

**CITY OF CARLSBAD
ENGINEERING STANDARDS**

VOLUME 3 – STANDARD DRAWINGS AND SPECIFICATIONS

CHAPTER 4 – POTABLE & RECYCLED WATER STANDARD DRAWINGS

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CHAPTER 4 – POTABLE & RECYCLED WATER STANDARD DRAWINGS

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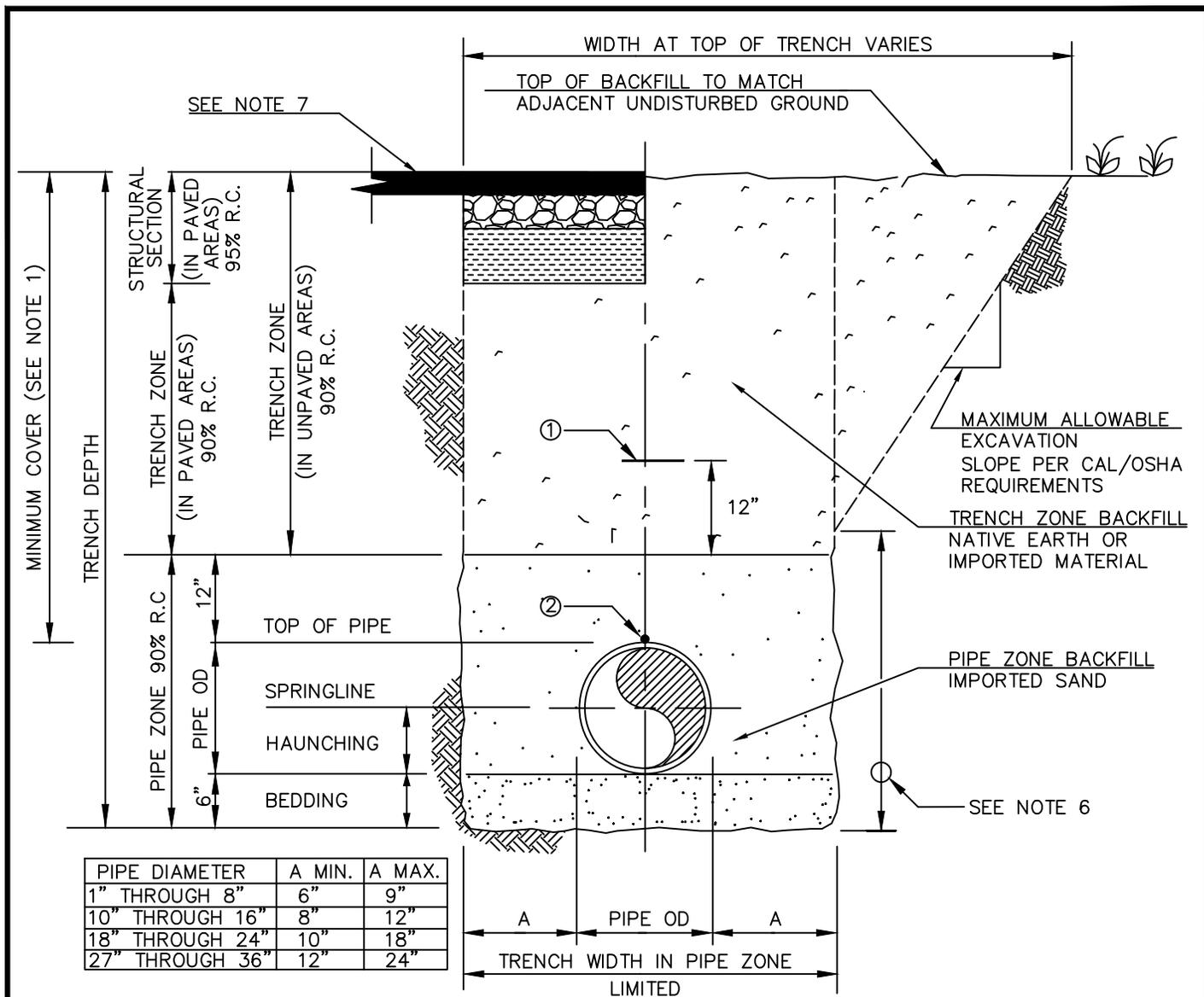
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<u>DESCRIPTION</u>	<u>ABBREVIATION</u>	<u>C.M.W.D. DWG. NO.</u>	<u>SYMBOL</u>
WATER PIPELINE (Size Per Plan)	W	W-2	
RECYCLED WATER PIPELINE (Size Per Plan)	RW	W-2	
GATE VALVE	GV	W-21	
BUTTERFLY VALVE	BFV	W-22	
BLOW-OFF ASSEMBLY (Over main or lateral installation)	BO	W-15, W-16	
MANUAL AIR RELEASE ASSEMBLY	MAR	W-10	
AIR VACUUM ASSEMBLY	AVA	W-11, W-12	
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REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT		4/29/22
			STANDARD SYMBOLS FOR IMPROVEMENT PLANS		DISTRICT ENGINEER RCE 55974
				STANDARD DWG. NO.	W-1





PIPE DIAMETER	A MIN.	A MAX.
1" THROUGH 8"	6"	9"
10" THROUGH 16"	8"	12"
18" THROUGH 24"	10"	18"
27" THROUGH 36"	12"	24"

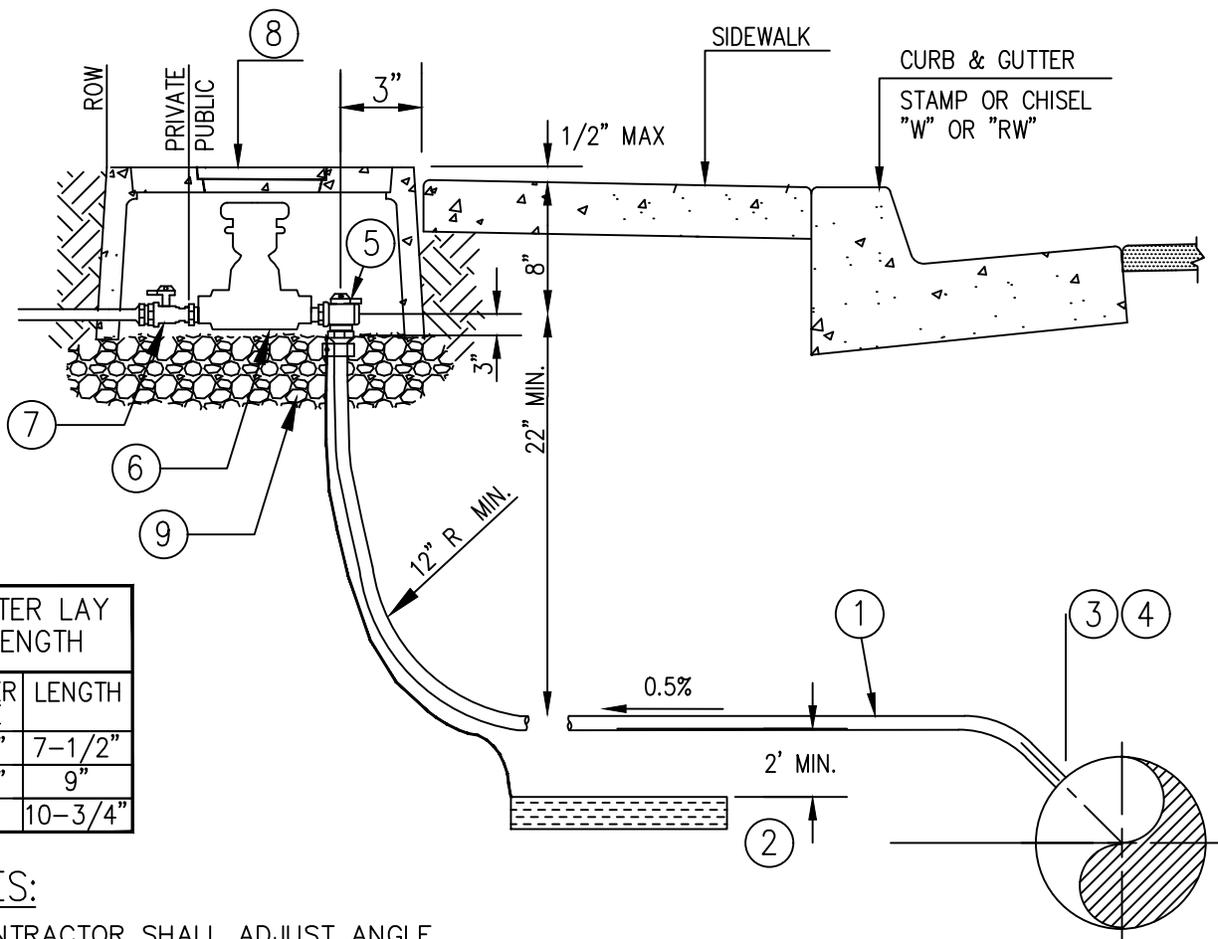
NOTES:

- PIPE MINIMUM COVER PER SPEC. 02223.
- PERCENTAGES SHOWN EQUAL MINIMUM RELATIVE COMPACTION.
- MINIMUM DEPTH OF COVER FROM TOP OF PIPE TO FINISH GRADE SHALL BE 3 FEET. FOR COVER LESS THAN 3', SPECIAL DESIGN AND APPROVAL REQUIRED.
- TRENCH ZONE AND PIPE ZONE BACKFILL MATERIALS SHALL BE PER SECTION 02223. ROCKS LARGER THAN 4" IN ANY DIMENSION, ASPHALT OR CONCRETE CHUNKS WILL NOT BE ALLOWED.
- CITY SHALL INSPECT TRENCH BOTTOMS PRIOR TO PLACEMENT OF BEDDING.
- REFER TO TITLE 8, CCR, SECTION 1541.1 FOR ALLOWABLE LIMIT OF VERTICALLY-SIDED LOWER PORTION AND OTHER PROTECTIVE SYSTEM CONFIGURATIONS.
- REFER TO GS SERIES STD. DWGS. FOR PAVEMENT RESTORATION REQUIREMENTS.

NO SCALE

ITEM	DESCRIPTION	SPEC/DWG
1	WARNING/ID TAPE	15000/W-28
2	TRACER WIRE FOR NON-METALLIC PIPE	15000/W-28

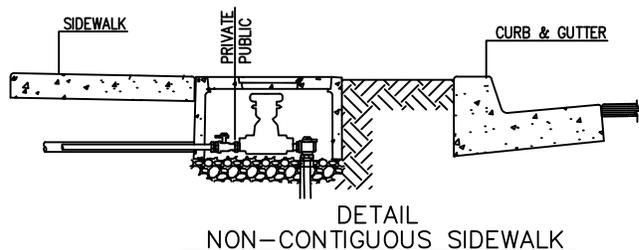
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
			TYPICAL TRENCH SECTION	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-2



METER LAY LENGTH	
METER SIZE	LENGTH
5/8"	7-1/2"
3/4"	9"
1"	10-3/4"

NOTES:

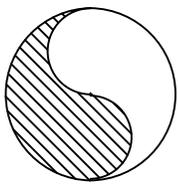
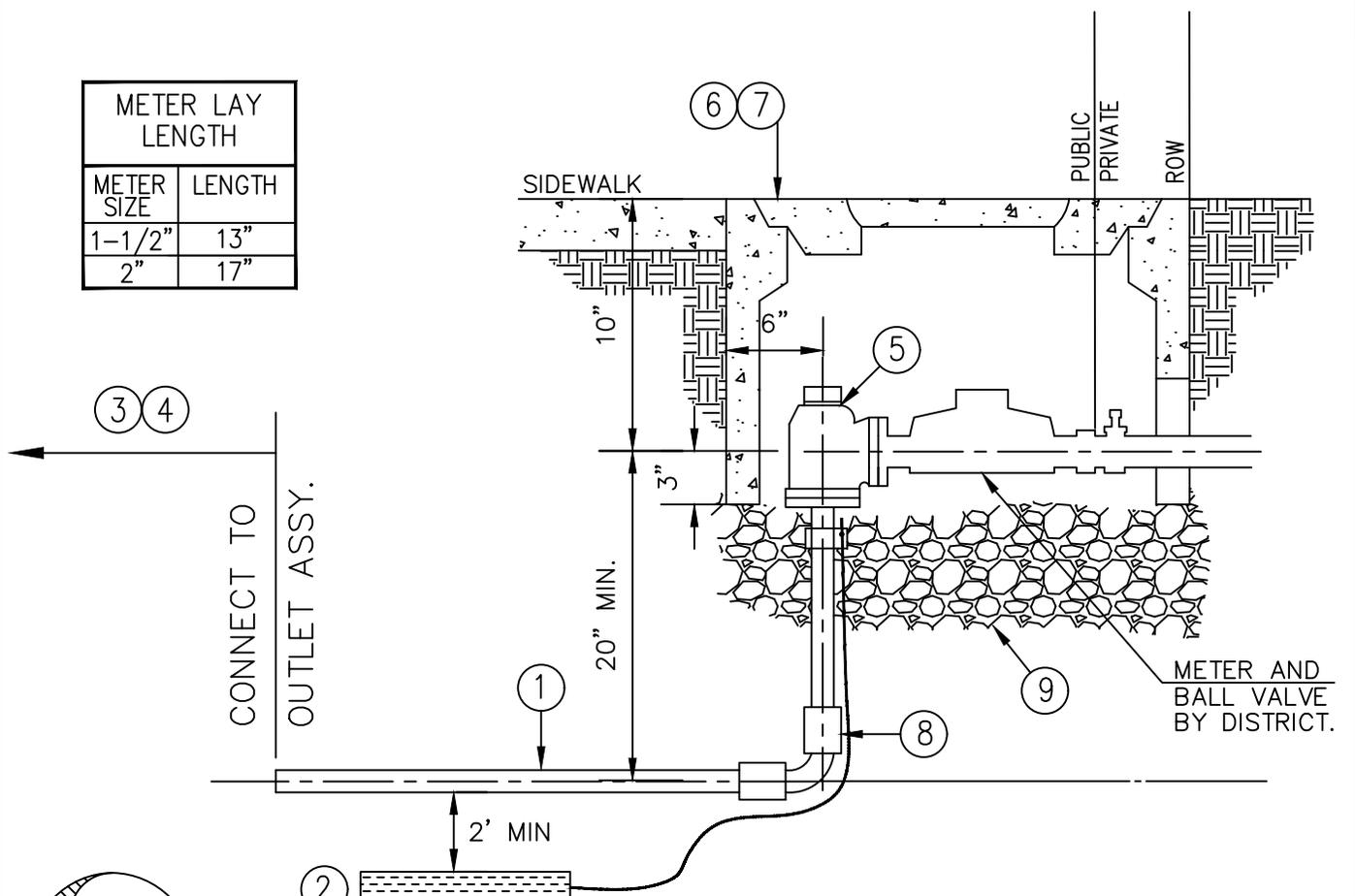
1. CONTRACTOR SHALL ADJUST ANGLE VALVE & METER BOX TO F.G. AFTER SIDEWALK IS INSTALLED & APPROVED.
2. DISTRICT WILL SET METER AND BALL VALVE
3. PIPING SHALL BE SOLID COPPER WITH NO JOINTS OR REPAIR COUPLINGS.
4. TAP TO MAIN TO BE MINIMUM OF 24" FROM NEAREST COUPLING, FITTING, VALVE, BELL OR OTHER TAPS.
5. POSITION ANODE MIDWAY BETWEEN PIPELINE AND METER BOX.
6. INTERIOR OF METER BOX SHALL BE CLEAR OF DEBRIS AND ANGLE METER STOP FULLY EXPOSED.
7. ALL METERS SHALL HAVE SEPARATE SERVICE TO MAIN.
8. DO NOT INSTALL METER BOXES OR SERVICE IN DRIVEWAYS.



ITEM	DESCRIPTION	SPEC/DWG
1	COPPER (TYPE 'K' SOFT)	15057
2	30 LB. ZINC ANODE WITH ANODE LEAD WIRE	WC-8
3	OUTLET ON AC OR PVC MAIN	W-13
4	OUTLET ON DUCTILE IRON OR STEEL MAIN	W-14
5	1" ANGLE METER STOP	15099
6	METER (BY DISTRICT)	
7	BALL VALVE (BY DISTRICT)	15099
8	METER BOX AND COVER	15000
9	4"-6" DEPTH OF 3/8" ROCK	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	1" WATER SERVICE CONNECTION	DISTRICT ENGINEER	DATE
			FOR 5/8", 3/4" & 1" METERS	RCE 55974	
				STANDARD DWG. NO.	W-3

METER LAY LENGTH	
METER SIZE	LENGTH
1-1/2"	13"
2"	17"

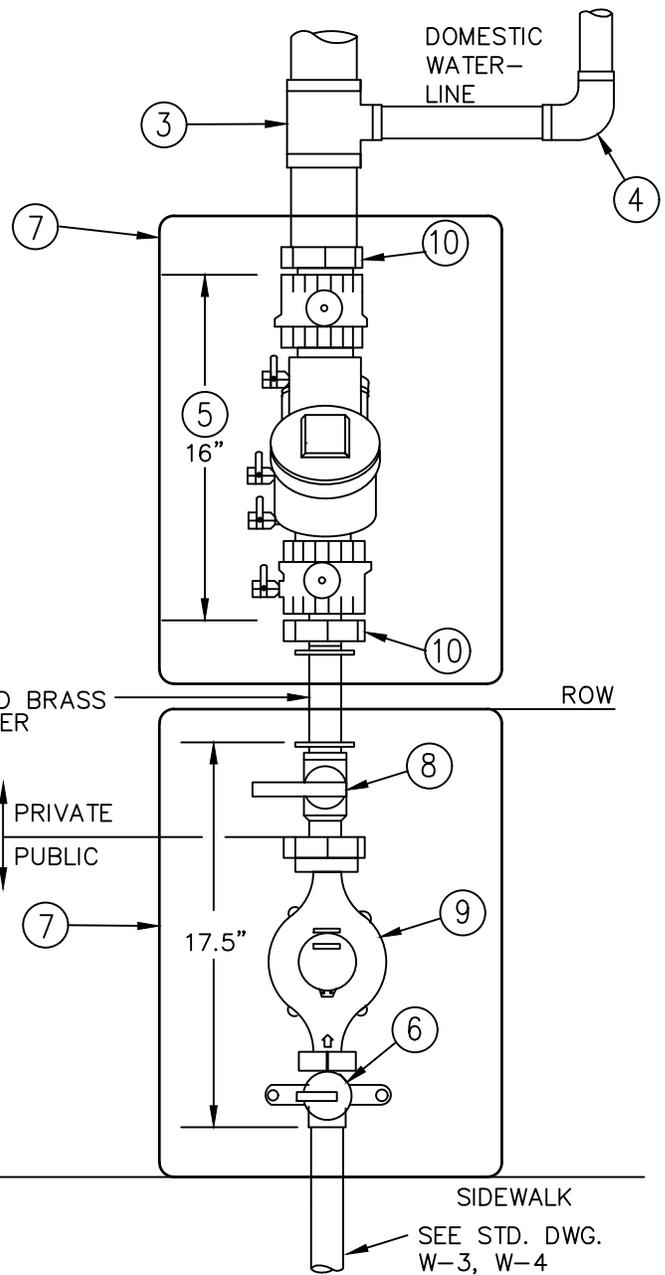
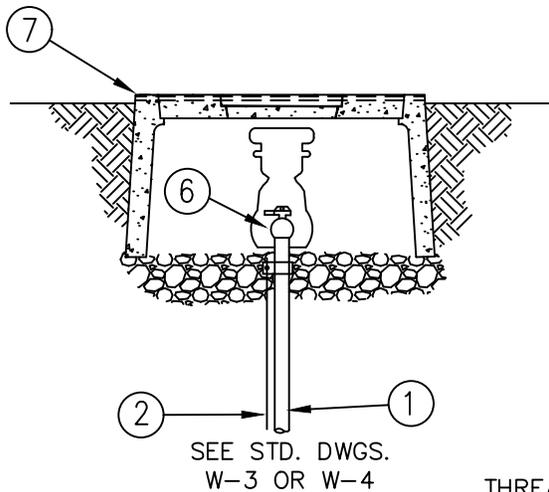


NOTES:

1. DISTRICT WILL SET METER AND BALL VALVE.
2. COPPER JOINTS SHALL BE COMPRESSION IN CONFORMANCE WITH SPECIFICATIONS.
3. TAP TO MAIN TO BE MINIMUM OF 24" FROM NEAREST COUPLING, FITTING, VALVE, BELL OR OTHER TAPS.
4. POSITION ANODE MIDWAY BETWEEN PIPELINE AND METER BOX.
5. FOR NON-CONTIGUOUS SIDEWALK, SEE STD. W-3

ITEM	DESCRIPTION	SPEC/DWG
1	2" COPPER (TYPE K STRAIGHT SOFT TUBE)	15057
2	30 LB. ZINC ANODE WITH ANODE LEAD WIRE	WC-8
3	OUTLET ON AC OR PVC MAIN	W-13
4	OUTLET ON DUCTILE IRON OR STEEL MAIN	W-14
5	2" ANGLE METER STOP	15099
6	METER BOX AND COVER (TRAFFIC AREA)	15000
7	METER BOX AND COVER (NON-TRAFFIC AREA)	15000
8	2" 90° ELL	15057
9	4"-6" DEPTH OF 3/8" ROCK	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	2" WATER SERVICE CONNECTION	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-4
				FOR 1-1/2" & 2" METERS	

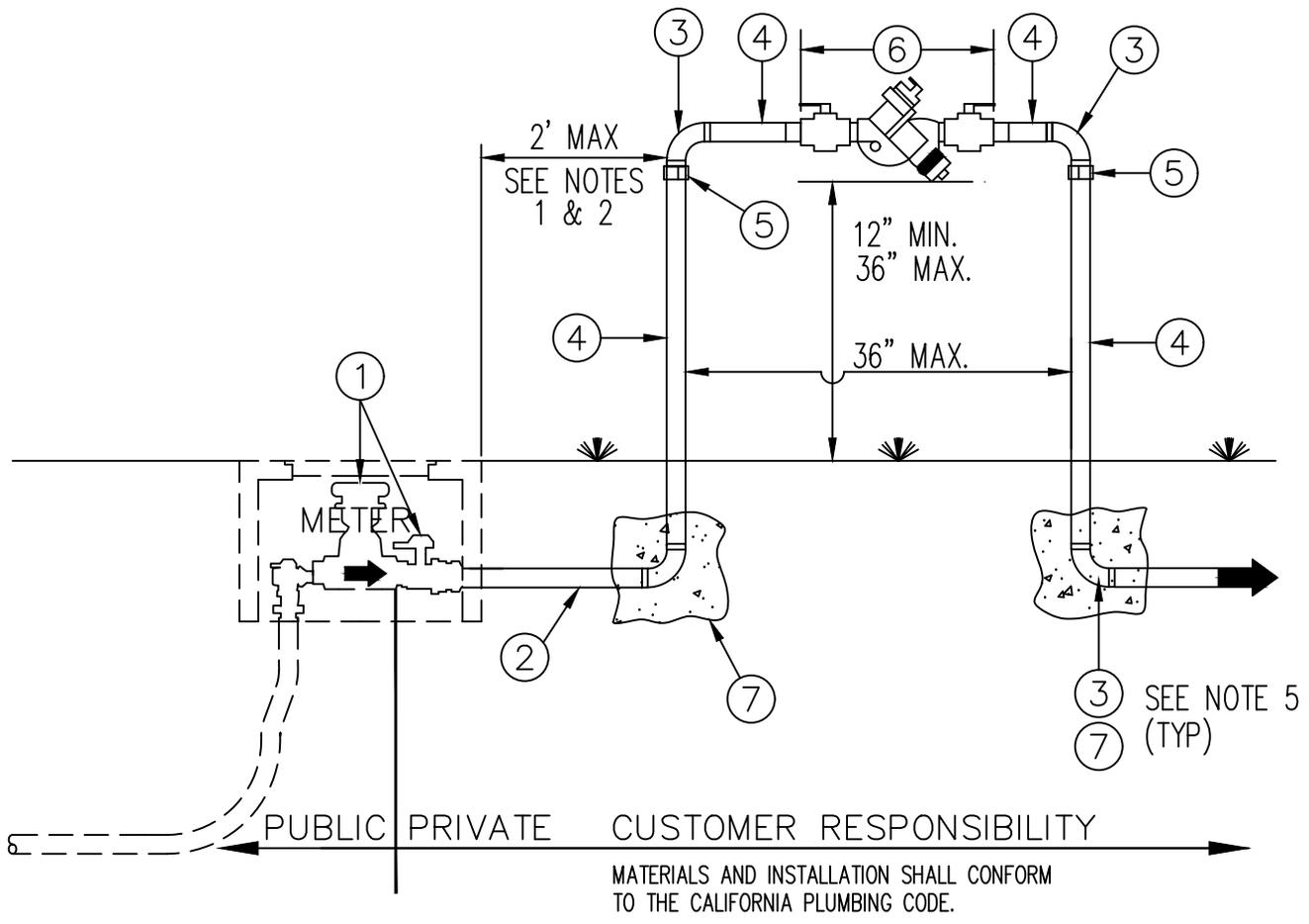


NOTES:

1. REFER TO STD. DWGS. W-3 OR W-4 FOR ADDITIONAL REQUIREMENTS.
2. DISTRICT TO SET METER AND BALL VALVE. ALL OTHER WORK BY CONTRACTOR.
3. PRIVATE WATER LINE MATERIALS SHALL CONFORM TO THE CALIFORNIA PLUMBING CODE.
4. JOINTS SHALL BE THREADED OR COMPRESSION IN CONFORMANCE WITH SPECIFICATIONS.
5. WHEN SERVICE MUST EXTEND UNDER SIDEWALK, INSTALL A SCHEDULE 80 PVC SLEEVE AROUND THE SERVICE TUBING BETWEEN THE METER BOX AND THE DOUBLE CHECK VALVE ASSEMBLY.

ITEM	DESCRIPTION	SPEC/DWG
1	COPPER (TYPE 'K' SOFT)	15057
2	30 LB. ZINC ANODE AND LEAD WIRE	16640/WC-8
3	TEE (MATCH REQUIRED FIRE & DOMESTIC BRANCH SERVICE SIZE)	15057
4	1" 90° BEND	15057
5	USC APPROVED DOUBLE CHECK VALVE ASSEMBLY W/ 1/4 TURN BALL VALVES AND TEST COCKS (LEAD FREE)	15112
6	1" ANGLE METER STOP	15099
7	METER BOX	15000
8	1" BALL VALVE	15099
9	1" WATER METER (BY DISTRICT)	W-3
10	BRASS UNION	15057

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		7/22	1" DOMESTIC WATER SERVICE CONNECTION WITH FIRE SPRINKLER SYSTEM	DISTRICT ENGINEER	DATE
2		5/24		RCE 55974	
				STANDARD DWG. NO.	W-5



NOTES:

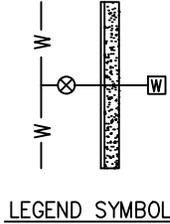
1. DO NOT INSTALL PLASTIC PIPE, OR PLASTIC FITTINGS BETWEEN THE METER AND BACKFLOW ASSEMBLY.
2. WHEN SERVICE MUST EXTEND UNDER SIDEWALK, INSTALL A SCHEDULE 80 PVC SLEEVE AROUND THE SERVICE TUBING BETWEEN THE METER BOX AND THE BACKFLOW PREVENTION DEVICE.
3. CONSTRUCT 2' HIGH RETAINING WALL ON 3 SIDES OF BACKFLOW PREVENTER WHEN INSTALLED ON 4:1 OR GREATER SLOPE. OPEN END SHALL BE AT DOWNHILL SIDE OF SLOPE. PROVIDE 2' HORIZONTAL CLEARANCE BETWEEN WALL AND BACKFLOW PREVENTER.
4. DO NOT INSTALL IN AREA SUBJECT TO FLOODING.
5. WRAP COPPER OR BRASS TUBING WITH 10 MIL UTILITY TAPE WHEN ENCASED IN CONCRETE.

ITEM	DESCRIPTION	SPEC/DWG
1	METER AND BALL VALVE (BY DISTRICT)	
2	THREADED BRASS OR COPPER PIPE	15057
3	BRASS 90° ELBOW (THREADED)	15057
4	THREADED BRASS PIPE	15057
5	BRASS UNION	15057
6	USC APPROVED BACKFLOW PREVENTION DEVICE	15112
7	FOUNDATION ANCHOR BLOCK	03000

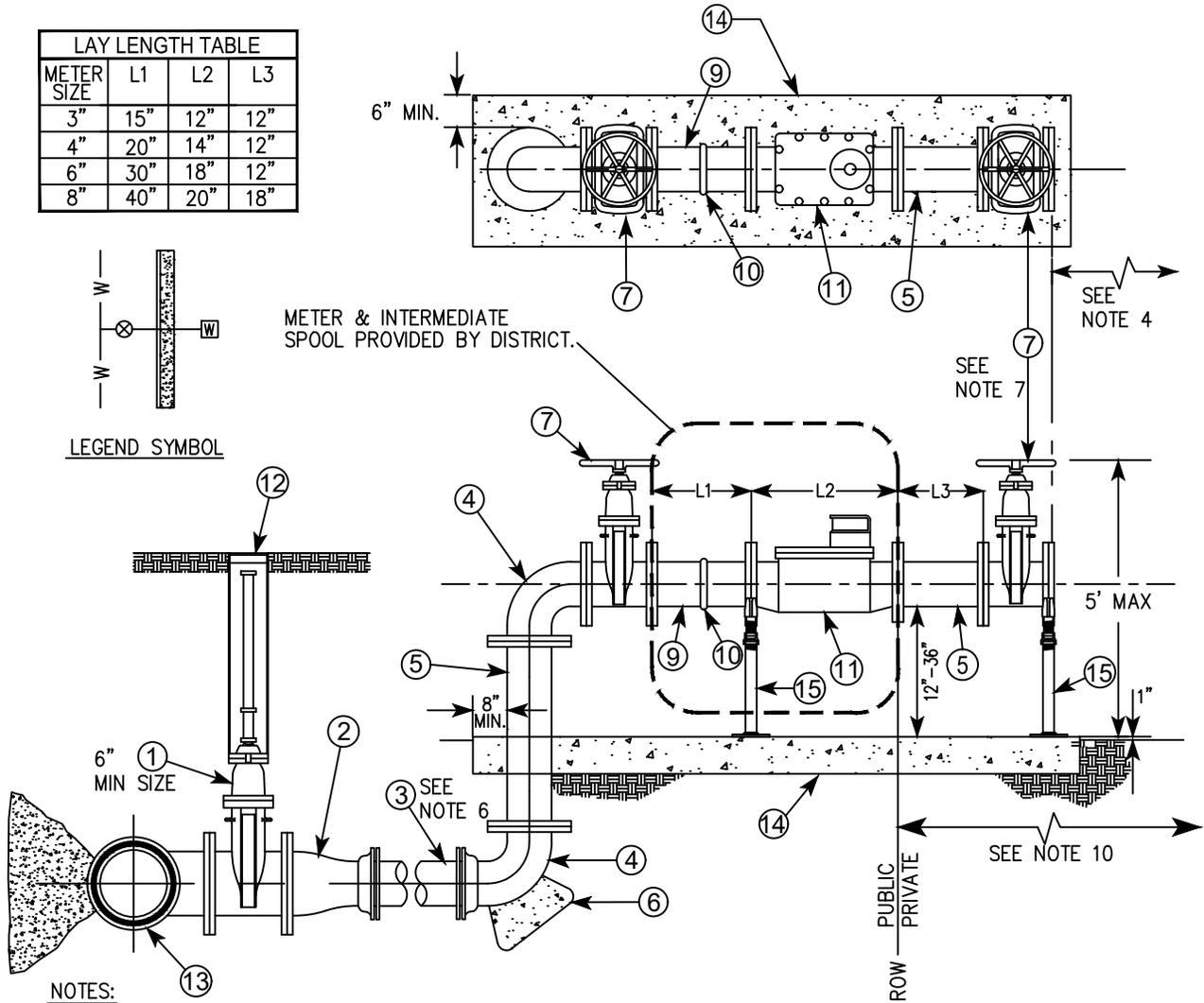
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Dorel Ruttle</i>	4/29/22
1		7/22	2" & SMALLER BACKFLOW PREVENTION INSTALLATION	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-6



LAY LENGTH TABLE			
METER SIZE	L1	L2	L3
3"	15"	12"	12"
4"	20"	14"	12"
6"	30"	18"	12"
8"	40"	20"	18"



METER & INTERMEDIATE SPOOL PROVIDED BY DISTRICT.

