Covington WATER DISTRICT

Standards and Specifications

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January 2024

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King County, Washington

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These Standards and Specifications were prepared under the direction of a registered professional engineer and approved by Board Resolution 4654 on December 19, 2023.

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Chapter 1
General Requirements

CHAPTER 1
GENERAL REQUIREMENTS

1.01 PURPOSE

The purpose of these Standards and Specifications is to provide minimum standards and guidelines for design and construction of Covington Water District (District) developer extension and capital projects. No extension or modification to the District's water system shall be made without the District's approval of construction plans prepared in accordance with these Standards and the District Administrative Code (DAC). All construction of developer extensions shall conform to these Standards, applicable American Water Works Association (AWWA) Specifications and the WSDOT/APWA Standard Specifications (Washington State Department of Transportation). The District Engineer shall be the final authority in all matters related to design, location, and specifications.

These Standards do not include design of the District's general facilities such as wells, pump stations or storage tanks. General Facility improvements require special design considerations and will be reviewed and approved by the District based on factors unique to each project.

Compliance with these Standards does not relieve the Design Engineer of the responsibility to apply conservative and sound professional judgement. These are minimum standards and are intended to assist, but not substitute, for competent work by design professionals. The District may, at its sole discretion due to special conditions and/or environmental constraints, require more stringent requirements than required under these Standards.

Revisions to these Standards will be made from time to time. The users shall be responsible to ensure that they are using the latest edition of District Standards and Specifications.

1.02 DEFINITIONS

Board – The Board of Commissioners of Covington Water District.

Contractor – The individual, firm, partnership, corporation, or joint venture entering into a contract with a Developer or the District to perform the work under these documents. The term shall also include the Contractor's agents, employees and subcontractors.

Developer– The property owner that has made, or intends to make, an application to the District for permission to construct a water system connection, extension, or modification to the District's water system. (Also see RCW 39.92.020). An individual, group of individuals, partnership, corporation, association, municipal corporation, state agency or other person undertaking development and their successors and assigns.

Development- The subdivision, or short platting of land, or the construction or reconstruction of residential, commercial, industrial, public, or any other building, building space or land.

Developer's Engineer or Design Engineer – The professional engineer or engineering firm entering into a contract with the Developer and representing the Developer to prepare construction documents and provide other engineering services to perform a developer extension project. The term shall also include its employees and subcontractors.

Developer Extension – A water main and/or other water facility to be connected to and extending the District's system. Previously known as a System Extension.

District – Covington Water District.

District Engineer – District Engineer of Covington Water District or duly authorized representative.

District Standards or these Standards – Covington Water District Standards and Specifications, latest edition.

District Standard Details or Standard Details - Covington Water District standard detail drawings.

Equipment - Machinery, accessories, appurtenances and manufactured articles to be furnished and/or installed under the Project.

Inspector – A representative of the District Engineer authorized to perform construction inspection and tests.

Material or Materials – These shall include machinery, manufactured or fabricated articles, and natural substance to be furnished in connection with the Project.

Non-Residential- Applies to any building or development for the purpose of occupancy and use other than a single family or duplex residential use.

Plans – The plans, profiles, cross-sections and details approved by the District Engineer, which show the design and details of the project.

Project – All work planned or approved for construction, reconstruction or relocation of water mains and/or other structures proposed or under contract within a limited area.

Reference Standards and Specifications – The technical standards and specifications of other agencies incorporated or referred to herein.

Separation – Clear distance between District facilities and other utilities or structures measured from outside wall to outside wall where the distance is least.

Structures – Foundation of any kind, buildings, sheds, retaining walls, rockeries, vaults or fences over 6' in height. Also includes obstructions such as poles, eaves, cornices, awnings or trellis.

System – The District's water system including mains, wells, pump stations, storage tanks, telemetry and all other facilities.

UPC – Uniform Plumbing Code – Current version of the code adopted by the local municipal jurisdiction.

Water System Plan – The current Water System Plan (WSP) for the Covington Water District, required by State and County law, as amended.

Words and Phrases - Whenever the words, “as directed”, “as required”, “as permitted”, or words of like effect are used, it shall be understood that the direction, requirement or permission of the District Engineer is intended. The words, “sufficient”, “necessary”, “proper”, and the like shall mean sufficient, necessary or proper in the judgment of the District Engineer. The words “approved”, “acceptable”, “satisfactory”, or similar words shall mean approved by, acceptable to, or to the satisfaction of the District Engineer.

WSDOT Standard Specifications - Standard Specifications for Road, Bridge and Municipal Construction, latest English edition, Washington State Department of Transportation and the American Public Works Association, including all amendments.

APWA Standards and Standard Specifications – Standards and specifications published by the American Public Works Association, latest version, including all amendments.

AWWA Standards – Standards published by the American Water Works Association.

1.03 ABBREVIATIONS

The following acronyms or abbreviations, which may appear, shall have the meanings indicated herein:

AASHTO	- American Association of the State Highway and Transportation Officials
AC	- Asbestos Cement
ANSI	- American National Standards Institute, Inc.
APWA	- American Public Works Association
ARRA	- American Recovery & Reinvestment Act
ASTM	- American Society for Testing and Materials
ATSSA	- American Traffic Safety Services Association
AWWA	- American Water Works Association
CWD	- Covington Water District
DAC	- Covington Water District Administrative Code
DEA or DE	- Developer Extension Agreement
DOE	- Washington State Department of Ecology
DOH	- Washington State Department of Health
ESA	- Endangered Species Act
OSHA	- Occupational Safety and Health Administration
MUTCD	- Manual Uniform Traffic Control Devices
NSF	- National Science Foundation
PSAPCA	- Puget Sound Air Pollution Control Agency
RCW	- Revised Code of Washington
UPC	- Uniform Plumbing Code

WAC - Washington Administrative Code
WISHA - Washington Industrial Safety and Health Act
WSDOT - Washington State Department of Transportation
WSP - (Covington Water District) Water System Plan

1.04 REFERENCE STANDARDS

The latest editions of the AWWA, WSDOT/APWA and AMSI reference standards govern design and construction within the Covington Water District, unless otherwise specified, and shall be adhered to as if they were included verbatim within the District Standards. However, the District shall not be responsible for furnishing these reference standards to the Developer, Design Engineer, or Contractor.

The latest editions of these additional standards for governing design are also incorporated within this set of standards:

ASME/ANSI B16.3 Malleable Iron Threaded Fittings

CWD Water System Plan (WSP) and District Administrative Code (DAC)

ASTM A53/A53M 04A Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

Recommended Standards for Water Works, Great Lakes-Upper Mississippi River Board of State Public Health

Sizing Guidelines for Public Water Supplies, DOH Guidelines

Rules and Regulations Relating to Fire Hydrants and Water Mains, King County Department of Planning and Community Development

Cross Connection Control Manual, Accepted Procedure and Practice. Current Edition, PNWS-AWWA Cross Connection Control Committee

King County Road Standards, King County Department of Public Works

Standard Specifications for Road, Bridge, and Municipal Construction, Washington State Department of Transportation

Manual of Uniform Traffic Control Devices (MUTCD)

NSF/ANSI Standard 61 for Drinking Water System Components with lead content.

1.05 GOVERNMENTAL AGENCY REQUIREMENTS

All construction within Cities, County or State and their rights-of-way shall be performed in accordance with the applicable standards and requirements and in accordance with franchise agreements and/or permit requirements. The Contractor is responsible for

determining these requirements prior to construction and meeting the requirements during construction.

Chapter 2
Plan Review & Approval

CHAPTER 2
PLAN REVIEW AND APPROVAL

2.01 GENERAL

Following these Standards for design of water system extensions will help ensure a timely review of the plans and keep review costs to a minimum. Plans not conforming to standards may take longer to review and increase the costs to the Developer. The District Engineer's decision to approve, reject or modify plans shall be based on:

- plans conforming to the District's Water System Plan
- meeting or exceeding the requirements of these Standards
- meeting or exceeding applicable locally adopted codes
- not adversely affecting the water system
    - water quality
    - safety
    - operation or maintenance
    - reliability

Plans for extension to the District's water system within proposed developments shall be prepared by the developer's Design Engineer and include features such as water mains, pressure reducing valves, hydrants, valves, meters, backflow prevention and other appurtenances within a proposed subdivision. The plans will be reviewed by the District Engineer and approved prior to start of construction of any water system extension.

The Design Engineer is responsible for any errors and omissions in the plans. The District Engineer's review or approval of Plans does not relieve any of the Design Engineer's responsibility or liability imposed upon it by law or by contract.

Plans may be rejected at the District's sole discretion and without detailed review, if they are of poor quality or contain a significant amount of errors and omissions and are not in conformance with these standards.

The District Engineer's plan review, plan approval, and construction inspection do not relieve the Developer of any responsibility to conform to the District Administrative Code (DAC) and these Standards.

Water system features such as booster stations, reservoirs, water treatment facilities, transmission mains or other water system features outside the boundaries of a proposed development will be designed by the District and constructed through award of a construction contract by the District Board of Commissioners. Award shall be to the appropriate bidder through a public bidding process in accordance with WAC and RCW requirements. All costs of design, contracting, construction, inspection and administration by the District shall be directly reimbursed by the developer according to terms of a formal Developer Extension Agreement (DEA).

2.02 PRE-DESIGN MEETING

After the Developer enters into a developer extension agreement with the District, the Developer's Engineer shall schedule a pre-design meeting with District staff. The Developer or their representative is required to attend the pre-design meeting along with

the Developer's Engineer. District staff will assist in water main layout and sizing, and providing appropriate record drawings, mapping, and reference to the District web site at www.covingtonwater.com for current Standard Details (see Appendix A).

2.03 PLAN FORMAT

Separate Plan Set – Water Developer Extension Plans shall be produced separate from other utility plans. A typical Water Plan Set includes Title Sheet/ Key Map/Legend/Notes/ Plan & Profile/ and Standard Details for the project.

Drafting – Plans shall be prepared using the current adopted version of AutoCAD™. Hand drawn submittals (including corrections or alterations) and pasted pieces will not be accepted. All construction Plans for the District's Developer Extensions shall be black/white on 24"×36" standard drafting paper.

Drawing Quality –– The drawings must be easy to read, with all lines and letters dark enough to provide good contrast with the paper. The base map showing existing features shall be screened to one-half tone.

Drafting Standards/Symbols – Drafting standards and symbols shall conform to Details shown in Appendix A. Symbols not shown shall conform to Washington State APWA Chapter CAD Standards.

