IRVIN WATER DISTRICT NO. 6
DESIGN CRITERIA AND GENERAL SPECIFICATIONS
FOR
WATER MAIN INSTALLATIONS (Updated 10/7/21)

I. GENERAL

The Irvin Water District No. 6 has adopted the Standard Specifications for Road, Bridge, and Municipal Construction of the Washington State Department of Transportation and the American Public Works Association (WSDOT/APWA) latest edition as a standard and uses AWWA as a guide. The applicable portions of these Standard Specifications shall apply to all work performed on or for the Irvin Water District water system.

The following items shall apply to all projects:

1. Prior to construction, plans of proposed facilities are to be submitted in duplicate to the District for approval. Said plans must bear the seal of a professional engineer licensed in the State of Washington. If fire flow is involved, the submitted plans must also bear the signature of the Fire District to be accepted. One copy of the plans bearing the approval signature of the District will be returned to the Owner and these approved plans must be on the job site at all times during construction. Exceptions to the plan requirements can only be granted by the Water District Board of Commissioners.

   Prior to submitting design documents for District review, the developer shall prepare project documentation as follows:

   Two sets of design drawings and one pdf of each plan/profile sheet, details, service area boundary plan, plat, and design calculations. The cover sheet of the design drawing set shall include the following two items:

a. Project design criteria - minimum information as follows:

- Total # of water service meters _____Each
- Peak demand for each meter _____GPM
- Number of buildings _____Each
- Floor space of largest building _____Sq. Ft.
- Total floor space – all buildings _____Sq. Ft.
- Number of floors each building _____Each

- Type of construction (I, IIA/B, II, IV, etc.) _____
- Occupancy _____
- Number of fire hydrants _____Each
- Fire hydrant spacing, proximity to structures _____Feet
- Number of buildings w/ approved automatic sprinkler system _____Each
- Number of fire line connections _____Each

b. Signature block for construction approval shall be as follows:

CONSTRUCTION APPROVAL STATEMENT

WATER PURVEYOR

Irvin Water District No. 6, with PWSID# 36050-R, has reviewed and approved this design for construction.

_____ _____ _____

Signature Title Date

FIRE DISTRICT

The Spokane Valley Fire Department has reviewed and approved, for construction, the fire hydrant locations shown on these drawings and the following project design criteria

BLDG. FIRE FLOW_____GPM DURATION_____HOURS

_____ _____ _____

Signature Title Date

2. The District's Engineer shall review and approve all Plans prior to construction at the expense of the Owner/Developer. A minimum of fifteen (15) days shall be allowed for this review process.

3. The Owner/Developer shall be responsible for obtaining plan approval or clearance from the Washington State Department of Health for his/her proposal, as may be necessary.

4. Prior to the start of construction, a preconstruction meeting shall be held at the District office. The Contractor and Owner shall be in attendance and shall be expected to provide the schedule and method of work, anticipated shut-offs dates, any material delays, questions, and general discussion of any foreseen issues during construction. The District

shall have their Engineer's Construction Inspector on site, at all times, during the specific construction of the water facilities. The construction inspector shall inspect all water construction work at the expense of the Owner/Developer including all water main installation, bedding and the first 3′ of backfill, valve assemblies, service connections, meter assemblies, vault installations, vault piping, and all other work associated with the installation of the water utility facilities. It shall be incumbent upon the Owner/Developer to coordinate his construction activities and scheduling with the inspector as his/her time shall be billed for showing up on site if the Contractor is absent without notification.

5. The District Manager or his authorized representative are the only individuals with authority to open or close existing valves for construction purposes. The Owner/Developer shall notify the District at least 48 hours prior to their need to turn off water for construction purposes.

6. Obtaining necessary permits shall be the responsibility of the Developer, Builder, Contractor, or property Owner, affected.

7. Where franchises, permits, easements, or deeds to property are required, as deemed necessary by the District, it shall be the responsibility of the affected party to acquire the same and submit appropriate documentation both on plans and by filing with the County Auditor.

8. Fire Protection Requirements shall be established by the City of Spokane Valley Fire Department.

9. Any changes to the plans or specifications shall be submitted to the District for approval fifteen (15) days prior to construction. Changes shall be submitted on an individual basis and treated as same.

10. Within ten (10) days after construction has ceased, complete and accurate "As Built" drawings shall be submitted to the District in AutoCAD format (.dwg). These drawings shall include dimensions from permanent reference points for all water lines, elbows, valves, and other such appurtenances in sufficient detail to facilitate future location.

11. The Owner/Developer shall reimburse the District for all Legal, Engineering, and other incidental costs that the District may incur as a result of his/her proposal. This shall include the District Engineer's costs associated with adding the new facilities to the District's Official Water System Map, and Hydraulic Analysis Model. Failure to pay these fees shall be grounds for immediate water shut off to the development. Current hourly rates for Legal, Engineering, and Inspection fees may be obtained by contacting the District.

12. Prior to the start of construction, all construction permits must be in hand and the Owner/Developer must have reimbursed the District for all review costs. After that the District will release one set of approved plans and construction can be initiated.

II. WATER DISTRIBUTION

These specifications are intended for use in construction and as an aid to the Licensed Professional Engineer in their design of facilities to become a part of the Irvin Water District Water System. All design must be approved by the District prior to submitting to Department of Health as per their appropriate rules and regulations.

All distribution pipelines shall be looped. In some limited instances, dead ends may be permitted, at the District's sole discretion and without reason for cause; however, tees and crosses are required for future system extension. Dead-end pipelines shall require a blow-off or fire hydrant for flushing. In-line valves are necessary at street intersections for isolation and control of the system. Water mains shall be installed across the entire front of the property, corner to corner. If the lot is on a corner, the main shall be installed around the corner to the end of the property. Water mains shall extend the entire length of frontage property within the development including to the end of any contiguous property. At the end of the property, the main shall terminate with a hydrant/blowoff and valve, or at minimum a valve, and 20′ of same size pipe.

All construction materials furnished shall be approved by District and shall be new and unused.

A. Design Flows

1. Design fire flows will be the current flows as required by the City of Spokane Valley Fire Department.
2. District will review anticipated flow requirements for a new area to be served prior to final design of system.

   Depending on type of development, lot size, etc., requirements may vary and should be established before design of system starts. The District shall also verify that supply is available and net effect of increased demand on the District's system.
3. Minimum size distribution main shall be eight (8) inch.
4. Main sizing shall be based on a flow velocity not exceeding 8 Ft./Sec. at peak daily flow plus fire flow. Minimum residual pressure shall be 40 p.s.i.

B. Water Mains

1. All mains shall have a minimum of four and a half (4½′) feet, and a maximum of six (6′), of earth cover above the top of pipe. Minimum cover shall be maintained under all '208' or other swale systems. Less than 4′-6″ cover may be acceptable for short distances where vertical transitions are needed to connect to existing water lines or as approved by the District.

2. Where the bottom of the trench is found to have unstable and/or unsuitable soils or rock the trench shall be excavated to a point at least 6" below the bottom of the pipe and backfilled with approved bedding material to a point 8" above the top of the pipe. Bedding material may be secured from local sources and shall be clean, coarse, granular material with 100% passing a 1/2" sieve.

   In all cases the trench shall be backfilled by hand to a point at least 8" above the top of the pipe, or in accordance with the manufacturer's recommendations with select material containing no large stones, roots, or other material which might endanger or disturb the pipe. The applicable provisions of AWWA Standards C600 shall apply to all excavation and backfilling work. Shaping, backfilling and compaction shall be done in compliance with the requirements of the District, State Highway and/or City Road Departments, as may be appropriate. Settling of the trench within a period of one year after completion of the work shall be considered incontrovertible evidence of inadequate compaction and the Owner/Developer shall be responsible for remedying the condition, including the replacement of surfacing, if necessary, at the cost of the Owner/Developer.

3. Permits and any other such arrangements that may be required for working on City right-of-way and private easements shall be the responsibility of the Owner/Developer and shall be obtained prior to start of work.

4. Water mains shall be installed under normal conditions above all sewer lines. When deviations occur, water main shall be encased in the same material and SDR as the carrier pipe with a minimum interior separation of 2", a perpendicular distance of ten (10) feet on either side of the water main or in accordance with Dept. of Ecology standards.

