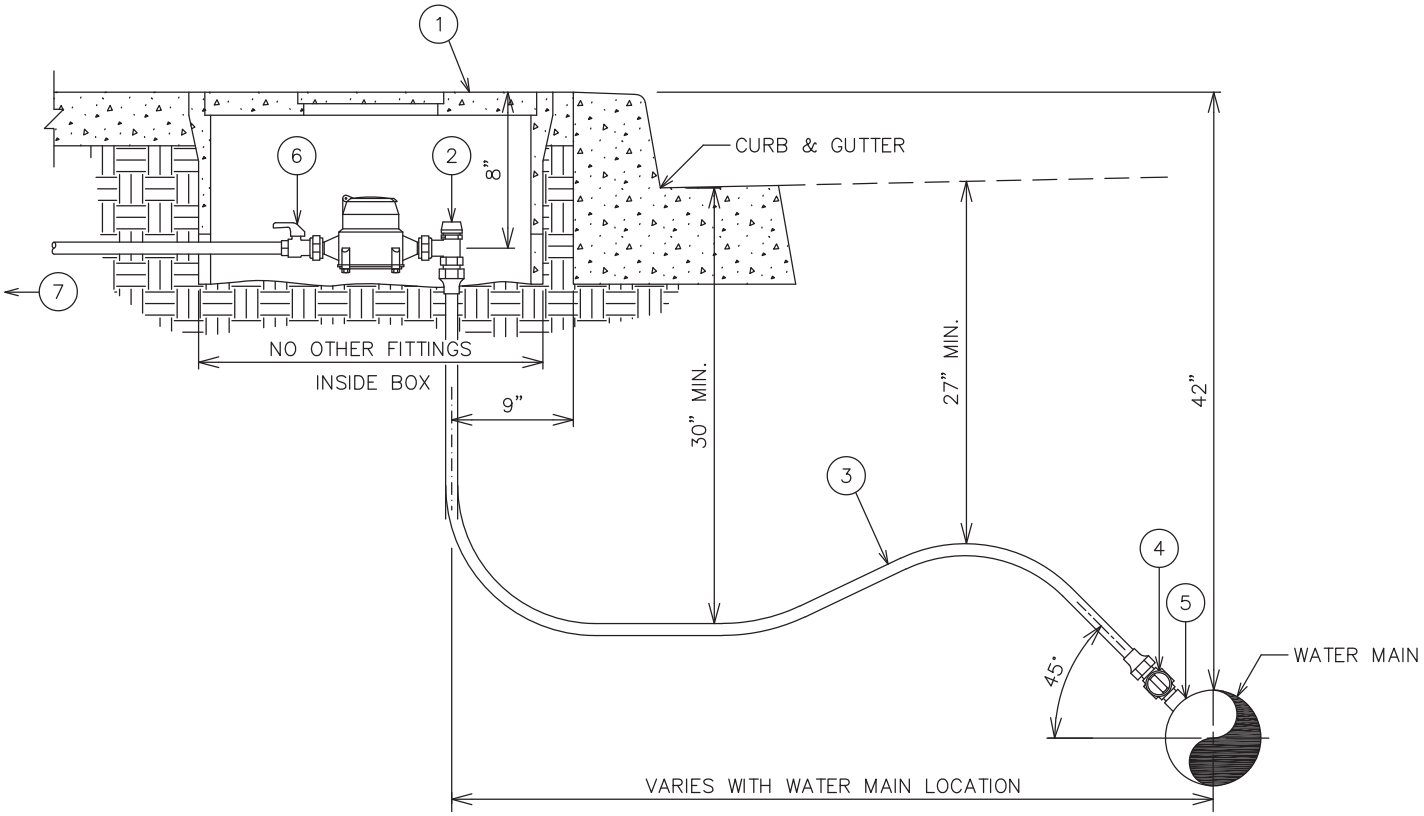


KEY NOTES:

1. ALL METER BOXES WILL BE SET BEHIND CURB SECTION SO THERE IS 2" TO 4" BETWEEN BACK OF CURB & METER BOX. METER BOX TO BE SET TO SIDEWALK GRADE. NO METER BOX SHALL BE LOCATED CLOSER THAN 5'–0" FROM EDGE OF DRIVEWAY APRON.

2. ALL METER BOXES NOT SET IN A SIDEWALK AND CURB SECTION WILL BE SET IN A CONCRETE PAD 12" THICK AND 24" WIDE AROUND THE BOX. METER WILL BE SET NEXT TO THE PROPERTY LINE AND OUTSIDE THE TRAVELED AREA.

3. DISTRICT WILL APPROVE ALL LOCATIONS OF METER BOXES.

MATERIAL DESCRIPTION

(1) 12" x 20" x 12" ARMORCAST METER BOX NO. A6000485X12 W/ ARMORCAST COVER W/HINGED READING LID NO. A6000484R–H9 FOR 3/4" SERVICES AND ARMORCAST METER BOX NO. A6001946PCX12 W/ ARMORCAST COVER W/HINGED READING LID NO. A6001866R–H9 FOR 1" SERVICES OR APPROVED EQUAL.

(2) BALL ANGLE METER VALVE W/ LOCKWING (FORD NO. BA43–232W–G–NL COMPRESSION CORP.) FOR 3/4" & 1" TUBING OR APPROVED EQUAL.

(3) TYPE "K" SOFT COPPER TUBING SERVICE LINE.

(4) 3/4" & 1" BALL TYPE CORPORATION VALVE WITH MALE I.P.T. ON THE INLET (MUELLER NO. B–25028N COMPRESSION CORP.) OR APPROVED EQUAL. SET CORPORATION VALVE AT 45° ON 3/4" AND 1" SERVICE CONNECTIONS.

(5) 3000 LB. WELD ON HALF COUPLING FOR 3/4" & 1" SERVICE CONNECTIONS ON STEEL PIPE. DOUBLE STRAP BRASS SERVICE SADDLES FOR 3/4" & 1" SERVICE CONNECTION ON ASBESTOS CEMENT PIPE (FORD NO.202B) OR APPROVED EQUAL. DOUBLE STRAP MALLEABLE IRON SADDLES WITH DIELECTRIC BUSHINGS FOR DUCTILE IRON PIPE. (JONES MODEL J–996) SADDLE OR APPROVED EQUAL FOR P.V.C. PIPE. ALL SADDLES TO BE GREASED AND WRAPPED. WRAP SERVICE WITH 10 MIL TAPE WITHIN 18" OF CORP FOR D.I. PIPE.

(6) CUSTOMER SHUT–OFF VALVE JONES NO. E–1908 FOR 3/4" AND 1" SERVICES OR APPROVED EQUAL.

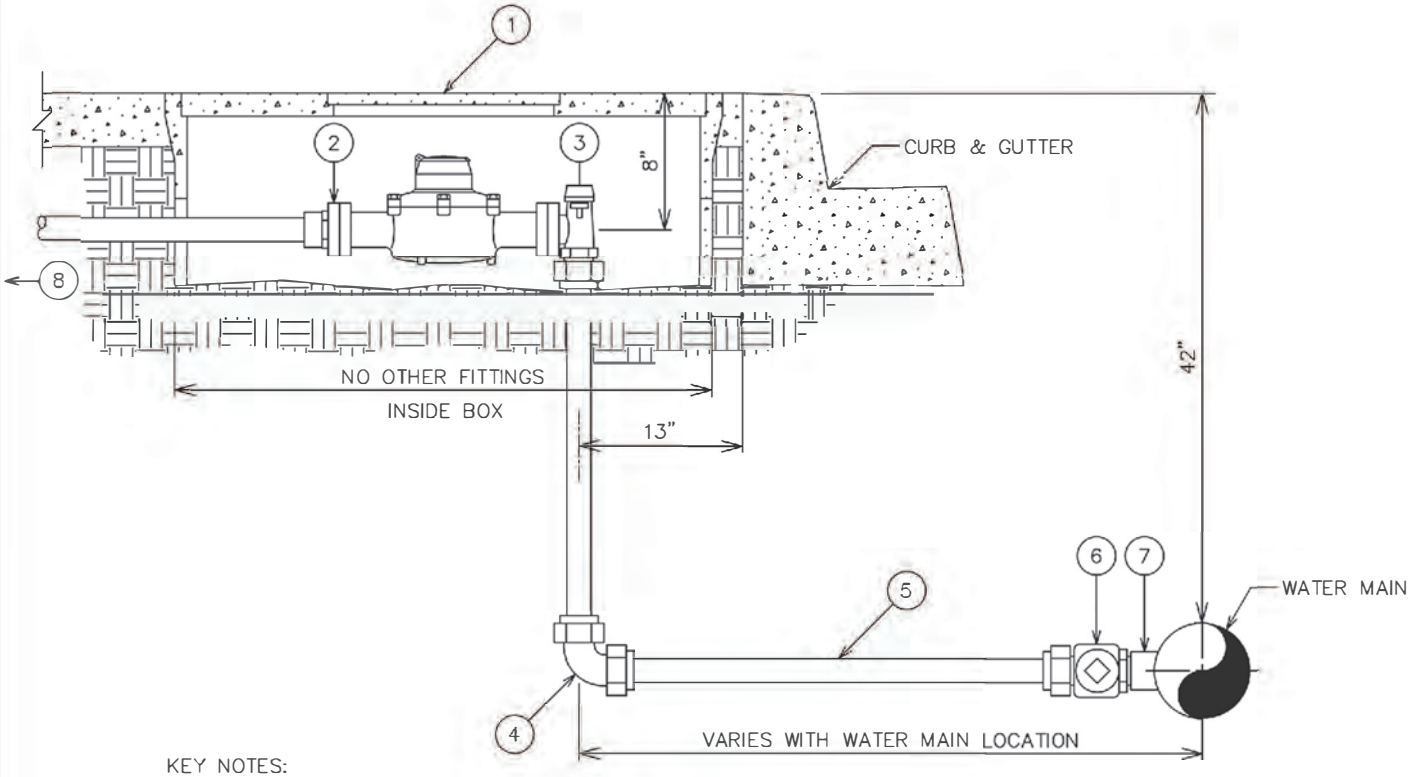
(7) APPROVED BACKFLOW PREVENTION DEVICE IS REQUIRED FOR NON–RESIDENTIAL USE.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL SERVICE CONNECTION
(3/4" AND 1")

W–1



KEY NOTES:

1. ALL METER BOXES WILL BE SET BEHIND CURB SECTION SO THERE IS 2" TO 4" BETWEEN BACK OF CURB & METER BOX. METER BOX TO BE SET TO SIDEWALK GRADE. NO METER BOX SHALL BE LOCATED CLOSER THAN 5'-0" FROM EDGE OF DRIVEWAY APRON.

2. ALL METER BOXES NOT SET IN A SIDEWALK AND CURB SECTION WILL BE SET IN A CONCRETE PAD 12" THICK AND 24" WIDE AROUND THE BOX. METER WILL BE SET NEXT TO THE PROPERTY LINE AND OUTSIDE THE TRAVELED AREA.

3. DISTRICT WILL APPROVE ALL LOCATIONS OF METER BOXES.

MATERIAL DESCRIPTION

(1) 17" x 30" x 12" ARMORCAST METER BOX NO. A6001640PCX12 W/ARMORCAST COVER W/HINGED READING LID NO. A6001643R-H9 OR APPROVED EQUAL.

(2) METER FLANGE COUPLING (FORD NO. CF31) OR APPROVED EQUAL WITH FULL-FACE OR DROP-IN GASKET.

(3) BALL ANGLE METER VALVE WITH LOCKWING (JONES NO. E-1975W) FOR 1" & 2" TUBING OR APPROVED EQUAL WITH FULL-FACE OR DROP-IN GASKET.

(4) COMPRESSION 90° ELBOW COUPLING (JONES NO. E-2611) OR APPROVED EQUAL.

(5) TYPE "K" SOFT COPPER TUBING SERVICE LINE AND COMPRESSION FITTINGS WILL BE USED.

(6) 1" OR 2" BALL TYPE CORPORATION VALVE WITH MALE I.P.T. ON THE INLET (JONES NO. J-1935 COMPRESSION) OR APPROVED EQUAL. SET CORPORATION VALVE HORIZONTAL ON 1 " & 2" SERVICE CONNECTIONS.

(7) 3000 LB. WELD ON HALF COUPLING FOR 1" & 2" SERVICE CONNECTIONS ON STEEL PIPE. DOUBLE STRAP BRASS SERVICE SADDLES FOR 1" & 2" SERVICE CONNECTION ON ASBESTOS CEMENT PIPE (FORD NO. 202B) OR APPROVED EQUAL. DOUBLE STRAP MALLEABLE IRON SADDLES WITH DIELECTRIC BUSHINGS FOR DUCTILE IRON PIPE. (JONES MODEL J-996) SADDLE OR APPROVED EQUAL FOR P.V.C. PIPE. ALL SADDLES TO BE GREASED AND WRAPPED. WRAP SERVICE WITH 10 MIL TAPE WITHIN 18" OF CORP FOR D.I. PIPE.

(8) APPROVED BACKFLOW PREVENTION DEVICE IS REQUIRED FOR NON-RESIDENTIAL USE.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

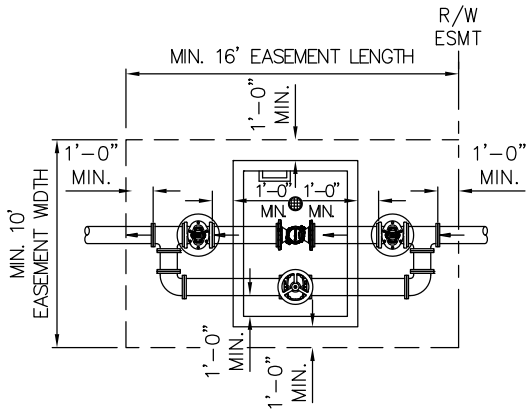
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL SERVICE CONNECTION
(1-1/2" AND 2")

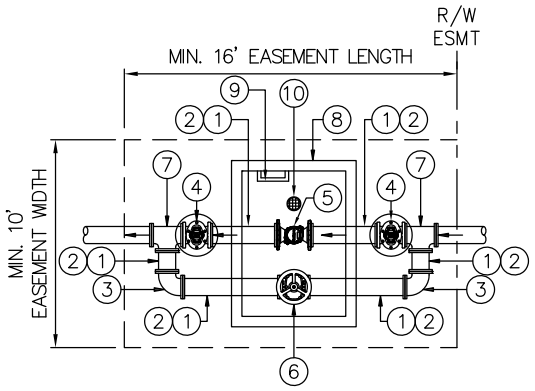
W-1A

MATERIAL DESCRIPTION

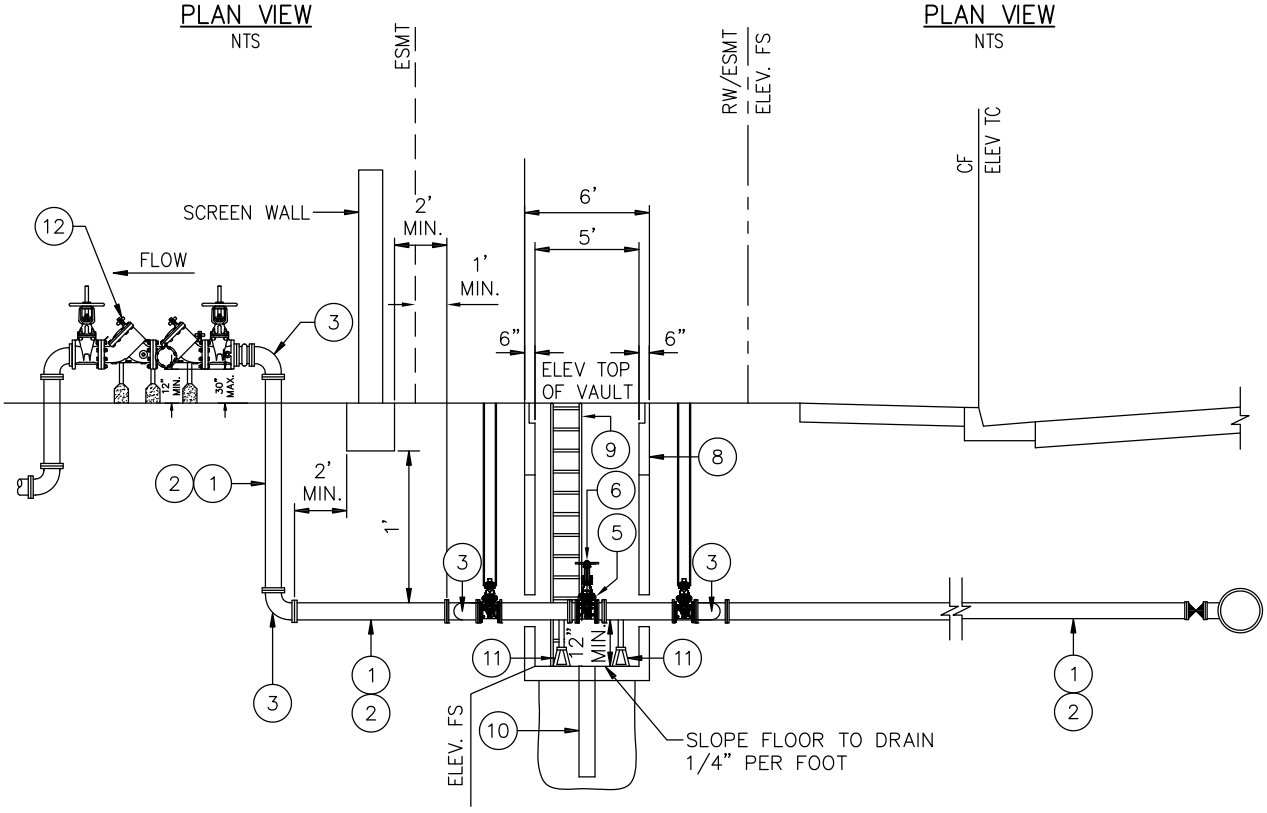
1. STEEL PIPE, 10 GA., C.M.L.&C.
2. SLIP ON WELD FLANGE
3. FLANGED 90° ELBOW, STL, C.M.L.&C.
4. FLANGED GATE VALVE CL150 W/VALVE BOX PER P.W.D. STD. W-5 AND LOCKING LID.
5. LARGE METER, MODEL OCTAVE ULTRASONIC WITH ITRON "ERT" AUTOMATIC METER READING SYSTEM.
6. GATE VALVE, FLANGED, 150 PSI WWP W/ WHEEL HANDLE O.S. & Y. (OUTSIDE SCREW YOKE AND HANDLE) AND LOCKING HANDLE.
7. FLANGED TEE, STL, C.M.L.&C.
8. 8'W X 6'L CONCRETE VAULT, MODEL JENSEN PRECAST OR APPROVED EQUAL.
9. LADDER, HOT-DIPPED GALVANIZED IRON.
10. SUMP DRAIN PER PWD STD. W-12
11. ADJUSTABLE STEEL SUPPORTS.
12. REDUCED PRESSURE-PRINCIPLE BACKFLOW PREVENTER



