

# CITY OF McFARLAND ENGINEERING STANDARDS

JULY 2022



PUBLIC WORKS DEPARTMENT  
ENGINEERING DIVISION

401 W. Kern Ave.  
McFarland, CA 93250  
(661) 792-3629

# CITY OF McFARLAND WATER STANDARDS

JULY 2022

APPROVED BY THE ENGINEER:



Approved on: July 15, 2022

CITY ENGINEER



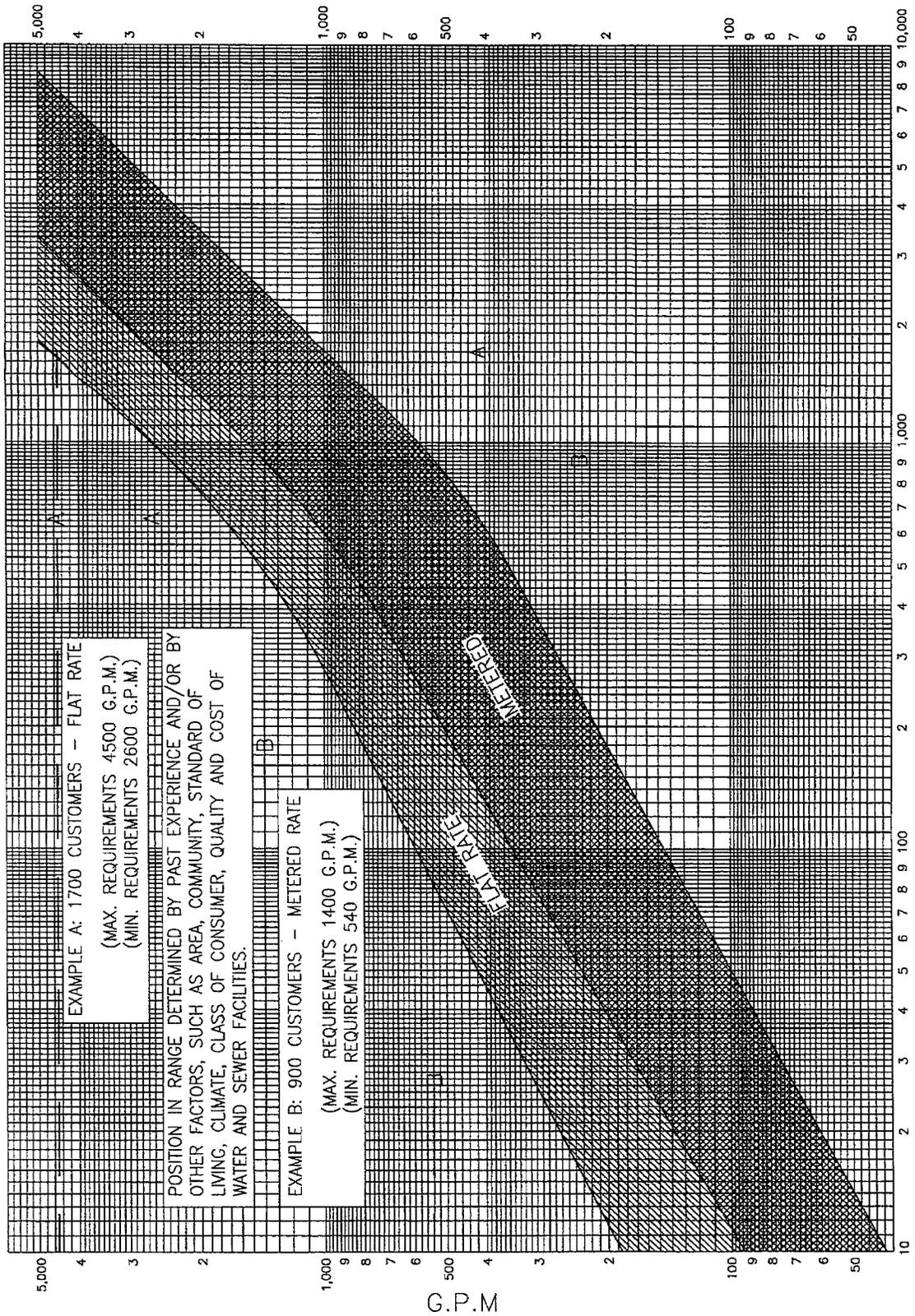
## PUBLIC WORKS DEPARTMENT

### ENGINEERING DIVISION

401 W. Kern Ave.  
McFarland, CA 93250  
(661) 792-3629

**CONTENTS**  
**WATER STANDARD DETAILS**

|  |       |
|--|-------|
| WATER SUPPLY REQUIREMENTS CHART                          | W-1   |
| BEDDING AND BACKFILL DETAILS FOR WATER PIPE              | W-2   |
| 1", 1-1/2", & 2" WATER SERVICE TYPICAL LONG SERVICE      | W-3A  |
| 1 / 1-1/2" WATER SERVICE TYPICAL SHORT SERVICE           | W-3B  |
| 2" WATER SERVICE TYPICAL SHORT SERVICE                   | W-4   |
| STANDARD FIRE HYDRANT ASSEMBLY – WATER MAIN IN STREET    | W-5A  |
| STANDARD FIRE HYDRANT ASSEMBLY – WATER MAIN BEHIND CURB  | W-5B  |
| 2" PERMANENT BLOW-OFF ASSEMBLY                           | W-6A  |
| 2" TEMPORARY BLOW-OFF ASSEMBLY                           | W-6B  |
| VALVE BOX ASSEMBLY – VALVES LOCATED BEHIND SIDEWALK      | W-7A  |
| VALVE BOX ASSEMBLY – VALVES LOCATED IN STREET            | W-7B  |
| STEEL CASING DETAIL FOR WATER PIPE                       | W-8   |
| TYPICAL THRUST BLOCK DETAILS                             | W-9A  |
| TYPICAL THRUST BLOCK DETAILS                             | W-9B  |
| WATER MAIN CROSSING BELOW SEWER LATERAL                  | W-10A |
| WATER MAIN CROSSING 12" OR LESS ABOVE SEWER LATERAL      | W-10B |
| WATER SAMPLING STATION                                   | W-11  |
| GATE VALVE INSTALLATION WITH CURB RETURN                 | W-12  |
| GATE VALVE INSTALLATION NO CURB RETURN                   | W-13  |
| GATE VALVE INSTALLATION DRIVEWAY (NO CURB RETURN)        | W-14  |
| COMBINATION AIR RELEASE VALVES                           | W-15  |
| HOT TAPPING WATER MAIN                                   | W-16A |
| HOT TAPPING WATER MAIN                                   | W-16B |
| WATER MAIN CROSSING BELOW STORM DRAIN                    | W-17A |
| WATER MAIN CROSSING 12" OR LESS ABOVE STORM DRAIN        | W-17B |
| 3"-8" WATER SERVICE INSTALLATION WITH BACKFLOW PREVENTER | W-18  |
| NEW FIRE SERVICE INSTALLATION                            | W-19  |

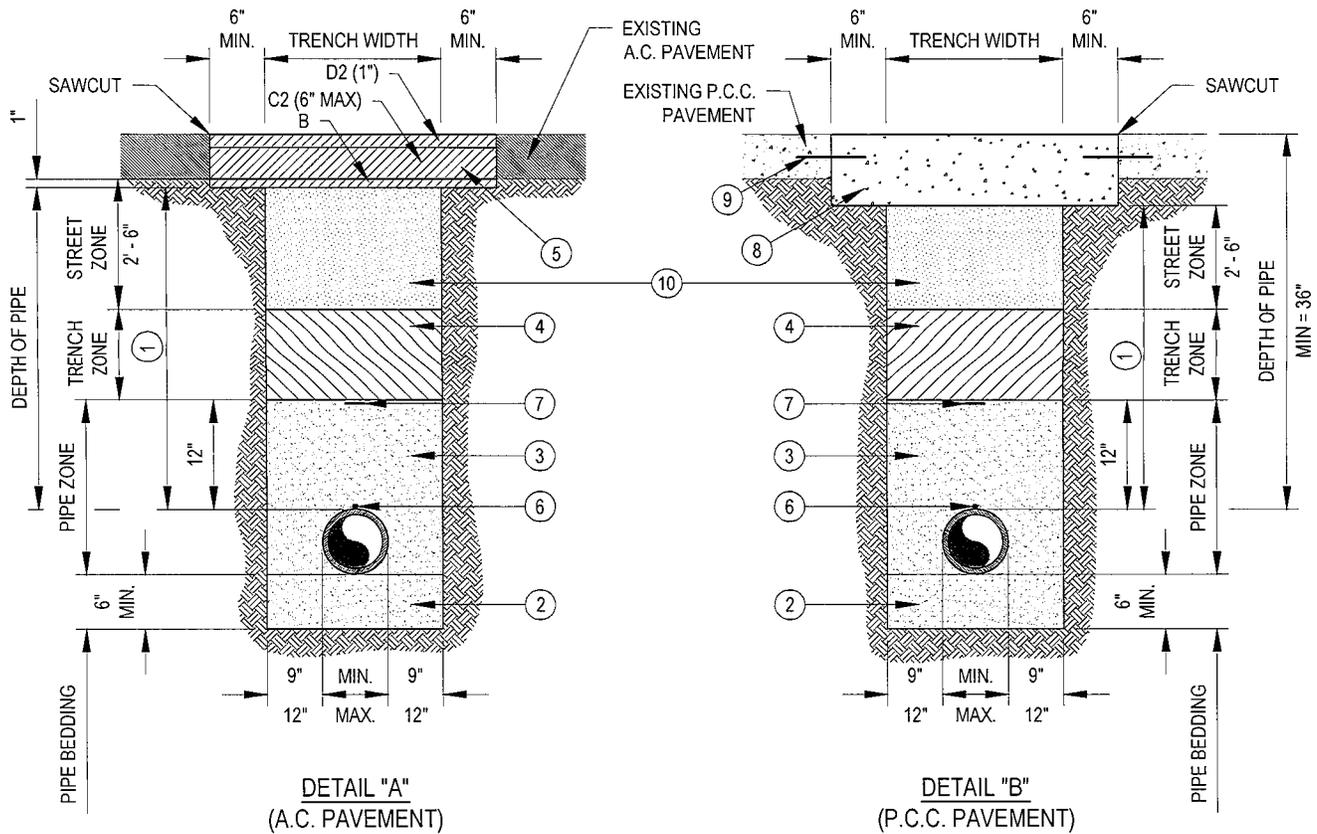


| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



# WATER SUPPLY REQUIREMENTS CHART



**DETAIL "A"**  
(A.C. PAVEMENT)

**DETAIL "B"**  
(P.C.C. PAVEMENT)

**NOTES:**

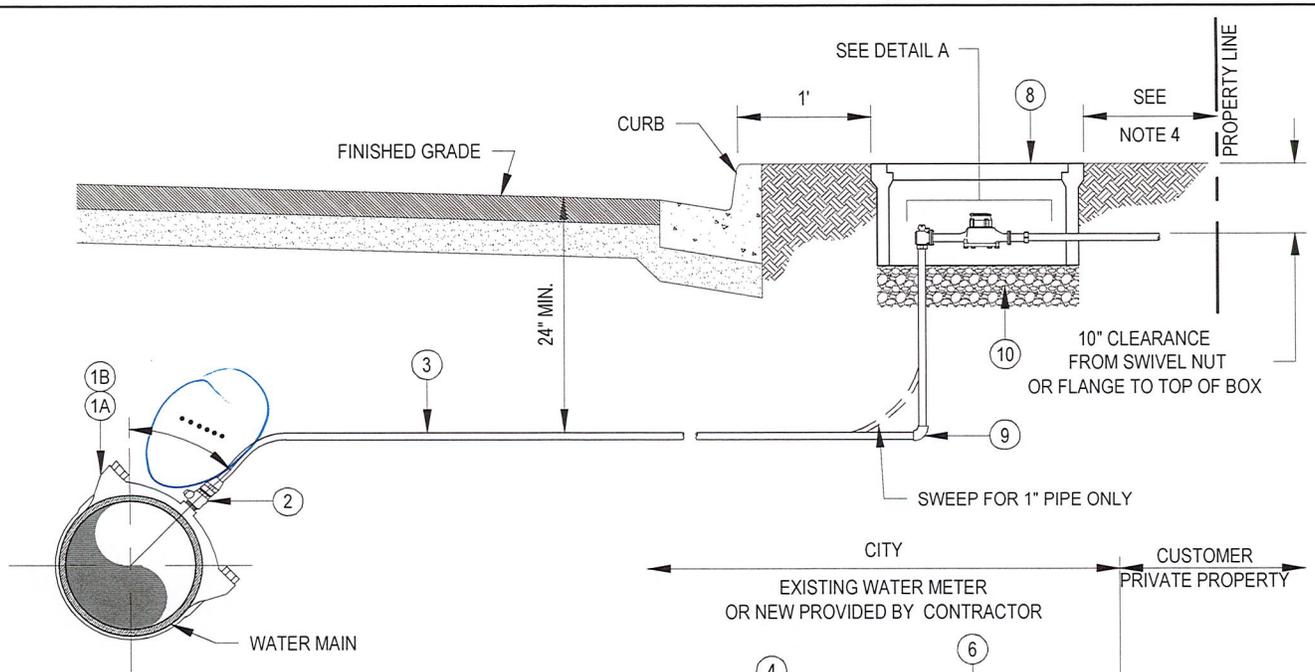
- ① IF COVER TO NEW PIPE IS LESS THAN 36", CITY ENGINEER WILL SPECIFY SPECIAL BEDDING AND BACKFILL REQUIREMENTS.
- ② 6" SAND BEDDING PER SSPWC 306-1.2.1 UNLESS OTHERWISE APPROVED BY THE CITY.
- ③ SAND BACKFILL COMPACTED TO 90% RELATIVE COMPACTION UNLESS OTHERWISE APPROVED BY THE CITY. JETTING IS NOT ALLOWED.
- ④ ALL BACKFILL SHALL BE MINIMUM 1-SACK SAND-CEMENT SLURRY, CRUSHED MISCELLANEOUS BASE (CMB), DECOMPOSED GRANITE (DG). MECHANICALLY DENSIFIED TO 90% RELATIVE COMPACTION FROM BOTTOM OF TRENCH TO 2-6" BELOW PAVEMENT. THE TOP 8" SUBGRADE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION. CONTRACTOR TO PROVIDE TEST REPORTS AS EVIDENCE OF PROPER COMPACTION.
- ⑤ PAVE 6" (OR EXISTING PAVEMENT THICKNESS PLUS 1", WHICHEVER IS GREATER) WITH D2-PG-6410, C2-PG-6410 A.C, B-PG-6410 REFER TO APWA STD PLAN 132-3 AND 133-3.
- ⑥ TRACER WIRE SECURED TO PIPE WHEN APPLICABLE (NOT NECESSARY FOR DIP). TRACER WIRE TO BE 8 GAUGE (AWG) THWN COPPER WITH HDPE INSULATION (BLUE COLOR). BRING UP INTO METER BOXES AND VALVE BOXES.
- ⑦ WARNING/IDENTIFICATION TAPE.
- ⑧ PLACE 8" P.C.C. CLASS 520-A-2500 (OR EXISTING PAVEMENT THICKNESS PLUS 1", WHICHEVER IS GREATER) TO NEAREST SCORE LINE REFER TO APWA STD PLAN 132-3.
- ⑨ #4 DOWEL AT 24" O.C. TO EXISTING PAVEMENT, CONTACT CITY ENGINEER'S OFFICE FOR DOWELING SPECIFICATIONS.  
NOTE: IF PAVEMENT CRACKS ARE EVIDENT NEAR TRENCH, CONTRACTOR IS REQUIRED TO OVERCUT THESE CRACKS IN FULL PAVEMENT THICKNESS.
- ⑩ STREET ZONE SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



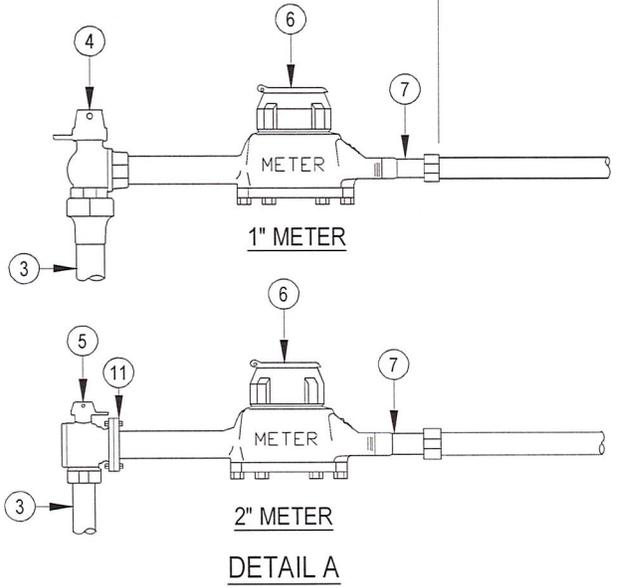
**BEDDING AND BACKFILL  
DETAILS FOR WATER PIPE**



| METER SIZE  | *METER BOX SIZE |
|-------------|-----------------|
| 1"          | 22" x 15" x 12" |
| 1-1/2" & 2" | 30" x 19" x 13" |

NOTES:

- ① BRONZE DOUBLE STRAP SERVICE SADDLE, 1" OR 2" F.I.P.T. OUTLET.
- ② 1" CAST BRONZE BALL CORPORATION STOP, M.I.P.T. x FLARE  
2" CAST BRONZE BALL CORPORATION STOP, M.I.P.T. x COMPRESSION.
- ③ 1" (ROLLS) OR 2" MUNICIPEX CTS SDR-9 COPPER PIPE, SOFT/ANNEALED TYPE K IN 20' LENGTHS PER AWWA C-904.
- ④ CAST BRONZE ANGLE METER BALL VALVE WITH LOCK WING, FLARE x SWIVEL NUT (MUELLER B-2425N-3, B-24258N-3 OR EQUAL).
- ⑤ CAST BRONZE ANGLE METER BALL VALVE WITH LOCK WING, F.I.P. x METER FLANGE (MUELLER B-24286N-3, B-24276N-3 OR EQUAL).
- ⑥ METER (FURNISHED BY CONTRACTOR).
- ⑦ JAMES JONES E-1908 BALL VALVE WITH METER COUPLING.
- ⑧ CHRISTY B12 METER BOX WITH B12G CONCRETE LID READING "WATER". USE EXTENSION WHERE NECESSARY.
- ⑨ 90° COPPER ELBOW, C x C SOLDER JOINTS
- ⑩ 6" THICK BASE OF 3/4" CRUSHED ROCK.
- ⑪ BOLTS, NUTS & WASHERS.



