

Appendix O

WATER CONSTRUCTION SPECIFICATIONS AND STANDARD DESIGN DETAILS

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WATER SPECIFICATIONS CONSTRUCTION

CW-1 TRENCH EXCAVATION AND BACKFILL

Trench excavation shall be unclassified. The terms earthwork or excavation include all materials excavated or removed regardless of material characteristics. The Developer shall estimate the kind and extent of materials which will be encountered in the excavation.

All trenches shall be dug to true line and smooth bottom grades. Surface grading, including cut, fill and compaction, shall be accomplished prior to trench excavation. In pavement sections, grading to subgrade may be sufficient for areas to be newly paved. The trench width from the bottom of the trench to the crown of the pipe shall not exceed 40 inches for 15-inch-diameter and smaller pipe. For 18-inch-diameter or larger pipe, the trench width from the bottom of the trench to the crown of the pipe shall not exceed 1.5 times the inside diameter plus 18 inches. If these widths are exceeded, a stronger grade of pipe and/or a higher classification and amount of bedding material shall be furnished, as directed by the District.

Minimum cover over all water lines shall be 36 inches over the top of the pipe for 8-inch mains and smaller; 42" for 10-inch mains; 48 inches over the top of mains 12-inches and larger. Maximum cover shall be 6 feet, unless otherwise authorized by Woodinville Water District. Deeper excavation may be required due to localized breaks in grade, or installing the new main under existing culverts or other utilities where necessary.

Where it is necessary to cross sanitary sewer or storm sewer trenches, all trench backfill shall be removed and replaced with mechanically compacted granular material to provide a uniform support for the full length of the pipe.

The Washington State Department of Health and the Washington State Department of Ecology require a minimum 10-foot horizontal separation between all sanitary sewer lines and water lines. Water mains shall be installed a minimum of 18-inches above the sanitary sewer mains. Section C1-9 of the Washington State Department of Ecology Criteria for Sewage Works Design Manual (the "Orange Manual"), identifies specific horizontal and vertical separation for construction of water and sewer mains. If unusual circumstances preclude construction within the above-stated minimum separation criteria, the Orange Manual specifies special requirements for construction of water and sewer mains.

A five-foot minimum horizontal separation shall be maintained between all water Power, telephone or other utilities. Poles shall have a min. separation of 8' with bases of the poles 2' lower than the proposed water or sewer. The developer shall inform the District if this criteria cannot be met.

The root systems of all trees not to be removed which are located on or near the easements and right-of-way shall not be cut or disturbed, but shall be tunneled or otherwise protected by the Developer to ensure that no damage is done. No roots larger than 1" shall be cut without approval from the agency in charge.

Piping shall be kept clean and dry from the Factory to installation. Pipe shall have temporary caps that are factory installed and shall remain in place until the pipe is installed in the trench. Pipe without these temporary caps will not be accepted. The contractor shall notify the District's Inspector as to the schedule for pipe delivery. Pipe shall not be unloaded until the Inspector is onsite.

During trenching, installing of pipe lines and appurtenances, and the placing of backfill, trenches shall be kept free of water. The Developer shall furnish all equipment necessary to dewater the trench and shall dispose of the water in such a manner as not to cause a nuisance or menace to the public, and in compliance with local jurisdictional requirements. Trench water shall not be pumped or placed in to drainage ditches, storm drains without clarifying. All water lines, new or existing, shall be protected against the intrusion of foreign material. A mechanical plug shall be placed in the end of each stick of pipe as pipe laying progresses.

When so directed by the District, the trench shall be extended below the pipeline grades to permit the placing of foundation gravel. All areas of over excavation, to remove unsuitable material, or for any other reason, shall be brought to grade with approved foundation material, and compacted.

Maximum amount of open trench on streets shall be 200 linear feet unless otherwise directed by the road agency. At the end of each day all ditches must be backfilled or covered with steel plates and barricaded with flashing warning lights to prevent people or animals from falling into the trench. In traffic areas, steel plating must be pinned to prevent movement and edges ramped with cold mix asphalt. The contractor shall anticipate materials for steel plating and bracing to create a smooth ride. The District reserves the right to request more complex steel sheeting layouts be designed by a Structural Engineer. Trench shoring shall be required if the excavation is not backfilled. "Steel plates on Roadway" signing and lighted flashing barricades to warn traffic shall be provided. These requirements shall be modified as necessary to conform to local jurisdictions.

All shoring and bracing or sheeting required to perform and protect the trench and to safeguard the employees, shall be designed and furnished by the Developer. No timber bracing, lagging, sheathing or other lumber shall be left in any excavation except with the permission of the District.

Pipe bedding and initial backfill to 12 inches over the top of the pipe shall be completed before subsequent backfilling operations are started. The initial 12-inches of backfill above the crown of the pipe shall be carefully and evenly placed.

The Developer shall take all necessary precautions to protect the pipe from any damage, movement or shifting. In general, backfilling shall be performed by placing the material so as not to damage the pipe.

Trench backfill materials shall be bank run gravel material or native material. Native material shall require testing by the Developer and approval by the Developer's soils geologist prior to installation.

The Developer shall be responsible for providing the proper size and type of compaction equipment and selecting the proper method of utilizing said equipment to attain the required compaction density. In all cases, equipment shall be selected and used so as to not damage the pipe or other utilities and structures. The maximum loose lift depth when using a jumping jack for compaction shall be 1-foot. The maximum loose lift depth when using a hoe pack for compaction shall be 2-feet. A jumping jack or Pneumatic tamper shall be used to compact backfill around valve boxes.

Compaction testing will be required for all backfilled trenches. A minimum of one testing location shall be chosen for each 100 feet of water main installed unless the local jurisdictional authority requires more frequent testing. A separate test shall be performed for each two (2) feet of depth. Perpendicular trenching in the roadway shall require one test per each or as requested by the local jurisdictional authority. The Developer, or the Contractor, shall contract the services of a qualified and approved geotechnical consultant to perform the compaction testing. All testing (and retesting) shall be at the Developer's expense. Additional testing and construction observation, at the Developer's expense, shall be required if the maximum backfill lists, as specified above, are exceeded. Testing locations shall be chosen by the field inspector. Compaction results shall be furnished daily during construction and all testing completed prior to paving. Recompression and retesting will be required for any tests which do not pass the compaction testing. Test locations shall be identified by station, offset and depth for easy field verification. Larger projects shall include a map of testing locations. Satisfactory compaction tests do not relieve the Contractor of the responsibility to provide trenches which will not fail. Subsurface settlements within the warrantee period will remain the responsibility of the Contractor.

Materials excavated from trenches are not guaranteed to be suitable to meet the standards for trench backfill. Where original excavated material is unsuitable for trench backfill, imported gravel backfill shall be placed. See Section MW-18 for material specifications for imported gravel backfill. The unsuitable material shall be removed by the Developer to a disposal area, in accordance with Jurisdictional requirements.

CW-2 INSTALLATION OF WATER MAINS AND FITTINGS

The trench shall be excavated to the depth required so as to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes. Pipe shall be installed with bells uphill.

All pipe, fittings, valves and hydrants shall be carefully lowered into the trench in such a way as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped into trench.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. Pipe shall be laid with bell ends facing in the direction of laying, unless directed otherwise by the District. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with bedding material tamped under it. No pipe shall be laid in water, or when, in the opinion of the District, trench conditions are unsuitable. Wherever it is necessary to deflect pipe from a straight line, the amount of deflection allowed shall not exceed pipe manufacturer's recommendations for mechanical and push-on joints, and shall be subject to approval by the District.

For connection of push-on joint, the jointing shall be done according to manufacturer's recommendations with special care used in cleaning gasket seat to prevent any dirt or sand from getting between the gasket and pipe. Lubricant to be used on the gasket shall be nontoxic and free from contamination. When a pipe length is cut, the outer edge of the cut shall be beveled with a file to prevent injury to the gasket during jointing.

For connection of mechanical joints, the socket, plain end of each pipe and gasket shall be cleaned of dirt before jointing and shall be jointed according to manufacturer's directions. Bolts shall be tightened alternately at top, bottom, and sides so pressure on gasket is even.

The cutting of pipe for installing valve, fitting or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or cement lining and so as to leave a smooth end at right angles to the axis of the pipe.

During pipe installation and at times when pipe laying is not in progress, the open ends of pipe shall be closed by a water-tight plug or other means approved by the District. If water is in the trench when work resumes, the seal shall remain in place until the trench is pumped completely dry.

CW-3 INSTALLATION OF GATE VALVES

Valves shall be installed in the Distribution system at sufficient intervals to facilitate system repair and maintenance, but in no case shall valves be less than one every 1000 feet in residential areas and 800 feet in Commercial/ Industrial areas. Each tee shall have a minimum of two valves each. Crosses shall have a minimum of 3 valves each.

The valves shall be set with the stems vertical. Gate valves must operate easily through the entire rotation of the valve stem from full open to closed. Valves which do not operate smoothly or which require excessive torque to operate will not be acceptable. The District will be the sole judge as to acceptability. Mechanical joints and flanged fittings shall be tightened per manufacturer recommendations. The valve nut shall be from 18-inches to 24-inches below finished grade. If the valve nut is deeper, a valve nut extension shall be furnished and installed.

CW-4 VALVE BOX INSTALLATION

The axis of the valve box shall be common with the axis projected off the valve stem and centered over the operating nut. Valve box chamber shall be sawcut square. Broken, jagged edged or cracked valve boxes will not be accepted. The tops of adjustable valve boxes shall be set flush to the existing or established grade. A jumping jack or Pneumatic tamper shall be used to compact backfill around valve boxes in max. 12" loose lifts. If installed outside of pavement, the valve boxes require a collar. Refer to Standard Plan 6

Valve box lids shall be cleaned of debris and asphalt and painted with (2) coats of safety Blue paint as specified in MW-11.

CW-5 INSTALLATION OF BUTTERFLY VALVES

The valves shall be installed in the same manner as gate valves. Allow adequate room on either side of the valve to allow full operation.

CW-6 INSTALLATION OR RELOCATION OF FIRE HYDRANTS

Hydrants shall be set plumb and to grade established by the Developer, so that the pumper port is between 18 and 24 inches above final grade. Hydrants shall be backfilled with 1-1/2 inch washed rock under and around the barrel drain. The barrel shall be supported on a concrete bearing block. A concrete pad shall be placed around the hydrant barrel as shown in Standard Plan No. 9A.

The Developer shall provide a survey to set the concrete pad, per Standard Plan 9A, so that top of concrete pad is at finish grade. Reasonably level access shall be given for all fire hydrants. This may require installation of retaining walls or rockeries. Hand rails or fencing required if wall higher than 18”.

The hydrant shall be set to an elevation such that there is a minimum 3-inch clearance from the top of the concrete pad to the bottom of the sidewalk flange, while maintaining the pumper port elevation between 18 inches to 24 inches above the concrete slab.

The Developer shall be responsible to make corrections within the warranty period should there be any changes in fire hydrant clearances due to changes in final grade. The hydrant shall be installed in an area which shall have a 5-foot radius clearance around hydrant per Fire Department regulations.

Maximum allowable bury depth for hydrants shall be 6 feet. For deeper installations, vertical bends shall be used to bring up pipe elevation with a standard 4-foot bury hydrant. See Standard Plan 9C.

Fire hydrant laterals shall be minimum 6-inch DI pipe if under 50 feet in length, and minimum 8” DI pipe if greater than 50 feet in length.

Maximum distance for fire hydrant foot valve shall be 50 feet. Fire hydrants shall be a minimum 4’ behind vertical curb and 5’ behind rolled curb.

The hydrant shall be painted with two coats of safety yellow paint, per Woodinville Water Specifications, MW-11. When shown on the Plans or as directed by the District, a culvert shall be installed in the roadway ditch in front of the hydrant assembly to provide access. Length and diameter shall be as specified. When working within King County Right-of-Way, a sketch showing culvert length, diameter, inverts, material and end treatment shall be prepared and forwarded through the Inspector to King County for their review and approval prior to installation.

Relocated fire hydrants shall meet the same requirements as new fire hydrants for grade, backfill, blocking and culverting. After relocation, the fire hydrant shall be painted like new. Relocated fire hydrants shall be subject to the same hydrostatic pressure and purity tests as new fire hydrants. A new fire hydrant shall be provided if the existing fire hydrant does not meet the District’s current specifications. A new Auxiliary gate valve at the main shall be provided as well if the existing valve does not meet the District’s current standards.

CW-7 INSTALLATION OF VALVE MARKER POSTS

Valve markers shall be installed for all valves except fire hydrant valves and valves located in paved areas at the location as directed by the District, per Standard Plan 23. The markers shall be set to leave 18 inches exposed above ground. The exposed portion of the markers shall be painted with concrete primer and two coats of yellow paint, per Woodinville Water Specifications, MW-11. The valve size and the distance to the valve, rounded off to the nearest foot, shall be on the marker in two-inch-high numbers using die-cut adhesive letters as shown in the Standard Plans.

CW-8 INSTALLATION OF FIRE HYDRANT GUARD POSTS

When directed by the District, guard posts shall be set with the tops of the posts at the same elevation as the top of the hydrant. The exposed portion of the posts shall be painted with concrete primer and two coats of yellow paint, per Woodinville Water Specifications, MW-11. Guard posts shall not be installed within 10' of a roadway fog line or edge of roadway.

CW-9 INSTALLATION OF AIR-RELEASE ASSEMBLIES

The air-release assemblies shall be installed, per Standard Plan 11, at the location shown on the plans or as directed by the District. Air-release assemblies shall be located at high points on the water line. To obtain proper installation and operation of the air-release assembly, it is often required that the main line at this point be placed somewhat deeper than the minimum of 3 feet. Contractor should be aware proper installation may require mainline piping deeper than 3 feet. The air vac box shall be filled with 5/8-inch crushed surfacing for freeze protection. Air Vac piping and Valve shall be included in pressure testing.

CW-10 INSTALLATION OF BLOW-OFF ASSEMBLIES

The blow-off assemblies shall be installed as shown on the Standard Plan 12 at the location as directed by the District. All dead end mains or laterals shall have a Blow off (or fire hydrant) installed at the end for water quality and flushing purposes.

CW-11 INSTALLATION OF CUSTOMER WATER SERVICES

The services shall be installed as shown on the standard plans. Maximum service length from the main to the residence is 300.

Service tapping shall be with a hole saw and resulting coupon shall be given to the District's Inspector. Services shall be installed in one piece with no splices, unless approved otherwise by Woodinville Water District for special conditions. Under no circumstances will splices be allowed for polyethylene services. Services shall not be crimped. All services shall be flow tested after testing and flushing. Contractor

shall provide the fittings and piping necessary to connect to the District Flow testing equipment.

CW-12 RECONNECTION OF AN EXISTING SERVICE

The contractor shall coordinate re-connection of an existing service with the affected property owner. Notification shall be given for water outages, 24 hours in advance and 30 minutes prior to shutoff. The contractor shall be responsible for any leaks that develop from the work performed making the reconnection. The contractor shall also be responsible for the cost of any water lost should the back-side connection develop a leak. Connections at the meter box shall be left open for inspection.

CW-13 CONCRETE THRUST BLOCKING

Concrete for thrust blocks shall be from a "pre-mix" vendor delivered by mixer truck to the site, proportioned to achieve 3,000 psi compressive strength when the line is to be pressurized. Alternatively, site mixed concrete may be allowed provided commercial pre-blended dry bag concrete products are used and mixed so as to achieve the required compressive strength.

Concrete thrust blocking shall be cast in place and have a minimum of 1/4-square-foot bearing against the fitting and 2 square feet of bearing against undisturbed soil and shall be clear of joints so as to permit taking up or dismantling joint. All poured in place blocking shall have a minimum measurement of 12 inches between the pipe and the undisturbed bank. The Developer shall coordinate with the inspector when preparations for thrust blocks are made to allow on site inspection before and/or during concrete placement. All blocking configurations and sizes shall be per Standard Plans 3 and 4. All blocking as shown on the standards are considered as minimums, and consideration should be given to unusual circumstances and topography.

CW-14 AUGERED OR BORED CASINGS

Casings shall be required as determined by the lead agency for service lines or mains installed under rockeries, retaining walls, state highways, or main thoroughfares.

Water mains installed in casing pipe shall be made by jacking, driving, or augering a steel casing pipe beneath the surface. No open excavation shall be made closer than six feet from the edge of pavement. The diameter of the casing shall be sufficient to allow installation of the water main and also to provide allowance for adjustment of the water main to proper line and grade. Wall thickness shall be sufficient to withstand installation force and highway loading and shall not be less than 3/8-inch.

Provisions shall be made to monitor possible cave-ins outside the casing. The voids shall be filled by pumping grout at low pressure.

The cutter head shall not protrude more than 1/3rd the diameter of the casing or max 8" to prevent or minimize cave-ins.

After installation and testing of the water main, and with the approval of the inspector, dry sand shall be blown in the casing pipe to fill all voids. Casing ends shall be sealed using linkseal, mortar, or other approved method. A temporary blow-off shall be placed at each end of the casing to verify and facilitate sand placement. Calculations shall be performed to show the amount of material installed has filled the interstitial void between the installed sewer main and the casing.

Restrained mechanical joint pipe shall be installed in all casings. Approved stainless steel casing insulators (Cascade Water Works Manufacturing, or equal) shall be used to protect the pipe and adjust it to proper grade. The water main may be pushed or pulled into the casing pipe, unless MEGALUGS are used for joint restraint, in which case the water main shall be pulled into and through the casing pipe.

All bore pits or related excavations shall be closed at the end of each day. Ditches must be backfilled or covered with steel sheets and, within public or private rights-of-way, barricaded with minimum 5-foot high chain link fencing and flashing warning lights to prevent people or animals from falling into the trench.

The requirements of the roadway agency as contained in the construction permit, or as issued by oral instructions of the authorized representative of the roadway agency shall be followed by the Developer.

CW-15 CONSTRUCTION ON STEEP SLOPES

Where construction occurs on slopes 20% or greater, the developer shall install concrete pipe anchors and slope retainers or other approved slope retainers as shown on Standard Plan 5.

All water and sewer mains installed on slopes of 20% or greater, or within fill slopes shall be restrained joint Class 52 ductile iron pipe.

For water mains constructed on slopes of 20% or greater, one concrete pipe anchor shall be installed for each pipe section.

CW-16 PIGGING WATER MAINS

The Developers Engineer shall develop a pigging plan for review by the District. The entire pipeline route needs to be pigged including sterile connections. Pigs shall be foam cubes 2" larger than the inside diameter of the main or foam pigs (See MW-23). 1" temp blow-offs will be required if air will be trapped in the filling process. Temp blow-offs or other exit points shall be designed so pig removal can be accomplished with minimal potential for contamination of the new system.

CW-17 FILLING WATER MAINS

The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before filling, flushing and testing. Where permanent blocking is not required, the Developer shall furnish and install temporary blocking.

As soon as pipe is adequately secured against movement under pressure, it may be filled with water. All water used for filling and flushing shall be metered to account for lost water. The new main shall be filled slowly. Max fill rate 1ft/second. A state approved backflow device shall be used to protect the District's existing system from cross contamination during filling and flushing. The backflow device shall be of sufficient size to allow for flushing (2-inch diameter minimum). All service caps, angle stops or setter valves shall be open or opened to expel air and tightened or closed after air removed. Fire hydrant valves and fire hydrant auxiliary gate valves shall be opened and cap removed on the fire hydrant. The cap shall be re-installed and tightened after air is removed. Fire hydrant valves and fire hydrant auxiliary gate valves shall be opened so as to remove air. Provisions shall be made to flush and remove high concentrations of chlorinated water 24 hours after fill.

CW-18 TESTING AND DISINFECTING

All pipelines shall be tested and disinfected prior to acceptance of work. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed, and operated by the Developer. Feed for the pump shall be from a barrel or other container so that the actual amount of "makeup" water can be measured periodically during the test period.

The maximum length of pipe that may be pressure tested at one time is 1,500 LF.

The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Developer shall furnish and install temporary blocking.

Water supply for filling, testing and flushing of the new mains will be available from the existing distribution system at no cost for one testing and flushing cycle. However, if water is needed for additional tests, the Developer shall be billed for water used at the current rate of the District. High volume flushing of the system will occur after the permanent full diameter connection is made. The Developer shall obtain specific permission from the District during the months of June through August before any high volume flushing will be allowed.

After the pipe is filled and all air expelled, it shall be pumped to a test pressure equal to 150 psi in excess of the operating pressure, and this pressure shall be

maintained for a period of 1/2 hour. In accordance with manufacturer's recommendation, all valves may be limited to a pressure differential equal to the rated pressure of the valve (200 psi minimum), but shall not restrict the test pressure of the main. Mainline testing shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. Hydrant ports shall also be tested to hold static pressure without any visible leaks. Hydrostatic tests shall be performed on every complete section of water main between two valves without back pressure on adjoining sections. Alternatively, pressure may be released in a safe manner beyond the valve being tested. All valves, including fire hydrant auxiliary gate valves shall be tested in this manner.

In addition to the hydrostatic pressure test, a leakage test shall be conducted on the pipeline per AWWA C600 Latest Revision. The leakage test shall be conducted at the same pressure as the hydrostatic pressure test for a period of not less than 1/2 hour. The quantity of water lost from the main shall not exceed the number of gallons per hour determined by the formula:

$$L = \frac{SD(P)^{0.5}}{148,000}$$

in which

L = Allowable leakage, gallons/hour

S = Length of pipeline tested

D = Nominal diameter of the pipe in inches

P = Avg. test pressure during leakage test, psi

Defective materials or workmanship, discovered as a result of the tests, shall be replaced by the Developer at the Developer's expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be rerun at the Developer's expense until a satisfactory test is obtained.

As sections of pipe are constructed and before pipelines are placed in service they shall be sterilized in conformance with AWWA C-651 latest version, the requirements of the State of Washington, Department of Social and Health Services.

Chlorine shall be applied in one of the following manners, listed in AWWA C-651-14 section 4.3.,4.4 or 4.5

1. Tablet/ Granule method of chlorination. May only be used if pipe was delivered with factory caps that remain in place until pipe is installed and no debris or ground water was allowed to enter pipe. Note: If ground water or debris is allowed into waterlines using the Tablet/ Granule method, temporary blow-offs shall be set on all end points immediately and granules flushed out.
2. Continuous Feed Method of Chlorination.
3. Slug Method of Chlorination.

Initial and 24-hour chlorine doses shall be per AWWA C-651-14 latest version.

After the desired chlorine concentration has been obtained throughout the section of line, the water in the line shall be left standing for 24 hours. Unless water temperature is lower than 41 degrees F then 48 hours. Following this, the line shall be thoroughly flushed and pigged and tested for residual chlorine concentration. Three (3) pipe volumes shall be flushed initially. Additional flushing shall continue if residual content is greater than levels found in the existing system. Minimum flushing speeds shall be 3" per second. Additional flushing will be required after final connection is made if minimum flushing speed not attained. At no time, shall chlorinated water from a new main be flushed into a body of fresh water. This is to include lakes, rivers, streams, and any and all other waters where fish or other natural water life can be expected.

The contractor shall provide all materials and equipment for de-chlorination and shall be responsible to obtain permission for flushing into storm drainage systems or drainage courses. The contractor shall be responsible for all damages resulting from flushing. The contractor shall provide a water tank, if in the opinion of the District, damage may occur, or if approvals have not been obtained for flushing. The contractor may flush into the District's sanitary sewer system only with prior permission. Proper screens must be installed to prevent debris from entering the sanitary sewer system.

Water sampling shall be performed by the District's inspector after the flushing is completed and again 17 hours minimum after the first sample. The line must not be placed in service until a satisfactory bacteriological report has been received.

Only District representatives shall be allowed to operate existing and new tie-in valves. Developer's personnel are expressly forbidden to operate any valve on any section of line which has been accepted by the District.

CW-19 CONNECTION TO EXISTING WATER MAIN / PLACING NEW MAINS IN SERVICE

Wet tap connections shall be installed as shown on the Plans & Standard plan No. 1. The tapping valve shall closed and remain closed after Tapping.

Cut-in tees and crosses shall be installed as shown on Standard Plan No. 1 and the valves on the branches of the tee or cross shall remain closed.

At connections of new piping to existing piping all of the new piping, appurtenances and blocking shall have been installed, disinfected and visually tested. The contractor is required to use a state approved backflow prevention device for filling, testing and flushing of the new water system prior to cutting into the existing line.

The District shall be notified by e-mail seven (7) working days in advance of all scheduled connections. No cut-in connections or connections of new piping to existing piping will be scheduled on Fridays or Mondays. Shutdowns shall be permitted from 9:00 a.m. to 3:00 p.m., Tuesday through Thursday. Connections shall not be allowed on Holidays or days leading up to or after a Holiday per the District's discretion.

Special circumstances may require shutdowns to be performed after-hours when affecting certain businesses or schools. Such after-hours shutdowns shall be scheduled only upon approval by the District.

All equipment and material necessary to make the connections shall be delivered to the site prior to the start of work. Bolts, flanges, gaskets, couplings and all accessories shall be checked and pre-assembled where possible by the Developer and verified by the District prior to shut down of the water system.

Excavation at the connection point shall be extended a minimum 1' below the pipe, with a deeper sump to prevent contamination when de-watering pipe. The contractor shall not cut into the pipe until authorized by the District's Inspector or representative.

Ditch water must be kept clean or clarified prior to placing in the District's sewer, or in storm drain system. Contractor shall receive prior approval from the Jurisdictional authority to de-water trench into storm drainage.

Before connection or cut-in, the fittings, pipes, valves, and couplings shall be cleaned and sterilized with chlorine solution in the same manner as provided for the pipeline. The cleaning and sterilizing shall be done immediately prior to installation and in the presence of the District. Once the water has been shut off, the Developer shall proceed rapidly and without interruption to complete the connection. Installation of mechanical pipe restraints such as Mega-lugs or field lock gaskets may be necessary to allow a visual test for leakage of all joints or taps under full line pressure prior to backfill.

Short spools and fittings for connections may be sterile swabbed immediately prior to making the connection, and must be witnessed by the District's Inspector. Sterile swabbing shall be performed with a new cleaning pig, mop, or bundled rags to prevent contamination. Cleaning gear shall be capable of reaching all portions of the pipe.

The Contractor shall provide temporary blocking at bends, fittings, and pipe ends as necessary.

