

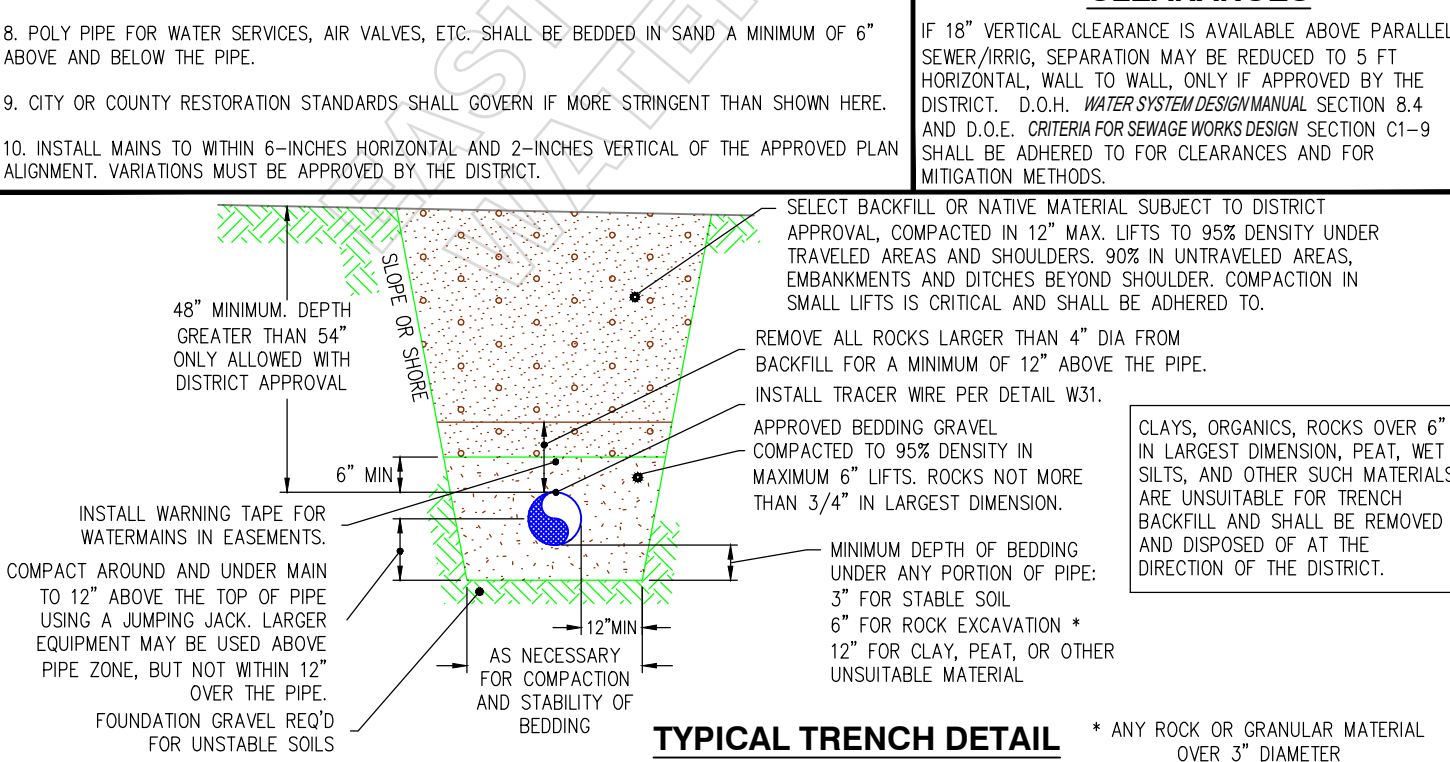
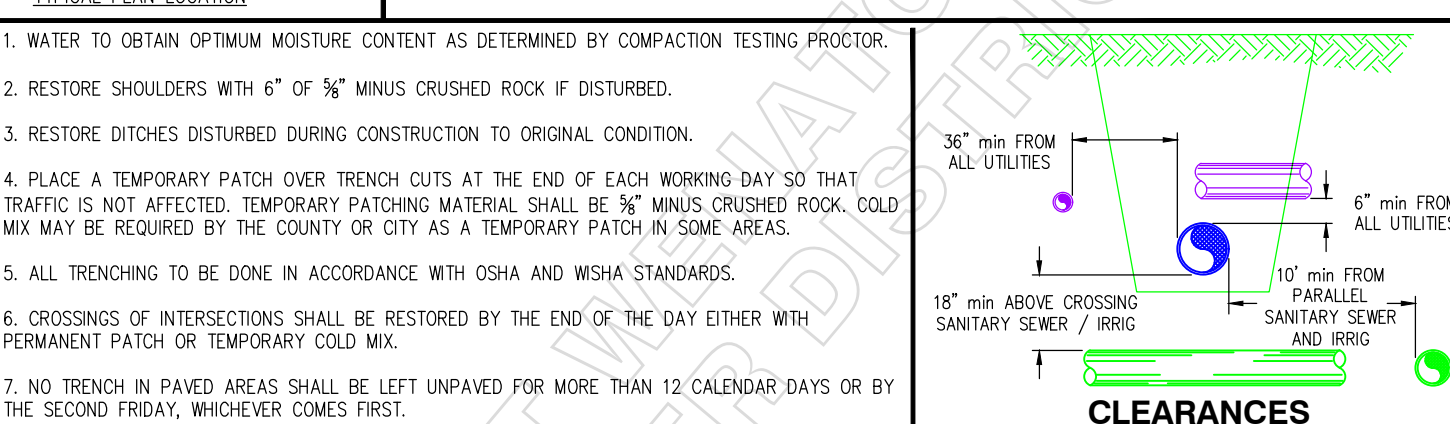
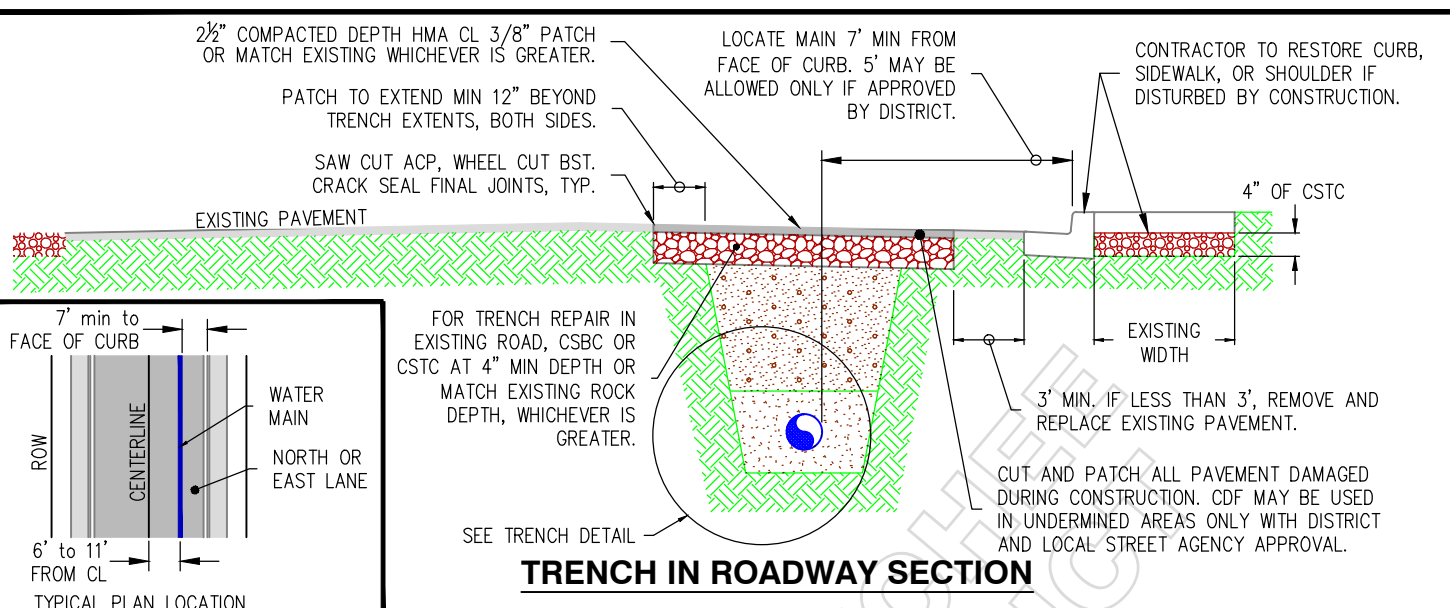
- CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF THE FOLLOWING:
 - EAST WENACHEE WATER DISTRICT DEVELOPER EXTENSION AGREEMENT (when applicable).
 - EAST WENACHEE WATER DISTRICT STANDARD DETAILS. IF ANY DETAIL IS REVISED AFTER PLAN APPROVAL, THE DISTRICT WILL DETERMINE IF THE REVISION MUST BE INCORPORATED INTO THE WORK.
 - EAST WENACHEE WATER DISTRICT SERVICE POLICIES AND CONSTRUCTION STANDARDS.
 - WA. STATE DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION.
- A PRECONSTRUCTION CONFERENCE IS REQUIRED PRIOR TO CONSTRUCTION AND 48 HOURS ADVANCE NOTIFICATION OF THE LOCAL MUNICIPALITY, THE EAST WENACHEE WATER DISTRICT, AND ALL AFFECTED UTILITY COMPANIES PRIOR TO THE ACTUAL START OF WORK.
- THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF THE RIGHT-OF-WAY/STREET CONSTRUCTION PERMIT AS ISSUED BY THE DOUGLAS COUNTY DEPT. OF TRANSPORTATION AND LAND SERVICES, CITY OF EAST WENACHEE, AND/OR WA. STATE DOT FRANCHISE FOR THIS PROJECT. TRAFFIC CONTROL SHALL FOLLOW THE ROAD AGENCY'S CODES AND STANDARDS.
- LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE ESTIMATED UNLESS STATED OTHERWISE. THE CONTRACTOR SHALL VERIFY, LOCATE AND PROTECT ALL UTILITIES WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL REPLACE OR REPAIR ANY UTILITIES DAMAGED DURING CONSTRUCTION. SHOW ALL ENCOUNTERED UTILITIES ON THE AS-BUILTS.
- LOCATION AND EXTENT OF IRRIGATION PIPELINES WITHIN THE PROJECT LIMITS ARE UNKNOWN. CONTRACTOR SHALL CONTACT PROPERTY OWNERS ADJACENT TO THE PROJECT FOR LOCATING PRIVATE IRRIGATION SYSTEMS. CONTRACTOR IS RESPONSIBLE FOR LOCATING, REPLACING, OR REPAIRING IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION. REPAIR IRRIGATION SYSTEMS WITH PRODUCTS OF NO LESSER QUALITY THAN SCH 40 PVC. SHOW IRRIGATION ON THE AS-BUILTS.
- ALL EXCAVATION SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE STANDARD DETAILS AND SECTIONS 7-9.3(10) AND 7-9.3(11) OF THE STANDARD SPECIFICATIONS. COMPACTION TESTING IS REQUIRED DURING BACKFILLING OPERATIONS AT THE DISCRETION OF THE WATER DISTRICT. IF TRENCH BACKFILL DOES NOT MEET COMPACTION REQUIREMENTS, CONTRACTOR SHALL EXCAVATE, RECOMPACT, AND RETEST MATERIAL AT CONTRACTOR'S EXPENSE.
- RESTORATION OF DAMAGED ROAD SURFACING SHALL BE IN ACCORDANCE WITH THE LOCAL MUNICIPALITY'S REQUIREMENTS. ALL OTHER AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR AS DIRECTED BY THE DISTRICT. THIS INCLUDES SHOULDERS, LANDSCAPING, WALLS, FENCES AND OTHER IMPROVEMENTS.
- ALL WATER SERVICES, FIRE HYDRANTS, AND THRUST BLOCKING SHALL BE INSPECTED BY THE DISTRICT BEFORE BURY.
- PROVIDE A SANITARY GAP BETWEEN THE EXISTING AND NEW WATER SYSTEMS. CONNECTION TO THE EXISTING WATER SYSTEM SHALL BE PERFORMED BY THE CONTRACTOR ONLY AFTER COMPLETING AN ACCEPTABLE PRESSURE TEST AND THE PIPELINE IS DISINFECTED, FLUSHED, AND RECEIPT OF ACCEPTABLE WATER QUALITY TEST RESULTS FROM THE HEALTH DISTRICT OR LAB.
- PERFORM PRESSURE TEST AT 250psi. THE DISTRICT INSPECTOR HAS DISCRETION TO MODIFY THE TESTING REQUIREMENTS.
 - PRESSURE WASHERS ARE NOT ALLOWED FOR PRESSURE TESTING. DISTRICT HAS THE RIGHT TO REJECT ANY PUMP SYSTEM THAT IN THE DISTRICT'S SOLE OPINION MAY BE UNSAFE OR UNSATISFACTORY.
 - PRESSURE TEST INCLUDES MAINLINE, HYDRANTS, SERVICE LINES, SETTERS, AND CUSTOMER SERVICE SIDE TAILPIPE.
 - TEST MAINLINE IN SECTIONS OF NO MORE THAN 1,500 FEET. PRESSURE DROP SHALL NOT EXCEED 5 psi IN 60 MINUTES.
 - ASSEMBLE AND TEST VALVE CLUSTERS OUTSIDE OF THE TRENCH PRIOR TO INSTALLATION.
 - TEST GAUGE RANGE SHALL NOT EXCEED 160% OF TEST PRESSURE (400 psi MAX FOR 250 psi TEST).
- AN INFLATABLE PIPE PLUG SHALL BE USED ON EACH JOINT DURING INSTALLATION TO PROTECT AGAINST SOIL INTRUSION AND FLOODING OF THE PIPE. OPEN ENDS OF VALVES SHALL BE PLUGGED OR BAGGED UNTIL EXTENDED WITH PIPE.
- CONTRACTOR SHALL POTHOLE A SUFFICIENT DISTANCE AHEAD OF PIPELAYING TO VERIFY DEPTH OF EXISTING WATER MAINS AND CROSSING UTILITIES AND TO ANTICIPATE ANY NECESSARY CHANGES IN FITTINGS OR ALIGNMENT.

CONTINUED ON W-30 . . .

- AN AS-BUILT RECORD MUST BE SUBMITTED TO THE DISTRICT BEFORE WATER SERVICE WILL BE PROVIDED.
- DEFLECTION AT PIPE AND FITTING JOINTS WILL BE ALLOWED UP TO 3.0" PER JOINT OR AS RECOMMENDED BY MANUFACTURER, WHICHEVER IS LESS. 3.0" IS 11" PER 18" PIPE STICK, WHICH IS 350' RADII.
- CONTRACTOR SHALL ONLY DISPOSE OF WASTE MATERIAL AT SITES APPROVED BY DOUGLAS COUNTY TRANSPORTATION AND LAND SERVICES. STOCKPILE MATERIALS ONLY ON DISTRICT APPROVED SITES.
- CONTRACTORS WORKING WITHIN THE RIGHT OF WAY OR ON EXISTING DISTRICT INFRASTRUCTURE SHALL BE LICENSED, BONDED, AND HAVE EXPERIENCE INSTALLING PUBLIC DOMESTIC WATER SYSTEMS AND BE PREPARED TO PRESENT EXAMPLES OF 5 SUCH PROJECTS UPON REQUEST BY THE DISTRICT.
- CONTRACTOR TO PROVIDE NO LESS THAN 48 HOURS NOR MORE THAN 72 HOURS NOTICE TO THE DISTRICT PRIOR TO ANY REQUESTED SHUTDOWN OR CUSTOMER OUTAGE. DISTRICT WILL MONDAY TO CUSTOMERS 24 HOURS IN ADVANCE OF OUTAGE. NO OUTAGES TO SHUT OFF EXISTING WATER MAINS ARE ALLOWED ON MONDAYS OR FRIDAYS.
- RESTRAINTS, GASKETS, OR RESTRAINED PIPES (PORTIONS GOUGED BY RESTRAINTS) MAY NOT BE REUSED ONCE ASSEMBLED.
- CONTRACTOR SHALL MAINTAIN AND RETURN ANY TEMPORARY EQUIPMENT PROVIDED BY THE DISTRICT. CONTRACTOR SHALL REIMBURSE THE DISTRICT FOR ANY DAMAGE OR LOSS OF EQUIPMENT.
- STAKE LOCATIONS OF WATERMAIN, BENDS, TEES, HYDRANTS, AND VAULTS PRIOR TO EXCAVATION. AT THE DISTRICT'S DISCRETION, THE CONTRACTOR MAY PROVIDE A GPS ROVER WITH LOCATIONS PRE-LOADED.
- NO WORK THAT REQUIRES INSPECTION, OVERSIGHT, OR INPUT FROM THE DISTRICT, THE DISTRICT'S INSPECTOR OR ENGINEER WILL BE ALLOWED ON FRIDAYS, SATURDAYS AND SUNDAYS. SEE SPECIFICATION 1-08.0(3) FOR FURTHER WORKING DAY RESTRICTIONS.

MATERIALS REQUIREMENTS

- ALL METAL PRODUCTS (VALVE BOXES & CASING PIPES EXCLUDED) & METAL ACCESSORIES (E.G. BOLTS, GLANDS, ETC) SHALL BE OF DOMESTIC FABRICATION & CONSTRUCTION. TEMPORARY MATERIALS NOT PART OF THE PERMANENT FACILITY NEED NOT BE DOMESTIC. THIS REQUIREMENT MAY BE SUPERCEDED BY CONTRACT REQUIREMENTS FOR STATE OR FEDERALLY FUNDED PROJECTS.
- ALL PIPE 3" AND LARGER SHALL BE DUCTILE IRON WITH A WALL THICKNESS NO LESS THAN CLASS 50 EXCEPT WHERE TRENCH BACKFILL OR LOADING DICTATE A STRONGER PIPE. USE CLASS 52 FOR HYDRANT RUNS AND WHERE PRESSURE EXCEEDS 150 PSI.
- HDPE SERVICE PIPE SHALL BE 250 psi RATED (DR9) CTS (Copper Tube Size). ONLY FORD "QUICK-JOINT", MUELLER "110 CONDUCTIVE COMPRESSION", OR EQUAL FITTINGS ALLOWED FOR HDPE OR COPPER PIPE CONNECTIONS. NO PACK JOINTS.
- ONLY FORD, MCDONALD, & MUELLER PRODUCTS ARE APPROVED FOR SERVICE BRASS, UNLESS OTHERWISE NOTED IN THESE DETAILS.
- VAULT LID NOTE: FOR ALL TAPER-TOP STYLE VAULTS FOR WATER SERVICES, AIR VALVES, PERMANENT BLOW-OFFS, AND OTHER PURPOSES, CONTRACTOR TO PURCHASE LID AND FRAME EQUAL TO EAST JORDAN IRONWORKS' EAST WENACHEE WATER DISTRICT SPECIFICATION, FRAME/LID 36202/3620C FOR NON-TRAFFIC AREAS, AND 36192/3619C FOR DRIVEWAYS AND TRAFFIC AREAS.
 - ANCHOR FRAME TO VAULT USING NON-SHRINK GROUT. FRAME AND LID TO BE RATED FOR TRAFFIC LOADING IN TRAFFIC AREAS.
 - WATER SERVICE VAULT LIDS TO INCLUDE ONE 2-3/16" DIAMETER HOLE WITH 4-1/4" DIAMETER x 9/16" DEEP RECESS FOR RADIO.
 - FOR AIR VALVES AND BLOW-OFFS, DO NOT DRILL HOLE IN LIDS, NOR PROVIDE "METER" TEXT ON FRAME.
 - LID SURFACE TO HAVE A STATIC COEFFICIENT OF FRICTION NO LESS THAN 0.60 AS DETERMINED BY ASTM C-1028.
- FLANGE GASKETS MUST BE RING TYPE (NOT FULL FACE) AND MINIMUM 1/8" THICK.
- FLANGE BOLTS ASTM A307 GRADE A OR B. ALL BOLTS, NUTS AND WASHERS TO BE ZINC PLATED STEEL OR COR-TEN MATERIALS.
- BURIED VALVES 2" AND SMALLER TO BE CURB STOP OR CORP STOP PER DETAILS, OR STYLE AT THE DISCRETION OF THE DISTRICT.
 - CORP STOP: MUELLER 300 BALL CORP (B-25028N), FORD FB110-Q-NL, OR APPROVED EQUAL.
 - CURB STOP: MUELLER 300 BALL CURB (B-25122N), FORD B41-Q-NL, OR APPROVED EQUAL.
- 3" BURIED VALVES ONLY ALLOWED WITH DISTRICT APPROVAL. IF ALLOWED, THE DISTRICT WILL DETERMINE WHAT TYPE OF VALVE IS APPROPRIATE.
- ALL CONCRETE VAULTS AND CHAMBERS MUST BE PRECAST. CAST-IN-PLACE ARE NOT ALLOWED.



