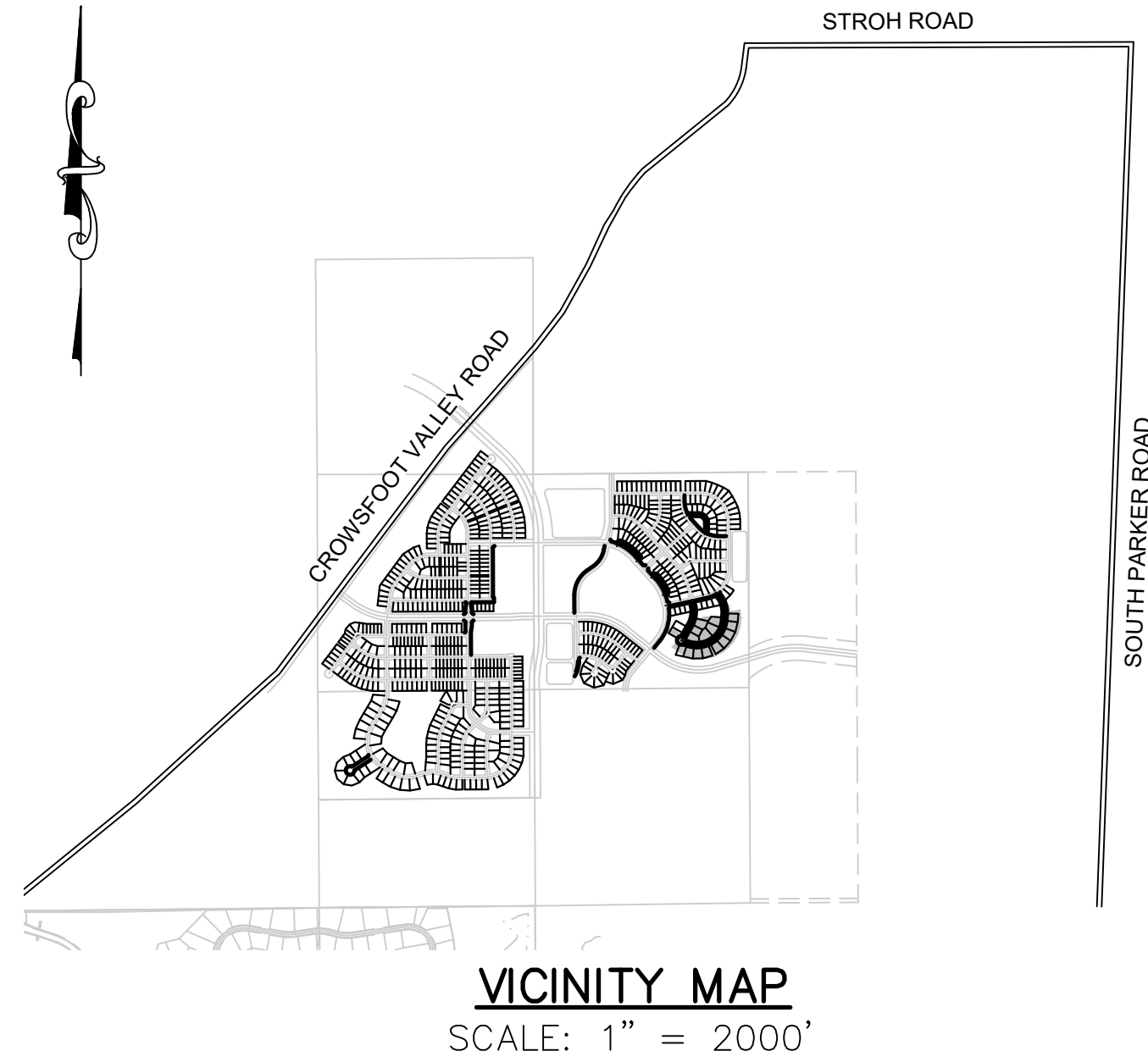


# TRAILS AT CROWFOOT FILING 12

## PARKER WATER AND SANITATION CONSTRUCTION PLANS

SECTIONS 4, 8, AND 9 TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN COUNTY OF DOUGLAS, STATE OF COLORADO

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3	AREA UTILITY PLAN
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5	SANITARY P&P BEEBALM LOOP
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8	SANITARY SEWER DETAIL
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15	WATER DETAILS
16	WATER DETAILS
17	WATER DETAILS



MATERIALS LIST		
DESCRIPTION	QUANTITY	UNIT
8" SEWER (PVC)	1,266	L.F.
4" DIA. MANHOLE	9	EA.
4" SEWER SERVICE	18	EA.
CONNECTION TO EXISTING MAIN	1	EA.
6" WATERPIPE (DIP)	40	L.F.
8" WATERPIPE (PVC)	1,494	L.F.
6" GATE VALVE	2	E.A.
8" GATE VALVE	2	EA.
8" MISC. FITTINGS	14	EA.
2" BLOW OFF VALVE (8" LINE-LOW POINT)	1	EA.
FIRE HYDRANT WITH 6" LEAD	2	EA.
DOMESTIC WATER SERVICE	18	EA.
CONNECTION TO EXISTING MAIN	2	EA.

### 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 THE TOWN OF PARKER, COMMUNITY DEVELOPMENT DEPARTMENT.

*[Signature]* 07/08/2021  
FIRE CODE OFFICIAL OR DESIGNATED REPRESENTATIVE DATE

(NOTE - UNDERGROUND FIRE LINE (UFL) SUBMITTAL DOCUMENTS MUST MEET THE REQUIREMENT OF NFPA 24 WHEN SUBMITTING FOR REVIEW.

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 SCHEDULED 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.

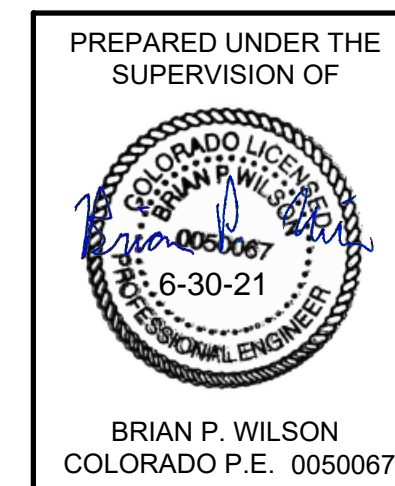
BY: *[Signature]*  
(DISTRICT REPRESENTATIVE)

DATE SIGNED: **07/19/2021**

APPROVED FOR CONSTRUCTION:  
PARKER WATER AND SANITATION DISTRICT

BY: *[Signature]*  
(DISTRICT ENGINEER)

DATE SIGNED: **07/19/2021**



**BENCHMARK**  
DOUGLAS COUNTY CONTROL POINT KNOWN AS 1.060032, BEING A 3-1/4" ALUMINUM CAP, BEING LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, HAVING A PUBLISHED ELEVATION OF 1799.2870 METERS (5903.13 FEET) NAVD '88 DATUM.

**BASIS OF BEARINGS:**  
THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 9 BEING MONUMENTED AT THE NORTHEAST CORNER OF SAID SECTION 9 BY A 3-1/4" ALUMINUM CAP STAMPED LS 23053 AND AT THE EAST QUARTER CORNER OF SAID SECTION 9 BY A 2-1/2" ALUMINUM CAP STAMPED LS 6935 BEING CONSIDERED TO BEAR SOUTH 00°15'06" EAST, 2648.70 FEET.

### DEVELOPER

HR 935 LLC  
7353 SOUTH ALTON WAY  
CENTENNIAL, CO 80112  
TEL: (303) 770-9111  
CONTACT: MATT JANKE

### PLANNER/ LANDSCAPE DESIGNER:

PCS GROUP, INC.  
200 KALAMATH STREET  
DENVER, CO 80233  
TEL: (303) 531-4905  
CONTACT: JOHN PRESTWICH

### SURVEYOR/ ENGINEER:

CVL, A WESTWOOD TEAM  
10333 E. DRY CREEK RD. STE 240  
ENGLEWOOD, CO 80112  
TEL: (720) 482-9526  
CONTACT: JIM JANNICKE

### UTILITY DISTRICT

PARKER WATER AND  
SANITATION DISTRICT  
18100 E. WOODMAN DRIVE  
PARKER, CO 80134  
TEL: (303) 841-4627

N:\PROJECTS\HR 935\HR 935\SET\CD\SET\2\PARKER WATER AND SANITATION\F12 COVER.DWG, RHC\CVL.DWG, 6/17/2021 9:36 AM

CALL 811  
TWO WORKING DAYS  
BEFORE YOU DIG  
**UNCC**  
1-800-922-1987  
UTILITY NOTIFICATION  
CENTER OF COLORADO

SHEET NUMBER	DRAWN BY:	KJD	CHECKED BY:	JUU	DATE:	SEPTEMBER 2017	SCALE:	AS SHOWN	FILE NO:	8130283701	TRAILS AT CROWFOOT FILING 12 CONSTRUCTION DRAWINGS COVER SHEET	HR 935 LLC 7353 South Alton Way CENTENNIAL, CO 80112		10333 E. Dry Creek Rd Suite 240 Englewood, CO 80112 Tel: 720.482.9526 www.cvlinc.net westwoodpa.com	Revisions	No.	Appr.	Date

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**GENERAL NOTES**

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE PWSD ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST VERSION.
- 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.
- 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.
- PWSD ENGINEER AND OTHER APPROVING AGENCIES ARE TO BE NOTIFIED 48 HOURS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL OBTAIN, AT HIS EXPENSE, ALL PERMITS NECESSARY TO PERFORM THE PROPOSED WORK.
- ALL CONCRETE SHALL BE A MINIMUM OF CLASS A, 6 SACK, TYPE II, 3000-POUND COMPRESSION STRENGTH.
- 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 SIZE PRINTS SHALL BE TRANSMITTED TO THE PWSD OFFICE.
- 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.
- TRENCHES SHALL BE EXCAVATED AND THE PIPE EXPOSED FOR THE INSPECTION AT ANY LOCATION ON THE PROJECT IF SO ORDERED BY THE INSPECTOR.
- 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 THE 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 EXPENSE TO THE DISTRICT.
- 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 MUST BE SUBMITTED TO THE DISTRICT ENGINEER.
- ALL SERVICES WILL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:  
"X" FOR SANITARY SERVICE SEWERS  
"V" FOR WATER SERVICES
- NO TREES ALLOWED IN EASEMENTS OR WITHIN 8' OF WATER OR SANITARY SEWER MAINS IN RIGHT OF WAY.
- 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**

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE PWSD ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST REVISION.
- ALL WATER MAINS SHALL BE PER PWSD MATERIALS SPECIFICATIONS. ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL BE SUITABLE FOR CHLORINATED AND CHLORAMINATED WATER.
- ALL BENDS, PLUGS, REDUCERS, AND FIRE HYDRANTS TO BE RODDED OR MEGA-LUGGED. ALL FITTINGS SHALL BE WRAPPED PER PWSD MATERIALS SPECIFICATIONS.
- THERE SHALL BE A MINIMUM COVER OF 4.5 FEET OVER ALL WATER MAINS.
- FIRE HYDRANTS SHALL CONFORM TO AWWA C-502 "DRY BARREL FIRE HYDRANTS" PIPE HYDRANT ASSEMBLIES PER PWSD SPECIFICATIONS.
- ALL BENDS, TEES, FIRE HYDRANTS, BLOW-OFFS, AND PLUGS AT DEAD-END MAINS SHALL BE PROTECTED FROM THRUST WITH CONCRETE THRUST BLOCKS.
- 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.
- 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.
- 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.
- 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.
- PIPE BEDDING SHALL BE A CLEAN, WELL-GRADED SAND OR SQUEEGEE SAND IN ACCORDANCE WITH PWSD STANDARDS AND SPECIFICATIONS, LATEST REVISION.
- 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.
- COMPACTION OF ALL TRENCHES MUST BE ATTAINED IN ACCORDANCE WITH THE SOILS REPORTS AND COMPACTION TEST RESULTS SUBMITTED TO THE DISTRICT ENGINEER PRIOR TO PROBATIONARY ACCEPTANCE.
- 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.
- CHLORINATION AND FLUSHING: ALL WATER MAINS SHALL BE INSTALLED AND CHLORINATED PER PWSD SPECIFICATIONS. CHLORINATION OF FINISHED PIPELINE COMPLETED BEFORE HYDROSTATIC TESTING.
- 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 NOTES**

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE PWSD ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST VERSION.
- ALL SEWER MAINS SHALL BE PVC, ASTM D-3034, SDR 35 OR APPROVED EQUAL. ALL SEWER MAIN SIZE IS 8" IN DIAMETER UNLESS OTHERWISE NOTED.
- SEWER LINES SHALL BE INSTALLED 5.0 FEET SOUTH OR WEST OF STREET CENTERLINE, UNLESS OTHERWISE SHOWN ON PLANS. SEWER LINES SHALL BE 10.00 FEET FROM WATER LINES EXCEPT WHEN CROSSING EACH OTHER. 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 ENCASMENT.
- 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.
- 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. NO UNDERDRAIN SYSTEM WILL BE ALLOWED TO BE PLACED IN MAINLINE OR SEWER SERVICE TRENCHES.
- SEWER SERVICE TEES FOR EACH UNIT SHALL BE STAKED BY A SURVEY CREW AND FURNISHED AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER "AS CONSTRUCTED" LOCATION OF TEES. SEWER WYES SHALL BE USED RATHER THAN TEES.
- 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.
- PIPE BEDDING SHALL BE CLASS "B" AND SHALL CONFORM TO ASTM C-33 OR D-448 GRADATION NO. 6 OR NO. 67.
- 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.
- 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.
- 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.
- 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.
- PRIOR TO PROBATIONARY ACCEPTANCE WALK-THROUGH, THE CONTRACTOR SHALL JET CLEAN THE ENTIRE SANITARY SEWER SYSTEM AND PUMP OUT AT THE PLUGGED MANHOLE.

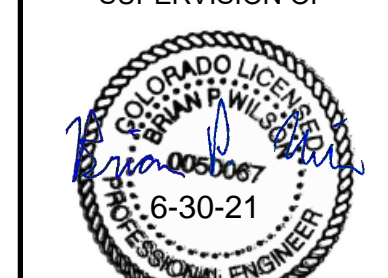
CALL 811  
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1-800-922-1987



**BENCHMARK**  
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PREPARED UNDER THE SUPERVISION OF



BRIAN P. WILSON  
COLORADO P.E. 0050067

**APPROVED**  
Jul 19 2021  
PARKER WATER AND  
SANITATION DISTRICT

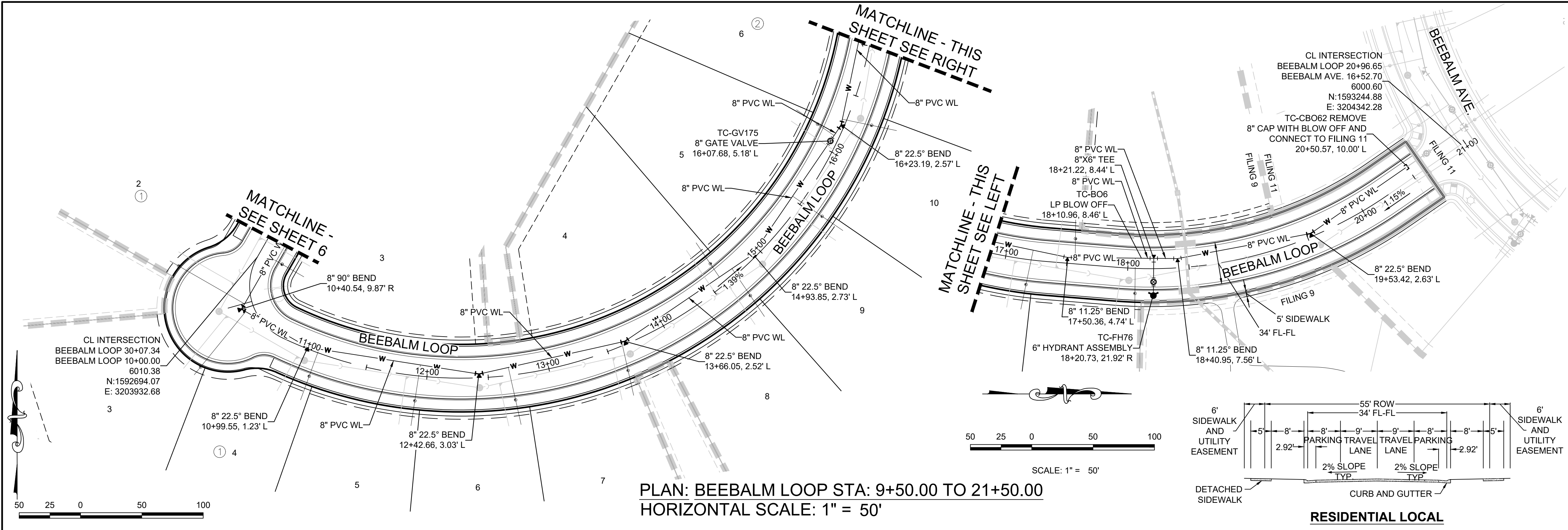
SHEET NUMBER	DRAWN BY: KJD	CHECKED BY: JU	DATE: SEPTEMBER 2017	SCALE:	AS SHOWN	FILE NO:	8130283701	
				TRAILS AT CROWFOOT FILING 12 CONSTRUCTION DRAWINGS PARKER WATER AND SANITATION NOTES				
IHR 935 LLC 7353 South Alton Way CENTENNIAL, CO 80112				10333 E. Dry Creek Rd Suite 240 Englewood, CO 80112 Tel: 720.482.952 www.cvlinc.net westwoodjpa.com				
								
Revisions				No.	Date	Init	Appr.	Date



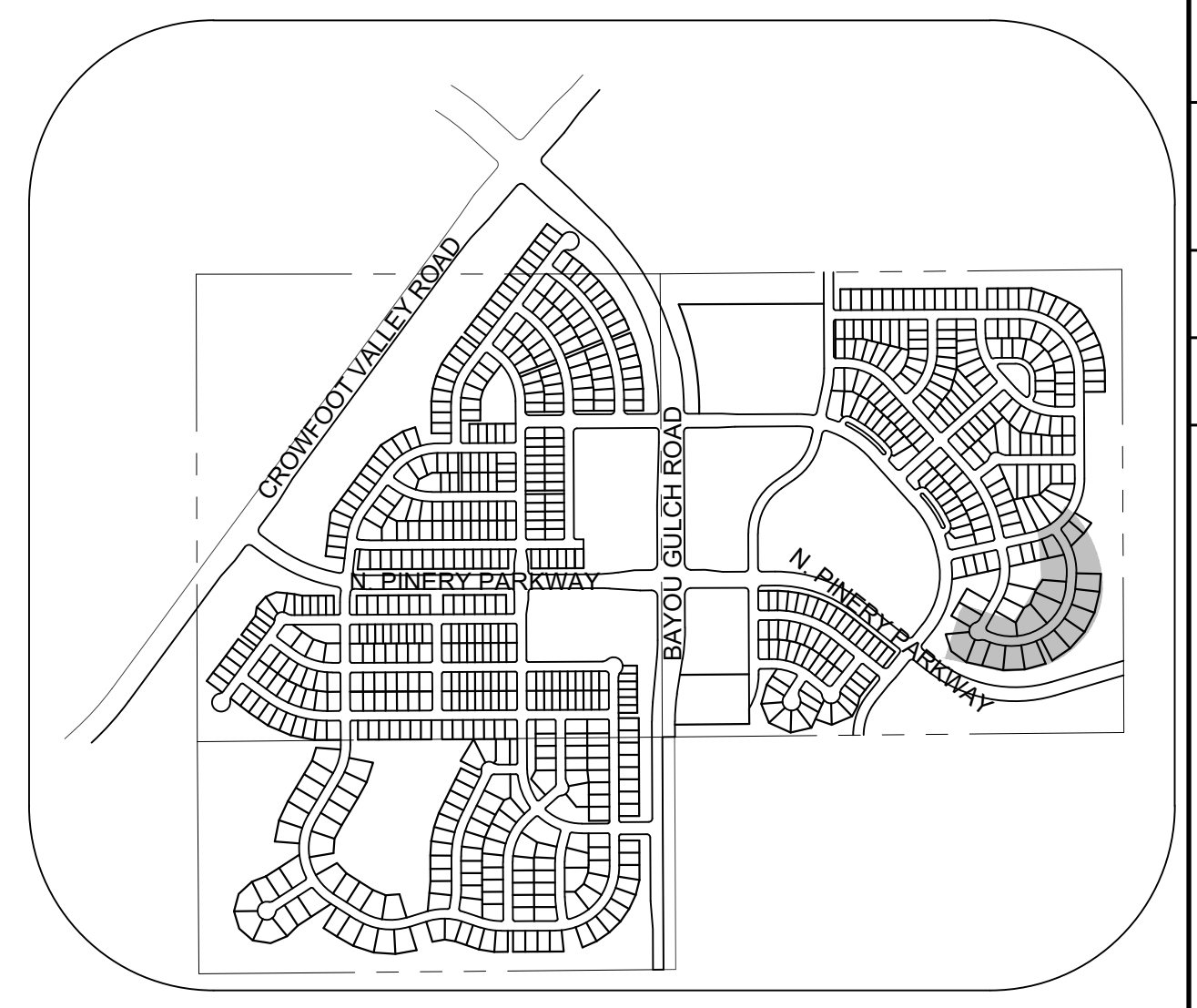








PLAN: BEEBALM LOOP STA: 9+50.00 TO 21+50.00  
HORIZONTAL SCALE: 1" = 50'