After connection to the existing system, the opening of valves shall only be accomplished by the District's authorized representative. The Contractor shall not backfill the connection until after the connection is checked and inspected under normal line pressure. Backfilling and compaction of the trench and installation and

maintenance of temporary trench patching shall be in accordance with local jurisdictional requirements.

CW- 20 ASBESTOS/CEMENT WATER PIPE

Asbestos/Cement (AC) water pipe cannot normally be accurately located in the field by standard locating methods. Approximate location of AC mains may be determined by identifying valve locations in the field. Potholing to determine precise locations of AC water pipe shall be required as necessary.

Any work to be performed upon existing asbestos/cement water pipe shall be in conformance with the latest edition of "Recommended Standard Asbestos/Cement Pipe Work Practice Procedures and Training Requirements," adopted and published by the Pacific Northwest Section of the American Water Works Association, which is included herein by reference, the Puget Sound Clean Air Agency (PSCAA) Asbestos Standards, and Chapter 296-65 of WAC, except as revised herein. Any AC pipe which is removed from service and is not disturbed may be capped and abandoned in place only with the permission from the local jurisdiction. Any exposed and disturbed pipe to be removed from service shall be removed and disposed of at an appropriate waste site. The disturbed pipe may not be relocated in the trench or otherwise disposed of on site. No new or used AC pipe is to be installed in the District. Disposal of any removed materials shall be at an approved off-site facility, in accordance with the above publications. All materials, equipment and safety gear shall be on site prior to cutting, tapping or removing any AC pipe.

The Contractor shall be responsible for obtaining all necessary permits and approvals from the appropriate jurisdiction for work on and disposal of AC pipe.

CW-21 RESTORATION OF DISTURBED AREAS

Restoration of public and private improvements shall be performed by experienced contractors or by employees of the Developer who are qualified in this type of work.

The Developer shall be responsible to maintain all roadway areas until the permanent repair is accomplished.

The Developer shall limit construction time on each easement to the very minimum possible, including the time required for installation and testing. Restoration work shall follow immediately after pipe testing with due allowance for weather and season of year.

Temporary Trench Patching

Temporary trench patches shall be Class ½" hot mix asphalt (HMA), and shall conform to Section 5.04 of the WSDOT Specifications. The contractor shall maintain the temporary trench patch until the permanent patch is installed.

Asphalt Pavement

The existing asphalt concrete shall be cut on a neat line by saw cutting prior to excavation. Before the end of each day the trench shall be backfilled and compacted and a temporary hot mix patch (2" minimum thickness) shall be placed and maintained in good condition until replaced.

Immediately prior to permanent resurfacing of bituminous surfaced roads, the edges shall be re-trimmed a minimum of 12 inches wider (or as required by the local jurisdiction) than the excavation with straight vertical edges free from irregularities and the temporary patch shall be removed. The City of Woodinville requires transverse patches to be cut back 3 times the width of the trench on each side. Edges of the trimmed surfacing shall be thoroughly tacked with an emulsified asphalt (SS-1) and asphalt concrete shall then be placed and compacted to the grade of the original surface. All asphalt joints shall be sealed with an approved sealer (AR4000). Permanent patch shall be installed within 30 days from the time the excavation was backfilled.

Crushed Surfacing

The existing gravel roadway shall be restored by grading the surface to a uniform grade to the width of the roadway prior to construction.

Where ditch sections are disturbed during construction, the ditch shall be restored to the same cross sections as existed prior to construction and shall be restored prior to placement of the crushed surfacing.

The Developer shall spread the crushed surfacing as each load is placed and shall compact the crushed surfacing after the material has been spread.

Landscaped and Improved Areas

All improvements and landscaping within the construction area which are damaged, destroyed or the use thereof interfered with due to the operation of the Developer shall be immediately restored to their former conditions by the Developer at the Developer's expense, using the services of a qualified nursery and/or sod installation company, except where noted otherwise. Notice should be given to the property owners along the route of construction by the Developer advising them of the methods to be used to preserve and restore the improvements.

Unimproved Areas

All areas disturbed by this construction for which no other restoration is specified, and for which there were no private improvements existing prior to construction, shall be seeded for erosion control.

Seeding shall not be done during windy weather or when the ground is frozen, excessively wet, or otherwise untillable. Seed shall be placed at a minimum rate of 120 pounds per acre.

Seeding, fertilizing and mulching shall be installed using an approved type hydroseeder. If hand seeding is used with prior approval, evidence of vigorous growth, in the opinion of the District, will be required prior to final acceptance.

Fertilizer shall be applied in accordance with requirements in the General Provisions, Section GP 40.L, and per the latest addition of King County Surface Water Manual, Appendix D, in accordance with the procedures and requirements for seeding.

Wood cellulose fiber mulch shall be applied in accordance with the procedures and requirements for seeding at a minimum rate of 1000 to 1500 pounds per acre.

CW-22 INSTALLATION OF PRESSURE-REDUCING STATION

Excavation shall be carried to the proper grade and to a dense undisturbed firm foundation. Grade shall be as shown on drawings, but in no case shall the top slab extend higher than 12 inches below adjoining road grades. The vault shall be carefully placed on a prepared foundation of foundation gravel. The excavation shall be kept free of ground and surface water during installation. The Contractor shall use caution at all times to prevent flotation of the vault.

Backfill around the structure shall be carefully placed in layers not over 12 inches thick and mechanically compacted. No brush, topsoil, organic material or asphalt

shall be used in backfilling. Where original excavated material is unsuitable for backfill, as determined by the Engineer, imported gravel backfill shall be placed. The unsuitable material shall be removed by the Contractor to a disposal site, in accordance with Jurisdictional requirements. The backfill shall be compacted by mechanical compactors to 95% of maximum density, ASTM D1557, to finished grade.

All pipe penetrations shall be cored.

Wrapid Seal or NPC External Joint Wrap shall be required at all pre-cast joints in areas of high groundwater or as directed by the District.

The Developer / Contractor shall provide permanent electrical service to the vault. The Developer/ Contractor shall obtain the necessary permits and perform all coordination with the electrical utility or its representative. A redlined electrical "As-Built drawing shall be submitted to the District for review and inclusion in the project as-Built. The Redline drawing shall include changes of all phases of the electrical work.

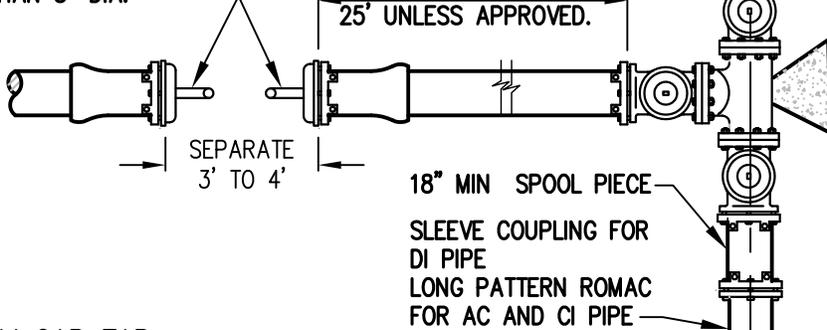
The vault shall include a 4-inch Schedule 40 PVC drain to daylight. The drain shall be placed at a minimum 2% slope with tracer wire (12-6). Vault drains that daylight to an open ditch require approval from the appropriate jurisdiction (King County or Cities of Bothell, Kirkland, Redmond or Woodinville). If gravity storm drainage is not available, a sump pump to discharge storm drainage and water from the vault shall be provided.

The piping, vault and metal items shall be painted per Woodinville Water Specifications, MW-11. All surfaces shall be clean and dry. No painting shall be done before the prepared surfaces are approved by the Engineer. The pipe shall be empty and the surfaces shall be free of all moisture and condensation before application begins.

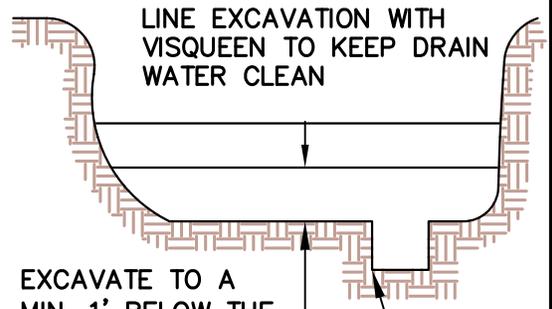
Upon completion of the installation the Contractor shall furnish the services of a technical manufacturer's representative for the pressure relief and pressure reducing valves. The technical representative shall check the installation, test the equipment, place it in operation and train the District's representative.

See Standard Plans 26, 26B, and 26C for Pressure Reducing Valve Station details.

INSTALL 2" DIA. TEMP BLOW OFF FOR 8" DIA. AND SMALLER AND 3" FOR LARGER THAN 8" DIA.



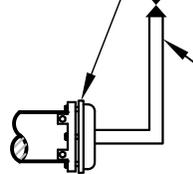
PIPE MAY DIRECTLY CONNECT AND EXTEND OUT OF THE STREET PER CONDITIONS IN NOTE 11. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINTS. MAX LENGTH 25' UNLESS APPROVED.



EXCAVATE TO A MIN. 1' BELOW THE EXISTING PIPE.
PROVIDE DEEP SUMP FOR PUMPING OUT WATER

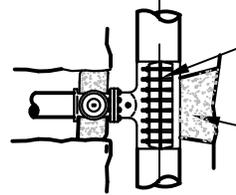
TRENCH PREPARATION

MJ CAP TAP 2" FOR 8" OR SMALLER AND 3" FOR 8" AND LARGER.

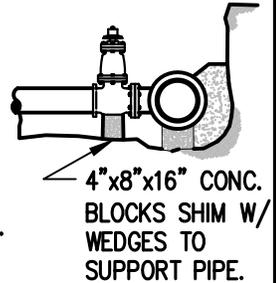


CUT-IN CONNECTION
NOT TO SCALE

2" GALV PIPING
2" GATE OR BALL VALVE W/ 2.5" MNST FIRE HOSE CONNECTION.
UPSIZE TO 3" IF MAINLINE LARGER THAN 8".



TAPPING SLEEVE (SEE NOTES 1&2)
CONC. THRUST BLOCKING (SEE STD. PLAN 3)

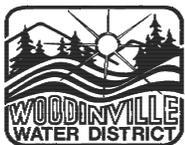


TEMP BLOW-OFF

TAPPED CONNECTION
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL SUBMIT E-MAIL REQUEST FOR SHUT DOWN (TIME AND DATE - SEE NOTE 8).
2. TAPPED CONNECTIONS NOT ALLOWED WITHOUT SPECIFIC APPROVAL FROM THE DISTRICT.
3. NO CONNECTION WILL BE ALLOWED UNTIL ALL PRESSURE TESTING COMPLETED, AND SATISFACTORY BACTERIOLOGICAL TEST RECEIVED. SEE CROSS CONNECTION CONTROL SECTION IN SPECIFICATIONS.
4. TAPPING SLEEVE TO BE STAINLESS STEEL FOR AC PIPE AND EPOXY COATED STEEL FOR DUCTILE OR CAST IRON PIPE. CLOSEST EDGE OF TAPPING SLEEVE MUST BE 3' (MIN.) FROM COUPLING ON AC PIPE.
5. SEE STANDARD PLANS 6 (VALVE BOX), 3 (THRUST BLOCKING) & 2 (PIPE AND FITTING RESTRAINT REQUIREMENTS.)
6. BACKFILL PER JURISDICTIONAL REQUIREMENTS WHEN IN ASPHALT. ALL OTHER AREAS PER THE STANDARD SPECIFICATIONS.
7. TEMP BLOW OFF'S MUST BE PROTECTED FROM DAMAGE. PLACE IN TRAFFIC BOX. TEMP BLOW OFFS IN PUBLIC R/W AREAS SHALL BE PLACED OUT OF PAVING. PROVIDE 2.5" MNST FIRE HOSE CONNECTION SEE DETAIL ABOVE.
8. WATER OUTAGE ONLY ALLOWED TUESDAY THROUGH THURSDAY 9:00AM TO 3:00PM. (7) WORKING DAYS NOTICE REQUIRED. AFTER HOUR CONNECTION MAY BE REQUIRED IF A BUSINESS, SCHOOL, ETC. IS IMPACTED.
9. ALL MJ JOINTS TO BE MEGALUG OR EQUAL.
10. SIMILAR TEMP B.O. REQUIREMENTS FOR TAPPED CONNECTIONS. LOCATE BLOW OFF OUT OF ASPH. WHEN POSSIBLE.
11. ALL PIPE, FITTINGS AND OTHER COMPONENTS USED IN CONNECTIONS AND THE STUB ON TO SITE SHALL BE STERILE SWABBED W/ PIPE SIZE FOAM PIG AS PART OF THE PROJECT PIGGING REQUIREMENTS CONNECTIONS SHALL BE TESTED UNDER FULL LINE PRESSURE PRIOR TO BACKFILL. THE STUB ONTO SITE SHALL BE PRESSURE TESTED (AT 200PSI) IN THE PRESENCE OF THE DISTRICT INSPECTOR.



**Woodinville
Water District**

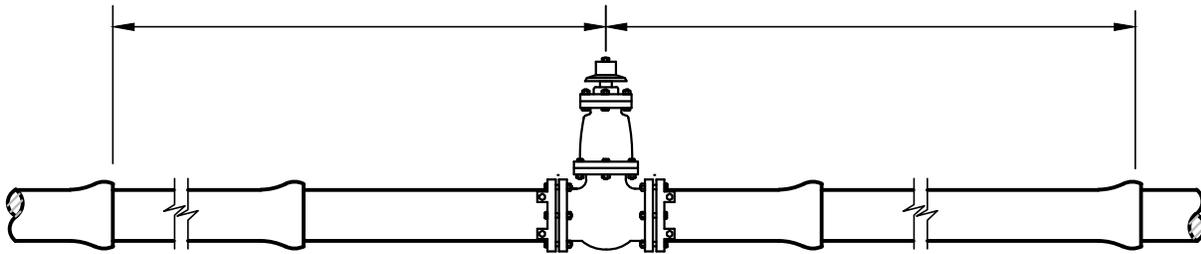
**CONNECTION
REQUIREMENTS**



**WATER STD.
PLAN NO. 1**

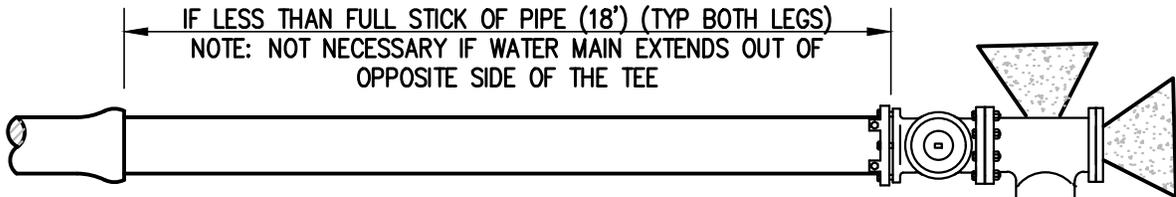
**REVISION DATE
10-16**

RESTRAIN PIPE JOINTS W/ FIELD
LOCK GASKETS (MIN. 35') EACH SIDE OF IN-LINE VALVE

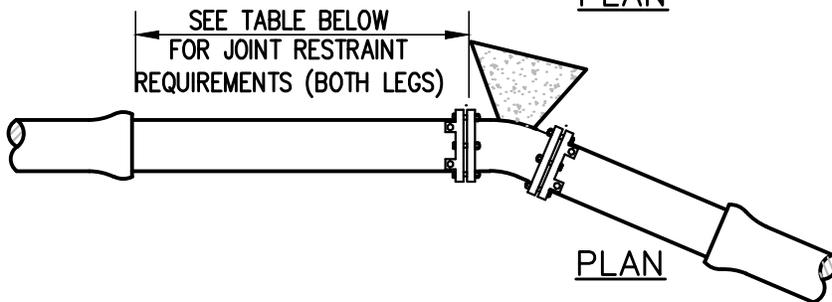


ELEVATION

INSTALL FIELD LOCK GASKET IN PIPE JOINT
IF LESS THAN FULL STICK OF PIPE (18') (TYP BOTH LEGS)
NOTE: NOT NECESSARY IF WATER MAIN EXTENDS OUT OF
OPPOSITE SIDE OF THE TEE



PLAN



PLAN

DEGREE OF BEND	RESTRAIN PIPE JOINT IF CLOSER THAN
11 1/4° BEND	NA
22 1/2° BEND	NA
45° BEND	8'
90° BEND	18'

NOTES:

1. THRUST BLOCKING REQUIRED – SEE STANDARD PLAN NO. 3.
2. ADDITIONAL RESTRAINT MAY BE REQUIRED (AS DIRECTED BY THE DISTRICT) FOR POOR GROUND CONDITIONS.
3. MEGALUGS (EBAA IRON OR EQUAL) SHALL BE INSTALLED ON ALL MECHANICAL JOINTS.
4. SEE STANDARD PLANS NO. 4 FOR VERTICAL BEND REQUIREMENTS.



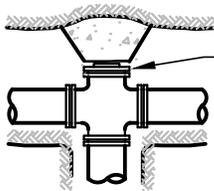
Woodinville
Water District

PIPE AND FITTING
RESTRAINT REQUIREMENTS



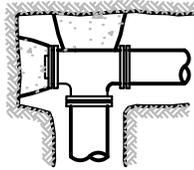
WATER STD.
PLAN NO. 2

REVISION DATE
11-12

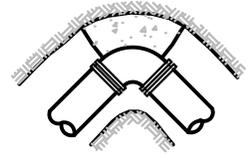


STEEL PLATE. FORM TO ALLOW FOR BOLT REMOVAL

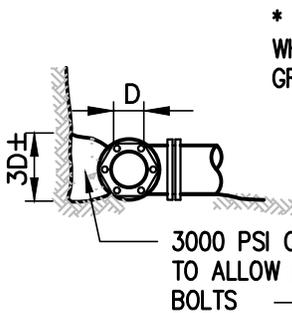
CROSS WITH PLUG



PLUGGED TEE

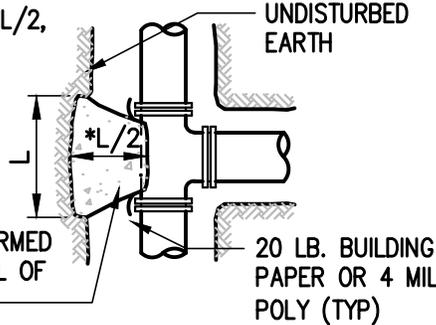


HORIZONTAL BEND

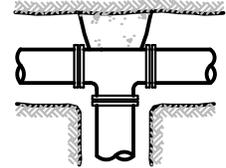


ELEVATION

* USE 12" OR L/2, WHICHEVER IS GREATER.



PLAN



TEE

THRUST BLOCK TABLE

PIPE SIZE	TEE OR END PLUG	90°	45°	22 ½°	11 ¼°
4" OR 6"	3	4	2	2	2
8"	6	7	4	2	2
10" OR 12"	12	16	9	5	3
16"	21	29	16	8	4

MINIMUM BEARING AREA AGAINST UNDISTURBED EARTH (SQUARE FEET)

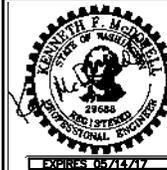
NOTES:

1. BEARING AREA OF CONC. THRUST BLOCK BASED ON 200 PSI PRESSURE AND SOIL BEARING LOAD OF 2000 POUNDS PER SQUARE FOOT.
2. AREAS MUST BE ADJUSTED FOR OTHER SIZE PIPES, PRESSURES AND SOIL CONDITIONS.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF ½ SQUARE FOOT BEARING AGAINST THE FITTING. SIDES SHALL BE FORMED WITH PLYWOOD OR EQUIVALENT.
4. THRUST BLOCK SHALL BEAR AGAINST FITTING ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT DISMANTLING OF JOINTS.
5. CONCRETE TO BE 3000 PSI MINIMUM. PRE-MIX CONCRETE IS PREFERRED. IF CONCRETE IS HAND MIXED THE PROPORTIONS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. COMPRESSIVE TESTS OF "HAND MIXED" CONCRETE MAY BE REQUIRED. PRE-INSPECTION OF BLOCKING AREA REQUIRED PRIOR TO PLACEMENT OF CONCRETE.
6. CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
7. SEE STANDARD PLAN NO. 2 FOR PIPE AND FITTING RESTRAINT REQUIREMENTS.
8. INSPECTION REQUIRED PRIOR TO BACKFILL.



**Woodinville
Water District**

**THRUST BLOCKING
REQUIREMENTS**



WATER STD.
PLAN NO. (3)

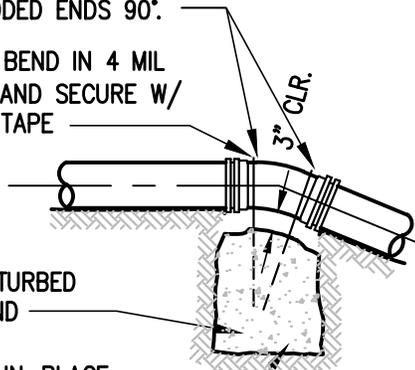
REVISION DATE
11-12

3/4" 'COR-TEN' OR #4 REBAR.
BEND LAST FOOT OF
EMBEDDED ENDS 90°.

WRAP BEND IN 4 MIL
POLY AND SECURE W/
DUCT TAPE

UNDISTURBED
GROUND

CAST-IN-PLACE
GRAVITY THRUST
BLOCK (1) CY MIN.
SEE NOTE 5.



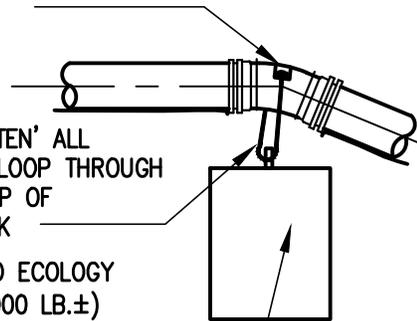
CAST IN PLACE

PIPE CLAMP (DIAM. OF PIPE).
SECURE ALLTHREAD W/ (2)
3/4" HEX NUTS

3/4" 'COR-TEN' ALL
THREAD- LOOP THROUGH
PICK STRAP OF
ECO-BLOCK

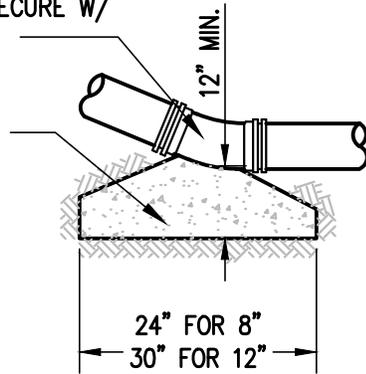
FULL SIZED ECOLOGY
BLOCK (3000 LB.±)
PERPENDICULAR TO
TRENCH & "KEYED" INTO
NATIVE GROUND

ECOLOGY BLOCK OPTION



WRAP BEND IN 4 MIL
POLY AND SECURE W/
DUCT TAPE

POURED IN PLACE
CONC. SEE NOTE 5.



REVERSE VERTICAL BENDS

RESTRAINED JOINT REQUIREMENTS

BEND SIZE	MIN. REQUIRED DISTANCE (LF) PIPE RESTRAINT EA. SIDE WITHOUT VERTICAL BLOCKING		MIN. REQUIRED DISTANCE (LF) PIPE RESTRAINT EA. SIDE WITH VERTICAL BLOCKING	
	4" TO 8"	12"	4" TO 8"	10" TO 12"
11 1/4°	30	30	0	0
22 1/2°	40	40	10	20
45°	NA	NA	20	30

NOTES:

1. DRAWING SUBMITTAL REQUIRED FOR APPROVAL BY THE DISTRICT WHEN PIPE DIAMETER EXCEEDS 12" OR VERTICAL DEFLECTION MORE THAN 45 DEGREES.
2. EBAA IRON MEG-A-LUGS OR EQUAL REQUIRED ON ALL MECHANICAL JOINTS.
3. POOR GROUND CONDITIONS WILL REQUIRE ADDITIONAL RESTRAINT, (AS DIRECTED BY THE DISTRICT).
4. ALL REVERSE VERTICAL BENDS SHALL BE BLOCKED AS SHOWN.
5. CONCRETE TO BE MIN. 3000 PSI COMPRESSIVE STRENGTH.