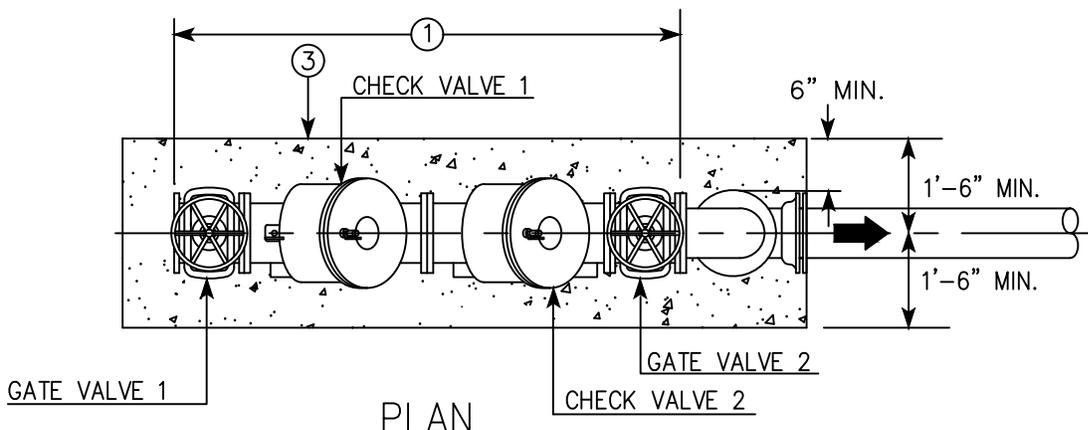


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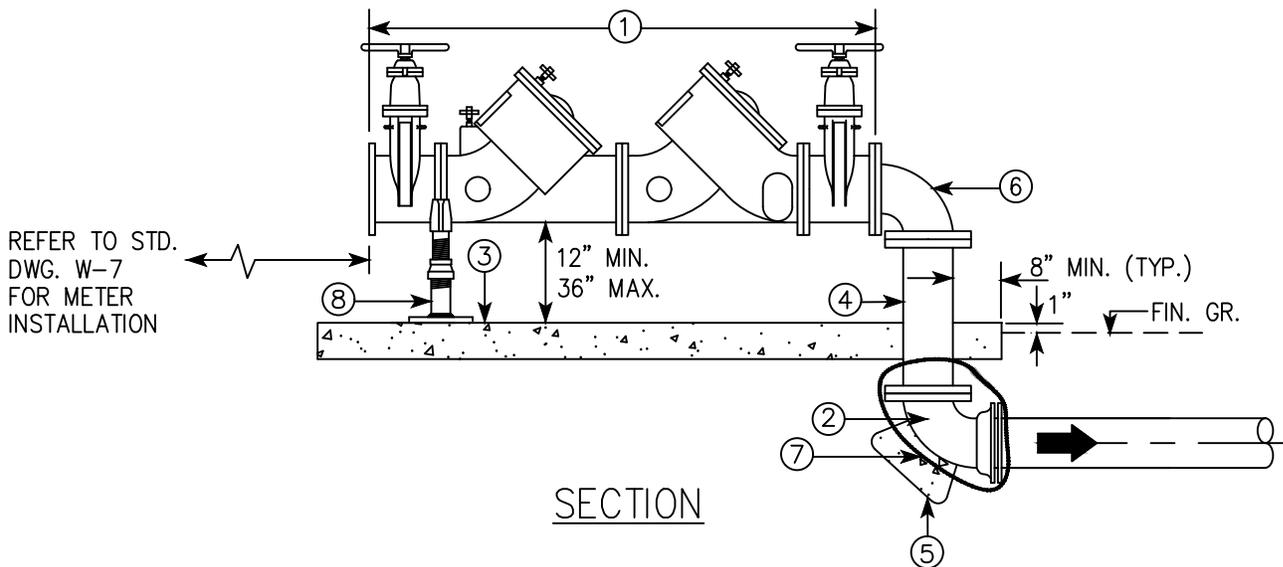
1. MATERIAL SUBSTITUTIONS SHALL NOT BE MADE WITHOUT DISTRICT APPROVAL.
2. ASSEMBLY LOCATION AND LAYOUT SHALL BE FIELD VERIFIED.
3. ALL PIPING AND FITTING JOINTS SHALL BE FULLY RESTRAINED.
4. REFER TO STANDARD DRAWING W-8 FOR INSTALLATION OF BACKFLOW PREVENTION DEVICE.
5. BRASS BOLTS AND NUTS SHALL BE USED FOR ALL CONNECTIONS TO THE WATER METER AND STRAINER.
6. PIPING DIAMETER TO MATCH METER SIZE.
7. THIS GATE VALVE IS PART OF THE ADJACENT BACKFLOW ASSEMBLY. SEE STD. DWG. W-8.
8. INSTALL PROTECTION POSTS PER STD. DWG. W-25 AT LOCATIONS APPROVED BY THE DISTRICT.
9. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC 09902.
10. CUSTOMER RESPONSIBILITY. INSTALL PURSUANT TO CMC SECTION 11.16.050, TITLE 17 OF THE CALIFORNIA ADMINISTRATIVE CODE, AND THE LATEST ADOPTED CROSS CONNECTION CONTROL POLICY HANDBOOK.

ITEM	DESCRIPTION	SPEC./DWG.	ITEM	DESCRIPTION	SPEC./DWG.
1	GATE VALVE, FLG'D OR FLG X MJ	15100	9	DI OR STL PIPE SPOOL, FLG X GROOVE	15056/15061
2	REDUCER (AS REQUIRED)	15056	10	GROOVED COUPLING	15000
3	DI OR PVC PIPE WITH RESTRAINED JOINTS	15056/15064	11	METER (ULTRASONIC)	AML
4	90° DI BEND, FLG'D OR FLG X MJ	15056	12	VALVE BOX ASSEMBLY	15000 / W-23
5	DIP SPOOL	15056	13	DI TEE W/TB, MJ X MJ X FLG	15056/03000
6	THRUST BLOCK	03000	14	REINF. CONCRETE PAD (560-C-3250)	03000
7	GATE VALVE WITH HAND WHEEL	15100	15	PIPE SUPPORT W/ SADDLE TOP	15000
8	NOT USED				

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	3" & LARGER WATER SERVICE CONNECTION	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-7



PLAN



SECTION

REFER TO STD. DWG. W-7 FOR METER INSTALLATION

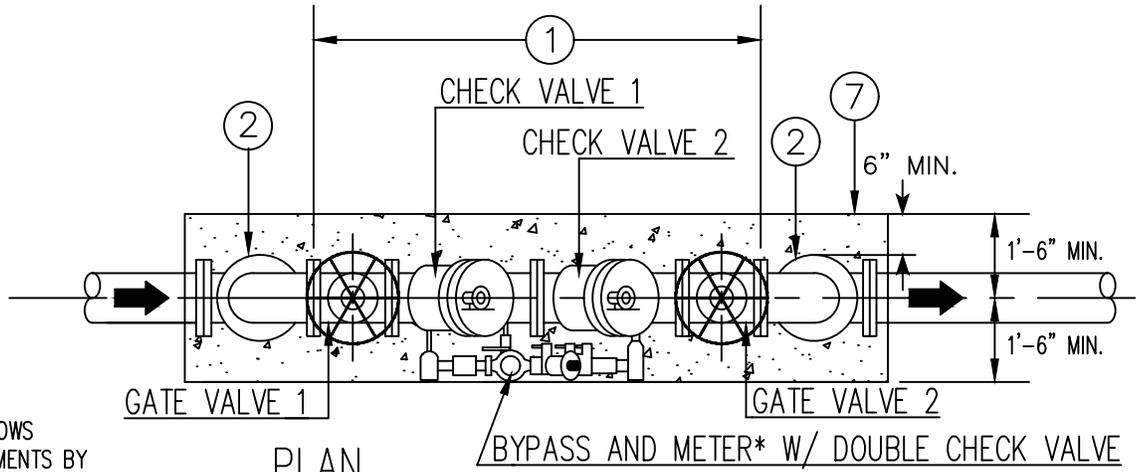
CUSTOMER RESPONSIBILITY
 INSTALL PURSUANT TO CMC SECTION 11.16.050, TITLE 17 OF THE CALIFORNIA ADMINISTRATIVE CODE, AND THE LATEST ADOPTED CROSS CONNECTION CONTROL POLICY HANDBOOK.

NOTES:

- 1. INSTALL PROTECTION POSTS PER STD. DWG. W-25.
- 2. ASSEMBLY LOCATION AND LAYOUT TO BE APPROVED BY THE DISTRICT. LENGTH TO BE FIELD VERIFIED.
- 3. REFER TO STD. DWG. W-7 FOR PUBLIC/PRIVATE SEPARATION OF RESPONSIBILITY.
- 4. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC 09902.

ITEM	DESCRIPTION	SPEC/DWG
1	USC APPROVED DOUBLE CHECK OR REDUCED PRESSURE PRINCIPLE ASSEMBLY, HORIZONTAL OR N-TYPE	15112
2	DI FLG'D x PO/MJ 90° BEND (SIZE PER PLAN)	15056
3	4" THICK REINFORCED CONCRETE PAD	03000
4	DIP SPOOL	15056
5	THRUST BLOCK	03000
6	DI FLG x FLG 90° BEND (SIZE PER PLAN)	15056
7	WAX TAPE & POLYETHYLENE ENCASEMENT	09902/15000
8	GALV. PIPE SUPPORT W/SADDLE TOP	15000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			3" & LARGER METERED BACKFLOW INSTALLATION		DATE
				STANDARD DWG. NO.	W-8



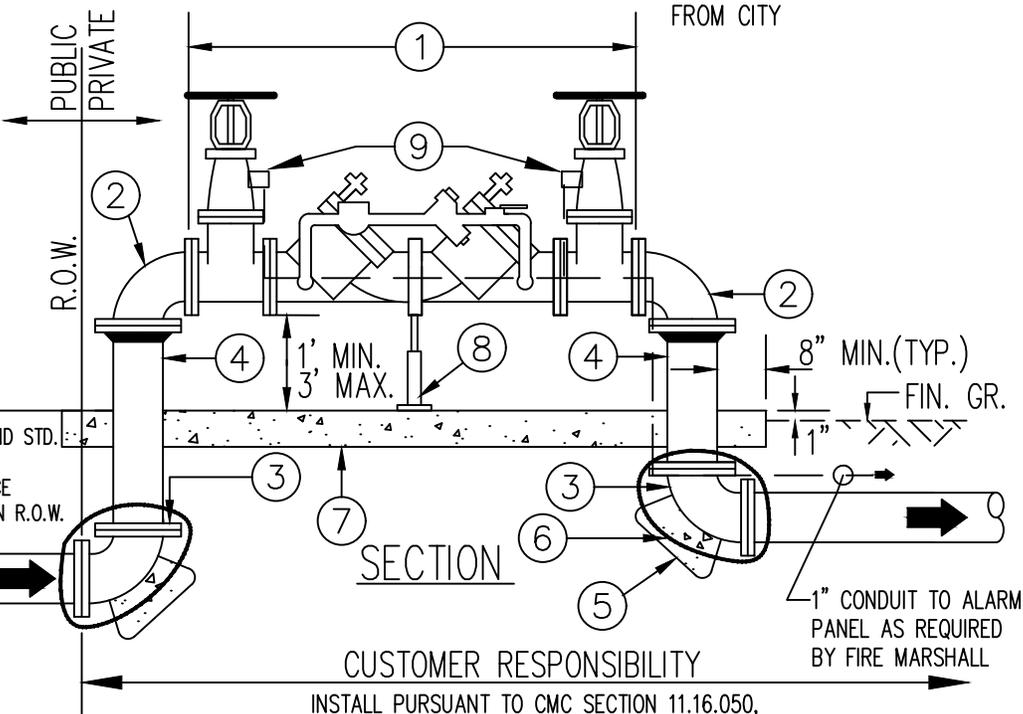
NOTES:

1. THIS DRAWING SHOWS MINIMUM REQUIREMENTS BY CMWD. MODIFICATIONS MAY BE REQUIRED FOR FIRE MARSHAL'S APPROVAL.
2. FOR EXISTING INSTALLATIONS, THE SERVICE PIPING MAY REQUIRE REPLACEMENT CONCURRENTLY WITH THE BACKFLOW PREVENTION DEVICE WHEN REQUIRED BY THE DISTRICT.

*BYPASS METER TO BE PURCHASED FROM CITY

REFER TO STD. DWG. W-7 FOR INSTALLATION REQUIREMENTS

SEE NOTE 2 AND STD. DWG. W-2 FOR PRIVATE SERVICE INSTALLATION IN R.O.W.



CUSTOMER RESPONSIBILITY

INSTALL PURSUANT TO CMC SECTION 11.16.050, TITLE 17 OF THE CALIFORNIA ADMINISTRATIVE CODE, AND THE LATEST ADOPTED CROSS CONNECTION CONTROL POLICY HANDBOOK.

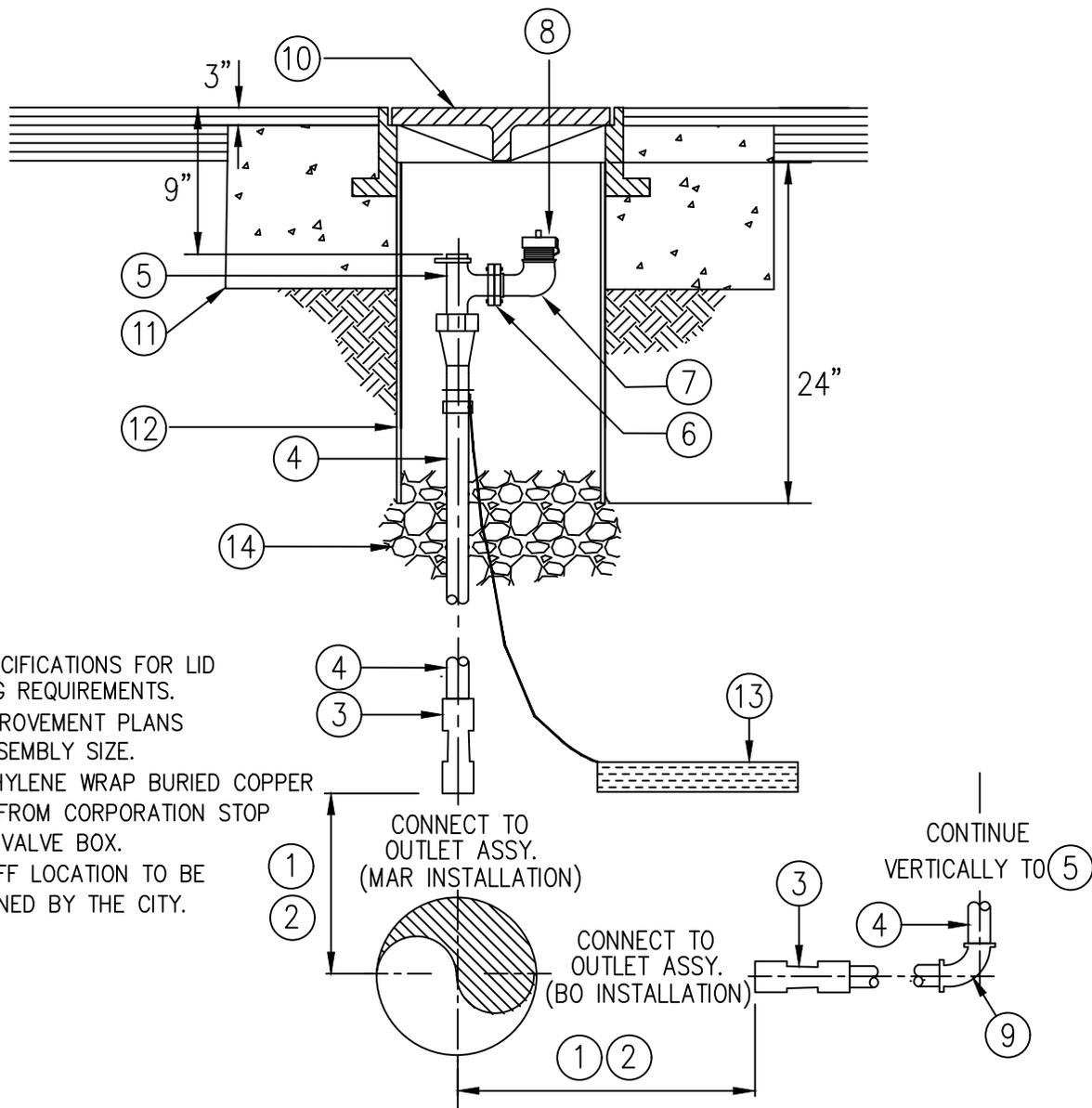
NOTES, CONT'D:

3. THIS STANDARD APPLIES TO FIRE PROTECTION SERVICES ONLY. ASSEMBLY LOCATION AND LAYOUT TO BE APPROVED BY DISTRICT.
4. INSTALL PROTECTION POSTS AS REQ'D PER STD DWG. W-25.
5. ABOVE GROUND APPURTENANCES SHALL BE PAINTED AND IDENTIFIED AS CALLED FOR BY THE FIRE DEPARTMENT.
6. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC. 09902.

ITEM	DESCRIPTION	SPEC/DWG
1	USC APPROVED DCDA OR RPDA WITH OS&Y GATE VALVES	15112
2	FLG'D 90° DI BEND	15056
3	FLG X FLG/PO/MJ 90° DI BEND	15056
4	FLG'D DI SPOOL	15056
5	THRUST BLOCK	03000
6	POLYETHYLENE ENCASEMENT	15000
7	4 INCH THICK REINFORCED CONCRETE PAD (560-C-3250)	03000
8	GALV. PIPE SUPPORT	15000
9	TAMPER SWITCH, SIGNAGE AND SECURITY AS REQ'D BY FIRE MARSHAL	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	
1		7/22	3" & LARGER FIRE DETECTION BACKFLOW PREVENTION ASSEMBLY	<i>Daryl Ruttle</i> DISTRICT ENGINEER RCE 55974
2		5/24		4/29/22 DATE
				STANDARD DWG. NO. W-9



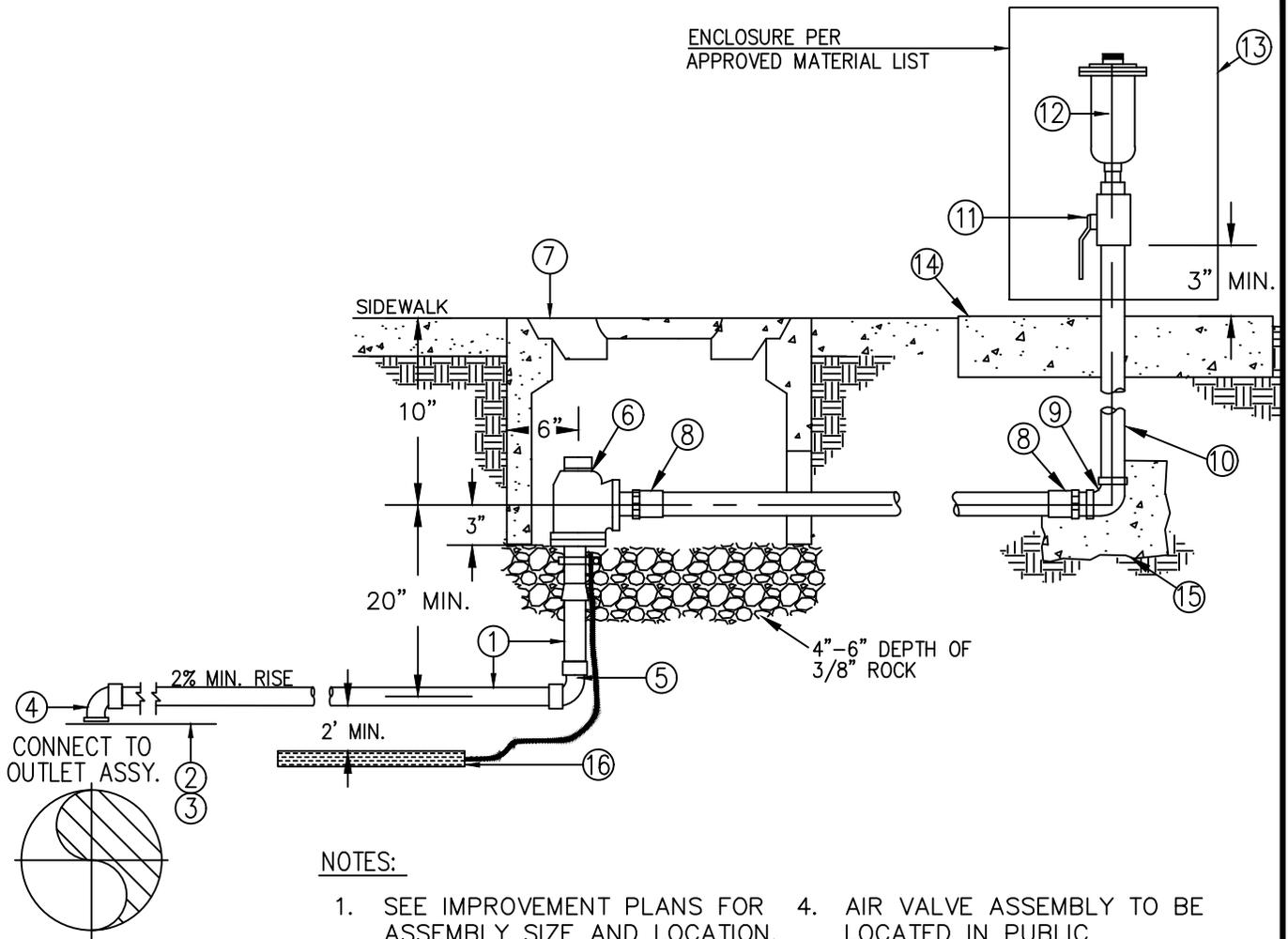


NOTES:

1. SEE SPECIFICATIONS FOR LID PAINTING REQUIREMENTS.
2. SEE IMPROVEMENT PLANS FOR ASSEMBLY SIZE.
3. POYLETHYLENE WRAP BURIED COPPER TUBING FROM CORPORATION STOP TO THE VALVE BOX.
4. BLOW OFF LOCATION TO BE DETERMINED BY THE CITY.

ITEM	DESCRIPTION	SPEC/DWG
1	OUTLET ON AC OR PVC MAIN FOR 1" THRU 2" ASSEMBLIES	W-13
2	OUTLET ON DI OR STEEL MAIN FOR 1" THRU 2" ASSEMBLIES	W-14
3	2" COUPLING, COMP X FNPT	15057
4	2" COPPER PIPE (TYPE 'K' SOFT)	15057
5	2" ANGLE METER STOP, COMP X METER FLG	15099
6	2" METER COMPANION FLANGE (BRASS NUTS AND BOLTS)	15057
7	2" BRASS STREET FLL	15057
8	2" MNPT X 2-1/2" NSHT ADAPTER W/ 2-1/2" CAP	
9	2" 90° BEND, COMP X COMP	15057
10	12" DIA. VALVE BOX ASSEMBLY	15000
11	30" DIAMETER X 8" THICK CONCRETE RING (560-C-3250)	03000
12	12" PVC PIPE SDR 35	15063
13	30 LB. ZINC ANODE WITH ANODE LEAD WIRE	WC-8
14	4"-6" DEPTH OF 3/8" ROCK	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daniel Rutledge</i>	4/29/22
1		5/24	2" MANUAL AIR RELEASE / 2" BLOW OFF ASSEMBLY	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-10

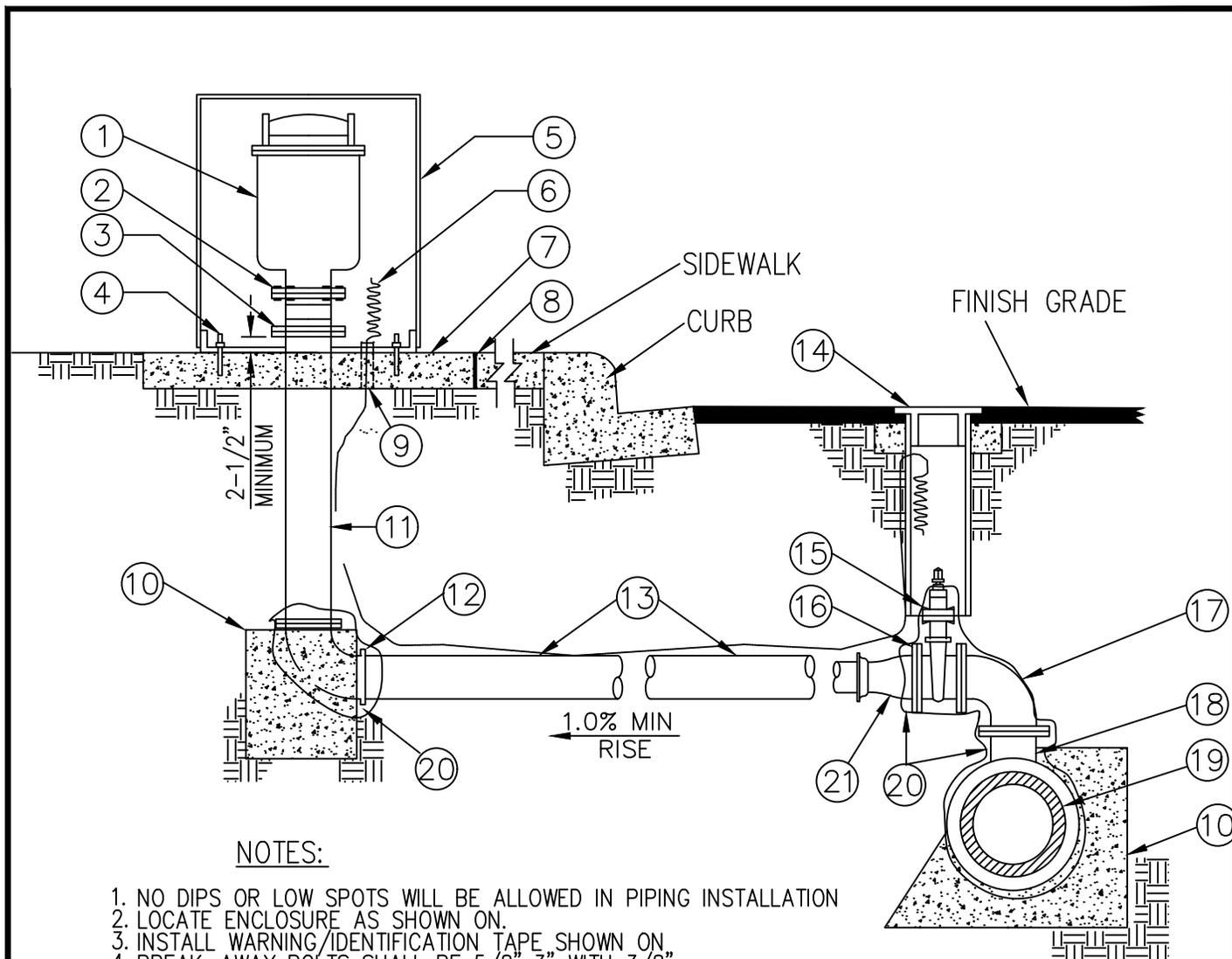


NOTES:

1. SEE IMPROVEMENT PLANS FOR ASSEMBLY SIZE AND LOCATION.
2. ALL VALVES AND FITTINGS SHALL BE THE SAME SIZE AS AIR VENT INLET.
3. POSITION ANODE MIDWAY BETWEEN PIPELINE AND VALVE BOX.
4. AIR VALVE ASSEMBLY TO BE LOCATED IN PUBLIC RIGHT-OF-WAY WITH LATERAL PIPING PERPENDICULAR TO THE MAIN.
5. CONCRETE ENCASED FITTINGS AND TUBING SHALL BE POLYETHYLENE ENCASED.