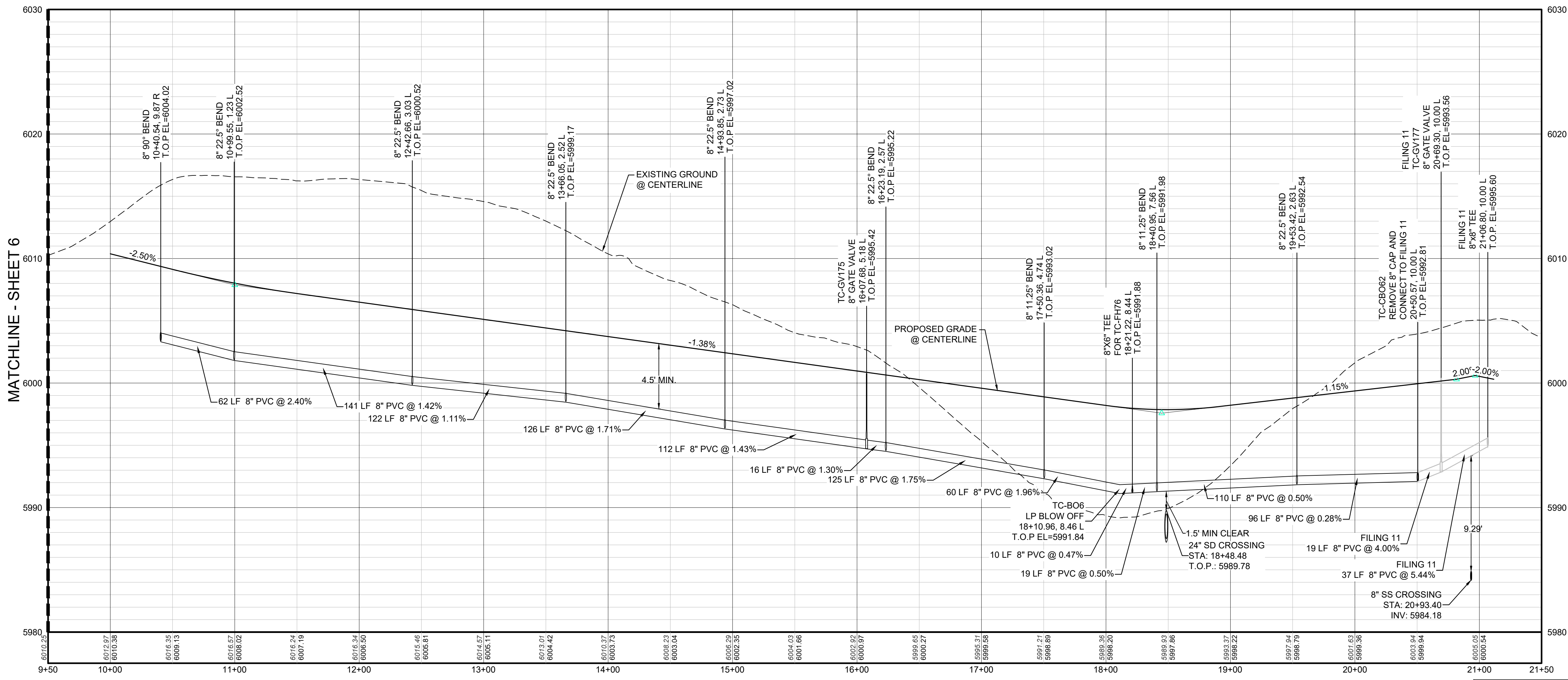


KEYMAP  
N.T.S.  
LEGEND

②	BLOCK NUMBER	△	PROPOSED RANGE POINT
Ⓐ	LOT TYPE	---	CENTERLINE
6	LOT NUMBER	---	RIGHT-OF-WAY
⊕	PROPOSED BUTTERFLY VALVE	---	PROPERTY LINE
⊞	PROPOSED CAP WITH END OF LINE BLOWOFF	---	EDGE OF PAVEMENT
⊟	PROPOSED REDUCER	→	PROPOSED DIRECTION OF FLOW
⊠	PROPOSED VALVE	1.0%	PROPOSED SLOPE & DIRECTION
⊡	PROPOSED FIRE HYDRANT	5615	EXISTING 5' CONTOUR
⊢	PROPOSED WL FITTING WITH THRUST BLOCK	5616	EXISTING 1' CONTOUR
⊣	PROPOSED FLARED END SECTION	5620	PROPOSED 5' CONTOUR
⊤	PROPOSED LOW POINT BLOW-OFF	5607	PROPOSED 1' CONTOUR
⊥	PROPOSED AIR VALVE	---	PROPOSED STORM DRAIN
⊦	FUTURE PHASE VALVE	---	PROPOSED SEWER LINE WITH MANHOLE
⊧	FUTURE FIRE HYDRANT	---	PROPOSED SEWER LATERAL
⊨	PROPOSED LIGHT POLE	---	PROPOSED WATER LINE
⊩	PROPOSED SIDEWALK	---	PROPOSED WATER LATERAL W/ METER
⊪	PROPOSED SIDEWALK RAMP	---	SECTION LINE
10.00	EXISTING ELEVATION	---	FILING BOUNDARY
10.00	PROPOSED DESIGN ELEVATION	---	EXISTING FIBER
⊫	PROPOSED STORM DRAIN INLET	---	OPTIC LINE
⊬	PROPOSED STORM DRAIN MANHOLE	---	EXISTING OVERHEAD POWER
⊭		---	EXISTING TELEPHONE LINE
⊮		---	PWSD EASEMENT
⊯		---	TYP. EASEMENT

AD	ANGLE DIFFERENCE	MH	MANHOLE
AV	AIR VAC RELEASE VALVE	N.T.S.	NOT TO SCALE
BVC	BEGIN VERTICAL CURVE	PVC	POLYVINYL CHLORIDE
BVP	BEGIN VERTICAL PROFILE	PVI	PT. OF VERTICAL INTERSECTION
CBO	CAP WITH BLOW OFF	PVT	POINT OF VERTICAL TANGENT
CRR	CURB RETURN RADIUS	RCBC	REINFORCED CONCRETE BOX CULVERT
EL	ELEVATION	RCP	REINFORCED CONCRETE PIPE
EP	EDGE OF PAVEMENT	ROW	RIGHT OF WAY
EVC	END VERTICAL CURVE	SC	SANITARY CAP
EVP	END VERTICAL PROFILE	SD	STORM DRAIN
FG	FINISHED GROUND	SL	SECTION LINE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	STA	STATION
GV	GATE VALVE	T.O.P.	TOP OF PIPE
HCR	HANDICAP CURB RAMP	UE	UTILITY EASEMENT
HP	HIGH POINT	VC	VERTICAL CURVE
INV	INVERT	WL	WATER LINE
K	CURVATURE COEFFICIENT	WLC	WATER LINE CONNECTION
LF	LINEAR FEET	WSE	WATER SURFACE ELEVATION

1. SEE SHEET 3 FOR WATER SERVICE TABLES



PROFILE: BEEBALM LOOP STA: 9+50.00 TO 21+50.00  
HORIZONTAL: 1" = 50'  
VERTICAL: 1" = 5'

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PREPARED UNDER THE SUPERVISION OF  
  
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**APPROVED**  
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PARKER WATER AND  
SANITATION DISTRICT

SHEET NUMBER	7	DRAWN BY:	RHR	CHECKED BY:	JU	DATE:	SEPTEMBER 2017	SCALE:	AS SHOWN	FILE NO.:	8130283701	TRAILS AT CROWFOOT FILING 12 CONSTRUCTION DRAWINGS WATER PLAN & PROFILE BEEBALM LOOP	HR 935 LLC 7353 South Alton Way CENTENNIAL, CO 80112	 10333 E. Dry Creek Rd Suite 240 Englewood, CO 80112 Tel: 720.482.952 www.cvlinc.net westwoodjps.com
	Revisions		No.		Date		Int.		Appr.		Date			

**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 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.

**INSTALLATION NOTES:**

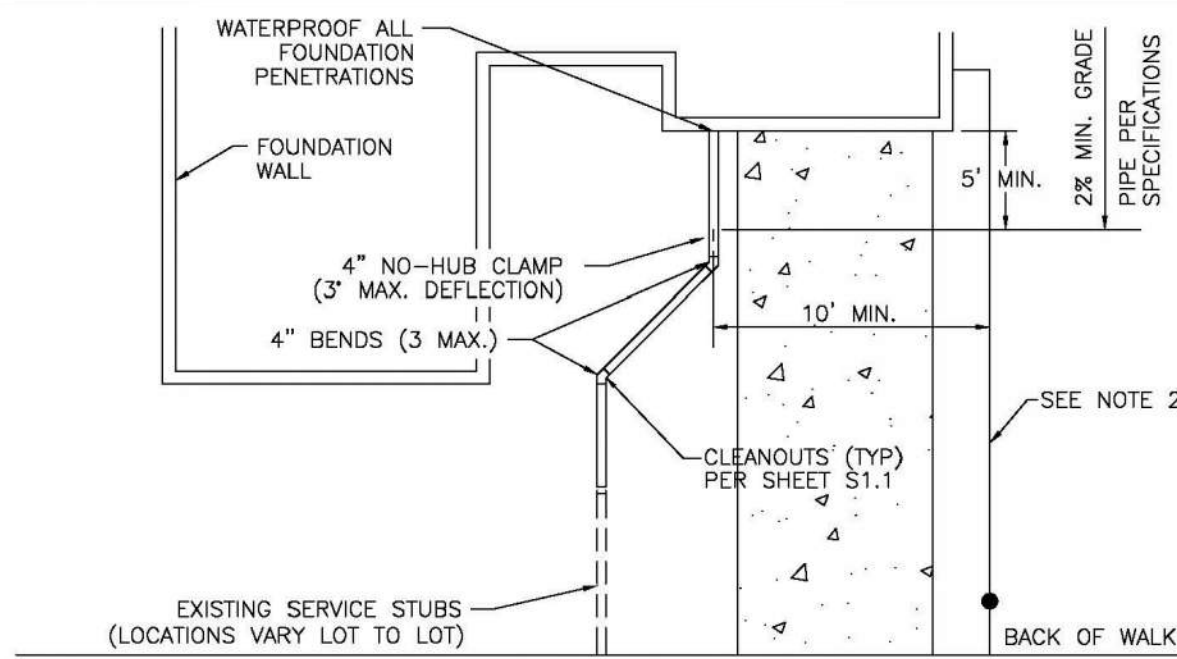
- SEWER**
1. ACCEPTABLE PIPE MATERIALS ARE TO BE SDR 35 PVC PIPE, ABS PIPE AND PVC SCHD 40 PIPE. APPROVED BEDDING IS TO BE SQUEEGEE.
  2. NO-HUB CLAMPS SHALL BE USED TO JOIN 2 MALE PIPE ENDS WITH A MAXIMUM DEFLECTION OF 3".
  3. MINIMUM GRADE SHALL BE 2%.
  4. INSTALLATION SHALL INCLUDE NO MORE THAN 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 PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:  
 \* FOR SANITARY SEWER SERVICE  
 \*\* FOR WATER SERVICES

**PARKER WATER & SANITATION DISTRICT**  
**DISTRICT POLICIES & INSTALLATION NOTES FOR SEWER SERVICES**

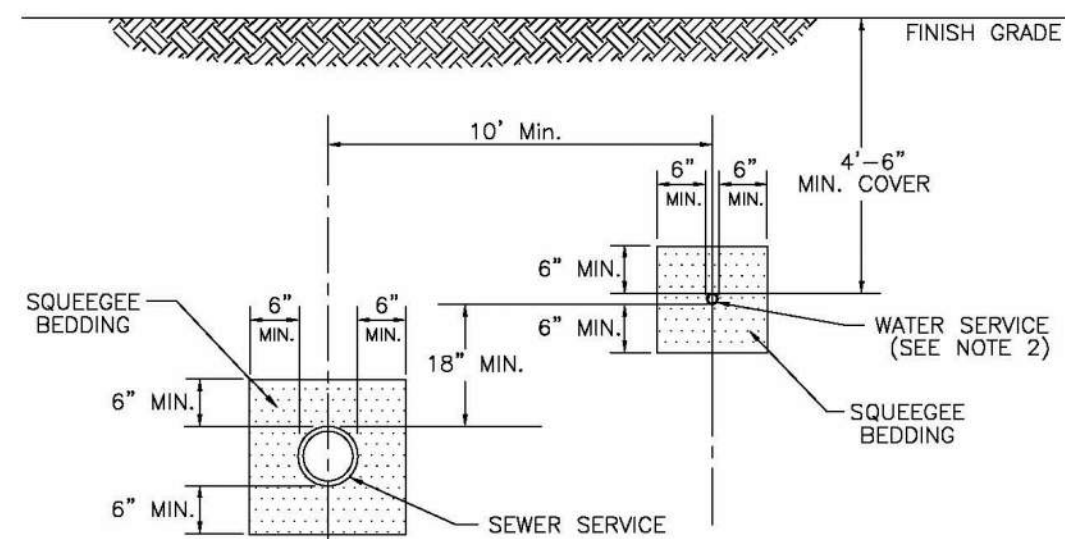
SCALE:	NONE	DATE:	2/96
APPROVED:	PVR	01/02	10/16
		1/08	1/16
DIRECTOR OF ENGINEERING			

2016 REVISION

SHEET S1.1



TYPICAL SERVICES PLAN VIEW



TYPICAL SERVICES SECTION

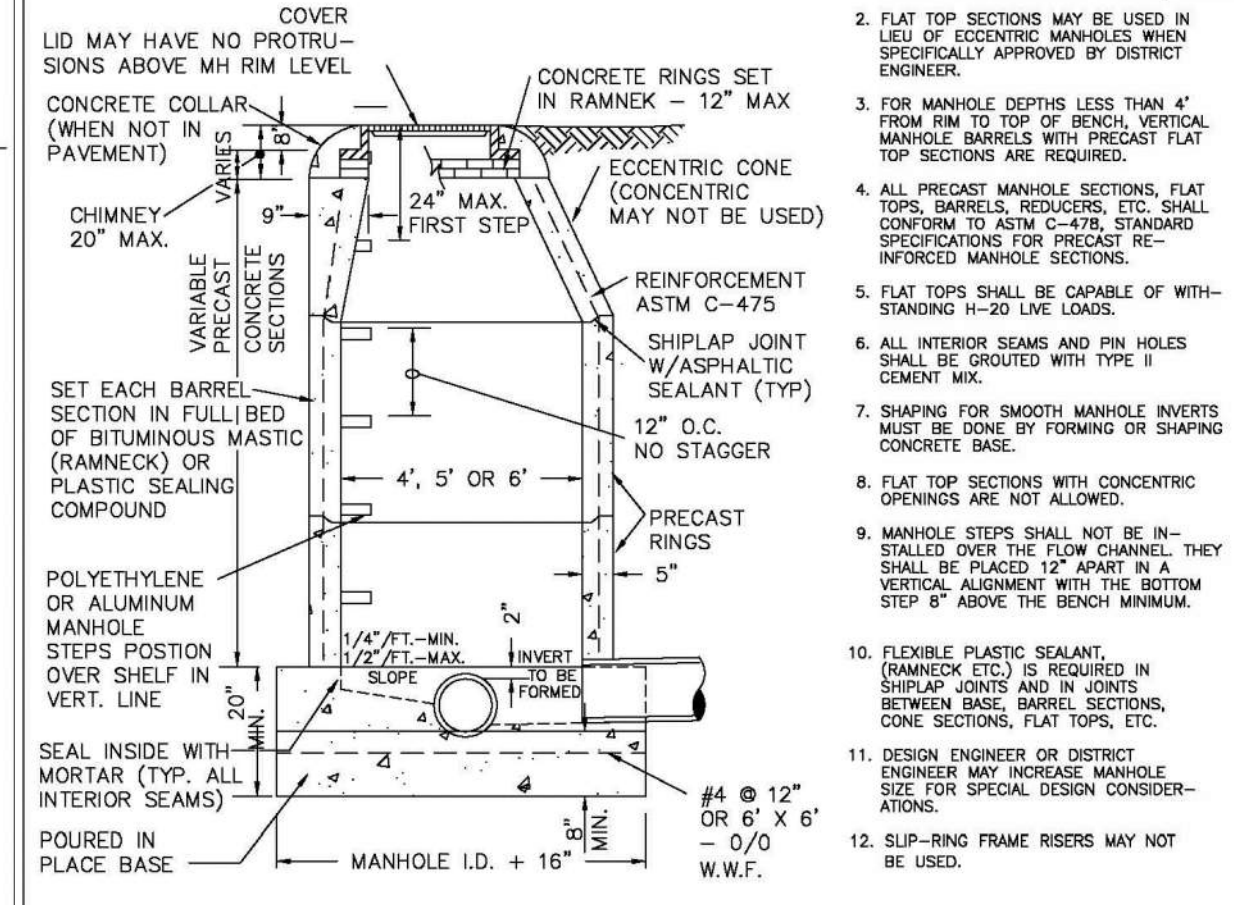
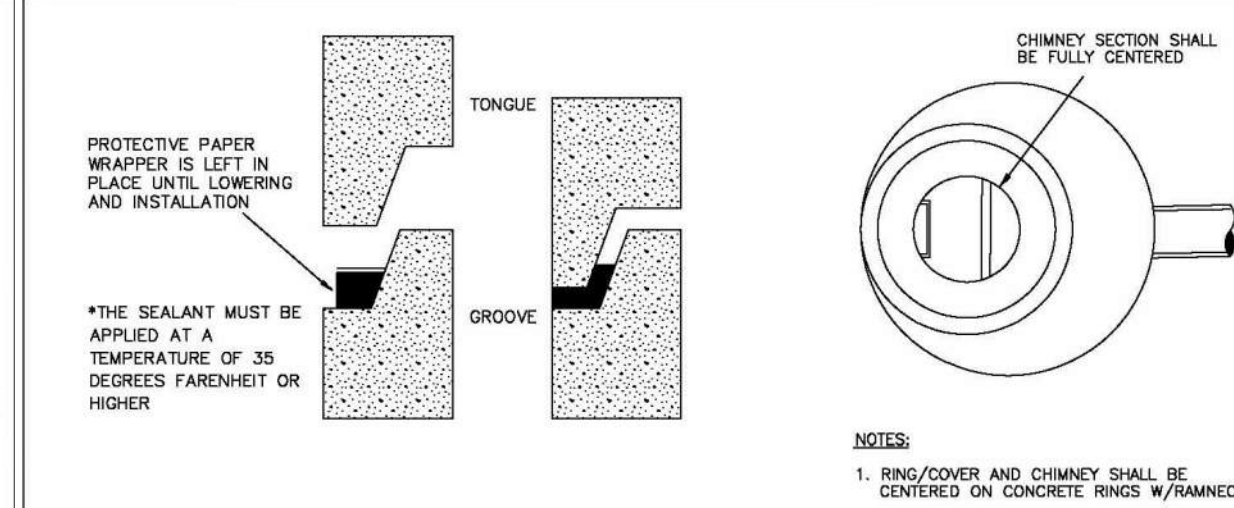
- NOTE:**
1. SEE SHEET S1.1 FOR DISTRICT POLICIES AND INSTALLATION NOTES.
  2. TYPICAL WATER SERVICES SHOWN ON SHEET W1.2 IN WATER DETAILS.

**PARKER WATER & SANITATION DISTRICT**  
**TYPICAL SEWER SERVICES**

SCALE:	NONE	DATE:	2/96
APPROVED:	PVR	2/00	01/02
		1/16	01/16
DIRECTOR OF ENGINEERING			

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SHEET S1.2



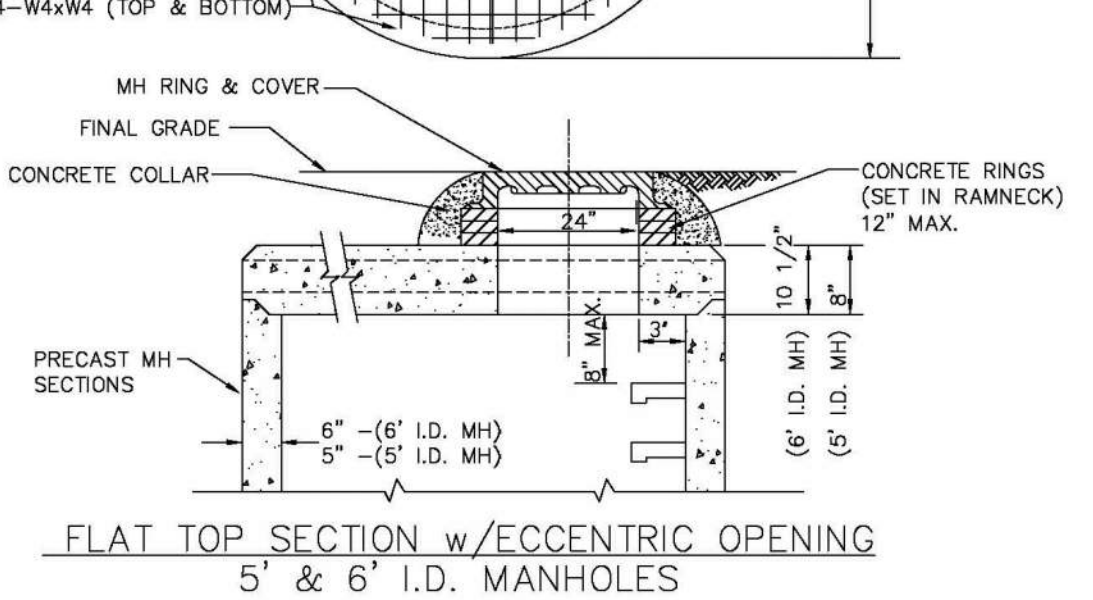
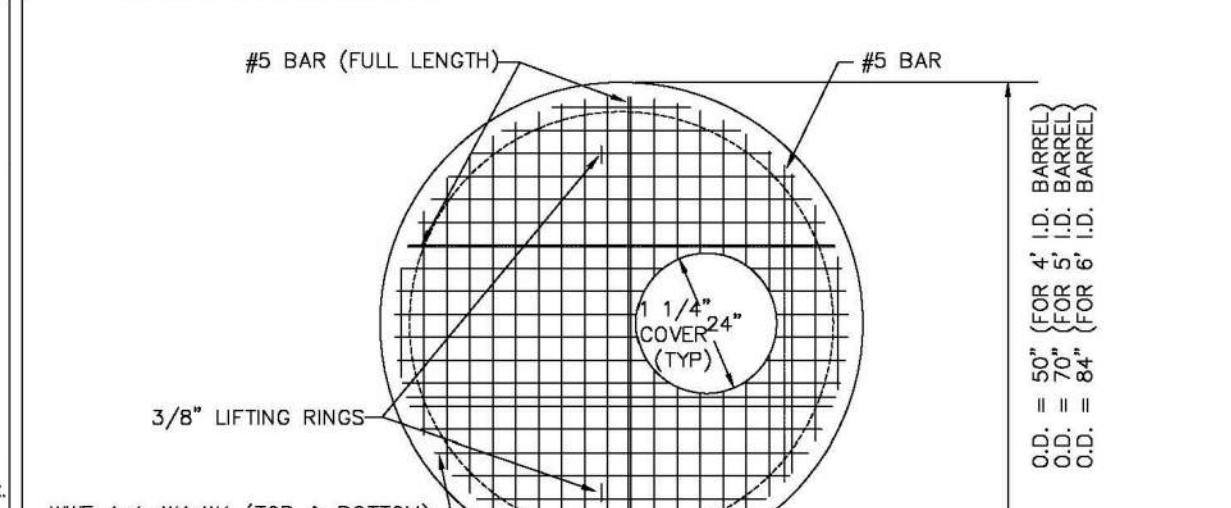
PIPE I.D.	MANHOLE I.D.
18" & SMALLER	4'-0"
21" TO 48"	5'-0"
54"	6'-0"
60" & LARGER	SPECIAL DESIGN