PLAN VIEW
NTS



PLAN VIEW
NTS



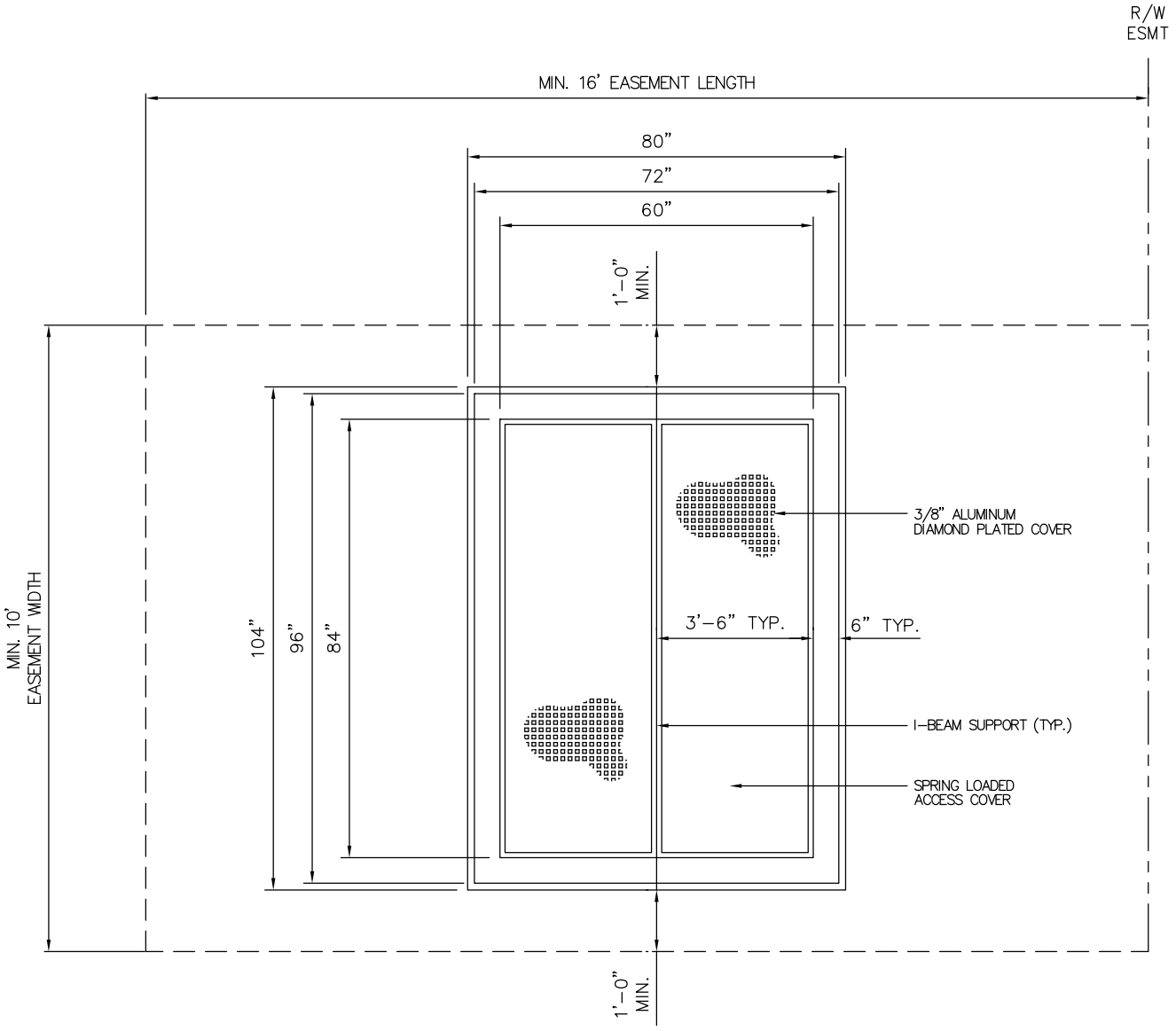
PROFILE VIEW
NTS

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL LARGE METER SERVICE CONNECTION
(3" – 10")

W-1B



PLAN VIEW VAULT COVER

NTS

NOTES:

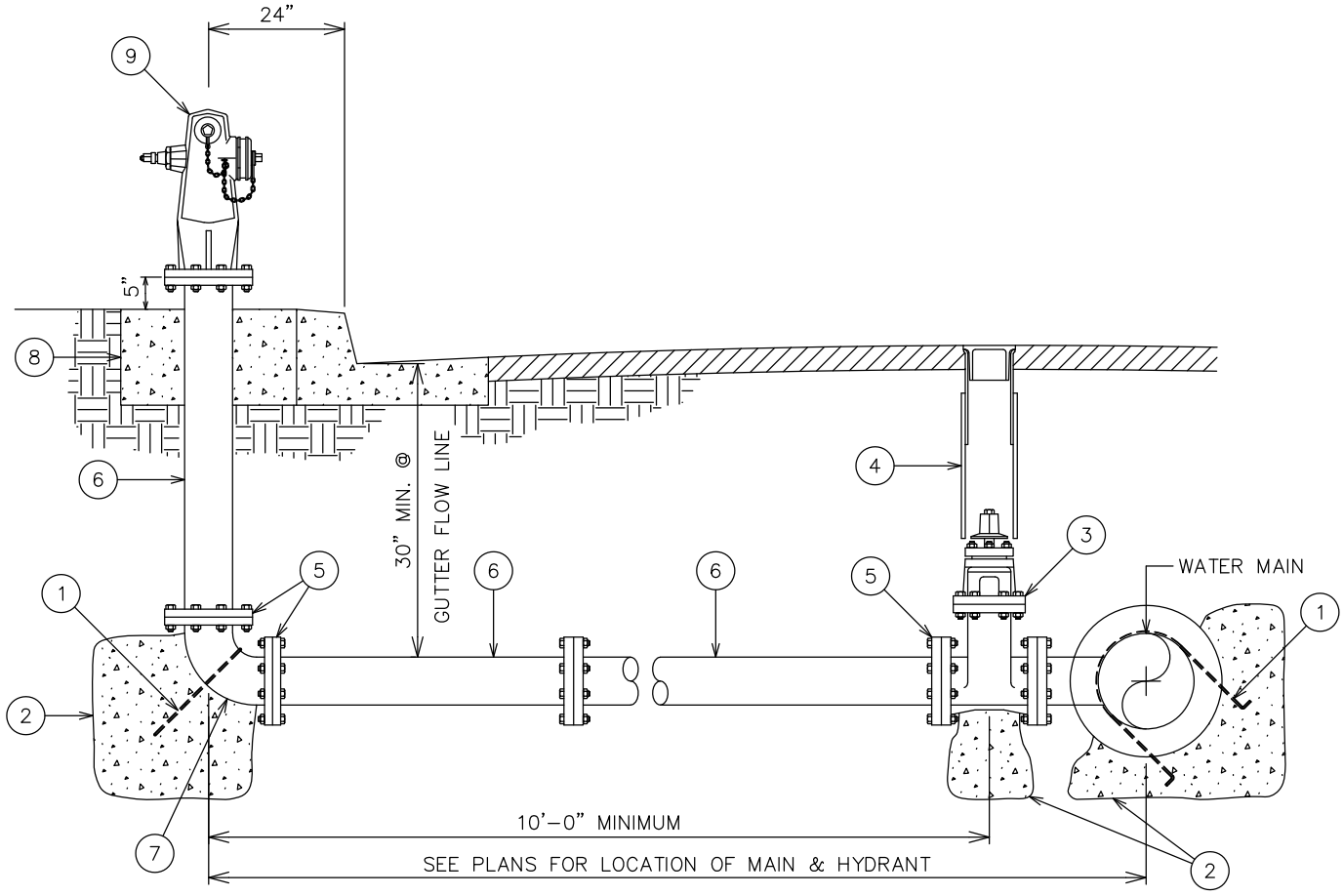
1. FRAME AND COVER TO ALUMINUM.
2. VAULT AND LID SUBMITTAL TO BE PROVIDED BY CONTRACTOR AND APPROVED BY DISTRICT PRIOR TO INSTALLATION.
3. VAULT LID SHALL BE RATED FOR H-20 LOADING.
4. EASEMENT SHALL BE GRANTED TO THE PALMDALE WATER DISTRICT FOR ACCESS, MAINTENANCE, AND INCIDENTAL PURPOSES.
5. AREA WITHIN AND ADJACENT TO THE VAULT EASEMENT SHALL BE GRADED TO DIRECT FLOWS AWAY FROM THE VAULT.
6. METER MUST BE SET IN A HORIZONTAL POSITION AT LEAST TWO (2) DIAMETERS OF STRAIGHT PIPE REQUIRED AT INLET END.
7. SCREEN WALL, IF REQUIRED, MUST BE LOCATED OUTSIDE DISTRICT EASEMENT. NO JOINTS WITHIN 2' OF FOOTING EDGE.
8. REDUCUED-PRESSURE PRINCIPLE BACKFLOW PREVENTER TO BE MAINTAINED BY OWNER/DEVELOPER.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL LARGE METER SERVICE CONNECTION
(3" - 10")

W-1B
CONTINUED



KEY NOTES:

1. CENTERLINE OF RISER SHALL BE 2 FEET BEHIND CURB FACE. NO FIRE HYDRANT SHALL BE INSTALLED CLOSER THAN 5 FEET FROM THE EDGE OF ANY DRIVEWAY APRON OR CURB RETURN. ALL UNCOATED METAL SURFACES (INCLUDING NUTS AND BOLTS) INSTALLED UNDERGROUND SHALL BE THOROUGHLY COATED W/ NO-OX GREASE AND THEN WRAPPED WITH 8 MIL POLYETHYLENE SHEET (AWWA C-105) ALL HYDRANTS SHALL BE PAINTED WITH ONE COAT OF RED PRIMER AND TWO COATS OF RUSTOLEUM SAFETY YELLOW OR APPROVED EQUAL. INTERMEDIATE PIPE JOINTS IN LATERAL SHALL BE FLANGED. PIPE SHALL BE INSTALLED HORIZONTAL OR SLOPING DOWNWARD FROM MAIN TO PROVIDE MINIMUM COVER.

MATERIAL DESCRIPTION

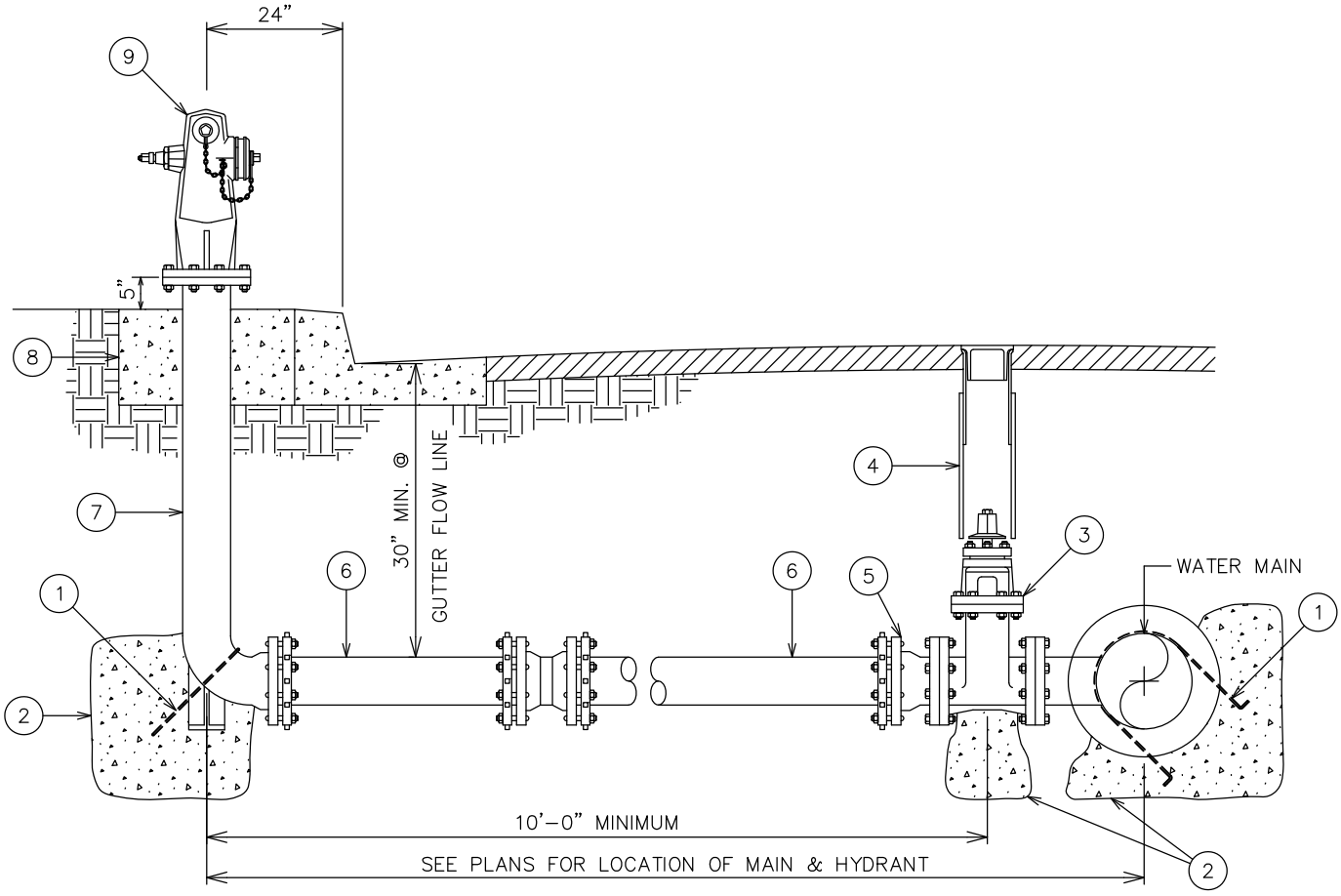
① ANCHOR ROD PER STD. W-4
② USE 2000 PSI MIN. CONCRETE FOR THRUST BLOCKS AND HYDRANT PAD. PLACE CONCRETE ON UNDISTURBED OR COMPACTED SOIL. THRUST BLOCKS MUST MEET REQUIREMENTS OF STD. W-4.
③ 6" FLANGED GATE VALVE CL150.
④ VALVE BOX PER STD. W-5.
⑤ 6" SLIP-ON WELD FLANGE CL 150.
⑥ 6-5/8" O.D. STL. PIPE 10 GA. C.M.L.& C. EXTEND NON-SHRINK MORTAR COATING WITH EXPANDED GALVANIZED LATH REINFORCEMENT TO MEET FLG. TAPER THICKNESS AND TO MEET FLG. HUB.
⑦ 6" FLANGED 90° ELBOW, STL., C.M.L.C., CL150 FLG.
⑧ 36" x 36" x 12" CONCRETE PAD WITH SIDEWALK FINISH TO BE SLOPED 1/4" PER FOOT TOWARDS THE CURB. IN THE ABSENCE OF A CONCRETE CURB OR WHERE TYPE "E" CURB (ROLLED) IS USED, SET BOTTOM OUTLET 24" ABOVE CROWN OF ROAD AND INSTALL BARRICADES PER STD. W-14.
⑨ 6" x 4" x 2-1/2" FIRE HYDRANT (CLOW 850 O.A.E.) SET F.H. OUTLETS AT 45° TO STREET. INSTALL BOLTS WITH HEADS UP. (HOLLOW BOLTS REQUIRED)

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

6" x 4" x 2-1/2" FIRE HYDRANT
(FOR STEEL OR A.C. PIPE)

W-2



KEY NOTES:

1. CENTERLINE OF RISER SHALL BE 2 FEET BEHIND CURB FACE. NO FIRE HYDRANT SHALL BE INSTALLED CLOSER THAN 5 FEET FROM THE EDGE OF ANY DRIVEWAY APRON OR CURB RETURN. ALL UNCOATED METAL SURFACES (INCLUDING NUTS AND BOLTS) INSTALLED UNDERGROUND SHALL BE THOROUGHLY COATED W/ NO-OX GREASE AND THEN WRAPPED WITH 8 MIL POLYETHYLENE SHEET (AWWA C-105) ALL HYDRANTS SHALL BE PAINTED WITH ONE COAT OF RED PRIMER AND TWO COATS OF RUSTOLEUM SAFETY YELLOW OR APPROVED EQUAL. INTERMEDIATE PIPE JOINTS IN LATERAL SHALL BE RESTRAINED WITH A MECHANICAL JOINT SLEEVE WITH RETAINING GLANDS OR JOINT RESTRAINT. PIPE SHALL BE INSTALLED HORIZONTAL OR SLOPING DOWNWARD FROM MAIN TO PROVIDE MINIMUM COVER.

MATERIAL DESCRIPTION

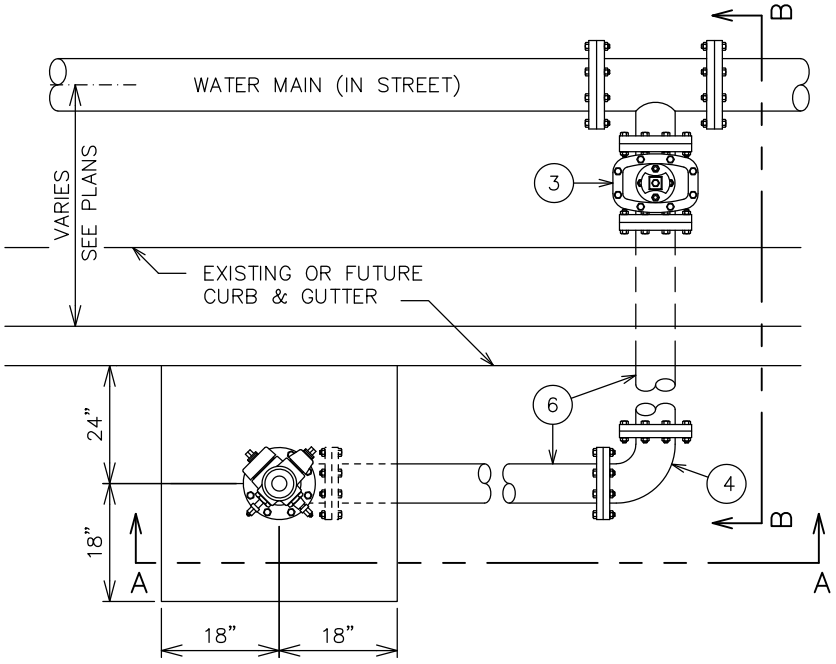
① ANCHOR ROD PER STD. W-4
② USE 2000 PSI MIN. CONCRETE FOR THRUST BLOCKS AND HYDRANT PAD. PLACE CONCRETE ON UNDISTURBED OR COMPACTED SOIL. THRUST BLOCKS MUST MEET REQUIREMENTS OF STD. W-4.
③ 6" FLANGED GATE VALVE CL150.
④ VALVE BOX PER STD. W-5.
⑤ 6" FLG. X M.J. ADAPTER, D.I., D.C.M.L., CL350 WITH RETAINING GLAND.
⑥ 6.90" O.D. DUCTILE IRON PIPE CL350 D.C.M.L.
⑦ 6" M.J. DUCTILE IRON HYDRANT BURY (8HOLE) WITH RETAINING GLAND OR 6" DUCTILE IRON SPOOL AND 6" M.J. x FLG. 90° ELBOW, D.I., D.C.M.L., CL350 WITH RETAINING GLAND.
⑧ 36" x 36" x 12" CONCRETE PAD WITH SIDEWALK FINISH TO BE SLOPED 1/4" PER FOOT TOWARDS THE CURB. IN THE ABSENCE OF A CONCRETE CURB OR WHERE TYPE "E" CURB (ROLLED) IS USED, SET BOTTOM OUTLET 24" ABOVE CROWN OF ROAD AND INSTALL BARRICADES PER STD. W-14.
⑨ 6" x 4" x 2-1/2" FIRE HYDRANT (CLOW 850 O.A.E.) SET F.H. OUTLETS AT 45° TO STREET. INSTALL BOLTS WITH HEADS UP. (HOLLOW BOLTS REQUIRED)

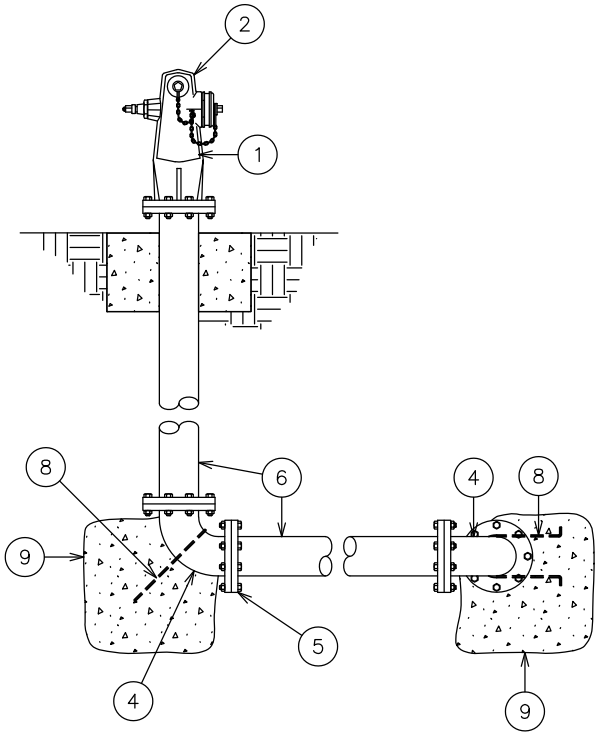
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

