Twentynine Palms Water District

Standard Drawings

SD-DC to SD-36

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THE FOLLOWING CERTIFICATION SHALL
APPEAR ON THE FIRST SHEET OF PLANS:

DRAWINGS CERTIFICATION

THE NOTES AND DRAWINGS CONTAINED HEREIN WERE PREPARED UNDER THE RESPONSIBLE CHARGE OF THE UNDERSIGNED PROFESSIONAL ENGINEER AND SET THE MINIMUM CONSTRUCTION STANDARDS FOR THIS TWENTYNINE PALMS WATER DISTRICT PROJECT. THE USE OF THIS DOCUMENT SHALL NOT BE CONSTRUED AS A SUBSTITUTE FOR ENGINEERING OF OTHER PROJECTS. EACH PROJECT SHALL HAVE CALCULATIONS, SPECIFICATIONS, AND DRAWINGS PREPARED BY AN APPROPRIATE STATE OF CALIFORNIA LICENSED ENGINEER.

NAME	TITLE	DATE

REVISION NO.	REVISION DATE

APPROVED: (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
DRAWINGS CERTIFICATION

SCALE: NTS

DWG. NO.

SD-DC

GENERAL NOTES

1. ALL WORK SHALL BE DONE BY AN APPROVED CONTRACTOR, IN CONFORMANCE WITH THE CONTRACT DRAWINGS, SPECIFICATIONS, AND TWENTYNINE PALMS WATER DISTRICT "STANDARDS FOR DOMESTIC WATER SYSTEMS," NOVEMBER 1997.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING A PRE-CONSTRUCTION MEETING WITH TWENTYNINE PALMS WATER DISTRICT A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE JOB SITE AND THE LOCATION OF ALL UNDERGROUND FACILITIES SHOWN OR NOT SHOWN ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL BE UNILATERALLY RESPONSIBLE FOR ANY DAMAGE DONE TO EXISTING UTILITIES, WHETHER SHOWN OR NOT SHOWN ON THE CONTRACT DRAWINGS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO PIPE AND APPURTENANCES INCURRED WHILE BACK FILLING AND COMPACTING.

6. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND DELIVER ONE COPY TO TWENTYNINE PALMS WATER DISTRICT.

7. THE CONTRACTOR SHALL NOTIFY ALL SERVING UTILITIES 48 HOURS PRIOR TO BEGINNING ANY DITCH EXCAVATION NEAR THEIR FACILITIES. CALL UNDERGROUND SERVICE ALERT TOLL FREE (1-800-422-4133).

8. THE CONTRACTOR SHALL CONFIRM ALL DRIVEWAY LOCATIONS PRIOR TO THE INSTALLATION OF SERVICES, FLUSHOUTS, BLOWOFFS, FIRE HYDRANTS, AND OTHER APPURTENANCES. NO FACILITIES WILL BE ALLOWED IN DRIVEWAYS OR CONCRETE STREET IMPROVEMENTS.

9. ALL PIPE SHALL BE CLASS 150, UNLESS OTHERWISE NOTED, AND INSTALLED WITH COPPER TRACING WIRE PER SD-2.

10. MAIN LINE PRESSURE TESTING SHALL BE PASSED PRIOR TO CONNECTION TO ANY TWENTYNINE PALMS WATER DISTRICT MAIN. NO WATER USE OF ANY KIND WILL BE PERMITTED UNTIL ALL MAINS, SERVICES, AND FIRE HYDRANTS HAVE BEEN PRESSURE TESTED, CHLORINATED, AND FLUSHED, AND A FAVORABLE BACTERIOLOGICAL REPORT HAS BEEN RECEIVED BY TWENTYNINE PALMS WATER DISTRICT.

11. CONNECTIONS OF NEW MAINS TO EXISTING MAINS SHALL BE MADE BY TWENTYNINE PALMS WATER DISTRICT AT THE OWNER'S EXPENSE. CONTRACTOR SHALL COORDINATE THIS WORK WITH TWENTYNINE PALMS WATER DISTRICT 48 HOURS PRIOR TO PREPARATION FOR THIS CONNECTION (760-367-7546). ALL OTHER WORK INCLUDING, BUT NOT LIMITED TO, EXCAVATION, BACKFILL, VALVE COVERS, AND PAVING FOR THIS CONNECTION SHALL BE BY THE CONTRACTOR.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

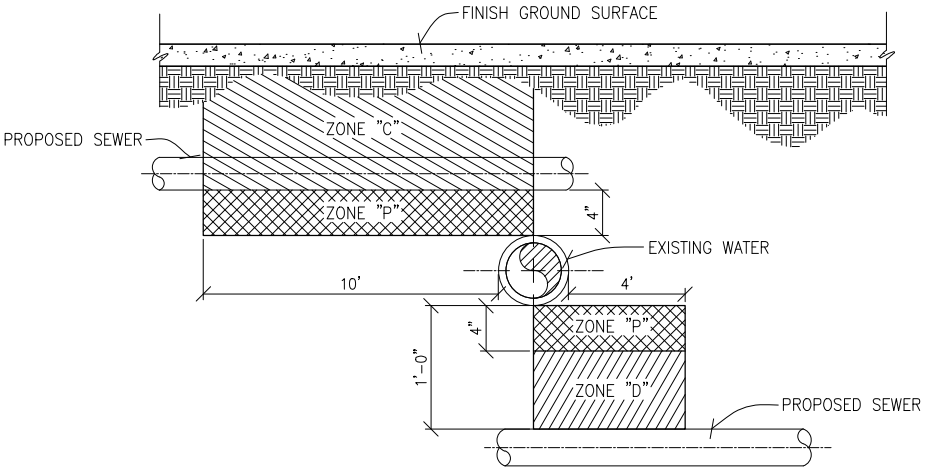
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
GENERAL NOTES

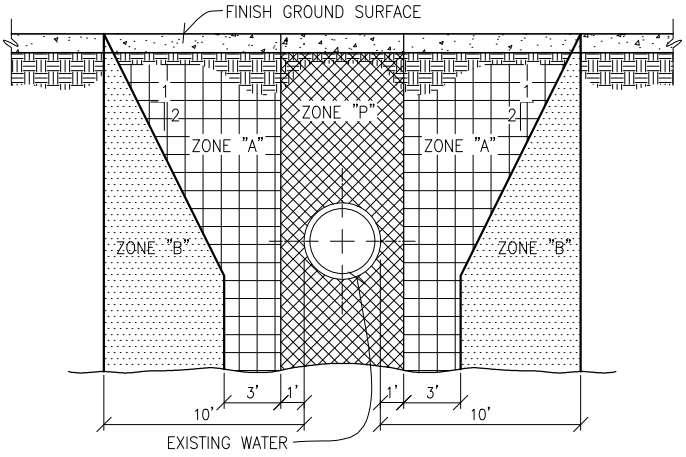
SCALE: NTS

DWG. NO.

SD-GN



CROSSING (PERPENDICULAR) CONDITION



PARALLEL CONDITION

ZONE "A" NO SEWERS SHALL BE CONSTRUCTED WITHOUT SPECIAL APPROVAL FROM STATE WATER RESOURCES CONTROL BOARD DIVISION OF DRINKING WATER AND THE TWENTYNINE PALMS WATER DISTRICT.

ZONE "B" SEWER SHALL BE CONSTRUCTED OF EXTRA STRENGTH VITRIFIED CLAY PIPE WITH COMPRESSION JOINTS, POLYVINYL CHLORIDE PLASTIC PIPE WITH RUBBER RING JOINTS (PER ASTM D 3034), OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS.

ZONE "C" & ZONE "D" SEWER SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS, CONTINUOUS SECTION OF CLASS 305 (DRI4 PER AWWA C-900) POLYVINYL CHLORIDE PLASTIC PIPE, CENTERED OVER PIPE BEING CROSSED OR VITRIFIED CLAY PIPE WITHIN A CONTINUOUS STEEL SLEEVE (1/4" MINIMUM WALL THICKNESS).

ZONE "P" NO SEWER LINE CONSTRUCTION ALLOWED.

REVISION NO.	DATE

APPROVED: _____ (DATE)

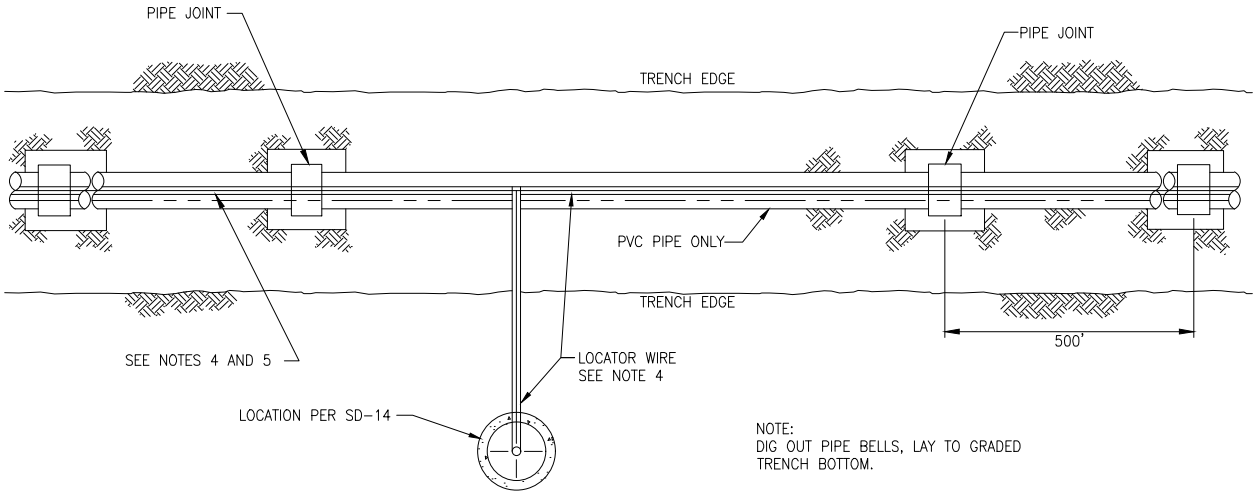
MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

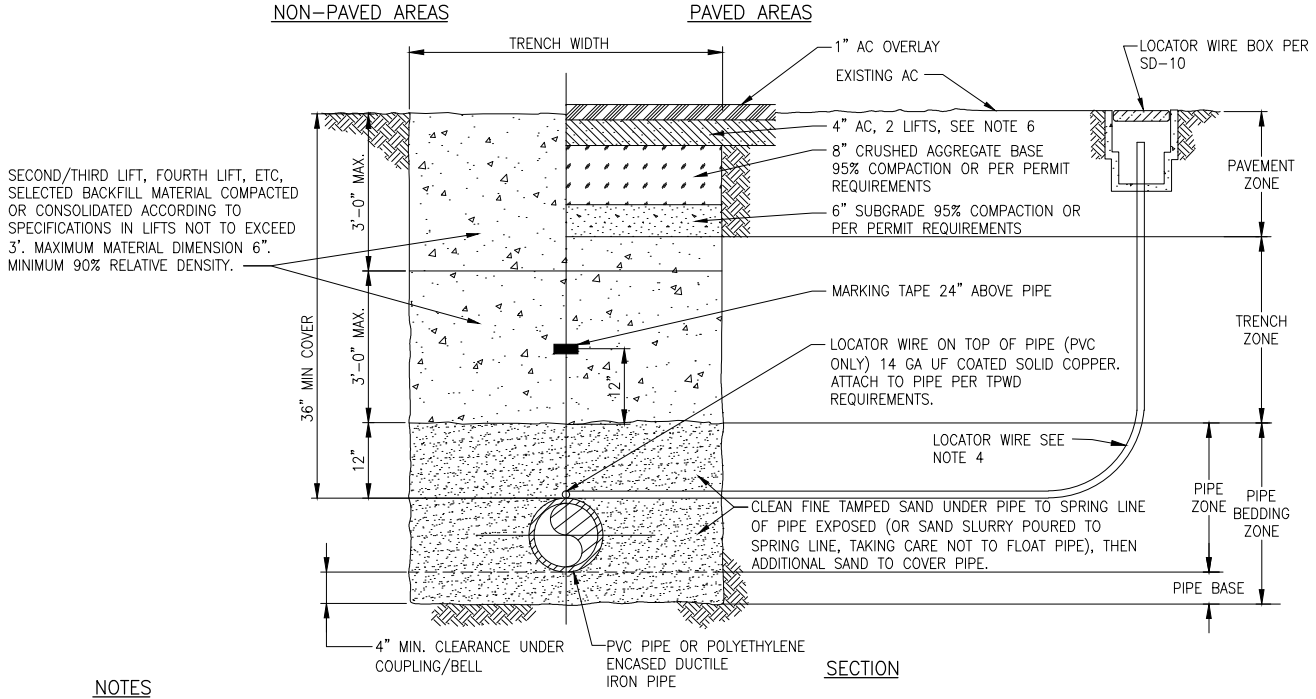
STANDARD DRAWING
PARALLEL AND PERPENDICULAR PIPELINE SEPARATION REQUIREMENTS

SCALE: NTS

DWG. NO.
SD-1



PLAN



SECTION

NOTES

1. THE BACKFILL MATERIAL IN THE PIPE ZONE MAY CONSIST OF MATERIAL FROM THE EXCAVATION WHERE THAT MATERIAL IS A UNIFORMLY GRADED GRANULAR SOIL FREE FROM STONES OR LUMPS EXCEEDING 3/4" IN MAX. DIM., VEGETABLE MATTER, OR OTHER UNSATISFACTORY MATERIAL; HAVING NOT LESS THAN 90% RELATIVE DENSITY AND SAND EQUIVALENT (SE) VALUE OF 30 (MIN).
2. WHERE CONTRACTOR DESIRES TO UTILIZE NATIVE MATERIAL IN PLACE OF SAND IN THE PIPE ZONE, THE SAND EQUIVALENT VALUE OF THE NATIVE MATERIAL SHALL BE DETERMINED AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH A.S.T.M. SPEC. D-2419. (MIN. S.E. 30)
3. WHEN INSTALLING PIPE, CONTRACTOR TO EXCAVATE BELOW ALL BELLS/JOINTS TO A DEPTH WHICH ALLOWS THE PIPE TO REST IN A UNIFORM MANNER.
4. INSTALL #14 AWG. LOCATOR WIRE WITH APPURTENANCE LATERAL TO GROUND SURFACE. TERMINATE LOCATOR WIRE IN LOCATOR WIRE BOX PER SD-10. LOCATOR WIRE SHALL BE INSTALLED AT A MAXIMUM OF EVERY 500' INTERVAL ALONG THE PVC MAIN. SPLICE AT MAIN WITH WATER TIGHT CONNECTOR.
5. INSTALL 6" WIDE MARKING TAPE LABELED WITH COLOR AS FOLLOWS:
   POTABLE WATER – BLUE
   SEWER – GREEN
   RECYCLED WATER – MAGENTA (PURPLE)
6. PAVEMENT REPLACEMENT SECTION SHOWN IS MINIMUM REQ'D, AND SHALL MEET STRICTER REQUIREMENTS OF LOCAL JURISDICTION, IF APPLICABLE

TRENCH WIDTH TABLE

PIPE SIZE	TOTAL TRENCH WIDTH	
	MIN.	MAX.
6"	18"	24'
8"	20"	26"
12"	24"	30"
16"	40"	52"
20"	44"	56"
24"	48"	60"

REVISION NO.	DATE

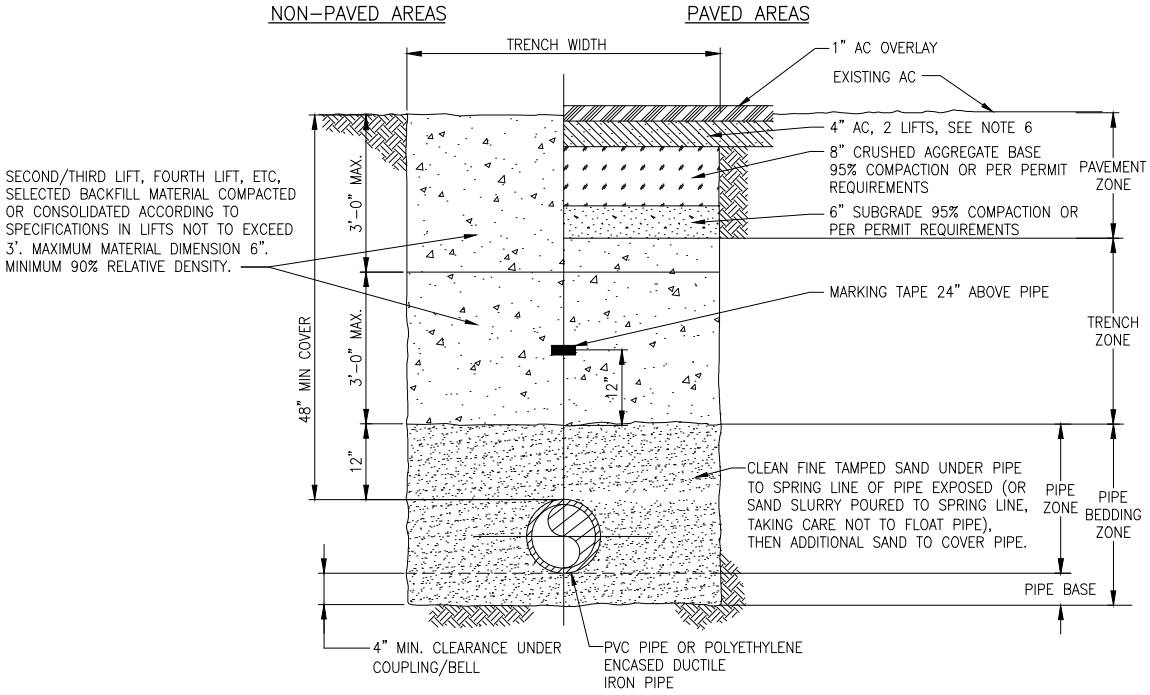
APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
PVC AND DUCTILE IRON PIPE INSTALLATION (INCLUDING LOCATOR WIRE DETAILS)

SCALE: NTS
DWG. NO.
SD-2



SECTION

NOTES

1. THE BACKFILL MATERIAL IN THE PIPE ZONE MAY CONSIST OF MATERIAL FROM THE EXCAVATION WHERE THAT MATERIAL IS A UNIFORMLY GRADED GRANULAR SOIL FREE FROM STONES OR LUMPS EXCEEDING 3/4" IN MAX. DIM., VEGETABLE MATTER, OR OTHER UNSATISFACTORY MATERIAL; HAVING NOT LESS THAN 90% RELATIVE DENSITY AND SAND EQUIVALENT (SE) VALUE OF 30 (MIN).
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	MIN.	MAX.
6"	18"	24'
8"	20"	26"
12"	24"	30"
16"	40"	52"
20"	44"	56"
24"	48"	60"

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APPROVED: _____ (DATE)

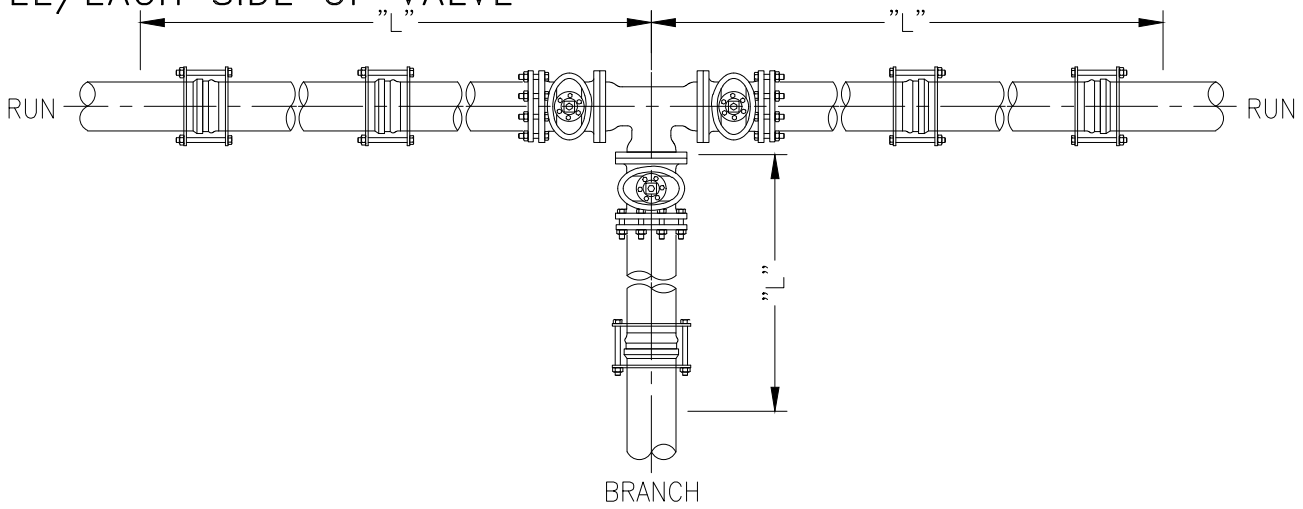
MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

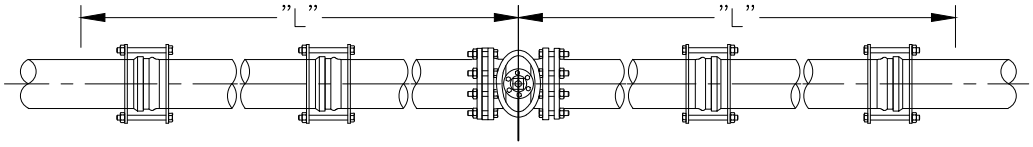
STANDARD DRAWING
TRENCH BACKFILL DETAIL

SCALE: NTS
DWG. NO.
SD–3

TEE/EACH SIDE OF VALVE

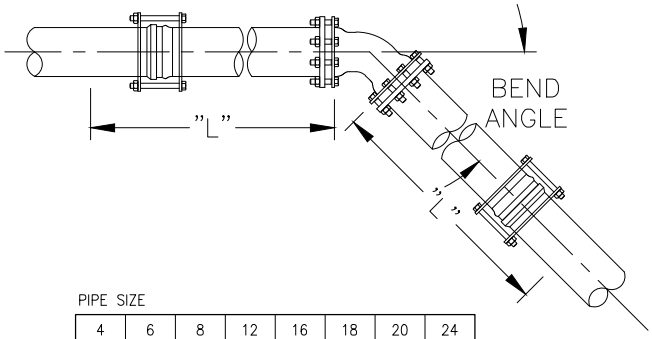


DEAD END/EACH SIDE OF VALVE



PIPE SIZE	4	6	8	12	16	18	20	24
RESTRAINED LENGTHS "L" IN FEET	59	84	110	156	202	223	245	287

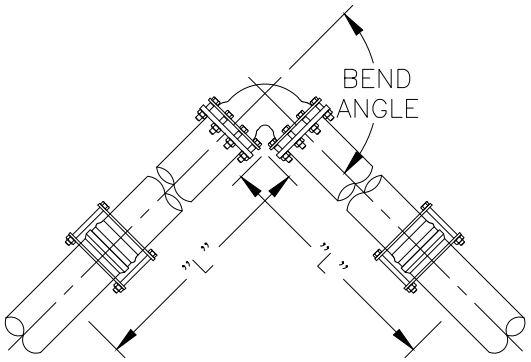
VERTICAL BEND



BEND ANGLE \ PIPE SIZE	4	6	8	12	16	18	20	24
11.25°	6	8	11	15	20	22	24	28
22.5°	12	17	22	31	40	44	49	57
45°	25	35	46	65	84	92	102	119

RESTRAINED LENGTHS "L" IN FEET

HORIZONTAL BEND



BEND ANGLE \ PIPE SIZE	4	6	8	12	16	18	20	24
11.25°	2	3	4	6	8	9	10	11
22.5°	5	7	9	13	16	18	19	23
45°	10	14	19	26	34	37	40	47
90°	25	34	45	63	81	89	98	113

RESTRAINED LENGTHS "L" IN FEET

RESTRAINT JOINT LENGTHS USAGE GENERAL NOTES

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED.
2. PIPES SHALL HAVE FORTY-EIGHT (48) INCHES MINIMUM DEPTH OF COVER.
3. A SAFETY FACTOR OF 1.5 ASSUMED.
4. ASSUMED SOIL TYPE ML (INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS) PER UNITED SOIL CLASSIFICATION ASTM D 2487.
   A. NO BEDDING IN GRANULAR MATERIAL.
   B. NO USE OF PHI = 0 PRINCIPAL.
5. PIPE BEDDING PER SD-2.
6. TEST PRESSURE 10% OVER MINIMUM DESIGN PRESSURE. RESTRAINED LENGTHS ABOVE BASED UPON DESIGN PRESSURE OF 200 PSI.
7. IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, THE RESTRAINED LENGTH SHALL BE DETERMINED BY THE DESIGN ENGINEER AND APPROVED BY THE TPWD.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

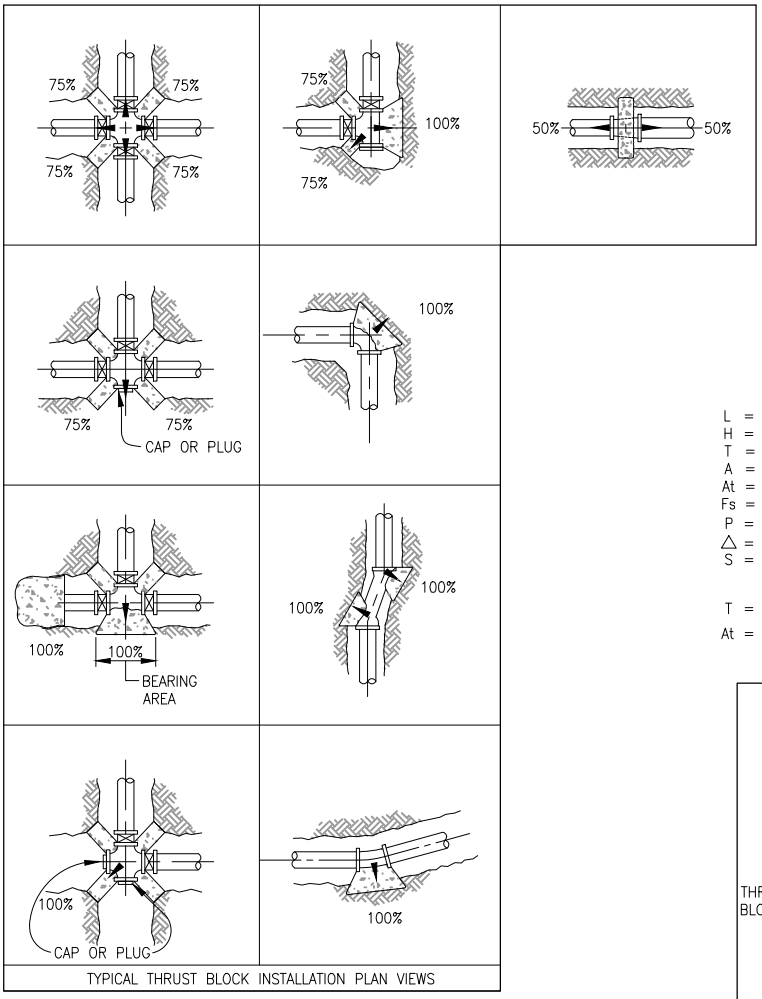
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING

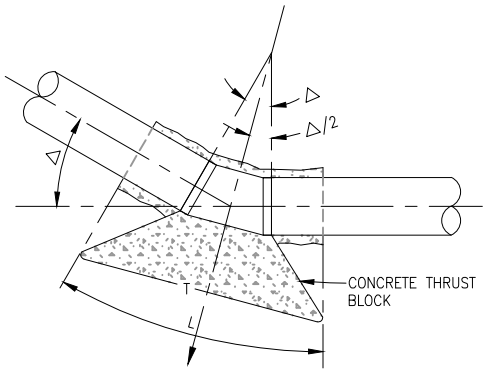
STANDARD RESTRAINT FOR TEES, DEAD ENDS, AND BENDS FOR PVC PIPE

SCALE: NTS

DWG. NO. SD-4



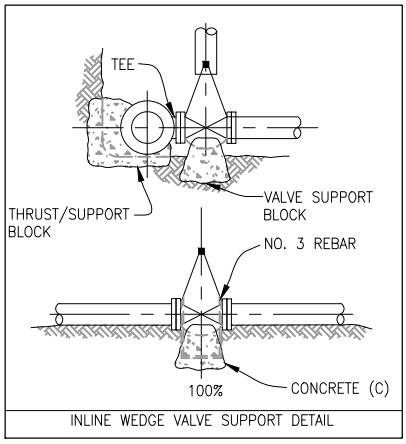
TYPICAL THRUST BLOCK INSTALLATION PLAN VIEWS



L = LENGTH OF CONCRETE THRUST BLOCK, IN FT.
H = HEIGHT OF CONCRETE THRUST BLOCK, IN FT.
T = THRUST AT BEND, IN LBS.
A = AREA OF PIPE (OUTSIDE DIA), IN SQ. INCHES.
At = AREA OF THRUST BLOCK
Fs = FACTOR OF SAFETY (1.25)
P = PIPE PRESSURE (TEST PRESSURE) IN P.S.I.
△ = ANGLE AT BEND, IN DEGREES.
S = ALLOWABLE LATERAL SOIL BEARING PRESSURE (SEE SOIL REPORT).