**PARKER WATER & SANITATION DISTRICT**  
**PARKER MANHOLE ECCENTRIC CONE**

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

2016 REVISION

SHEET S3.1



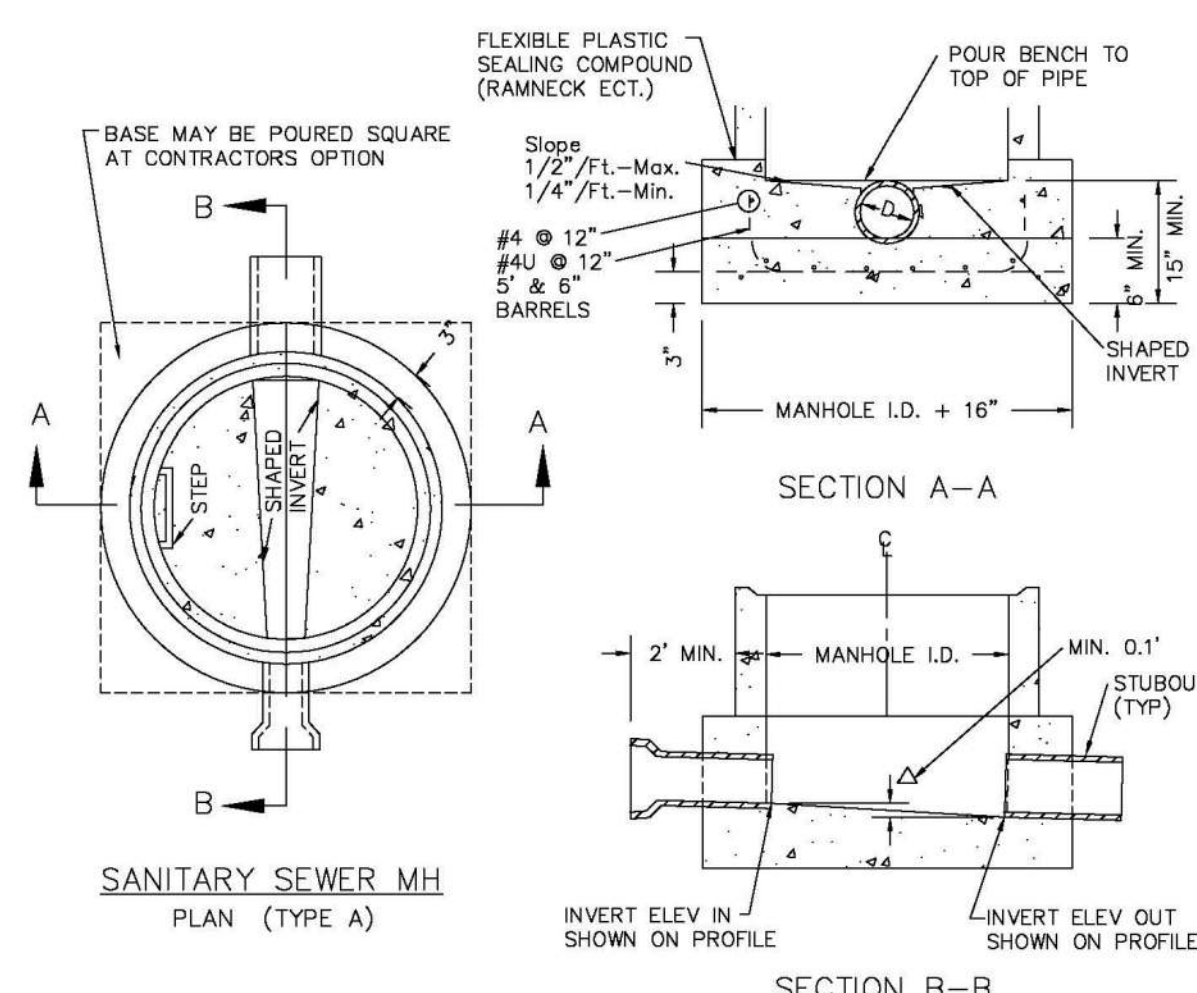
**PARKER WATER & SANITATION DISTRICT**  
**PRECAST MANHOLE - 5' & 6' I.D. WITH ECCENTRIC CONE**

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

2016 REVISION

SHEET S3.3

**APPROVED**  
**Jul 19 2021**  
**PARKER WATER AND SANITATION DISTRICT**



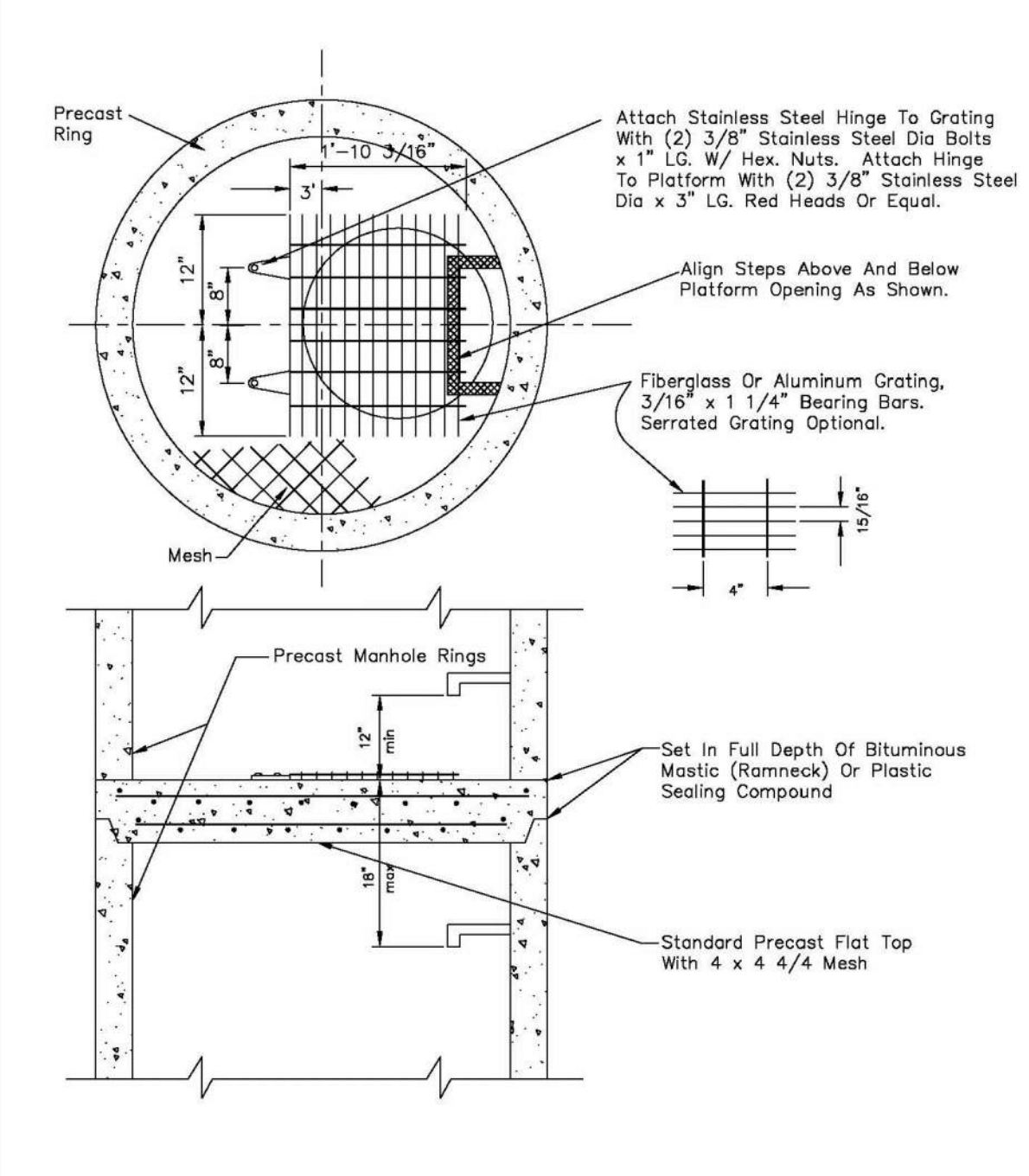
- NOTES:**
1. Manhole barrel min. thickness to be 5".
  2. Shaping for smooth manhole inverts may be done by forming or shaping with cement mortar (San. Sewer).
  3. The manhole steps shall conform to District Standards and Specifications.
  4. Precast sections to conform to A.S.T.M C-478.
  5. All dead-end 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. Δ = invert drop thru MH (if Δ > 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	01/16
		10/16	
DIRECTOR OF ENGINEERING			

2016 REVISION

SHEET S3.5



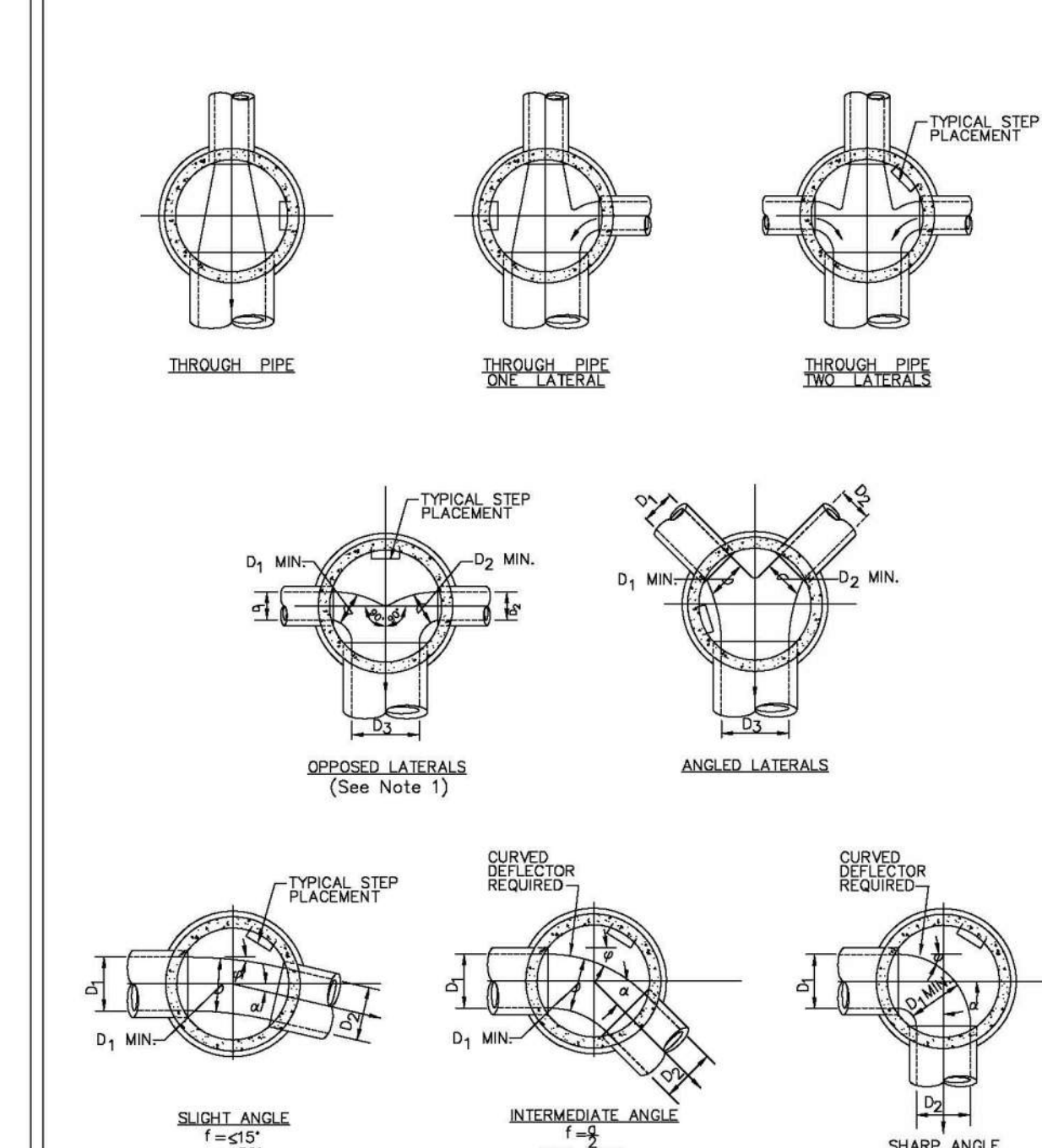
- NOTES:**
- 1.1 Maximum distance between platforms shall be 15' vertically.
  - 1.2 All hardware used inside a manhole shall be stainless steel.
  - 1.3 Manholes over 20' deep shall submit structural calculations on base and wall sizing.

**PARKER WATER & SANITATION DISTRICT**  
**INTERMEDIATE PLATFORM FOR MANHOLES OVER 20' DEPTH**

SCALE:	NONE	DATE:	2/96
APPROVED:	PVR	2/00	01/16
		1/16	10/16
DIRECTOR OF ENGINEERING			

2016 REVISION

SHEET S3.6



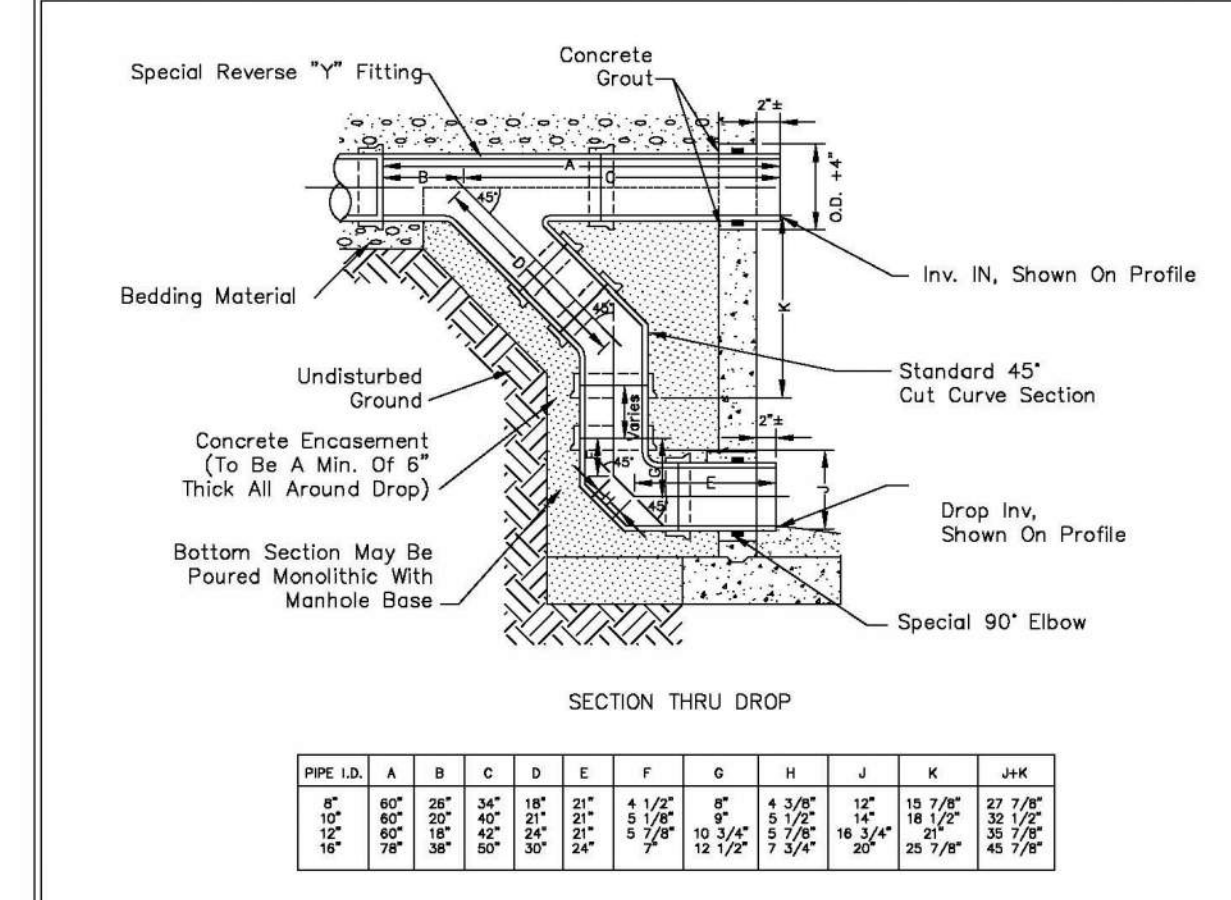
- NOTES:**
1. Manhole shall be coated using bituminous mastic (ramneck) or plastic sealing compound.

**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



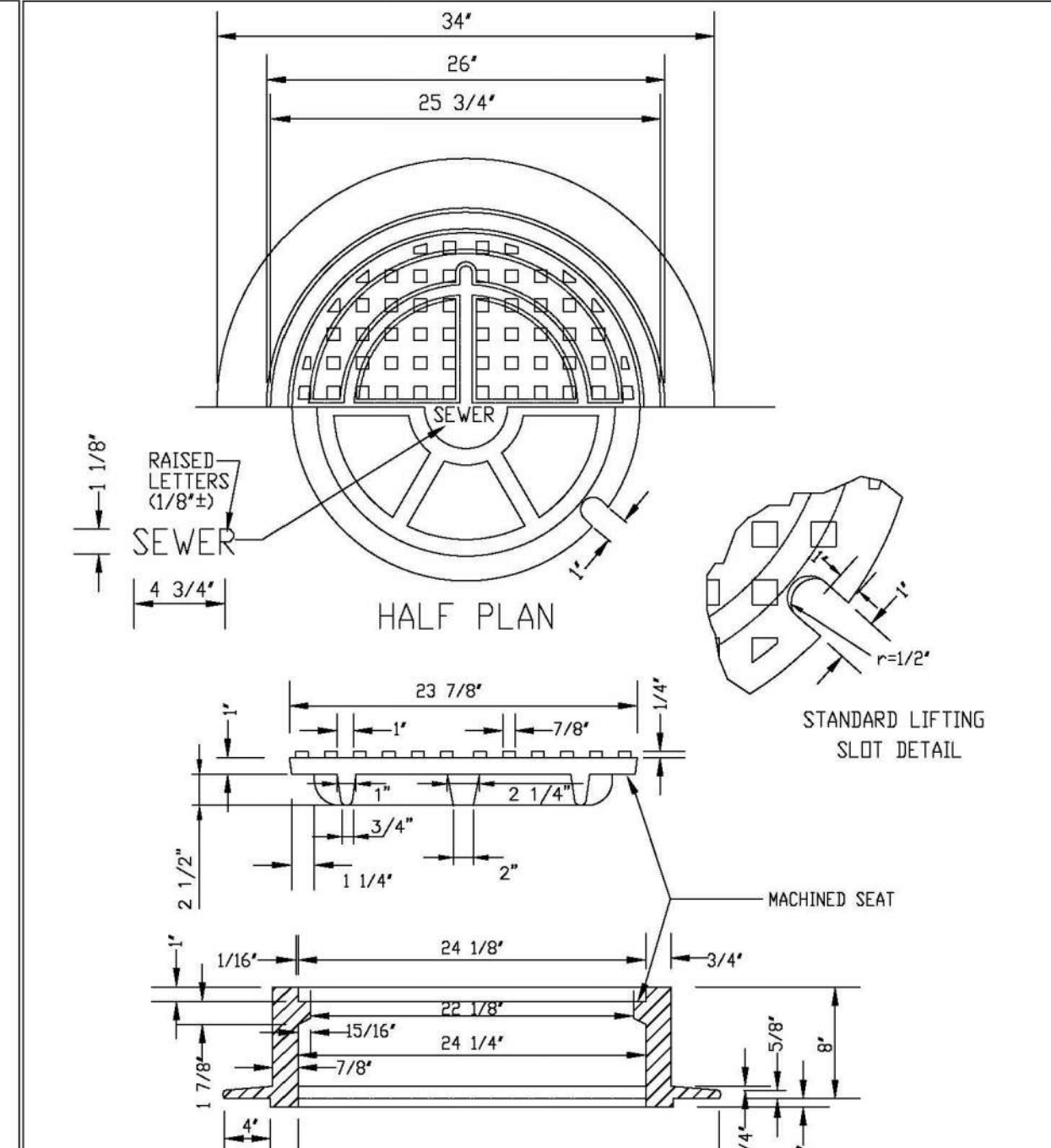
- NOTES:**
1. Vt Clay Pipe & fittings (A.S.T.M. C-700) shown, details similar for all other pipe.
  2. Diameter of drop shall not be less than the line pipe diameter.
  3. For 18" diameter and larger, outside drop detail shall be a special design.
  4. Manhole shall be coated using bituminous mastic (ramneck) or plastic sealing compound.