6" x 4" x 2-1/2" FIRE HYDRANT
(FOR DUCTILE IRON PIPE OR C-900 PVC PIPE)

W-2A





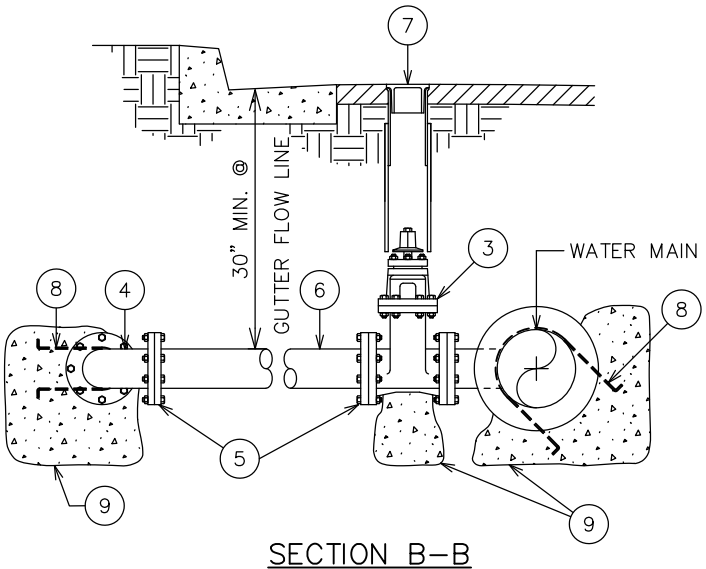
SECTION A–A

PROPERTY LINE

PLAN VIEW

KEY NOTES:

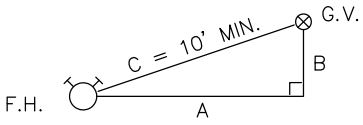
1 CENTERLINE OF RISER SHALL BE 2 FEET BEHIND CURB FACE. NO FIRE HYDRANT SHALL BE INSTALLED CLOSER THAN 5 FEET FROM THE EDGE OF ANY DRIVEWAY APRON OR CURB RETURN. ALL UNCOATED METAL SURFACES (INCLUDING NUTS AND BOLTS) INSTALLED UNDERGROUND SHALL BE THOROUGHLY COATED W/ NO–OX GREASE AND THEN WRAPPED WITH 8 MIL POLYETHYLENE SHEET (AWWA C–105) ALL HYDRANTS SHALL BE PAINTED WITH ONE COAT OF RED PRIMER AND TWO COATS OF RUSTOLEUM SAFETY YELLOW OR APPROVED EQUAL. INTERMEDIATE PIPE JOINTS IN LATERAL SHALL BE FLANGED. PIPE SHALL BE INSTALLED HORIZONTAL OR SLOPING DOWNWARD FROM MAIN TO PROVIDE MINIMUM COVER.



SECTION B–B

MATERIAL DESCRIPTION

① SEE STANDARD W–2 FOR FIRE HYDRANT REQUIREMENTS.
② SET FIRE HYRANT OUTLETS AT 45° TO STREET.
③ 6" FLANGED GATE VALVE CL150.
④ 6" FLG'D 90° ELBOW, STL., C.M.L.C., CL150 FLG.
⑤ 6" SLIP–ON WELD FLANGE, CL150.
⑥ 6–5/8" O.D. STEEL 10 GA. MIN. C.M.L.C.
⑦ VALVE BOX PER STD. W–5.
⑧ ANCHOR ROD PER STD. W–4.
⑨ USE 2000 PSI MINIMUM CONCRETE FOR THRUST BLOCKS AND CONCRETE PAD. PLACE CONCRETE AGAINST UNDISTURBED OR COMPACTED SOIL. THRUST BLOCKS MUST MEET REQUIREMENTS OF STD. W–4. IN THE ABSENCE OF A CONCRETE CURB OR WHERE TYPE "E" CURB (ROLLED) IS USED, SET BOTTOM OUTLET 24" ABOVE CROWN OF ROAD AND INSTALL BARRICADES PER P.W.D. STD. W–14.



$\sqrt{A^2 + B^2} = C$

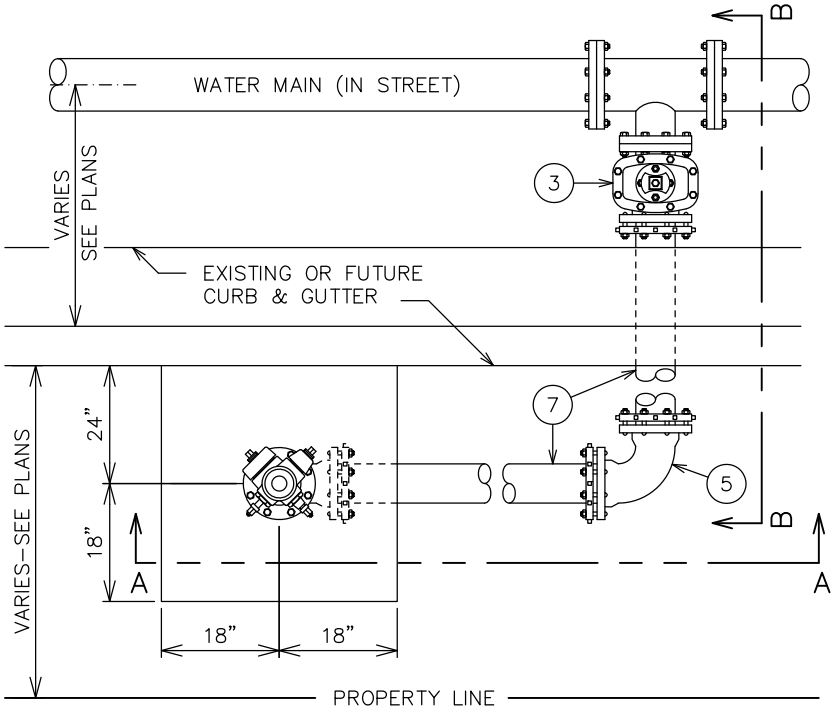
FORMULA FOR FIGURING HYDRANT FROM VALVE LOCATION

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

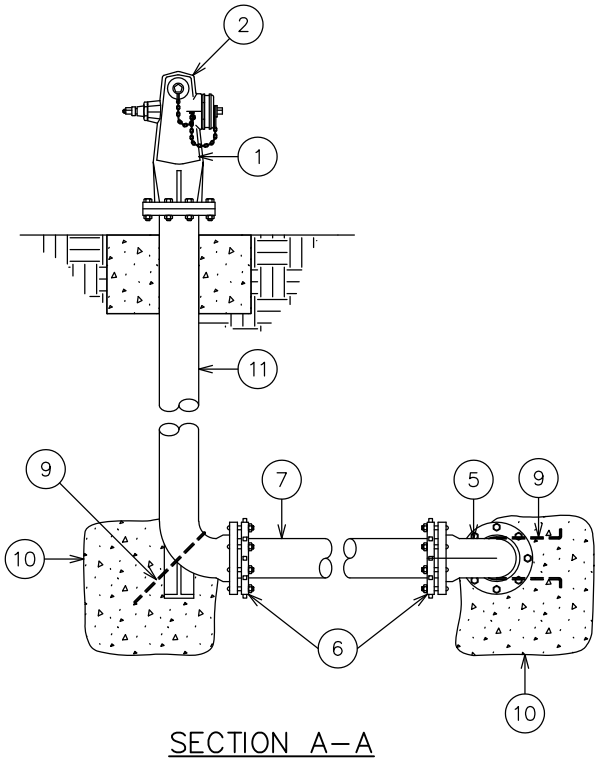
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

PARALLEL FIRE HYDRANT
(FOR STEEL OR A.C. PIPE)

W–3



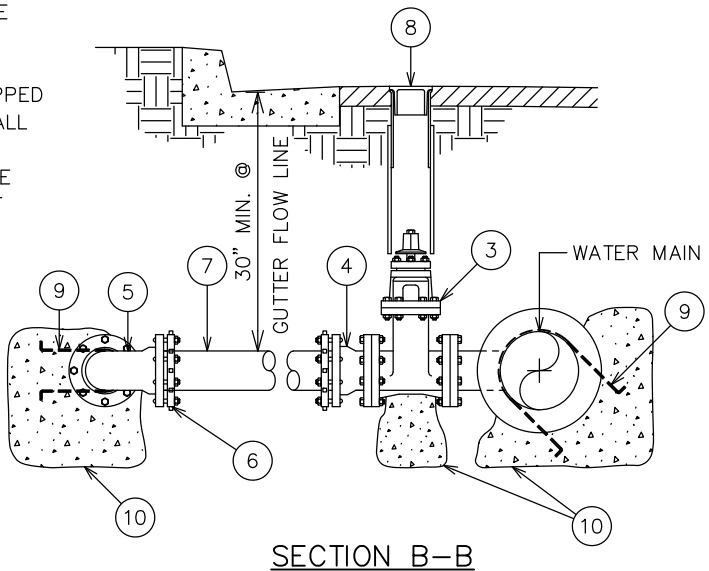
PLAN VIEW



SECTION A–A

KEY NOTES:

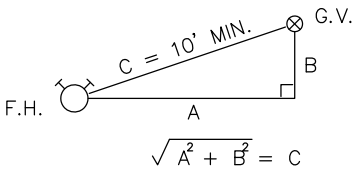
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SECTION B–B

MATERIAL DESCRIPTION:

1. SEE STANDARD W-2A FOR FIRE HYDRANT REQUIREMENTS.
2. SET FIRE HYDRANT OUTLETS AT 45° TO STREET.
3. 6" FLANGED GATE VALVE CL150.
4. 6" FLG. X M.J. ADAPTER, D.I., D.C.M.L., CL350 WITH RETAINING GLAND.
5. 6" M.J. 90° ELBOW, D.I., D.C.M.L., CL350 WITH RETAINING GLAND.
6. ALL M.J. FITTINGS SHALL HAVE RETAINING GLANDS.
7. 6.90" O.D. DUCTILE IRON PIPE CL 350 D.C.M.L.
8. VALVE BOX PER STD. W-5.
9. ANCHOR ROD PER STD. W-4.
10. USE 2000 PSI MINIMUM CONCRETE FOR THRUST BLOCKS AND CONCRETE PAD. PLACE CONCRETE AGAINST UNDISTURBED OR COMPACTED SOIL. THRUST BLOCKS MUST MEET REQUIREMENTS OF STD. W-14. IN THE ABSENCE OF A CURB OR WHERE TYPE "E" CURB(ROLLED) IS USED, SET BOTTOM OUTLET 24" ABOVE CROWN OF ROAD AND INSTALL BARRICADES PER STD. W-14.
11. 6" M.J. DUCTILE IRON HYDRANT BURY (8 HOLES) WITH RETAINING GLAND OR 6" DUCTILE IRON SPOOL AND 6" M.J. X FLG. 90° ELBOW, D.I., D.C.M.L., CL350 WITH RETAINING GLAND.



$\sqrt{A^2 + B^2} = C$

FORMULA FOR FIGURING HYDRANT FROM VALVE LOCATION

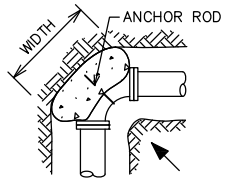
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
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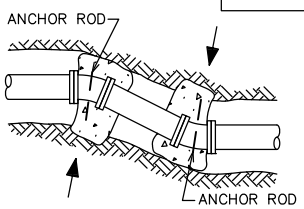
PARALLEL FIRE HYDRANT
(FOR DUCTILE IRON PIPE OR C-900 PVC PIPE)

W-3A

→ = DIRECTION OF RESULTANT THRUST

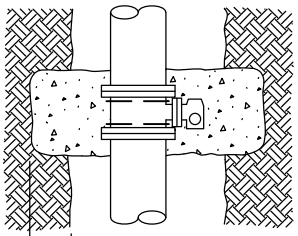


PLAN

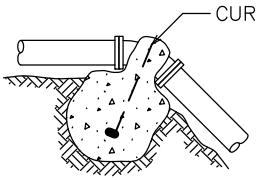


PLAN

BENDS

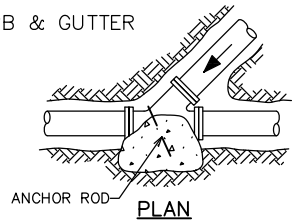


PLAN



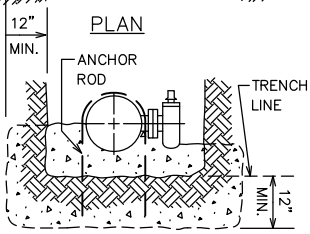
ELEVATION

VERTICAL BEND
(SEE NOTE 5)

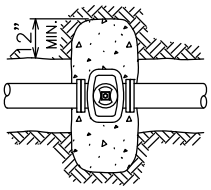


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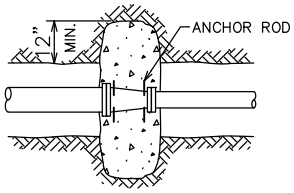
WYE



PROFILE

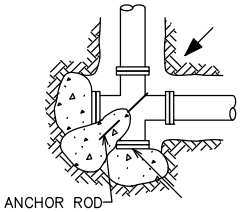


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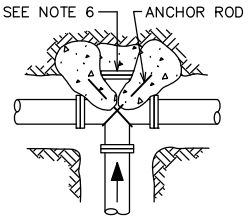


PLAN

BUTTERFLY VALVES

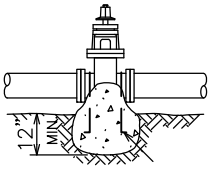


PLAN



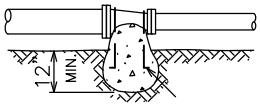
PLAN

CROSSES



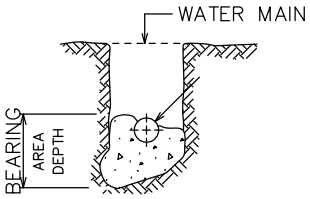
ELEVATION

VALVES
(ALL TYPES
EXCEPT BFV)

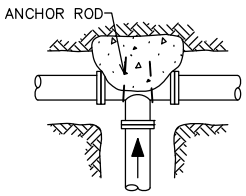


ELEVATION

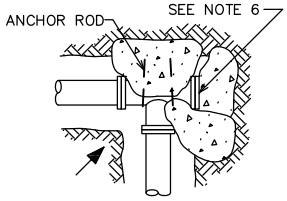
REDUCERS



FITTING SECTION
(TYPICAL)



PLAN



PLAN

TEES

TABLE I				
* MINIMUM BEARING AREAS IN SQ. FT.				
MAIN SIZE	** TEE	90° BEND	45° BEND	22-1/2° BEND
6"	4	4	4	3
8"	5	7	4	3
10"	9	12	6	4
12"	12	16	9	6

* BASED ON 150 PSI W.W.P. PRESSURE AND SOIL BEARING LOADS OF 2000 PSF. THE RATIO OF WIDTH TO HEIGHT SHALL NOT EXCEED 1-1/2 TO 1.

** TEES, PLUG, CAPS AND HYDRANTS.

TABLE II		
*** SOIL TYPE	**** MAX. ALLOWABLE SOIL BEARING VALUES	FACTORS FOR INCREASING AREAS IN TABLE I
LOOSE SAND	500 PSF	4
SOFT SANDY CLAY	1000 PSF	2
ADOBE	1000 PSF	2
COMPACT FINE SAND	2000 PSF	1
COMPACT COARSE SAND	2000 PSF	1
MEDIUM STIFF CLAY	2000 PSF	1

*** THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE SAFE SOIL BEARING VALUES AND THE POSITION AND SIZE OF BEARING AREAS.

**** BASED ON 2 FEET MINIMUM DEPTH OF COVER OVER PIPE.

GENERAL NOTES:

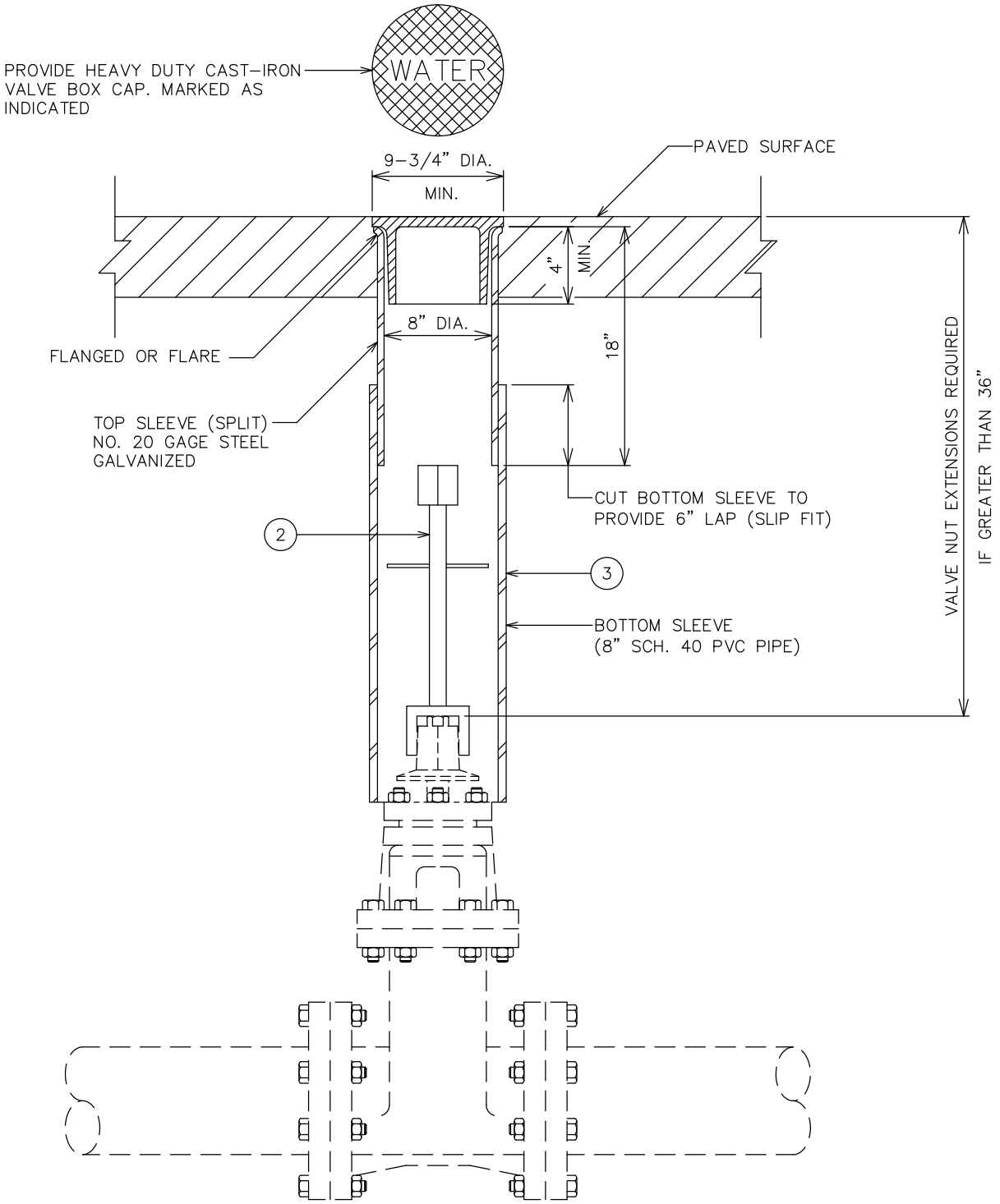
1. ALL ANCHOR AND THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED OR COMPACTED SOIL.
2. MINIMUM ALLOWABLE WATER PRESSURE FOR DESIGN OF THRUST BLOCKS IS 150 PSI. BEARING AREA INCREASES DIRECTLY WITH INCREASE IN PRESSURE.
3. ALL CONCRETE USED IN THRUST BLOCKS SHALL ATTAIN 2000 PSI STRENGTH.
4. ANCHOR RODS SHALL BE A MINIMUM OF 1/2" DIAMETER REINFORCING STEEL AND SHALL BE USED FOR ALL THRUST BLOCKS. ENCASE RODS IN 2000 PSI CONCRETE. EXPOSED PORTIONS OF RODS SHALL BE THOROUGHLY COATED IN NO-OX GREASE AND WRAPPED W/8 MIL POLYETHYLENE SHEET (AWWA C-105).
5. USE ANCHOR BLOCKS AT VERTICAL BENDS WHEN PIPE IS ABOVE OR BELOW GROUND. SIZE OF BLOCK AND ROD SHALL BE AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER IN THE FIELD.
6. USE 30 POUND FELT TO INSURE COLD JOINT OR 8 MIL POLYETHYLENE WRAP PER AWWA C105.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