- CONSTRAINTS**
- SOIL CONDITIONS AND BEARING CHARACTERISTICS ARE TO BE DETERMINED BY THE DISTRICT.
 - THIS STANDARD DETAIL IS FOR HORIZONTAL THRUST RESTRAINT ONLY.
 - CONCRETE BLOCKING SHALL BE PER DOT/APWA SPECIFICATION 7-09.3(2), CURRENT EDITION.
 - MAINTAIN 18" MINIMUM GROUND COVER OVER THE TOP OF ALL CONCRETE BLOCKING.
 - ALL THRUST BLOCKS TO BE FORMED AND FITTINGS COVERED IN PLASTIC.
 - ANY TEMPORARY BLOCKING USED TO SUPPORT FITTINGS DURING CONSTRUCTION SHALL BE REMOVED PRIOR TO BACKFILLING.
- PROCEDURE**
- DETERMINE BEARING FACTOR IN TABLE 1 CORRESPONDING TO APPROPRIATE PIPE SIZE AND TYPE OF FITTING.
 - MULTIPLY THE BEARING FACTOR DETERMINED IN TABLE 1 BY THE MULTIPLICATION FACTOR IN TABLE 2 FOR THE APPROPRIATE SOIL CLASSIFICATION.
 - THE RESULT IS THE REQUIRED AREA OF CONCRETE (IN SQ. FT.) WHICH MUST BEAR AGAINST UNDISTURBED SOIL.
 - USING TABLE 3 LOCATE THE MINIMUM DEPTH OF CONCRETE (D_{min}) CORRESPONDING TO THE REQUIRED BEARING AREA.
- A. "H" EQUALS "D"
 B. MAX. "L" EQUALS 2 x "H"
 C. MIN. "L" EQUALS "H"

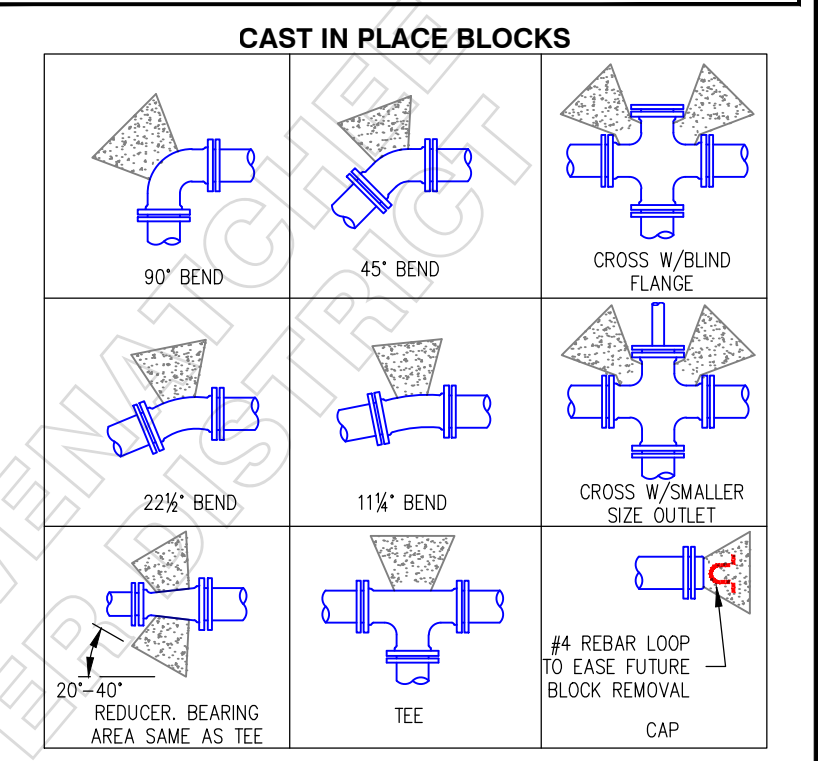
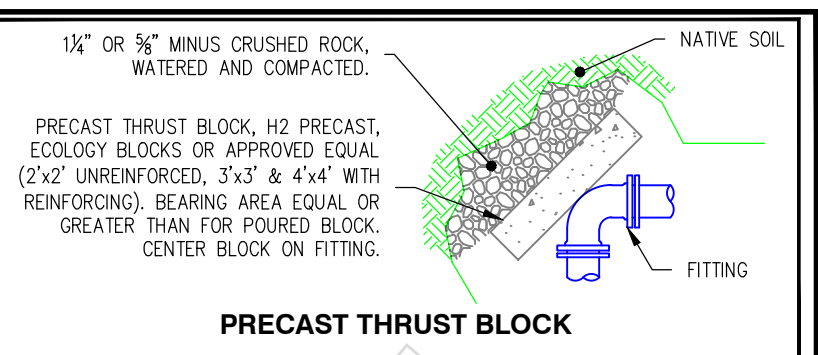


TABLE 1 - BEARING FACTOR

| TEST PRESSURE (PSI) | TEST SIZE | 90° BEND | 45° BEND | 22 1/2° BEND | 11 1/4° BEND |
|---------------------|-----------|----------|----------|--------------|--------------|
| 3 | 300 | 2.34 | 2.6 | 2.34 | 2.34 |
| 4 | 300 | 2.74 | 3.0 | 2.74 | 2.74 |
| 6 | 300 | 5.6 | 7.9 | 5.6 | 5.6 |
| 8 | 300 | 9.6 | 13.6 | 7.4 | 7.4 |
| 10 | 300 | 14.5 | 20.5 | 11.1 | 11.1 |
| 12 | 300 | 20.5 | 29.0 | 15.7 | 15.7 |
| 14 | 300 | 27.6 | 39.0 | 21.1 | 21.1 |
| 16 | 300 | 35.7 | 50.4 | 27.3 | 27.3 |
| 18 | 300 | 44.8 | 63.4 | 34.3 | 34.3 |
| 20 | 300 | 55.0 | 77.7 | 42.1 | 42.1 |
| 24 | 300 | 78.4 | 111.0 | 60.0 | 60.0 |

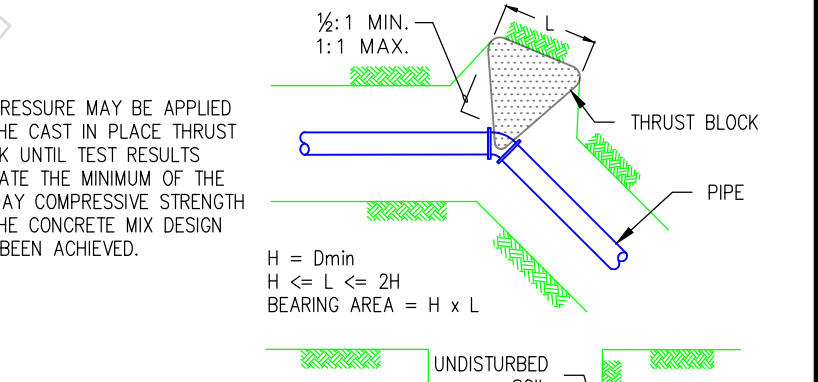


TABLE 2 - MULTIPLICATION FACTOR

| SOIL CONDITION | MULTIPLICATION FACTOR |
|----------------------------------|-----------------------|
| MUCK, PEAT, etc. | - |
| SOFT CLAY | 2.0 |
| SILT | 1.3 |
| SAND OR SANDY SILT | 1.0 |
| SOIL AND GRAVEL | 0.7 |
| SAND AND GRAVEL CEMENTED W/ CLAY | 0.5 |
| HARD SOIL | 0.2 |

TABLE 3 - BLOCK SHAPE

| REQD BEARING AREA (SQ. FT.) | MINIMUM DEPTH (D _{min}) |
|-----------------------------|-----------------------------------|
| 2.25 MIN - 5.0 | 1.5" |
| 5.01 - 10.0 | 2.3" |
| 10.01 - 15.0 | 3.0" |
| 15.01 - 30.0 | 4.0" |
| 30.01 - 40.0 | 4.5" |
| 40.01 - 50.0 | 5.0" |
| 50.01 - 70.0 | 6.0" |

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
CONSTRUCTION NOTES
 PAGE 1 of 2

DRAWING NO. W-01 SHEET NO. 1

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WATER SYSTEM STANDARD DETAIL
CONSTRUCTION NOTES
 PAGE 2 of 2

DRAWING NO. W-30 SHEET NO. 2

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
TRENCH SECTION AND RESTORATION

DRAWING NO. W-03 SHEET NO. 3

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
HORIZONTAL THRUST BLOCKING

DRAWING NO. W-04 SHEET NO. 4

Vertical Thrust Blocking

| PIPE SIZE (NOMINAL TEST PRESSURE) | VERTICAL BEND DEGREES | AMOUNT CONCRETE BLOCKING - CU FT | LENGTH OF SIDE FEET | SHACKLE ROD DIA. INCHES | DEPTH OF ROD IN INCHES | NUMBER OF THE RODS PER SET (2 EMBEDDED RODS PER SET) |
|-----------------------------------|-----------------------|----------------------------------|---------------------|-------------------------|------------------------|--|
| 3" | 11 1/4 | 5.8 | 1.8 | 5/8 | 12" | 2 |
| | 22 1/2 | 11.5 | 2.3 | 5/8 | 12" | 2 |
| | 45 | 22.6 | 2.8 | 5/8 | 12" | 2 |
| 4" | 11 1/4 | 8.5 | 2.0 | 5/8 | 12" | 2 |
| | 22 1/2 | 17.0 | 2.6 | 5/8 | 12" | 2 |
| | 45 | 33.2 | 3.2 | 5/8 | 12" | 2 |
| 6" | 11 1/4 | 17.6 | 2.6 | 5/8 | 12" | 2 |
| | 22 1/2 | 35.0 | 3.3 | 5/8 | 12" | 2 |
| | 45 | 68.7 | 4.1 | 5/8 | 12" | 2 |
| 8" | 11 1/4 | 30.3 | 3.1 | 3/4 | 12" | 2 |
| | 22 1/2 | 60.2 | 3.9 | 3/4 | 12" | 2 |
| | 45 | 118 | 4.9 | 3/4 | 12" | 4 |
| 10" | 11 1/4 | 45.5 | 3.6 | 3/4 | 12" | 2 |
| | 22 1/2 | 90.6 | 4.5 | 3/4 | 12" | 2 |
| | 45 | 178 | 5.6 | 3/4 | 24" | 4 |
| 12" | 11 1/4 | 64.4 | 4.0 | 3/4 | 12" | 2 |
| | 22 1/2 | 128 | 5.1 | 3/4 | 12" | 4 |
| | 45 | 251 | 6.3 | 3/4 | 12" | 6 |
| 14" | 11 1/4 | 86.5 | 4.4 | 3/4 | 12" | 2 |
| | 22 1/2 | 172 | 5.6 | 3/4 | 24" | 4 |
| | 45 | 338 | 7.0 | 1" | 24" | 6 |
| 16" | 11 1/4 | 112 | 4.8 | 3/4 | 12" | 3 |
| | 22 1/2 | 223 | 6.1 | 3/4 | 12" | 6 |
| | 45 | 436 | 7.6 | 1" | 24" | 6 |
| 18" | 11 1/4 | 141 | 5.2 | 3/4 | 12" | 4 |
| | 22 1/2 | 280 | 6.5 | 1" | 24" | 4 |
| | 45 | 549 | 8.2 | 1-1/4" | 24" | 6 |

VERTICAL THRUST BLOCKING

1. RESTRAINED JOINTS ARE PREFERRED OVER VERTICAL THRUST BLOCKING UNLESS RESTRAINTS ARE NOT PRACTICAL.

2. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI.

3. SHACKLE RODS PER STANDARD DETAIL W-07.

Restrained Joint Pipe

- RESTRAINED JOINTS ARE ACCEPTABLE INSTEAD OF THRUST BLOCKS, WHERE APPROPRIATE. THE DISTRICT WILL BE THE SOLE DETERMINER IF THE APPLICATION IS APPROPRIATE. THE FOLLOWING APPLICATIONS MUST USE RESTRAINED JOINTS UNLESS IMPRACTICAL:
 - DEAD END MAINS THAT MAY BE EXTENDED IN THE FUTURE.
 - SOFT OR SATURATED SOILS, FITTINGS NEAR TOP OF SLOPE, OR BEARING AGAINST AN ADJACENT UTILITY.
 - VERTICAL BENDS WITH FORCE DIRECTION UPWARDS ARE NOT COVERED HERE. MUST BE DESIGNED BY ENGINEER FOR EACH CASE.
- MECHANICAL JOINT RESTRAINTS SHALL BE COATED WITH FUSION BONDED POLYESTER, OR ZINC & EPOXY COATING. EBAE MEGABOND, ROMAC ROMABOND, FORD ARMORGUARD E-COAT, OR APPROVED EQUAL.
- THE FOLLOWING PRODUCTS ARE NOT ALLOWED: SET-SCREW RESTRAINTS, TYLER/McWANE TUFORIP, ALL GRIPPER STYLE GASKETS (FIELD-LOK, SURE-STOP, ETC.) LARGER THAN 12" DIAMETER.
- THE FOLLOWING TABLES ARE BASED ON EQUATIONS FROM THE DUCTILE IRON PIPE RESEARCH ASSOCIATION'S 2016 THRUST RESTRAINT FOR DUCTILE IRON PIPE. THE FOLLOWING CONDITIONS MUST BE MET FOR THESE RESULTS TO BE VALID. IF ANY OF THESE CONDITIONS CANNOT BE MET, PROTECT SPECIFIC CALCULATIONS MUST BE PROVIDED:
 - PIPE LAYING CONDITION TYPE 4 OR 5, DEFINED AS:
 - 1.1. SELECT GRANULAR BEDDING MATERIAL BELOW PIPE.
 - 1.2. PIPE ZONE BEDDING EXTENDING TO TOP OF PIPE MECHANICALLY COMPACTED IN LIFTS.
 - 1.3. PIPE RESTING DIRECTLY ON NATIVE TRENCH BOTTOM IS NOT ACCEPTABLE.
 - 1.4. SANDY SILT BEDDING FOR IMPORT CLEAN SAND OR 5/8" TOP-COURSE, LENGTHS MAY BE REDUCED BY 25%.
 - 1.5. DEPTH OF COVER IS 3.5 FEET MINIMUM AT THE TIME OF PRESSURE TESTING.
 - 1.6. 250psi TEST PRESSURE MAXIMUM. FOR HIGHER TEST PRESSURE, MULTIPLY "L" BY THE PROPORTIONAL DIFFERENCE.
 - 1.7. EXAMPLE: FOR 300psi, 300/250=1.2 THEREFORE, LENGTHS MUST BE MULTIPLIED BY 1.2.

THE LENGTH "L" GIVEN BELOW IS THE DISTANCE THAT PIPE MUST BE RESTRAINED PAST THE FITTING JOINT. ALL JOINTS WITHIN THIS DISTANCE MUST BE RESTRAINED, INCLUDING THE FITTING.

| DIA. | 11 1/4" BEND | 22 1/2" BEND | 33 1/2" BEND | 45° BEND | 67 1/2" BEND | 90° BEND | DEAD/REDUCER END * |
|------|--------------|--------------|--------------|----------|--------------|----------|--------------------|
| 4" | 3' | 5' | 8' | 10' | 17' | 25' | 20' |
| 6" | 4' | 7' | 11' | 14' | 23' | 34' | 28' |
| 8" | 5' | 9' | 14' | 19' | 30' | 44' | 37' |
| 10" | 6' | 11' | 16' | 22' | 36' | 53' | 43' |
| 12" | 7' | 13' | 19' | 26' | 41' | 62' | 50' |
| 14" | 8' | 16' | 24' | 33' | 53' | 78' | 62' |
| 16" | 9' | 18' | 27' | 36' | 58' | 86' | 72' |
| 18" | 10' | 21' | 32' | 42' | 68' | 102' | 84' |

* Assumes reducer down 2 sizes. (example 12"x8"). Larger reductions should be treated as a tee.

** For PVC or poly-bagged pipe, multiply the lengths by the value shown in the PVC row.

STANDARD & BRANCH REDUCING TEES (1.4x for PVC)

| BRANCH DIAMETER | 4" | 6" | 8" | 10" | 12" | 16" | 18" |
|-----------------|------|------|------|------|------|------|------|
| 4" | 46' | 39' | 31' | 23' | 15' | 1' | 1' |
| 6" | 70' | 65' | 60' | 55' | 43' | 37' | 37' |
| 8" | 97' | 93' | 89' | 80' | 67' | 57' | 57' |
| 10" | 119' | 116' | 116' | 109' | 105' | 90' | 90' |
| 12" | 143' | 143' | 143' | 137' | 133' | 113' | 113' |
| 16" | 187' | 187' | 187' | 187' | 187' | 154' | 154' |
| 18" | 207' | 207' | 207' | 207' | 207' | 171' | 171' |

1. CASING TO BE USED WHEN:

- WATERMAIN CROSSES UNDER SANITARY SEWER OR IRRIGATION.
- WATERMAIN CROSSES OVER SANITARY SEWER OR IRRIGATION WITH LESS THAN 18" CLEARANCE.
- AT THE DISCRETION OF THE DISTRICT.
- ALTERNATELY, SANITARY SEWER OR IRRIGATION MAY BE CASED OR CONSTRUCTED OF WATERMAIN CLASS MATERIALS (D1, C900 PVC, ETC.).

2. CASINGS SHALL BE NEW 0.25" THICK STEEL, CL 50 DL, DR17 HDPE, OR DR21 C900 PVC; MATERIAL AND WALL THICKNESS AT THE DISCRETION OF THE DISTRICT.

3. PIPE THROUGH CASINGS SHALL BE SUPPORTED WITH RUNNERS SPACED MEETING THE FOLLOWING REQUIREMENTS:

- NO FARTHER THAN 8 FEET BETWEEN RUNNERS.
- A RUNNER NO FARTHER THAN 3 FEET FROM EACH END OF THE CASING.
- A RUNNER NO FARTHER THAN 2 FEET FROM EACH CARRIER PIPE PUSH-ON JOINT.

4. RUNNERS SHALL BE MANUFACTURED PRODUCTS (APCS, CALPICO, OR APPROVED EQUAL), NO BLOCKS AND STRAPS. CASING ENDS SHALL BE CAPPED WITH MANUFACTURED CASING END SEALS.