**PARKER WATER & SANITATION DISTRICT**  
**OUTSIDE DROP MANHOLE CONSTRUCTION**

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

2016 REVISION

SHEET S3.8



- NOTE:**
1. Casting Specifications: ASTM A-48 With A Minimum Tensile Strength Of 25 KSI (Class 25)
  2. All Coating 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

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 Englewood, CO 80112  
 Tel: 720.482.952  
 www.cvlinc.com  
 westwoodjps.com

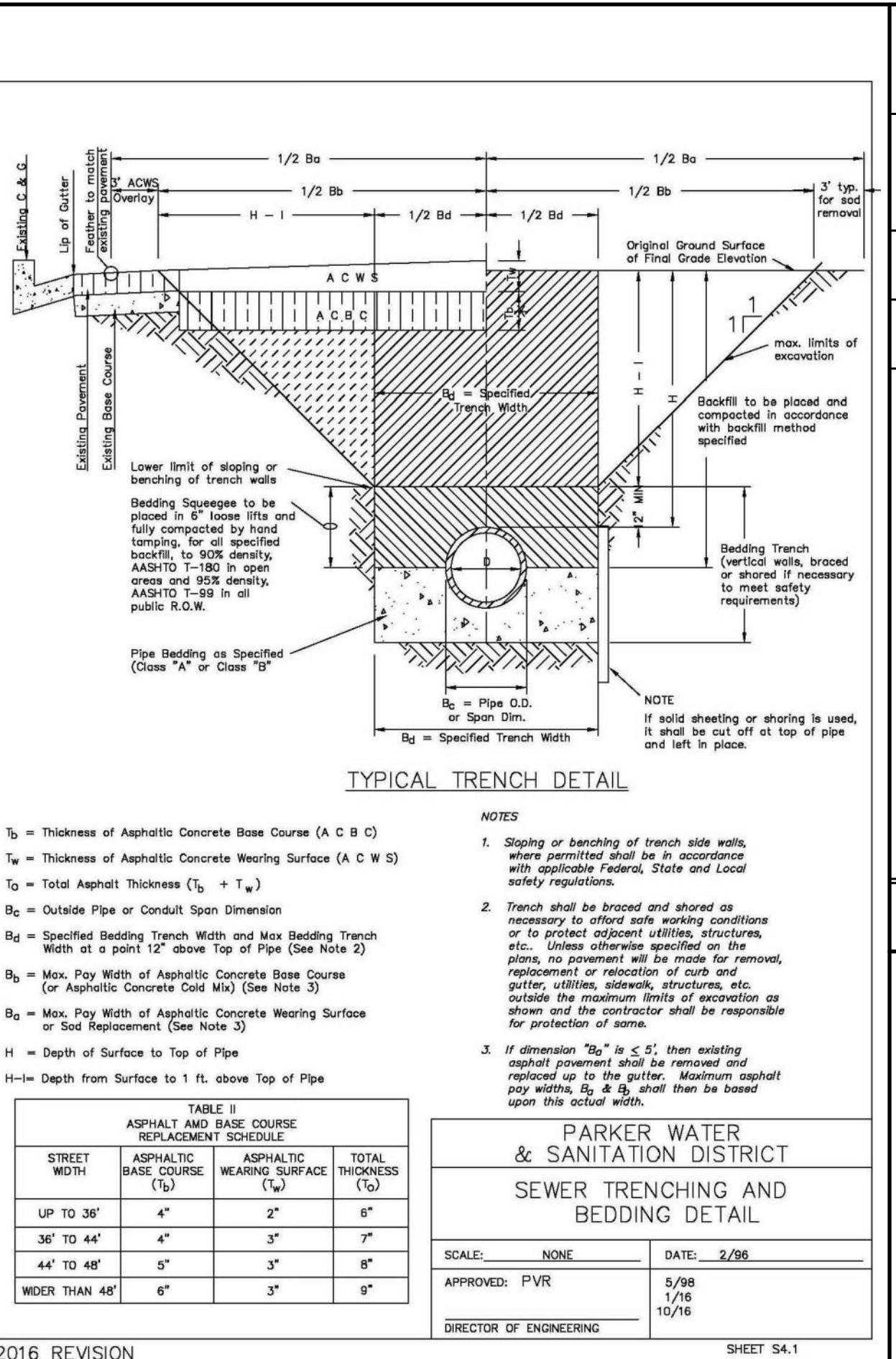
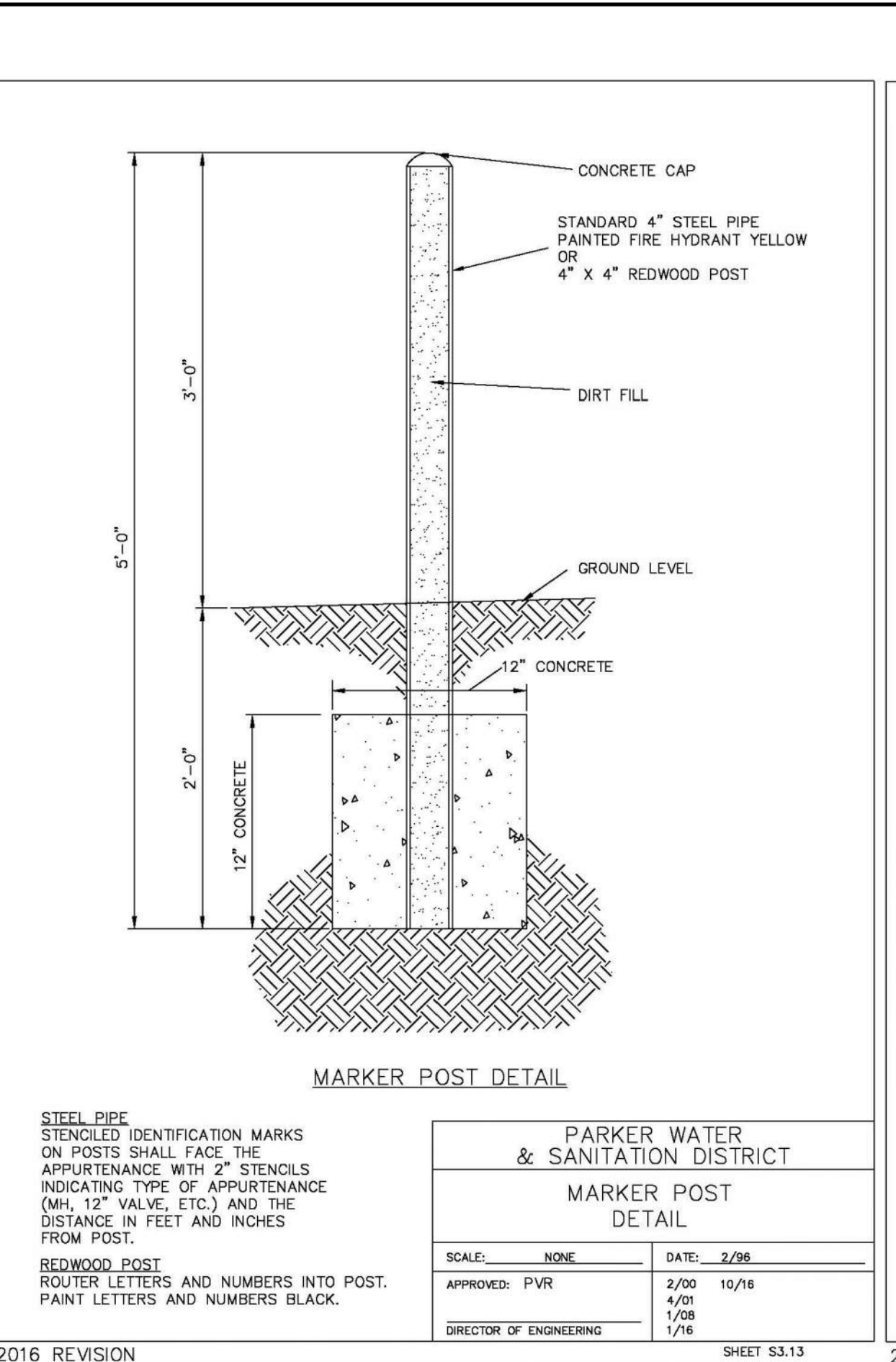
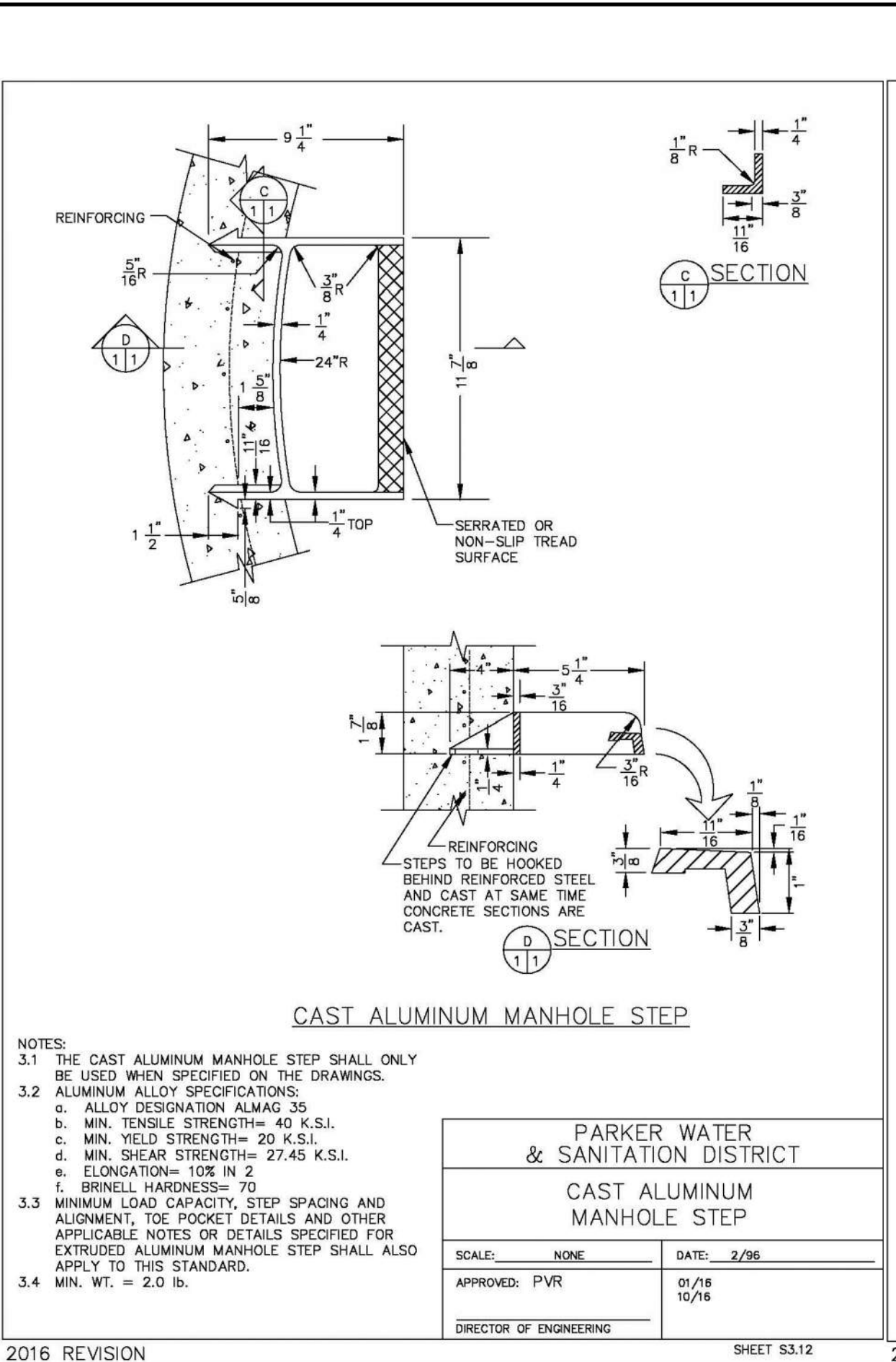
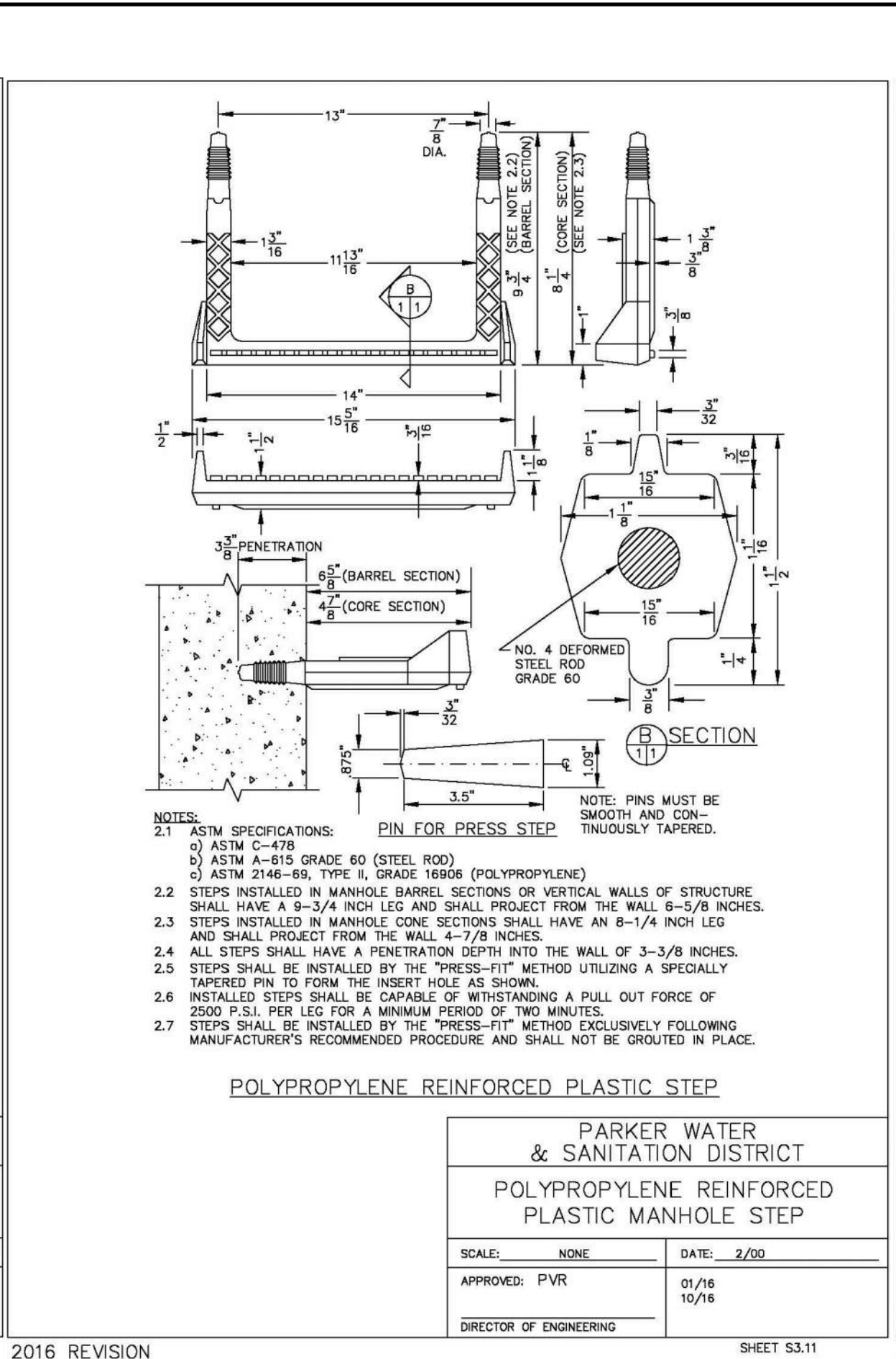
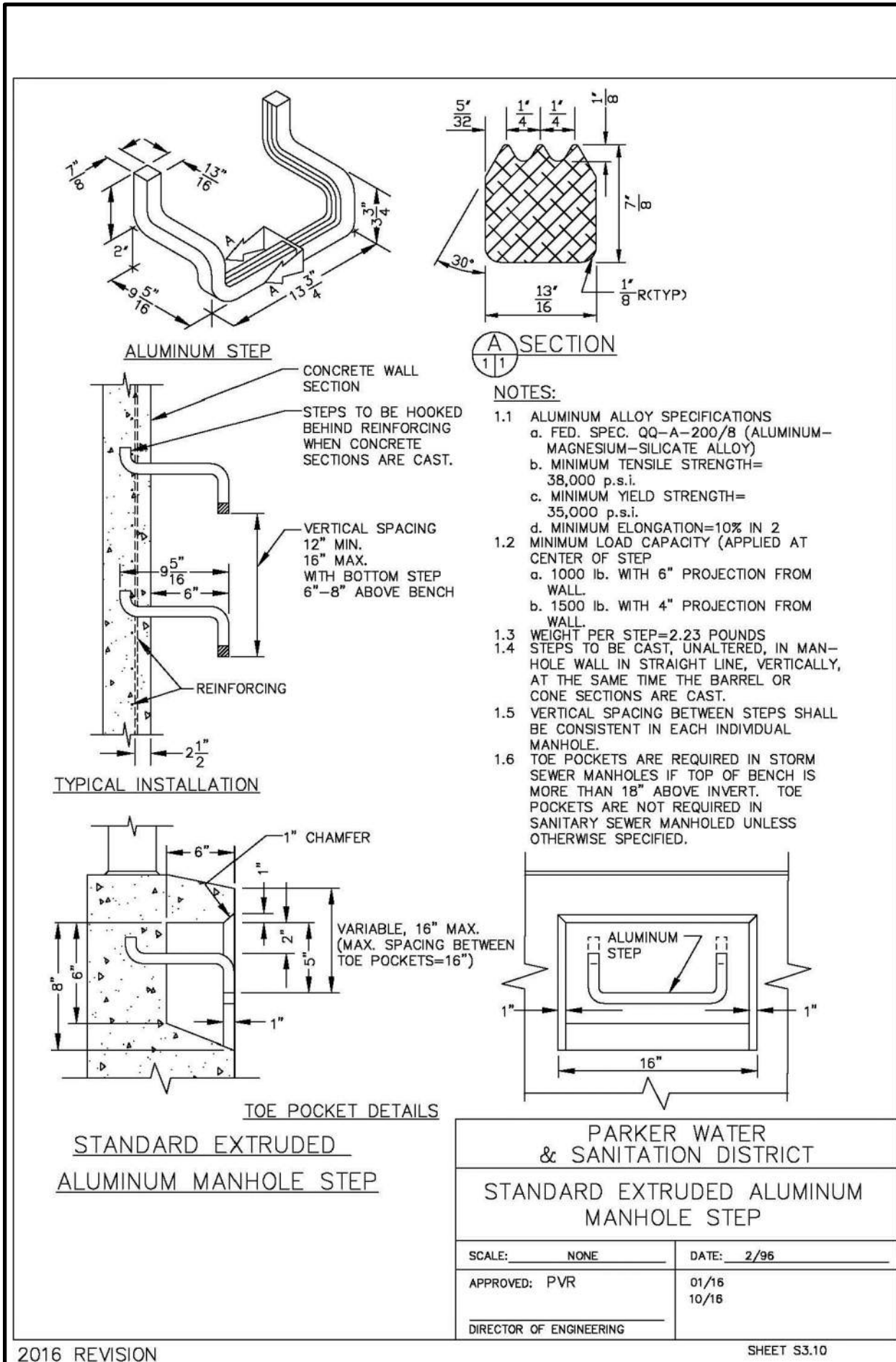
**Westwood team**