$T = 2 \times P \times A \times \sin\frac{\triangle}{2}$

$At = Fs \times \frac{T}{S}$



INLINE WEDGE VALVE SUPPORT DETAIL

MINIMUM THRUST BLOCK INSTALLATION FOR UNRESTRAINED JOINTS AT 150 PSI AND 200 PSI

PIPE SIZE (IN.)	TYPE OF FITTING	SAFE SOIL BEARING (PSF)	THRUST BLOCK WIDTH (FT) X HEIGHT (FT)				SAFE SOIL BEARING (PSF)	THRUST BLOCK WIDTH (FT) X HEIGHT (FT)				SAFE SOIL BEARING (PSF)	THRUST BLOCK WIDTH (FT) X HEIGHT (FT)			
			PRESSURE =150 PSI		PRESSURE =200 PSI			PRESSURE =150 PSI		PRESSURE =200 PSI			PRESSURE =150 PSI		PRESSURE =200 PSI	
			L	H	L	H		L	H	L	H		L	H	L	H
16	TEE	1500	8.25	4.25	9.50	4.75	2000	7.00	3.50	8.25	4.25	3000	5.75	3.00	6.75	3.50
16	90°		9.75	5.00	11.25	5.75		8.50	4.25	9.75	5.00		7.00	3.50	8.00	4.00
16	45°		7.25	3.75	8.25	4.25		6.25	3.25	7.25	3.75		5.25	2.75	6.00	3.00
16	22.5°		5.25	2.75	6.00	3.00		4.50	2.25	5.25	2.75		3.75	2.00	4.25	2.25
16	11.25°		3.50	1.75	4.00	2.00		3.00	1.50	3.50	1.75		2.75	1.25	3.00	1.50
14	TEE		7.25	3.75	8.25	4.25		6.25	3.25	7.25	3.75		5.25	2.75	6.00	3.00
14	90°		8.50	4.25	10.00	5.00		7.50	3.75	8.50	4.25		6.00	3.00	7.00	3.50
14	45°		6.25	3.25	7.25	3.75		5.50	2.75	6.25	3.25		4.50	2.25	5.25	2.75
14	22.5°		4.50	2.25	5.25	2.75		4.00	2.00	4.50	2.25		3.25	1.75	3.75	2.00
14	11.25°		3.00	1.50	3.50	1.75		2.25	1.50	3.00	1.50		2.25	1.00	2.50	1.25
12	TEE		6.25	3.25	7.25	3.75		5.50	2.75	6.25	3.25		4.50	2.25	5.25	2.75
12	90°		7.50	3.75	8.50	4.25		6.50	3.25	7.50	3.75		5.25	2.75	6.00	3.00
12	45°		5.50	2.75	6.25	3.25		4.75	2.50	5.50	2.75		4.00	2.00	4.50	2.25
12	22.5°		4.00	2.00	4.50	2.25		3.50	1.75	4.00	2.00		2.75	1.50	3.25	1.75
12	11.25°		2.25	1.50	3.00	1.50		2.00	1.25	2.25	1.50		2.00	1.00	2.00	1.25
8	TEE		4.25	2.75	5.00	2.50		3.75	2.00	4.25	2.25		3.00	1.50	3.50	1.75
8	90°		5.25	2.75	6.00	3.00		4.50	2.25	5.25	2.75		3.75	2.00	4.25	2.25
8	45°		3.75	2.00	4.25	2.25		3.25	1.75	3.75	2.00		2.75	1.50	3.25	1.75
8	22.5°		2.75	1.50	3.25	1.75		2.50	1.25	2.75	1.50		2.00	1.00	2.25	1.25
8	11.25°		2.00	0.75	2.50	1.00		1.50	0.75	2.00	0.75		1.25	0.75	1.50	0.75
6	TEE		3.25	1.75	3.75	2.00		3.00	1.50	3.25	1.75		2.50	1.25	2.75	1.50
6	90°		4.00	2.00	4.50	2.25		3.50	1.75	4.00	2.00		2.75	1.50	3.25	1.75
6	45°		3.00	1.50	3.25	1.75		2.50	1.25	3.00	1.50		2.00	1.00	2.50	1.25
6	22.5°		2.25	1.25	2.50	1.25		1.75	1.00	2.25	1.25		1.50	0.75	1.75	1.00
6	11.25°		1.00	1.00	1.50	0.75		1.25	0.50	1.00	1.00		1.00	0.50	1.25	0.50
4	TEE		2.25	1.25	2.75	1.50		2.00	1.00	2.25	1.25		1.75	1.00	2.00	1.00
4	90°		2.75	1.50	3.25	1.75		2.50	1.25	2.75	1.50		2.00	1.00	2.25	1.25
4	45°		2.00	1.00	2.50	1.25		1.75	1.00	2.00	1.00		1.50	0.75	1.75	1.00
4	22.5°		1.50	0.75	1.75	1.00		1.25	0.75	1.50	0.75		1.00	0.50	1.25	0.75
4	11.25°	1500	0.75	0.50	1.00	0.50	2000	0.75	0.50	0.75	0.50	3000	0.75	0.25	0.75	0.50

NOTES:

1. THRUST BLOCKS ARE ONLY ALLOWED IN SPECIAL CIRCUMSTANCES WHERE RESTRAINED MECHANICAL JOINTS CAN NOT BE USED.
2. THE SIZES SHOWN ARE TO BE CONSIDERED MINIMUM ALLOWABLE BEARING AREAS. ACTUAL THRUST BLOCK SIZES SHALL BE DESIGNED BASED ON ACTUAL IN-SITU SOIL CONDITIONS & DESIGN PRESSURE.
3. CONCRETE THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED EARTH.
4. CONCRETE THRUST BLOCKS SHALE BE OF CLASS 'C' (2000 PSI) CONCRETE.
5. ALL CONCRETE SHALL BE POURED TO AVOID ANY INTERFERENCE WITH BOLTED CONNECTIONS OR JOINTS.
6. FIGURE (100%) AT THRUST BLOCK INDICATES PERCENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA. ARROW ( ) INDICATES THRUST DIRECTION.
7. THE TABLE AT LEFT IS BASED UPON TEST PRESSURE OF 200 P.S.I. FOR CLASS 150 AND 250 P.S.I. FOR CLASS 200.
8. KEY ALL THRUST BLOCKS INTO TRENCH WALL AND BOTTOMS.
9. FOR END PLUGS OR CAPS USE THRUST BLOCK EQUIVALENT TO TEE THRUST BLOCK.

REVISION NO.	DATE

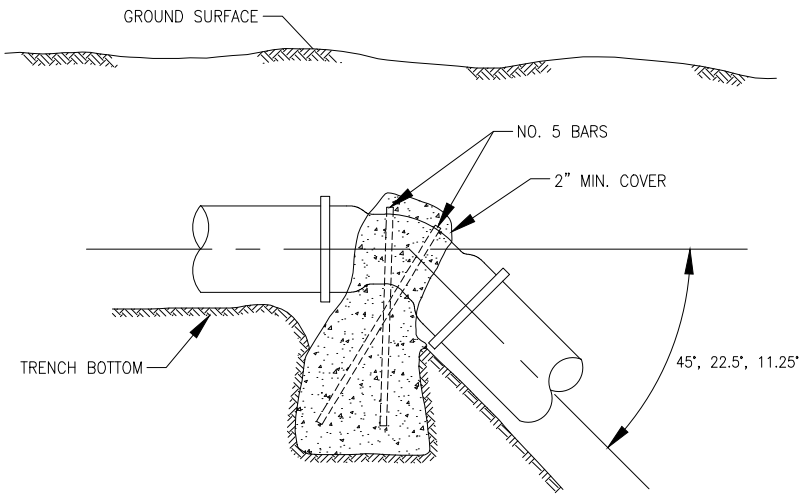
APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
TRUST BLOCK DETAILS

SCALE: NTS
DWG. NO.
SD-5



PIPE SIZE	CUBIC FT. OF CONCRETE					
	CLASS 150 TEST PRESS. 225 psi			CLASS 200 TEST PRESS. 300 psi		
	45°	22.5°	11.25°	45°	22.5°	11.25°
4	15	8	4	20	10	5
6	33	17	9	44	22	11
8	58	30	15	77	40	20
12	–	–	34	–	–	45

NOTES:

1. INDICATES ANCHOR BLOCK MUST BE DESIGNED FOR EACH INDIVIDUAL CASE.
2. THRUST BLOCKS ARE ONLY ALLOWED IN SPECIAL CIRCUMSTANCES WHERE RESTRAINED MECHANICAL JOINTS CAN NOT BE USED.
3. THE SIZES SHOWN ARE TO BE CONSIDERED MINIMUM ALLOWABLE BEARING AREAS. ACTUAL THRUST BLOCK SIZES SHALL BE DESIGNED BASED ON ACTUAL IN-SITU SOIL CONDITIONS & DESIGN PRESSURE.
4. CONCRETE THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED EARTH.
5. CONCRETE THRUST BLOCKS SHALE BE OF CLASS 'C' (2000 PSI) CONCRETE.
6. ALL CONCRETE SHALL BE POURED TO AVOID ANY INTERFERENCE WITH BOLTED CONNECTIONS OR JOINTS.
7. FIGURE (100%) AT THRUST BLOCK INDICATES PERCENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA. ARROW ( ) INDICATES THRUST DIRECTION.
8. THE TABLE AT LEFT IS BASED UPON TEST PRESSURE OF 200 P.S.I. FOR CLASS 150 AND 250 P.S.I. FOR CLASS 200.
9. KEY ALL THRUST BLOCKS INTO TRENCH WALL AND BOTTOMS.
10. FOR END PLUGS OR CAPS USE THRUST BLOCK EQUIVALENT TO TEE THRUST BLOCK.

REVISION NO.	DATE

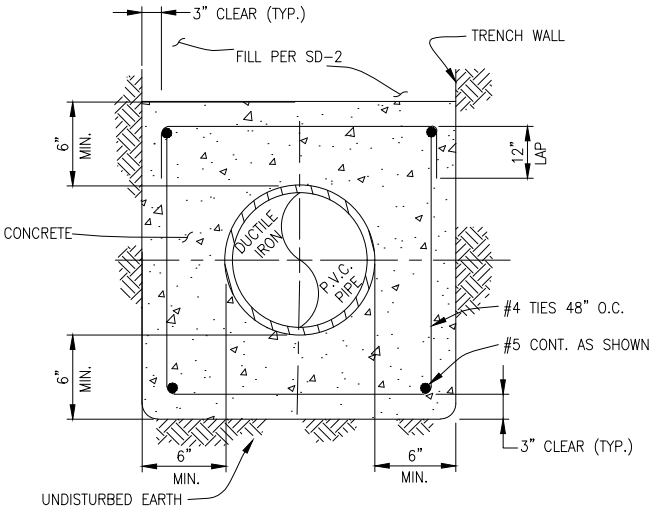
APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

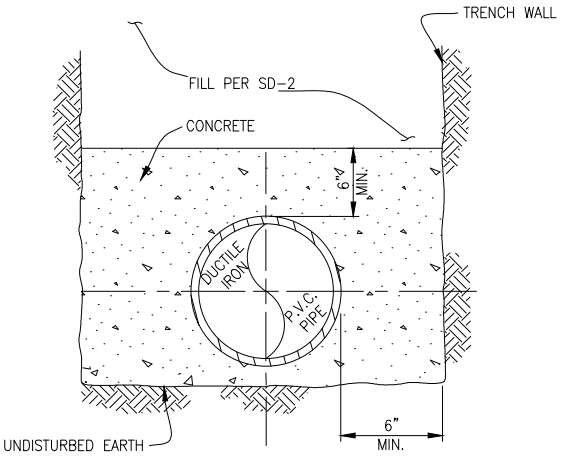
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
ANCHOR BLOCK
(VERTICAL BEND)

SCALE: NTS
DWG. NO.
SD-6



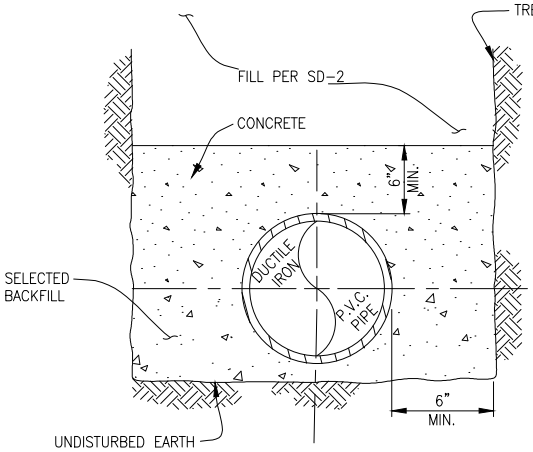
CONCRETE ENCASEMENT NO. 1



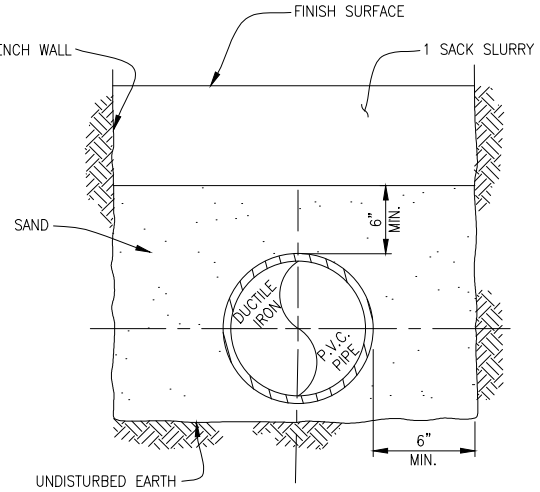
CONCRETE ENCASEMENT NO. 2

NOTES

1. PIPE SIZES GREATER THAN 16" REQUIRE SPECIFIC STRUCTURAL DESIGN.
2. CONCRETE ENCASEMENTS AND CONCRETE CAP SHALL BE CLASS "A" CONCRETE (3000 PSI).
3. PIPE MUST BE ANCHORED TO AVOID FLOTATION.



CONCRETE CAP



SLURRY BACKFILL

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

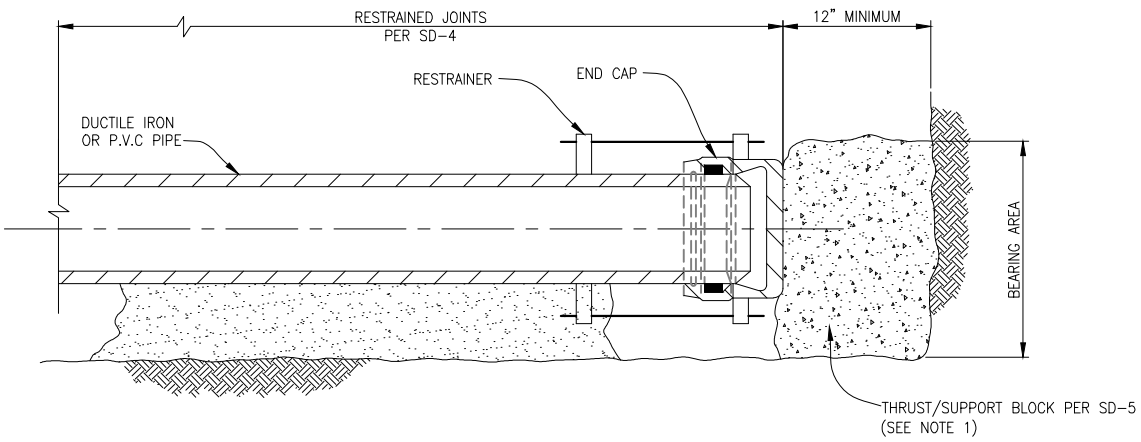
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
CONCRETE ENCASEMENT AND CONCRETE CAP

SCALE: NTS

DWG. NO.

SD-7



NOTES

1. CONCRETE THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED EARTH WITH MINIMUM BEARING AREA PER SD-5.

2. CONCRETE THRUST BLOCKS SHALL BE OF CLASS "C" (2000 P.S.I.) CONCRETE MIN. 4-1/2 SACK MIX.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

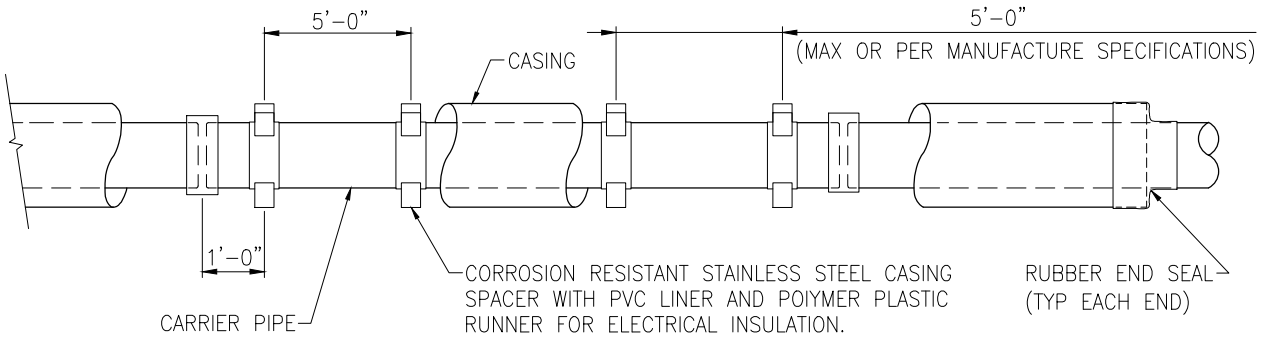
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
END CAP
INSTALLATION

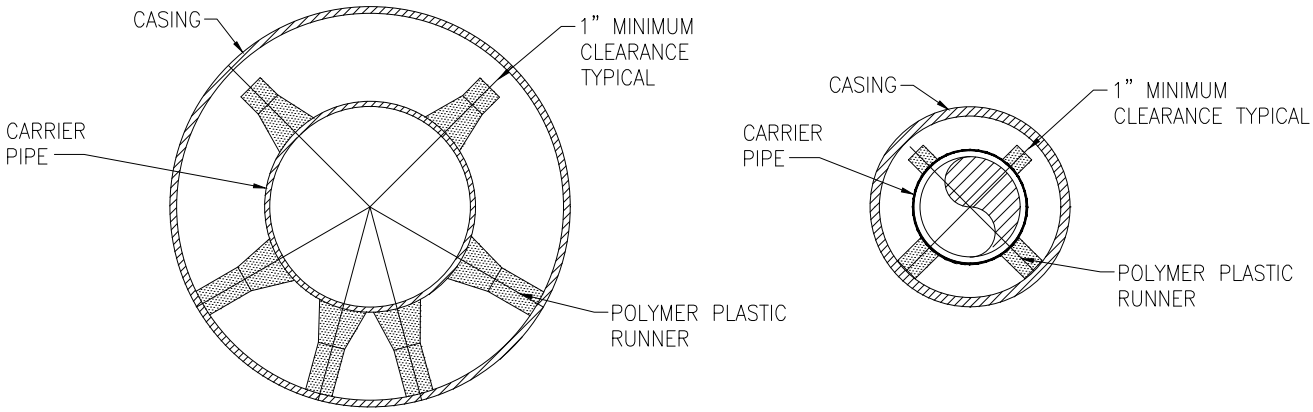
SCALE: NTS

DWG. NO.

SD-8



ELEVATION
NO SCALE



CARRIER PIPE (SIZES 14" THRU 24")

CARRIER PIPE (SIZES 4" THRU 12")

SECTION
NO SCALE

		CASING PIPE SELECTION	
		JACK & BORE	OPEN CUT TRENCH
CARRIER PIPE SIZE	CASING SIZE	STEEL CYLINDER THICKNESS	MATERIAL
6"	14"	1/4"	PVC (DR-14)
8"	16"	3/8"	PVC (DR-14)
12"	24"	3/8"	PVC (DR-14)
16"	30"	1/2"	1/4" CML&C STEEL
20"	36"	1/2"	1/4" CML&C STEEL
24"	42"	1/2"	1/4" CML&C STEEL

NOTES:

1. STEEL CASINGS SHALL BE SMOOTH STEEL PIPE WITH FULLY WELDED JOINTS.
2. CARRIER PIPE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS WITH RESTRAINED JOINTS.
3. CARRIER PIPE SHALL BE TESTED BEFORE SEALING ENDS OF CASING.
4. CASING SPACERS SHALL BE LUBRICATED AS NECESSARY BASED ON MANUFACTURES RECOMMENDATION, AS APPROVED BY TPWD, TO FACILITATE CARRIER PIPE INSTALLATION.
5. ANY VOIDS CREATED BY BORING, JACKING, OR TUNNELING CASING PIPE SHALL BE FILLED BY PRESSURE GROUTING.
6. ANNULAR SPACE INSIDE CARRIER PIPE SHALL NOT BE FILLED UNLESS OTHERWISE SPECIFIED.
7. CATHODIC TESTING SHALL BE DESIGNED AND INSTALLED ON ALL STEEL CASINGS. SEE SD-10 FOR INSULATED TEST CONNECTION DETAIL.

* MATERIALS LISTED ARE MINIMUM VALUES ONLY. DESIGN ENGINEER IS TO DESIGN AND SLECT ACTUAL MATERIALS BASED ON IN-SITU SITE CONDITIONS SUCH AS DEPTH, SOIL CORROSIVITY, LOADING CONDITIONS, ETC. ON ALL CASINGS.

REVISION NO.	DATE

APPROVED: _____ (DATE)

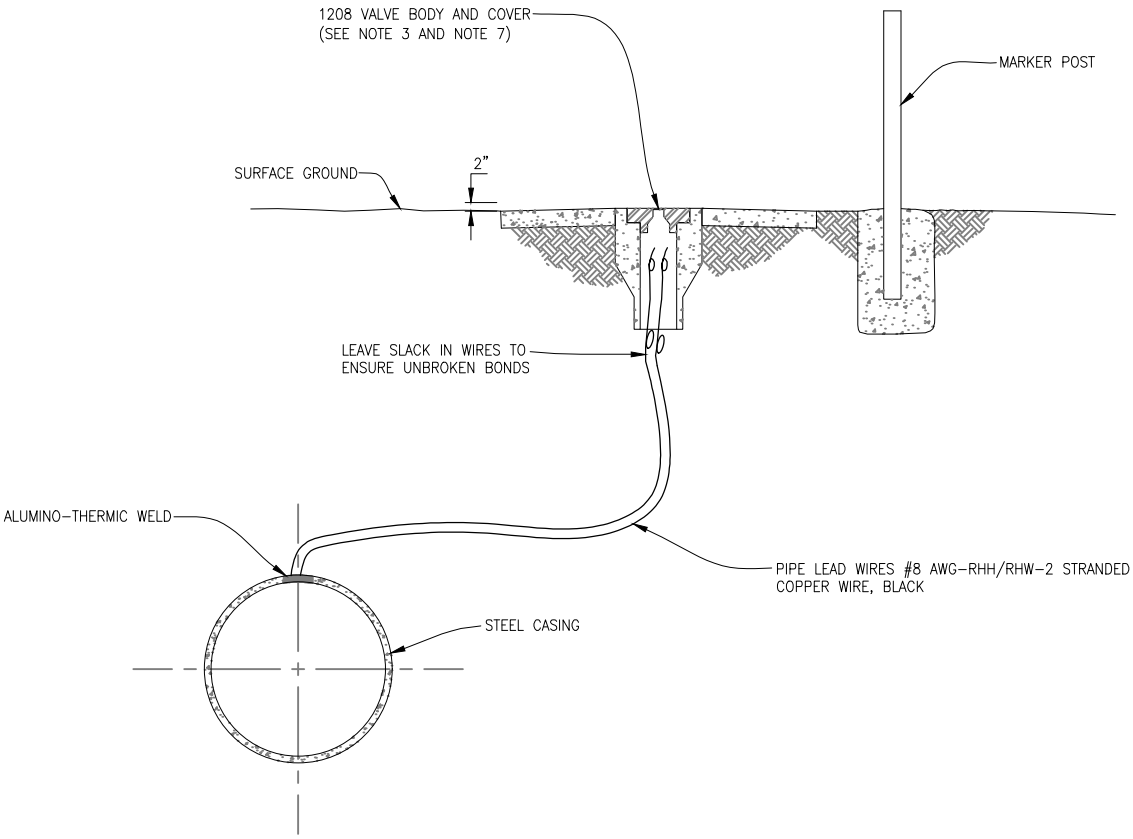
MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
STEEL CASING

SCALE: NTS

DWG. NO.
SD-9



NOTES:

1. WELD LEAD WIRES TO PIPE AFTER INSTALLATION IN TRENCH.
2. LEAD WIRES SHALL HAVE A BURY DEPTH OF 5' (MIN.) AT CURB OR SHOULDER OF ROAD WITH 3" WIDE MARKING TAPE 24" ABOVE WIRE LABELED "CAUTION: BURIED CATHODIC PROTECTION LINE"
3. REFER TO SD-13 OR SD-14 FOR CP TEST STATION PLACEMENT.
4. TERMINATE ALL WIRES PER TPWD REQUIREMENTS.
5. LEAD WIRES SHALL BE COLORED AND TAGGED PER TPWD REQUIREMENTS.
6. TEST STATIONS SHALL BE INSTALLED AT EACH END OF THE STEEL CASING OR AS INDICATED BY CONTRACT DRAWINGS.
7. VALVE BOX AND COVER BASED ON SOUTH BAY FOUNDRY #1208N OR APPROVED EQUAL.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

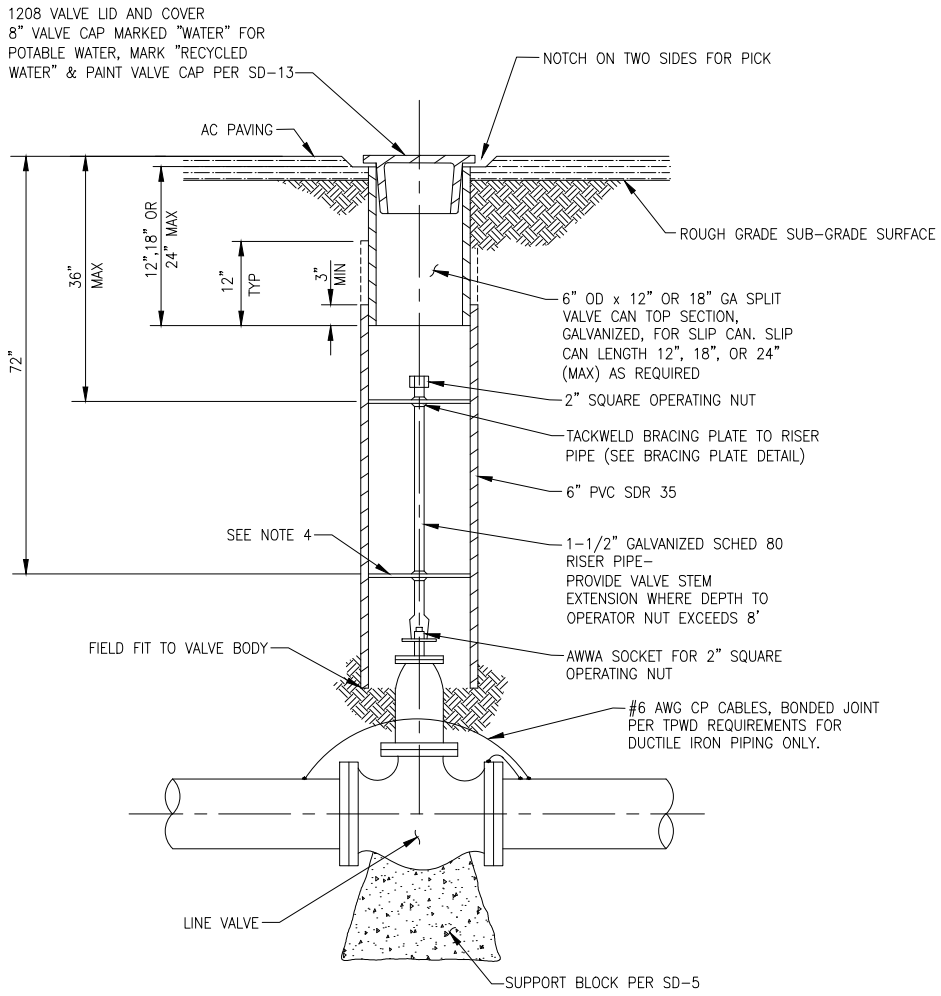
STANDARD DRAWING

CATHODIC PROTECTION
TEST STATION
FOR STEEL CASING

SCALE: NTS

DWG. NO.