5. CASING LENGTH AS NECESSARY TO EXTEND 10 FEET PAST THE UTILITY CROSSING, BOTH SIDES, OR AS DIRECTED BY THE DISTRICT.

6. CASING RUNNERS TO BE SELECTED SO CLEARANCE BETWEEN TOP RUNNER LEG AND CASING DOES NOT EXCEED 1".

7. MINIMUM INSIDE DIAMETER OF CASING TO BE THE LARGER OF 3" MORE THAN PIPE BELL OR 6" MORE THAN PIPE BARREL, O.D.

ASSUMING STANDARD PUSH-ON JOINT OF CARRIER PIPE:

- 6" PIPE (8.7" BELL) - 12" CASING I.D.
- 8" PIPE (10.9" BELL) - 14" CASING I.D.
- 12" PIPE (15.1" BELL) - 18" CASING I.D.
- 16" PIPE (20.0" BELL) - 24" CASING I.D.
- 18" PIPE (22.0" BELL) - 26" CASING I.D.
- OTHER SIZES OR TYPES OF CARRIER PIPE, CONFIRM WITH DISTRICT.

Case Pipe

1. CASING TO BE USED WHEN:

- WATERMAIN CROSSES UNDER SANITARY SEWER OR IRRIGATION.
- WATERMAIN CROSSES OVER SANITARY SEWER OR IRRIGATION WITH LESS THAN 18" CLEARANCE.
- AT THE DISCRETION OF THE DISTRICT.
- ALTERNATELY, SANITARY SEWER OR IRRIGATION MAY BE CASED OR CONSTRUCTED OF WATERMAIN CLASS MATERIALS (D1, C900 PVC, ETC.).

2. CASINGS SHALL BE NEW 0.25" THICK STEEL, CL 50 DL, DR17 HDPE, OR DR21 C900 PVC; MATERIAL AND WALL THICKNESS AT THE DISCRETION OF THE DISTRICT.

3. PIPE THROUGH CASINGS SHALL BE SUPPORTED WITH RUNNERS SPACED MEETING THE FOLLOWING REQUIREMENTS:

- NO FARTHER THAN 8 FEET BETWEEN RUNNERS.
- A RUNNER NO FARTHER THAN 3 FEET FROM EACH END OF THE CASING.
- A RUNNER NO FARTHER THAN 2 FEET FROM EACH CARRIER PIPE PUSH-ON JOINT.

4. RUNNERS SHALL BE MANUFACTURED PRODUCTS (APCS, CALPICO, OR APPROVED EQUAL), NO BLOCKS AND STRAPS. CASING ENDS SHALL BE CAPPED WITH MANUFACTURED CASING END SEALS.

5. CASING LENGTH AS NECESSARY TO EXTEND 10 FEET PAST THE UTILITY CROSSING, BOTH SIDES, OR AS DIRECTED BY THE DISTRICT.

6. CASING RUNNERS TO BE SELECTED SO CLEARANCE BETWEEN TOP RUNNER LEG AND CASING DOES NOT EXCEED 1".

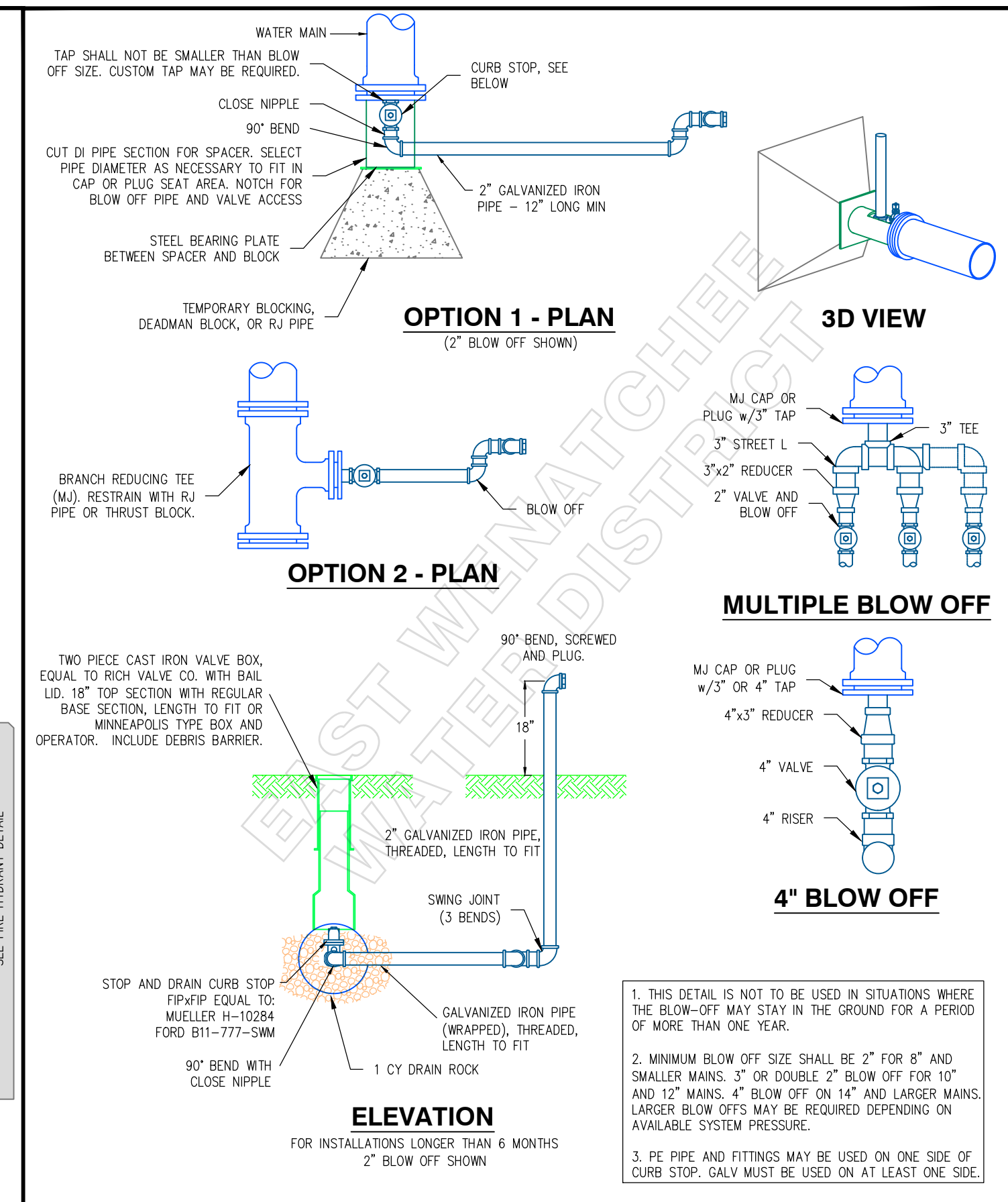
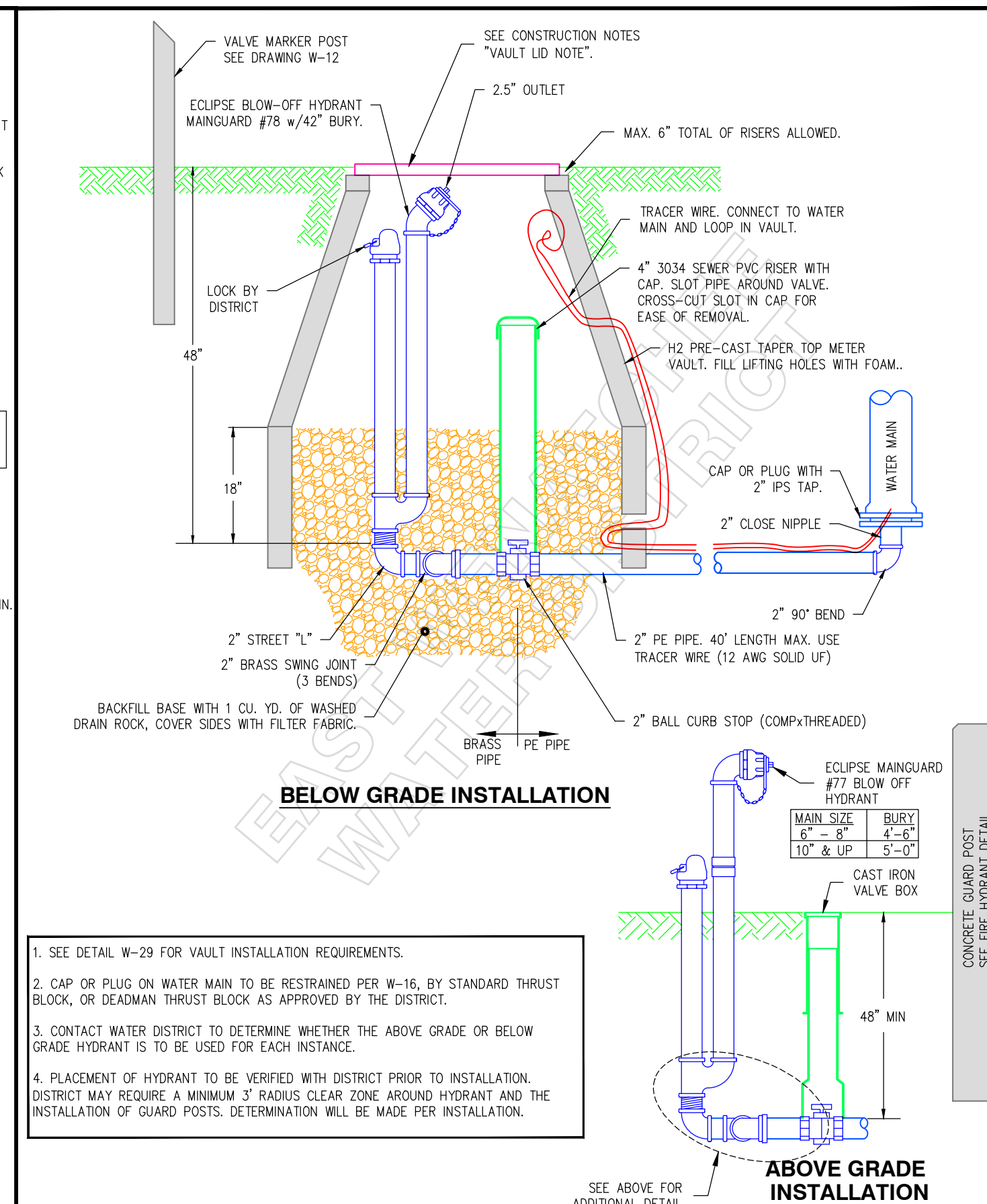
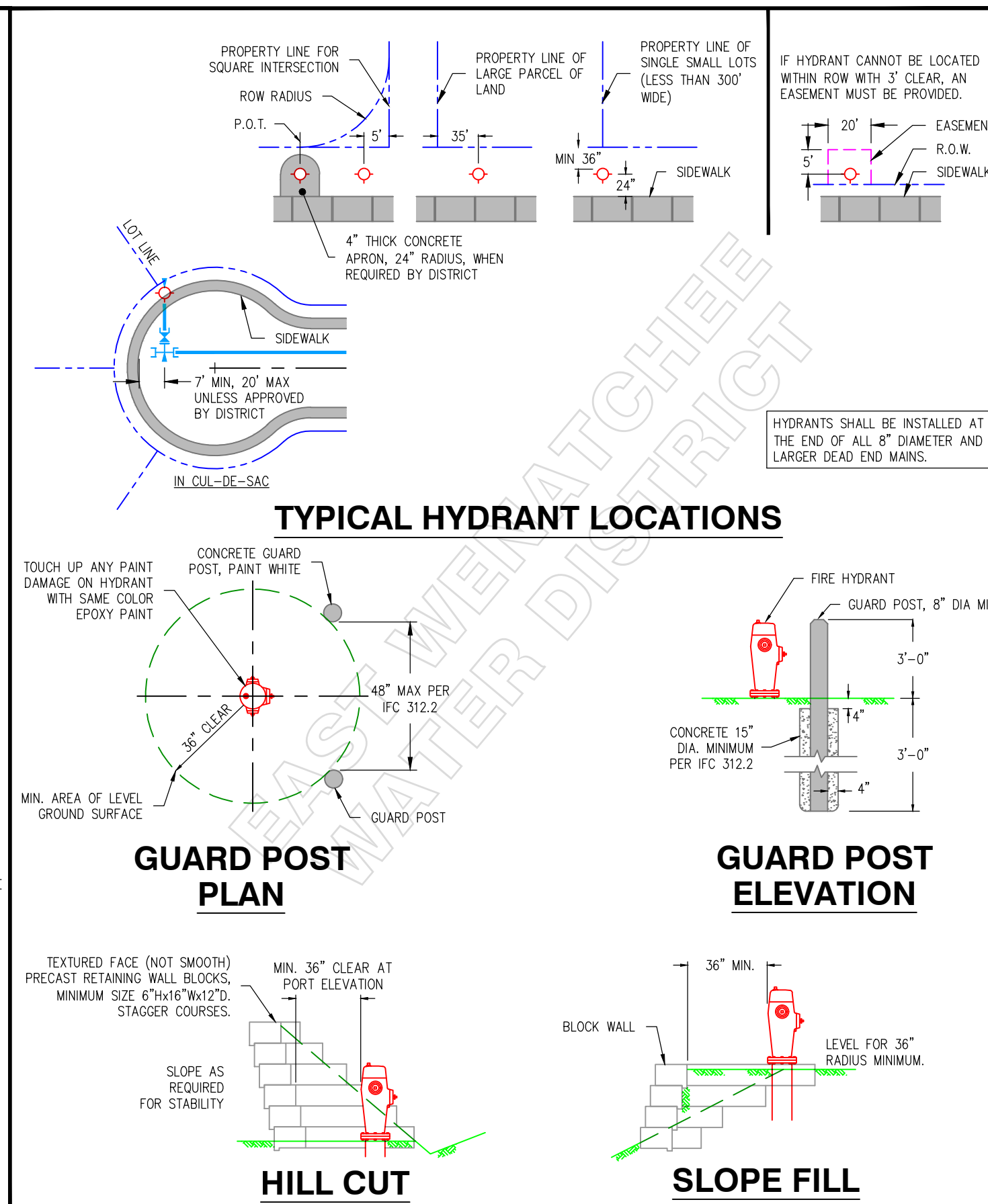
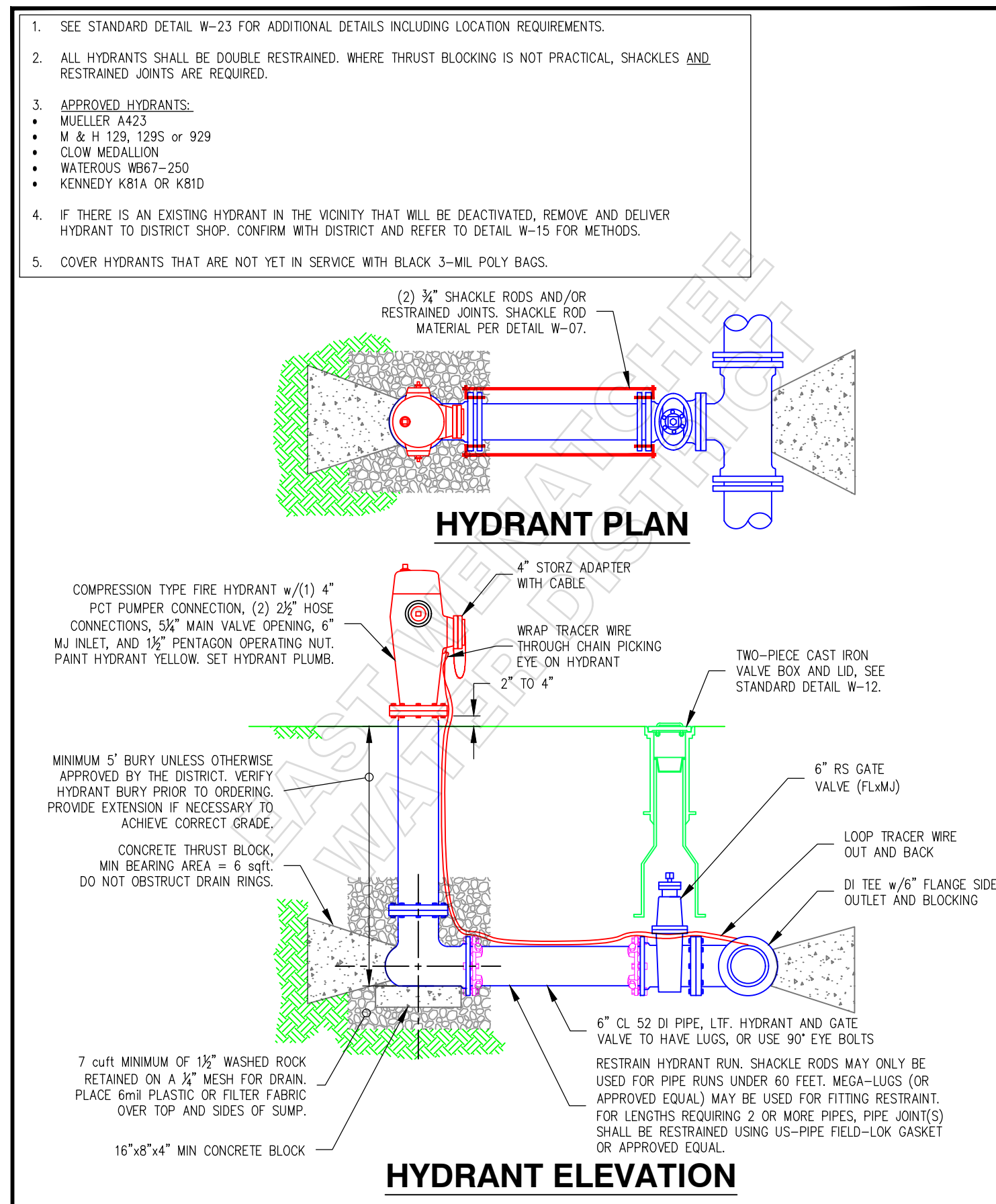
7. MINIMUM INSIDE DIAMETER OF CASING TO BE THE LARGER OF 3" MORE THAN PIPE BELL OR 6" MORE THAN PIPE BARREL, O.D.

ASSUMING STANDARD PUSH-ON JOINT OF CARRIER PIPE:

- 6" PIPE (8.7" BELL) - 12" CASING I.D.
- 8" PIPE (10.9" BELL) - 14" CASING I.D.
- 12" PIPE (15.1" BELL) - 18" CASING I.D.
- 16" PIPE (20.0" BELL) - 24" CASING I.D.
- 18" PIPE (22.0" BELL) - 26" CASING I.D.
- OTHER SIZES OR TYPES OF CARRIER PIPE, CONFIRM WITH DISTRICT.