HR 935 LLC  
 7353 South Alton Way  
 CENTENNIAL, CO 80112

**TRAILS AT CROWFOOT**  
**FILING 12 CONSTRUCTION DRAWINGS**  
**SANITARY SEWER DETAIL**

SCALE:	AS SHOWN	FILE NO:	8130283701
DRAWN BY:	JU	CHECKED BY:	JU
DATE:	SEPTEMBER 2017		

**8**



2016 REVISION

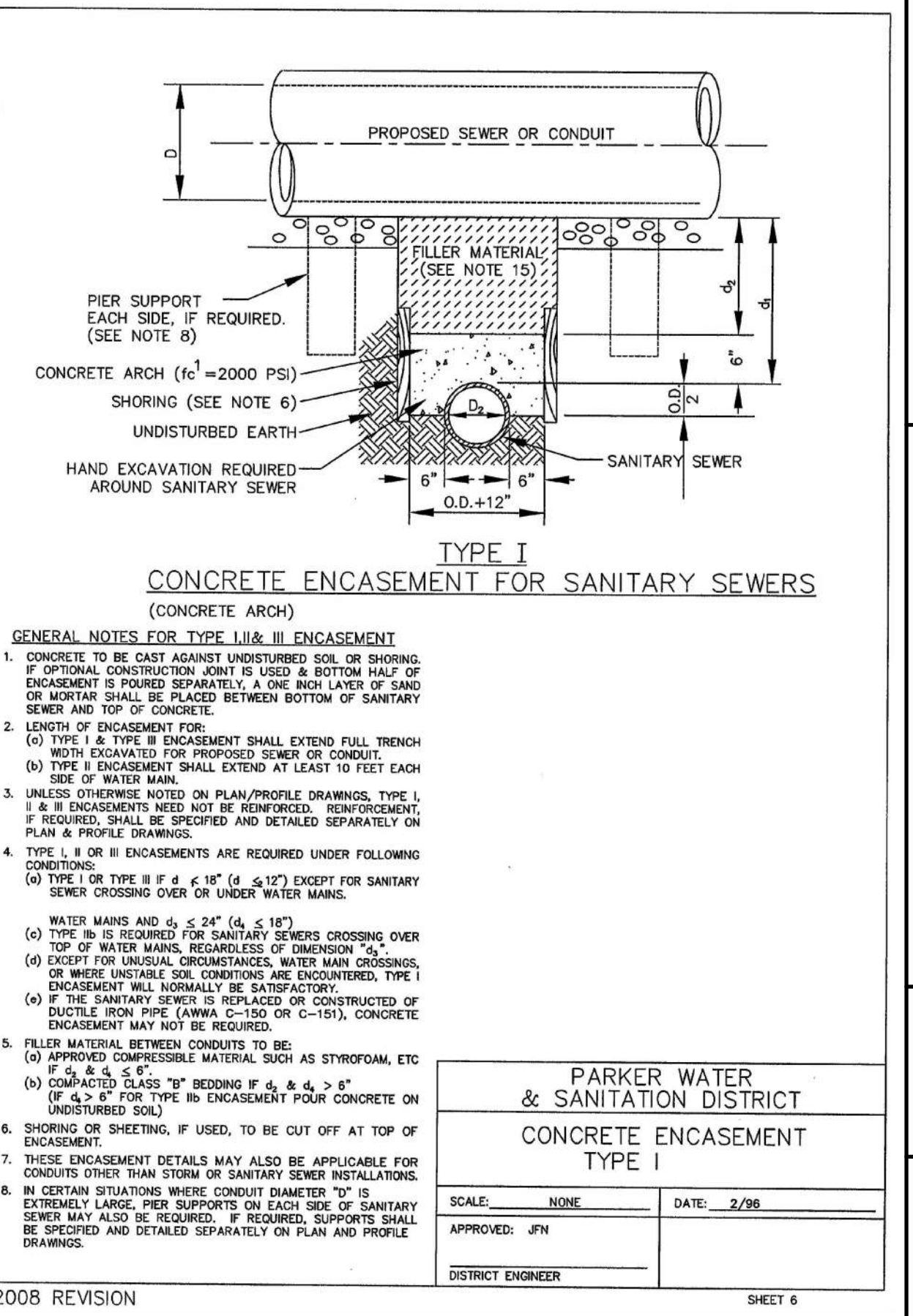
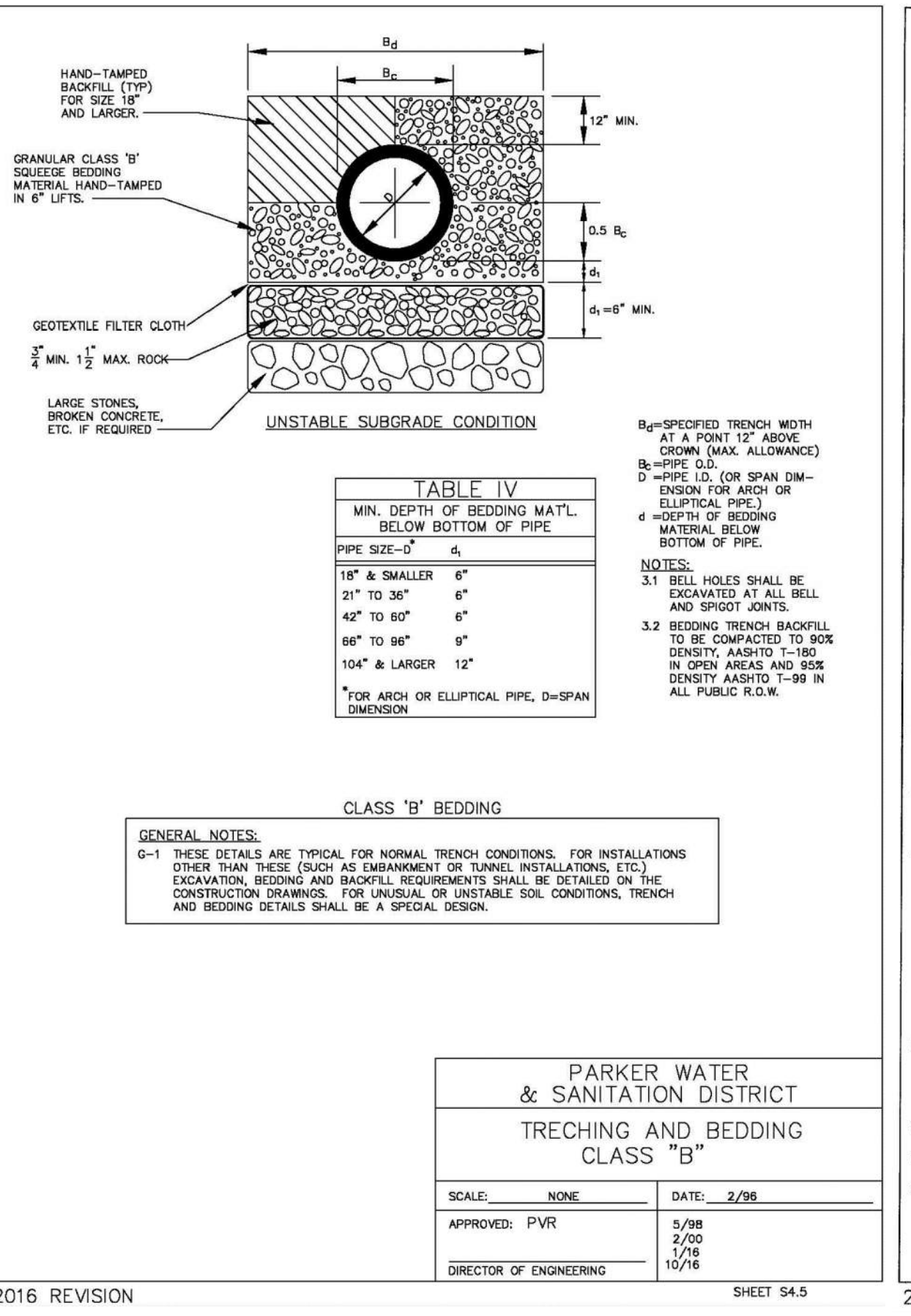
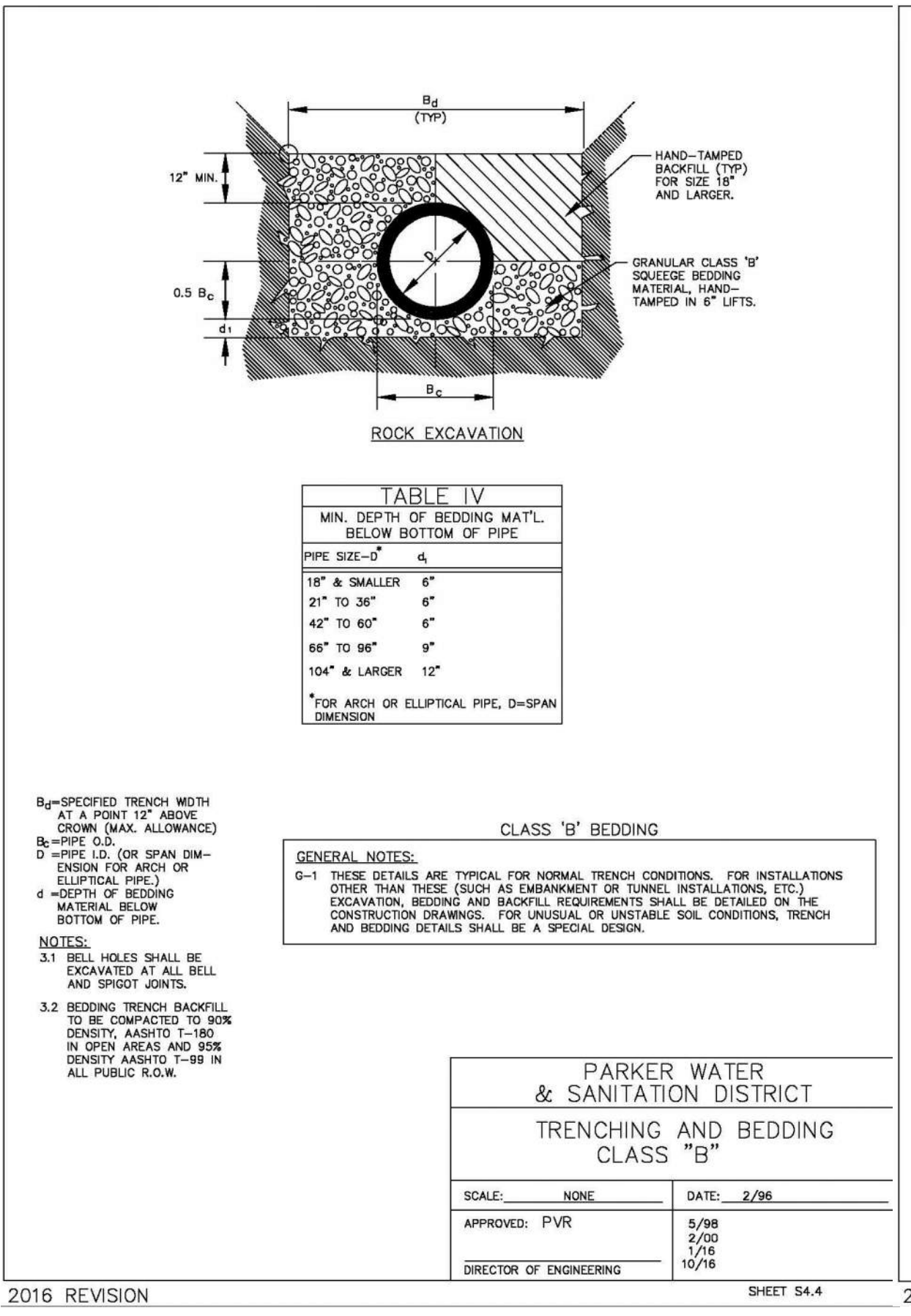
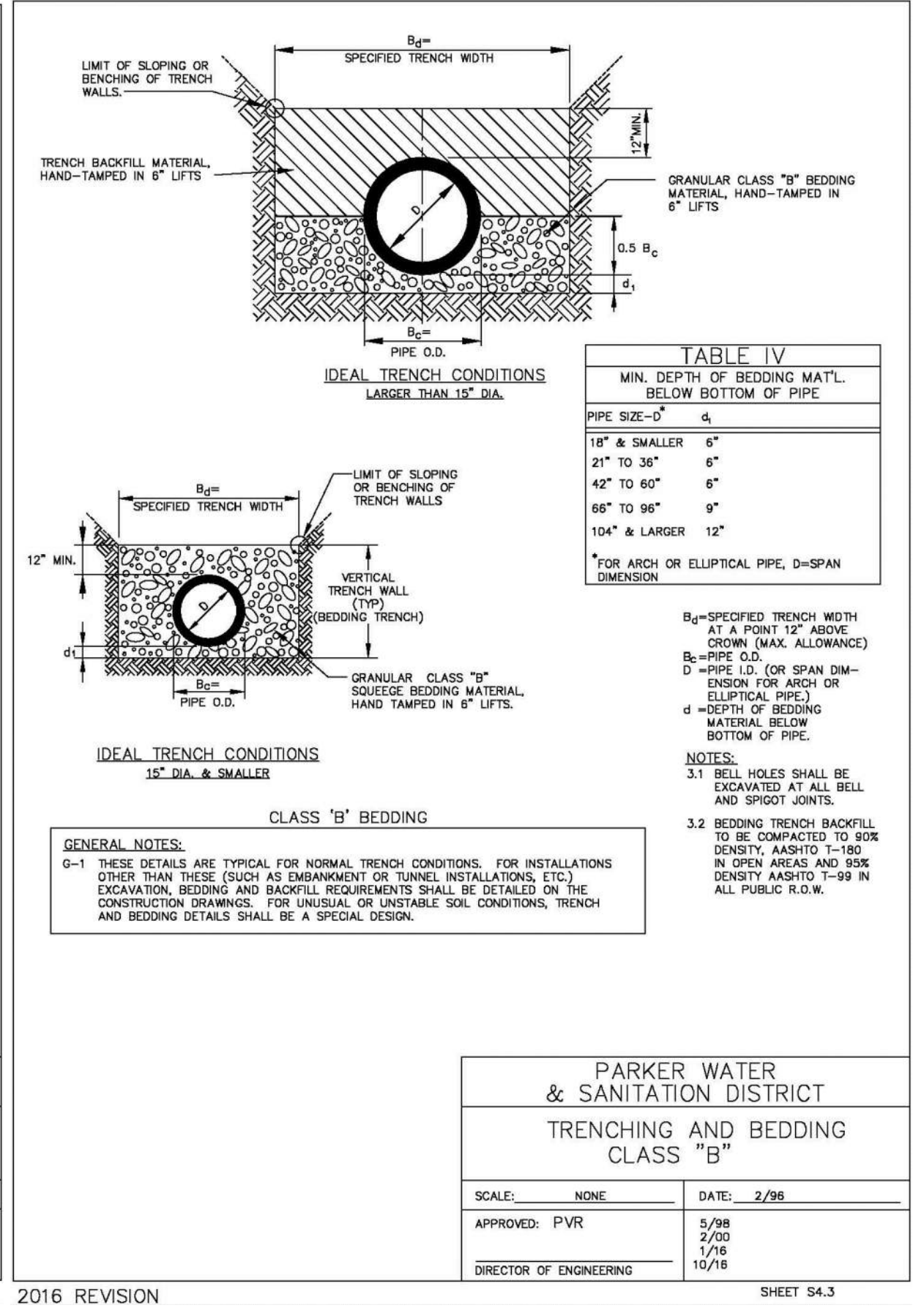
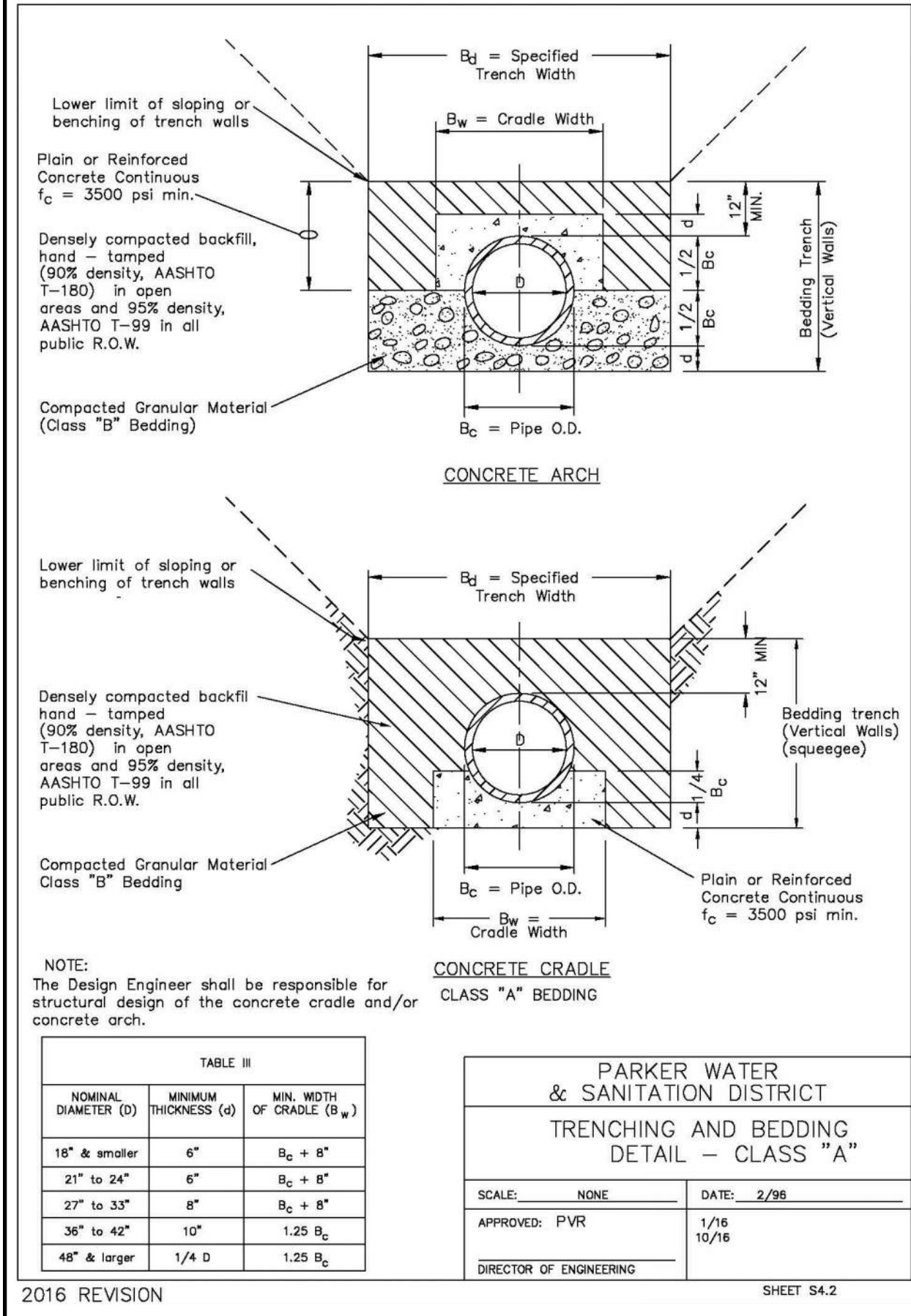
2016 REVISION

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**APPROVED**  
Jul 19 2021  
**PARKER WATER AND SANITATION DISTRICT**



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**CVL**  
a Westwood team

HR 935 LLC  
7353 South Alton Way  
CENTENNIAL, CO 80112

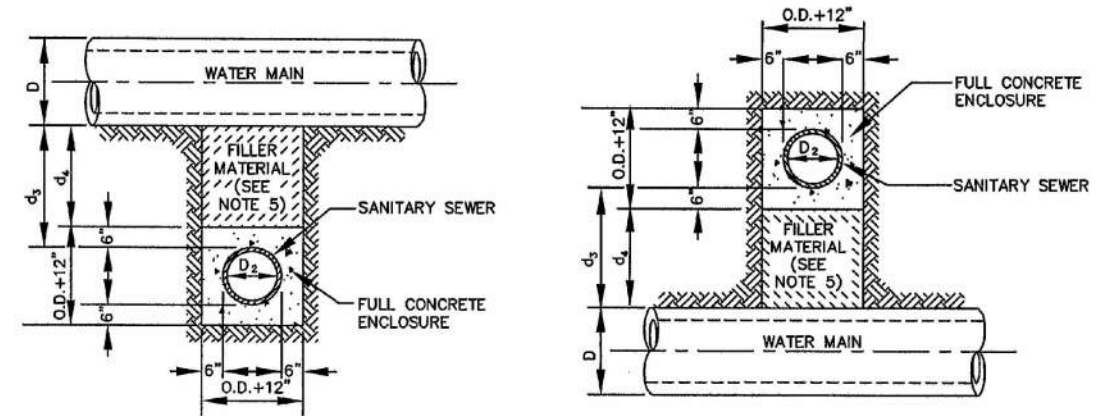
TRAILS AT CROWFOOT  
FILING 12 CONSTRUCTION DRAWINGS  
SANITARY SEWER DETAIL

SCALE: AS SHOWN  
FILE NO: 8130283701

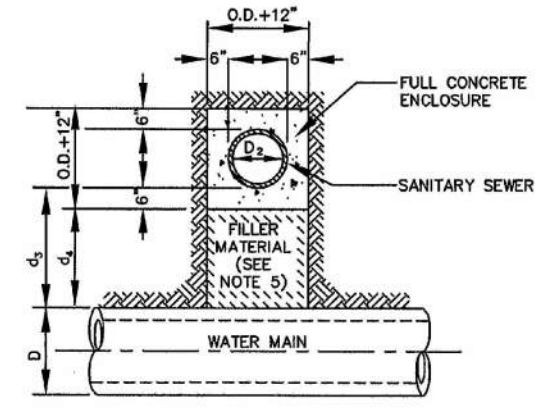
DRAWN BY: JF  
CHECKED BY: JU  
DATE: SEPTEMBER 2017

SHEET NUMBER: 9

Revisions: No. Date Init. Appr. Date



**TYPE IIa**  
SANITARY SEWER CROSSING UNDER WATER MAIN  
IF  $d_s > 2$  ft, ENCASMENT NOT REQUIRED



**TYPE IIb**  
SANITARY SEWER CROSSING OVER TOP OF WATER MAIN  
FULL ENCASMENT REQUIRED REGARDLESS OF DIMENSION  $d_s$ .

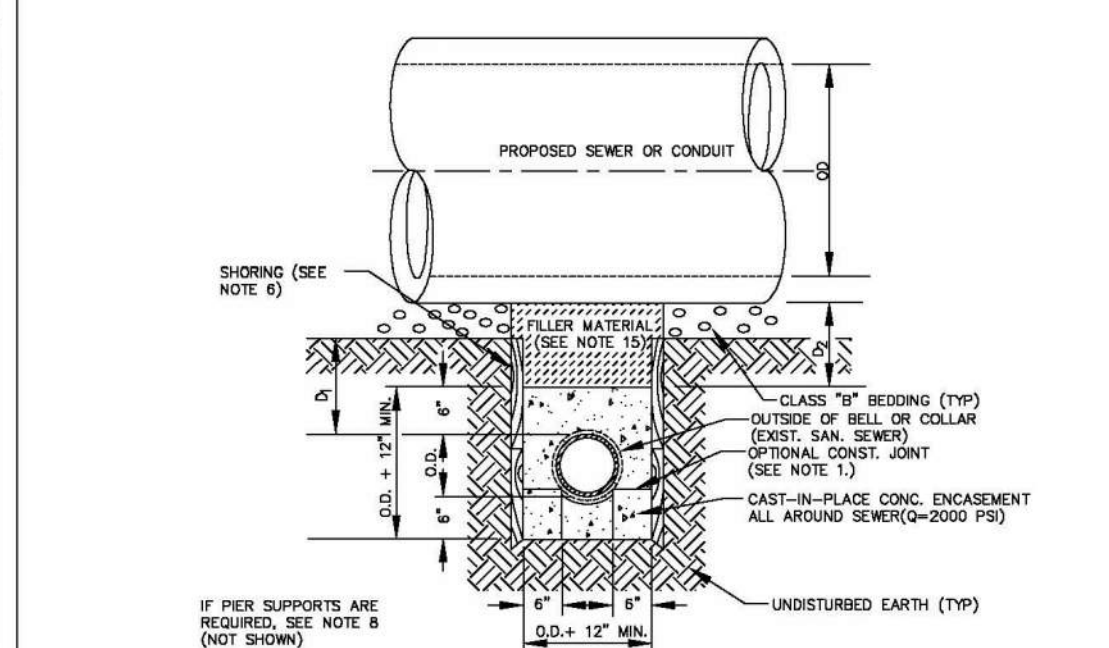
**TYPE II**  
CONCRETE ENCASMENT FOR SANITARY SEWERS CROSSING OVER OR UNDER WATER MAIN

**GENERAL NOTES FOR TYPE IIa & IIb ENCASMENT**

- CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING. IF OPTIONAL CONSTRUCTION JOINT IS USED & BOTTOM HALF OF ENCASMENT IS POURED SEPARATELY, A ONE INCH LAYER OF SAND OR MORTAR SHALL BE PLACED BETWEEN BOTTOM OF SANITARY SEWER AND TOP OF CONCRETE.
- LENGTH OF ENCASMENT FOR:
  - TYPE I & TYPE II ENCASMENT SHALL EXTEND FULL TRENCH WIDTH EXCAVATED FOR PROPOSED SEWER OR CONDUIT.
  - TYPE II ENCASMENT SHALL EXTEND AT LEAST 10 FEET EACH SIDE OF WATER MAIN.
- UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, TYPE I, II & III ENCASMENTS NEED NOT BE REINFORCED. REINFORCEMENT, IF REQUIRED, SHALL BE SPECIFIED AND DETAILED SEPARATELY ON PLAN & PROFILE DRAWINGS.
- TYPE I, II OR III ENCASMENTS ARE REQUIRED UNDER FOLLOWING CONDITIONS:
  - TYPE I OR TYPE II IF  $d_s \leq 18"$  ( $d_s \leq 12"$  EXCEPT FOR SANITARY SEWERS CROSSING OVER OR UNDER WATER MAINS).
  - TYPE II IS REQUIRED FOR SANITARY SEWERS CROSSING OVER TOP OF WATER MAINS REGARDLESS OF DIMENSION  $d_s$ .
  - EXCEPT FOR UNUSUAL CIRCUMSTANCES, WATER MAIN CROSSINGS, OR WHEN UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, TYPE I ENCASMENT WILL NORMALLY BE SATISFACTORY.
  - IF THE SANITARY SEWER IS REPLACED OR CONSTRUCTED OF DUCTILE IRON PIPE (AWWA C-150 OR C-151), CONCRETE ENCASMENT MAY NOT BE REQUIRED.
- FILLER MATERIAL BETWEEN CONDUITS TO BE:
  - APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF  $d_s \leq 4"$  OR  $4' < d_s \leq 6'$ .
  - COMPACTED CLASS "B" BEDDING IF  $d_s \leq 4"$  OR  $4' < d_s \leq 6'$  FOR TYPE IIb ENCASMENT POUR CONCRETE ON UNDISTURBED SOIL.
- SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASMENT.
- THESE ENCASMENT DETAILS MAY ALSO BE APPLICABLE FOR CONDUITS OTHER THAN STORM OR SANITARY SEWER INSTALLATIONS. IN CERTAIN SITUATIONS WHERE CONDUIT DIAMETER "D" IS EXTREMELY LARGE, PERI-SUPPORTS ON EACH SIDE OF SANITARY SEWER MAY ALSO BE REQUIRED. IF REQUIRED, SUPPORTS SHALL BE SPECIFIED AND DETAILED SEPARATELY ON PLAN AND PROFILE DRAWINGS.