CONCRETE THRUST BLOCKS

W-4



GENERAL NOTES:

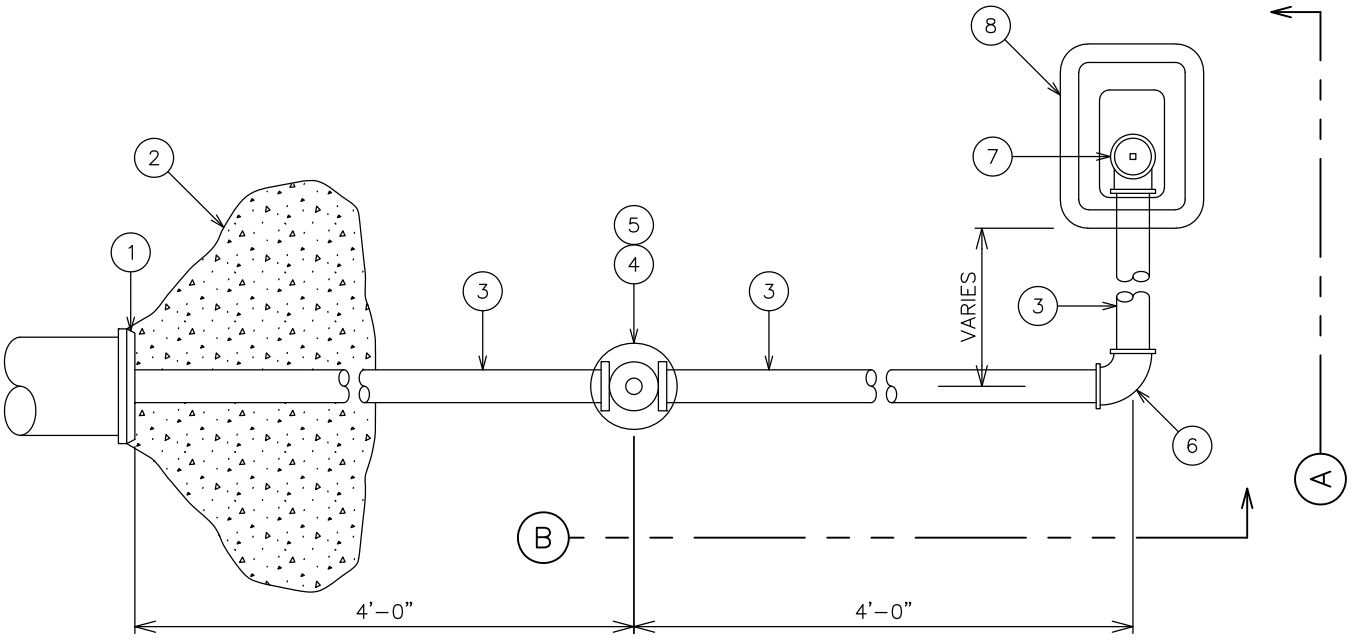
1. ALL VALVE BOXES LOCATED IN UNIMPROVED STREETS OR DIRT AREA SHALL BE ENCLOSED IN 24" x 24" x 12" CONCRETE PAD.
2. VALVE NUT EXTENSION – 1-1/4" DIAMETER GALVANIZED STEEL PIPE WITH 2" SQUARE BOX AT BASE AND 2" SQUARE OPERATING NUT AT TOP AND 1/4" CENTERING PLATE CUT 1/4" SMALLER THAN THE INSIDE DIAMETER OF VALVE RISER.
3. ALL VALVE RISERS SHALL BE ADJUSTED SO THAT THE VALVE BOX LID WILL BE FLUSH WITH THE FINISHED STREET GRADE.
4. VALVE MARKERS ARE REQUIRED WHEREVER VALVES ARE CONSTRUCTED IN UNIMPROVED STREETS OR EASEMENTS. MARKERS SHALL BE PLACED AS CLOSE AS PRACTICABLE TO VALVES. MARKERS SHALL FACE VALVES AND BE ORIENTED PERPENDICULAR TO THE MAINLINE. DISTANCE AND DIRECTION TO THE VALVE SHALL BE CLEARLY SHOWN ON THE MARKER.

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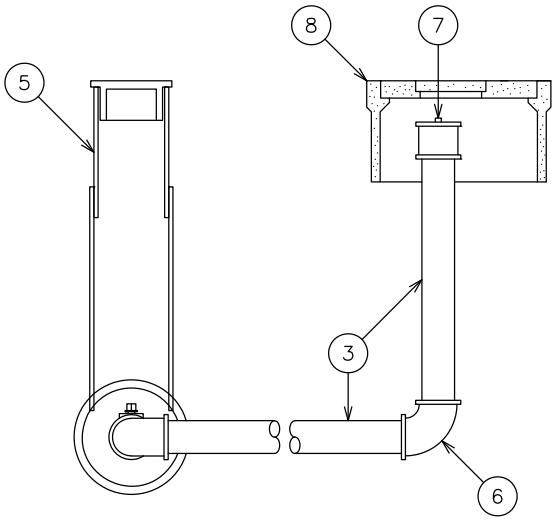
TYPICAL VALVE BOX INSTALLATION
(IMPROVED OR UNIMPROVED ROADS)

W-5



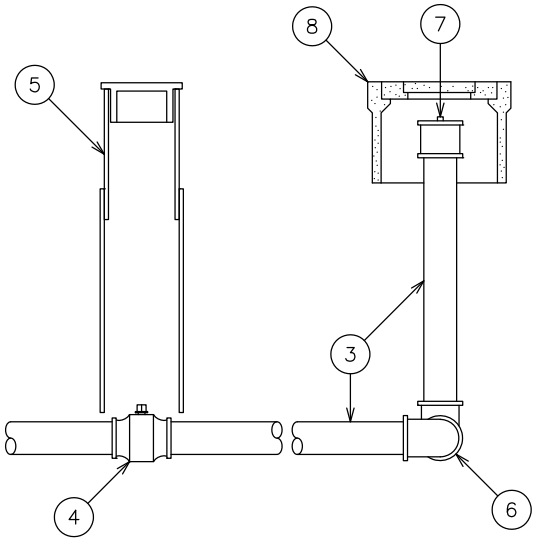
PLAN VIEW

N.T.S.



SECTION A

N.T.S.



SECTION B

N.T.S.

KEY NOTES:

1. DUCTILE PIPE WILL REQUIRE A DIELECTRIC BUSHING.
2. 10 MIL TAPE REQUIRED FROM END CAP TO 1 FT PAST CONCRETE OR 18" MIN.

MATERIAL DESCRIPTION:

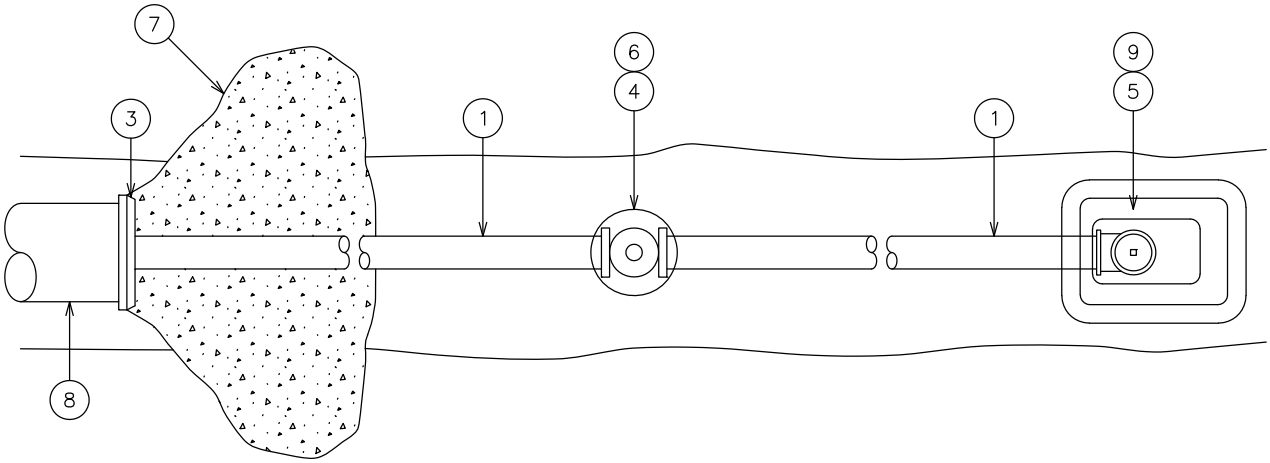
(1) 2" TAPPED CAP OR BLIND FLANGE
(2) CONCRETE THRUST BLOCK PER P.W.D. STD. W–4.
(3) 2" BRASS ALLOY LEAD FREE (LF) PER NSF/ANSI 61 AND 372.
(4) 2" LF BRASS BALL STRAIGHT SVC VALVE (JONES NO. J–1900W OR APPROVED EQUAL).
(5) VALVE BOX PER STD. W–5 (NOTE: VALVE RISER IS NOT TO REST ON PIPE).
(6) 2" 90° ELBOW BRASS ALLOY LEAD FREE (LF) PER NSF/ANSI 61 AND 372.
(7) 2" COUPLING WITH SQUARE HEAD PLUG BRASS ALLOY LEAD FREE (LF).
(8) SET NO. W438 METER BOX 1–1/2" TO 2" BEHIND THE CURB SECTION. IN THE ABSENCE OF CURB, SET METER BOX ADJACENT TO RIGHT–OF–WAY LINE WITH CONCRETE PAD PER STD. W–1.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

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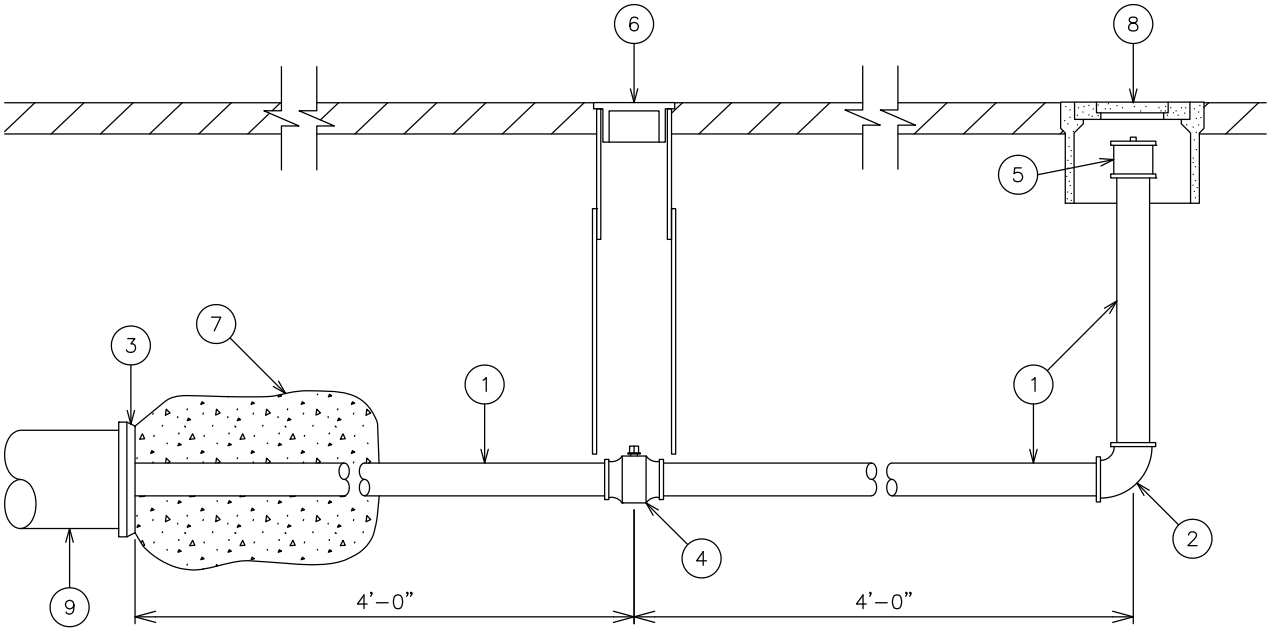
2" TEMPORARY BLOW–OFF ASSEMBLY
(BEHIND CURB IN PARKWAY)

W–6



PLAN VIEW

N.T.S.



SECTION VIEW

N.T.S.

GENERAL NOTES:

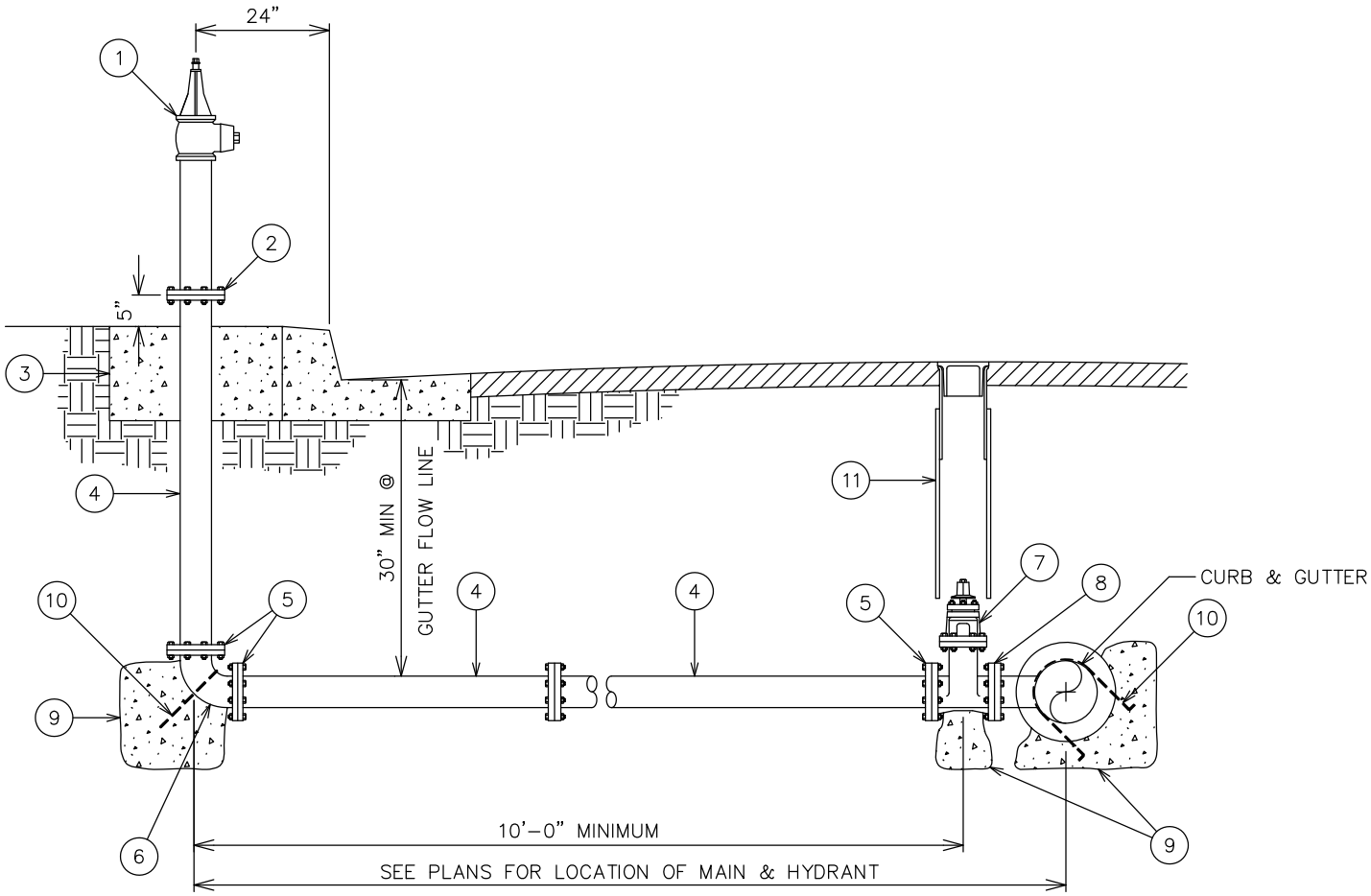
1. 2" BRASS ALLOY LEAD FREE (LF) PER NSF/ANSI 61 AND 372.
2. 2" 90° ELBOW BRASS ALLOY LEAD FREE (LF) PER NSF/ANSI 61 AND 372.
3. 2" LF BRASS TAPPED CAP OR BLIND FLANGE.
4. 2" LF BRASS BALL STRAIGHT SVC VALVE (JONES NO. J–1900W OR APPROVED EQUAL).
5. 2" LF BRASS COUPLING WITH SQUARE HEAD PLUG.
6. VALVE BOX PER STD. W–5 (NOTE: VALVE RISER IS NOT TO REST ON PIPE).
7. CONCRETE THRUST BLOCK PER STD. W–4.
8. SET NO. W438 METER BOX 1–1/2" TO 2" BEHIND THE CURB SECTION. IN THE ABSENCE OF CURB, SET METER BOX ADJACENT TO RIGHT–OF–WAY LINE WITH CONCRETE PAD PER STD. W–1.
9. DUCTILE PIPE WILL REQUIRE A DIELECTRIC BUSHING.
10. 10 MIL TAPE REQUIRED FROM END CAP TO 1 FT PAST CONCRETE OR 18" MIN.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
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2" TEMPORARY BLOW–OFF ASSEMBLY
(IN THE STREET)

W–6A



KEY NOTES:

1. IN THE ABSENCE OF A CURB OR WHERE TYPE "E" CURB (ROLLED) IS USED, SET OUTLET 24-INCHES ABOVE CROWN OF ROAD AND INSTALL BARRICADES PER STD. W-14.
2. CENTERLINE OF RISER SHALL BE 2 FEET BEHIND CURB FACE.
3. NO BLOW-OFF SHALL BE INSTALLED CLOSER THAN 5 FEET FROM EDGE OF ANY DRIVEWAY APRON OR CURB RETURN.
4. ALL UNCOATED METAL SURFACES (INCLUDING NUTS AND BOLTS) INSTALLED UNDERGROUND SHALL BE THOROUGHLY COATED W/ NO-OX GREASE AND THEN BE WRAPPED WITH 8 MIL POLYETHYLENE SHEET (AWWA C-105).
5. ALL BLOW-OFFS SHALL BE PAINTED WITH ONE COAT OF RED PRIMER AND TWO COATS OF RUST-OLEUM FOREST GREEN OR APPROVED EQUAL.
6. INTERMEDIATE PIPE JOINTS IN LATERAL SHALL BE FLANGED. PIPE SHALL BE INSTALLED HORIZONTAL OR SLOPING DOWNWARD FROM MAIN TO PROVIDE MINIMUM COVER.