SD-10



VALVE COVER AND RISER DETAIL

NOTES

1. CONTRACTOR SHALL RAISE SLIP CAN TO FINISH STREET GRADE, WHERE PAVING IS PROPOSED.
2. IN UNPAVED AREAS, CONTRACTOR SHALL LEAVE CAP AND SPLIT SLIP CAN 6" BELOW FINISH GRADE (IE GRADED SHOULDERS).
3. FOR UNPAVED ROADS ONLY
   SET TOP OF VALVE CAN (COVERED) MIN 6" BELOW ROUGH-GRADED SUB-GRADE TO AVOID DAMAGE DURING FINE GRADING AND SCARIFYING OPERATION.
4. WHERE RISER PIPE IS PRESENT AT 72" BELOW GRADE, PROVIDE ADDITIONAL BRACING PLATE.

REVISION NO.	DATE

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MATTHEW SHRAGGE
GENERAL MANAGER

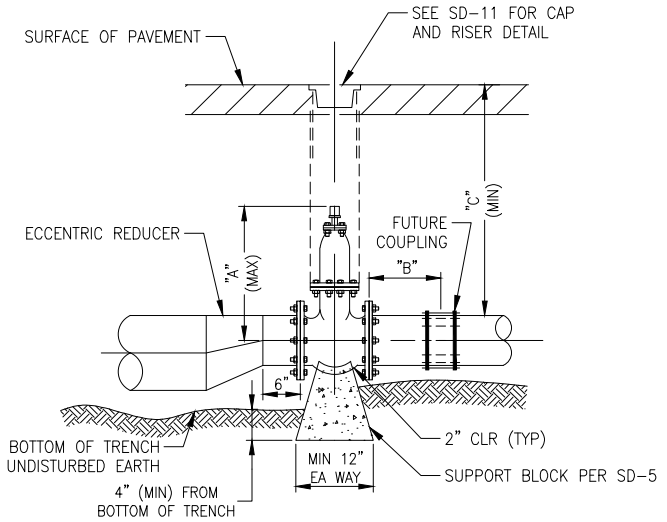
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
VALVE CAP AND RISER DETAIL

SCALE: NTS

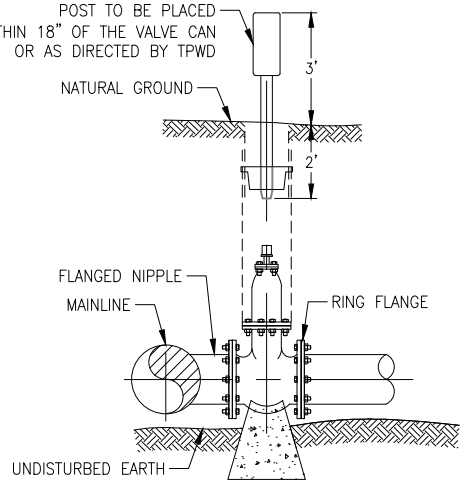
DWG. NO.
SD-11

14" DIAMETER AND LARGER STEEL PIPELINE INSTALLATION



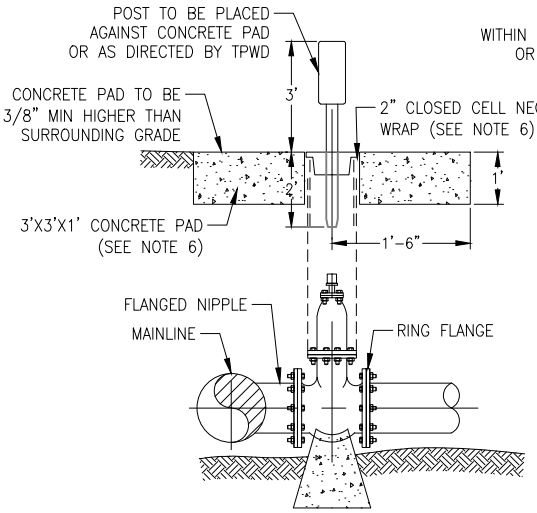
IN-LINE VALVE INSTALLATION

PAVED STREET
(PIPE COATING NOT SHOWN)
N.T.S.



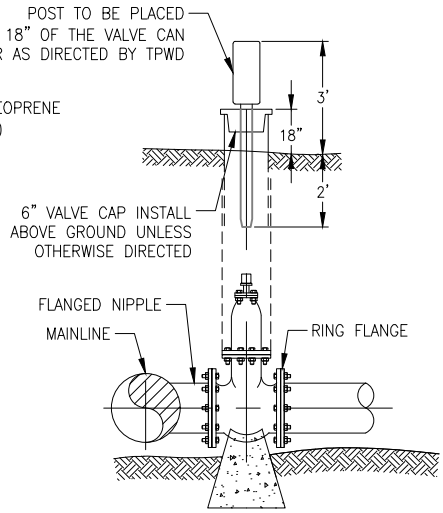
BURIED VALVE COVER DETAIL

UNIMPROVED ROADWAY
N.T.S.



CONCRETE PAD DETAIL

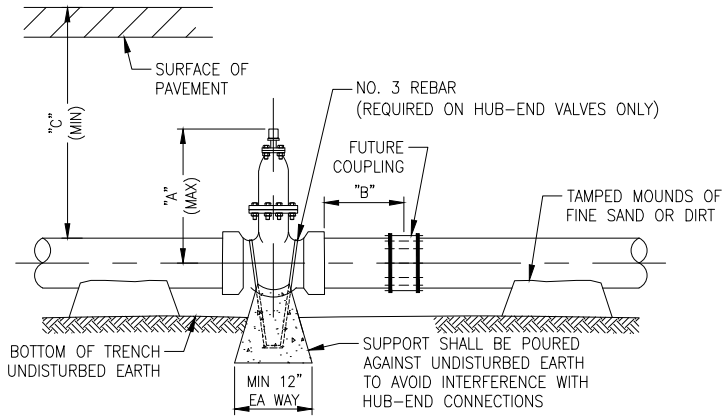
UNIMPROVED ROADWAY
N.T.S.



ELEVATED VALVE COVER DETAIL

OPEN FIELD
N.T.S.

GATE VALVE SIZE	TABULATED DIMENSIONS		
	DIMENSIONS		
	VALVE HEIGHT "A"	COUPLING NIPPLE "B"	ABS. MIN. COVER "C
4"	19"	1'-6"	1'-7"
6"	23"	1'-6"	1'-9"
8"	28"	1'-6"	2'-0"
10"	31"	1'-6"	2'-4"
12"	36"	2'-0"	2'-8"
14"	41"	2'-0"	3'-0"
16"	47"	2'-0"	3'-5"
18"	51"	2'-0"	3'-8"
20"	56"	2'-0"	3'-11"



PVC AND DI PIPELINE INSTALLATION FOR 4" DIAMETER AND LARGER

NOTES:

1. ALL FLEXIBLE JOINTS IN PIPELINES UPSTREAM FROM VALVES OR IN BRANCH LINE SHALL BE WELDED OR RESTRAINED IN ACCORDANCE WITH THE SPECIFICATIONS AND CONTRACT DRAWINGS TO PROVIDE ANCHORAGE FOR UNBALANCED FORCES.
2. ALL STEEL FLANGES SHALL BE COATED IN FIELD WITH AN APPROVED COATING PER TWPD SPECIFICATIONS.
3. ALL STEEL PIPE AND FITTINGS SHALL BE COATED WITH THE SAME MATERIALS AS SUPPLIED ON THE PIPE.
4. VALVES 20" & LARGER REQUIRE ENGINEER'S APPROVAL.
5. RECYCLED WATER PIPELINE SHALL HAVE LOCATOR TAPE INSTALLED. TAPE TO BE (3") THREE INCHES WIDE AND PLACED ABOVE THE RECYCLED WATER LINE STATING IN (2") TWO INCH HIGH LETTERING, "CATION RECYCLED WATER", THE COLOR OF THE TAPE SHALL BE PURPLE-PANATONE 512C.
6. CONCRETE PAD SHALL BE OF CLASS "A" CONCRETE 3000 PSI.
   A. CLOSED CELL NEOPRENE PER ASTM D-1056, D-1667a & D-412;
      - COMPRESSION RESISTANCE = 5-13 PSI
      - 50% COMPRESSION SET = 25%
      - DENSITY = 15-30 LBS/FT^3
      - WATER ABSORPTION = 0.1 MAX LBS/FT^2
      - TENSILE = 150 MIN. PSI
      - ELONGATION = 350 MIN. %

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

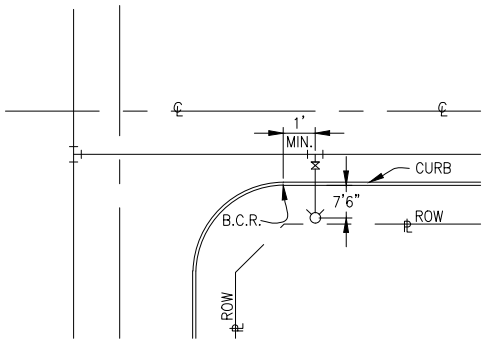
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
GATE VALVE INSTALLATION

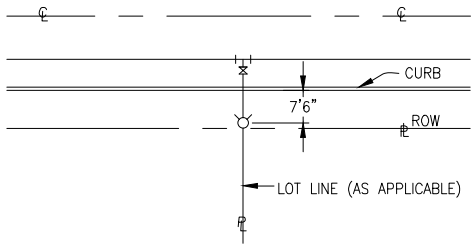
SCALE: NTS

DWG. NO.

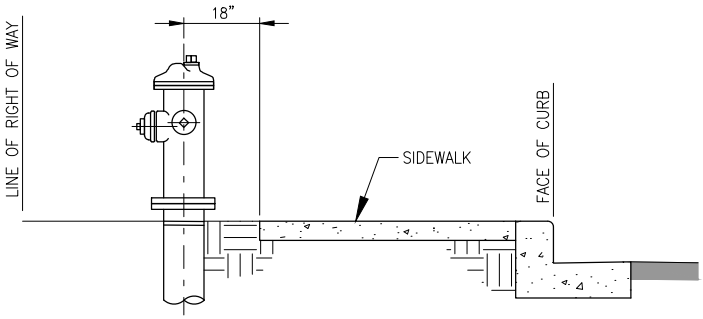
SD-12



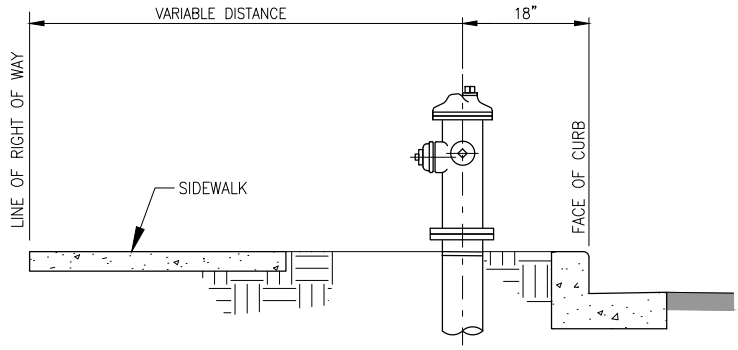
INTERSECTIONS



LOT LINES



CURB & SIDEWALK
ADJACENT



CURB & SIDEWALK
SEPARATED

NOTES:

1. PAINTING OF HYDRANTS:
   - A. HYDRANTS TO BE PAINTED WITH APPROVED SAFETY YELLOW, PER TPWD REQUIREMENTS.
   - B. PRIVATE HYDRANTS SHALL BE PAINTED BLUE.
   - C. HYDRANT TOPS & NOZZLE TOPS, WITH CAPACITY GREATER THAN 999 G.P.M. TO BE YELLOW.
   - D. HYDRANT TOPS & NOZZLE TOPS, WITH CAPACITY FROM 500–999 G.P.M. TO BE GREEN.
   - E. HYDRANT TOPS & NOZZLE TOPS, WITH CAPACITY LESS THAN 500 G.P.M. TO BE RED.
2. FIRE HYDRANT SHALL BE PLACED
   - A. I. 18" BEHIND CURB FACE WHEN PROPOSED OR EXISTING SIDEWALK IS 8' OR WIDER.
     II. 18" BEHIND BACK OF SIDEWALK WHEN PROPOSED OR EXISTING SIDEWALK IS LESS THAN 8' WIDE.
     III. ON PROPERTY LINE WHEN NO SIDEWALK IS EXISTING OR TO BE INSTALLED UPON COMPLETION OF WATER SYSTEM.
   - B. 1' AWAY FROM INTERSECTION OF SIDEWALK WITH CORNER APRON AS MEASURED ALONG THE CURB'S EDGE.
   - C. ON LOT LINES EXCEPT AT STREET INTERSECTIONS.
3. ALL APPURTENANCES WILL BE STAKED FOR LOCATION AND ELEVATION.
4. CONCRETE FOR THRUST BLOCKS AND SUPPORTS TO BE CLASS "C" (2000 P.S.I.) CONCRETE.
5. GUARD POSTS ARE NOT REQUIRED WHERE FIRE HYDRANTS ARE ADJACENT TO CURB OR SIDEWALKS OR AS DIRECTED BY TPWD.
6. APPURTENANCES SHALL INCLUDE THE FOLLOWING, BUT ARE NOT LIMITED TO: AIR/VAC RELEASE ASSEMBLIES, BLOW OFF ASSEMBLIES, TEST STATIONS, WATER METER BOXES AND FIRE HYDRANTS.
7. ALL FIRE HYDRANTS, BLOW OFFS, DETECTOR CHECKS, AIR VAC ASSEMBLIES AND METER SERVICES, WILL BE LOCATED OUT OF DRIVEWAYS, SIDEWALKS, WALKWAYS AND/OR ANY CONCRETE STRUCTURES. ALL APPURTENANCES SHALL BE PLACED IN LAWN OR PLANTER AREAS WHERE AVAILABLE, OR OTHERWISE AS APPROVED BY TPWD.
8. LANDSCAPING AROUND ALL APPURTENANCES IS LIMITED TO GROUND COVER 6" OR LESS IN HEIGHT WITHIN 2' OF APPURTENANCES.
9. SEE DRAWING SD–14 FOR APPURTENANCE LOCATIONS IN UNIMPROVED STREETS WITHOUT CURBS.
10. PAINTING OF VALVE CANS – BLUE
11. MINIMUM 5' HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SERVICE LATERALS.
12. SPECIFIC JURISDICTIONAL (CITY OR COUNTY) REQUIREMENTS FOR SETBACK AND/OR PLACEMENT OF FIRE HYDRANTS/APPURTENANCES WILL GOVERN, AND SHALL BE DENOTED ON PLANS IF DIFFERENT THAN SHOWN HEREON.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

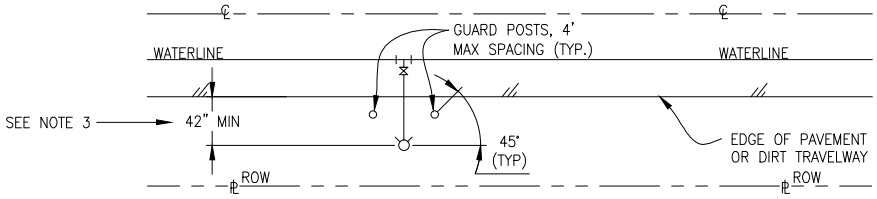
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING

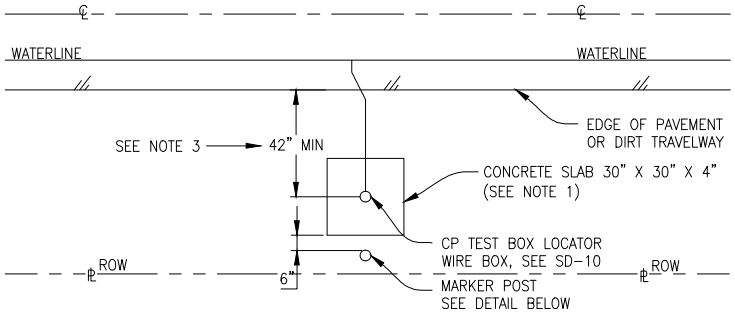
FIRE HYDRANT AND APPURTENANCE LOCATIONS (IMPROVED STREETS)

SCALE: NTS

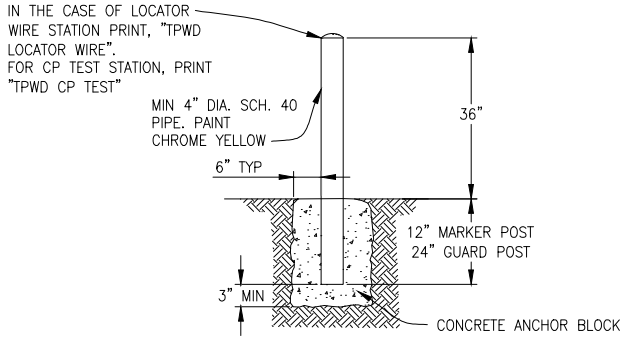
DWG. NO. SD–13



FIRE HYDRANT/APPURTENANCE INSTALLATIONS



CP TEST STATION,
LOCATOR WIRE STATION



GUARD/MARKER POST DETAIL

NOTES:

1. MARKER POST AND CONCRETE SLAB WILL NOT BE REQUIRED FOR LOCATOR WIRE BOX AND CP TEST BOX SITUATED IMMEDIATELY ADJACENT TO A FIRE HYDRANT, OR APPURTENANCE WHERE, AS CONFIRMED BY TPWD, ADEQUATE PROTECTION EXIST.
2. REFER TO APPLICABLE NOTES ON DRAWING NO. SD-13.
3. INSTALL HYDRANT ADJACENT TO THE PROPERTY LINE WHEN NO CURB OR SIDEWALK EXISTS, OR WHEN NEITHER WILL BE INSTALLED UPON PROJECT COMPLETION. LOCATE THE HYDRANT WITH SUFFICIENT OFFSET SUCH THAT IT DOES NOT ENCROACH ONTO THE ADJACENT PROPERTY.
4. SPECIFIC JURISDICTIONAL (CITY OR COUNTY) REQUIREMENTS FOR SETBACK AND/OR PLACEMENT OF FIRE HYDRANTS/APPURTENANCES WILL GOVERN, AND SHALL BE DENOTED ON PLANS IF DIFFERENT THAN SHOWN HEREON.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

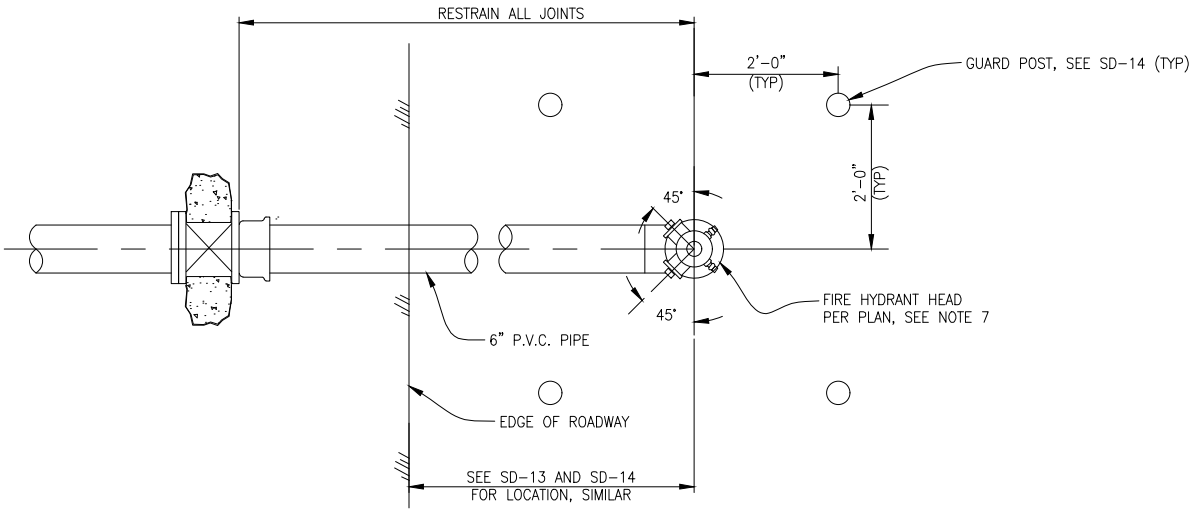
STANDARD DRAWING

FIRE HYDRANT AND APPURTENANCE LOCATIONS (UNIMPROVED STREETS)

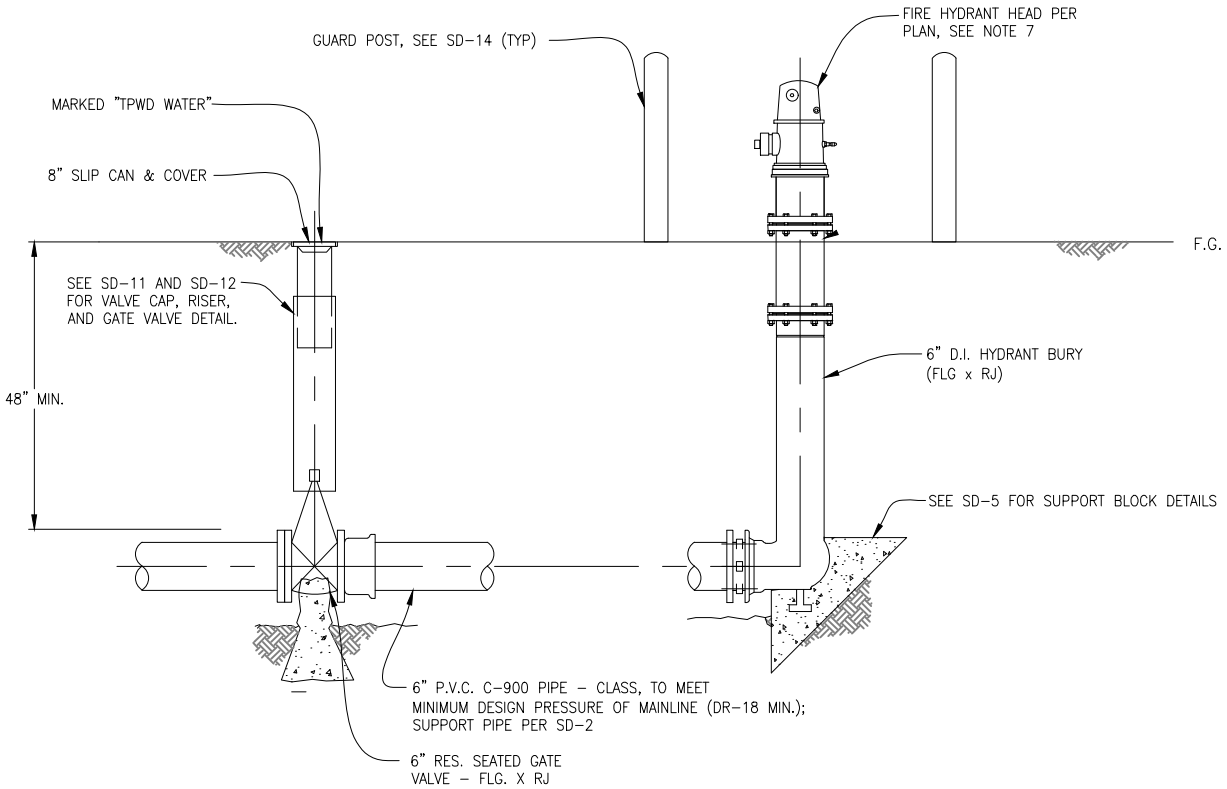
SCALE: NTS

DWG. NO.

SD-14



PLAN



PROFILE

NOTES:

1. REFER TO SD-13 AND SD-14, "APPURTENANCE LOCATIONS AND NOTES".
2. FIRE HYDRANTS TO BE PAINTED PER SD-13.
3. GROUT ALL BARE STEEL AND IRON.
4. COLD-APPLY WAX TAPE COATING TO ALL BOLTS, NUTS AND FLANGES.
5. REFER TO SD-2 FOR LOCATOR WIRE REQUIREMENT AND INSTALLATION.
6. INSTALL BLUE RETRO REFLECTING PAVEMENT MARKER PER FIRE DEPARTMENT STANDARDS.
7. REFER TO SD-16 OR SD-17, SIMILAR.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

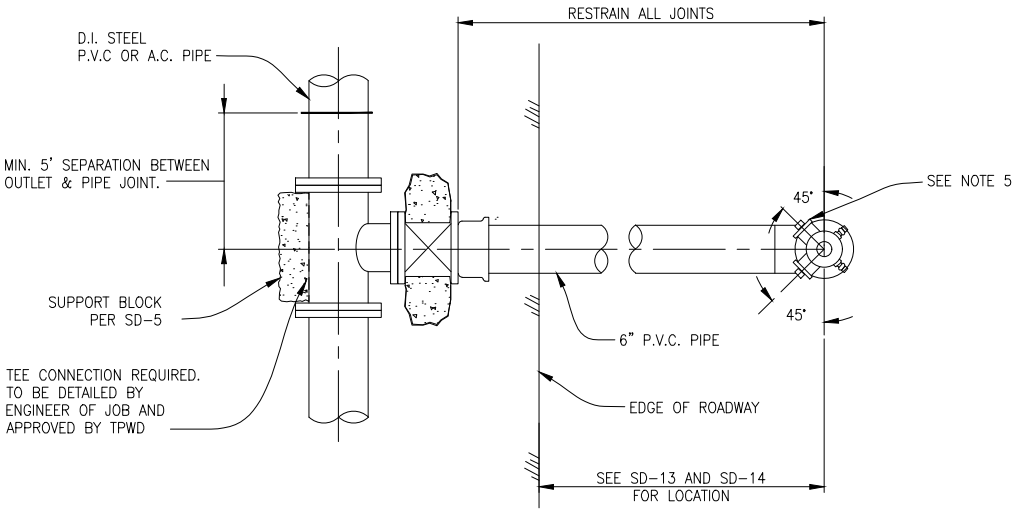
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
WATER PIPELINE
DEAD-END FIRE
HYDRANT

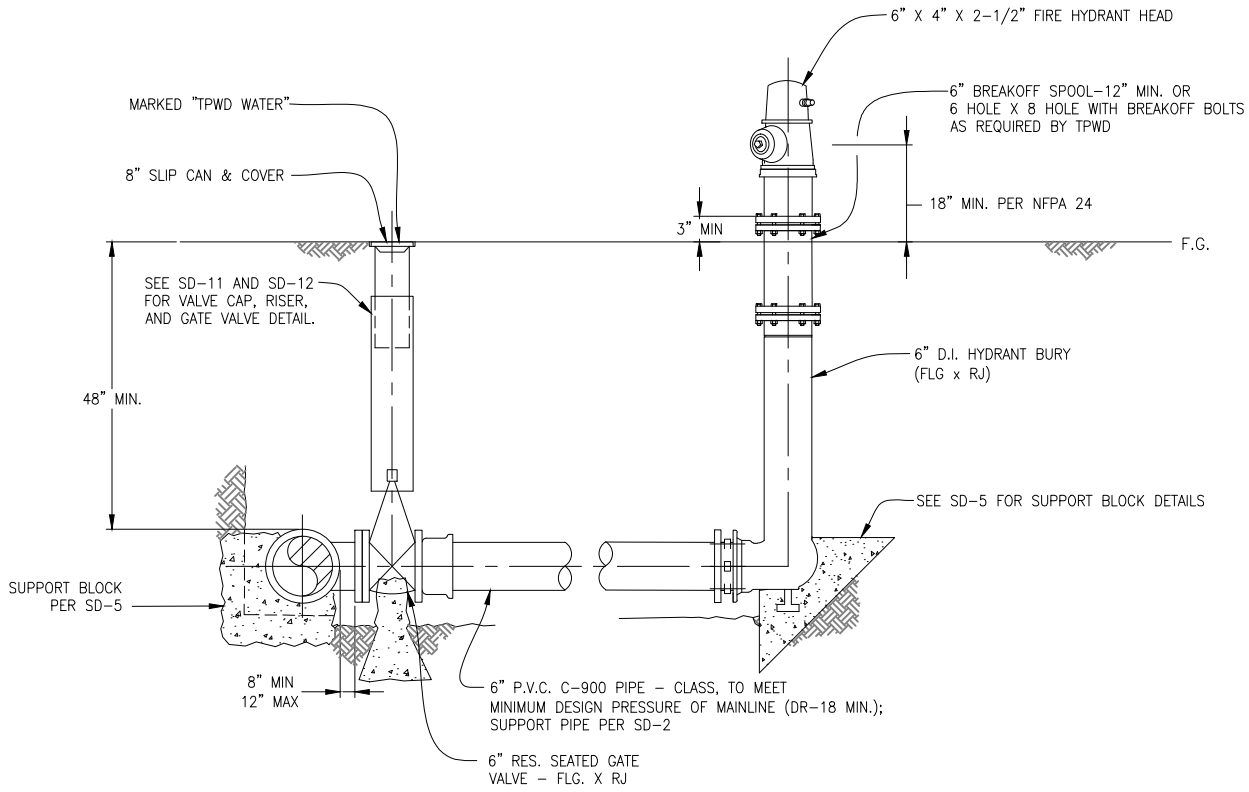
SCALE: NTS

DWG. NO.