5. Water mains shall have a minimum clearance of fifty (50) feet from all drain fields.

6. Type of pipe: Pipe may be any of the following, at the option of the District. In general, pipe 12" and smaller may be PVC and pipe 16" and larger shall be ductile iron.

   a. Ductile iron, Class 50 may be used for distribution mains, according to AWWA. C151, & ANSI A21.51 latest edition. Pipe thickness to be in accordance with manufacturer's recommendations for particular installation.

   b. All PVC pipe shall be Class 150 SDR 18 with OD matching D.I. or C.I. and conform in all respects to AWWA Standard C-900 or C-905, latest edition. Special circumstances may require Class 200 or ductile iron pipe in areas of high pressure and/or physical conditions.

   d. Service lines from mains to curb stops shall be copper tubing per ASTM B 88, Type K or 200 psi polyethylene pipe.

   e. All fittings shall have the same working pressure and be designed for the pipe being installed. Makeshift and/or incompatible fittings, couplings, and other appurtenances will not be permitted. All PVC and ductile iron pipe fittings shall be cement mortar lined ductile iron.

f. Tracer wire shall be #12 coated copper, taped to the top of the pipe, in a continuous strand for locating pipe. Splices shall be made using a direct burial device, UL Listed for direct burial use. Tracer wire shall extend and wrap around the base, at ground level, of all fire hydrants. Tracer wire shall extend along all service lines and through all meters, DCVA boxes, and vaults with two 3-inch diameter loops inside. Tracer wire shall extend from the meter box/DCVA to the foundation of any served buildings and shall terminate with a 3' #4 rebar at the edge of foundation. Tracer wire shall extend up all valve boxes; the wire shall run on the outside of the bottom section of valve box, and inside the top section of valve box.

7. Thrust blocks shall be placed on all bends, tees, end caps, fire hydrants or other locations as may be deemed necessary and as shown on plans to prevent pipeline separation due to water hammer. The blocks shall be poured in place. 3,000 psi. in 28 days concrete shall be used. All blocks shall be poured to undisturbed earth, but in all cases shall have a minimum of four square feet of direct contact with undisturbed earth. Thrust Blocks shall be sized to resist design flows and pressures, including water hammer.

8. Mains shall be located generally on the side of streets, avenues, highways, and right-of-ways.

9. Placement of mains in right-of-ways shall be as follows:

   Inside the North or East curb line and in accordance with City of Spokane Valley Engineer's requirements.

   Where mains are extended into private property, easements for construction and perpetual maintenance shall be obtained prior to acceptance by District. Easements shall be at least 15' wide or as may be required by the District, and shall specify that no permanent buildings, fences or other structures shall be erected over water mains(s).

10. No field welding or torch cutting of pipe shall be allowed on coated pipe. All cuttings shall be accomplished with a specified cutter. Welds shall be done in a shop and coatings equal to original re-applied.

11. Badly bent or stressed pipe shall be removed and replaced. All damaged wrapping shall be repaired with coatings approved by the District. In all cases the minimum accepted coating shall be Koppers Pankote "300" enamel.

12. Lead caulked, flared, soldered, or solvent weld joints shall not be allowed.

13. All gaskets required between flanges shall be one-eighth inch (1/8) thick red rubber ring gaskets only, no full-faced gaskets. They shall comply with AWWA specifications.

14. All mains and their appurtenances shall be hydrostatically tested at 200 p.s.i. at the highest point in the line and maintain this pressure, for a period of one hour. Testing shall include all mains, service piping to meter angle-stop valve, and opened hydrants. This shall also apply to all mains having joints open for inspection. No leakage will be allowed, and all defects shall be remedied and the line retested until it complies with the above

requirements. Testing for cut-in facilities that cannot be tested shall be open and visually inspected with a paper towel beneath the applicable facilities for a period of 2 hours. Final testing shall be done in the presence of the District's Inspector, Engineer, or authorized representative. All necessary equipment, gauges, tools, etc., for testing the installed piping shall be provided by the Owner/Developer including any temporary facilities required where blowoffs or hydrants are not available.

15. Disinfection of all mains shall be accomplished according to AWWA specifications and the Washington State Department of Health. Mains shall then be flushed and sampled by the District. These actions must be accomplished prior to placing mains in service for domestic consumption, as per Spokane County Health District Requirements. Owner/Developer shall be responsible to contact District for clearance from same and bear all costs for the sampling process.

    Placement of chlorine in the pipe during the laying operation shall be by granular hypochlorite only at each joint. Tabular form of hypochlorite is not acceptable. Use sufficient hypochlorite to obtain 25 mg/l (ppm) chlorine residual; use a fill velocity of less than 1 ft/sec.; allow water to remain in pipe at least 24 hours. Provide sufficiently sized ports to accomplish a minimum flushing flow velocity of 2 ft/sec. to remove foreign material. Use same flushing velocity if pipe is flushed prior to disinfection. This entire process must be repeated if unsatisfactory bacteriological test results are obtained.

16. Connection to existing pipelines where cut-ins are to be made in existing pipes shall be made by the District or in their inspector's presence only upon approval by the District.

Valves:

In general, valves shall be placed on every leg of every tee or cross in the proposed development except where no services or connections exist between two valves on the same pipe. The District shall determine the number and valve placement for all water facilities.

A. Buried

17. To accomplish standardization, the following brands of gate valves will be allowed:

Mueller	Flanged, hub end, or mechanical joint
Dresser	Flanged, hub end, or mechanical joint
Kennedy	Flanged, hub end, or mechanical joint

All gate valves shall have "O" ring type packing glands and be resilient seat.

18. To accomplish standardization the following butterfly valves will be allowed:

Dresser Style 450	Flanged, hub end, or mechanical joint

Butterfly valves shall be used only where special applications are approved and on pipe 16-inches and larger. When installed they shall have a valve indicator which clearly shows position of disc.

19. All gate valves shall be resilient seat with non-rising stem with 60,000 lb. tensile strength stem, conforming to AWWA C-509.

20. Two-inch square operating nuts will be provided for all underground buried valves.

21. Valve boxes will be set so the bell on the bottom section is at the base of the operating nut only. Box shall not set on valve bonnet. Valve box bottom section barrel shall be not less than six (6) inches in diameter. If extensions are required five (5) inch double hub soil pipe will be allowed, however normal bottom sections must be used initially. The top of the bottom section must be inside the top section not less than four (4) inches and not more than ten (10) inches. Box shall be adjustable. A Trumbull Valve Box Alignment Device shall be installed on the operating nut of all valves prior to the installation of the valve box.

22. Valve boxes will be set to final finished grade. Where pavement is to be installed the contractor shall be responsible for the setting of boxes to final pavement grade. Final acceptance of these items shall not be given until this is completed. (This also applies to concrete sidewalks and curbs).

23. Top sections shall be minimum fourteen inches (14") in length having lip at the bottom of section and capable of holding Tyler 16T 6855 6865 lid or equal.

24. Thrust or bearing blocks will be required wherever City personnel and/or Engineer require.

25. All valves shall open to the left only.

Fire Hydrants

Fire Hydrants located on the Irvin Water District distribution system are owned and maintained by the District. All fire hydrants installed must conform to the District's specifications. Hydrants provided shall be traffic model Type M & H, style 129T, American-Darling B-62-B, or Mueller A-423 with 2-1/2" hose nozzles, 4-1/2" steamer nozzle, MVO 5-1/4", 4-1/2' bury (minimum), 2-1/16" drain holes, mechanical joint shoe connection, 1-1/2" point to flat pentagon operating nut and open left (counter-clockwise). Pre-approved alternate fire hydrants will be considered by the District. All hydrants shall include a gate valve placed at the main. Hydrants shall be installed in accordance with the Standard Plan provided in these Specifications. A Storz Adapter shall be installed on the pumper port of all hydrants.

Services and Metering Thereof

26. Applications for service will be made at the Water District Office including a legal description of the property to be served. A plot plan may be required. The size of the service will be determined by the District with a 1" minimum. HOOK UP FEE will be paid before installation

will be made. Any other charges incidental to the extension of service lines to the applicant's property will be paid by the applicant.

Each service shall be served by a separate service line tapped to a District distribution main. All taps 2" and smaller must be made by District personnel, at the District's discretion. The Owner/Developer must provide all materials (dbl. strap saddle) and pay the District's fee for the tap.

Minimum size domestic service shall be one inch.

27. Meters shall be required for all water use from the District's system.

28. Water Meter. On each property there shall be installed at the expense of the user a water meter of a type approved by the District (See Standard Plan) for each dwelling, building, or other structure except apartment houses or single service multiple purpose structure.

29. Location. The location of the meter or meters used in measuring the customer's use of water shall generally be at the property line and be in a place satisfactory to the District's representative before services will be supplied. The water meter must be located in such manner as to provide ready and convenient access. All meter and DCVA's shall be placed in non-drivable surfaces only.