NOTES:

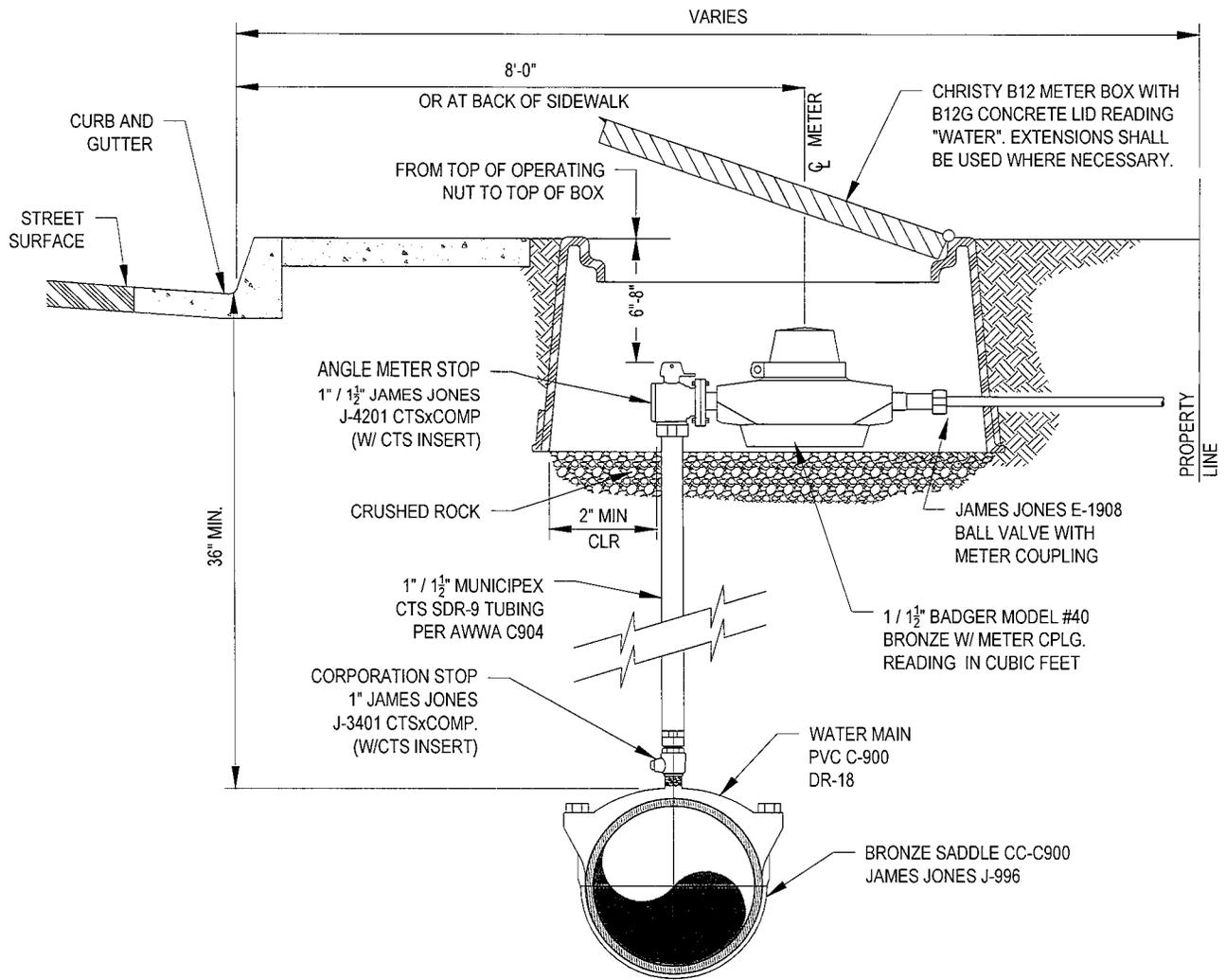
- 1. SIZE OF SERVICES MUST BE APPROVED BY THE CITY OF McFARLAND.
- 2. SERVICE DEPTH SHALL BE 2'-6" MIN. @  $\bar{\ell}$ .
- 3. THE WATER LINE SHALL EXTEND PERPENDICULAR TO THE  $\bar{\ell}$  OF THE STREET FROM THE WATER MAIN TO CURB STOP.
- 4. METER BOXES SHALL BE CONSTRUCTED APPROX. 8' BEHIND  $\bar{\ell}$  WHERE SIDEWALKS ARE ADJACENT TO CURBS, OR ACCORDING TO TRACT MAP.
- 5. IF METER BOX IS LOCATED ON A SLOPE NEXT TO A CURB OR SIDEWALK, A PROTECTIVE RETAINING WALL SHALL BE CONSTRUCTED.
- 6. ALL FITTINGS SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURERS INSTALLATION GUIDE. ALL DRY TAPS SHALL BE MADE BY MACHINE WITH GUIDE OR PILOT FOR TAP.
- 7. FITTINGS TO CONFORM TO THE CITY OF McFARLAND WATER COMPANY TECHNICAL SPECIFICATIONS FOR WATER SERVICES.
- 8. A "W" SHALL BE STAMPED ON THE CONCRETE CURB FACE IN THE LOCATION OF ALL WATER SERVICE METERS.

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



1", 1-1/2", & 2" WATER SERVICE  
TYPICAL LONG SERVICE  
W-3A



NOTES:

1. SIZE OF SERVICES MUST BE APPROVED BY THE CITY OF McFARLAND.
2. SERVICE DEPTH SHALL BE 2'-6" MIN. @  $\bar{\ell}$ .
3. THE WATER LINE SHALL EXTEND PERPENDICULAR TO THE  $\bar{\ell}$  OF THE STREET FROM THE WATER MAIN TO CURB STOP.
4. METER BOXES SHALL BE CONSTRUCTED APPROX. 8' BEHIND  $\bar{\ell}$  WHERE SIDEWALKS ARE ADJACENT TO CURBS, OR ACCORDING TO TRACT MAP.
5. IF METER BOX IS LOCATED ON A SLOPE NEXT TO A CURB OR SIDEWALK, A PROTECTIVE RETAINING WALL SHALL BE CONSTRUCTED.
6. ALL FITTINGS SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURERS INSTALLATION GUIDE. ALL DRY TAPS SHALL BE MADE BY MACHINE WITH GUIDE OR PILOT FOR TAP.
7. FITTINGS TO CONFORM TO THE CITY OF McFARLAND WATER COMPANY TECHNICAL SPECIFICATIONS FOR WATER SERVICES.
8. A "W" SHALL BE STAMPED ON THE CONCRETE CURB FACE IN THE LOCATION OF ALL WATER SERVICE METERS.
9. METER BOXES TO BE INSTALLED WITHIN 2'-FT OF PROPERTY SIDELINES.

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

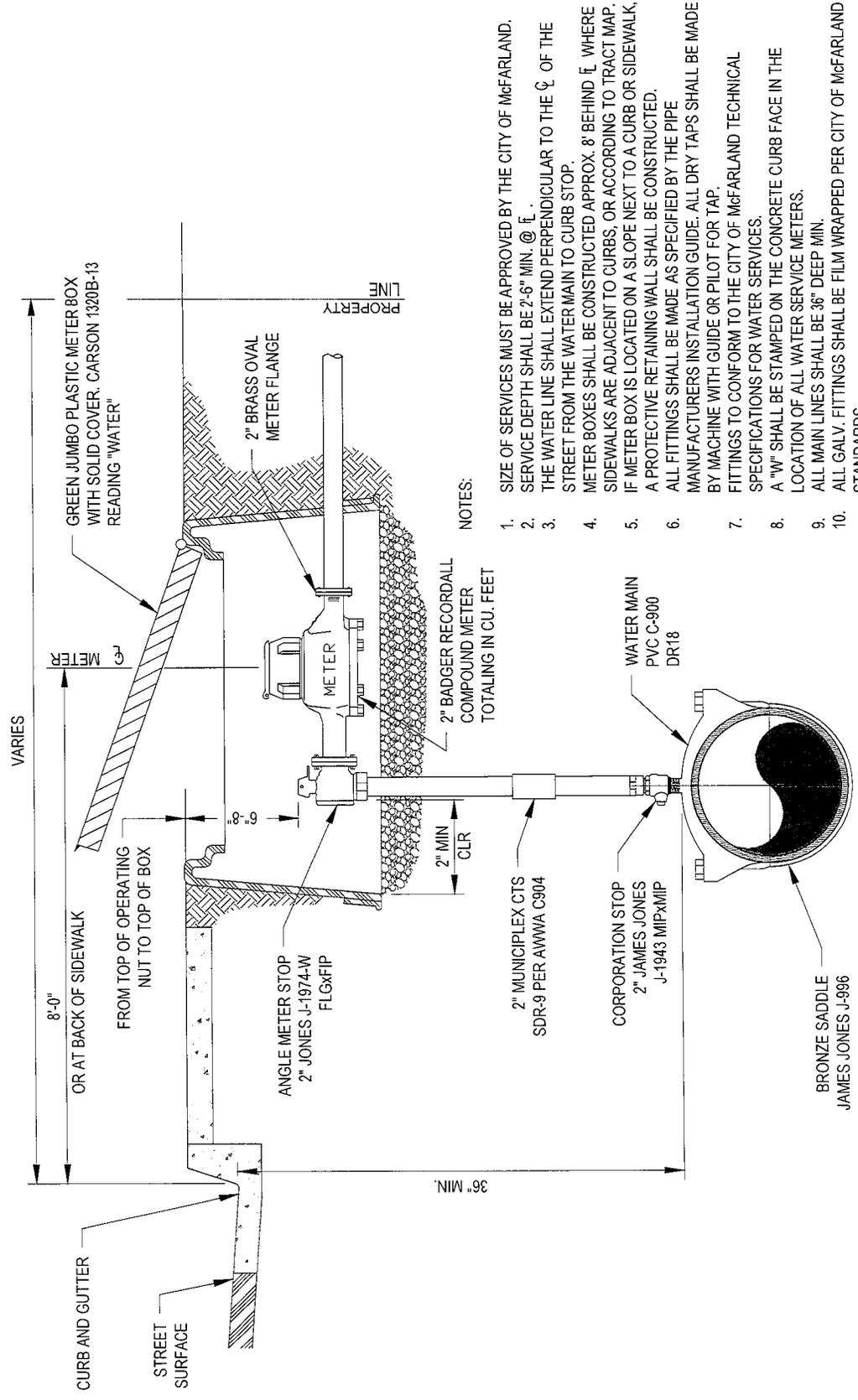
STANDARD CURRENT AS OF:

JULY 2022



1" / 1/2" WATER SERVICE  
TYPICAL SHORT SERVICE

W-3B



NOTES:

1. SIZE OF SERVICES MUST BE APPROVED BY THE CITY OF McFARLAND.
2. SERVICE DEPTH SHALL BE 2'-6" MIN. @ 1" .
3. THE WATER LINE SHALL EXTEND PERPENDICULAR TO THE C. OF THE STREET FROM THE WATER MAIN TO CURB STOP.
4. METER BOXES SHALL BE CONSTRUCTED APPROX. 8' BEHIND I. WHERE SIDEWALKS ARE ADJACENT TO CURBS; OR ACCORDING TO TRACT MAP.
5. IF METER BOX IS LOCATED ON A SLOPE NEXT TO A CURB OR SIDEWALK, A PROTECTIVE RETAINING WALL SHALL BE CONSTRUCTED.
6. ALL FITTINGS SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURERS INSTALLATION GUIDE. ALL DRY TAPS SHALL BE MADE BY MACHINE WITH GUIDE OR PILOT FOR TAP.
7. FITTINGS TO CONFORM TO THE CITY OF McFARLAND TECHNICAL SPECIFICATIONS FOR WATER SERVICES.
8. A "W" SHALL BE STAMPED ON THE CONCRETE CURB FACE IN THE LOCATION OF ALL WATER SERVICE METERS.
9. ALL MAIN LINES SHALL BE 36" DEEP MIN.
10. ALL GALV. FITTINGS SHALL BE FILM WRAPPED PER CITY OF McFARLAND STANDARDS.