PARKER WATER & SANITATION DISTRICT	
CONCRETE ENCASMENT TYPE II	
SCALE: NONE	DATE: 2/96
APPROVED: JFN	5/98 4/01 1/08
DISTRICT ENGINEER	

2008 REVISION SHEET 7



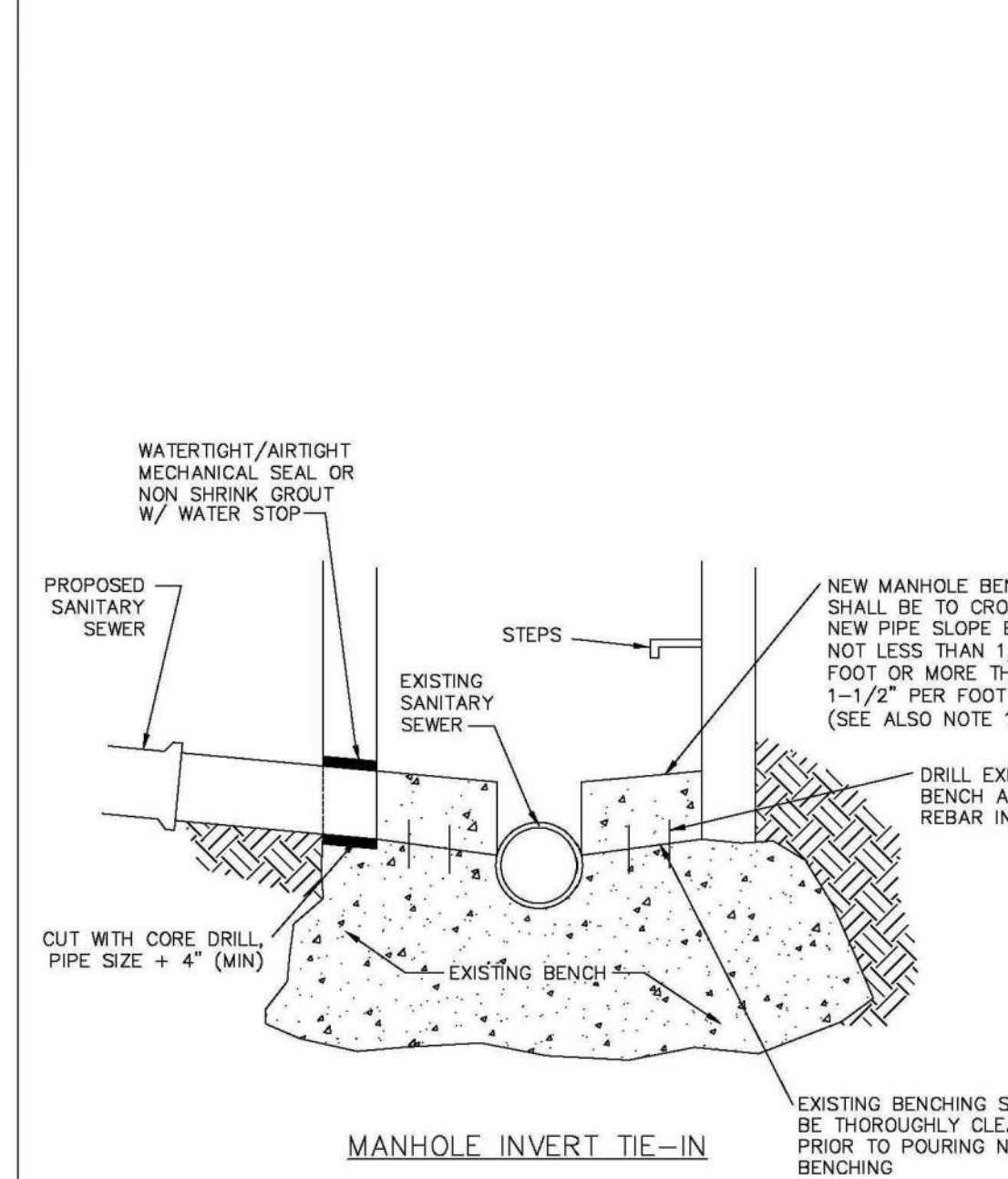
**TYPE III**  
CONCRETE ENCASMENT FOR SANITARY SEWERS (FULL ENCASMENT) NO SCALE

**GENERAL NOTES FOR TYPE IIIa & IIIb ENCASMENT**

- CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING. IF OPTIONAL CONSTRUCTION JOINT IS USED & BOTTOM HALF OF ENCASMENT IS POURED SEPARATELY, A ONE INCH LAYER OF SAND OR MORTAR SHALL BE PLACED BETWEEN BOTTOM OF SANITARY SEWER AND TOP OF CONCRETE.
- LENGTH OF ENCASMENT FOR:
  - TYPE I & TYPE II ENCASMENT SHALL EXTEND FULL TRENCH WIDTH EXCAVATED FOR PROPOSED SEWER OR CONDUIT.
  - TYPE I ENCASMENT SHALL EXTEND AT LEAST 10 FEET EACH SIDE OF WATER MAIN.
- UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, TYPE II & III ENCASMENTS NEED NOT BE REINFORCED. REINFORCEMENT, IF REQUIRED, TO BE SPECIFIED AND DETAILED SEPARATELY ON PLAN & PROFILE DRAWINGS.
- TYPE I, II OR III ENCASMENTS ARE REQUIRED UNDER FOLLOWING CONDITIONS:
  - TYPE I OR TYPE II IF  $d_s \leq 18"$  ( $d_s \leq 12"$  EXCEPT FOR SANITARY SEWERS CROSSING OVER OR UNDER WATER MAINS).
  - TYPE II IS REQUIRED FOR SANITARY SEWERS CROSSING UNDER WATER MAINS AND  $d_s \leq 24"$  ( $d_s \leq 18"$  EXCEPT FOR UNUSUAL CIRCUMSTANCES, WATER MAIN CROSSINGS, OR WHEN UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, TYPE I ENCASMENT WILL NORMALLY BE SATISFACTORY).
  - IF THE SANITARY SEWER IS REPLACED OR CONSTRUCTED OF DUCTILE IRON PIPE (AWWA C-150 OR C-151), CONCRETE ENCASMENT MAY NOT BE REQUIRED.
  - APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF  $d_s \leq 4"$ .
  - COMPACTED CLASS "B" BEDDING IF  $d_s \leq 4"$  OR  $4' < d_s \leq 6'$  FOR TYPE IIb ENCASMENT POUR CONCRETE ON UNDISTURBED SOIL.
  - SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASMENT.
  - THESE ENCASMENT DETAILS MAY ALSO BE APPLICABLE FOR CONDUITS OTHER THAN STORM OR SANITARY SEWER INSTALLATIONS. IN CERTAIN SITUATIONS WHERE CONDUIT DIAMETER "D" IS EXTREMELY LARGE, PERI-SUPPORTS ON EACH SIDE OF SANITARY SEWER MAY ALSO BE REQUIRED. IF REQUIRED, SUPPORTS SHALL BE SPECIFIED AND DETAILED SEPARATELY ON PLAN AND PROFILE DRAWINGS.
  - CONCRETE ENCASED PIPING SHALL BE LINED WITH FELT LAYER.

PARKER WATER & SANITATION DISTRICT	
CONCRETE ENCASMENT TYPE III	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	5/98 1/78 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET 54.8

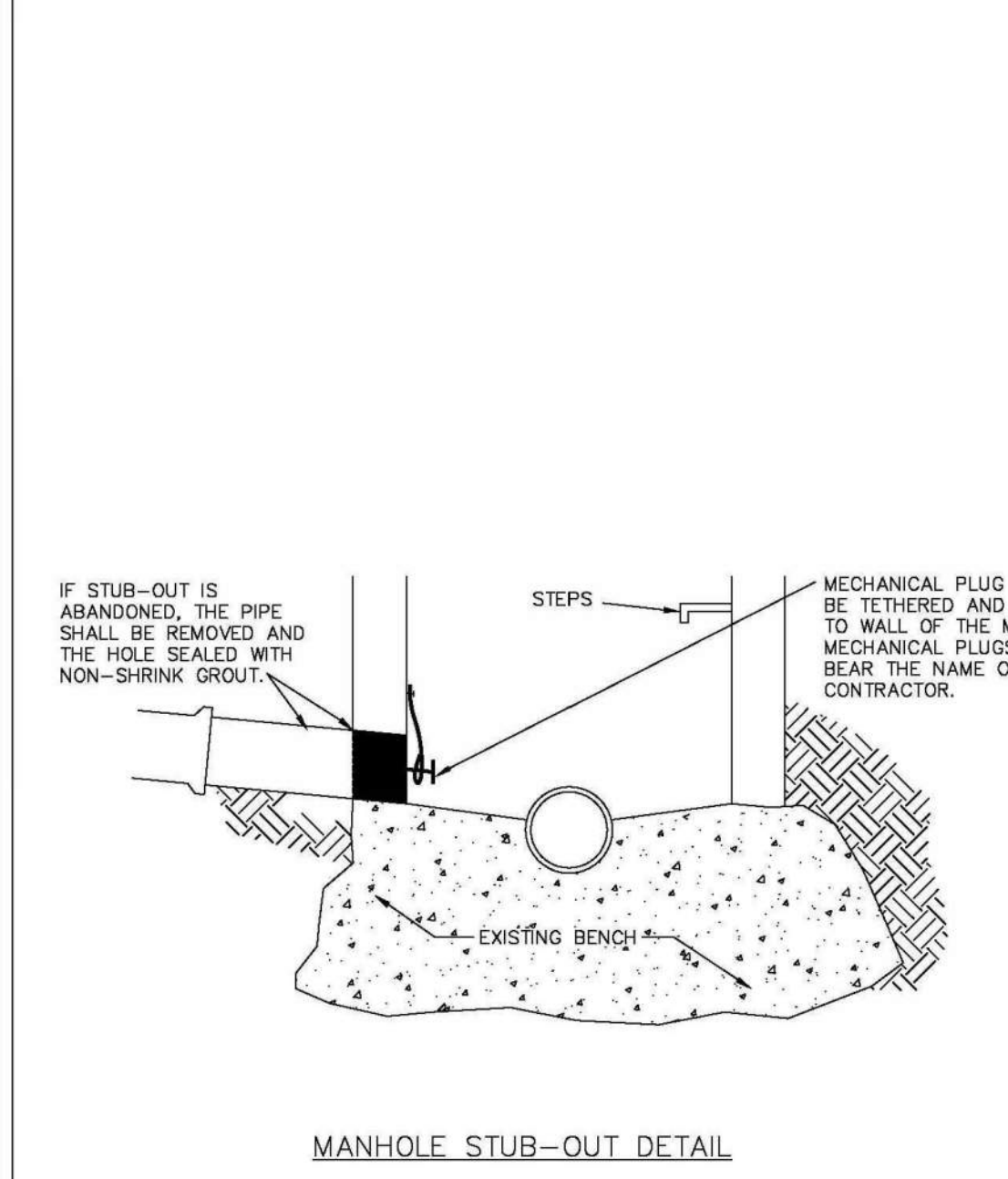


**MANHOLE INVERT TIE-IN**

**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	5/98 1/78 10/16
DIRECTOR OF ENGINEERING	

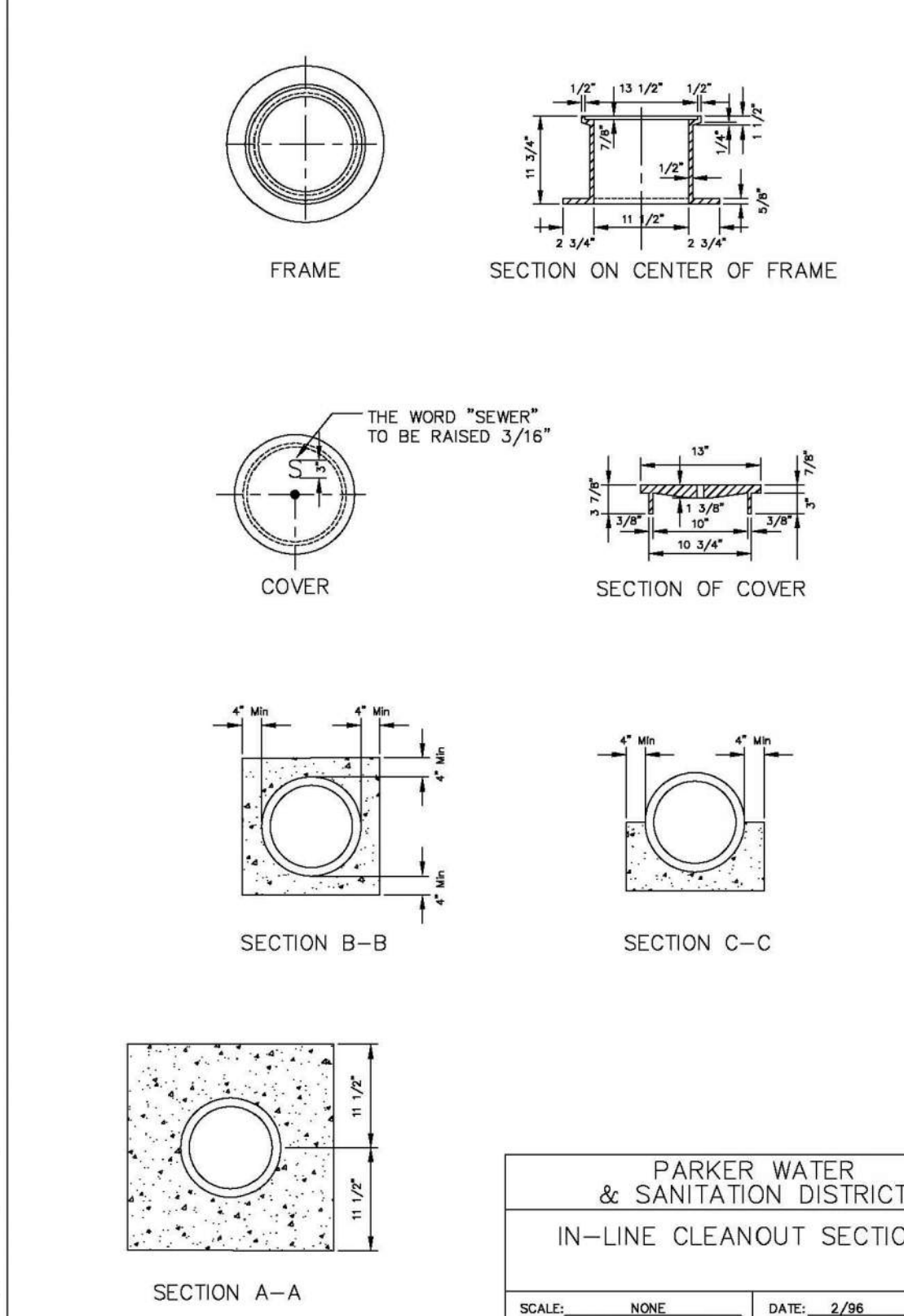
2016 REVISION SHEET 54.9



**MANHOLE STUB-OUT DETAIL**

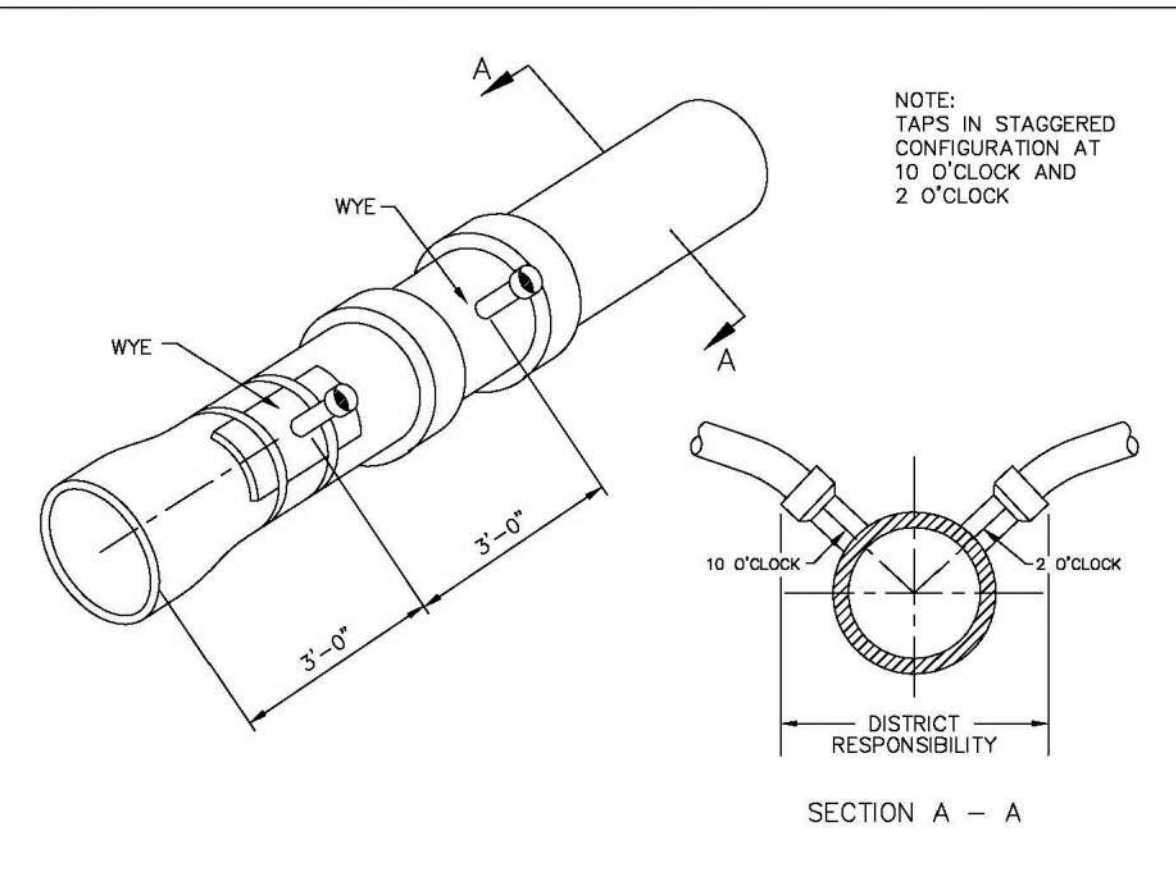
PARKER WATER & SANITATION DISTRICT	
MANHOLE STUB-OUT DETAIL	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	1/78 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET 54.10



**IN-LINE CLEANOUT SECTIONS**

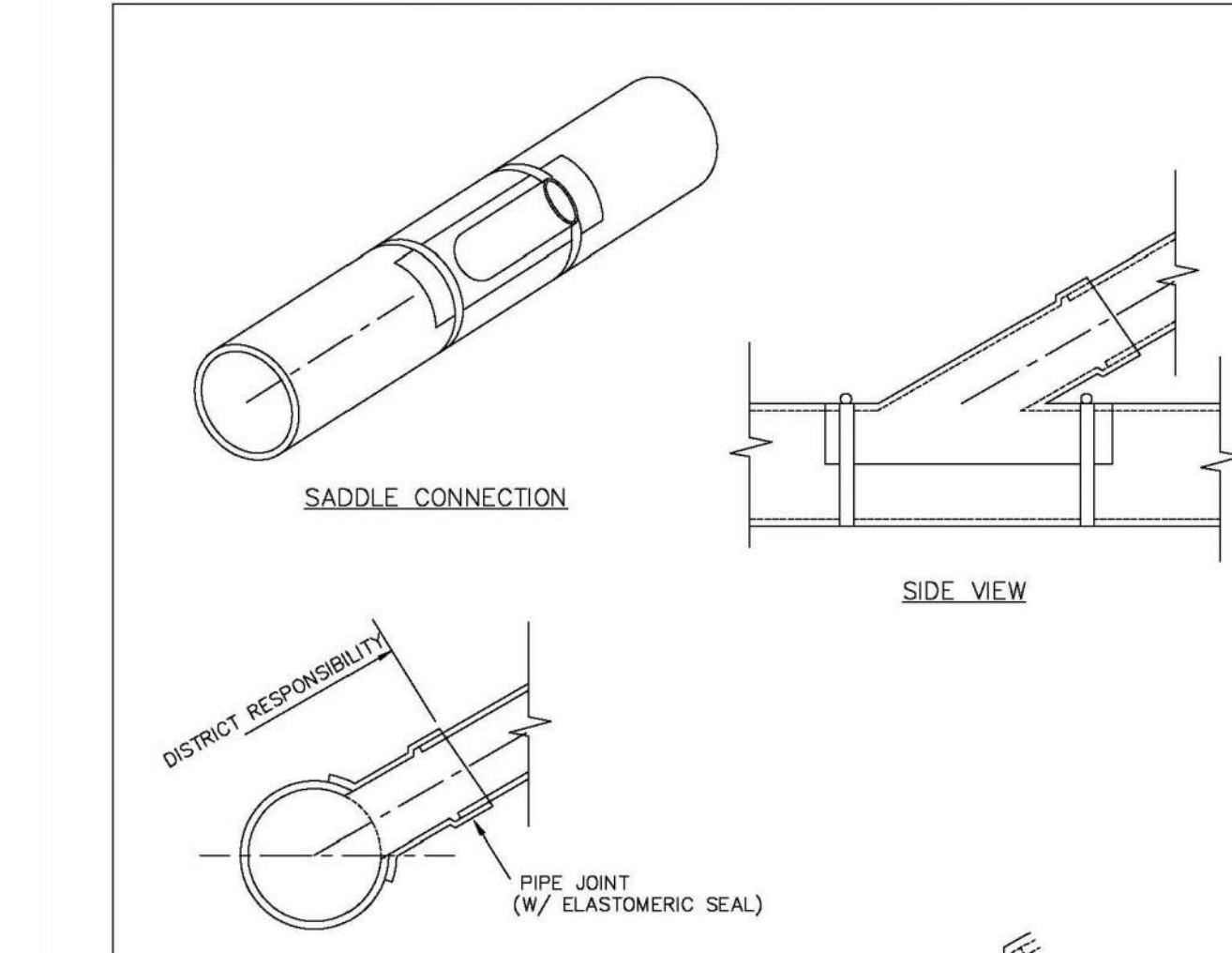
2016 REVISION SHEET 54.12



Sewer service connections shall be positioned at either the 2 o'clock or the 10 o'clock position on the circumference of the sewer main. On new installations, tee or wye fittings shall be used. When tapping into existing sewer main, a saddle connection and approved coring method shall be used. The minimum distance between service connections made along the pipe shall be 3 feet. The minimum distance from either the bell or spigot end of a pipe shall be 3 feet. The minimum distance from the center of a manhole to a service connection shall be either 7 feet or the transition point from the manhole trench to the normal pipe trench, whichever is greater. A maximum of 4 sewer service connections shall be allowed per 20 foot length of pipe. In all cases, a specific soils investigation should be conducted to assure that the external loading will be within allowable limits regardless of the number of taps involved.