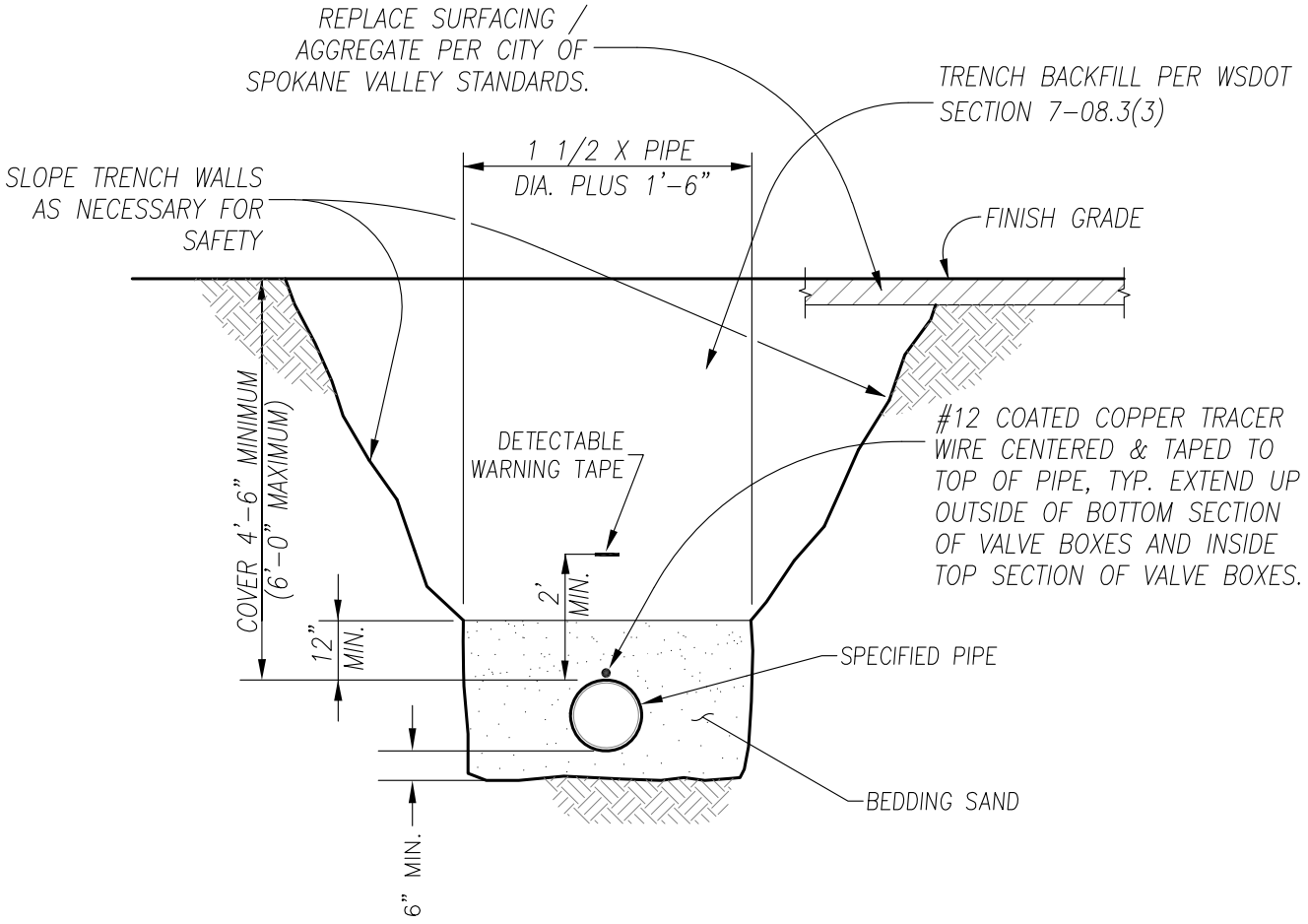
III. WORKMANSHIP AND MATERIALS

All construction work shall be performed by workers skilled in the trade at which they are performing and completed work shall be neat, sound and particularly suited for its intended use. All materials shall be new and unused and specifically designed for its intended use. If, in the opinion of the District Manager or his authorized representative, the completed work does not show a degree of craftsmanship, materials used are inferior or otherwise not suited for use in the Irvin Water District Water System, or other makeshift connections, devices, or appurtenances have been installed, then this shall be cause to reject the work. All such rejected work shall be removed and replaced to the District's satisfaction and at the Owner/Developer expense.

IV. STANDARD DETAILS

The attached standard details shall be included on the construction drawings, as applicable, for the various items of work.

DETAIL DRAWING No. 101



NOTES:

SEE O.S.H.A. & W.I.S.H.A. CONSTRUCTION STANDARDS FOR EXCAVATIONS.

CALL BEFORE YOU DIG: 811

TRACER WIRE SPLICING SHALL CONSIST OF A DIRECT BURIAL DEVICE, UL LISTED, FOR THE PURPOSES OF DIRECT BURIAL.

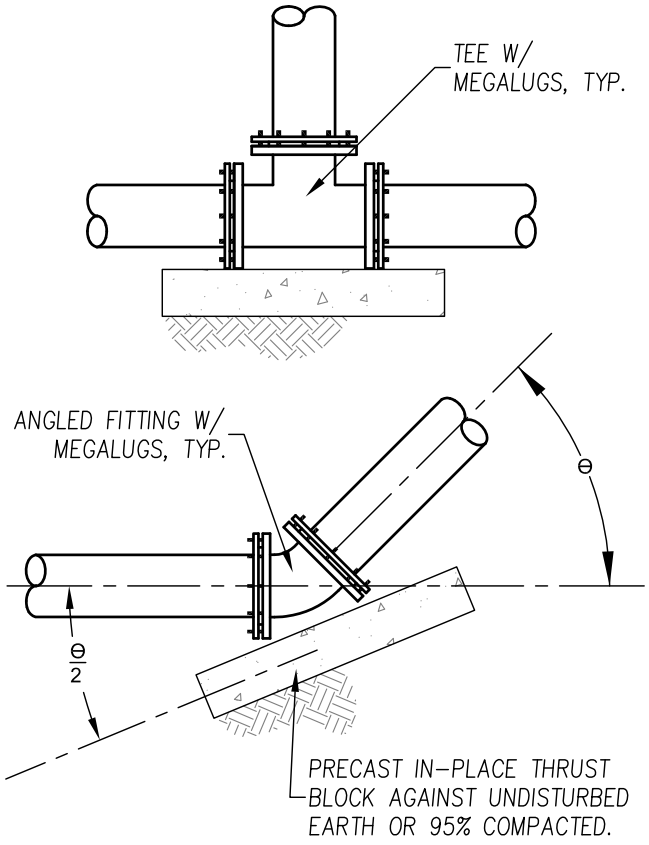
ALL VALVES SHALL HAVE A TRUMBULL VALVE BOX ALIGNMENT DEVICE INSTALLED ON THE OPERATING NUT PRIOR TO VALVE BOX INSTALLATION.

N.T.S.

IRVIN WATER DISTRICT NO. 6

TYPICAL WATER MAIN TRENCH

DETAIL DRAWING No. 102



MIN. THRUST BLOCK SIZING - S.F.

Θ	4"	6"	8"	10"	12"
11¼°	1	1	2	2	3
22½°	1	2	3	4	6
45°	2	3	6	8	12
90°	3	6	10	15	21
TEE/CAP/VALVE	3	5	9	14	20

MIN. RESTRAINED JOINT LENGTH - FT.

Θ	4"	6"	8"	10"	12"	16"
11¼°	3	5	6	7	8	10
22½°	7	9	11	13	16	18
45°	13	18	23	28	32	40
90° TEE/CAP	31	43	54	66	76	97

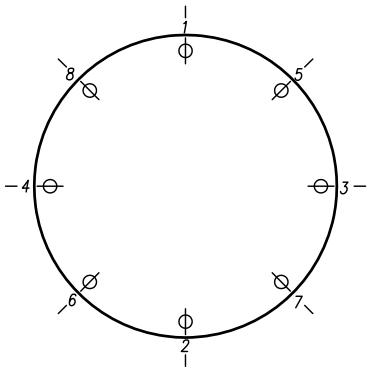
MULTIPLY RESTRAINED LENGTHS BY 1.20 FOR PVC. RESTRAINED LENGTH NOT REQ'D BELOW 12", USE THRUST BLOCKS UNLESS VERT. BENDS EXIST. USE RESTRAINED LENGTH FOR ALL VERT. BENDS, NO REBAR OR VERT. T'BLOCKS.