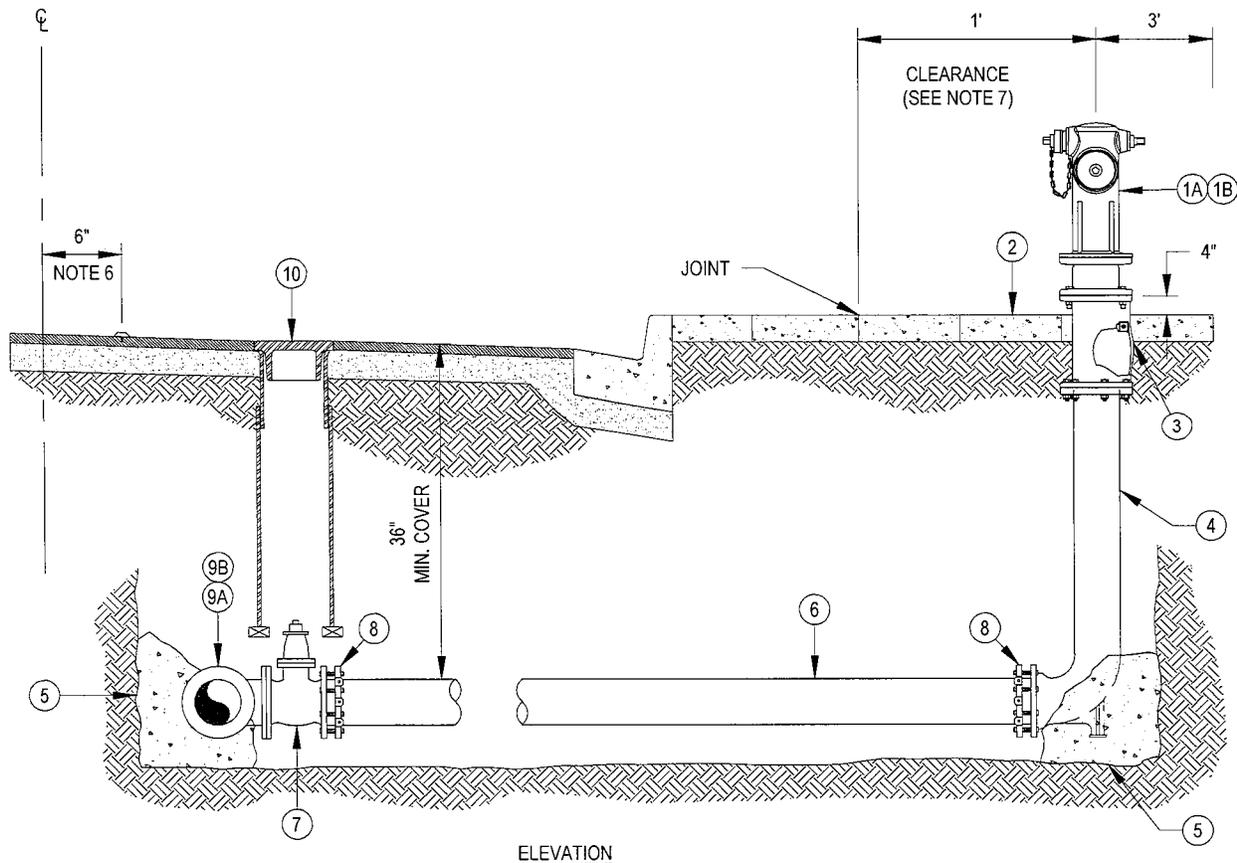
2" WATER SERVICE  
TYPICAL SHORT SERVICE

W-4

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

JULY 2022

STANDARD CURRENT AS OF:



ELEVATION

NOTES:

- (1A) 6" FIRE HYDRANT WITH 2.5" x 4" x 4" IN COMMERCIAL AREAS. MUELLER A-421, 1-4 $\frac{1}{2}$ " AND 2-2 $\frac{1}{2}$ " OUTLETS, DRY BARREL, PER AWWA C-502.
- (1B) 6" FIRE HYDRANT WITH 2.5" x 4" x 4" IN COMMERCIAL AREAS.
- (2) CONCRETE SPLASH PAD.
- (3) 6" BREAK-OFF CHECK VALVE (CLOW LBI 400A OR JONES J6000).
- (4) DRY BARREL HYDRANT BURYS (MJ x FLG) SIZE TO FIT.
- (5) CONCRETE THRUST BLOCK PER W-9A AND W-9B.
- (6) 6" DUCTILE IRON PIPE CL 350.
- (7) 6" RESILIENT WEDGE GATE VALVE (FLG x MJ).
- (8) RESTRAINED MECHANICAL JOINT.
- (9A) DUCTILE IRON TEE WITH 6" FLANGED BRANCH.
- (9B) STAINLESS STEEL TAPPING TEE WITH 6" FLANGED BRANCH.\*
- (10) VALVE BOX AND CAP WITH SLIP CAN.

\*CHECK COMPATIBILITY OF TEE MATERIAL WITH EXISTING PIPE MATERIAL. TAPPING TEE ONLY ALLOWED WHEN MAIN SIZE IS 8" OR GREATER.

NOTES:

1. TOP FLANGE OF BREAK-OFF CHECK VALVE SHALL BE SET WITHIN THE CONCRETE PAD. BREAK OFF GROOVE, MINIMUM OF ONE, SHALL BE PLACED ABOVE THE PAD.
2. FIRE HYDRANT FLANGE BOLTS SHALL BE A307 ZINC-PLATED BOLTS INSTALLED WITH NUTS ON TOP OF THE FLANGE. BREAK AWAY BOLTS SHALL BE USED.
3. FIRE HYDRANT (AND RISER CAP) TO BE PAINTED WITH RUST-OLEUM ALUMINUM SILVER #7715 OR EQUIVALENT.
4. INSTALL BURY SPOOL WHEN NECESSARY TO MEET REQUIRED GRADE.
5. ALL FIRE HYDRANTS THAT ARE REMOVED MUST BE DELIVERED TO THE WATER DIVISION UNDAMAGED.
6. INSTALL BLUE REFLECTOR 6-INCH OFF STREET CENTERLINE ON HYDRANT SIDE.
7. PER CALIFORNIA FIRE CODE, CLEARANCE AROUND FIRE HYDRANT SHALL BE A 3-FT RADIUS.

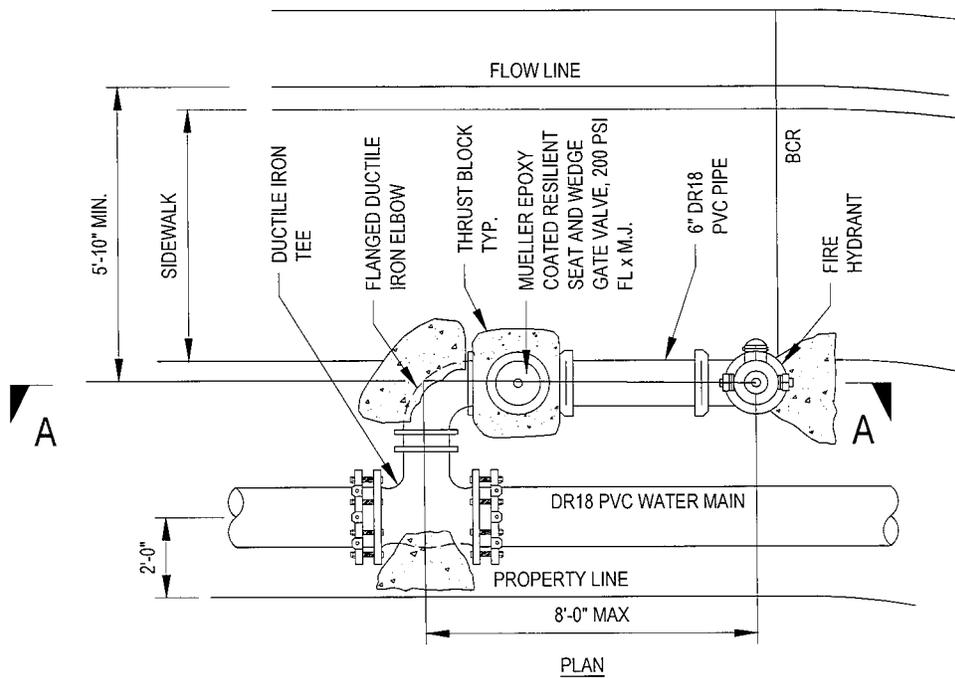
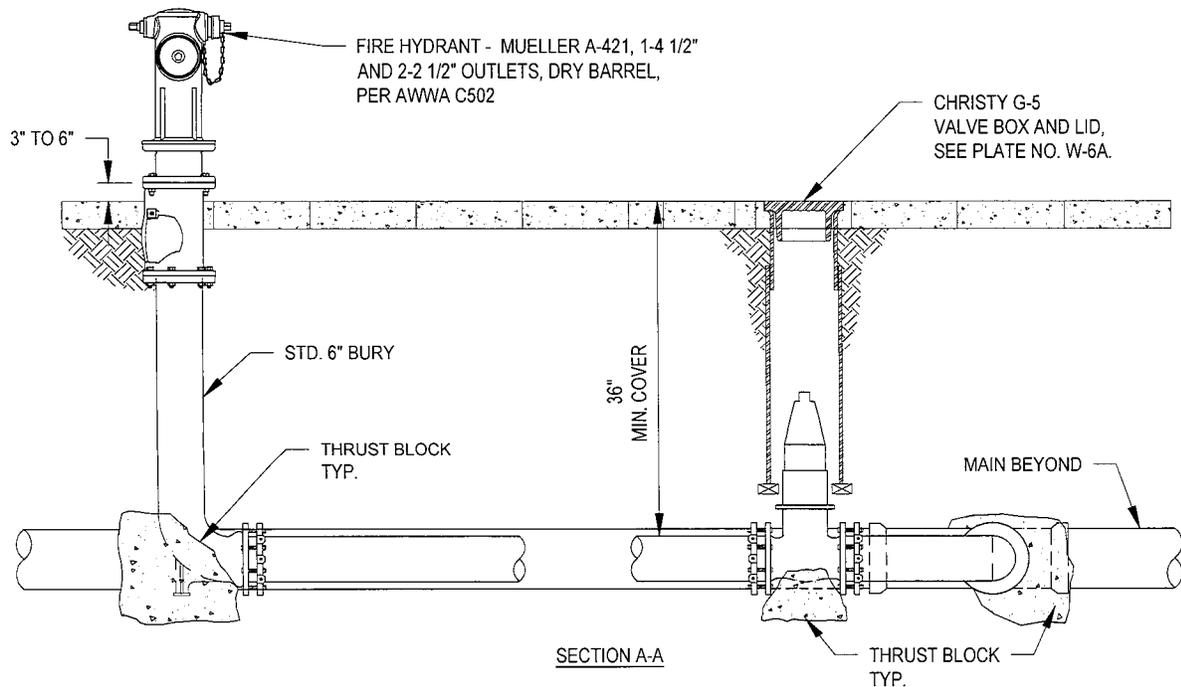
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF:

JULY 2022



STANDARD FIRE HYDRANT  
ASSEMBLY - WATER MAIN  
IN STREET W-5A



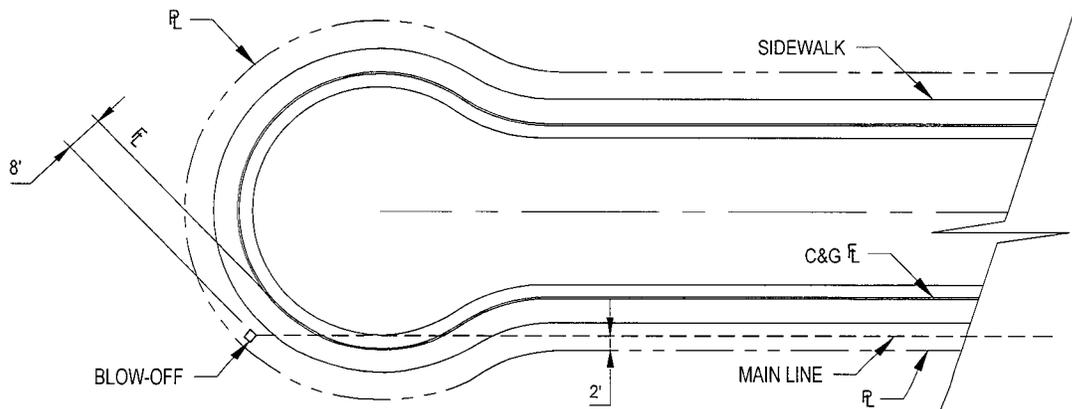
NOTES:

1. HYDRANTS ARE TO BE LOCATED BEHIND CURB LINE AS FOLLOWS:
  - a. WHEN SIDEWALK IS NOT ADJACENT TO CURB HYDRANT,  $\phi$  SHALL BE 2'-6" BEHIND CURB LINE.
  - b. WHEN SIDEWALK IS ADJACENT TO CURB HYDRANT,  $\phi$  SHALL BE 5'-10" BEHIND CURB LINE.
2. WHERE NO CURB, GUTTER, AND SIDEWALK EXIST, HYDRANTS ARE TO BE PLACED 2'-2" FROM PROPERTY LINE.

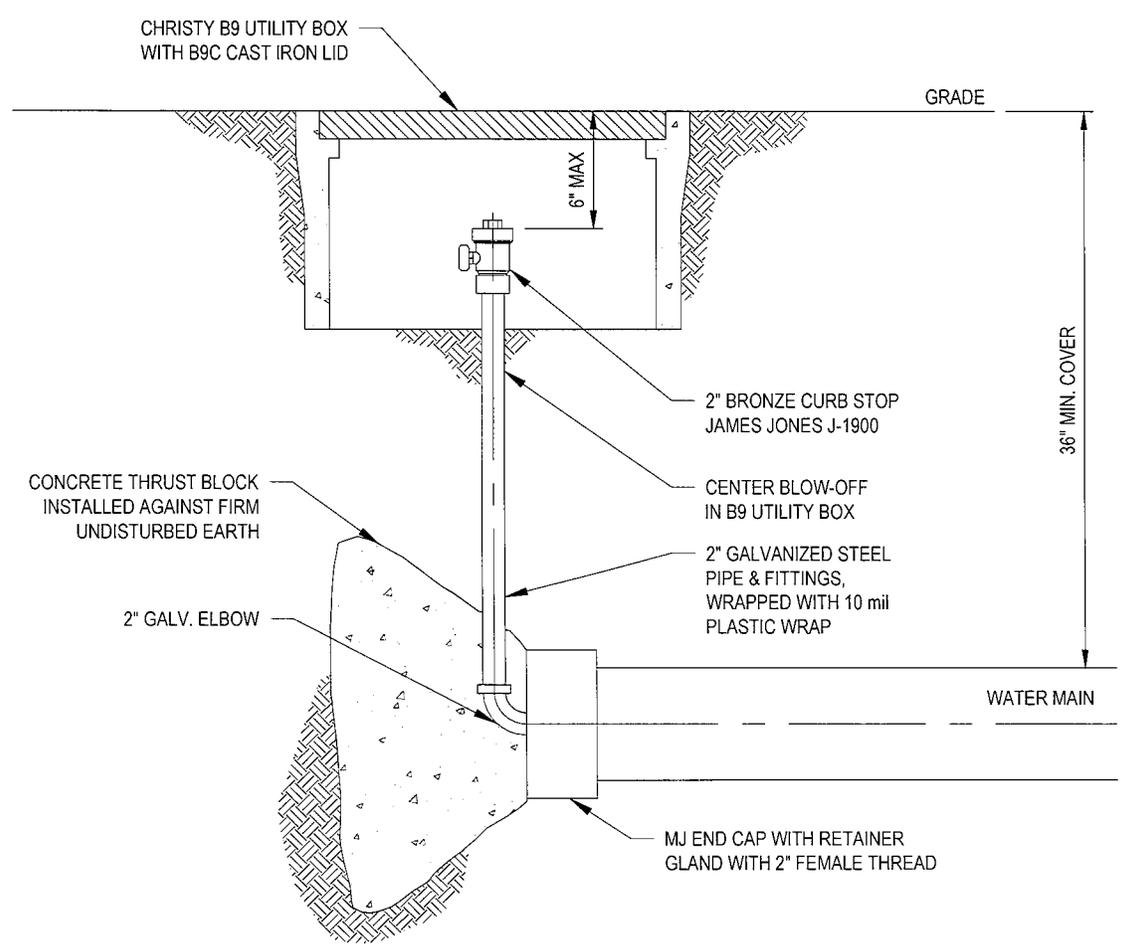
| REVISIONS               | BY        | APP | DATE |
|-------------------------|-----------|-----|------|
|                         |           |     |      |
|                         |           |     |      |
|                         |           |     |      |
| STANDARD CURRENT AS OF: | JULY 2022 |     |      |