Text Font/Size – Text font shall be SIMPLEX font using AutoCAD. Text identifying existing features shall be 0.08" in height, text identifying street names shall be 0.24" in height, and text for instructions and callouts for proposed water facilities shall be 0.1" in height.

Title Sheet/Title Block – Title sheet shall include a project title, generally centered on the top of the sheet, which include the project name, District assigned project identification number, section, township, range, the number of lots or units for a residential development, and the water system pressure zone(s). The title block shall include the name of the project as well as the names, addresses and phone numbers of the Developer and the Design Engineer. Title sheet and title block shall conform to the District format as shown in Appendix B. Proposed service shall be summarized and shown in table format by size and use with corresponding fixture count converted to GPM in accordance with UPC.

Vicinity Map – The vicinity map shall be shown on the title sheet and shall cover the project site and surrounding streets and property within a minimum of 600 feet of the project site. Adjacent developments, existing and proposed, are to be shown in sufficient detail to indicate effects on the water system layout. The project name, highway/streets, major public properties (such as schools, fire stations, etc.), and quarter section corners shall be shown in the map. The map shall be 8"W×6"H. with a scale from 1" = 1,000' to 1" = 2,000'.

Key Map – If the plan set has more than two plan and profile sheets, a key map showing the entire project site at a smaller scale and the boundaries showing the areas covered by all plan and profile sheets shall be provided. The key map shall show all proposed and existing water mains (with sizes), valves, meters, air valves, blow-offs, and hydrants

within a minimum of 600 feet of the project site. Call out details should not be shown on this map.

Street Names – Official Street/road names in the Project shall be used if known. Otherwise, name street/road by letters (such as Street A, Road B, Tract C, etc.) in construction plans and convert to official street/road names in record drawings.

Legend – The key map sheet shall include a legend of symbols for proposed and existing items for clarity. Legend must show symbols for other plan features such as utilities, structures, poles, etc., within the project area.

North Arrow – Include north arrows on all plan view drawings. Where possible, north arrow shall face up or to the left of each drawing. A north arrow and bar scale shall be shown at the upper left-hand corner of the drawing.

Datum –Horizontal datum shall be NAD-83-91 and vertical datum shall be NAVD 88 control and shall be indicated on the Plans. Plans shall not mix datum – all features shall be according to the same datum. Plans shall reference a local benchmark for control. Design shall reference WA State Plane Coordinate System, North Zone.

Benchmarks – Show locations and elevations of permanent **and** temporary benchmarks on plan drawings.

Stationing – Stationing on plan and profile should proceed from left to right in 50-foot increments or from bottom to top, where appropriate. Other more detailed increments due to larger projects with longer profiles may only be used with the District Engineer's approval.

Right-of-Way, Easement, and Property Data – The drawings shall include all right-of-way lines, property lines, dimensions, lot numbers, block numbers, plat names, and street names. If the street is private, it shall be identified as such. Show existing and proposed easements and rights of way.

Drawing Layout – Drawings shall be laid out in a logical order for reasonable understanding. Plans will not be approved if the layout is inconsistent with District requirements. Plan layout for a large project shall be discussed at a pre-design meeting with District staff. The plan view and profile for segments of water main shall be shown on the same plan sheet with the plan view on top of the sheet. The profile shall be located and oriented directly below the plan view wherever possible. When the Plan for a short branch of water main (such as a water main in a tract) is shown on a sheet, the profile for the tract and water main shall be shown on the same sheet. Fire hydrant laterals and fire service lines will require a profile view on a separate sheet dedicated to appurtenant features.

Profiles shall be accurate in callouts for elevation to avoid need for system adjustments during construction. For larger Developer extensions, match lines shall be provided showing stations and sheet numbers at all appropriate locations. Other utilities and structures, existing and proposed, shall be shown to a level of detail to allow the District to identify potential conflicts or constructability issues during design.

Hydrant Location Plan – Prior to plan approval, Design Engineer must submit plan showing hydrant locations approved by the appropriate local Fire Marshal.

Plan View Information – The plan view shall indicate and identify all existing and proposed buildings, structures, utilities (water, sewer, storm drain, power, phone, gas, fiber optics and cable TV), road/street right-of-way, easements, curbs, gutters, driveways, sidewalks, planters, streams, wetlands, mailboxes, structural features, topographic data, and other known physical features within the project area, which may affect the design and construction of the water mains. Show all existing and proposed water facilities including water mains, valves, hydrants, blow-offs, air/vacuum valves, meters, cross connection control assemblies, fire sprinkler vaults, fire department connections, etc. Fitting callouts shall be shown on the plan view and not repeated on the profile view. If an existing pipe is greater than 12 inches in diameter, the pipe may be drawn in its actual width, depending on the scale. All callouts shall include the station number.

Profile Information – Profiles shall accurately show existing and finished grades. All existing and proposed utilities shall be shown. Each utility crossing shall be accurately depicted and a calculated clearance shall be shown. All physical characteristics of the utilities shall be shown true to scale. This shall include, but is not limited to, waterline deflection, fittings, valves, fire hydrants, blow-offs, air valves, pipe length/diameter/material, pipe slope, storm water catch basin inverts, sewer manhole inverts, etc. Separate profiles are required for hydrant runs and fire lines from the main to the vault or hydrant, including the finished grade elevations.

Pressure Zone – If the Project covers more than one pressure zone, Plans shall show all pressure zone boundaries, pressure reducing valves, normal flow directions, booster pumps, check valves and isolation valves.

Scale – Indicate scales in the drawing area and title block on each sheet, utilizing a consistent format. Bar scales shall be used in drawing areas for Plan reproduction integrity. The horizontal scale for plan and profile sheets shall be 1” = 10’, 1” = 20’, or 1” = 30’. Smaller horizontal scales (1” = 40’ or 1” = 50’) may be used only with approval by the District Engineer. The vertical scale for profiles shall be 1” = 5’. Architectural scaled drawings will not be accepted.

Details – The Design Engineer shall provide design details (and calculation where appropriate) for the District’s review and approval for details not included in District Standards or altered to fit a specific project need. Standard Detail numbers shall be used for callouts.

2.04 CALLOUTS

Callouts shall include but are not limited to the following:

Street Names - Use official street/road names wherever possible.

Easement Callouts - Dimension and ownership of existing and proposed easements (e.g. 20’ CWD WATER EASEMENT).

Existing Water Main Callouts - Size and material of all existing water mains (e.g. EX. 12” D.I.).

Proposed Water Main Callouts - Pipe length (from center-of-fitting to center-of-fitting), size, and material alongside of each pipe in both plan and profile (e.g. 150 L.F. 8" D.I.). The plans shall include centerline stationing and offsets for all water mains and appurtenances.

Structure Callouts – All structures within 20-feet of the water main or District facility shall be identified. The Design Engineer shall demonstrate minimum clearances are met.

Tie-In Callouts – For connection to an existing water main, callouts shall include size and material of new and existing water mains, method of tie-in, and fittings, valves, adaptors, sleeves and all other items to be used. Indicate “COORDINATE W/CWD”.

Fitting Callouts – Station, offset, size, type, and attachment of fittings such as tees, crosses, bends, restrained pipe lengths, and sleeves shall be shown in plan view (e.g. STA. 18+55.6, 3.5’ RT, 12”×8” TEE (FL×MJ) W/CONCRETE BLOCK). If valves, reducers, adapters and sleeves are used at the fitting, all the items shall be listed.

Valve Callouts – Station, offset, number, size, type, and attachment, (e.g. STA. 18+55.6, 3.5’ RT, 12” GATE VALVE (FL×MJ)). Existing valve callouts shall be described and location shown on plans. If plan drawings are not able to provide the location on plan, then the direction and distance shall be depicted on plan view.

Hydrant Callouts – Sequential number and station of fire hydrant and all restrained fittings and parts for the fire hydrant assembly. Hydrants shall be shown on the plans where the hydrant is to be located with respect to property lines and easements that will be provided.

Air/Vac and Blow-off Callouts – The sequential number of each item and refer to the sheet where the details are shown. If they are labeled as “AIR/VAC No. 1 AT HIGH POINT” or “BLOW-OFF NO. 5”, the approximate stationing shall be shown.

Utilities Crossing Callouts – Where a water main crosses or potentially conflicts with other utilities, show location in the plan and the callout station, calculated pipe elevations, and demonstrate minimum wall to wall clearance requirement is met in the profile.

Other Utilities Callouts – Existing and proposed utilities shall be shown in plans and profiles if information is available. Callouts shall include stationing, offsets, sizes, material, and invert elevations where impact on water line design or installation may exist. Separation shall be based upon wall to wall clearance; measurement from centerlines is not acceptable.

Meter Callouts – Single family residential meters do not need callouts if standard sizes (5/8”) are used. However, the location, service line size, size and type of each meter (including domestic, irrigation and fire sprinkler meters) shall be shown for non-residential developments. Refer to Standard Details.

Individual PRV – If the area has a high static pressure (above 80 psi), the plans shall include the Statement that individual PRV is required.

Backflow Prevention/Premise Isolation – Size and apparatus for backflow prevention directly behind the meters shall be clearly identified as required by the District. Refer to appropriate Standard Details for callouts.

Landscape and Irrigation Plans – Landscaping plans and features shall be shown in sufficient detail to indicate irrigation system configuration and plumbing arrangements. Plans must show existing and proposed District water system features, including easements. Irrigation systems shall be modified where a conflict is presented between existing or proposed District facilities.

Abandoned Facilities – Plans shall clearly identify existing system components that will be abandoned. Abandoned meters, hydrants, blow-off assemblies, air-vacs and other above ground features shall be called out.

In home fire tank system shall provide appropriate RPBA at the back of the domestic meter.

2.05 ENGINEER STAMP

Plans shall be prepared by a professional engineer with current registration in the State of Washington. All Plan sheets submitted to the District for review shall be stamped and dated by the Design Engineer. The Design Engineer shall indicate “SUBMITTED TO CWD FOR REVIEW, NOT FOR CONSTRUCTION” clearly at the lower right corner on each preliminary Plan sheet prior to approval by the District. The Design Engineer shall make copies of District Standard Details available to the Contractor as appropriate to complete the project.

A Final Plan set shall be submitted for the District Engineer’s approval to construct. The Final Plan set shall be wet stamped, signed in blue ink and dated by the Design Engineer. The plan sheets shall each contain a signature block labeled “Approved for Construction” to accommodate signature by the District Engineer.