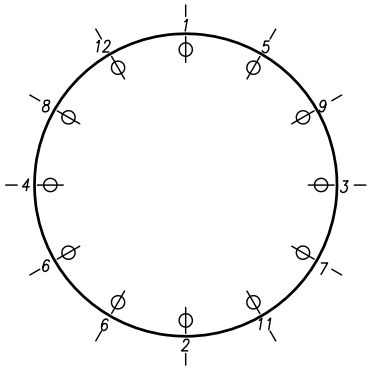
MIN. S.F. OF BEARING AREA AGAINST UNDISTURBED EARTH. CONTRACTOR IS REMINDED THAT VOLUME/WEIGHT OF CONC. CONTRIBUTES LITTLE HORIZ. RESISTANCE AGAINST PIPE THRUST.

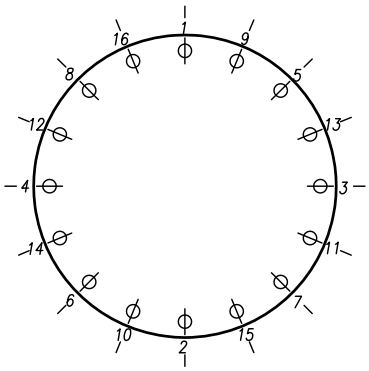
THRUST BLOCKS MAY BE PYRAMIDED TO ACHIEVE AREA IF OVER STD. PRECAST SIZE.

RESTRAINED LENGTH SHALL BE DEVELOPED USING FIELD-LOK OR DIAMOND-LOK GASKETS, NO BELL RESTRAINTS UNLESS SS.

THRUST RESTAINT







SEQUENTIAL ORDER
FOR TIGHTENING BOLTS

8 BOLTS	12 BOLTS	16 BOLTS
1-2	1-2	1-2
3-4	3-4	3-4
5-6	5-6	5-6
7-8	7-8	7-8
	9-10	9-10
	11-12	11-12
		13-14
		15-16

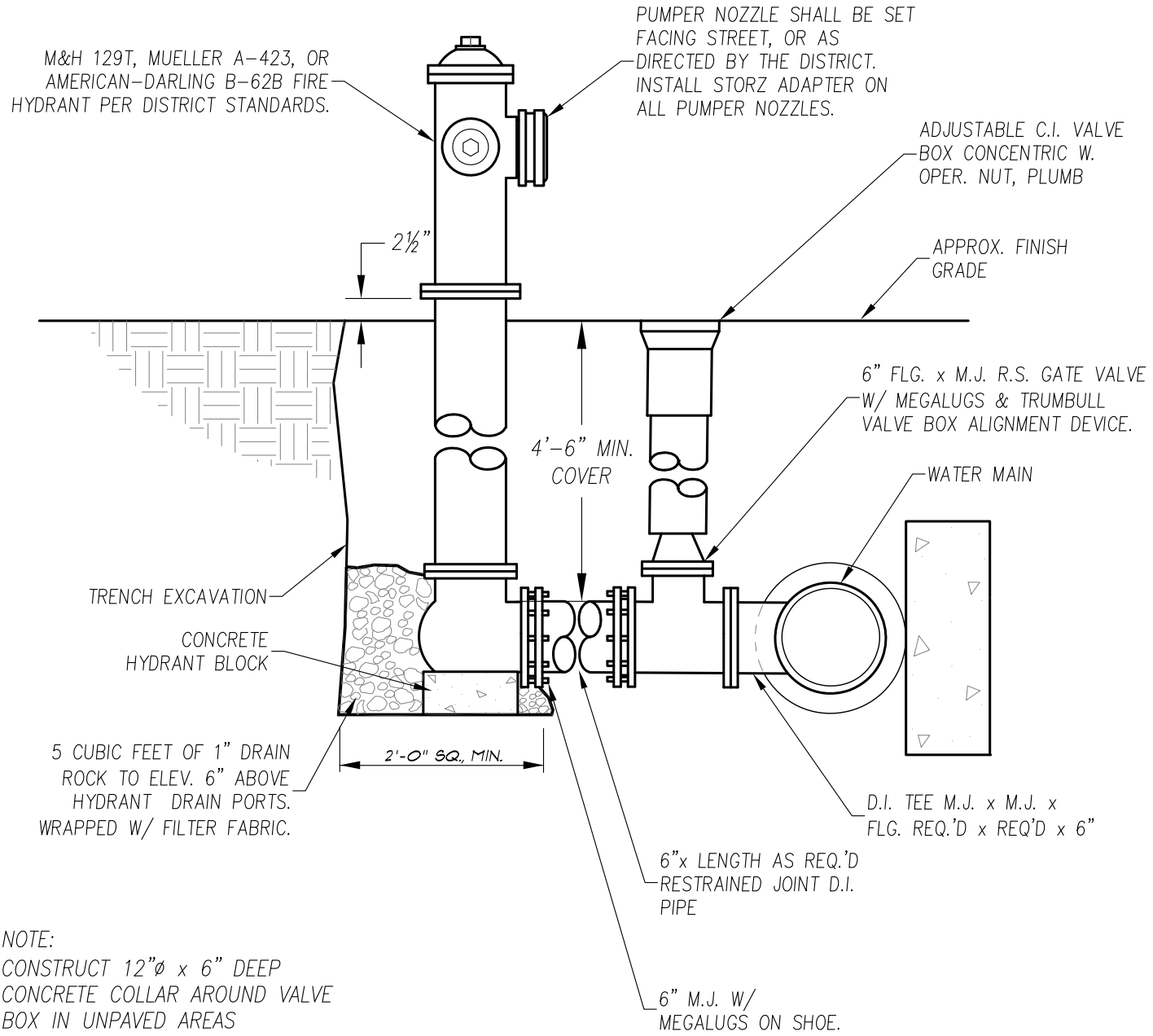
BOLT SEQUENCE & TORQUE

BOLT TORQUE REQUIREMENTS	
PIPE SIZE	PIPE & FITTINGS 250 PSI
4"	90 FT./LB.
6"	90 FT./LB.
8"	90 FT./LB.
10"	90 FT./LB.
12"	90 FT./LB.
14"	110 FT./LB.
16"	110 FT./LB.
18"	120 FT./LB.

IRVIN WATER DISTRICT NO. 6

THRUST RESTRAINT, BOLT SEQUENCE, & TORQUE

DETAIL DRAWING No. 103



NOTE:
CONSTRUCT 12"ø x 6" DEEP CONCRETE COLLAR AROUND VALVE BOX IN UNPAVED AREAS

ALL VALVES SHALL HAVE A TRUMBULL VALVE BOX ALIGNMENT DEVICE INSTALLED ON THE OPERATING NUT PRIOR TO VALVE BOX INSTALLATION.

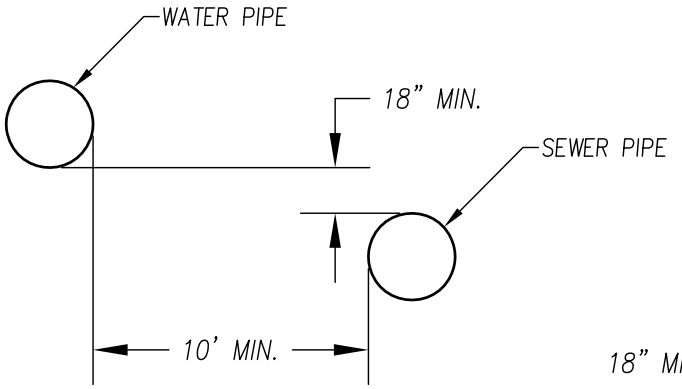
N.T.S.