ITEM	DESCRIPTION	SPEC/DWG	ITEM	DESCRIPTION	SPEC/DWG
1	2" COPPER PIPE. (TYPE "K" SOFT)		10	2" BRASS PIPE, REGULAR WALL, MNPT	
2	OUTLET ON AC OR PVC MAIN	W-13	11	2" BRONZE BALL VALVE, FNPT	15057
3	OUTLET ON DI OR STEEL MAIN	W-14	12	2" COMB. AIR RELEASE AND VACUUM VALVE, FNPT AND CLOSE NIPPLE	15108
4	2" 90° ELBOW, COMP. X FNPT	15057	13	AVA ENCLOSURE	15108
5	2" 90° ELBOW, COMP.	15057	14	30"X30"X6" REINF. CONCRETE PAD	03000
6	2" ANGLE METER STOP, COMP X METER FLG	15057	15	CONCRETE ANCHOR BLOCK 2 CUBIC FEET	03000
7	METER BOX & COVER (H-20 RATED IN TRAFFIC AREA)	15000	16	30 LB. ZINC ANODE WITH ANODE LEAD WIRE	WC-8
8	2" COMP X MNPT ADAPTER	15057			
9	2" BRONZE 90° ELBOW, FNPT	15057			

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT		 DISTRICT ENGINEER RCE 55974	4/29/22
1		5/24	2" AIR-VACUUM VALVE ASSEMBLY			DATE
					STANDARD DWG. NO.	W-11

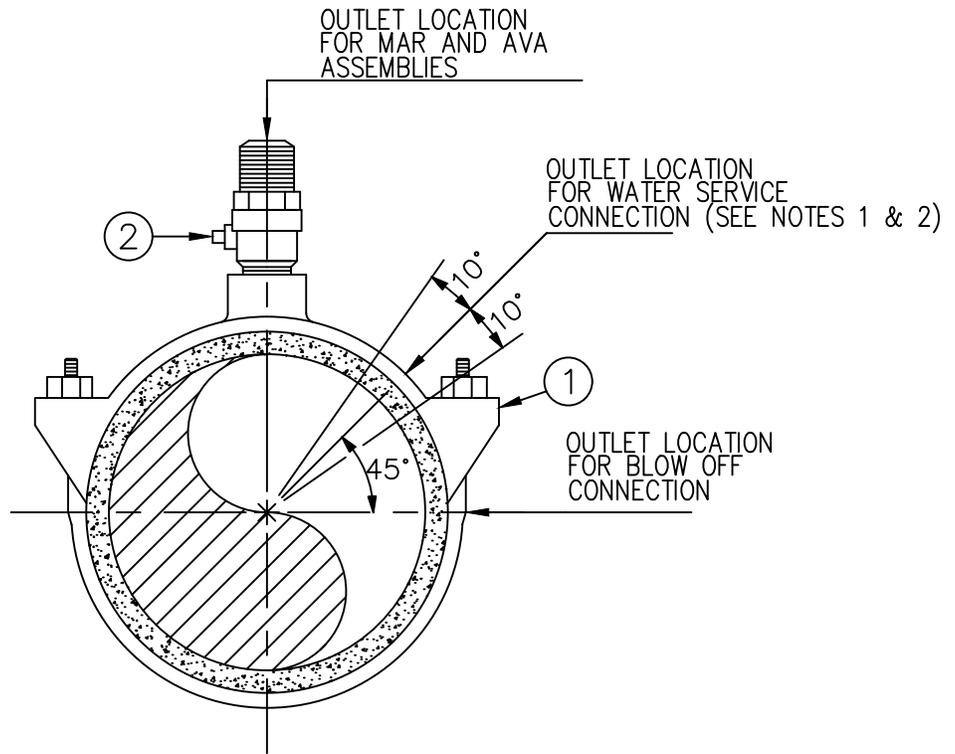


NOTES:

1. NO DIPS OR LOW SPOTS WILL BE ALLOWED IN PIPING INSTALLATION
2. LOCATE ENCLOSURE AS SHOWN ON.
3. INSTALL WARNING/IDENTIFICATION TAPE SHOWN ON.
4. BREAK-AWAY BOLTS SHALL BE 5/8"x3" WITH 3/8" HOLE DRILLED IN THE SHAFT OF THE BOLT. INSTALL WITH NUTS ON TOP OF THE FLANGE. BOLTS SHAFT SHALL BE FILLED WITH SILICONE SEALANT.
5. AIR AND VACUUM VALVES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED IN ACCORDANCE WITH THE SPECIFICATIONS
6. CONNECTIONS TO STEEL MAINS SHALL BE IN ACCORDANCE WITH SECTION 15061
7. MATERIALS SHALL BE SELECTED FROM THE APPROVED MATERIALS LIST

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	AUTOMATIC COMBINATION AIR RELEASE & AIR/VACUUM VALVE, SIZE PER PLAN	10	CONCRETE THRUST/ANCHOR BLOCK
2	BREAK-AWAY BOLTS	11	FLG'D DI PIPE x REQUIRED LENGTH
3	4"x8" LONG FLG'D SPOOL WITH BREAK-OFF GROOVES	12	FLG x MJ/PO 90° DI BEND
4	1/2"x3" STAINLESS STEEL DROP-IN ANCHORS (MIN. 3 EA @ 120° APART)	13	DI OR PVC C900 PIPE
5	AVA ASSEMBLY ENCLOSURE	14	VALVE BOX
6	TRACER WIRE	15	6" FLG x MJ/PO/FLG RWGV
7	42"x42"x6" THICK REINFORCED CONCRETE SLAB	16	FLG x MJ/PO DI ADAPTER (IF REQUIRED)
8	EXPANSION JOINT FILLER	17	6" FLG'D 90° BEND
9	1" PVC CONDUIT FOR TRACER WIRE	18	MJ/PO/FLG x FLG TEE W/6" OUTLET
		19	WATER MAIN
		20	POLYETHYLENE ENCASEMENT & WAX TAPE WRAP BURIED NUTS & BOLTS PER SPEC. 09902
		21	FLG X MJ/PO DI REDUCER (FOR < 6" PIPING)

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
			3" & LARGER COMBINATION AIR RELEASE & AIR/VACUUM VALVE	DISTRICT ENGINEER	DATE
				RCE 55974	
				STANDARD DWG. NO.	W-12

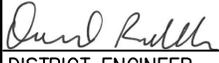


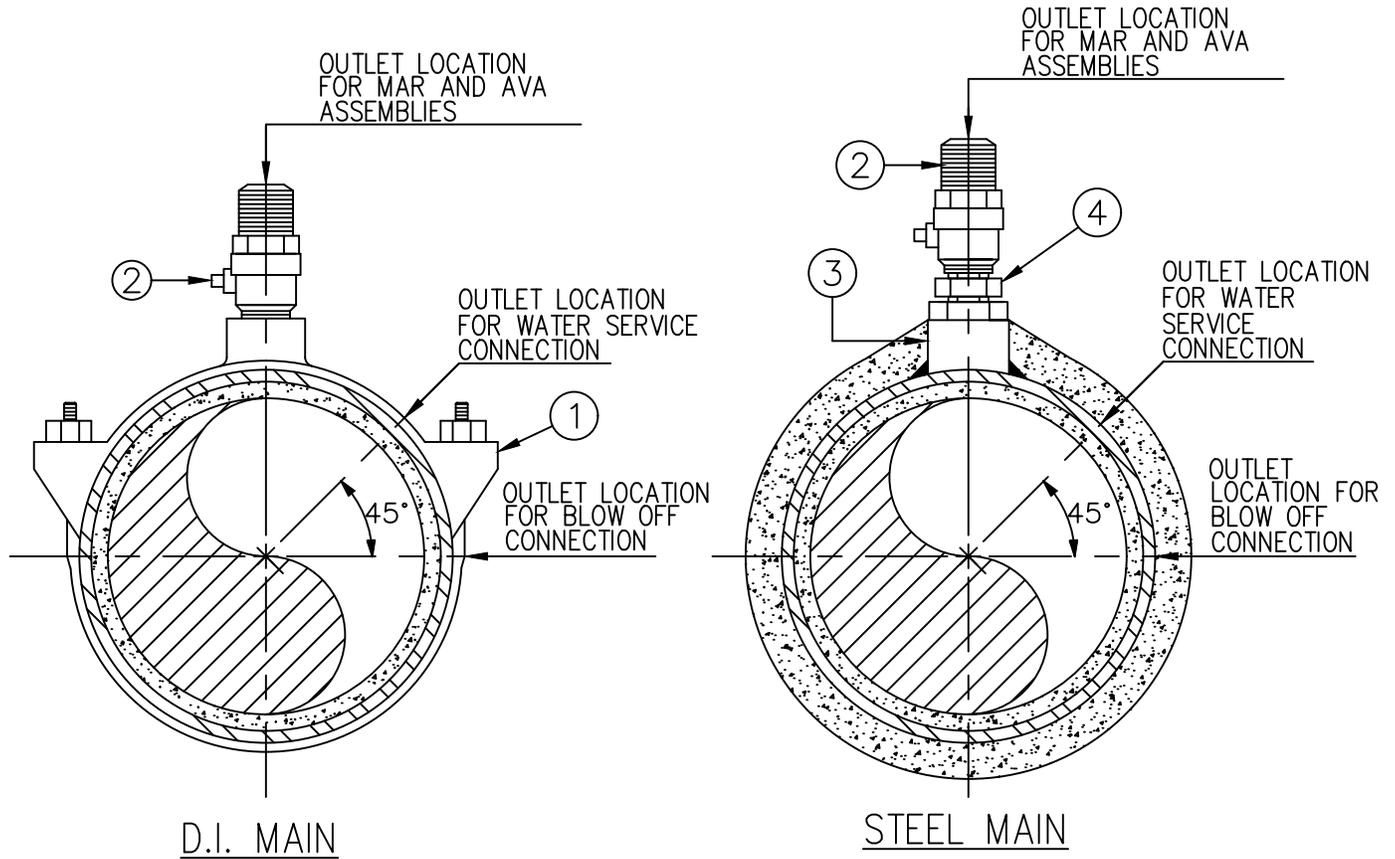
A.C. OR P.V.C. MAIN

NOTES:

1. FOR 2 OR MORE SERVICE CONNECTIONS ON EXISTING AC PIPE, REPLACE THE AC PIPE TO THE NEAREST PIPE JOINTS WITH C900 PVC PIPE, DR 14.
2. ORIENT MULTIPLE TAPS AT A 10-DEGREE STAGGERED RADIAL OFFSET FROM A 45-DEGREE PLANE.
3. SADDLES SHALL HAVE A MINIMUM OF 24" SEPARATION FROM ADJACENT SADDLES, PIPE JOINTS, VALVES OR FITTINGS.

ITEM	DESCRIPTION	SPEC/DWG
1	BRONZE DOUBLE STRAP SERVICE SADDLE, FNPT	15057
2	1" OR 2" CORP. STOP, MNPT X MNPT	15099

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			OUTLET ON A.C. OR P.V.C. MAIN FOR 1" & 2" ASSEMBLIES		DATE
				STANDARD DWG. NO.	W-13

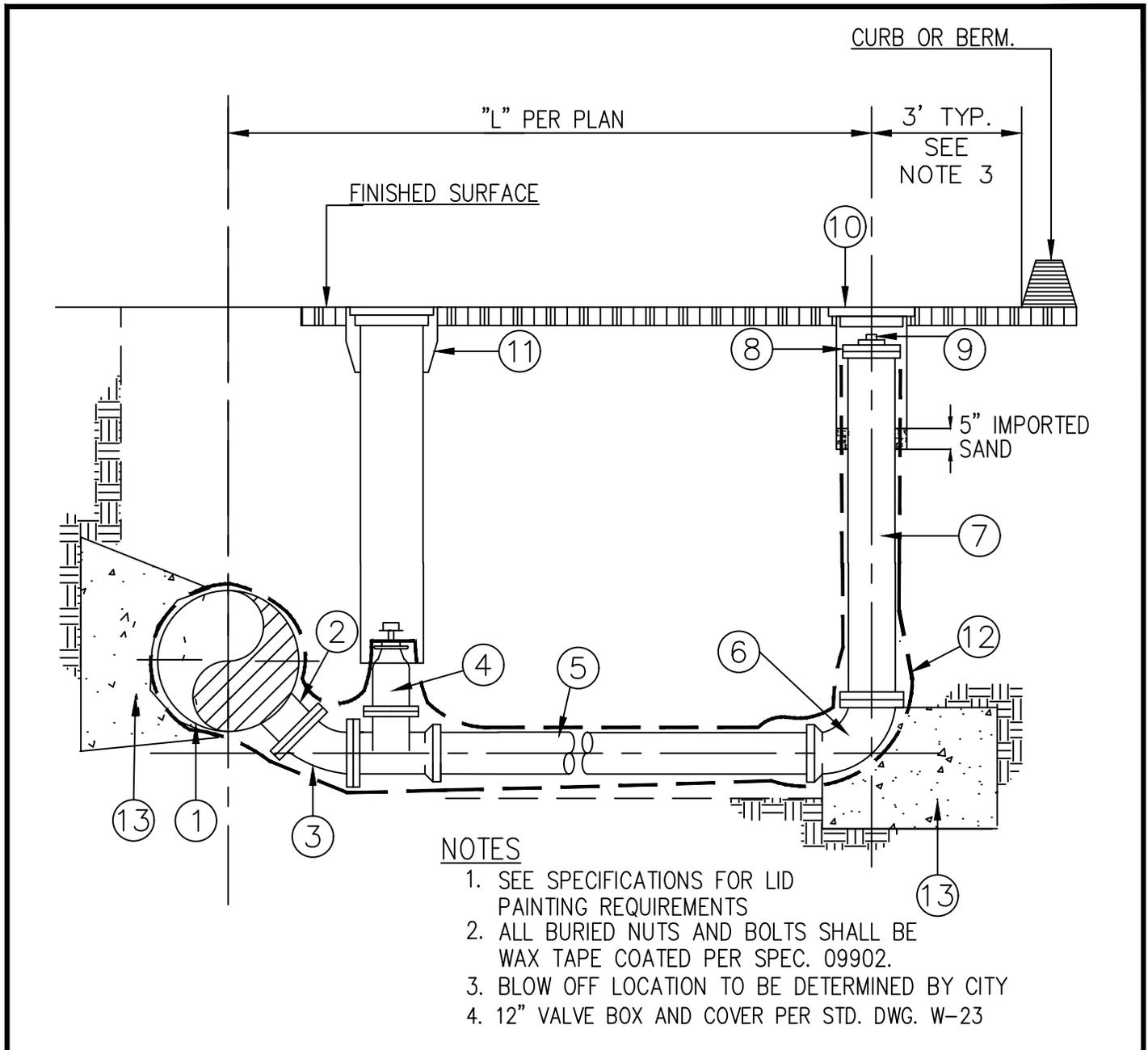


NOTES:

1. OUTLETS SHALL HAVE A MINIMUM OF 24" SEPARATION FROM ADJACENT OUTLETS, PIPE JOINTS, VALVES OR FITTINGS.
2. APPLY FIELD MORTAR COATING PER SPEC SECTION 15061.

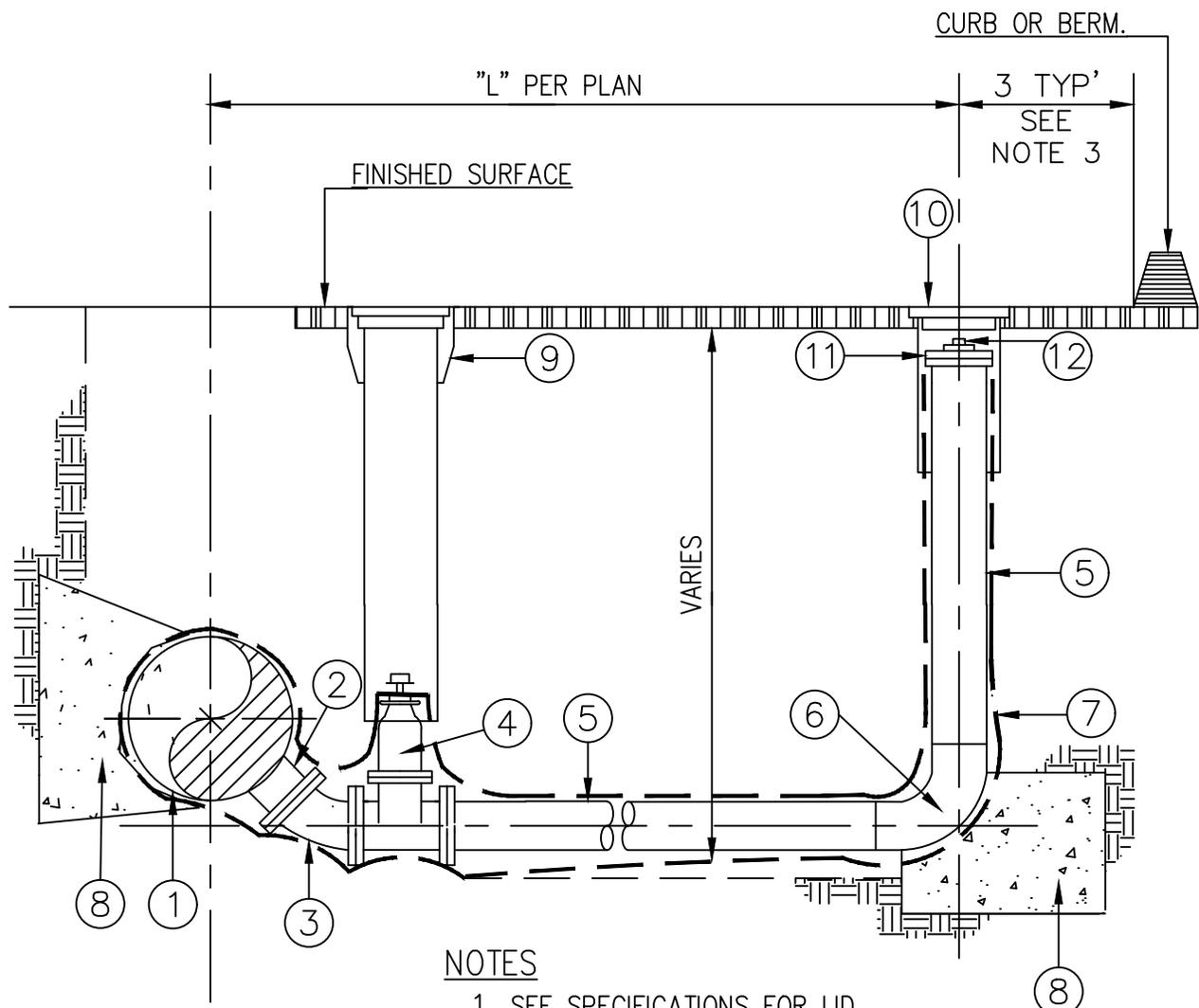
ITEM	DESCRIPTION		SPEC/DWG
1	DOUBLE BAND SERVICE SADDLE, FNPT		15057
2	1" OR 2" CORP. STOP, MNPT X MNPT		15099
3	3000-LB THREADED HALF COUPLING, WELDED TO PIPE		15000
4	1" OR 2" INSULATING UNION, MNPT X FNPT, CLASS 3000		15000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22 DATE
1		7/22	OUTLET ON D.I. OR STEEL MAIN FOR 1" & 2" ASSEMBLIES		
				STANDARD DWG. NO.	W-14



ITEM	DESCRIPTION	SPEC/DWG
1	PVC OR DI MAIN	
2	DI TEE W/ 6" FLG'D OUTLET	15061
3	45° DI BEND, FLG'D	15056
4	6" FL X PO OR MJ GATE VALVE	15100
5	C900 PVC OR DI PIPE	15064/15056
6	90° BEND PO OR MJ X FLG	15056
7	DI SPOOL FLG'D	15056
8	DI COMPANION FLANGE DRILLED AND TAPPED FOR ITEM 9.	15056
9	4" DI THREADED PLUG	15056
10	12" VALVE BOX ASSEMBLY	W-10/15000
11	VALVE BOX ASSEMBLY	W-23
12	POLYETHYLENE ENCASEMENT	15000
13	CONCRETE THRUST BLOCK	03000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	6" BLOW-OFF ASSEMBLY FOR PVC AND DI PIPE	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-15



NOTES

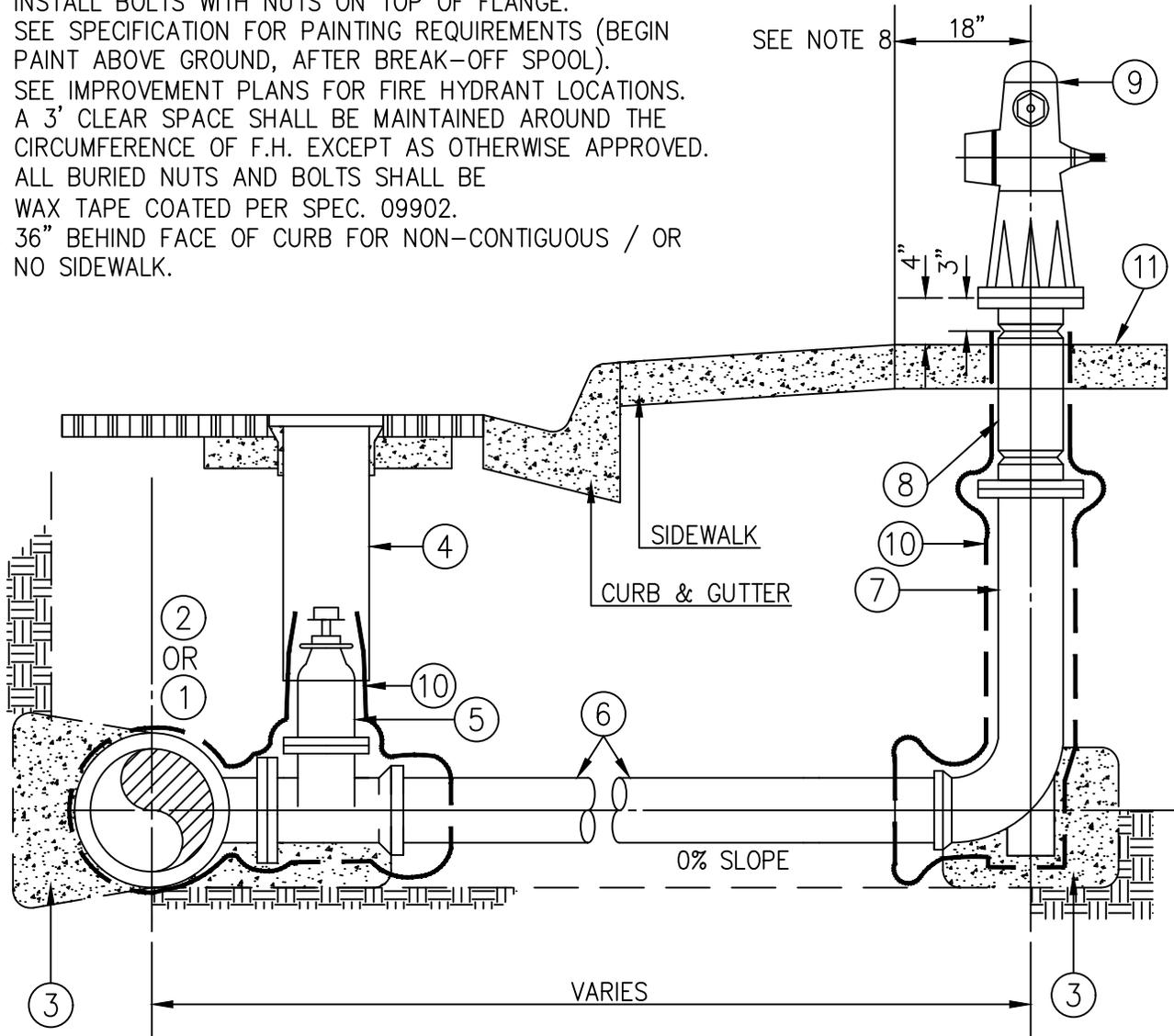
1. SEE SPECIFICATIONS FOR LID PAINTING REQUIREMENTS
2. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC. 09902
3. BLOW OFF LOCATION TO BE DETERMINED BY CITY
4. 12" VALVE BOX AND COVER PER STD. DWG. W-23

ITEM	DESCRIPTION	SPEC/DWG
1	STEEL PIPE MAIN	15061
2	STEEL TEE W/ 6" FLG'D OUTLET	09870/15061
3	45° STEEL BEND, FLG X FLG	09870/15061
4	GATE VALVE, FLG X FLG	15100
5	STEEL SPOOL, FLG X PE	09870/15061
6	STEEL 90° BEND	09870/15061
7	POLYETHYLENE WRAP	15000
8	CONCRETE THRUST BLOCK	03000
9	VALVE BOX ASSEMBLY	W-10/15000
10	12" VALVE BOX ASSEMBLY	15000
11	COMPANION FLANGE DRILLED AND TAPPED FOR ITEM 12	15061
12	4" THREADED STEEL PLUG, CLASS 150	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	6" BLOW-OFF ASSEMBLY FOR STEEL PIPE	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-16

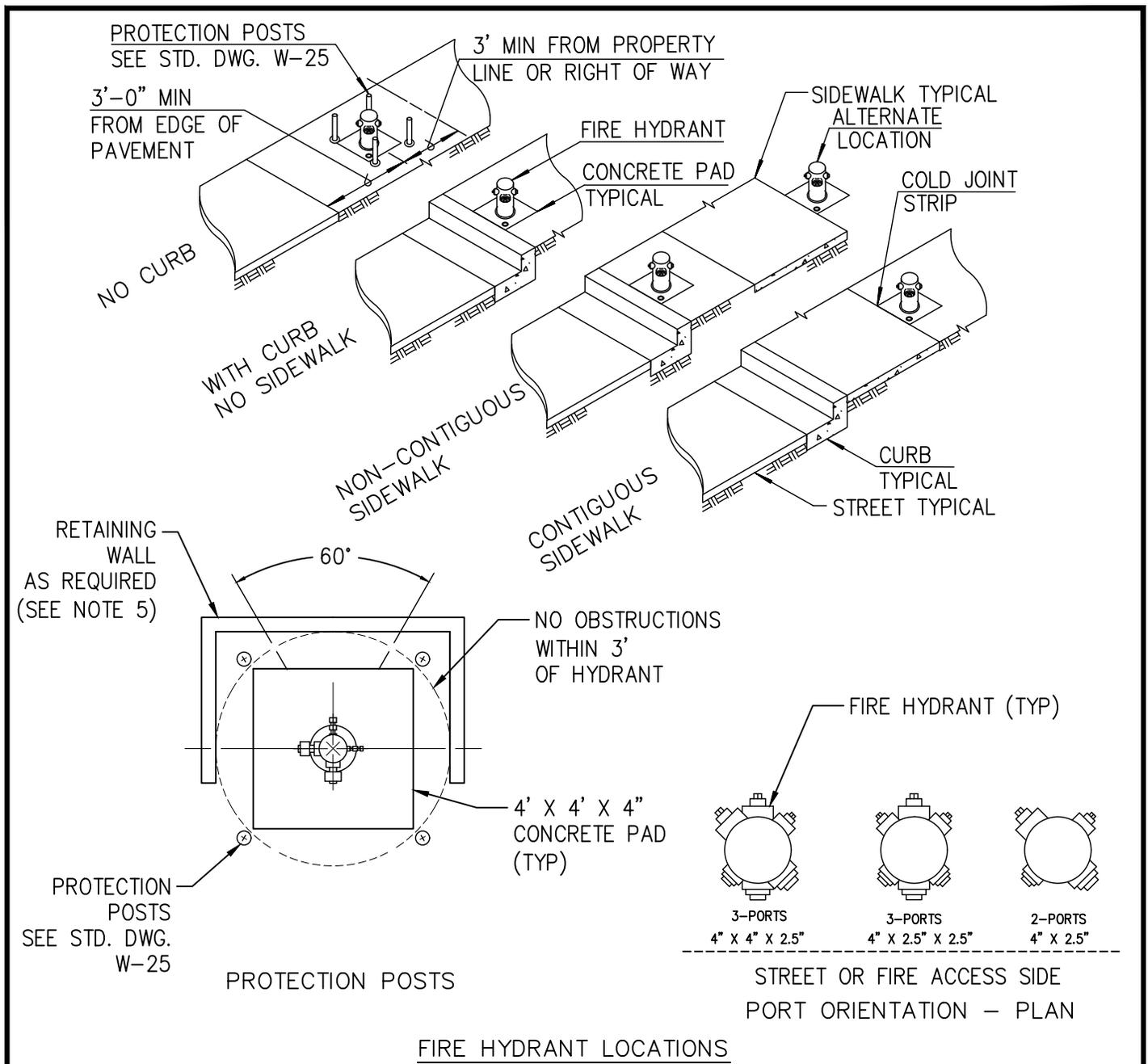
NOTES:

1. FOR INSTALLATIONS ON ACP WATER MAINS, REPLACE THE ACP WITH C900 PVC DR 18 PIPE.
2. BOLTS & NUTS – 3/4" X 3" HEX HEADS.
3. INSTALL BOLTS WITH NUTS ON TOP OF FLANGE.
4. SEE SPECIFICATION FOR PAINTING REQUIREMENTS (BEGIN PAINT ABOVE GROUND, AFTER BREAK-OFF SPOOL).
5. SEE IMPROVEMENT PLANS FOR FIRE HYDRANT LOCATIONS.
6. A 3' CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF F.H. EXCEPT AS OTHERWISE APPROVED.
7. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC. 09902.
8. 36" BEHIND FACE OF CURB FOR NON-CONTIGUOUS / OR NO SIDEWALK.



ITEM	DESCRIPTION	SPEC/DWG
1	DUCTILE IRON OR PVC PIPE – D.I. TEE WITH 6" FLG OUTLET (PO OR MJ X FL)	15056
2	STEEL PIPE – 6" STEEL FLG OUTLET	09870/15061
3	THRUST BLOCK (OR RESTRAINED JOINTS WITH DISTRICT ENGINEER APPROVAL)	03000
4	VALVE BOX ASSEMBLY	15100
5	6" FLG X PO GATE VALVE	W-21
6	6" C900 PVC DR14 PIPE	15064
7	6" X 30" PO X FLG BURY ELL	15056
8	VARIABLE LENGTH FLG'D BREAK OFF SPOOL	15139
9	6" FIRE HYDRANT, 6 HOLE	15139
10	POLYETHYLENE ENCASEMENT	15000
11	4'X4'X4" THICK REINFORCED CONCRETE PAD	03000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	FIRE HYDRANT ASSEMBLY	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-17

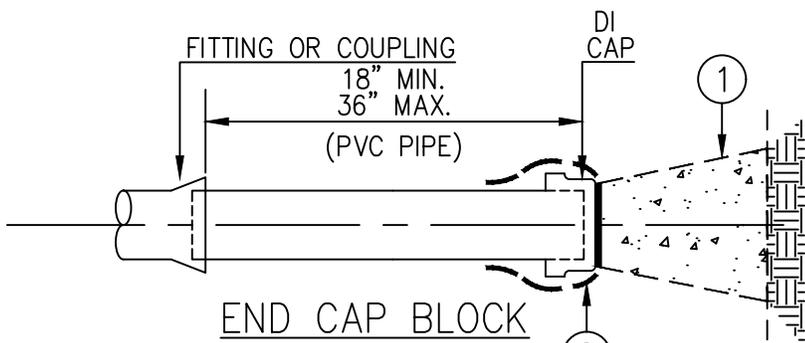


FIRE HYDRANT LOCATIONS

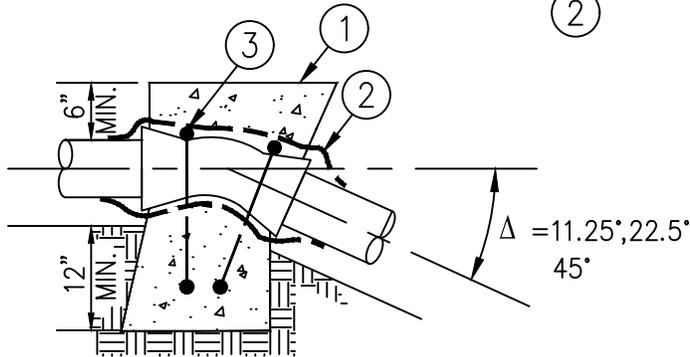
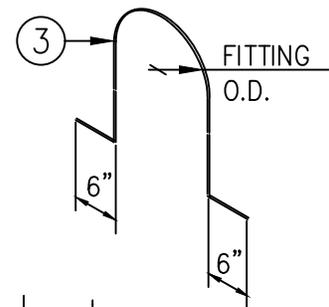
NOTES:

1. LOCATE FIRE HYDRANT AS SHOWN ABOVE OR AS DIRECTED BY THE ENGINEER OR FIRE MARSHALL
2. FIRE HYDRANTS SHALL BE INSTALLED WITH THE LARGEST PORT PERPENDICULAR TO THE STREET.
3. INSTALL EXPANSION JOINT FILLER BETWEEN CONCRETE PAD AND CURB OR SIDEWALK.
4. CONCRETE APRON SHALL BE REQUIRED WHERE THE FIRE HYDRANT IS INSTALLED IN AN UNPAVED LOCATION. THE APRON SHALL BE 4" THICK 520-C-2500 REINFORCED CONCRETE.
5. WHEN DISTANCE FROM THE FIRE HYDRANT TO THE TOP OR TOE OF THE SLOPE OR WALLS IS LESS THAN 2', SPECIAL HYDRANT LAYOUT DETAIL SHALL BE SHOWN ON THE PLANS.
6. NUMBER OF PROTECTION POSTS AND LOCATIONS TO BE SHOWN ON THE PLANS.

