



**GENERAL SPECIFICATIONS
FOR
WATER MAIN EXTENSIONS**

**PUBLIC UTILITY DISTRICT NO. 1
OF CLALLAM COUNTY**

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SECTION I

SPECIAL PROVISIONS

1. **QUALIFICATIONS**

The water main extension installer (Installer) shall be a **licensed, bonded, and insured** contractor able to do water main extension work in the state of Washington, **and registered** with the District's Small Works Roster. In addition, the Installer should maintain adequate insurance as the Installer considers necessary for the proper protection of all parties including, but not limited to:

- a. Comprehensive General Liability
- b. Automobile Liability
- c. Workers' Compensation

2. **MATERIALS**

The Installer shall furnish all equipment and materials as specified that are required to complete the work and shall be solely responsible for these materials, equipment, and all material supplied by the District until the Project is accepted by the District.

All water meters and fittings in contact with potable water shall be "reduced lead" in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act - Public Law No. 111-380 (Reduction of Lead in Drinking Water Act).

3. **STORAGE**

The Installer shall, at his/her own expense, secure and maintain a storage place for his materials and equipment.

4. **PRECONSTRUCTION CONFERENCE**

A preconstruction conference shall be held at a time and place fixed by the District which will be within one week from the planned start date. The Installer must be prepared for a thorough discussion and review, as well as revision which may be deemed necessary in the opinion of the District, of the following:

- Completion Schedule
- Equipment List
- Inspection Procedures
- Shop Drawings
- Other Matters Pertaining to
Performance of Work

- Materials List
- Job Procedures
- Plans and Specifications
- Supplemental Drawings

5. PROTECTION OF WORK AND PROPERTY AND SAFETY

- a. The Installer shall continuously maintain adequate protection of the work from damage and shall protect District property from injury or loss arising in connection with the installation of the water main extension. Installer shall make good any such damage, injury, or loss; except such as may be directly due to errors in the Contract Documents or caused by agents or employees of the District. Installer shall adequately protect adjacent property from loss or damage occasioned by performance of the work and shall provide and maintain all passageways, guard fences, lights, and other facilities for protection required by public authority or local conditions.
- b. The Installer shall bear the risk of loss or damage for all finished or partially finished work until the entire Contract is accepted by the District.
- c. The Installer shall take all necessary precautions for the safety of employees on the work site and shall comply with all applicable provisions of federal, state, and municipal safety laws and building codes. The Installer shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for protection of workers and the public; shall post danger signs warning against known or unusual hazards; and shall designate a responsible member of his/her organization on the construction site whose duty shall be the prevention of accidents. The name and position of such person so designated shall be reported to the District by the Installer. The Installer shall save the District harmless from all suits and actions of any kind that result from noncompliance of all applicable safety rules and regulations.

6. INDEMNITY AND HOLD HARMLESS AGREEMENT

The Installer agrees to indemnify and hold harmless the District and its agents and employees, from liability, loss, damage, injury, or death arising out of or resulting from performance by the Installer, injuring or damaging the person or property of any other person or corporation, except as otherwise limited in this paragraph. In the event of concurrent negligence or fault of the Installer, its agents, employees, or subcontractors and the District, its agents or employees, the Installer shall indemnify and hold harmless the District and its agents or employees to the extent that liability, loss, damage, injury, or death is caused by the negligence or fault of the Installer, its agents, employees, or subcontractors.

It is understood that the Installer assumes the risk of the condition of the property of the District to be worked upon or about, and the Installer agrees to indemnify the District or its agents and employees against any loss, damage, injury, or death to the person or property of Installer, its agents, employees, representatives, licensees, or invitees, resulting from any defective condition of said property, while the Installer is engaged in the performance of this work. The Installer also agrees to indemnify and hold harmless the District from any and all liens, claims, or damage of any kind or

nature against or to any property of the District and resulting from or arising out of the performance by the Installer under the terms of this project.

In all claims against the District or its agents and employees, or the Installer, any subcontractor, anyone directly or indirectly employed by the Installer or any subcontractor, or anyone for whose acts the Installer or any subcontractor may be liable, the indemnification obligation under this paragraph shall not be affected by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Installer or any subcontractor under any workers' compensation act, including Title 51 RCW, any disability benefit acts, or any other employee benefit acts. The Installer and any subcontractor hereby waive, for themselves and their successors, any right to claim any such limitation as a defense, set off, or other reduction of the District's right to indemnification under this paragraph.

7. PERMITS, FRANCHISES, AND EASEMENTS

The Customer will obtain all franchises and easements for work.

The Installer will obtain and pay for all other permits required to complete this Contract. The Installer shall confirm that all permits, franchises, and easements are in order prior to commencing work on the portion of the job covered by such instruments. The Installer shall comply with the Special Provisions and requirements of each permit, franchise, and easement. The Installer shall familiarize himself/herself with all permits, franchises, and easements and with the provisions and requirements thereof. Where information regarding final requirements is not yet available, the Installer shall be responsible to determine and expect those requirements normally imposed by the applicable agency having jurisdiction.

8. MAINTENANCE OF STREETS AND UTILITIES

The Installer shall be responsible at all times for the maintenance of streets and other utilities affected by construction operations. Debris and rubbish shall not be permitted to accumulate, and all premises shall be maintained in a neat and workmanlike condition.

In the event that the Installer fails to conform to these requirements, the District shall have the right to have the work done by others; and the cost will be deducted from monies due the Installer.

The Installer shall notify the State of Washington Department of Transportation Maintenance Supervisor and/or the Clallam County Department of Public Works Road Supervisor seven (7) calendar days prior to working on any public rights-of-way.

9. SUITABILITY OF MATERIAL

The Installer shall be responsible for ensuring that all material furnished by the Installer be fit for the intended purposes and shall obtain warranties of suitability for intended purpose from all material suppliers.

All water meters and fittings in contact with potable water shall be "reduced lead" in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act - Public Law No. 111-380 (Reduction of Lead in Drinking Water Act).

10. TRADE NAMES

Whenever any article or any class of materials is specified by a trade name or by the name of any particular patentee, manufacturer, or dealer, it shall be and is mutually understood to mean and specify the article or class of materials described, or any other equal thereto in quality, finish, and durability, and equally as serviceable for the purpose for which it is intended, subject to the favorable review and acceptance of the District. The terms "similar and equal to" and "or equal" mean equal in the judgment of the District.

If the Installer proposes to use an alternate to the material specified, a specification sheet MUST accompany the bid documents. The District shall be the sole judge in the question of "or equal" of any material, supplies, and/or installation technique proposed by the Installer.

11. INSPECTION OF WORK

The District or its representative will make periodic visits to the job to familiarize itself generally with the progress and quality of the work. The District will carry out reasonable inspections of the work to determine if it is proceeding in accordance with these documents.

12. CONTRACT WORK HOURS

The Installer shall confine hours of work to that of District crew, Monday through Friday. **Weekend work will be allowed only by prior approval of the District.**

These time limits shall not be sufficient reason to allow a dangerous or potentially dangerous condition to exist overnight or through the weekend. The District shall be notified if emergency work is to be done outside the normal work hours.

Additional inspection costs required by the District for after-hours, weekend, holiday, and emergency work will be computed on a double-time rate and added to the inspection fees for the Project.

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SECTION II
WATERWORKS GENERAL SPECIFICATIONS

DIVISION 1 - MATERIALS OF CONSTRUCTION

1. GENERAL

All materials shall be new and undamaged. Unless otherwise approved by the District, the same manufacturer of each item shall be used throughout the work.

2. DUCTILE AND CAST IRON FITTINGS

a. Mechanical Joint and Flanged x Mechanical Joint Fittings

Fittings shall be ductile iron, compact fittings, and pressure rated for 350 psi working pressure in accordance with AWWA C153. Joint dimensions and metal thickness shall meet the requirements of ANSI A21.10, A21.11, and A21.15.

Bituminous coating and cement lining shall be standard thickness in accordance with AWWA C104.

Rubber gaskets for mechanical joint (M.J.) shall be in accordance with AWWA C111.

Payment for mechanical joint fittings shall be made on the basis of AWWA published weights for ductile iron compact fittings, not including weights of accessories or bituminous lining.

The Installer shall furnish certification from the manufacturer of the fittings and gaskets being supplied, that the inspections of all the specified tests have been made, and the results thereof comply with the requirements of this standard.

b. Flanged Fittings

Fittings shall be cast iron short-body with Class 125 flanges in accordance with AWWA C107.

Bituminous coating and cement lining shall be standard thickness in accordance with AWWA C104.

Gaskets for flanges shall be 1/8-inch SBR or neoprene rubber, meeting all requirements of AWWA C111.

The Installer shall furnish certification from the manufacturer of the fittings and gaskets being supplied that the inspections of all the specified tests have been made and the results thereof comply with the requirements of this standard.

3. FIRE HYDRANTS

Fire hydrants shall be a compression-type hydrant with a minimum of 5 ¼ -inch main valve opening, for 42-inch trench with 6-inch mechanical-joint connection, two 2 ½ -inch hose connections (NST), 4-inch pumped connection (NST), and ¾ -inch Pentagon operating nut. Hydrant shall close with water pressure and be of traffic type with designed replaceable break points. Hydrant shall allow full 360° rotation by loosening flange bolts and turning nozzle screw. Hydrant shall be Mueller Centurion®, or approved equal, in accordance with AWWA C502. Hydrant shall be painted Parker Equipment Enamel "Equipment Yellow."

A 4-inch (FNST) x 5-inch Storz Coupling shall be installed on all fire hydrants.

4. GATE VALVES

Gate valves shall be resilient wedge type, non-rising stem, 2-inch operating nut, bronze-mounted for 200 psi working pressure per AWWA C509, unless other pressure is specified. Gate valve shall be Mueller "Resilient Seat" gate valve or approved equal.

5. VALVE BOXES

Valve boxes shall be cast iron, two-piece, rated for H-20 traffic loading and equal to Olympic Foundry Inc. #950, with 6-inch diameter sewer casing cut to length.

6. VALVE MARKER POSTS

Valve marker posts shall be reinforced concrete posts, 5 x 4 inches on one end and 6 x 6 inches on the other end, 42 inches long. Valve marker posts shall be set at all valves **or** valve clusters, except hydrant valves. Valve marker posts shall be Fog-Tite Meter Seal Co. valve marker or approved equal.

7. WATER MAINS - POLYVINYL CHLORIDE (PVC)

The pipe shall be manufactured to cast iron size (C.I.) outside dimensions with DRs and tolerances in compliance with AWWA Standard C900-75, PVC Pressure Pipe, 4" - 12" For Water. The pipe shall be approved by Factory Mutual (FM) and the Underwriter's Laboratories (U/L) for use in underground fire protection service. Laying length shall be 20 feet for all sizes, except that up to 15 percent of the footage may be in random lengths of not less than 10 feet.

The pipe shall have an integral bell end, and the gasket seal shall be reinforced with a steel band or other rigid material. The joint shall be in compliance with the

requirements of ASTM D-3139, "Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals."

The pipe marking shall include:

- 1) Nominal size and O.D. base (e.g., 8-inch C.I.).
- 2) Material code designation (PVC 1120).
- 3) Dimension ratio number (DR 18).
- 4) Pressure class (150).
- 5) AWWA designation number (AWWA C900).
- 6) Manufacturer's name or trademark and production code.