IRVIN WATER DISTRICT NO. 6

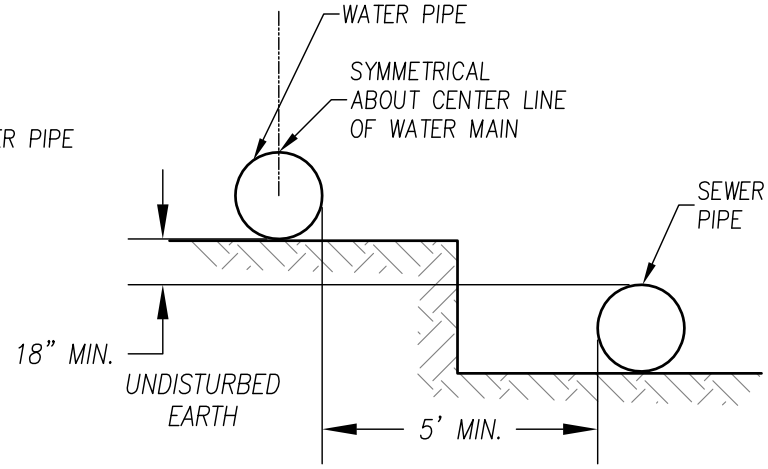
FIRE HYDRANT ASSEMBLY

C:\E&H\IRVIN\STD_DET\IWD-Std. Details.DWG PLOT 1:1 10/13/21

DETAIL DRAWING No. 104



REQUIRED SEPARATION BETWEEN WATER AND SEWER PIPELINES (PARALLEL CONSTRUCTION)



STANDARD

UNUSUAL

HORIZONTAL AND VERTICAL SEPARATION (PARALLEL)

A MINIMUM HORIZONTAL SEPARATION OF 10 FEET BETWEEN SANITARY SEWERS, RECLAIMED WATER LINES, AND ANY EXISTING POTABLE WATER LINES, AND A MINIMUM VERTICAL SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE DRINKING WATER LINE AND THE CROWN OF THE SEWER SHALL BE MAINTAINED.THE DISTANCE SHALL BE MEASURED EDGE TO EDGE (I.E., FROM THE OUTER DIAMETER OF THE PIPES.) SEWERS.

FIGURE C1–2 REQUIRED SEPARATION BETWEEN POTABLE WATER LINES, RECLAIMED WATER LINES, AND SANITARY SEWERS, PARALLEL CONSTRUCTION

FIGURE C1–3 REQUIRED SEPARATION BETWEEN WATER LINES AND SANITARY SEWERS, UNUSUAL CONDITIONS PARALLEL CONSTRUCTION C1–24 AUGUST 2008 CRITERIA FOR SEWAGE WORKS DESIGN

UNUSUAL CONDITIONS (PARALLEL)

WHEN LOCAL CONDITIONS PREVENT THE SEPARATIONS DESCRIBED ABOVE, A SEWER MAY BE LAID CLOSER THAN 10 FEET HORIZONTALLY OR 18 INCHES VERTICALLY TO A WATER LINE OR RECLAIMED WATER LINE, PROVIDED THE GUIDELINES BELOW ARE FOLLOWED:

IT IS LAID IN A SEPARATE TRENCH FROM THE WATER LINE.

WHEN THIS VERTICAL SEPARATION CANNOT BE OBTAINED, THE SEWER SHALL BE CONSTRUCTED OF MATERIALS AND JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION AND SHALL BE PRESSURE TESTED TO ENSURE WATER TIGHTNESS PRIOR TO BACKFILLING. ADEQUATE RESTRAINT SHOULD BE PROVIDED TO ALLOW TESTING TO OCCUR.

IF SEWERS MUST BE LOCATED IN THE SAME TRENCH AS A POTABLE WATER LINE, SPECIAL CONSTRUCTION AND MITIGATION IS REQUIRED. BOTH WATER LINES AND SEWER LINES SHALL BE CONSTRUCTED WITH A CASING PIPE OF PRESSURE–RATED PIPE MATERIAL DESIGNED TO WITHSTAND A MINIMUM STATIC PRESSURE OF 150 PSI.

R LINE SHALL BE PLACED ON A BENCH OF UNDISTURBED EARTH WITH THE BOTTOM OF THE WATER PIPE AT LEAST 18 INCHES ABOVE THE CROWN OF THE SEWER, AND SHALL HAVE AT LEAST 5 FEET OF HORIZONTAL SEPARATION AT ALL TIMES. ADDITIONAL MITIGATION EFFORTS, SUCH AS IMPERMEABLE BARRIERS, MAY BE REQUIRED BY THE APPROPRIATE STATE AND LOCAL AGENCIES.

VERTICAL SEPARATION (PERPENDICULAR)

SEWER LINES CROSSING WATER LINES AT ANGLES INCLUDING PERPENDICULAR SHALL BE LAID BELOW THE WATER LINES TO PROVIDE A SEPARATION OF AT LEAST 18 INCHES BETWEEN THE INVERT OF THE WATER LINE AND THE CROWN OF THE SEWER.

UNUSUAL CONDITIONS (PERPENDICULAR)

WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION AS DESCRIBED ABOVE, CONSTRUCTION SHALL BE USED FOR CROSSING PIPES AS FOLLOWS:

A. GRAVITY SEWERS PASSING UNDER WATER LINES

ALL OF THE FOLLOWING SHALL APPLY TO GRAVITY SEWERS:

CONSTRUCTED OF MATERIAL IS THE ONE SEGMENT OF THE MAXIMUM STANDARD LENGTH OF PIPE (BUT NOT LESS THAN 18 FEET LONG) SHALL BE USED WITH THE PIPES CENTERED TO MAXIMIZE JOINT SEPARATION.

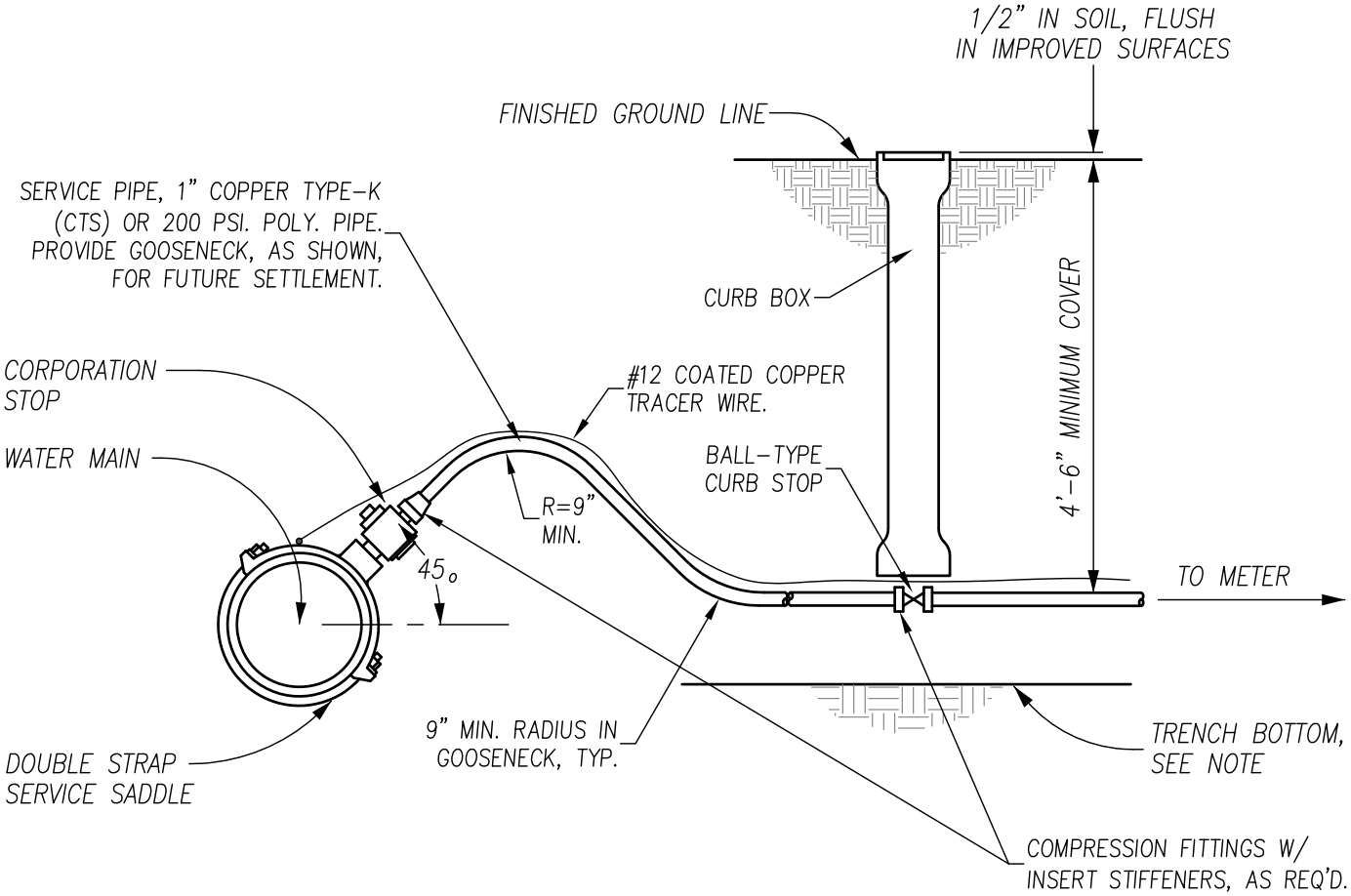
STANDARD GRAVITY–SEWER MATERIAL ENCASED IN CONCRETE OR IN A ONE QUARTER–INCH THICK CONTINUOUS STEEL, DUCTILE IRON, OR PRESSURE RATED PVC PIPE WITH A DIMENSION RATIO (DR) (THE RATIO OF THE OUTSIDE DIAMETER TO THE PIPE WALL THICKNESS) OF 18 OR LESS, WITH ALL VOIDS PRESSURE–GROUTED WITH SAND–CEMENT GROUT OR BENTONITE. COMMERCIALLY AVAILABLE PIPE SKIDS AND END SEALS ARE ACCEPTABLE. WHEN USING STEEL OR DUCTILE IRON CASING, DESIGN CONSIDERATION FOR CORROSION PROTECTION SHOULD BE CONSIDERED.