Tie Rod Selection Tables

| PIPE DIAMETER | ASTM A242 (COR-TEN® OR EQUAL) STEEL | | | | | | 304SS OR OTHER STEELS | | | | | |
|---------------|-------------------------------------|---------|---------|---------|----------|----------|-----------------------|---------|---------|---------|----------|----------|
| | 2" BEND | 4" BEND | 6" BEND | 8" BEND | 10" BEND | 12" BEND | 2" BEND | 4" BEND | 6" BEND | 8" BEND | 10" BEND | 12" BEND |
| 3" | 2 | 2 | 2 | 2 | 2 | 2 | 100 | 100 | 100 | 100 | 100 | 100 |
| 4" | 2 | 2 | 2 | 2 | 2 | 2 | 100 | 100 | 100 | 100 | 100 | 100 |
| 6" | 2 | 2 | 2 | 2 | 2 | 2 | 100 | 100 | 100 | 100 | 100 | 100 |
| 8" | 4 | 3 | 2 | 2 | 2 | 2 | 50 | 50 | 50 | 50 | 50 | 50 |
| 10" | 6 | 4 | 3 | 2 | 2 | 2 | 40 | 40 | 40 | 40 | 40 | 40 |
| 12" | 8 | 6 | 4 | 3 | 2 | 2 | 30 | 30 | 30 | 30 | 30 | 30 |
| 14" | 10 | 8 | 6 | 4 | 3 | 2 | 20 | 20 | 20 | 20 | 20 | 20 |
| 16" | 12 | 10 | 8 | 6 | 4 | 3 | 15 | 15 | 15 | 15 | 15 | 15 |
| 18" | 16 | 14 | 12 | 10 | 8 | 6 | 10 | 10 | 10 | 10 | 10 | 10 |



East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
FIRE HYDRANT

DRAWING NO. W-02 SHEET NO. 9

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
HYDRANT LOCATIONS

DRAWING NO. W-23 SHEET NO. 10

East Wenatchee Water District

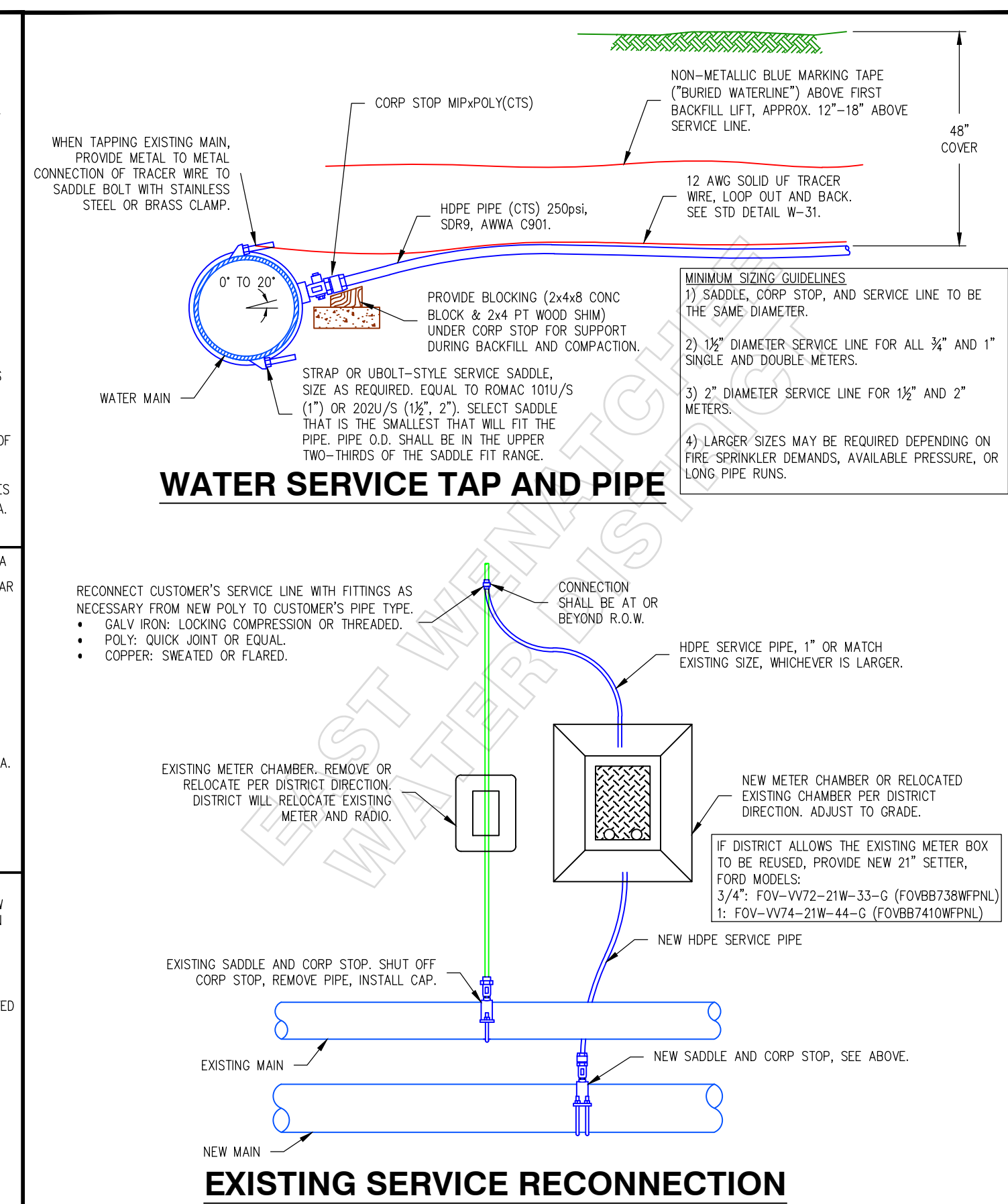
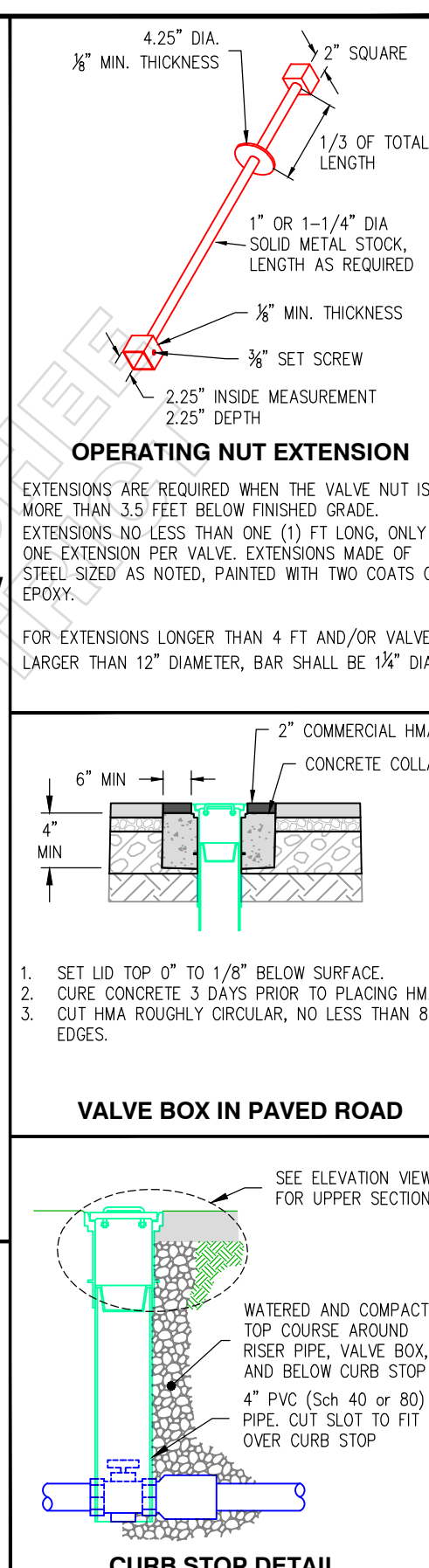
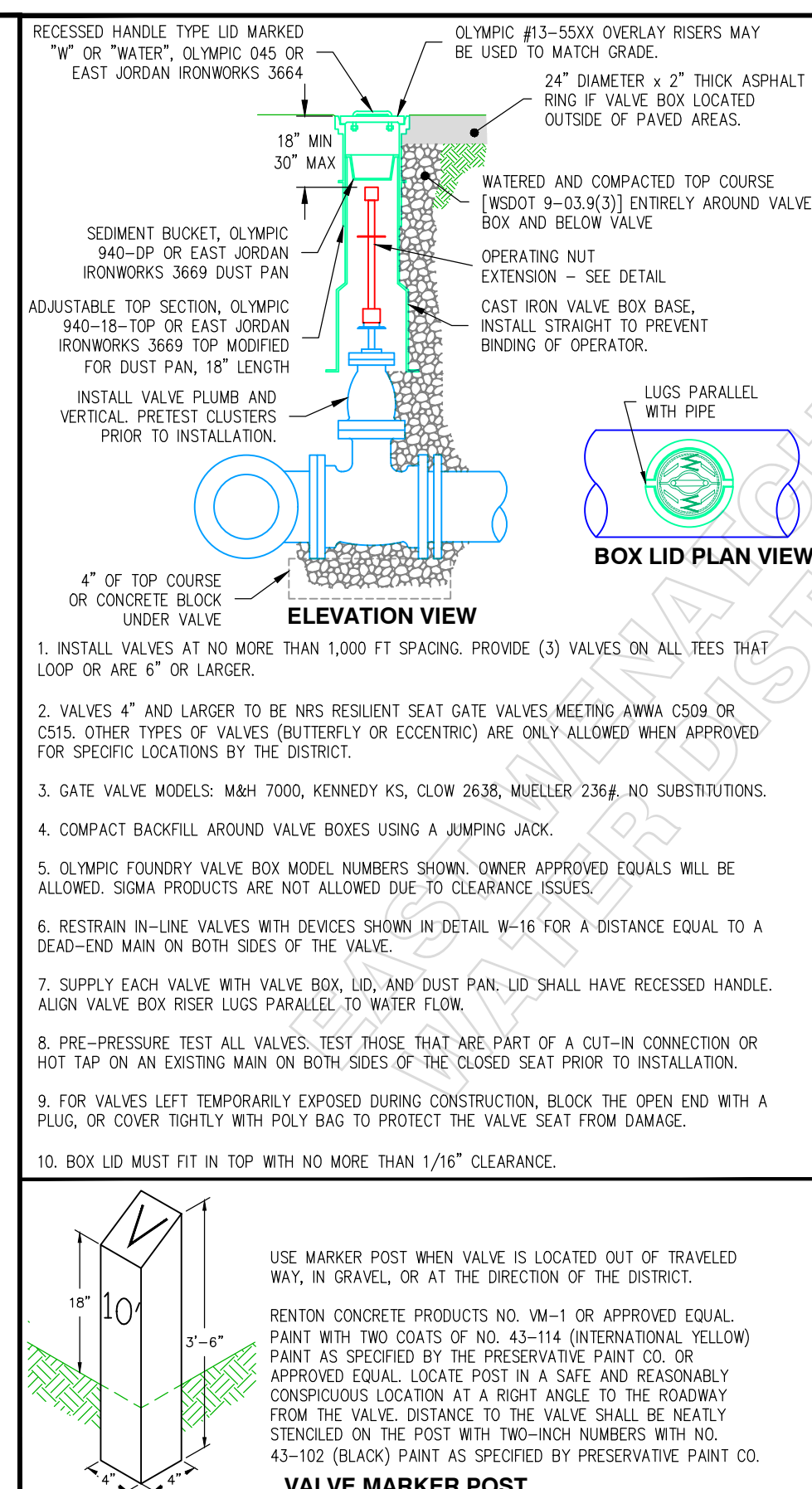
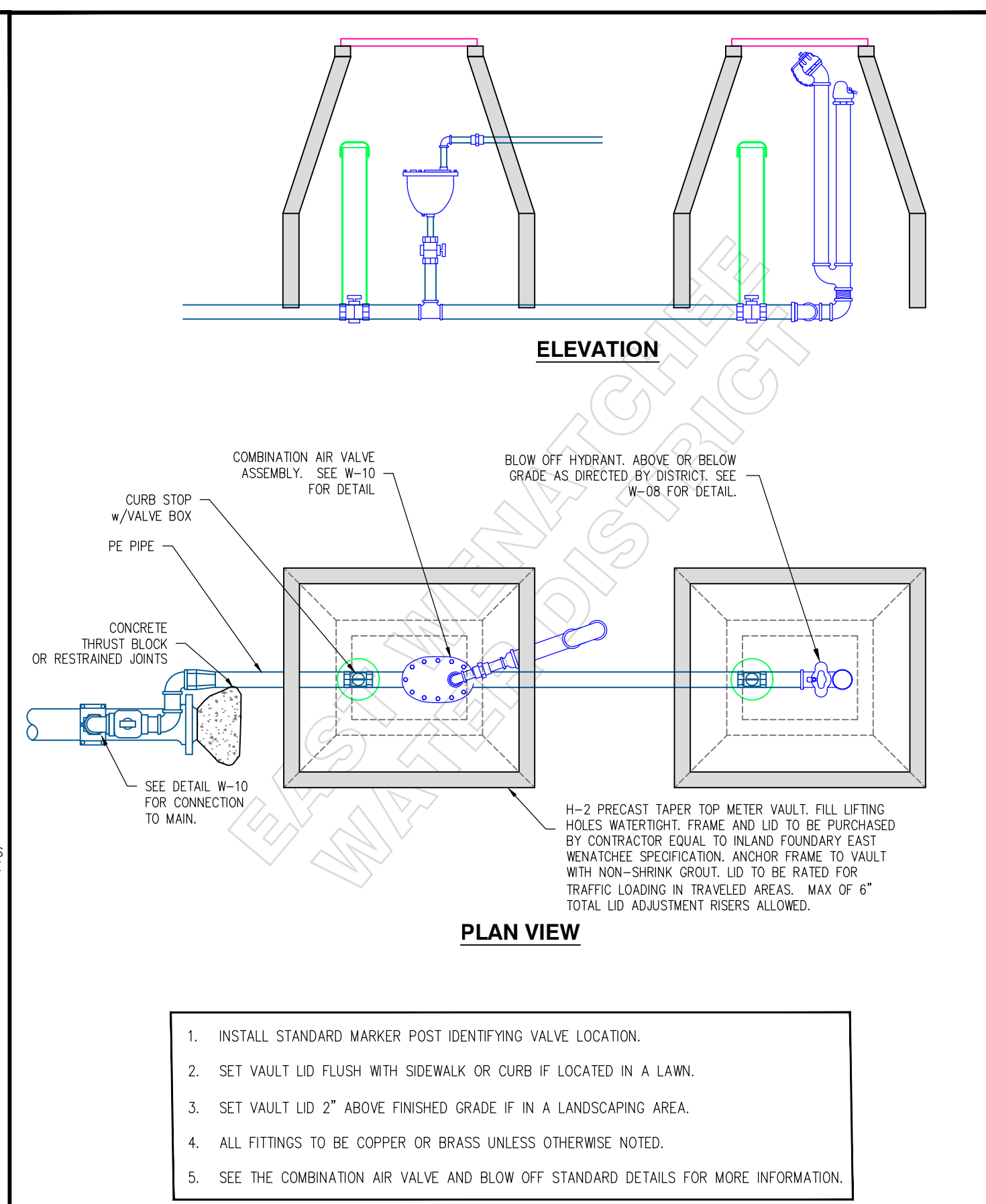
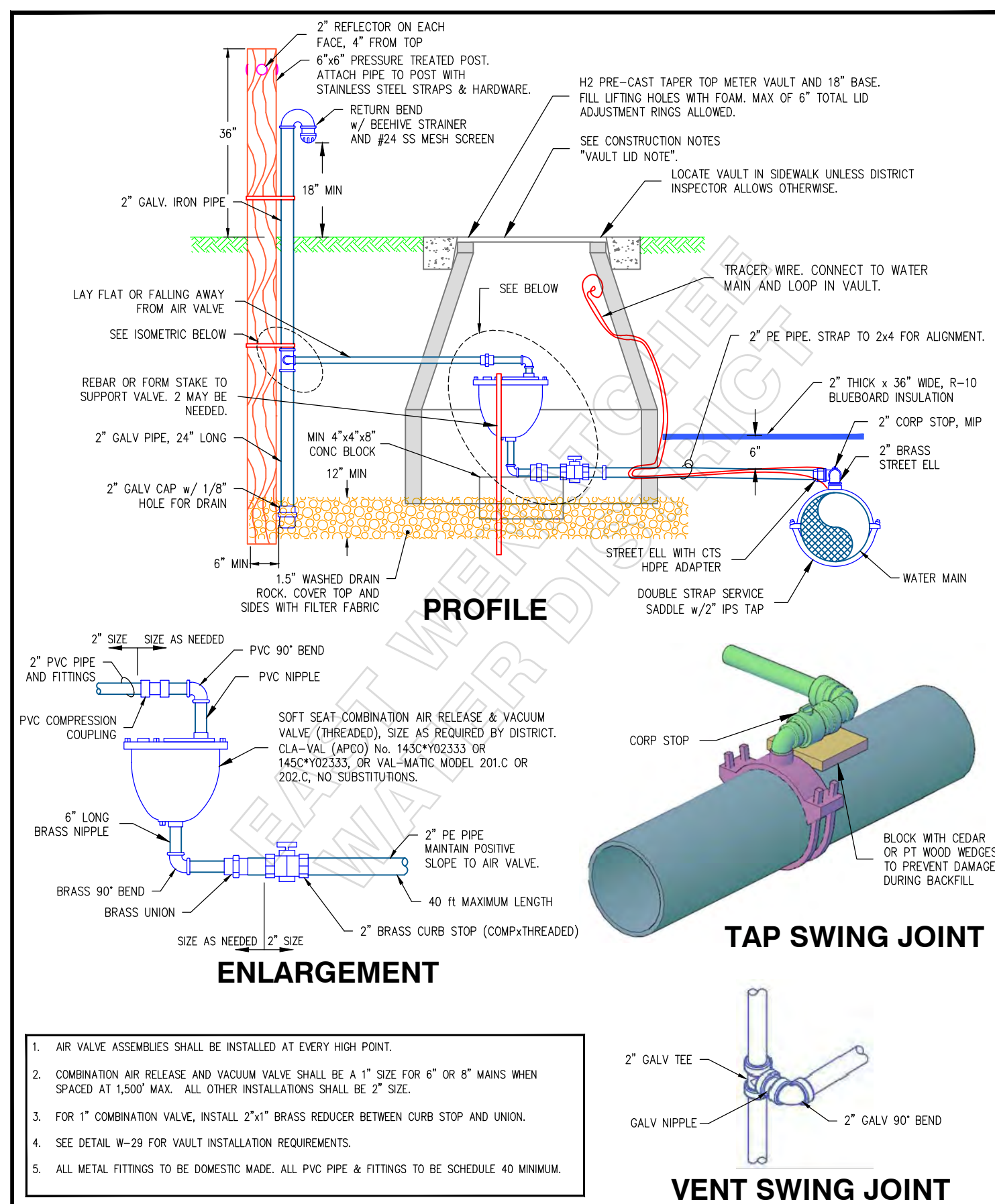
WATER SYSTEM STANDARD DETAIL
PERMANENT BLOW-OFF HYDRANT

DRAWING NO. W-08 SHEET NO. 11

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
CONSTRUCTION BLOW-OFF ASSEMBLY

DRAWING NO. W-09 SHEET NO. 12



East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
COMBINATION AIR VALVE ASSEMBLY

DRAWING NO. W-10 SHEET NO. 13

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
COMBINATION AIR VALVE & BLOW-OFF ASSEMBLIES

DRAWING NO. W-11 SHEET NO. 14

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
ISOLATION VALVE INSTALLATION DETAILS

DRAWING NO. W-12 SHEET NO. 15

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
CUSTOMER SERVICE CONNECTIONS

DRAWING NO. W-14 SHEET NO. 16

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
CONSTRUCTION BLOW-OFF ASSEMBLY