2.06 GENERAL NOTES

The following General Notes shall be incorporated on the key map sheet. All the notes on the list may not pertain to every Project. The Design Engineer should include only those notes that are relevant to the Project and may omit non-relevant notes; replace deleted notes with “Not Used”. However, the remaining General Notes shall not be re-numbered. If additional notes are needed, they shall be added under the title of “SPECIAL NOTES” next to the General Notes.

General Notes:

1. All work shall be in accordance with approved Plans and District Standards and Specifications. Any changes to the design without District approval may jeopardize the acceptance of the Project by the District.

2. The Developer/Contractor shall schedule a pre-construction conference with Covington Water District at least two weeks in advance of delivery of materials on-site or start of any work.

3. The Contractor shall keep a copy of the Approved plans, Standards and Specifications on the jobsite at all times during construction.

4. All materials shall conform to the District Standards and Specifications and shall be approved by the District prior to delivery to the job site.

5. The District shall have first right of refusal for salvage of any water system features. Specific items of salvage may be called out on the plans or within contract documents.

6. All service locations shall be field approved by the District prior to installation.

7. It is the Contractor's responsibility to locate underground utilities by calling One-Call Underground Utility Locator (1-800-424-5555 or 811) 48 hours prior to construction.

8. The District shall be notified at least 48 hours prior to commencing work on the water system and confirm contact with the District's construction inspector. Failure to provide adequate notice will result in delay of work on the system.

9. Adequate trench sheeting and/or shoring shall be provided by the Contractor as required by OSHA and WISHA.

10. The pipe shall be installed by following the finished grade profile wherever possible. The cover depths shall be 42 inches (3.5 feet) typical; 36 inches (3 feet) minimum, and 60 inches (5 feet) maximum when approved by the District Engineer. Water mains under State Highways travel lanes shall be 60 inches (5 feet) minimum cover depths when required by the jurisdictional permit; or as otherwise required by WSDOT. Cover depth is measured from finished grade to the top of pipe.

11. Pipe joint deflections shall not exceed 3-degrees of deflection for unrestrained pipe and 1- 1/2 degrees for restrained pipe and no more than 11-inches deflection per 18-feet of horizontal pipe. Bends may be required to maintain proper water main alignment within easements or public right-of-way.

12. Water main shall not be placed under sidewalk, curbs, gutters, or any permanent structures without the prior approval of the District Engineer.

13. No connections to the District's system are allowed until the new construction passes pressure and purity tests. No more than 5 working days shall pass between testing of extensions and connection to the system. All pipe disinfection and verification shall conform to AWWA 651. Verification shall be repeated if more than 5 days pass between testing and connection to the system.

14. Prior to making connections to the existing system, contractor shall field verify the

location, depth and material of existing water mains at the point of connection. All main line valves shall be maintained so as to be accessible during project construction and all valve stem tops having over 48 inches of cover require an extension in accordance with CWD Standards.

15. All water lines shall maintain a minimum of 10 feet horizontal clearance from sanitary sewers. When water lines cross sewer lines, the minimum vertical clearance shall be 1.5 feet (wall to wall).

16. Contractor shall contact the District for inspection of flushing, pressure test and purity testing process. To fill the main for flushing, pressure and purity tests, the contractor is required to rent a hydrant cart from the District. The hydrant shall remain in the full open position during use to prevent back-siphon through the drain hole. After successful testing, as determined by the District inspector, the contractor will tie into the existing system, using disinfected sleeves and spool pieces. Connection to the District water system shall be in accordance with AWWA 651.

17. The Contractor shall contact the District for valve operation. Only authorized representatives of the District shall operate valves in the District water system.

18. Tapping – Tapping sleeves shall be pressure tested in an approved manner in the field in the presence of the District construction inspector, prior to tapping the main line. Tapping of the main line shall not proceed unless a District inspector is present. Existing main exterior must be thoroughly cleaned and disinfected before installing tapping sleeve. No size-on-size tapping is allowed.

19. Shut down or tapping of existing water lines to facilitate connection to the existing facilities shall be coordinated with the District inspector at least 72 hours in advance to allow for customer notice of service interruption. Any relocation of existing facilities is subject to approval of the District Engineer.

20. Water will be supplied only through a hydrant cart with proper backflow prevention and meter. Contractor shall obtain the hydrant cart apparatus at District headquarters upon payment of a deposit. Water usage and daily fee for use will be billed in accordance with current rate structure.

21. The Contractor is hereby notified that, since filling and flushing will be done through a cross-connection control device, low velocity flows may be encountered. Therefore, every attempt shall be made to keep the pipe clean during installation. This may include swabbing the pipe with chlorinated water.

22. The Contractor shall perform temporary soil erosion and sedimentation control, dust control, noise control, and traffic control as required by the District and applicable jurisdictional permits.

23. Cutting and patching of public road rights-of-way shall conform to the requirements of the permit agency.

24. Water service shall be maintained for commercial services during their normal

business hours. The Contractor shall coordinate service interruption impacting commercial customers to occur during non-operating business hours.

25. Disinfection of newly constructed main shall be performed through a chlorine injection apparatus which accurately doses chlorine into the main. This apparatus shall be rented from the District and obtained at District Headquarters by contacting customer service and paying deposits for damage and a daily use fee.

26. The project shall follow the District's latest version of Premise Isolation Program requirements. The manual is available via the District's website.

27. Connections to existing water mains shall be via a cut-in tee. All joints must be restrained unless otherwise approved by the District Engineer.

28. The Developer/Contractor shall arrange for compaction testing to be performed by a certified technician. The Developer/contractor shall provide the Engineer and the District with one copy of the compaction test report within 24 hours of test completion.

29. The Developer/Contractor shall maintain construction redline plans with actual field measurements, field changes, and top of pipe elevations every 50 linear feet and at every fitting installed. Construction redlines shall be sent to the District. Incomplete, inaccurate, illegible or poor-quality drawings will be rejected.

2.07 PLAN SUBMISSIONS

The first Plan submittal to the District for review shall be submitted as PDF and AutoCAD files to scale and include civil plans with final grading, sewer and storm information, landscaping Plans, and soils report for the Project. Plans shall be prepared in accordance with Chapter 3 of these Standards.

Subsequent submissions shall include PDF copies of revised Plans and return comment form indicating how review comments and corrections have been addressed.

Fire Marshal Approval –The applicant's Design Engineer shall be responsible for obtaining local Fire Authority approval of plans prior to submitting plans to the District for a second review**.** Prior to Plan approval, the Design Engineer shall submit an electronic copy of **the** fire hydrant location plan stamped approved by the Fire Marshal of local jurisdiction, if the Project requires fire hydrant installation. The District reserves the right to require additional fire protection measures or modify sizes as deemed necessary.

Easements - If any off-site easement is required on a property not owned by the Developer or District and outside of public right-of-way, the developer must acquire an acceptable easement before Plans will be approved by the District. Easements shall be obtained for water facilities including, but not limited to, water mains, hydrants, meter boxes and backflow prevention devices.

Geotechnical Reports – Any geotechnical investigations on the project site shall be submitted as support for trench design assumptions.

For final submission of approved Plans for District Engineer's signature, include an electronic set of original Plans signed and stamped (blue ink preferred) by the Design Engineer. Remove all "NOT FOR CONSTRUCTION" notes. Include a signature block for the District Engineer's approval for construction.

2.08 PLAN MODIFICATION APPROVALS

Any changes to the scope of the work outlined in approved plans shall be documented on the "Plan Change Request" form provided by the District accompanied by a PDF copy of plan change drawings which clearly identify and illustrate the proposed change. The District Engineer shall review and give approval of all changes prior to commencing any work related to the change. Constructing water system components not identified on the approved plans may jeopardize project acceptance by the District. During construction, changes deemed minor by the District Engineer, shall be noted and accounted for in the record drawings.

2.09 RECORD DRAWINGS

After construction completion and at final approval of as-builts, the Developer's Engineer shall provide signed record drawings (as-built plans) to the District for permanent records. The District requires one (1) set of drawings on mylar, one (1) set on bond paper, final CAD files, and a PDF record drawing to scale with original paper size. The digital format shall be current release of AutoCAD^{tm} adopted by the District ".DWG" files and in a pdf format. The AutoCAD^{tm} files shall include all Plans, profiles, notes, and details of the Developer Extension. Drawings shall be spatially referenced and all external references (ex. ref) and base mapping must be included. The plot style table (pen assignments) file shall also be included so that the drawings are reproducible at the District.

See Section 3.30 for specific requirements for record drawings.

Chapter 3
Design Standards

CHAPTER 3
DESIGN STANDARDS

3.01 HYDRAULIC REQUIREMENTS

All water mains, including those not designed to provide fire protection, shall be sized following a hydraulic analysis based on flow demands and pressure requirements. The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under maximum day flow demands plus fire flow and 30 psi under peak hour demand. Fire flow demand will be established by the District and shall not be less than the demand determined by the local jurisdictional fire marshal. The desired working pressure in the distribution system during Maximum Day flow conditions shall be not less than 30 psi, and not greater than 125 psi. Pipe network shall be designed not to exceed a sustained flow of 8 feet per second during maximum day demand without fire flow demand. Flow velocities in water mains shall not exceed 10 feet per second during the maximum day demand plus fire flow, as determined by the District hydraulic model. An individual PRV is required when the District's static pressure at the ground level exceeds 80 psi.

3.02 PLANNING CRITERIA

Planning criteria for developer extensions are established in the currently adopted District Water System Plan (WSP). Criteria presented in the plan include average daily usage by customer class and peaking factors. Minimum requirement for developer extension are determined by hydraulic modeling and are made conditions of the Water Availability Certificate. The hydraulic model utilizes the planning criteria set forth in the Water System Plan for assessing the impact of proposed developer extensions. Minimum Fire flow requirements for buildings are established by the local fire marshal for the jurisdiction. Necessary improvements to reliably provide fire flow are subject to District approval. The District's minimum fire demand during maximum day demand is 1,500 gpm for residential and 3,000 gpm for non-residential development within UGAs (Urban Growth Areas), but in no case less than the fire flow as established by the fire marshal at maximum day demand, whichever is greater. Rural Fire Flow shall be a minimum of 1,000 gpm for 2-hour duration. Existing water system infrastructure impacted by finish grade modifications shall be brought to current standards as part of project construction. Failure of the design engineer to identify such impacts or for District Plan Review to identify such impacts does not relieve the contractor or developer of the requirement to bring the system to standard.

