
9. NO VOIDS ALLOWED UNDER WATERLINES FROM STOP BOX TO FOUNDATION.
10. CURBSTOP BOXES AND METER PITS CANNOT BE IN DRIVEWAYS.
11. ONLY 3/4" (JUMPER) PIPES (RESIDENCES) ARE ALLOWED. (JUMPER) PIPES WILL BE REMOVED PRIOR TO METER SET DATE.
12. ALL SERVICES WILL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:
    "X" FOR SANITARY SEWER SERVICE
    "V" FOR WATER SERVICES
13. NO SPLICES OR FLARED COUPLINGS ALLOWED ON SERVICES LARGER THAN 3/4". SILVER SOLDIERED JOINTS MUST BE USED IN MOVING STOPBOXES ON SERVICES LARGER THAN 3/4". SILVER SOLDIERED JOINTS MUST BE INSPECTED BY PWSD PRIOR TO BURIAL. FLARED COUPLINGS WILL BE ALLOWED ON ALL SERVICES 3/4" AND SMALLER.

PARKER WATER & SANITATION DISTRICT

DISTRICT POLICIES & INSTALLATION NOTES FOR WATER SERVICES

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	1/04 1/16 10/16

2016 REVISION — SHEET W1.1



NOTES:
1. ALTERNATE TO THE ABOVE: FASTEN M.J. VALVE DIRECTLY TO A M.J. ANCHOR TEE (ALSO CALLED SWIVEL TEE)
2. NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED IN FIRE HYDRANT BRANCH
4. NO PORTION OF FIRE HYDRANT MAY BE WITHIN INSIDE WALK AREA.
5. FIRE HYDRANT EXTENSIONS MAY NOT BE MORE THAN 36" OUTSIDE WALK AREA.

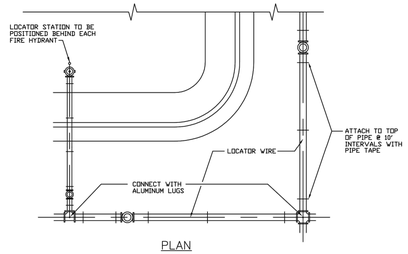
PARKER WATER & SANITATION DISTRICT

FIRE HYDRANTS LOCATION & INSTALLATION

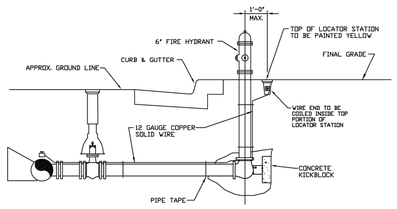
SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	4/01 10/16 01/02 12/07 1/16

2016 REVISION — SHEET W2.5

PIPE LOCATION SYSTEM



PLAN



SECTION VIEW @ FIRE HYDRANT

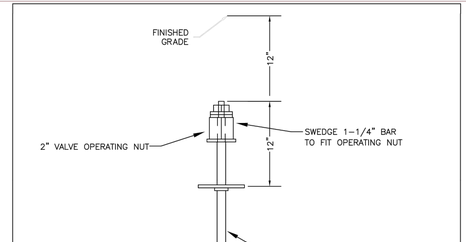
NOTES:
1. FOR USE ON ALL DUCTILE IRON AND PVC WATER MAINS.
2. LOCATOR STATION POSITION MAY BE MODIFIED AT THE DIRECTION OF THE DISTRICT ENGINEER.
3. A CONTINUITY TEST WILL BE REQUIRED PRIOR TO PRELIMINARY ACCEPTANCE.

PARKER WATER & SANITATION DISTRICT

LOCATOR WIRE DETAILS

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	4/01 01/02 01/16 10/16

2016 REVISION — SHEET W2.6



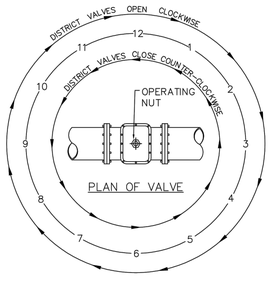
NOTES:
1. VALVE EXTENSIONS ONLY ALLOWED ON VALVES DEEPER THAN 9 FEET.

PARKER WATER & SANITATION DISTRICT

VALVE OPERATOR EXTENSION

SCALE: NONE	DATE: 5/98
APPROVED: PVR DIRECTOR OF ENGINEERING	2/00 12/07 1/16 10/16

2016 REVISION — SHEET W3.3



PLAN OF VALVE

NOTE:
ONLY RIGHT HAND OPENING VALVES ALLOWED.

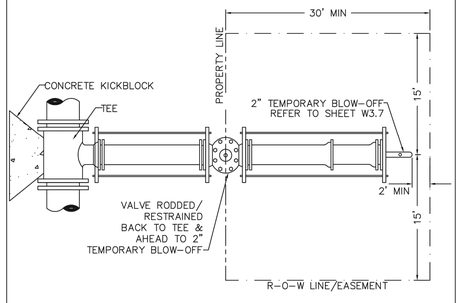
VALVE OPENING & CLOSING PROCEDURE

PARKER WATER & SANITATION DISTRICT

VALVE OPERATION

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	1/16 10/16

2016 REVISION — SHEET W3.4

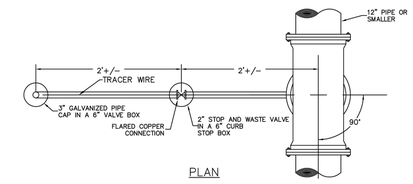


PARKER WATER & SANITATION DISTRICT

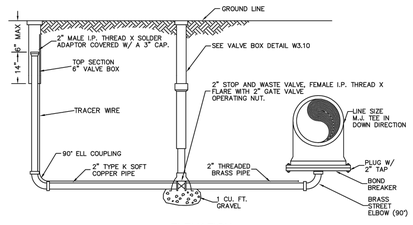
STUB-OUT CONFIGURATIONS

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	1/16 10/16

2016 REVISION — SHEET W3.5



PLAN



ELEVATION

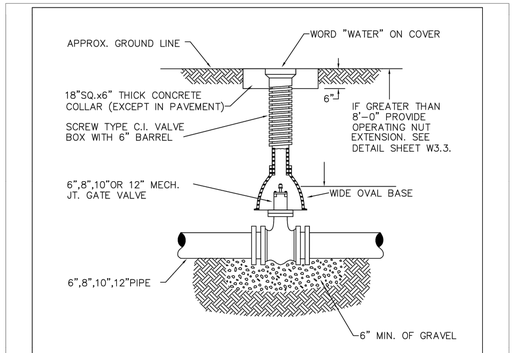
NOTE: PLUG SHALL BE MECHANICALLY RESTRAINED.

PARKER WATER & SANITATION DISTRICT

LOW POINT BLOW-OFF WITH SAND TRAP

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	4/01 1/16 10/16

2016 REVISION — SHEET W3.8



6-INCH VALVE BOXES

CHECK MATERIAL SPECIFICATIONS

NOTES:
1. ALL C.I. SHALL BE WRAPPED WITH 8 MIL. MIN. THICKNESS POLYETHYLENE.
2. VALVE NUT SHALL BE CENTERED.
3. VALVE BOX SHALL BE PLUMB.
4. SEE MATERIAL SPECIFICATIONS FOR VALVE BOX WITH GREATER THAN BURIED DEPTH OF 4.5 FT.