DRAWING NO. W-09 SHEET NO. 12

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
PERMANENT BLOW-OFF HYDRANT

DRAWING NO. W-08 SHEET NO. 11

East Wenatchee Water District

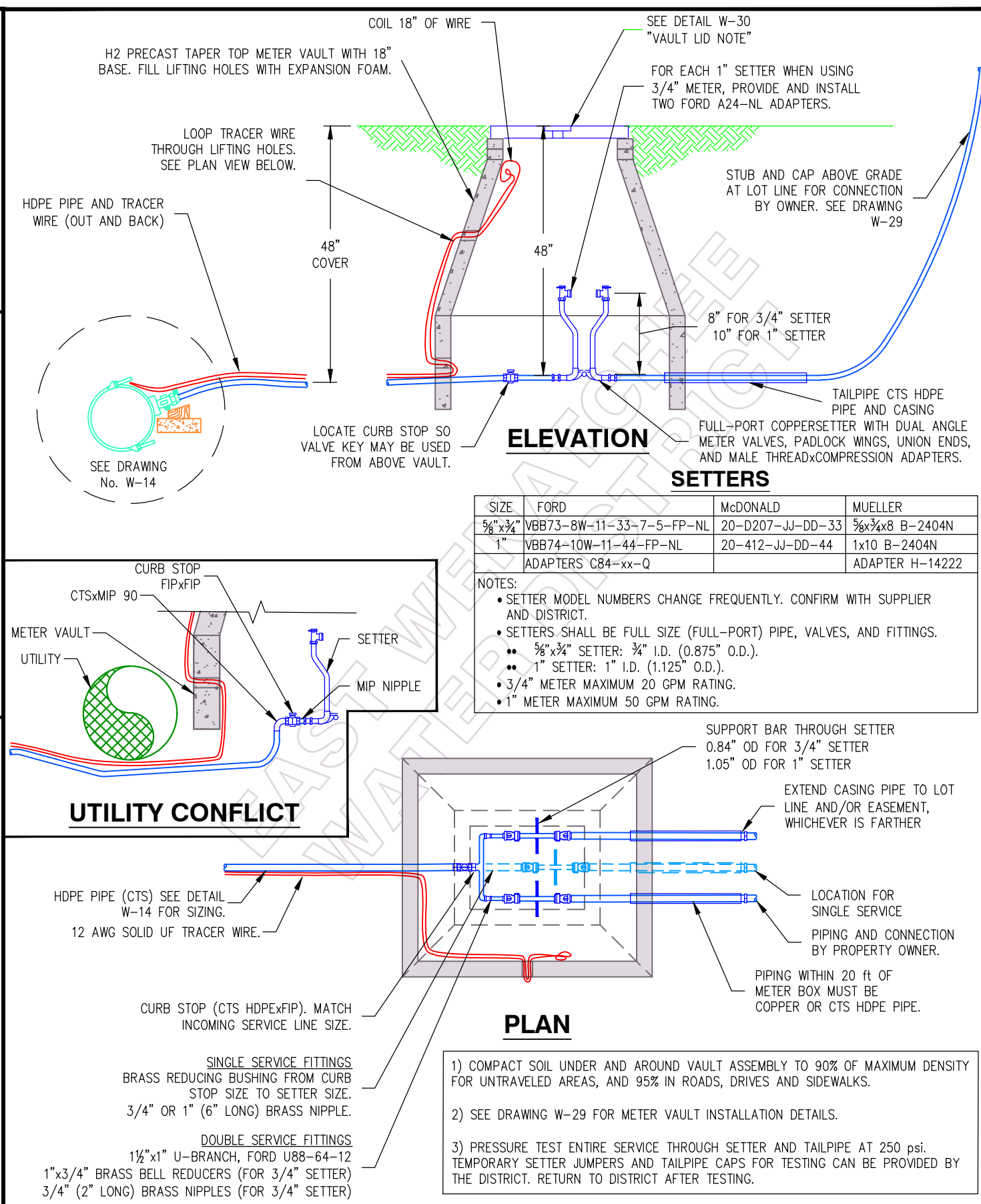
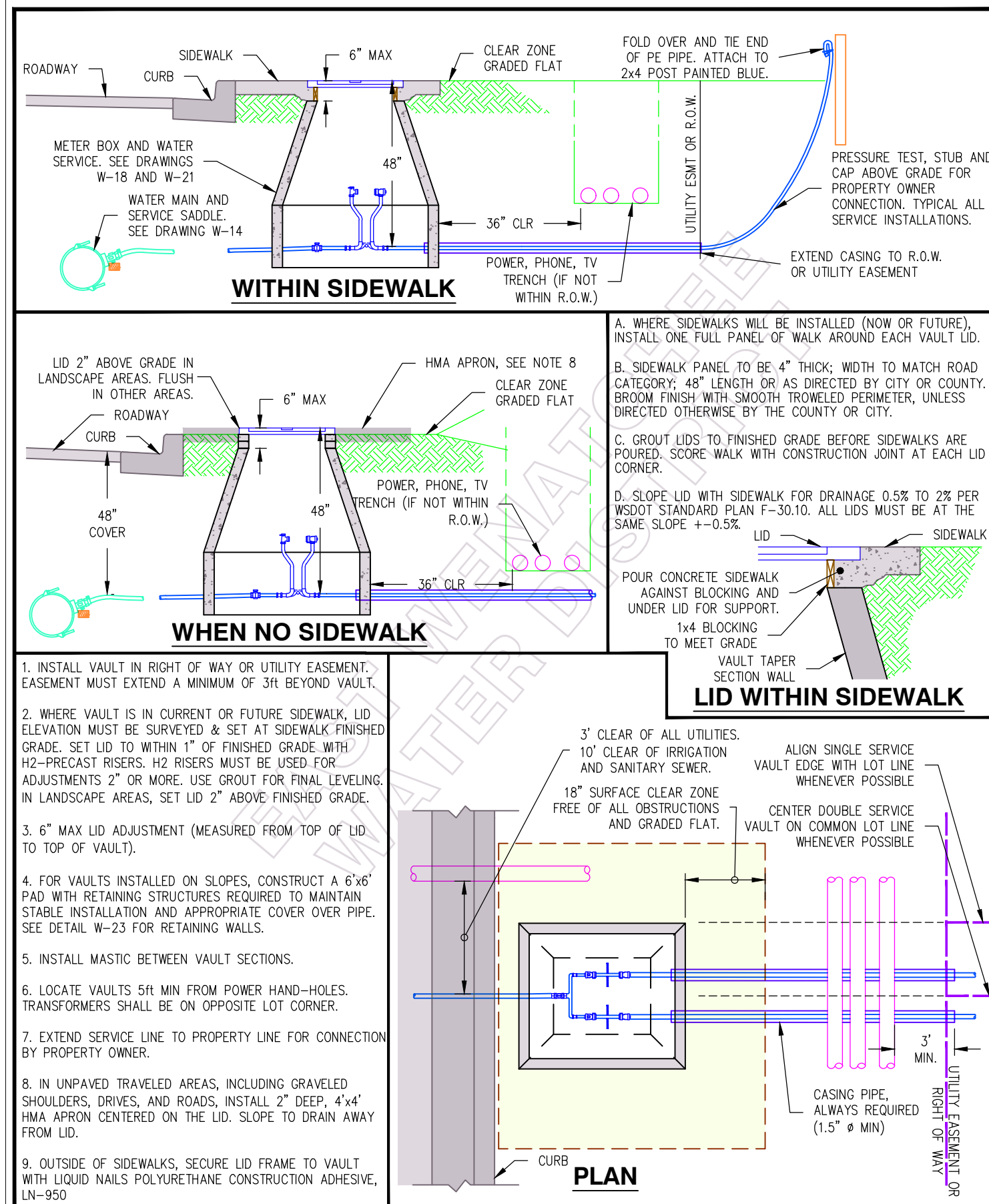
WATER SYSTEM STANDARD DETAIL
HYDRANT LOCATIONS