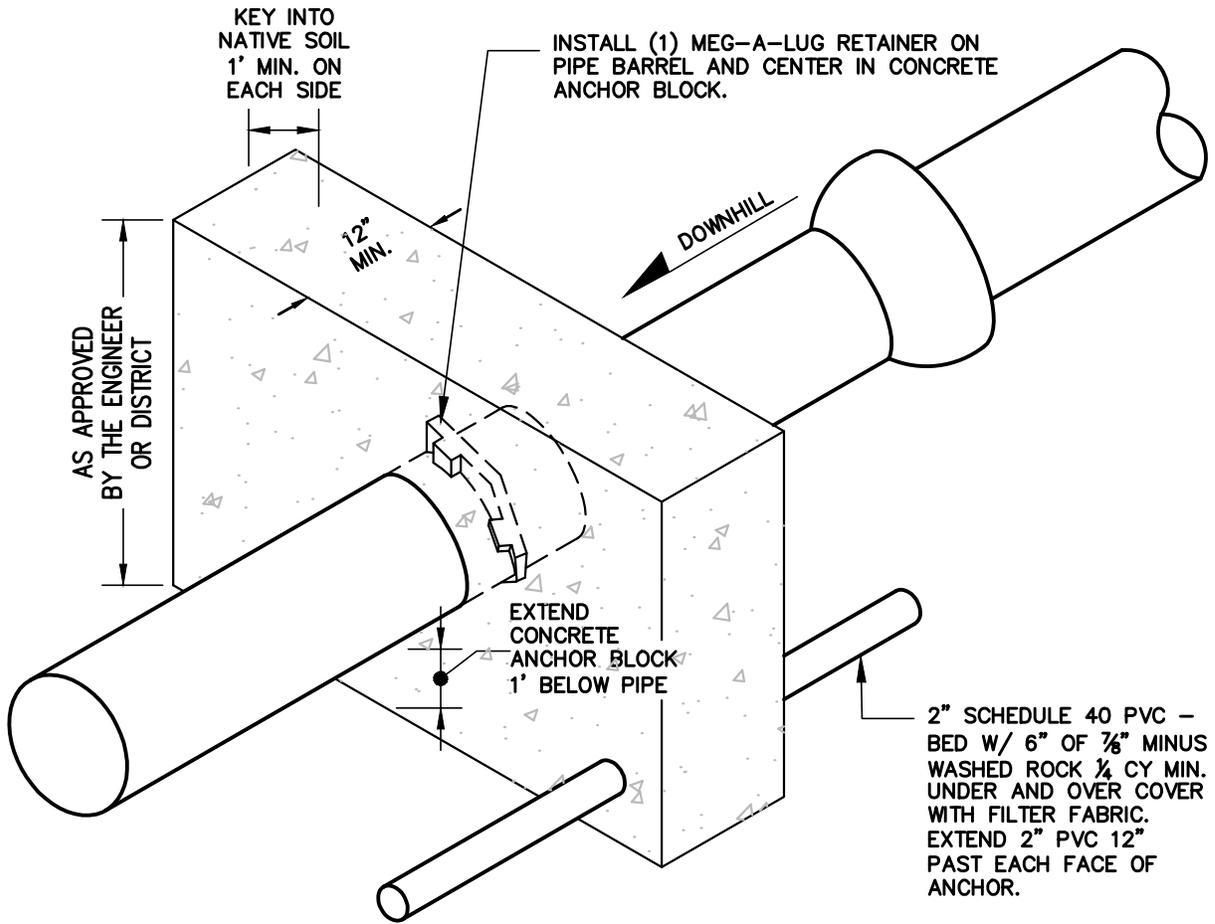
**Woodinville
Water District**

**VERTICAL BLOCKING
RESTRAINT REQUIREMENTS**



**WATER STD.
PLAN NO. 4**

REVISION DATE
12-11



NOTES:

1. HILLHOLDER PIPE ANCHORS REQUIRED ON SLOPES MORE THAN 20%.
2. SPACING AS APPROVED BY THE DISTRICT'S ENGINEER.
3. RESTRAINED JOINTS REQUIRED ON WATERLINE.
4. LOCATE PIPE ANCHOR/ SLOPE RETAINER ON DOWN HILL SIDE OF PIPE BELL WHEN PRACTICAL



**Woodinville
Water District**

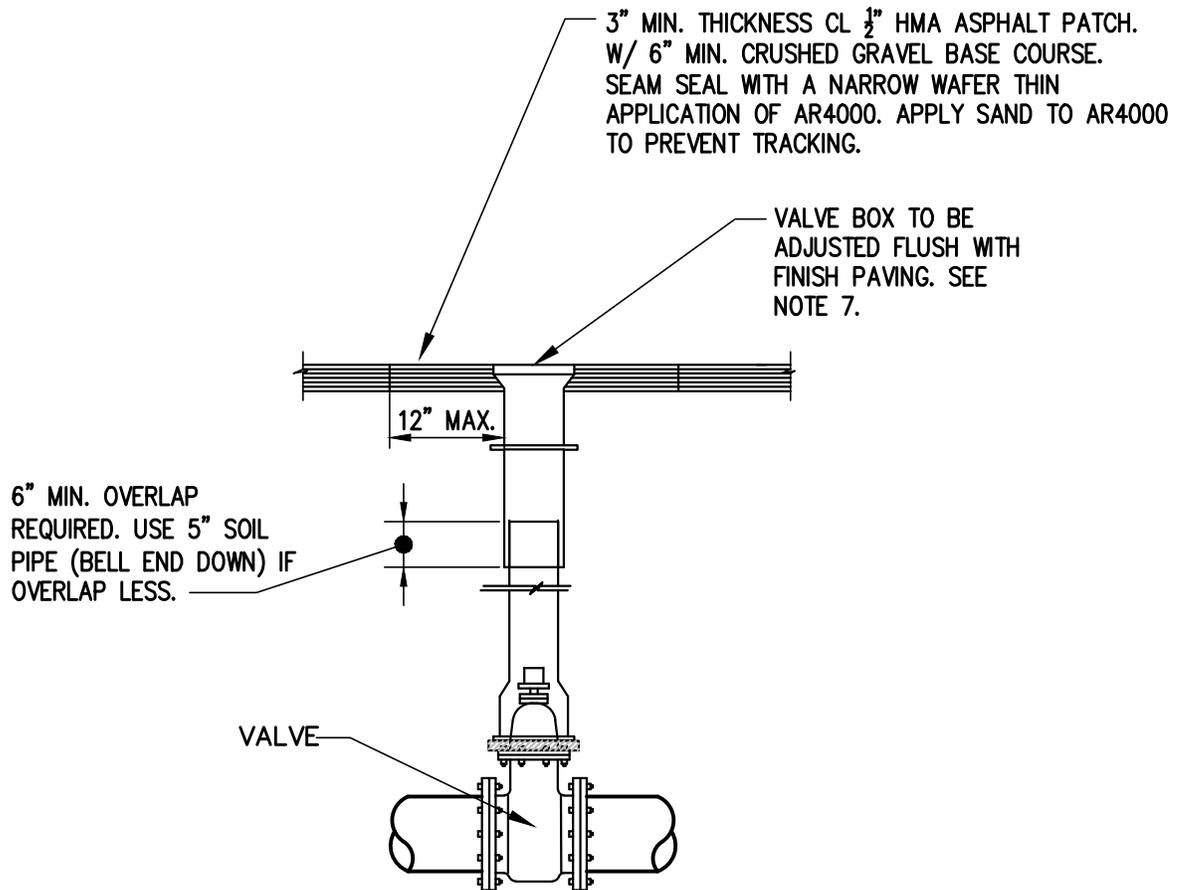
**PIPE ANCHOR /
SLOPE RETAINER**



**WATER STD.
PLAN NO. 5**

REVISION DATE

9-07



NOTES:

1. THE CONTRACTOR SHALL OFFSET STAKE ALL EXISTING VALVE BOX LOCATIONS. DIMPLES SHALL BE LEFT IN THE OVERLAY FOR LOCATING PURPOSES AND EMERGENCY ACCESS.
2. VALVE BOX & LID TO BE EAST JORDAN IRON WORKS PRODUCT NO. 85552737 CATALOG NO. 8555.
3. VALVE BOX LIDS TO BE A MIN. 3.5 INCHES IN OVERALL DEPTH. LOCKING VALVE BOX LIDS REQUIRED IF LIDS WILL NOT STAY PUT DUE TO TRAFFIC OR AS REQUIRED BY THE DISTRICT.
4. SAWCUT VALVE BOX COMPONENTS BROKEN OR JAGGED VALVE BOX SECTIONS NOT ACCEPTABLE.
5. USE OF OVERLAY RINGS REQUIRES APPROVAL FROM WWD AND RIGHT OF WAY JURISDICTION.
6. VALVE BOX LIDS TO BE PAINTED (2) COATS OF SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54T00154 SW4086.
7. VALVE BOXES SHALL BE ADJUSTED AFTER OVERLAY AND PATCHED AS SHOWN ABOVE. VALVES SHALL BE ADJUSTED WITHIN (3) WORKING DAYS OF THE OVERLAY.
8. IF ANY PART OF THE VALVE BOX NEEDS TO BE REPLACED, INSTALLATION SHALL BE PER STANDARD PLAN NO. 6.



**Woodinville
Water District**

**VALVE BOX ADJUSTMENT
IN ASPHALT OVERLAY**



**WATER STD.
PLAN NO. 6B**

REVISION DATE

3-16

SURFACE RESTORATION IN ACCORDANCE WITH LOCAL JURISDICTIONAL REQUIREMENTS.
 MINIMUM REQUIREMENTS SHOWN IN TRENCH PAVEMENT & SURFACE RESTORATION DETAIL
 NO. 8.

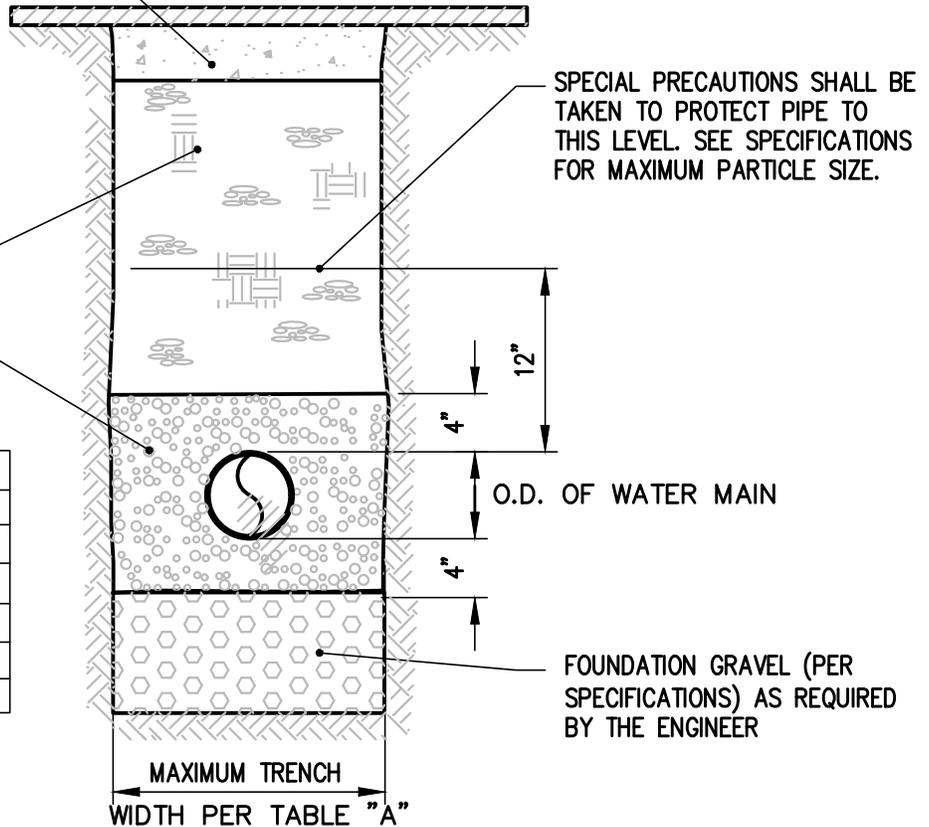
6.5" OF 5/8" CRUSHED GRAVEL (MIN.) REQUIRED
 IN HARD SURFACED AREAS. COMPACT TO 95%
 MAX. DENSITY. LOCAL JURISDICTIONAL
 REQUIREMENTS SHALL OVERRIDE.

SELECT NATIVE MATERIAL OR
 IMPORTED GRAVEL. COMPACT
 TO MIN. 95% MAX. DENSITY.
 SEE SPECIFICATIONS. SEE
 NOTE 1.

BEDDING GRAVEL

TABLE "A"

6" PIPE	2'-6"
8" PIPE	2'-6"
10" PIPE	3'-0"
12" PIPE	3'-0"
15",16" PIPE	3'-6"
18" PIPE	4'-0"
24" PIPE	4'-0"



NOTES:

TRENCH SECTION

1. LOCAL JURISDICTIONAL REQUIREMENTS OVERRIDE ALL APPLICABLE SECTIONS OF THIS DETAIL. WHEN WORKING IN A STREET R/W PLEASE REFER TO ALL LOCAL JURISDICTIONAL REQUIREMENTS FOR TRENCH EXCAVATION AND BACKFILL.
2. FILL AREAS SHALL BE FILLED AND COMPACTED PRIOR TO INSTALLATION OF WATER MAINS. 95% COMPACTION PER ASTM D-1557 REQUIRED IN FILL AREAS. REPORTS REQUIRED PRIOR TO TRENCHING.
3. BEDDING REQUIRED ONLY IF DIRECTED BY THE DISTRICT DUE TO NATIVE SOIL CONDITIONS. BEDDING SHALL BE 5/8" CRUSHED SURFACING.
4. PUMPING SOILS SHALL BE REMOVED FROM THE TRENCH BACKFILL IMMEDIATELY.
5. USE OF NATIVE SOILS FOR BACKFILL REQUIRES PROCTOR SAMPLES BE TAKEN PRIOR TO EXCAVATION. COMPACTION TESTS SUBMITTED DAILY ON NATIVE AND IMPORTED BACKFILL. BACKFILL SHALL BE REMOVED AND RECOMPACTED OR REPLACED UNTIL PASSING TEST RESULTS ARE OBTAINED.



**Woodinville
 Water District**

**TYPICAL
 LONGITUDINAL
 TRENCH SECTION**



WATER STD.
 PLAN NO. 7

REVISION DATE
 12-11

SURFACE RESTORATION IN ACCORDANCE WITH LOCAL JURISDICTIONAL REQUIREMENTS.
 MINIMUM REQUIREMENTS SHOWN IN TRENCH PAVEMENT & SURFACE RESTORATION DETAIL
 NO. 8.

6.5" OF 5/8" CRUSHED GRAVEL (MIN.) REQUIRED
 IN HARD SURFACED AREAS. COMPACT TO 95%
 MAX. DENSITY. LOCAL JURISDICTIONAL
 REQUIREMENTS SHALL OVERRIDE.

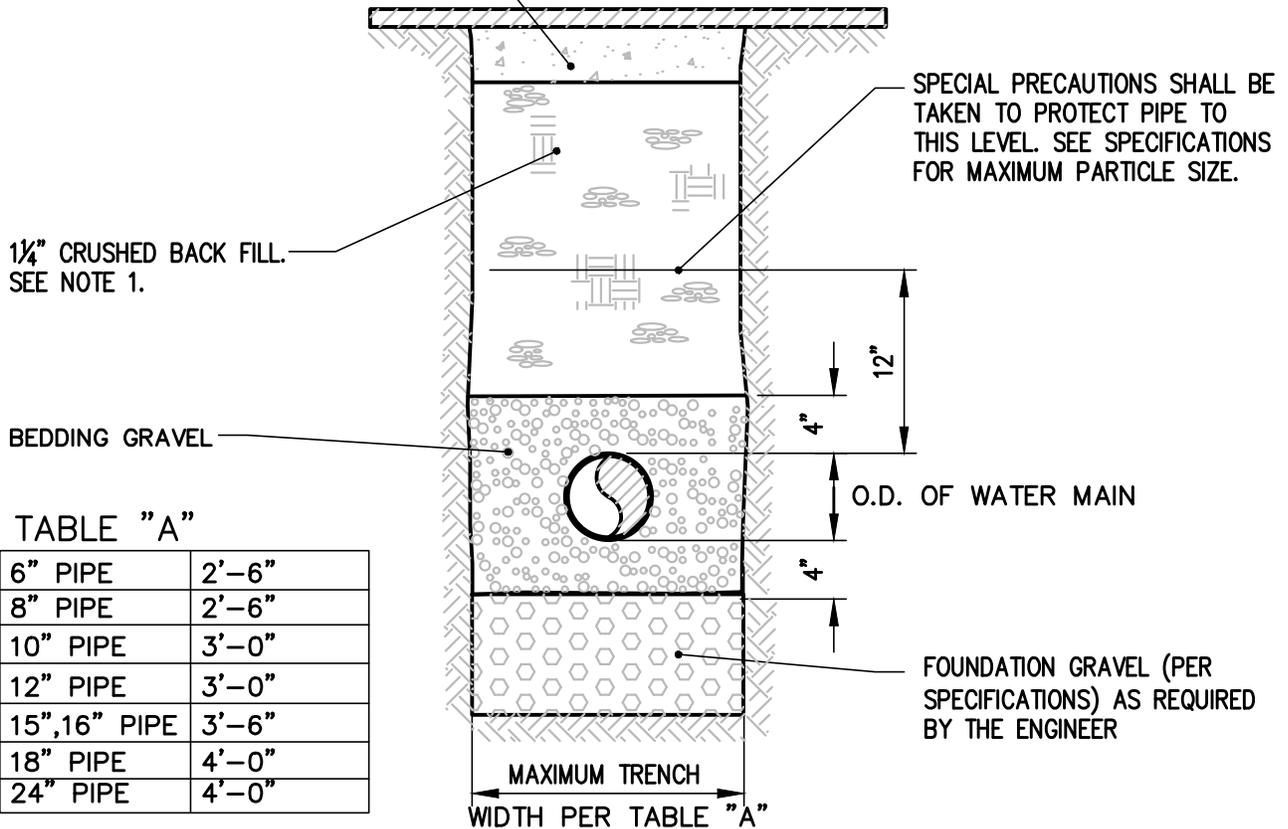


TABLE "A"

6" PIPE	2'-6"
8" PIPE	2'-6"
10" PIPE	3'-0"
12" PIPE	3'-0"
15",16" PIPE	3'-6"
18" PIPE	4'-0"
24" PIPE	4'-0"

NOTES:

TRENCH SECTION

1. LOCAL JURISDICTIONAL REQUIREMENTS OVERRIDE ALL APPLICABLE SECTIONS OF THIS DETAIL. WHEN WORKING IN A STREET R/W PLEASE REFER TO ALL LOCAL JURISDICTIONAL REQUIREMENTS FOR TRENCH EXCAVATION AND BACKFILL.
2. FILL AREAS SHALL BE FILLED AND COMPACTED PRIOR TO INSTALLATION OF WATER MAINS. 95% COMPACTION PER ASTM D-1557 REQUIRED IN FILL AREAS. REPORTS REQUIRED PRIOR TO TRENCHING.
3. BEDDING REQUIRED ONLY IF DIRECTED BY THE DISTRICT DUE TO NATIVE SOIL CONDITIONS. BEDDING SHALL BE 5/8" CRUSHED SURFACING.
4. PUMPING SOILS SHALL BE REMOVED FROM THE TRENCH BACKFILL IMMEDIATELY.
5. COMPACTION TESTS SHALL BE SUBMITTED DAILY ON IMPORTED BACKFILL. BACKFILL SHALL BE REMOVED AND RECOMPACTED OR REPLACED UNTIL PASSING TEST RESULTS ARE OBTAINED.



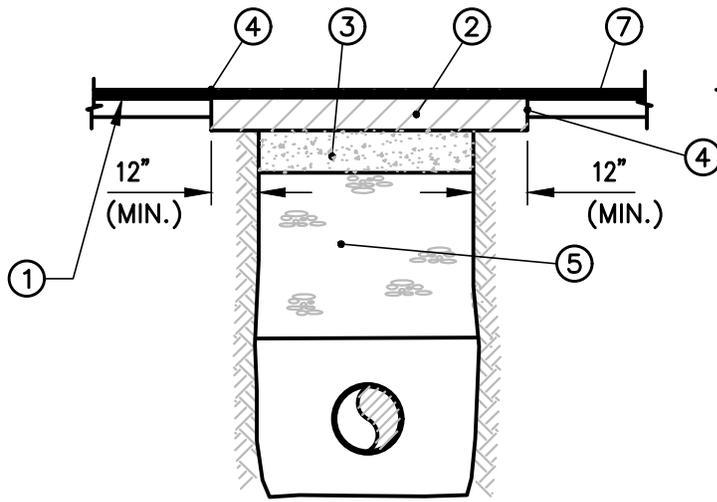
**Woodinville
 Water District**

**TYPICAL
 TRANSVERSE
 TRENCH SECTION**

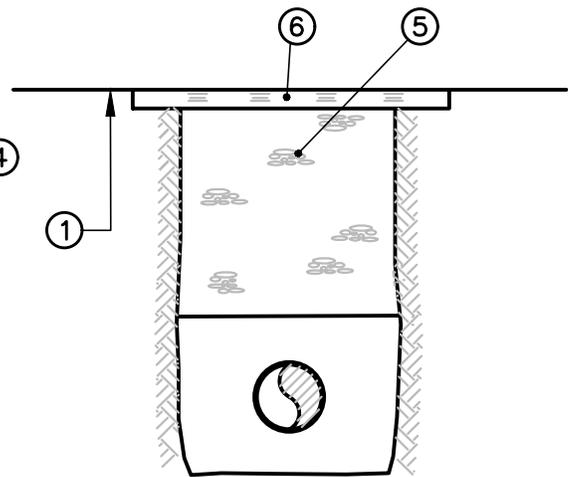


**WATER STD.
 PLAN NO. 7A**

REVISION DATE
 12-11



ACP RESTORATION



SHOULDER AND EASEMENT RESTORATION

- ① EXISTING SURFACE
- ② PERMANENT PATCH- MATCH EXISTING DEPTH (3" MIN.) DEPTH 1/2" HMA ASPHALT. JURISDICTIONAL REQUIREMENTS OVERRIDE.
TEMPORARY PATCH- 2" MIN. DEPTH 1/2" HMA ASPHALT ON 3" MIN. CRUSHED SURFACING.
- ③ CRUSHED GRAVEL PER STD PLANS 7 & 7A LOCAL JURISDICTIONAL REQUIREMENTS OVERRIDE.
- ④ NEAT LINE ACP CUT. TACK EDGES WITH EMULSIFIED ASPHALT SEAM SEAL WITH A NARROW APPLICATION OF AR4000. UNLESS OVERLAY SCHEDULED FOR CURRENT YEAR.
- ⑤ TRENCH BACKFILL- SEE STANDARD DETAIL 7 & 7A OR PER LOCAL JURISDICTION
- ⑥ RESTORE EXISTING SURFACE. TOP SOIL, CSTC (2" MIN.) OR AS NOTED ON THE PLANS.
- ⑦ 2" ASPHALT 1/2" HMA OVERLAY FULL WIDTH OVERLAY, INCLUDING PAVED SHOULDERS, WHEN SPECIFIED ON THE PLANS OR REQUIRED BY THE JURISDICTIONAL AUTHORITY.

NOTES:

1. THESE STANDARDS ARE THE MINIMUM ALLOWABLE. LOCAL JURISDICTIONAL REQUIREMENTS SHALL OVERRIDE WHERE APPLICABLE.
2. SEE TYPICAL TRENCH SECTION DETAIL (STANDARD PLAN 7 & 7A).
3. DAILY TEMPORARY TRENCH PATCH REQUIRED IF PERMANENT PATCHING NOT IN PLACE. CONTRACTOR SHALL BE AWARE "T" IS REQUIRED SO PERMANENT PATCH RESIDES ON 12" OF UNDISTURBED MATERIAL. PERMANENT PATCH SHALL BE INSTALLED W/IN 30 DAYS OF EXCAVATION. "T" CUT SHALL NOT BE PERFORMED UNTIL TRENCH IS BACKFILLED.



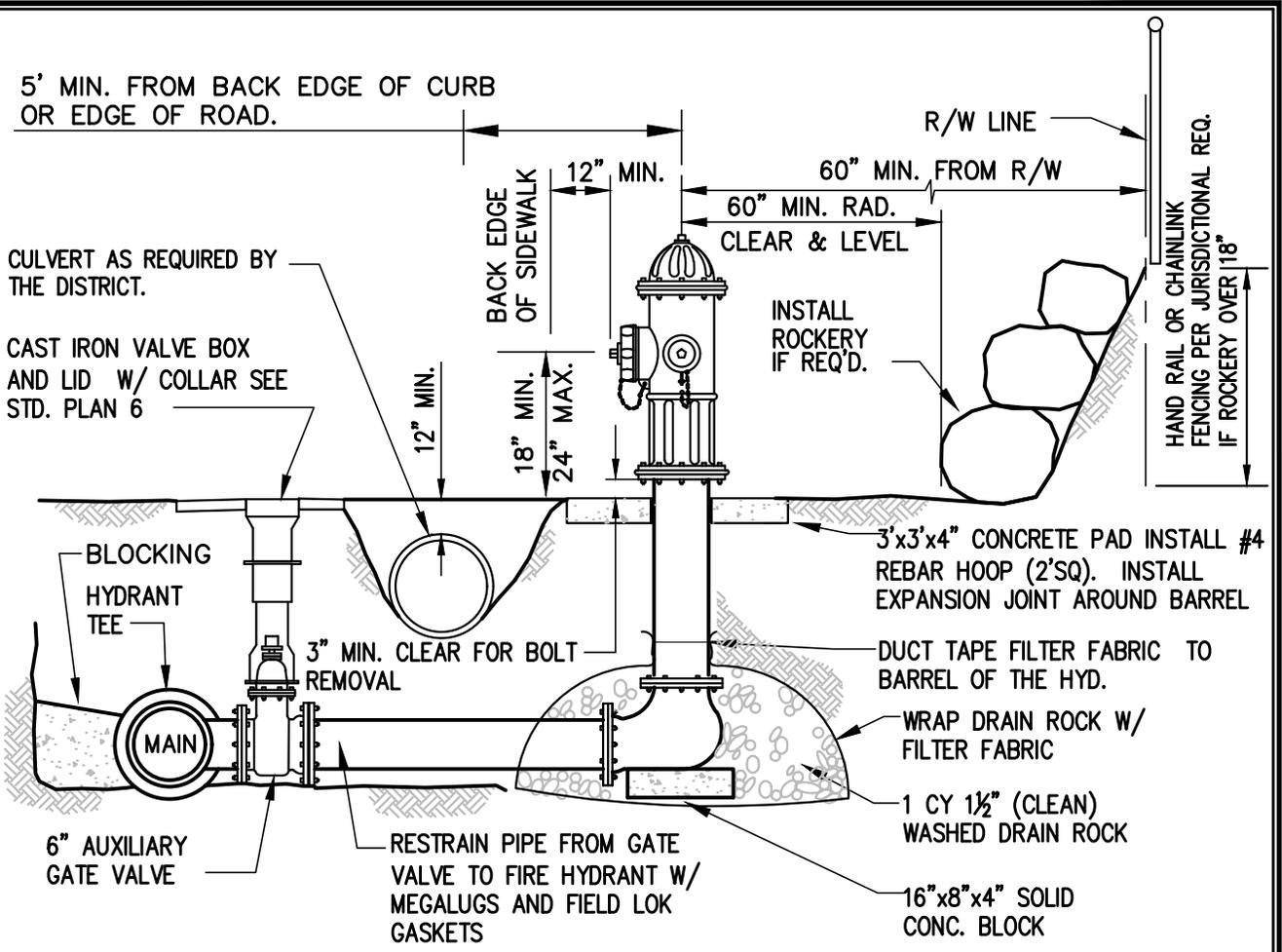
**Woodinville
Water District**

**TRENCH
PAVEMENT & SURFACE
RESTORATION**



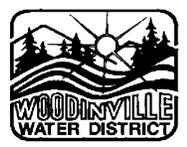
**WATER STD.
PLAN NO. ⑧**

REVISION DATE
12-11



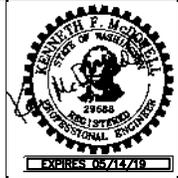
NOTES:

1. 6" DIA. CL 52 (PER SPEC'S) TO BE USED IF PIPE RUN UNDER 50'. 8" REQUIRED IF OVER 50'. AN 8"x6" TEE AND 6" GATE VALVE SHALL BE PLACED AT THE END OF AN 8" PIPE RUN W/ 6" D.I. CL 52 TO THE FIRE HYDRANT LOCATION.
2. SEE STANDARD PLANS 3, (THRUST BLOCKING), 6 (VALVE BOX), 7 & 7A (TYPICAL LONGITUDINAL & TRANSVERSE TRENCH SECTION) & 8 (TRENCH RESTORATION).
3. PROVIDE LEVEL ACCESS TO FIRE HYDRANT. SEE SPECIFICATIONS.
4. SIDE PORTS SHALL BE 2 1/2" NST/NH THREADS.
5. IN THE CITY OF WOODINVILLE AND KING COUNTY, A 4" PUMPER PORT W/ SEATTLE THREADS REQUIRED. SEE SPECIFICATIONS. STORZ ADAPTERS ARE REQUIRED IN THE CITY'S OF BOTHELL, KIRKLAND AND REDMOND (PER THEIR DETAILS). NEW WATER MAINS WILL NOT BE PLACED INTO SERVICE IF WRONG PUMPER PORTS INSTALLED.
6. THE DEVELOPER SHALL PROVIDE SURVEY TO SET THE BASE ELEVATION (TOP OF CONCRETE PAD) OF THE FIRE HYDRANT. SEE THE DE SPECIFICATIONS FOR OTHER REQUIREMENTS.
7. MAXIMUM BURY DEPTH ON FH IS 6'. DEEPER INSTALLATION SHALL BE INSTALLED PER STANDARD PLAN 9C.