PARKER WATER & SANITATION DISTRICT	
DOMESTIC SEWER TAPPING DETAIL	
SCALE: NONE	DATE: 2/96
APPROVED: PVR	4/01 1/08 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET 54.13



**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	1/78 10/16
DIRECTOR OF ENGINEERING	

2016 REVISION SHEET 54.14

**APPROVED**  
Jul 19 2021  
PARKER WATER AND SANITATION DISTRICT

N:\PROJECTS\HSS RANCH\ENGINEERING\SSHEETS SET\DCD\SET 2\PARKER WATER AND SANITATION\F12 SANITARY SEWER DETAILS.DWG.BRIAN.W. 6/17/2021 9:49 AM

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1-800-922-1987

SHEET NUMBER	DRAWN BY: JF	SCALE: AS SHOWN	CHECKED BY: JU	DATE: SEPTEMBER 2017	FILE NO: 8130283701	Revisions	No.	Date	Init	Appr.	Date

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Tel: 720.482.952  
www.cvlinc.net  
westwoodjps.com

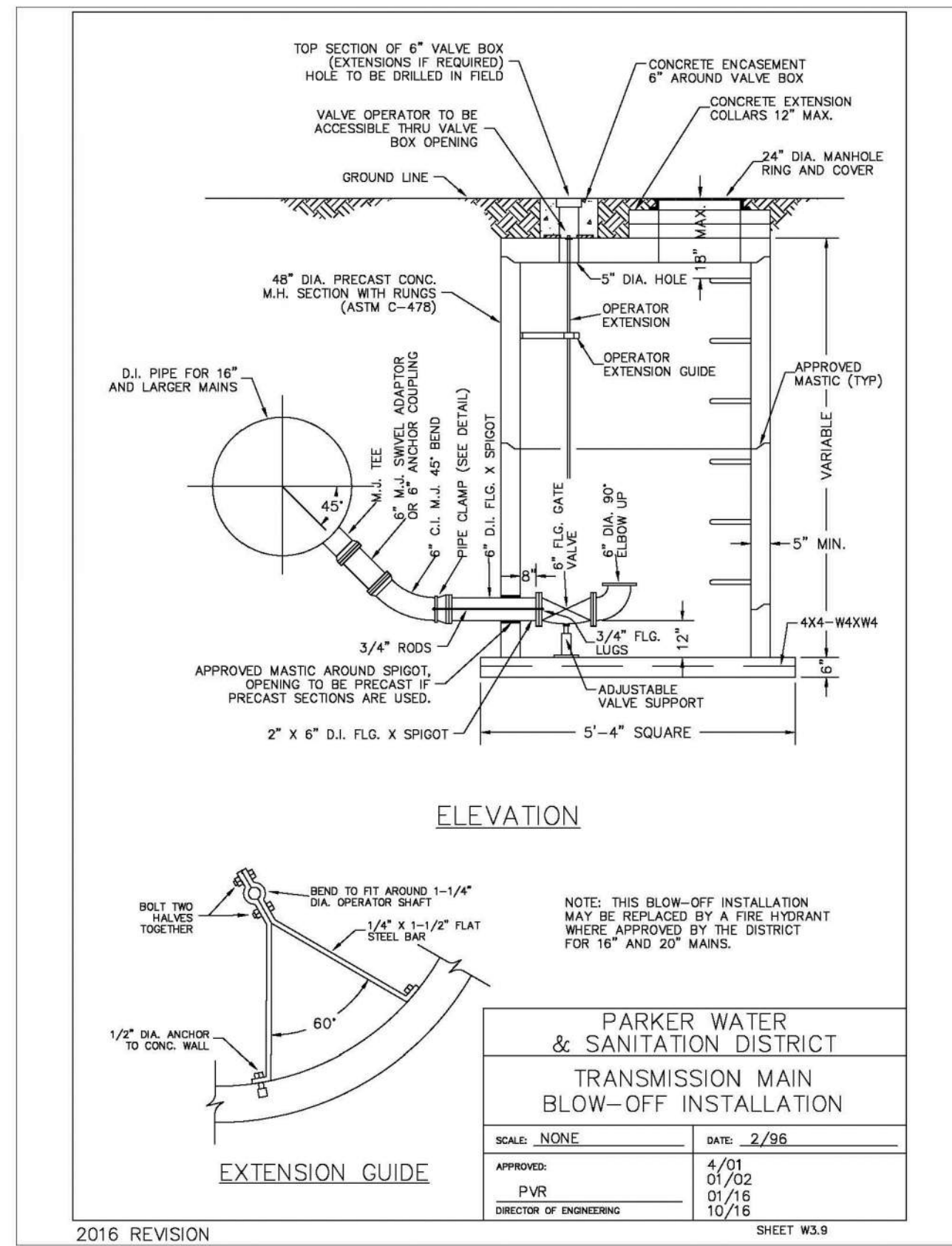
**Westwood team**

HR 935 LLC  
7355 South Alton Way  
CENTENNIAL, CO 80112

TRAILS AT CROWFOOT  
FILING 12 CONSTRUCTION DRAWINGS  
SANITARY SEWER DETAIL







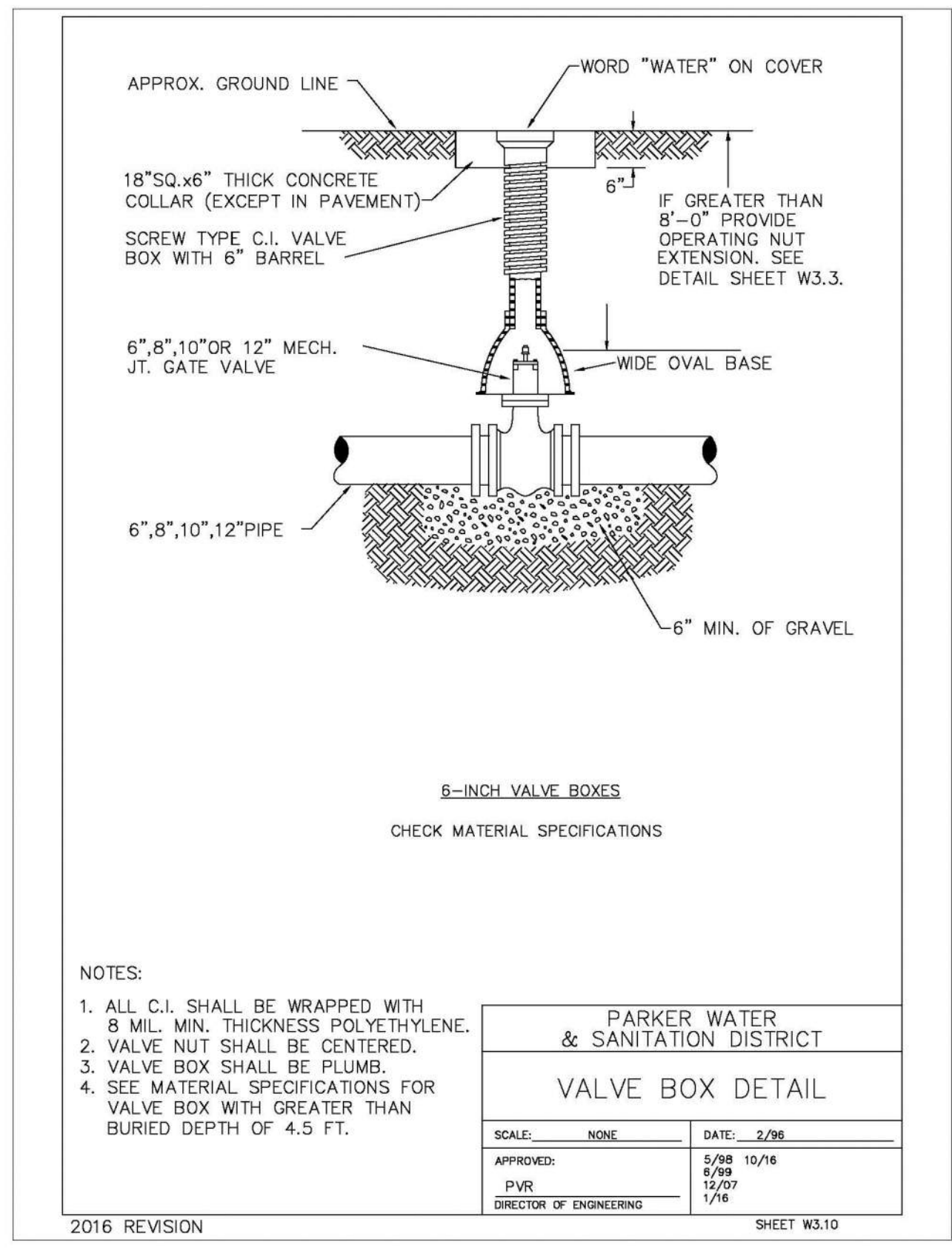
ELEVATION

NOTE: THIS BLOW-OFF INSTALLATION MAY BE REPLACED BY A FIRE HYDRANT WHERE APPROVED BY THE DISTRICT FOR 16\"/>

PARKER WATER & SANITATION DISTRICT	
TRANSMISSION MAIN BLOW-OFF INSTALLATION	
SCALE: NONE	DATE: 2/98
APPROVED: PVR	DATE: 4/01
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.9



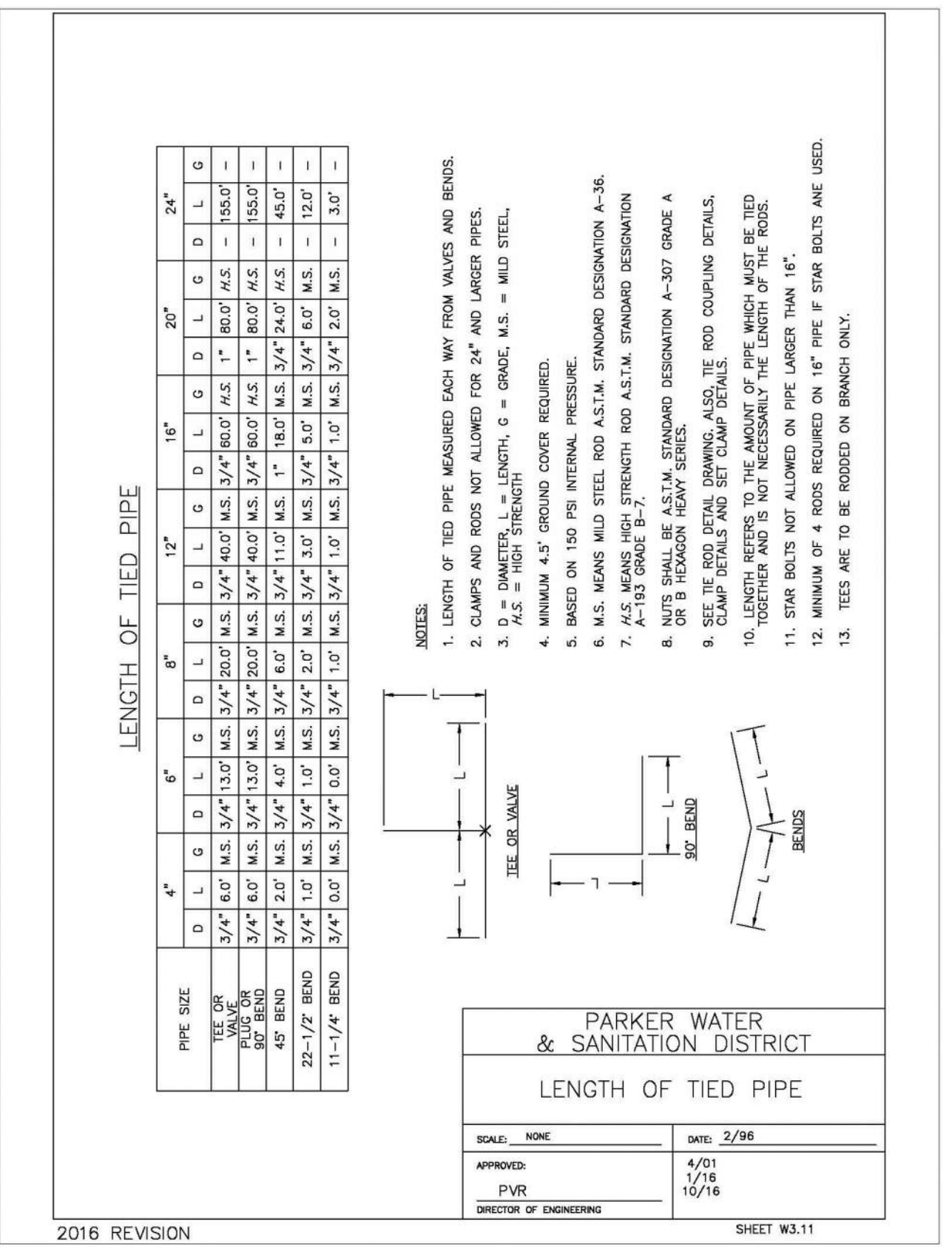
6-INCH VALVE BOXES  
CHECK MATERIAL SPECIFICATIONS

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: 2/98
APPROVED: PVR	DATE: 2/98
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.10

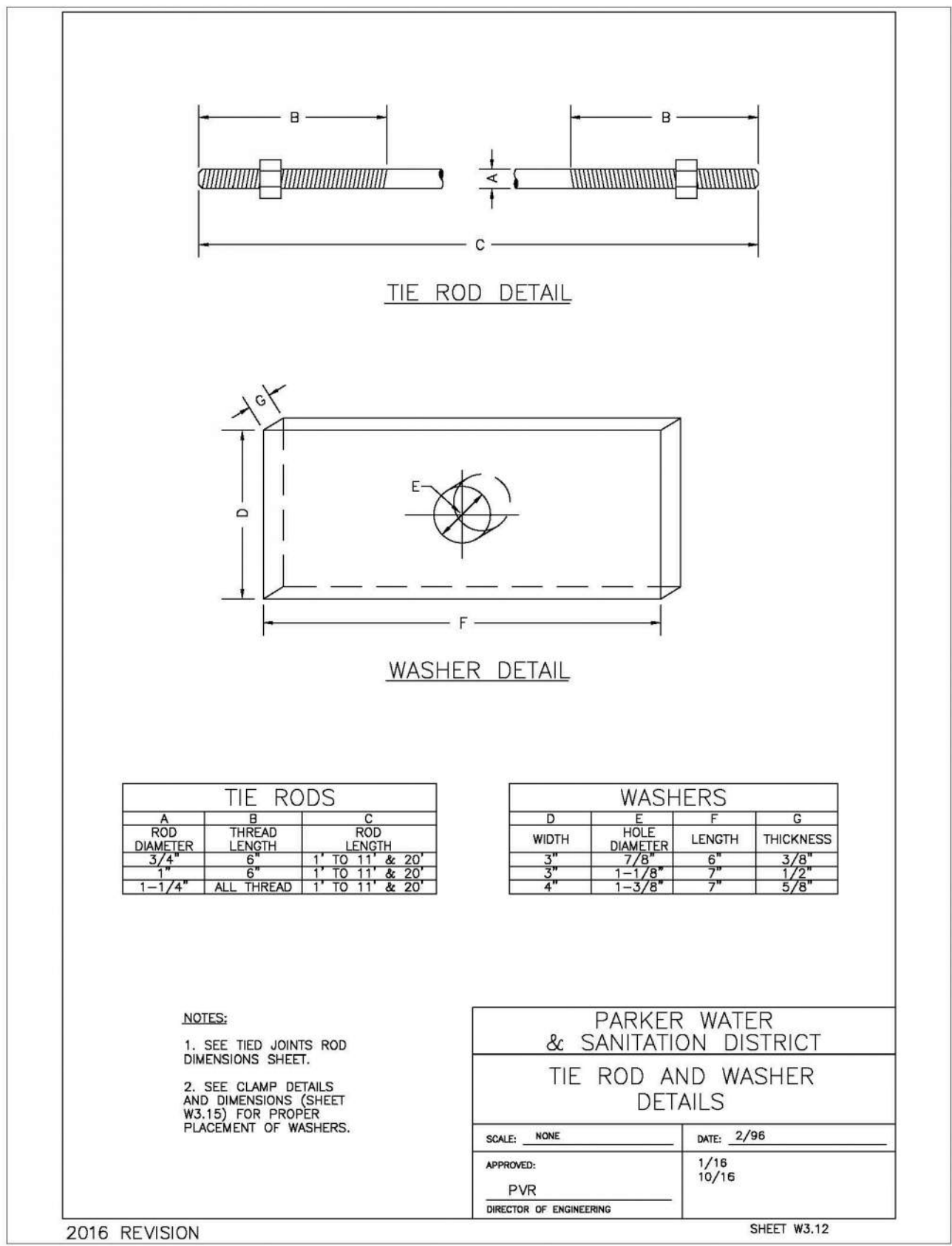


LENGTH OF TIED PIPE

PARKER WATER & SANITATION DISTRICT	
LENGTH OF TIED PIPE	
SCALE: NONE	DATE: 2/98
APPROVED: PVR	DATE: 4/01
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.11



TIE ROD DETAIL

WASHER DETAIL

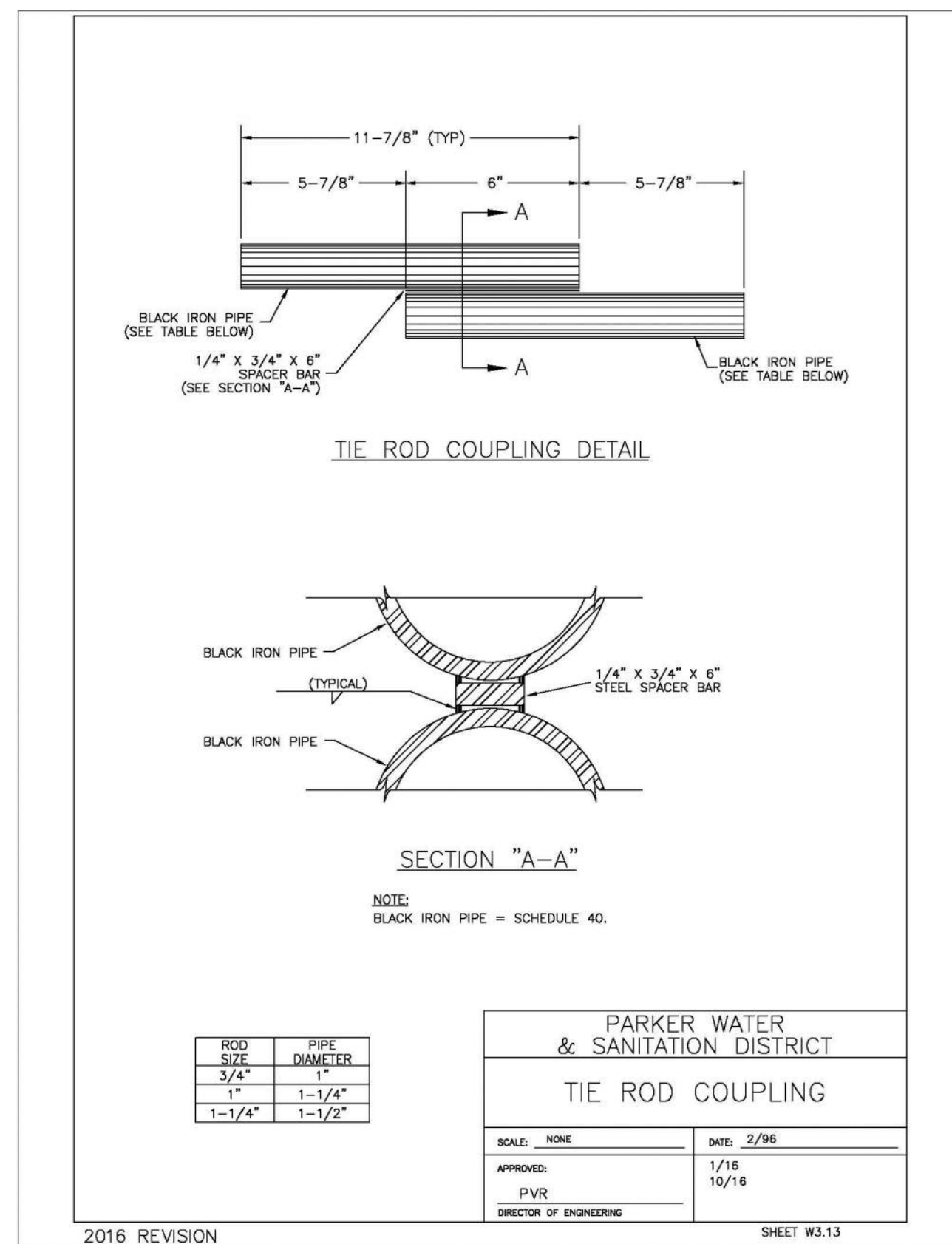
TIE RODS		
ROD DIAMETER	ROD LENGTH	ROD END LENGTH
3/4"	11-11/16	8-20
1"	13-11/16	11-8
1-1/4"	15-11/16	11-8