PARKER WATER & SANITATION DISTRICT

VALVE BOX DETAIL

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	5/98 10/16 6/99 12/07 1/16

2016 REVISION — SHEET W3.10

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020
Tucson - San Diego - Riverside - Orange
Sacramento - San Luis Obispo - Phoenix
rickengineering.com
COLORADO LICENSED ROBERT K. FITCH 48704 PROFESSIONAL ENGINEER

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

REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE:	NTS
DATE:	9/15/2020
DRAWN BY:	WD
CHECKED BY:	JS
JOB NO:	D01173-A

WATER DETAILS

PROJECT NO. D01173-A
DRAWING NO. 8
SHEET NO. 8 OF 12 SHEETS

PRELIMINARY NOT FOR CONSTRUCTION

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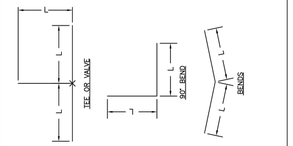
LENGTH OF TIED PIPE

PIPE SIZE		4"			6"			8"			12"			16"			20"			24"		
		D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
TEE OR VALVE PLUS 90° BEND	3/4"	6.0"	M.S.	3/4"	13.0"	M.S.	3/4"	20.0"	M.S.	3/4"	40.0"	M.S.	3/4"	60.0"	M.S.	1"	80.0"	M.S.	–	150.0	–
	1"	6.0"	M.S.	3/4"	13.0"	M.S.	3/4"	20.0"	M.S.	3/4"	40.0"	M.S.	3/4"	60.0"	M.S.	1"	80.0"	M.S.	–	150.0	–
90° BEND	3/4"	2.0"	M.S.	3/4"	4.0"	M.S.	3/4"	6.0"	M.S.	3/4"	11.0"	M.S.	3/4"	16.0"	M.S.	3/4"	24.0"	M.S.	–	45.0"	–
45° BEND	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	2.0"	M.S.	3/4"	3.0"	M.S.	3/4"	5.0"	M.S.	3/4"	6.0"	M.S.	–	12.0"	–
22–1/2° BEND	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	2.0"	M.S.	–	3.0"	–
11–1/4° BEND	3/4"	0.0"	M.S.	3/4"	0.0"	M.S.	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	1.0"	M.S.	3/4"	2.0"	M.S.	–	3.0"	–

NOTES:
1. LENGTH OF TIED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS AND RODS NOT ALLOWED FOR 24" AND LARGER PIPES.
3. D = DIAMETER, L = LENGTH, G = GRADE, M.S. = MILD STEEL, H.S. = HIGH STRENGTH
4. MINIMUM 4.5' GROUND COVER REQUIRED.
5. BASED ON 150 PSI INTERNAL PRESSURE.
6. M.S. MEANS MILD STEEL ROD A.S.T.M. STANDARD DESIGNATION A-36.
7. H.S. MEANS HIGH STRENGTH ROD A.S.T.M. STANDARD DESIGNATION A-193 GRADE B7.
8. NUTS SHALL BE A.S.T.M. STANDARD DESIGNATION A-307 GRADE A OR B HEXAGON HEAVY SERIES.
9. SEE TIE ROD DETAIL DRAWING, ALSO, TIE ROD COUPLING DETAILS, CLAMP DETAILS AND SET CLAMP DETAILS.
10. COUPLING ROD TURNBUCKLES, WHICH MUST BE TIED TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
11. STAR BOLTS NOT ALLOWED ON PIPE LARGER THAN 16".
12. MINIMUM OF 4 RODS REQUIRED ON 16" PIPE IF STAR BOLTS ARE USED.
13. TEES ARE TO BE ROODED ON BRANCH ONLY.



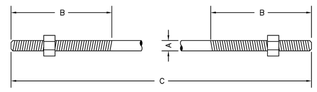
PARKER WATER & SANITATION DISTRICT

LENGTH OF TIED PIPE

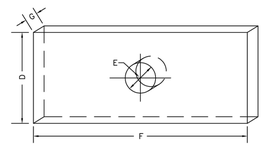
SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 4/01, 1/16, 10/16

2016 REVISION | SHEET W3.11



TIE ROD DETAIL



WASHER DETAIL

TIE RODS

A ROD DIAMETER	B THREAD LENGTH	C ROD LENGTH
3/4"	6"	1'-10 11" & 20"
1"	6"	1'-10 11" & 20"
1-1/4"	ALL THREAD	1'-10 11" & 20"

WASHERS

D WIDTH	E HOLE DIAMETER	F LENGTH	G THICKNESS
3"	7/8"	5"	1/4"
3"	1-1/8"	5"	1/4"
4"	1-3/8"	7"	5/8"

NOTES:
1. SEE TIED JOINTS ROD DIMENSIONS SHEET.
2. SEE CLAMP DETAILS AND DIMENSIONS (SHEET W3.15) FOR PROPER PLACEMENT OF WASHERS.

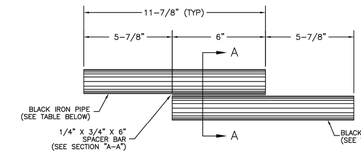
PARKER WATER & SANITATION DISTRICT

TIE ROD AND WASHER DETAILS

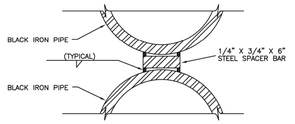
SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 1/16, 10/16

2016 REVISION | SHEET W3.12



TIE ROD COUPLING DETAIL



SECTION "A-A"

NOTE:
BLACK IRON PIPE = SCHEDULE 40.

ROD SIZE	PIPE DIAMETER
3/4"	1"
1"	1-1/4"
1-1/4"	1-1/2"

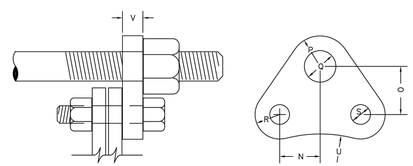
PARKER WATER & SANITATION DISTRICT

TIE ROD COUPLING

SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 1/16, 10/16

2016 REVISION | SHEET W3.13



FLANGE LUG DETAIL

DIMENSIONS (IN INCHES)

PIPE DIA.	N	O	H.S. ROD P	H.S. ROD Q	H.S. ROD ROD DIA.	M.S. ROD P	M.S. ROD Q	M.S. ROD ROD DIA.	R	S	U	V	PIPE DIA.
4	1-7/16	4	1	7/8	3/4	1	7/8	3/4	7/8	3/4	2-1/8	3/4	4
6	1-13/16	6	1	7/8	3/4	1	7/8	3/4	7/8	7/8	2-1/8	3/4	6
8	2-3/16	8	1	7/8	3/4	1	7/8	3/4	7/8	7/8	2-1/8	3/4	8
12	2-9/16	12	1-1/4	1-1/8	7/8	1-1/4	1-1/8	7/8	1-1/8	1"	2-1/8	7/8	12
16	3-1/16	16	1-1/4	1-1/8	7/8	1-1/4	1-1/8	7/8	1-1/4	1-1/8	2-1/8	1-1/8	16
20	3-31/32	20	1-1/4	1-1/8	1"	1-1/4	1-1/8	1"	1-1/16	1-1/4	2-1/8	1-1/4	20
24	ROODS AND CLAMPS NOT ALLOWED												24

NOTES:
1. M.S. MEANS MILD STEEL ROD A.S.T.M. STANDARD DESIGNATION A-36. (NUTS SHALL BE A.S.T.M. STANDARD DESIGNATION A-307 GRADE A OR B HEXAGON HEAVY SERIES).
2. H.S. MEANS HIGH STRENGTH STEEL ROD A.S.T.M. STANDARD DESIGNATION A-193 GRADE B7; (NUTS SHALL BE A.S.T.M. STANDARD DESIGNATION A-194 GRADE 2H).
3. FLANGE LUGS SHALL NOT BE USED ON VALVES.