3.03 WATER MAIN LAYOUT

Residential –District Administrative Code (DAC) requires that anyone who desires water service for more than one single family residence, including single family and multi-family structures, must extend the District's System to, and past, at least one full side of the property. In addition, the water mains must be installed through all internal streets; loop to all adjacent mains which will, in the District's opinion, extend past or through the property in the future; and stub to the property line where it is likely that they will be needed to connect to future mains. Depending on the property size, shape and the Water System Plan, the District may require mains to be constructed on more than one, and up to all,

full sides of the property. The District also reserves the right to require that extra service lines be installed, at the District's discretion, to be used for sampling stations.

Non-Residential Properties –DAC requires that anyone who desires water service to non-residential (commercial, industrial or public) property must extend the District's System to, and past, the entire perimeter of the property and/or stub or connect to present and future mains. The District also reserves the right to require that extra service lines be installed, at the District's discretion, to be used for sampling stations.

Developer extensions shall be designed as a looped network to provide increased reliability of service, improved water quality and reduced pressure losses under high demand conditions, such as fire flow. Dead end mains are permitted only under limited circumstances and only at the discretion of the District Engineer. Dead end mains, when allowed, shall be fully restrained.

3.04 WATER MAIN LOCATION

Where practical, water mains shall be within the right-of-way of public streets and roads. New water mains within public right-of-way shall be located on north and east sides of the centerlines. Whenever possible water mains shall be approximately 15 feet off the property lines, in the shoulder of the roadway for rural roads, and approximately midway between centerline and curb for urban streets and may be deflected to avoid concrete bus lanes, cross-gutters and other obstacles. Water mains in the roadway or parking lots shall be a minimum 6 feet from curbs or edges of parking lanes. Exceptions to this requirement may be made in order to minimize the cutting and replacing of pavement, to avoid conflicts with other underground facilities, to permit sanitary sewers to be installed on the "low side" of streets, or for other reasons approved by the District. Mains shall be installed on a street with the distance from the property line and/or centerline varied as little as practical. Water mains shall not be located under or behind parking lanes, curbs, gutters, or sidewalks.

In an easement crossing paved areas on private property, water mains shall be installed in driving lanes (not under parking stalls). Easements on non-residential properties shall be minimum 20-feet wide. Residential areas shall provide designated tracts for water main that are not within public right of way. Such tracts shall be minimum 20-feet width and dedicated for access and utility use with ownership by established homeowner associations. Such tracts are typical for looping mains from cul-de-sac streets.

Water mains 12-inch diameter or less may be laid along road/street curves using pipe joint deflection. Pipe joint deflections shall not exceed 3-degrees per joint for unrestrained pipe and 1-1/2 degrees per joint for restrained pipe. Larger diameter pipe joint deflection requirements shall be at the discretion of the District Engineer. Joint deflections shall not exceed 11 inches for every 18-feet of unrestrained pipe, or 5.5 inches for every 18-feet of restrained pipe. Use of short pipe segments to achieve a greater rate of deflection is prohibited. Angle fittings may be required to maintain proper water main alignment within public right-of-way or easements.

3.05 HORIZONTAL SEPARATION

Washington State Department of Health and Department of Ecology regulations and guidelines shall be adhered to at all times for separation of water main and sanitary sewer. Variations shall be at the discretion of the District Engineer and shall not exceed formal criteria established by the Department of Ecology Manual entitled *Criteria for Sewage Works Design*.

Water mains shall be separated at least 10 feet horizontally (outside wall to outside wall) from any existing or proposed sanitary sewer, septic tank and/or absorption field. The distance shall be measured at the least point of separation. In cases where it is not practical to maintain a 10-foot separation, the District may allow deviation on a case-by-case basis using DOE criteria. Water service connections and side sewers shall have minimum horizontal separation of 10 feet unless otherwise approved by the District.

The horizontal separation between water mains and other utility features such as storm drains, gas, power, other water mains, telephone, utility poles, fiber optics, cable TV, and utility vaults, shall be a minimum of 5 feet when situated in public right-of-way. Separation from structures shall be 10 feet within easement areas or tracts.

3.06 VERTICAL SEPARATION

Washington State Department of Health and Department of Ecology regulations and guidelines shall be adhered to at all times for separation of water main and sanitary sewer. Variations shall be at the discretion of the District Engineer and shall meet criteria established by the Department of Ecology Manual entitled *Criteria for Sewage Works Design*.

Where practical, water mains shall cross other utilities at right angles. If this is not possible, the crossing angle shall be maintained between 45 and 90 degrees. Water mains crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outer wall of the water main and the outer wall of the sewer. Wherever practical, the water main shall be above the sewer main. Where a water main crosses over a sanitary sewer, one full length of water pipe shall be used with the pipe centered over the sewer for maximum joint separation. When the above conditions cannot be met, the District has the right to approve a variance in accordance with DOE criteria. However, where water main crosses below a sanitary sewer, the District shall require that the sewer be constructed of ductile iron and be pressure tested before being put on line. The District may also require the sewer be encased in concrete, as the District Engineer deems necessary.

The vertical clearances between water mains and storm drains shall be a minimum of 12 inches. Whenever practical, the water main shall be above storm drains. The vertical clearances between water mains and other utilities such as gas, power, telephone, fiber optics, and cable TV shall be at least 12 inches. Contractor shall call for inspections to verify separations for utility crossings installed subsequent to completion of water main.

3.07 SETBACK DISTANCE FROM BUILDINGS AND STRUCTURES

Water mains shall be located a minimum of 10 feet from covered parking or walkways, 15 feet minimum from buildings and 10 feet from retaining walls. A 20-foot-wide minimum easement shall be provided for a water main between buildings. When passing under retaining walls or rockery, water main shall be placed in a steel casing in accordance with District Standards. Water main shall not be placed under buildings. (See 1.02 for definition of “Structure”).

3.08 WATER MAIN SIZING

Transmission mains, non-residential developments, and specific areas outlined in the District’s Water System Plan require 12-inch or larger water mains. Water main that is greater than 16-inch diameter shall require specific design and evaluation for approval by the District Engineer. The District does not use 10-inch pipe as water distribution main. When providing supply to residential areas for distribution, 8-inch or larger pipe is required. The District uses 6-inch pipe as part of the distribution system only as fire hydrant runs (not longer than 50 feet). With District approval, 4-inch pipe may be used to serve water to a tract serving 4-8 single family parcels or the end of a cul-de-sac beyond the last fire hydrant and when no future extension is anticipated, as determined by the District Engineer. The length of the 4-inch water main shall not exceed 200 feet and shall serve no less than 4 and no more than 8 residential units.

Pipeline design for water main extensions greater than 16-inch diameter is a specialty design requiring measures beyond those contained in these standards and conditions. Design Engineers shall provide assumptions and calculations for such specialty design to the District for review.

3.09 PIPE MATERIAL

Water mains shall be cement-mortar lined ductile iron Class 52, unless otherwise specified Water mains within high voltage power easements shall be polyvinyl chloride (PVC) AWWA C-909 or C-905, pressures class 200 pipe with 10 gauge insulated locate wires. High density polyethylene (HDPE) and other pipe materials may be used only with District Engineer’s approval. Designs that require PVC or HDPE water mains must include tracer wire and test station installations. The Design Engineer will provide a test station detail for District approval. Test station locations must be clearly shown on the design drawings.

3.10 PIPE FITTINGS

Pipe shall be furnished with mechanical joints or rubber gasket push-on joints unless flanged joints or restrained joints are required. Vertical bends shall be used when vertical alignment cannot be achieved using joint deflections of 1.5-degree with restrained joints and 3-degrees without restraint. All reducers shall be eccentric with the flat side installed at the top to maintain equal grade line at both ends of the reducer.

3.11 STEEL CASING

Ductile iron pipe shall be encased in a steel casing when crossing under a rockery or wall so that maintenance of the water main will not disturb the structures. Casings are required when crossing (1) under rockeries; (2) under retaining wall footings; and (3) under reinforced earth retaining walls (both wall and reinforcing material). Casings shall extend a minimum of 5 feet past each edge of the structure, or a distance equal to the depth of pipe, whichever is greater.

The carrier pipe shall be installed with casing spacers. Minimum vertical clearance between the bottom of the wall or footing and top of the pipe or casing shall be 2 feet. The pipe trench at the casing shall be backfilled with trench backfill material (see typical trench detail in Appendix A) when the vertical clearance is less than 3 feet.

Ductile iron pipe shall be restrained and encased in a steel casing when crossing under a railroad or state highway. Casings shall extend beyond the edges of the right-of-way. The casing pipe and carrier pipe shall be installed in accordance with the applicable federal, state and local regulations. In the case of railroad crossings, the casing and pipe shall also comply with requirements established by the railroad company.

For all installations, casing spacers shall be placed on the carrier pipe to ensure approximate centering within the casing pipe and to prevent damage during installation. At a minimum, 1-inch clearance between the carrier pipe bell and casing pipe shall be maintained. (See Appendix A - Pipe Casing Standard Detail). Each end of the casing shall be sealed using rubber end caps as a preferred method with controlled density fill (CDF) per the Districts discretion. The contractor shall refer to the District Standard Details for additional information.

Steel, AWWA 909, or HDPE casing may also be required when a water main crosses a creek or wetlands. Water main extended through casings shall be restrained-joint construction.

3.12 COVER DEPTH

Cover depths above the top of water mains shall be typically 42 inches (3.5 feet). Pipes 8 inches and smaller shall have a maximum depth of 60 inches (5 feet) to the bottom of the pipe. Pipes 12 inches and larger shall have a maximum depth of 66 inches (5.5 feet) to the bottom of pipe. Depth of bury shall routinely remain between 36 inches and 42 inches to avoid ‘roller-coaster” variations in the pipe grade. “Roller Coaster” effect is described as 18” dip or rise in pipe depth per 200 feet horizontal distance. In no case shall main depth to the top of the pipe exceed 60 inches (5 feet). The cover depth may be a minimum of 36 inches (3 feet) with the approval of the District Engineer.

Cover depths shall be 60 inches (5 feet) under the traveled lanes of State highways, when required by WSDOT or the local jurisdiction.

3.13 SLOPES

Where slopes are 20% or greater, pipe joints shall be restrained. Anchor blocks shall be used in conjunction with joint restraint where slopes are 20% or greater.

3.14 CORROSION PROTECTION

Ductile iron fittings shall be protected by 8-mil polyethylene encasement in accordance with AWWA/ANSI C105/A21.5, as directed by the District Engineer. Polyethylene Encasement shall be required for fittings to protect from contact with concrete thrust blocking. Pipe installed in highly corrosive soils shall conform to AWWA C909 materials or provide other means of cathodic protection.