HE LENGTH OF SEWER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER LINE. THE SEWER PIPE SHALL BE THE LONGEST STANDARD LENGTH AVAILABLE FROM THE MANUFACTURER.

IRVIN WATER DISTRICT NO. 6

REQUIRED SEPARATION BETWEEN WATER LINES AND SANITARY SEWER

DETAIL DRAWING No. 201



1" SERVICE CONNECTION

NOTE:
BEDDING SHALL BE SAND, 6" UNDER AND 12" OVER SERVICE PIPE, TYP.
$\frac{1}{2}$" MAXIMUM OCCASIONAL ROCK SIZE AS DIRECTED BY THE ENGINEER.

BACKFILL SHALL BE PER WSDOT STD. SPECIFICATION SECTION 7-08.3(3).

TRACER WIRE SHALL EXTEND UP THE OUTSIDE OF THE BOTTOM SECTION OF CURB STOP BOX AND INSIDE THE TOP SECTION OF CURB STOP BOX.

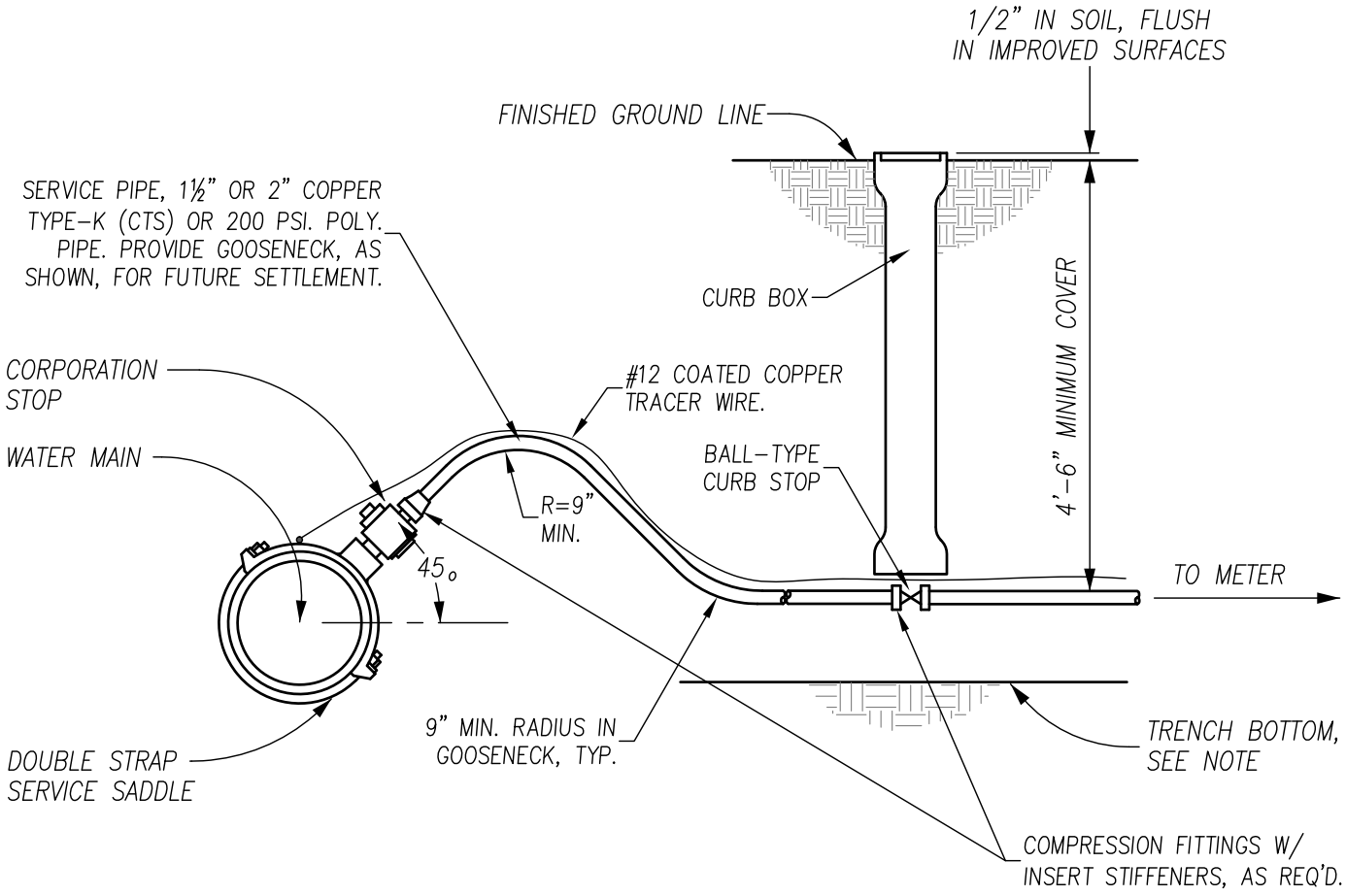
TRACER WIRE SPLICING SHALL CONSIST OF A DIRECT BURIAL DEVICE, UL LISTED, FOR THE PURPOSES OF DIRECT BURIAL.

N.T.S.

IRVIN WATER DISTRICT NO. 6

1" SERVICE CONNECTION AND SERVICE PIPE

DETAIL DRAWING No. 202



1 ½" AND 2" SERVICE CONNECTION

NOTE:
BEDDING SHALL BE SAND, 6" UNDER AND 12" OVER SERVICE PIPE, TYP.
½" MAXIMUM OCCASIONAL ROCK SIZE AS DIRECTED BY THE ENGINEER.

BACKFILL SHALL BE PER WSDOT STD. SPECIFICATION SECTION 7-08.3(3).

TRACER WIRE SHALL EXTEND UP THE OUTSIDE OF THE BOTTOM SECTION OF CURB STOP BOX AND INSIDE THE TOP SECTION OF CURB STOP BOX.