STANDARD FIRE HYDRANT  
ASSEMBLY - WATER MAIN  
BEHIND CURB W-5B



LOCATION



BLOW-OFF ELEVATION

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

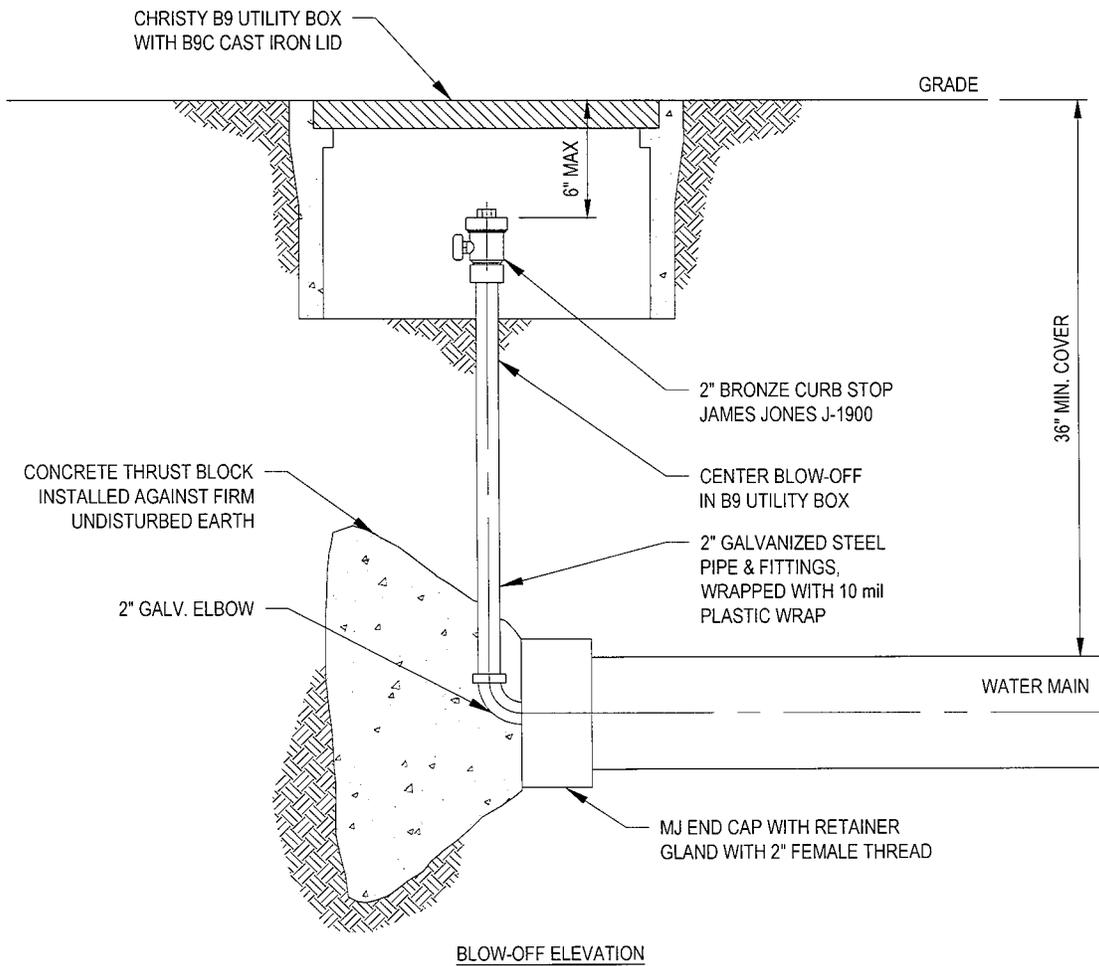
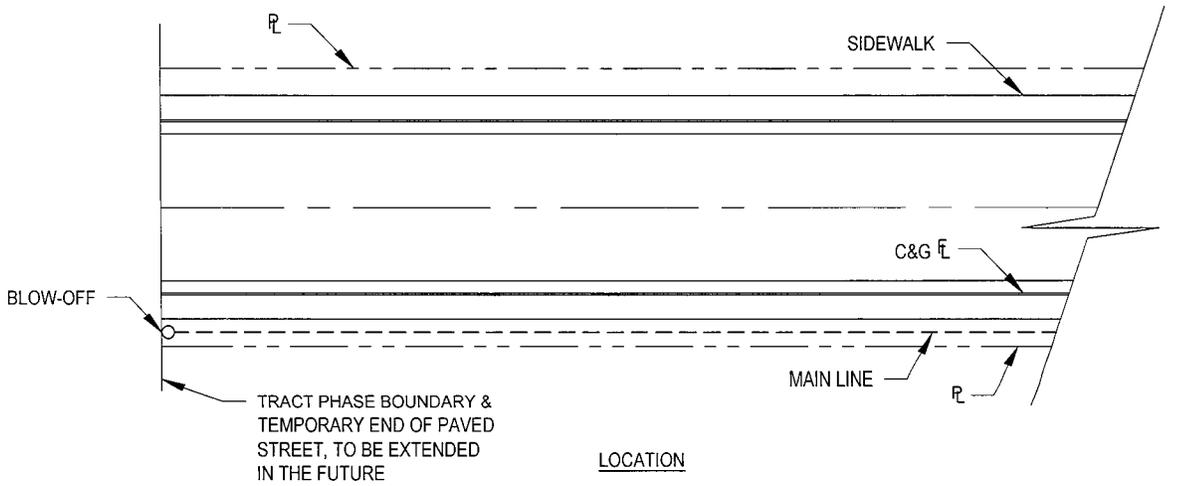


2" PERMANENT BLOW-OFF ASSEMBLY

W-6A

STANDARD CURRENT AS OF:

JULY 2022



BLOW-OFF ELEVATION

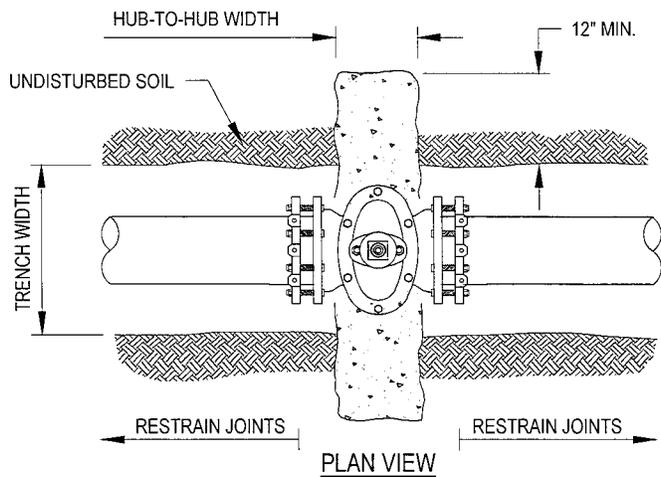
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |



## 2" TEMPORARY BLOW-OFF ASSEMBLY

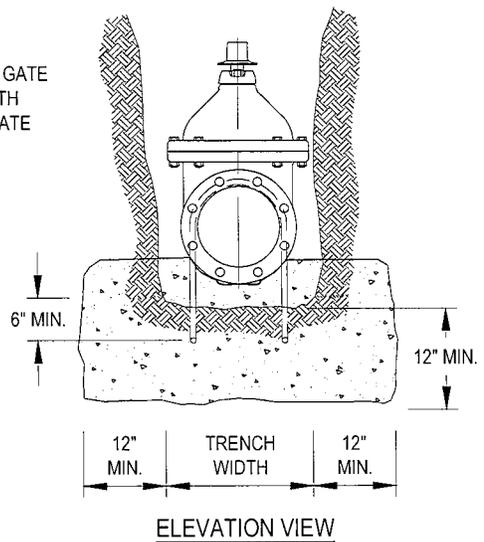
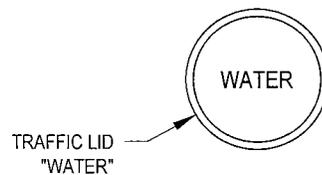
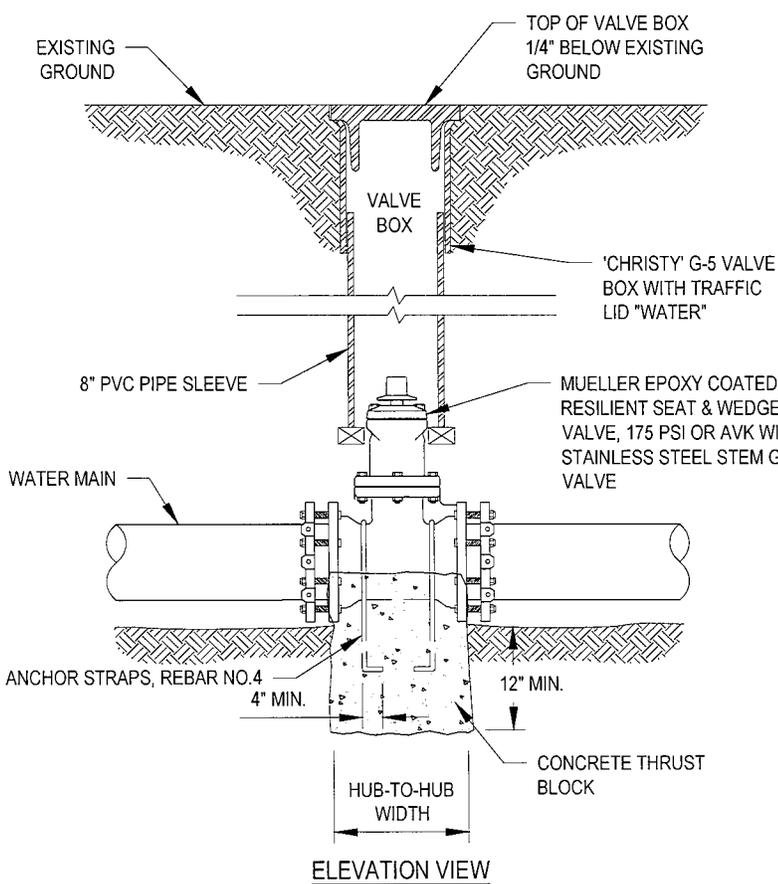
W-6B

STANDARD CURRENT AS OF: JULY 2022



NOTES:

1. VALVE STEM EXTENSION NOT SHOWN.
2. VALVE ANCHOR REQUIRED ON ALL VALVES OVER 6" AND ALL VALVES AT DEAD ENDS.
3. ANCHOR STRAPS SHALL BE EMBEDDED DIRECTLY INTO THE CONCRETE THRUST BLOCK.
4. CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL (5-SACK) AND BE POURED AGAINST UNDISTURBED NATIVE SOIL.
5. ALL VALVES SHALL CONFORM TO SPECIFICATIONS FOR GATE VALVES FOR WATER WORKS SERVICE PER AWWA STANDARD 509-80.
6. DIMENSIONS TO BE THE SAME FOR ALL SIZES OR TYPES OF OPENINGS.

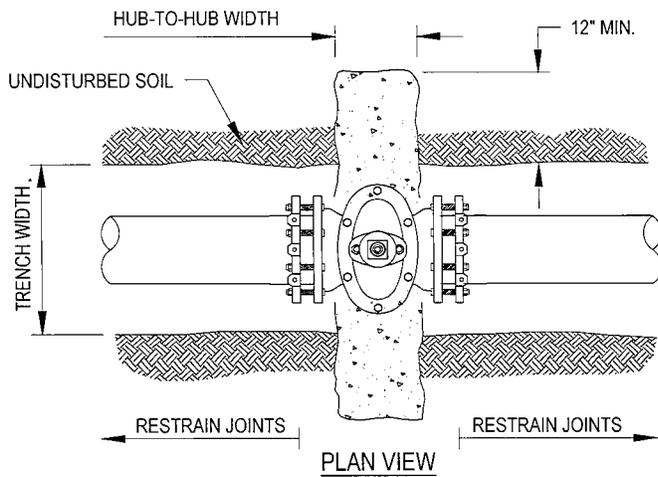


| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022

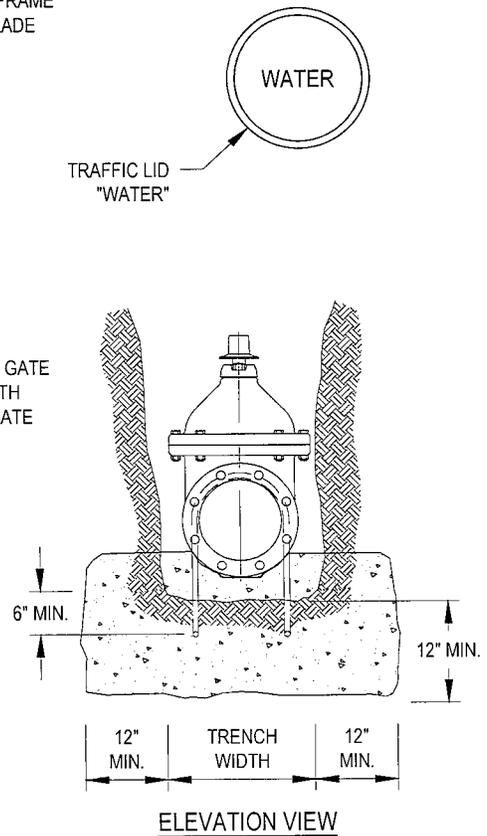
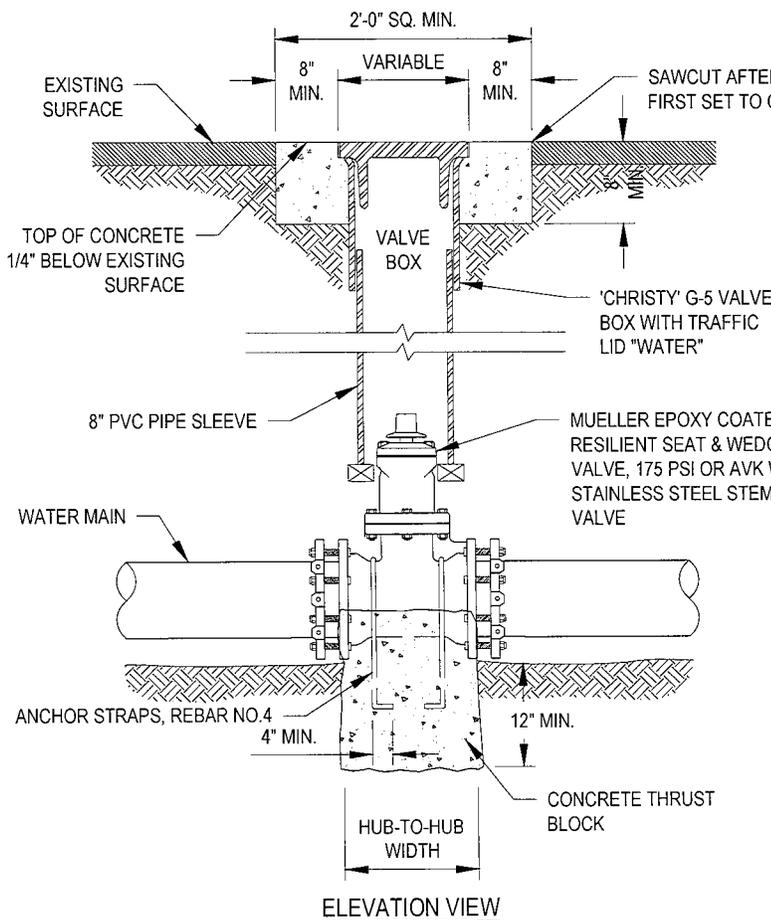


VALVE BOX ASSEMBLY - VALVES  
LOCATED BEHIND SIDEWALK  
W-7A



NOTES:

1. VALVE STEM EXTENSION NOT SHOWN.
2. VALVE ANCHOR REQUIRED ON ALL VALVES OVER 6" AND ALL VALVES AT DEAD ENDS.
3. ANCHOR STRAPS SHALL BE EMBEDDED DIRECTLY INTO THE CONCRETE THRUST BLOCK.
4. CONCRETE THRUST BLOCKS SHALL CONFORM TO STATE STANDARD 90-1.01, 470 LBS/CY CEMENTITIOUS MATERIAL (5-SACK) AND BE POURED AGAINST UNDISTURBED NATIVE SOIL.
5. ALL VALVES SHALL CONFORM TO SPECIFICATIONS FOR GATE VALVES FOR WATER WORKS SERVICE PER AWWA STANDARD 509-80.
6. DIMENSIONS TO BE THE SAME FOR ALL SIZES OR TYPES OF OPENINGS.
7. CONCRETE MAY BE DELETED ON ROAD MIX STREETS UPON APPROVAL OF INSPECTOR.
8. CONCRETE TO BE CLASS "A" (SIX SACK).
9. CONCRETE TO BE BARRICADED FOR THREE DAYS AFTER POURING.
10. CONCRETE CURE TO BE IN ACCORDANCE WITH SECTION 90-7 "CURING CONCRETE" OF THE MOST RECENT CITY OF McFARLAND STANDARDS SPECIFICATIONS EDITION.



| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |



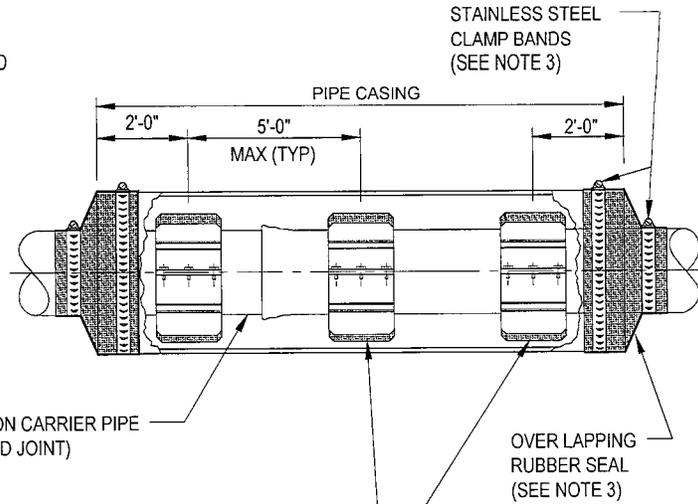
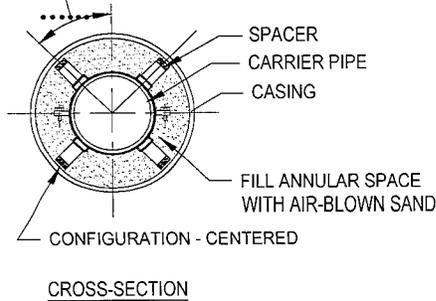
VALVE BOX ASSEMBLY - VALVES LOCATED IN STREET