Seal of the testing agency that verified the suitability of the pipe material for potable water service (NSF).

Each length of pipe (standard or random), including the integral bell, shall be pressure tested to four times the rated pressure for a minimum of five seconds by the manufacturer.

Pipe shall meet all additional test requirements as described in AWWA C900 for Class 150 pipe.

Pipe shall be PW Pipe Twinseal® Class 150 with rubber gasketed joint or approved equal.

NOTE: In poor soils and/or where special thrusting is necessary, ductile iron pipe, Class 52 with Megalug® followers, may be required by the District instead of PVC pipe.

HDPE: HDPE pipe and fittings shall conform to the current revision of AWWA C906, Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 65 In. for Waterworks, except as superseded and/or supplemented herein. If these specifications and AWWA C906 differ, these specifications shall govern.

Properties: HDPE pipe and fittings shall be made from HDPE having a material designation of PE4710 meeting ASTM D3350 cell classification 445574C. The material shall be listed in PPI (Plastics Pipe Institute) TR-4 with a standard grade HDB rating of 1600 psi at 73°F, and shall be listed and approved for potable water use in accordance with NSF/ANSI 61.

Unless otherwise specified in the contract documents, all HDPE joints shall be thermally butt fused.

***Any Contractor performing butt-fusion for the District, must qualify on P.U.D.'s butt-fusion procedure or provide documentation that their butt-fusion procedure is qualified and documentation showing fusion personnel are qualified on their procedures. This must be approved by P.U.D. Note: It is a common practice and

accepted industry “Rule of Thumb” when fusing pipes of unlike SDR’s to fuse a maximum mismatch of one SDR.

8. WATER METER

All PUD water meters shall be a Badger Water Meter with an ADE register with inline connector and Itron 100W ERT radio-read transmitter. The register must read in one (1) cubic feet.

All meters shall meet AWWA specifications and standards. Meters shall be of the right size, type and specification for which it was designed. Selection of the meter type and size shall be based only on the flow requirement (GPM) and type of application, and not the head.

All water meters and fittings in contact with potable water shall be “reduced lead” in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act – Public Law No. 111-380 (Reduction of Lead in Drinking Water Act).

Meter specifications:

1. For residential applications, a Badger Meter M25 5/8 x 3/4-inch shall be used, with a positive displacement disc capable of a maximum flow of 25 GPM. The register shall be a Badger ADE technology, with Itron inline connector and Itron 100W ERT.
2. 1-inch Badger Meter M70, positive displacement disc capable of a maximum flow of 70 GPM. The register shall be a Badger ADE technology, with Itron inline connector and Itron 100W ERT.
3. 1-1/2-inch Badger Meter M120, positive displacement disc capable of a maximum flow of 120 GPM. The Badger M120 shall have Elliptical Flanges and a 1-inch test plug so that the meter can be tested in place. The register shall be a Badger ADE technology, with Itron inline connector and Itron 100W ERT.
4. 2-inch Badger Meter M170, positive displacement disc capable of a maximum flow of 170 GPM. The Badger M170 shall have Elliptical flanges and a 1-inch test plug so that the meter can be tested in place. The register shall be a Badger ADE technology, with Itron inline connector and Itron 100W ERT.
5. Contact the District for specification on all meters over 2-inch.

9. SERVICE SADDLE

Service saddles shall be ductile iron body with nylon coating, stainless steel strap and nuts in accordance with ASTM A536d and AISI C1015-20. Service saddles shall be Romac 101N with IPT threaded connection or approved equal.

10. CORPORATION STOP

Corporation stops shall be all brass, A.Y. McDonald #73131, with MIPT connections or approved equal; and installed so operating lever is located on the side.

All water meters and fittings in contact with potable water shall be “reduced lead” in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act – Public Law 111-380 (Reduction of Lead in Drinking Water Act).

11. SERVICE PIPE

Service pipe shall be high-strength Polyethylene, cold-flare, service pipe capable of withstanding 300 psi at 73.4°F for 1,000 hours. Service pipe shall be 1-inch copper tubing size (CTS) and manufactured for use with standard flare or pack-joint fittings not requiring heat, flame, cement, or solvent to affect a seal. Pipe shall be clearly marked showing manufacturer's trademark, nominal pipe size, and type of material. Service pipe shall be Drisco Pipe 5100 CTS Ultra-Line Polyethylene pipe as manufactured by the Phillips Product Co., Inc., or approved equal.

12. METER SETTERS

Meter setters shall be tandem, 9 inches tall, all copper and brass construction with dual check valve, equal to A.Y. McDonald #750212QAMM33 with MIPT connections.

All water meters and fittings in contact with potable water shall be “reduced lead” in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act – Public Law 111-380 (Reduction of Lead in Drinking Water Act).

13. PRESSURE-REDUCING VALVES

Pressure-reducing valves shall be all brass and equal to Watts Regulator LF25AUB-Z3.

All water meters and fittings in contact with potable water shall be “reduced lead” in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act – Public Law 111-380 (Reduction of Lead in Drinking Water Act).

14. SERVICE PIPE ADAPTERS

Service pipe adapters to connect meter setters and corporation stops to polyethylene service pipe shall have FIPT x CTS pack joint, equal to A.Y. McDonald #74754-22.

All water meters and fittings in contact with potable water shall be "reduced lead" in accordance with the January 4, 2011 Amendment to the Federal Safe Drinking Water Act – Public Law 111-380 (Reduction of Lead in Drinking Water Act).

15. METER / PRV BOXES

Water meter boxes and meter box extensions shall be manufactured from high-density polyethylene with the following physical properties:

Flexure modulus	90,000 psi	Hardness	58 Shore D
Comprehensive strength		Specific gravity	0.6
10% deflection	1,100 psi		
Total load at center of top	2,800 lbs		

Water meter boxes shall be Carson Industries #1220-12 with Reading lid or approved equal. Water meter box extensions shall be Carson #1220-6X or approved equal.

Note: Carson Industries #1527-18XL boxes with a ductile iron lid (no riser required with 18-inch) may be required by the District in areas where traffic is expected.

16. LOCATE WIRE

Locate wire shall be 10-gauge stranded copper wire with 600-volt insulation; Essex or approved equal.

17. TAPPING SLEEVE

Tapping sleeve shall be all stainless steel with a full circumferential seal. The body and bolts shall be 18-8 Type 304 Stainless Steel. The branch outlet shall be heavy stainless steel pipe with an ANSI 150 lb. flange. Gasket shall be full circumferential gasket compounded for use on water, salt solutions, mild acids/bases and sewerage. Sleeve shall meet or exceed ANSI/AWWA C-223 and the MSS-SP 124 Standards as applicable. Sleeve shall be JCM 432 All Stainless Steel Tapping Sleeve or approved equal.

18. TAPPING VALVE (FLG x M.J.)

Tapping valve shall be manufactured for tapping purposes, with oversize bore and alignment ring. Fusion Epoxy coated inside and out in accordance with AWWA C213-91. Resilient seated type, in accordance with AWWA C509. Ductile iron body, with pressure rating of 250 psi working, 500 psi test. U.S. Pipe "Metroseal" or approved equal.

19. AIR / VACUUM VALVE

Air/vacuum valve shall be combination air valve. APCO #143C or approved equal.

20. CASING (for water service pipe)

Casing for service pipe shall be 1-1/2- or 2-inch PVC (200 psi) water pipe or approved equal.

SECTION II

WATERWORKS GENERAL SPECIFICATIONS

DIVISION 2 - METHODS OF CONSTRUCTION

1. GENERAL

Except as otherwise noted herein, all work shall be accomplished as recommended in applicable American Waterworks Association (AWWA) specifications and according to the recommendations of the manufacturer of the material or equipment used.

2. ALIGNMENT

Unless otherwise specified, the location of the water mains, valves, hydrants, and principal fittings, including modifications, will be staked out by the District when requested by the Installer. Pipe shall be laid closely to specified alignment, without exceeding manufacturers' recommended minimum radius of curvature. Alignment deviation shall not exceed 0.5 feet. Replacement of stakes lost or destroyed shall be made at the Installer's expense.

3. TRENCH EXCAVATION

Any area where personnel must enter the trench shall be excavated in accordance with Chapter 296-155 WAC of the Washington State Safety Code. This code requires that the excavated material be at least 2 feet from the edge of the trench, and that any trench over 4 feet deep be sloped, shored, sheeted, or otherwise adequately protected against sloughing.

Trenches shall be excavated to the line and depth designated by the District to provide a minimum of 36 inches of cover over the pipe, and/or 30 inches of cover when crossing the existing roadway ditch, whichever is deeper, unless otherwise shown on the contract drawings. Except for unusual circumstances where approved by the District, the trench sides shall be excavated vertically and the trench width shall be excavated only to such widths as are necessary for adequate working space. The maximum trench width at the top of the pipe shall normally be the outside diameter of the pipe barrel plus 16 inches. The top width of the trench shall not exceed the outside diameter of the pipe plus 30 inches.

The trench shall be kept free from water until jointing is complete. Surface water shall be diverted so as not to enter the trench. The Installer shall maintain sufficient pumping equipment on the job to ensure that these provisions are carried out.

Gravel required in the bottom of the trench due to action of weather or workmen shall be furnished by the Installer. Boulders, rocks, roots, and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth 6 inches below water main grade. Where material is removed from below water main grade, the trench shall be backfilled to grade with material satisfactory to the District and thoroughly compacted.

Trenching operations shall not proceed more than 300 feet in advance of pipe laying, except with written approval of the District.

When trenching operations cut through pavement, the pavement shall be removed to width of 18 inches greater than the top width of the trench. The pavement shall be cut on a straight line and shall be beveled so that the cut will be approximately 1 inch wider at the top than at the bottom. Pavement shall be cut ahead of the trenching equipment to prevent excessive tearing up of the surfacing and to eliminate ragged edges.

Any time potential historic or pre-historic cultural resources or human remains are discovered during trenching or excavation, work must be stopped and appropriate Clallam PUD project management personnel must be notified immediately. Work will not recommence without notice from the Clallam PUD project manager. Failure to comply with this procedure may expose the contractor to criminal liability under RCW 27.53.060.

4. TIMBERING, SHEETING, AND SHORING

The Installer shall provide and install timbering, sheeting, and shoring as necessary to protect workmen, the work, and existing buildings, utilities, and other properties. Removal of timbering, sheeting, and shoring shall be accomplished in such a manner that there will be no damage to the work or to other properties. All timbering, sheeting, and shoring shall be the Installer's design, and in accordance with Washington State Department of Labor and Industries Standards.

5. LAYING GASKETED PIPE

The Installer shall check the inside of the pipe to ensure that all foreign matter in the socket has been removed. The gasket seat shall be thoroughly inspected to be certain it is clean. The gasket must be wiped clean with a clean cloth, flexed, and then placed in the socket so that the gasket is seated evenly around the inside of the socket with the heel of the gasket fitting snugly in the retainer seat. When installing pipe in sub-freezing weather, the gaskets, prior to their use, must be kept at a temperature of 40°F or higher and dry by suitable means.