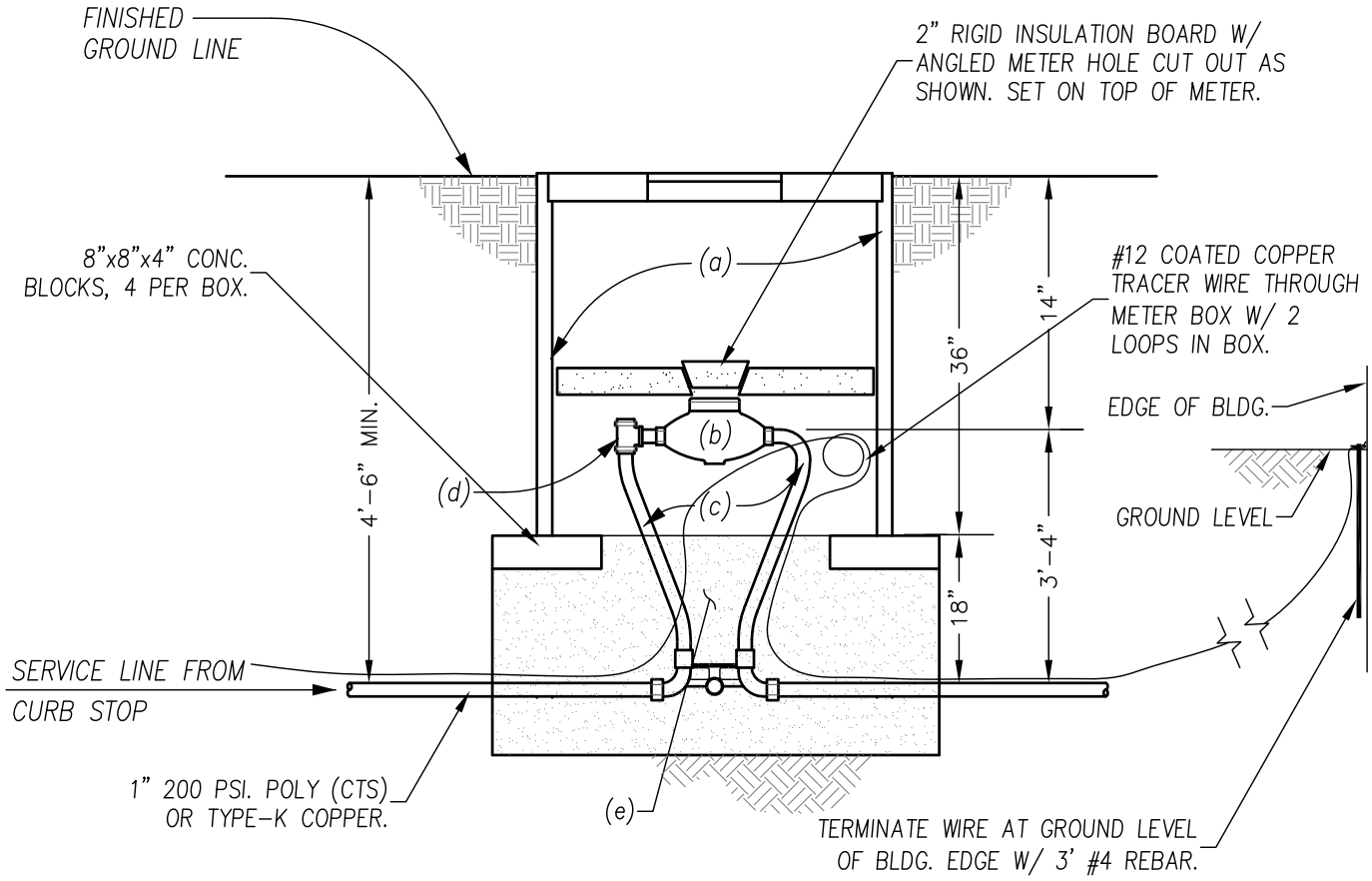
TRACER WIRE SPLICING SHALL CONSIST OF A DIRECT BURIAL DEVICE, UL LISTED, FOR THE PURPOSES OF DIRECT BURIAL.

N.T.S.

IRVIN WATER DISTRICT NO. 6

1 ½" - 2" SERVICE CONNECTION AND SERVICE PIPE

DETAIL DRAWING No. 301



1" METER ASSEMBLY MATERIALS

(a) METER BOX AND COVER WITH HINGED LID (ARMORCAST 13"x24" BOX, 2-18" SECTIONS, MODEL #A6001946APCX18, W/ CAST IRON HINGED LID, MODEL #A6001866R)

(b) WATER METER: SENSUS SRII, READING IN C.F.

(c) 36" COPPERSETTER METER YOKE

(d) ANGLE KEY VALVE WITH LOCK WING

(e) 25" OF SAND, TYP.

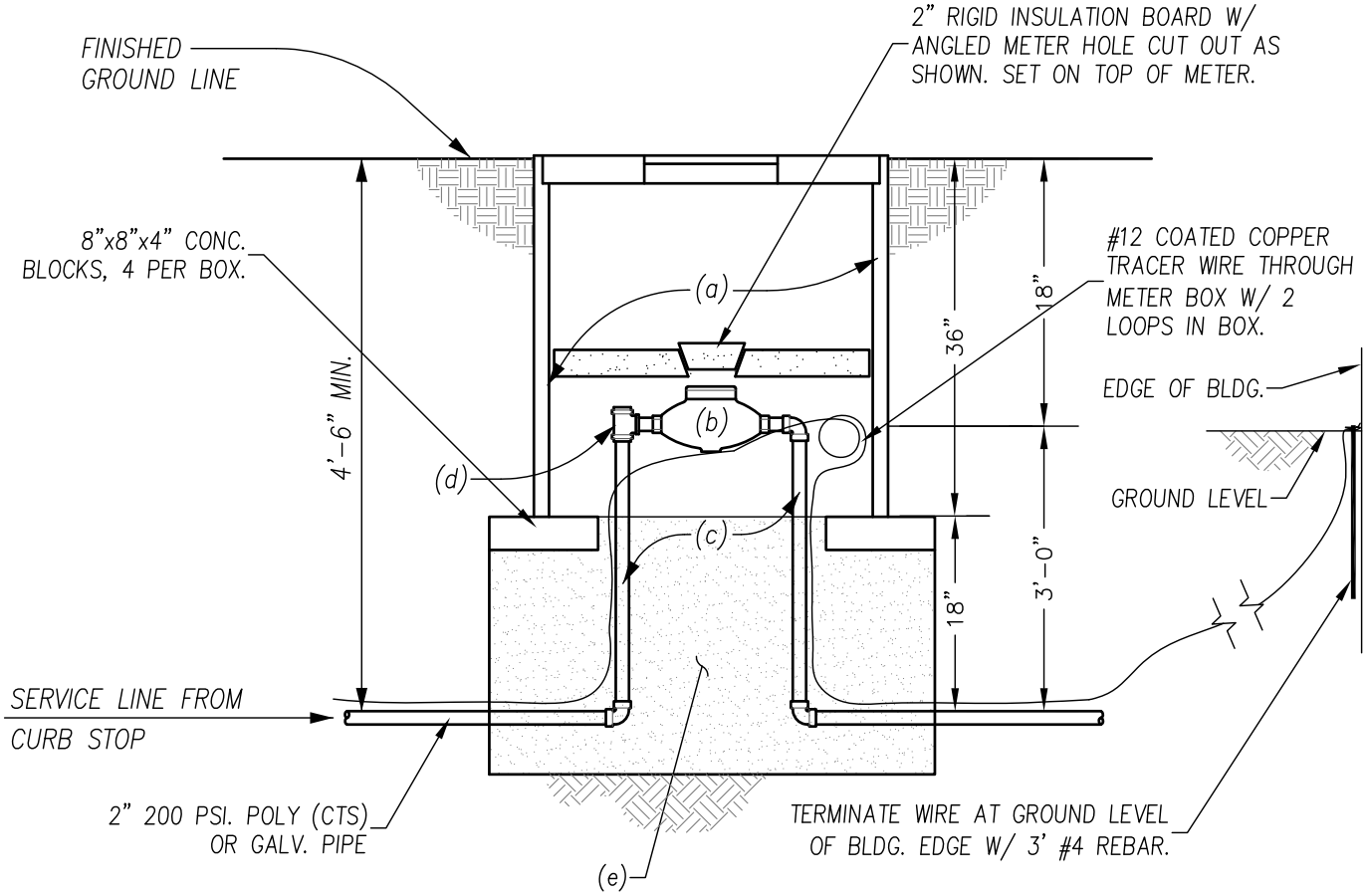
NOTE:
METERS SHALL BE SET IN NON-DRIVABLE AREAS ONLY.

N.T.S.

IRVIN WATER DISTRICT NO. 6

1" METER ASSEMBLY & BOX

DETAIL DRAWING No. 302



METER ASSEMBLY MATERIALS

(a) METER BOX AND COVER WITH HINGED LID (ARMORCAST 17"x30" BOX, 2-18" SECTIONS, MODEL #A6001640PCX18, W/ CAST IRON HINGED LID, MODEL #A6001643R)

(b) WATER METER: SENSUS OMNI, READING IN C.F.

(c) 1½" & 2" 200 PSI. POLY. OR G.I. PIPE.

(d) ANGLE KEY VALVE WITH LOCK WING

(e) 25" OF SAND, TYP.

NOTE:
METERS SHALL BE SET IN NON-DRIVABLE AREAS ONLY.