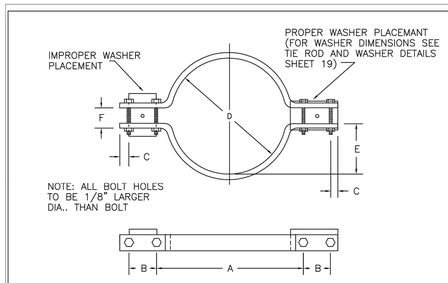
PARKER WATER & SANITATION DISTRICT

FLANGE LUG DETAIL

SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 1/16, 10/16

2016 REVISION | SHEET W3.14



CLAMP DETAILS

DIMENSIONS

TABLE OF DIMENSIONS FOR CLAMPS

PIPE DIA.	BAR SIZE	A BELL CLAMP	A BODY CLAMP	B BELL CLAMP	B BODY CLAMP	C BELL CLAMP	C BODY CLAMP	D BELL CLAMP	D BODY CLAMP	E BELL CLAMP	E BODY CLAMP	F BELL CLAMP	F BODY CLAMP	BOLT SIZES BELL CLAMP	BOLT SIZES BODY CLAMP	PIPE DIA.
4	1–1/2X1/2	9–3/4	7–1/2	3–1/2	3–1/2	1	1	6–3/4	4–7/8	2–3/4	1–13/16	1–1/4	1–1/4	3X1/2	2–1/2X3/8	4
6	2X1/2	13	9–1/2	4	4–1/2	2	2	10–1/4	7–1/8	4–1/8	2–15/16	2	1–1/4	3–1/2X1/2	3–1/2X1/2	6
8	2–1/2X1/2	15	12–3/4	4–3/4	4–1/2	1–1/4	1–1/2	12–1/4	9–1/4	5–1/8	4	2	1–1/4	4–1/2X1/2	4X1/2	8
12	2–1/2X5/8	17–1/2	16–5/8	4–5/8	4–3/4	1	1–1/4	14–1/2	13–1/2	6	5–1/2	2–1/2	2–1/2	4–1/2X5/8	4–1/2X5/8	12
16	3X3/4	24–1/2	21–7/8	4–1/2	4–3/4	1–1/2	1–1/2	19–3/4	17–1/2	8–3/8	7–1/2	3	2–1/2	5–1/2X5/8	5–1/2X5/8	16
20	3X3/4	30–1/2	25–5/8	4–1/2	4–3/4	1–1/2	1–1/2	24–3/4	21–3/4	10–7/8	9–1/2	3	2–3/4	5–1/2X5/8	5–1/2X5/8	20
24	RODS AND CLAMPS NOT ALLOWED															24

NOTE: ALL DIMENSIONS IN INCHES
CLAMPS MAY NOT BE USED ON PVC PIPE.

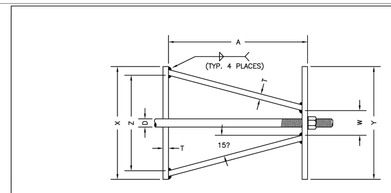
PARKER WATER & SANITATION DISTRICT

CLAMP DETAILS AND DIMENSIONS

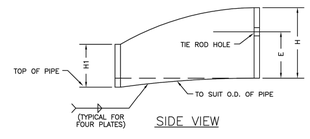
SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 12/07, 1/16, 10/16

2016 REVISION | SHEET W3.15



TOP VIEW



SIDE VIEW

HARNESS LUG DIMENSIONS

CARRIER PIPE NOMINAL DIA.	STUD DIA. D	A	W	Z	T	H	E	H1	Y	X
4" TO 16"	3/4"	5"	1–1/2"	3–3/4"	3/8"	4–1/8"	3–1/8"	2"	4–1/2"	5"
20"	1"	5–3/4"	1–3/4"	4–7/16"	3/8"	4–1/2"	3–1/4"	2"	5–1/4"	5–11/16"

NOTES:
1. USE TWO HIGH STRENGTH STEEL TIE RODS AT END OF CASING.
2. TIE ROD HOLE DIAMETER 1/8" LARGER THAN STUD DIAMETER.
3. BOTTOM EDGE OF ALL PLATES SHAPED TO FIT O.D. OF PIPE.

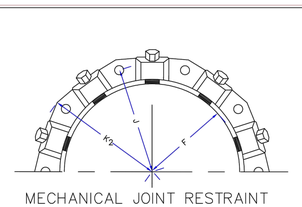
PARKER WATER & SANITATION DISTRICT

HARNESS LUG DETAILS

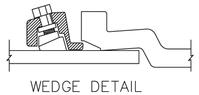
SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 1/16, 10/16

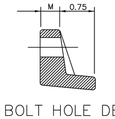
2016 REVISION | SHEET W3.16



MECHANICAL JOINT RESTRAINT



WEDGE DETAIL



BOLT HOLE DETAIL

	NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
P V C	4"	2	2					P V C
	6"	6	3	11.12	9.5	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
D I	4"	4	2					D I
	6"	6	3	11.12	9.5	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	

NOTES:
1. DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN.

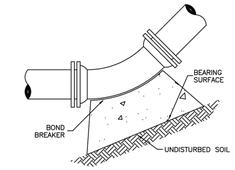
PARKER WATER & SANITATION DISTRICT

MECHANICAL JOINT RESTRAINT DETAILS

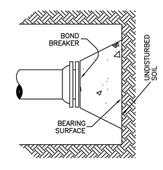
SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 2/00, 12/07, 1/16, 10/16

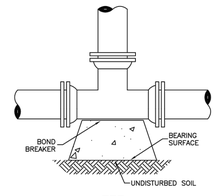
2016 REVISION | SHEET W3.17



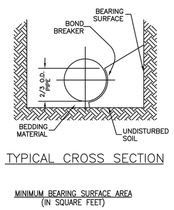
11–1/4°,22–1/2°,45° & 90° BENDS



DEAD END



TEE



TYPICAL CROSS SECTION

NOTES:
1. ALL VALVES, TEES, BENDS AND PLUGS SHALL BE RESTRAINED AND KICKBLOCKED.
2. BEARING SURFACES SHOWN IN CHART ARE MINIMUM.
3. BASED ON 150 PSI PIPE PRESSURE PLUS WATER HAMMER:
   4", 6" AND 8" WATER HAMMER = 120 PSI.
   12" WATER HAMMER = 110 PSI.
   16", 20" AND 24" WATER HAMMER = 70 PSI.
4. SOIL BEARING CAPACITY = 3,000 LBS./SQ. FT.