A film of lubricant shall be applied to inside surface of gasket which will come in contact with entering plain end of pipe. The plain end of the pipe must be cleaned of all foreign matter and a film of lubricant applied to the outside of the plain end.

The plain end of the pipe shall be aligned and carefully entered into the socket until it just makes contact with the gasket.

Joint assembly shall then be completed by forcing the plain end of the entering pipe past the gasket until the black stab line comes flush with the socket face.

For joint assemblies 8 inches and smaller, socketing of the plain end may be accomplished in some cases by pushing against face of bell of entering pipe with crowbar or spade.

The force required to complete the assembly shall be by the crowbar or jack methods. "Stabbing," with the use of a backhoe or excavator, the plain end of the pipe into the bell, will not be acceptable.

When left unattended, a suitable plug shall be installed in the end of laid pipe to inhibit contamination.

6. LAYING MECHANICAL JOINT PIPE AND FITTINGS

The inside of the socket and the plain end of the pipe shall be thoroughly cleaned of all foreign matter. With gland and gasket on plain end of pipe, seal the plain end of pipe into the socket. Press gasket firmly and evenly into socket. Move gland into position, insert all bolts, and make all nuts finger-tight. All bolts shall be tightened evenly at all points around the gland by alternating tightening of bolts from side to side. Repeat the tightening cycle until all bolts are tightened to 75-90 foot-pounds of torque. When left unattended, a suitable plug shall be inserted in the end of laid pipe to inhibit contamination.

Lubrication of mechanical-joint gaskets is not permitted.

7. **BACKFILLING**

Backfilling and surface restoration shall closely follow installation and testing of the pipe, so that not more than 300 feet of pipe is left exposed without express approval of the District. Selected bedding material (free of particles larger than 1-inch) shall be placed and compacted around and under the water mains by hand tools to a height of 6 inches above the top of the water main. The remaining backfill shall be placed and compacted; except that under driveways and roadways, all backfill material shall be placed in layers not more than 6 inches thick and compacted to the density of the existing sub-grade. Where governmental agencies other than the District have jurisdiction over roadways, the backfill and compaction shall be done to the satisfaction of the agency having the jurisdiction. **No pipe shall be backfilled until the District's Inspector has inspected and approved of the pipe's bedding.**

8. **GATE VALVE INSTALLATION**

Gate valves shall be set in the ground level and shall be opened and shut under pressure and the packing gland adjusted so as to permit easy operation and at the same time show no leakage. Valves shall be blocked in accordance with Blocking Details. Maximum distance between valves on distribution mains is subject to District approval. At water main intersections, valves shall be placed on 4 out of 4 legs at each cross, and 3 out of 3 legs at each tee, except when tapping an existing water main. For fire hydrant auxiliary valves and blowoffs see Exhibits.

9. **VALVE BOX INSTALLATION**

Valve boxes shall be installed on all underground valves and shall be set flush in pavement and in gravel roads as required by the District.

10. **VALVE MARKER INSTALLATION**

Painted (Waterous "Bright Yellow" #V1814Y) concrete marker posts shall be set for all valve **or** valve clusters except auxiliary hydrant valves. The post shall be set at right angles to the road from the valve and shall be situated in a safe and reasonably conspicuous location, normally on the property line. Markers shall be set a minimum of 18 inches into ground.

11. CONCRETE BLOCKING

Concrete blocking shall have a minimum of 1/2-square foot bearing against the fitting and 2 square feet bearing against undisturbed soil. Blocking shall bear against fittings only and shall be clear of joints so as to permit taking up or dismantling joint. All hydrants, elbows, gate valves, and tees shall be blocked in accordance with Blocking Details. The Installer shall install blocking which is adequate to withstand full test pressure as well as to continuously stand operating pressures under all conditions of service. Concrete blocking shall be based on 200 psi test pressure with safe soil bearing load of 3,000 pounds per square foot. All hydrants, elbows, gate valves, and tees shall sit flush on 8" x 16" x 4" solid concrete block(s).

Note: A District representative must inspect the trench excavation prior to pouring any thrust block. Failure to notify the District prior to pouring concrete may require removal of concrete to facilitate the trench excavation inspection. Situations may occur that require special size and shape of solid concrete thrust blocks. When required, they will be designed by the District and installed as directed by the District's Inspector.

12. BLOWOFF INSTALLATION

The purpose of a blowoff is to allow for flushing of the water main extension. A blowoff shall be installed at the end of any new water main extension except when a fire hydrant can be used for this purpose. In some instances the District may require an inline gate valve prior to a blowoff assembly. See Exhibits for blowoff designs.

13. METER INSTALLATION

Water meter setters shall be set vertically in center of meter box with Inlet/Outlet of setter flush with the bottom of meter box. Meter box shall be set where staked and flush with the existing ground. One (1) meter box extension shall be used per each meter box to obtain an acceptable depth. Meter setter shall be held vertical with stakes approved by the District. Taps shall be a minimum of 24 inches apart on PVC; all others require District approval prior to tapping.

14. STERILIZATION AND FLUSHING OF WATER MAINS & FIRE HYDRANTS

Sterilization of water mains and fire hydrants shall be accomplished by the Installer in accordance with the requirements of the Washington State Health Department and in a manner satisfactory to the District. The section to be sterilized shall be thoroughly flushed at maximum flow prior to chlorination. Sections will ordinarily be sterilized between adjacent gate valves unless, in the opinion of the District, a longer section may be satisfactorily handled.

Hydrants along the chlorinated section shall be opened during application until the presence of chlorine has definitely been detected. When a chlorine concentration of not less than 50 ppm has been established throughout the main, the valves shall be closed and the main left undisturbed for 24 hours.

The Installer shall then thoroughly flush the water main and/or fire hydrant(s), disposing of all highly chlorinated water in accordance with AWWA and DOE requirements, and exercising special care to avoid damage to surrounding property.

The District shall be on site to operate all valves during filling and flushing. **Installers shall not operate valves connected to the District's system.**

15. **HYDROSTATIC TESTS**

The mains and/or fire hydrants shall be filled with water and all air removed prior to starting the test. The test shall be accomplished by pumping the main up to the required pressure (1.5 times the operating pressure or 200 psi, whichever is greater); stop the pump for twenty (20) minutes; and then pump up to the test pressure again. The quantity of water required to restore the pressure shall be accurately determined by pumping through a positive displacement water meter with a sweep unit hand registering 1 gallon per revolution, or a calibrated barrel. Acceptability of the test will be determined by two factors: (a) there shall not be an appreciable or abrupt loss in pressure during the twenty (20) minute test period; (b) the quantity of water lost from the main shall not exceed the following table. Gauges used in the test shall be accompanied with satisfactory certifications of accuracy from a laboratory approved by the District.

Table of Allowable Water Loss
Per 1000 Linear Feet of Pipe
in 20-Minute Test Period

<u>Pipe Size</u>	<u>Water Loss</u>
2"	0.07 Gallon per 1000' Pipe
4"	0.15 Gallon per 1000' Pipe
6"	0.22 Gallon per 1000' Pipe
8"	0.28 Gallon per 1000' Pipe
10"	0.36 Gallon per 1000' Pipe
12"	0.42 Gallon per 1000' Pipe

Prior to calling out the District to witness the pressure test, the Installer shall have all equipment set up completely ready for operation and shall have successfully performed the test to assure himself that the pipe is in a satisfactory condition. Final hydrostatic tests shall be performed only Monday through Wednesday, and only in the presences of the District inspector.

16. COLIFORM BACTERIA ANALYSIS

Upon satisfactorily completing a hydrostatic test of the main, the Installer shall disinfect and flush the new water main in accordance with the AWWA Standard for Water Main Disinfection (C651-14) and submit a coliform bacteria analysis (bacteriological sample) to the Clallam County Department of Health or State-approved laboratory, Monday through Wednesday only. Laboratory certification and bacterial analysis method performed will comply with 40 CFR 141.852.

17. REPLACING ROAD SURFACING

The Installer shall restore all roadway and driveway surfaces excavated or disturbed to a condition acceptable to the governmental agency having control of the road and/or the District. The Installer shall notify the Clallam County Department of Public Works Road Supervisor seven (7) calendar days prior to open-cutting any County road.

18. LOCATE WIRE INSTALLATION

The locate wire shall be installed in the same ditch and at the same elevation as the water main.

19. PLACEMENT OF OTHER UTILITIES

No other utilities shall be placed in the water main trench without prior approval from the District. Primary electrical trenches shall be located a minimum of 5 feet laterally from a water main trench. Non-potable piping shall be located a minimum of 10 feet laterally from a water main trench.

Where non-potable piping must cross water mains, the water main must be located a minimum of 18" above the non-potable water piping. If an 18" vertical separation is unavoidable, a minimum of 20-foot continuous stick on PVC conduit/casing shall be centered on one of the crossing pipes. Where these vertical separation requirements cannot be met special construction methods will be implemented in accordance with DOH/ODW Water System Design Manual section 8.4.4.

20. CROSS CONNECTION CONTROL

The District has a Cross Connection Control Policy. For utility placement specifications of non-potable water piping, see section 19. See the District's Cross Connection Control Policy for all other related issues pertaining to backflow prevention.

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SECTION III

GENERAL SPECIFICATIONS

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SECTION III

GENERAL SPECIFICATIONS

1. SCOPE OF WORK

These general specifications cover the furnishing and installing of all materials, all equipment, and the performance of all work necessary for the installation of the following improvements, together with gate valves, fittings, fire hydrants, and all other appurtenances, complete, tested, and in proper operating conditions as shown on the Plans and as described herein.

2. MATERIALS, EQUIPMENT, AND INSTALLATION PROCEDURES

Facilities shall be constructed as shown on the Plans and in accordance with these specifications. Manufacturer's equipment shall be installed in compliance with the specifications of the manufacturer, except where a higher quality of workmanship is required by the plans and specifications. All material and work shall be in strict accordance with any applicable regulations of the State and local authorities. The Installer shall arrange for such inspections as these agencies may require and shall submit evidence of their approval where requested by the District. Except where depth is required to clear underground obstructions or where otherwise accepted on the Contract Plans or to follow future road grades, a minimum of 36 inches of cover will be required over all water mains to be installed under this Contract.

3. EXISTING UTILITIES

Locations of various existing utilities, such as telephone lines, gas lines, water mains, storm drains, and other obstructions are not shown on the Plans.

The Installer shall locate obstructions by inquiring from the different utilities and by exploring in advance of excavation. The Utilities Underground Location Center for this area can be reached by calling 1-800-424-5555.

The Installer shall excavate around and under existing utility facilities with special care and shall support and maintain them.

Where it is necessary to remove or reconnect any existing facility, the Installer shall make necessary arrangements with the respective utility, and the Installer shall bear all cost which may be involved. Any utilities damaged in the course of construction shall be repaired or replaced to serviceable conditions at the Installer's expense.

4. PIPE BEDDING AND SPECIAL PIPE BEDDING

All PVC pipe installed shall be properly bedded in accordance with the following:

- Light, loose soil (no large rocks) - 6" above the top of pipe
- Large rocks and hardpan - 6" above the top of pipe and 3" below bottom of pipe

Note: The ditch bottom shall be flat, with no ridges or voids below the installed pipe.