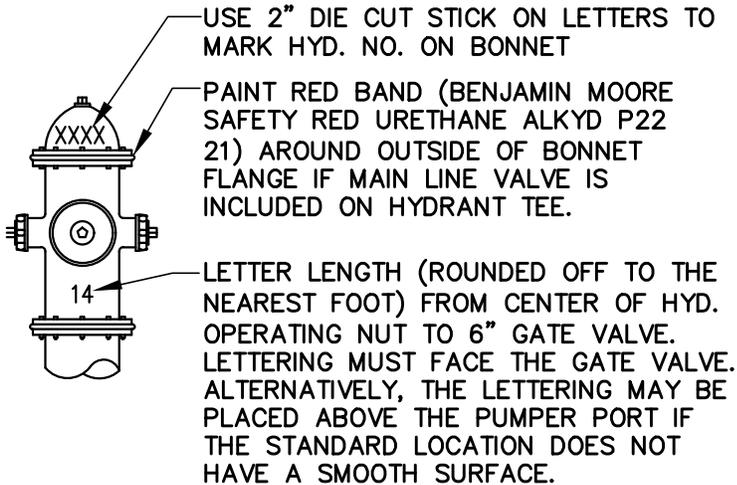
**Woodinville
Water District**

**NEW FIRE
HYDRANT INSTALLATION**

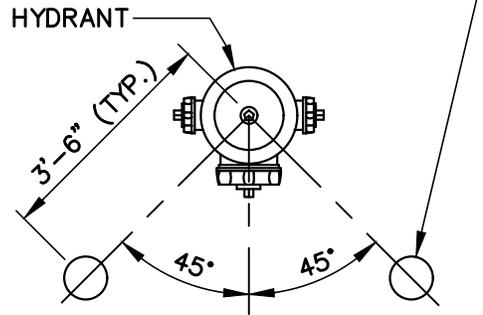


**WATER STD.
PLAN NO. 9A**

REVISION DATE
3-18



INSTALL BOLLARDS AS DIRECTED. TOP OF BOLLARD TO BE LEVEL W/ TOP OF OPERATING NUT.



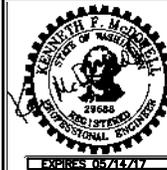
NOTES:

1. FIRE HYDRANTS & BOLLARDS TO BE PAINTED (2) COATS SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54Y157 SAFETY YELLOW. VALVE BOX LIDS TO BE PAINTED (2) COATS OF SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54T00154 SW4086 SAFETY BLUE.
2. PORT CAP CHAINS SHALL BE RE-INSTALLED AFTER PAINTING.
3. BOLLARDS MAY NOT BE USED WITHIN 10' OF ROADWAY EDGES. PROTECTION FOR FIRE HYDRANTS MUST BE PROVIDED WHERE BOLLARDS CAN'T BE USED. DEVELOPER SHALL SUBMIT PLAN FOR FIRE HYDRANT PROTECTION.
4. SEE "APPROVED FOR CONSTRUCTION" PLANS FOR FIRE HYDRANT NUMBER.



**Woodinville
Water District**

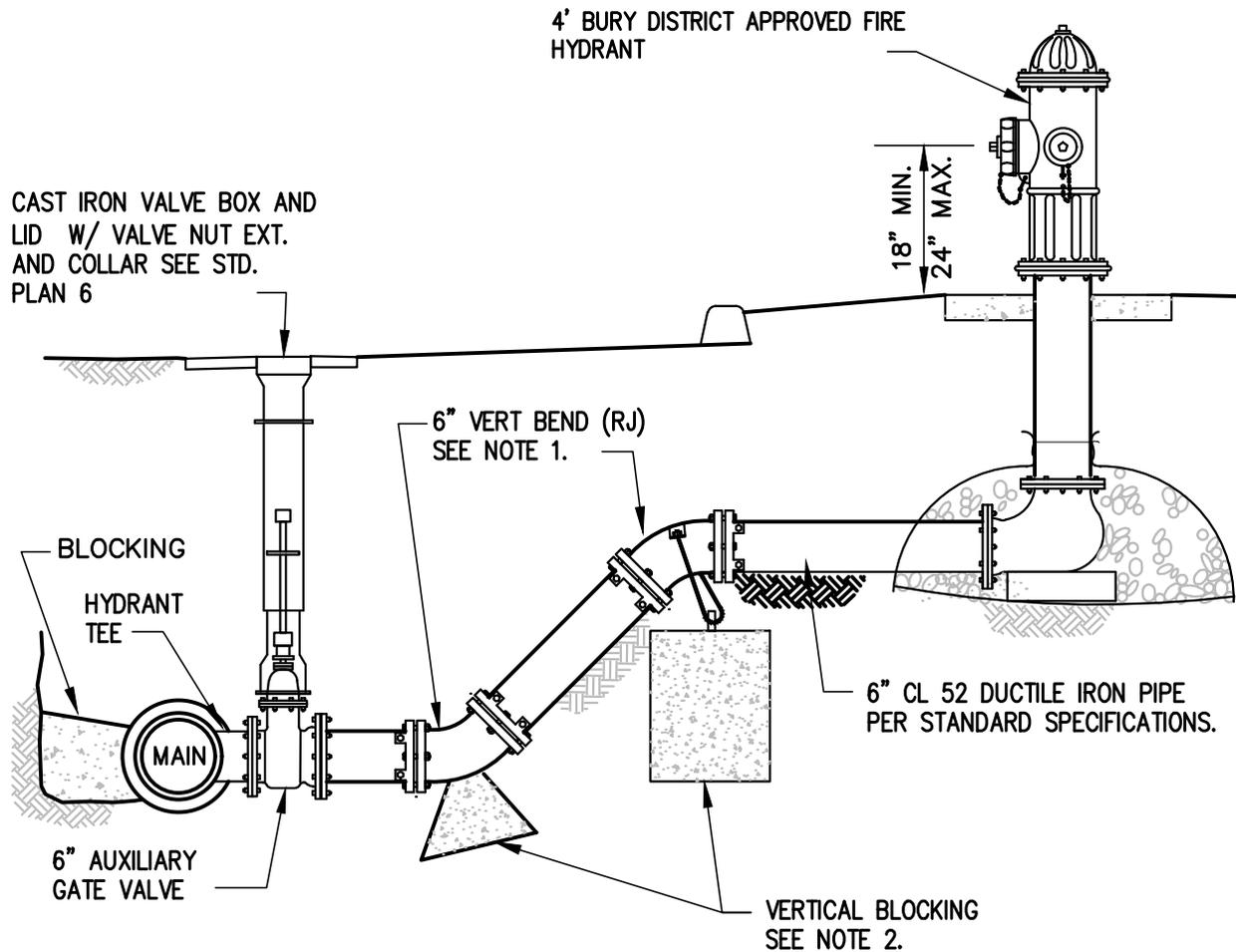
**NEW AND RELOCATED FIRE
HYDRANT DETAILS**



WATER STD.
PLAN NO. 9B

REVISION DATE

3-16



NOTES:

1. MAX. BURY DEPTH FOR FIRE HYDRANTS SHALL BE 6'. FOR DEEPER INSTALLATIONS INSTALL A 4' BURY FIRE HYDRANT WITH VERTICAL BENDS AS SHOWN. 45° MAX. VERTICAL BEND.
2. INSTALL GRAVITY BLOCKING PER STANDARD PLAN NO. 4
3. SEE STANDARD PLANS 9A, 9B AND STANDARD SPECIFICATIONS FOR NEW HYDRANT INSTALLATION REQUIREMENTS.



**Woodinville
Water District**

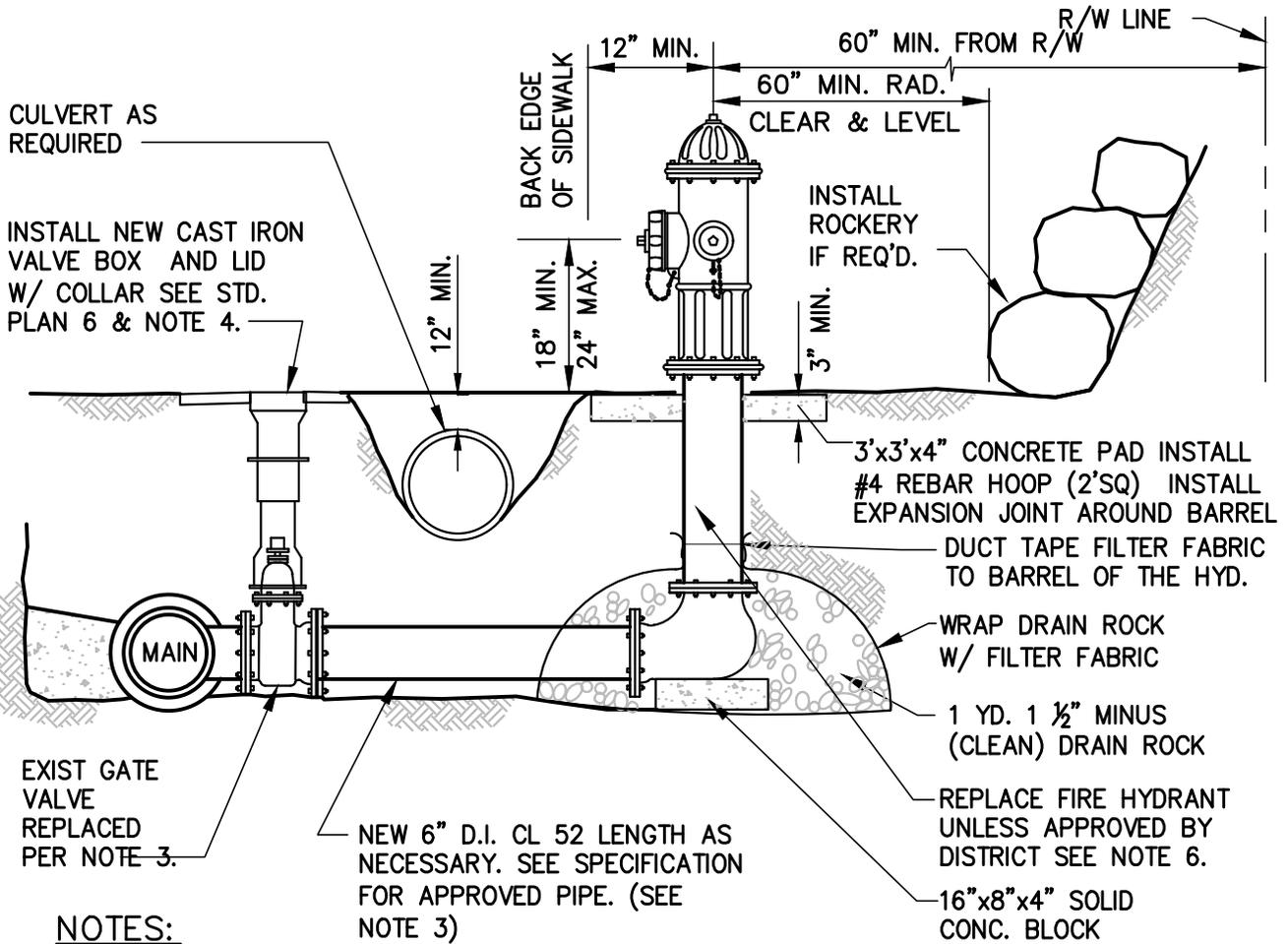
**DEEP FIRE
HYDRANT INSTALLATION**



**WATER STD.
PLAN NO. 90**

REVISION DATE

9-07



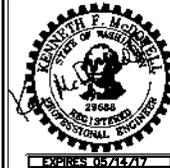
NOTES:

1. ALL APPLICABLE DETAILS FROM STANDARD PLANS 9A & 9B (NEW FIRE HYDRANT INSTALLATION) APPLY TO RELOCATED FIRE HYDRANT.
2. EXISTING FIRE HYDRANT MUST BE PRESSURE TESTED PRIOR TO RELOCATION AND RETESTED PRIOR TO ACCEPTANCE.
3. REPLACE 6" EXISTING PIPE BACK TO FOOT VALVE. ALL MECHANICAL JOINTS SHALL BE MEG-A-LUG OR EQUAL. REPLACE EXISTING GATE VALVE IF IT IS A DOUBLE DISC OR DOES NOT CONFORM TO AWWA C509 OR C515 OR IS NOT AN APPROVED GATE VALVE FOR THE DISTRICT (SEE MW-3 IN STANDARD SPECIFICATIONS)
4. REPLACE VALVE BOX PER STANDARD PLAN NO. 6.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL A FH BARREL EXTENSION, IF NECESSARY, TO COMPLY WITH THE CLEARANCES SHOWN ABOVE.
6. INSTALL A NEW FIRE HYDRANT PER STANDARD PLANS 9A OR 9C & 9B UNLESS THE EXISTING FIRE HYDRANT MEETS CURRENT DISTRICT STANDARDS FOR NEW FIRE HYDRANTS (SEE MW-8A IN THE STANDARD SPECIFICATIONS).
7. RELOCATED FIRE HYDRANTS SHALL BE PAINTED AND LETTERED PER THE SPECIFICATIONS. RE-USED FIRE HYDRANTS SHALL BE PRESSURE WASHED (MIN. 3000 PSI) PRIOR TO PAINTING.



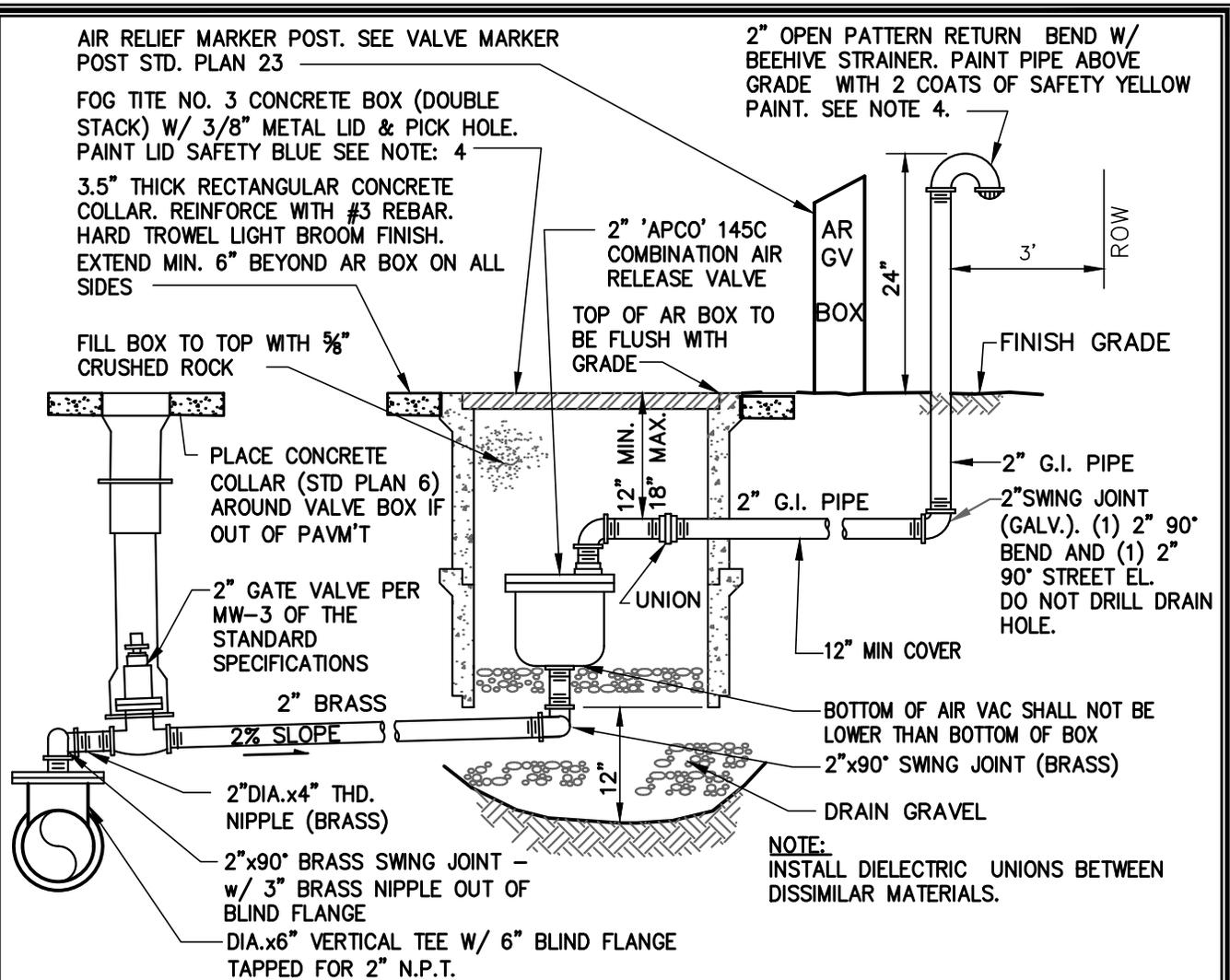
**Woodinville
Water District**

**RELOCATE EXISTING
FIRE HYDRANT**



**WATER STD.
PLAN NO. 10**

**REVISION DATE
10-16**



NOTES:

1. CONTRACTOR SHALL LOCATE DIA. x 6" TEE AT HIGH POINT IN THE MAIN. THE MAINLINE GENERALLY NEEDS TO BE DEEPER THAN 3' TO PROVIDE BURY DEPTH AT THE AIR RELEASE BOX AND 2" GALV. DISCHARGE PIPING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. SEE STANDARD PLAN 6 FOR VALVE BOX REQUIREMENTS.
3. METAL LID TO HAVE PICK HOLE OR PICK NOTCH. METER FLAP NOT ALLOWED.
4. AIR VAC PIPING TO BE PAINTED (2) COATS OF SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54Y157 SAFETY YELLOW. VALVE & AIR VAC BOXES LIDS TO BE PAINTED (2) COATS OF SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54T00154 SW4086 SAFETY BLUE.
5. AIR RELEASE AND PIPING SHALL BE INCLUDED IN PRESSURE TESTING.



**Woodinville
Water District**

**AIR RELEASE
ASSEMBLY**



**WATER STD.
PLAN NO. 11**

REVISION DATE
3-18

OLD CASTLE 1324BCF-18 W/ DUCTILE IRON LID (H2O LOADING) & HINGED METAL FLAP LOCATE BLOW-OFF BOX AWAY FROM DRAINAGE OR HIGH WATER AREAS. PAINT LID SAFETY BLUE SEE NOTE 2.

CENTER BLOW-OFF CAP IN BOX

BLOW OFF MARKER POST SEE STANDARD PLAN 23.

3.5" THICK CONCRETE COLLAR TO DIMENSIONS SHOWN. FLUSH WITH FINISH GRADE. REINFORCE WITH #3 REBAR.

SEE THRUST BLOCK DETAILS

MJ PLUG

4" CL 52 RESTRAINED PIPE (SEE NOTE 1) LENGTH AS REQUIRED

4" GATE VALVE, (FLxMJ)

DIA.x4" TEE, (FLxMJ)

PLAN

CENTER MOUNT 1/4" BALL VALVE IN CAP FOR MANUAL PRESSURE RELEASE

DETAIL "A"

D.I. WATER MAIN

R/W OR PROP. LINE

BLOW OFF MARKER POST. SEE STANDARD PLAN 23

FINISH GRADE

2" BRASS QUICK DISCONNECT FITTING & CAP W/ 1/4" BALL VALVE PRESSURE RELEASE (SEE DETAIL "A")

2"Ø x 4"± BRASS NIPPLE

4" BLIND FLANGE TAPPED 2" (I.P. THREADS)

24" LIFT OF WASHED ROCK C.I. VALVE BOX. SEE STANDARD PLAN 6

4" SPOOL (PEXFL) LENGTH AS NEEDED

4" x 90° BEND MJ

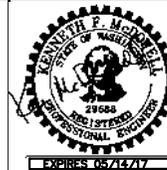
NOTES:

- MECHANICAL JOINTS (MJ) TO BE RESTRAINED WITH EBBA IRON MEG-A-LUGS. INSTALL FIELD LOK GASKETS IN PIPE JOINTS.
- VALVE MARKER TO BE PAINTED (2) COATS SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54Y157 SAFETY YELLOW. BLOW OFF AND VALVE BOX LIDS TO BE PAINTED (2) COATS OF SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54T00154 SW4086 SAFETY BLUE.
- BLOW OFF BOX NOT ALLOWED IN THE STREET.



Woodinville Water District

BLOW OFF ASSEMBLY



WATER STD. PLAN NO. 12

REVISION DATE 10-16

12 GAUGE TRACER WIRE WRAP
AROUND ENTIRE LENGTH OF PIPE
W/ 2' MIN. EXTRA IN METER BOX

BARE END OF
TRACE WIRE
AND ATTACH
TO SADDLE

COMPACT
TRENCH

SIDEWALK

DISTRICT'S
RESPONSIBILITY

CUSTOMER'S
RESPONSIBILITY

6" MIN.

R/W
OR
ESMT
LINE

3' MIN.

PIPE SHALL ENTER
BOX VERTICALLY
(TYP)

1" DIA. TYPE "K" COPPER
TAIL PIECE. DUCT TAPE END.

2X4 MARKER BOARD. PAINT SAFEY
BLUE. STENCIL IN 2" LETTERS-
"WATER CONN."

PLACE SAND OR 5/8" CRUSHED ROCK
BEDDING 6" UNDER AND OVER SERVICE LINE
AND AROUND CONNECTION TO THE MAIN.

SEE STANDARD PLAN 13M FOR MATERIAL LIST

NOTE - CIRCLED NUMBERS ABOVE REFER TO
MATERIALS LISTED ON STD PLAN 13M.

NOTES

1. LOT CORNERS AND PROPERTY LINES MUST BE ESTABLISHED BEFORE SERVICES ARE INSTALLED.
2. CONTRACTOR TO PROVIDE ALL MATERIALS PER STD PLAN 13M. SERVICES SHALL BE TESTED WITH THE MAINLINE.
3. TRACE WIRES MUST BE VISIBLE IN METER BOX.
4. NO SPLICES ALLOWED IN SERVICE LINE.
5. CORP STOP LOCATION SHALL BE OFFSET PRECISELY FOR GPS SURVEY.
6. CONTRACTOR SHALL SCHEDULE SERVICE FLUSH WITH THE DISTRICT'S INSPECTOR.
7. METER INSTALLATION BY THE DISTRICT. METER WILL NOT BE SET UNTIL PROJECT ACCEPTED.
8. METER BOX SHALL BE PERPENDICULAR TO SIDEWALK, PROPERTY LINE OR AS DIRECTED. TOP OF BOX SHALL BE FLUSH WITH FINISH GRADE.
9. SINGLE FAMILY FIRE OR IRRIGATION SERVICES SHALL HAVE BACKFLOW PROTECTION PER STANDARD PLAN 21.
10. NO METER OR DCVA BOXES ALLOWED IN DRIVEWAYS OR HARD SURFACED AREAS.
11. IF AN EXISTING SERVICE IS BEING MOVED TO A NEW LOCATION INSULATE METER W/ BATT FIBERGLASS.
12. ALL FITTINGS SHALL COMPLY WITH NSF 61

NOTE: ALL BRASS COMPONENTS SHALL CONFORM TO THE LATEST VERSIONS OF NSF 61 AND ANSI/AWWA STANDARD C800 AND SHALL BE STAMPED/ EMOSSSED TO SHOW THE PRODUCT IS MADE FROM A NO LEAD ALLOY.



**Woodinville
Water District**

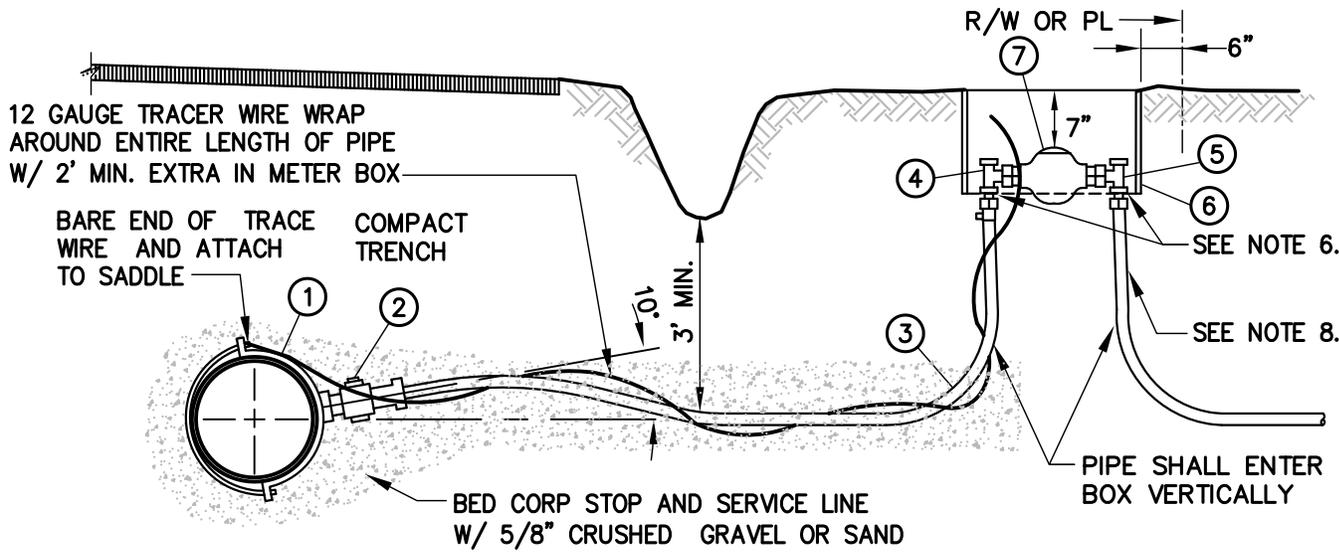
**SINGLE FAMILY
SERVICE INSTALLATION**



**WATER STD.
PLAN NO. 13**

REVISION DATE

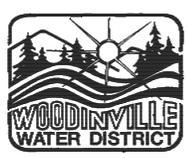
3-18



1" SEE STANDARD PLAN 13M FOR MATERIAL LIST
NOTE - CIRCLED NUMBERS ABOVE REFER TO
MATERIALS LISTED ON STD PLAN 13M.