MATERIAL DESCRIPTION:

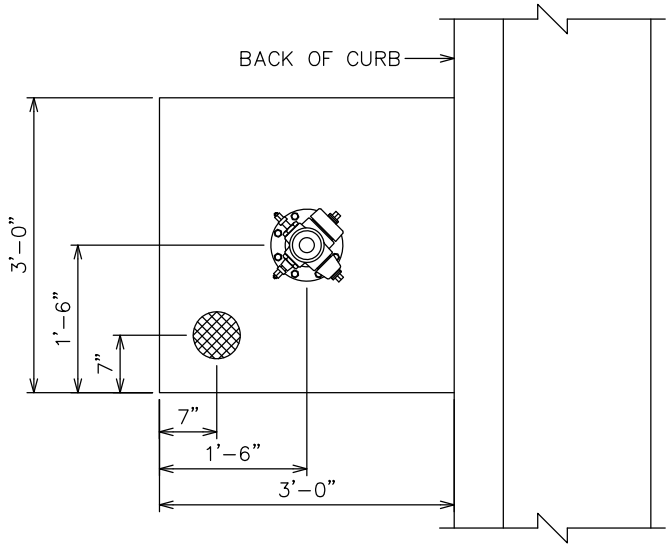
1. 4" x 2-1/2" WHARF HEAD. (JONES MODEL NO. J-344 H.P. O.A.E.)
2. 4" COMPANION FLANGE CL125. INSTALL BOLTS WITH HEADS UP. (HOLLOW BOLTS REQUIRED)
3. 36" x 36" x 12" CONCRETE PAD WITH SIDEWALK FINISH TO BE SLOPED 1/4" PER FOOT TOWARDS THE CURB.
4. 4" STL. PIPE 10 GA. MIN. C.M.L.& C. EXTEND NON-SHRINK MORTAR COATING WITH EXPANDED GALVANIZED LATH REINFORCEMENT TO MEET FLG. TAPER THICKNESS AND TO MEET FLG. HUB
5. 4" SLIP-ON WELD FLANGE.
6. 4" FLANGED 90° ELBOW, STL., C.M.L.C., CL150 FLG.
7. 4" FLANGED GATE VALVE CL150.
8. 4" FLG INSULATION KIT (WHEN WATER MAIN IS DUCTILE IRON)
9. USE 2000 PSI MINIMUM CONCRETE FOR THRUST BLOCKS AND CONCRETE PAD. PLACE CONCRETE ON UNDISTURBED OR COMPACTED SOIL. THRUST BLOCKS MUST MEET REQUIREMENTS OF P.W.D. STD. W-4.
10. ANCHOR ROD PER STD. W-4.
11. VALVE BOX PER P.W.D. STD. W-5.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

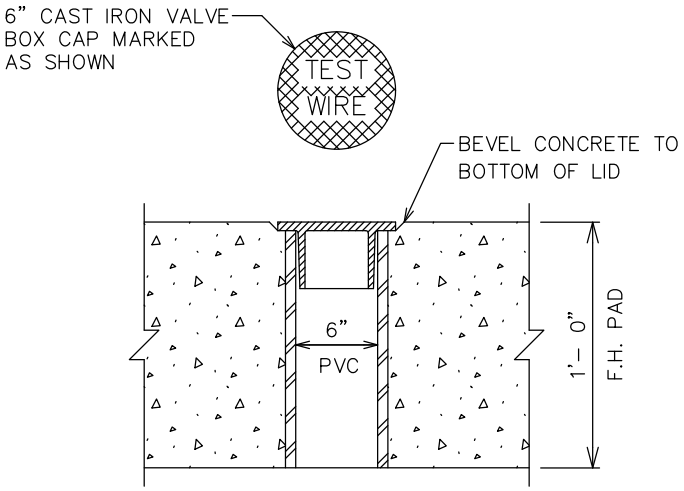
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4" BLOW-OFF ASSEMBLY

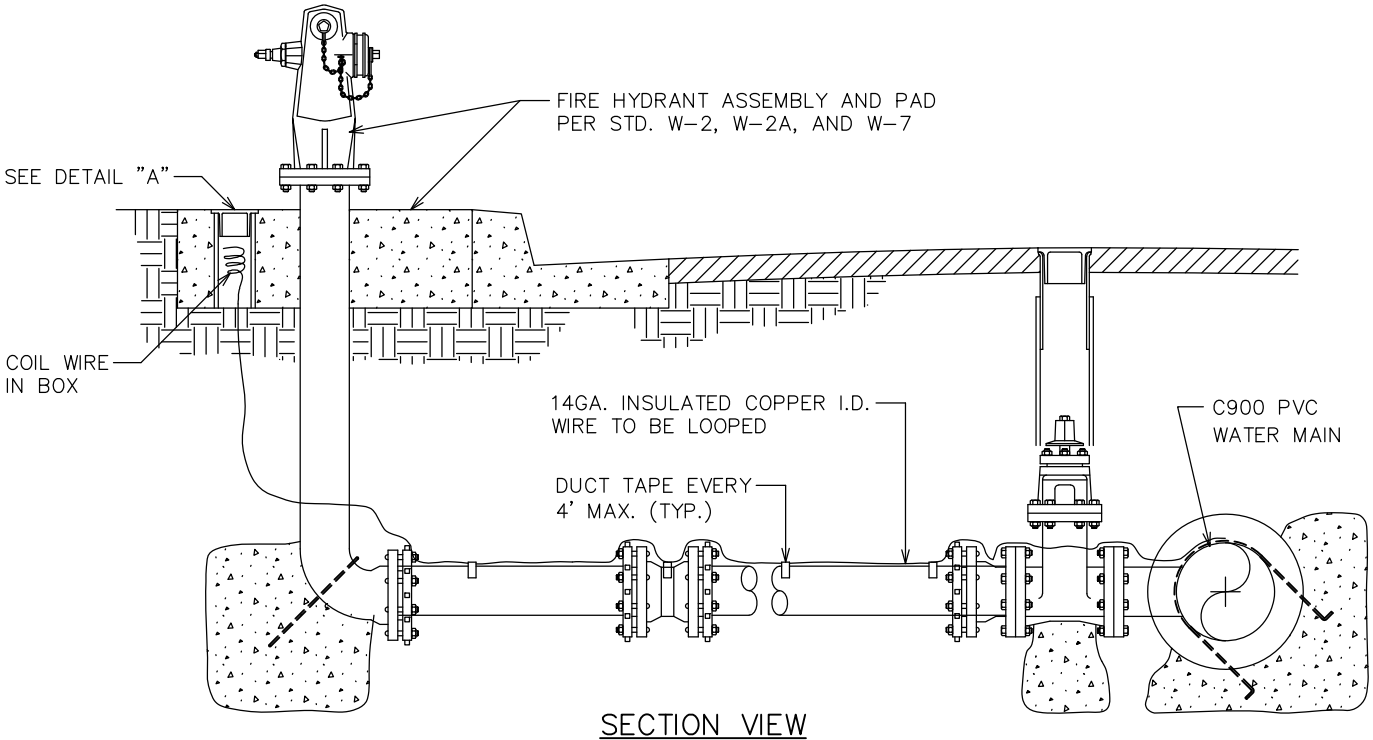
W-7



PLAN VIEW
N.T.S.



DETAIL "A"
N.T.S.



SECTION VIEW
N.T.S.

GENERAL NOTES:

1. WIRE MUST BE LAID ON TOP OF PIPE AND FASTENED SECURELY AT 4' MAX. INTERVALS WITH AN EIGHT INCH LENGTH OF DUCT TAPE OR OTHER APPROVED METHOD.

2. SPLICES TO BE MADE WITH BUTT CONNECTORS AND ARE TO BE ENCAPSULATED WITH RUBBER SEALING TAPE (POLYISOBUTELENE) PER DUET INDUSTRIES OR OTHER APPROVED TYPE.

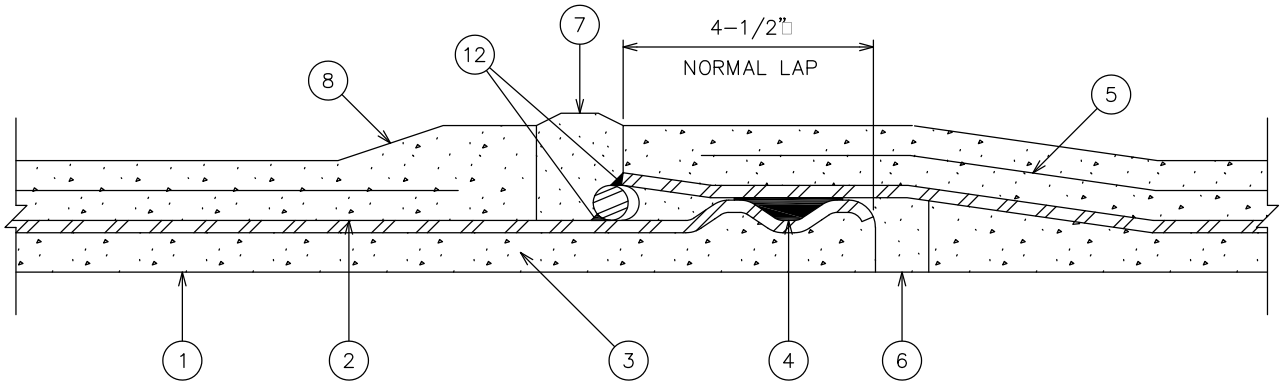
3. INSTALL TEST STATION AT ALL DEAD ENDS OR POINT OF CONNECTION.

PALMDALE WATER DISTRICT
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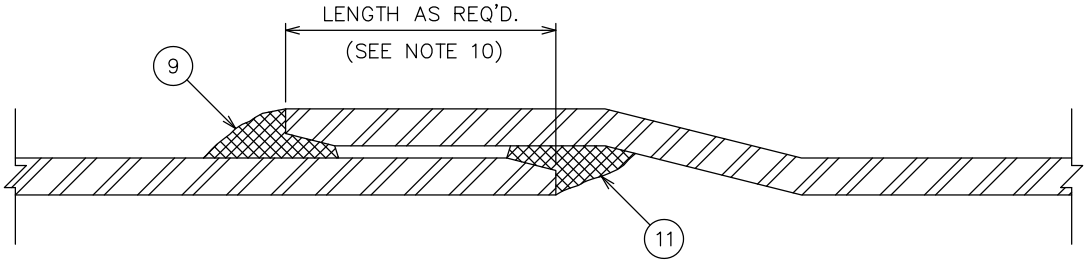
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

INSTALLATION OF IDENTIFICATION WIRE
(C-900 PVC PIPE)

W-8



TYPICAL RUBBER GASKET JOINT



TYPICAL LAP-WELDED SLIP JOINT

GENERAL NOTES:

1. I.D. PIPE
2. O.D. CYLINDER
3. CEMENT MORTAR LINING
4. RUBBER GASKET
5. WIRE REINFORCEMENT
6. CEMENT MORTAR – PLACE IN FIELD – STEEL TROWEL FINISH FOR PIPE 24" DIAMETER & LARGER, BALL FINISHED FOR LESS THAN 24" DIAMETER.
7. CEMENT GROUT PLACED IN FIELD WITH FACTORY SUPPLIED DIAPERS.
8. CEMENT MORTAR COATING
9. OUTSIDE WELD
10. NORMAL LAP – 1-1/2 INCHES. 10TH JOINT LAP – 3 INCHES (NOT TO BE WELDED UNTIL 9 JOINTS ON EACH SIDE HAVE BEEN WELDED).
11. INSIDE WELD MAY BE SUBSTITUTED FOR OUTSIDE WELD.
12. CONTINUITY CONNECTOR.

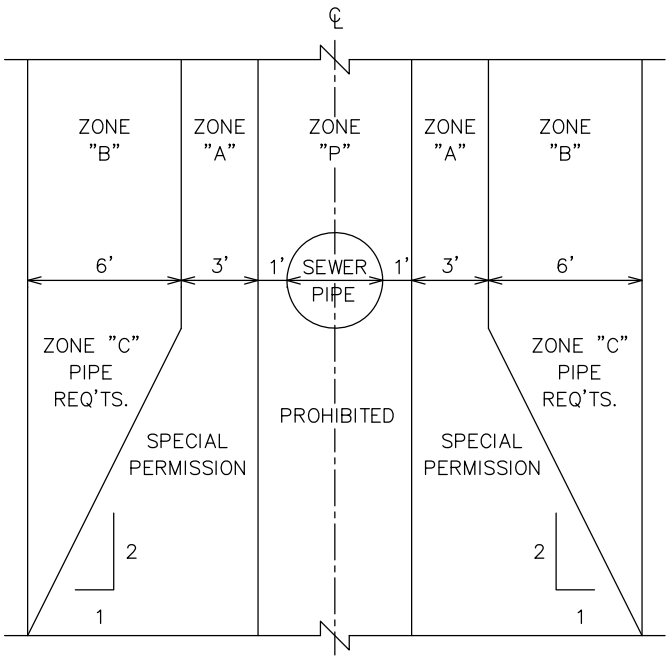
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: DEC. 2021 CMV
APPROVED: Scott Rogers

TYPICAL STEEL PIPE JOINT DETAILS

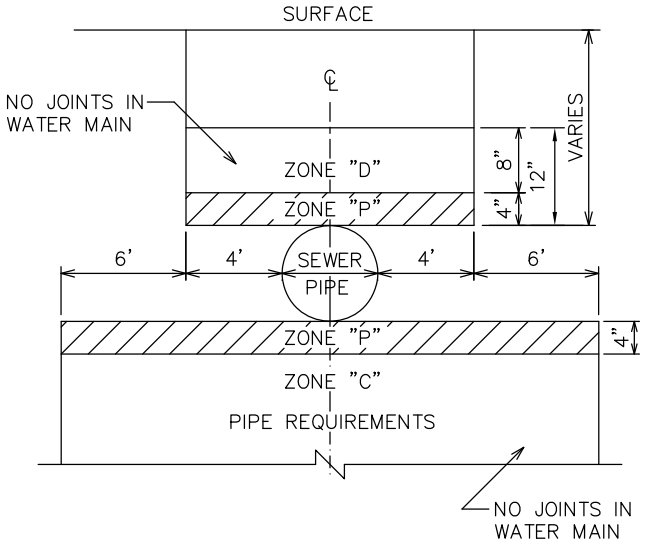
W-9

PARALLEL CONSTRUCTION



SPECIAL CONSTRUCTION WILL BE REQUIRED IF HORIZONTAL CLEARANCE BETWEEN PRESSURE WATER MAIN AND SEWER LINE IS LESS THAN 10 FEET. SEE THE ZONE ABOVE CORRESPONDING TO CONSTRUCTION REQUIREMENTS BELOW.

PERPENDICULAR CONSTRUCTION



SPECIAL CONSTRUCTION WILL BE REQUIRED IF VERTICAL CLEARANCE BETWEEN PRESSURE WATER MAIN AND SEWER LINE IS LESS THAN 1 FOOT AT CROSSING. SEE THE ZONE ABOVE CORRESPONDING TO CONSTRUCTION REQUIREMENTS BELOW.

ZONE	WATER MAIN CONSTRUCTION REQUIREMENTS
A	NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE HEALTH AGENCY.
B	USE THE FOLLOWING TYPES OF PIPE: DUCTILE IRON PIPE, C.M.L. WITH HOT DIP BITUMINOUS COATING OR STEEL PIPE 10 GA. (MIN.), C.M.L. & C.M.C. WITH WELDED JOINTS.
C	NO JOINTS WITHIN 10 FEET OF OUTER EDGES OF SEWER LINE. PIPE REQUIREMENTS: DUCTILE IRON PIPE, C.M.L. WITH HOT DIP BITUMINOUS COATING OR STEEL PIPE 10 GA. (MIN.), C.M.L. & C.M.C. WITH WELDED JOINTS. PIPE SHALL BE 20 FT LENGTHS
D	NO JOINTS WITHIN 4 FEET OF EITHER SIDE OF SEWER LINE. USE THE FOLLOWING TYPES OF PIPE & MATERIALS: DUCTILE IRON PIPE, C.M.L. AND POLYETHYLENE WRAPPED OR STEEL PIPE 10 GA. (MIN.), C.M.L. & C.M.C. WITH WELDED JOINTS.
P	PROHIBITED ZONE – NO WATER MAINS ARE ALLOWED TO BE INSTALLED WITHIN THIS ZONE.

GENERAL NOTES:

1. WATER MAINS AND SEWER LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH.

2. SEPARATION DISTANCES SPECIFIED SHALL BE MEASURED FROM THE OUTER EDGES OF PIPE.

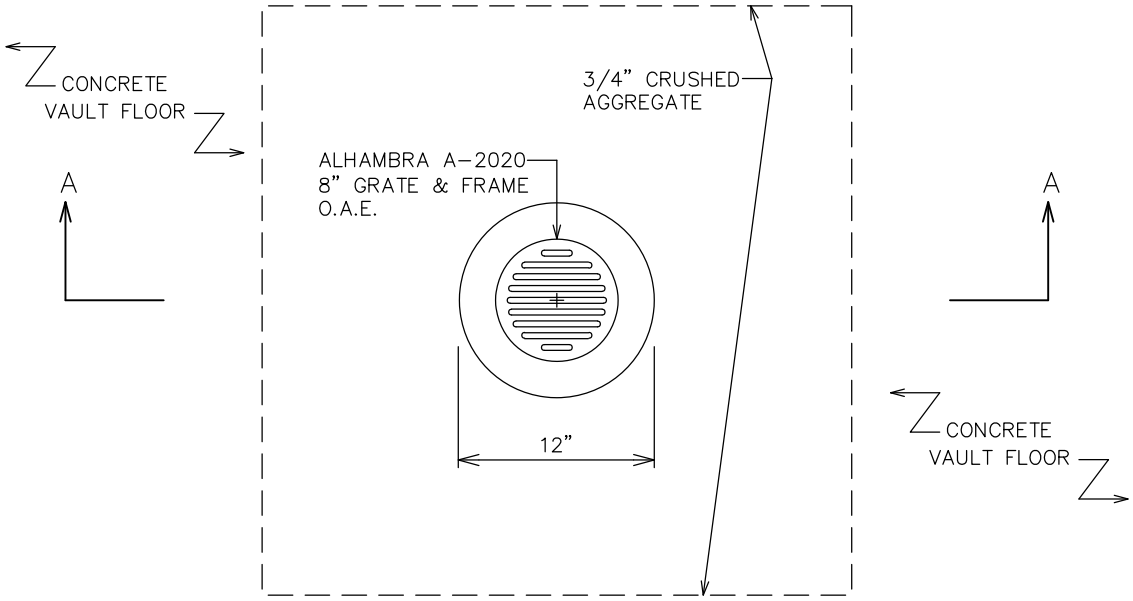
3. THE "CALIFORNIA WATERWORKS STANDARDS" SETS FORTH THE MINIMUM SEPARATION REQUIREMENTS FOR WATER MAINS AND SEWER LINES. THESE STANDARDS ARE CONTAINED IN SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