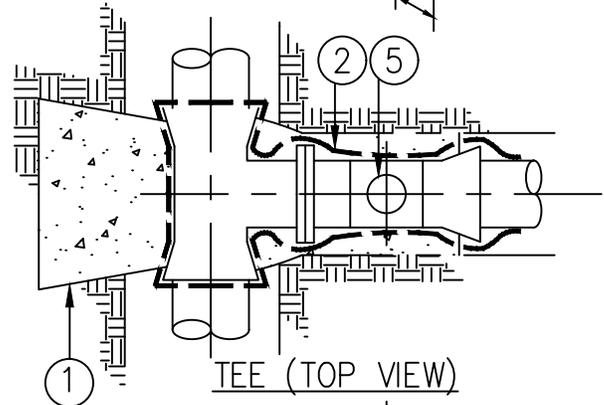
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	FIRE HYDRANT INSTALLATION	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-18



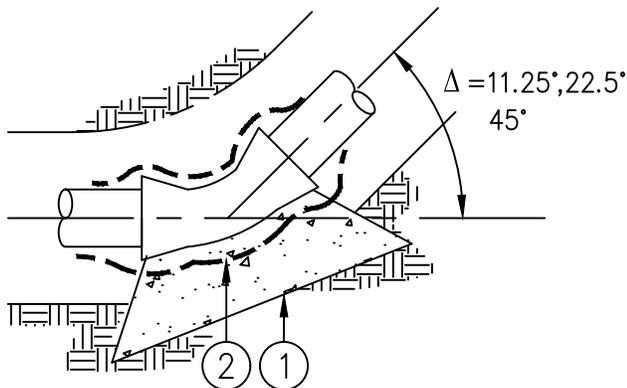
REINFORCING STEEL DETAIL



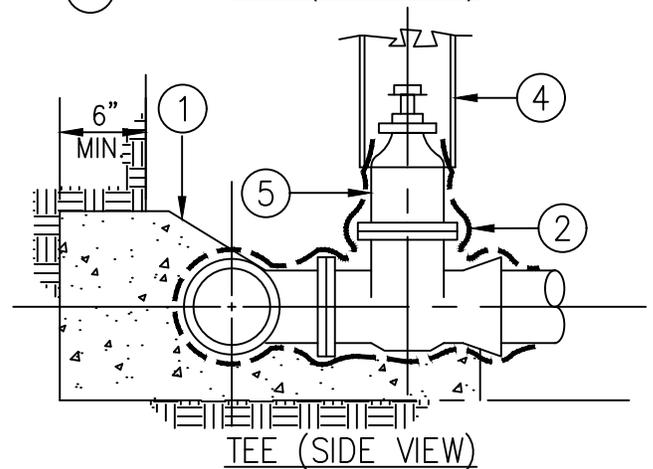
VERTICAL DOWN BEND



TEE (TOP VIEW)



HORIZONTAL & VERTICAL UP BEND



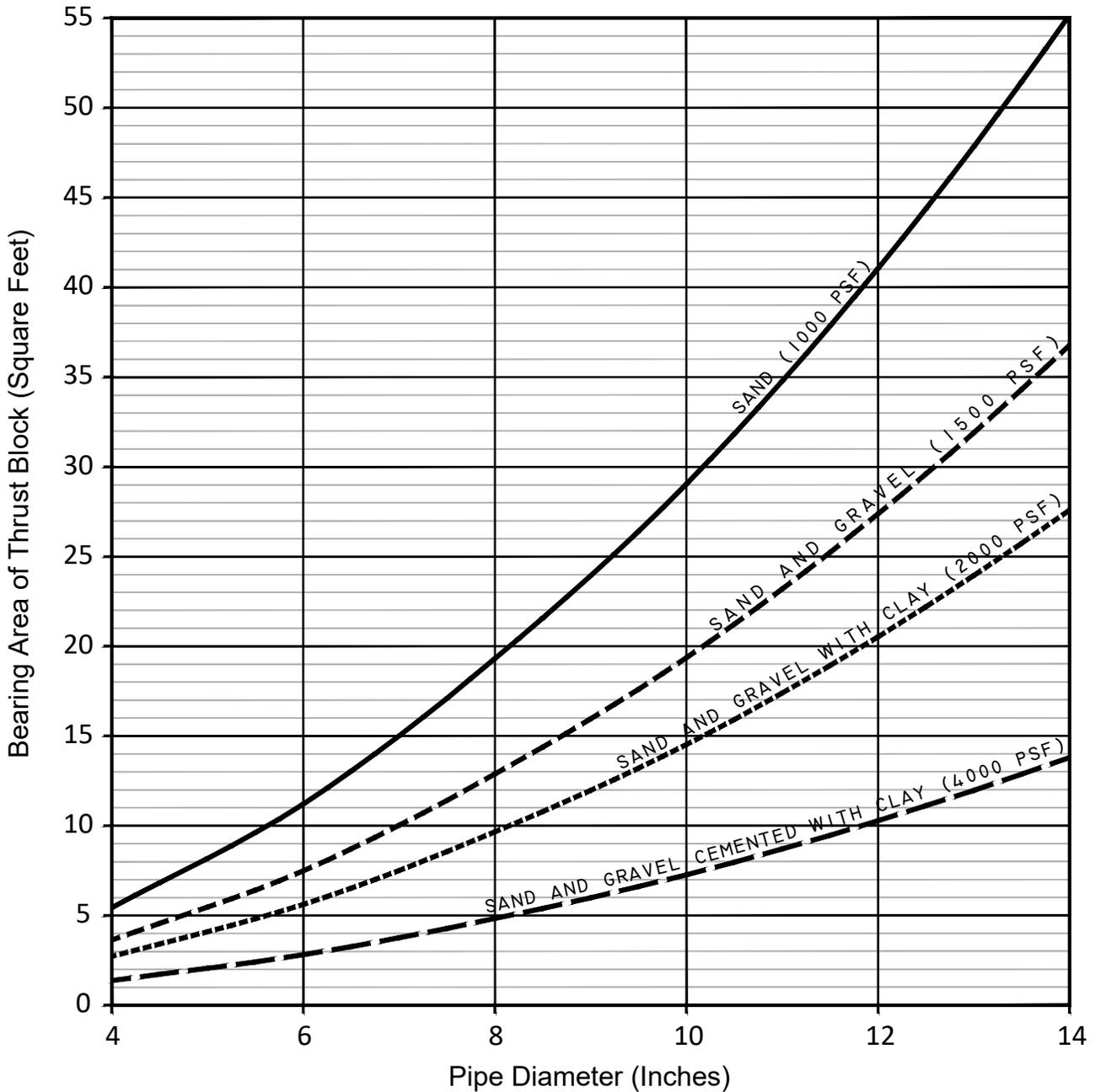
TEE (SIDE VIEW)

NOTES:

1. FITTINGS SHALL BE DUCTILE IRON FOR DI & PVC PIPE.
2. CONCRETE MINIMUM CURING TIME PER SPEC. 03000.
3. SEE STD. DWG. W-22 FOR PLUG & BUTTERFLY VALVE THRUST BLOCKS.
4. ENGINEER TO PROVIDE CALCULATIONS FOR THRUST/ANCHOR BLOCK SIZE.
5. ALL BURIED NUTS AND BOLTS REQUIRE APPLICATION OF NON-OXIDE GREASE AND WAX TAPE COATING PER SPEC 09902.
6. RESTRAINED JOINTS MAY BE ALLOWED IN LIEU OF THRUST BLOCKS. ENGINEER OF RECORD TO SUBMIT RESTRAINED JOINT LENGTH CALCULATION FOR APPROVAL.

ITEM	DESCRIPTION	SPEC/DWG
1	CONCRETE THRUST BLOCK	03000
2	POLYETHYLENE ENCASEMENT	15000
3	NO. 4 REINFORCING STEEL (2 EA. TYP.)	03000
4	VALVE BOX ASSEMBLY	15000
5	FLG X PO OR FLG X MJ GATE VALVE	15100

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
			CONCRETE THRUST BLOCKS	DISTRICT ENGINEER	DATE
				RCE 55974	
				STANDARD DWG. NO.	W-19



NOTES:

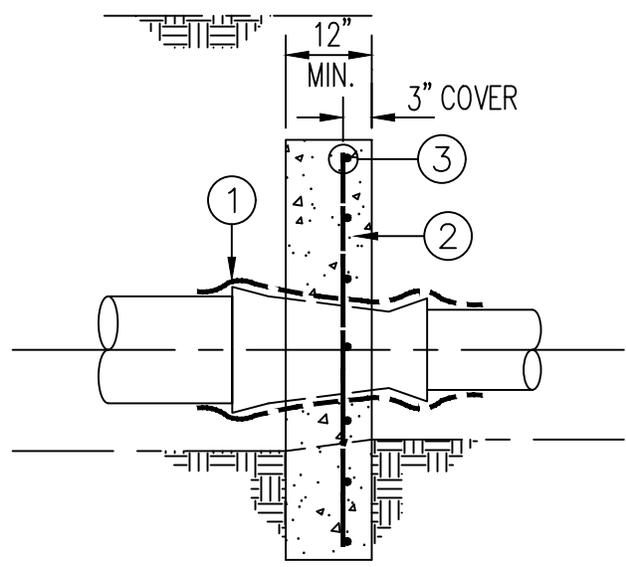
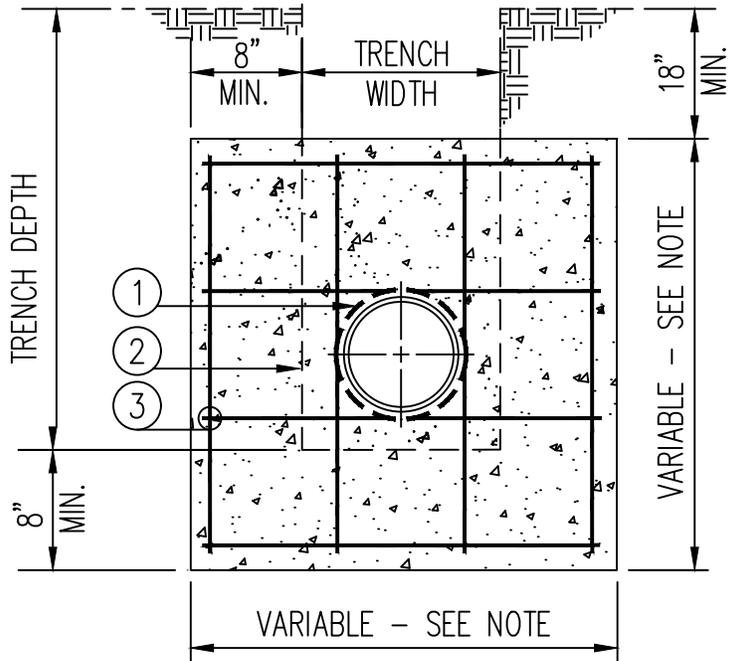
- THE CHART DOES NOT APPLY TO ANCHOR BLOCKS FOR VERTICAL BENDS. SUBMIT CALCULATIONS FOR RESTRAINED JOINT DESIGN.
- ASSUMES 200 PSI HYDROSTATIC TEST PRESSURE AND UNSATURATED SOIL CONDITIONS. FOR OTHER CONDITIONS, SUBMIT CALCULATIONS.
- THE CHART REPRESENTS STRAIGHT-LINE THRUST (DEAD END, LINE VALVE OR TEE). USE THE FOLLOWING BEARING AREA FACTORS FOR HORIZONTAL BENDS:

BEARING AREA FACTORS FOR HORIZONTAL BENDS:

90-DEG. BEND:	1.4
45-DEG. BEND:	0.8
22.5-DEG. BEND:	0.4
11.25-DEG. BEND:	0.2

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	7/22/22
			THRUST BLOCK BEARING AREAS		DATE
			STANDARD DWG. NO. W-19A		





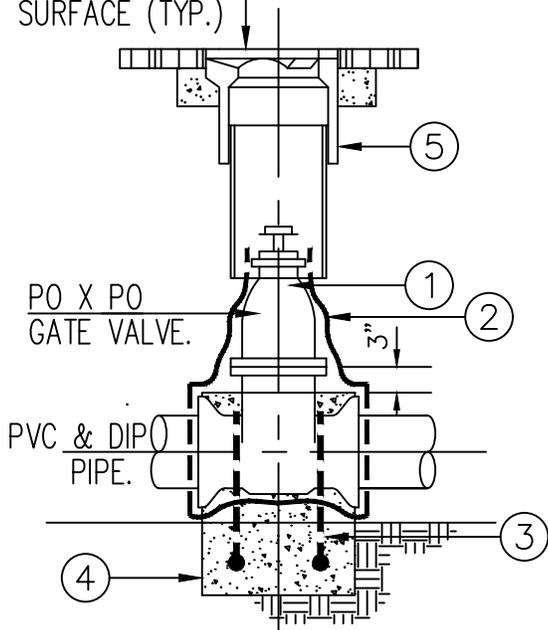
NOTES:

1. BEARING AREA SHALL BE THE DIFFERENCE BETWEEN THE BEARING AREAS REQUIRED FOR THRUST ANCHORAGE OF MAINS ON EACH SIDE OF REDUCER PLUS THE AREA OF THE TRENCH OPENING.
2. MINIMUM DIMENSIONS SHOWN SHALL BE ADHERED TO.
3. FOR PIPE DIAMETERS LARGER THAN 12", ENGINEER TO PROVIDE CALCULATIONS FOR THRUST BLOCK SIZE.
4. FITTINGS SHALL BE DUCTILE IRON FOR DI & PVC PIPE.
5. CONCRETE MINIMUM CURING TIME PER SPEC. 03000.
6. RESTRAINED JOINTS MAY BE ALLOWED IN LIEU OF THRUST BLOCKS.

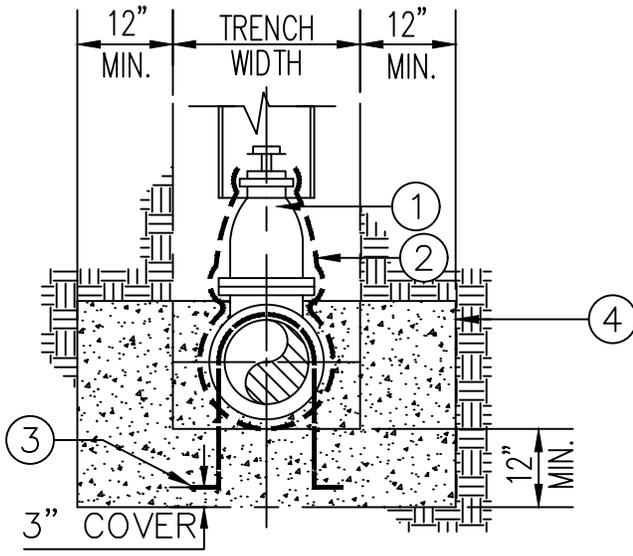
ITEM	DESCRIPTION	SPEC/DWG
1	POLYETHYLENE ENCASEMENT	15000
2	CONCRETE THRUST BLOCK (560-C-3250 CONCRETE)	03000
3	NO. 4 BAR 9" ON CENTER EACH WAY	03000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT THRUST BLOCK FOR REDUCER 4" THRU 12"	<i>Daryl Rutledge</i> DISTRICT ENGINEER RCE 55974	4/29/22 DATE

FINISHED SURFACE (TYP.)



TRENCH ELEVATION
PVC & DIP PIPE

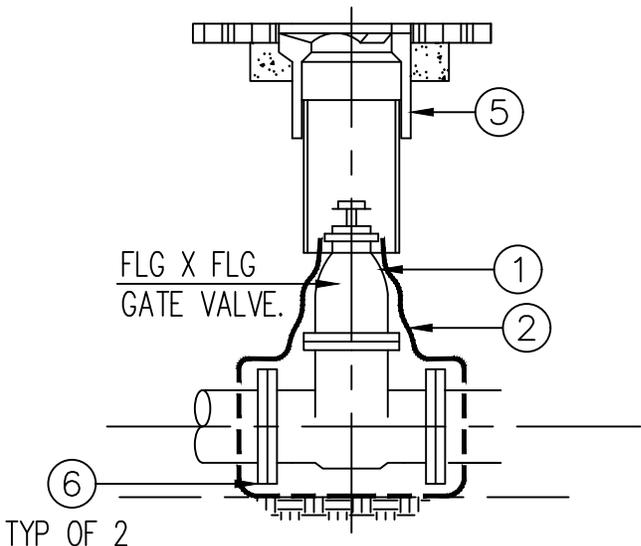
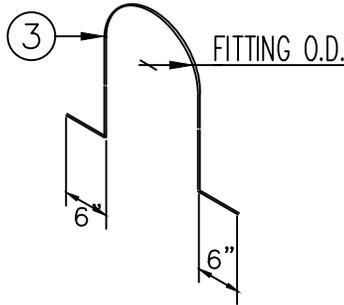


TRENCH SECTION
(TYPICAL)

NOTES:

1. SEE SPECIFICATIONS FOR BURIED FLANGE AND VALVE REQUIREMENTS.
2. THRUST BLOCK BEARING AREA PER ENGINEER CALCULATIONS TO BE SHOWN ON THE APPROVED PLANS.
3. ALL BURIED NUTS AND BOLTS REQUIRE APPLICATION OF NON-OXIDE GREASE AND WAX TAPE COATING PER SPEC 09902.

REINFORCING STEEL DETAIL.

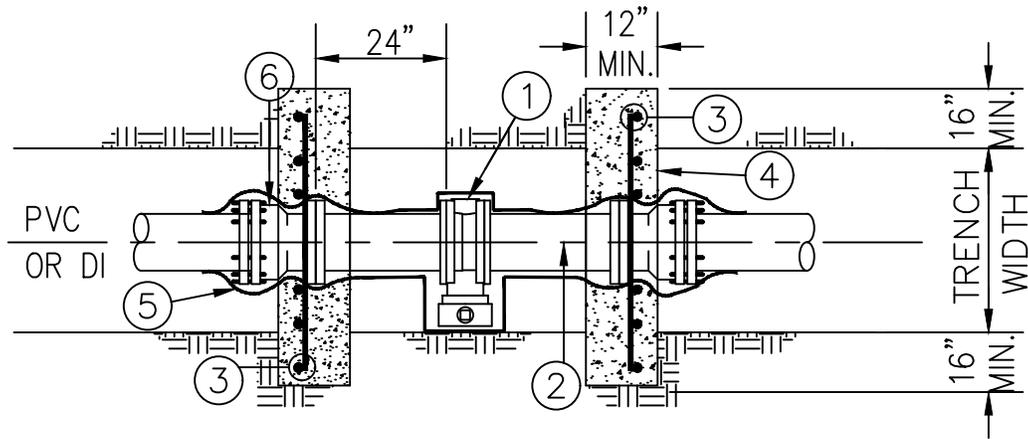


TRENCH ELEVATION
STEEL PIPE

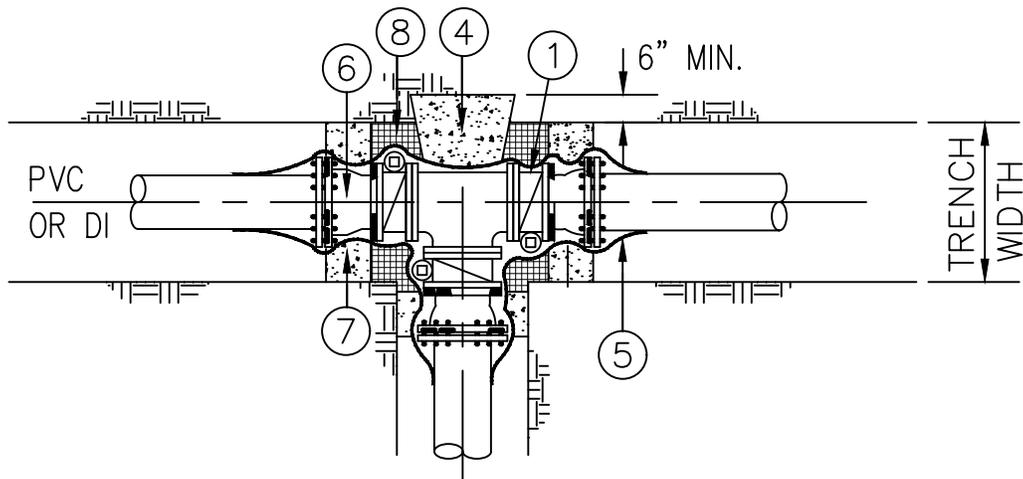
ITEM	DESCRIPTION	SPEC/DWG
1	GATE VALVE	15100
2	POLYETHYLENE ENCASEMENT	15000
3	NO. 4 REINFORCING STEEL (2 EA. TYP)	03000
4	CONCRETE THRUST/ANCHOR BLOCK (560-C-3250)	03000
5	VALVE BOX ASSEMBLY	W-23
6	STEEL FLG, FIELD WELDED	09870/15061

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			GATE VALVE INSTALLATION		DATE
				STANDARD DWG. NO.	W-21





LINE VALVE INSTALLATION



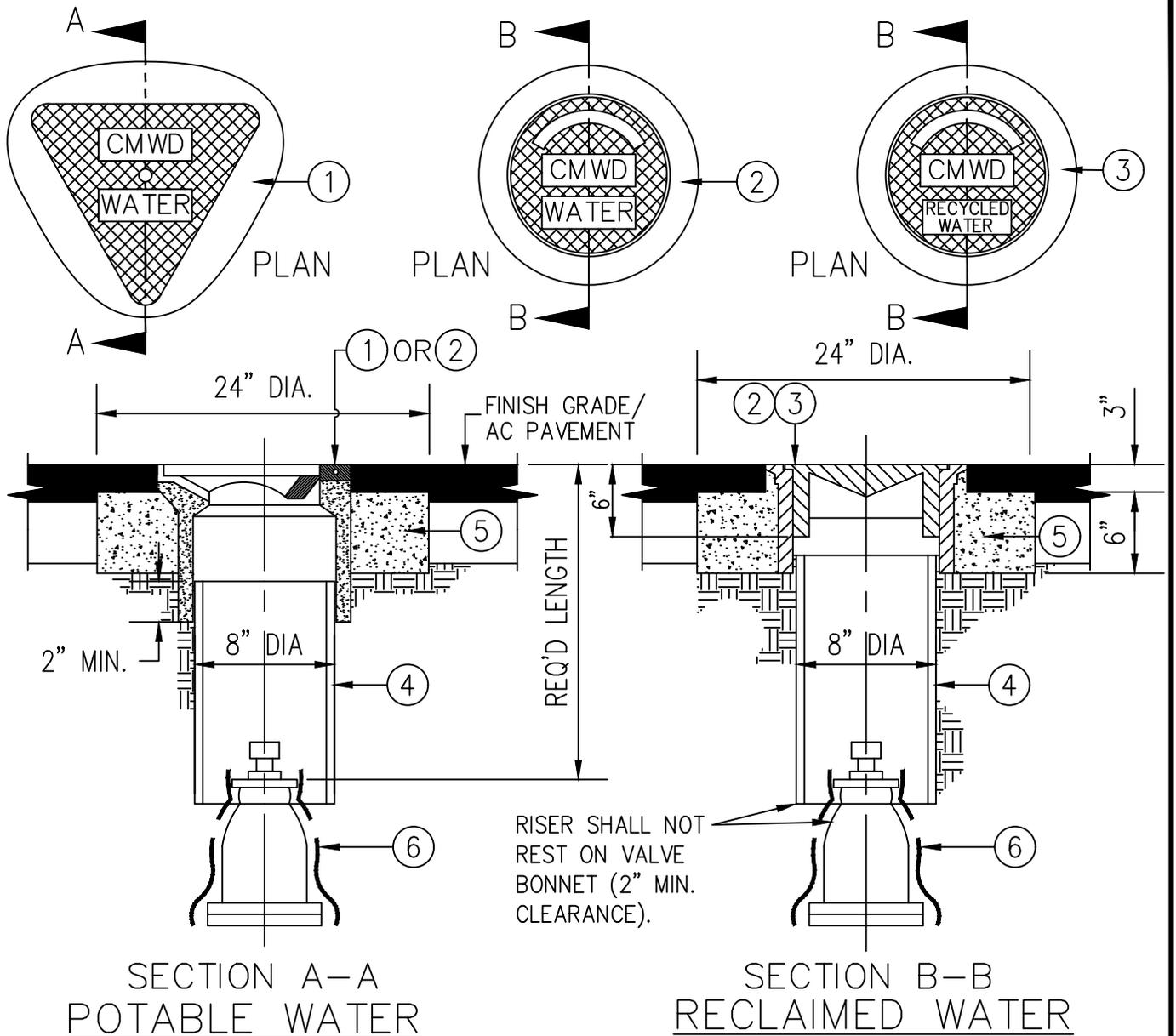
TEE ASSEMBLY

NOTES:

1. FOR INSTALLATION ON ACP, REMOVE THE ACP TO THE NEAREST PIPE JOINTS AND REPLACE WITH C900 PVC PIPE, DR 14.
2. FOR VALVE INSTALLATION ON STEEL PIPE, USE SLIP-ON WELDED FLANGES AND INSTALL PER SPEC 09870 AND 15061.
3. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC. 09902. APPLY NO-OXIDE GREASE.
4. SEE STANDARD DRAWING W-23 FOR REQUIRED VALVE BOX INSTALLATION.
5. ENGINEER OF RECORD TO PROVIDE THRUST BLOCK BEARING AREA CALCULATIONS FOR DISTRICT ENGINEER APPROVAL.

ITEM	DESCRIPTION	SPEC/DWG
1	BUTTERFLY VALVE	15102
2	DI FLG'D SPOOL	15056
3	NO. 4 REINFORCING STEEL 6" O.C. EACH WAY	W-19/03000
4	CONCRETE THRUST BLOCK (560-C-3250)	W-19/03000
5	POLYETHYLENE ENCASEMENT	15000
6	FL X MJ ADAPTER	15056
7	CONCRETE SUPPORT	03000
8	SANDBAGS	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	BUTTERFLY VALVE INSTALLATION	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO.	W-22



SECTION A-A
POTABLE WATER

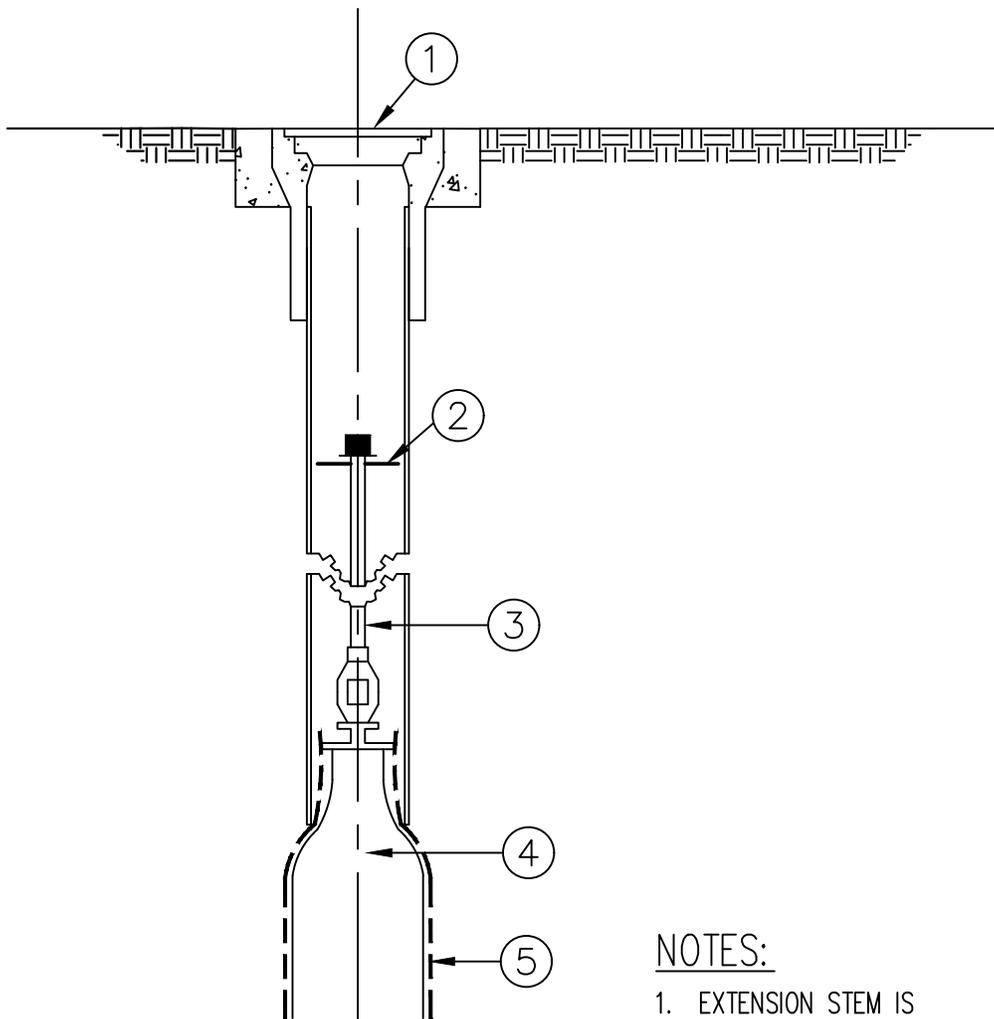
SECTION B-B
RECLAIMED WATER

NOTES:

1. IN UNPAVED AREAS PLACE MARKER POST NEXT TO VALVE BOX ASSEMBLY AS DIRECTED BY THE ENGINEER. (SEE STD. DWG. W-26).
2. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC. 09902.
3. SEE STD. DWG. W-24 FOR VALVE EXTENSION STEM.
4. LID TO RECEIVE 2 COATS OF PAINT. SEE SPECIFICATIONS FOR PAINTING REQUIREMENTS.
5. VALVE BOX AND COVER TO BE A MANUFACTURED SET.