MINIMUM BEARING SURFACE AREA (IN SQUARE FEET)

SIZE OF PIPE	BENDS 11–1/4°	22–1/2°	45°	90°	TEE OR DEAD END
4"	1.00	1.00	1.00	1.80	1.50
6"	1.00	1.25	2.25	4.00	3.00
8"	1.00	2.00	4.00	7.50	5.25
12"	2.00	4.25	8.25	15.25	11.00
16"	3.50	8.50	12.50	23.00	16.50
20"	5.00	10.00	19.50	35.50	25.00
24"	6.50	13.00	26.00	47.00	33.00

PARKER WATER & SANITATION DISTRICT

CONCRETE KICKBLOCKS
BEARING SURFACES AND INSTALLATION

SCALE: NONE | DATE: 2/96

APPROVED: PVR, DIRECTOR OF ENGINEERING | 4/01, 1/16, 10/16

2016 REVISION | SHEET W3.18

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020
Tucson - San Diego - Riverside - Orange
Sacramento - San Luis Obispo - Phoenix
rickengineering.com
COLORADO LICENSED ROBERT K. FITCH 48704 PROFESSIONAL ENGINEER

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

REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE: NTS
DATE: 9/15/2020
DRAWN BY: WD
CHECKED BY: JS
JOB NO: D01173-A

WATER DETAILS

PROJECT NO. D01173-A
DRAWING NO. 9
SHEET NO. 9 OF 12 SHEETS

PRELIMINARY NOT FOR CONSTRUCTION

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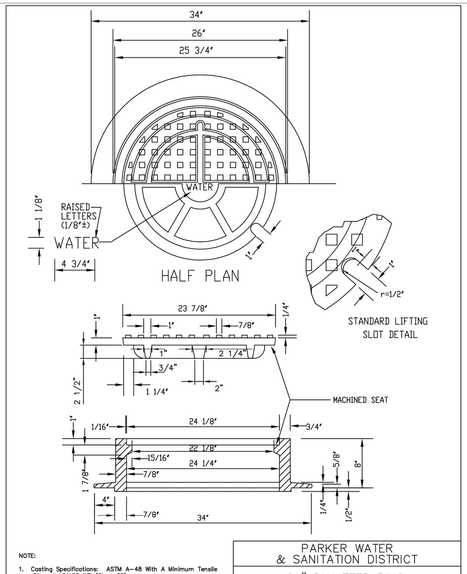


NOTE:

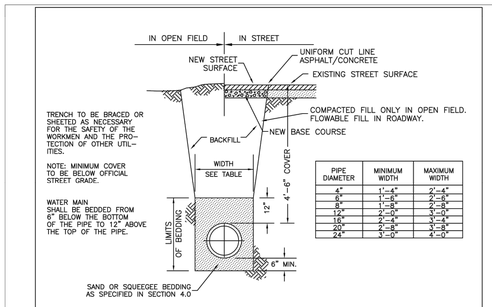
1. Casting Specifications: ASTM A-48 With A Minimum Tensile Strength Of 25 KSI (Class 25)
2. All Casting To Be Dipped In Asphalt Base Paint (Or Approved Equal).

PARKER WATER & SANITATION DISTRICT

24" DIAMETER RING AND COVER

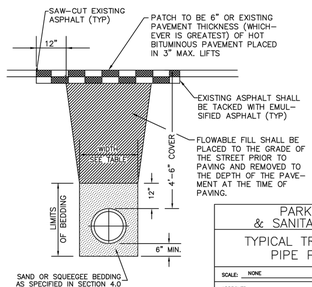
SCALE: NONE	DATE: 6/05
APPROVED: PVR DIRECTOR OF ENGINEERING	12/07 1/16 10/16

2016 REVISION — SHEET W3.19



PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-4"	2'-4"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	3'-0"	4'-0"

STANDARD TRENCH SECTION



STREET CUT PATCH

PARKER WATER & SANITATION DISTRICT

TYPICAL TRENCH SECTION PIPE PROTECTION

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	1/16 10/16

2016 REVISION — SHEET W4.1

PIPE BEDDING:

(a) Installation of Bedding and Pipe: After completion of the trench excavation and proper preparation of the foundation, six inches (6") of bedding material shall be placed on the trench bottom for support under the pipe. Bell holes shall be dug deep enough to provide a minimum of two inches (2") of clearance between the bell and bedding material. All pipe shall be installed in such a manner as to insure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade, and the joint is made, the bedding material shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

Tamping is herein defined as the act of placing approved bedding material under the haunches of the pipe, paying particular attention to voids, bell holes, and sling holes. The purpose of tamping is to ensure uniform support for the pipe.

The limits of bedding shall be from six inches (6") below the bottom of the pipe to twelve inches (12") above the top of the pipe. Approved backfill may then be installed to the groundline. See Chapter 2 of these Standards for backfill and compaction of backfill.

Compaction of bedding is not required. The only requirement is sufficient tamping to achieve uniform support under the pipe. See Sheet W4.1 of the Standard Details for a typical trench cross section.

(b) Bedding Material: The bedding material shall be a clean well-graded sand or squeegee sand and shall conform to the following limits when tested by means of laboratory sieves:

Well-Graded Sand for (24-inch or large diameter)

Sieve Size	Total Percent Passing by Weight
3/8 inch	100
No. 4	70–100
No. 8	36–93
No. 16	20–80
No. 30	8–65
No. 50	2–30
No. 100	1–10
No. 200	0–3

Squeegee Sand for use with 20-inch or smaller

Sieve Size	Total Percent Passing by Weight
3/8 inch	100
No. 200	0–3

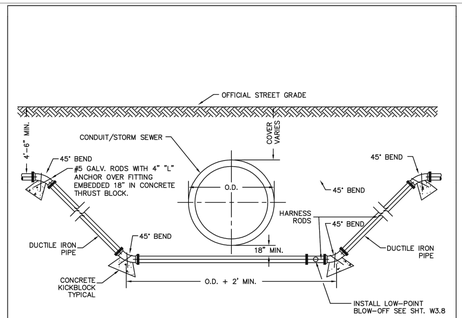
If approved by the District, fines form the trench walls and spoils pile may be used to provide uniform support for the pipe. No rock or stone larger than that allowed by the sieve analysis, or any other detrimental substance, shall be placed closer to the pipe than six inches (6"). Approved bedding materials shall be stockpiled on the jobsite to be used in the event natural materials become unsatisfactory. The District reserves the right to require the use of the specified bedding material at any time.

PARKER WATER & SANITATION DISTRICT

PIPE BEDDING

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	5/98 7/00 7/16 10/16

2016 REVISION — SHEET W4.2



NOTES:

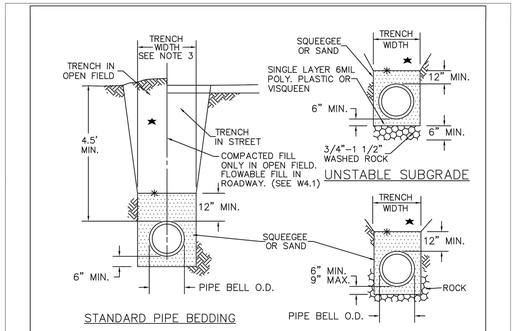
1. LENGTH OF EXTENSION OF PIPE AND HARNESS RODS SHALL BE IN ACCORDANCE WITH THESE ENGINEERING STANDARDS.
2. ALL WATER MAINS TWELVE (12") INCHES OR SMALLER, WHICH CROSS UNDER CONDUITS/STORM SEWER SHALL BE DUCTILE IRON OR PVC PER SPECIFICATIONS.
3. A BORED CROSSING MAY BE REQUIRED BY THE ENGINEER.
4. CONCRETE KICKBLOCKS PER SHEET W3.18.