3.15 THRUST RESTRAINT

Use horizontal and vertical concrete blocking and show locations and types of blocking on plan and profile. Concrete blocking is required on all fittings, including restrained joint fittings. See District Standard Details, Appendix A.

No change in horizontal direction or diameter shall occur within 36 feet of the vertical bend. Special blocking or joint restraint designs may be necessary for poor soil, conflicting utility, etc. Specially designed blocking and restrained pipe shall be required for conditions as determined by the District Engineer. Conditions where installation is within or adjacent to fill material, close proximity to other existing or proposed utilities or utility trenches, inside pipe casings, critical or sensitive areas, or dead end conditions are typical circumstances requiring such special design. Design Engineer shall submit the appropriate Ductile Iron Pipe Research Association (DIPRA) calculations defining the restraint required and show the restrained limit on the plans and profiles. The Design Engineer shall also submit the support documentation to the calculations and assumptions such as geotechnical reports and soil classification data.

3.16 ASBESTOS CONCRETE PIPE CROSSING

When a proposed water main crosses existing asbestos concrete (AC) pipe, the District may require removal and replacement of the AC pipe with ductile iron pipe. The AC pipe to be removed shall be disposed of in accordance with the Puget Sound Air Pollution Control Agency (PSAPCA) requirements. A permit from PSAPCA to perform the AC pipe removal is required prior to construction drawing approval. Personnel performing the removal must be certified to perform the work. The permit shall be obtained by the contractor and provided to the District before notice to proceed is given.

3.17 VALVES

Sufficient valves shall be provided on water mains so that interrupted service and sanitary hazards will be minimized during repairs, construction and maintenance. Line valves shall be located at no more than 500-foot intervals in non-residential, industrial and multi-family

areas and at no more than one block or 800-foot intervals in other areas. Where the system serves widely scattered customers and where future development is not expected, the valve spacing shall not exceed one quarter (1/4) mile. At water main intersections, valves shall be placed on all legs at each cross and all legs at each tee (unless tapping an existing water main). The valves shall be spaced so that no more than two fire hydrants are removed from service with any separate main shut-down. The final determination of valve spacing and location shall be determined by the District Engineer.

An auxiliary valve shall be installed on each hydrant run at the tee. Provide a valve at each end of an easement. Additional valves may be required for area isolation and uni-directional flushing.

Zone separation valves shall have a blow-off located on both sides of the valve or consist of two valves with a hydrant between them to facilitate flushing and prevent dead end mains.

Valves on water mains shall, where practical, be located within or immediately adjacent to the edge of the street outside of wheel paths for vehicles or bicycle lanes. A valve box or vault chamber shall be provided for every valve.

Generally, valve sizes shall be the same as the water main. All valves 12-inch and smaller shall be resilient seat gate valves and all valves larger than 12-inch shall be side-mount actuated. If a valve is installed in gravel or unpaved area, a 3’× 3’×4” asphalt pad shall be set around each valve box at finished grade.

Following transfer and acceptance by Bill of Sale, a developer extension is formally accepted by the Board of Commissioners. All valves are then property of the District and shall be opened, closed or otherwise operated ONLY by qualified and authorized District personnel.

3.18 FIRE HYDRANTS

These fire hydrant specifications satisfy Covington Water District’s process for approval. Fire hydrants shall be shown on plans where the hydrant is to be located with respect to property lines and where easements will be needed or provided. Building footprint or pad areas shall also be shown relative to the water system features. Fire hydrants shall be installed for buildings where water is served by the District. The final number of hydrants and their locations shall be approved by the Fire Marshal designated for the local jurisdiction. Bollards for protection of hydrants shall be placed only upon approval by the District Engineer.

The minimum number of fire hydrants shall not be less than the required flow divided by one thousand two hundred fifty (1250), rounded off to the nearest whole number. In no case shall the fire flow be reduced below that required by these rules and regulations as a result of this computation.

Fire hydrants serving multi-family, plats, and non-residential lots shall be located not more than 300 feet on center and shall be located so that at least one hydrant is located within 150 feet of all structures or uses. Fire hydrants shall not be closer than 50 feet from multi-

family or non-residential buildings. Additional hydrants may be required as directed by the District.

Any hydrant run exceeding 50 feet in length shall be 8 inches in diameter. The joints of hydrant runs shall be restrained (see Standard Detail in Appendix A). No more than one hydrant shall be installed on any permanent dead-end 8-inch water main. No domestic or fire sprinkler water service will be permitted on any hydrant branch. Fire hydrants shall be installed at the ends of each dead-end line more than 300 feet in length. Such fire hydrants may be removed to conform to standard spacing requirements when the main is again extended with the District Engineer's approval. Such runs shall pass a specific purity sample obtained for the run.
Fire hydrants shall be located near the beginning of curb return or at lot lines. No fire hydrant shall be placed within 3 feet of a driveway. A hydrant shall be installed within 50 feet of a Fire Department Connection (FDC). FDC may be placed on buildings instead of at the fire control vault, as approved by local Fire Marshal. Hydrants shall not be closer than 50 feet to any structure; unless approved by the Fire Marshal.

Hydrants shall be designed for standard bury depths; extension kits shall not be permitted to adjust new hydrant installations to finished grade. Bends shall not be permitted in fire hydrant mains.

Prior to CWD approval, a separate, stamped fire district approval is required.

3.19 COMBINATION AIR VALVES

Combination air valves shall be installed on high points of new water mains which are 12-inch diameter or larger, where the elevation difference between the high point and the next low point exceeds one (1) pipe diameter, or as required by the District Engineer. The typical valve size shall be 2 inches. However, supporting calculations per AWWA Manual M51 shall be provided for the site-specific slope and maximum flow rate through the pipe to verify proper valve sizing.

The air valves shall be located outside the traveled portion of the roadway, preferably behind the curb or sidewalk and within the public right-of-way and the District easement. The depth of the water main near the air and vacuum release valve shall be deep enough to achieve at least the minimum upslope (2%) to the release valve. Where practical, water main profile shall be adjusted to eliminate the use of combination valves.

3.20 BLOW-OFFS

Each dead-end main shall be provided with a fire hydrant if more than four residential units are served or with an approved flushing hydrant or a blow-off assembly for flushing purposes. Flushing devices shall be sized to provide flows that will give a velocity of at least 4 feet per second in the water main being flushed. No flushing device shall be directly connected to any sewer. Blow-off assemblies shall be located outside the traveled portion of the roadway, behind the curb or sidewalk, and within the public right-of-way or water line easement. Blow-offs shall be installed on dead end mains unless fire hydrant is required by the District Engineer. Avoid multiple blow-offs through strategic hydrant

placement.

3.21 CONNECTIONS TO EXISTING SYSTEM

Connections to existing mains shall be made via cut-in per standard detail in Appendix A.

3.22 JOINING DISSIMILAR METALS

Connections between dissimilar metals (i.e. brass to iron) shall utilize dielectric unions or insulating gaskets to eliminate electrical connectivity between the fittings.

3.23 EASEMENTS

All water mains, valves, fire hydrants, meters, air/vacuum valves, blow-offs, and other appurtenances not in public right-of-way shall have easements designated on submitted plans to provide the District with permanent access to these mains and appurtenances, as well as easements for future line connections, as required. The easement for the water mains shall be 20 feet in width and 10 feet on all sides of pipelines and a minimum of 5 feet on each side of appurtenances (such as hydrants, meters, air/vac, blow-offs, etc) or as directed by the District Engineer.

Provide easement boundaries on plans and identify their widths. If an easement is defined as a constant width on each side of the water main, then show an easement callout and label it as typical (TYP.).

An easement running parallel with a lot line shall not be split so as to occur on two lots. The easement, title report and legal descriptions with accompanying sketch and plans shall be prepared by the applicant's engineer, a digital copy of which shall be sent to the District Engineer, or easements for the District facilities shall be shown within a tract or plat map. Easements shall be shown on the construction plans and short plat documents.

Design Engineer shall provide digital copies of the easement description and sketch to the District Engineer for review. When acceptable, two additional copies of the description and sketch, signed by a registered Professional Land Surveyor, shall be submitted along with a current (within 30 days) title report for the property reflecting all deeds of trust and encumbrances and subordinations, signed by the trustees shown on the title report. If documentation is not acceptable, the District Engineer will return the documents with the required corrections noted.

Before the project is accepted by the District, easements shall be recorded using the District Easement Form. Easement drawing and legal description shall be included as exhibits. Exhibits shall be 8-1/2-inch by 11-inch with 1-inch borders. The easement sketch must contain a vicinity map showing the location of the easement in relation to major streets and highways. The sketch should also depict easement boundaries with bearings, distances, points of beginning from the description, north arrow and other information required to review the easement for accuracy in relation to District facilities. Easement exhibits shall be consistent with record drawings indicating the location of District facilities

to ensure proper accommodation for the facilities.

If off-site easements are required on properties not owned by the Developer or outside the public right-of-way, the Developer shall acquire the easements before construction plans are approved by the District.

3.24 SERVICE CONNECTIONS

Service connections including saddle, service line, meter box and appurtenances shall be installed as part of the construction of all new water developer extensions. All services shall have a designated parcel and owner for the service. Each building requires a separate domestic use meter.

METERS

The District shall install all residential meters up to 2-inch (not including compound meters). Positive displacement meters shall be used for 2-inch residential meters. All non-residential meters 2-inch and larger types shall be determined by the District and shall be installed by the contractor. Other non- residential meters sizes shall be installed by the contractor with the inspector present. The stops for both the bypass line and the meter on large setters shall be locked in an off position, by the District Inspector once the meter is installed. Meter stops will be unlocked when the system is accepted for service. Outside use meters are required for all non-residential developments with a landscape irrigation system and for buildings with hose bibbs. A separate fire sprinkler meter and fire service line shall be provided if fire sprinkler system supported by the District system is required by the Fire Marshal for a structure. Irrigation systems, fire sprinkler systems and non-residential connections must be protected by the appropriate type of DOH approved backflow prevention assembly. The District requires all non-residential domestic uses to install a Reduced Pressure Backflow Assembly (RPBA). Irrigation or fire protection uses require a Double Check Valve Assembly (DCVA). Domestic residential meters with fire tanks in the house shall provide an RPBA on back of the domestic meter. Flow through meters are allowed in the District, however, the full volume used of the flow through meter will be charged for the connection fee. Alternative meters may be required per the District Engineer.