Under normal conditions, satisfactory pipe bedding (i.e., reject sand) shall be selected and installed from the excavated materials by hand methods. However, when conditions are such that bedding material cannot be selected from the excavated material, the District's inspector will request "Special Pipe Bedding" be installed.

When Special Pipe Bedding is required, it will be furnished and installed in accordance with the above; and shall consist of clean granular sand and gravel of which 100 percent will pass the U.S. standard 1-inch opening and not more than 3 percent will pass the U.S. No. 200 (wet sieve), with a minimum sand equivalent of 50.

All ditches will be backfilled covering all piping, valves and fittings before water mains are filled.

5. FOUNDATION GRAVEL

Foundation gravel shall not normally be required except where unstable soil conditions (peat bogs, swamps) exist. Where foundation gravel is required to provide a stable trench bottom, it shall consist of 2-inch drain rock, 12 inches deep.

6. ORDER OF CONSTRUCTION

Restoration of trenches shall be complete within five (5) working days after installation of pipe. The District will inspect and observe the hydrostatic test of pipe within 24 hours after notification by the Installer that a section is ready for inspection and test. The Installer shall contact the District at least 24 hours in advance of the completion of sterilization and flushing, and his representative shall take water samples in the presence of the District's Inspector.

7. RESTORATION

All trench areas within public rights-of-way shall be restored in accordance with the requirements of the agency having jurisdiction. All other improved areas disturbed by trenching shall be restored to a condition equal to or better than the original condition.

Unimproved areas shall be cleaned, trimmed, and smoothly graded; and all slashings, roots, and other debris shall be removed from the construction site. The area shall be reseeded with an appropriate grass mixture.

8. TRAFFIC MAINTENANCE AND PROTECTION ON IMPROVED ROADS

The Installer shall conduct his/her operation so as to minimize the interference with automotive and pedestrian traffic.

Soft backfill in trenches shall be plainly marked so as to warn motorists, and access shall be provided for all driveways and parking areas. All work shall be carried on with due regard for the safety and convenience of the public. Open trenches shall be provided with barricades that can be seen at a reasonable distance at night and shall be adequately lighted. An adequate number of lighted signs for detours and construction in progress shall be provided. Safety instructions shall in no way relieve the Installer of his/her responsibility or liability.

A minimum of one-way traffic shall be maintained at all times. Where one lane of traffic is to be obstructed by the construction, the Installer shall provide properly equipped flagmen at each end of his/her operation to direct traffic; and sufficient signs, barricades, or other warning devices shall be provided to reduce the speed of the traffic approaching or leaving the construction area. The traffic control and the warning signs shall be placed and maintained in a manner satisfactory to the governing agency and/or the District.

No roads may be closed without permission of the governing agency.

9. CONSTRUCTION STAKING

All work shall be to the alignment shown on the Plans or approved revisions. Upon request by the Installer, the District will stake, within two (2) working days, the horizontal locations and/or reference benchmarks of water mains. Requests for staking should be made at least 48 hours in advance of actual need to allow for scheduling of manpower by the District.

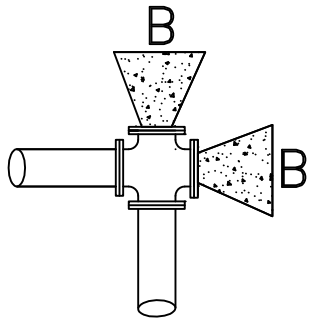
10. CULVERT EXTENSIONS

Culvert extensions may be required for installation of the water mains in various locations. When water mains are installed across ditches, culvert extensions will be required to ensure uninterrupted flow in the ditch. The culvert shall be installed in the ditch prior to trenching or tunneling the water main under the ditch. The water main trench shall be suitably backfilled and compacted around the culvert to avoid diversion of the waters upon completion of the installation.

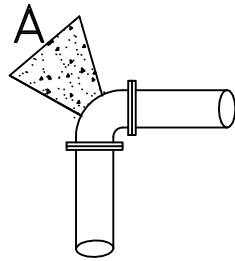
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EXHIBITS

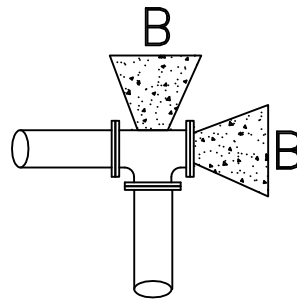
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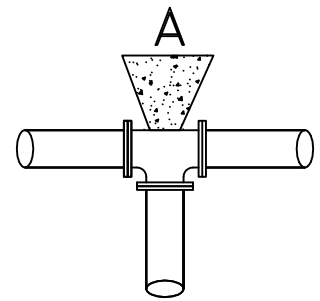
CROSS



90° ELBOW



TEE (PLUGGED)



TEE

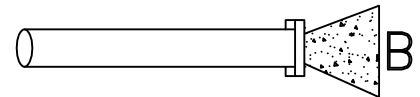
THRUST BLOCK TABLE

Minimum Bearing Area Against
Undisturbed Soil

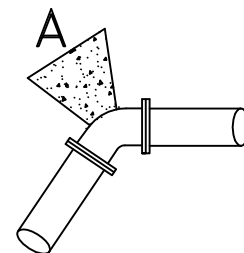
PIPE SIZE	A (ft ²)	B (ft ²)
4"	3	1
6"	4	2
8"	7	4
10"	11	6
12"	16	9
14"	22	12
16"	29	16
18"	36	20

NOTES:

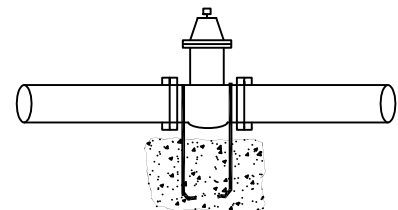
- Bearing area of concrete thrust block is based on 200 psi pressure and safe soil bearing load of 2000 psf. Thrust blocks in poor soil may require larger bearing surfaces and/or non-standard designs as requested by the District.
- Thrust blocks shall be 3000 psf concrete with a minimum of 1/4 square foot bearing against the fitting. Wrap all bearing surfaces and bolts with 6 mil. plastic.
- All fittings and valves shall be supported by pre-cast concrete blocks.



CAP

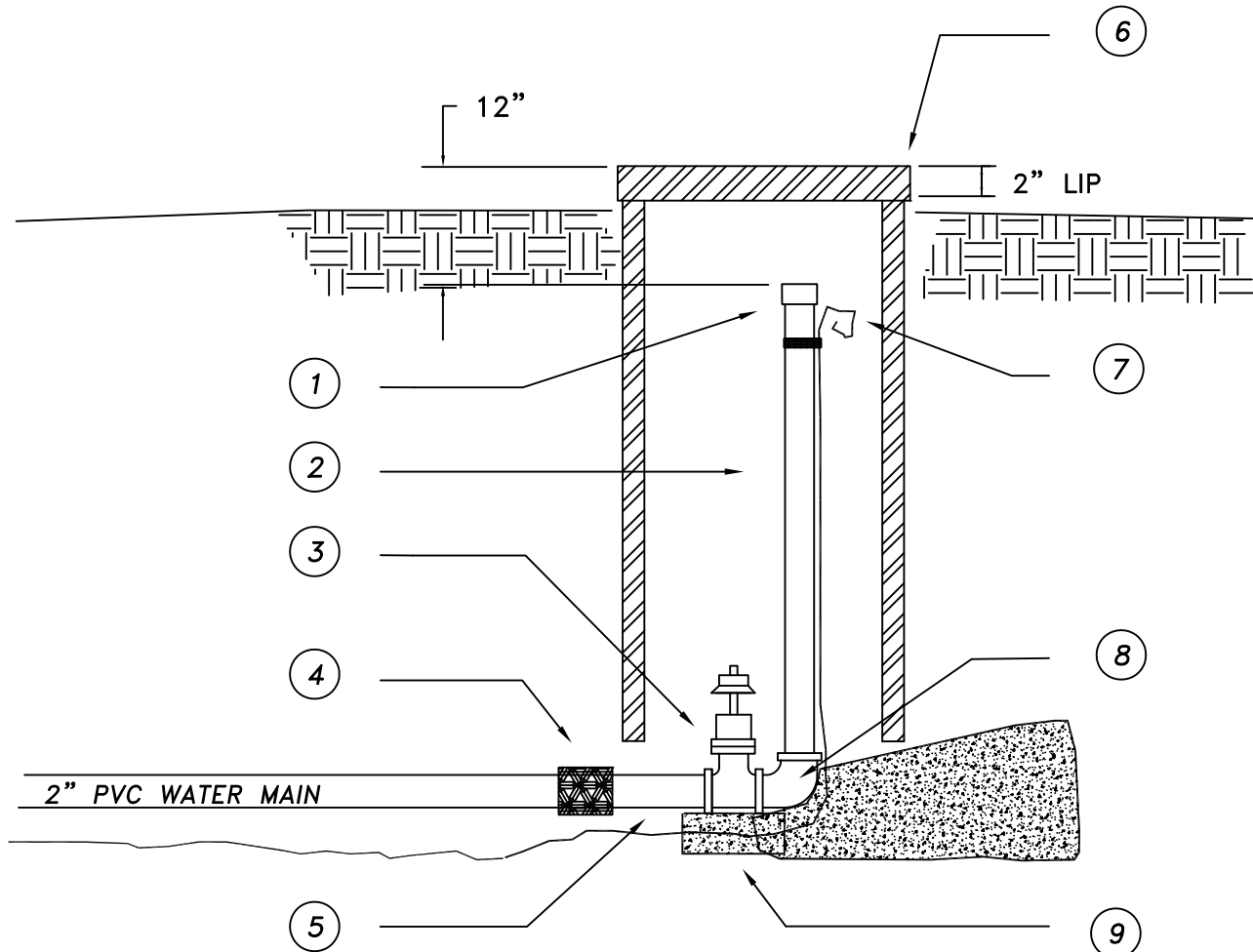


ELBOW (ALL OTHERS)