PARKER WATER & SANITATION DISTRICT

CONDUIT OR STORM SEWER CROSSING

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	5/98 10/16 2/00 12/07 1/16

2016 REVISION — SHEET W4.6



STANDARD PIPE BEDDING

PIPE BEDDING IN ROCK

★ MACHINE COMPACTED TRENCH BACKFILL

✳ LIMIT OF SLOPING OR BENCHING OF TRENCH WALLS

UNDISTURBED GROUND

NOTES:

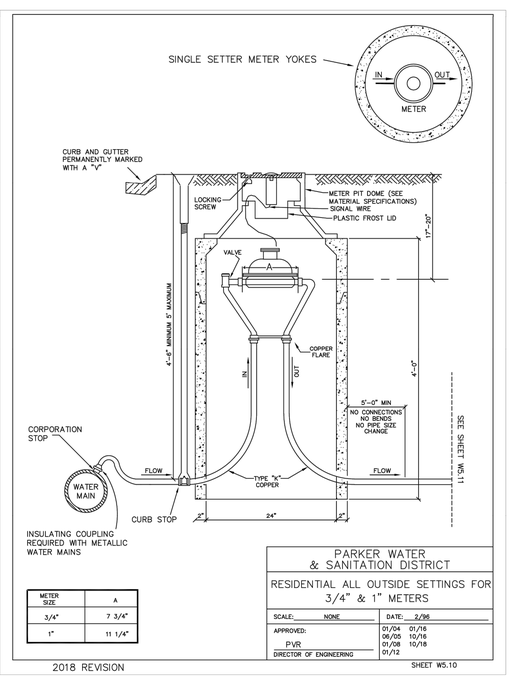
1. MIN.COVER TO BE BELOW FINAL STREET GRADE CONSTRUCTION OF WATER MAIN MAY NOT START UNTIL FINAL GRADE WITHIN 1 FOOT.
2. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE PROTECTION OF OTHER UTILITIES AND TO MEET OSHA SAFETY REQUIREMENT.
3. TRENCH WIDTH SHALL NOT BE MORE THAN 16" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE LAID THEREIN (BELL OR COUPLING O.D. IF APPLICABLE). REFER TO SHEET W4.1 FOR DIMENSIONS.

PARKER WATER & SANITATION DISTRICT

BEDDING DETAILS

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	1/16 10/16

2016 REVISION — SHEET W4.8



METER SIZE	A
3/4"	7 3/4"
1"	11 1/4"

PARKER WATER & SANITATION DISTRICT

RESIDENTIAL ALL OUTSIDE SETTINGS FOR 3/4" & 1" METERS

SCALE: NONE	DATE: 2/96
APPROVED: PVR DIRECTOR OF ENGINEERING	01/04 01/16 05/05 10/16 01/08 10/18 01/12

2018 REVISION — SHEET W5.10

WATER & SEWER IMPROVEMENT PLANS FOR

DOUGLAS 234

FILING NO. 6

DOUGLAS COUNTY, COLORADO

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020
Tucson - San Diego - Riverside - Orange
Sacramento - San Luis Obispo - Phoenix
rickengineering.com
COLORADO LICENSED ROBERT K. FITCH 48704 PROFESSIONAL ENGINEER

Know what's below. Call before you dig.

REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE:	NTS
DATE:	9/15/2020
DRAWN BY:	WD
CHECKED BY:	JS
JOB NO:	D01173-A

WATER DETAILS

PROJECT NO. D01173-A

DRAWING NO. 10

SHEET NO. 10 OF 12 SHEETS

PRELIMINARY NOT FOR CONSTRUCTION

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INSPECTION POLICY:

1. ALL SERVICE INSPECTIONS MUST BE SCHEDULED WITH THE DISTRICT OFFICE AT LEAST 24 HOURS IN ADVANCE OF THE REQUESTED INSPECTION.
2. IF THE CONTRACTOR IS NOT READY FOR INSPECTION WHEN THE INSPECTOR ARRIVES AT THE SITE, A RE-INSPECTION WILL HAVE TO BE SCHEDULED IN ACCORDANCE WITH NOTE 1 ABOVE AND A RE-INSPECTION FEE CHARGED.
3. SHOULD THE SERVICE LINES BE DAMAGED BY LATER CONSTRUCTION, AN INSPECTION OF THE REPAIR WILL BE REQUIRED IN ACCORDANCE WITH NOTES 1 AND 2 ABOVE.
4. THE CONTRACTOR SHALL LEAVE ALL PIPE AND FITTINGS EXPOSED FOR THE INSPECTOR TO OBSERVE. INSPECTORS WILL NOT ENTER ANY EXCAVATIONS TO CHECK MATERIALS. THE TOP LAYER OF BEDDING CAN BE ADDED AFTER THE INSPECTION HAS BEEN COMPLETED.
5. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH OSHA STANDARDS.
6. LOTS WITHOUT BULDING ADDRESSES OR LOT AND BLOCK NUMBERS BEFORE DISTRICT INSPECTION OR METER SET WILL FAIL AUTOMATICALLY.
7. CONTRACTOR MUST BE PRESSENT AT TIME OF INSPECTION UNLESS COORDINATED WITH DISTRICT INSPECTOR.

INSTALLATION NOTES:

SEWER

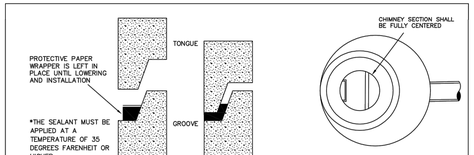
1. ACCEPTABLE PIPE MATERIALS ARE TO BE SDR 35 PVC PIPE, ABS PIPE AND PVC SCHD 40 PIPE. APPROVED BEDDING IS TO BE SQUEEGEE.
2. NO-HUB CLAMPS SHALL BE USED TO JOIN 2 MALE PIPE ENDS WITH A MAXIMUM DEFLECTION OF 3°.
3. MINIMUM GRADE SHALL BE 2%.
4. INSTALLATION SHALL INCLUDE NO MORE THAN 3 BENDS. 90° BENDS ARE NOT ALLOWED. SOLVENT WELDED PIPE WILL NOT BE ALLOWED.
5. CLEAN-OUTS SHALL BE INSTALLED AT 100' INTERVALS AND EVERY CHANGE IN DIRECTION. CLEAN-OUTS ARE NOT REQUIRED FOR SERVICES LESS THAN 100' UNLESS THERE ARE CHANGES IN DIRECTION. PROVIDE DUAL CLEAN-OUT WITHIN 5 FEET OF FOUNDATION.
6. STRESSING OF THE PIPE BETWEEN FITTINGS WILL NOT BE ALLOWED.
7. SEWER SERVICE LINE SHALL NOT BE LOCATED UNDER CONCRETE SURFACE.
8. ALL SERVICES WILL BE PERMANANTELY MARKED ON CURB FACE AS FOLLOWS:
   "X" FOR SANITARY SEWER SERVICE
   "V" FOR WATER SERVICES

PARKER WATER & SANITATION DISTRICT

DISTRICT POLICIES & INSTALLATION NOTES FOR SEWER SERVICES

SCALE: NONE	DATE: 2/96
APPROVED: PVR	01/02 10/16 1/08 1/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S1.1



NOTES:

1. RING/COVER AND CHIMNEY SHALL BE CENTERED ON CONCRETE RINGS W/RAMNECK.
2. FLAT TOP SECTIONS MAY BE USED IN LIEU OF ECCENTRIC MANHOLES WHEN SPECIFICALLY APPROVED BY DISTRICT ENGINEER.
3. FOR MANHOLE DEPTHS LESS THAN 4' FROM RIM TO TOP OF BENCH, VERTICAL MANHOLE BARRELS WITH PRECAST FLAT TOP SECTIONS ARE REQUIRED.
4. ALL PRECAST MANHOLE SECTIONS, FLAT TOPS, BARRELS, REDUCERS, ETC. SHALL CONFORM TO ASTM C-478, STANDARD SPECIFICATIONS FOR PRECAST RE-INFORCED MANHOLE SECTIONS.
5. FLAT TOPS SHALL BE CAPABLE OF WITH-STANDING H-20 LIVE LOADS.
6. ALL INTERIOR SEAMS AND PIN HOLES SHALL BE GROUTED WITH TYPE II CEMENT MIX.
7. SHAPING FOR SMOOTH MANHOLE INVERTS MUST BE DONE BY FORMING OR SHAPING CONCRETE BASE.
8. FLAT TOP SECTIONS WITH CONCENTRIC OPENINGS ARE NOT ALLOWED.
9. MANHOLE STEPS SHALL NOT BE IN-STALLED OVER THE FLOW CHANNEL. THEY SHALL BE PLACED 12" APART IN A VERTICAL ALIGNMENT WITH THE BOTTOM STEP 8" ABOVE THE BENCH MINIMUM.
10. FLEXIBLE PLASTIC SEALANT, (RAMNECK ETC.) IS REQUIRED IN SHIPLAP JOINTS AND IN JOINTS BETWEEN BASE, BARREL SECTIONS, CONE SECTIONS, FLAT TOPS, ETC.
11. DESIGN ENGINEER OR DISTRICT ENGINEER MAY INCREASE MANHOLE SIZE FOR SPECIAL DESIGN CONSIDER-ATIONS.
12. SLIP-RING FRAME RISERS MAY NOT BE USED.