DRAWING NO. W-23 SHEET NO. 10

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
FIRE HYDRANT

DRAWING NO. W-02 SHEET NO. 9



East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

WATER SERVICE, AIR VALVE, BLOW OFF VAULT INSTALLATION DETAILS

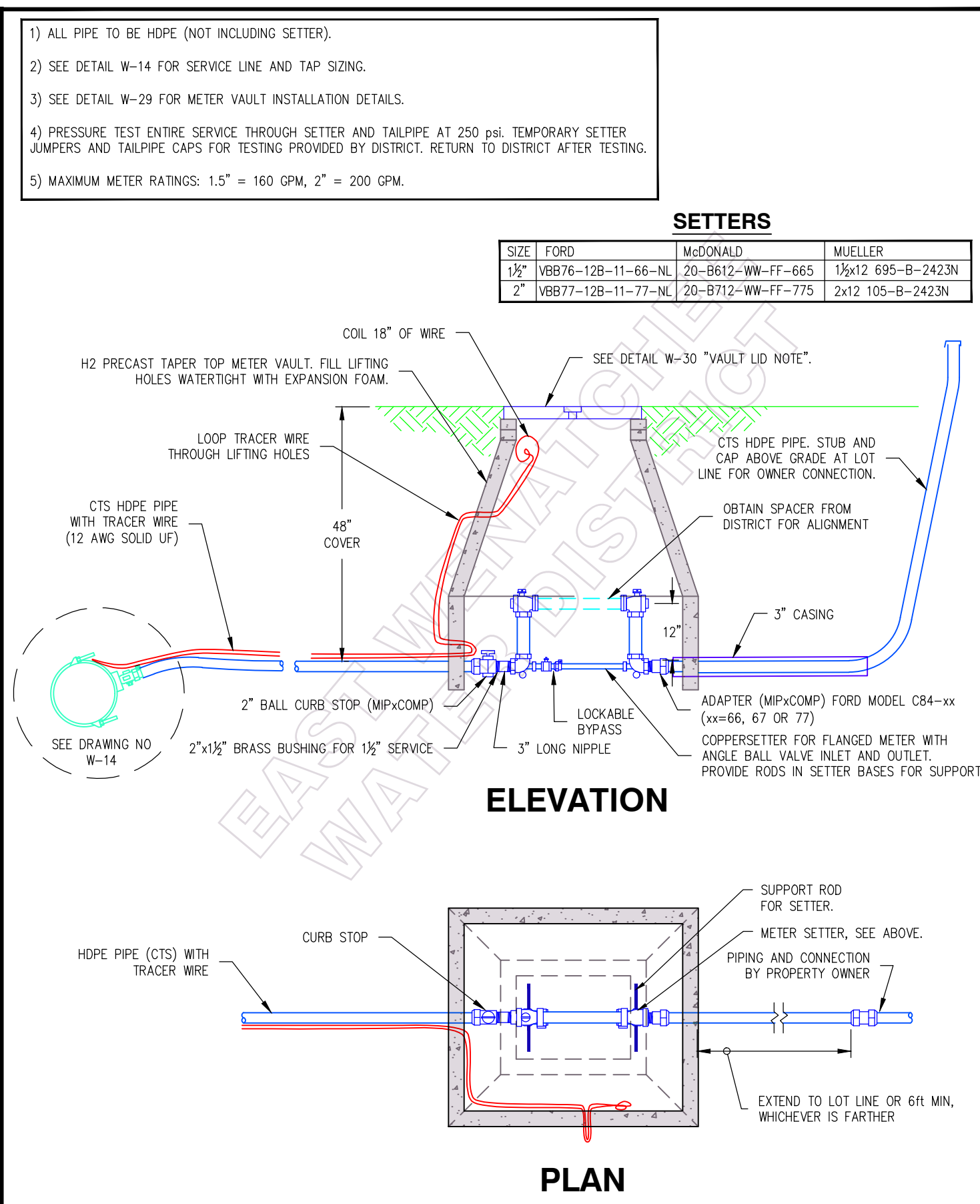
DRAWING NO. W-29 SHEET NO. 17

East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

3/4" AND 1" SINGLE AND DOUBLE WATER SERVICES

DRAWING NO. W-21 SHEET NO. 18

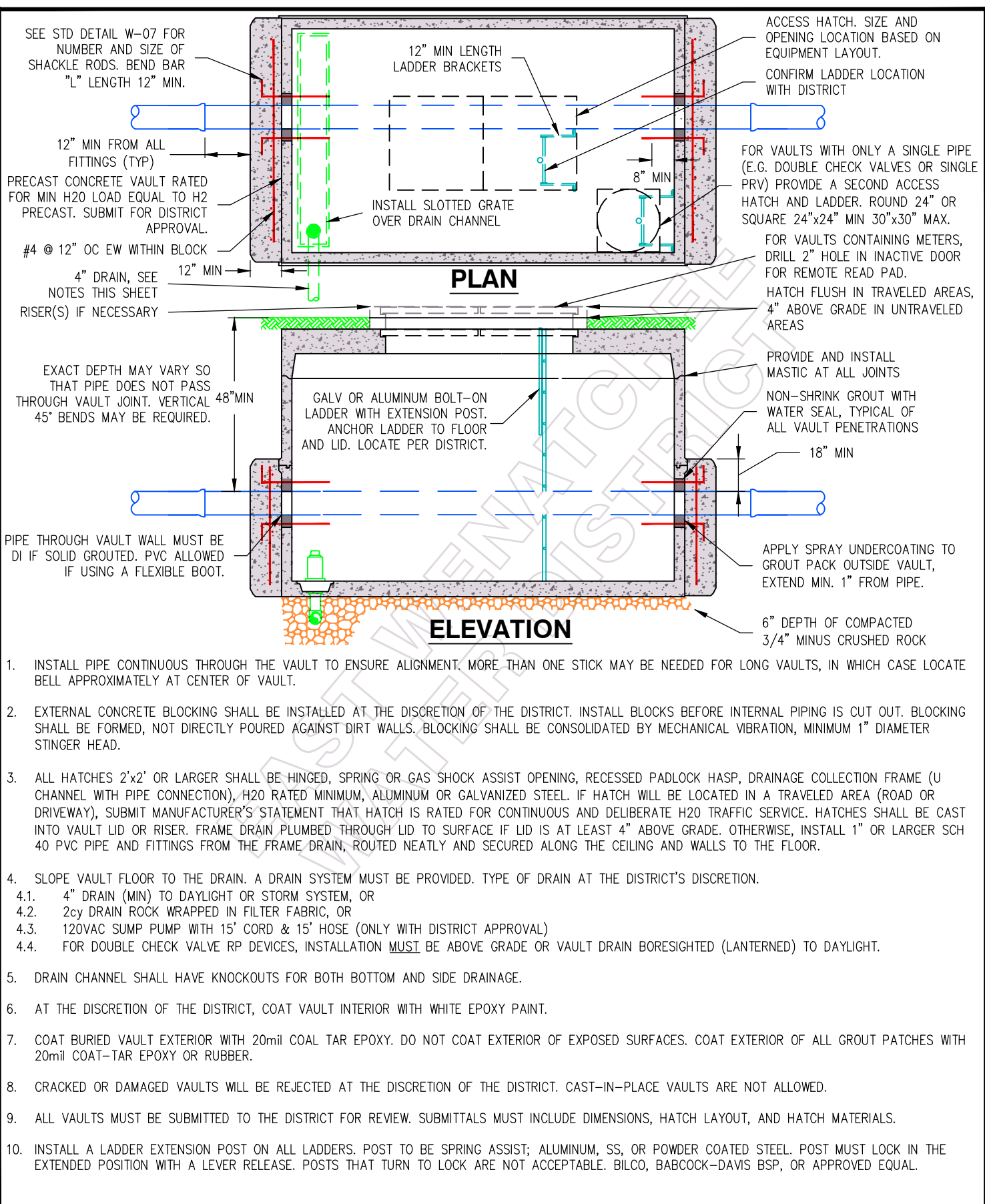


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

1 1/2" AND 2" WATER SERVICE

DRAWING NO. W-18 SHEET NO. 19

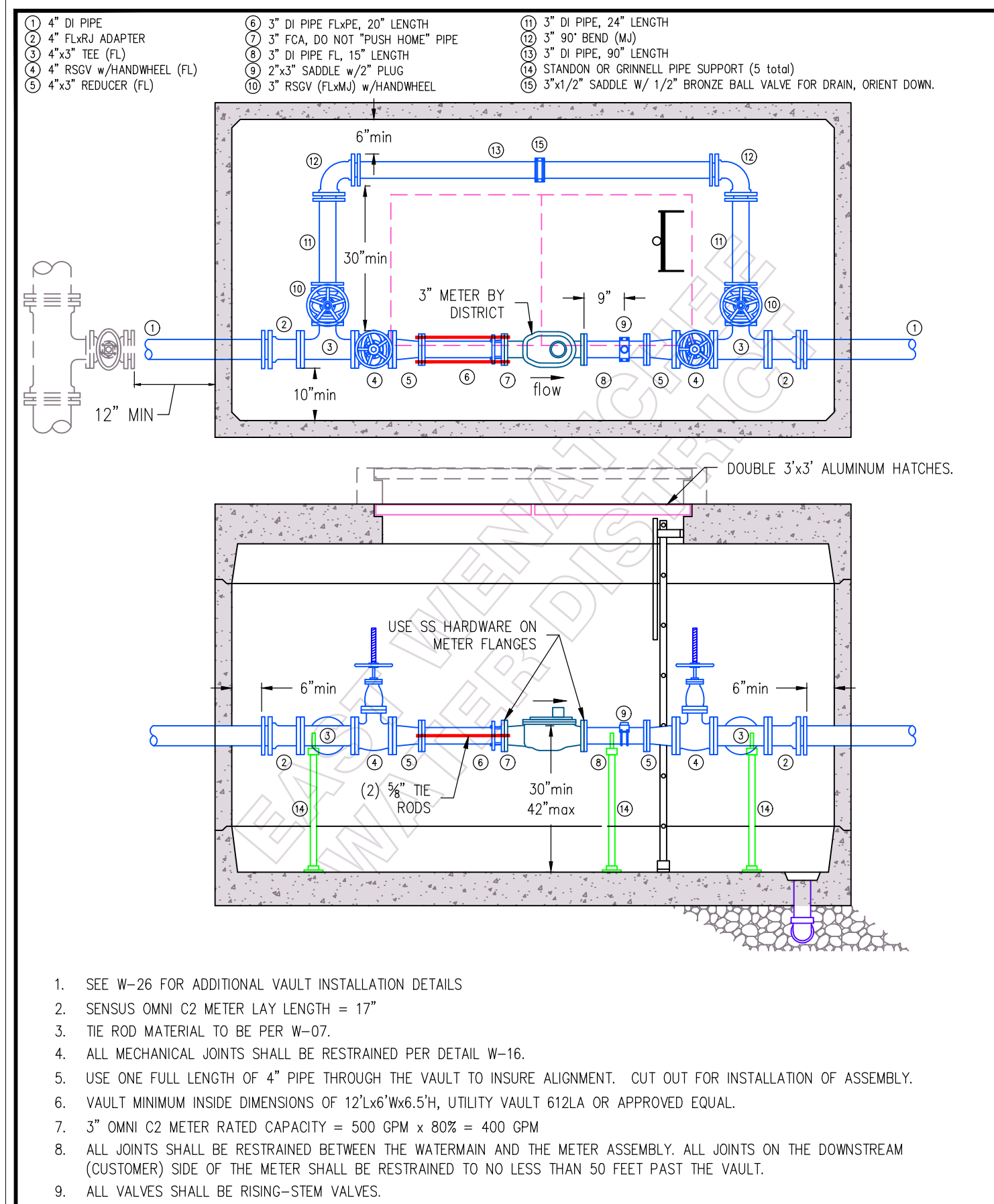


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

LARGE VAULTS

DRAWING NO. W-26 SHEET NO. 20

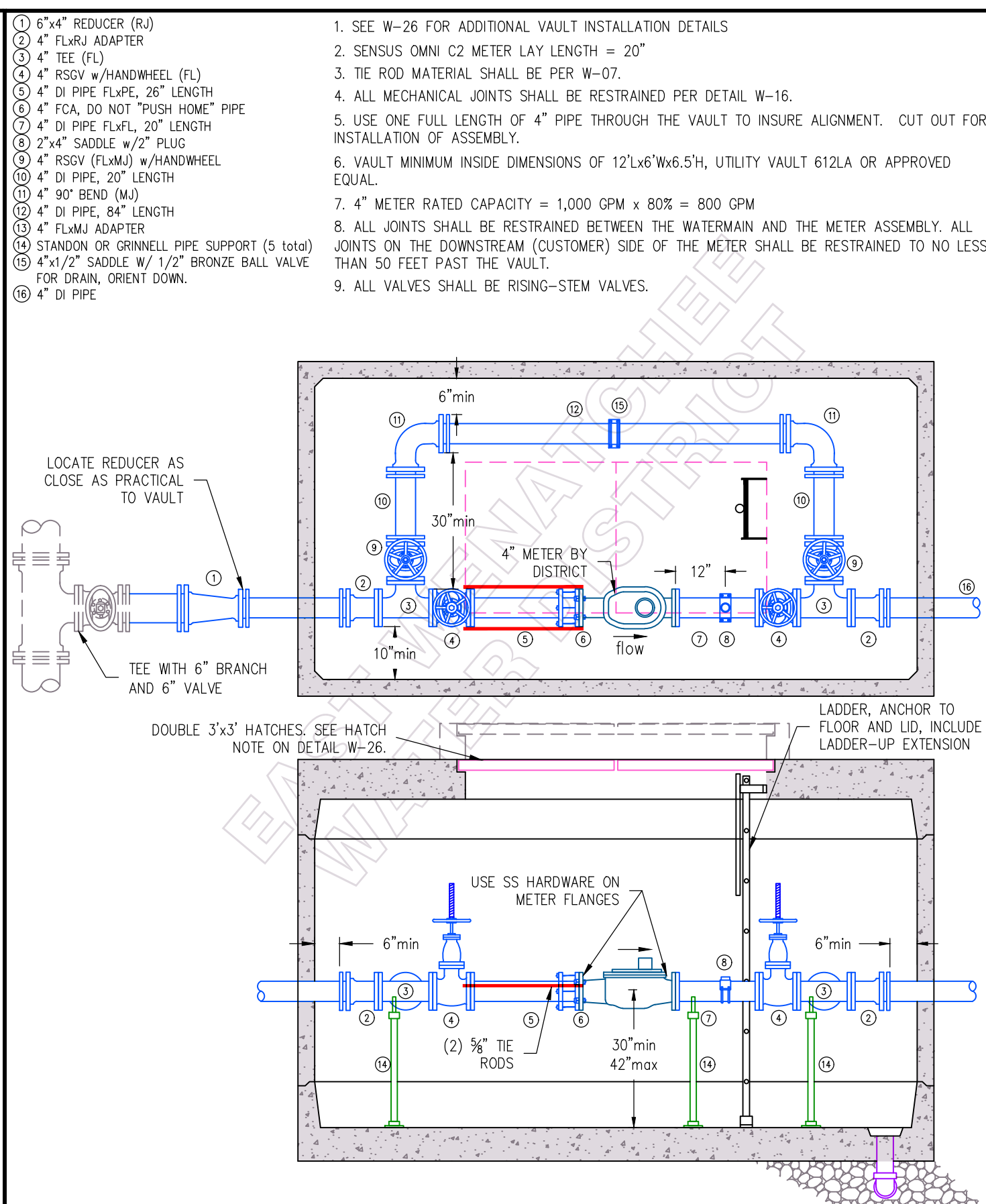


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

3" METER ASSEMBLY

DRAWING NO. W-20 SHEET NO. 21

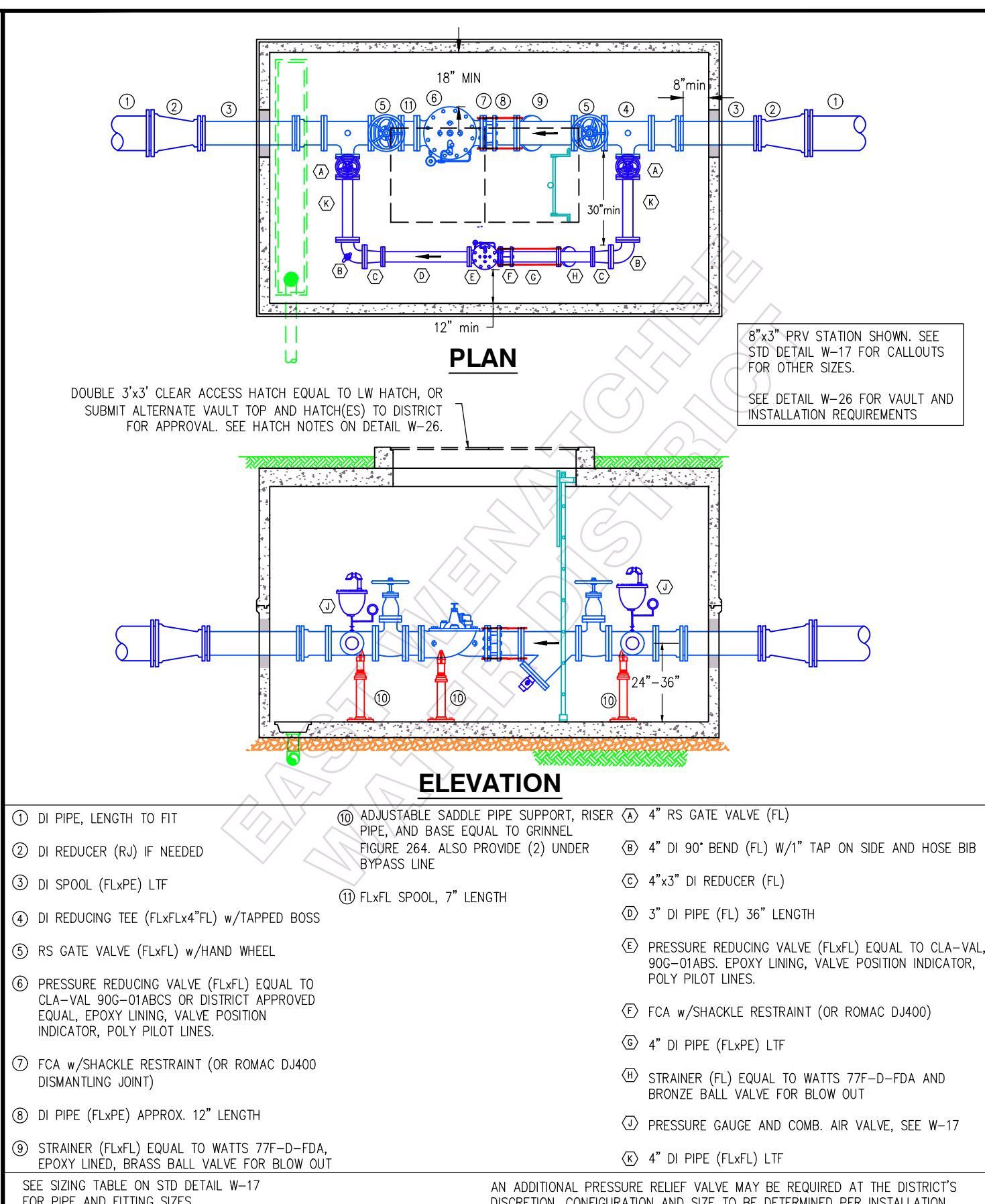


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

4" METER ASSEMBLY

DRAWING NO. W-24 SHEET NO. 22

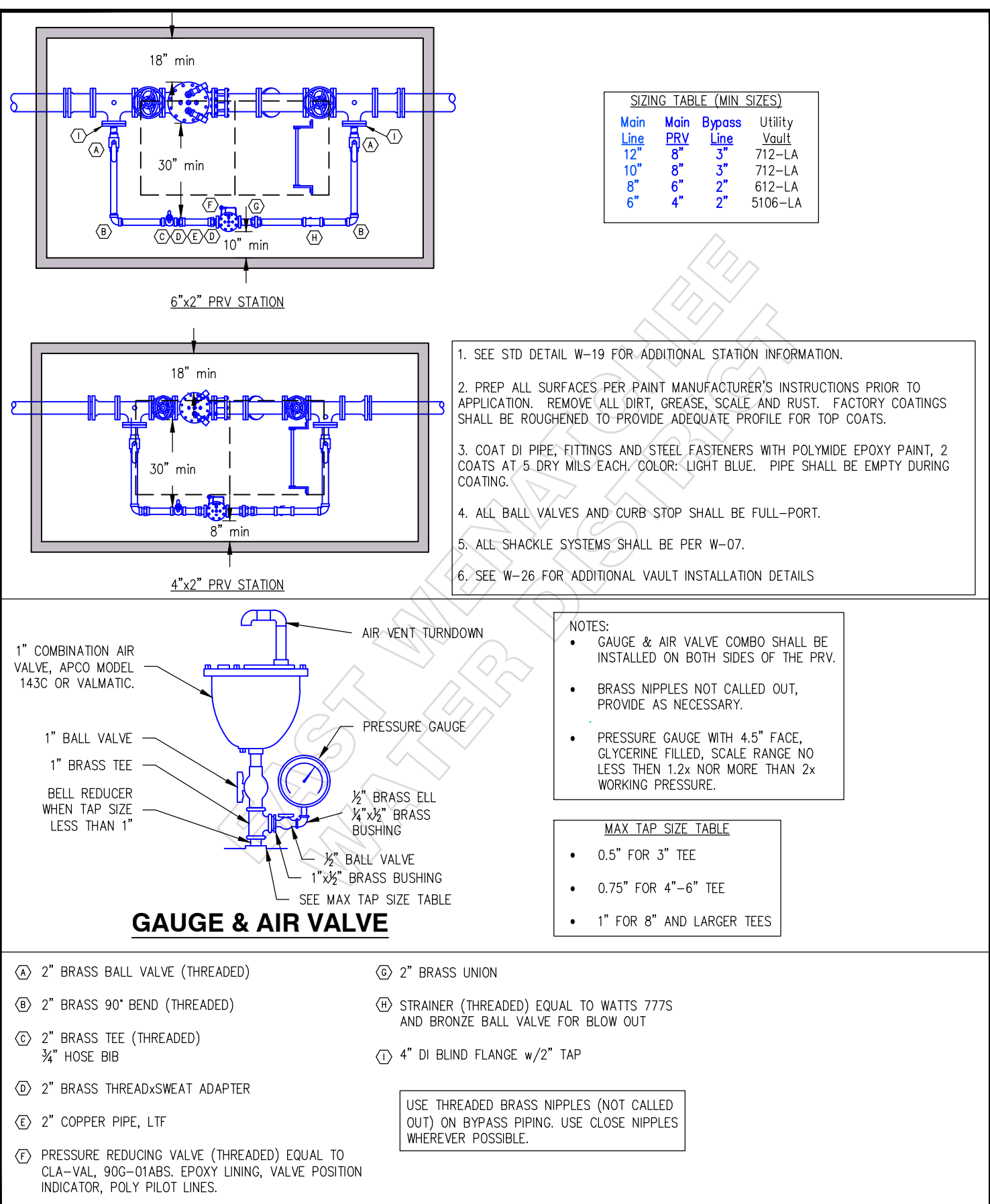


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

PRESSURE REDUCING STATION

DRAWING NO. W-19 SHEET NO. 23



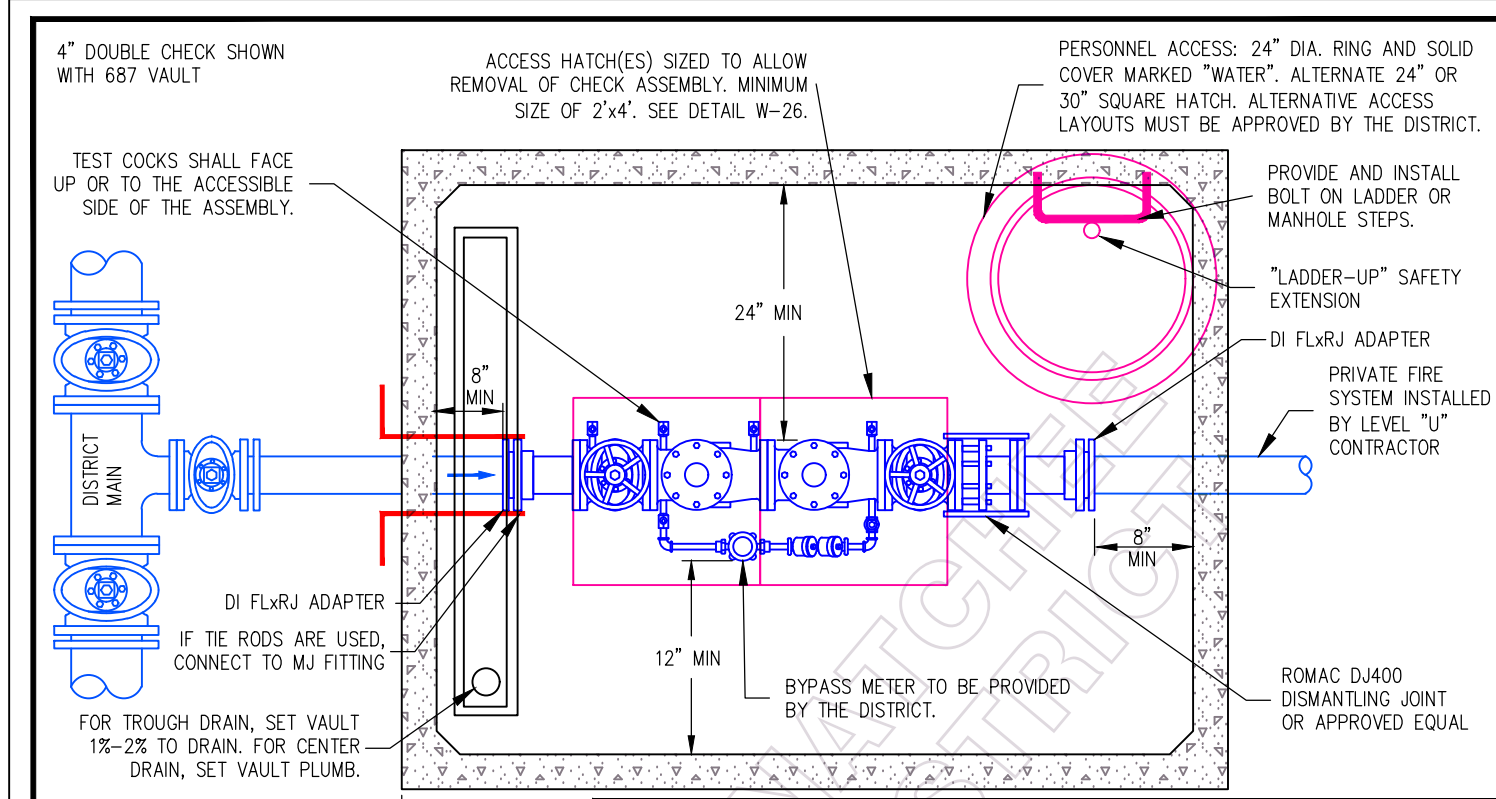
East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL

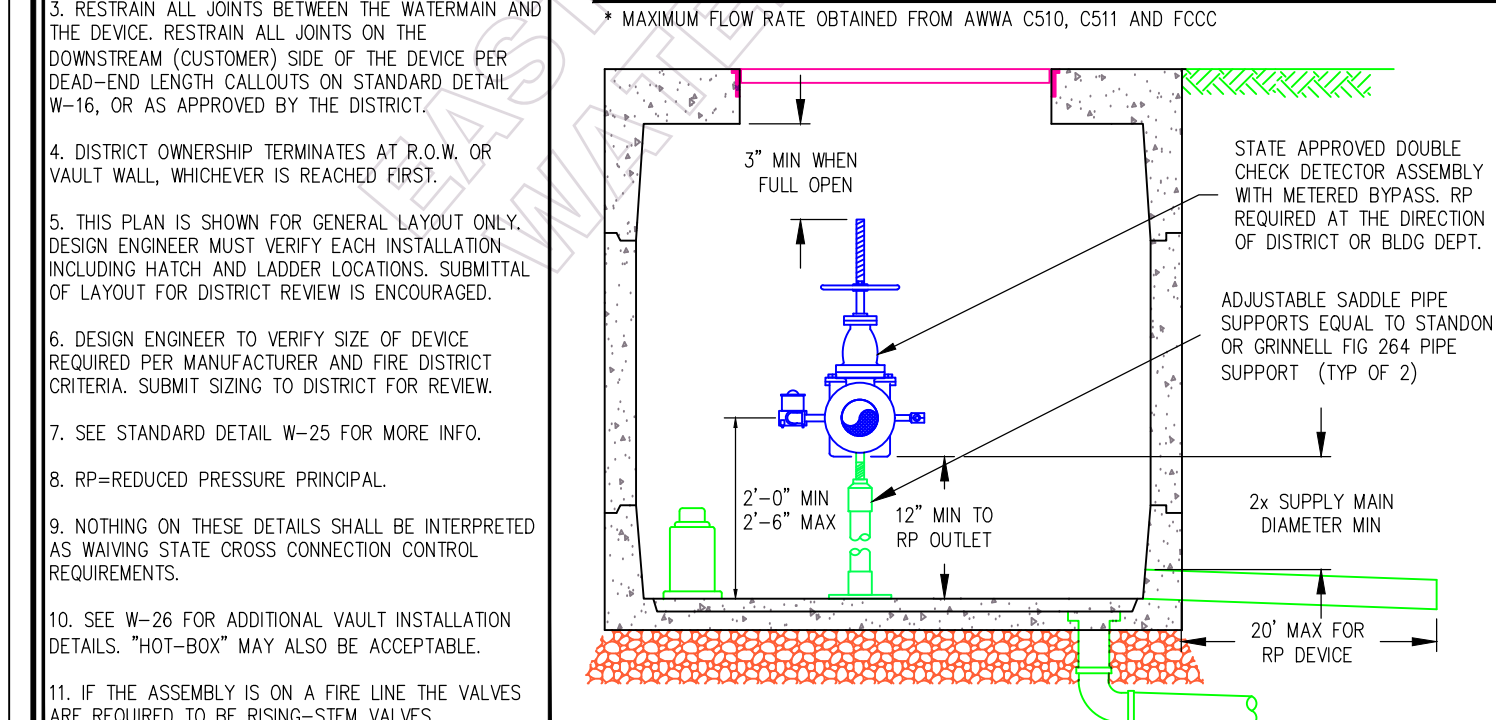
PRESSURE REDUCING STATION DETAILS

DRAWING NO. W-17 SHEET NO. 24





| VALVE DIAM | MAX FLOW (GPM) | MIN VAULT HEIGHT | MIN VAULT WIDTH | MIN VAULT LENGTH BASED ON BACKFLOW DEVICE LENGTH |
|------------|----------------|------------------|-----------------|--|
| 2" | 225 gpm | 72" | 54" | ALL 2.5" DIA. DEVICES, VAULT 5' |
| 3" | 320 gpm | 72" | 54" | DEVICE 4" TO 4", VAULT 7' |
| 4" | 500 gpm | 72" | 58" | DEVICE 4" TO 4", VAULT 7.5' |
| 6" | 1000 gpm | 72" | 60" | DEVICE 4" TO 4", VAULT 7.5' |
| 8" | 1500 gpm | 72" | 62" | DEVICE 4" TO 4", VAULT 8' |
| 10" | 2300 gpm | 74" | 66" | DEVICE 5" TO 6", VAULT 8' |
| 12" | 3000 gpm | 82" | 66" | DEVICE > 6", VAULT 12' |