SD-15



PLAN



PROFILE

NOTES:

1. REFER TO SD-13 AND SD-14, "APPURTENANCE LOCATIONS AND NOTES".
2. FIRE HYDRANTS TO BE PAINTED PER SD-13.
3. GROUT ALL BARE STEEL AND IRON.
4. COLD-APPLY WAX TAPE COATING TO ALL BOLTS, NUTS AND FLANGES.
5. DIRECTION OF OUTLETS SHALL BE AT 45° POINTED TOWARDS THE STREET.
6. REFER TO SD-2 FOR LOCATOR WIRE REQUIREMENT AND INSTALLATION.
7. INSTALL BLUE RETRO REFLECTING PAVEMENT MARKER
PER FIRE DEPARTMENT STANDARDS.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

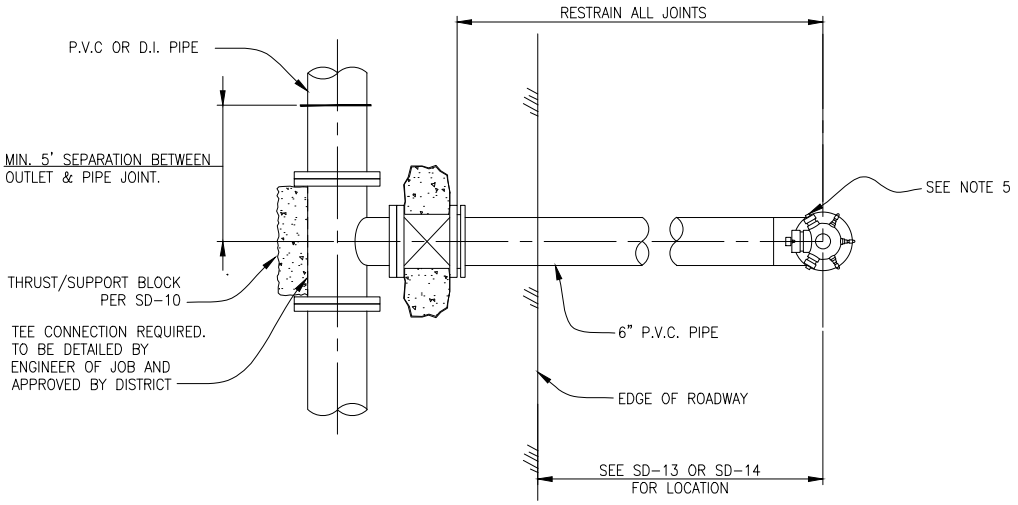
STANDARD DRAWING

6" FIRE HYDRANT ASSEMBLY

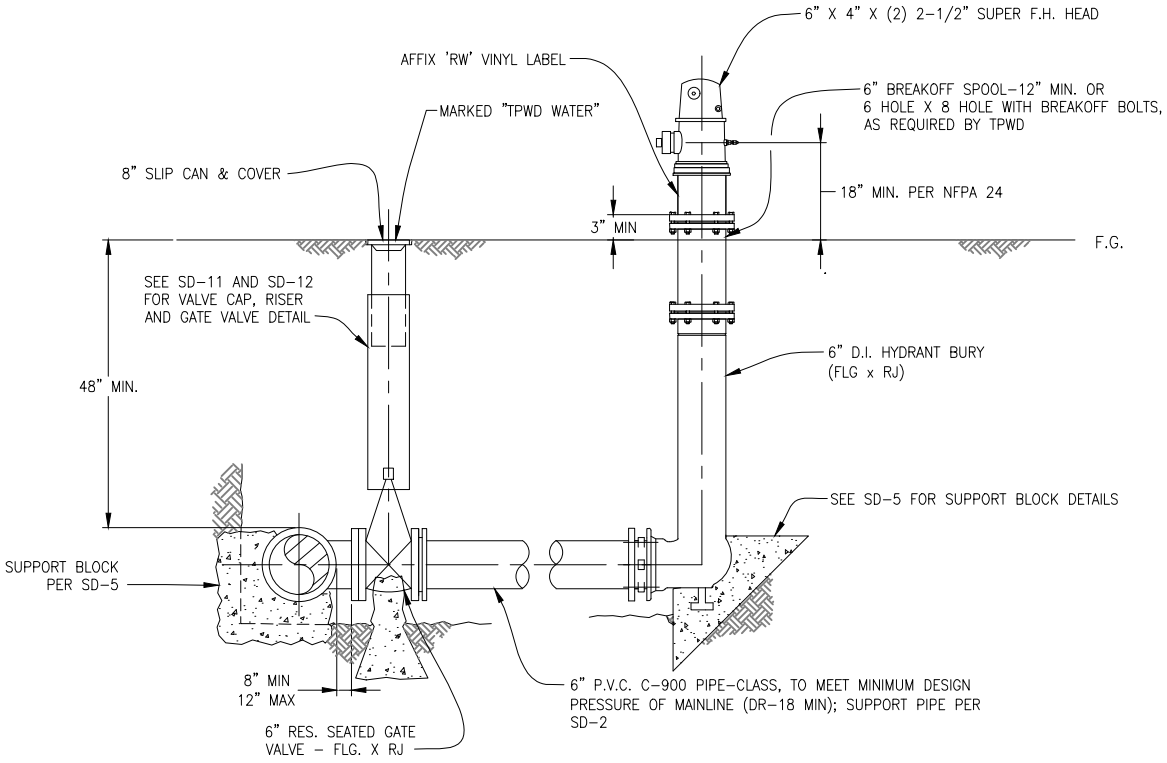
SCALE: NTS

DWG. NO.

SD-16



PLAN



PROFILE

NOTES:

1. REFER TO SD-13 OR SD-14, "APPURTENANCE LOCATIONS & NOTES."
2. FIRE HYDRANTS TO BE PAINTED PER SD-13.
3. GROUT ALL BARE STEEL AND IRON.
4. COLD-APPLY WAX TAPE COATING TO ALL BOLTS, NUTS, AND FLANGES.
5. LARGE OUTLET TO BE POINTED TOWARDS THE STREET.
6. REFER TO SD-2 FOR LOCATOR WIRE REQUIREMENT AND INSTALLATION.
7. INSTALL BLUE RETRO REFLECTING PAVEMENT MARKER PER FIRE DEPARTMENT STANDARDS.

REVISION NO.	DATE

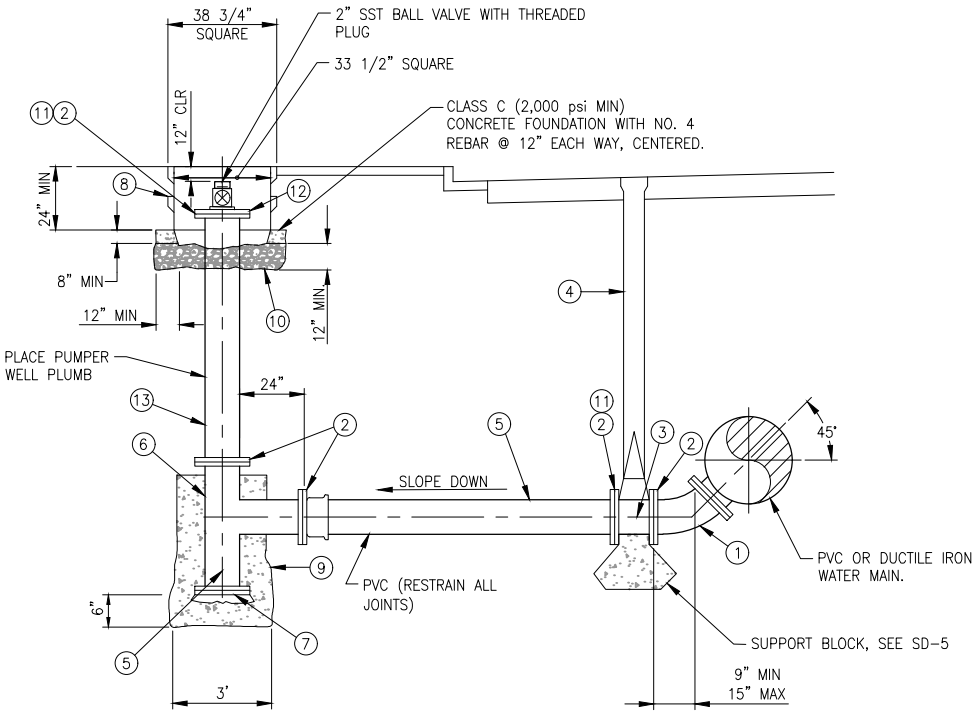
APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
SUPER FIRE HYDRANT ASSEMBLY

SCALE: NTS
DWG. NO. SD-17



① FLANGED DUCTILE IRON TEE WITH FLANGED DUCTILE IRON 45° ELBOW

② FLANGE.

③ FLANGED RESILIENT SEATED GATE VALVE PER SD-12.

④ VALVE CAP RISER PER STD. DWG. SD-11.

⑤ PVC C-900 W /DI FITTINGS.

⑥ DI TEE. (FLANGED)

⑦ BLIND FLANGE.

⑧ PRECAST CONCRETE VAULT, BROOKS 733A WITH 3/8" BOLT DOWN DIAMOND PLATE STEEL COVER.

⑨ CONCRETE THRUST/SUPPORT BLOCK (5' X 3' X 3'), PLACED AGAINST UNDISTURBED EARTH. CONCRETE SHALL BE CLASS 'C' (2,000 psi MIN) CONCRETE.

⑩ 1" CRUSHED ROCK BASE.

⑪ 2' CUT TO FIT. SHIP FLANGE LOOSE.

⑫ COMPANION FLANGE W/ 2" THREADED OUTLET

⑬ FLANGED DUCTILE IRON SPOOL

MAIN	BLOW OFF SIZE
8"-24"	6"

NOTES:

1. GROUT ALL BARE STEEL AND IRON.
2. COLD-APPLY WAX TAPE COATING TO ALL BOLTS, NUTS AND FLANGES PER SPECIFICATIONS.
4. PLACEMENT OF BLOW-OFF SHALL BE PER SD-13 AND SD-14.

REVISION NO.	DATE

APPROVED: _____ (DATE)

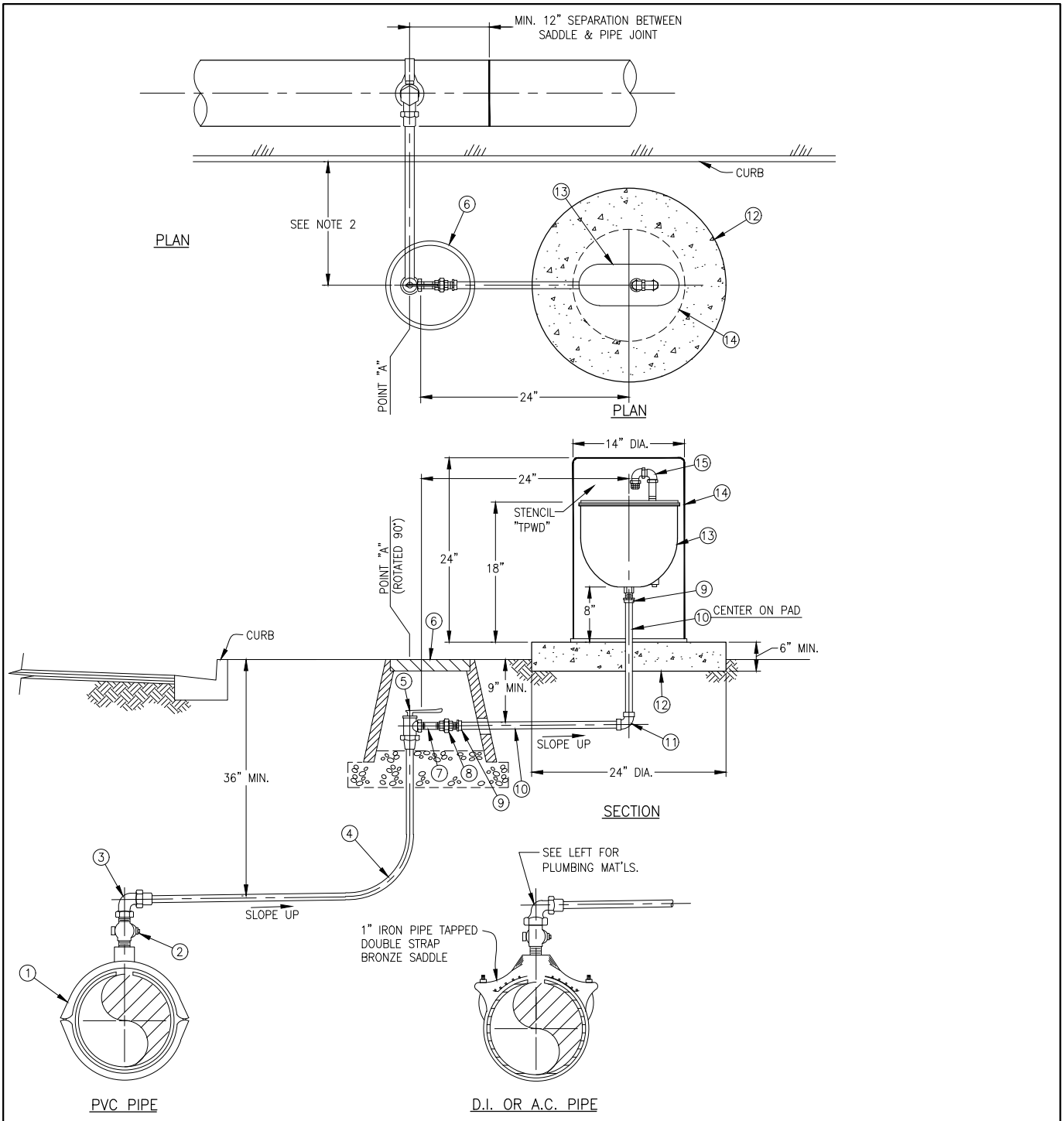
MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
6" BLOW-OFF ASSEMBLY

SCALE: NTS

DWG. NO.
SD-18



NOTES:

1. ALL BURIED BRASS/COPPER TUBING AND FITTINGS SHALL BE DOUBLE TAPE WRAPPED/COVERED WITH POLYPIPE TAPE GUARD: BLUE–POTABLE WATER; PURPLE–RECYCLED WATER.
2. REFER TO SD–13 OR SD–14 FOR PLACEMENT.
3. LANDSCAPING AROUND AIR VAC ASSEMBLY IS LIMITED TO GROUND COVER 6" OR LESS IN HEIGHT WITHIN 2' OF ASSEMBLY.

NO.	DESCRIPTION	QTY.
1	1"x 2" WIDE STRAP SERVICE SADDLE	1
2	1" BRASS CORP. STOP (MNPT)	1
3	1" 90° BRASS BEND (FNPT x CTS – COMPRESSION ADAPTOR)	1
4	1" TYPE K "SOFT" COPPER TUBING	–
5	FULL PORT ANGLE CURB VALVE (CTS x FNPT OR FIP)	1
6	10" ROUND HEAVY DUTY PLASTIC VALVE BOX & LOCKING COVER WITH "WATER" OR "RECYCLED WATER" STAMPED ON LID	1
7	1"x4" LONG THREADED BRASS NIPPLE	1
8	1" BRASS UNION (FNPT x FNPT)	1
9	1" COPPER THREADED ADAPTER (MNPT x SWEAT OR CTS)	2
10	1" TYPE K "HARD" (RIGID) COPPER TUBING	–
11	1" COPPER 90° ELBOW (SWEAT OR CTS)	1
12	24" DIA. (OR SQUARE) 6" THICK CONCRETE PAD	1
13	1" AIR VAC & AIR RELEASE VALVE	1
14	PIPELINE PRODUCTS 14"x24" VALVE ENCLOSURE (ADVANTAGE SERIES VCAS–1424; POTABLE: RESIDENTIAL–GREEN, COMMERCIAL–YELLOW, RECYCLED–PURPLE)	1
15	1" GALV. STEEL STREET ELBOW(S) WITH SS SCREEN	2

REVISION NO.	REVISION DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

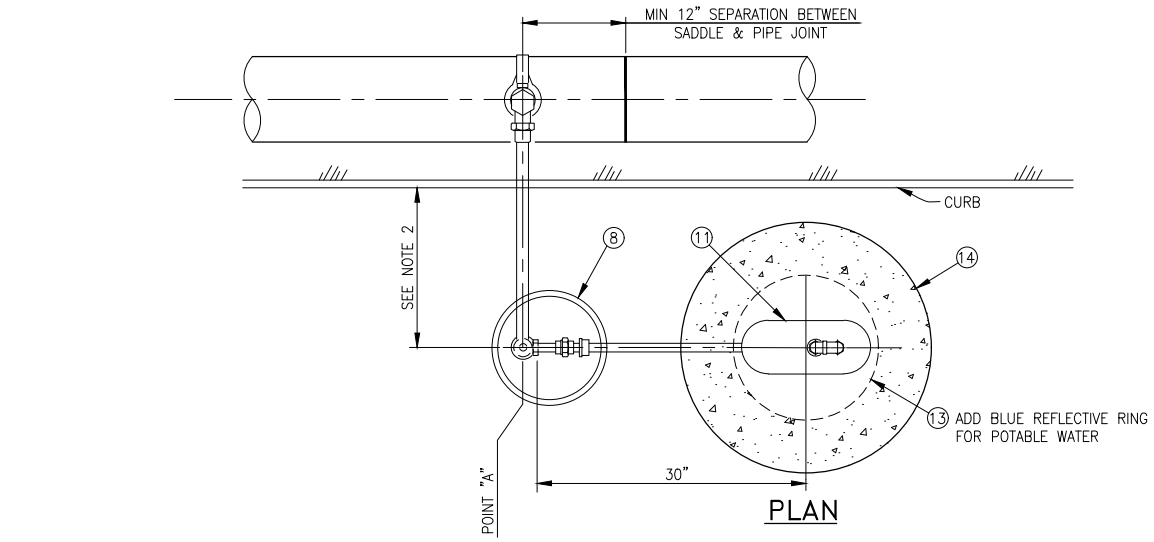
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING

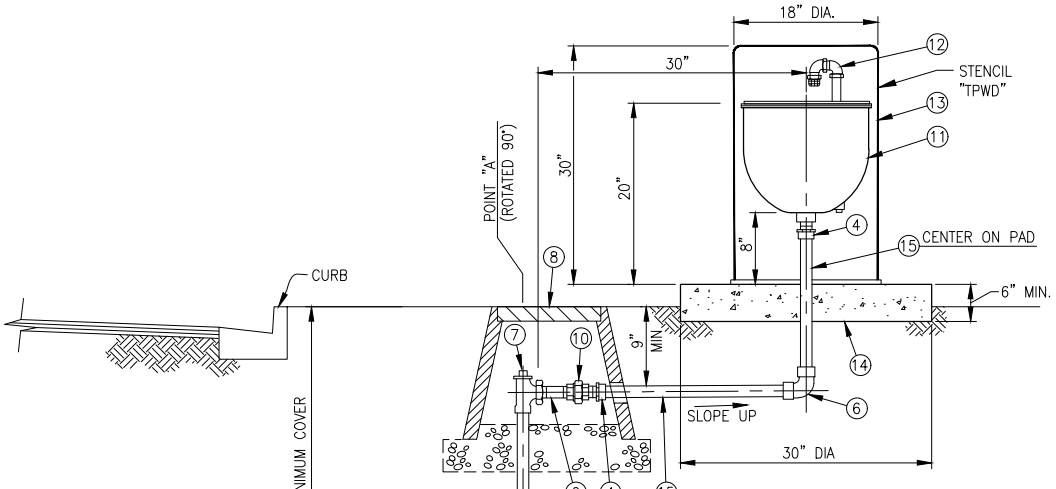
1" AIR VACUUM AND AIR RELEASE ASSEMBLY

SCALE: NTS

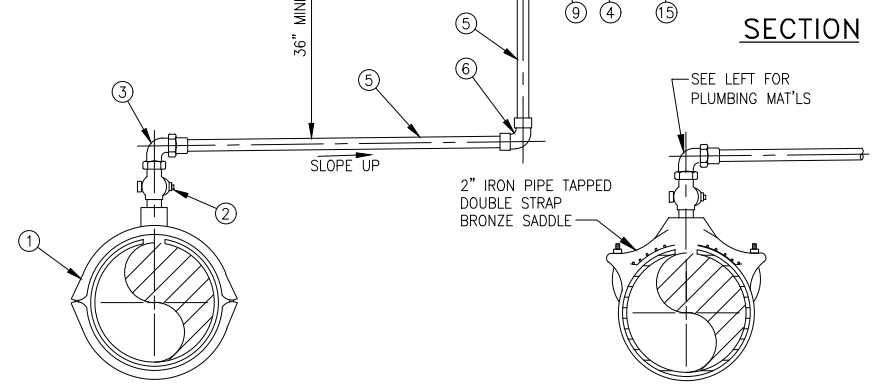
DWG. NO. SD–19



PLAN



SECTION



PVC PIPE D.I. OR A.C. PIPE

NOTES:

1. ALL BURIED BRASS/COPPER TUBING AND FITTINGS SHALL BE DOUBLE TAPE WRAPPED/COVERED WITH POLYPIPE TAPE GUARD: BLUE–POTABLE WATER; PURPLE–RECYCLED WATER.
2. REFER TO SD–13 OR SD–14 FOR PLACEMENT.
3. LANDSCAPING AROUND AIR VAC ASSEMBLY IS LIMITED TO GROUND COVER 6" OR LESS IN HEIGHT WITHIN 2' OF ASSEMBLY.

NO.	DESCRIPTION	QTY.
1	2"x 2" WIDE STRAP SERVICE SADDLE	1
2	2" BRASS CORP. STOP (MNPT)	1
3	2" BRASS 90° FITTING (FNPT X CTS COMPRESSION ADAPTER)	1
4	2" COPPER THREADED ADAPTER (MNPT x SWEAT OR CTS)	4
5	2" TYPE K SOFT COPPER TUBING	–
6	2" COPPER 90° ELBOW (SWEAT OR CTS)	2
7	FULL PORT ANGLE CURB VALVE (CTS X FNPT) – NO LONG HANDLE	1
8	10" ROUND HEAVY DUTY PLASTIC VALVE BOX & LOCKING COVER WITH "WATER" OR "RECYCLED WATER" STAMPED ON LID	1
9	2"x6" LONG THREADED BRASS NIPPLE	1
10	2" BRASS UNION (FNPT x FNPT)	1
11	2" AIR VAC & AIR RELEASE VALVE	1
12	2" GALV. STEEL STREET ELBOW(S) WITH SS SCREEN	2
13	PIPELINE PRODUCTS 18"x30" VALVE ENCLOSURE (ADVANTAGE SERIES VCAS–1830; POTABLE; YELLOW, RECYCLED; PURPLE)	1
14	30" DIA ROUND (OR SQUARE), 6" THICK CONCRETE PAD	1
15	2" TYPE K "HARD" (RIGID) COPPER TUBING	

REVISION NO.	REVISION DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

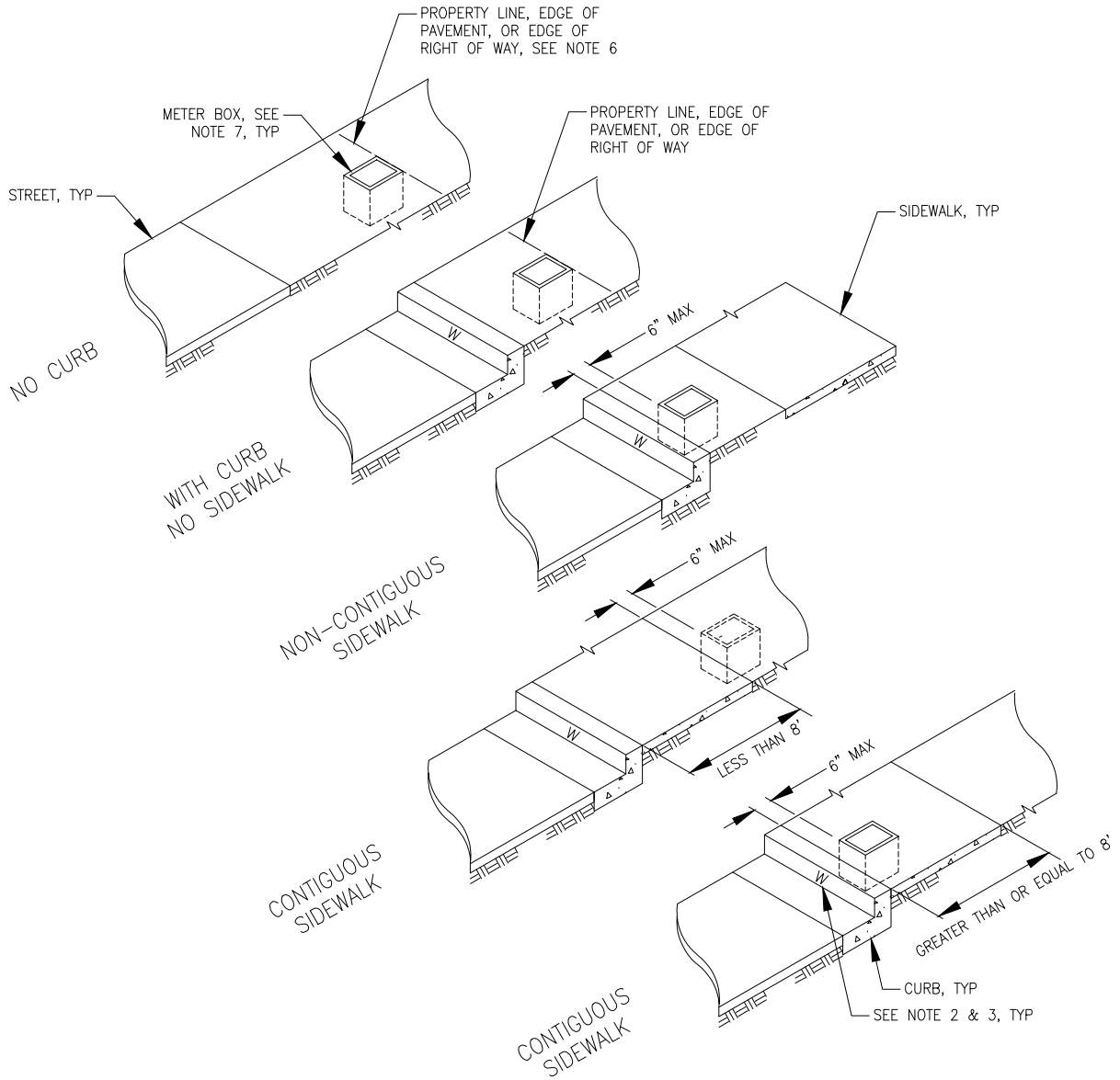
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING

2" AIR VACUUM AND AIR RELEASE ASSEMBLY

SCALE: NTS

DWG. NO. SD–20



NOTES:

1. REFER TO DISTRICT SPECIFICATIONS WHERE APPLICABLE.
2. STAMP OR CHISEL A 2" HIGH 'W' IN CURB FACE TO IDENTIFY POTABLE WATER SERVICE LOCATION.
3. STAMP OR CHISEL A 2" HIGH 'RW' IN CURB FACE TO IDENTIFY RECYCLED WATER SERVICE LOCATION.
4. METER BOXES ARE NOT TO BE INSTALLED IN DRIVEWAYS, SIDEWALKS OR WITHIN PAVED ROADWAYS.
5. MULTIPLE METER BOXES SHALL BE INSTALLED WITH A MINIMUM OF 9" BETWEEN BOXES.
6. WHEN NO CURBS OR GUTTERS ARE EXISTING OR TO BE INSTALLED UPON COMPLETION OF THE WATER SYSTEM, PLACE BACK EDGE OF METER BOX ON PROPERTY LINE.
7. AN EASEMENT MAY BE NEEDED DEPENDING ON LOCATION OF METER BOX.
8. METER BOXES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN DISTRICT'S SPECIFICATIONS.
9. MATERIALS SHALL BE SELECTED FROM THE DISTRICT'S APPROVED MATERIALS LIST.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

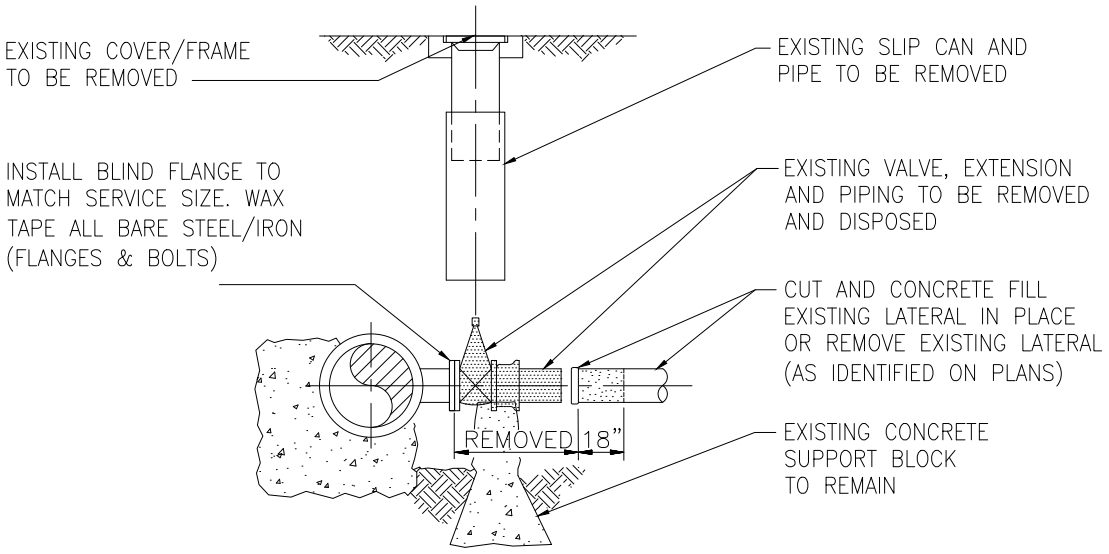
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
WATER METER BOX LOCATIONS

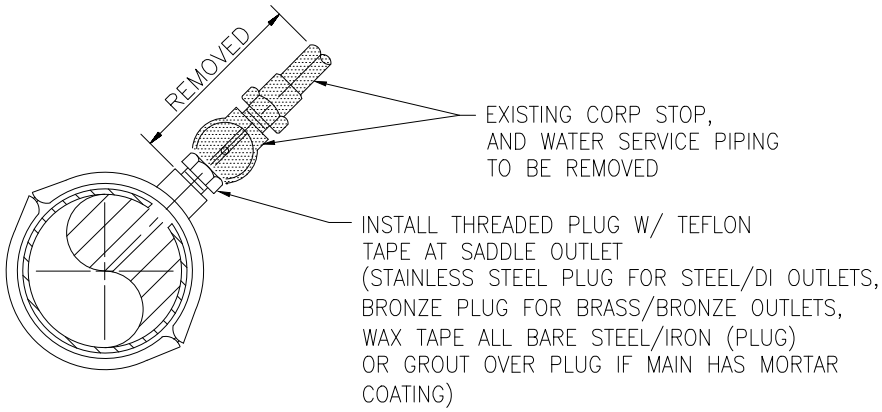
SCALE: NTS

DWG. NO.

SD-21



FLANGED OUTLET
(4" AND LARGER CONNECTION)



SADDLE/THREADED OUTLET
(3/4" THRU 2" CONNECTION)

NOTES:
THE FOLLOWING SHALL BE THE STEPS TAKEN TO ABANDON EXISTING WATER APPURTENANCES.

1. PRIOR APPROVAL FROM TPWD SHALL BE OBTAINED IN THE FORM OF APPROVED PLANS, INSPECTION PACKAGE, AND SERVICE ABANDONMENT AGREEMENT BETWEEN TPWD AND PROPERTY OWNER.
2. CONTRACTOR SHALL:
   A. COORDINATE WITH TPWD TO REMOVE EXISTING METERS ON WATER SERVICES AND FIRE DETECTOR ASSEMBLIES.
   B. COORDINATE WITH TPWD TO SHUT-DOWN/ISOLATE MAIN FROM SERVICE.
   C. EXCAVATE DOWN TO GAIN ACCESS TO CONNECTION POINT AT MAIN AND LATERAL FOR REMOVAL.
   D. CUT AND CRIMP EXISTING COPPER SERVICES 12" TO 18" AWAY FROM THE SERVICE CONNECTION AND LEAVE IN PLACE. MAINS LARGER THAN 2" SHALL BE CUT 18" TO 28" FROM SERVICE CONNECTION AND HAVE REMAINING 18" OF THE PIPE PLUGGED WITH CONCRETE AND ABANDONED IN PLACE UNLESS PLANS SPECIFY THE REMOVAL OF THE REMAINING PIPE.
   E. EXCAVATE DOWN TO AND REMOVE THE RISER TO THE WATER METER OR FIRE SERVICE. CUT AND CRIMP, OR PLUG WITH CONCRETE (18 INCH MINIMUM), THE REMAINING SERVICE LINES.
   F. BACKFILL AND COMPACT THE EXCAVATIONS IN ACCORDANCE WITH TPWD STANDARDS AND/OR ENCROACHMENT PERMIT.
   G. REPAIR ANY DAMAGED PAVEMENT MATERIALS IN ACCORDANCE WITH ENCROACHMENT PERMIT REQUIREMENTS.
   H. CONTACT TPWD TO RECHARGE THE WATER MAIN AFTER SERVICE HAS BEEN ABANDONED.

REVISION NO.	DATE

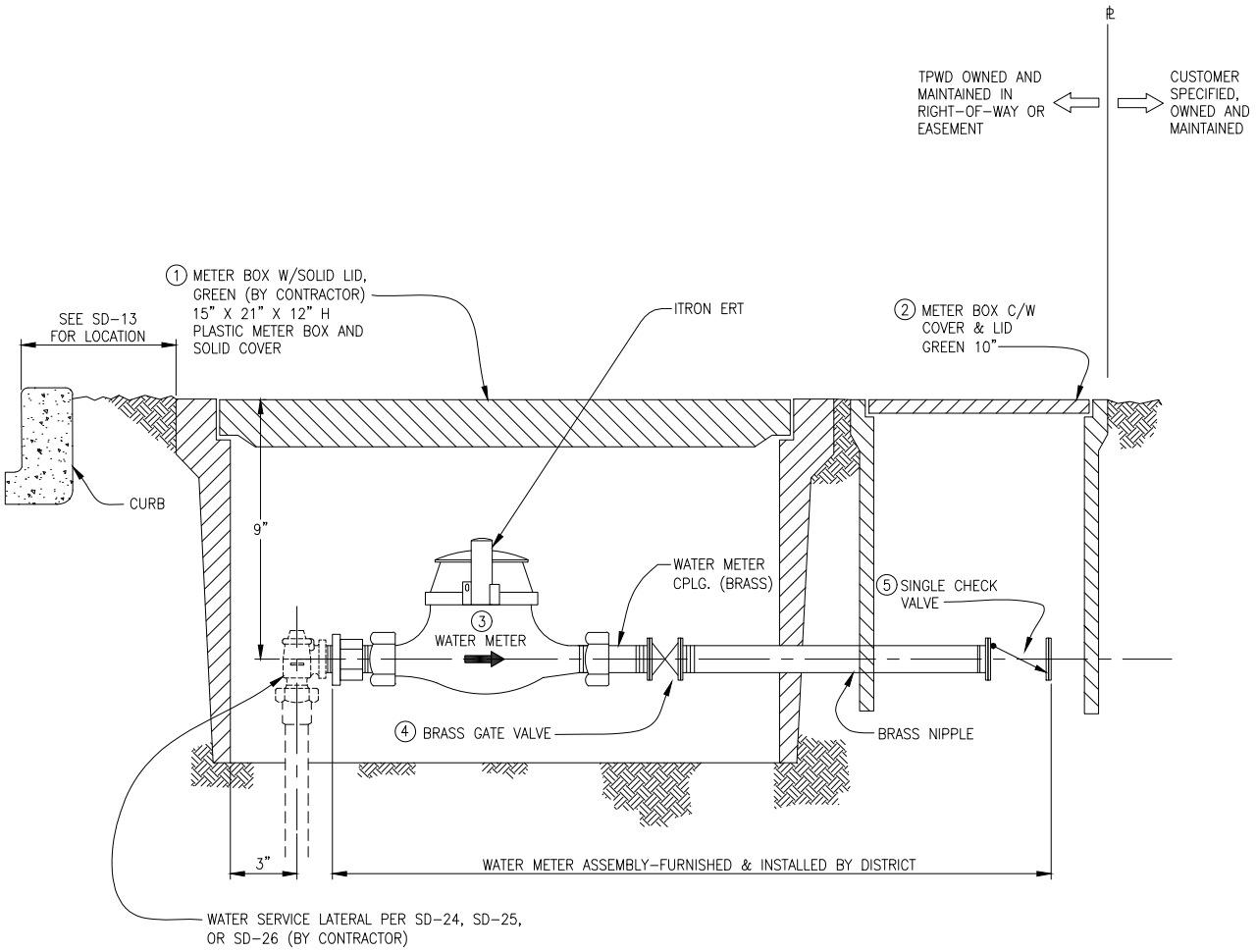
APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

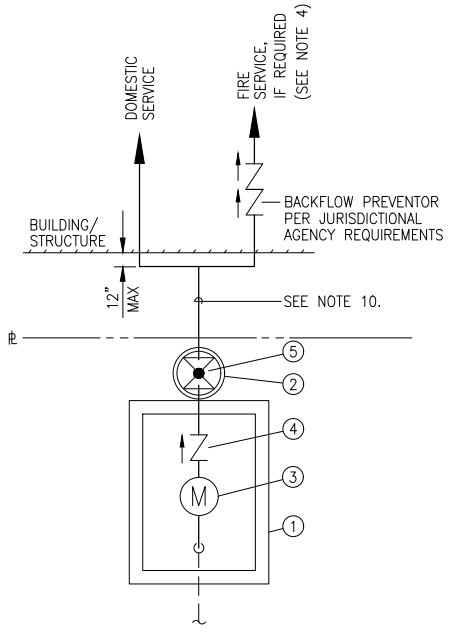
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
EXISTING WATER
SERVICE ABANDONMENT

SCALE: NTS
DWG. NO.
SD-22



SECTION VIEW



SCHEMATIC PLAN VIEW

NOTES

1. STAMP CURB WITH "W" FOR LATERAL LOCATION
2. METER BOX LOCATION IS 7 1/2' FROM FACE OF CURB OR AS DIRECTED BY TPWD. (REF SD-13 OR SD-14)
3. ALL METER BOXES WILL BE STAKED FOR LOCATION AND ELEVATION.
4. NO DIPS OR POCKETS IN LATERAL WILL BE ALLOWED.

*5. METER BOX WILL BE AN 15" X 21" X 12"H PLASTIC #4 METER BOX & SOLID COVER.

6. WHEN NO CURBS ARE EXISTING OR TO BE INSTALLED, PLACE BACK EDGE OF METER BOX 3'-0" FROM PROPERTY LINE.
7. LANDSCAPING AROUND METER BOX IS LIMITED TO GROUND COVER 6" OR LESS IN HEIGHT WITHIN 2' OF METER BOX.
8. METER BOXES SHALL BE PLACED IN LAWN OR PLANTER AREAS ONLY. METERS SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, HANDICAPPED RAMPS, ETC.
9. APPLICABLE ONE AND TWO FAMILY RESIDENTIAL UNITS ONLY.
10. SINGLE SERVICE LINE TO TO BUILDING/STRUCTURE, TEE FOR RESIDENTIAL FIRE SPRINKLERS MUST BE WITHIN 12-INCHES OF BUILDING/STRUCTURE.

* IF SERVICE REQUIRES PRESSURE REGULATING CONTACT TPWD FOR REQUIREMENTS.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

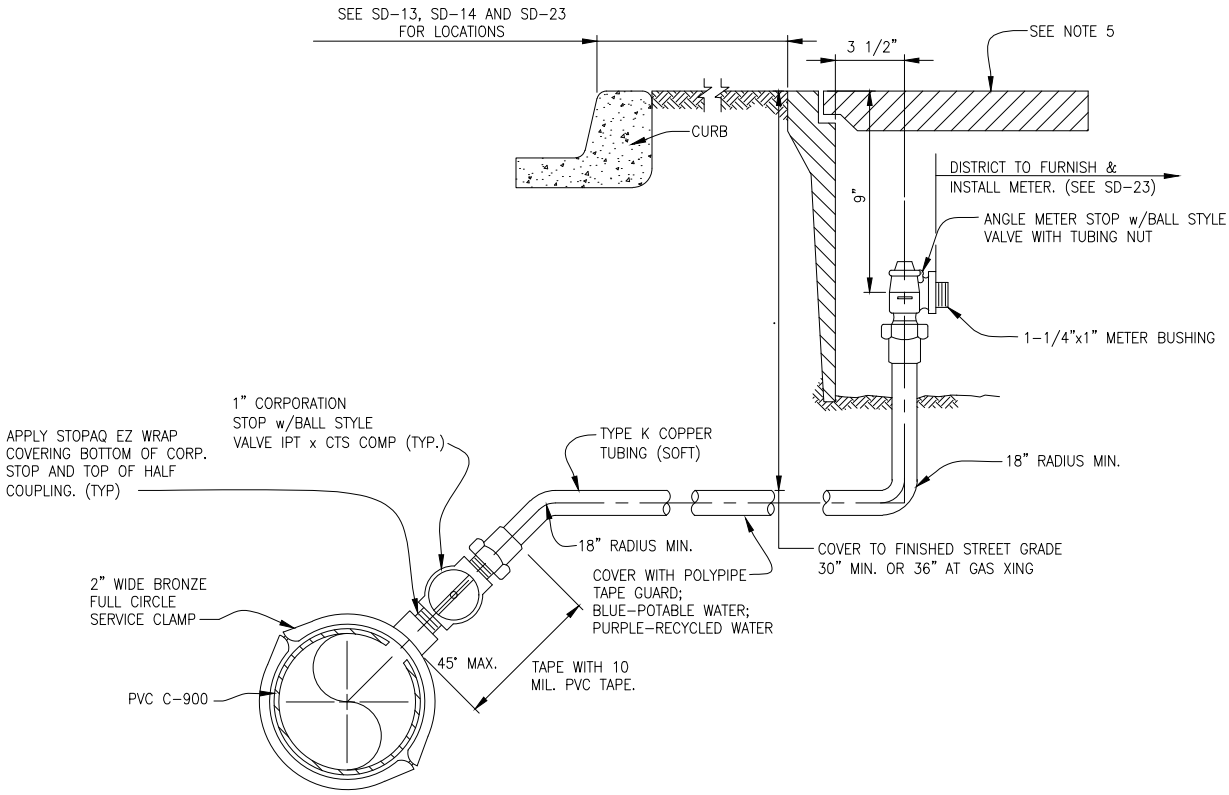
STANDARD DRAWING

TYPICAL DROP-IN METER INSTALLATION (5/8", 3/4", 1", 1-1/2" OR 2")

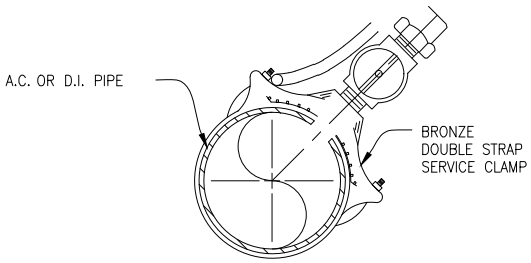
SCALE: NTS

DWG. NO.

SD-23



TYPE "A"
PVC PIPE C-900



TYPE "B"
A.C. OR D.I. PIPE

NOTES:

1. STAMP CURB WITH "W" FOR LATERAL LOCATION.
2. METER BOX LOCATION PER SD-13 & SD-14.
3. ALL METER BOXES SHALL BE STAKED FOR LOCATION AND ELEVATION.
4. NO DIPS OR POCKETS IN LATERAL WILL BE ALLOWED.
5. SEE SD-13 FOR METER BOX AND COMPONENTS.
6. ALL BARE IRON & STEEL SHALL BE COATED WITH CEMENT MORTAR.
7. SERVICE SADDLE TO HAVE A MIN. 12" SEPARATION FROM ANY PIPE JOINTS UNLESS OTHERWISE APPROVED BY TPWD.
8. METER BOXES SHALL BE PLACED IN LAWN OR PLANTER AREAS ONLY. METER BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, HANDICAPPED RAMPS, ETC.
9. MINIMUM 5'-0" SEPARATION BETWEEN WATER AND SEWER LATERALS AND BETWEEN WATER.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

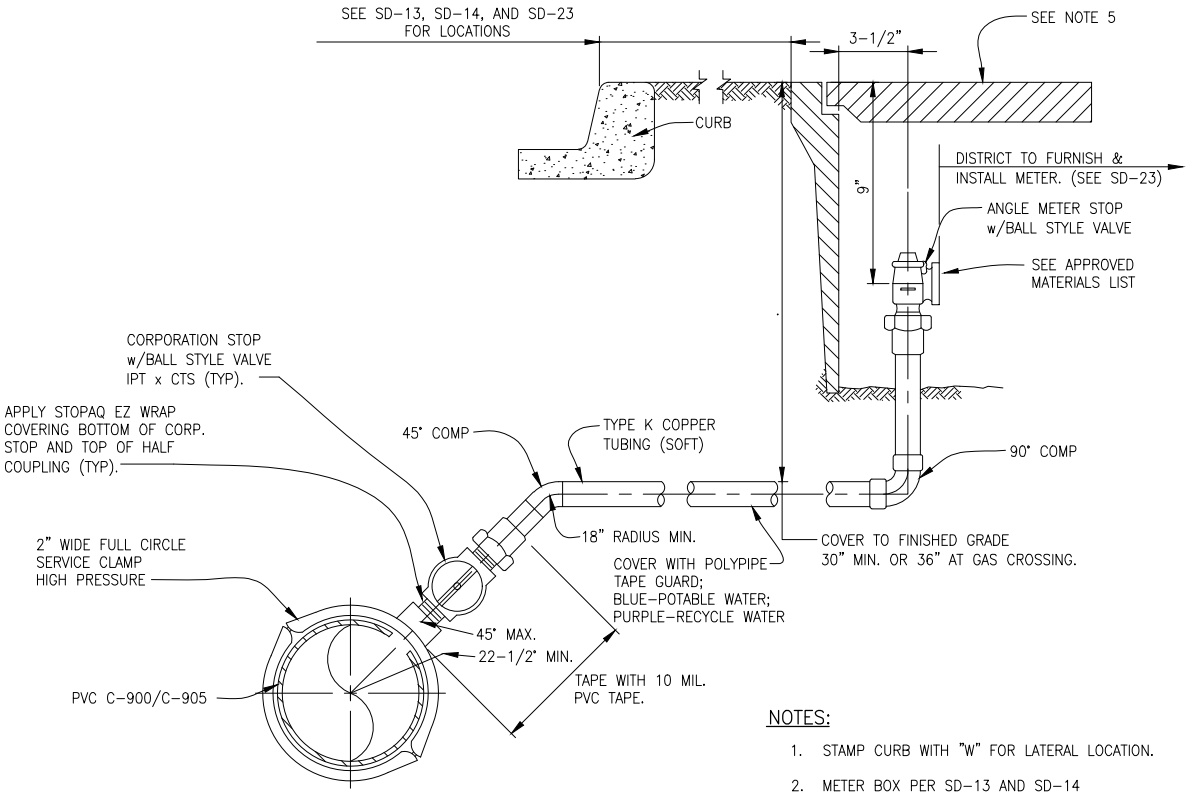
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
3/4" AND 1" WATER SERVICE LATERAL (COPPER)

SCALE: NTS

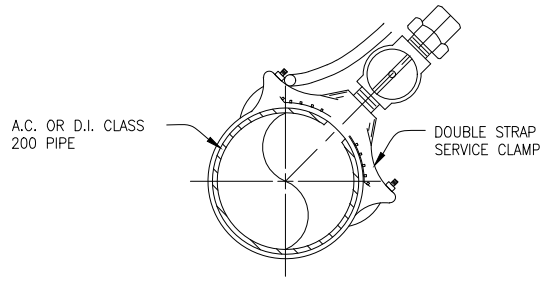
DWG. NO.

SD-24



TYPE "A"

PVC PIPE C-900



TYPE "B"

A.C. OR D.I. PIPE

NOTES:

1. STAMP CURB WITH "W" FOR LATERAL LOCATION.
2. METER BOX PER SD-13 AND SD-14
3. ALL METER BOXES SHALL BE STAKED FOR LOCATION AND ELEVATION.
4. NO DIPS OR POCKETS IN LATERAL WILL BE ALLOWED.
5. SEE SD-13 FOR METER BOX AND COMPONENTS.
6. ALL BARE IRON & STEEL SHALL BE COATED WITH CEMENT MORTAR.
7. SERVICE SADDLE TO HAVE A MIN. 12" SEPARATION FROM ANY PIPE JOINTS UNLESS OTHERWISE APPROVED BY RCWD.
8. METER BOXES SHALL BE PLACED IN LAWN OR PLANTER AREAS. METER BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, HANDICAPPED RAMPS.
9. MINIMUM 5'-0" SEPARATION BETWEEN WATER AND SEWER LATERALS AND BETWEEN WATER AND RECYCLED WATER LATERALS.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

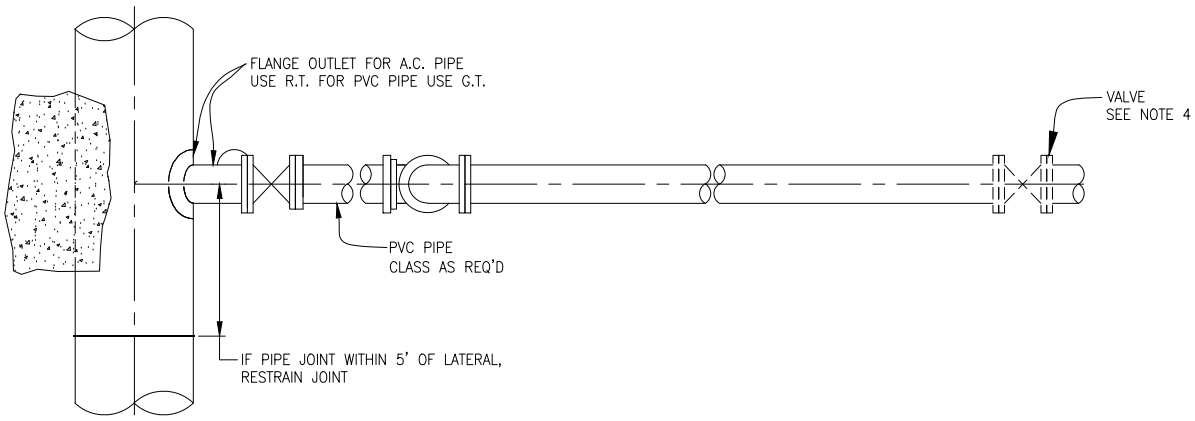
STANDARD DRAWING

1 1/2" & 2" WATER SERVICE LATERAL (COPPER)

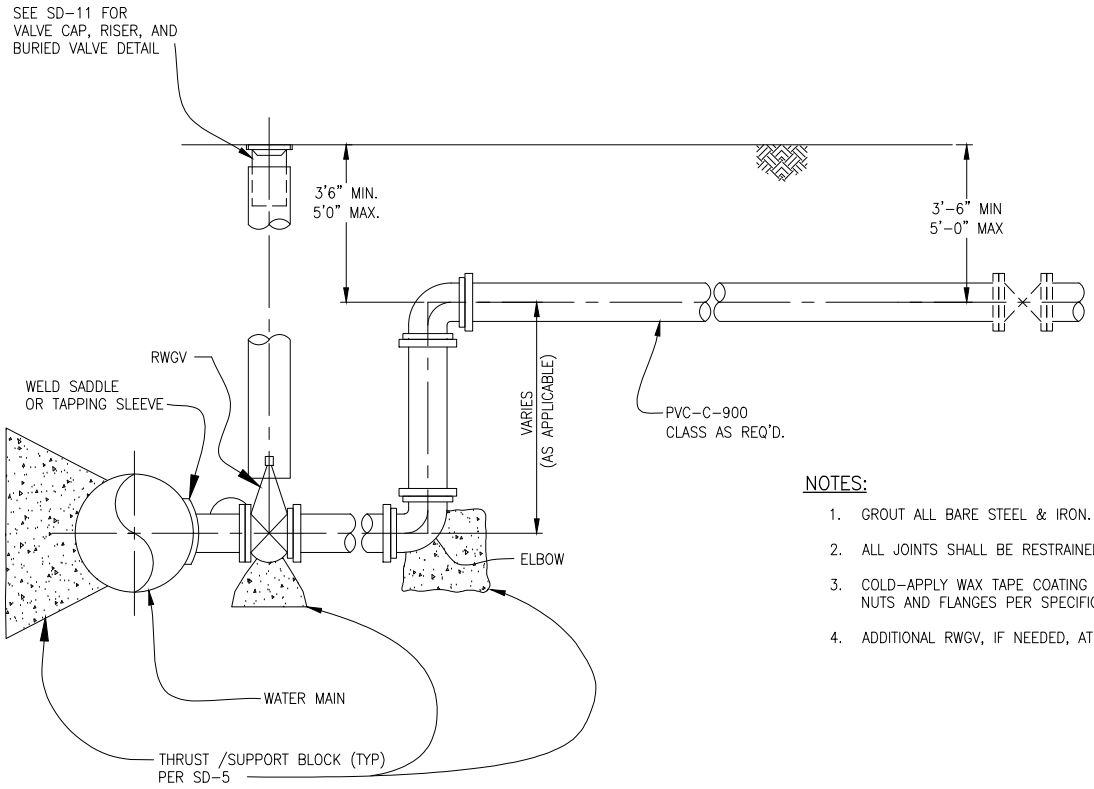
SCALE: NTS

DWG. NO.