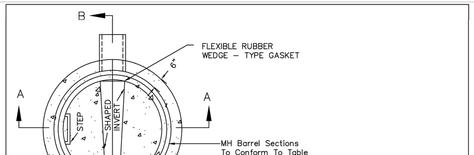
PIPE I.D.	MANHOLE I.D.
18" & SMALLER	4'-0"
21" TO 48"	5'-0"
54"	6'-0"
60" & LARGER	SPECIAL DESIGN

PARKER WATER & SANITATION DISTRICT

PARKER MANHOLE ECCENTRIC CONE

SCALE: NONE	DATE: 2/96
APPROVED: PVR	4/01 10/16 01/02 1/08 1/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S3.1



	a	b
48"	5'	b
60"	6'	b
72"	7'	b

SANITARY SEWER MH
PLAN (TYPE A)

SECTION A-A

SECTION B-B

NOTES:

1 Base slab shall be cast monolithic with the bottom riser section.
2 All pipe openings shall be formed with an approved flexible rubber wedge - type gasket conforming to A.S.T.M. C-443 which shall be capable of providing a water - tight joint with zero leakage around the installed pipe(s).
3 Manhole steps installed in the bottom riser section shall conform to PWSD Standards and Specifications.
4 Shiplap joint on manhole barrel riser shall conform to PWSD Standards and Specifications, however as an alternate a special adapter section may be provided at the first joint in the bottom riser section which will adapt the precast base section to PWSD standard manhole riser sections.
5 Grouted flow channels and inverts shall conform to PWSD Standards and Specifications. Manhole barrel min. diameter shall conform to table. Precast barrel sections to conform to A.S.T.M. C-478. All dead-end manholes shall be stubbed thru at 0.40% minimum slope.
9 Stub outs shall extend 2'-0" min past manhole O.D. and be satisfactorily plugged.
10 Slope of bench = 1/2"/Ft.-Max 1/4"/Ft.-Min.
11 △= Invert drop thru Manhole (If > 18", outside drop MH req'd)

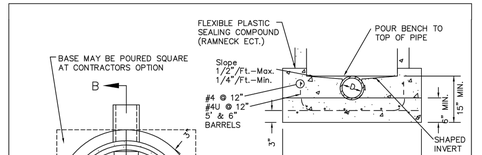
ATTENTION:
NOT TO BE USED WITHOUT EXPRESS PERMISSION OF DISTRICT ENGINEER.

PARKER WATER & SANITATION DISTRICT

PRECAST MANHOLE BASE DETAIL

SCALE: NONE	DATE: 2/96
APPROVED: PVR	01/02 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S3.4



SANITARY SEWER MH
PLAN (TYPE A)

NOTES:

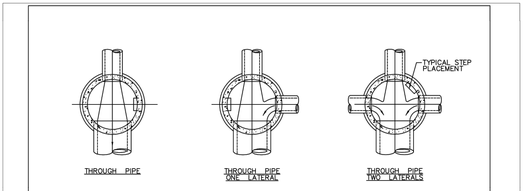
1. Manhole barrel min. thickness to be 5".
2. Shaping for smooth manhole inverts may be done by forming or shaping with cement mortar (San. Sewer).
3. The manhole steps shall conform to District Standards and Specifications.
4. Precast sections to conform to A.S.T.M C-478.
5. All dead-end manholes, that call out a stub out, shall be thru at 0.40% minimum slope.
6. Stub outs shall extend 2'-0" minimum past manhole O.D. and be satisfactorily plugged.
7. Reinforcing in base required for manhole.
8. Slope of bench = 1/2"/Ft.-Max. 1/4"/Ft.-Min.
9. △ = invert drop thru MH (if △ > 18", outside drop MH required). Min. 0.1' for all straight through MH and 0.2' for all angled MH.

PARKER WATER & SANITATION DISTRICT

CAST-IN-PLACE MANHOLE BASE DETAIL

SCALE: NONE	DATE: 2/96
APPROVED: PVR	01/02 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S3.5



NOTES:

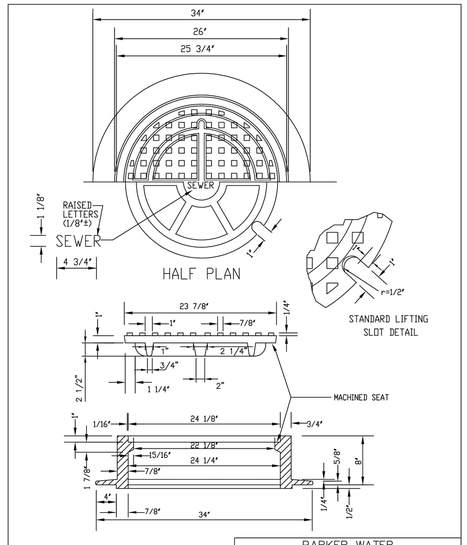
1. Manhole shall be coated using bituminous mastic (ramneck) or plastic sealing compound.

PARKER WATER & SANITATION DISTRICT

TYPICAL BASE CHANNELIZATION DETAILS

SCALE: NONE	DATE: 2/96
APPROVED: PVR	01/16 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S3.7



NOTE:

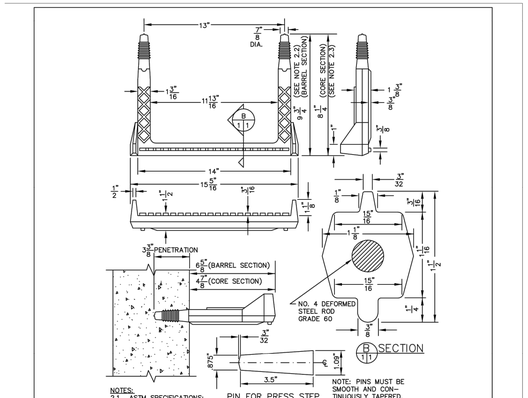
1. Casting Specifications: ASTM A-48 With A Minimum Tensile Strength Of 25 KSI (Class 25)
2. All Casting To Be Dipped In Asphalt Base Paint (Or Approved Equal).
3. No other manhole lids will be accepted without prior approval from the District Engineer.