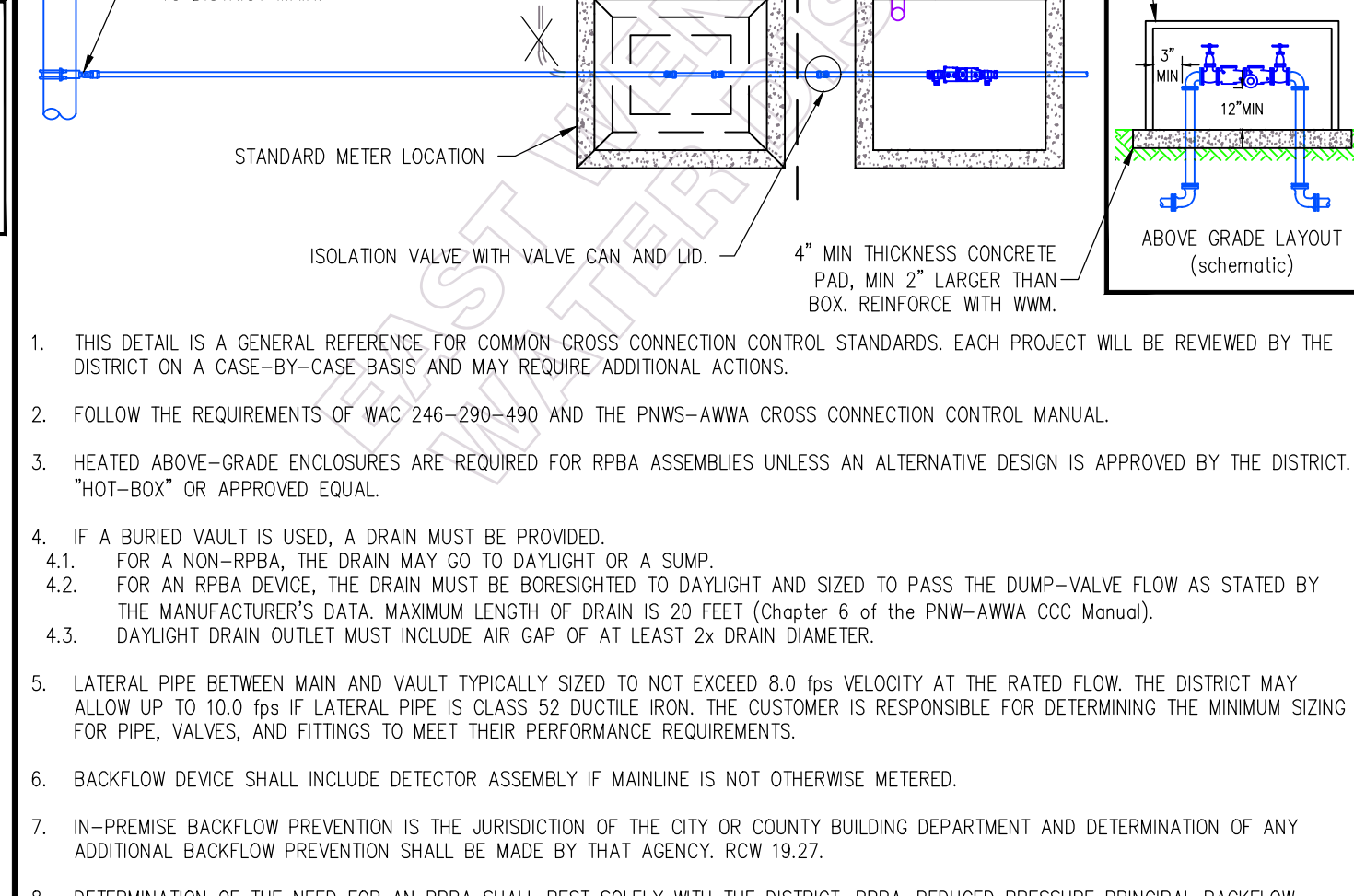
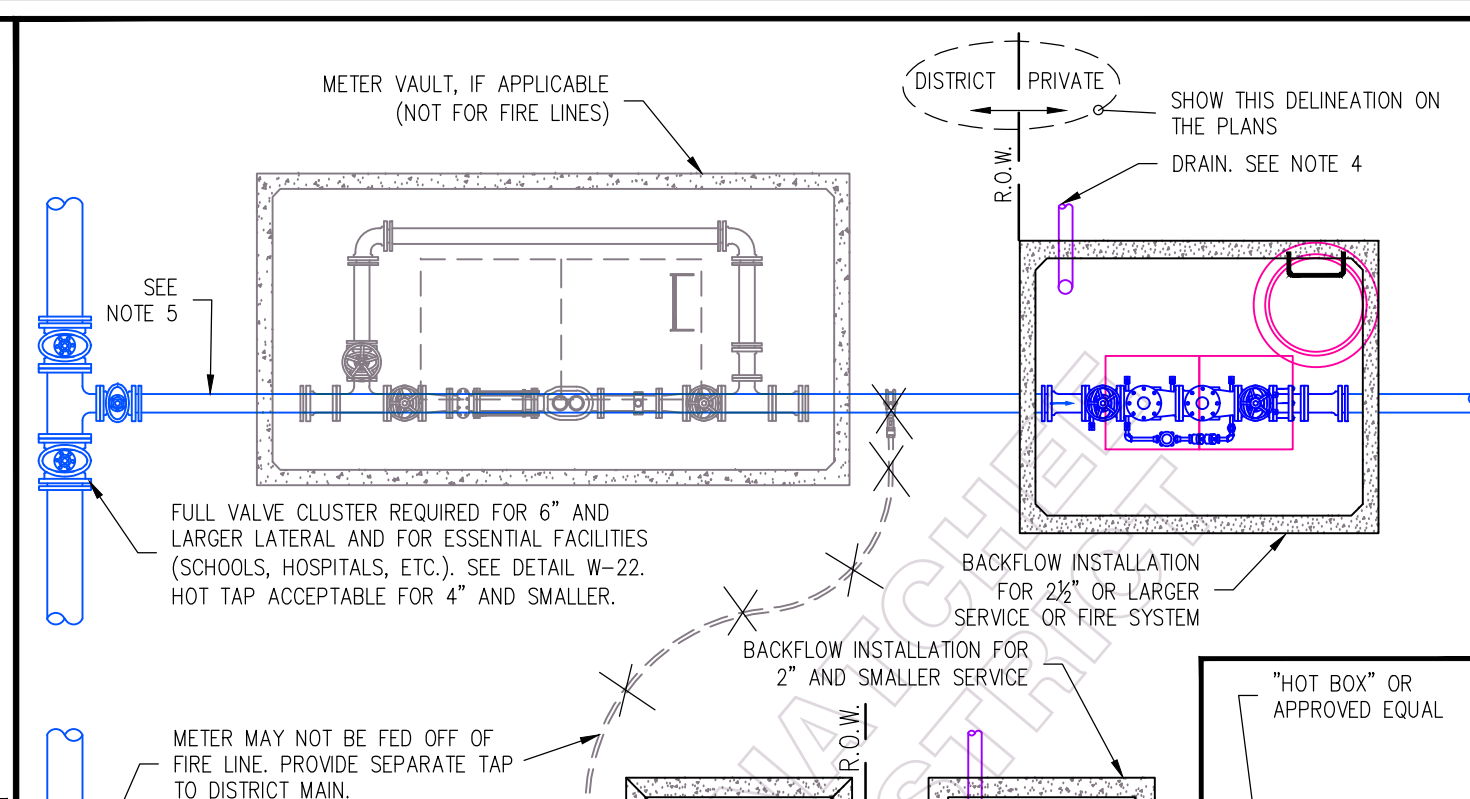


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
BACKFLOW PREVENTION ASSEMBLY

File:EWDTW4 Revised: MAR 30, 2023 Printed: MAR 30, 2023

DRAWING NO. W-13 SHEET NO. 25

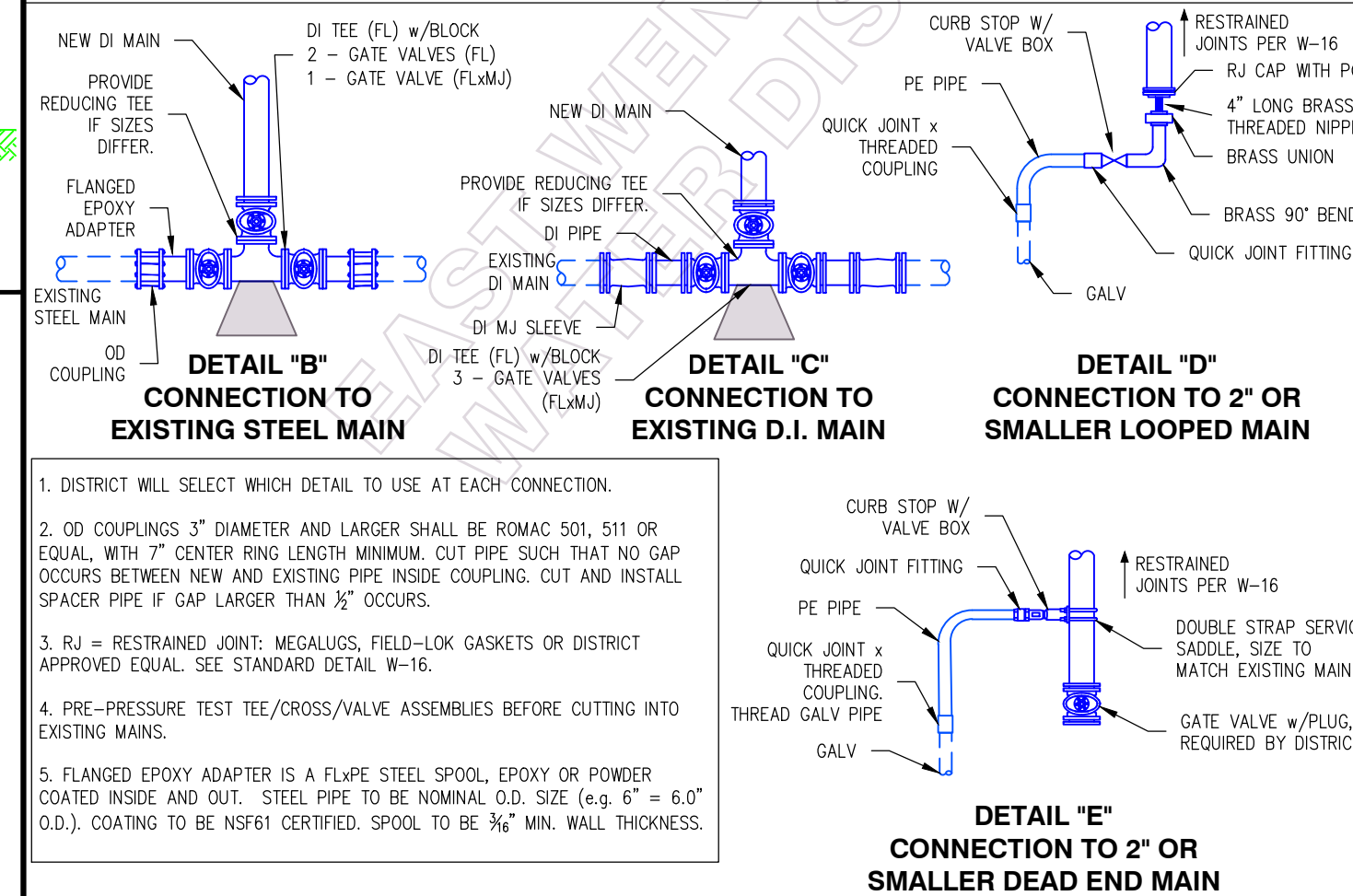
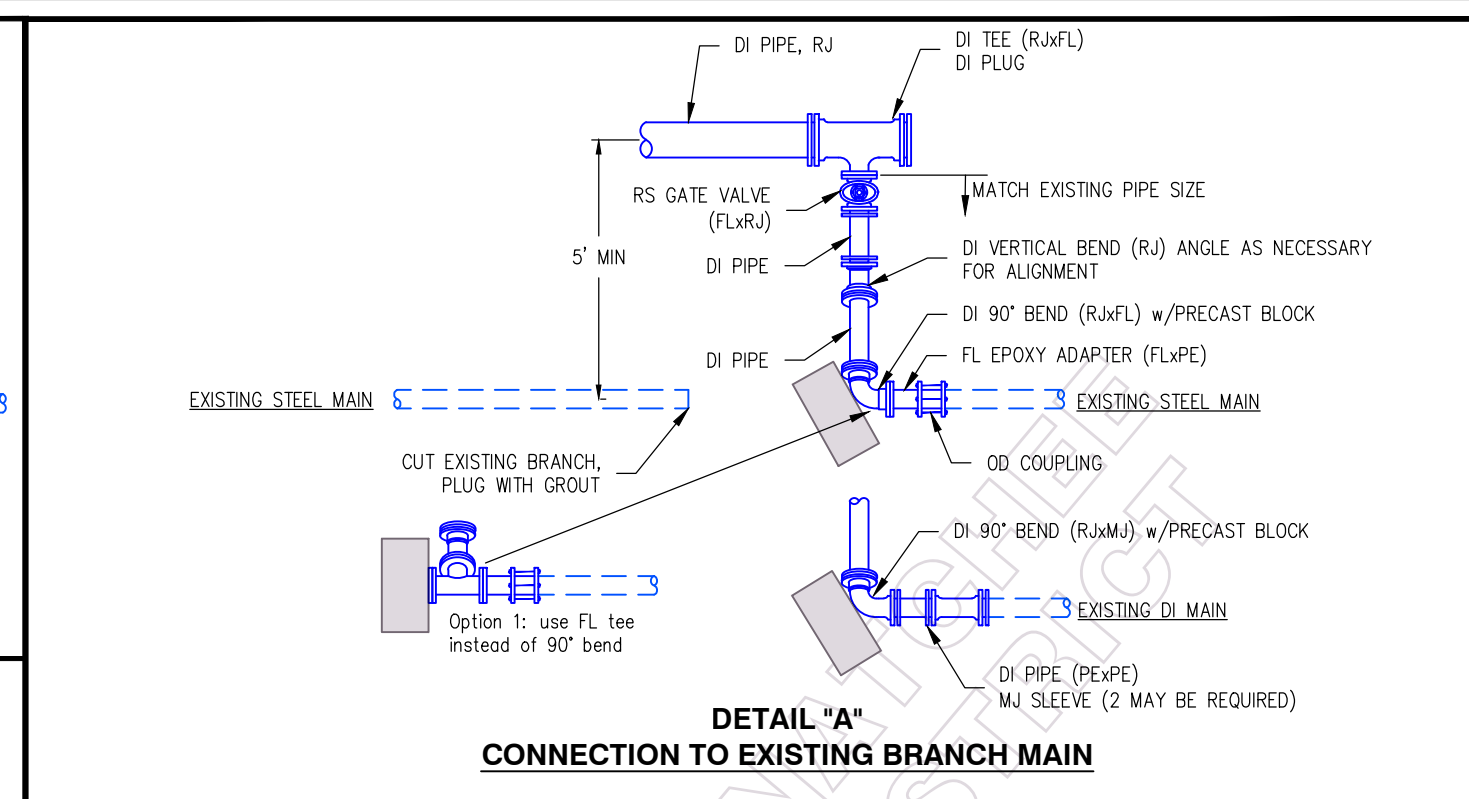


East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
BACKFLOW ASSEMBLY INSTALLATION

File:EWDTW10 Revised: MAR 30, 2023 Printed: MAR 30, 2023

DRAWING NO. W-25 SHEET NO. 26



East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
CONNECTIONS TO EXISTING MAINS

File:EWDTW28 Revised: FEB 10, 2023 Printed: FEB 10, 2023

DRAWING NO. W-22 SHEET NO. 27

ABANDONMENT, REMOVAL, AND TERMINATION NOTES

DISTRICT SHALL BE SOLE DETERMINER OF APPROPRIATE ABANDONMENT PROCEDURES AND METHODS. RESTORE ALL DISTURBED SURFACES TO ORIGINAL CONDITION AND TO THE SATISFACTION OF THE DISTRICT. DELIVER, UNDAMAGED, ALL REMOVED EQUIPMENT (HYDRANTS, SERVICE BRASS, VALVES, ETC., NOT PIPE) TO THE DISTRICT AT THE 15TH STREET AND EASTMOUNT SHOP WITHIN ONE WEEK OF REMOVAL. THE DISTRICT OWNS ALL EXISTING MATERIALS AND HAS THE RIGHT OF SALVAGE FOR ANY EQUIPMENT AT THEIR DISCRETION. ANY EQUIPMENT THE DISTRICT DOES NOT WISH RETURNED SHALL BE DISPOSED OF BY THE CONTRACTOR. SHOULD THE CONTRACTOR UNNECESSARILY DAMAGE ANY EXISTING FUNCTIONAL EQUIPMENT, SAID EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR AT THEIR COST. THE FOLLOWING METHODS ARE APPROVED ABANDONMENT PROCEDURES FOR TERMINATED EQUIPMENT.

ABANDONED HYDRANTS, SERVICES, BRANCH MAINS, ETC. SHALL BE TERMINATED AT THE FACILITY LOCATION AND AT THE MAINLINE. THE LATERAL SHALL NOT BE LEFT CONNECTED TO THE MAINLINE.

VALVES

1. REMOVE VALVES AND VALVE BOXES. PLUG OR BLIND FLANGE THE WATER MAIN.
2. AN ALTERNATIVE METHOD OF ABANDONMENT IS ACCEPTABLE IF, AT THE DISCRETION OF THE DISTRICT, THE VALVE CANNOT BE REMOVED. PLUG AND CLOSE THE VALVE, THEN REMOVE THE VALVE BOX.

WATER MAINS

1. CUT AND DRAIN THE ABANDONED WATER MAIN WHERE EXPOSED DURING CONSTRUCTION AND AT ALL LOW POINTS.
2. REMOVE MAINS IN THE WAY OF NEW CONSTRUCTION. SAW CUT AND REMOVE SHORT SECTIONS OF PIPE. MAINS SHALL NOT BE FORCIBLY REMOVED WITH HEAVY EQUIPMENT DUE TO POTENTIAL DAMAGE TO SURROUNDING UTILITIES.
3. MAINS THAT WILL BE TERMINATED BUT NOT ENCOUNTERED DURING NEW TRENCHING MAY BE LEFT IN PLACE, BUT ALL VALVES MUST BE REMOVED OR ABANDONED AS DESCRIBED UNDER "VALVES".
4. PLUG ENDS OF ABANDONED MAINS EXPOSED DURING CONSTRUCTION WITH GROUT PLUG, BLIND FLANGE, OR CAP AS DIRECTED BY THE DISTRICT DEPENDING ON THE TYPE OF PIPE AND SOIL CONDITIONS.