For residential developments, meter boxes shall be located in front of the lot to be served unless otherwise approved by the District. They shall be close to the property line, within public right-of-way or water easement, and not in paved areas such as sidewalk or driveway. Meters for two neighboring lots shall be installed near the common lot line to ease meter reading. Meters located close to driveways shall use boxes with traffic rating. The distance from the water main to the meter box shall not exceed 60 feet. Service lines shall be perpendicular to the water main. Any deviation from this requirement must be approved by the District Engineer.

Each non-residential building shall be metered. The District Engineer may require non-residential meters 2-inch and larger to be AMR type meters, or as determined by the District. For non-residential and multi-family developments, meters shall be located behind the back of a curb or sidewalk and not behind parking space or other obstructions. Compound meters shall have the recommended approach and discharge piping

commonly requiring installation in a vault or buried enclosure. Alternative meters such as ultrasonic may be required per the District Engineer.

The standard meter size is 5/8” for a single-family residential house. Non-Residential services and meter sizes shall be determined by the building official of the applicable jurisdiction per the Uniform Plumbing Code, and the plans shall show the locations and sizes of the services and meters. An owner shall supply the appropriate fixture unit counts converted to gallons per minute (gpm) to support the meter sizes included on the plans.

SERVICE LINES

Minimum allowable service lines from mains to meters shall be 1.5" for new single family residential buildings and 2” for multi-family or non-residential buildings. Each building shall be served by separate services and meters. Non-residential irrigation and fire sprinklers shall be served by separate services and meters unless otherwise approved by the District. A minimum pressure of 20 psi at the meter shall be maintained in the main during fire flow plus maximum day flow demand. If friction losses will cause the pressure at the building to drop below the minimum, the service line size shall be increased or private booster pump installed.
Static service pressures at ground floor elevation shall be determined at all lots/buildings to ensure compliance with system pressure standards. Plans shall identify lots/buildings where the builder/owner should install individual pressure reducing valves (PRV’s) in accordance with the plumbing code on the customer side of service lines (after water meter box) when service pressures exceed 80 psi.

3.25 EXISTING WATER MAIN ABANDONMENT

Existing water mains out of service on private property shall be removed as required by the District or the local jurisdiction. Existing water mains out of service in public right-of-way shall be removed or abandoned. If water mains are to be abandoned in place, the ends of the abandoned water mains shall be plugged by filling with Class 2,500 psi concrete for a minimum length of 12 inches. A cap or plug may also be used with mechanical restraint.

3.26 PRESSURE REDUCING STATIONS

If a development is located in two or more pressure zones, the District may require pressure reducing stations be designed and installed by a Developer. In these circumstances, developers shall also pay for design, construction, and start up of the station(s).

3.27 BACKFLOW PREVENTION

The District strictly prohibits interconnection of other water supplies with the District’s water system. When there is a conflict with backflow requirements stated in CWD specifications, the Cross-Connection Control Manual supersedes.

Irrigation systems, fire sprinkler systems, non-residential service connections, private wells and other water uses which create a potential or will cause contamination of the District Water System by backflow, shall be required to install approved backflow prevention assemblies, and/or otherwise meet the requirements of the WAC 246-290-490 “Cross-Connection Control Regulation in Washington State”, and the recommendations of the PNWS-AWWA Cross-Connection Control Manual, latest edition. Premise isolation is required unless variation is approved by the District Engineer.

Auxiliary water supply on or available to a consumer’s premises is not acceptable to the District. The District requires that if an auxiliary supply is situated on the site, premise isolation in the form of a reduced pressure backflow assembly (RPBA) shall be installed on any and all services from the District’s main, even if such auxiliary water supply is not interconnected or proposed for interconnection. RPBA units require annual testing for proper operation and reporting to the District (WAC 246-290-490(2) (a)).

Fire sprinkler system connections to the District’s water system shall be owned and maintained by the property owner, beginning immediately downstream of an exterior inlet vault face, residential meter or valve where the fire sprinkler system connects to the District’s water main.The backflow prevention assembly on irrigation and residential fire sprinkler system connections shall be located immediately downstream of the meter connection on the owner’s property. The assembly shall be owned and maintained by the property owner and inspected and tested annually by a certified backflow assembly tester (BAT) for backflow devices. The assembly design and construction shall be approved by the Cross-Connection Control Coordinator and/or District Engineer. Prior to use of a new meter with a backflow assembly, the backflow assembly shall be tested and results provided to the District.

A master meter for multiple services requires double check valve assemblies, or Reduced Pressure Backflow Assemblies (RPBA) (minimum), depending upon hazard level, and determined by the Cross-Connection Control Coordinator and/or District Engineer, and a bypass with equal backflow prevention to avoid loss of service during maintenance and repair. All backflow assemblies must be tested prior to project acceptance and introduction of water service to a facility.

3.28 PRIVATE WELLS

See the DAC for District policies regarding private wells.

3.29 PLAN EXPIRATION

District’s approval of plans shall be valid for a period of one (1) year subsequent to date of approval shown on the plans. If construction is not completed within that time, the District may require plan revision depending on changes occurring since the approval date. The Developer shall pay all costs resulting from plan change requirements.

3.30 RECORD DRAWINGS

The record drawings (as-built plans) shall be required prior to Bill of Sale and revised to incorporate information pertaining to the water system improvement as constructed. The record drawings shall meet the following minimum requirements:

- Show official street and road names.
- Show the size, length and material of the as-constructed pipelines between fittings.
- Show the size and joint type of each fitting and appurtenance actually installed.
- Indicate the actual location of the water main including depth of bury or elevation at all fittings and appurtenances.
- Show the actual constructed water main fittings and appurtenances, correcting the location data provided in the drawings as necessary.
- Indicate the size, location and type (whether single or double) of all water service connections.
- Indicate areas of non-standard cover and any other unique feature of the project.
- The easements shown in the record drawings shall match the final legal descriptions of the easements granted to the District, and match the plat.
- Show vertical separations with all other utilities.
- Provide electronic CAD files at final engineering plan approval for District to pre-check coordinates.

Final, approved record drawings shall be submitted electronically in AutoCAD and PDF format.

Chapter 4
Material Standards

CHAPTER 4
MATERIAL STANDARDS

4.01 GENERAL

All materials shall be new and undamaged. Domestic pipe and fitting materials are required when reasonably available. Domestic shall mean manufactured in the United States or Canada. For federally funded projects, the Contractor shall supply materials complying with 'Made in USA/Build America Buy America (BABA)' requirements. The same manufacturer of each item shall be used throughout the project. All materials specifically referenced shall comply with applicable sections of ANSI, ASTM, AWWA or the WSDOT/APWA Standard Specifications and approved by the District.

NSF/ANSI 61: National Science Foundation/American Standards Institute performance-based standard established to measure contaminates introduced into drinking water from products. The contaminates include regulated metals including lead and copper, organics and pesticides. The Reduction of Lead in Drinking Water Act adopted in January, 2011 reduces the allowable lead content in plumbing fittings, including meters. The effective date is July 1, 2012.

Approved manufacturers and model numbers of various materials are listed in Appendix C of these Standards. When specific manufacturers or models are listed, no substitutions will be allowed without prior approval by the District Engineer. If required by the District, the Contractor shall furnish certification from the manufacturer of the materials being supplied that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the reference Standards.

4.02 ALTERNATIVE METHODS OR MATERIAL REQUESTS

These Standards shall be construed as the minimum requirements of the District and shall be applicable to all work performed on water system improvements under its jurisdiction. Although these Standards are intended to apply to all work on the District's water system, these Standards will not apply for all situations. Compliance with these Standards does not relieve the designer of the responsibility to apply conservative and sound professional judgment. As minimum Standards, they are intended to assist but not substitute for competent work by design professionals. The District may at its sole discretion require more stringent requirements than would normally be required under these Standards, due to special conditions and/or environmental constraints.

4.03 DUCTILE IRON PIPE

Ductile iron pipe shall be cement-lined unless otherwise specified and shall conform to AWWA C151 standards. Ductile iron pipe 12" diameter and smaller shall be minimum thickness class 52 and pipe greater than 12-inch diameter to 16-inch shall be thickness class 51 or 52. Standard thickness of cement-mortar lining shall be in accordance with AWWA C104 standards. Higher thickness or pressure class pipe may be required where the pipe will be exposed to high external loads, depth of bury outside of District standards

or as directed by the District Engineer. Special design submittal will be required in such circumstances.

4.04 POLYVINYL CHLORIDE PIPE

Polyvinyl chloride (PVC) pipe 12” diameter and smaller shall conform to AWWA C909. Minimum pressure class shall be rated 210 psi, or as directed by the District Engineer. PVC pipe shall have the same outside dimensions as ductile iron pipe. Fittings for PVC pipe shall be ductile-iron. Pipe joints shall be made with a rubber ring and thickened bell. Solvent welded joints will not be permitted.

4.05 HIGH DENSITY POLYETHYLENE PIPE

High density polyethylene (HDPE) pipe shall conform to AWWA C906. The pressure rating shall be determined by the District on a case-by-case basis. HDPE pipe shall be used only as approved by the District Engineer.

4.06 GALVANIZED STEEL PIPE

Galvanized steel pipe less than 4 inches in diameter shall conform to ASTM A53, Schedule 40 and shall be hot dip galvanized inside and outside, including the couplings. The couplings shall be malleable iron with thread (IPT) couplings in accordance with ANSI B16.3.

4.07 POLYETHYLENE ENCASEMENT

Polyethylene encasement, as required, shall be eight-mil tube and comply with AWWA/ANSI C105/A21.5.

4.08 FITTINGS

All fittings for ductile and PVC pipe shall be ductile iron with cement-mortar lining conforming to AWWA C104. Mechanical joint fittings shall be compact fittings conforming to AWWA C153, with ductile iron follower gland conforming to AWWA C111. Flanged fittings shall conform to AWWA C110. Fittings shall utilize gaskets and hardware in accordance with AWWA C111.

4.09 RESTRAINED JOINTS

Restrained joints shall be either bolted or boltless design and flexible after assembly. Any device utilizing set screws are not permitted. Restrained joint devices shall not be used on plain end fittings. Use of shackle rods on ductile iron bell-and-spigot pipe is not permitted. Thrust blocks shall be provided in addition to the joint restraint system unless otherwise approved by the District. Restrained joint waterlines greater than 16-inches

are specialty design which may require additional considerations not addressed in this specification.