PARKER WATER & SANITATION DISTRICT

24" DIAMETER RING AND COVER

SCALE: NONE	DATE: 2/96
APPROVED: PVR	01/16 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S3.9



NOTES:

2.1 ASTM SPECIFICATIONS:
a) ASTM C-478
b) ASTM A-615 GRADE 60 (STEEL ROD)
c) ASTM 2146-69, TYPE II, GRADE 16906 (POLYPROPYLENE)
2.2 STEPS INSTALLED IN MANHOLE BARREL SECTIONS OR VERTICAL WALLS OF STRUCTURE SHALL HAVE A 9-3/4 INCH LEG AND SHALL PROJECT FROM THE WALL 6-5/8 INCHES.
2.3 STEPS INSTALLED IN MANHOLE CONE SECTIONS SHALL HAVE AN 8-1/4 INCH LEG AND SHALL PROJECT FROM THE WALL 4-7/8 INCHES.
2.4 ALL STEPS SHALL HAVE A PENETRATION DEPTH INTO THE WALL OF 3-3/8 INCHES.
2.5 STEPS SHALL BE INSTALLED BY THE "PRESS-FIT" METHOD UTILIZING A SPECIALLY TAPERED PIN TO FORM THE INSERT HOLE AS SHOWN.
2.6 INSTALLED STEPS SHALL BE CAPABLE OF WITHSTANDING A PULL OUT FORCE OF 2500 P.S.I. PER LEG FOR A MINIMUM PERIOD OF TWO MINUTES.
2.7 STEPS SHALL BE INSTALLED BY THE "PRESS-FIT" METHOD EXCLUSIVELY FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURE AND SHALL NOT BE GROUTED IN PLACE.

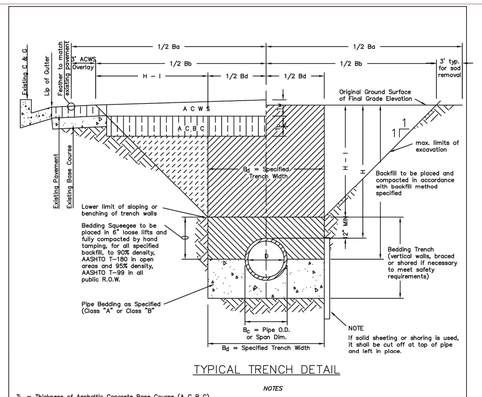
POLYPROPYLENE REINFORCED PLASTIC STEP

PARKER WATER & SANITATION DISTRICT

POLYPROPYLENE REINFORCED PLASTIC MANHOLE STEP

SCALE: NONE	DATE: 2/00
APPROVED: PVR	01/16 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S3.11



TYPICAL TRENCH DETAIL

T_b = Thickness of Asphaltic Concrete Base Course (A C B C)

T_w = Thickness of Asphaltic Concrete Wearing Surface (A C W S)

T_o = Total Asphalt Thickness (T_b + T_w)

B_c = Outside Pipe or Conduit Span Dimension

B_d = Specified Bedding Trench Width and Max Bedding Trench Width at a point 12" above Top of Pipe (See Note 2)

B_b = Max. Pay Width of Asphaltic Concrete Base Course (or Asphaltic Concrete Cold Mix) (See Note 3)

B_a = Max. Pay Width of Asphaltic Concrete Wearing Surface or Sod Replacement. (See Note 3)

H = Depth of Surface to Top of Pipe

H-I= Depth from Surface to 1 ft. above Top of Pipe

NOTES

1. *Sloping or benching of trench side walls, where permitted shall be in accordance with applicable Federal, State and Local safety regulations.*
2. *Trench shall be braced and shored as necessary to afford safe working conditions or to protect adjacent utilities, structures, etc., Unless otherwise specified on the plans, no pavement will be made for removal, replacement or relocation of curb and gutter, utilities, sidewalk, structures, etc. outside the maximum limits of excavation as shown and the contractor shall be responsible for protection of same.*
3. *If dimension "B_b" is ≤ 5', then existing asphalt pavement shall be removed and replaced up to the gutter. Maximum asphalt pay widths, B_b & B_a, shall then be based upon this actual width.*

TABLE II
ASPHALT AMD BASE COURSE REPLACEMENT SCHEDULE

STREET WIDTH	ASPHALTIC BASE COURSE (T_b)	ASPHALTIC WEARING SURFACE (T_w)	TOTAL THICKNESS (T_o)
UP TO 36'	4"	2"	6"
36' TO 44'	4"	3"	7"
44' TO 48'	5"	3"	8"
WIDER THAN 48'	6"	3"	9"

PARKER WATER & SANITATION DISTRICT

SEWER TRENCHING AND BEDDING DETAIL

SCALE: NONE	DATE: 2/96
APPROVED: PVR	5/98 1/16 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION — SHEET S4.1

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020
Tucson - San Diego - Riverside - Orange
Sacramento - San Luis Obispo - Phoenix
rickengineering.com

COLORADO LICENSED ROBERT K. FITCH 48704 PROFESSIONAL ENGINEER

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REVISIONS:

NO.	DESCRIPTION	DATE:
△	-	-

SCALE: NTS
DATE: 9/15/2020
DRAWN BY: WD
CHECKED BY: JS
JOB NO: D01173-A

SEWER DETAILS

PROJECT NO. D01173-A
DRAWING NO. 11
SHEET NO. 11 OF 12 SHEETS

PRELIMINARY NOT FOR CONSTRUCTION

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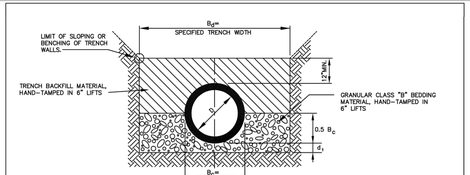
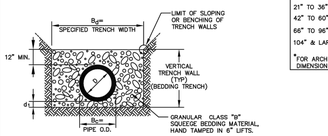


IDEAL TRENCH CONDITIONS
LARGER THAN 15" DIA.

TABLE IV MIN. DEPTH OF BEDDING MAT'L. BELOW BOTTOM OF PIPE	
PIPE SIZE–D"	d_1
18" & SMALLER	6"
21" TO 36"	6"
42" TO 60"	6"
66" TO 96"	9"
104" & LARGER	12"

*FOR ARCH OR ELLIPTICAL PIPE, D=SPAN DIMENSION



IDEAL TRENCH CONDITIONS
15" DIA. & SMALLER

B_d=SPECIFIED TRENCH WIDTH AT A POINT 12" ABOVE CROWN (MAX. ALLOWANCE)
B_c=PIPE O.D.
D =PIPE I.D. (OR SPAN DIMENSION FOR ARCH OR ELLIPTICAL PIPE.)
d =DEPTH OF BEDDING MATERIAL BELOW BOTTOM OF PIPE.

NOTES:
3.1 BELL HOLES SHALL BE EXCAVATED AT ALL BELL AND SPIGOT JOINTS.

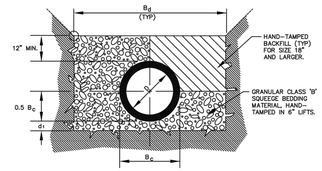
3.2 BEDDING TRENCH BACKFILL TO BE COMPACTED TO 90% DENSITY, AASHTO T-180 IN OPEN AREAS AND 95% DENSITY AASHTO T-99 IN ALL PUBLIC R.O.W.

CLASS 'B' BEDDING

GENERAL NOTES:
G-1 THESE DETAILS ARE TYPICAL FOR NORMAL TRENCH CONDITIONS. FOR INSTALLATIONS OTHER THAN THESE (SUCH AS EMBANKMENT OR TUNNEL INSTALLATIONS, ETC.) EXCAVATION, BEDDING AND BACKFILL REQUIREMENTS SHALL BE DETAILED ON THE CONSTRUCTION DRAWINGS. FOR UNUSUAL OR UNSTABLE SOIL CONDITIONS, TRENCH AND BEDDING DETAILS SHALL BE A SPECIAL DESIGN.