ITEM	DESCRIPTION	SPEC/DWG
1	VALVE BOX & COVER WITH NON-SKID C.I. COVER AND LIFT HOLE	15000
2	VALVE BOX & COVER FOR NORMALLY CLOSED VALVE	15000
3	VALVE BOX & COVER FOR RECYCLED WATER	15000
4	8" PVC MIN. DR 18	15000
5	CONCRETE COLLAR (560-C-3250)	03000
6	POLYETHYLENE ENCASEMENT	15000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
1		5/24	VALVE BOX ASSEMBLY	DISTRICT ENGINEER	DATE
				RCE 55974	
				STANDARD DWG. NO.	W-23

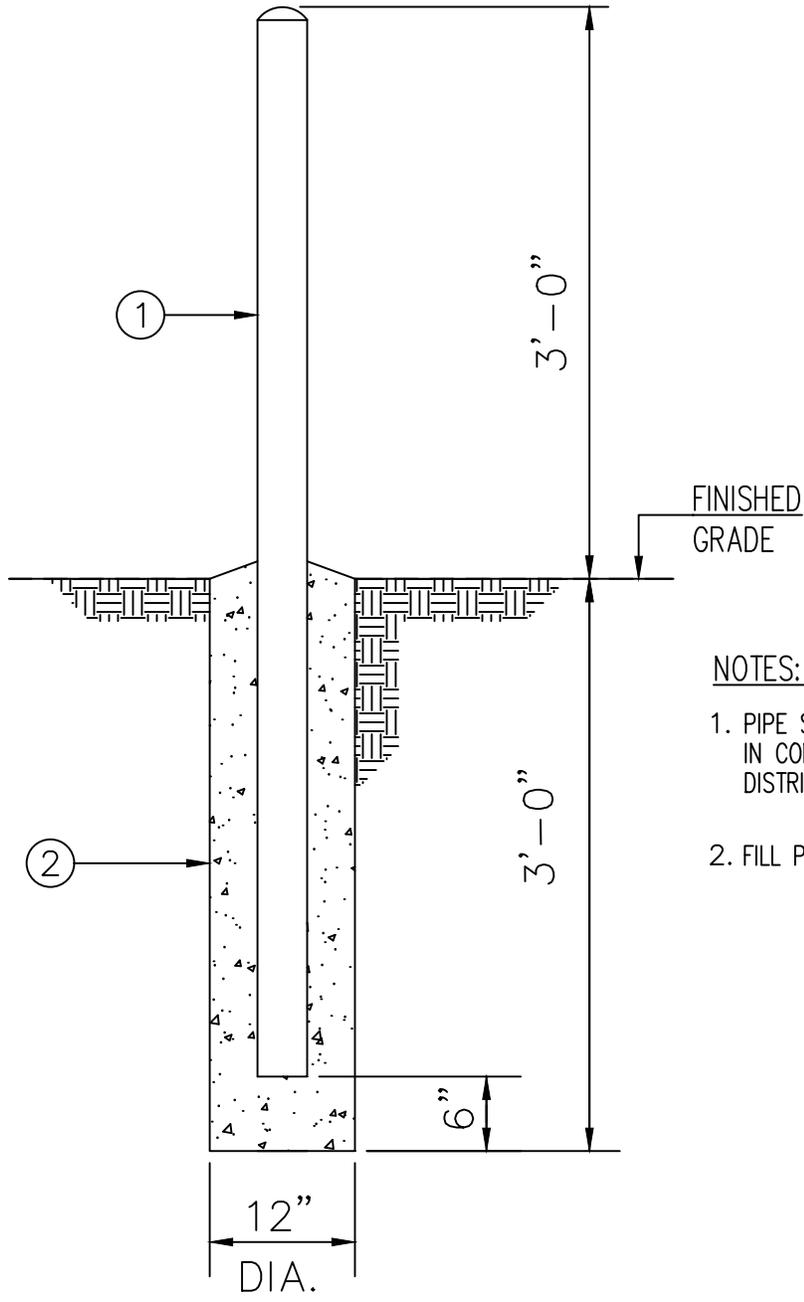


NOTES:

1. EXTENSION STEM IS REQUIRED WHEN OPERATING NUT IS 5' OR MORE BELOW TOP OF VALVE COVER.
2. ALL BURIED NUTS AND BOLTS SHALL BE WAX TAPE COATED PER SPEC. 09902.

ITEM	DESCRIPTION	SPEC/DWG
1	VALVE BOX ASSEMBLY	15000/W-23
2	DISC GUIDE WELDED TO EXTENSION STEM	15000
3	EXTENSION STEM W/ SQUARE NUT (COUPLE PER MFG. SPECS.)	15000
4	GATE OR BUTTERFLY VALVE	15100/15102
5	POLYETHYLENE ENCASEMENT	15000

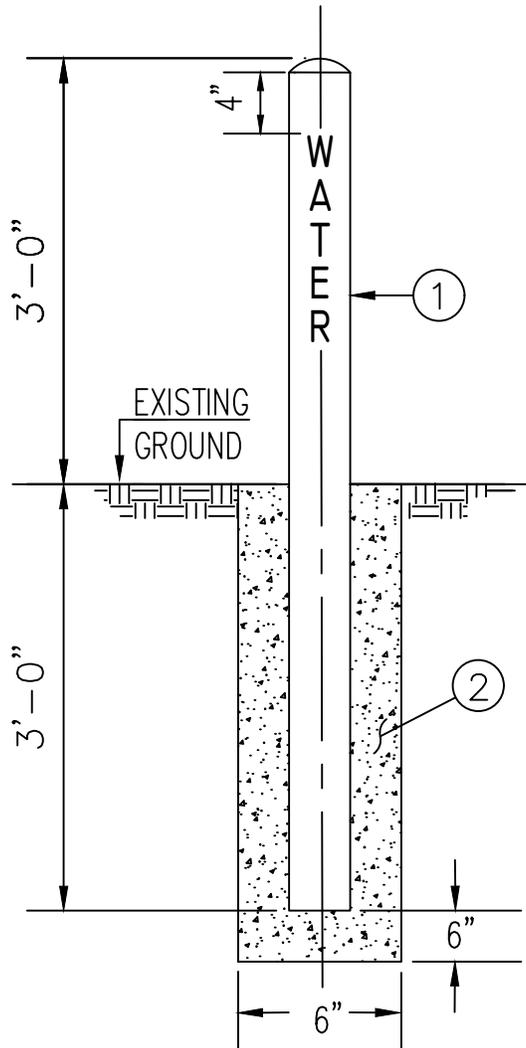
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			VALVE OPERATOR EXTENSION STEM		DATE
				STANDARD DWG. NO.	W-24



- NOTES:
1. PIPE SHALL BE PAINTED IN CONFORMANCE WITH DISTRICT SPECIFICATIONS.
 2. FILL PIPE WITH CONCRETE.

ITEM	DESCRIPTION		SPEC/DWG
1	4" SCH. 40 STEEL PIPE, PAINTED (ASTM A36)		
2	CONCRETE FOOTING (470-C-2000)		03000
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT
			 DISTRICT ENGINEER RCE 55974
PROTECTION POST			STANDARD DWG. NO. W-25



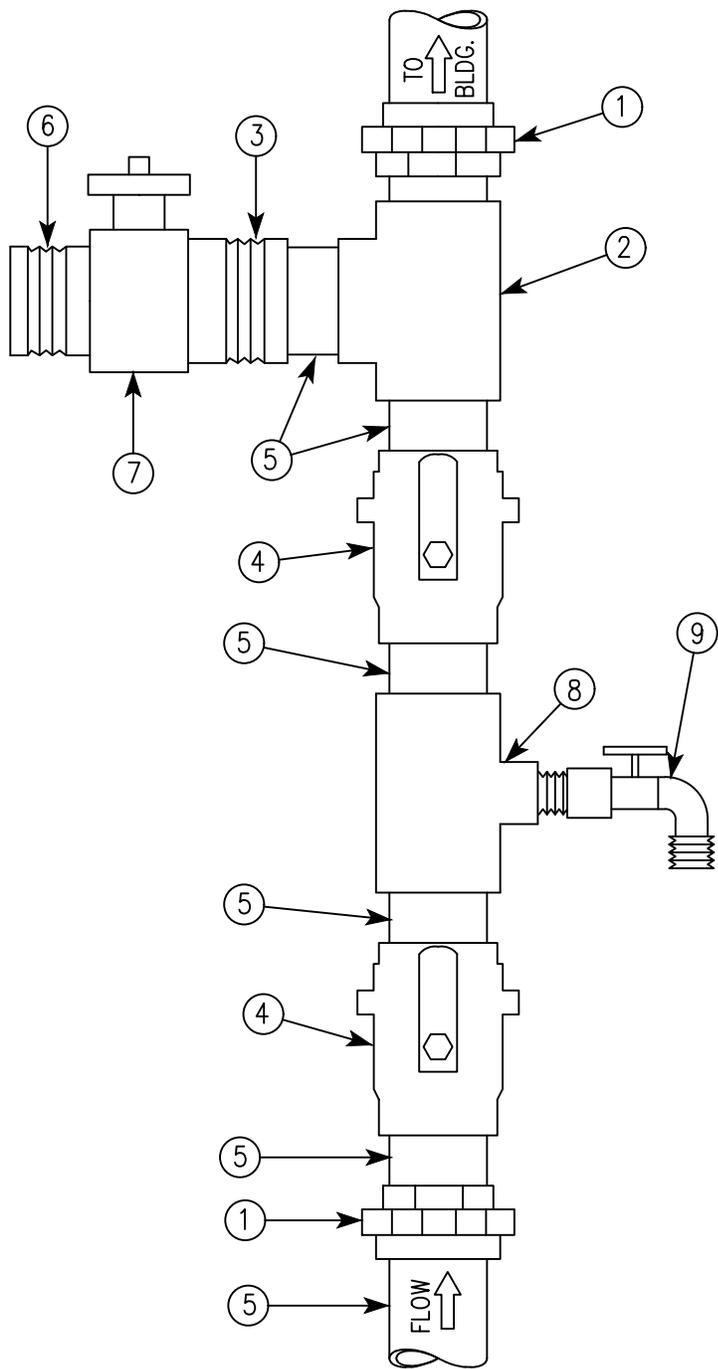


NOTE:

1. MARKER POST COLOR AND STENCILING SHALL CONFORM WITH APWA UNIFORM COLOR CODE FOR TYPE OF SERVICE.

ITEM	DESCRIPTION	SPEC/DWG
1	PIPELINE MARKER POST	AML
2	CONTROLLED LOW STRENGTH MATERIAL (CLSM)	03000

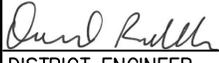
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			MARKER POST		DATE
				STANDARD DWG. NO.	W-26



NOTES:

1. UNLESS SPECIFIED OTHERWISE, FITINGS AND PIPE SIZES SHALL MATCH WATER SERVICE DIAMETER.
2. THREADED JOINT FITTINGS (NPT) MAY BE USED IN PLACE OF SOLDERED JOINTS.

ITEM	DESCRIPTION	SPEC/DWG
1	COPPER x COPPER UNION	15057
2	COPPER TEE	15057
3	MNPT x COPPER ADAPTER	15057
4	BALL VALVE WITH HAND LEVER	15099
5	TYPE L COPPER	15057
6	1.5" FIRE HOSE FITTING	
7	BALL VALVE WITH PADLOCK WING	15099
8	COPPER REDUCING TEE	15057
9	3/4" HOSE BIB OR TEST COCK	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			BYPASS TEE FOR CROSS CONNECTION TESTING		DATE
				STANDARD DWG. NO.	W-27

WATER METER SEE NOTE 3

INSTALL WARNING/ID TAPE
ABOVE PIPE TYPICAL
SEE NOTE 5

SEE SPECS FOR
REQUIRED DEPTH

OVERLAP TAPE

TRACER WIRE
SEE NOTE 2

WATER MAIN

WATER LATERAL

PROPERTY LINE

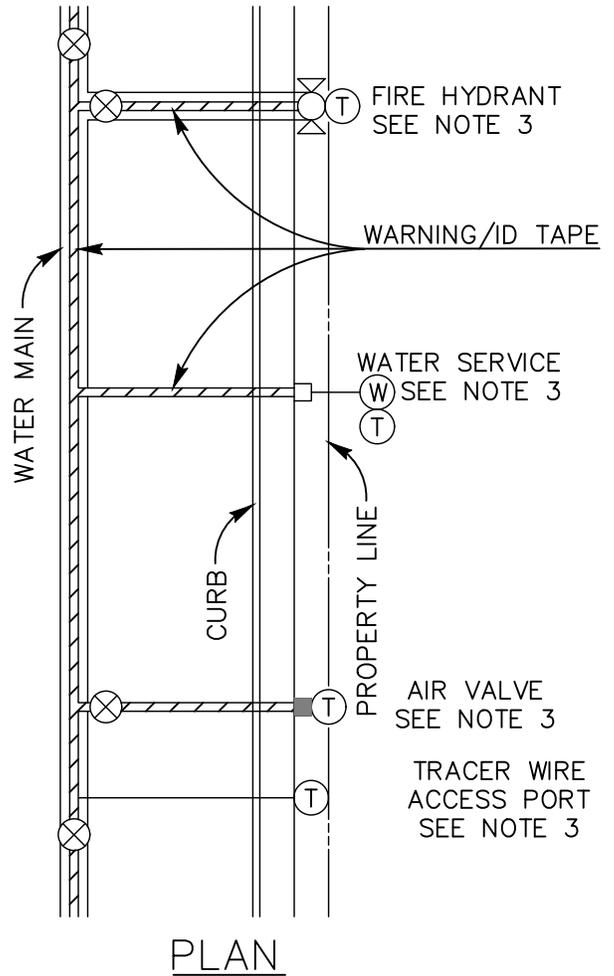
SECTION AT WATER LATERALS

CI LID
MARKED TRACER
OR WATER

CP TEST BOX
SEE NOTE 3
AND WC-6

TRACER WIRE
SEE NOTE 3

TRACER WIRE ACCESS
PORT (CP BOX)
DETAIL



PLAN

NOTES:

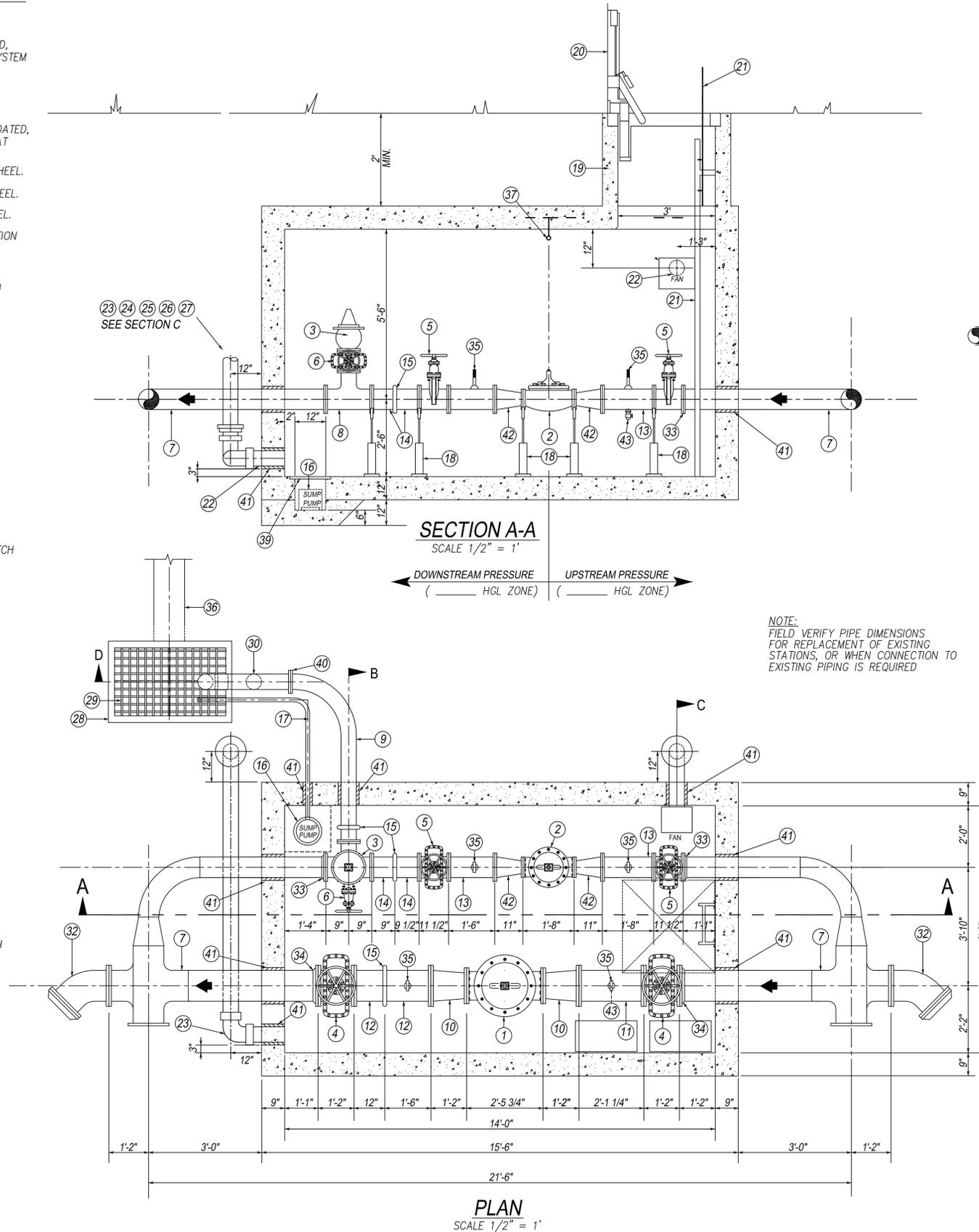
- 1) MATERIALS SHALL BE SELECTED FROM THE APPROVED MATERIALS LIST.
- 2) TRACER WIRE FOR NON METALLIC PIPE AND OR WARNING ID TAPE TO RUN CONTINUOUSLY ALONG THE ENTIRE LENGTH OF WATER MAINS AND APPURTENANCES. SECURE WIRE TO THE PIPE AND MAINTAIN ON PIPE CENTERLINE DURING TRENCH BACKFILL.
- 3) TRACER WIRE ACCESS PORTS SHALL BE INSTALLED WITHIN THE CONCRETE SPLASH PAD OF ALL FIRE HYDRANTS IN ACCORDANCE WITH THE STANDARD DRAWINGS. TRACER WIRE MAY TERMINATE WITHIN METER BOX, BLOWOFF BOX OR AIR VALVE PER THE SPECIFICATIONS. TRACER WIRE MAY TERMINATE IN A CP TEST ONLY IF NO OTHER APPURTENANCE EXISTS WITHIN THE REQUIRED 1,000' INTERVAL. ALL BURIED WIRES THAT REQUIRE TRENCHING TO A TEST BOX LOCATION SHALL BE INSTALLED, WITHOUT SPLICE, IN A CONDUIT IN THE TRENCH AT MINIMUM DEPTH OF 24".
- 4) WIRE SPLICE CONNECTORS SHALL BE SILICONE FILLED TYPE AND BE USED FOR TRACER WIRE REPAIR ONLY. SPLICING FOR NEW INSTALLATIONS WILL NOT BE ALLOWED.

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LEGEND ON PLANS
(TRACER WIRE)

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			WARNING/IDENTIFICATION TAPE AND TRACER WIRE INSTALLATION		DATE
				STANDARD DWG. NO.	W-28

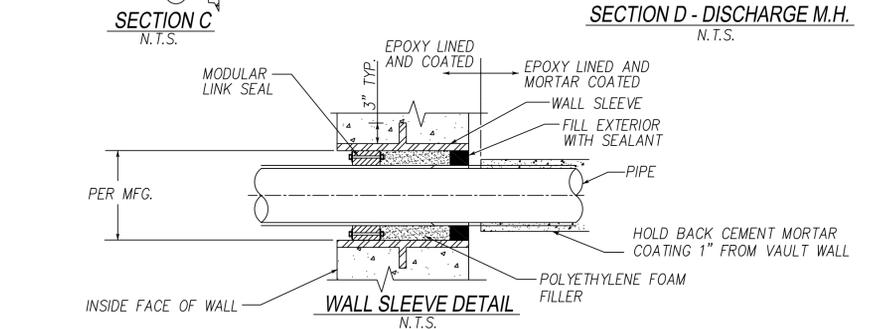
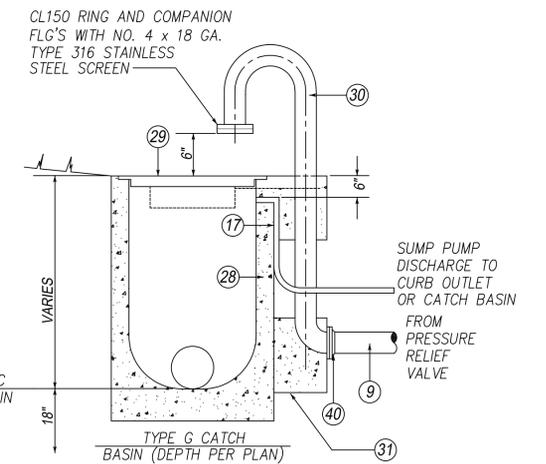
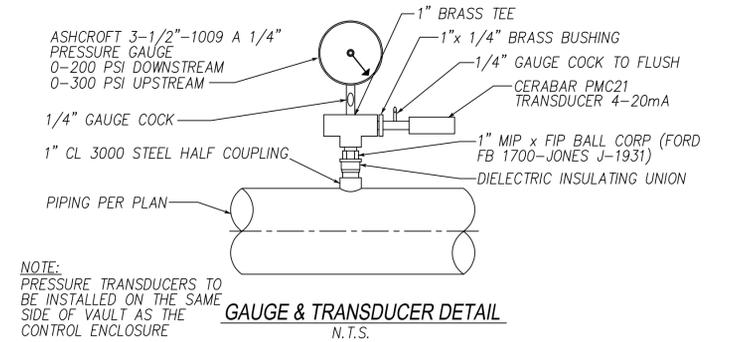
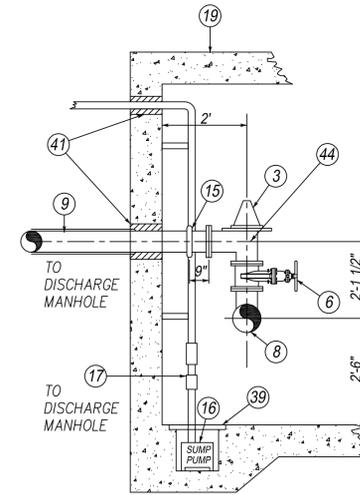
MATERIALS LIST: (STEEL PIPE THICKNESS = t = 1/4")

- 1 EACH 10" PRESSURE REDUCING AND PRESSURE SUSTAINING VALVE, CLA-VAL 92G-01, BCSKY, D.I. BODY, SS TRIM, CL 125 FLANGES, EPOXY LINED AND COATED, ULTRASONIC TRANSMITTER (SEE MISC. UNDER TELEMETRY SYSTEM COMPONENT LIST).
- 2 EACH 6" PRESSURE REDUCING AND PRESSURE SUSTAINING VALVE. (SAME DESCRIPTION AS ITEM NO. 1).
- 3 EACH 6" PRESSURE RELIEF VALVE, 50A-01 BCKOY, C.I. BODY, SS TRIM, CL 125 FLANGES, EPOXY LINED AND COATED, CRL 20-200 PSI RANGE. INSTALL FLANGE INSULATION KIT AT FLANGE CONNECTION TO 6" STEEL DISCHARGE PIPE.
- 2 EACH 12" GATE VALVES, CL 125 FLANGES, WITH HAND WHEEL.
- 2 EACH 8" GATE VALVES, CL 125 FLANGES, WITH HAND WHEEL.
- 1 EACH 6" GATE VALVE, CL 125 FLANGES, WITH HAND WHEEL.
- 2 EACH 12 X 12 X 8" FABRICATED 10 GA. STEEL COMBINATION TEE, BEND, REDUCER, WELDED JOINTS, CL150 FLANGES.
- 1 EACH 8X6" DI TEE, CL125 FLANGES
- 1 EACH 6" FABRICATED 10 GA. STEEL DISCHARGE LINE WITH BEND, CL150 FLANGES, MECHANICAL COUPLINGS.
- 2 EACH 12 X 10" CL125 FLANGED REDUCER.
- 1 EACH 12" CL150 FLANGED SPOOL.
- 1 EACH 12" CL150 FLG X GROOVE SPOOL.
- 1 EACH 8" CL150 FLANGED SPOOL.
- 1 EACH 8" CL150 FLG X GROOVE SPOOL.
- 3 EACH STYLE 77 VICTAULIC COUPLINGS.
- 1 EACH SUMP PUMP "LITTLE GIANT" 1/3 HP AUTOMATIC, CAT.#506158.
- 1 EACH 1-1/2" SCH 80 PVC DISCHARGE WITH CHECK VALVE AND COMPRESSION COUPLING. 1-1/2" GALVANIZED SUPPORT BRACKET.
- 9 EACH ADJUSTABLE PIPE SUPPORT. GALVANIZED WITH DRAIN HOLE - MOUNTED ON RAISED CEMENT.
- 1 EACH PRE-CAST CONCRETE VAULT (H-20 LOADING).
- 1 EACH 36 X 36" HATCH, BILCO TYPE J-4ALH20. RUN HATCH DRAIN TUBE TO DAYLIGHT OR CURB.
- 1 EACH GALVANIZED STEEL LADDER, WALL MOUNTED WITH LADDER SAFETY EXTENSION.
- 2 EACH 6" SCH 80 PVC VENT PIPES. LOCATION PER PLAN
- 3 EACH 6" SCH 80 PVC 90° BENDS.
- 2 EACH 6" SCH 80 PVC FLG ADAPTER.
- 2 EACH 6" 10 GA. STEEL VENT PIPE, PRIME AND PAINT.
- 2 EACH 6" STEEL INTAKE AIR CAP, MUSHROOM STYLE PRIME AND PAINT.
- 2 EACH CONCRETE VENT PIPE ENCASEMENTS.
- 1 EACH SDRSD TYPE G-1 CATCH BASIN. LOCATION PER LOCATION PER CIVIL DRAWINGS.
- 1 EACH GALVANIZED STEEL GRATE, FRAME AND GRATE, SDRSD STD DWGS D-13 AND D-15.
- 1 EACH 6" FABRICATED 10 GA. STEEL DISCHARGE WITH 180° LONG RADIUS BEND, CL150 FLANGES, EPOXY LINED AND PAINT COATED.
- NOT USED.
- FLG X MJ BEND, RESTRAINED (WHERE REQ'D, ALTERNATE INLET/OUTLET).
- 2 EACH 8" SLIP ON/WELD ON FLANGES (SHIP LOOSE). INSTALL FLANGE INSULATION KIT.
- 2 EACH 12" SLIP ON/WELD ON FLANGES (SHIP LOOSE). INSTALL FLANGE INSULATION KIT.
- PRESSURE GAUGE AND PRESSURE TRANSDUCER WITH FLUSH PORT PER GAUGE AND TRANSDUCER DETAIL THIS SHEET.
- 12" PVC SDR 35 DRAIN PIPE TO STORM DRAIN.
- 5/8" LIFTING EYE BOLT WITH EMBED OVER GATE VALVE OR CONTROL VALVE 8" AND LARGER.
- NOT USED.
- FRP GRATE.
- 1 EACH 6" CL150 FLANGE.
- WALL SLEEVES PER WALL SLEEVE DETAIL THIS SHEET.
- 2 EACH 8 X 6" CL125 FLANGED REDUCER.
- 1 EACH 2" 3000-LB HALF COUPLING AND BALL VALVE W/ TEE HANDLE TO BE LOCATED ON BOTTOM OF 12" DIAMETER SPOOL, AS DIRECTED.
- 3/4" BALL VALVE WITH MNPT X MGHY ADAPTER AT BODY PLUG LOCATION.
- TELEMETRY ENCLOSURE WITH FLOAT SWITCH WIRED TO 110V RELAY.



GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE PLANS AND SPECIFICATIONS OF THE CARLSBAD MUNICIPAL WATER DISTRICT AND ALL WORK SHALL BE EXECUTED IN CONFORMANCE WITH APPROVED SHOP DRAWINGS.
2. ALL MATERIALS SHALL BE AS SHOWN OR DISTRICT APPROVED EQUALS.
3. PIPING DIMENSIONS ARE NOMINAL. ALLOWANCES FOR END CAPS AND GASKETS SHALL BE MADE AS NECESSARY BY FABRICATOR. CONTRACTOR/FABRICATOR, SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL OF ALL PIPING AND VAULTS PRIOR TO FABRICATION.
4. ALTERNATE PRS INLET/OUTLET PIPING CONFIGURATION OR ACCESS HATCH LOCATION MAY BE REQUIRED TO SUIT FIELD CONDITIONS.
5. VAULT, RISER AND MANHOLE FRAME AND COVER SHALL BE DESIGNED IN CONFORMANCE WITH AASHTO STANDARDS FOR H-20 LOADING AND APPLICABLE SURCHARGE LOADS. VAULT SHALL BE OF A PRECAST TYPE DESIGN. SUBMIT SHOP DRAWINGS AND CALCULATIONS TO THE DISTRICT, FOR APPROVAL.
6. IN UNPAVED AREAS, EXTEND ACCESS RISER 6" ABOVE FINISH GRADE.
7. ALL INTERIOR PIPING, VALVES AND FITTINGS SHALL BE, EPOXY LINED AND COATED PER DISTRICT STANDARDS.
8. BURIED STEEL PIPE SHALL BE CEMENT MORTAR COATED OR EPOXY COATED AND PE WRAPPED PER DISTRICT STANDARDS.
9. ALL ACCESSORY PIPING, TUBING, CONDUIT AND OTHER COMPONENTS SHALL BE SECURED WITH MOUNTING CLIPS, BRACKETS AND ANCHOR BOLTS AS APPROVED.
10. SEAL ALL CONDUIT PENETRATIONS AND JOINT SURFACES WITH CEMENT GROUT. ALL WALL SURFACES SHALL BE FINISHED SMOOTH PER DISTRICT STANDARDS.



DATE	INITIAL	REVISION DESCRIPTION	DATE	INITIAL	DATE	INITIAL
5/24	NI	MATERIALS LIST				

SHEET 1	CITY OF CARLSBAD ENGINEERING DEPARTMENT	SHEETS 4
CARLSBAD MUNICIPAL WATER DISTRICT PRESSURE REDUCING STATION STANDARD DRAWING		
APPROVED	<i>Daniel Rulth</i>	4/29/22
DISTRICT ENGINEER	RCE 55974	DATE
DWN BY:	PROJECT NO.	DRAWING NO.
CHKD BY:		W-29A
RVWD BY:		



ELECTRICAL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. WORK INCLUDED: PROVIDE COMPLETE ELECTRICAL AND CONTROL SYSTEM AS SHOWN ON THE DRAWINGS, AS SPECIFIED HEREIN, AND AS NEEDED FOR A COMPLETE AND PROPER INSTALLATION INCLUDING, BUT NOT NECESSARILY LIMITED TO:
 - 1. POWER/TEL. PEDESTAL AND METER PEDESTAL FOR METERING FACILITIES, MAIN CIRCUIT BREAKER ETC.;
 - 2. FEEDER SYSTEM, IN CONDUIT TO BRANCH CIRCUITS;
 - 3. BRANCH CIRCUIT WIRING, IN CONDUIT, FOR LIGHTING, RECEPTACLES, JUNCTION BOXES AND MOTORS;
 - 4. HANGERS, ANCHORS, SLEEVES, CHASES, SUPPORTS FOR FIXTURES, AND OTHER ELECTRICAL MATERIALS AND EQUIPMENT IN ASSOCIATION THEREWITH;
 - 5. LIGHTING FIXTURES AND LAMPS;
 - 6. WIRING SYSTEM, IN CONDUIT, FOR EQUIPMENT AND CONTROLS PROVIDED UNDER OTHER SECTIONS OF THESE SPECIFICATIONS;
 - 7. MOTOR STARTERS AND CONTROLS FOR MOTORS PROVIDED UNDER THE CONTRACT, BUT FOR WHICH MOTOR STARTERS AND CONTROLS ARE NOT OTHERWISE PROVIDED;
 - 8. TELEMETRY SYSTEM, INCLUDING INSTALLATION OF A RADIO AND ETHERNET SWITCH;
 - 9. OTHER ITEMS AND SERVICES REQUIRED TO COMPLETE THE SYSTEMS.