GATE VALVE

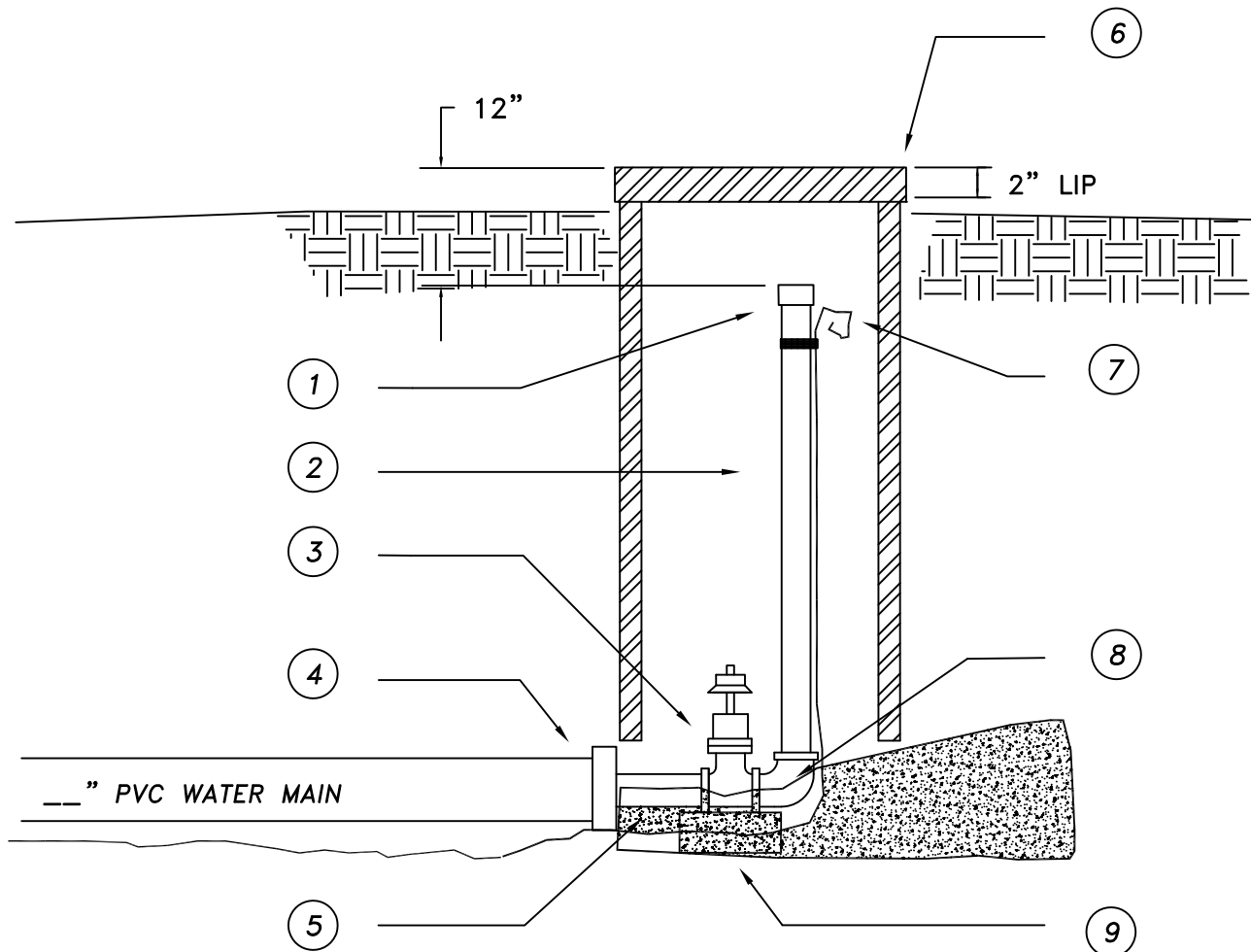
NOTE: ALL PIPING UNDER PRESSURE SHALL BE BRASS.
ALL PIPING NOT UNDER PRESSURE MAY BE GALVANIZED.



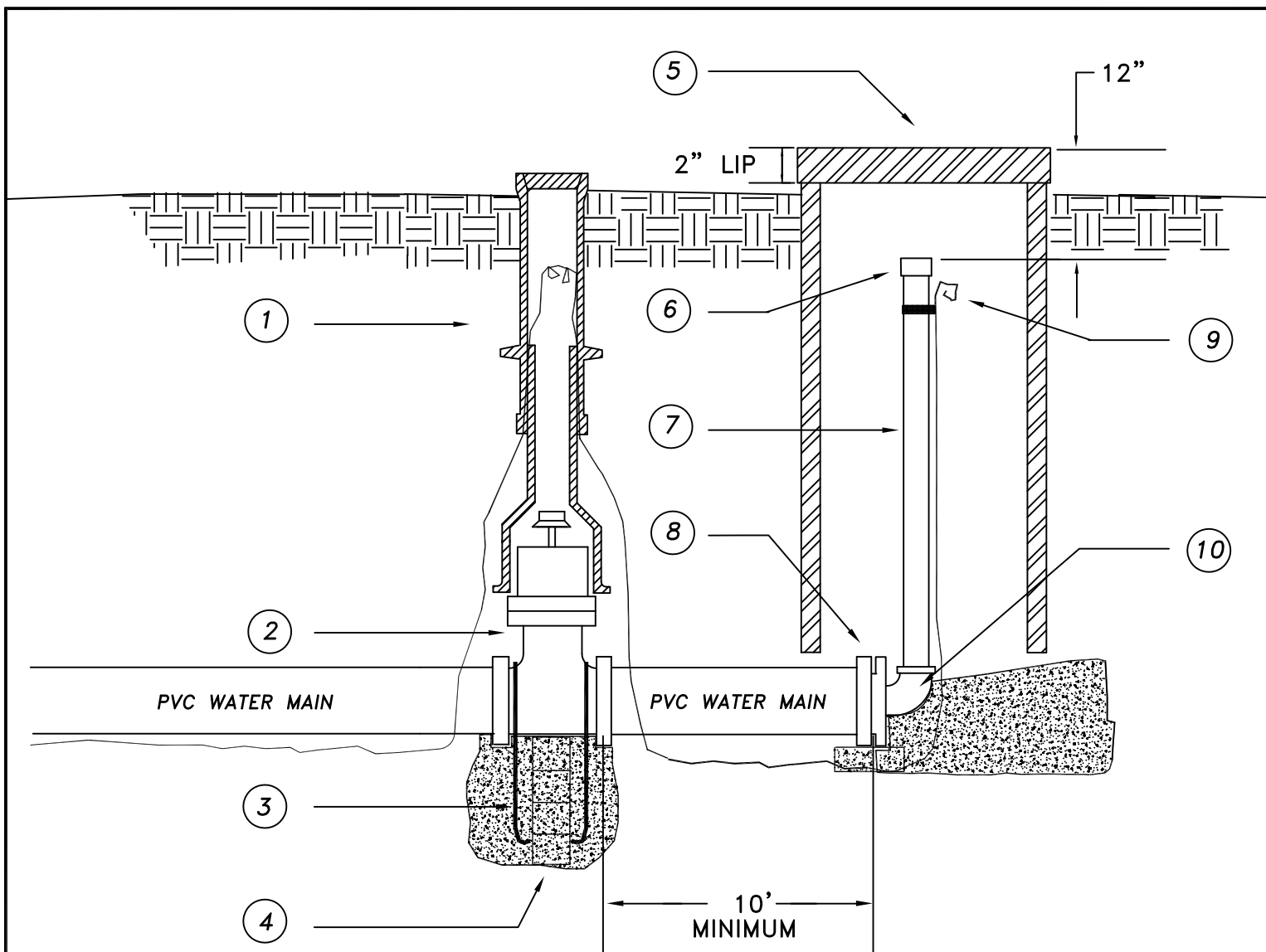
1. 2" COUPLING, IPT
DO NOT PLUG OR CAP
2. 2" GALVANIZED PIPE
3. 2" RESILIENT-SEATED
GATE VALVE, IBBM, IPT
4. 2" FLEX COUPLING
(ROCKWELL #411)
5. 2" BRASS NIPPLE, IPT
(6" LONG)

6. 18" ϕ CORRIGATED POLYETHYLENE
CULVERT PIPE WITH FABRICATED
STEEL LID
7. LOCATE WIRE (#10 STRANDED)
8. 2" GALVANIZED STREET ELBOW, IPT
9. CONCRETE THRUST BLOCK(S),
USE CONCRETE SOLID BLOCK(S)
FOR TEMPORARY SUPPORT
(16"x8"x4" AND/OR 16"x8"x2")

NOTE: ALL PIPING UNDER PRESSURE SHALL BE BRASS.
ALL PIPING NOT UNDER PRESSURE MAY BE GALVANIZED.

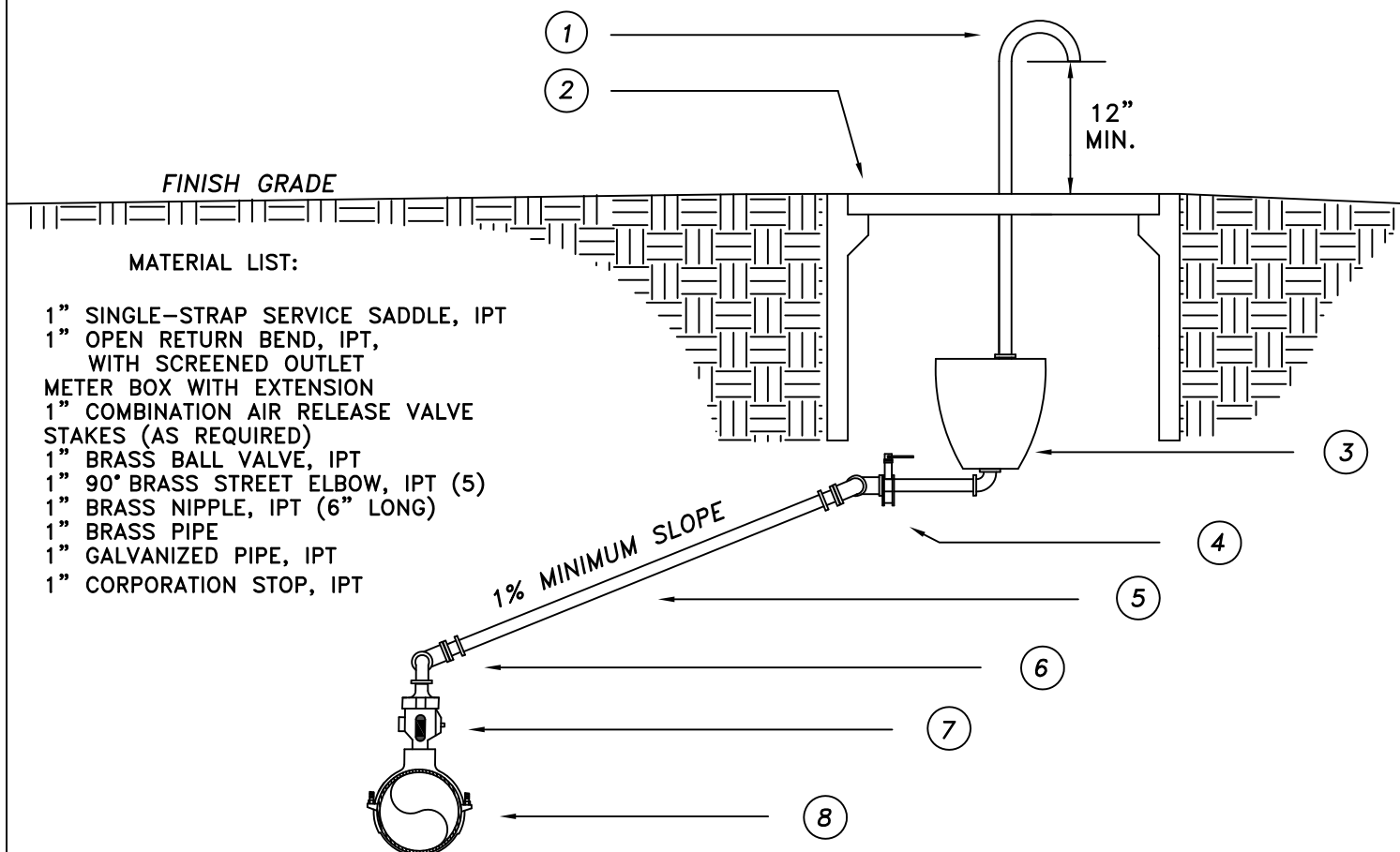


1. 2" COUPLING, IPT
DO NOT PLUG OR CAP
2. 2" GALVANIZED PIPE
3. 2" RESILIENT-SEATED
GATE VALVE, IBBM, IPT
4. ___" CAP, MJ
(TAPPED 2" IPT)
5. 2" BRASS NIPPLE, IPT
(6" LONG)
6. 18" \emptyset CORRUGATED POLYETHYLENE
CULVERT PIPE WITH FABRICATED
STEEL LID
7. LOCATE WIRE (#10 STRANDED)
8. 2" GALVANIZED STREET ELBOW, IPT
9. CONCRETE THRUST BLOCK(S),
USE CONCRETE SOLID BLOCK(S)
FOR TEMPORARY SUPPORT
(16"x8"x4" AND/OR 16"x8"x2")