PARKER WATER & SANITATION DISTRICT	
TRENCHING AND BEDDING CLASS "B"	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	5/98, 2/00, 1/16, 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET S4.3



ROCK EXCAVATION

TABLE IV MIN. DEPTH OF BEDDING MAT'L. BELOW BOTTOM OF PIPE	
PIPE SIZE–D"	d_1
18" & SMALLER	6"
21" TO 36"	6"
42" TO 60"	6"
66" TO 96"	9"
104" & LARGER	12"

*FOR ARCH OR ELLIPTICAL PIPE, D=SPAN DIMENSION

B_d=SPECIFIED TRENCH WIDTH AT A POINT 12" ABOVE CROWN (MAX. ALLOWANCE)
B_c=PIPE O.D.
D =PIPE I.D. (OR SPAN DIMENSION FOR ARCH OR ELLIPTICAL PIPE.)
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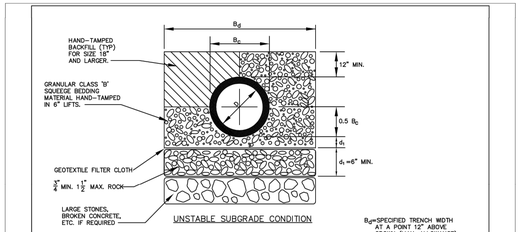
G-1 THESE DETAILS ARE TYPICAL FOR NORMAL TRENCH CONDITIONS. FOR INSTALLATIONS OTHER THAN THESE (SUCH AS EMBANKMENT OR TUNNEL INSTALLATIONS, ETC.) EXCAVATION, BEDDING AND BACKFILL REQUIREMENTS SHALL BE DETAILED ON THE CONSTRUCTION DRAWINGS. FOR UNUSUAL OR UNSTABLE SOIL CONDITIONS, TRENCH AND BEDDING DETAILS SHALL BE A SPECIAL DESIGN.

PARKER WATER & SANITATION DISTRICT	
TRENCHING AND BEDDING CLASS "B"	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	5/98, 2/00, 1/16, 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET S4.4



UNSTABLE SUBGRADE CONDITION

B_d=SPECIFIED TRENCH WIDTH AT A POINT 12" ABOVE CROWN (MAX. ALLOWANCE)
B_c=PIPE O.D.
D =PIPE I.D. (OR SPAN DIMENSION FOR ARCH OR ELLIPTICAL PIPE.)
d =DEPTH OF BEDDING MATERIAL BELOW BOTTOM OF PIPE.

NOTES:
3.1 BELL HOLES SHALL BE EXCAVATED AT ALL BELL AND SPIGOT JOINTS.

3.2 BEDDING TRENCH BACKFILL TO BE COMPACTED TO 90% DENSITY, AASHTO T-180 IN OPEN AREAS AND 95% DENSITY AASHTO T-99 IN ALL PUBLIC R.O.W.

TABLE IV MIN. DEPTH OF BEDDING MAT'L. BELOW BOTTOM OF PIPE	
PIPE SIZE–D"	d_1
18" & SMALLER	6"
21" TO 36"	6"
42" TO 60"	6"
66" TO 96"	9"
104" & LARGER	12"

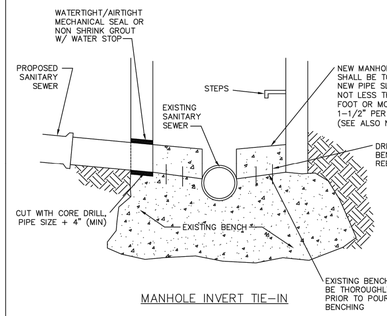
*FOR ARCH OR ELLIPTICAL PIPE, D=SPAN DIMENSION

CLASS 'B' BEDDING

GENERAL NOTES:
G-1 THESE DETAILS ARE TYPICAL FOR NORMAL TRENCH CONDITIONS. FOR INSTALLATIONS OTHER THAN THESE (SUCH AS EMBANKMENT OR TUNNEL INSTALLATIONS, ETC.) EXCAVATION, BEDDING AND BACKFILL REQUIREMENTS SHALL BE DETAILED ON THE CONSTRUCTION DRAWINGS. FOR UNUSUAL OR UNSTABLE SOIL CONDITIONS, TRENCH AND BEDDING DETAILS SHALL BE A SPECIAL DESIGN.

PARKER WATER & SANITATION DISTRICT	
TRECHING AND BEDDING CLASS "B"	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	5/98, 2/00, 1/16, 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET S4.5

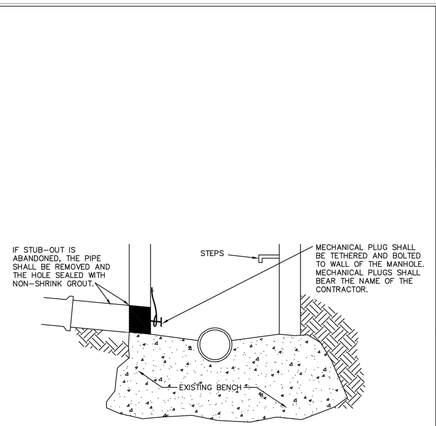


MANHOLE INVERT TIE–IN

NOTES
1 – NEW BENCH SHALL INCLUDE REINFORCEMENT TO CONTROL CONCRETE CRACKING.

PARKER WATER & SANITATION DISTRICT	
MANHOLE INVERT TIE–IN DETAIL	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	1/16, 10/16
DIRECTOR OF ENGINEERING	

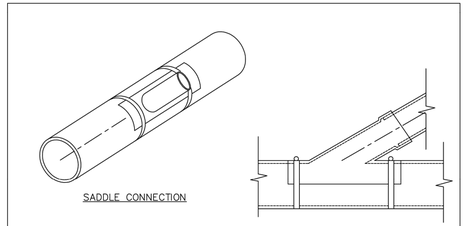
2016 REVISION SHEET S4.9



MANHOLE STUB–OUT DETAIL

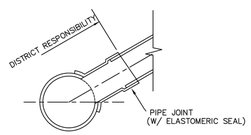
PARKER WATER & SANITATION DISTRICT	
MANHOLE STUB–OUT DETAIL	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	1/16, 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET S4.10

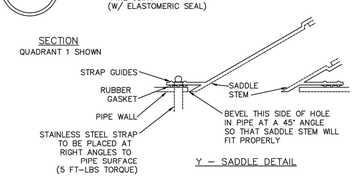


SADDLE CONNECTION

SIDE VIEW



SECTION
QUADRANT 1 SHOWN



Y – SADDLE DETAIL

NOTES:
1. SADDLE FITTINGS TO BE PER ASTM D3034.
2. CONNECTION SHALL BE Y – SADDLE WITH TWO BONDS

PARKER WATER & SANITATION DISTRICT	
P.V.C. SADDLE CONNECTION DETAIL	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	1/16, 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET S4.14

WATER & SEWER IMPROVEMENT PLANS FOR
DOUGLAS 234
FILING NO. 6
DOUGLAS COUNTY, COLORADO

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020
Tucson - San Diego - Riverside - Orange
Sacramento - San Luis Obispo - Phoenix
rickengineering.com

COLORADO LICENSED ROBERT K. FITCH 48704 PROFESSIONAL ENGINEER

Know what's below. Call before you dig.

REVISIONS:

NO.	DESCRIPTION	DATE:
1	-	-

SCALE: NTS
DATE: 9/15/2020
DRAWN BY: WD
CHECKED BY: JS
JOB NO: D01173-A

SEWER DETAILS

PROJECT NO. D01173-A
DRAWING NO. 12
SHEET NO. 12 OF 12 SHEETS

PRELIMINARY NOT FOR CONSTRUCTION

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