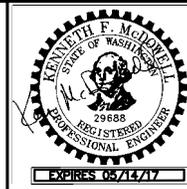
NOTES:

1. CONTRACTOR TO PROVIDE ALL MATERIALS AS SHOWN EXCEPT METERS.
2. TRACE WIRES MUST BE VISIBLE IN METER BOX.
3. NO SPLICES ALLOWED IN SERVICE LINE.
4. EXISTING SERVICE SHALL BE MAINTAINED UNTIL THE NEW SYSTEM IS PRESSURE TESTED, FLUSHED AND SATISFACTORY BACTERIOLOGICAL TEST RECEIVED. THEN THE CONTRACTOR SHALL COORDINATE WITH THE INDIVIDUAL OWNER AND THE DISTRICT TO SCHEDULE CONNECTION TO THE NEW SYSTEM. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. METER BOX SHALL BE PERPENDICULAR TO SIDEWALK, PROPERTY LINE OR AS DIRECTED. METERS SHALL BE CENTERED IN THE METER BOX AND PARALLEL. BOTH ANGLE METER STOPS SHALL BE VERTICAL AND ACCESSIBLE FOR SHUT OFF WITH A METER KEY. METER BOX NOT ALLOWED IN SIDEWALK. PRIOR APPROVAL REQUIRED FOR INSTALLATIONS IN TRAFFIC AREAS.
6. CONTRACTOR SHALL CHECK ALL EXISTING METERS PRIOR TO SERVICE INSTALLATION AND INSTALL THE APPROPRIATE SIZED ANGLE METER STOPS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS TO RECONNECT THE CUSTOMER SIDE OF THE SERVICE.
7. EXISTING METERS TO BE REUSED EXCEPT THOSE IDENTIFIED BY THE DISTRICT TO BE REPLACED. NEW METERS WILL BE SUPPLIED BY THE DISTRICT AND INSTALLED BY THE CONTRACTOR. BACKFILL INSIDE METER BOX TO BOTTOM OF METER REGISTER. AMR COMPONENTS SHALL BE TRANSFERRED, CONTRACTOR SHALL REQUEST INSTRUCTION IF UNFAMILIAR WITH OUR AMR COMPONENTS.
8. BACKSIDE CONNECTIONS SHALL BE MADE WITH 1" TYPE 'K' COPPER. FOR LARGER SINGLE FAMILY METERS, SIZE THE BACKSIDE TYPE 'K' COPPER TO THE SIZE OF THE METER. BRASS FITTINGS AND CONNECTORS SHALL BE USED FOR RECONNECTION.



**Woodinville
Water District**

**SINGLE FAMILY
SERVICE RECONNECTION**

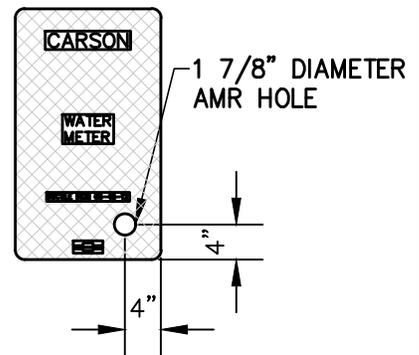


**WATER STD.
PLAN NO. 13B**

**REVISION DATE
5-16**

1" SERVICE MATERIAL LIST

- ① SERVICE SADDLE
ROMAC 101-S, FORD FS101 W/ I.P. THREADS & STAINLESS STEEL STRAP
- ② BALL CORP. STOP (W/ 1" I.P. THREADS)
AY MCDONALD 73131B W/ 74754-3Q COMP. W/ STIFFENER
FORD FB 500 W/ C16-44-Q-NL COMP. W/ STIFFENER
MUELLER B-20013 W/ H-15456 INSTA-TITE
- ③ SERVICE PIPE
1" CENTENNIAL PLASTICS INC. CENCORE HIGH DENSITY POLYETHYLENE SERVICE PIPE MEETING AWWA C901 REQUIREMENTS; ASTM D2239, SIDR 7 PRESSURE CLASS 250 PSI, I.P.S. COLOR - BLUE
- ④ BALL ANGLE METER STOP (W/ 1" I.P. THREADS & CONNECTION TO 1" POLY PIPE) FOR 1" METER
1"x1" AY MCDONALD 74644B W/ 1" 74753-33 PJxFIP ADAPT IPS/PEP
1"x1" MUELLER B-24265 W/ H-15426 INSTA-TITE
1"x1" FORD BA13-444W-NL W/ C86-44-NL PACK JOINT
FOR 3/4" METER
INSTALL (2) FORD A24-NL 3/4"x1" ADAPTERS
- ⑤ BALL ANGLE METER STOP (W/ 1" I.P. THREADS & CONNECTION TO 1" COPPER PIPE) FOR 1" METER
1"x1" MUELLER 110 COMPRESSION FITTING OR APPROVED EQUAL
- ⑥ METER BOX
OLD CASTLE 1324BCF-18 ENCLOSURE W/ DUCTILE IRON LID (H2O LOADING) & 1 7/8" DIAMETER AMR HOLE PER DIMENSIONS SHOWN TO RIGHT. NO READER FLAP
- ⑦ DISTRICT WILL PROVIDE (1) METER IDLER PER TYPICAL INSTALLATION (IE. 1" OR 3/4") THE CONTRACTOR SHALL ENSURE THE METER IDLER IS PARALLEL TO THE METER BOX AND CENTERED IN BOTH DIRECTIONS.

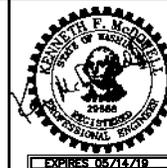


NOTE: ALL BRASS COMPONENTS SHALL CONFORM TO THE LATEST VERSIONS OF NSF 61 AND ANSI/AWWA STANDARD C800 AND SHALL BE STAMPED/ EMOSSSED TO SHOW THE PRODUCT IS MADE FROM A NO LEAD ALLOY.



**Woodinville
Water District**

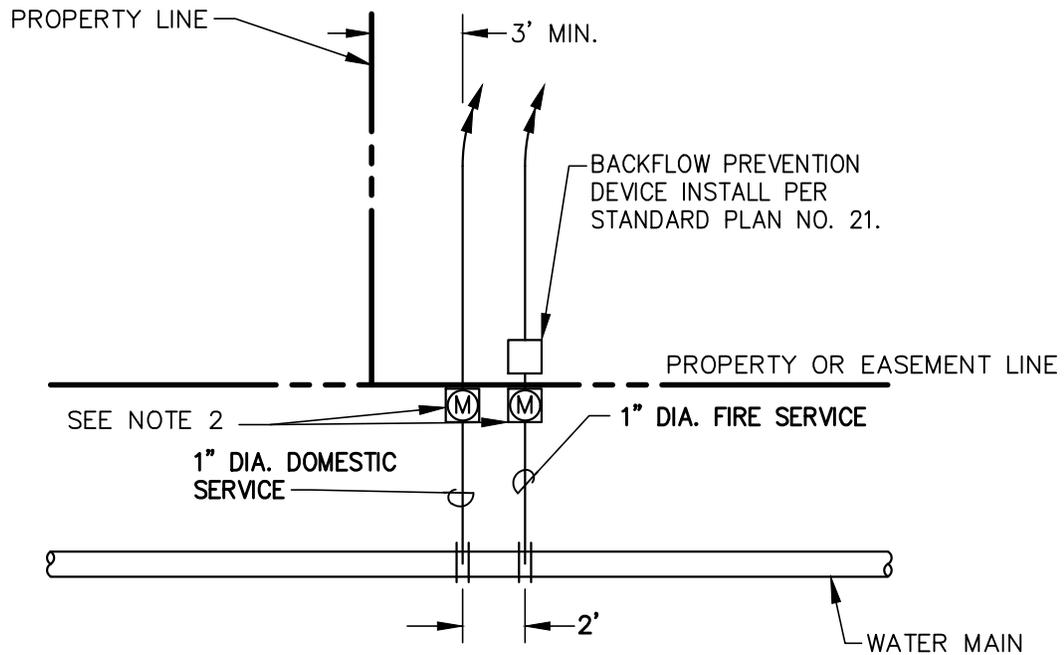
**1" POLY SERVICE
MATERIAL LIST**



**WATER STD.
PLAN NO. 13M**

REVISION DATE

3-18



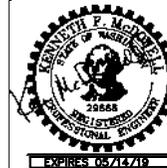
NOTES:

1. IT SHALL BE THE OWNER'S RESPONSIBILITY TO INSURE THAT THE SERVICE LINES AND METER SIZES ARE ADEQUATE TO SERVE THE DOMESTIC & FIRE SPRINKLER OR IRRIGATION SYSTEMS. REFER TO LARGER METER AND BACKFLOW DETAILS FOR SYSTEMS REQUIRING PIPE AND METER LARGER THAN 1".
2. AFTER PROJECT ACCEPTANCE AND METER SET FEES HAVE BEEN PAID, THE METERS WILL BE INSTALLED BY THE DISTRICT.
3. INSTALL DOMESTIC & FIRE SPRINKLER SERVICE IN ACCORDANCE WITH STANDARD PLAN 13 (SINGLE FAMILY DOMESTIC SERVICE). BACK OF METER BOX SHALL BE PLACED AT THE R/W LINE OR IN THE UTILITY EASEMENT AS SHOWN.
4. THE BACKFLOW PREVENTION ASSEMBLY SHALL BE A DOUBLE CHECK VALVE ASSEMBLY AS APPROVED BY THE WASHINGTON STATE DEPARTMENT OF HEALTH. MIN. SIZE OF BACKFLOW DEVICE SHALL MATCH METER SIZE.
5. NO CHEMICALS ARE ALLOWED IN THE FIRE SPRINKLER PIPING SYSTEM.
6. THE BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED BY THE OWNER. SEE STANDARD PLAN NO. 21. THE DEVICE WILL BE INSPECTED AND INITIALLY TESTED BY THE DISTRICT PRIOR TO ESTABLISHING WATER SERVICE. THE BACKFLOW DEVICE SHALL NOT BE INSTALLED IN A BUILDING.
7. FIRE SPRINKLER SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH THE LOCAL FIRE MARSHAL'S REQUIREMENTS AND HAVE FIRE MARSHALL APPROVAL.
8. NO METER OR DCVA BOXES ALLOWED IN DRIVEWAYS OR HARD SURFACED AREAS.
9. INSPECTION REQUIRED ON FIRE SERVICE AND BACKFLOW ASSEMBLY PRIOR TO BACKFILL. CALL 425-487-4100 TO SCHEDULE.



**Woodinville
Water District**

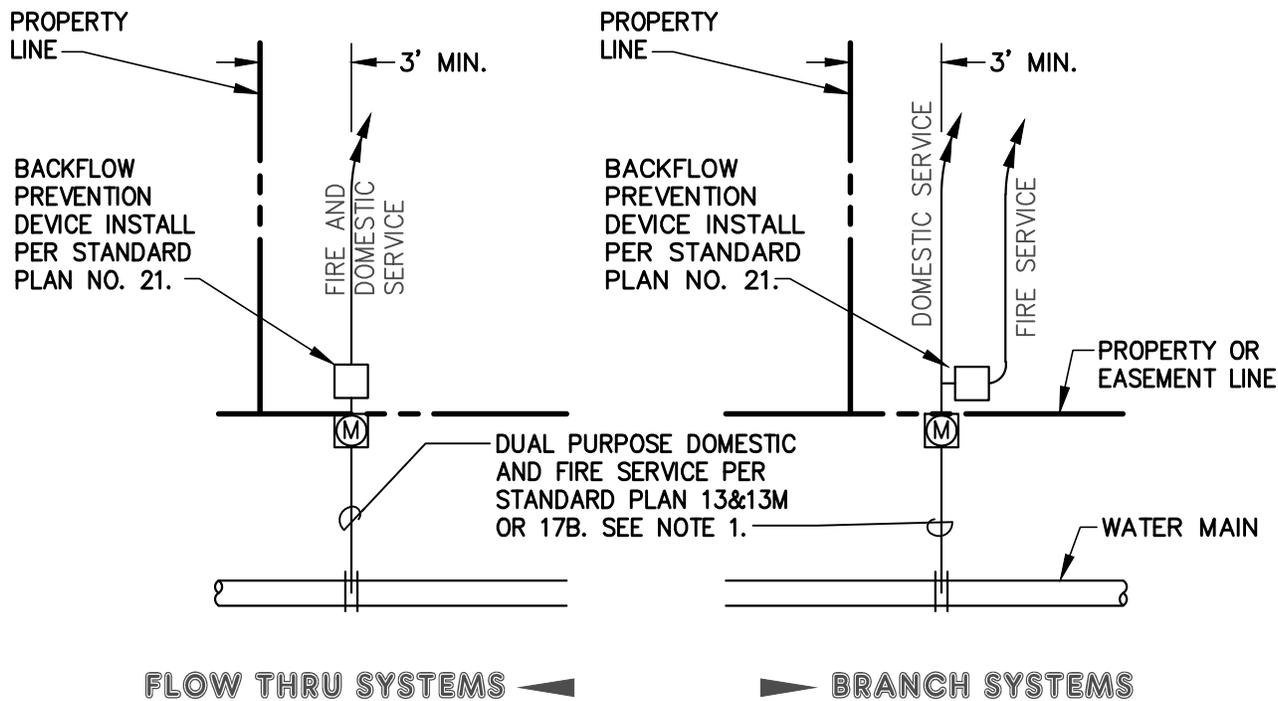
**1" SINGLE FAMILY
DOMESTIC AND FIRE
SERVICE CONNECTIONS**



**WATER STD.
PLAN NO. 14**

REVISION DATE

3-18



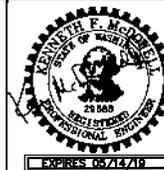
NOTES:

1. IT SHALL BE THE OWNER'S RESPONSIBILITY TO INSURE THAT THE SERVICE LINES AND METER SIZES ARE ADEQUATE TO SERVE THE DOMESTIC & FIRE SPRINKLER OR IRRIGATION SYSTEMS. REFER TO LARGER METER AND BACKFLOW DETAILS FOR SYSTEMS REQUIRING PIPE AND METER LARGER THAN 1".
2. INSTALL DUAL SERVICE IN ACCORDANCE WITH STANDARD PLAN 13 & 13M. BACK OF METER BOX SHALL BE PLACED AT THE R/W LINE OR IN THE WATER EASEMENT IF SIDEWALK AT EDGE OF R/W.
3. THE BACKFLOW PREVENTION DEVICE SHALL BE A DOUBLE CHECK ASSEMBLY AS APPROVED BY THE WASHINGTON STATE DEPARTMENT OF HEALTH. MIN. SIZE OF BACKFLOW DEVICE SHALL MATCH METER SIZE.
4. NO CHEMICALS ARE ALLOWED IN THE FIRE SPRINKLER PIPING SYSTEM.
5. FIRE SPRINKLER SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH THE LOCAL FIRE MARSHAL'S REQUIREMENTS AND HAVE FIRE MARSHALL APPROVAL.
6. NO METER OR DCVA BOXES ALLOWED IN DRIVEWAYS OR HARD SURFACED AREAS.
7. INSPECTION REQUIRED ON FIRE SERVICE AND BACKFLOW ASSEMBLY PRIOR TO BACKFILL. CALL 425-487-4100 TO SCHEDULE.



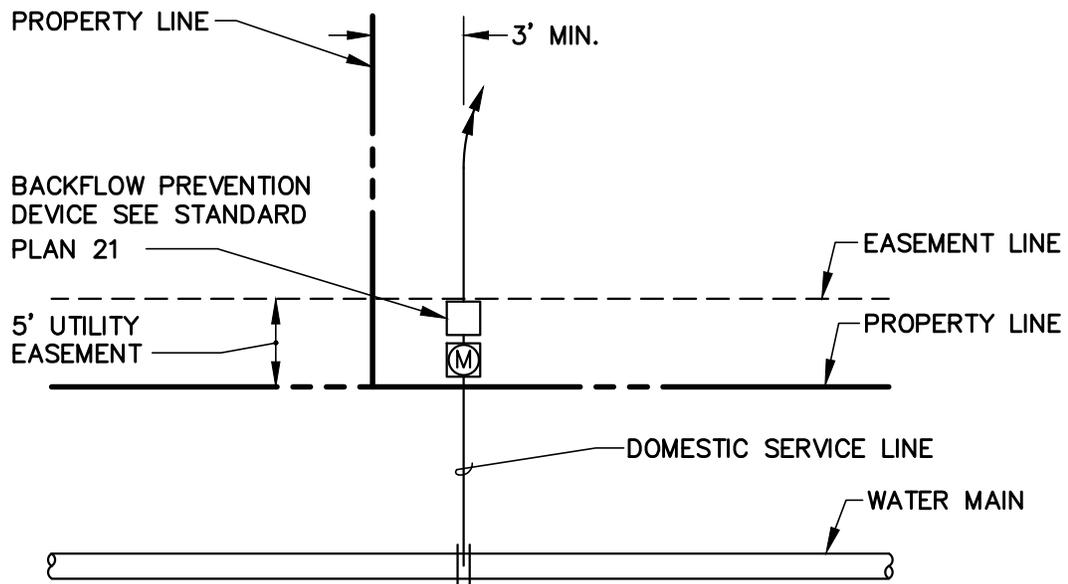
**Woodinville
Water District**

**1" SINGLE FAMILY DUAL
PURPOSE DOMESTIC AND
FIRE SERVICE
CONNECTION**



**WATER STD.
PLAN NO. 14B**

**REVISION DATE
3-18**



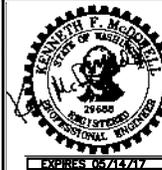
NOTES:

1. DOMESTIC SERVICE SHALL BE INSTALLED PER STANDARD PLAN 13 (1" SFR RESIDENTIAL SERVICE). METER BOXES MAY BE PLACED AT THE R/W LINE OR IN THE UTILITY EASEMENT AS SHOWN.
2. AFTER PROJECT ACCEPTANCE AND METER SET FEES HAVE BEEN PAID, THE METER WILL BE INSTALLED BY THE DISTRICT.
3. IT SHALL BE THE OWNER'S RESPONSIBILITY TO INSURE THAT THE SERVICE LINE AND METER SIZE ARE ADEQUATE TO SERVE THE DOMESTIC WATER SYSTEM REQUIREMENTS.
4. THE BACKFLOW PREVENTION DEVICE SHALL BE A DOUBLE CHECK ASSEMBLY AS APPROVED BY THE WASHINGTON STATE DEPARTMENT OF HEALTH. (SEE STANDARD PLAN 21)
5. PHYSICAL SEPARATION REQUIRED BETWEEN THE AUXILIARY SYSTEM AND THE DISTRICT'S DISTRIBUTION SYSTEM. INSPECTION OF THE PHYSICAL SEPARATION IS REQUIRED PRIOR TO ESTABLISHING WATER SERVICE.
6. THE BACKFLOW DEVICE SHALL BE INSTALLED BY THE OWNER. THE DEVICE WILL BE INSPECTED AND INITIALLY TESTED BY THE DISTRICT PRIOR TO ESTABLISHING WATER SERVICE.
7. INSTALLATION OF THE BACKFLOW PREVENTER CREATES A CLOSED LOOP SYSTEM FOR YOUR PRIVATE WATER SYSTEM, CONSULT WITH THE LOCAL AUTHORITY OR A PLUMBER TO PREVENT ANY THERMAL EXPANSION PROBLEMS.



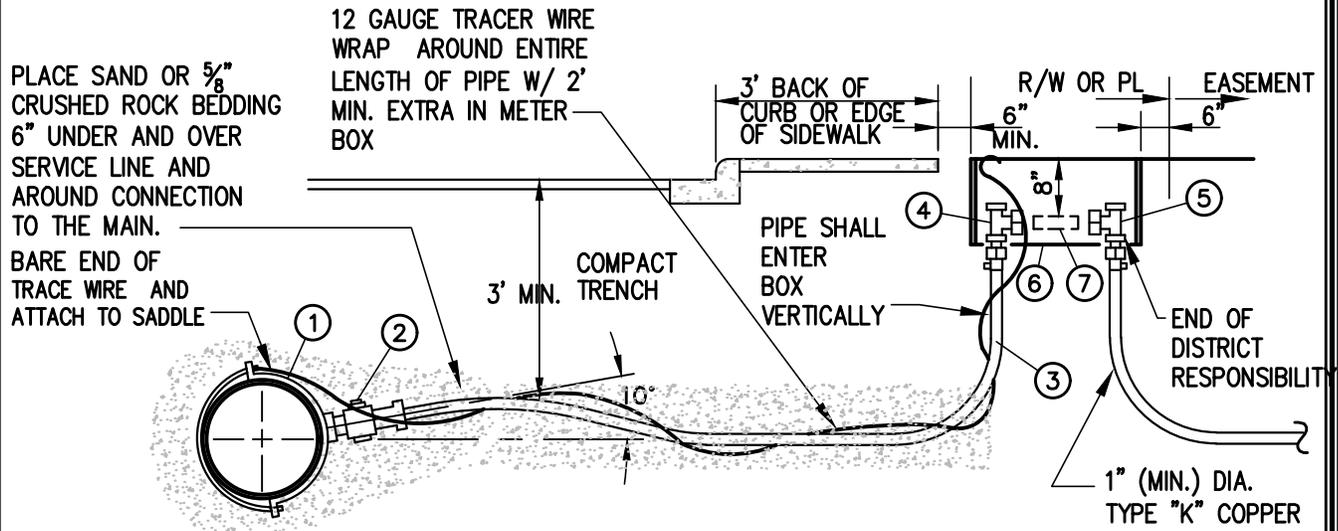
**Woodinville
Water District**

**SINGLE FAMILY RESIDENCE W/
AUXILIARY WATER SUPPLY**



**WATER STD.
PLAN NO. 15**

**REVISION DATE
9-07**



SEE STANDARD PLAN 13M FOR MATERIAL LIST
NOTE - CIRCLED NUMBERS ABOVE REFER TO
MATERIALS LISTED ON STD PLAN 13M.

NOTES:

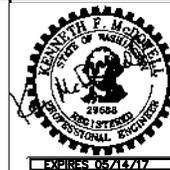
1. CONTRACTOR TO PROVIDE ALL MATERIALS. SERVICES SHALL BE TESTED WITH THE MAINLINE.
2. TRACE WIRES MUST BE VISIBLE IN METER BOX.
3. NO SPLICES ALLOWED IN SERVICE LINE.
4. CORP STOP LOCATION SHALL BE OFFSET PRECISELY FOR GPS SURVEY.
5. LOCATE METER BOX OUT OF PAVING OR SIDEWALKS. METER BOX SHALL BE PERPENDICULAR TO THE SIDEWALK OR AS DIRECTED BY THE DISTRICT.
6. CONTRACTOR SHALL SCHEDULE SERVICE FLUSH WITH THE DISTRICT'S INSPECTOR.
7. METER INSTALLATION BY THE DISTRICT. METER WILL NOT BE SET UNTIL PROJECT ACCEPTED.
8. THE BACKSIDE OF ALL SERVICES SHALL BE PLUMBED IN TYPE "K" COPPER AND HAVE BACKFLOW PROTECTION. DOMESTIC WATER SHALL CONNECT TO A RPBA PER STD. PLAN 19. IRRIGATION AND FIRE METERS SHALL CONNECT TO A DCVA PER STD PLAN 21.
9. IF FIRE OR IRRIGATION SERVICE IS REQUIRED, IT SHALL BE A SEPARATE DEDICATED SERVICE. FIRE SERVICE SHALL BE SIZED ACCORDING TO FLOW REQUIREMENTS NEEDED.

NOTE: ALL BRASS COMPONENTS SHALL CONFORM TO THE LATEST VERSIONS OF NSF 61 AND ANSI/AWWA STANDARD C800 AND SHALL BE STAMPED/ EMOSSSED TO SHOW THE PRODUCT IS MADE FROM A NO LEAD ALLOY.