SD-25



PLAN



PROFILE

NOTES:

1. GROUT ALL BARE STEEL & IRON.
2. ALL JOINTS SHALL BE RESTRAINED.
3. COLD-APPLY WAX TAPE COATING TO ALL BOLTS, NUTS AND FLANGES PER SPECIFICATIONS.
4. ADDITIONAL RWGV, IF NEEDED, AT TPWD DISCRETION.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

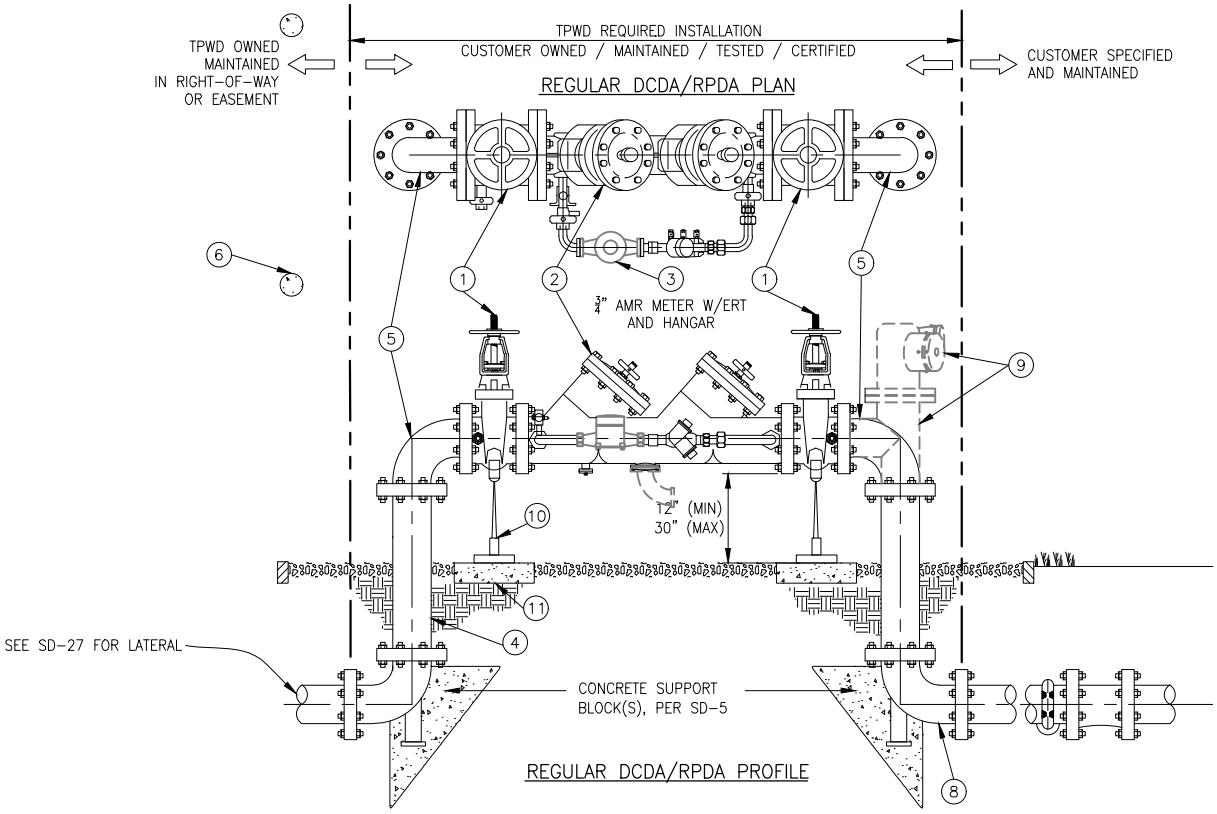
STANDARD DRAWING

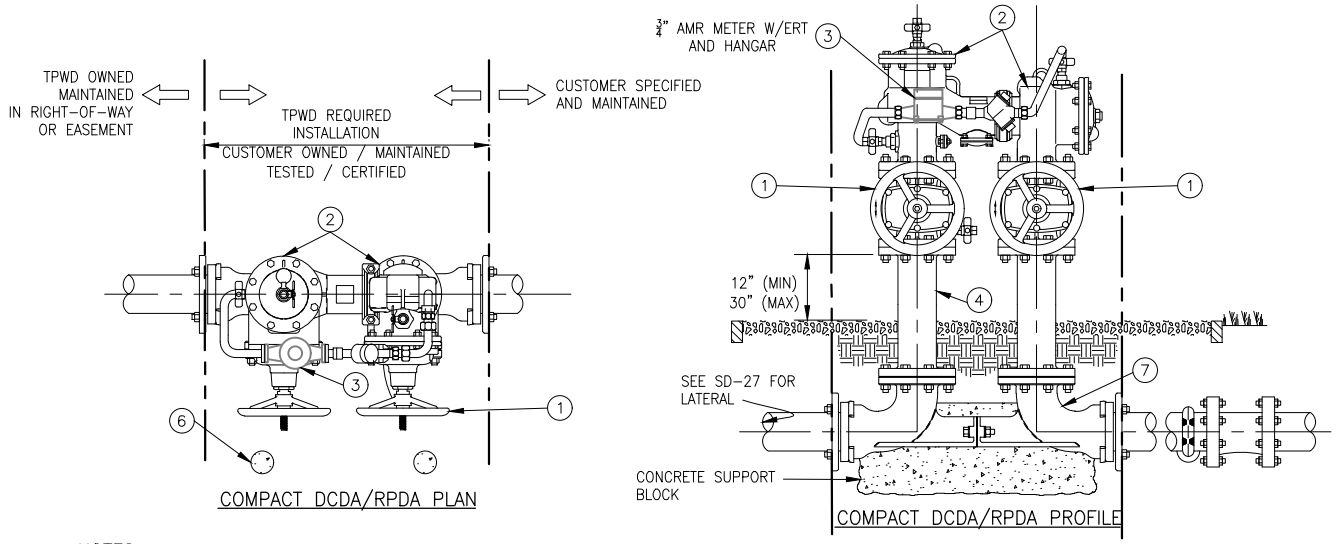
PVC SERVICE LATERAL
(4", 6", 8", AND 12")

SCALE: NTS

DWG. NO.

SD-26





NOTES:

1. D.I. PIPE TO BE USED ON ALL VERTICAL RISERS AND 90° ELBOWS.
2. IF LANDSCAPING IS PROPOSED, IT SHALL BE PLACED A MINIMUM OF 3' FROM THE DCDA/RPDA ASSEMBLY.
3. EASEMENT REQUIRED IF DCDA/RPDA ASSEMBLY ENCROACHES ONTO PRIVATE PROPERTY.
4. RESTRAIN ALL JOINTS ABOVE GROUND.
5. APPROPRIATE TEST COCKS SHALL BE IN PLACE AT ALL TIMES.
6. TPWD SHALL HAVE UNOBSTRUCTED ACCESS TO DCDA/RPDA DEVICE.
7. REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA) MAY BE REQUIRED IF SITE IS IRRIGATED WITH RECYCLED WATER AND AT THE TPWD'S DISCRETION.

NO.	DESCRIPTION	QTY.
1	O.S. & Y. VALVES WITH LOCK AND CHAIN	2
2	USC/FM/UL APPROVED DOUBLE CHECK/REDUCED PRESSURE DETECTOR ASSEMBLY (DEVICE)	1
3	BY-PASS METER – PROVIDED AND INSTALLED BY TPWD	1
4	DUCTILE IRON – AS REQ'D	AS REQ.
5	DUCTILE IRON 90° ELBOW, SEE NOTE 8	2
6	GUARD POSTS PER SD-14	2
7	DEVICE SETTING ELBOWS (SUPPLIED BY DEVICE MANUFACTURER)	2
8	90° BASE BENDS	2
9	DUCTILE IRON TEE & FIRE DEPARTMENT CONNECTION (OPTIONAL – AS APPROVED BY FIRE DEPARTMENT)	1
10	VALVE SUPPORTS, SEE DETAIL ON SD-29	2
11	CONCRETE PAD, 12"x12"x6"	2

* ABOVE GROUND DCDA ASSEMBLY REQUIRED. BELOW GROUND DCDA INSTALLATION REQUIRES SPECIAL APPROVAL BY TPWD.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

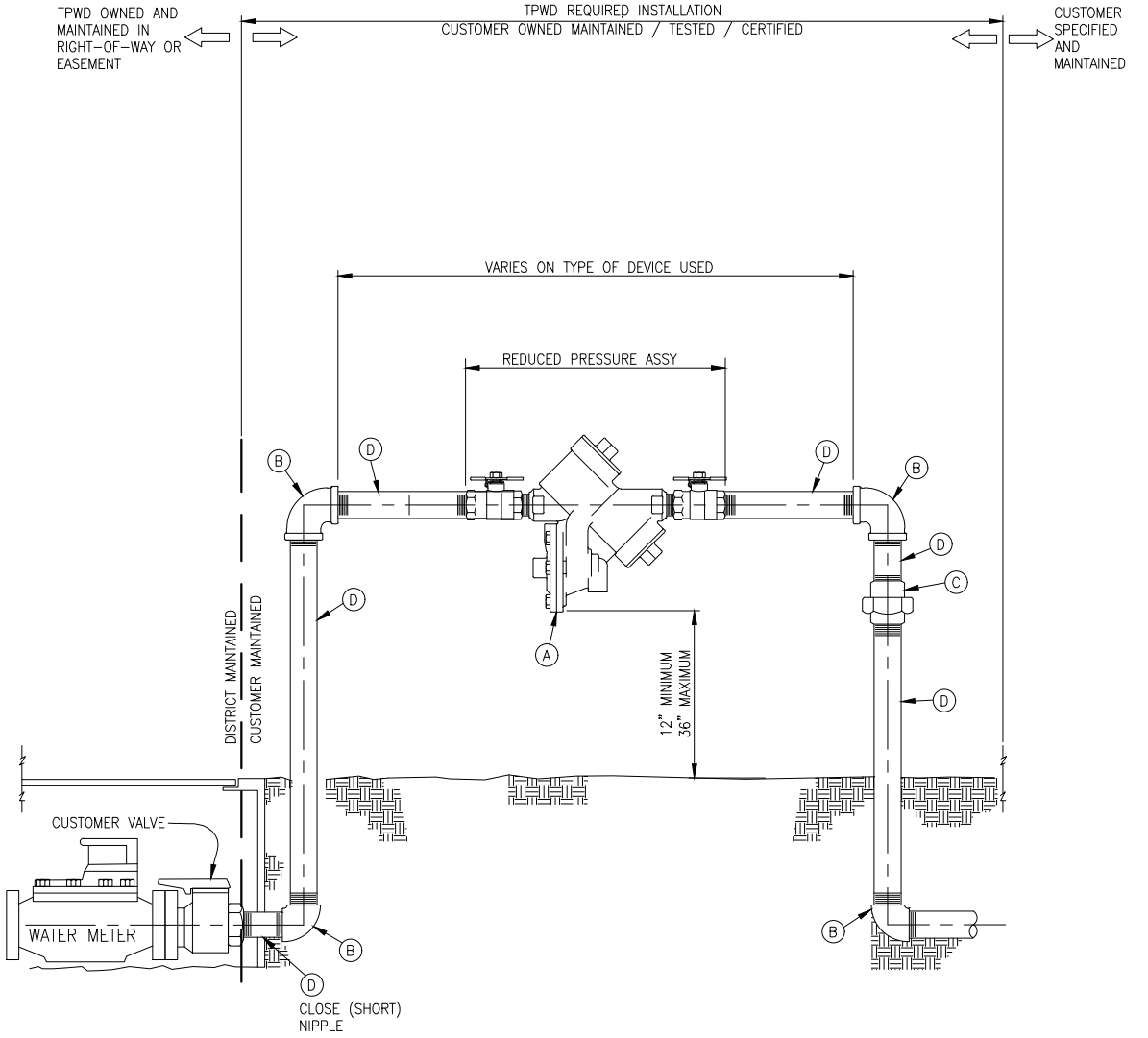
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING

FIRE SERVICE & BACKFLOW PREVENTION ASSEMBLY (DCDA OR RPDA)

SCALE: NTS

DWG. NO. SD-27



NOTES:

1. ALL INSTALLATIONS SHALL BE ABOVE GROUND.
2. ALL BACKFLOW PREVENTION DEVICES SHALL BE IMMEDIATELY ADJACENT TO THE WATER METER UNLESS APPROVED BY TPWD PRIOR TO INSTALLATION.
3. THE BACKFLOW PREVENTION DEVICE SHALL BE SELECTED FROM THE APPROVED USC LIST ON FILE WITH TPWD.
4. NO CONNECTIONS SHALL BE MADE BETWEEN THE WATER METER AND THE BACKFLOW DEVICE.
5. TYPE OF BACKFLOW PREVENTION DEVICE SHALL BE BASED ON THE DEGREE OF HAZARD. AS DETERMINED BY TPWD.
6. APPROPRIATE TEST COCKS SHALL BE IN PLACE AT ALL TIMES.
7. TPWD SHALL HAVE ACCESS TO BACKFLOW PREVENTION DEVICE FOR THE INITIAL CERTIFICATION TEST.
8. REFER TO APPLICABLE STANDARD DRAWINGS FOR INSTALLATION OF WATER METER & SERVICE.
9. NIPPLES SHALL BE BRASS, COPPER, OR GALVANIZED STEEL. (NO PVC)

MATERIALS

- (A) BACKFLOW PREVENTION DEVICE (U.S.C. APPROVED)
- (B) 90° ELBOW
- (C) UNION (THREADED UNION RECOMMENDED FOR REMOVAL AND REPAIR OF DEVICE)
- (D) PIPE/NIPPLE VARIES IN LENGTH (SEE NOTE NO. 9)

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

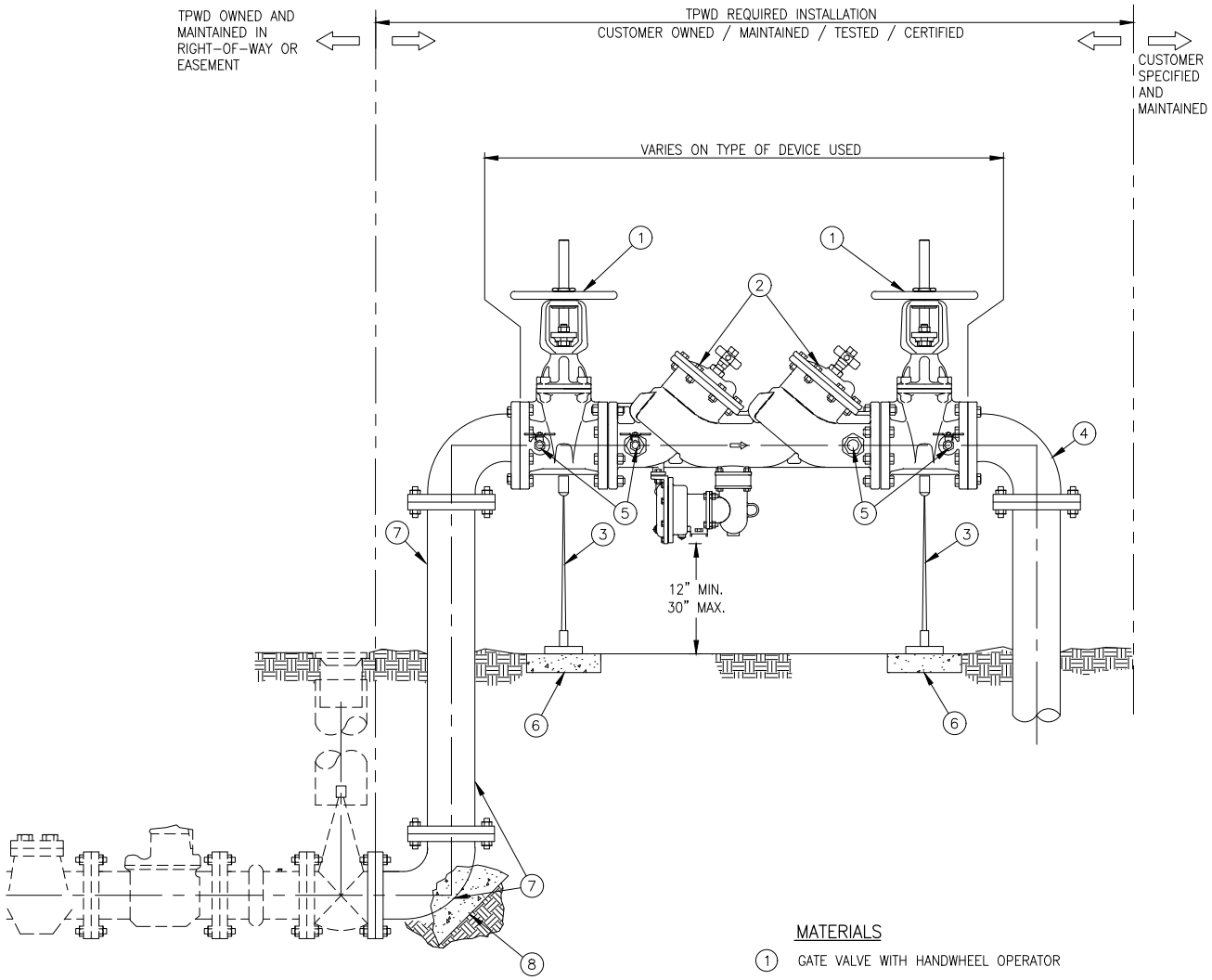
STANDARD DRAWING

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (2" & SMALLER)

SCALE: NTS

DWG. NO.

SD-28



NOTES

A. ALL INSTALLATIONS SHALL BE ABOVE GROUND.

B. ALL BACKFLOW PREVENTION DEVICES SHALL BE IMMEDIATELY ADJACENT TO THE WATER METER.

C. THE BACKFLOW PREVENTION DEVICE SHALL BE SELECTED FROM THE U.S.C. APPROVED LIST ON FILE WITH TPWD.

D. NO CONNECTIONS SHALL BE MADE BETWEEN THE WATER METER AND THE BACKFLOW PREVENTION DEVICE.

E. TYPE OF BACKFLOW PREVENTION DEVICE SHALL BE BASED ON THE DEGREE OF HAZARD. AS DETERMINED BY TPWD.

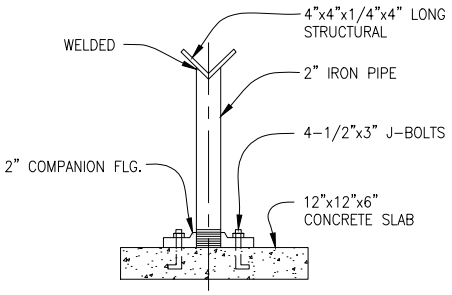
F. APPROPRIATE TEST COCKS SHALL BE IN PLACE AT ALL TIMES.

G. TPWD SHALL HAVE UNOBSTRUCTRUCTED ACCESS TO BACKFLOW PREVENTION DEVICE.

H. REFER TO APPLICABLE TPWD STANDARD DRAWINGS FOR INSTALLATION OF WATER METER & SERVICE.

MATERIALS

1. GATE VALVE WITH HANDWHEEL OPERATOR
2. BACKFLOW PREVENTION DEVICE (U.S.C. APPROVED)
3. VALVE SUPPORTS, SEE DETAIL HEREON
4. 90° DUCTILE IRON ELBOW
5. TEST COCK (4 REQUIRED)
6. CONCRETE PAD, 12"x12"x6"
7. PIPING BETWEEN METER AND BACKFLOW DEVICE SHALL BE DUCTILE IRON OR STEEL (NO PVC).
8. CONCRETE THRUST/SUPPORT BLOCK PER SD-5



VALVE SUPPORT DETAIL

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

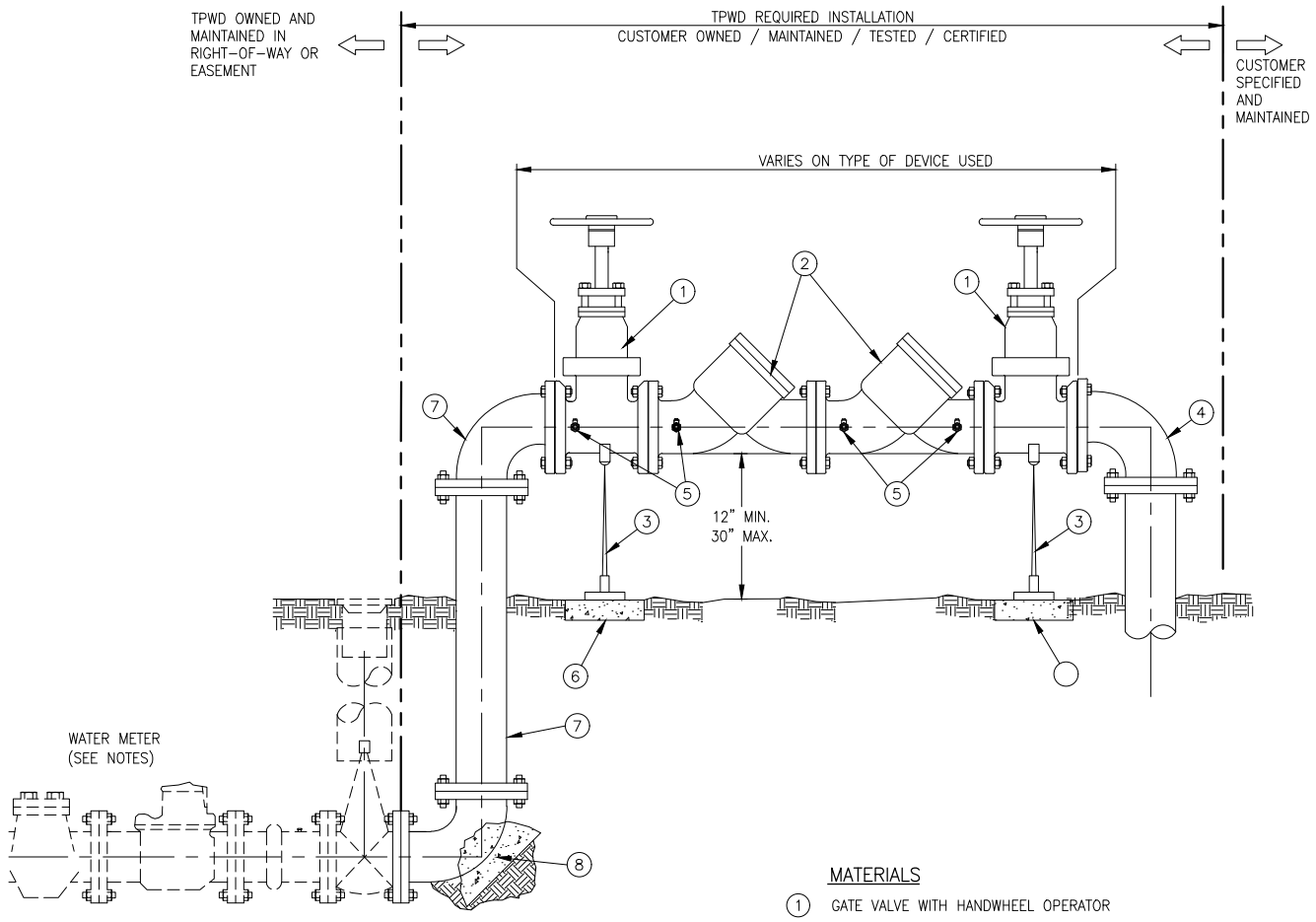
STANDARD DRAWING

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY 3" & LARGER

SCALE: NTS

DWG. NO.

SD-29



NOTES

A. ALL INSTALLATIONS SHALL BE ABOVE GROUND.

B. ALL DOUBLE CHECK BACKFLOW PREVENTION DEVICES SHALL BE IMMEDIATELY ADJACENT TO THE WATER METER.

C. THE BACKFLOW PREVENTION DEVICE SHALL BE SELECTED FROM THE U.S.C. APPROVED LIST ON FILE WITH TPWD.

D. NO CONNECTIONS SHALL BE MADE OR EQUIPMENT INSTALLED BETWEEN THE WATER METER AND THE BACKFLOW PREVENTION DEVICE.

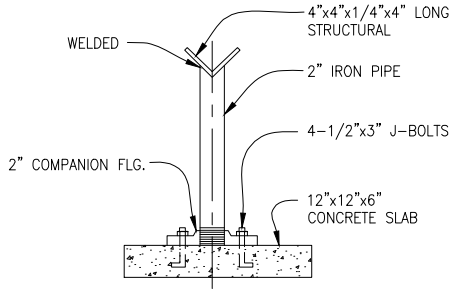
E. APPROPRIATE TEST COCKS SHALL BE IN PLACE AT ALL TIMES.

F. TPWD SHALL HAVE UNOBSTRUCTED ACCESS TO BACKFLOW PREVENTION DEVICE.

G. REFER TO APPLICABLE TPWD STANDARD DRAWINGS FOR INSTALLATION OF WATER METER & SERVICE.

MATERIALS

1. GATE VALVE WITH HANDWHEEL OPERATOR
2. DOUBLE CHECK BACKFLOW PREVENTION DEVICE (U.S.C. APPROVED)
3. VALVE SUPPORT, SEE DETAIL HEREON
4. 90° DUCTILE IRON ELBOW
5. TEST COCK (4 REQUIRED)
6. CONCRETE PAD, 12"x12"x6"
7. PIPING BETWEEN METER AND BACKFLOW DEVICE SHALL BE DUCTILE IRON (NO PVC)
8. CONCRETE THRUST/SUPPORT BLOCK PER SD-5



VALVE SUPPORT DETAIL

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

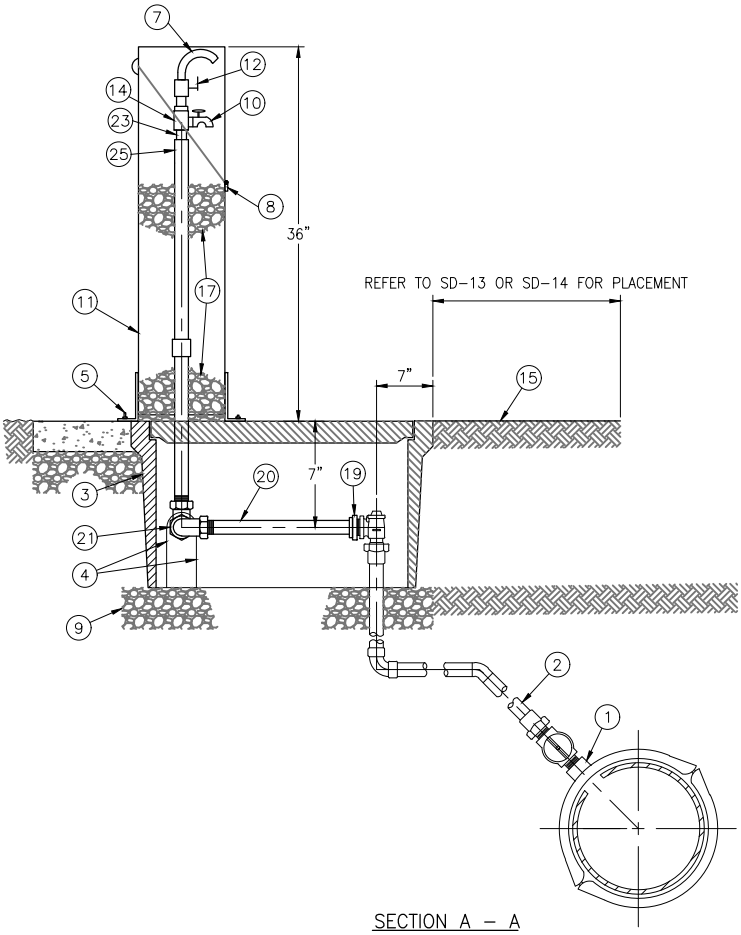
STANDARD DRAWING

DOUBLE CHECK BACKFLOW PREVENTION DEVICE (3" & LARGER)

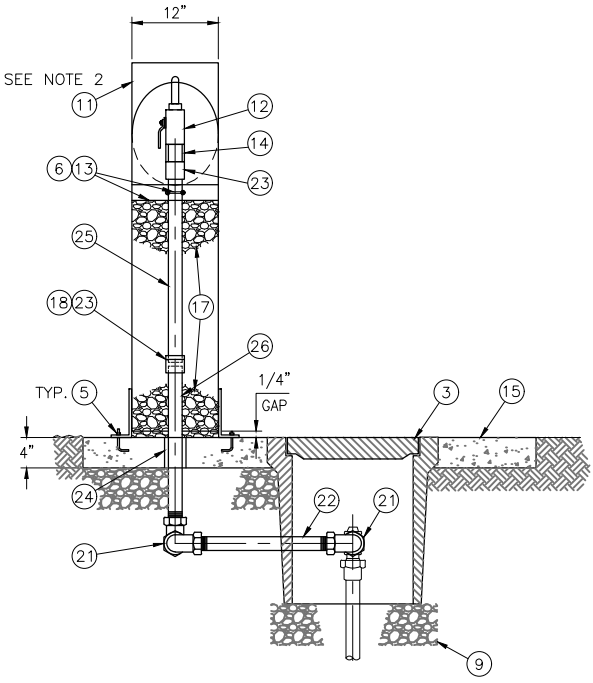
SCALE: NTS

DWG. NO.