1.2 QUALITY ASSURANCE

- A. USE SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION. THE REDUCING STATION HAS BEEN CLASSIFIED AS WET LOCATION. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA70), MUST BE UL RATED PANEL FOR TELEMETRY EQUIPMENT. CONTROL ENCLOSURE MUST BE CONSTRUCTED BY A CERTIFIED UL508A PANEL SHOP AND CONTAIN A UL CERTIFICATION.
- B. WITHOUT ADDITIONAL COST TO THE OWNER, PROVIDE SUCH OTHER LABOR AND MATERIALS AS ARE REQUIRED TO COMPLETE THE WORK OF THIS SECTION IN ACCORDANCE WITH THE REQUIREMENTS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION, REGARDLESS OF WHETHER SUCH MATERIALS AND ASSOCIATED LABOR ARE CALLED FOR ELSEWHERE IN THESE CONTRACT DOCUMENTS.

1.3 SUBMITTALS

- A. PRODUCT DATA: WITHIN 35 CALENDAR DAYS AFTER THE CONTRACTOR HAS RECEIVED THE OWNER'S NOTICE TO PROCEED, SUBMIT SIX (6) COPIES OF:
 - 1. MATERIALS LIST OF ITEMS PROPOSED TO BE PROVIDED UNDER THIS SECTION;
 - 2. MANUFACTURER'S SPECIFICATIONS AND OTHER DATA NEEDED TO PROVE COMPLIANCE WITH THE SPECIFIED REQUIREMENTS;
 - 3. MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES WHICH, WHEN APPROVED BY THE OWNER WILL BECOME THE BASIS FOR ACCEPTING OR REJECTING ACTUAL INSTALLATION PROCEDURES USED ON THE WORK.
 - 4. ELECTRICAL AND CONTROL ENCLOSURE SHOP DRAWINGS.
- B. MANUAL: UPON COMPLETION OF THIS PORTION OF THE WORK, AND AS A CONDITION OF ITS ACCEPTANCE, DELIVER TO THE OWNER TWO (2) COPIES OF AN OPERATION AND MAINTENANCE MANUAL. INCLUDE WITHIN EACH MANUAL:
 - 1. COPY OF APPROVED RECORD DOCUMENTS FOR THIS PORTION OF THE WORK;
 - 2. COPIES OF ALL CIRCUIT DIRECTORIES;
 - 3. COPIES OF ALL WARRANTIES AND GUARANTIES;
 - 4. CONTROL SCHEMATICS AND WRITTEN STEP-BY-STEP DESCRIPTION OF THE CONTROL FUNCTIONS.

1.4 WARRANTY

- A. PROVIDE 1 YEAR WARRANTY ON ALL LABOR AND MATERIALS FROM THE DATE OF COMMISSIONING.

PART 2 – PRODUCTS

2.1 GENERAL

WHERE UNDERWRITER'S LABORATORIES, INC. HAVE ESTABLISHED STANDARDS FOR SUCH MATERIALS, PROVIDE ONLY MATERIALS BEARING THE UL LABEL.

- A. TEMPORARY POWER:
 - 1. THE CONTRACTOR, AT HIS OWN EXPENSE, WILL PROVIDE TEMPORARY POWER AND PAY THE COSTS FOR INSTALLING PERMANENT ELECTRICAL METER OR METERS AS REQUIRED.

2.2 SERVICE ENTRANCE (METER PEDESTAL)

- A. PEDESTAL: MYERS 120/240 VAC ME-UG 125 WITH 100 AMP MAIN CIRCUIT BREAKER
- B. METERING SECTION AND EQUIPMENT SHALL BE IN ACCORDANCE WITH SAN DIEGO GAS & ELECTRIC COMPANY (SDG&E) REQUIREMENTS.

2.3 GROUNDING SYSTEM

- A. GROUND ALL EQUIPMENT, INCLUDING SWITCHBOARDS, TRANSFORMERS, CONDUIT SYSTEMS, MOTORS, AND OTHER APPARATUS, BY CONDUIT OR CONDUCTOR TO COLD WATER MAIN OR TO INDEPENDENT GROUNDING ELECTRODE AS SHOWN ON THE DRAWINGS, USING GROUND CLAMPS MANUFACTURED BY BURNDY OR T&B AND APPROVED BY THE OWNER.
- B. USE GROUND RODS IF WATER MAINS OR PIPING ARE NOT METALLIC, OR IF ISOLATION COUPLINGS HAVE BEEN USED.
 - 1. LOCATE GROUND RODS IN PLANTERS OR SIMILAR AREAS WHICH WILL RECEIVE WATER REGULARLY, AND DRIVE TO A DEPTH OF AT LEAST 8'-0.
 - 2. MAKE MEG GROUND TESTS TO MEASURE GROUND RESISTANCE, AND PROVIDE NOT MORE THAN 5 OHMS RESISTANCE, ADDING GROUND RODS AS REQUIRED TO ACHIEVE THAT LEVEL.
 - 3. MAKE GROUND RODS ACCESSIBLE FOR INSPECTION.

2.4 DISTRIBUTION SYSTEM

- A. IDENTIFICATION:
 - 1. IDENTIFY ALL APPARATUS USED FOR OPERATION AND CONTROL OF CIRCUITS, APPLIANCES, AND EQUIPMENT
 - 2. PROVIDE PHENOLIC NAMEPLATES, BLACK FACE WITH WHITE CORE LETTERS, SHOWING PROPER AND COMPLETE IDENTIFICATION TO FIT 2" x 1" HIGH NAMEPLATE.
- B. WIRING DEVICES:
 - 1. PROVIDE DUPLEX RECEPTACLES OF 3-POLE GROUNDING TYPE WITH THE THIRD POLE U-SHAPED AND GROUNDED TO THE CONDUIT SYSTEM, UL APPROVED.
- C. RACEWAYS:
 - 1. PROVIDE SCH 80 PVC WHERE ENCASED IN CONCRETE OR MASONRY OR BURIED.

WHERE THE CONDUIT IS ALTERNATE TO BE FLOOR SLAB, CONDUIT SHALL EMERGE ABOVE THE FLOOR TO BE CONNECTED TO THE RACEWAY OR TO THE RACEWAY. ALL FLEXIBLE CONDUITS SHALL BE SEALTITE TYPE OR EQUAL.

PIPELINE SUPPLY

- 3. OUTLETS, JUNCTION BOXES, AND SWITCH BOXES: PROVIDE STANDARD ONE-PIECE UNITS, GALVANIZED OR CAST METAL, OF SHAPE AND SIZE BEST SUITED TO THAT PARTICULAR LOCATION, OF SUFFICIENT SIZE TO CONTAIN ENCLOSED WIRES WITHOUT CROWDING. EXACT LOCATION OF ELECTRICAL COMPONENTS TO BE DETERMINED BY DISTRICT REPRESENTATIVE DURING CONSTRUCTION. 110V OUTLETS SHALL BE MOUNTED 42" ABOVE FLOOR. INSTALL WEATHER PROOF COVERS ON RECEPTACLES AND SWITCHES LOCATED IN VAULTS.
- 4. CONDUIT SYSTEMS SHALL BE PROVIDED WITH AN "APPROVED MEANS" TO PREVENT ACCUMULATION OF CONDENSATION AND PERMIT DRAINAGE OF LIQUIDS.
- D. CONDUCTORS:
 - 1. FOR LINE VOLTAGES, PROVIDE 600V INSULATED COPPER WIRE AND CABLE, NEC STANDARD, OF TYPES SPECIFIED BELOW FOR DIFFERENCE APPLICATIONS, WITH UL LABEL, AGENCIES HAVING JURISDICTION.
 - 2. WITH CONDUCTORS, PROVIDE INSULATING BUSHINGS OR INSULATING SLEEVES.
 - 3. FOR WIRE AND CABLE, PROVIDE XHHW OR THHN/THWN.
 - A. IDENTIFY FEEDER NEUTRALS WITH WHITE TAPE OR WHITE PAINT.
 - B. USE ONLY COPPER WIRES AND CABLES.

2.5 LIGHTING FIXTURES

- A. PROVIDE FIXTURES OF THE TYPES SHOWN ON THE DRAWINGS, COMPLETE WITH LAMPS AND MOUNTING HARDWARE.

2.6 MOTOR STARTERS

- A. GENERAL: PROVIDE WESTINGHOUSE UNITS, OR EQUAL AS APPROVED IN ADVANCE BY THE OWNER OF THE SIZES AND TYPES NEEDED FOR THE OPERATIONS SHOWN ON THE DRAWINGS, SPECIFIED HEREIN, AND OTHERWISE REQUIRED FOR THE FACILITY, AND WITH THE FOLLOWING:
 - 1. COMPLY WITH PERTINENT REQUIREMENTS OF NEMA AND NFPA-70.
 - 2. INCLUDE REQUIRED ACCESSORY ITEMS.
 - 3. HORSEPOWER RATED, WITH THERMAL OVERLOADS.
 - 4. NORMALLY RESET WITHOUT ENTERING THE STARTER ENCLOSURE.
 - 5. EQUIPPED WITH OVERLOADS IN EACH UNDERGROUND LEG.

2.7 TOP MOUNTED FLOAT LEVEL

- A. 4RKO4 FLOAT SWITCH (SINGLE POINT DETECTION).

2.8 ELECTRONIC PRESSURE TRANSMITTERS

- A. ELECTRONIC PRESSURE TRANSMITTERS SHALL BE CERABAR T PMC 131 (FOR 0-146 PSI USE 0-10 BAR) DOWNSTREAM AND (FOR 0-365 PSI USE 0-25 BAR) UPSTREAM. ACCURACY SHALL BE PLUS OR MINUS 0.25 PERCENT OF CALIBRATED SPAN. PROCESS WETTED AND BODY MATERIALS SHALL BE 316 SS. PROCESS CONNECTIONS SHALL BE 1/2-INCH NPT.

2.9 OTHER MATERIALS

- A. PROVIDE OTHER MATERIALS, NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, AS SELECTED BY THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE OWNER.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

- A. EXAMINE THE AREAS AND CONDITIONS UNDER WHICH WORK OF THIS SECTION WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.

3.2 PREPARATION

- A. COORDINATION:
 - 1. COORDINATE AS NECESSARY WITH OTHER TRADES TO ASSURE PROPER AND ADEQUATE PROVISION IN THE WORK OF THOSE TRADES FOR INTERFACE WITH THE WORK THIS SECTION.
 - 2. COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE SCHEDULE FOR WORK OF OTHER TRADES TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.
 - 3. WHERE LIGHTING FIXTURES AND OTHER ELECTRICAL ITEMS ARE SHOWN IN CONFLICT WITH LOCATIONS OF STRUCTURAL MEMBERS AND MECHANICAL OR OTHER EQUIPMENT, PROVIDE REQUIRED SUPPORTS AND WIRING TO CLEAR THE ENCROACHMENT.
- B. DATA INDICATED ON THE DRAWINGS AND IN THESE SPECIFICATIONS ARE APPROXIMATE, BUT THEIR ACCURACY IS NOT WARRANTED. THE EXACT LOCATIONS, DISTANCES, LEVELS, AND OTHER CONDITIONS WILL BE GOVERNED BY ACTUAL CONSTRUCTION AND THE DRAWINGS AND SPECIFICATIONS SHOULD BE USED ONLY FOR GUIDANCE IN SUCH REGARD.
- C. WHERE OUTLETS ARE NOT SPECIFICALLY LOCATED ON THE PLAN, LOCATE AS DETERMINED IN THE FIELD BY THE OWNER. WHERE OUTLETS ARE INSTALLED WITHOUT SUCH SPECIFIC DIRECTION, RELOCATE AS DIRECTED BY THE OWNER AND AT NO ADDITIONAL COST TO THE OWNER.
- D. VERIFY ALL MEASUREMENTS. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF DIFFERENCES BETWEEN WORK SHOWN ON THE DRAWINGS AND ACTUAL MEASUREMENTS AT THE SITE CONSTRUCTION.
- E. BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS HAVE BEEN DESIGNED FOR MAXIMUM ECONOMY CONSISTENT WITH ADEQUATE SIZING FOR VOLTAGE DROPS AND OTHER CONSIDERATIONS. INSTALL THE WIRING WITH CIRCUITS ARRANGED EXACTLY AS SHOWN ON THE DRAWINGS, EXCEPT AS OTHERWISE APPROVED IN ADVANCE BY THE OWNER.
- F. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC, BUT ARE REQUIRED TO BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT. WHERE DEVIATIONS ARE REQUIRED TO CONFORM WITH ACTUAL CONSTRUCTION AND THE WORK OF OTHER TRADES, MAKE SUCH DEVIATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

3.3 INSTALLATION OF RACEWAYS AND FITTINGS

- A. WHERE CONDUIT IS INSTALLED, OR EXPOSED IN WORK AREAS, PROVIDE RIGID GALVANIZED CONDUIT.
 - 1. SEAL JOINTS TO PREVENT ENTRANCE OF WATER.
 - 2. PROVIDE GROUND WIRE OF PROPER SIZE.
 - 3. USE NYLON (RATHER THAN STEEL) FISH TAPE.
- B. USE FLEXIBLE CONDUIT ONLY FOR SHORT MOTOR CONNECTIONS, OR WHERE SUBJECT TO VIBRATION.

3.4 INSTALLATION OF POWER EQUIPMENT

- A. PROVIDE POWER AND CONTROL WIRING FOR MOTOR STARTERS AND SWITCHES AS SHOWN ON THE DRAWINGS.

B. CONNECTIONS TO MISCELLANEOUS EQUIPMENT

- 1. WIRE TO, AND CONNECT TO, ALL EQUIPMENT NOT SPECIFICALLY DESCRIBED BUT TO WHICH ELECTRICAL POWER IS REQUIRED.
- 2. COORDINATE AS NECESSARY WITH OTHER TRADES AND SUPPLIERS TO VERIFY TYPES, NUMBERS, AND LOCATIONS OF EQUIPMENT.

3.5 INSTALLATION OF CONDUCTORS

- A. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, USE NO. 12 TYPE THWH/THHN CONDUCTORS FOR ALL BRANCH CIRCUITS, PROTECTED BY 20 AMP CIRCUIT BREAKERS. WHERE SO INDICATED ON THE DRAWINGS, USE LARGER WIRES TO LIMIT VOLTAGE DROPS.
- B. INSTALLATION OF CONDUITS
 - 1. WHERE CONDUIT SIZE IS NOT SHOWN, INSTALL 3/4" CONDUIT.
 - 2. PROVIDE CODE SIZE CONDUIT FOR NUMBER AND SIZE WIRES SHOWN OR REQUIRED, UNLESS A LARGER SIZE CONDUIT IS SHOWN ON THE DRAWINGS.
- C. USE IDENTIFIED (WHITE) NEUTRALS AND COLOR CODED PHASE WIRES FOR ALL BRANCH CIRCUIT WIRING.
 - 1. MAKE SPLICES ELECTRICALLY AND MECHANICALLY SECURE WITH PRESSURE TYPE CONNECTORS, OR BY SOLDERING.
 - A. FOR WIRES SIZE 6 AWG AND SMALLER, PROVIDE "SCOTCH-LOCK" CONNECTORS.
 - B. FOR WIRE SIZE 4 AWG AND LARGER, PROVIDE BURNDY "VERSITAPS", AND HEAVY DUTY CONNECTORS, OR T&B "LOCK-TITE" CONNECTORS.
 - 2. INSULATE SPLICES WITH A MINIMUM OF TWO HALF-LAPPED LAYERS OF SCOTCH BRANCH NO. 33 VINYL-PLASTIC ELECTRICAL TAPE WHERE INSULATION IS REQUIRED.
- D. TAPE ALL JOINTS WITH RUBBER TAPE 1 1/2 TIMES THE THICKNESS OF THE CONDUCTOR INSULATION, THEN COVER WITH THE FRICTION TAPE OR THE VINYL-PLASTIC ELECTRICAL TAPE SPECIFIED ABOVE.
- E. THE DRAWINGS INDICATE THE GENERAL DIRECTION OF HOME RUNS. CONTINUE ALL SUCH HOME RUNS TO THE PANEL AS THOUGH THE ROUTES WERE SHOWN COMPLETELY.

3.6 INSTALLATION OF POWER AND METER PEDESTALS

- A. INSTALL AS SHOWN ON THE DRAWINGS.
- B. MOUNT A TYPEWRITTEN DIRECTORY BEHIND GLASS OR PLASTIC ON THE INSIDE OF EACH PANEL DOOR AND, ON THE DIRECTORY, SHOW THE CIRCUIT NUMBER AND COMPLETE DESCRIPTION OF ALL DEVICES ON EACH CIRCUIT.
- C. INSTALL TELEMETRY COMPONENTS PER CMWD REQUIREMENTS. SEE SHEET 2.

3.7 TESTING AND INSPECTOR

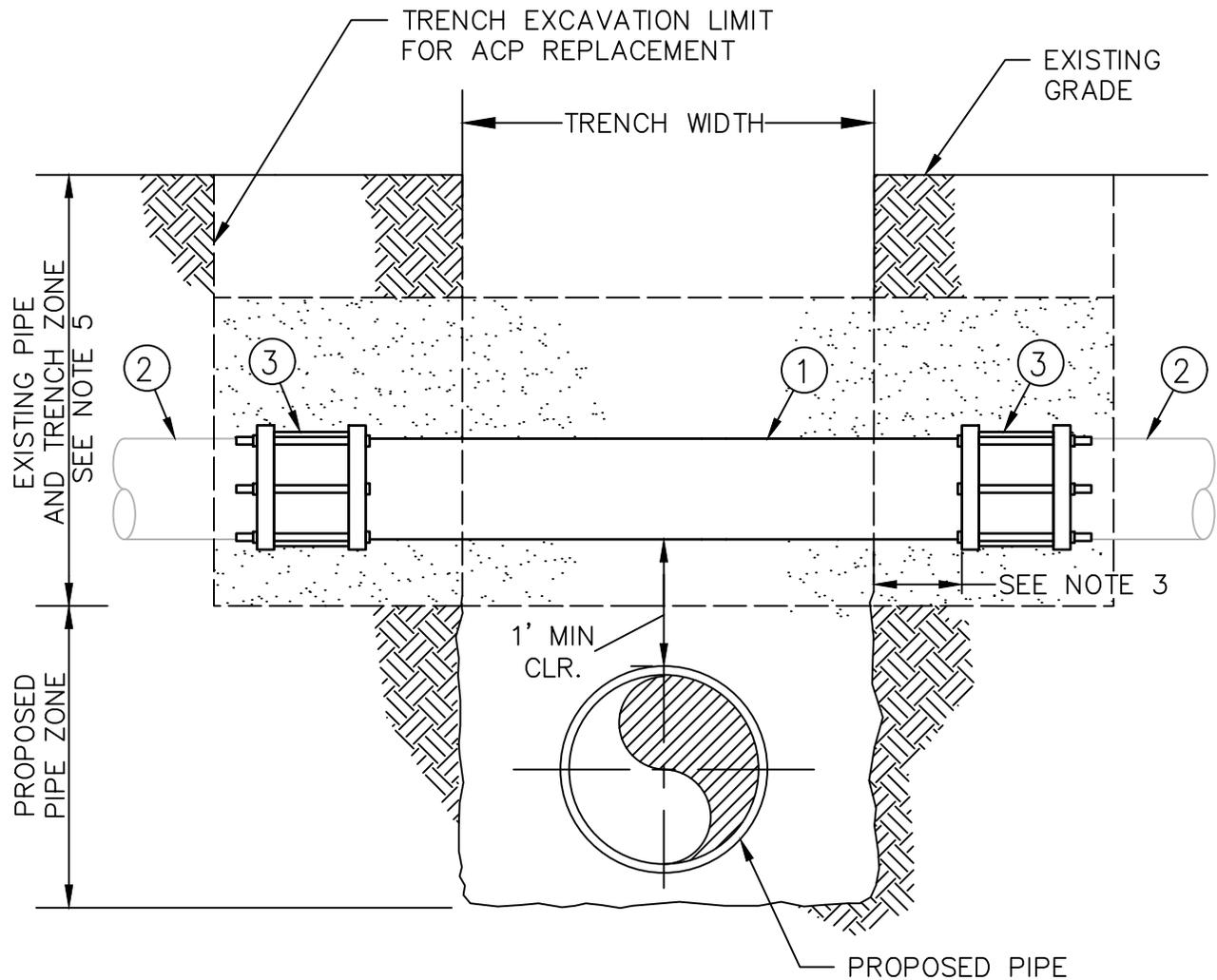
- A. PROVIDE PERSONNEL AND EQUIPMENT, MAKE REQUIRED TESTS, AND SECURE REQUIRED APPROVALS FROM THE OWNER AND GOVERNMENTAL AGENCIES HAVING JURISDICTION.
- B. MAKE WRITTEN NOTICE TO THE OWNER ADEQUATELY IN ADVANCE OF EACH OF THE FOLLOWING STAGES OF CONSTRUCTION:
 - 1. IN THE UNDERGROUND CONDITION PRIOR TO PLACING CONCRETE FLOOR SLAB, WHEN ALL ASSOCIATED ELECTRICAL WORK IS IN PLACE;
 - 2. WHEN ALL ROUGH-IN IS COMPLETE, BUT NOT COVERED;
 - 3. AT COMPLETION OF THE WORK OF THIS SECTION.
- C. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND TO NOT COMPLY WITH THE SPECIFIED REQUIREMENTS, WITHIN THREE DAYS AFTER RECEIPT OF NOTICE OF SUCH NONCOMPLIANCE, REMOVE THE NON-COMPLYING ITEMS FROM THE JOB SITE AND REPLACE THEM WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS, ALL AT NO ADDITIONAL COST TO THE OWNER.
- D. IN THE OWNER'S PRESENCE:
 - 1. TEST ALL PARTS OF THE ELECTRICAL SYSTEM AND PROVE THAT ALL SUCH ITEMS PROVIDED UNDER THIS SECTION FUNCTION ELECTRICALLY IN THE REQUIRED MANNER.
 - 2. IMMEDIATELY SUBMIT TO THE OWNER A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
 - 3. ALSO, MEASURE VOLTAGES BETWEEN PHASES AND BETWEEN PHASE WIRES AND NEUTRALS, AND REPORT THESE VOLTAGES TO THE OWNER.

3.8 PROJECT COMPLETION

- A. UPON COMPLETION OF THE WORK OF THIS SECTION, THOROUGHLY CLEAN ALL EXPOSED PORTIONS OF THE ELECTRICAL INSTALLATION, REMOVING ALL TRACES OF SOIL, LABELS, GREASE, OIL, AND OTHER FOREIGN MATERIAL, AND USING ONLY THE TYPE CLEANER RECOMMENDED BY THE MANUFACTURER OF THE ITEM BEING CLEANED.
- B. THOROUGHLY INDOCTRINATE THE OWNER'S OPERATION AND MAINTENANCE PERSONNEL IN THE CONTENTS OF THE OPERATIONS AND MAINTENANCE MANUAL REQUIRED TO BE SUBMITTED UNDER THESE SPECIFICATIONS.
- C. ON THE FIRST DAY THE FACILITY IS IN OPERATION, FOR AT LEAST EIGHT HOURS AT A TIME AS DIRECTED BY THE OWNER, PROVIDE A QUALIFIED FOREMAN AND CREW TO PERFORM SUCH ELECTRICAL WORK AS MAY BE REQUIRED BY THE OWNER.

SHEET 3		CITY OF CARLSBAD ENGINEERING DEPARTMENT		SHEETS 4	
CARLSBAD MUNICIPAL WATER DISTRICT PRESSURE REDUCING STATION NOTES					
APPROVED		<i>Dorel Rulth</i>		4/29/22	
DISTRICT ENGINEER		RCE 55974		DATE	
DWN BY:	PROJECT NO.	DATE	INITIAL	DATE	INITIAL
CHKD BY:					
RVWD BY:					
DATE	INITIAL	DATE	INITIAL	DATE	INITIAL
ENGINEER OF WORK		REVISION	DESCRIPTION	OTHER APPROVAL	CITY APPROVAL



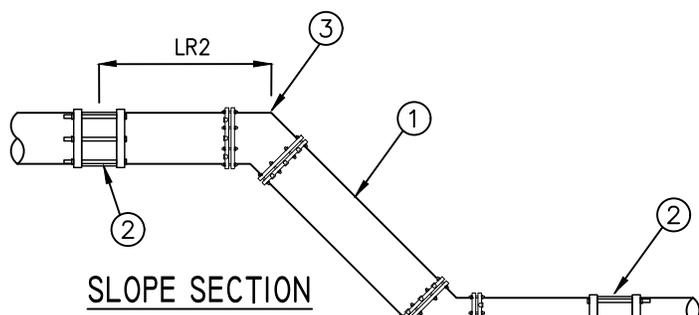


NOTES:

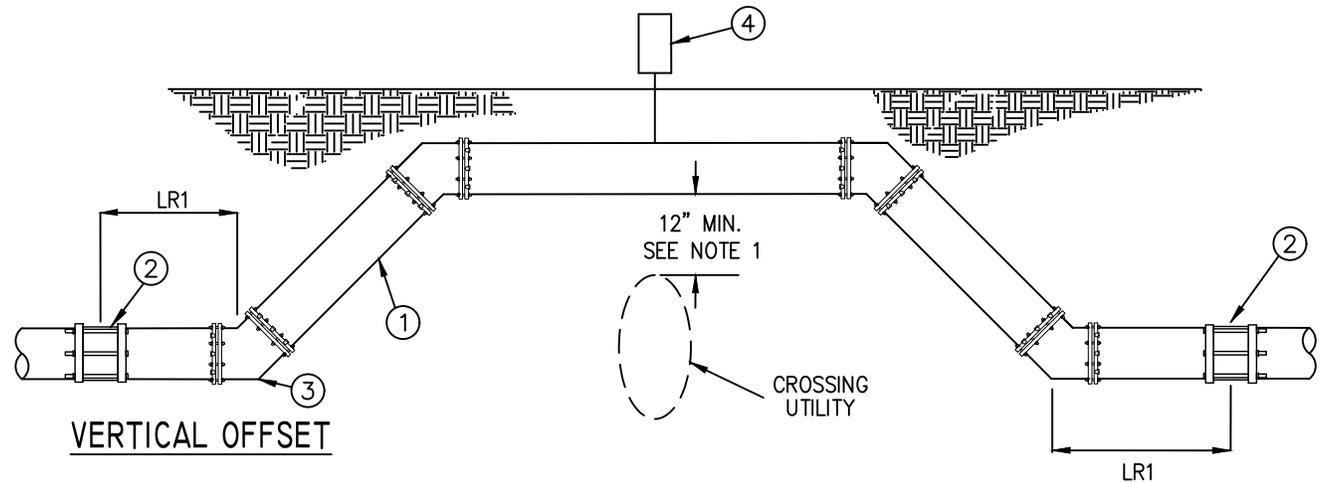
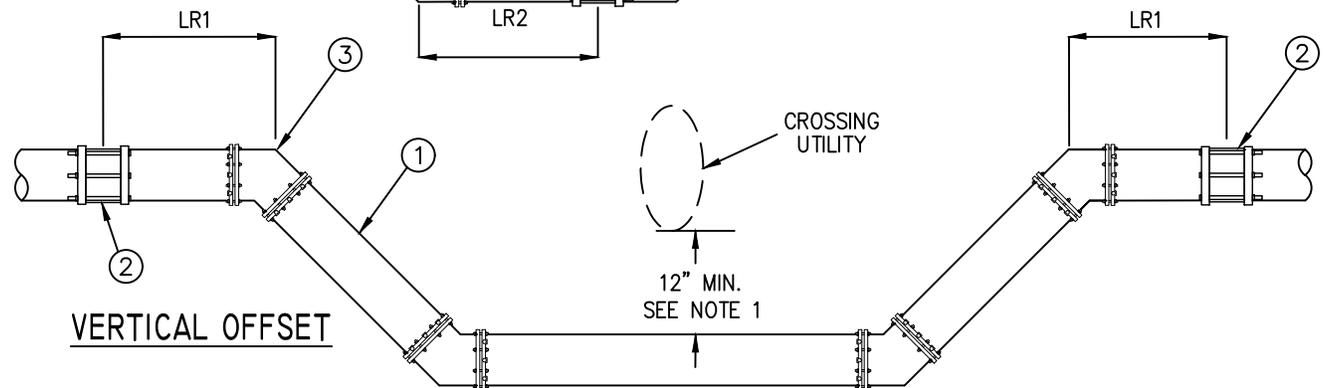
1. SUBMIT SHUTDOWN/CONNECTION REQUEST FOR DISTRICT APPROVAL IN ACCORDANCE WITH DISTRICT STANDARDS.
2. EXISTING AC PIPE SHALL BE REPLACED WHEN TRENCH WIDTH EXCEEDS 18 INCHES.
3. REPLACE AC PIPE TO NEAREST JOINT LOCATED OUTSIDE OF 2 FEET MIN. DIMENSION FROM TRENCH. AC PIPE LENGTH MAY VARY FROM 7 FEET TO 13 FEET.
4. DISINFECT NEW PIPE AND COUPLINGS IN ACCORDANCE WITH SPEC SECTION 15041.
5. SEE CMWD STD. DWG. W-2 FOR SURFACE RESTORATION AND PIPE INSTALLATION REQUIREMENTS OF UNDERCUT WATER MAIN. PIPE BEDDING MATERIAL SHALL BE PLACED BY HAND AND COMPACTED UNDER PIPE AND HAUNCHES.