WATER SERVICES AND AIR VALVE ASSEMBLIES

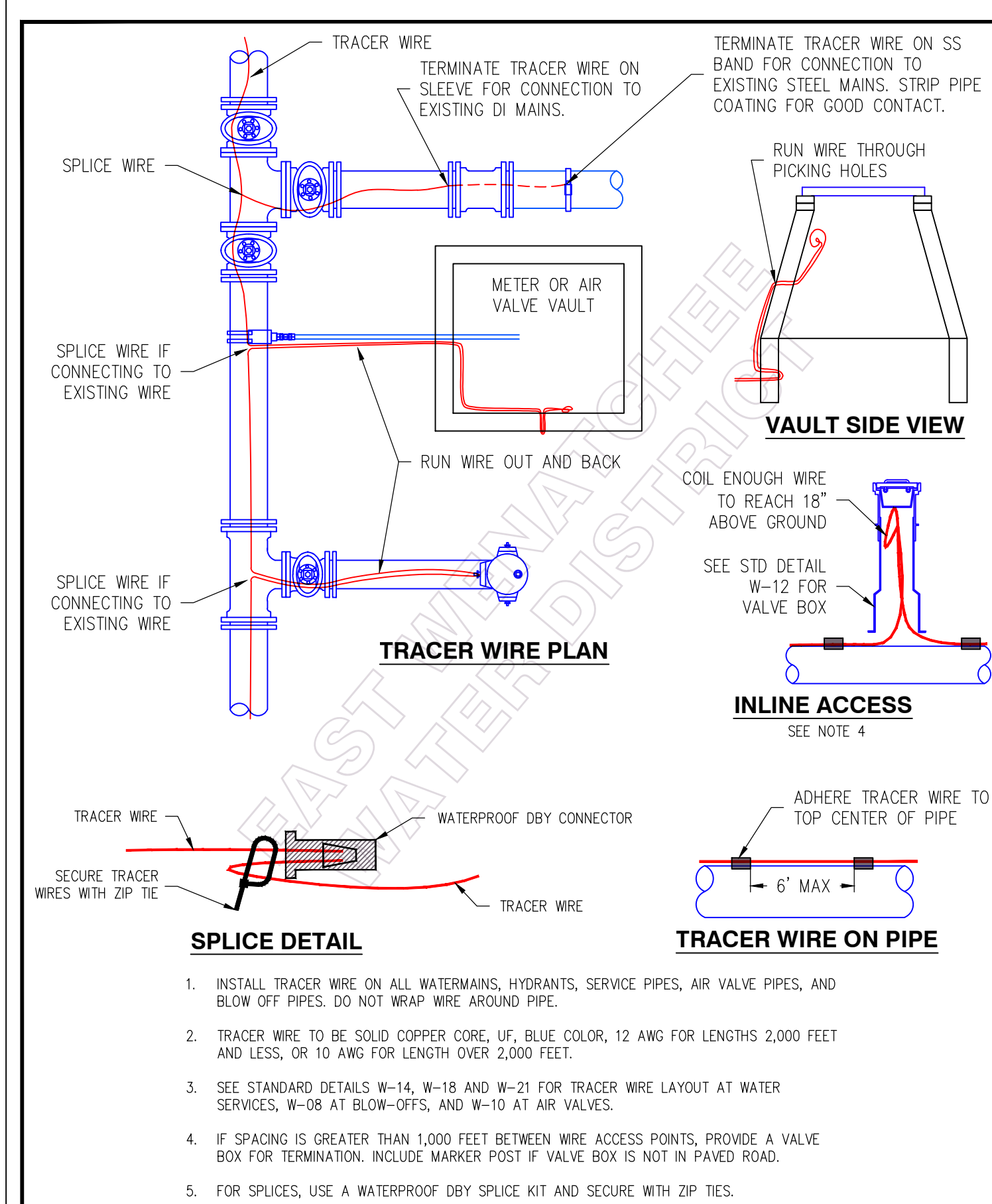
1. REMOVE ALL VALVES, SETTERS AND MISCELLANEOUS FITTINGS. BACKFILL WITH CRUSHED ROCK AND COMPACT. NATIVE SOILS MAY BE USED FOR BACKFILL ONLY IF APPROVED BY THE DISTRICT.
2. CUT SERVICE AT MAIN AND REMOVE STUB FROM CORP STOP. CLOSE CORP STOP AND INSTALL THREADED CAP.
3. REMOVE ENTIRE SERVICE LINE BACK TO WATER MAIN (EXCAVATE OR PULL).
4. AT THE DISCRETION OF THE DISTRICT, THE SERVICE LINE MAY REMAIN IN PLACE, BUT MUST BE TERMINATED AT THE MAINLINE AS DESCRIBED IN ITEM 2.

HYDRANTS

1. REMOVE ENTIRE HYDRANT. REMOVE OR ABANDON LATERAL PIPE AND ISOLATION VALVE AS DETAILED ABOVE.
2. REMOVE ANY BOLLARDS.
3. BACKFILL WITH CRUSHED ROCK, OR NATIVE MATERIAL IF APPROVED BY THE DISTRICT.

File:EWDTW29 Revised: JAN 7, 2020 Printed: JAN 7, 2020

DRAWING NO. W-15 SHEET NO. 28



East Wenatchee Water District

WATER SYSTEM STANDARD DETAIL
TRACER WIRE

File:EWDTW31 Revised: DEC 21, 2021 Printed: DEC 21, 2021

DRAWING NO. W-31 SHEET NO. 29

REVISION HISTORY

JUNE 2018

- W-13 REVISED MINIMUM VAULT SIZE REQUIREMENTS
- W-14 REVISED SADDLE FIT RANGE
- W-18 ADDED MUELLER PRODUCT INFORMATION TO TABLE
- W-21 ADDED MUELLER PRODUCT INFORMATION TO TABLE
- W-30 ADDITIONAL SPACING REQUIREMENTS FOR CASING RUNNERS

JANUARY 2017

- W-01 REVISED WATER MAIN COVERAGE DEPTH NOTE
- W-01 REVISED THE THRUST RESTRAINT NOTE
- W-01 INCLUDED SETTERS AND TAILPIPE IN PRESSURE TEST NOTE
- W-01 INCLUDED OPEN END OF VALVES IN PIPE PLUG NOTE
- W-06 REMOVED DEADMAN THRUST BLOCK DETAIL
- W-07 REVISED ATTACHMENT DETAIL TO INCLUDE A WASHER AND DOUBLE NUT OR NYLON NUT
- W-10 CLARIFIED CMU BLOCK SIZE REQUIRED AND ELIMINATED CMU BLOCK UNDER CURB STOP
- W-10 CLARIFIED MATERIAL ALLOWED FOR CORP STOP BLOCKING
- W-12 ADDED NOTE 8 AND ADDED PLAN VIEW OF BOX LID
- W-13 UPDATED NOTE 3 TO CLARIFY RESTRAINED PIPE REQUIREMENTS
- W-13 REMOVED THRUST BLOCKS AND SHACKLES
- W-13 CHANGED THE FCA TO A FLX RJ ADAPTER
- W-13 ADDED DISMANTLING JOINT
- W-13 UPDATED VAULT MIN INTERIOR DIMENSION REQUIREMENTS TO MATCH NEW PIPE LAYOUT
- W-13 INCLUDED IPEL IN TYPE OF METER ALLOWED
- W-15 INCLUDED AIR VALVE ASSEMBLIES IN WATER SERVICE SECTION TITLE
- W-19 REMOVED WALL COLLARS FROM DETAIL
- W-20 REMOVED EXTERIOR BLOCKS AND SHACKLES, ADDED NOTE 8, UPDATED FITTING NO. 2 FROM MJ TO RJ
- W-21 REMOVED NOTE 4 REGARDING MASTIC BETWEEN CHAMBER TOP AND BASE
- W-21 ADDED NOTE REGARDING PRESSURE TESTING SERVICE
- W-21 ADDED NOTE IN ELEVATION REGARDING REQUIRED ADAPTER IN 1" SETTERS
- W-24 REMOVED EXTERIOR BLOCKS AND SHACKLES, ADDED NOTE 8, UPDATED FITTING NO. 2 FROM MJ TO RJ WITH NO FCA OPTION
- W-26 REMOVED ALL WALL COLLARS
- W-26 UPDATED NOTE 2 TO HAVE THE DISTRICT DECIDE IF EXTERNAL BLOCKS ARE REQUIRED
- W-26 CLARIFIED IN NOTE 3 TO NEATLY ROUTE DRAIN PIPING IN VAULT
- W-26 CREATED A NEW NOTE 7 ALLOWING THE DISTRICT TO REQUIRE INTERIOR PAINT
- W-26 UPDATED NOTE 8 (WAS PREVIOUSLY 7) TO REQUIRE EXTERIOR COAT OR GROUT PATCHES
- W-30 RELOCATED CASING NOTE TO CASING DETAIL, W-32
- W-30 UPDATED CONTRACTOR SHUTDOWN REQUIREMENT NOTE
- W-30 INCLUDED ASTM A307 GRADE B FOR FLANGE BOLTS
- W-31 NEW DETAIL CREATED FOR TRACER WIRE INSTALLATION
- W-32 NEW DETAIL CREATED FOR CASING PIPES

SEPTEMBER 2017

- W-01 RELOCATED DOMESTIC-MADE REQUIREMENT NOTE FROM NOTE 15 TO NOTE 1.
- W-01, W-30 SPLIT NOTE 15 INTO SEPARATE NOTES 1, 2, AND 17. RENUMBERED OTHER NOTES ACCORDINGLY.

JUNE 2018 (CONTINUED)

- W-08 REVISED THE TRACER WIRE TO NOT WRAP AROUND THE PIPE.
- W-10 REVISED TRACER WIRE ROUTING.
- W-10 CREATED AN ISOMETRIC OF THE BLOW-OFF TEE.
- W-10 UPDATED THE MODEL NUMBERS FOR THE APCO AIR RELEASE/VACUUM VALVE.
- W-10 CALLED OUT THE LENGTH OF THE NIPPLE UNDERNEATH THE AIR RELEASE/VACUUM VALVE.
- W-12 ADDED TRACER WIRE TO ISOLATION VALVE DETAIL
- W-12 UPDATED VALVE NOTE TO INCLUDE VALVES ON TEES.
- W-12 CLARIFIED PRE-PRESSURE TEST NOTE TO SAY CLOSED SEAT.
- W-12 ADDED TO MARKER POST NOTE TO INCLUDE WHEN VALVE IS IN GRAVEL AREA.
- W-13 ADDED 12" VALVE SIZE DATA TO THE VAULT MIN. INSIDE TABLE
- W-14 ADDED 1" MIN SIZE TO PE SERVICE PIPE
- W-14 REVISED TRACER WIRE TO NOT WRAP AROUND PIPE
- W-14 INCLUDED "WHEN TAPPING EXISTING MAIN" TO NOTE ABOUT TRACER WIRE CONNECTION.
- W-16 ADDED A FUSION BONDED POLYESTER COATING REQUIREMENT TO THE MECHANICAL JOINT RESTRAINTS
- W-16 UPDATED THE REQUIRED RESTRAINED LENGTHS FOR ALL FITTINGS
- W-17 ADDED A BELL REDUCER ON THE GAUGE & AIR VALVE DETAIL
- W-17 ADDED A MAX TAP SIZE TABLE
- W-18 REVISED TRACER WIRE TO NOT WRAP AROUND PIPE
- W-18 ADDED DETAIL TO SHOW SERVICE LINE GOING UNDER CROSSING UTILITY
- W-18 ADDED 3" CASING TO ELEVATION DETAIL FOR SERVICE PIPE
- W-19 ADDED FLX RJ ADAPTERS TO EACH END OF THE MAIN PIPE IN THE VAULT
- W-19 ADDED A SPOOL OF PIPE TO SEPARATE THE PRV'S AND MOVE THE LADDER
- W-19 REVISED ITEM NO. 4, REDUCING TEE, TO COME WITH A TAPPED BOSS
- W-20 ADDED A VALVE AND DRAIN ON THE BYPASS
- W-21 REVISED TRACER WIRE TO NOT WRAP AROUND PIPE
- W-21 UPDATED THE MUELLER MODEL NUMBER
- W-22 REMOVED NOTES AND PIPING THAT WAS REDUNDANT TO DETAIL W-15
- W-22 UPDATED GENERAL NOTE 1 TO READ WATERMAIN INSTEAD OF BRANCH
- W-22 UPDATED COUPLING NOTE TO INCLUDE ROMAC 511 COUPLING OR EQUAL WITH A 7" CENTER RING LENGTH MINIMUM.
- W-24 ADDED A VALVE AND DRAIN ON THE BYPASS
- W-26 CLARIFIED NOTE ABOUT DRILLING 2" HOLE IN DOOR. ONLY IF VAULT HAS METER
- W-26 ADDED NOTE ABOUT A SPRAY UNDERCOAT TO THE GROUT PACK
- W-26 REVISED LADDER-UP TO BE SPRING LOADED AND INCLUDED APPROVED MATERIALS FOR THE LADDER
- W-29 ADDED REFERENCE TO RETAINING WALL DETAIL TO GENERAL NOTE 4
- W-30 UPDATED THE DIMENSIONS FOR THE RECESSED HOLE FOR THE RADIO.
- W-30 ADDED NOTE STATING THE TYPE OF VALVES TO BE USED WHEN SMALLER THAN 4"
- W-31 UPDATED TRACER WIRE TO COME IN BETWEEN TWO PARTS OF VALVE BOX
- W-31 UPDATED DETAIL TO SHOW TRACER WIRE TERMINATING ON SLEEVE OR COUPLING
- W-31 REVISED THE WATERPROOF NUT TO A WATERPROOF DBY CONNECTOR
- W-31 REMOVED TRACER WIRE WRAPPING DETAIL
- W-31 ADDED GENERAL NOTE 6
- W-32 ADDED DETAIL FOR CASINGS LONGER THAN 20'
- W-32 INCLUDED A CROSS SECTION OF THE CROSS UTILITY FOR EACH CASING DETAIL.
- W-32 ADDED NOTE ABOUT CASING RUNNER SELECTION SIZE.
- W-32 ADDED NOTE LISTING CASING SIZE NEEDED FOR VARIOUS PUSH-ON JOINT DI CARRIER PIPE SIZES.
- W-14, W-18, W-21, W-29 CHANGED SERVICE LINE DEPTH CALLOUT TO 48" COVER.

MARCH 2019

- W-01 (NOTE 1) ADDED TO USE MOST CURRENT VERSION OF STANDARDS.
- W-01 (NOTE 13) ADDED TO PRETEST VALVES PRIOR TO INSTALLATION.
- W-13 ADDED MAXIMUM DRAIN PIPE LENGTH OF 20 FEET.
- W-16 ADDED MULTIPLIER FOR PVC PIPE. ADDED THAT SET-SCREW RESTRAINTS NOT ALLOWED. ADDED TYLER TUFGRIP RESTRAINTS ARE NOT ALLOWED (DUE TO QUALITY CONTROL ISSUES).
- W-25 ADDED MAXIMUM DRAIN PIPE LENGTH OF 20 FEET.
- W-30 (NOTE 23) ADDED COEFFICIENT OF FRICTION REQUIREMENT.
- W-31 REVISED TRACER WIRE IN VALVE BOXES.

JULY 2019

- W-12 (NOTE 13) ADDED MAXIMUM GAUGE SCALE REQUIREMENT.
- W-29 CLARIFIED MAXIMUM 6" VERTICAL ADJUSTMENT.
- W-30 (NOTE 23) UPDATED LID/FRAM MODEL NUMBERS.
- W-30 (NOTE 29) ADDED NEW NOTE ABOUT DISTRICT LOANED EQUIPMENT.

JANUARY 2020

- W-02, W-14, W-18, W-21, W-31 REVISED TRACER WIRE CONFIGURATION
- W-04 REVISED PRECAST BLOCK CALLOUT LISTING AVAILABLE SIZES.
- W-12 SIGMA BOX TOPS NO LONGER ALLOWED DUE TO CLEARANCE ISSUES.
- W-12 REMOVED TRACER WIRE FROM VALVE BOX.
- W-12 ADDED VALVE BOX COLLAR.
- W-18 UPDATED METER SETTER MODEL NUMBERS.
- W-23 CHANGED HILLHOLDER WALLS FROM ROCKS TO PRECAST BLOCK.
- W-26 ADDED GAS SHOCK OPTION FOR HATCH.
- W-29 NOW GRAPHICALLY SHOWS LID ADJUSTMENT RISERS.

JANUARY 2021

- W-01 REVISED NOTE 11 THAT RESTRAINED JOINTS ARE NOW GENERALLY ALLOWED INSTEAD OF THRUST BLOCKS.
- W-02 4" STORZ ADAPTER NOW REQUIRED FOR ALL HYDRANTS.
- W-04 REVISED TABLES SO SAND AND SANDY SILT ARE THE DEFAULT MATERIAL (1.0 MULTIPLIER).
- W-08 CHANGED SWING JOINT FROM STEEL TO BRASS.
- W-11 ADDED MULTIPLE AND 4" BLOW OFF CONFIGURATION OPTIONS
- W-12 INCREASED INLINE VALVE RESTRAINED JOINT LENGTH REQUIREMENT (NOTE 5).
- W-13 REVISED VAULT SIZES
- W-16 ADDED LENGTHS FOR COMBINED BENDS.
- W-29 ADDED REQUIREMENT TO INSTALL SIDEWALK PANEL AROUND LID WHEN SIDEWALKS ARE DEFERRED.
- W-31 ADDED ACCESS BOX DETAIL.

APRIL 2021

- W-14 SADDLES, CORP STOPS, AND SERVICE LINES FOR ALL 3/4" AND 1" SINGLE AND DOUBLE METERS ARE NOW 1.5" DIAMETER.
- W-25 DISTRICT MAY ALLOW LATERAL PIPE VELOCITY UP TO 10 FPS WITH CL52 DI.

MAY 2021

- W-01 ADDED THAT PRESSURE WASHERS NOT ALLOWED FOR PRESSURE TESTING.
- W-03 CHANGED PAVEMENT PATCH MATERIAL FROM CLASS B TO HMA CL 3/8". ADDED PIPE ALIGNMENT TOLERANCES.
- W-13 REVISED VAULT LENGTH CRITERIA.

SEPTEMBER 2021

- W-16 ADDED THAT McWANE/TYLER SURE-STOP GASKETS ARE NOT APPROVED.

DECEMBER 2021

- W-02 CHANGED CLOW MODEL F2500 TO MEDALLION. CHANGED MAXIMUM SHACKLE ROD LENGTH FROM 15 FEET TO 60 FEET.
- W-03 ADDED MARKER TAPE FOR PIPE IN EASEMENTS.
- W-12 ADDED EXTENSION ROD DIMENSION FROM SURFACE.
- W-13, W-26 ADDED/CLARIFIED SECONDARY ACCESS HATCH FOR VAULTS WITH A SINGLE PIPE (NOT FOR THOSE WITH INSIDE BYPASSES). REVISED LADDER LOCATION AND BRACKET REQUIREMENTS.
- W-14, W-18 CHANGED SERVICE PIPE SIZE TO 2" FOR ALL 1.5" WATER SERVICES.
- W-23 REVISED UNOBSTRUCTED SPACE AROUND THE HYDRANT TO 36" CLEAR.
- W-26, W-30 ADDED NOTE THAT CAST-IN-PLACE VAULTS NOT ALLOWED.
- W-29 CLARIFIED SIDEWALK PANEL SIZE AND SLOPE.
- W-30 ADDED NOTE ABOUT CONSTRUCTION STAKING.

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- W-01, MOVED MATERIALS SPECS TO W-30.
- W-03, CLARIFIED PIPE ZONE BEDDING COMPACTION METHOD AND MAXIMUM DEPTH OF 6" PER LIFT. ADDED NOTE REQUIRING CRACK SEAL ON ALL ASPHALT JOINTS.
- W-10, CLARIFIED BLUE BOARD INSULATION TO BE 2" THICK WITH A MINIMUM R-10.
- W-12, ADDED LIST OF APPROVED GATE VALVE MODELS AND EAST JORDAN IRONWORKS VALVE BOX MODEL NUMBERS.
- W-13, ADDED VALVES TO BE RISING-STEM FOR FIRE LINES; ALTERNATIVE HATCH LAYOUT TO BE APPROVED BY THE DISTRICT; AND THE BYPASS METER IS TO BE PROVIDED BY THE DISTRICT.
- W-14, CLARIFIED MARKING TAPE TO BE NON-METALLIC WHEN LOCATED ABOVE TRACER WIRE.
- W-16, GRIPPER TYPE RESTRAINT GASKETS NOT APPROVED FOR LARGER THAN 12".
- W-20, CLARIFIED VALVES TO BE RISING STEM.
- W-22, ADDED ROMAC 501 TO APPROVED COUPLINGS.
- W-25, ADDED ISOLATION VALVE BETWEEN THE METER AND BACKFLOW ASSEMBLY AND THAT THE DEVICE WILL BE IN A HOT BOX UNLESS OTHERWISE APPROVED BY THE DISTRICT.
- W-26, CLARIFIED LADDER EXTENSION POST PRODUCT REQUIREMENTS.
- W-30, BROKE OUT MATERIALS SPECS INTO SEPARATE LIST. CLARIFIED VALVES TO BE RISING STEM

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