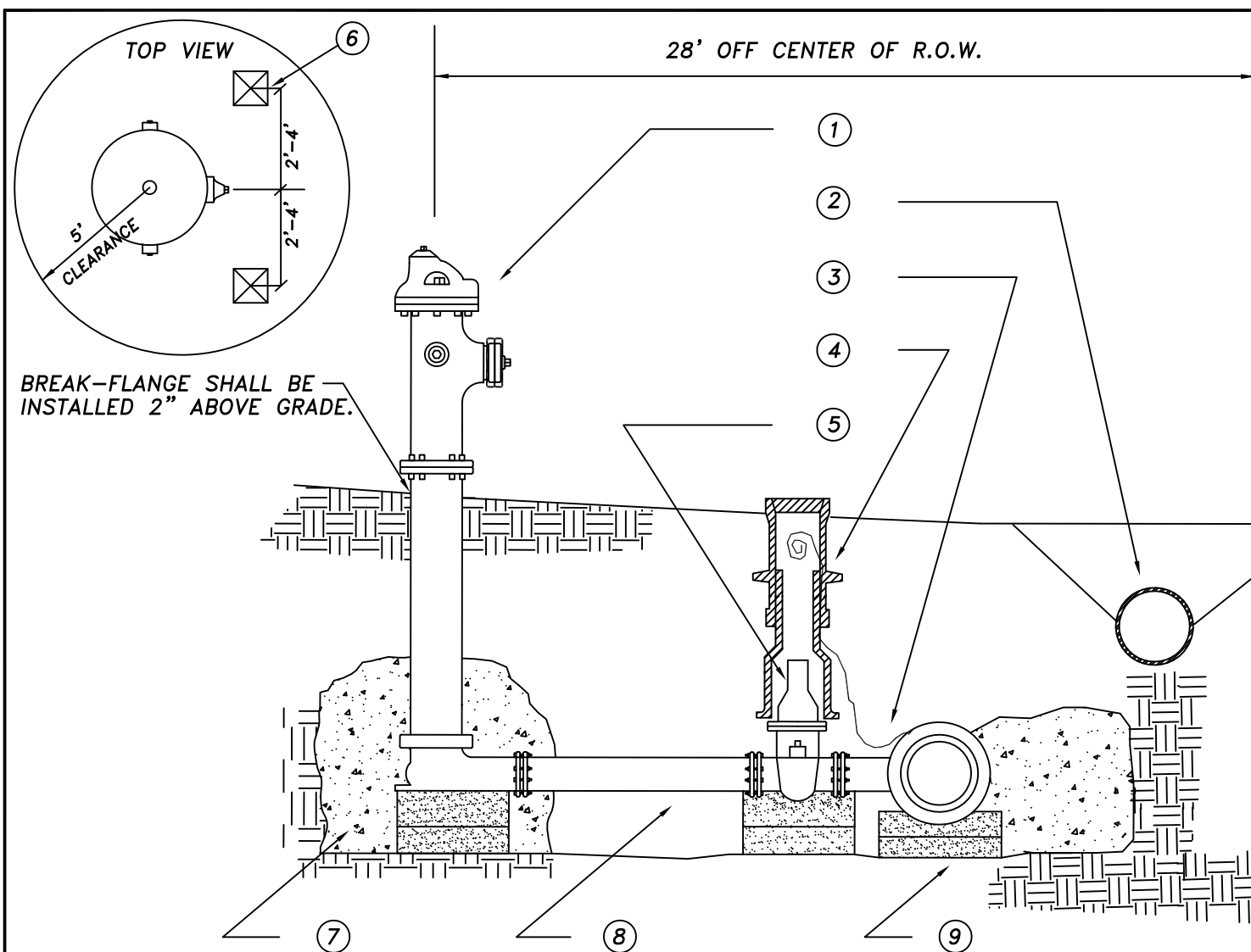


1. CAST IRON VALVE BOX WITH LID
2. RESILIENT-SEATED GATE VALVE, MJ (SIZED TO WATER MAIN)
3. WRAP #4 REBAR AROUND VALVE AND ANCHOR INTO CONCRETE THRUST BLOCK
4. CONCRETE THRUST BLOCK(S): WRAP ALL FLANGES WITH PLASTIC. USE CONCRETE SOLID BLOCK(S) FOR TEMPORARY SUPPORT (16"x8"x4" AND/OR 16"x8"x2")
5. 18" Ø CORRUGATED POLYETHYLENE CULVERT PIPE WITH FABRICATED STEEL LID. IN TRAFFIC AREAS, A CAST IRON VALVE BOX SHALL BE USED IN PLACE OF CULVERT PIPE
6. 2" COUPLING, IPT (DO NOT PLUG OR CAP)
7. 2" GALVANIZED PIPE (24" LONG)
8. DUCTILE IRON CAP, MJ, WITH 2" IPT OPENING (SIZED TO WATER MAIN)
9. LOCATE WIRE (#10 STRANDED)
10. 2" STREET ELBOW

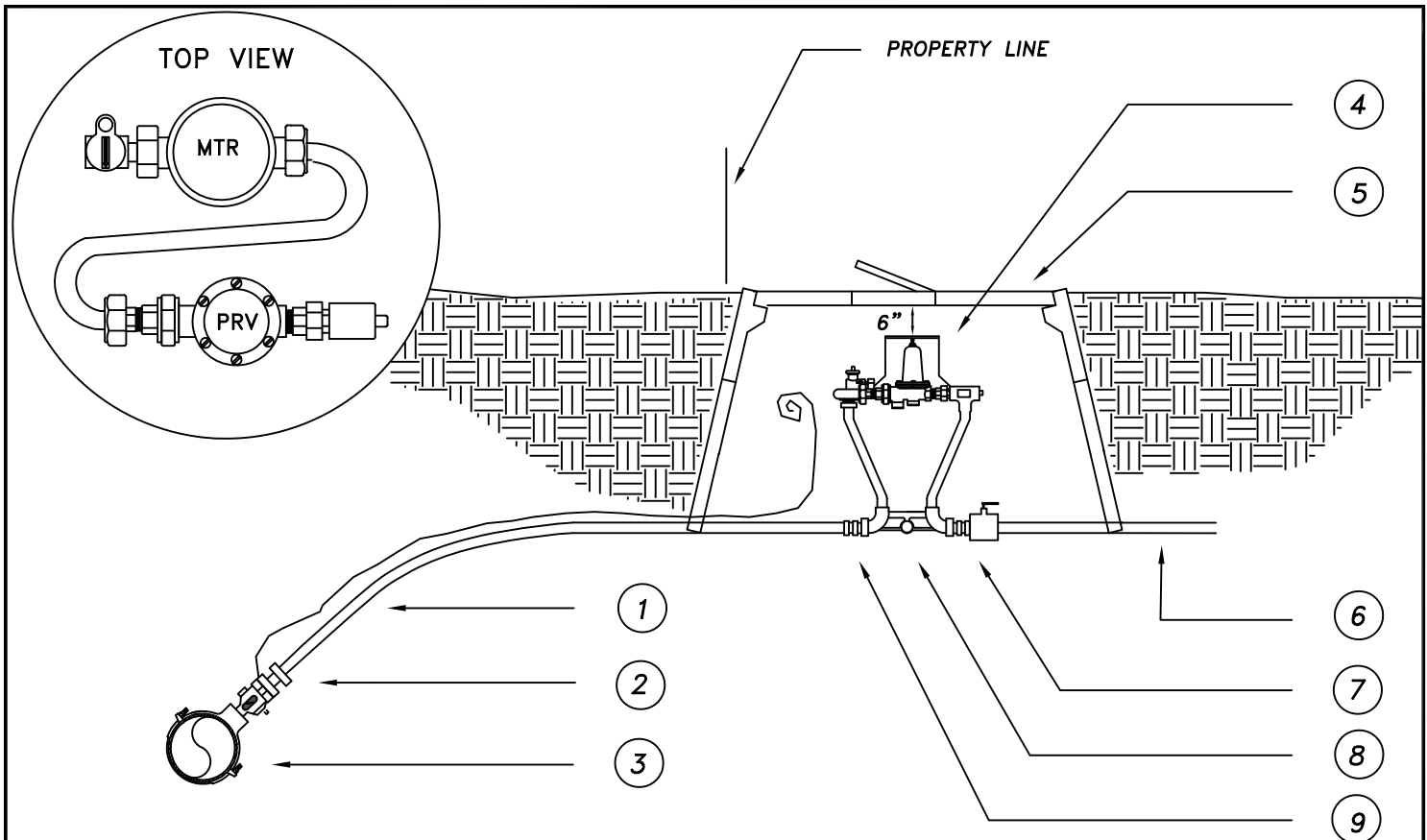
NOTE: ALL PIPING UNDER PRESSURE SHALL BE BRASS.
ALL PIPING NOT UNDER PRESSURE MAY BE GALVANIZED.