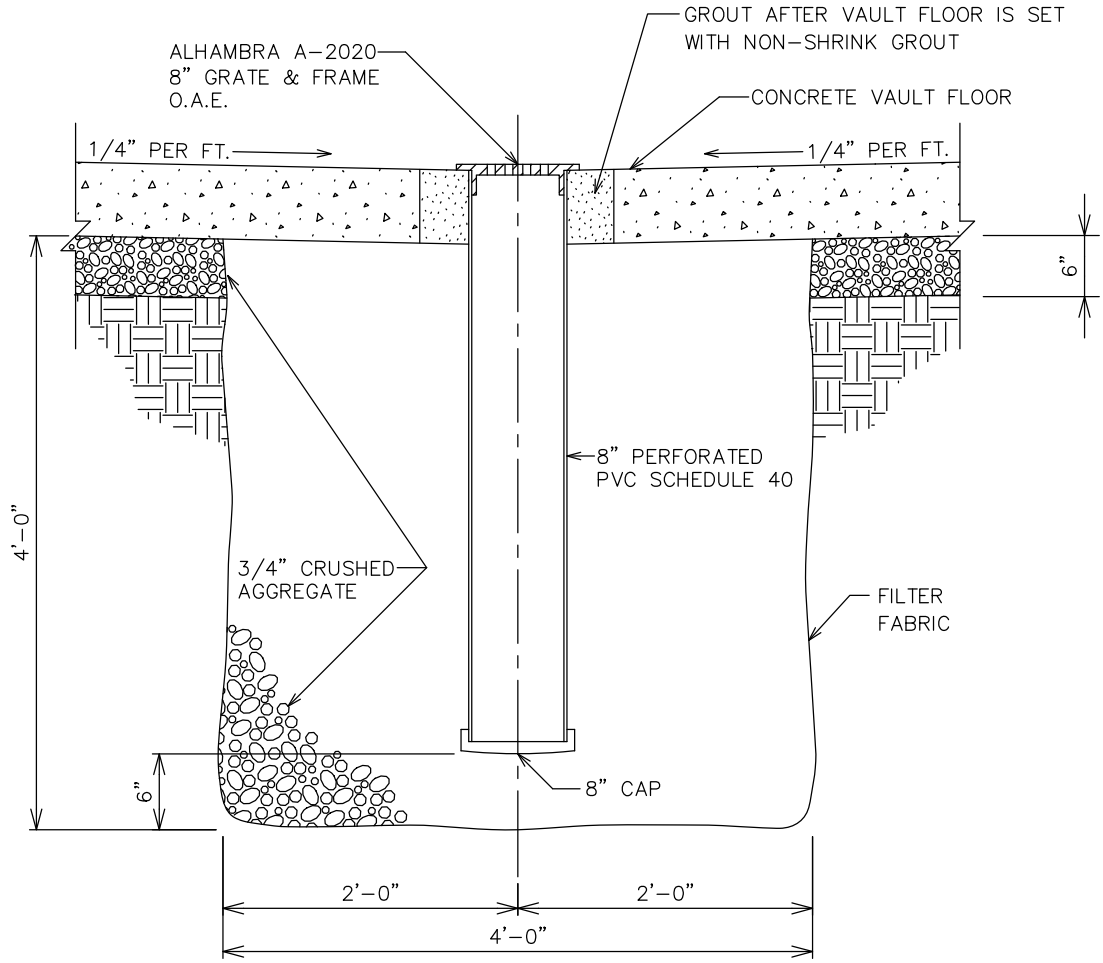
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

DESIGN REQUIREMENTS FOR WATER MAINS IN THE VICINITY OF SANITARY SEWERS

W–10



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

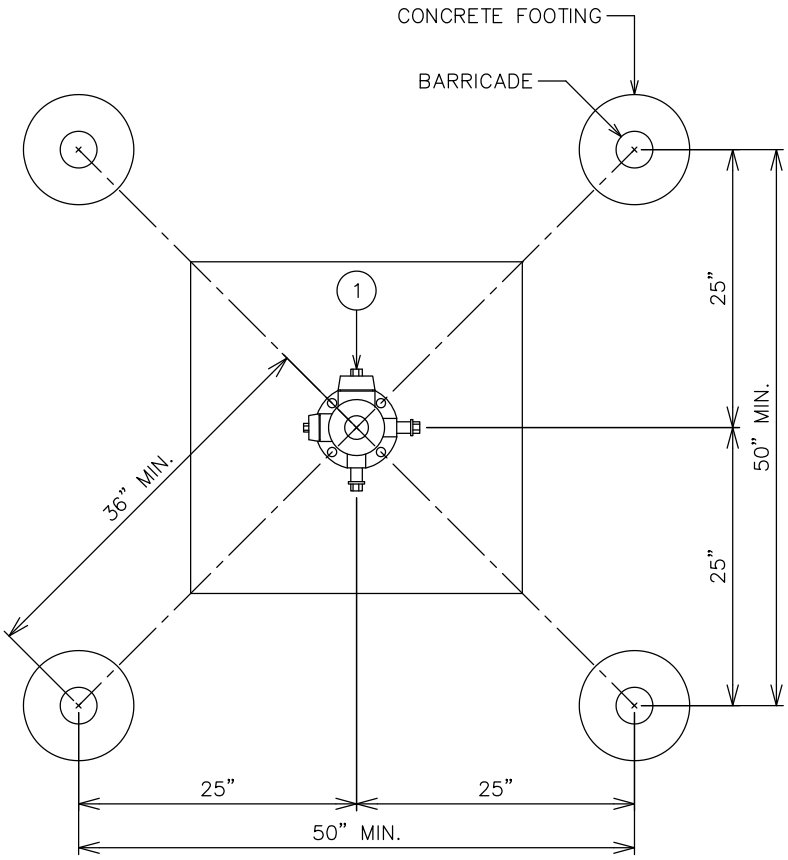
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

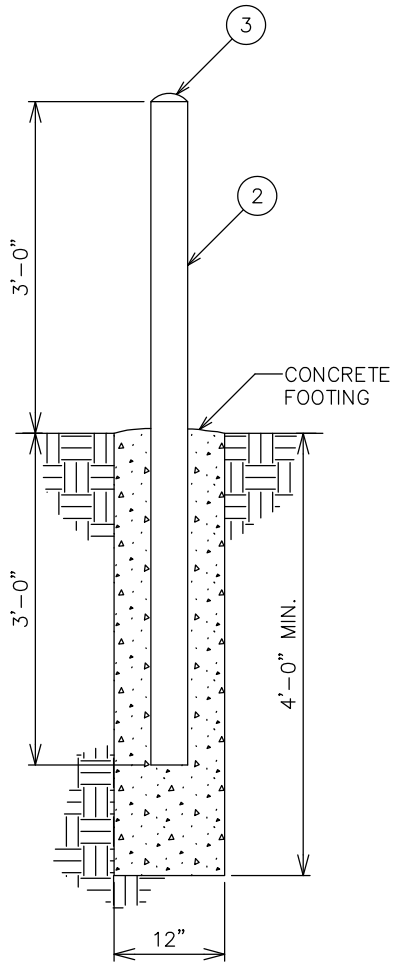
SUMP DETAIL FOR METER VAULTS
(TO BE LOCATED PER APPROVED PLAN)

W-12

STREET WITHOUT CONCRETE CURB



BARRICADE PLAN
TYPICAL PER L.A. CO. FIRE DEPARTMENT
N.T.S.



BARRICADE DETAIL
N.T.S.

GENERAL NOTES:

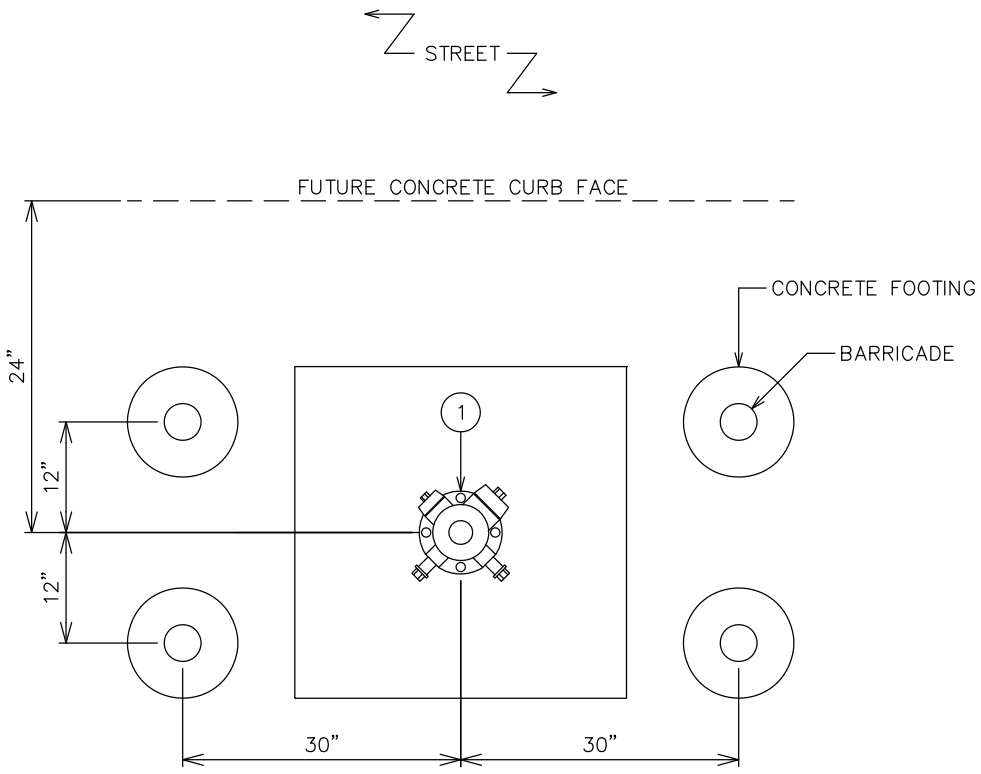
1. WATER DEVICE (HYDRANT SHOWN) BEING PROTECTED.
2. 6' OF 4" STANDARD STEEL PIPE SCHEDULE 40 CONCRETE FILLED
3. CONCRETE CAP
4. FOUR BARRICADES ARE TO BE USED UNLESS OTHERWISE SPECIFIED.
5. THE EXACT LOCATION OF BARRICADES MAY BE CHANGED BY THE DISTRICT REPRESENTATIVE IN THE FIELD.
6. THE STEEL PIPE ABOVE THE GROUND SHALL BE PAINTED A MINIMUM OF ONE FIELD COAT OF RED PRIMER AND TWO COATS OF RUST-OLEUM SAFETY YELLOW OR APPROVED EQUAL.
7. 25" BARRICADE SPACING SHALL BE WIDENED AS REQUIRED TO PROVIDE CLEARANCE FOR ATTACHMENTS TO FIRE HYDRANT OUTLETS.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

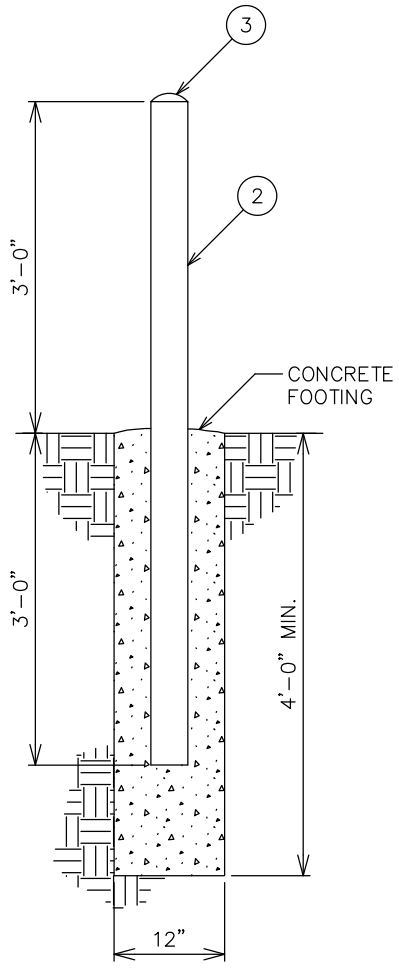
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL BARRICADES DETAIL
(STREET WITHOUT CONCRETE CURB)

W-14



TEMPORARY BARRICADE PLAN
TYPICAL PER L.A. CO. FIRE DEPARTMENT
N.T.S.



BARRICADE DETAIL
N.T.S.

GENERAL NOTES:

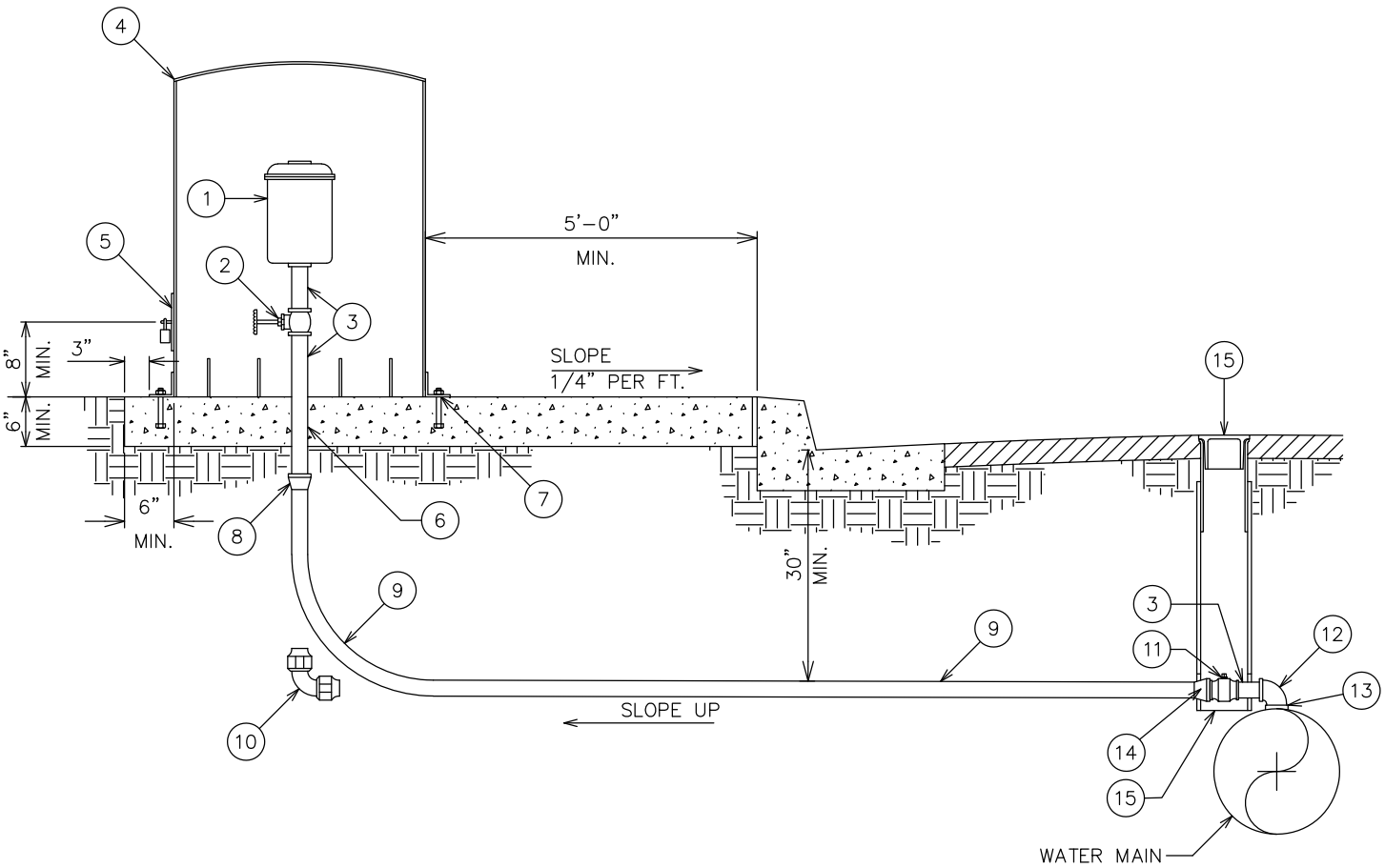
1. FIXTURE BEING PROTECTED.
2. 6' OF 4" STANDARD STEEL PIPE SCHEDULE 40 CONCRETE FILLED
3. CONCRETE CAP
4. FOUR BARRICADES ARE TO BE USED UNLESS OTHERWISE SPECIFIED.
5. THE EXACT LOCATION OF BARRICADES MAY BE CHANGED BY THE DISTRICT REPRESENTATIVE IN THE FIELD.
6. THE STEEL PIPE ABOVE THE GROUND SHALL BE PAINTED A MINIMUM OF ONE FIELD COAT OF RED PRIMER AND TWO COATS OF RUST-OLEUM SAFETY YELLOW OR APPROVED EQUAL.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL TEMPORARY BARRICADES DETAIL
FOR FIRE HYDRANTS

W-15



KEY NOTES:

1. WHEN WATER MAIN IS REQUIRED TO BE HOT TAPPED USE M.I.P. x M.I.P. CORPORATION VALVE.
2. IF NO CURB AND GUTTER OR IF TYPE "E" CURB (ROLLED). INSTALL BARRICADES PER STANDARD W–14 AS REQUIRED (RUST–OLEUM SAFETY YELLOW).
3. ALL VALVES AND PIPING ABOVE GROUND SHALL BE INSULATED.
4. PAINT VALVE ASSEMBLY ABOVE GROUND, AND STEEL COVER (INSIDE AND OUTSIDE), WITH TWO COATS OF RED PRIMER AND TWO COATS OF RUSTOLEUM FOREST GREEN OR APPROVED EQUAL.
5. USE PROPER CLASS FITTINGS FOR WATER WORKING PRESSURE (CLASS 150 MINIMUM).
6. SEE PLANS FOR VALVE SIZES AND USE SAME SIZE FITTINGS AND NIPPLE LENGTHS TO SUIT (NO CLOSE NIPPLES).
7. ALL EDGES AGAINST OTHER CONCRETE TO HAVE PREFORMED JOINT FILLER.
8. ALL PIPING AND APPURTENANCES WILL BE AIR VACUUM VALVE SIZE.
9. 36" x 36" x 6" CONCRETE PAD WITH SIDEWALK FINISH TO BE SLOPED 1/4" PER FOOT TOWARDS THE CURB.