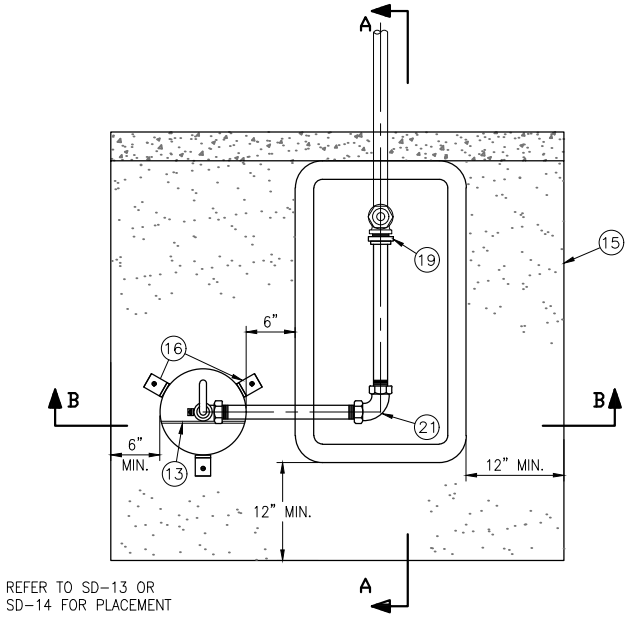
SD-30



SECTION A – A



SECTION B – B



PLAN

NO.	DESCRIPTION	QTY..
1	1" SERVICE CONNECTION PER SD-24	1
2	1" TYPE "K" COPPER TUBING PER SD-24	1
3	CONCRETE METER BOX WITH READING LID (15" x 21" x 12")	1
4	SAWCUT OR CORE DRILL FOR 1" PIPE	1
5	⅜" DIA X 4" LONG STAINLESS STEEL J ANCHOR BOLT CAST IN SLAB (3 EACH AT 120° APART WITH STAINLESS STEEL NUTS AND WASHERS) INSTALL WITH RUBBER GROMMET UNDER ANCHOR CLIPS TO PROVIDE ¼" GAP.	3
6	INTERNAL MOUNT AND STAINLESS STEEL U-BOLT.	1
7	⅜" TYPE "K" SOFT COPPER SPIGOT BEND TO 120° FOR DOWNWARD OPENING.	1
8	LOCKING HASP ASSEMBLY FOR 5H08 PADLOCK	1
9	¾" CRUSHED ROCK PLACE TO DEPTH 6" BELOW CONCRETE METER BOX	–
10	STD. HOSE BIBB	1
11	STD. STEEL PIPE 12" DIAMETER x 36" HIGH. W/ HINGED COVER SEE NOTE 3.	1
12	3/8" STAINLESS STEEL TEFLON SEATED BALL VALVE, F.I.P.T. x F.I.T.P. (ORIENT VALVE HANDLE TOWARD FRONT OF SAMPLE STATION).	1
13	1 3/4" WIDE x 3⁄16" THICK STEEL FLAT BAR, WELDED TO INTERIOR OF SAMPLE STATION.	1
14	1" BRASS TEE (M.I.D.T.) W/ 1" x 3/8" BRASS REDUCING BUSHING (TOP).	1 1
15	4" THICK CLASS "B" CONCRETE.	3
16	ANCHOR CLIPS WITH ½" HOLES AT 120° SPACING WELD TO WATER SAMPLE STATION COVER.	–
17	½" PEA GRAVEL.	1
18	1" PVC SCH. 80 COUPLING, F.I.P.T. x F.I.T.P.	1
19	1" METER NUT BY F.I.P.T. ADAPTER.	1
20	1" RED BRASS NIPPLE, T.B.E. 6" LONG.	2
21	1" BRASS 90° BEND F.I.P.T. x F.I.P.T.	1
22	1" RED BRASS NIPPLE, T.B.E. 18" LONG.	2
23	1" WROT COPPER SLIP BY M.I.P.T. ADAPTER.	1
24	2" SCH. 80 PVC SLEEVE.	–
25	1" TYPE "K" RIGID COPPER PIPE.	1
26	1" RED BRASS NIPPLE, T.B.E. 10" LONG.	

NOTES

1. ALL STAINLESS STEEL HARDWARE SHALL BE TYPE 316 ALLOY.
2. REFER TO SD-13 OR SD-14 FOR PLACEMENT AND PAINTING.
3. STENCIL "TPWD DOMESTIC" OR "RECLAIMED" AS DIRECTED BY TPWD.

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

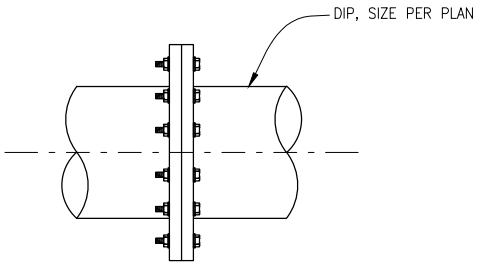
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
WATER QUALITY
SAMPLE STATION

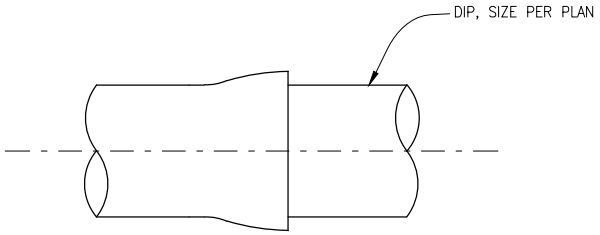
SCALE: NTS

DWG. NO.

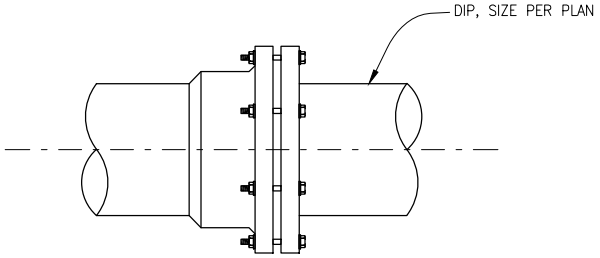
SD-31



FLANGED CONNECTION



PUSH–ON CONNECTION



MECHANICAL JOINT CONNECTION

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

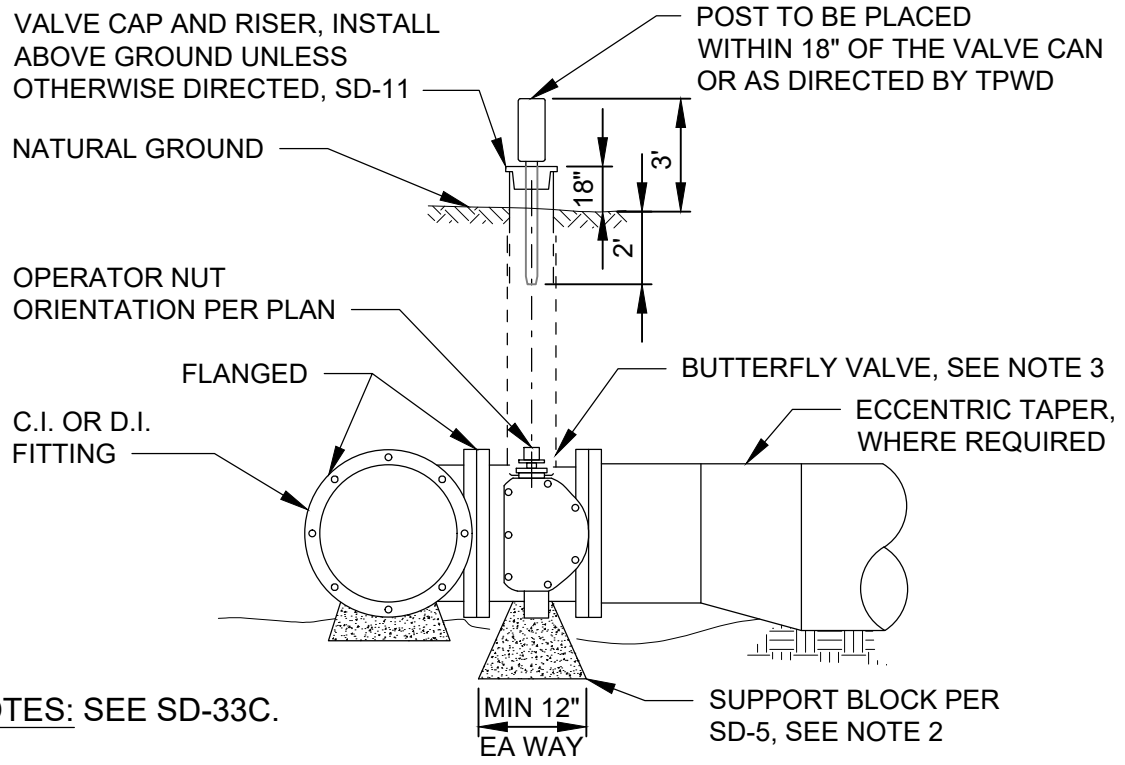
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
DUCTILE IRON
PIPELINE DETAILS

SCALE: NTS

DWG. NO.

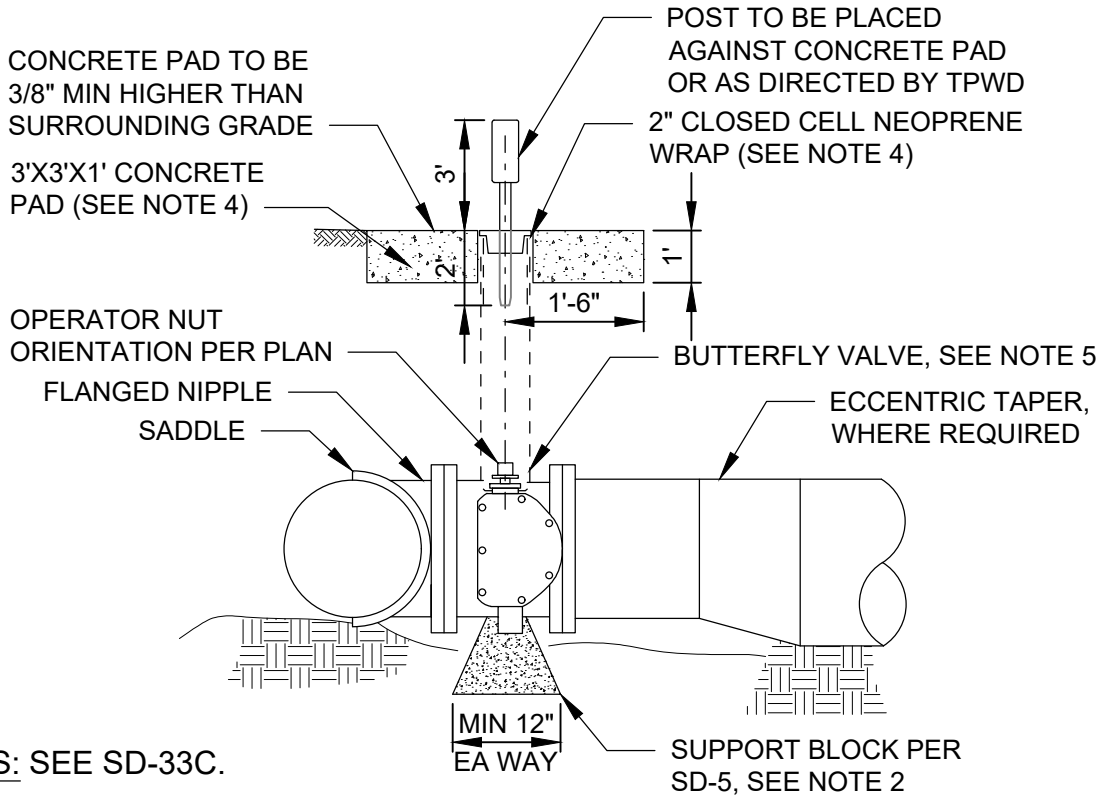
SD–32



NOTES: SEE SD-33C.

C.I. AND D.I. FITTING

SHOWING OPEN FIELD



NOTES: SEE SD-33C.

STEEL PIPE SADDLE OUTLET (NOTE FOR HOT TAP USE)

SHOWING UNIMPROVED ROADWAY

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

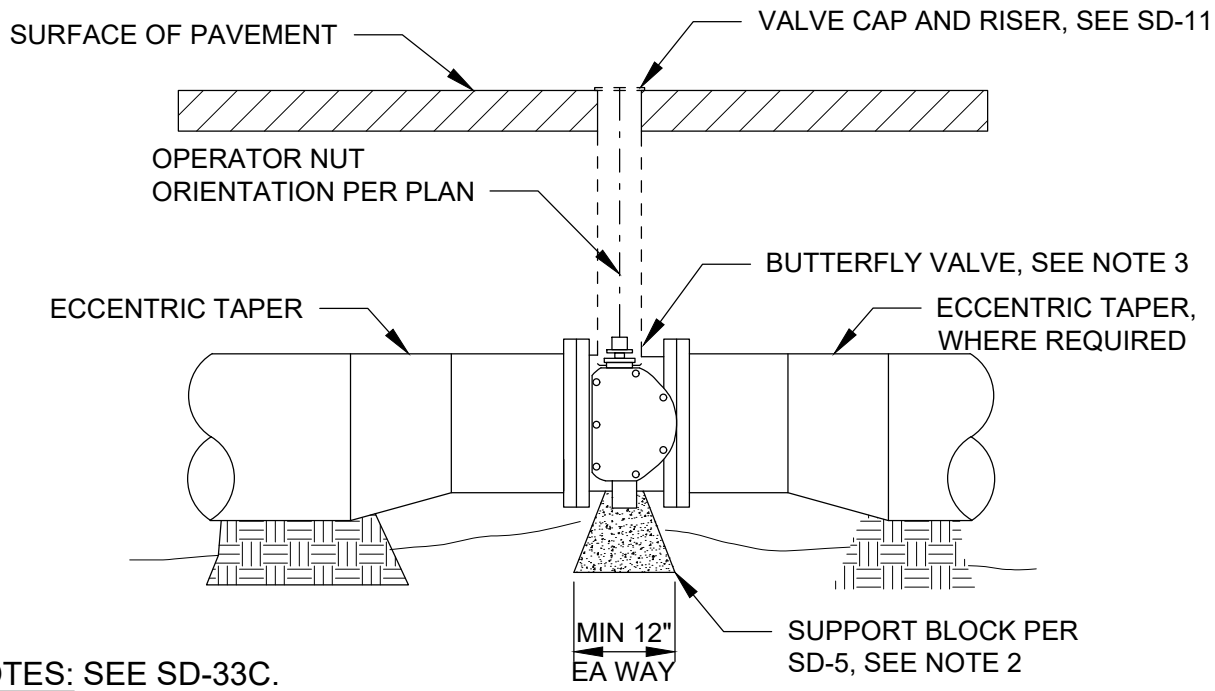
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
BUTTERFLY VALVES INSTALLATION, C.I. AND D.I. FITTING AND STEEL PIPE SADDLE OUTLET

SCALE: NTS

DWG. NO.

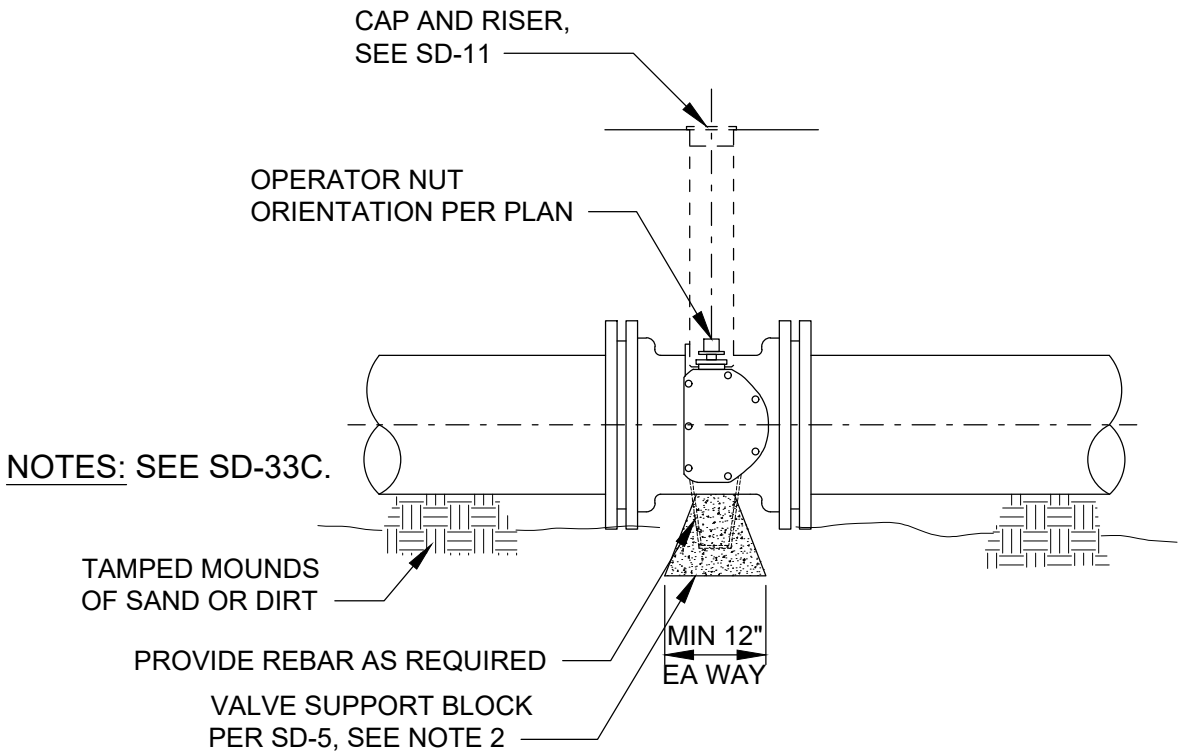
SD-33A



NOTES: SEE SD-33C.

STEEL PIPE IN LINE VALVE

SHOWING PAVED STREET



NOTES: SEE SD-33C.

MECHANICAL JOINT CONNECTIONS (AC, PVC, DI)

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

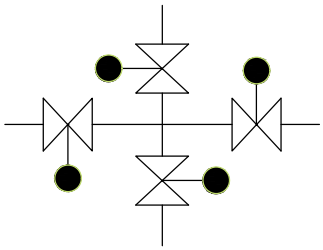
STANDARD DRAWING
BUTTERFLY VALVES
INSTALLATION,
STEEL PIPE IN LINE VALVE
AND MJ CONNECTIONS

SCALE: NTS

DWG. NO.

SD-33B

VALVE OPERATOR NOT TO BE PLACED COUNTER CLOCKWISE OF VALVE



PLAN

SCALE: NTS

NOTES:

1. FLEXIBLE JOINTS IN PIPELINES FROM VALVES OR IN BRANCH LINES SHALL BE WELDED OR RESTRAINED TO PROVIDE ANCHORAGE FOR UNBALANCED FORCES.

2. CONCRETE SUPPORTS TO AVOID INTERFERENCE WITH BOLTED OR HUB END CONNECTIONS AND SHALL BE POURED AGAINST UNDISTURBED EARTH.

3. USE VICTAULIC COUPLING ONLY IF REQUIRED BY THE ENGINEER OR IF SPECIFICALLY NOTED ON THE PLANS.

4. CONCRETE PAD SHALL BE OF CLASS "A" CONCRETE 3000 PSI.
   A. CLOSED CELL NEOPRENE PER ASTM D-1056, D-1667a & D-412;
      - COMPRESSION RESISTANCE = 5-13 PSI
      - 50% COMPRESSION SET = 25%
      - DENSITY = 15-30 LBS/FT^3
      - WATER ABSORPTION = 0.1 MAX LBS/FT^2
      - TENSILE = 150 MIN. PSI
      - ELONGATION = 350 MIN. %

REVISION NO.	DATE

APPROVED: (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

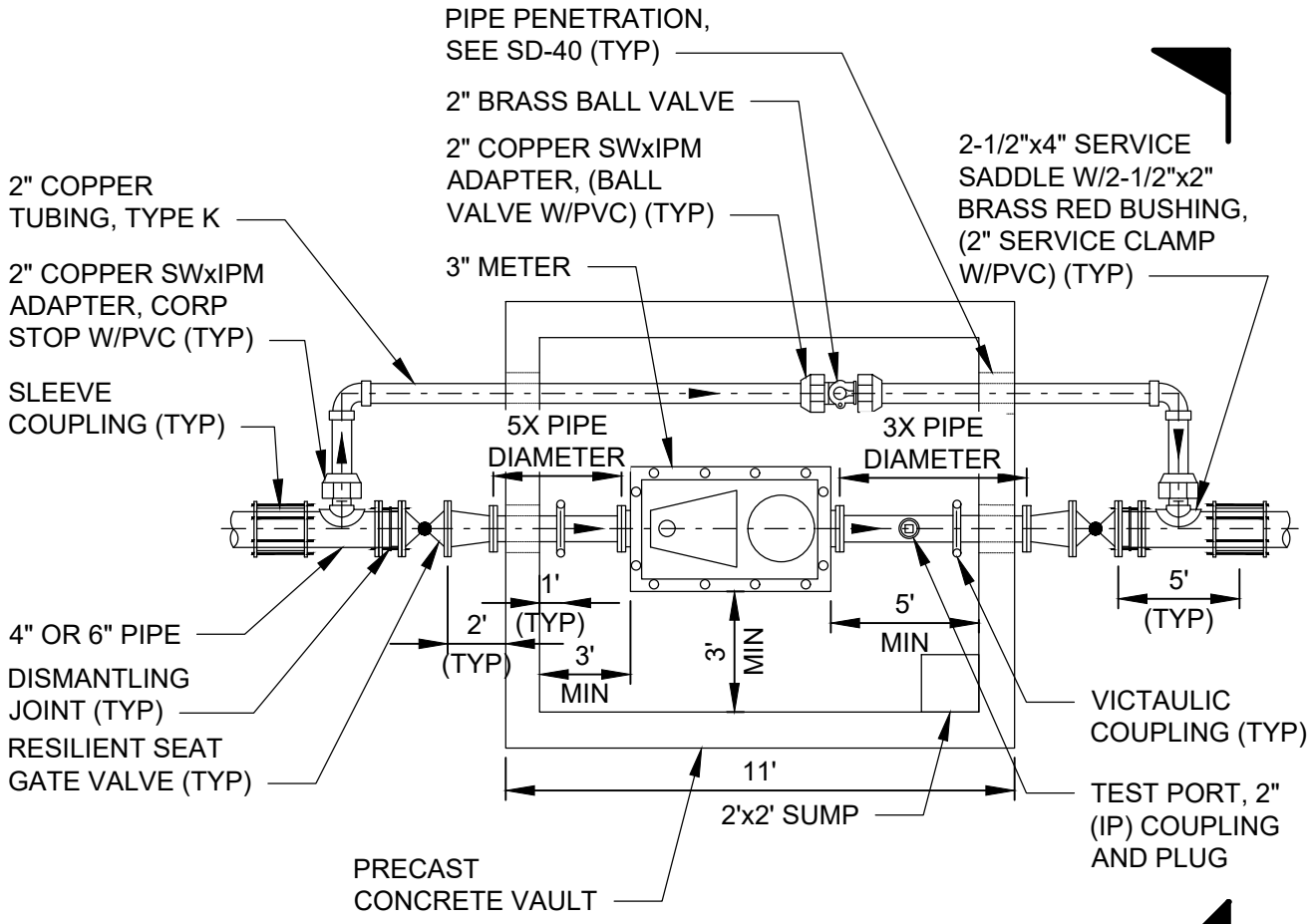
STANDARD DRAWING

BUTTERFLY VALVES INSTALLATION, GENERAL

SCALE: NTS

DWG. NO.

SD-330



NOTES: SEE SD-34E.

A
SD-34E

PLAN

SCALE: NTS

METER TABLE

METER SIZE	FLOW RATE (GPM)	LATERAL SIZE	VELOCITY (FT/S)	METER LENGTH
3" OMNI C2	400	4"	8.4	17"
3" OMNI T2	500	4"	10.6	19"
3" OCTAVE	500	4"	10.6	12"
3" OMNI C2	400	6"	4.1	17"
3" OMNI T2	500	6"	5.1	19"
3" OCTAVE	500	6"	5.1	12"

REVISION NO.	DATE

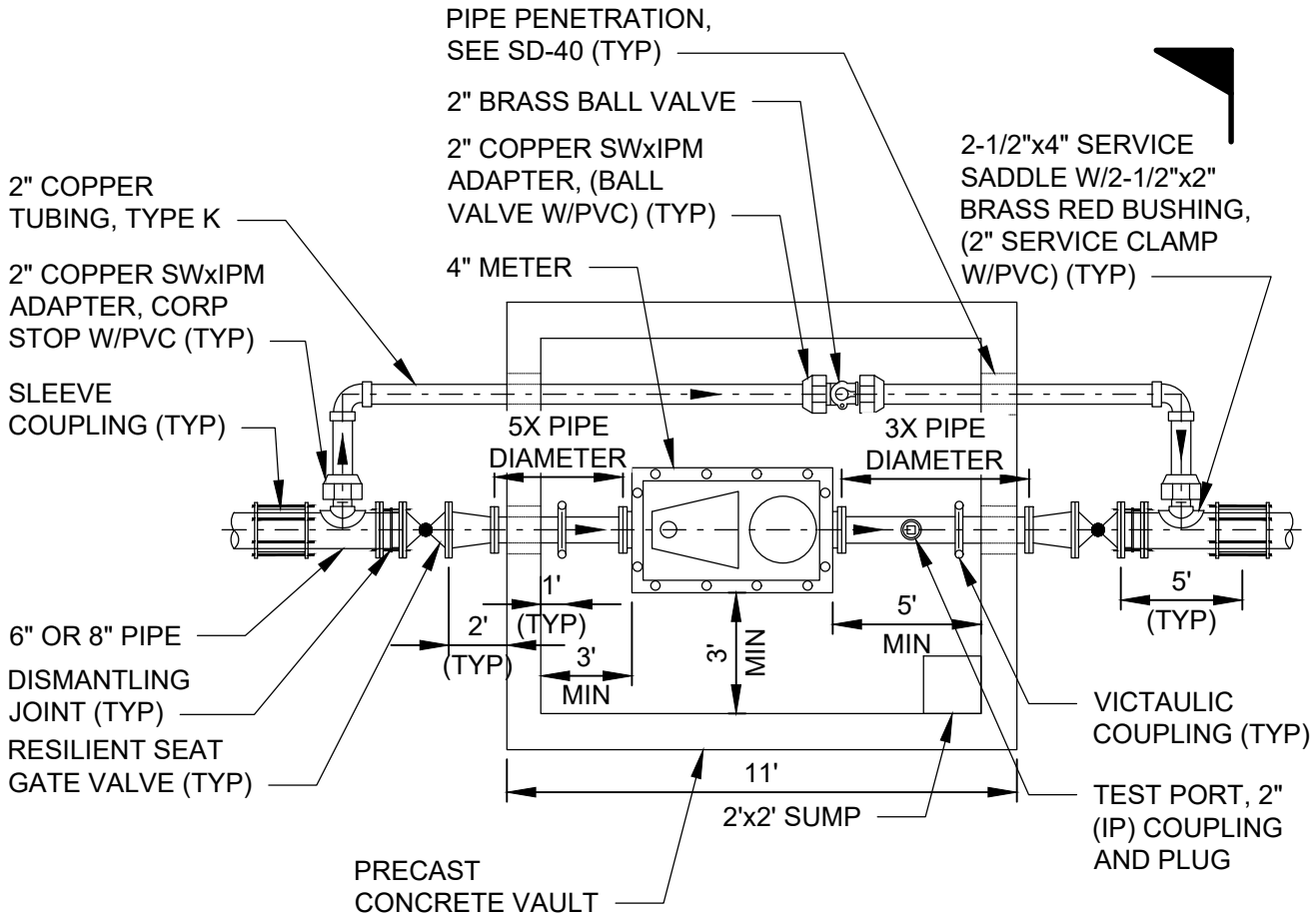
APPROVED: (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
METER INSTALLATION, 3"

SCALE: NTS
DWG. NO. SD-34A



NOTES: SEE SD-34E.