ITEM	DESCRIPTION	SPEC/DWG
1	NEW PVC PIPE, NO INTERMEDIATE JOINTS OR FITTINGS	15064
2	EXISTING AC WATER MAIN	
3	TRANSITION COUPLING	15000

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT UNDERCUT ACP WATER MAIN REPLACEMENT	<i>Dorel Rutth</i> DISTRICT ENGINEER RCE 55974	7/22/22 DATE



NOTE:
 RESTRAINED LENGTH DIMENSIONS (LR1 AND LR2)
 SHALL BE CALCULATED BY ENGINEER OF RECORD
 AND SUBMITTED FOR APPROVAL



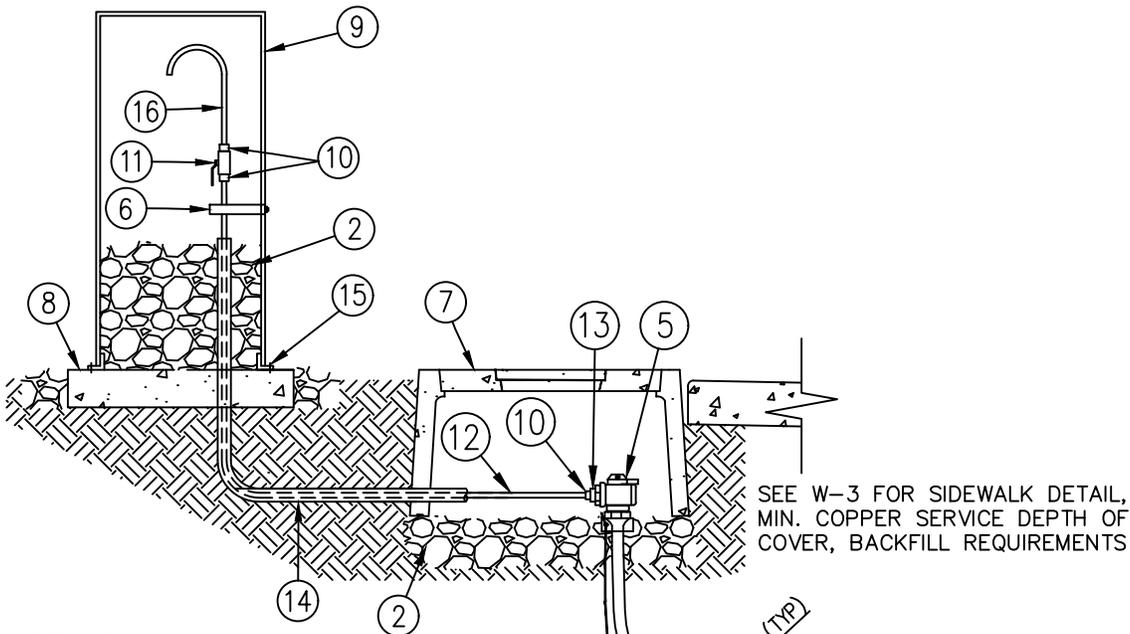
NOTES:

1. SEPARATION, SLEEVING OR NO-JOINT REQUIREMENTS FOR POTABLE PIPELINES BELOW NON-POTABLE FLUID PIPELINES SHALL APPLY. (SECTION 64572, CA. WATERWORKS STANDARDS).
2. ALL PIPE JOINTS BETWEEN FITTINGS SHALL BE RESTRAINED.
3. INSTALL AIR-VACUUM VALVE ASSEMBLY UNLESS OTHERWISE APPROVED.
4. ALL METALLIC FITTINGS AND HARDWARE SHALL BE POLYETHYLENE ENCASED.

ITEM	DESCRIPTION	SPEC/DWG
①	DI OR PVC PIPE	15056/15064/15065
②	TRANSITION OR FLEXIBLE PIPE COUPLING	15000
③	RESTRAINED DI FITTING (11.25°, 22.5° OR 45°) MJ OR PUSH ON	15056/15064
④	2" AIR VALVE	W-11

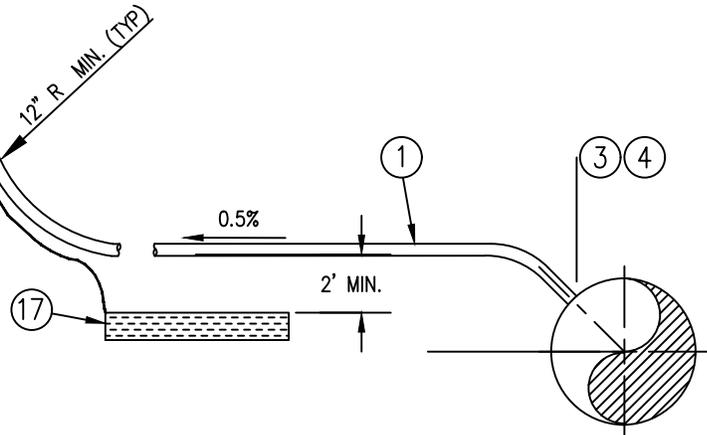
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	7/22/22 DATE





NOTES:

1. LOCATE WATER SAMPLE POINT ENCLOSURE WHERE SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE DISTRICT REPRESENTATIVE.
2. CONTRACTOR SHALL ADJUST BALL VALVE & METER BOX TO F.G. AFTER SIDEWALK IS INSTALLED & APPROVED.
3. COPPER TUBING SHALL HAVE NO JOINTS.
4. TAP TO MAIN TO BE MINIMUM OF 24" FROM NEAREST COUPLING, FITTING, VALVE, BELL OR OTHER TAPS.
5. POSITION ANODE MIDWAY BETWEEN PIPELINE AND METER BOX.
6. INTERIOR OF METER BOX SHALL BE CLEAR OF DEBRIS AND BALL VALVE FULLY EXPOSED.
7. FOR NON-CONTIGUOUS SIDEWALK, SEE STD. DWG. W-3 FOR METER BOX PLACEMENT.

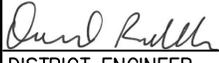


ITEM	DESCRIPTION	SPEC/DWG
1	1" COPPER (TYPE 'K' SOFT)	15057
2	3/8" ROCK, ADD'L 6" X 6" DEPTH SURROUNDING CONCRETE PAD	
3	OUTLET ON AC OR PVC MAIN	W-13
4	OUTLET ON DUCTILE IRON OR STEEL MAIN	W-14
5	1" ANGLE METER STOP	15099
6	STAINLESS STEEL U-BOLT	15000
7	#37 METER BOX W/ TWO PIECE LID	AML
8	2' x 2' x 6" THICK REINFORCED CONCRETE PAD	03000
9	GALVANIZED WATER SAMPLING STATION ENCLOSURE	AML
10	3/8" COMP X MALE IPT ADAPTER	15057
11	3/8" 316 STAINLESS STEEL BALL VALVE WITH FEMALE IPT	15099
12	3/8" COPPER (TYPE K SOFT)	15057
13	1-1/4" MALE IPT X 3/8" FEMALE IPT BUSHING	15057
14	1" SCHEDULE 40 PVC CONDUIT SLEEVE WITH SWEEP BEND	15064
15	3/8" STAINLESS STEEL ANCHOR BOLTS W/ NUTS & INSULATING WASHERS	15000
16	3/8" 316 STAINLESS STEEL TUBE	
17	30 LB ZINC ANODE(S) WITH ANODE LEAD WIRE	WC-8

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i> 7/22/22
1		5/24	WATER SAMPLING STATION	DISTRICT ENGINEER RCE 55974
				DATE STANDARD DWG. NO. W-32

ABBREVIATIONS:

AL	ALUMINUM
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AWWA	AMERICAN WATER WORKS ASSOCIATION
BLK	BLACK
BLU	BLUE
BOC	BACK OF CURB
CML&TW	CEMENT-MORTAR LINED AND TAPE WRAPPED
CP	CATHODIC PROTECTION
CI	CAST IRON
CoC	CITY OF CARLSBAD
CTS	CORROSION TEST STATION
Cu	COPPER
DI	DUCTILE IRON
DW	DOMESTIC WATER
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
HMWPE	HIGH MOLECULAR WEIGHT POLYETHYLENE
IJ	ISOLATION JOINT
INSUL	INSULATING
LB	POUND
Mg	MAGNESIUM
Mn	MANGANESE
MAX	MAXIMUM
MIN	MINIMUM
Ni	NICKEL
No.	NUMBER
PE	POLYETHYLENE
PW	POTABLE WATER
PSI	POUNDS PER SQUARED INCH
PVC	POLYVINYL CHORIDE
QTY.	QUANTITY
RECOM	RECOMMENDATION
REF	REFERENCE
REQ	REQUIRED
RHH-RHW	RUBBER INSULATED HIGH HEAT, AND RUBBER INSULATED HEAT AND WATER RESISTANT
SCH	SCHEDULE
Si	SILICON
SPECS	SPECIFICATIONS
STA	STATION
STRD	STRANDED
TYP	TYPICAL
VAR	VARIOUS
YLW	YELLOW

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			CATHODIC PROTECTION ABBREVIATIONS		DATE
				STANDARD DWG. NO.	WC-1

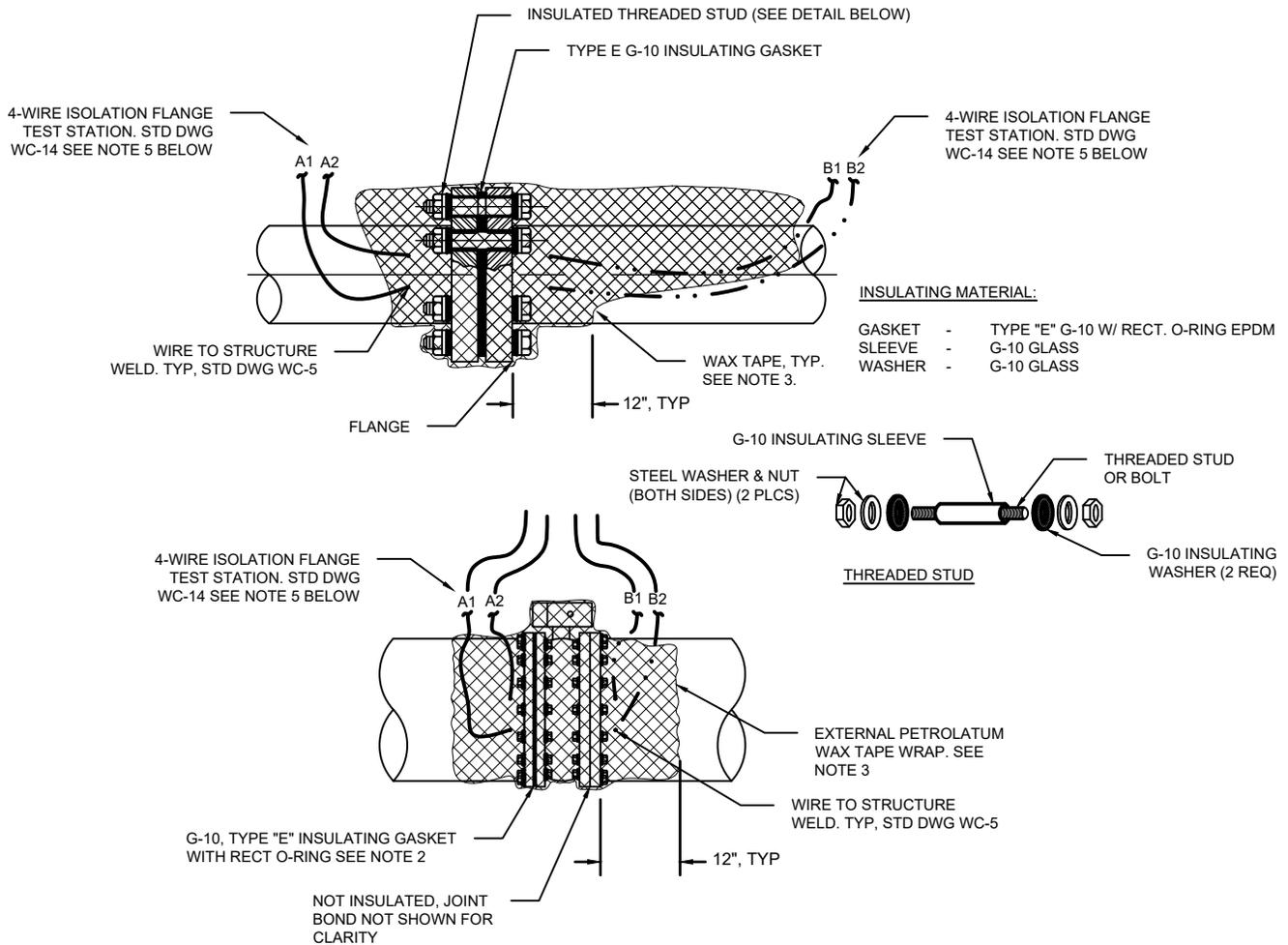
GENERAL NOTES

1. ALL MATERIALS AND INSTALLATION METHODS SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND TECHNICAL SPECIFICATIONS.
2. UNLESS OTHERWISE NOTED, DRAWINGS ARE NOT SHOWN TO SCALE.
3. CORROSION TEST STATIONS:
 - A. INSTALL TEST STATION BOXES AS SHOWN IN THE PLANS AND PERPENDICULAR TO THE PIPELINE AT THE TEST WIRE CONNECTION POINT. TEST STATION LOCATIONS MAY BE MOVED ±5' FROM THE STATIONS SHOWN TO AVOID DRIVEWAYS OR INTERFERENCE WITH OTHER STRUCTURES. COORDINATE INSTALLATION OF TEST STATION CONDUIT WITH POSTS AND OTHER FIXTURES TO AVOID DAMAGE TO CONDUIT. INSTALL TEST STATION BOXES A MIN OF 4' FROM EOP OR BOC.
 - B. ALL WIRES SHALL HAVE ENOUGH SLACK TO ALLOW TERMINAL BOARD TO BE REMOVED 24" FROM THE OPENING OF BOX.
 - C. INSTALL REINFORCED CONCRETE PAD (24" SQ. OR 24" DIA. x 6" THICK) AROUND TEST BOXES IN UNPAVED AREAS. USE No. 4 REBAR. SEE STANDARD DRAWING WC-6.
 - D. IDENTIFY TEST LEADS WITH HEAT SHRINK SLEEVE.
 - E. WIRE SIZE, INSULATION, AND COLORS SCHEDULE

• PIPELINE LEADS	- No. 8 AWG STRANDED HMWPE BLACK
• ANODE LEAD	- No. 12 AWG STRANDED HMWPE BLACK
• CASING LEAD	- No. 10 AWG STRANDED HMWPE BLACK
• BOND WIRE	- No. 4 AWG STRANDED HMWPE BLACK
 - F. PLACE ALL WIRE RUNS IN SCH 80 PVC CONDUIT WITH SOLVENT WELDED JOINTS @ A MIN OF 3 FEET BELOW FINISHED GRADE. CONDUIT AND WIRES NOT SHOWN IN ALL DETAILS FOR CLARITY.
4. ANODE INSTALLATION NOTES:
 - A. INSTALL ANODES ACCORDING TO THE PLANS AND SPECIFICATIONS.
 - B. INSTALL PLASTIC WARNING TAPE ALONG ENTIRE HORIZONTAL RUN OF WIRES. USE 6" WIDE 4 MIL THICK INERT PLASTIC TAPE PRINTED WITH "CAUTION CATHODIC PROTECTION CABLE BELOW."
 - C. PLACE ALL HORIZONTAL AND VERTICAL WIRE RUNS IN SCH 40 PVC CONDUIT WITH SOLVENT WELDED JOINTS @ A MIN OF 3 FEET BELOW FINISHED GRADE. CONDUIT NOT SHOWN IN ALL DETAILS FOR CLARITY.
 - D. NUMBER OF ANODES AND TYPE VARIES. ANODES MAY BE INSTALLED ON EITHER SIDE OF THE PIPE MIN 8' FROM PIPE. DO NOT EXCEED THE BOUNDS OF CoC RIGHT-OF-WAY.
 - E. BACKFILL ANODES WITH CLEAN NATIVE SOIL IN 6" LIFTS. BACKFILL SHALL BE SCREENED AND FREE OF ROCKS LARGER THAN 2 INCHES IN DIAMETER.
 - F. AT CASINGS PLACE ANODES ADJACENT TO NON-ENCASED CARRIER PIPE.
5. BURIED MECHANICAL JOINTS, I.E., VALVES, FLANGES OR COUPLINGS, EXCEPT INSULATING FLANGES, MUST BE BONDED PER STANDARD DRAWING WC-4 AND WAX TAPED, PER AWWA C217.
6. NO WIRE SPLICES ARE PERMITTED.
7. WIRE CONNECTIONS TO PIPE SHALL BE MADE BY THE EXOTHERMIC WELD OR PIN BRAZING PROCESS. ATTACH 1 WIRE PER ATTACHMENT POINT. ALL WELDS MUST BE SEPARATED BY 6" MIN. SEE STANDARD DRAWING WC-5.
8. CONTRACTOR SHALL DOCUMENT ALL CHANGES FROM THE PROJECT DRAWINGS AND SUBMIT "AS-BUILT" DRAWINGS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMPLETION OF WORK.

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			CATHODIC PROTECTION		DATE
			GENERAL NOTES		STANDARD DWG. NO. WC-2





NOTES:

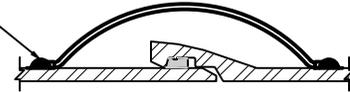
1. FULL LENGTH INSULATING SLEEVES REQUIRED AT ALL THRU-FLANGE BOLTS OR STUDS.
2. VALVE AND INSULATING FLANGE KIT TO BE ASSEMBLED AND TESTED BY THE CONTRACTOR'S CORROSION ENGINEER AND VERIFIED BY CoC REPRESENTATIVE PRIOR TO BURIAL. RE-TEST AFTER FINAL INSTALLATION. SEE SPECIFICATION SECTION 16640.
3. BURIED INSULATING FLANGES ARE TO BE WRAPPED WITH WAX TAPE. DAMAGED COATINGS WHERE INSULATING FLANGES ARE INSTALLED IN VAULTS ARE TO BE REPAIRED PER PROJECT COATING SPECIFICATIONS.
4. WIRES EXTEND TO TEST STATION (NOT SHOWN FOR CLARITY).
5. ALL INSULATED FLANGES REQUIRE A TEST STATION. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. FOR NOMINAL PIPE DIAMETERS UP TO AND INCLUDING 36", PROVIDE ONE INSULATING WASHER AND ONE STEEL WASHER ON EACH SIDE OF THE FLANGE FOR EACH FLANGE BOLT. FOR NOMINAL PIPE DIAMETERS GREATER THAN 36", THE INSULATING WASHERS SHALL BE INSTALLED SANDWICHED BETWEEN A PAIR OF MATCHING STEEL WASHERS (NOT SHOWN FOR CLARITY) ON EACH SIDE OF THE FLANGE FOR EACH FLANGE BOLT.

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Rutledge</i>	4/29/22
			INSULATING FLANGE KIT	DISTRICT ENGINEER	DATE
				RCE 55974	
				STANDARD DWG. NO.	WC-3

NOTES:

1. DEPICTED BOND LOCATIONS ARE DIAGRAMMATIC IN NATURE. INSTALL BONDS AT LOCATIONS PER SECTION VIEW BELOW.
2. ALL BOND WIRES SHALL BE STRD. COPPER WIRE W/HMWPE INSULATION, INSTALLED AT MIN. LENGTH BUT ACCOUNTING FOR FULL ALLOWABLE JOINT MOVEMENT.
3. TWO No.4 BOND WIRES ARE REQUIRED PER JOINT FOR PIPE DIAMETERS 24" AND SMALLER. THREE No.4 BOND WIRES ARE REQUIRED PER JOINT FOR PIPE DIAMETERS GREATER THAN 24".
4. BOND WIRES SHALL BE SPACED 6" APART MIN.
5. ALL WIRE CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD OR PIN BRAZING PROCESS.
6. WAX TAPE ALL BURIED BOLTED FITTINGS PER AWWA C217.
7. HEAT SHRINKABLE POLYOLEFIN COATING FOR CONNECTIONS NOT SHOWN FOR CLARITY.
8. APPLY BONDS BEFORE HEAT SHRINK COATING.

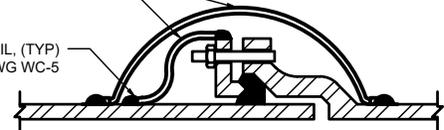
WIRE-TO-STRUCTURE CONNECTION, (TYP). SEE STD DWG WC-5



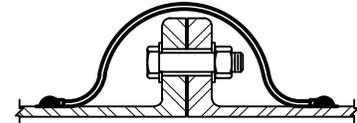
PUSH-ON JOINT

BOND WIRE, (TYP)

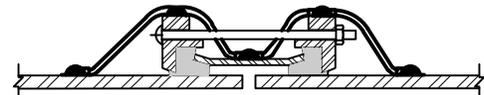
WELD DETAIL, (TYP) SEE STD DWG WC-5



MECHANICAL JOINT



FLANGED JOINT (NON-INSULATING)

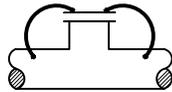


NOTE: BOND EACH INDIVIDUAL METALLIC COMPONENT.

MECHANICAL SLEEVE COUPLING



ADAPTER



BLIND FLANGE



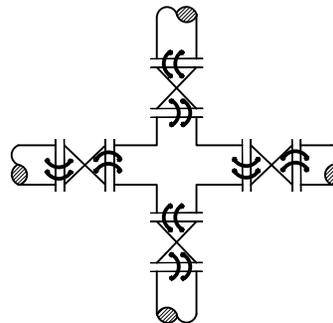
VALVE



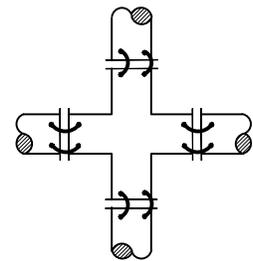
DISMANTLING JOINT WITH VALVE



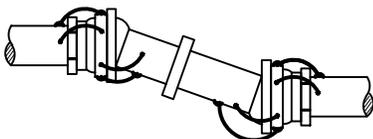
VICTAULIC COUPLING



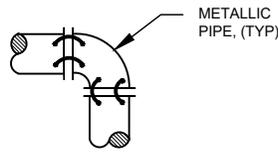
VALVE CROSSING



CROSS

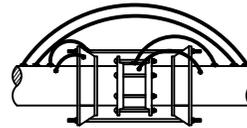


FLEXIBLE JOINT

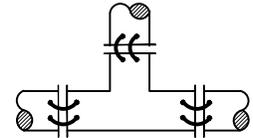


BEND

METALLIC PIPE, (TYP)

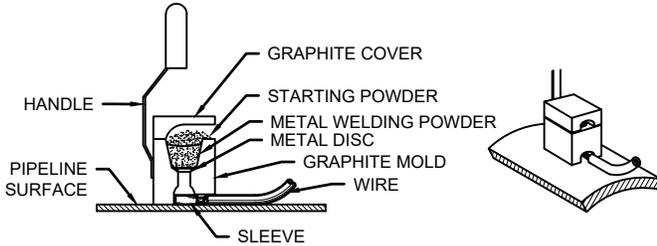


FLEX COUPLING WITH RESTRAINER



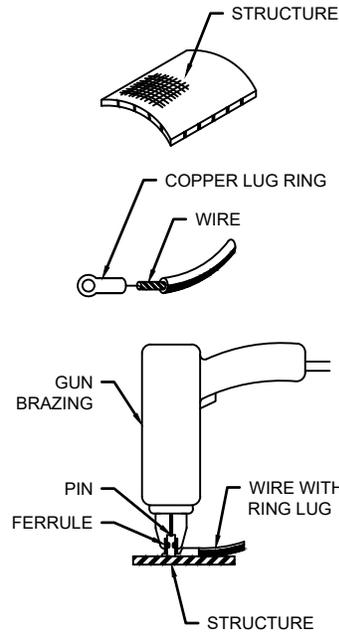
TEE

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Dorel Rutth</i>	4/29/22
			JOINT BOND FOR NON-WELDED	DISTRICT ENGINEER	DATE
			DIP AND STEEL JOINTS	RCE 55974	
				STANDARD DWG. NO.	WC-4



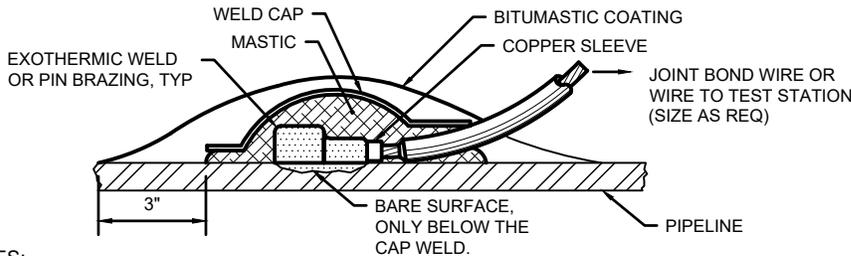
- STEP 1. GRIND STRUCTURE CONNECTION AREA (3"x3") TO BARE SHINY METAL AND CLEAN WITHOUT REMOVING EXCESS METAL.
- STEP 2. STRIP INSULATION FROM WIRE. ATTACH SLEEVE
- STEP 3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR & IGNITE.
- STEP 4. REMOVE SLAG FROM CONNECTION & STRIKE WITH 2 LB. HAMMER TO TEST FOR SOUNDNESS.
- STEP 5. COVER CONNECTION AND EXPOSED STRUCTURE SURFACE WITH A WELD CAP AND BITUMINOUS COATING COMPOUND.

EXOTHERMIC WELD



PIN BRAZING

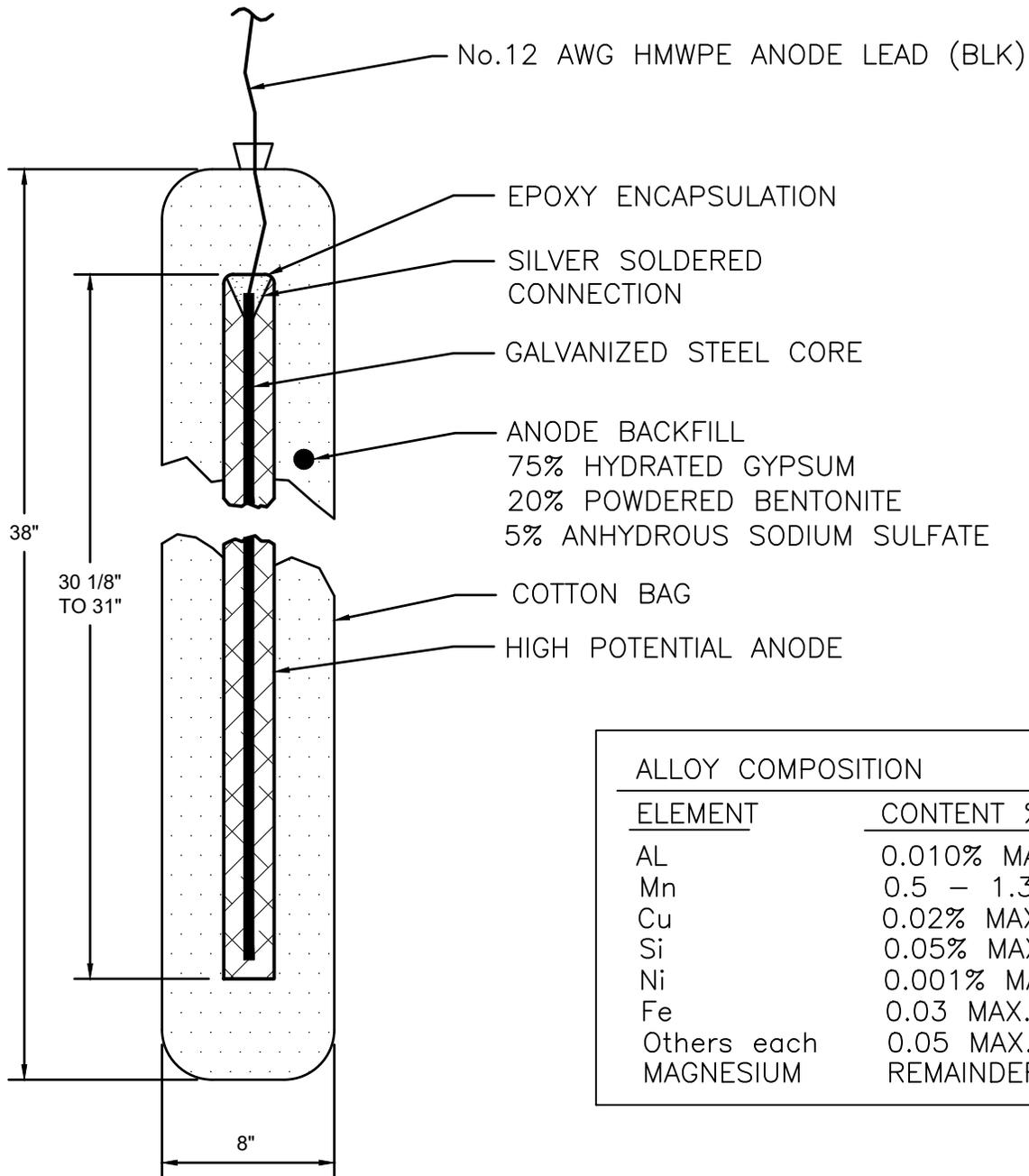
1. DEGREASE AND CLEAN STRUCTURE TO BARE, BRIGHT METAL WITH MECHANICAL DEVICES WITHOUT REMOVING EXCESS METAL.
2. STRIP WIRE INSULATION AND ATTACH FROM WIRE AND ATTACH A BAC M1 COMPRESSION TERMINAL OR APPROVED EQUAL.
3. LOAD THE BRAZING GUN WITH A DIRECT BRAZING PIN AND FERRULE. USE A THREADED, TYPE CONNECTION FOR ABOVE-GROUND USE ONLY.
4. BRAZE THE WIRE TO THE PIPE. EXTRA MATERIAL REQUIRED FOR DI OR CI PIPE.
5. TEST BRAZE BY BREAKING OFF THE SHANK OF THE PLAIN PIN WITH A HAMMER.
6. COVER CONNECTION WITH MASTIC FILLED WELD CAP AND BITUMASTIC COATING 80% SOLIDS BY VOLUME OVER WELD CAP AND ALL EXPOSED METAL.
7. ALLOW WELD COATING TO CURE PER MANUF RECOM BEFORE BURIAL.