Boltless designs shall utilize gripping gaskets suitable for a 350 psi working pressure. Gripping gaskets shall be rubber gaskets with stainless steel teeth for wedging action on bell-and-spigot DI pipe, 16-inch diameter and smaller. Gasket material and dimensions shall conform to AWWA C111. Gaskets shall only be used on compatible pipe as recommended by the manufacturer.

Bolted joint restraint systems shall utilize multiple gripping wedges incorporated into a ductile iron retainer gland. The gland body and wedges shall be cast from grade 65-45-12 ductile iron in conformance with ASTM A536. Glands for mechanical joints shall be compatible with all mechanical joints conforming to AWWA C111. Split designs are only allowed on mid-pipe installations for embedment into concrete for thrust restraint. The working pressure of the joint restraint system when used on ductile iron pipe shall be a minimum of 350 psi for pipe diameters of 16-inches or less. Wedge-action joint restraint systems used on PVC pipe shall have a working pressure rating equal to the pipe rating with a minimum safety factor of two.

Bolted restraint for C909 and C905 PVC bell-and-spigot pipe joints shall utilize a full-circle bell restraint harness with stainless steel clamping hardware. Harnesses shall be split design, provide full 360° contact and support of pipe and incorporate serrations on the inner face to provide full restraint. Restraint harnesses shall be epoxy coated grade 65-45-12 ductile iron. Use of a back-up ring against the pipe bell is prohibited. Threaded thrust rods and nuts used to connect the harnesses over the bell shall be constructed of high strength low alloy steel in accordance with AWWA C111. After assembly, thrust restraint hardware shall be field coated with an epoxy designed for underground conditions. Bell-and-spigot restraint systems used on PVC pipe shall have a working pressure rating equal to the pipe rating with a minimum safety factor of two. Wedge-action retainers designed for PVC pipe meeting the requirements herein may be utilized in lieu of serrated harnesses.

4.10 COUPLINGS

Flexible coupling and transition coupling cast components shall be long-body style ductile iron. Bolts and nuts shall be in accordance with ASTM A536-80, Grade 65-45-12. Bolts shall be high strength, low alloy steel track head bolts with national course rolled thread and heavy hex nuts. Gaskets shall meet AWWA/ANSI C111/A21.11 composition specifications.

4.11 BOLTS AND NUTS

Bolts, nuts and washers used for securing fittings shall be of similar materials. Steel bolts shall meet the requirements of AWWA C111, ASTM A307 or ASTM F568 for carbon steel or ASTM F593 or ASTM F738 for stainless steel. Nuts shall meet the requirements ASTM A563 for carbon steel or ASTM F594 or ASTM F836 for stainless steel. Iron bolts and nuts shall meet the requirements of ASTM A536, grade 65-45-12.

4.12 GATE VALVES

All gate valves 2" through 12" shall be resilient seated gated valves conforming to the latest revision of AWWA C515. All gate valves shall be epoxy coated and turn counter-clockwise to open. All gate valves shall have ANSI flanges or mechanical joints ends.

Buried gate valves shall be non-rising stem suitable for installation with the type and class of pipe being installed. Operating stems shall be equipped with standard 2-inch operation nut, and O-ring stem seals. Valves in vaults shall have hand wheels.

All gate valves larger than 12-inch shall be resilient wedge, side-mount actuated, and require a minimum 4-foot of cover, see Appendix C for Approved Materials List.

4.13 BUTTERFLY VALVES

Butterfly valves will not be allowed.

4.14 CHECK VALVES (2" AND LARGER)

Check valves 2-inches and larger shall be non-slamming swing check conforming to AWWA C508. Valves 2 to 12-inches in diameter shall be rated for a working pressure of 175 psi and valves larger than 12-inches shall have a 150 psi working pressure rating. Valve body and cover shall be cast or ductile iron and epoxy coated conforming to AWWA C550. The ductile iron hinge arm shall pivot on a 304 stainless steel hinge pin. The valve shall be resilient seated; metal to metal seating is not allowed. The valve disc shall be bronze, cast iron, ductile iron or stainless steel with Buna-N rubber facing; valves 3-inches and smaller may have a valve disc constructed entirely from Buna-N rubber. Valve ends shall be class 125 flanged in accordance with AWWA C110 or mechanical joint conforming to AWWA C111.

Valves may use a weight or spring to dampen the closing force during flow reversal. Valves deemed to be slamming in the opinion of the District shall be retrofitted with a dampening device. Valves shall be equipped with a steel lever arm connected to an extended stainless-steel hinge pin, or be flexible in design to allow for a field installed lever arm, for the purpose of retrofitting the valve if required. Where provided, the lever-weight or lever-spring assembly shall be field adjustable for site-specific conditions.

4.15 VALVE MARKER POSTS

Valve marker posts shall be provided and placed in accordance with Approved Materials (Appendix C) and Standard Details (Appendix A).

Markers will be supplied to the Contractor by the District to be installed by the Contractor at locations specified by the District. Markers shall be "Tri-view" manufactured by Rhino Marking and Protection Systems, Hem #TVF36BB. Markers shall be manufactured with Tri-Grip anchor system consisting of pre-cut anchor barbs that fold out from the post.

4.16 VALVE BOXES

Valve Boxes shall be installed on all buried valves. The box and lid shall be cast iron, 2-piece slip type. The cover shall have the word “WATER” cast in the upper surface. Valve box lids shall be East Jordan 8555 current model Valve box paving risers shall be cast iron suitable for H-20 traffic loading. All castings shall be coated with asphaltic varnish.

A valve operating nut extension shall be furnished and installed on all valves where the finished grade is more than 36 inches above the valve operating nut. Extensions are to be a minimum of 12” with only one extension per valve. The operating nut extension shall extend into the top section of the valve box.

4.17 VALVE VAULTS

Valve vault designs in public right-of-way shall be approved by the District Engineer and dimensioned and sized for valve removal and replacement. Vaults shall be furnished in pre-cast concrete sections with sufficient strength to withstand H-20 traffic loading together with access frames and covers.

4.18 COMBINATION AIR VALVES

Combination air valves shall be designed to operate with potable water under pressure to permit discharging a surge of air from an empty line when filling and relieve the vacuum when draining the system. The air valves shall also release an accumulation of air when the system is under pressure. This shall be accomplished in a single valve body designed to withstand a pressure of 300 psi.

The body and cover shall be cast iron conforming to ASTM A48, Class 30. Floats shall be stainless steel conforming to ASTM A 240 and designed to withstand 1,000 psi. Seats shall be Buna N rubber. Internal parts shall be stainless steel or bronze. Combination air valves shall conform to AWWA C512.

4.19 BLOW-OFF ASSEMBLIES

Blow-off assemblies shall be as shown in the Standard Details.

4.20 FIRE HYDRANTS

Fire hydrants shall be 5 ¼ MVO, meet or exceed the requirements of AWWA C502 as well as the following:

(1) Hydrant shall have a standard 4 ½” NST pumper port and two 2½” NST side ports, all opening by turning counter-clockwise with 1-¼” operating nut;
(2) Hydrant shall be painted with two coats of hi-gloss safety yellow enamel paint;
(3) 5” Storz adaptors are required for Fire District #43(Maple Valley Fire) and Fire District #37(Covington Fire). 4” Storz adaptors are required for Fire District #44(Black Diamond

Fire) as specified by the appropriate Fire Marshall.

Hydrant Locking Mechanisms will be applied to all new hydrants installed in the District in commercial areas only. Locks are specific to the District and to the particular hydrant. The District will obtain and install the locks at the developer or owner's cost.

Fire hydrants shall be the "Traffic Model" type with approved breakaway features. Every effort will be made to avoid angle fittings in the hydrant branch.

Hydrants shall be exercised/opened and flushed by the District for rocks with developer coordinating flushing activity to Fire Authority.

4.21 TAPPING SLEEVES

Tapping sleeves shall be used in lieu of cut-in tees except at the direction of the District. No size-on-size taps on ductile or cast-iron pipe shall be allowed. Tapping valves shall be epoxy coated and resilient seat.

4.22 COPPER SERVICE LINES

No longer used for private development projects. Information below is provided for maintenance of existing systems.

All service lines shall be seamless copper tubing conforming to ASTM B88, Type K, annealed or polyethylene rated for 200 psi. The tubing shall be coupled using compression fittings having a positive external gripping feature, conforming to the requirements of AWWA C800, minimum 150 psi working pressure.

4.23 PLASTIC SERVICE LINES

SDR 9 Plastic service lines shall be high density polyethylene pipe conforming to AWWA C901.Municipex Crosslinked Polyethylene (PEXa) piping, produced in accordance with AWWA 904 may be used. Service lines shall be copper-tube size with a minimum pressure rating of 200 psi, and a standard dimension ratio not to exceed 9. The pipe shall be either black with blue striping or blue in color. Stainless steel stiffening inserts are required at all connection points.

4.24 SADDLES AND CORPORATION STOPS

Service saddles shall be as provided in Appendix C. Saddles shall have stainless steel double straps.

Corporation stops for use with the saddle shall be of bronze in accordance with AWWA Standard C800 with AWWA tapered thread (CC) inlet by compression fitting for 1" copper outlet, complete with compression nuts for copper service. Corporation stops shall be the ball valve type.

4.25 BOXES FOR METERS, AIR VALVES AND BLOW-OFFS

Boxes for meters (with hinged reader lids), air valves and blow-offs shall be boxes as listed in the Approved Materials list in Appendix C and shown on Standard Details in Appendix D. Refer to the approved materials listing for sizes and part numbers. Boxes placed in travel areas shall have traffic lids with corrosion resistant coating. Every effort shall be made to avoid placement in vehicle or pedestrian travel areas.

4.26 GENERAL FACILITIES

General system facilities, such as pressure reducing stations, pump stations and storage tanks shall be designed for the specific application. Material requirements for individual facility components will be established during design to maintain consistency within the water system.

Developer's Engineer shall prepare a specific design for general facilities for a project. The design will be submitted to the District for approval, including a Preliminary Design Report.

4.27 INDIVIDUAL PRESSURE REDUCING VALVES (RESIDENTIAL)

When installed, PRVs for single family residential lots shall be direct-acting, piston-type with integral strainer and bypass. The PRV body shall be bronze with a threaded outlet end and integral union on the inlet end. The PRVs shall be line-sized with a spring range from 25 to 75 psi. All individual PRVs shall be installed in a box as described in the Approved Materials list (Appendix C) and shown in the Standard Details (Appendix A). The individual PRV and box shall be owned and maintained by the property owner.