MATERIAL DESCRIPTION:

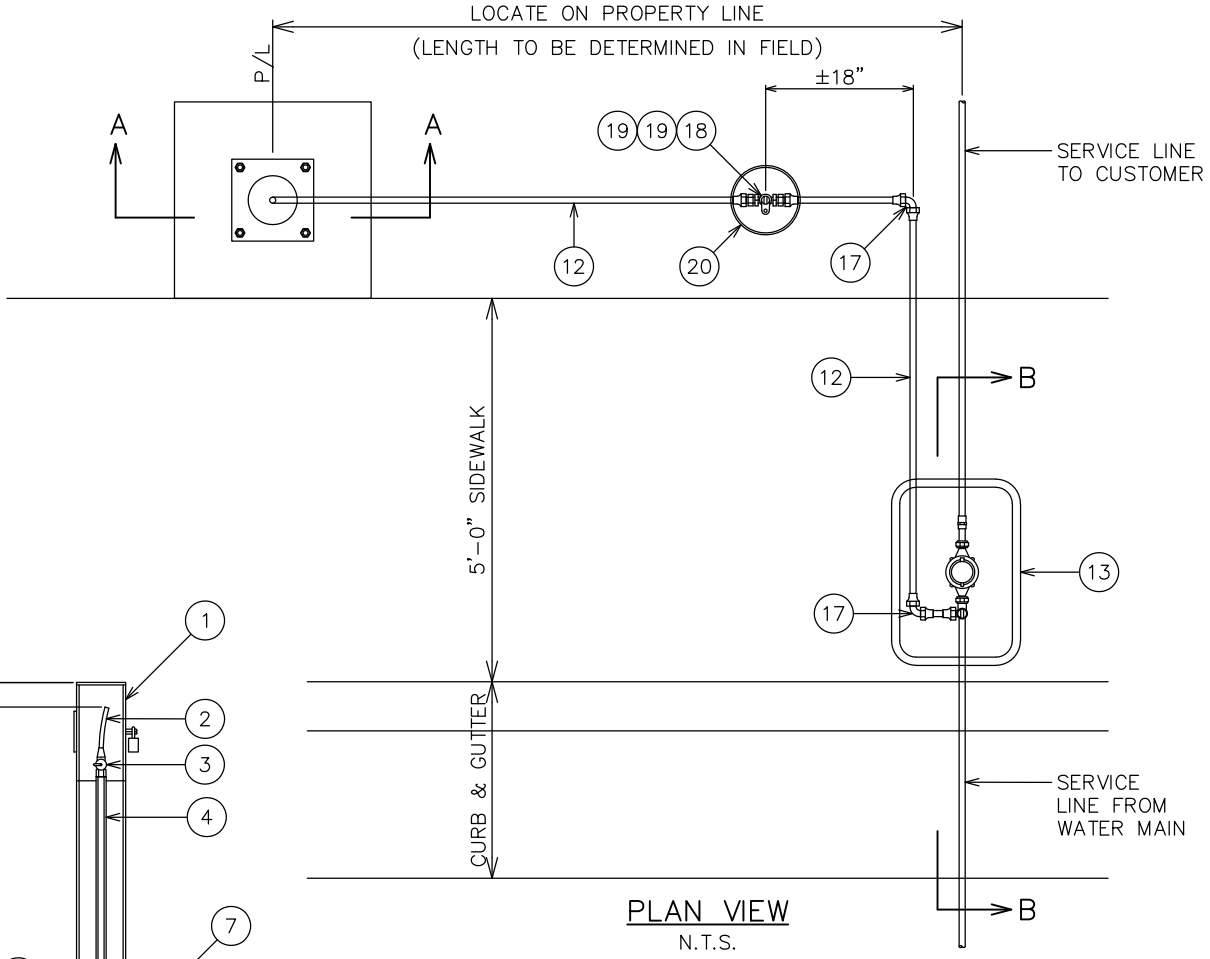
① COMBINATION AIR AND VACUUM RELEASE VALVE A.R.I. D–040.
② GATE VALVE, BRASS
③ BRASS NIPPLE
④ A.R.I. VALVE ENCLOSURE
⑤ 6" x 6" DOOR WITH WELDED HINGES AND PADLOCK HASP. PADLOCK TO BE SUPPLIED BY DISTRICT.
⑥ PROTECT PIPE WITH 20 MIL TAPE
⑦ 3" x 3" x ," , 4" LONG WITH Œ" DIA. HOLE WELDED TO STEEL COVER (4 REQUIRED)
⑧ COUPLING, F.I.P. x COMPRESSION FOR 2", FIP x COMP. FOR 1"
⑨ USE TYPE "K" COPPER TUBING.
⑩ COMPRESSION 90^ ELBOW REQUIRED FOR 1" AND 2" ASSEMBLIES.
⑪ BALL STRAIGHT SVC VALVE (JONES NO. J–1900W, OR APPROVED EQUAL)
⑫ 90^ STREET ELBOW, BRASS
⑬ CONNECTIONS SHALL BE MADE WITH MATERIALS SPECIFIED IN P.W.D. STD. W–1.
⑭ MIP x COMPRESSION ADAPTER FOR 2", MIP x COMP. ADAPTER FOR 1".
⑮ VALVE BOX PER P.W.D. STD. W–5 (NOTCH VALVE RISER AROUND PIPE)

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

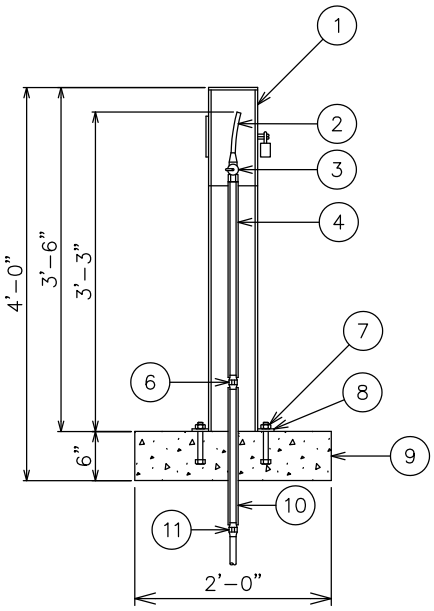
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

AIR AND VACUUM RELEASE VALVE
(TYPICAL 1" THROUGH 2" COMBINATION)

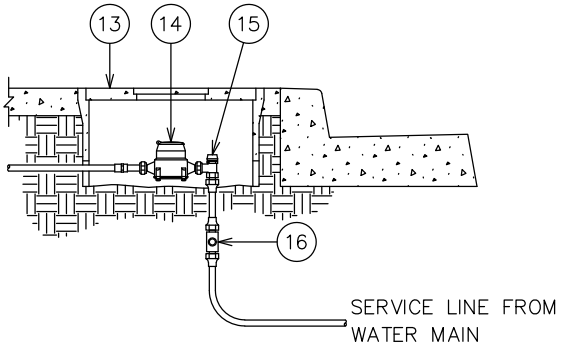
W–16



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

MATERIAL DESCRIPTION:

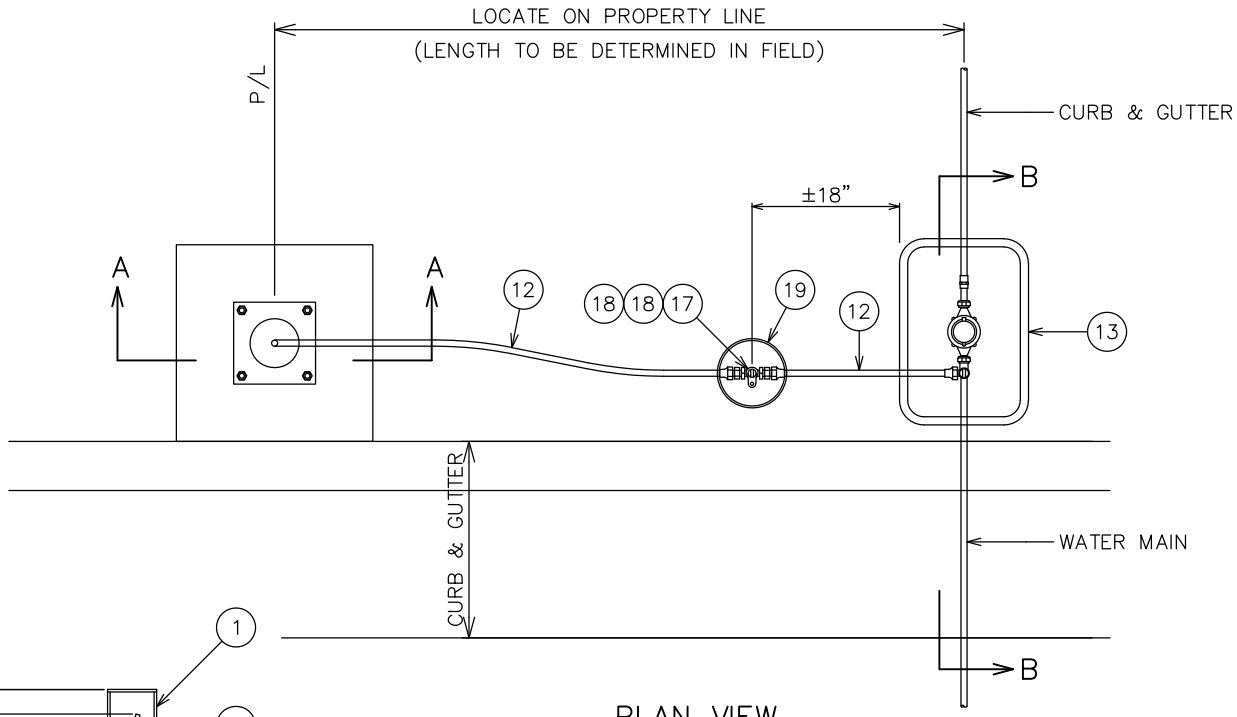
① 6" DIA. STL. PIPE WITH 12" HINGED DOOR & CLASP FOR LOCKING (PADLOCK TO BE SUPPLIED BY THE DISTRICT).
② 3/8" COPPER TUBE
③ 3/4" BALL VALVE WITH 3/4" x 3/8" BRASS BUSHING & 3/8" M.I.P. x COMP. ADAPTER.
④ 3/4" x 30" L.F. BRASS NIPPLE WITH PIPE INSULATION.
⑤ NO ITEM
⑥ 3/4"L.F. BRASS COUPLING
⑦ 4-1/2" ANCHOR BOLTS
⑧ 10" x 10" x 3/16" BASE PLATE
⑨ 24" x 24" x 6" CONCRETE PAD
⑩ 3/4"x 18" L.F. BRASS NIPPLE WITH PIPE INSULATION
⑪ 3/4" F.I.P. x COMP. ADAPTER
⑫ 3/4" TYPE "K" SOFT COPPER TUBING
⑬ METER BOX
⑭ METER
⑮ ANGLE STOP WITH COMPRESSION INLET (SIZE VARIES).
⑯ VARIES" x 3/4" COMPRESSION TEE
⑰ 3/4" COMPRESSION 90° ELBOW
⑱ 3/4" STRAIGHT STOP
⑲ 3/4" M.I.P. x COMP. ADAPTER
⑳ IRRIGATION CONTROL VALVE BOX

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

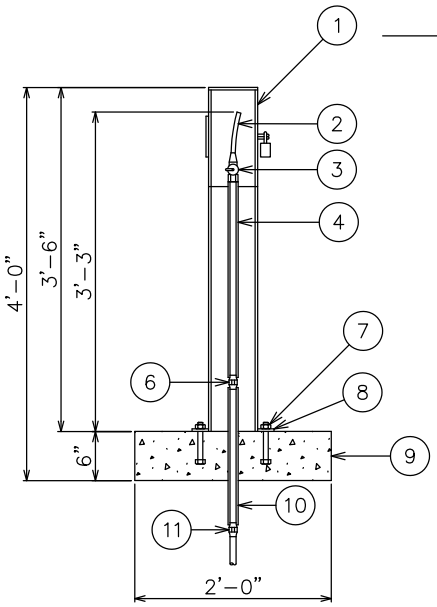
DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

BACTERIOLOGICAL TEST STATION
(TEST STATION BEHIND SIDEWALK)

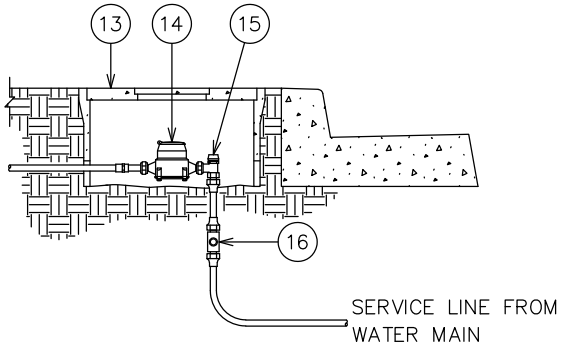
W-17



PLAN VIEW
N.T.S.



SECTION A–A
N.T.S.



SECTION B–B
N.T.S.

KEY NOTES:

IF NO CURB AND GUTTER OR IF TYPE "E" CURB (ROLLED), INSTALL BARRICADES PER P.W.D. STD. W–14 AS REQUIRED (RUSTOLEUM SAFETY YELLOW)

MATERIAL DESCRIPTION:

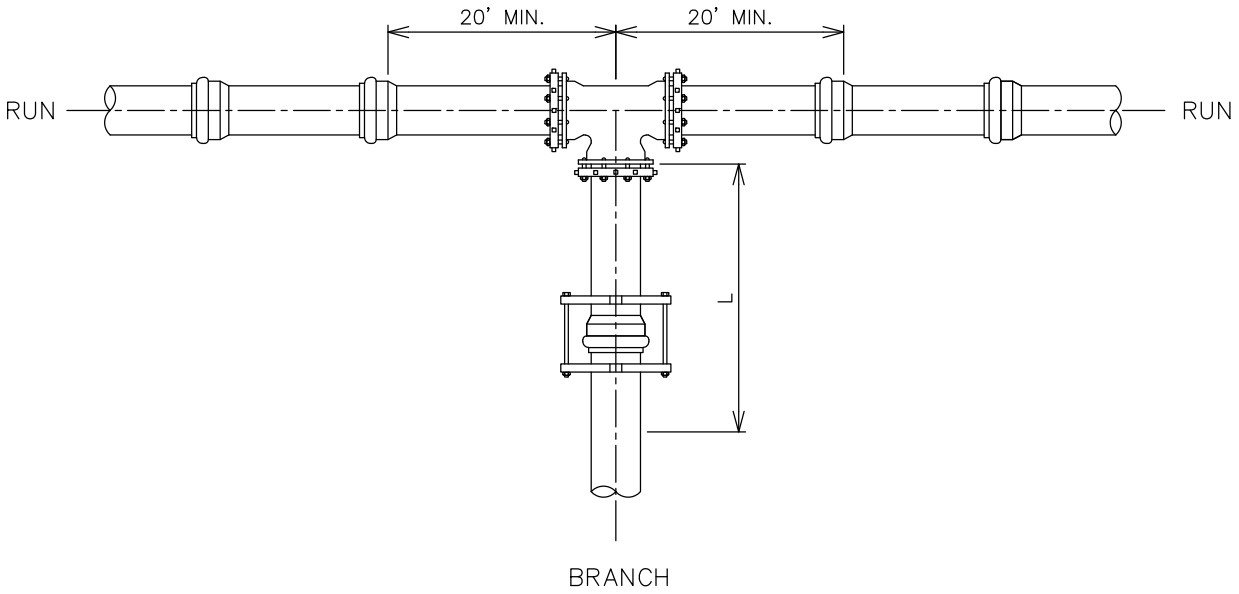
① 6" DIA. STL. PIPE WITH 12" HINGED DOOR & CLASP FOR LOCKING (PADLOCK TO BE SUPPLIED BY THE DISTRICT).
② 3/8" COPPER TUBE
③ 3/4" BALL VALVE WITH 3/4" x 3/8" BRASS BUSHING & 3/8" M.I.P. x COMP. ADAPTER.
④ 3/4" x 30" L.F. BRASS NIPPLE WITH PIPE INSULATION.
⑤ NO ITEM
⑥ 3/4" L.F. BRASS COUPLING
⑦ 4–1/2" ANCHOR BOLTS
⑧ 10" x 10" x 3/16" BASE PLATE
⑨ 24" x 24" x 6" CONCRETE PAD
⑩ 3/4" x 18" L.F. BRASS NIPPLE WITH PIPE INSULATION
⑪ 3/4" F.I.P. x COMP. ADAPTER
⑫ 3/4" TYPE "K" SOFT COPPER TUBING
⑬ METER BOX
⑭ METER
⑮ ANGLE STOP WITH COMPRESSION INLET (SIZE VARIES).
⑯ VARIES" x 3/4" COMPRESSION TEE
⑰ 3/4" COMPRESSION 90° ELBOW
⑱ 3/4" STRAIGHT STOP
⑲ 3/4" M.I.P. x COMP. ADAPTER
⑳ IRRIGATION CONTROL VALVE BOX

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

BACTERIOLOGICAL TEST STATION
(TEST STATION FOR NO SIDEWALK OR SIDEWALK WIDER THAN 5')

W–17A



RUN SIZE

BRANCH SIZE	4	6	8	10	12	14	16	18	20	24
4	*	*	*	*	*	*	*	*	*	*
6		*	*	*	*	*	*	*	*	*
8			*	*	*	*	*	*	*	*
10				*	*	*	*	*	*	*
12					13	*	*	*	*	*
14						24	13	*	*	*
16							36	25	14	*
18								47	37	16
20									58	39
24										79

* – FOR THIS CONDITION NEED ONLY RESTRAIN THE BRANCH OUTLET OF THE TEE.

RESTRAINED LENGTHS, "L" (IN FEET)

1. RESTRAIN THE TWO MECHANICAL JOINTS ON THE RUN SIDES OF THE TEE. THERE SHOULD BE A FULL 20' LENGTH OF PIPE INSTALLED ON EACH SIDE OF THE RUN.

2. ALL JOINTS WITHIN THE LENGTH "L" ON THE BRANCH MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS ON PUSH–ON PIPE PER P.W.D. SPECIFICATION.

3. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION OF GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS ON STANDARD DRAWING W–20.

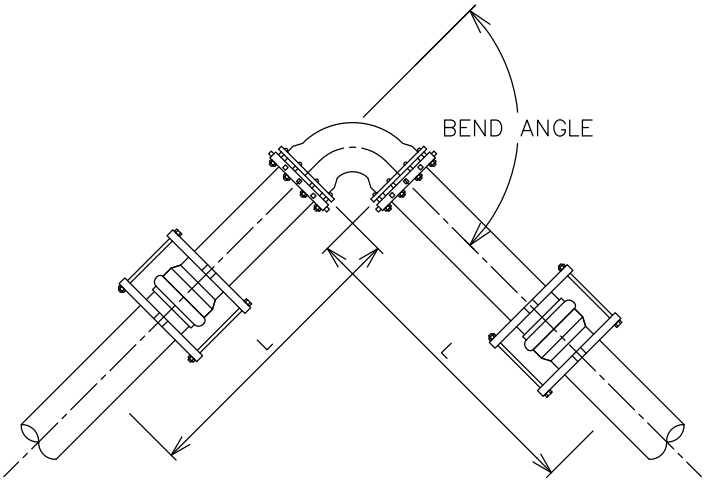
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: DEC. 2021 CMV
APPROVED: Scott Rogers

STANDARD TEE RESTRAINT
(FOR C–900 PVC PIPE)

W–18

HORIZONTAL BEND



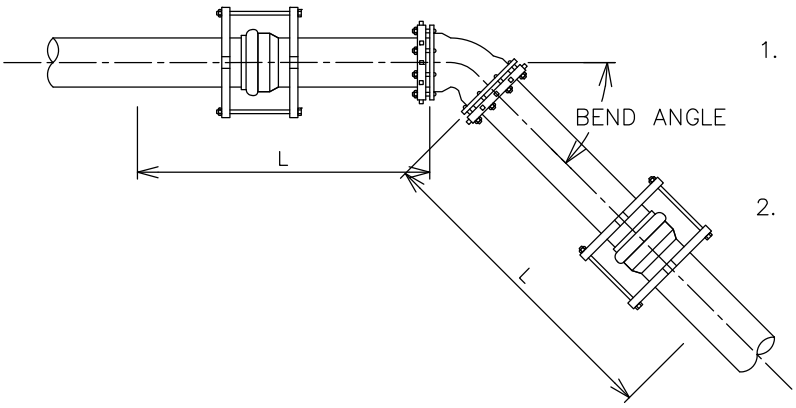
1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER P.W.D. SPECIFICATION.

2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION OF GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS ON STANDARD DRAWING W-20.

RESTRAINED LENGTHS, "L" (IN FEET)

BEND ANGLE \ RUN SIZE	4	6	8	10	12	14	16
11.25	3	3	3	4	4	5	5
22.5	3	5	7	7	9	10	11
45	7	11	13	15	18	20	23
90	17	24	31	37	43	49	55

VERTICAL BEND



1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER P.W.D. SPECIFICATION.

2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION OF GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS ON STANDARD DRAWING W-20.

RESTRAINED LENGTHS, "L" (IN FEET)

BEND ANGLE \ RUN SIZE	4	6	8	10	12	14	16
11.25	5	7	9	11	13	15	17
22.5	11	15	19	23	27	31	35
45	23	31	40	48	56	64	72

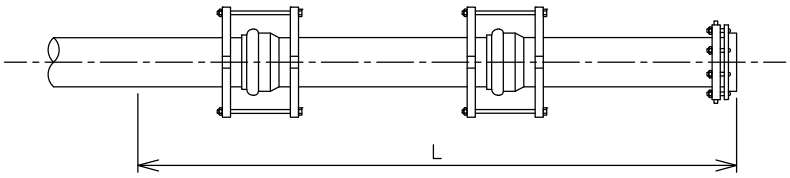
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: DEC. 2021 CMV
APPROVED: Scott Rogers

STANDARD BEND RESTRAINT
(FOR C-900 PVC PIPE)

W-19

DEAD END P.V.C. PIPE



1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH–ON PIPE PER P.W.D. SPECIFICATION.

2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE GENERAL NOTES BELOW.

PIPE SIZE

4	6	8	10	12	14	16
52	73	96	115	136	155	174

RESTRAINED LENGTHS, "L" (IN FEET)

RESTRAINED JOINT LENGTHS USAGE GENERAL NOTES

RESTRAINED LENGTH CALCULATIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA TYPICALLY USED WITH BACKFILL IN P.W.D. ;

1. FORTY–TWO (42) INCHES MINIMUM DEPTH OF COVER.

2. A MINIMUM SAFETY FACTOR OF 1.5

3. SOIL TYPE PER P.W.D. SPECIFICATION.

4. PIPE ZONE BACKFILL FROM A DEPTH OF SIX (6) INCHES MINIMUM UNDER THE PIPE TO TWELVE (12) INCHES ABOVE THE TOP OF PIPE SHALL BE IMPORTED FILL SAND HAVING A MINIMUM SAND EQUIVALENCY OF SAE–30. PIPE ZONE AND TRENCH BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DENSITY OF THE MATERIAL AT OPTIMUM MOISTURE CONTENT.