- | | |
|---|---|
| 1. 1" OPEN RETURN BEND, IPT,
WITH SCREENED OUTLET | 5. 1" BRASS PIPE, IPT |
| 2. METER BOX WITH EXTENSION
(EQUAL TO CARSON IND. #1419) | 6. 1" 90° BRASS STREET ELBOW, IPT (2) |
| 3. 1" COMBINATION AIR RELEASE
VALVE (EQUAL TO APCO #143C) -
STAKE ASSEMBLY FOR SUPPORT | 7. 1" CORPORATION STOP, IPT
(EQUAL TO A.Y. McDONALD #73131) |
| 4. 1" BRASS BALL VALVE, IPT
1" 90° BRASS STREET ELBOW, IPT (3)
1" BRASS NIPPLE, IPT (6" LONG) | 8. WATER MAIN WITH 1" SINGLE-STRAP
SERVICE SADDLE, IPT, TAP SIZED
AS REQUIRED (EQUAL TO ROMAC #101N-H),
INSTALLED STRAIGHT UP AND DOWN |

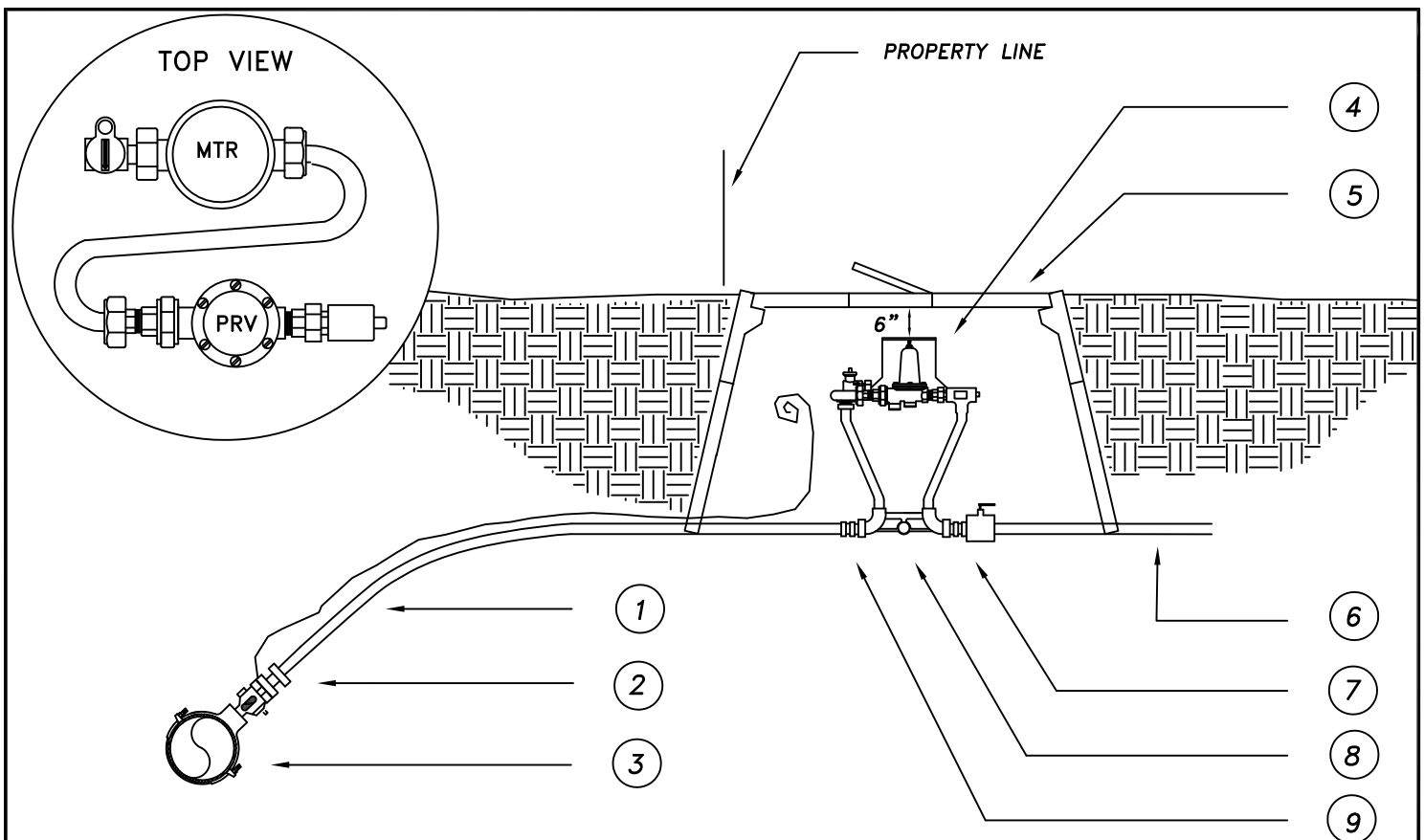


1. FIRE HYDRANT, WITH MJ CONNECTION (EQUAL TO MUELLER 'CENTURION') 4" (FNST) x 5" STORZ COUPLING REQUIRED
2. INSTALL ALUMINUM CULVERT IN COUNTY ROAD DITCH AND CONSTRUCT ACCESS TO FIRE HYDRANT (CONTACT COUNTY FOR SPECIFIC SIZE AND TYPE OF CULVERT REQUIRED)
3. TEE WITH 6" FLANGE ON BRANCH, CONNECTED TO A NEW WATER MAIN
LOCATE WIRE (#10 STRANDED)
4. VALVE BOX WITH LID
6" DIAMETER, MIN. SEWER CASING TO DEPTH (EQUAL TO OLYMPIC FOUNDRY INC. 950)
5. 6" GATE VALVE, FLGxMJ
6. 6' CONCRETE GUARD POSTS SET 4' IN THE GROUND (2) (IF REQUIRED BY PUD)
7. 1" WASHED ROCK FOR DRAINAGE, BACKFILL TO 1' ABOVE HYDRANT DRAIN
8. 6" DUCTILE IRON SPOOL WITH MEGALUG FOLLOWERS
9. CONCRETE THRUST BLOCK, USE SOLID CONCRETE BLOCKS FOR SUPPORT



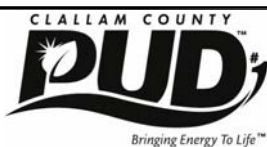
1. 1" SERVICE PIPE, 200 PSI (MIN.), COLD FLARE TYPE (EQUAL TO DRISCO PIPE 5100 CTS), WITH LOCATE WIRE (#10 STRANDED)
2. 1" CORP STOP MIPT (EQUAL TO A.Y. McDONALD #73131), POSITION OPERATING LEVER ON THE SIDE; 1" ADAPTER, PACK-JOINTxFIPT, (A.Y. McDONALD #74754-22)
3. WATER MAIN WITH 1" SINGLE-STRAP SERVICE SADDLE, IPT, TAP SIZED AS REQUIRED (EQUAL TO ROMAC #101N-H), INSTALLED AT 45° ANGLE
4. TANDEM COPPER SETTER (EQUAL TO A.Y. McDONALD #750212QAMM33); 5/8" x 3/4" M25 BADGER METER WITH ITRON 100W ERT, IN CUBIC FEET; AND 3/4" PRESSURE REDUCING VALVE, WATTS LF25AUB-Z3, WITH UNION END
5. REINFORCED 1" PLASTIC METER BOX WITH READER STYLE LID (EQUAL TO CARSON INDUSTRIES #1220-12) AND EXTENSION (EQUAL TO CARSON INDUSTRIES #1220-6X)
6. 3/4" x 12" BRASS NIPPLE, MIPT
7. 3/4" BRASS BALL VALVE, IPT (EQUAL TO WATTS LF600 SERIES)
8. STAKE THROUGH CENTER HOLE OF SETTER FOR STABILITY
9. 1" ADAPTER, PACK-JOINTxMIPT, (A.Y. McDONALD #74753-22) 1" x 3/4" BELL REDUCER, IPT

NOTES: PRESSURE REDUCING VALVE REQUIRED, UNLESS OTHERWISE DIRECTED BY DISTRICT.
2" PVC CONDUIT REQUIRED ON ALL ROAD CROSSINGS FROM CORPORATION STOP TO WITHIN 2 FEET OF WATER METER.



1. 1" SERVICE PIPE, 200 PSI (MIN.), COLD FLARE TYPE (EQUAL TO DRISCO PIPE 5100 CTS), WITH LOCATE WIRE (#10 STRANDED)
2. 1" CORP STOP MIPT (EQUAL TO A.Y. McDONALD #73131), POSITION OPERATING LEVER ON THE SIDE; 1" ADAPTER, PACK-JOINTxFIPT, (A.Y. McDONALD #74754-22)
3. WATER MAIN WITH 1" SINGLE-STRAP SERVICE SADDLE, IPT, TAP SIZED AS REQUIRED (EQUAL TO ROMAC #101N-H), INSTALLED AT 45° ANGLE
4. TANDEM COPPER SETTER (EQUAL TO A.Y. McDONALD #750212QAMM44); 1" M70 BADGER METER WITH ITRON 100W ERT, IN CUBIC FEET; AND 1" PRESSURE REDUCING VALVE, WATTS LF25AUB-Z3, WITH UNION END
5. REINFORCED PLASTIC METER BOX WITH READER STYLE LID (EQUAL TO CARSON INDUSTRIES #1324-12)
6. 1" x 12" BRASS NIPPLE, MIPT
7. 1" BRASS BALL VALVE, IPT (EQUAL TO WATTS LF600 SERIES)
8. STAKE THROUGH CENTER HOLE OF SETTER FOR STABILITY
9. 1" ADAPTER, PACK-JOINTxMIPT, (A.Y. McDONALD #74753-22)

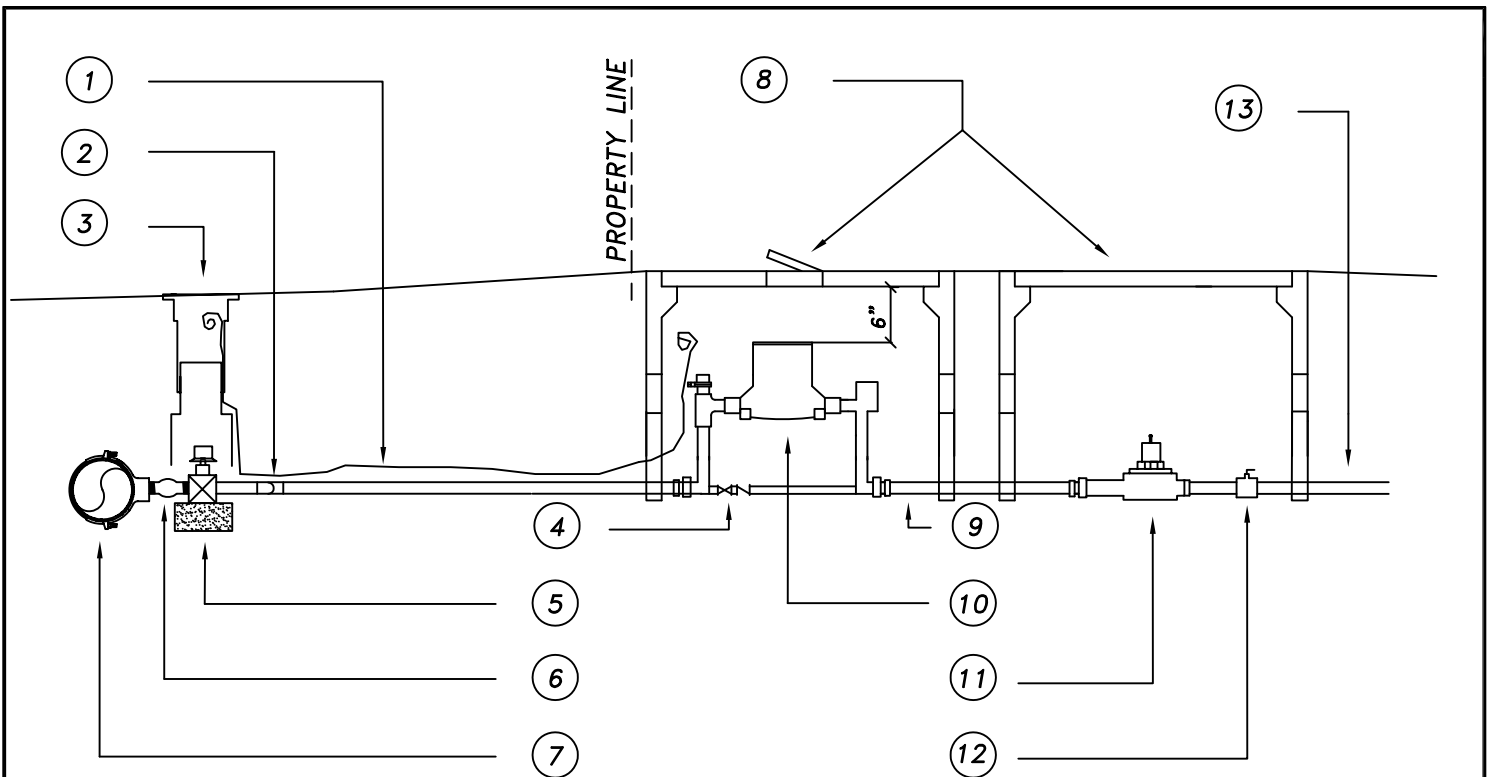
NOTES: PRESSURE REDUCING VALVE REQUIRED, UNLESS OTHERWISE DIRECTED BY DISTRICT.
2" PVC CONDUIT REQUIRED ON ALL ROAD CROSSINGS FROM CORPORATION STOP TO WITHIN 2 FEET OF WATER METER.