WASHERS			
D	F	G	H
WIDTH	DIAMETER	LENGTH	THICKNESS
3/4"	7/8"	7"	3/32"
1"	1-1/8"	7"	1/8"
1-1/4"	1-5/8"	7"	5/16"

PARKER WATER & SANITATION DISTRICT	
TIE ROD AND WASHER DETAILS	
SCALE: NONE	DATE: 2/98
APPROVED: PVR	DATE: 1/16
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.12



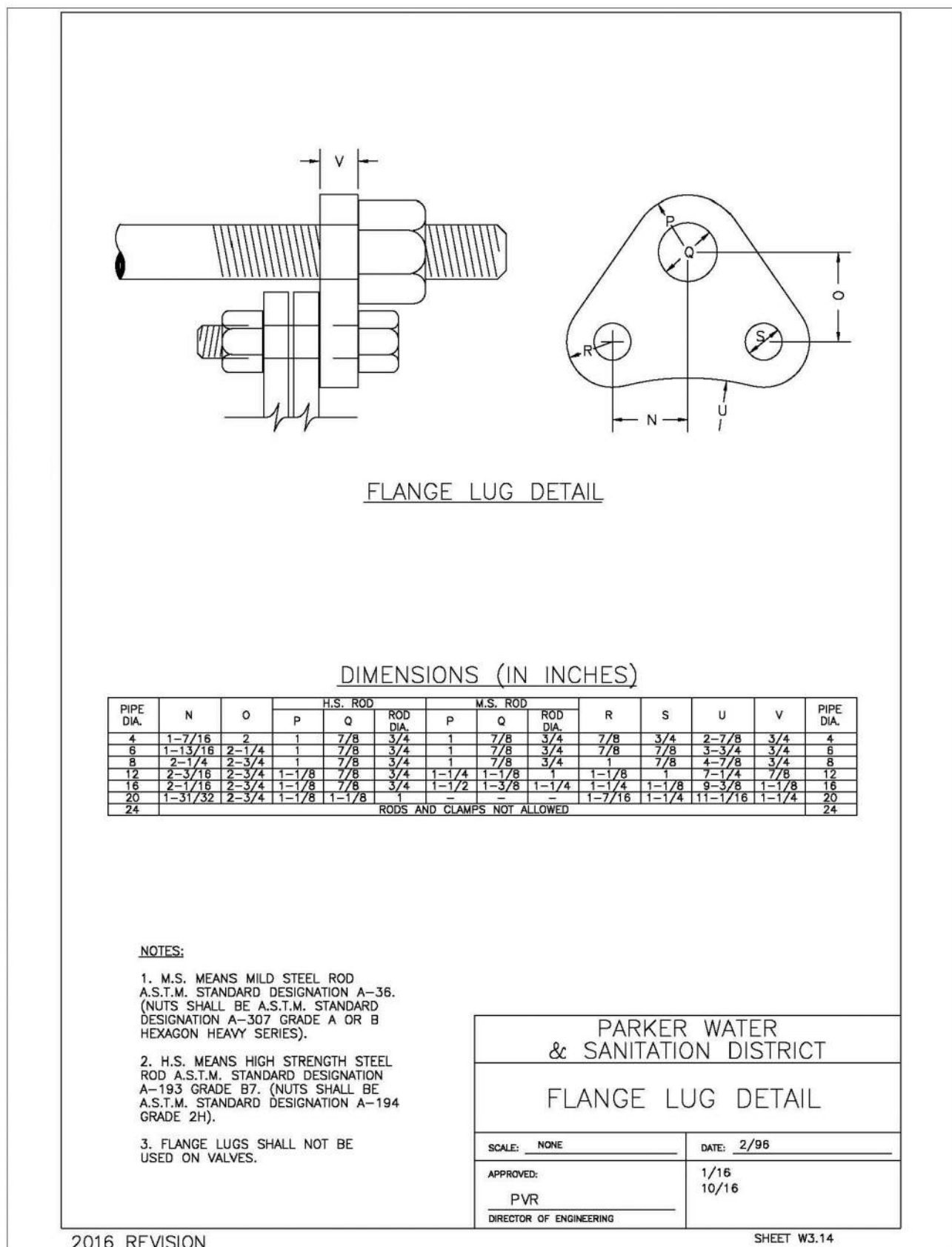
TIE ROD COUPLING DETAIL

SECTION "A-A"

PARKER WATER & SANITATION DISTRICT	
TIE ROD COUPLING	
SCALE: NONE	DATE: 2/98
APPROVED: PVR	DATE: 1/16
DIRECTOR OF ENGINEERING	10/16

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SHEET W3.13



FLANGE LUG DETAIL

DIMENSIONS (IN INCHES)

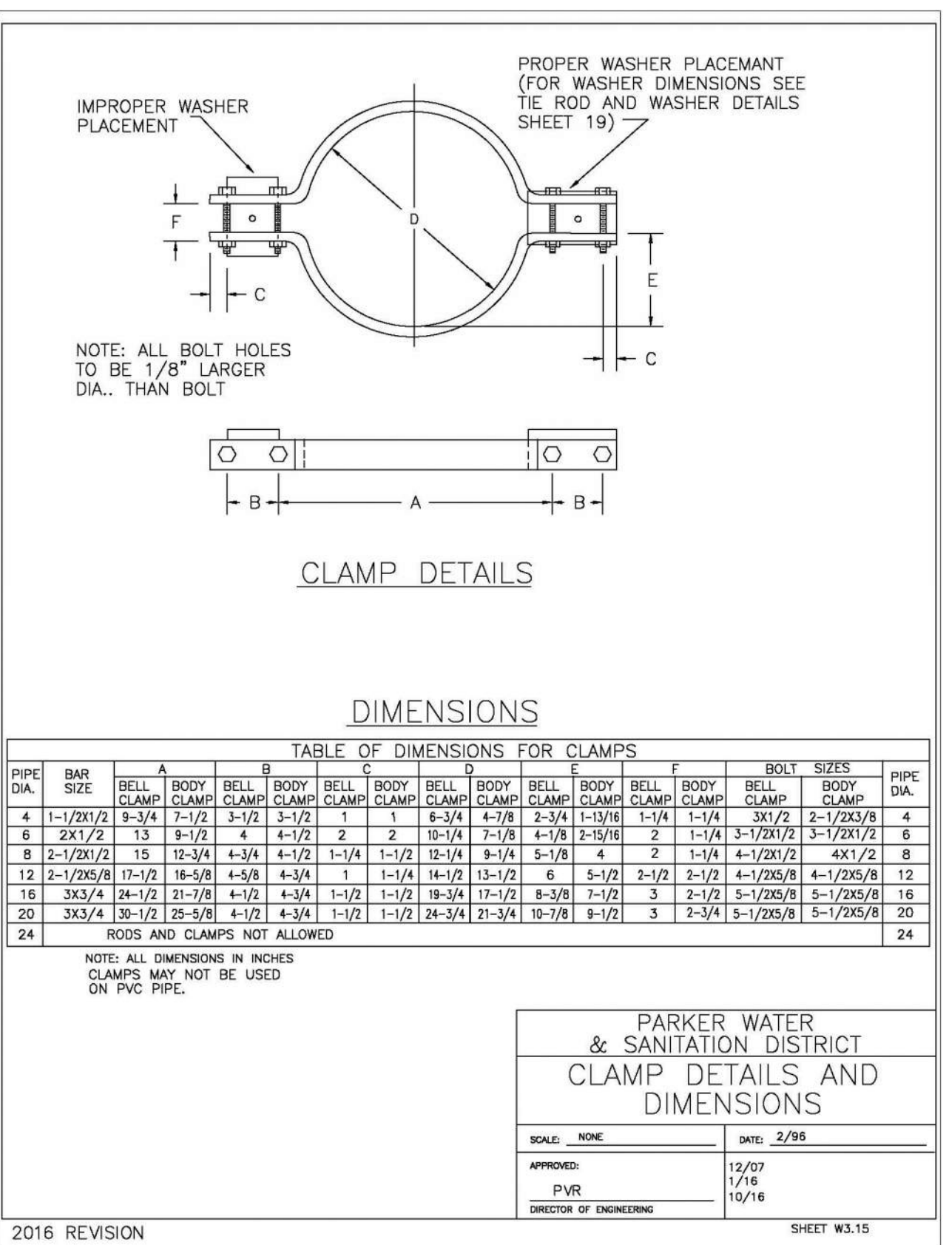
PIPE DIA.	N	O	P	Q	R	S	U	V	PIPE DIA.
4	1-1/2	2	1	1/8	3/4	7/8	3/4	2-1/2	3/4
6	2-1/4	3-1/4	2	1/8	3/4	7/8	3/4	3-1/2	3/4
8	3-1/4	4-1/4	3	1/8	3/4	7/8	3/4	4-1/2	3/4
10	4-1/4	5-1/4	4	1/8	3/4	7/8	3/4	5-1/2	3/4
12	5-1/4	6-1/4	5	1/8	3/4	7/8	3/4	6-1/2	3/4
14	6-1/4	7-1/4	6	1/8	3/4	7/8	3/4	7-1/2	3/4
16	7-1/4	8-1/4	7	1/8	3/4	7/8	3/4	8-1/2	3/4
18	8-1/4	9-1/4	8	1/8	3/4	7/8	3/4	9-1/2	3/4
20	9-1/4	10-1/4	9	1/8	3/4	7/8	3/4	10-1/2	3/4
24	11-1/4	12-1/4	11	1/8	3/4	7/8	3/4	12-1/2	3/4

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: 2/98
APPROVED: PVR	DATE: 12/07
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.14



CLAMP DETAILS

DIMENSIONS

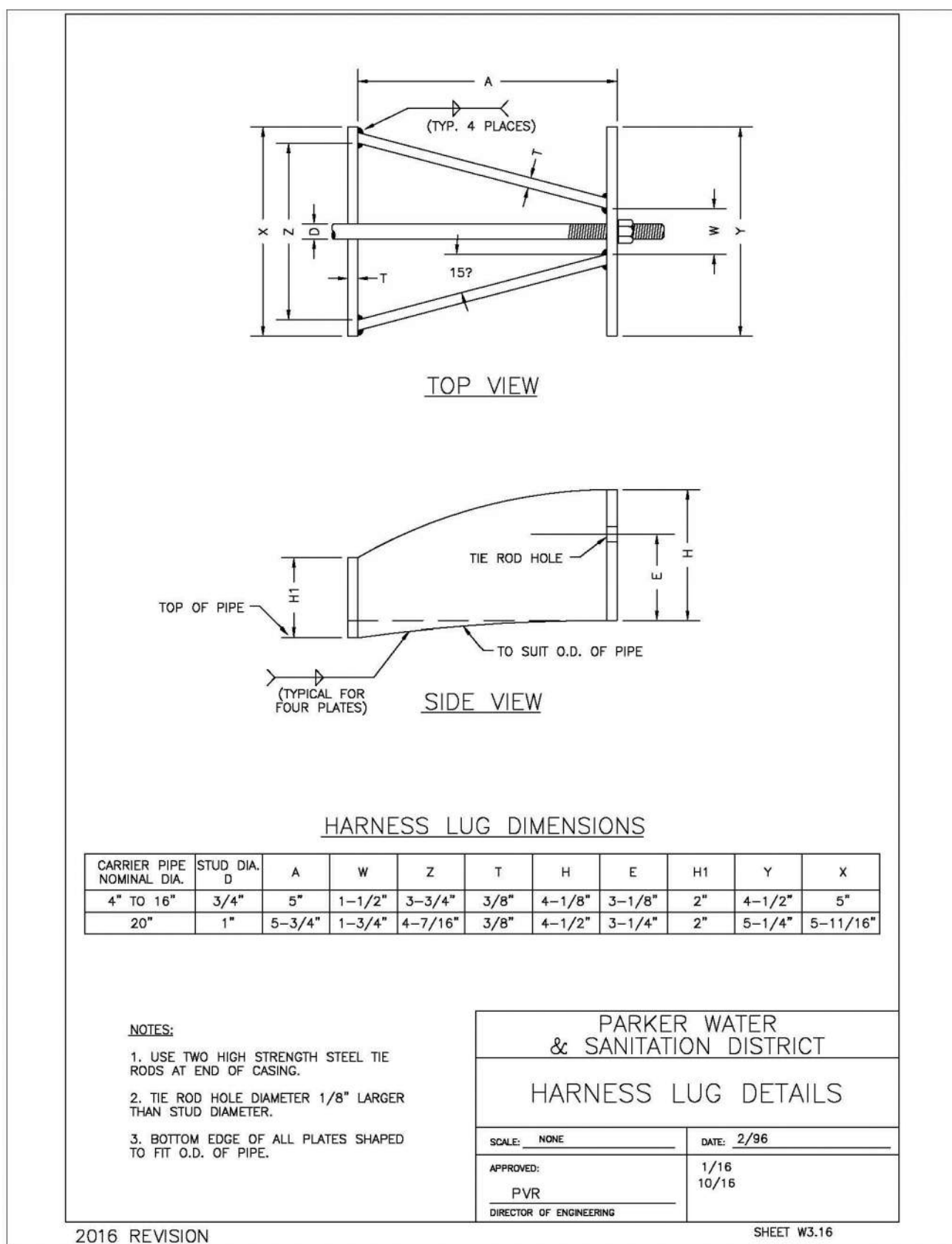
PIPE DIA.	BAR SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	PIPE DIA.
4	1-1/2	8-3/4	7-1/2	3-1/2	3-1/2	1	1	6-3/4	4-7/8	2-3/4	1-1/4	1-1/4	3x1/2	2-1/2x3/8	4			4
6	2x1/2	13	8-1/2	4	4-1/2	2	2	10-1/4	7-1/8	4-1/8	2-1/8	2	1-1/4	3-1/2x1/2	5-1/2x1/2	6		6
8	2-1/2	15	12-3/4	4-3/4	4-1/2	1-1/4	1-1/2	13-1/4	8-1/4	5-7/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	8		8
10	3	17	14-3/4	5-1/4	5-1/2	1-1/4	1-1/2	15-1/4	9-1/4	6-3/4	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	10		10
12	3-1/2	19	16-3/4	6-1/4	6-1/2	1-1/4	1-1/2	17-1/4	10-1/4	7-3/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	12		12
14	4	21	18-3/4	7-1/4	7-1/2	1-1/4	1-1/2	19-1/4	11-1/4	8-3/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	14		14
16	4-1/2	23	20-3/4	8-1/4	8-1/2	1-1/4	1-1/2	21-1/4	12-1/4	9-3/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	16		16
18	5	25	22-3/4	9-1/4	9-1/2	1-1/4	1-1/2	23-1/4	13-1/4	10-3/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	18		18
20	5-1/2	27	24-3/4	10-1/4	10-1/2	1-1/4	1-1/2	25-1/4	14-1/4	11-3/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	20		20
24	6-1/2	31	28-3/4	12-1/4	12-1/2	1-1/4	1-1/2	29-1/4	16-1/4	13-3/8	4	2	1-1/4	4-1/2x1/2	6-1/2x1/2	24		24

NOTES:  
1. ALL DIMENSIONS IN INCHES.  
2. CLAMPS MAY NOT BE USED ON PVC PIPE.

PARKER WATER & SANITATION DISTRICT	
CLAMP DETAILS AND DIMENSIONS	
SCALE: NONE	DATE: 2/98
APPROVED: PVR	DATE: 12/07
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.15



TOP VIEW

SIDE VIEW

HARNES LUG DIMENSIONS

CARRIER PIPE NOMINAL DIA.	STUD DIA.	D	A	W	Z	T	H	E	H1	Y	X
4\"/>											

NOTES:  
1. USE TWO HIGH STRENGTH STEEL TIE RODS AT END OF CASING.  
2. TIE ROD HOLE DIAMETER 1/8\"/>

PARKER WATER & SANITATION DISTRICT	
HARNES LUG DETAILS	
SCALE: NONE	DATE: 2/98
APPROVED: PVR	DATE: 1/16
DIRECTOR OF ENGINEERING	10/16

2016 REVISION

SHEET W3.16

**APPROVED**  
Jul 19 2021  
PARKER WATER AND SANITATION DISTRICT

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a Westwood team

HR 935 LLC  
7353 South Alton Way  
CENTENNIAL, CO 80112

TRAILS AT CROWFOOT  
FILING 12 CONSTRUCTION DRAWINGS  
WATER DETAILS

SCALE: AS SHOWN  
FILE NO: 8130283701

DRAWN BY: JF  
CHECKED BY: JU  
DATE: SEPTEMBER 2017

SHEET NUMBER: 13

Revisions: No. Date Init. Appr. Date

### 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
4"	2	2					P
6"	6	3	11.12	9.5	7.00	0.88	V
8"	6	4	13.37	11.75	9.15	1.00	V
10"	8	6	15.62	14.00	11.20	1.00	C
12"	8	8	17.88	16.25	13.30	1.25	C
4"	4	2					D
6"	6	3	11.12	9.5	7.00	0.88	D
8"	6	4	13.37	11.75	9.15	1.00	I
10"	8	6	15.62	14.00	11.20	1.00	I
12"	8	8	17.88	16.25	13.30	1.25	I

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: 2/00  
PVR 12/07  
DIRECTOR OF ENGINEERING 1/16

2016 REVISION      SHEET W3.17

### 11-1/4", 22-1/2", 45" & 90" BENDS

DEAD END      TYPICAL CROSS SECTION

MINIMUM BEARING SURFACE AREA (IN SQUARE FEET)

SIZE OF 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
10"	1.00	4.25	8.50	16.50	11.00
12"	1.50	6.50	12.50	24.00	16.50
16"	3.00	10.00	19.50	36.50	25.00
24"	5.50	13.00	25.00	47.00	33.00

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.  
5. SOIL BEARING CAPACITY = 3,000 LBS./SQ. FT.

PARKER WATER & SANITATION DISTRICT  
CONCRETE KICKBLOCKS BEARING SURFACES AND INSTALLATION

SCALE: NONE      DATE: 2/96

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

2016 REVISION      SHEET W3.18

HALF PLAN      STANDARD LIFTING SLOT DETAIL

NOTE:  
1. Coating Specifications: ASTM A-48 With A Minimum Tensile Strength Of 28 KSI (Class 20).  
2. All Coating To Be Dipped In Asphalt Base Coat (Or Approved Equal).

PARKER WATER & SANITATION DISTRICT  
24" DIAMETER RING AND COVER

SCALE: NONE      DATE: 6/08

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

2016 REVISION      SHEET W3.19

ACCESS MANHOLE      ACCESS MANHOLE AND AIR VALVE ASSEMBLY

NOTE:  
USE 2" AIR VALVE ASSEMBLY ON 30" OR SMALLER PIPE.  
FOR VENT PIPE DETAILS SEE SHEET W3.1.  
RESIDENTIAL ASSEMBLY MAY BE USED IN RESIDENTIAL AREAS ONLY (SEE DETAIL SHEET W3.3).  
SEE SHEET W3.6 FOR CONCRETE MANHOLE BASE BEAMS AND AIR/VACUUM VALVE DETAILS.

PARKER WATER & SANITATION DISTRICT  
ACCESS MANHOLE ASSEMBLY

SCALE: NONE      DATE: 2/96

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

2016 REVISION      SHEET W3.20

STANDARD TRENCH SECTION      STREET CUT PATCH

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-4"	2'-4"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
10"	2'-0"	3'-0"
12"	2'-2"	3'-2"
16"	2'-6"	3'-6"
20"	3'-0"	4'-0"
24"	3'-0"	4'-0"

PARKER WATER & SANITATION DISTRICT  
TYPICAL TRENCH SECTION PIPE PROTECTION

SCALE: NONE      DATE: 2/96

APPROVED: 5/98  
PVR 2/00  
DIRECTOR OF ENGINEERING 10/16

2016 REVISION      SHEET W4.1

### PIPE BEDDING

(a) Installation of Bedding and Pipes: 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. Bedding 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 silt 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 composition of backfill.

Composition 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 squeaky sand and shall conform to the following limits when tested by means of laboratory sieves:

Sieve Size	Total Percent Passing by Weight
3/8 inch	100
No. 4	70-100
No. 6	35-63
No. 10	20-50
No. 20	5-25
No. 30	2-30
No. 100	1-10
No. 200	0-3

Squeaky Sand for use with 24-inch or smaller

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

If approved by the District, fines from 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 substances, 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: 5/98  
PVR 2/00  
DIRECTOR OF ENGINEERING 10/16

2016 REVISION      SHEET W4.2

PLAN VIEW      PROFILE      TYPICAL SECTION

NOTE:  
1. ALL CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3,000 PSI USING TYPE I PORTLAND CEMENT AND 3/4" AGGREGATE. ALL CONCRETE SHALL HAVE 5-7% ENTRAINED AIR CONTENT AND A MAXIMUM SLUMP OF 4".  
2. ALL REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60.  
3. ALL REINFORCEMENT SHALL HAVE 2" MIN. CONCRETE COVER.  
4. THE SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY PRIOR TO FORMING THE STRUCTURE.  
5. PIPE SHALL BE WRAPPED WITH FELT LAYER BEFORE ENCASING.

PARKER WATER & SANITATION DISTRICT  
WATERLINE ENCASEMENT

SCALE: NONE      DATE: 3/98

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

2016 REVISION      SHEET W4.3

PLAN FOR PERPENDICULAR CROSSING      PLAN FOR ANGLE CROSSING

FORMULA FOR FINDING C:  
 $C = B + (2)(1.5) \left[ \frac{B}{2} + A + F \right]$

FORMULA FOR FINDING L:  
 $L = \frac{C}{\sin \phi}$

PARKER WATER & SANITATION DISTRICT  
BORED CROSSINGS BENEATH CONDUITS

SCALE: NONE      DATE: 2/96

APPROVED: 2/00  
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2016 REVISION      SHEET W4.4

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a Westwood team									
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