NOTES:

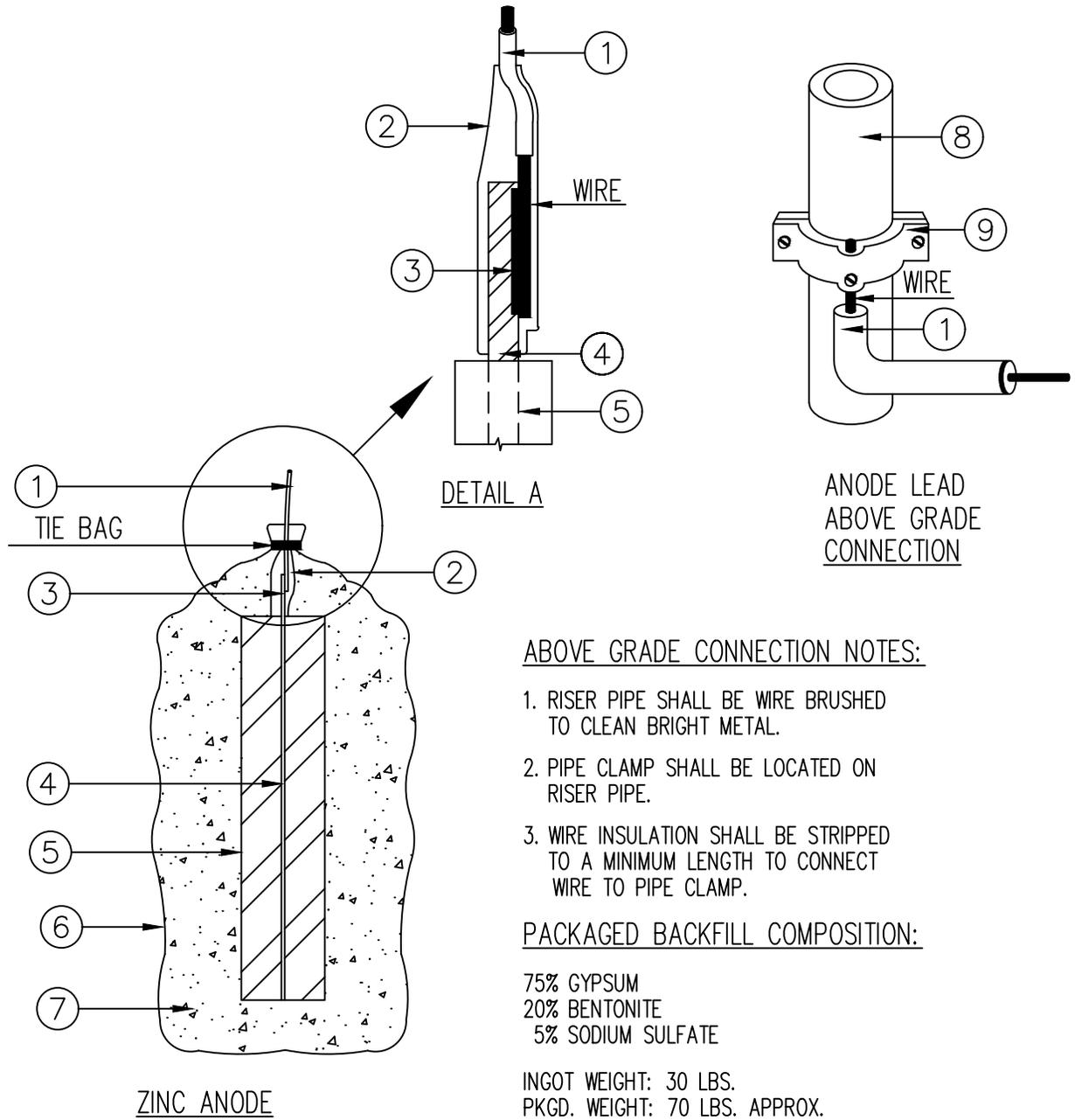
1. PROCEDURE SHOWN ABOVE IS TO BE USED AS A GENERAL GUIDE ONLY. CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS.
2. ALL WELDS SHALL BE A MIN OF 6" APART UNLESS OTHERWISE INDICATED IN MANUFACTURER'S INSTRUCTIONS.
3. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22 DATE
			WIRING-TO-STRUCTURE WELD DETAIL		



ALLOY COMPOSITION	
ELEMENT	CONTENT %
AL	0.010% MAX.
Mn	0.5 – 1.3%
Cu	0.02% MAX.
Si	0.05% MAX.
Ni	0.001% MAX.
Fe	0.03 MAX.
Others each	0.05 MAX.
MAGNESIUM	REMAINDER

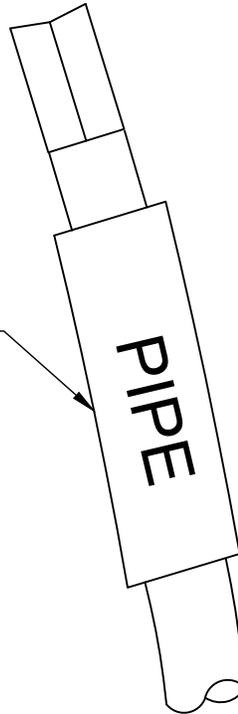
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22 DATE
			48 LB HIGH POTENTIAL MAGNESIUM ANODE		
				STANDARD DWG. NO.	WC-7



ITEM	DESCRIPTION	SPEC/DWG
1	ANODE LEAD NO.12 AWG STRD. COPPER WIRE W/ HMWPE INSULATION.	
2	HEAT SHRINKABLE SLEEVE.	
3	SILVER SOLDER CONNECTION.	
4	1/4" DIAMETER GALVANIZED STEEL CORE.	
5	2"X2"X30" ZINC ALLOY INGOT.	
6	CLOTH BAG.	
7	PACKAGED BACKFILL.	
8	BRASS OR COPPER RISER PIPE.	
9	BRASS OR COPPER PIPE CLAMP WITH SCREW TERMINAL.	

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Ruttle</i>	4/29/22
			ZINC ANODE FOR	DISTRICT ENGINEER	DATE
			1" AND 2" WATER SERVICE	RCE 55974	
				STANDARD DWG. NO.	WC-8

HEAT SHRINKABLE SLEEVE
LABEL. TYP.

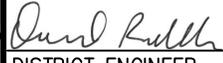


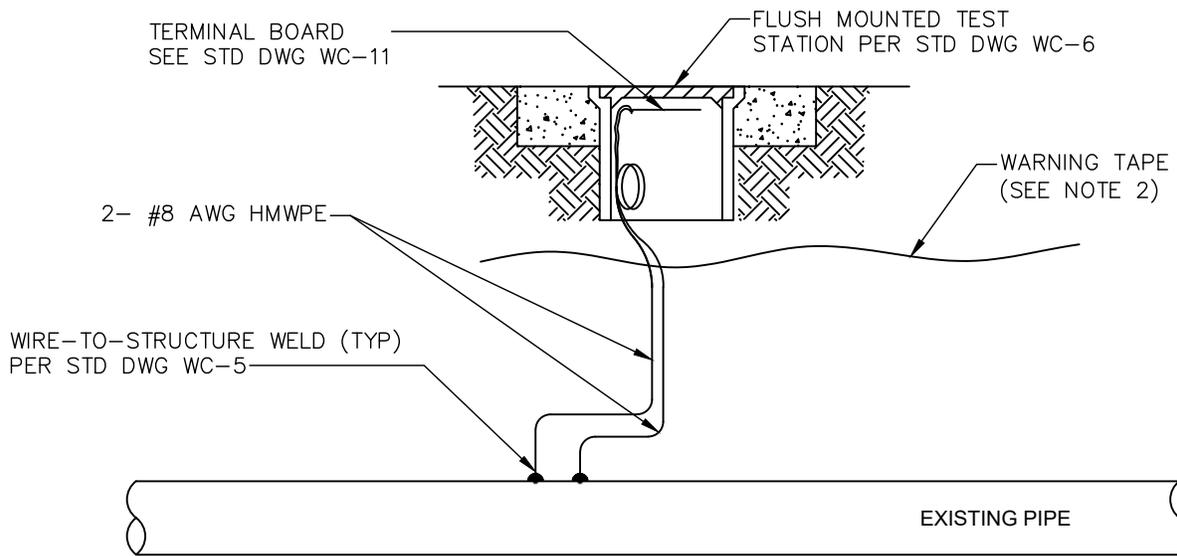
Legend:

- | | |
|--------------------------------|--------------------|
| ANODE LEADS | - ANODE No. |
| PROTECTED PIPE | - PIPE |
| UNPROTECTED PIPE | - UNPROTECTED PIPE |
| LINE CURRENT TEST STATION WIRE | - STA XX+XX |
| CASING | - CASING |
| AIR VAC | - AVAC |
| BLOW OFF | - BO |

NOTES:

1. WIRE LABELS SHALL IDENTIFY THE STRUCTURE OR DEVICE CONNECTED TO THE WIRE.

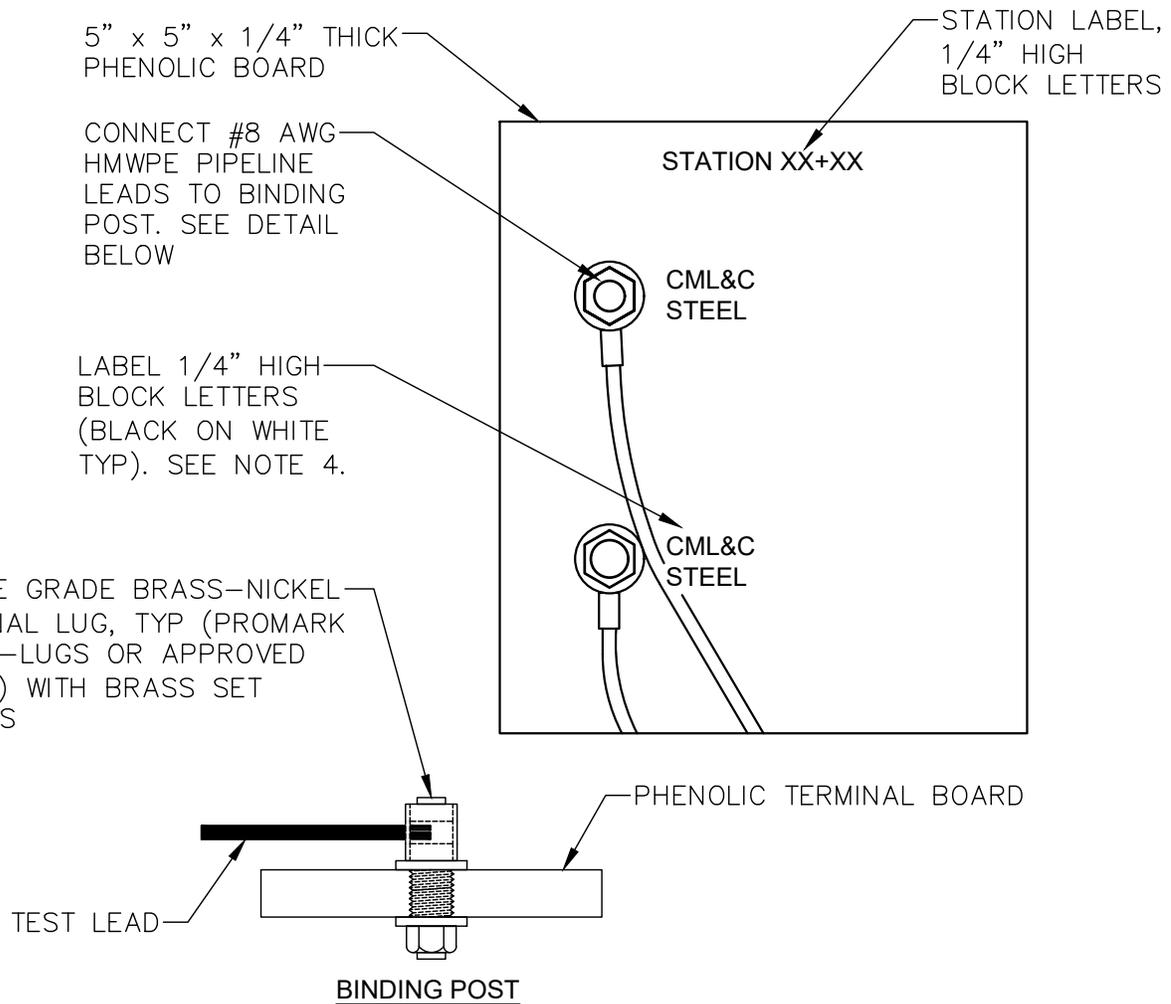
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22 DATE
			HEAT SHRINKABLE LABEL		



NOTES:

1. INSTALL TEST STATION AT EACH LOCATION SHOWN ON DRAWING.
2. INSTALL PLASTIC WARNING TAPE 12" BELOW FINISH GRADE, ALONG THE ENTIRE LENGTH OF WIRES. USE 6" WIDE BY 4 MIL THICK INERT PLASTIC TAPE PRINTED WITH "CAUTION CATHODIC PROTECTION CABLE BELOW".
3. INSTALL ALL LEAD WIRE(S) IN TRENCH WITH MIN. 36" COVER. ROUTE WIRES IN SCH. 40 PVC CONDUIT.
4. AT PAVED LOCATIONS REPAIR SURFACES PER ENCROACHMENT PERMIT.
5. ALL WIRES INSIDE TEXT BOX SHALL HAVE MIN. 24" SLACK.
6. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.

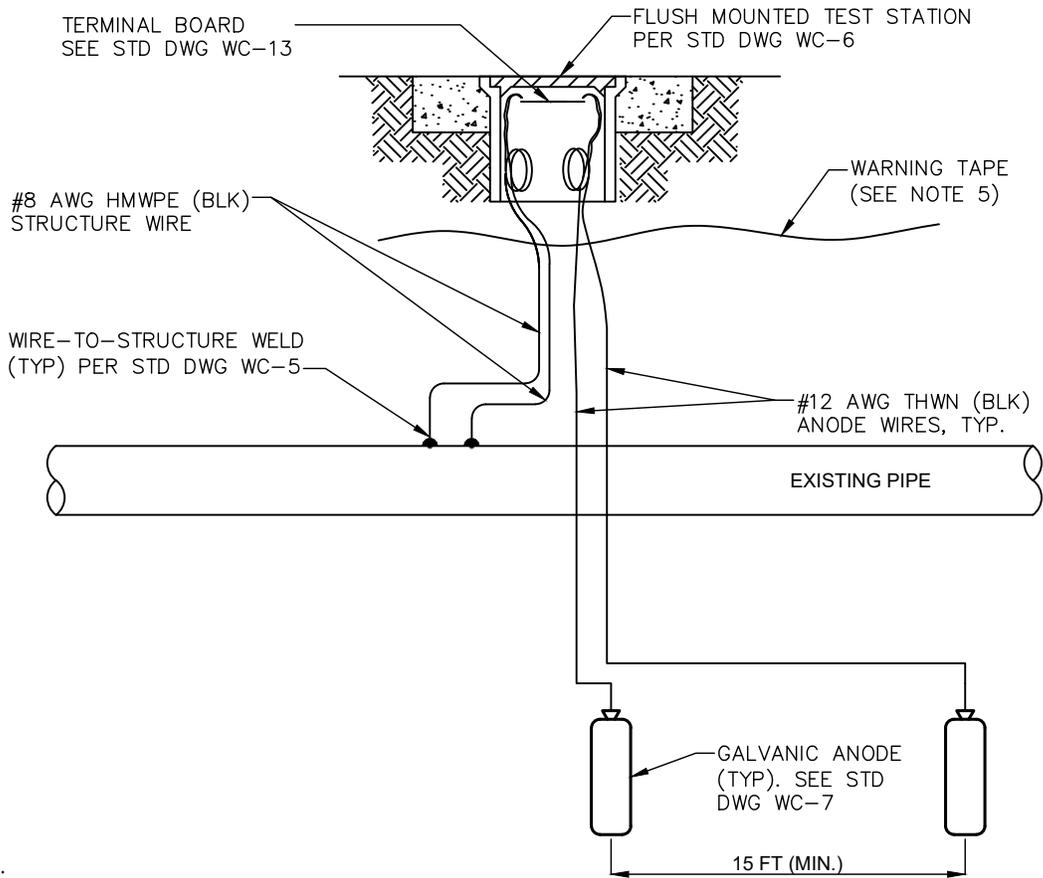
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			TEST STATION		DATE
			CORROSION MONITORING	STANDARD DWG. NO.	WC-10



NOTE:

1. CONNECT EACH WIRE ON A SEPARATE TERMINAL LUG.
2. FOR TEST STATIONS WITH MULTIPLE PIPELINES, ADD ADDITIONAL BINDING POSTS AND WIRES.
3. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.
4. LABEL SHALL IDENTIFY WHAT STRUCTURE WIRE IS CONNECTED TO. DETAIL PROVIDES EXAMPLE FOR CML&C STEEL PIPE

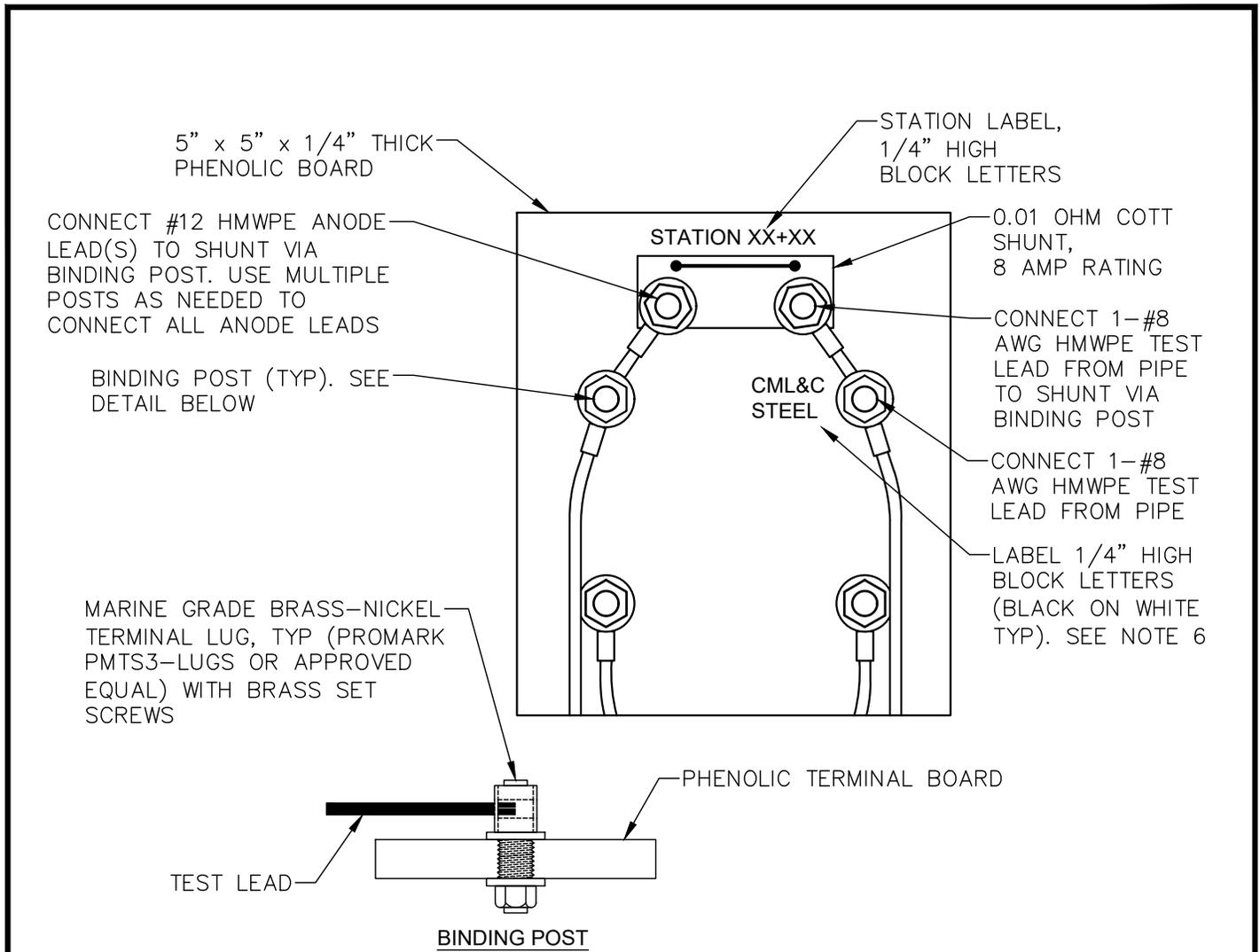
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			2-WIRE TEST STATION WIRING		DATE
				STANDARD DWG. NO.	WC-II



NOTES:

1. INSTALL TEST STATION AT EACH LOCATION SHOWN ON DRAWING.
2. THE NUMBER AND LOCATION OF ANODES MUST BE DESIGNED BY A QUALIFIED CORROSION ENGINEER.
3. ANODES SHALL BE INSTALLED A MIN. OF 8' FROM PIPE. ANODES TO REMAIN WITHIN THE BOUNDS OF CMWD'S EASEMENT, OR PUBLIC RIGHT-OF-WAY.
4. INSTALL ANODES A MINIMUM OF 12' BELOW FINISHED GRADE.
5. INSTALL PLASTIC WARNING TAPE 12" BELOW FINISH GRADE, ALONG THE ENTIRE LENGTH OF WIRES. USE 6" WIDE BY 4 MIL THICK INERT PLASTIC TAPE PRINTED WITH "CAUTION CATHODIC PROTECTION CABLE BELOW".
6. INSTALL ALL LEAD WIRE(S) IN TRENCH WITH MIN. 36" COVER. ROUTE WIRES IN SCH. 40 PVC CONDUIT.
7. AT PAVED LOCATIONS REPAIR SURFACES PER ENCROACHMENT PERMIT.
8. ALL WIRES INSIDE TEXT BOX SHALL HAVE MIN. 24" SLACK.
9. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.

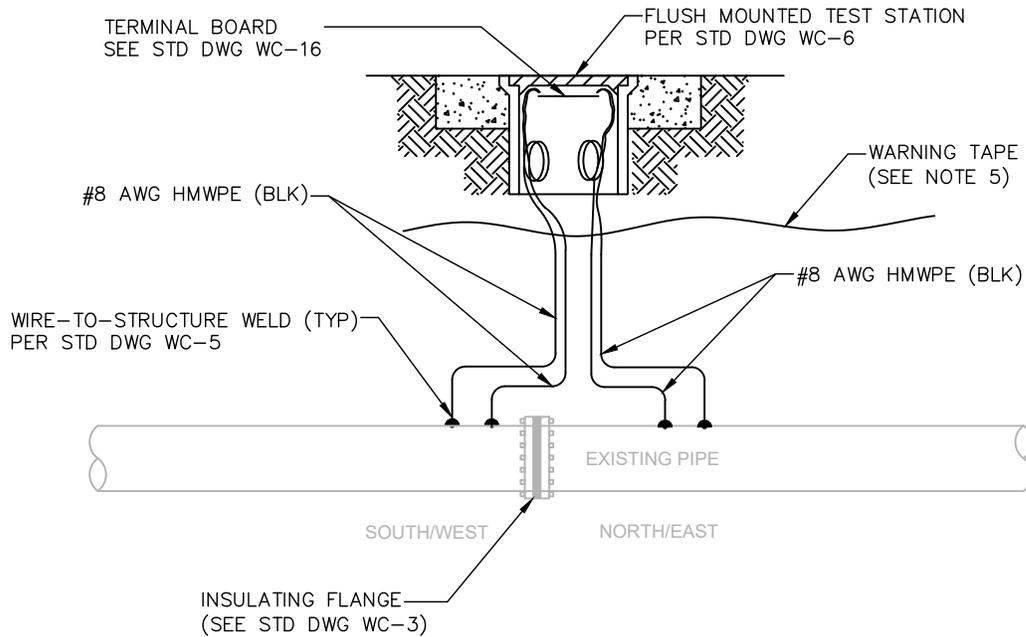
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>Daryl Rutt</i>	4/29/22
1		5/24	TEST STATION WITH ANODES	DISTRICT ENGINEER RCE 55974	DATE
				STANDARD DWG. NO. WC-12	



NOTES:

1. NUMBER OF WIRES VARIES. CONNECT EACH WIRE ON A SEPARATE TERMINAL LUG EXCEPT FOR ANODE WIRES. CONNECT 4 ANODE WIRES PER TERMINAL LUG.
2. FOR TEST STATIONS WITH MORE THAN 4 ANODES, ADDITIONAL BUSBAR WILL BE REQUIRED (NOT SHOWN ON DETAIL).
3. NUMBER OF ANODES VARIES.
4. DO NOT CONNECT SHUNT BETWEEN PIPE AND ANODES DURING CONSTRUCTION. SHUNT TO BE CONNECTED BY THE CONTRACTOR'S CORROSION ENGINEER DURING OPERATIONAL TESTING PER SPECS.
5. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.
6. LABEL SHALL IDENTIFY WHAT STRUCTURE WIRE IS CONNECTED TO. DETAIL PROVIDES EXAMPLE FOR CML&C STEEL PIPE.

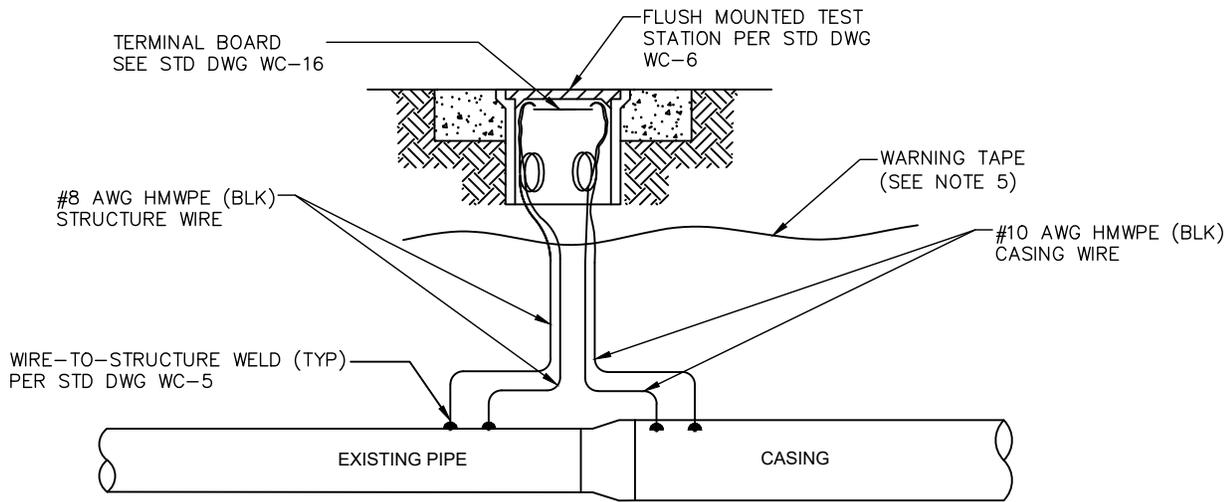
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			TEST STATION WITH ANODES WIRING		DATE
				STANDARD DWG. NO.	WC-13



NOTES:

1. INSTALL TEST STATION AT EACH LOCATION SHOWN ON DRAWING.
2. INSTALL PLASTIC WARNING TAPE 12" BELOW FINISH GRADE, ALONG THE ENTIRE LENGTH OF WIRES. USE 6" WIDE BY 4 MIL THICK INERT PLASTIC TAPE PRINTED WITH "CAUTION CATHODIC PROTECTION CABLE BELOW".
3. INSTALL ALL LEAD WIRE(S) IN TRENCH WITH MIN. 36" COVER. ROUTE WIRES IN SCH. 40 PVC CONDUIT.
4. AT PAVED LOCATIONS REPAIR SURFACES PER ENCROACHMENT PERMIT.
5. ALL WIRES INSIDE TEXT BOX SHALL HAVE MIN. 24" SLACK.
6. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.

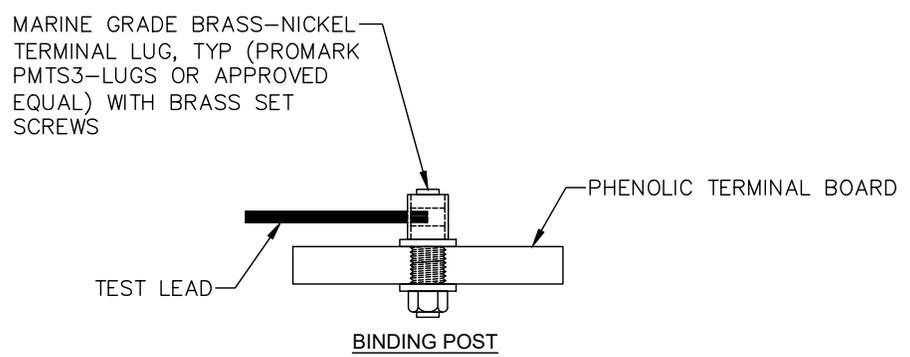
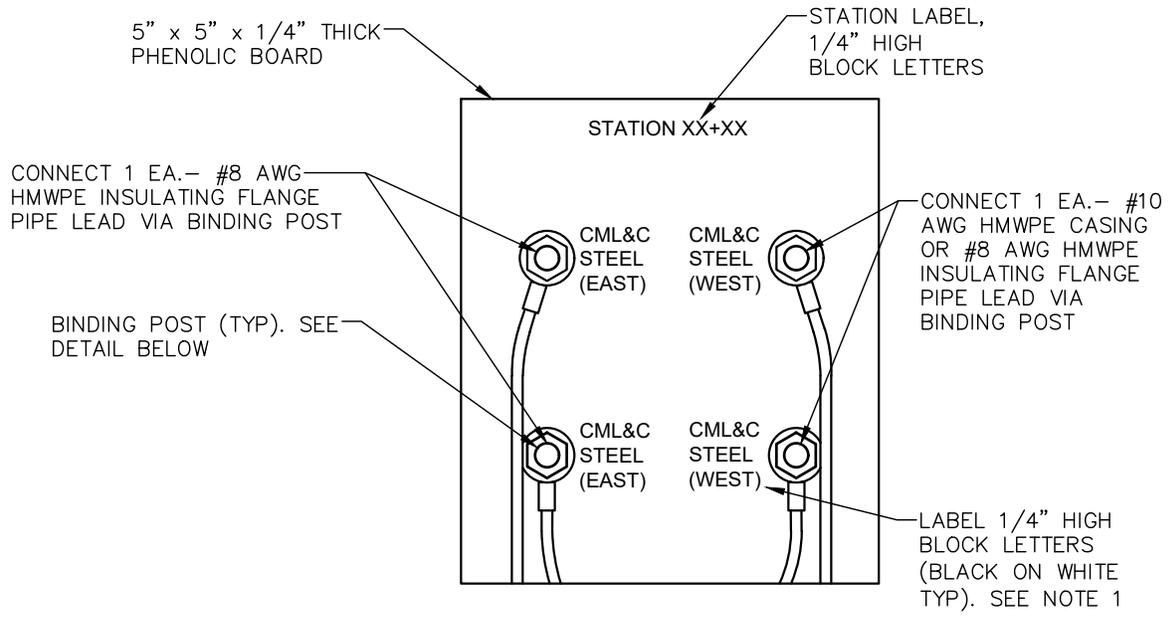
REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	<i>David Rutt</i>	4/29/22
1		7/22	TEST STATION - INSULATING FLANGE	DISTRICT ENGINEER	DATE
				RCE 55974	
				STANDARD DWG. NO.	WC-14



NOTES:

1. INSTALL TEST STATION AT EACH LOCATION SHOWN ON DRAWING.
2. INSTALL PLASTIC WARNING TAPE 12" BELOW FROM FINISH GRADE, ALONG THE ENTIRE LENGTH OF WIRES. USE 6" WIDE BY 4 MIL THICK INERT PLASTIC TAPE PRINTED WITH "CAUTION CATHODIC PROTECTION CABLE BELOW".
3. INSTALL ALL LEAD WIRE(S) IN TRENCH WITH MIN. 36" COVER. ROUTE WIRES IN SCH. 40 PVC CONDUIT.
4. AT PAVED LOCATIONS REPAIR SURFACES PER ENCROACHMENT PERMIT.
5. ALL WIRES INSIDE TEST BOX SHALL HAVE MIN. 24" SLACK.
6. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22
			TEST STATION - NEW CASING		DATE
				STANDARD DWG. NO.	WC-15



NOTES:

1. LABEL SHALL IDENTIFY WHAT STRUCTURE WIRE IS CONNECTED TO. DETAIL PROVIDES EXAMPLE FOR CML&C STEEL PIPE ON EITHER SIDE OF AN EAST/WEST ORIENTED INSULATION FLANGE.
2. SEE STANDARD DRAWINGS WC-1 & WC-2 FOR GENERAL NOTES AND ABBREVIATIONS.

REV.	APPROVED	DATE	CARLSBAD MUNICIPAL WATER DISTRICT	 DISTRICT ENGINEER RCE 55974	4/29/22 DATE
			INSULATING FLANGE OR CASING TEST STATION WIRING		