W-7B

STANDARD CURRENT AS OF:

JULY 2022

ANGLES TO BE CONSTANT AROUND ENTIRE CIRCUMFERENCE OF THE PIPE. NUMBER OF SPACERS PER MANUFACTURER'S SPECIFICATIONS



PLACEMENT OF SPACERS ON CARRIER PIPE PER MANUFACTURER'S SPECIFICATIONS (NOT TO EXCEED 5' MAXIMUM SPACING)

| DI CARRIER PIPE |           |
|-----------------|-----------|
| 8" SPACER WIDTH |           |
| PIPE SIZE       | CASING ID |
| 8"              | 18"       |
| 12"             | 24"       |
| 16"             | 30"       |
| 18"             | 30"       |
| 20"             | 36"       |
| 24"             | 42"       |
| 30"             | 48"       |
| 36"             | 54"       |

NOTES:

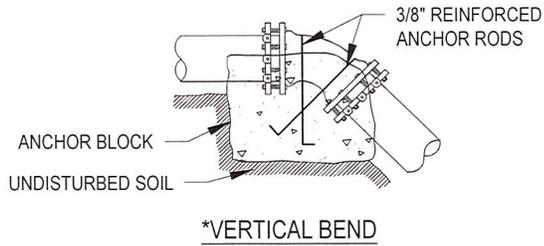
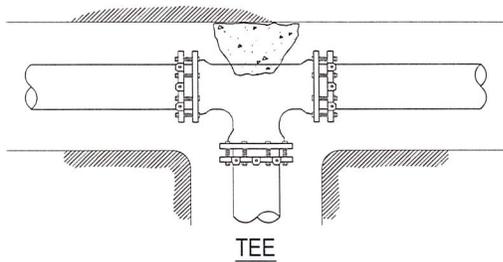
1. DUCTILE IRON (DI) PIPE JOINTS INSIDE PIPE CASING TO BE RESTRAINED (TYP).
2. INTERIOR OF CASING TO BE GROUND SMOOTH AND LUBRICATED FOR SPACER INSTALLATION.
3. RUBBER SEALS AND STAINLESS STEEL CLAMPS REQUIRED.
4. REDWOOD SKIDS CAN BE SUBSTITUTED FOR SPACERS ON A CASE BY CASE BASIS AS APPROVED BY THE CITY.
5. CASING THICKNESS (TO BE DETERMINED BY ENGINEER) NOT TO EXCEED DEFLECTION OF PIPE. MINIMUM THICKNESS SHALL BE 1/4".
6. ALTERNATE CASING SIZE TO BE APPROVED BY DEPARTMENT ENGINEER ON A CASE BY CASE BASIS.
7. STEEL CASING WELDS TO BE FULL-PENETRATION WELDS.
8. CONTRACTOR RESPONSIBLE FOR PREVENTING DAMAGE TO CARRIER PIPE DURING INSTALLATION.
9. A CASING VENT AND TEST STATION SHALL BE INSTALLED AS DIRECTED BY ENGINEER.

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

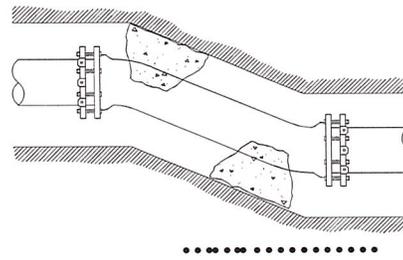
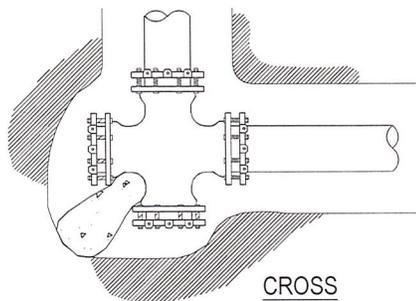
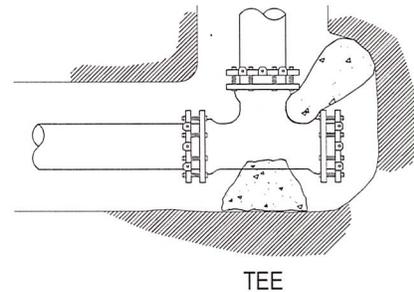
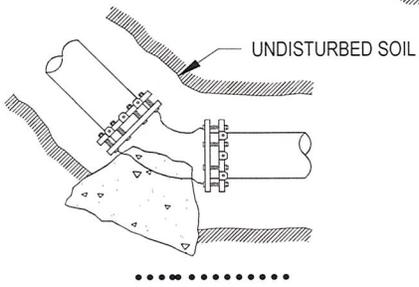
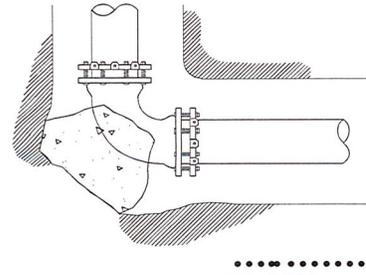
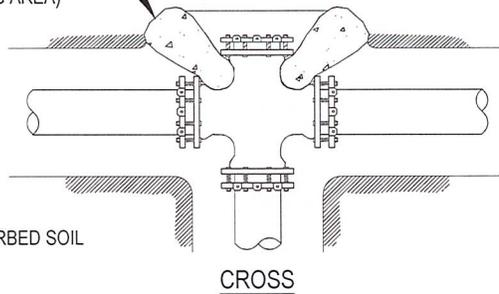
STANDARD CURRENT AS OF: JULY 2022



STEEL CASING DETAIL FOR WATER PIPE



THRUST BLOCK SHALL BE SIZED ACCORDING TO "TEE CHART" VALUES (EACH BLOCK SHOWN EQUALS HALF THE BEARING AREA)



**NOTES:**

1. ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. CONCRETE SHALL BE PLACED BEHIND BELL OF FITTING.
2. SIZE THRUST BLOCK ACCORDING TO THE LARGEST OUTLET DIAMETER ON TEE OR CROSS.
3. SEE TECHNICAL SPECIFICATIONS FOR CONCRETE CONSTRUCTION.
4. TEST GREATER THAN 150 PSI REQUIRE CALCULATION.
5. DO NOT BACKFILL FOR A MINIMUM OF 12 HRS AFTER PLACING CONCRETE TO ALLOW CURE TIME.
6. FITTINGS SHALL BE FILM WRAPPED & INSPECTED PRIOR TO PLACING CONCRETE.

\* REQUIRES CALCULATION

**THRUST BLOCK SCHEDULE BASED ON 2000 PSI CONCRETE & 1500 PSF SOIL BEARING**

| PIPE SIZE | TEE OR PLUG | BEARING AREAS FOR 150 PSI PRESSURE TEST (S.F.) |   |   |
|-----------|-------------|--|---|---|
|           |             | HYDRANT  |   |   |
| 6         | 3           | 4  | 2 | 2 |
| 8         | 5           | 8  | 4 | 2 |
| 10        | 8           | 12   | 6 | 3 |
| 12        | 11          | 18   | 8 | 4 |

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



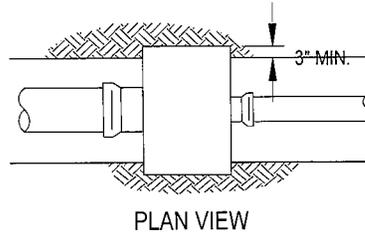
**TYPICAL THRUST BLOCK DETAILS**

W-9A

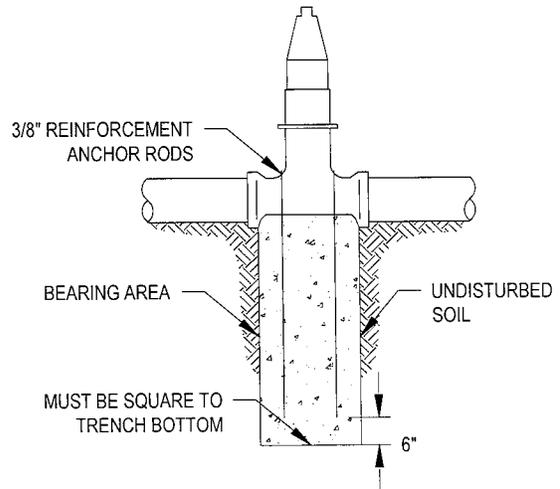
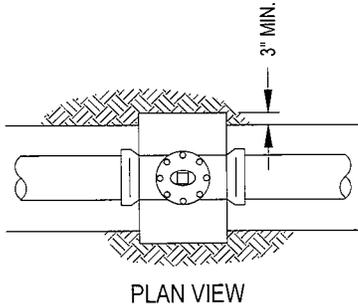
**THRUST BLOCK SCHEDULE BASED ON 2000 PSI  
CONCRETE & 1500 PSF SOIL BEARING**

REDUCER

| REDUCER SIZE | AREA REQUIRED | THRUST BLOCK SIZE |
|--------------|---------------|-------------------|
| 12X10        | 3.5 s.f.      | 1.9' x 1.9'       |
| 12X8         | 6.3 s.f.      | 2.5' x 2.5'       |
| 12X6         | 8.5 s.f.      | 2.9' x 2.9'       |
| 10X8         | 2.8 s.f.      | 1.8' x 1.7'       |
| 10X6         | 5.0 s.f.      | 2.2' x 2.2'       |
| 8X6          | 2.2 s.f.      | 1.5' x 1.5'       |



VALVE ANCHORS



| VALVE SIZE | AREA REQUIRED | THRUST BLOCK SIZE |
|------------|---------------|-------------------|
| 12         | 11.3 s.f.     | 3.4' x 3.4'       |
| 10         | 7.9 s.f.      | 2.8' x 2.8'       |
| 8          | 5.0 s.f.      | 2.2' x 2.2'       |
| 6          | 2.8 s.f.      | 1.7' x 1.7'       |

NOTES:

1. ALL THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED SOIL. CONCRETE SHALL BE PLACED BEHIND BELL OF FITTING.
2. BEARING AREAS SHOWN IN TABLE ARE BASED UPON ALLOWABLE SOIL PRESSURE OF 1500 PSF.
3. CONCRETE STRENGTH SHALL BE 2000 PSI AT 28 DAYS MINIMUM.
4. SEE THE CITY OF McFARLAND TECHNICAL SPECIFICATIONS FOR CONCRETE CONSTRUCTION.
5. DO NOT BACKFILL FOR A MINIMUM OF 12 HRS AFTER PLACING CONCRETE TO ALLOW CURE TIME.
6. FITTINGS SHALL BE FILM WRAPPED & INSPECTED PRIOR TO PLACING CONCRETE.

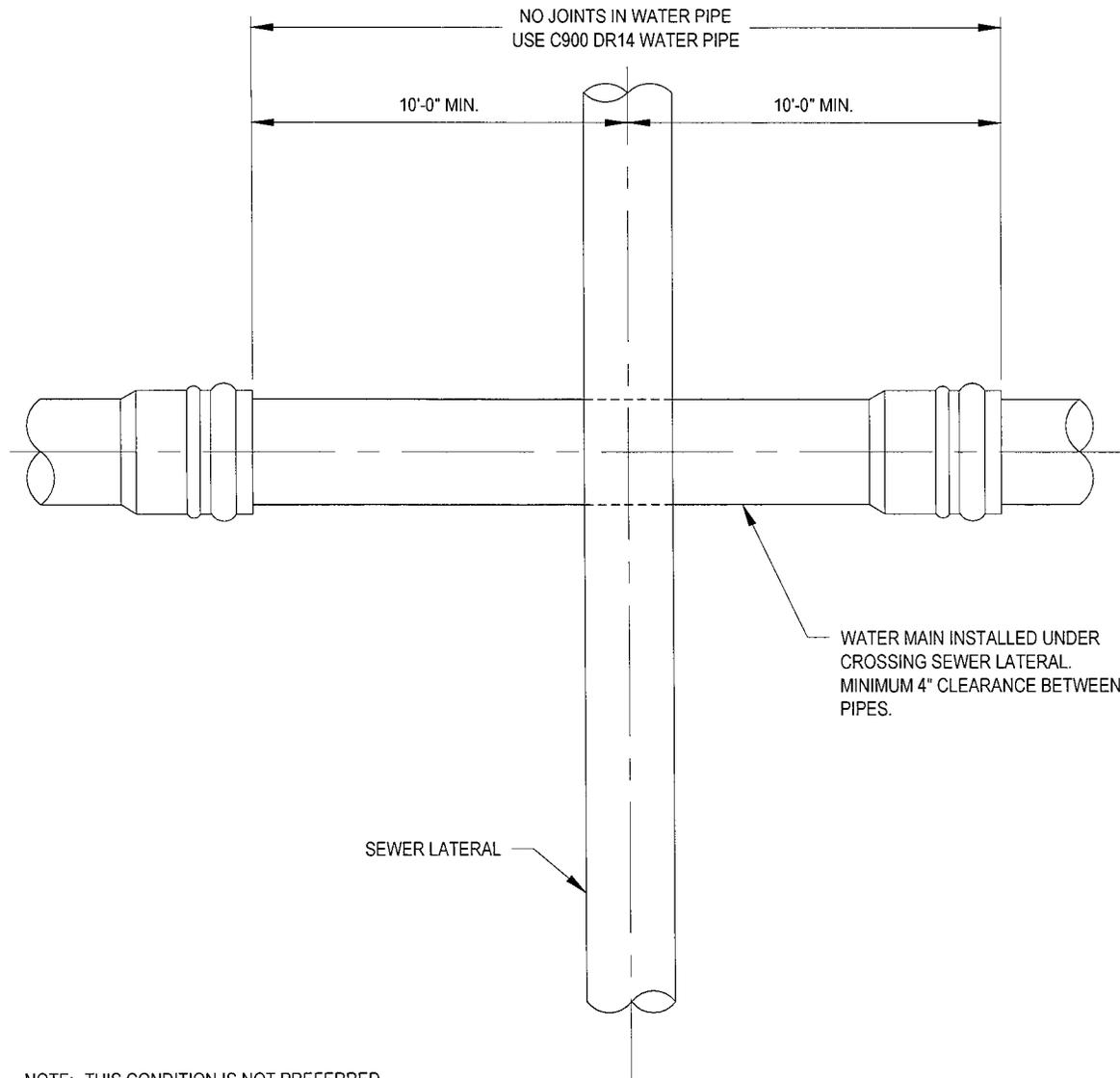
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