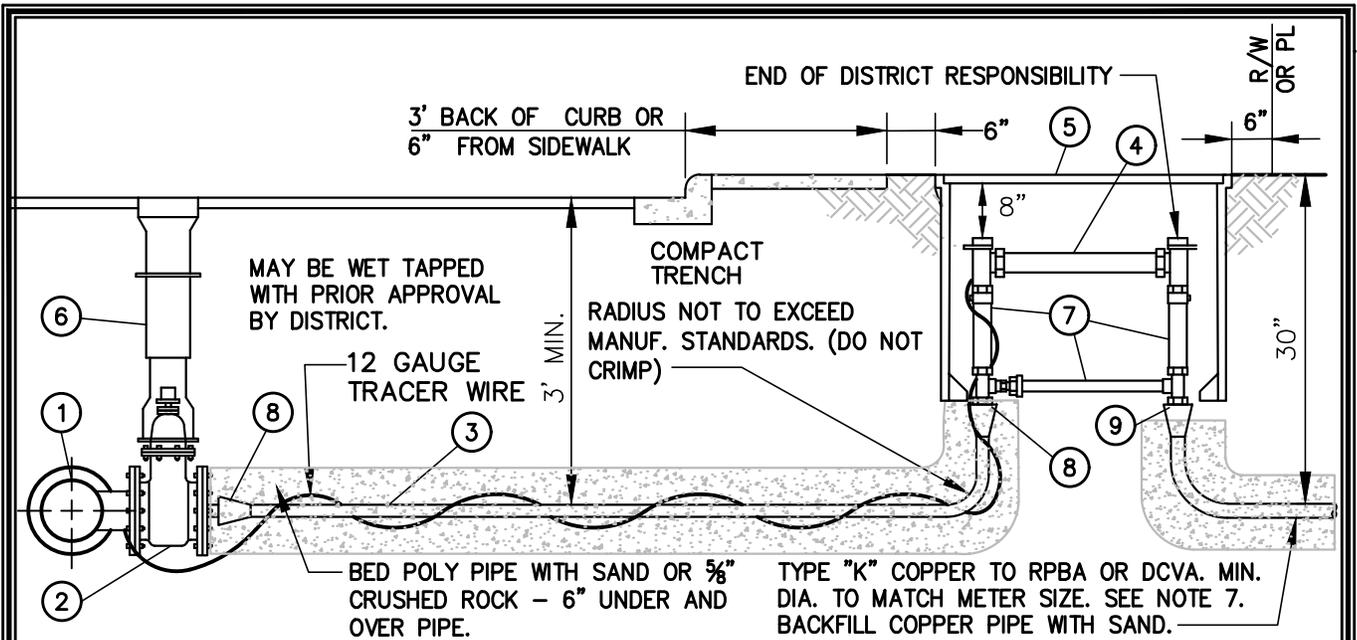
**Woodinville
Water District**

**1" COMMERCIAL
SERVICE CONNECTION**



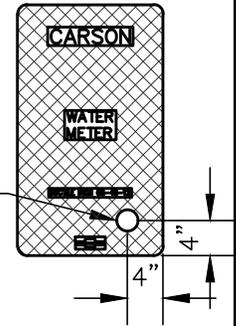
**WATER STD.
PLAN NO. 16**

REVISION DATE
11-13



MATERIAL LIST

- ① DIA. x 4" TEE, MJ x FL
- ② 4" RESILIENT SEATED GATE VALVE WITH 4" BLIND FLANGE AND 1 1/2" OR 2" TAP (SEE GATE VALVES).
- ③ 1.5" OR 2" DRISCOPIPE ULTRA LINE 5100 HIGH DENSITY POLYETHYLENE SERVICE PIPE MEETING AWWA C901 REQUIREMENTS; PE 3408 MATERIAL, SDR7, PRESSURE CLASS 200 PSI, I.P.S. OR APPROVED EQUAL.
- ④ METER IDLER FURNISHED BY WWD
- ⑤ OLD CASTLE 1730BCF-18 ENCLOSURE W/ DUCTILE IRON LID (H2O LOADING) & 1 7/8" DIAMETER AMR HOLE AT LOCATION SHOWN. NO READER FLAP.
- ⑥ VALVE BOX - SEE STANDARD PLAN NO. 6
- ⑦ METER SETTER WITH VERTICAL BALL VALVE INLET AND OUTLET - WITH BYPASS
 1.5" FORD NO. VBB 86-12B-11-66-NL 2" FORD NO. VBB 87-12B-11-77-NL
 1.5" MUELLER B-2427N X 12 2" MUELLER B-2427N X 12
- ⑧ 1.5" OR 2" PACK JOINT w/ FIP THREADS x 1.5" OR 2" IP POLY
 1.5" FORD C86-66-IDR7 W/ STIFFENER 2" FORD C86-77-IDR7 W/ STIFFENER
 1.5" MUELLER P-15428N W/ STIFFENER 2" MUELLER P-15428N W/ STIFFENER
 1.5" AY McDONALD 74753-33 W/ STIFFENER 2" AY McDONALD 74753-33 W/ STIFFENER
- ⑨ MUELLER 110 COMPRESSION OR APPROVED EQUAL



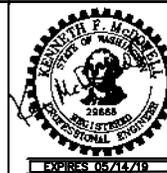
NOTES:

1. CONTRACTOR TO PROVIDE ALL MATERIALS. SERVICES SHALL BE TESTED WITH THE MAINLINE.
2. NO SPLICES ALLOWED IN SERVICE LINE.
3. LOCATE METERS OUT OF ASPHALT OR SIDEWALKS. TRAFFIC BOXES WILL BE REQUIRED BY THE DISTRICT IF METER BOX CLOSE TO TRAFFIC AREAS.
4. CONTRACTOR SHALL SCHEDULE SERVICE FLUSH WITH THE DISTRICT'S INSPECTOR.
5. METER INSTALLATION BY THE DISTRICT. METER WILL NOT BE SET UNTIL PROJECT ACCEPTED.
6. TRACE WIRES MUST BE VISIBLE IN METER BOX.
7. THE BACKSIDE OF ALL SERVICES SHALL BE PLUMBED IN TYPE "K" COPPER AND HAVE BACKFLOW PROTECTION. DOMESTIC WATER SHALL CONNECT TO A RPBA PER STD. PLAN 19. IRRIGATION AND FIRE METERS SHALL CONNECT TO A DCVA PER STD PLAN 21.
8. ALL BRASS COMPONENTS SHALL CONFORM TO THE LATEST VERSIONS OF NSF 61 AND ANSI/AWWA STANDARD C800 AND SHALL BE STAMPED/ EMOSSOED TO SHOW THE PRODUCT IS MADE FROM A NO LEAD ALLOY.



**Woodinville
Water District**

**1 1/2" AND 2" COMMERCIAL
SERVICE CONNECTION**

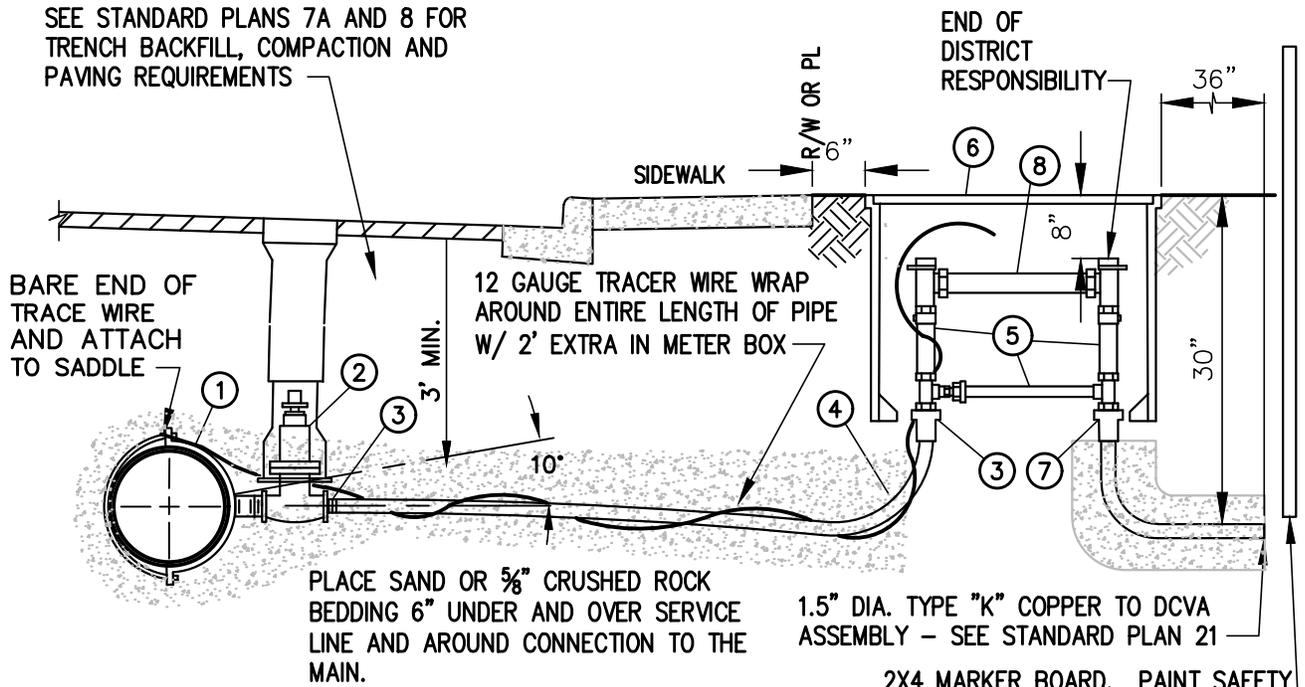


**WATER STD.
PLAN NO. 17**

REVISION DATE

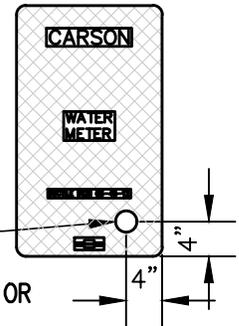
3-18

SEE STANDARD PLANS 7A AND 8 FOR TRENCH BACKFILL, COMPACTION AND PAVING REQUIREMENTS



1.5" SERVICE MATERIAL LIST

- ① **SERVICE SADDLE**
ROMAC 202NS, FORD FS202 W/ I.P. THREADS & STAINLESS STEEL STRAPS
- ② **1.5" GATE VALVE THREADED PER MW-3 OF THE STANDARD SPECIFICATIONS VALVE BOX PER STANDARD PLAN 6. W/ 1.5"x2" NIPPLE TO SADDLE.**
- ③ **1.5" PACK JOINT w/ 1.5" FIP THREADS x 1.5" IP POLY**
FORD C86-66-IDR7-NL W/ STIFFENER
MUELLER E-15429N W/ STIFFENER
McDONALD 74753-33 W/ STIFFENER OR APPROVED EQUAL
- ④ **SERVICE PIPE**
1.5" DRISCOPIPE ULTRA LINE 5100 HIGH DENSITY POLYETHYLENE SERVICE PIPE MEETING AWWA C901 REQUIREMENTS; PE 3408 MATERIAL, SDR7, PRESSURE CLASS 200 PSI, I.P.S. OR APPROVED EQUAL.
- ⑤ **METER SETTER WITH VERTICAL BALL VALVE INLET AND OUTLET 1 1/2" FORD NO. VBB 86-12-11-66 1 1/2" MUELLER B-2426 X 12 OR APPROVED EQUAL. NO BYPASS ALLOWED**
- ⑥ **METER BOX**
OLD CASTLE 1730BCF-18 ENCLOSURE W/ DUCTILE IRON LID (H2O LOADING) & 1 7/8" DIAMETER AMR HOLE AT LOCATION SHOWN. NO READER FLAP
- ⑦ **MUELLER 110 COMPRESSION FITTING OR APPROVED EQUAL**
- ⑧ **DISTRICT WILL PROVIDE (1) METER IDLER PER TYPICAL INSTALLATION. THE CONTRACTOR SHALL ENSURE THE METER IDLER IS PARALLEL TO THE METER BOX AND CENTERED IN BOTH DIRECTIONS.**



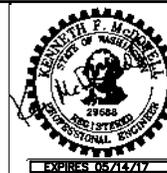
NOTES

- 1. ALL NOTES APPLY FROM STANDARD PLAN 13 (1" SINGLE FAMILY SERVICE).
- 2. NOTE: ALL BRASS COMPONENTS SHALL CONFORM TO THE LATEST VERSIONS OF NSF 61 AND ANSI/AWWA STANDARD C800 AND SHALL BE STAMPED/ EMOSSO TO SHOW THE PRODUCT IS MADE FROM A NO LEAD ALLOY.



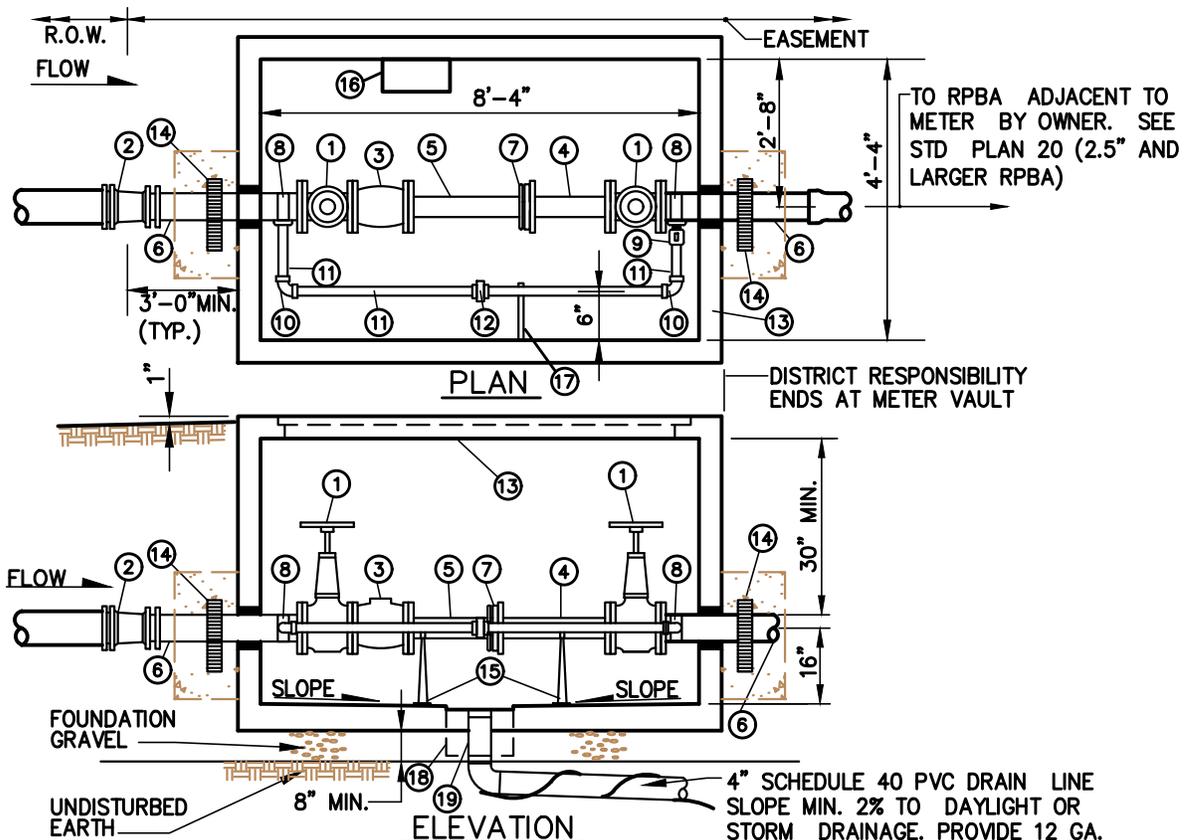
**Woodinville
Water District**

**SINGLE FAMILY
1 1/2" DIAMETER
SERVICE INSTALLATION**



**WATER STD.
PLAN NO. (17B)**

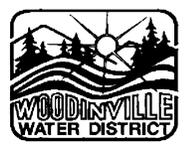
**REVISION DATE
12-16**



MATERIAL LIST FOR 3" AND 4" METER

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. 4" or 3" G.V., FLxFL 2. 4"x3" REDUCER, MJxMJ (INSTALL FOR 3") 3. BADGER PLATE STRAINER 4. METER IDLER-PROVIDED BY DISTRICT SEE NOTES 4 & 5 5. FLxPE SPOOL (LENGTH TO FIT) 6. FLxPE SPOOL 7. EBBA IRON SERIES 2100 MEG-A-FLANGE 8. FORD 202BS OR APPROVED EQUAL 1 1/2" SADDLE 9. 1.5" BALL VALVE W/ LOCK CAP (MIPxFIP FOR B81-666-W OR APPROVED EQUAL 10. 1.5"x90" BEND W/ I.P. THREADS 11. 1.5" BRASS PIPING | <ol style="list-style-type: none"> 12. 1 1/2" BRASS UNION 13. UTILITY VAULT 4484-LA W/ DUAL LOCKING STEEL COVERS 4484-TL-2-332P WITH RECESSED PADLOCK HASP OR APPROVED EQUAL. CONTRACTOR SHALL VERIFY INTERIOR VAULT DIMENSIONS WILL ACCOMMODATE ACTUAL MATERIALS USED. DRILL 1 7/8" FOR AMR IN LID AT LOCATION DESIGNATED BY THE DISTRICT. 14. 2' X 2' X 8" THICK FORMED CONCRETE BLOCKING WITH LOCKING FOLLOWER RING. 15. ADJUSTABLE PIPE SUPPORT 16. ACCESS LADDER 17. PIPE BRACKET 18. PROVIDE 12" DEEP SUMP, FOR PUMP, IF GRAVITY DRAIN UNAVAILABLE. GRAVITY DRAINS SHALL HAVE A SUMP SCREEN. 19. PROVIDE SUMP PUMP IF GRAVITY DRAIN UNAVAILABLE. |
|---|--|

- NOTES:**
1. VAULT LOCATION SHOWN IS IN A LANDSCAPED OR UNIMPROVED AREA. INSTALLATIONS IN ASPHALT AREAS WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL.
 2. ALL MJ JOINTS SHALL BE MEG-A-LUGED.
 3. INSTALL SUMP PUMP WITH ELECTRIC SERVICE AND DISCHARGE PIPING AS SHOWN IN STANDARD DETAIL 25 (FIRE SPRINKLER SERVICE CONNECTION) IF GRAVITY DRAIN UNAVAILABLE.
 4. 60 DAY LEAD TIME NEEDED TO ORDER A 3" AND LARGER METER.
 5. AFTER BOARD ACCEPTANCE, THE DEVELOPERS CONTRACTOR SHALL PICKUP THE METER AT THE DISTRICT AND INSTALL IT.



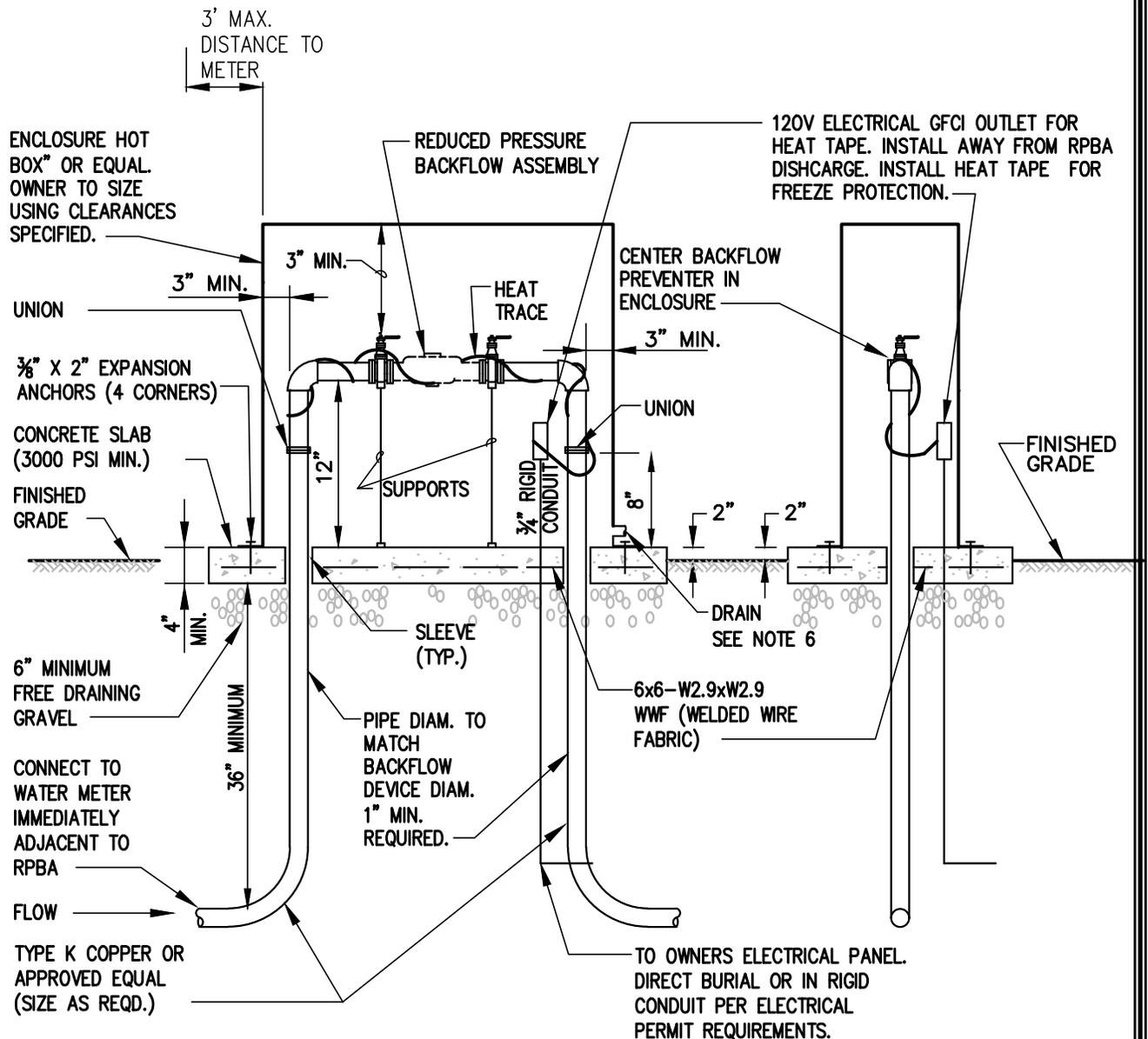
**Woodinville
Water District**

**3" AND 4" WATER
METER INSTALLATIONS**



**WATER STD.
PLAN NO. 18**

REVISION DATE
10-16



NOTES:

1. PROVIDE DISTRICT APPROVED SUPPORT FOR DEVICES LARGER THAN 1" DIAMETER.
2. OWNER SHALL FURNISH, INSTALL AND MAINTAIN THE RPBA AND ALL PIPING AND APPURTENANCES SHOWN ON THIS PLAN.
3. DISTRICT WILL PROVIDE INSPECTION AND INITIAL TEST OF THE RPBA PRIOR TO ESTABLISHMENT OF WATER SERVICE.
4. REDUCED PRESSURE BACKFLOW ASSEMBLIES SHALL BE STATE APPROVED DEVICES.
5. SUBSEQUENT ANNUAL TESTING OF RPBA REQUIRED BY OWNER.
6. DRAIN SHALL BE SIZED IN ACCORDANCE WITH AWWA CROSS CONNECTION CONTROL MANUAL FIGURE 6-8.



**Woodinville
Water District**

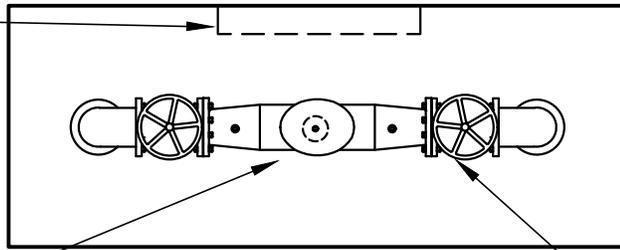
**2" AND SMALLER
REDUCED PRESSURE
BACKFLOW ASSEMBLY**



**WATER STD.
PLAN NO. 19**

REVISION DATE
2-18

1500W 120V HEATER



CENTER RPBA IN BOTH DIRECTIONS OF BOX

PLAN

RESILIENT WEDGE OS&Y GATE VALVES REQUIRED.

3" OR 4" 90° BEND (FL)

RPBA - SEE NOTE 7.

HEATER

HOT BOX INSTALLATION REQUIRED MODEL #HB3E SHOWN DIAPHRAGMATICALLY. CONTRACTOR TO VERIFY REQUIRED SIZE.

UNDER GROUND POWER CONDUIT. PROVIDED BY THE DEVELOPER.

4" CONC. SLAB (MIN. 3000 PSI AND RATED FOR OUTDOOR USE) EXTEND 5" BEYOND ENCLOSURE (ALL DIRECTIONS). REINFORCE W/ 6x6 W2.9xW2.9 WWF

4"x3" REDUCER FOR 3" INSTALLATIONS.

JACK SCREW PIPE SUPPORTS

PROVIDE 6" PVC SLEEVE THROUGH SLAB

4" D.I. CL 52 TO 3" OR 4" METER VAULT.



3' OR 4" 90° BEND (MJ)

ELEVATION

NOTES:

1. APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY TO LAY HORIZONTAL ONLY.
2. DESIGNED FOR BACK SIPHONAGE AND BACK PRESSURE.
3. THE WATERLINE SHALL BE DISINFECTED, FLUSHED, AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
4. ALL FITTINGS SHALL BE FLANGED OR RESTRAINED.
5. LOCATION SHALL BE AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE DISTRICT.
6. THE HOT BOX SHALL HAVE A MIN. CLEAR DISTANCE OF 3' FROM ALL OTHER STRUCTURES.
7. BACKFLOW ASSEMBLY SHALL BE STATE APPROVED AND TESTED AFTER INSTALLATION AND YEARLY THEREAFTER, BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO WOODINVILLE WATER DISTRICT.