DRAWN	ALWARD
DATE	10/17/12
REV.	
SCALE	N.T.S.

TITLE
1" METER INSTALLATION

H:\Engdata\Water\Specs\1 Meter.dwg



- | | |
|---|--|
| <p>1. 1-1/2" RED BRASS PIPE, IPT WITH LOCATE WIRE (#10 STRANDED)</p> <p>2. 1-1/2" BRASS STREET ELBOW, IPT, AS REQUIRED</p> <p>3. CAST IRON VALVE BOX WITH LID</p> <p>4. 1-1/2" COPPER SETTER WITH CHECK VALVE AND 1" LOCKABLE BYPASS, EQUAL TO A.Y. McDONALD #7720B61WDF 665</p> <p>5. 1-1/2" RESILENT-SEATED GATE VALVE, EQUAL TO MUELLER A-2360, AND SOLID CONCRETE BLOCKS FOR SUPPORT</p> <p>6. 1-1/2" BRASS CORP STOP, MIPTxMIPT EQUAL TO A.Y. McDONALD #73131</p> <p>7. DOUBLE STRAP SERVICE SADDLE WITH 1-1/2" IPT OPENING, EQUAL TO ROMAC 202N-H</p> | <p>8. 24" x 36" TRAFFIC-RATED METER BOX WITH STEEL LID AND EXTENSIONS AS REQUIRED, EQUAL TO FOGTITE #2T</p> <p>9. 1-1/2" RED BRASS NIPPLE, IPT (LENGTH TO FIT)</p> <p>10. 1-1/2" M120 BADGER METER, FLG, COMPOUND WITH ITRON 100W ERT, IN CUBIC FEET</p> <p>11. 1-1/2" PRESSURE REDUCING VALVE, EQUAL TO WATTS LFU5B, WITH UNION END</p> <p>12. 1-1/2" BRASS BALL VALVE, FIPT</p> <p>13. 1-1/2" RED BRASS NIPPLE, MIPT (LENGTH TO FIT)</p> |
|---|--|

NOTE: PRESSURE REDUCING VALVE REQUIRED ON SERVICE ≥ 70 PSI.

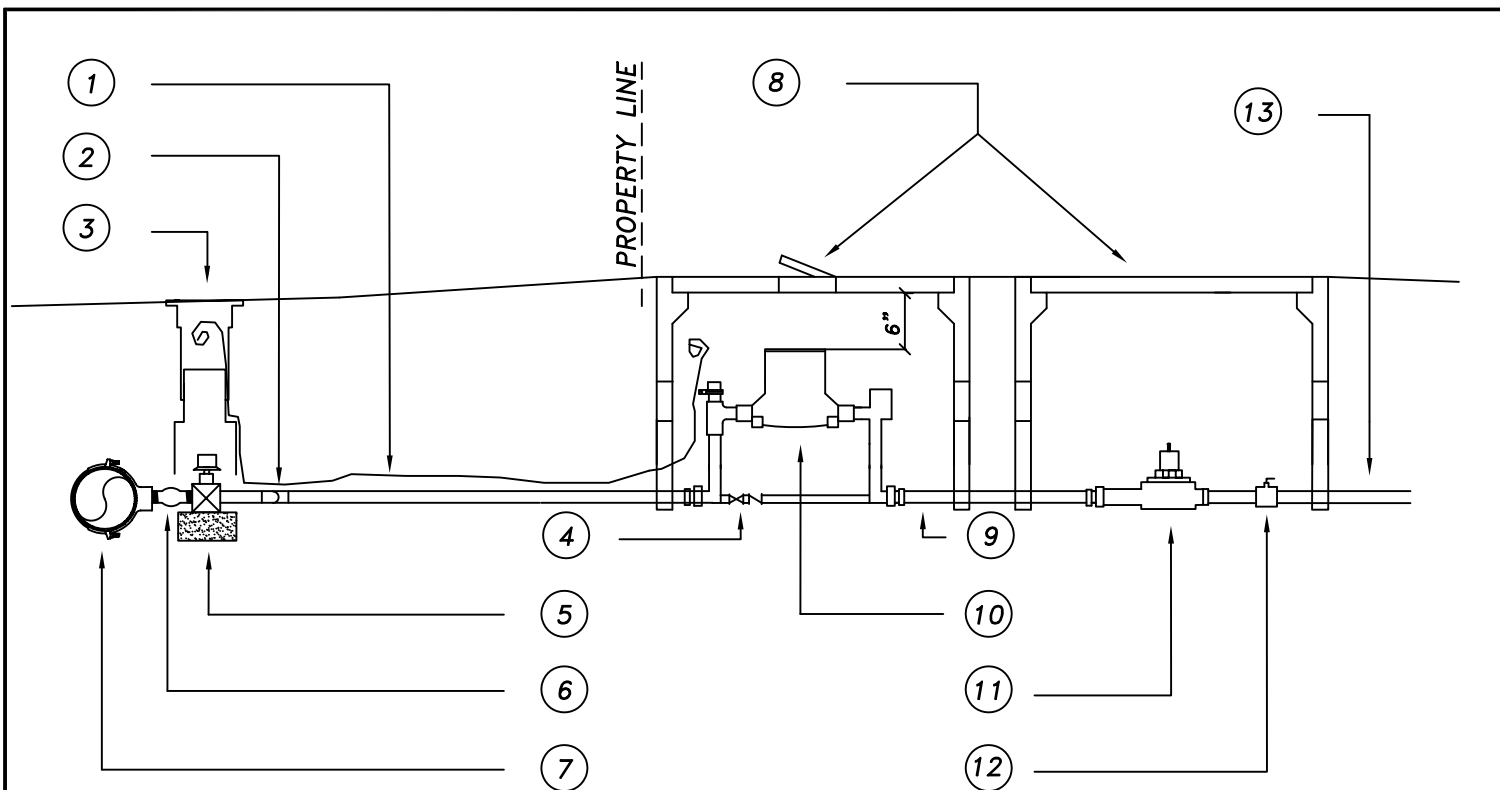
IF 1-1/2" TAP IS FOR A 2" PVC MAIN EXTENTION, THEN A 6" BRASS NIPPLE WITH A FLEX COUPLING WILL BE REQUIRED BETWEEN GATE VALVE AND PIPE.

COMPOUND METERS ARE NOT AVAILABLE UNDER 2".



DRAWN	KITZ
DATE	10/12
SCALE	N.T.S.

TITLE	1-1/2" TAP & METER
Auto-Cad	H:\Engdata\Water\Specs\1-12Meter.dwg

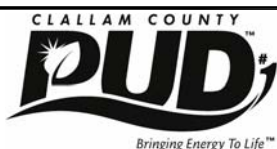


1. 2" RED BRASS PIPE, IPT
WITH LOCATE WIRE (#10 STRANDED)
2. 2" BRASS STREET ELBOW, IPT,
AS REQUIRED
3. CAST IRON VALVE BOX WITH LID
4. 2" COPPER SETTER WITH CHECK
VALVE AND 1" LOCKABLE BYPASS,
EQUAL TO A.Y. McDONALD
#7720B71WDF 775
5. 2" RESILENT-SEATED GATE VALVE,
EQUAL TO MUELLER A-2360, AND
SOLID CONCRETE BLOCKS FOR
SUPPORT
6. 2" BRASS CORP STOP, MIPTxMIPT
EQUAL TO A.Y. McDONALD #73131
7. DOUBLE STRAP SERVICE SADDLE
WITH 2" IPT OPENING, EQUAL TO
ROMAC 202N-H

8. 24" x 36" TRAFFIC-RATED METER BOX
WITH STEEL LID AND EXTENSIONS AS
REQUIRED, EQUAL TO FOGTITE #2T
9. 2" RED BRASS NIPPLE, IPT
(LENGTH TO FIT)
10. 2" M170 BADGER METER, FLG,
COMPOUND WITH ITRON 100W ERT,
IN CUBIC FEET
11. 2" PRESSURE REDUCING VALVE,
EQUAL TO WATTS LFU5B, WITH
UNION END
12. 2" BRASS BALL VALVE, FIPT
13. 2" RED BRASS NIPPLE, MIPT
(LENGTH TO FIT)

NOTE: PRESSURE REDUCING VALVE REQUIRED ON SERVICE \geq 70 PSI.

IF 2" TAP IS FOR A 2" PVC MAIN EXTENSION, THEN A 6" BRASS NIPPLE WITH A FLEX COUPLING WILL BE REQUIRED BETWEEN GATE VALVE AND PIPE.



DRAWN	KITZ
DATE	12/07 -- 10/12
SCALE	N.T.S.

TITLE	2" TAP & METER
Auto-Cad	H:\Engdata\Water\Specs\2Meter.dwg

P.U.D. WATER MAIN

P.U.D. WATER LINE
IN CONDUIT, UP TO
WITHIN APPROX. 2'
OF WATER METER

WATER LINE, WATER
METER, PRESSURE
REDUCING VALVE, AND
BALL VALVE IN TANDEM
SETTER (BY P.U.D.)

PROPERTY LINE

BACKFLOW PREVENTION ASSEMBLY,
IF REQUIRED, BY CUSTOMER

SERVICE LINE, BY CUSTOMER

GATE VALVE, BY CUSTOMER

CUSTOMER RESIDENCE

NOTES: THE INSTALLATION OF A BALL OR GATE VALVE AT THE CUSTOMER'S RESIDENCE IS RECOMMENDED FOR ISOLATING POSSIBLE SERVICE LINE WATER LEAKS.

THE CUSTOMER IS RESPONSIBLE FOR THE COST OF ALL WATER THAT PASSES THROUGH THE WATER METER, AND FOR ANY DAMAGES CAUSED BY THE CUSTOMER OPERATING P.U.D. FACILITIES.



DRAWN	ALWARD
DATE	9/23/99
REV.	2/1/07
SCALE	N.T.S.

TITLE	TYPICAL WATER SERVICE INSTALLATION
AUTO-CAD	H:\ENGDATA\WATER\SPCS\SERVICE