**TYPICAL THRUST BLOCK  
DETAILS**

**W-9B**



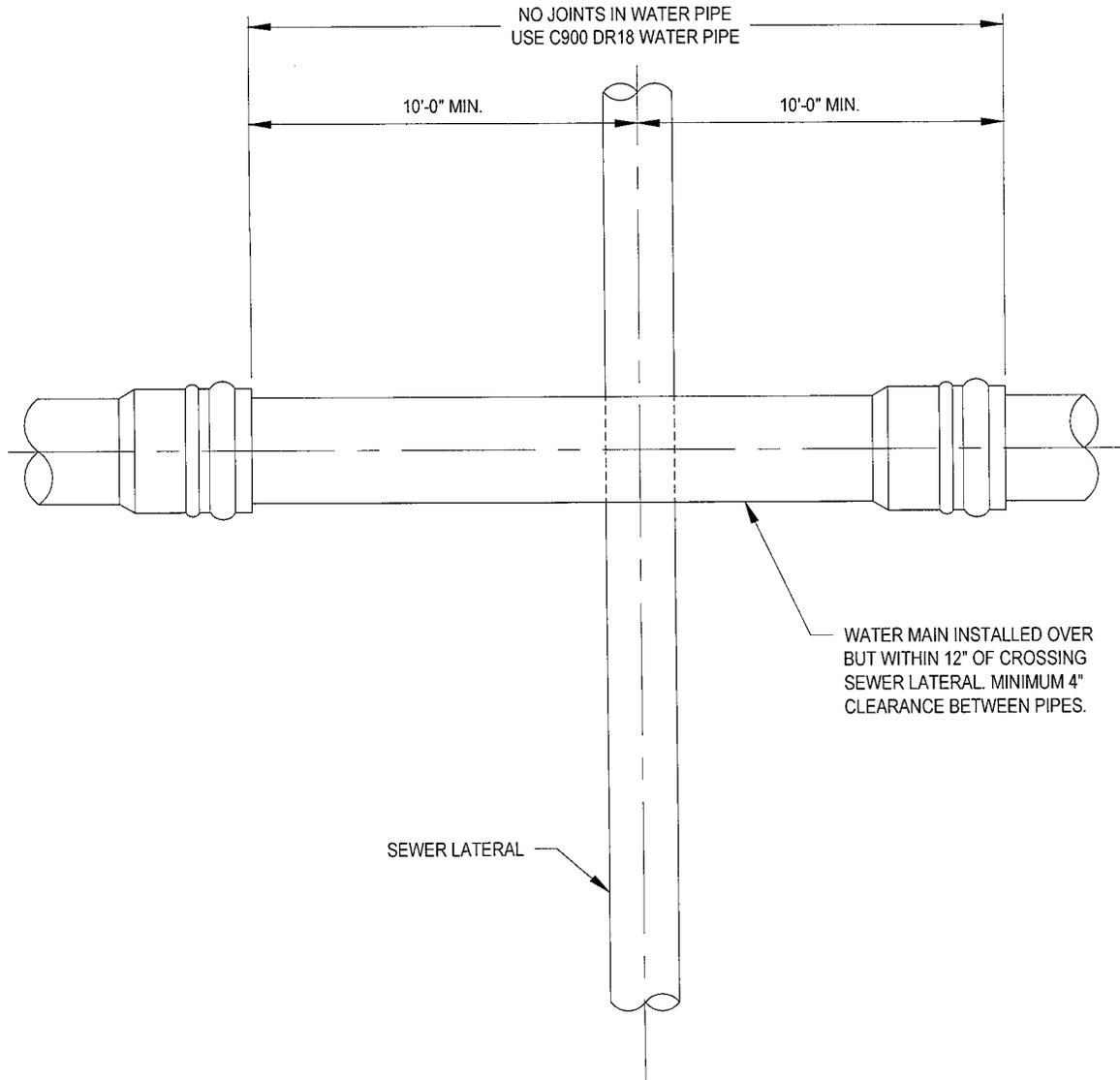
NOTE: THIS CONDITION IS NOT PREFERRED.  
 ONLY PLACE SEWER LATERAL ABOVE WATER IF  
 THERE IS NO OTHER ALTERNATIVE.

| REVISIONS               | BY | APP       | DATE |
|-------------------------|----|-----------|------|
|                         |    |           |      |
|                         |    |           |      |
|                         |    |           |      |
| STANDARD CURRENT AS OF: |    | JULY 2022 |      |



**WATER MAIN CROSSING  
 BELOW SEWER LATERAL**

**W-10A**

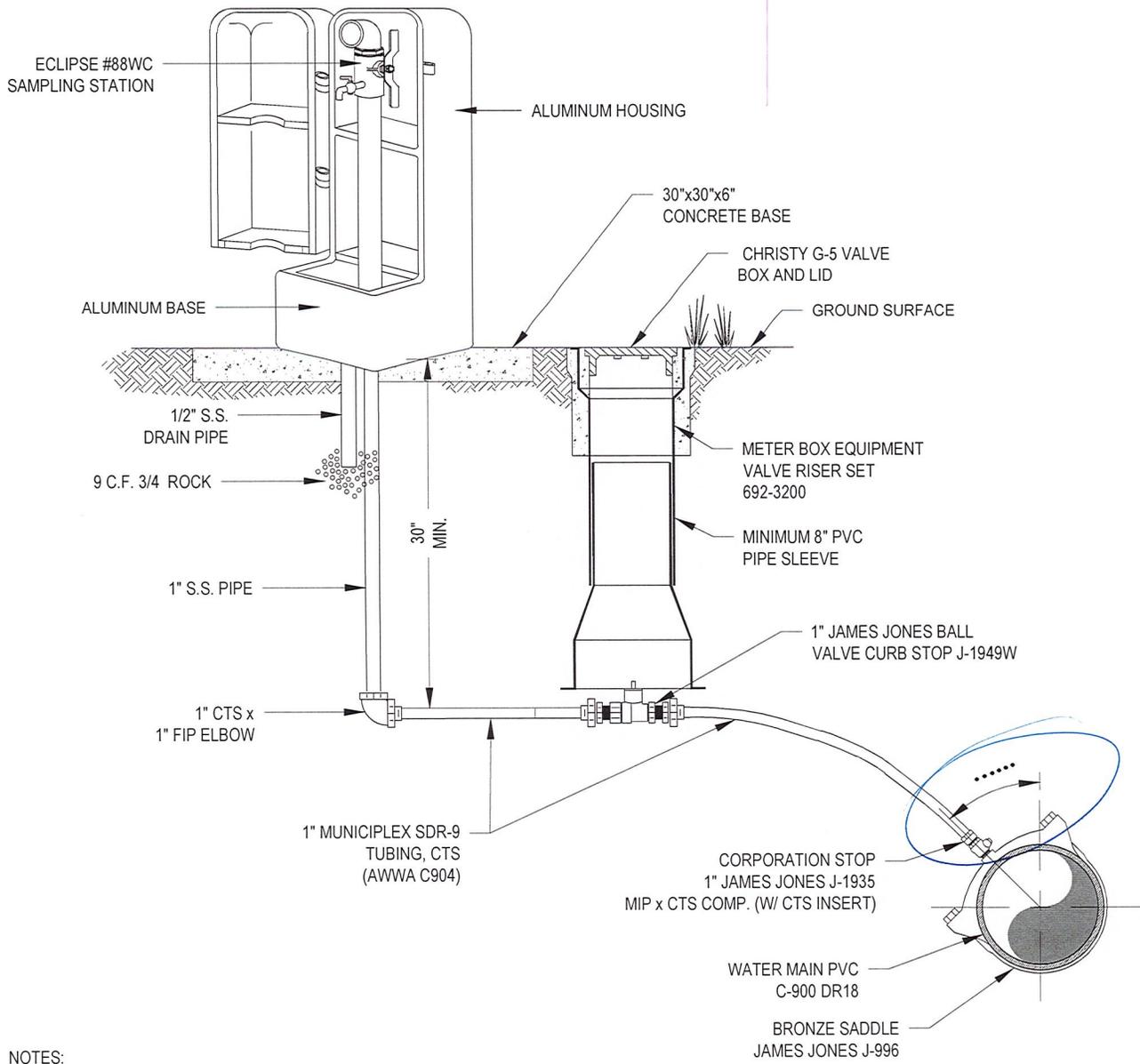


NOTE: IT IS PREFERABLE TO PLACE THE SEWER LATERAL BELOW WATER PIPES AND SEPARATE THEM BY AT LEAST 12". THIS DETAIL APPLIES WHEN SEWER LATERAL IS CLOSER THAN 12" TO WATER PIPE.

| REVISIONS               | BY | APP       | DATE |
|-------------------------|----|-----------|------|
|                         |    |           |      |
|                         |    |           |      |
|                         |    |           |      |
| STANDARD CURRENT AS OF: |    | JULY 2022 |      |



WATER MAIN CROSSING  
12" OR LESS ABOVE  
SEWER LATERAL W-10B



NOTES:

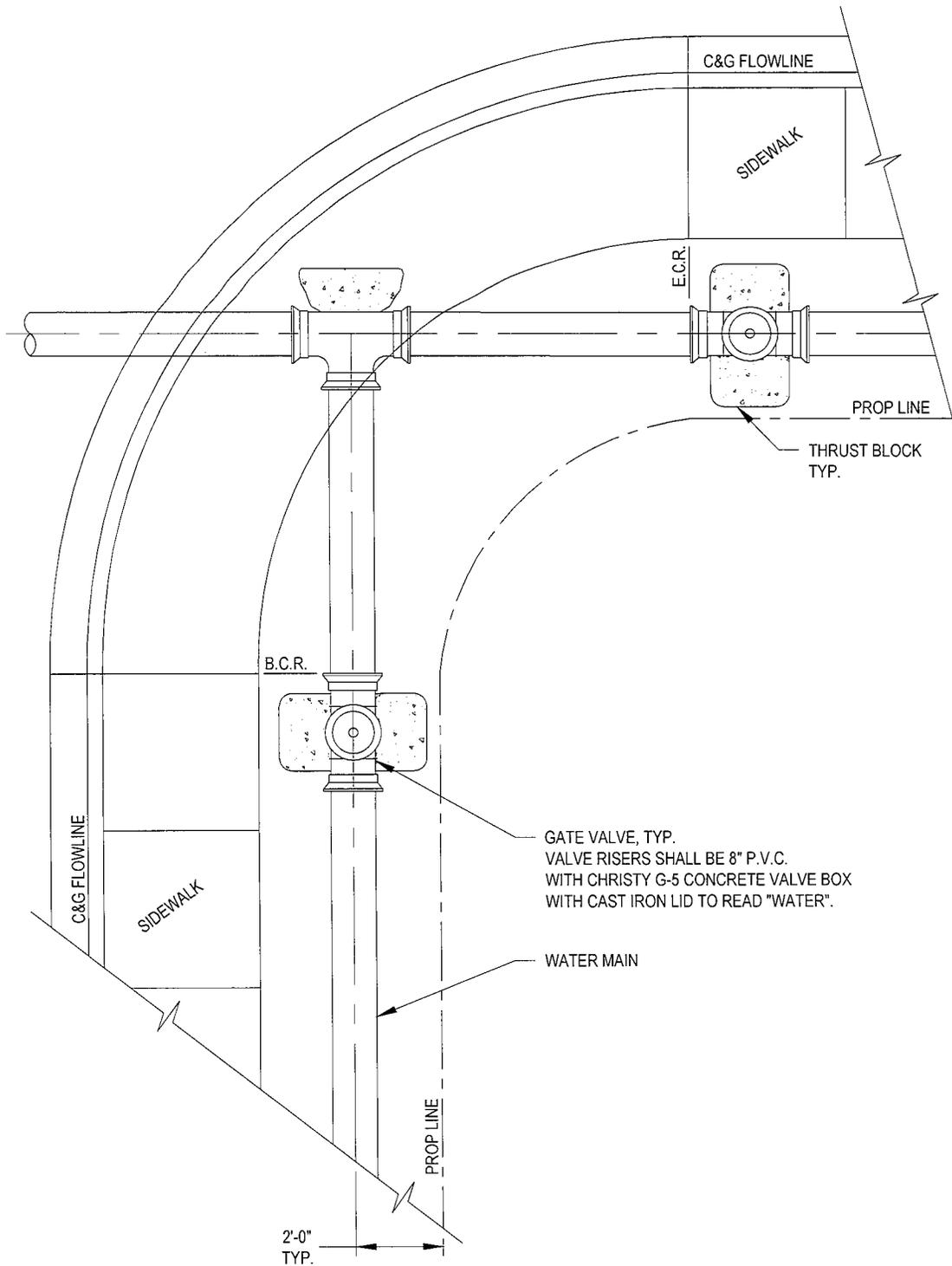
1. SAMPLING STATIONS SHALL BE 2.5' BURY, WITH A 1" MIP INLET, AND A 1" FIP DISCHARGE. A 1/4" BENT-NOSE SAMPLING BIB SHALL BE LOCATED BEFORE THE DISCHARGE.
2. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NONREMOVABLE ALUMINUM-CAST HOUSING. LOCATE 1'-0" BEHIND SIDEWALK PER CITY ENGINEER.
3. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND THE WATER WILL FLOW IN AN ALL BRASS WATERWAY.
4. ALL WORKING PARTS SHALL BE SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING.
5. A 1" BALL VALVE WILL CONTROL THE WATER FLOW, AND BE LOCATED BEFORE THE SAMPLING BIB, AS MANUFACTURED BY KUPFERLE FOUNDRY, ST. LOUIS, MO 63102.

| REVISIONS               | BY        | APP | DATE |
|-------------------------|-----------|-----|------|
|                         |           |     |      |
|                         |           |     |      |
|                         |           |     |      |
| STANDARD CURRENT AS OF: | JULY 2022 |     |      |



WATER SAMPLING STATION

W-11



GATE VALVE, TYP.  
 VALVE RISERS SHALL BE 8" P.V.C.  
 WITH CHRISTY G-5 CONCRETE VALVE BOX  
 WITH CAST IRON LID TO READ "WATER".

WATER MAIN

2'-0"  
 TYP.

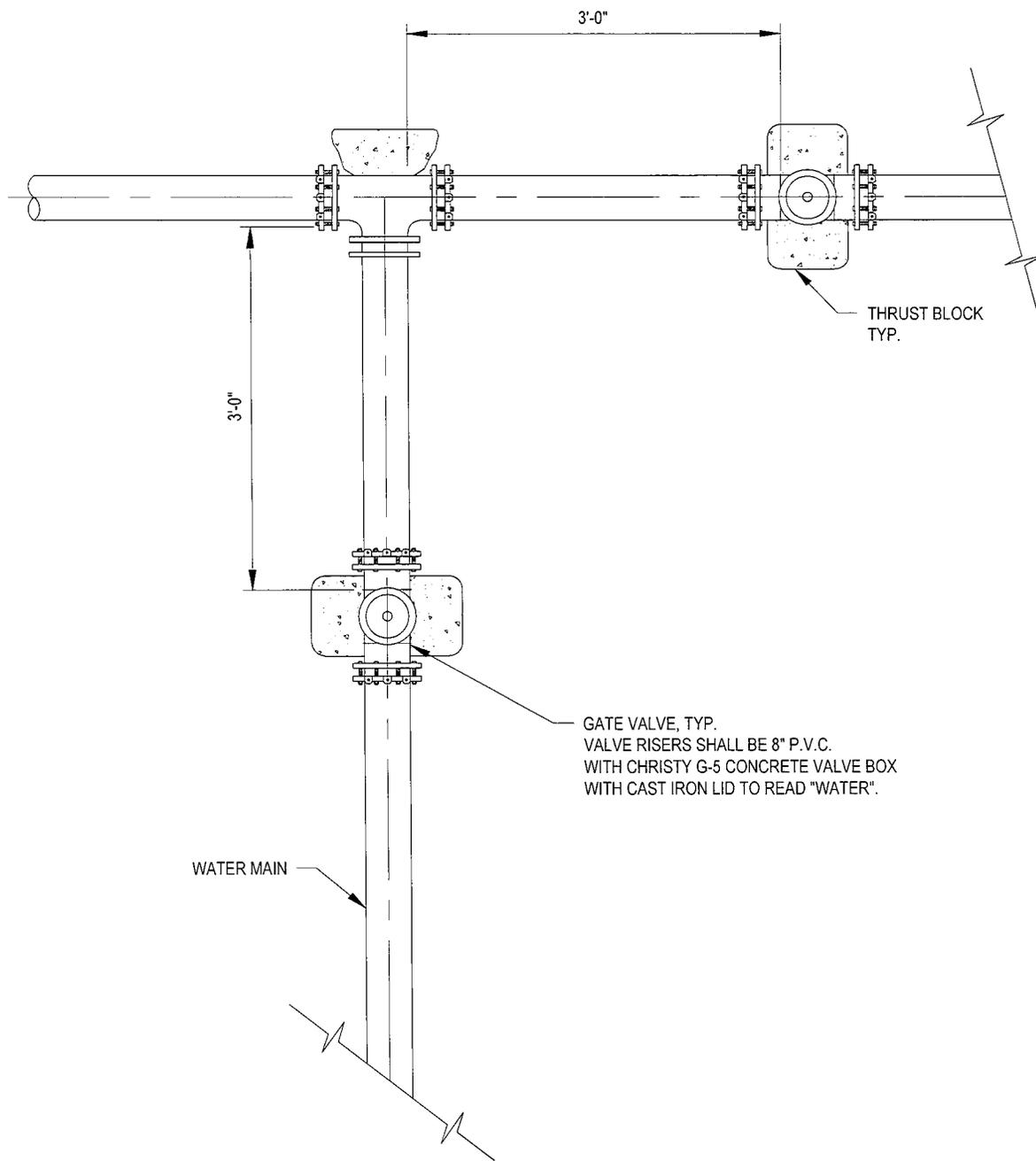
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



## GATE VALVE INSTALLATION WITH CURB RETURN

W-12



GATE VALVE, TYP.  
 VALVE RISERS SHALL BE 8" P.V.C.  
 WITH CHRISTY G-5 CONCRETE VALVE BOX  
 WITH CAST IRON LID TO READ "WATER".