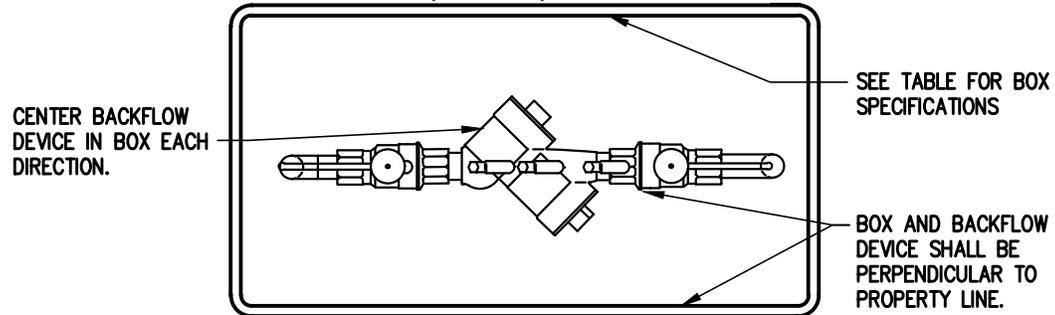
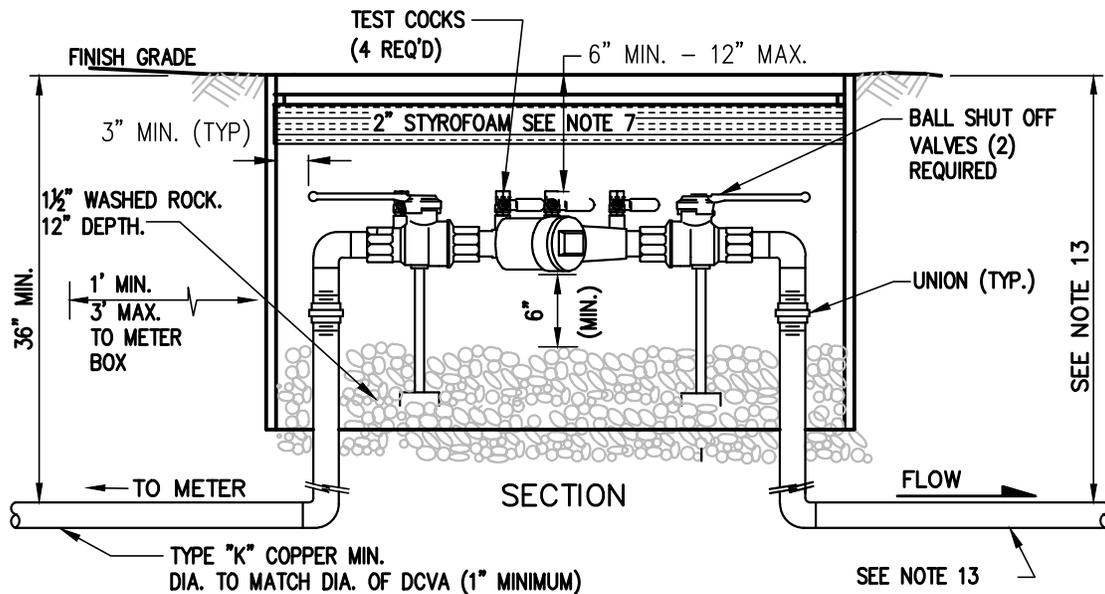
Woodinville Water District

2.5" AND LARGER REDUCED PRESSURE BACKFLOW ASSEMBLY



WATER STD. PLAN NO. 20

REVISION DATE 2-10



NOTES:

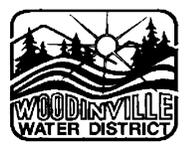
PLAN

1. APPROVED DOUBLE CHECK VALVE ASSEMBLY TO BE INSTALLED HORIZONTAL WITH GROUND.
2. DESIGNED FOR BACK SIPHONAGE, BACK PRESSURE AND LOW HEALTH HAZARDS.
3. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
4. THE DCVA MAYBE INSTALLED BELOW GROUND PROVIDED ALL ALL OF THE CLEARANCES ARE MET.
5. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING.
6. DCVA MUST BE ACCESSIBLE.
7. DCVA MUST BE PROTECTED FROM FREEZING CONDITIONS. FORM FIT 2" BELOW GRADE QUALITY STYROFOAM BELOW LID.
8. THE BACKFLOW ASSEMBLY MUST BE A WASH. STATE APPROVED MODEL.
9. DCVA MUST BE TESTED AFTER INSTALLATION AND YEARLY THEREAFTER BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER.
10. TEST RESULTS SHALL BE SENT TO WOODINVILLE WATER DISTRICT.
11. FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
12. SUPPORTS REQUIRED ON 2" AND LARGER DCVA ASSEMBLIES.
13. COVER & TYPE OF PIPE FOR FIRELINES SHALL BE AS REQUIRED BY THE JURISDICTIONAL FIRE DISTRICT.

WATER BOX REQUIREMENTS	
DCVA SIZE	OLD CASTLE ENCLOSURE NO.
1"	1324BCF W/ DI LID
1.5"	1527BCF W/ DI LID
2"	1730BCF W/ DI LID

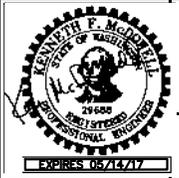
NOTES

1. CLEARANCES SHOWN ABOVE MUST BE MET OR BOX WILL NEED TO BE UP-SIZED
2. BOXES & LIDS SHALL BE EQUIPPED WITH THE BOLT DOWN FEATURE. DO NOT INSTALL READER FLAP

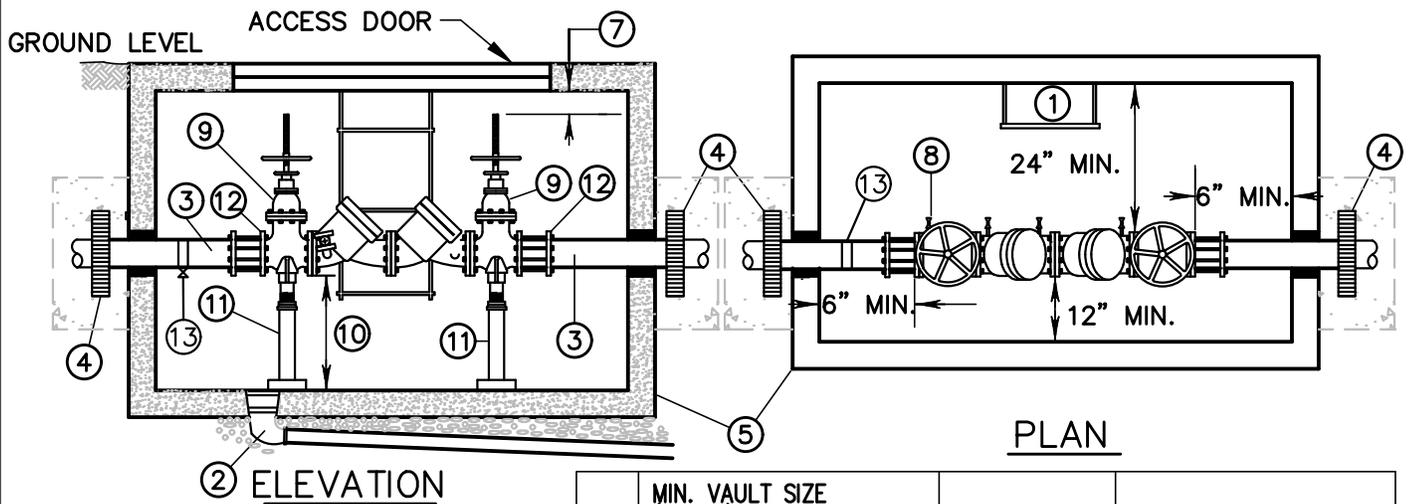


**Woodinville
Water District**

**DOUBLE CHECK VALVE
ASSEMBLY 2" AND SMALLER**



**WATER STD.
PLAN NO. (21)**
REVISION DATE
11-13



SIZE	MIN. VAULT SIZE (INSIDE)			OLDCASTLE CO. MODEL	OLDCASTLE COVER
	W	L	H		
3"	3'-8"	4'-8"	3'-3"	644-LA	64-2-332P
4"	3'-10"	5'-3"	3'-8"	575-LA	57TL-2-332P
6"	4'-0"	6'-6"	4'-5"	577-LA	57TL-20332P
8"	4'-5"	7'-8"	5'-3"	4484-LA	4484-TL2-332P
10"	4'-8"	8'-8"	6'-1"	5106-LA	5106-TL3-332

LEGEND

CONTRACTOR TO VERIFY VAULT SIZE IS ADEQUATE.

- ① ONE GALVANIZED STEEL LADDER TO BE SECURED TO VAULT.
- ② 4" SCHD 40 PVC DRAIN 2% MIN. SLOPE TO STORM BASIN. PROVIDE 12 GAUGE TRACE WIRE. SUMP PUMP REQUIRED IF DRAIN NOT FEASIBLE.
- ③ CLASS 52 DUCTILE IRON PIPE REQUIRED. SIZE AS REQUIRED (4" DIA. MIN.). FOR 3", PLACE REDUCER OUTSIDE OF VAULT. ALL PIPE AND FITTINGS SHALL BE RESTRAINED.
- ④ 2' x 2' x 8" THICK FORMED CONCRETE BLOCKING WITH LOCKING FOLLOWER RING.
- ⑤ PRECAST CONCRETE VAULT WITH A MINIMUM OF TWO, 3' X 3' DIAMOND PLATE DOORS RATED FOR H2O LOADING. MARKED "WATER". VAULT SHALL BE EQUAL TO OLDCASTLE MODEL LISTED IN TABLE ABOVE.
- ⑥ WATER TIGHT GROUT SHALL BE USED IN ALL VAULT PENETRATIONS.
- ⑦ A MINIMUM OF 3" BETWEEN THE UNDERSIDE OF THE LID, OR VAULT, AND THE HIGHEST POINT OF VALVING AND ASSEMBLY IS REQUIRED.
- ⑧ THE DEVICE MUST BE EQUIPPED WITH (4) RESILIENT SEATED TEST COCKS WITH PLUGS INSTALLED.
- ⑨ THE DEVICE MUST ALSO BE EQUIPPED WITH (2) RESILIENT WEDGE O.S.& Y. SHUT OFF GATE VALVES WITH HAND WHEELS. GATE VALVES SHALL CONFORM TO AWWA C-509 OR C515.
- ⑩ A MINIMUM OF A 12" CLEARANCE IS REQUIRED BETWEEN THE LOWEST POINT OF THE DEVICE AND TO THE BOTTOM OF THE VAULT.
- ⑪ TWO ADJUSTABLE PIPE STANCHIONS REQUIRED AND SIZED APPROPRIATELY.
- ⑫ EBBA IRON SERIES 2100 MEG-A-FLANGE
- ⑬ 3" OR 4" X 2" DOUBLE STRAP STAINLESS STEEL SADDLE, 2" CURB STOP W/ LOCKING WING FOR FLUSHING. PLACE CURB STOP ON BOTTOM OF PIPE.

NOTES:

- VAULT ASSEMBLY TO BE CENTERED IN VAULT. TEE AND GATE VALVE REQUIRED ON CONNECTION TO MAINLINE.
- THE D.C.V.A. CHOSEN MUST BE ON THE MOST RECENT WA. STATE APPROVAL LISTING.
- THE DISTRICT WILL PROVIDE INSPECTION AND INITIAL TEST OF THE BACKFLOW DEVICE PRIOR TO THE ESTABLISHMENT OF WATER SERVICE. SUBSEQUENT TESTING OF THE BACKFLOW DEVICE REQUIRED BY THE OWNER.
- SCHEDULE THOROUGH FLUSH OF THE SERVICE PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.



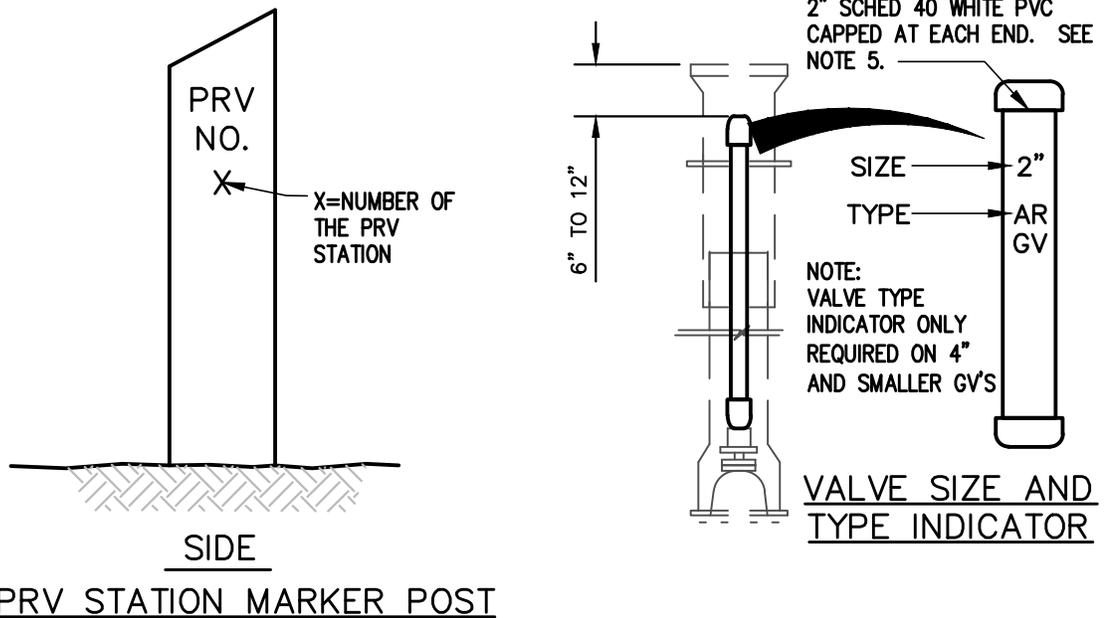
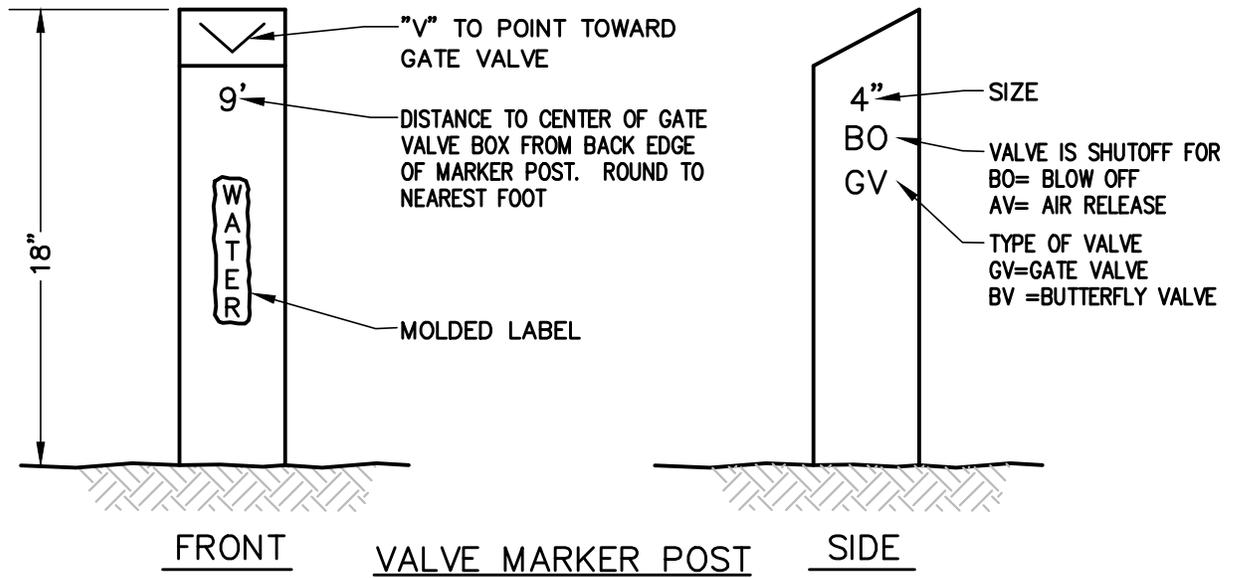
**Woodinville
Water District**

**2.5" AND LARGER DOUBLE
CHECK VALVE ASSEMBLY**



**WATER STD.
PLAN NO. 22**

REVISION DATE
12-16



NOTES:

1. ALL MARKER POSTS TO BE PAINTED (2) COATS SHERWIN WILLIAMS INDUSTRIAL URETHANE ALKYD B54Y157 SAFETY YELLOW.
2. 2" BLACK DIE CUT STICK ON LETTERS SHALL BE USED TO LETTER MARKERS.
3. LETTER THE SIDE OF BLOW-OFF, AIR RELEASE AND PRV MARKERS AS SHOWN. LETTER DISTANCE FROM BACK EDGE OF POST TO CENTER OF GATE VALVE BOX OR HATCH ON PRV.
4. CONSIDERATION SHALL BE GIVEN IN LOCATING VALVE MARKER TO SAFETY, AESTHETICS AND MAINTENANCE OF SURROUNDING AREA. WHENEVER POSSIBLE, LOCATE MARKER TO THE EVEN FOOT.
5. PLACE VALVE TYPE AND SIZE INDICATOR IN VALVE CHAMBER W/ 6" CLEARANCE AT TOP. USE WATERPROOF MARKER FOR NOTATIONS.



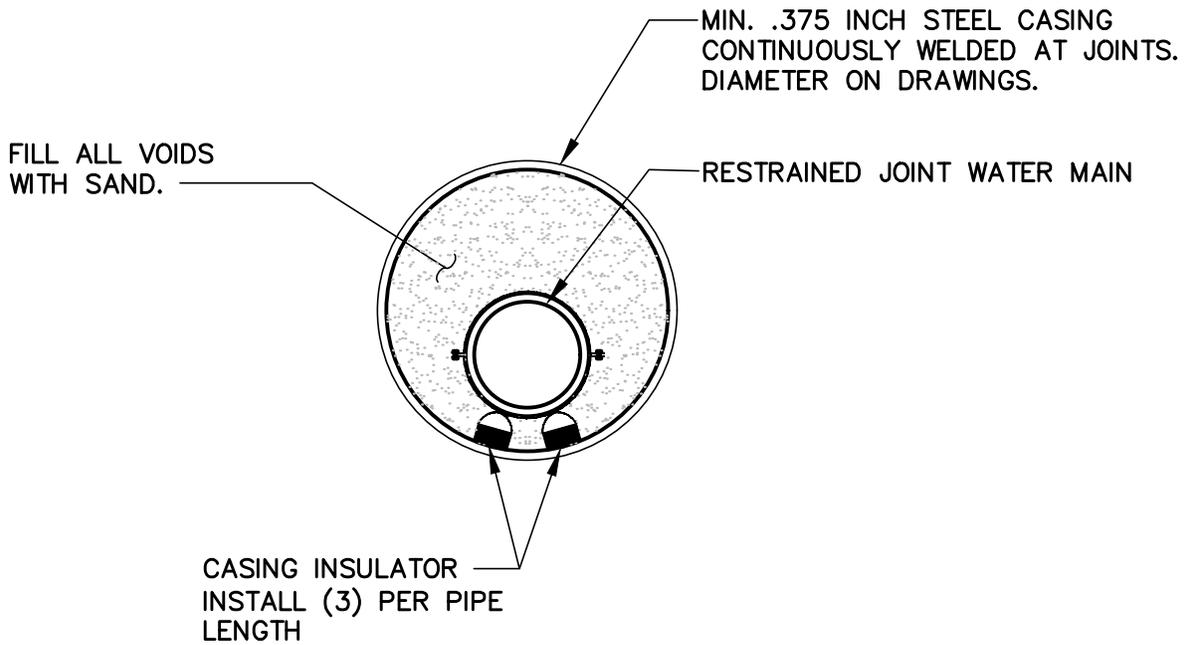
**Woodinville
Water District**

**VALVE
MARKER POSTS**



**WATER STD.
PLAN NO. 23**

**REVISION DATE
12-16**



NOTES:

1. SEAL ENDS OF CASING W/ BUTYL RUBBER CASING SEALS.
2. RESTRAINED JOINTS REQUIRED IN CASING. SIZE CASING TO ACCOMMODATE THE RESTRAINED JOINT PIPE.



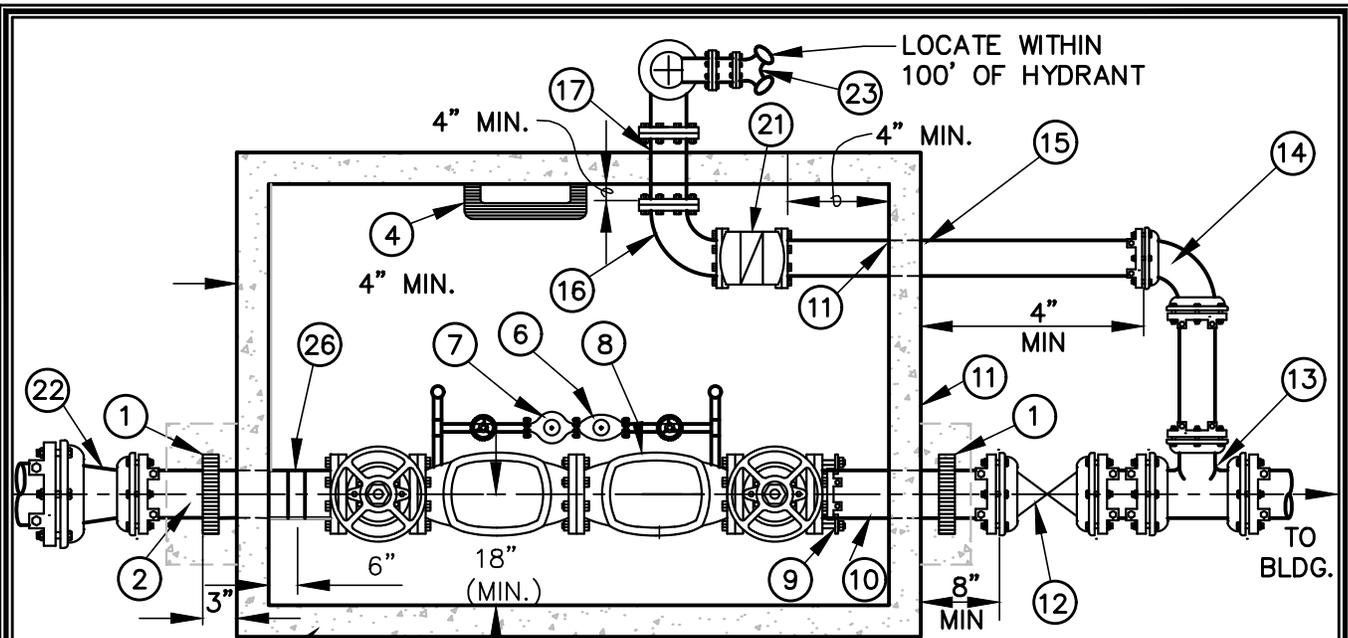
**Woodinville
Water District**

CASING DETAIL



**WATER STD.
PLAN NO. 24**

**REVISION DATE
11-12**



PLAN VIEW
NOT TO SCALE

IF SUMP PUMP NECESSARY—INSTALL WEATHERPROOF GFCI OUTLET INSIDE VAULT (OWNER TO PROVIDE ELECTRICAL SERVICE)

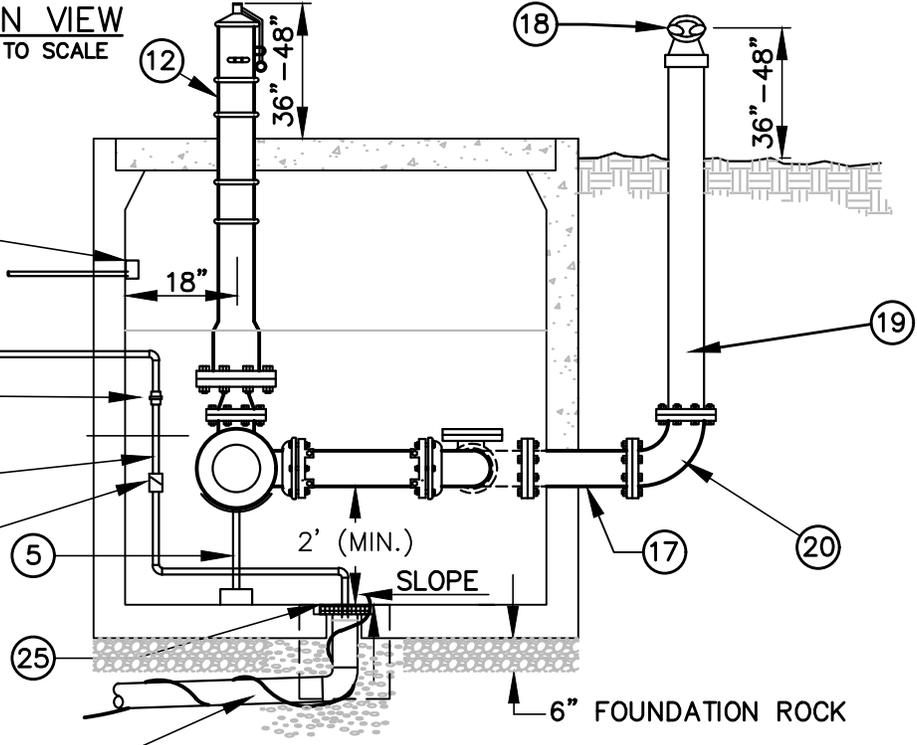
TERMINATE SUMP PUMP PIPING IN CATCH BASIN

1½" PVC UNION

1½" SCHEDULE 40 PVC

1½" PVC SINGLE CHECK

4" SCH. 40 PVC W/ 12GA. (EXTEND INTO VAULT) TRACER WIRE. 2% MIN. SLOPE PROVIDE SUMP PUMP IF GRAVITY DRAIN NOT FEASIBLE

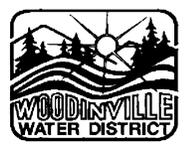


END VIEW
NOT TO SCALE

NOTES:

- 1) DESIGN FOR 4" THRU 10" DOUBLE DETECTOR CHECK VALVE
- 2) SEE ATTACHED NOTES FOR MATERIAL LISTING

SHEET 1 OF 2



Woodinville Water District

FIRE SPRINKLER SERVICE CONNECTION

WATER STD. PLAN NO. **25**

REVISION DATE 10-16

MATERIAL LISTING

- | | |
|---|--|
| <p>① 2' X 2' X 8" THICK FORMED CONCRETE BLOCKING WITH LOCKING FOLLOWER RING (EBBA IRON MEGALUG OR EQUAL.</p> <p>② CL 53 SPOOL, PE X FL</p> <p>③ PRECAST CONCRETE VAULT WITH DOUBLE HINGED STEEL PLATE DOORS WITH SUPPORT ARMS, DIMENSION TO VARY WITH SIZE OF ASSEMBLY.</p> <p>④ O.S.H.A. APPROVED LADDER</p> <p>⑤ PIPE SUPPORT STAND UNDER DCDA.</p> <p>⑥ COPPER OR BRASS BYPASS WITH AN APPROVED DCVA. PLUMB TO INSIDE OF VAULT.</p> <p>⑦ 3/4" METER SUPPLIED W/ DCDA UNIT.</p> <p>⑧ WASHINGTON STATE DEPARTMENT OF HEALTH DCDA IN MAIN LINE WITH TWO O.S. & Y. RESILIENT SEATED SHUTOFF VALVES AND TEST COCKS. SEE SPECIFICATIONS FOR APPROVED GATE VALVES.</p> <p>⑨ EBAA IRON SERIES 2100 MEG-A-FLANGE.</p> <p>⑩ CLASS 52 PIPE LENGTH TO FIT.</p> <p>⑪ GROUT INTERIOR AND EXTERIOR ALL AROUND PIPE AND ALL WALL PENETRATIONS USING NON-SHRINK GROUT.</p> <p>⑫ GATE VALVE MJ X MJ WITH POST INDICATOR VALVE (PIV).</p> <p>⑬ MJ TEE ASSEMBLY SIZED ACCORDINGLY.</p> | <p>⑭ 90° BEND, (MJ).</p> <p>⑮ CL 53 SPOOL, PE X FL.</p> <p>⑯ 90° BEND, FL.</p> <p>⑰ CL 53 SPOOL FL X FL.</p> <p>⑱ UL LISTED F.D. CONNECTION AND UL LISTED BREAKAWAY CAPS.</p> <p>⑲ SCHEDULE 40 GALVANIZED PIPE SPOOL FLxTHREAD. WITH 20 MIL PIPE WRAP BELOW GRADE. PAINT PER FIRE MARSHALL REQUIREMENTS.</p> <p>⑳ 90° BEND FL.</p> <p>㉑ SWING TYPE GRAVITY OPERATED CHECK VALVE WITH BALL DRIP VALVE TO BE INSTALLED HORIZONTALLY.</p> <p>㉒ REDUCER (IF REQUIRED)OR SLEEVE COUPLING OUTSIDE OF VAULT.</p> <p>㉓ NOT USED.</p> <p>㉔ NOT USED.</p> <p>㉕ PROVIDE ZOELLER CO. SUMP PUMP- PART NO. 53-0001, MODEL NO. M-53-D. IF GRAVITY DRAIN NOT FEASIBLE</p> <p>㉖ 2" DOUBLE STRAP SADDLE ROMAC 202S OR APPROVED EQUAL W/ 2" CURB STOP WITH LOCKING HASP. TAP ON BOTTOM OF PIPE FOR FLUSHING</p> |
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DOUBLE DETECTOR CHECK AND VAULT ASSEMBLY NOTES:

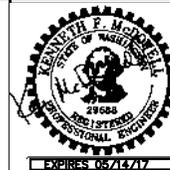
- (1) OWNER SHALL FURNISH, AND INSTALL THE DCDA AND ALL PIPING AND APPURTENANCES SHOWN ON THIS PLAN.
- (2) DOUBLE DETECTOR BACKFLOW PREVENTORS SHALL BE FEBCO OR STATE APPROVED EQUAL. (SUBMITTAL REQUIRED). NOTE:DO NOT ALTER BACKFLOW UNIT IN ANY MANNER OR IT WILL LOOSE THE STATE APPROVAL.
- (3) DISTRICT WILL PROVIDE INSPECTION AND INITIAL TEST OF THE DCDA PRIOR TO ESTABLISHMENT OF WATER SERVICE. SUBSEQUENT ANNUAL TESTING OF DCDA REQUIRED BY OWNER.
- (4) ITS SHALL BE THE OWNERS RESPONSIBILITY TO SIZE THE FIRE SPRINKLER SERVICE LINE, OBTAIN AND COORDINATE FIRE PERMIT AND ELECTRICAL PERMIT (IF REQUIRED) .
- (5) ALL PIPING, VALVES & FITTINGS DOWNSTREAM OF THE VAULT IS SHOWN & CALLED OUT GENERICALLY. A SEPARATE DETAIL PLAN FOR VAULT INSTALLATION AND SPRINKLER LINE MUST BE SUBMITTED AND APPROVED BY THE FIRE MARSHALL PRIOR TO INSTALLATION.
- (6) LADDERS SHALL BE INSTALLED IN COMPLIANCE TO O.S.H.A. REQUIREMENTS.
- (7) NO CHEMICALS ARE ALLOWED IN THE FIRE SPRINKLER PIPING SYSTEM.
- (8) LOCATE VAULT IN PLANTING AREA AND NOT IN PAVING AREA, UNLESS APPROVED BY THE DISTRICT.
- (9) PIPE SHALL BE CL. 52 AND CEMENT LINED. (EXCEPT AS SHOWN)
- (10) A SUMP PUMP SHALL BE INSTALLED W/ POWER CONDUIT AT THE OWNERS EXPENSE IF GRAVITY DRAIN IS NOT FEASIBLE. 1½" DIA. SCHEDULE 40 PVC SHALL BE USED FOR DISCHARGE PIPING. INSTALL SINGLE CHECK AND UNION IN-LINE DOWNSTREAM OF PUMP. ANCHOR PIPING TO WALL.
- (11) TEMPORARY SUPPORT SHALL BE PROVIDED UNDER VALVES AT THE TIME OF INSTALLATION. AFTER COMPLETE INSTALLATION, INSTALL PERMANENT PIPE SUPPORT STAND.
- (12) SIZE VAULT BASED ON SIZE OF APPARATUS AND MEETING MINIMUM CLEARANCES. (VAULT SUBMITTAL REQUIRED)
- (13) MINIMUM APPARATUS SIZE SHALL BE 4".
- (14) VAULT SHALL BE SEALED TO PREVENT WATER LEAKAGE.
- (15) ALL MJ JOINTS TO BE RESTRAINED W/ MEG-A-LUG OR EQUAL.

SHEET 2 OF 2



**Woodinville
Water District**

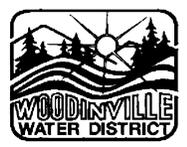
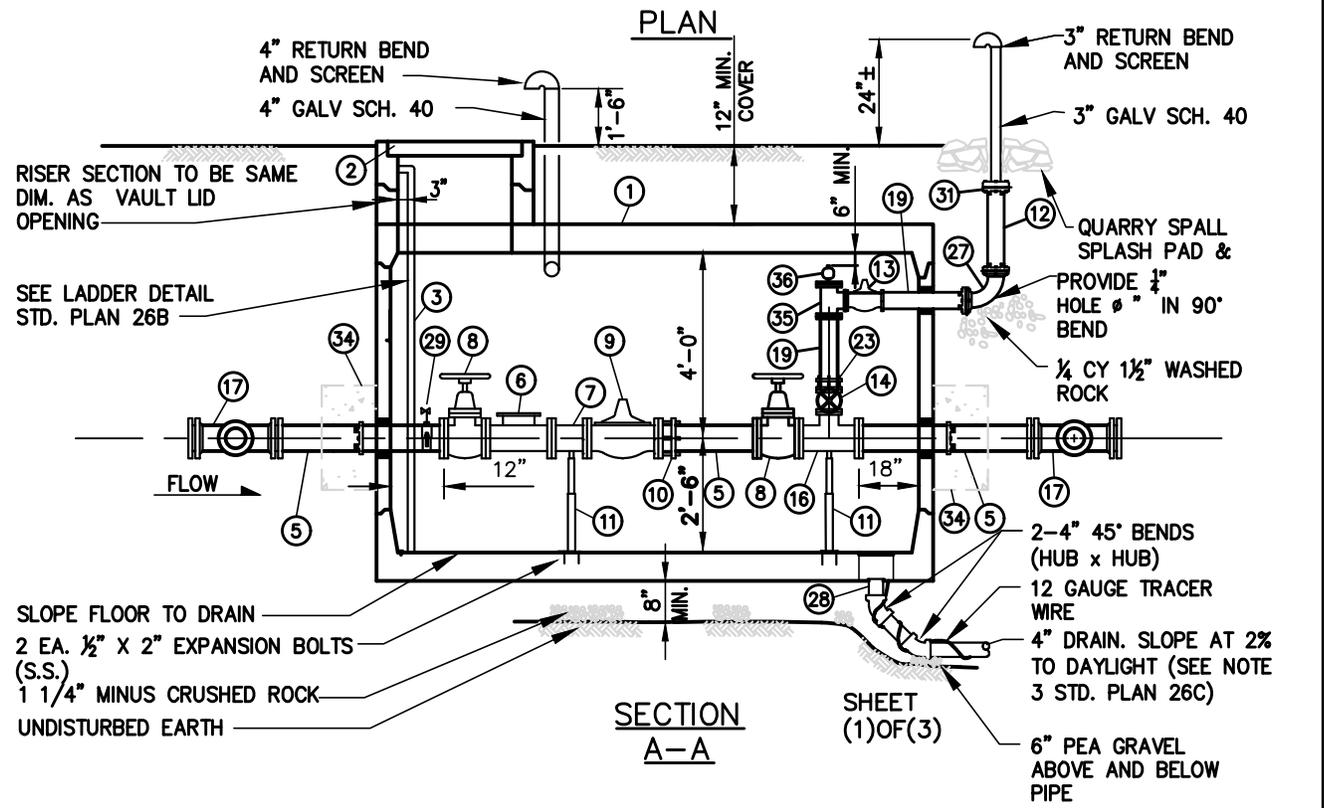
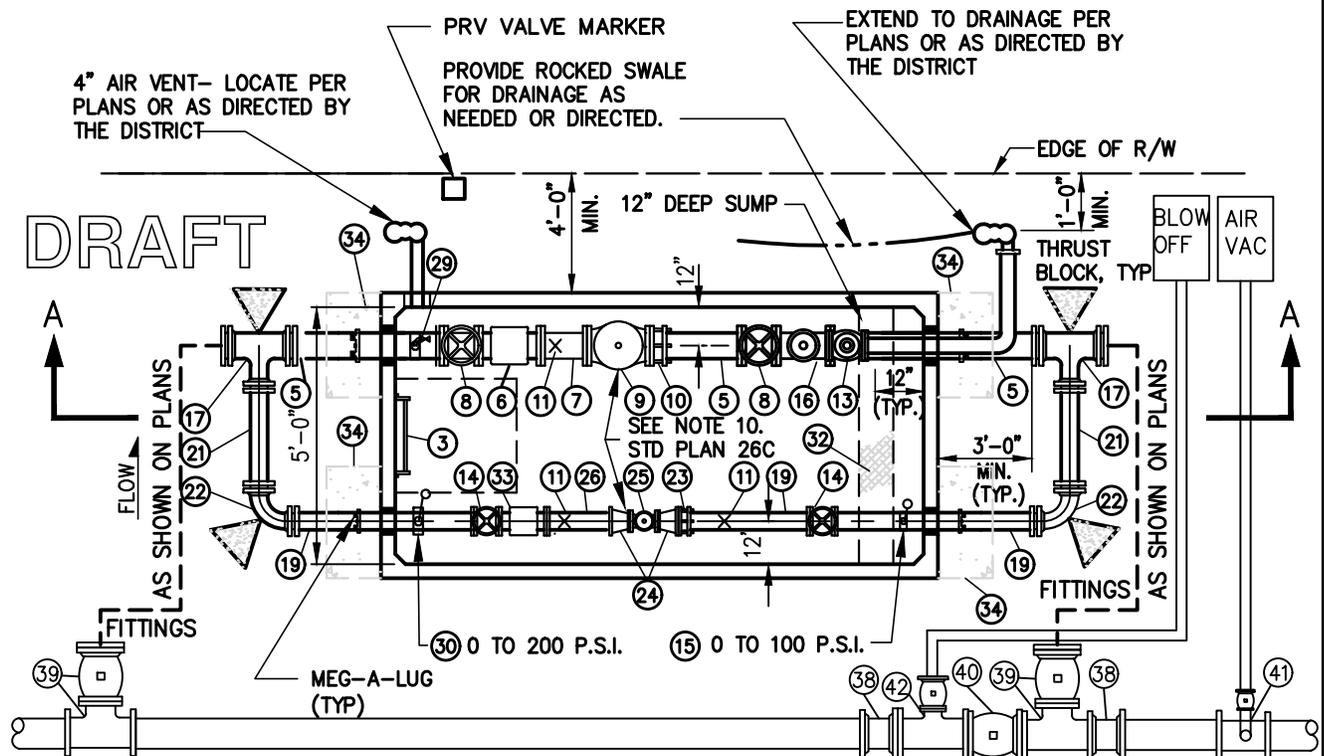
**FIRE SPRINKLER
SERVICE CONNECTION**



**WATER STD.
PLAN NO. 25A**

REVISION DATE
10-16

DRAFT



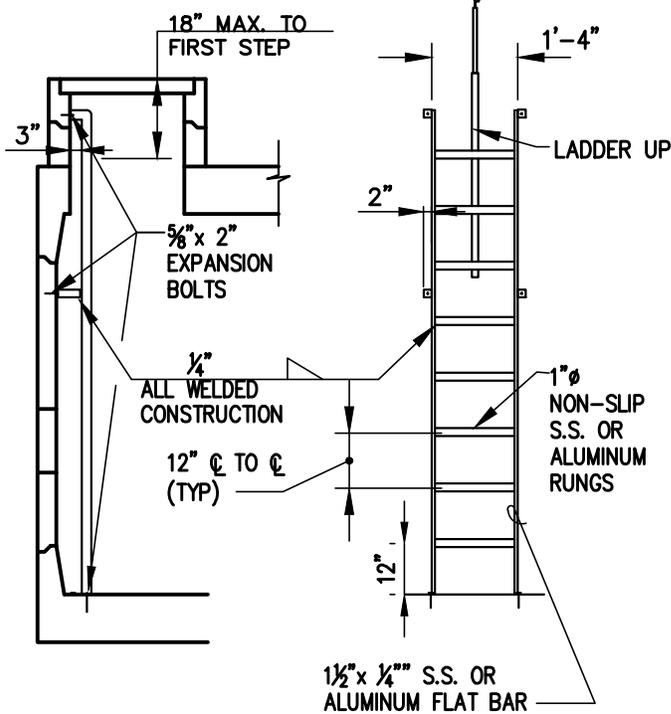
**Woodinville
Water District**

**PRESSURE REDUCING
VALVE STATION**

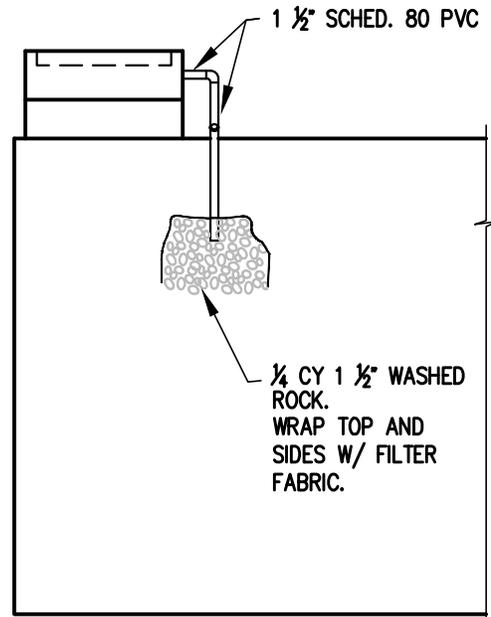


**WATER STD.
PLAN NO. 26**

REVISION DATE
12-12



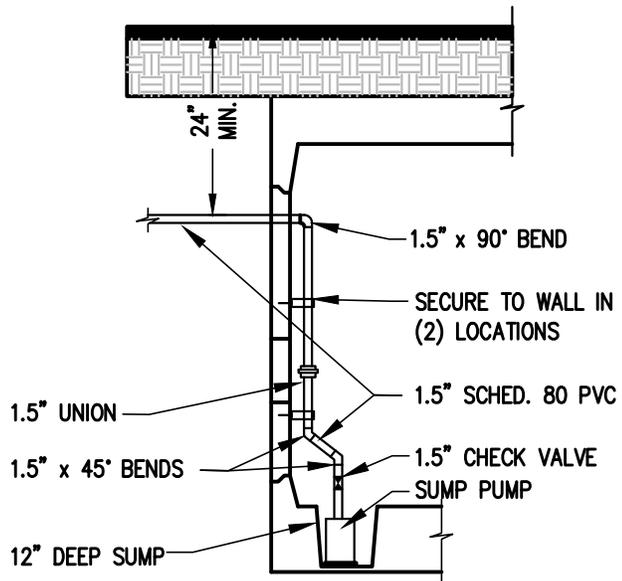
LADDER DETAIL



LID GUTTER DETAIL

NOTES:

1. STAINLESS STEEL OR ALUMINUM LADDER WITH LADDER UP - LW PRODUCTS OR APPROVED EQUAL. SUBMITTAL REQUIRED.



NOTES:

1. TERMINATE SUMP PUMP DISCHARGE LINE IN CATCH BASIN OR DAYLIGHT IN LOCATION APPROVED BY THE DISTRICT.
2. PROVIDE ZOELLER CO. SUMP PUMP- PART NO. 53-0001, MODEL NO. M-53-D.

SUMP PUMP DETAIL

(2) OF (3)



**Woodinville
Water District**

**PRESSURE REDUCING
VALVE STATION
DETAILS**



**WATER STD.
PLAN NO. (26B)**

REVISION DATE

5-11

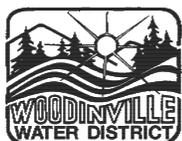
MATERIAL LIST

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. OLDCASTLE VAULT 612LA 2. LW PRODUCTS, 30" SQUARE MIN. OR AS SHOWN ON DWG. (DWG. GOVERNS) 3. STAINLESS STEEL OR ALUMINUM LADDER W/ "LADDER UP" (SEE DETAIL STD. PLAN 26B) 4. NOT USED 5. 6" SPOOL (FLxPE) LENGTH AS REQUIRED 6. 6" H STYLE STRAINER (FLxFL) CLA-VAL X43H 7. 6" SPOOL x 18" LONG (FLxFL) 8. 6" GATE VALVE W/ HAND WHEEL (FLxFL) 9. 6" PRESSURE REDUCING VALVE (FLxFL) MODEL NO. 90G-01 BCSYKCX101 W/ STAINLESS TRIM & COVER BOLTS. SPRINGS RATING OF 20-105 PSI. 10. 6" RESTRAINED FLANGE COUPLING ADAPTER (RFCA) 11. ADJUSTABLE PIPE SUPPORT 12. 4" D.I. (RJ)- EXTEND TO DRAINAGE COURSE PER PLAN OR AS DIRECTED. INSTALL BENDS (RJ) AS NEEDED. 13. 4" REDUCED PORT PRESSURE RELEASE VALVE. MODEL NO. 650G-01BSKC/x101/STAINLESS TRIM AND COVER BOLTS. SPRINGS RATING OF 20-105 PSI. 14. 4" GATE VALVE W/ WHEEL (FLxFL) 15. 3D PRESSURE GAUGE 0-100 PSI INSTALLED ON 3/4" ROMAC 101S SADDLE W/ 1/4" BALL VALVE. 16. 6" x 4" TEE (FLxFL) 17. 6" x 4" TEE (MJxMJ) 18. NOT USED 19. 4" SPOOL (FLxPE) LENGTH AS REQUIRED | <ol style="list-style-type: none"> 20. NOT USED 21. 4" SPOOL (PExPE) LENGTH AS REQUIRED 22. 4" 90° BEND (MJxMJ) 23. 4" RESTRAINED FLANGED COUPLING ADAPTER (RFCA) 24. 4"x2" REDUCER (FL) 25. 2" REDUCED PORT PRESSURE REDUCING VALVE (FLxFL) MODEL NO. 690G-01 BCSYKCX101 W/ STAINLESS TRIM. SPRINGS RATING OF 20-105 PSI. 26. 4"x 2' LONG SPOOL (FLxFL) 27. 4" 90° BEND (MJxMJ) 28. REMOVABLE SUMP DRAIN (W/ 1" LIP) 29. 3/4" ROMAC 101S SADDLE, 3/4" BALL CORP STOP W/ HOSE BIB 30. 3D PRESSURE GAUGE 0-200 PSI INSTALLED ON 3/4" ROMAC 101S SADDLE W/ 1/4" BALL VALVE. 31. 4" CAP MJ - MEGALUG W/ 3" TAP 32. GALVANIZED GRATING (2 PIECES) 33. 4" H STYLE STRAINER (FLxFL) CLA-VAL X43H 34. 2' x 2' x 8" THICK FORMED CONCRETE BLOCKING WITH LOCKING FOLLOWER RING 35. 4" TEE, FL W/ TAPPED BLIND FLANGE 36. 1/2" AIR RELEASE APCO#55. 37. NOT USED 38. ADAPTER (FLxMJ) 39. MAINLINE DIA. TEE (FL) OR FLxMJ AND GATE VALVE (FLxMJ) 40. ZONE VALVE - NORMALLY CLOSED 41. AIR VAC ASSEMBLY PER STD. PLAN 11 (TEE FL) 42. 2" BLOW-OFF PER STD. PLAN 12 (TEE MJxFL) |
|--|---|

NOTES:

1. THIS IS A GENERIC MATERIAL LIST. FITTINGS AND VALVE SIZES AND TYPES MY DIFFER, AND ARE SHOWN ON THE PLANS.
2. ALL MECHANICAL JOINT FITTINGS (IN OR OUT OF THE VAULT) SHALL BE MEG-A-LUGED.
3. SUMP PUMP REQUIRED IF GRAVITY DRAIN NOT POSSIBLE.
4. VAULT OPENINGS SHALL BE CORED. CORED OPENINGS SHALL BE SIZED TO ACCOMMODATE LINK SEAL. LINK SEAL SHALL BE GROUTED INSIDE AND OUT WITH APPROVED NON-SHRINK GROUT..
5. EXTERIOR VAULT JOINTS SHALL BE SEALED WITH 6" WIDE W/RAPID SEAL BY CANUSA-CPS OR NPC EXTERNAL JOINT WRAP BY TRELLEBORG ENGINEERING SYSTEMS , IN WET AREAS.
6. WATERLINE SHALL BE RESTRAINED (MIN.) 50' UPSTREAM AND 40' DOWNSTREAM OF VAULT.
7. STAINLESS STEEL BOLTS W/ SILICON BRONZE NUTS SHALL BE USED ON ALL FLANGED FITTINGS.
8. ELECTRICAL SERVICE SHALL BE PROVIDED. SEE STANDARD SPECIFICATIONS FOR REQUIREMENTS.
9. ENGINEER RESPONSIBLE TO SET VAULT SO TOP SLAB IS MIN. 12" LOWER THAN ADJACENT OR FUTURE ROADS TO ACCOMMODATE WIDENING OR PAVING WITHOUT CONFLICT.
10. INSTALL PILOT CONTROL PACKAGE TOWARDS INSIDE OF VAULT ON 6" AND 2" PRV.

(3) OF (3)



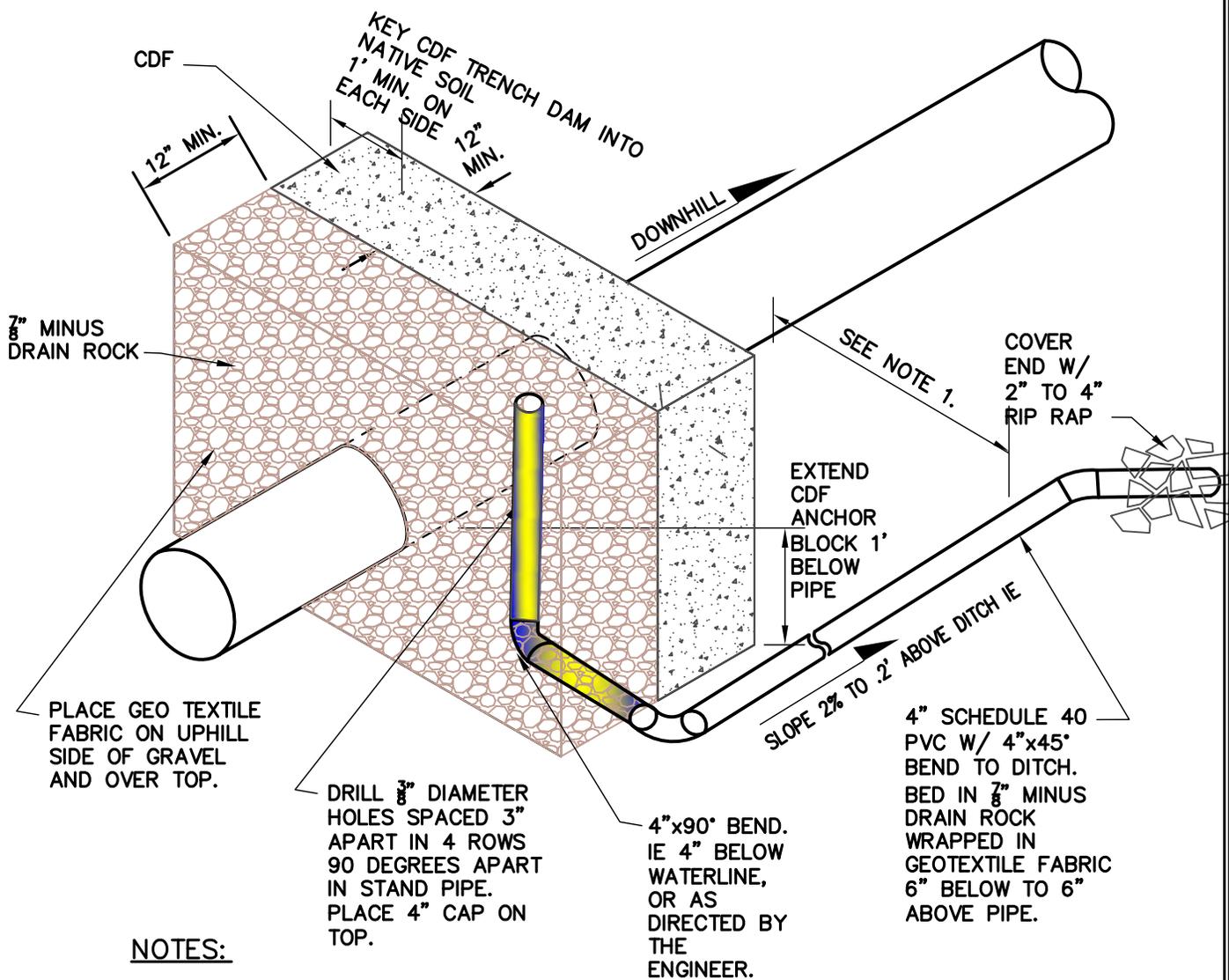
Woodinville
Water District

PRESSURE REDUCING
VALVE STATION



WATER STD.
PLAN NO. 26C

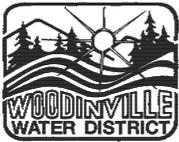
REVISION DATE
3-16



NOTES:

1. 4" PVC DRAIN TO PARALLEL WATERLINE W/ OFFSET BETWEEN PIPES DETERMINED BY THE ENGINEER.
2. PAVEMENT RESTORATION PER CONTRACT DOCUMENTS.
3. GEO TEXTILE FABRIC TO BE WATER PERMEABLE.

TRENCH DAM DETAIL



**Woodinville
Water District**

**TRENCH DAM
DETAIL**



**WATER STD.
PLAN NO. 27**

**REVISION DATE
12-16**