PLAN

SCALE: NTS

A
SD-34E

METER TABLE

METER SIZE	FLOW RATE (GPM)	LATERAL SIZE	VELOCITY (FT/S)	METER LENGTH
4" OMNI C2	800	6"	8.2	20"
4" OMNI T2	1000	6"	10.2	23"
4" OCTAVE	1000	6"	10.2	14"
4" OMNI C2	800	8"	4.8	20"
4" OMNI T2	1000	8"	5.9	23"
4" OCTAVE	1000	8"	5.9	14"

REVISION NO.	DATE

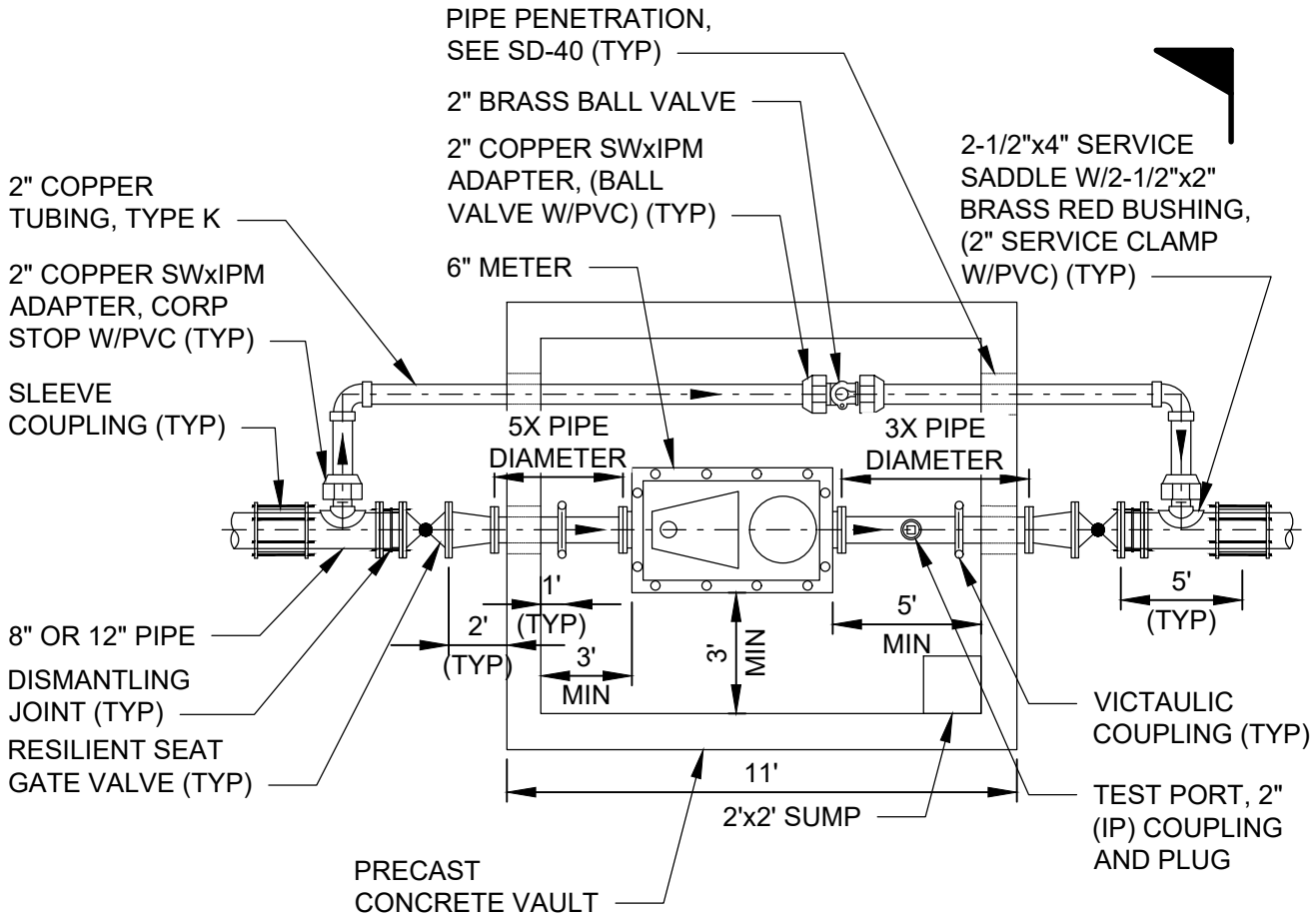
APPROVED: (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
METER INSTALLATION, 4"

SCALE: NTS
DWG. NO.
SD-34B



NOTES: SEE SD-34E.

PLAN

SCALE: NTS

A
SD-34E

METER TABLE

METER SIZE	FLOW RATE (GPM)	LATERAL SIZE	VELOCITY (FT/S)	METER LENGTH
6" OMNI C2	1600	8"	9.5	24"
6" OCTAVE	1600	8"	9.5	18"
6" OMNI C2	1600	12"	4.5	24"
6" OCTAVE	1600	12"	4.5	18"
6" OMNI T2	2000	12"	5.6	27"

REVISION NO.	DATE

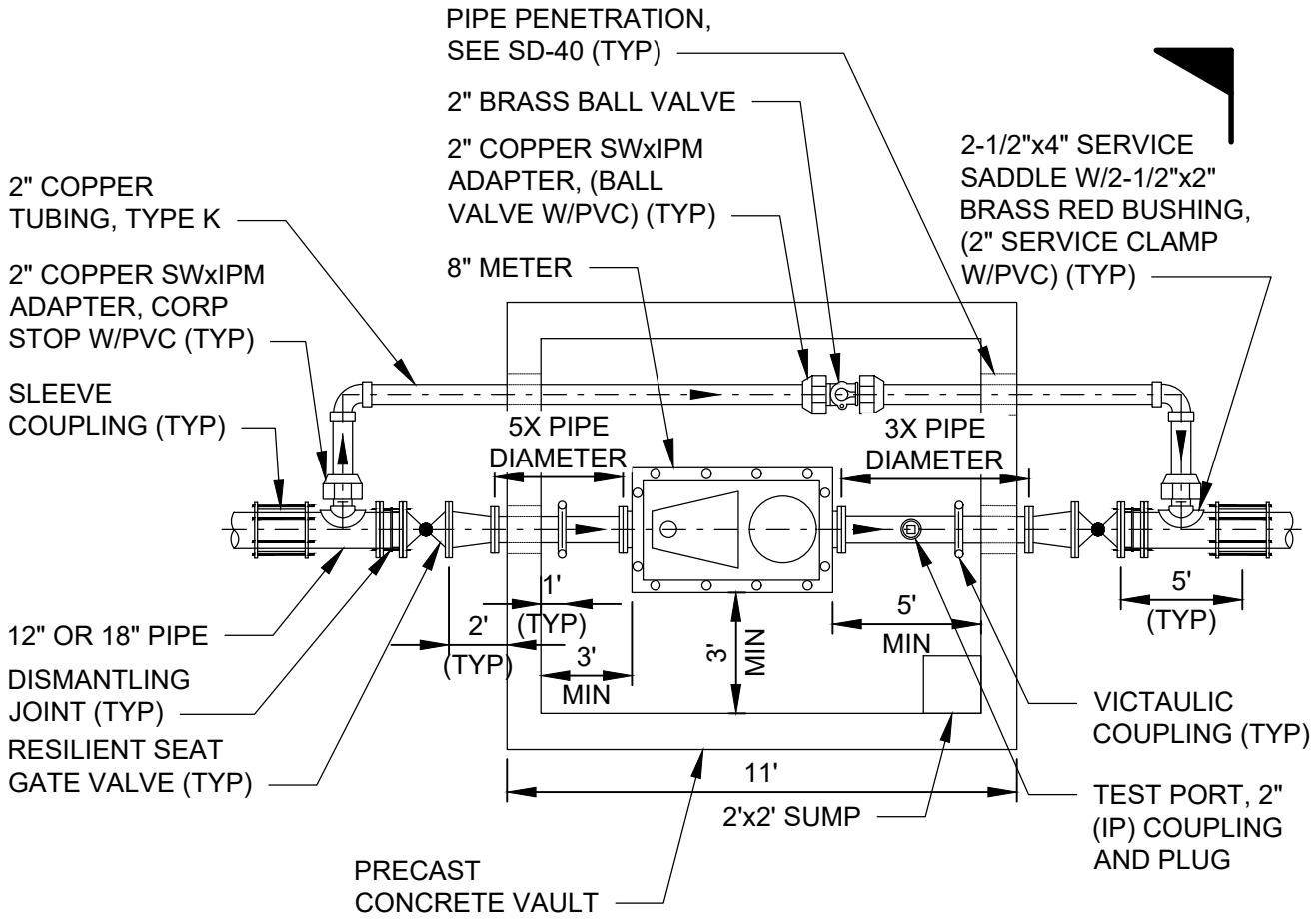
APPROVED: (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
METER INSTALLATION, 6"

SCALE: NTS
DWG. NO.
SD-340



NOTES: SEE SD-34E.

PLAN

SCALE: NTS

A
SD-34E

METER TABLE

METER SIZE	FLOW RATE (GPM)	LATERAL SIZE	VELOCITY (FT/S)	METER LENGTH
8" OMNI C2	2700	12"	7.5	30-1/8"
8" OCTAVE	2800	12"	7.8	20"
8" OMNI T2	3500	12"	9.8	30-1/8"
8" OMNI C2	2700	18"	3.4	30-1/8"
8" OCTAVE	2800	18"	3.6	20"
8" OMNI T2	3500	18"	4.4	30-1/8"

REVISION NO.	REVISION DATE

APPROVED: (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
METER INSTALLATION, 8"

SCALE: NTS

DWG. NO.
SD-34D

NOTES:

1. PROVIDE SUPPORTS AS REQUIRED.

2. IF VAULT IS PLACED IN DIRT/LANDSCAPE, PLACE TOP 4" ABOVE GRADE AND GRADE AWAY FROM VAULT TO PREVENT WATER FROM ENTERING.

3. WHEN VAULT IS PLACED IN HIGH LOAD OR TRAFFIC PRONE AREAS, VAULT AND LID SHALL BE ABLE TO WITHSTAND AASHTO H-20 VEHICULAR LOADS.

4. VAULT LIDS SHALL HAVE SPRING ASSIST FOR BOTH LIDS.

5. VAULT SHALL BE A MINIMUM OF 3' DEEP AND A MAXIMUM OF 5' DEEP WHERE FEASIBLE.

PLACEMENT OF METER VAULT

A. PLACE FRONT EDGE OF VAULT 6" BEHIND EXISTING OR PROPOSED 6' OR 8' SIDEWALKS.

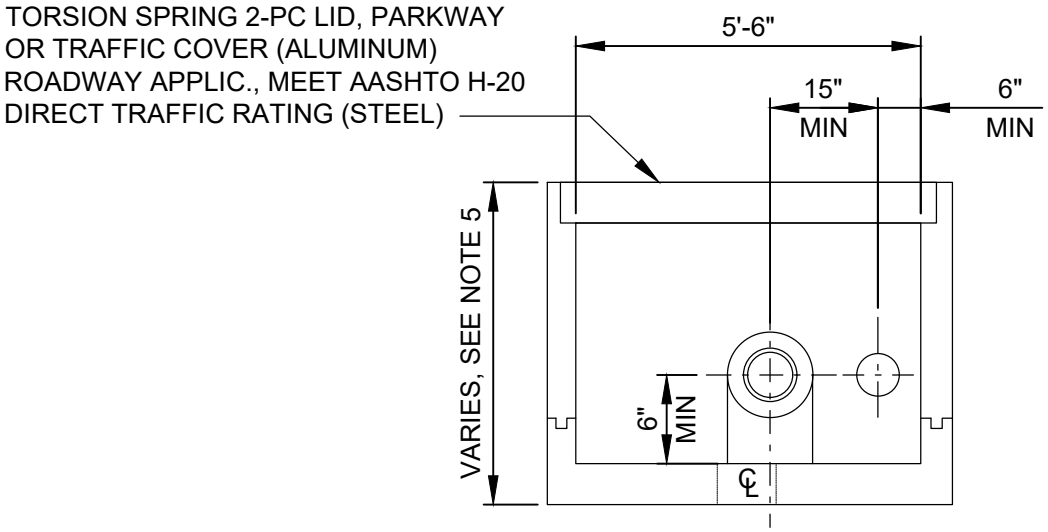
B. WHEN PROPOSED OR EXISTING SIDEWALKS IS 12' WIDE, PLACE FRONT EDGE OF VAULT 1.5' BEHIND CURB USING APPROPRIATE BOX.

C. WHEN NO SIDEWALK IS PROPOSED, PLACE FRONT EDGE OF VAULT 6.5' BEHIND CURB.

D. WHEN NO CURBS ARE EXISTING OR TO BE INSTALLED UPON COMPLETION OF THE WATER SYSTEM, PLACE BACK EDGE OF VAULT ON PROPERTY LINE.

E. WHEN INSTALLED IN CONCRETE (SIDEWALK), USE COVER ASSEMBLY THAT AVOIDS TRIPPING HAZARDS, AND WHICH INCLUDES READING LID.

F. A MINIMUM 5' SEPARATION IS TO BE MAINTAINED BETWEEN THE SEWER LATERAL, WATER SERVICE, AND RECYCLED WATER SERVICE.



A SECTION
VARIES SCALE: NTS

REVISION NO.	DATE

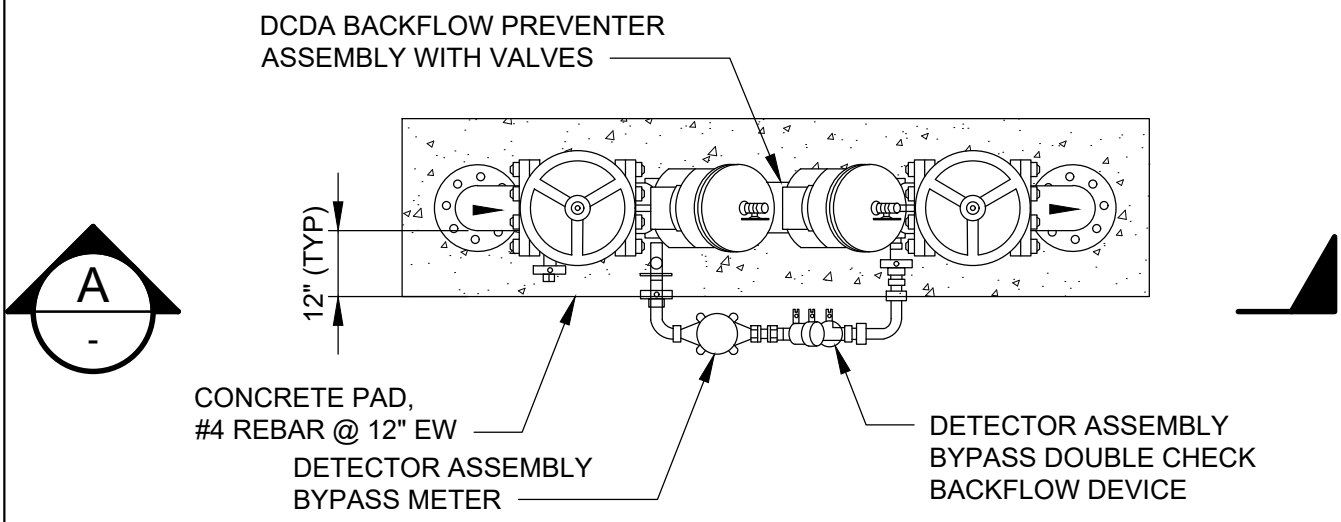
APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
METER INSTALLATION, GENERAL

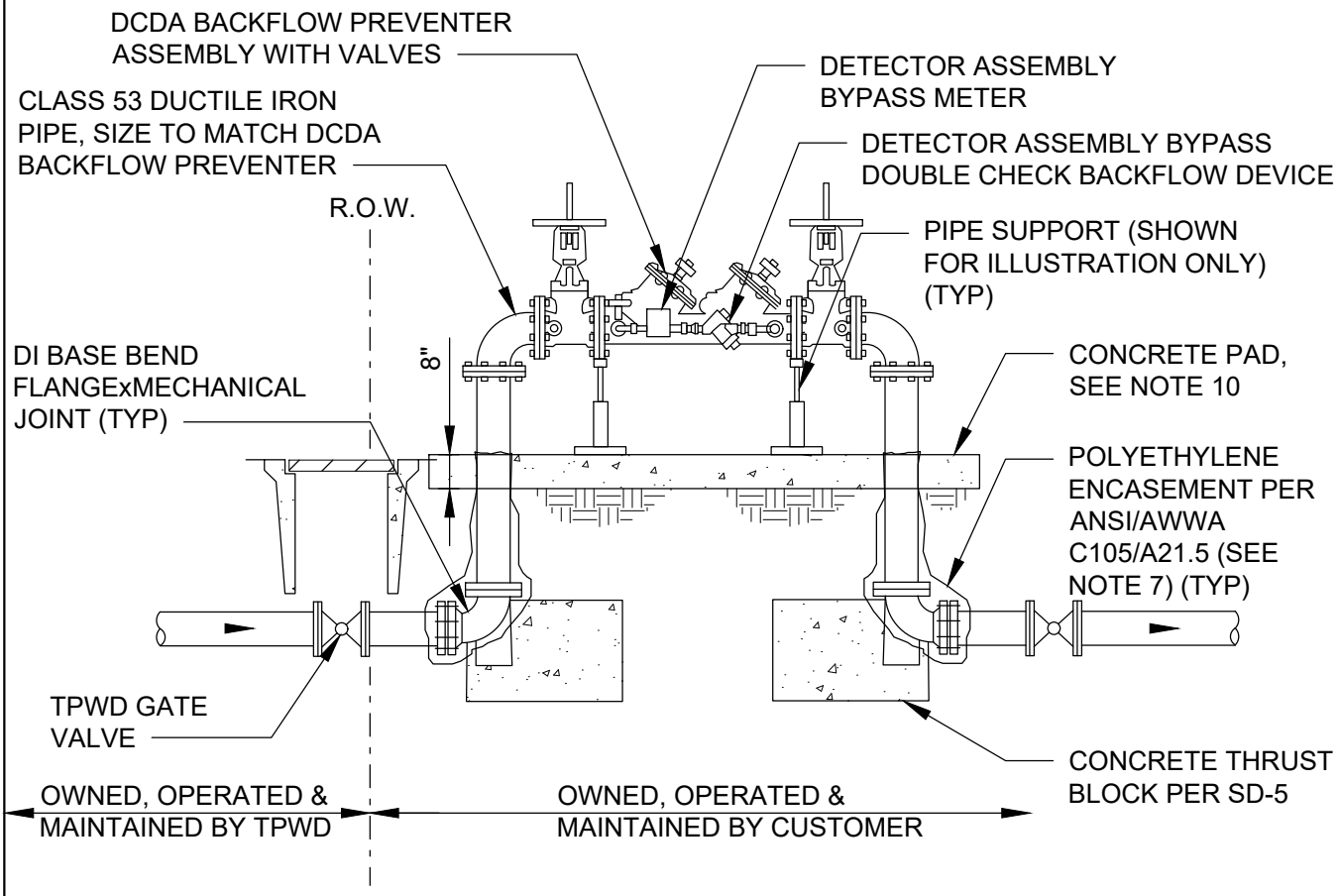
SCALE: NTS
DWG. NO.
SD-34E



A
-

PLAN

SCALE: NTS



A
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SECTION

SCALE: NTS

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
DOUBLE CHECK
DETECTOR ASSEMBLY
REDUCED PRESSURE
DETECTOR ASSEMBLY

SCALE: NTS

DWG. NO.

SD-35A

NOTES:

1. PROVIDE A USC APPROVED BACKFLOW PREVENTION ASSEMBLY AS DESIGNATED BY TPWD APPROVED MATERIALS LIST SPECIFICATIONS.

2. TPWD MAINTENANCE RESPONSIBILITY STOPS AT THE RIGHT OF WAY. THE CUSTOMER IS RESPONSIBLE TO TEST AND MAINTAIN THE BACKFLOW PREVENTION ASSEMBLY, IN ACCORDANCE TPWD ADMINISTRATIVE CODE.

3. CERTIFICATION TESTING IS REQUIRED IMMEDIATELY AFTER AN ASSEMBLY IS RELOCATED, REPLACED, REPAIRED, NEW INSTALLATION ACCEPTANCE AND WATER DELIVERY PER TPWD ADMINISTRATIVE CODE PRIOR TO NEW INSTALLATION ACCEPTANCE AND WATER DELIVERY.

4. BACKFLOW PREVENTION ASSEMBLY INSTALLATIONS INCLUDING ALL APPURTENANCES FOR THE SUPPLY OF DOMESTIC WATER SHALL BE NSF 61 CERTIFIED.

5. BACKFLOW PREVENTION ASSEMBLIES SHALL BE LOCATED AS SHOWN ON PLANS OR AS CLOSE AS PRACTICAL TO THE RIGHT OF WAY BUT NOT FURTHER THAN 3 FEET WITHOUT TPWD APPROVAL. ASSEMBLY SHALL BE VISIBLE AND READILY ACCESSIBLE FROM THE RIGHT-OF-WAY AND MEET ALL CITY ZONING AND BUILDING CODES.

6. NO OUTLETS, TEES, OR CONNECTIONS SHALL BE ALLOWED BETWEEN TPWD GATE VALVE AND BACKFLOW ASSEMBLY.

7. BACKFLOW PREVENTION ASSEMBLIES SHALL MAINTAIN A VERTICAL CLEARANCE FROM THE LOWEST POINT OF 12 INCHES (MINIMUM) TO 36 INCHES (MAXIMUM) ABOVE FINISHED GRADE, WITH SIDE AND TOP CLEARANCES OF 12 INCHES (MINIMUM) FROM ANY OBSTRUCTIONS IN ALL DIRECTIONS.

8. POLYETHYLENE ENCASEMENT SHALL BE INSTALLED PER ANSI/AWWA C105/A21.5 REQUIREMENTS. HIGH-DENSITY POLYETHYLENE (HDPE) SHALL BE A MINIMUM OF .004 (4 MIL) THICKNESS. LOW-DENSITY POLYETHYLENE (LDPE) SHALL BE A MINIMUM OF .008 (8 MIL) THICKNESS.

9. ALL DI JOINTS SHALL BE RESTRAIN TYPE.

10. TOP OF CONCRETE PAD SHALL BE 2" ABOVE ADJACENT GRADE IF PLACED IN DIRT, LEVELED WITH ADJACENT GRADE IF PLACED IN AC PAVEMENT OR CONCRETE.

RECOMMENDED DCDA & RPDA SIZE (FOR REFERENCE ONLY)

SIZE	FLOWS (MIN-MAX)
4"	1 GPM - 500 GPM
6"	1 GPM - 1,000 GPM
8"	1 GPM - 1,600 GPM
10"	1 GPM - 2,300 GPM
12"	1 GPM - 3,500 GPM

REVISION NO.	REVISION DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

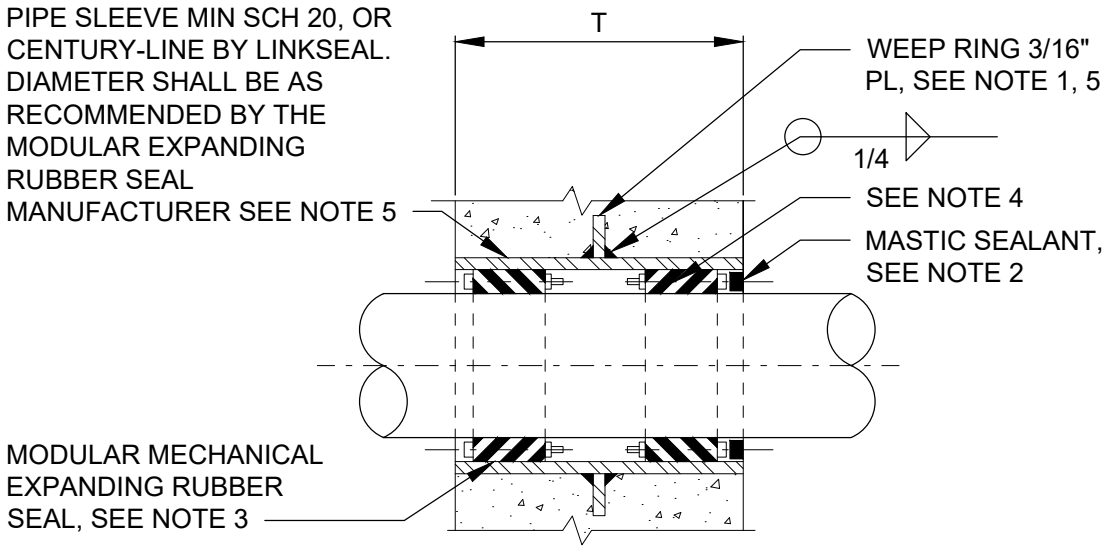
TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
DOUBLE CHECK DETECTOR ASSEMBLY REDUCED PRESSURE DETECTOR ASSEMBLY

SCALE: NTS

DWG. NO.

SD-35B



NOTES:

1. WEEP RING SHALL HAVE A MINIMUM DIAMETER 3 INCHES GREATER THAN THE OUTSIDE PIPE DIAMETER OF SLEEVE.

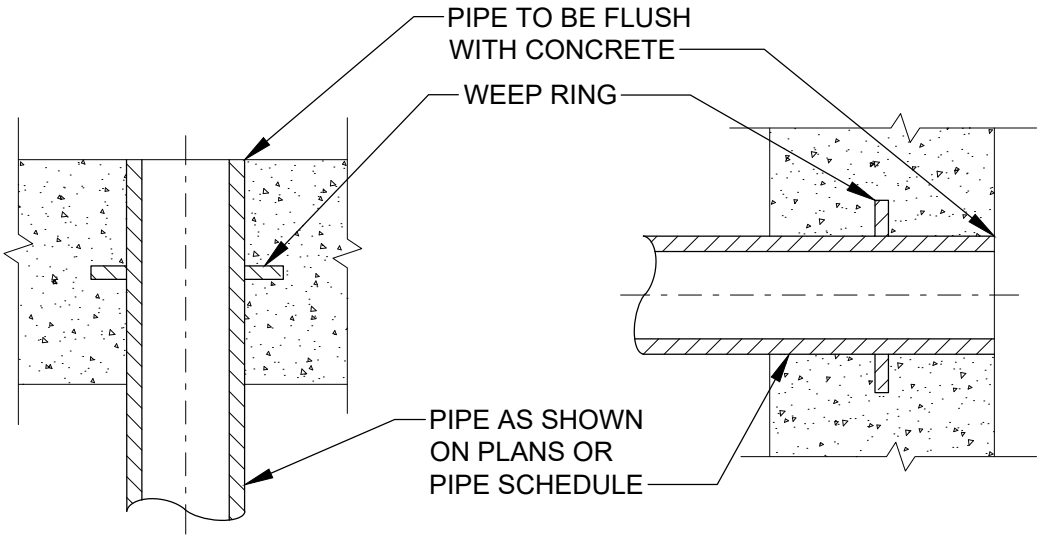
2. WHERE FACE OF WALL OR FLOOR IS EXPOSED TO LIQUID, EARTH, OR A CLASSIFIED HAZARDOUS AREA, SEAL ANNULAR SPACE WITH MASTIC SEALANT.

3. WHERE USED WITH COPPER PIPE, PROVIDE GLASS REINFORCED NYLON PRESSURE PLATES. OTHERWISE, PROVIDE STAINLESS ATTACHMENT HARDWARE.

4. FOR WALL OR FLOOR THICKNESS, T, GREATER THAN OR EQUAL TO 12 INCHES, PROVIDE MODULAR EXPANDING RUBBER SEAL ON BOTH ENDS OF PIPE PENETRATION.

5. WHERE PIPE PENETRATES EXISTING WALLS OR FLOORS, OMIT SLEEVE AND WEEP RING, CORE DRILL HOLE THROUGH EXISTING WALL OR FLOOR.

GENERIC PIPE PENETRATION



PIPE PENETRATION WITH EXPOSURE TO LIQUID ON ONE SIDE OR BOTH SIDES AT DIFFICULT OT REACH LOCATIONS

REVISION NO.	DATE

APPROVED: _____ (DATE)

MATTHEW SHRAGGE
GENERAL MANAGER

TPWD Twentynine Palms Water District 760.367.7546

STANDARD DRAWING
PIPE PENETRATION

SCALE: NTS

DWG. NO.

SD-36