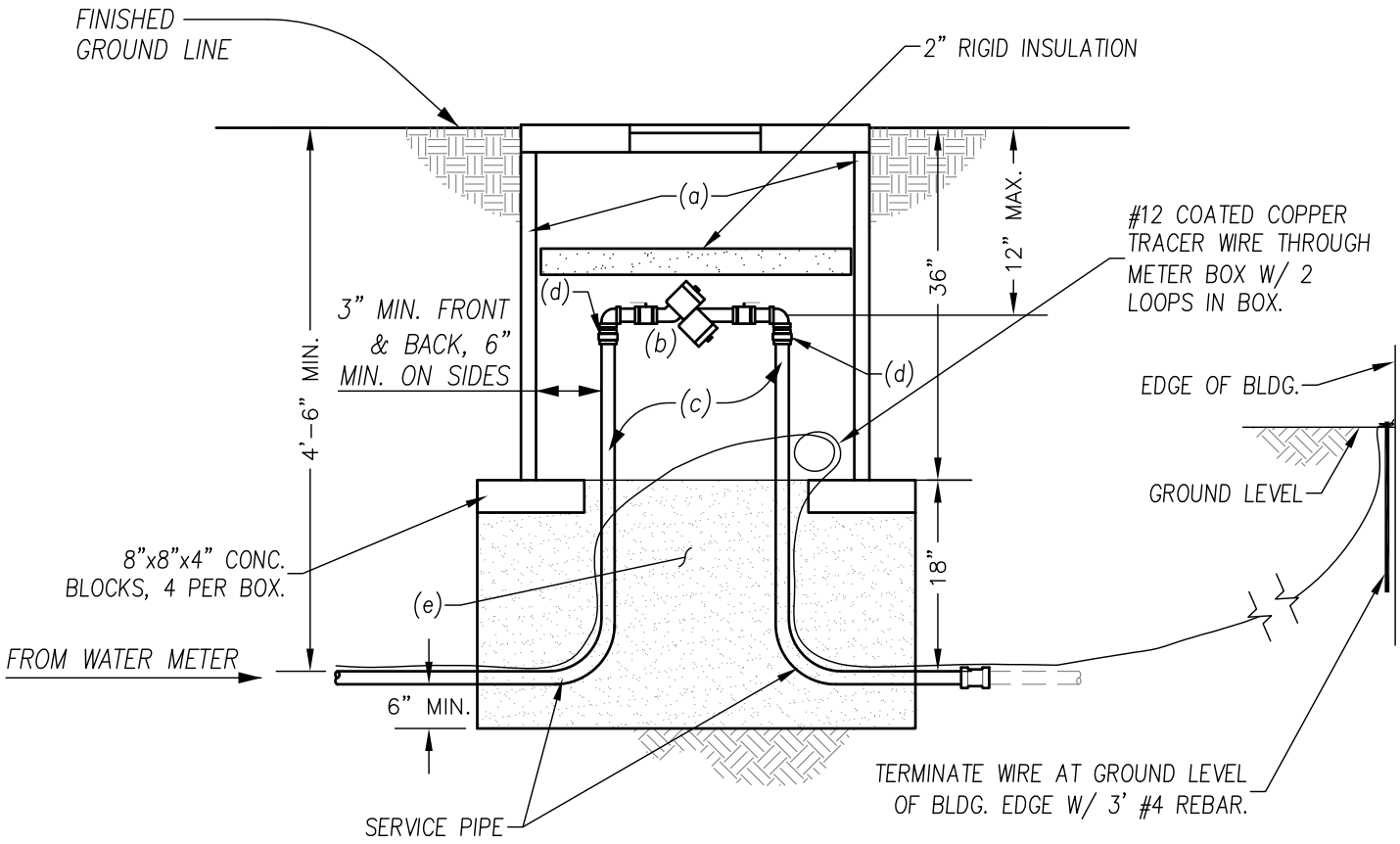
N.T.S.

IRVIN WATER DISTRICT NO. 6

1 ½ & 2" METER ASSEMBLY & BOX

C:\E&H\IRVIN\STD_DET\IWD-Std. Details.DWG PLOT 1:1 10/13/21

DETAIL DRAWING No. 401



BACKFLOW PREVENTION ASSEMBLY MATERIALS

(a) METER BOX AND COVER WITH HINGED LID (ARMORCAST 17"x30" BOX, 2-18" SECTIONS, MODEL #A6001640PCX18, W/ CAST IRON HINGED LID, MODEL #A6001643R)

*(b) PREVENTION DEVICE MUST BE LISTED AS AN APPROVED WA ST. D.O.H. DEVICE.

(c) SERVICE PIPE 200 PSI POLY. (C.T.S.) OR G.I. PIPE.

(d) COMPRESSION COUPLING OR UNION W. 90° STREET ELL.

(e) 25" OF SAND, TYP.

NOTE:
DCVA'S SHALL BE SET IN NON-DRIVABLE AREAS ONLY.

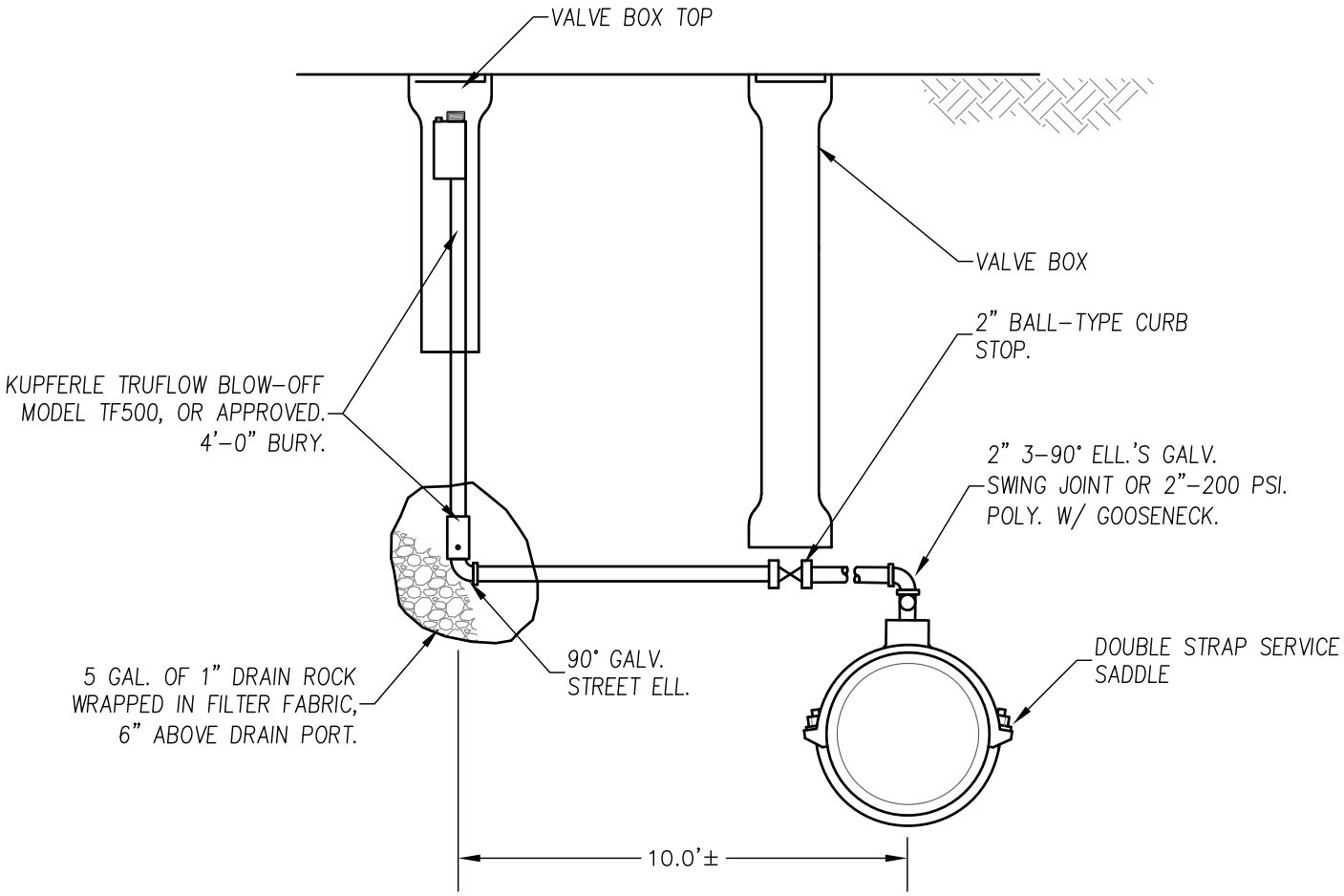
* THIS DEVICE CREATES A CLOSED SYSTEM ON THE PREMISE.

N.T.S.

IRVIN WATER DISTRICT NO. 6

1" - 2" DOUBLE CHECK VALVE ASSEMBLY (DCVA) & BOX

DETAIL DRAWING No. 402



NOTE:
SUPPLY RISER PIPE AND OPERATING SCREW WRENCH W/ BLOWOFF ASSEMBLY (1 PER PROJECT).

IRVIN WATER DISTRICT NO. 6

PERMANENT BLOWOFF ASSEMBLY