5. 200 PSI TEST PRESSURES FOR FOUR (4) THROUGH SIXTEEN (16) INCH SIZE PIPES.

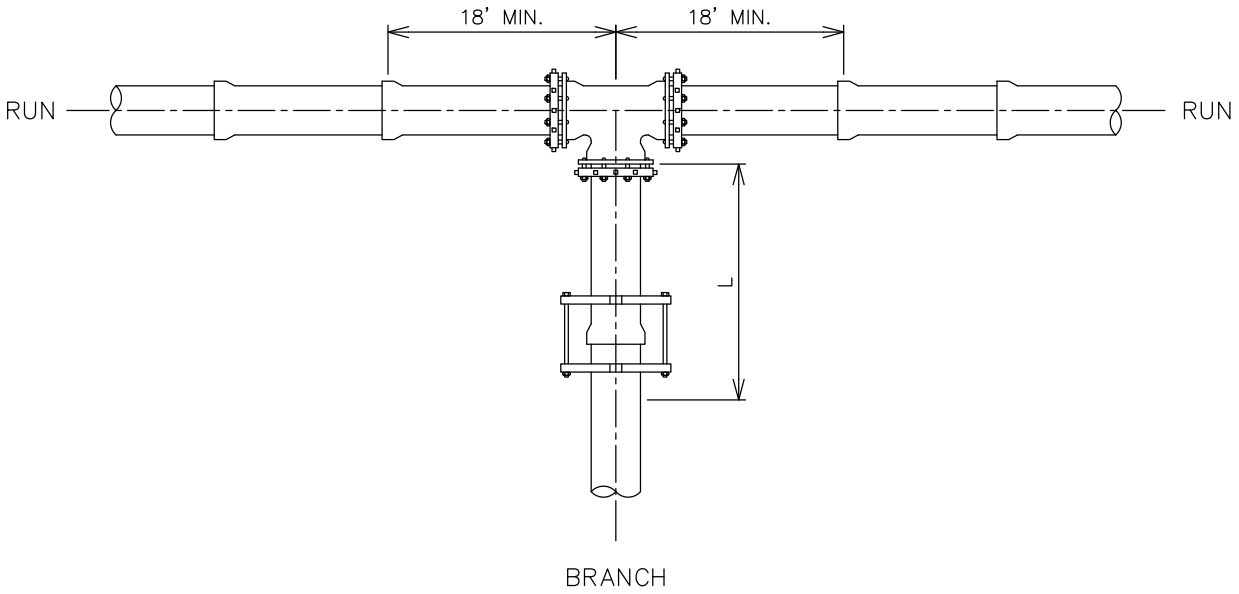
   IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, THE RESTRAINED JOINT LENGTH SHALL BE DETERMINED BY THE DISTRICT ENGINEER.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

STANDARD DEAD END RESTRAINT
(FOR C–900 PVC PIPE)

W–20



RUN SIZE

BRANCH SIZE	4	6	8	10	12	14	16	18	20	24
4	*	*	*	*	*	*	*	*	*	*
6		*	*	*	*	*	*	*	*	*
8			*	*	*	*	*	*	*	*
10				*	*	*	*	*	*	*
12					13	*	*	*	*	*
14						24	13	*	*	*
16							36	25	14	*
18								47	37	16
20									58	39
24										79

* – FOR THIS CONDITION NEED ONLY RESTRAIN THE BRANCH OUTLET OF THE TEE.

RESTRAINED LENGTHS, "L" (IN FEET)

1. RESTRAIN THE TWO MECHANICAL JOINTS ON THE RUN SIDES OF THE TEE. THERE SHOULD BE A FULL 18' LENGTH OF PIPE INSTALLED ON EACH SIDE OF THE RUN.

2. ALL JOINTS WITHIN THE LENGTH "L" ON THE BRANCH MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS ON PUSH–ON PIPE PER P.W.D. SPECIFICATION.

3. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION OF GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS ON STANDARD DRAWING W–23.

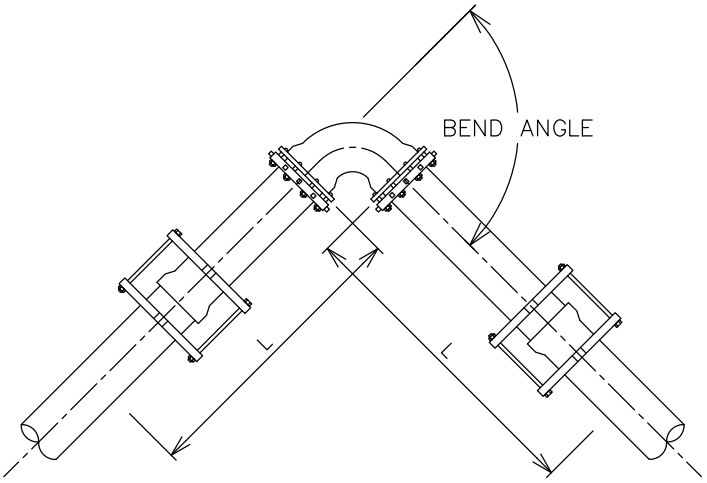
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

STANDARD TEE RESTRAINT
(FOR DUCTILE IRON PIPE)

W–21

HORIZONTAL BEND



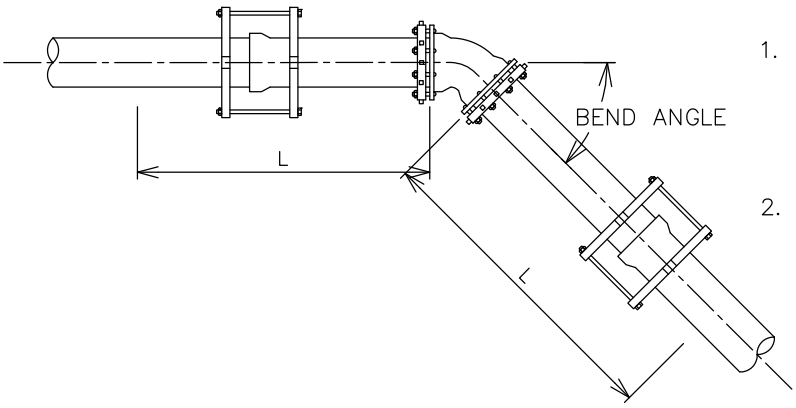
1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER P.W.D. SPECIFICATION.

2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION OF GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS ON STANDARD DRAWING W-23.

RESTRAINED LENGTHS, "L" (IN FEET)

BEND ANGLE \ RUN SIZE	4	6	8	10	12	14	16
11.25	3	3	3	4	4	4	5
22.5	3	4	7	7	8	9	10
45	7	9	12	15	17	19	21
90	16	23	29	35	40	45	51

VERTICAL BEND



1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER P.W.D. SPECIFICATION.

2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION OF GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS ON STANDARD DRAWING W-23.

RESTRAINED LENGTHS, "L" (IN FEET)

BEND ANGLE \ RUN SIZE	4	6	8	10	12	14	16
11.25	3	5	7	8	8	10	11
22.5	7	11	12	15	17	20	22
45	15	19	25	31	36	41	46

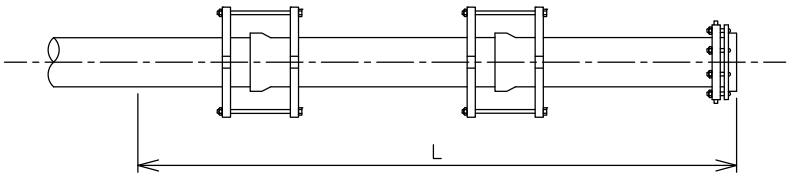
PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: DEC. 2019 MRW
APPROVED: Scott Rogers

STANDARD BEND RESTRAINT
(FOR DUCTILE IRON PIPE)

W-22

DEAD END DUCTILE IRON PIPE



1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH–ON PIPE PER P.W.D. SPECIFICATION.

2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE GENERAL NOTES BELOW.

PIPE SIZE

4	6	8	10	12	14	16
33	47	61	73	86	98	111

RESTRAINED LENGTHS, "L" (IN FEET)

RESTRAINED JOINT LENGTHS USAGE GENERAL NOTES

RESTRAINED LENGTH CALCULATIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA TYPICALLY USED WITH BACKFILL IN P.W.D. ;

1. FORTY–TWO (42) INCHES MINIMUM DEPTH OF COVER.

2. A MINIMUM SAFETY FACTOR OF 1.5

3. SOIL TYPE PER P.W.D. SPECIFICATION.

4. PIPE ZONE BACKFILL FROM A DEPTH OF SIX (6) INCHES MINIMUM UNDER THE PIPE TO TWELVE (12) INCHES ABOVE THE TOP OF PIPE SHALL BE IMPORTED FILL SAND HAVING A MINIMUM SAND EQUIVALENCY OF SAE–30. PIPE ZONE AND TRENCH BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DENSITY OF THE MATERIAL AT OPTIMUM MOISTURE CONTENT.

5. 200 PSI TEST PRESSURES FOR FOUR (4) THROUGH SIXTEEN (16) INCH SIZE PIPES.

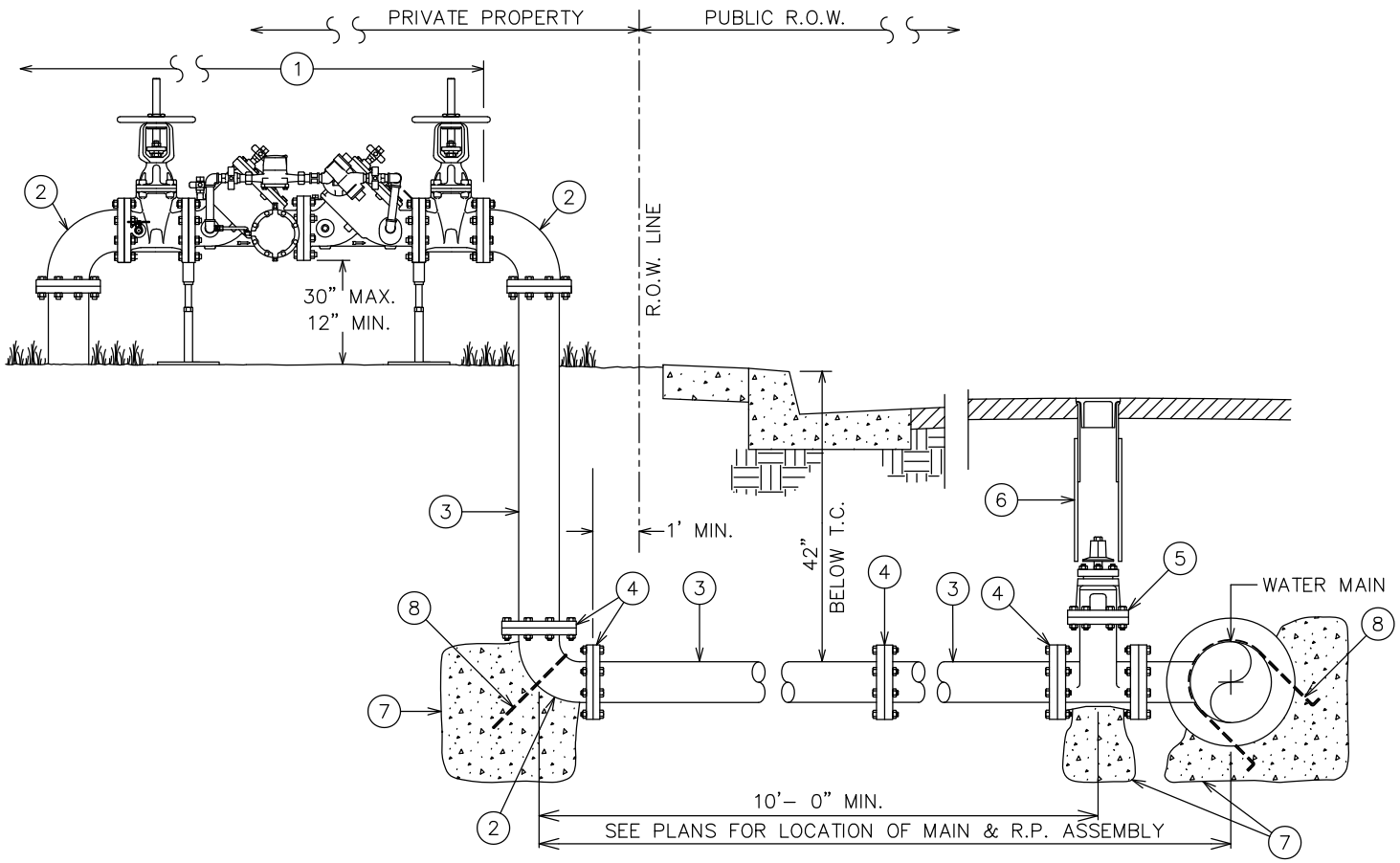
   IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, THE RESTRAINED JOINT LENGTH SHALL BE DETERMINED BY THE DISTRICT ENGINEER.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

STANDARD DEAD END RESTRAINT
(FOR DUCTILE IRON PIPE)

W–23



KEY NOTES:

1. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE INCLUDING REPAIR OR REPLACEMENT AND MUST PROVIDE RESULTS OF REQUIRED ANNUAL BACKFLOW TEST TO THE DISTRICT.
2. METER ATTACHED TO REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA) SHALL BE OWNED AND MAINTAINED BY THE DISTRICT. RPDA METER TO BE ACCESSIBLE TO THE DISTRICT AT ALL TIMES.
3. ALL UNCOATED METAL SURFACES (INCLUDING NUTS AND BOLTS) INSTALLED UNDERGROUND SHALL BE THOROUGHLY COATED W/ NO-OX GREASE AND THEN BE WRAPPED WITH 8 MIL POLYETHYLENE SHEET (AWWA C-105).
4. INTERMEDIATE PIPE JOINTS IN LATERAL SHALL BE FLANGED. PIPE SHALL BE INSTALLED HORIZONTAL OR SLOPING DOWNWARD FROM MAIN TO PROVIDE MINIMUM COVER.
5. IF THE ABSENCE OF A CURB OR WHERE TYPE "E" CURB (ROLLED) IS USED, INSTALL BARRICADES PER P.W.D. STD. W-14 AS REQUIRED.

MATERIAL DESCRIPTION:

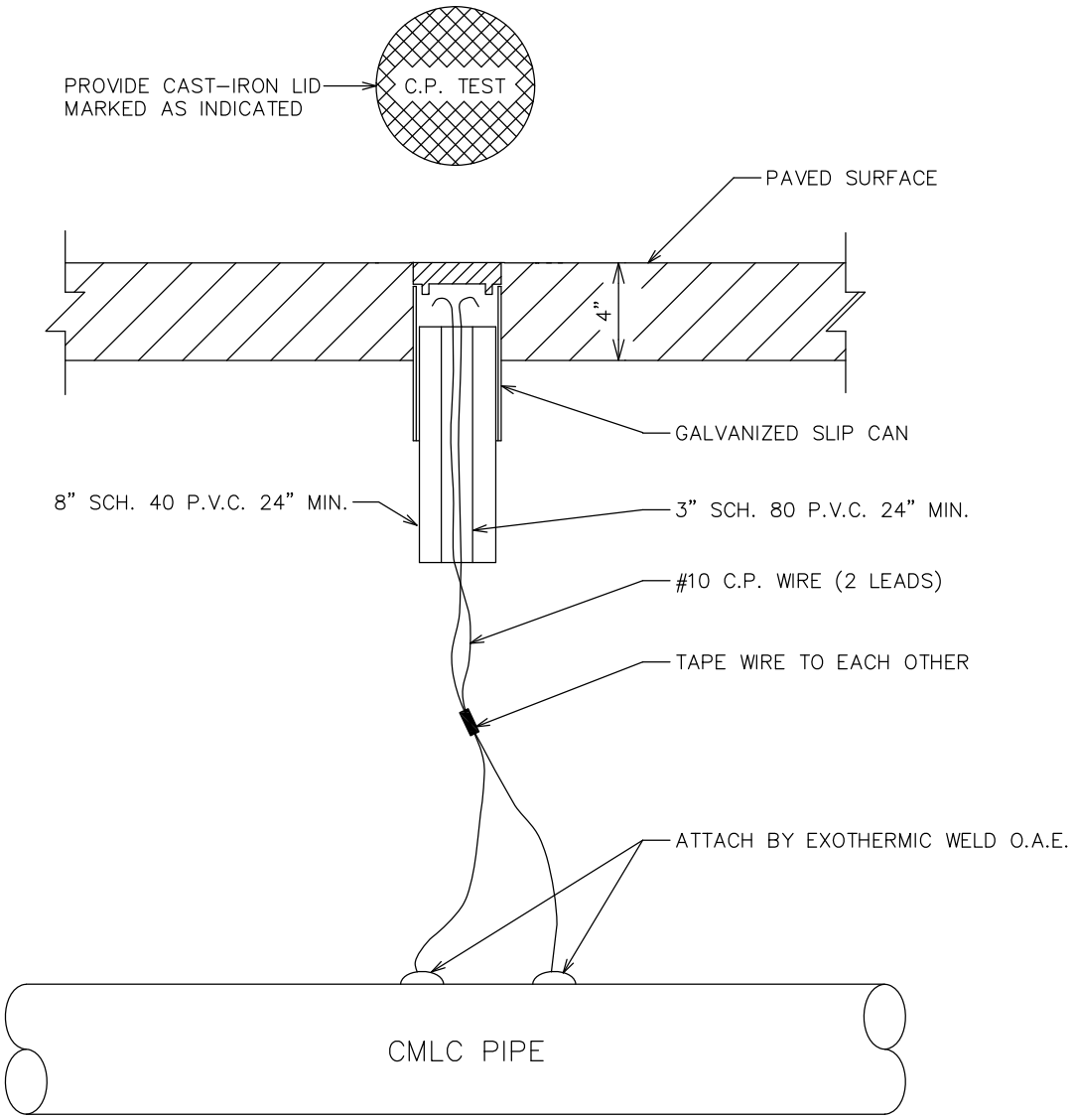
(1) REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA), CURRENT USC APPROVED MODELS ONLY.
(2) 90° FLANGED ELBOW STL., C.M.L.C., CL150 FLG.
(3) STL. PIPE 10 GA. MIN. C.M.L.& C. EXTEND NON-SHRINK MORTAR COATING WITH EXPANDED GALVANIZED LATH REINFORCEMENT TO MEET FLG. TAPER THICKNESS AND TO MEET FLG. HUB.
(4) SLIP-ON WELD FLANGE CL150.
(5) FLANGED GATE VALVE CL150.
(6) VALE BOX PER P.W.D. STD. W-5.
(7) USE 2000 PSI MIN. CONCRETE FOR THRUST BLOCKS. PLACE CONCRETE ON UNDISTURBED OR COMPACTED SOIL. THRUST BLOCKS MUST MEET REQUIREMENTS OF P.W.D. STD. W-4.
(8) ANCHOR ROD PER P.W.D. STD. W-4.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

REDUCED PRESSURE DETECTOR ASSEMBLY

W-24



KEY NOTES:

1. ALL VALVE BOXES LOCATED IN UNIMPROVED STREETS OR DIRT AREA SHALL BE ENCLOSED IN 24" x 24" x 12" THICK CONCRETE PAD.
2. PUT LARGE LOOP KNOT IN CABLE WITH HEAVY SLACK.
3. TEST BEFORE AND AFTER BACKFILL BY DISTRICT.

PALMDALE WATER DISTRICT
A CENTURY OF SERVICE

DATE: JUL. 2021 CMV
APPROVED: Scott Rogers

TYPICAL C.P. TEST STATION
(IMPROVED OR UNIMPROVED ROADS)

W-26