WATER MAIN

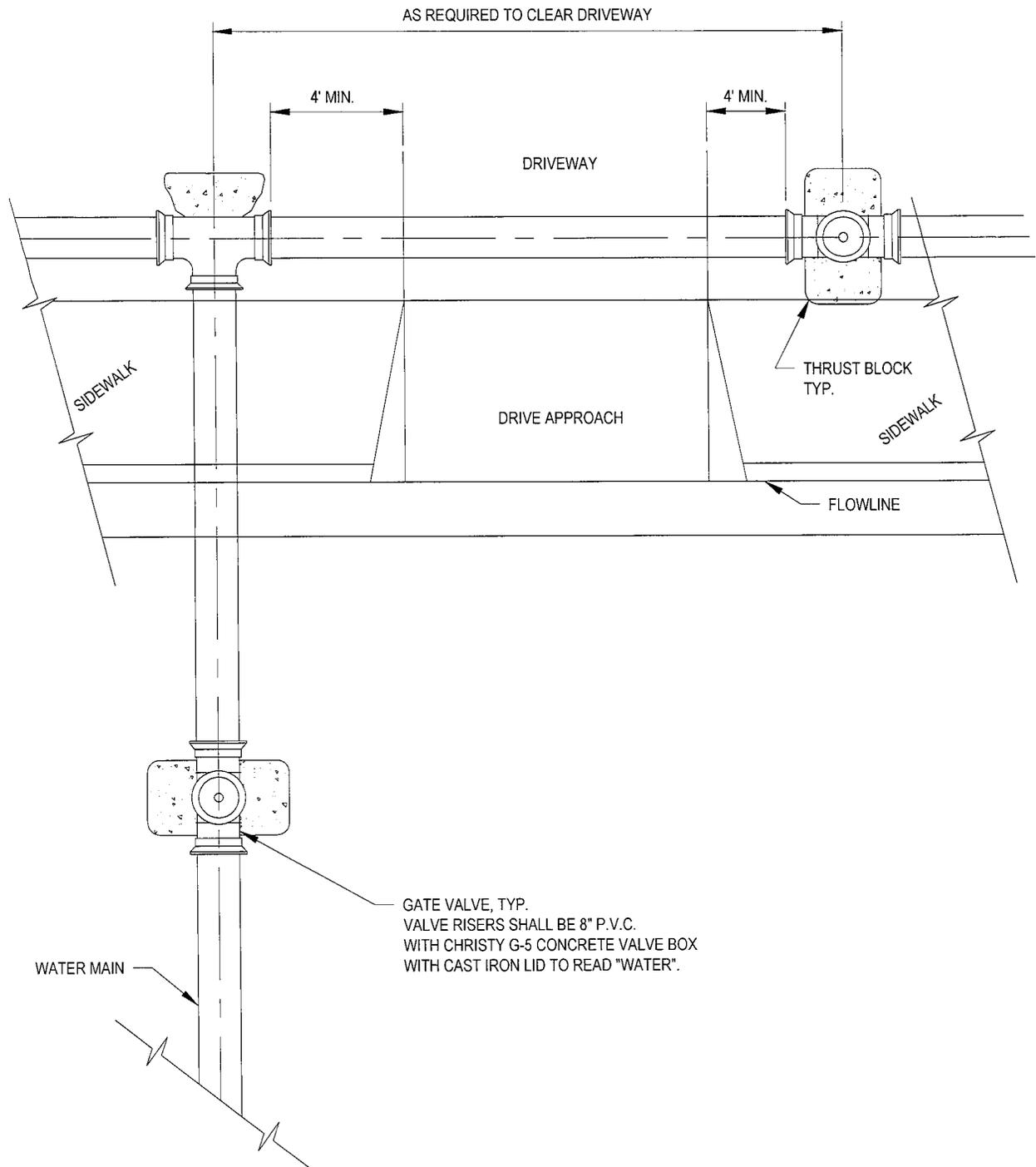
THRUST BLOCK  
 TYP.

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



GATE VALVE INSTALLATION  
 NO CURB RETURN



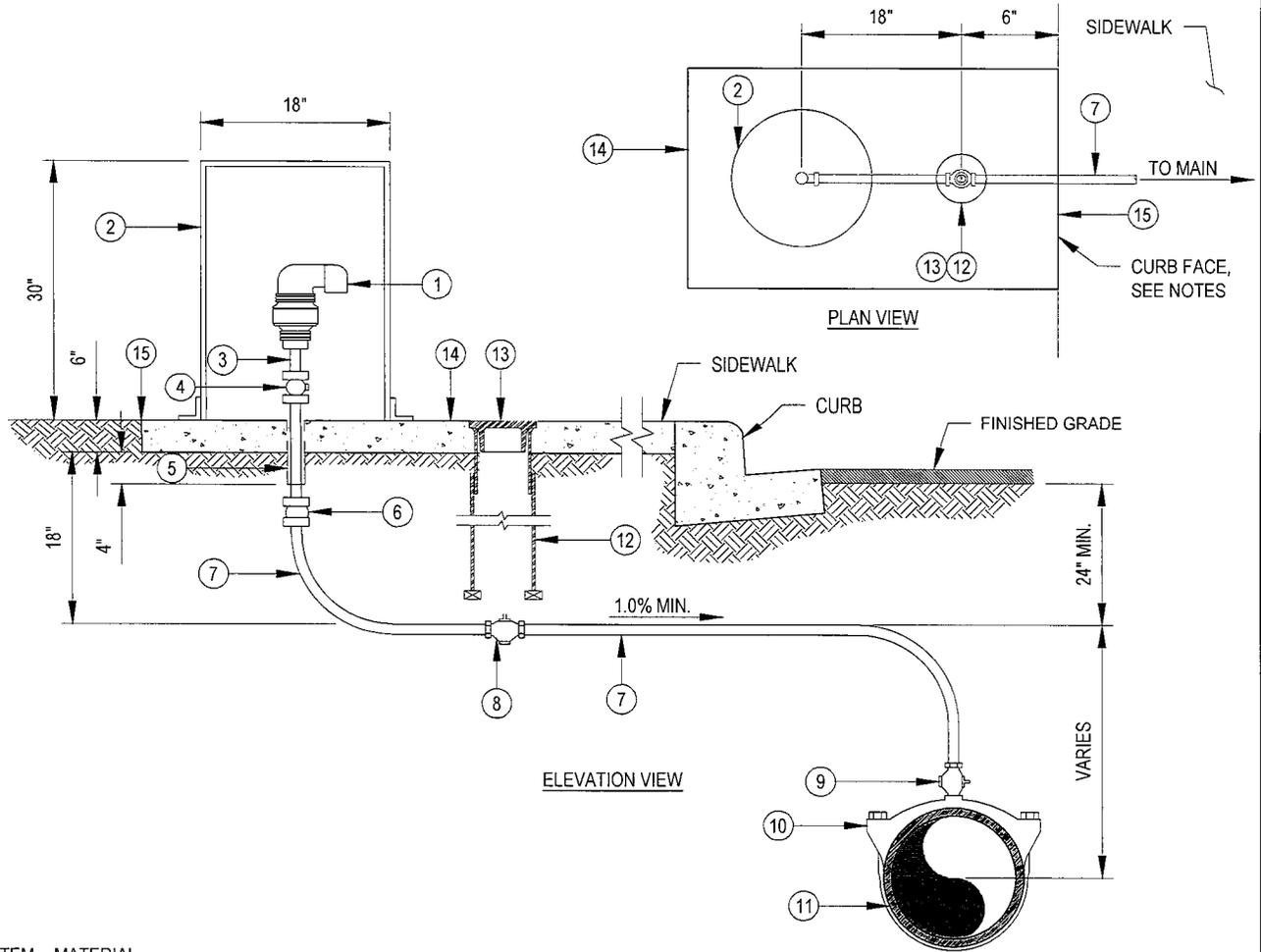
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



**GATE VALVE INSTALLATION  
DRIVEWAY (NO CURB RETURN)**

**W-14**



- | ITEM | MATERIAL  |
|------|---|
| 1    | AIR RELEASE AND VACUUM VALVE (A.R.I.)                                   |
| 2    | POLYETHYLENE AIR RELEASE VALVE ENCLOSURE, NOTE 1                        |
| 3    | 2" x 1-1/2" PVC NIPPLE  |
| 4    | 2" BALL VALVE F.I.P.T. x F.I.P.T.                                       |
| 5    | 2" x 12" BRASS NIPPLE WITHIN 2" x 1/2" BLACK FOAM SLEEVE                |
| 6    | 2" BRASS COUPLING WITH SOLDER COUPLINGS                                 |
| 7    | 2" COPPER PIPE TYPE "K", SOFT, ENCASED IN POLY WRAP C                   |
| 8    | 2" BALL VALVE WITH TEE HEAD, C x C SOLDER JOINTS OR F.I.P.T. x F.I.P.T. |
| 9    | 2" BRONZE CORPORATION STOP, M.I.P.T. x COMP.                            |
| 10   | (SIZE) x 2" F.I.P.T SERVICE SADDLE                                      |
| 11   | WATER MAIN  |
| 12   | 8" PVC PIPE EXTENSION   |
| 13   | VALVE BOX PER W-7A AND W-7B   |
| 14   | 42" x 30" x 6" THICK CONCRETE SLAB                                      |
| 15   | COLD JOINT STRIP  |

NOTES:

1. INSTALL ENCLOSURE PER MANUFACTURER RECOMMENDATIONS
2. WHERE SIDEWALK EXISTS, AIR AND VACUUM VALVE ENCLOSURE TO BE PLACED AT BACK OF CURB FACE.
3. IF NO SIDEWALK, AIR AND VACUUM VALVE ENCLOSURE TO BE PLACED AT 24" FROM ADJACENT PROPERTY LINE.
4. ALL SERVICE LATERALS SHALL BE WRAPPED WITH POLYETHYLENE ENCASEMENT (NORTH TOWN POLY WRAP - C, OR APPROVED EQUAL).

| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

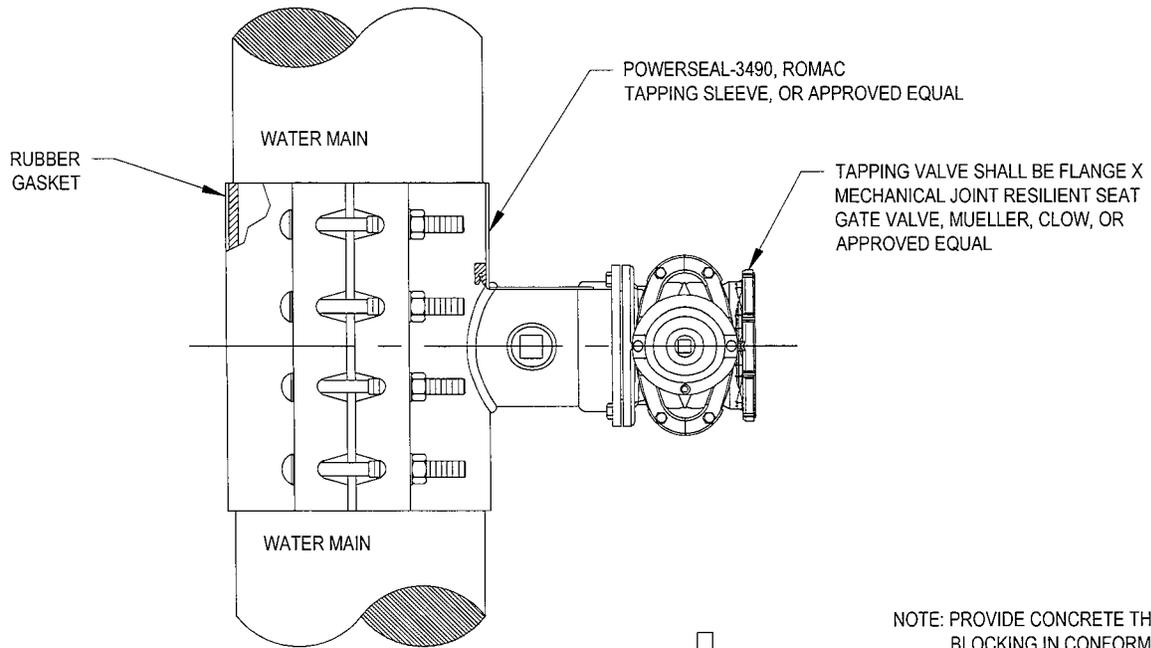
STANDARD CURRENT AS OF:

JULY 2022

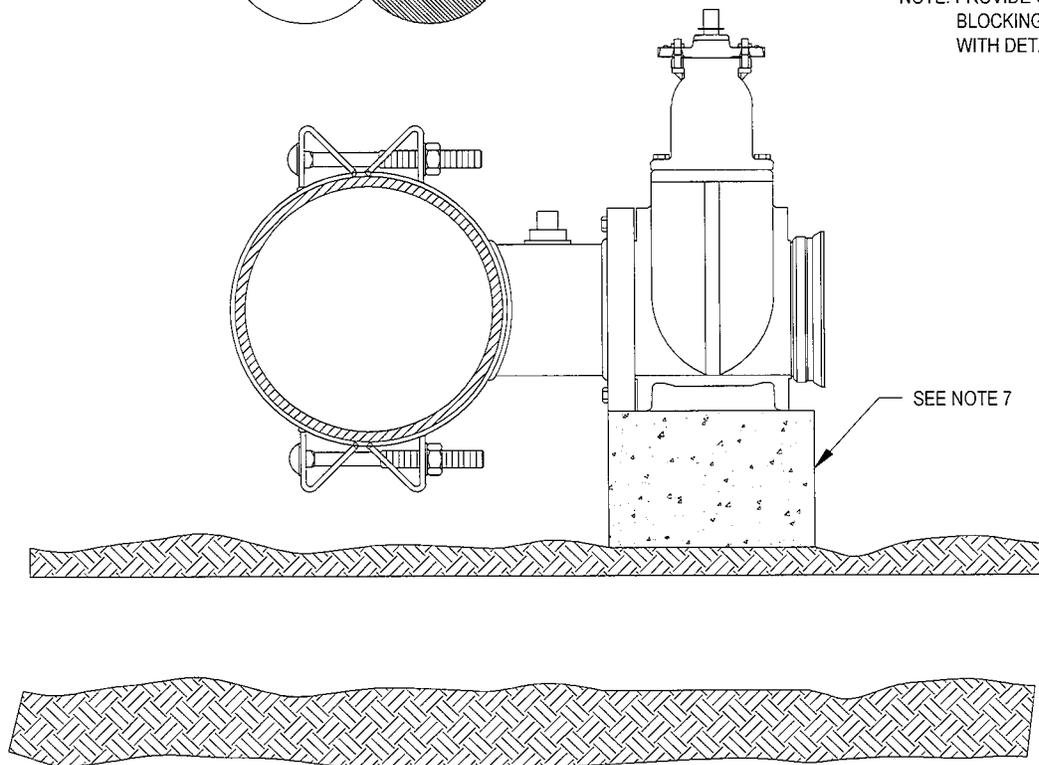


## COMBINATION AIR RELEASE VALVES

W-15



NOTE: PROVIDE CONCRETE THRUST BLOCKING IN CONFORMANCE WITH DETAILS W-9A and W-9B.



| REVISIONS               | BY        | APP | DATE |
|-------------------------|-----------|-----|------|
|                         |           |     |      |
|                         |           |     |      |
|                         |           |     |      |
| STANDARD CURRENT AS OF: | JULY 2022 |     |      |



HOT TAPPING WATER MAIN

W-16A

NOTES:

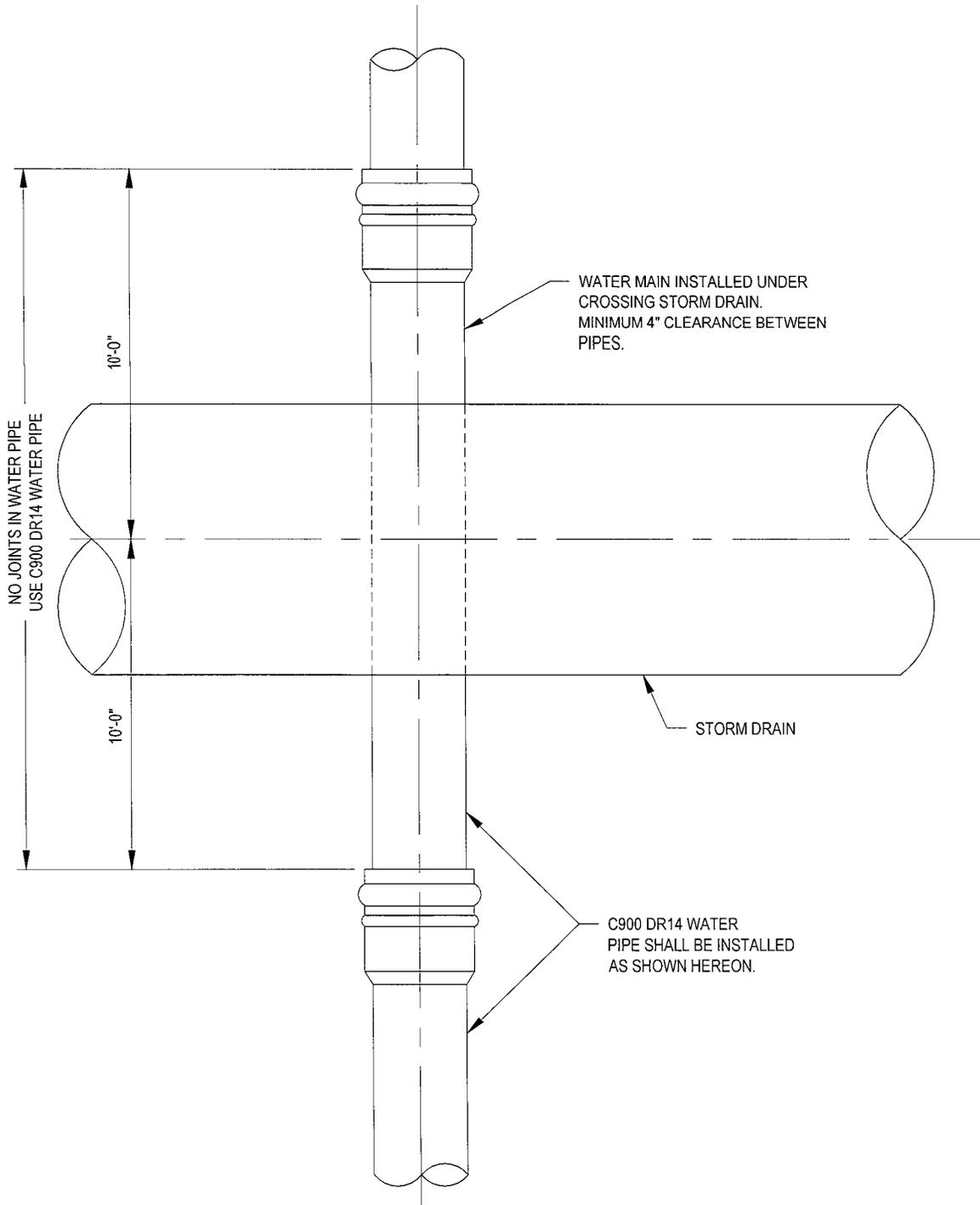
1. TAPPING SLEEVE SHALL BE CONSTRUCTED OF 304 STAINLESS STEEL AND SHALL BE FULLY PASSIVATED TO RETURN WELDED STAINLESS STEEL TO ITS ORIGINAL STATE.
2. RUBBER GASKET SHALL BE A 360° COMPLETE FULL CIRCLE. DO NOT USE GREASE OR PIPE LUBRICATES ON GASKET.
3. BRANCH SHALL BE MINIMUM 3/8" LARGER THAN NORMAL TO ALLOW FOR FULL SIZE CUTTER HEAD.
4. TAPPING SLEEVE SHALL BE SUPPLIED WITH FLANGE FACE ON BRANCH.
5. TAPPING SLEEVE SHALL HAVE A FLANGE FACE GASKET PERMANENTLY ATTACHED TO SLEEVE AT FACTORY.
6. LUGS SHALL BE STRUCTURALLY WELDED TO THE STEEL.
7. VALVE AND TAPPING EQUIPMENT SHALL BE SUPPORTED BY CONCRETE BLOCK DURING AND AFTER INSTALLATION.
8. THOROUGHLY CLEAN WATER MAIN WITH WIRE BRUSH PRIOR TO INSTALLATION OF TAPPING SLEEVE.
9. FLANGE FACE SHALL BE INSTALLED VERTICALLY TRUE AND PLUMB.
10. TAPPING SLEEVE SHALL NOT BE INSTALLED WITHIN 4 (FOUR) PIPE DIAMETERS OF AN EXISTING PIPE BELL UNLESS APPROVED OTHERWISE.
11. TAPPING SLEEVE BRANCHES SHALL BE LESS THAN 75% OF THE MAIN SIZE BEING TAPPED OR TEE MUST BE CUT-IN.

| REVISIONS               | BY        | APP | DATE |
|-------------------------|-----------|-----|------|
|                         |           |     |      |
|                         |           |     |      |
|                         |           |     |      |
| STANDARD CURRENT AS OF: | JULY 2022 |     |      |



HOT TAPPING WATER MAIN

W-16B



NOTE: THIS CONDITION IS NOT PREFERRED.  
ONLY PLACE STORM DRAIN ABOVE WATER IF  
THERE IS NO OTHER ALTERNATIVE.

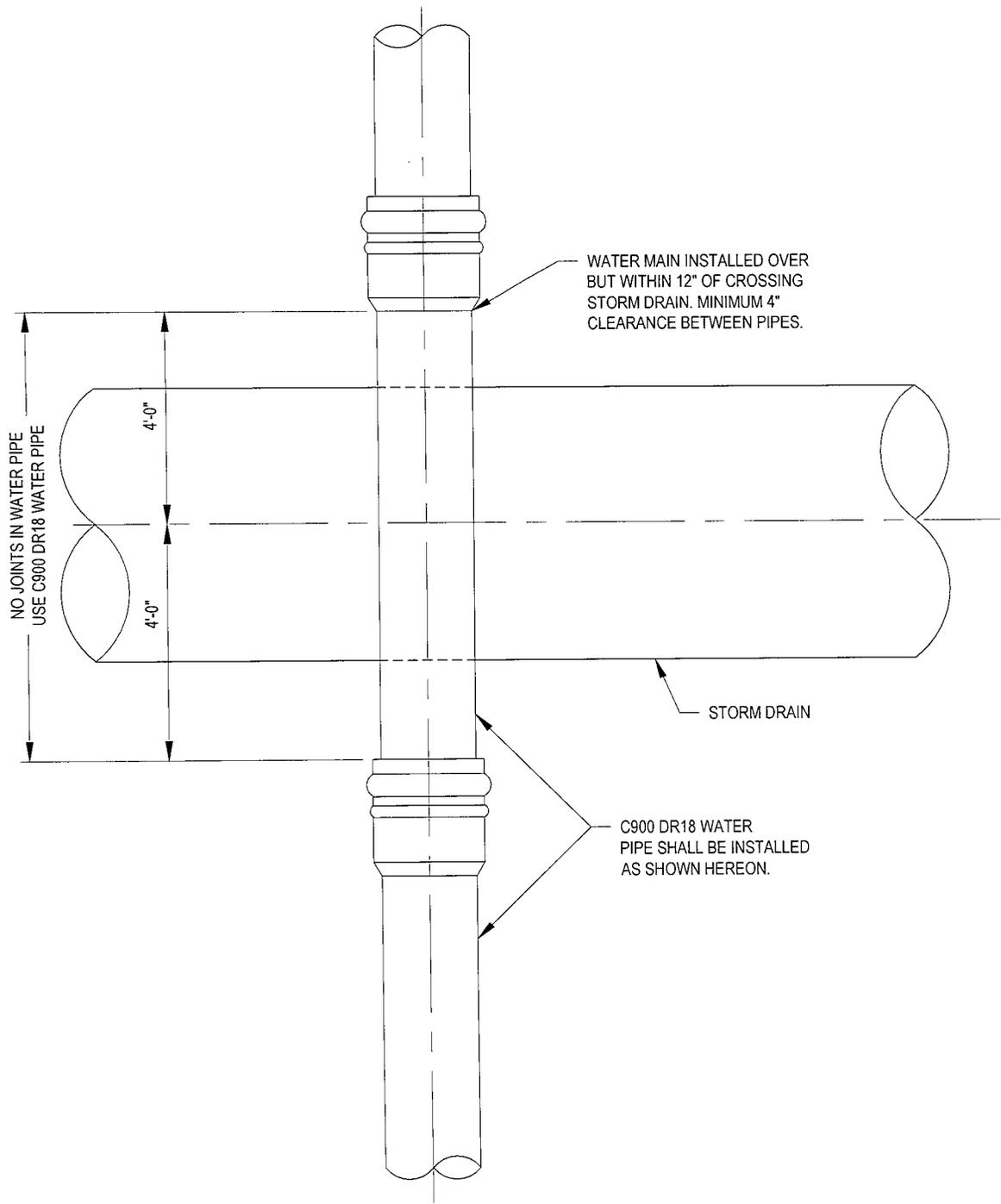
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



## WATER MAIN CROSSING BELOW STORM DRAIN

W-17A



NOTE: IT IS PREFERABLE TO PLACE THE STORM DRAIN BELOW WATER PIPES AND SEPARATE THEM BY AT LEAST 12". THIS DETAIL APPLIES WHEN STORM DRAIN IS CLOSER THAN 12" TO WATER PIPE.

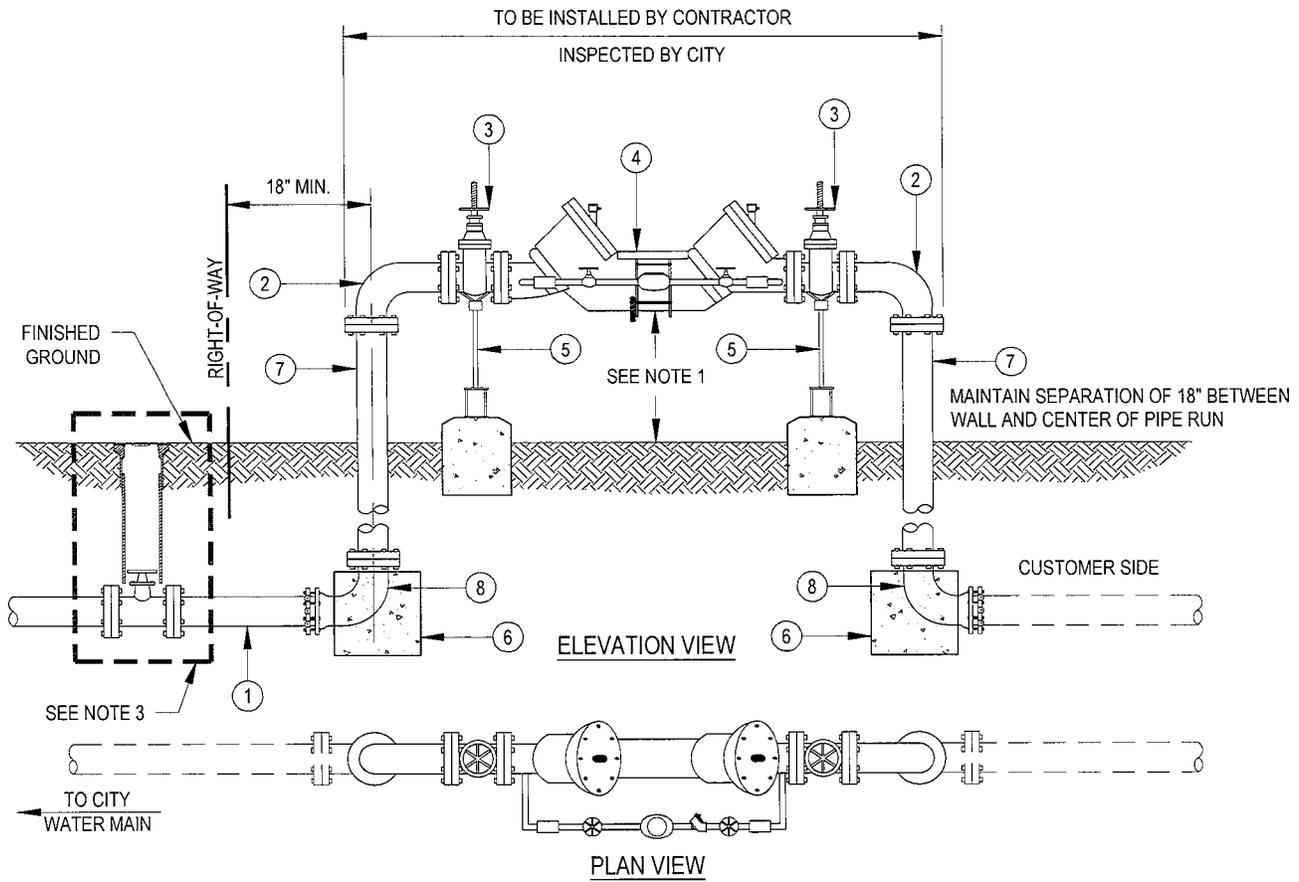
| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



WATER MAIN CROSSING  
 12" OR LESS ABOVE  
 STORM DRAIN W-17B





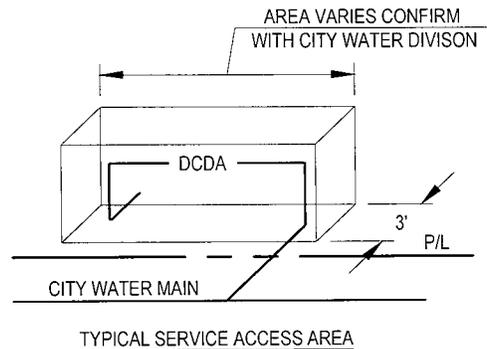
NOTES:

1. WATER SERVICE SHALL BE INSTALLED WITH 12" MINIMUM TO 30" MAXIMUM CLEARANCE ABOVE NATURAL FINISHED GRADE AND SHALL BE READILY ACCESSIBLE FOR INLINE SERVICE AND TEST.
2. THE APPROVED BACKFLOW PREVENTION ASSEMBLY SHALL BE FURNISHED BY THE MANUFACTURE AS A COMPLETE ASSEMBLY, METER TO BE FURNISHED BY THE CONTRACTOR (MEASURED IN CU. FT.).
3. FOR 2 INCH SERVICE INSTALLATIONS, SEE DETAIL W-3A.
4. DCDA MUST BE INSTALLED AS CLOSE AS PRACTICAL TO THE PROPERTY LINE AND COMPLETELY WITHIN PRIVATE PROPERTY.
5. PROVIDE TAMPER-PROOF ENCLOSURE FOR APPROVAL.

\* PROPERTIES WITH ONSITE AUXILIARY WATER SUPPLIES OR CHEMICAL INJECTION FIRE SYSTEMS MAY REQUIRE A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY. CONTACT THE CITY OF MCFARLAND WATER DEPARTMENT PERSONNEL TO CONSULT AND CONFIRM THE REQUIRED BACKFLOW PREVENTION ASSEMBLY REQUIRED.

ITEM MATERIAL

- ① DUCTILE IRON PIPE CL350, TYPICAL
- ② 90° BEND (FLG x FLG)
- ③ OS & Y GATE VALVE (FLG x FLG)
- ④ USC APPROVED BACKFLOW PREVENTION ASSEMBLY - DOUBLE CHECK DETECTOR ASSEMBLY\*
- ⑤ ADJUSTABLE PIPE SUPPORT
- ⑥ THRUST BLOCK
- ⑦ DUCTILE IRON SPOOL (FLG X FLG)
- ⑧ 90° DUCTILE IRON BEND (MJ x FLG).



| REVISIONS | BY | APP | DATE |
|-----------|----|-----|------|
|           |    |     |      |
|           |    |     |      |
|           |    |     |      |

STANDARD CURRENT AS OF: JULY 2022



NEW FIRE SERVICE INSTALLATION

W-19