4.28 INDIVIDUAL PRESSURE REDUCING VALVES (NON-RESIDENTIAL 2" AND SMALLER)

Individual PRVs for non-residential developments shall be equipped with a pressure relief valve at the discharge side, unless otherwise shown in the plans. The contractor shall construct the PRV in accordance with the Standard Details. The PRV shall be direct-acting piston type with integral strainer and bypass. The PRV body shall be bronze with a threaded outlet end and an integral union on the inlet end. PRVs shall be line-sized with a spring range from 25 to 75 psi.

Pressure relief valve shall be a 3/4" hydraulically or pneumatically operated, diaphragm actuated globe valve. It shall be direct-acting, adjustable, spring loaded and designed to permit flow when pressure exceeds the spring setting. Spring range shall be from 20 to 200 psi

4.29 REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)

All RPBAs shall be as listed on the most current copy of "Accepted Cross-Connection Control Assemblies" published by DOH. The assembly shall include a tightly closing resilient seated shut-off valve on each end of the body and each assembly shall be fitted

with four properly located resilient seated test cocks. The RPBA shall be installed in a secure above ground enclosure located immediately back of the meter. Unless otherwise approved by the District.

4.30 DOUBLE CHECK VALVE ASSEMBLY (DCVA)

All Double Check Valve Assemblies (DCVAs) shall be as listed on the most current copy of "Accepted Cross-Connection Control Assemblies" published by DOH. The assembly shall include a tightly closing resilient seated shut-off valve on each end of the body and each assembly shall be fitted with four properly located resilient seated test cocks. All DCVAs shall be located immediately back of the meter.

4.31 STEEL CASING

Steel casing shall be black steel pipe conforming to ASTM A53. Minimum casing wall thickness shall be 0.250 inch for casings 24 inches or smaller and 0.375 inch for casings larger than 24 inches in diameter. Project conditions may warrant additional thickness. Casing pipe shall be welded steel. Cathodic protection may be required.

4.32 CASING SPACERS AND END SEALS

Casing spacers shall be sized for pipe being installed. Materials are specified in the Approved Materials list, Appendix C.

4.33 CONCRETE

Thrust blocking, encasement, or slope anchor concrete shall be mixed from materials acceptable to the District and shall have a 30-day compressive strength of not less than 2,500 psi. The mix shall contain five (5) sacks of cement per cubic yard and shall be of such consistency that the slump is between 1 inch and 5 inches. All concrete shall be mechanically mixed.

4.34 BEDDING MATERIAL

Pipe Zone bedding material shall be as specified in Section 9-03.12(3) “Gravel Backfill for Pipe Zone Bedding” of the WSDOT Standard Specifications.

4.35 CONTROLLED DENSITY FILL

Controlled density fill (CDF) shall be a mixture of Portland cement, admixture (optional), Fly Ash, aggregates and water. It shall be proportioned to provide a grout-like, non--segregating; free flowing, self-consolidating and "excavatable" material that will result in a non--settling- fill which has measurable unconfined compressive strength. Compressive strength shall not exceed 1,500 psi.

When CDF is required, material and installation shall conform to the standards of the applicable jurisdiction.

4.36 TRENCH BACKFILL

Trench backfill shall conform to Section 9.03.19 “Bank Run Gravel for Trench Backfill” of the WSDOT Standard Specifications. Material may be either naturally occurring with sieve analysis tested at every 100-foot of trench or processed to meet the 2-1/2”-minus gradation specified. Pipe Zone material may be used as an alternate for trench backfill.

4.37 TRACER WIRE

Tracer wire shall be designed for direct bury; use of THHN is prohibited. Size of the conductor shall be 10 AWG consisting of solid copper wire. The insulating jacket shall be high density polyethylene (HDPE), color-coded blue and minimum thickness of 30 mils.

Chapter 5
Construction Standards

CHAPTER 5
CONSTRUCTION STANDARDS

5.01 GENERAL REQUIREMENTS

The Project shall be constructed as shown on the Plans and in accordance with these Standards. Materials shall be installed in compliance with the manufacturer's instructions and specifications, except where a higher quality of workmanship is required by the Plans and these Standards. All work shall be in accordance with any applicable regulations of the State, County and local jurisdictions. The Contractor shall arrange for such inspection by these agencies and shall submit evidence of their approval, if requested by the District. Contractors shall have a copy of the District Standards document on site during construction. A printed copy of the District Standards shall be available to the Contractor at the Pre-Construction Conference for this purpose.

Contractors shall accept responsibility for compliance with all OSHA and WISHA requirements to providing a safe work area. Where situations require entry to District facilities considered "confined spaces", Contractor shall comply with District requirements for entry and work within such spaces. District requirements and practices are defined in an adopted confined space program available from the District upon request.

5.02 MATERIAL SUBMITTALS

The Developer/Contractor shall provide material submittals to the District for approval after the Plans are approved for construction. The Developer/Contractor shall assume the risk for material or equipment, which is fabricated or delivered prior to the District's approval of material submittals. Use of materials in the Approved Materials List does not require submittal of cut-sheets. Submit a summarized bulleted list of the product description, manufacturer, model number, size, and fitting type when applicable. Organize the list in accordance with the material category designation below.

Electronic submission of material submittals is required. The District shall either approve or otherwise indicate the reasons for disapproval. One set will be returned electronically to the Developer/Contractor. Disapproved submittals shall be revised and electronically resubmitted to the District.

District's review of material submittals covers only general conformity to the Plans and these Standards. The Developer/Contractor is responsible for quantity determination. No quantities are to be verified by the District. The Developer/Contractor is responsible for any errors, omissions or deviations from the contract requirements. Review and approval of submittals by the District does not relieve the Developer/Contractor from his obligation to furnish required items in accordance with the Plans and these Standards. Materials delivered to the construction site shall conform to approved submittal information maintaining consistency with regard to manufacturer and model numbering. Poor quality materials shall be rejected by the inspector and removed from the site by the Developer/Contractor each. "Material Submittal" section shall follow a Material Submittal Form indicating the specific part number(s) which shall be checked or highlighted along with its specific purpose. The following shows the preferred order to list the material categories:

1. Pipe, Fittings, Pipe Restraints and Casing
2. Valves (Gate Valves, Butterfly Valves, Air Valves, Blow-off Drain Valves, and Valve Boxes)
3. Hydrants and Attachments
4. Service Fittings, Copper Pipe, Saddles, Ball Valves, Corps, Sleeves, U-Bolts, etc.)
5. Boxes for Meters, Blow-offs, and Air Valve Assemblies
6. Cross Connection Control Assemblies (DDCVA, RPBA, DCVA)
7. Bedding Material with Sieve Analysis
8. Concrete
9. Vaults, hatches, and ladders
10. Other items if required.

5.03 PRE-CONSTRUCTION CONFERENCE

The Developer/Contractor shall contact the District to schedule a pre-construction conference after the District confirms right-of-way permits are approved. The conference shall include the Developer, Developer's Engineer, Contractor's Foreman or Job Superintendent, representatives from the permit agencies, and District representatives. The Contractor shall demonstrate ownership of a set of District Standards and Specifications document to have on the construction site or a set shall be provided and the cost charged to the Developer's Receivable Account. The amount charged is prescribed by Rate Table II for District services, which is updated annually. The Contractor shall not be issued Notice to Proceed until appropriate submittals and permits have been approved for work to commence.

5.04 CONSTRUCTION SCHEDULE

The Developer/Contractor shall provide the District with a written construction schedule a minimum of five (5) work days prior to start of water developer extension construction to arrange staking and inspection. Contractor shall allow permitting agency and District a minimum of two (2) work days notice to customers of construction impacts. The Developer/Contractor shall abide by the District's normal working schedule from Monday to Friday. Friday construction is permitted for non-trenching type construction and if easily inspect-able on Monday. If trenching is requested on Fridays, then the contractor shall contact the District for approvals to trench with conditions.

5.05 EASEMENTS

Prior to start of water developer extension construction, the Developer/Contractor must acquire any necessary permanent easements for construction of any water mains or facilities not located in existing public right-of-way, in District easements, or on the Developer's property. Easements shall be specifically in the District's name.

5.06 PERMITS

The District is responsible to road agencies for excavations in the right-of-way for water

system work under the franchise. The District shall make application for all public right-of-way permits for water developer extensions, at the project's expense when the District has received a traffic control plan from the Developer/Contractor and approved by the affected agency. Traffic control plan shall be prepared by the Design Engineer, or Contractor possessing an ATSSA Certification. The Developer/Contractor shall apply for and obtain all other permits such as electrical, plumbing, King County DDES Water Main Extension Permit, King County Fire System Permit, and any other required permits. All permits shall be in hand prior to beginning excavation for water system work.

5.07 STOP WORK NOTICE

The District shall issue a Stop Work Notice upon observing construction which does not comply with these standards or approved plan documents. If any work is covered contrary to the request of the District Inspector or Engineer, it must, if requested by the Inspector, be uncovered for the Inspector's observation and replaced or resumed at Contractor's expense. If work is defective, or contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed work will conform to the plans and specifications, the District may order the Contractor to stop the work or any portion thereof, until the cause of such order has been eliminated.

5.08 HANDLING OF PIPE

All types of pipe shall be handled in a manner that prevents damage to the pipe, pipe lining or coating. Pipe shall be bagged or plugged from manufacturer before unloading at the site. Pipe and fittings arriving without protective covering including plugged or bagged pipe ends shall be rejected or the Contractor shall disinfect and bag pipe immediately for storage on-site until installation.

Pipe and fittings shall be loaded and unloaded using forks or cable choker in a manner to avoid shock or damage, and under no circumstances shall they be dropped, skidded, or rolled against other pipe. Damaged pipe will be rejected, and the Contractor shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the project site within 24 hours.

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. The bottom tiers of the stack shall be kept off the ground on timbers, rails or other similar supports. Pipe on succeeding tiers shall be alternated by bell and plain end. Timbers of 4"×4" shall be placed between tiers and chocks shall be placed at each end to prevent movement. Each size of pipe shall be stacked separately.

Threaded pipe ends shall be protected by couplings or other means until the pipe is installed. Dirt or other foreign material shall be prevented from entering the pipe or pipe joints during handling and installation. When pipe installation is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the District to ensure cleanliness inside the pipe.

5.09 STAKING

Staking shall be performed by or under the direct supervision of the Developer's land surveyor licensed in the State of Washington. Provide the District with two (2) work days notice to inspect construction staking before construction begins.
Staking shall be placed in 50' intervals and at all fittings on base line or edge of easement with stationing, hub elevations, finish elevations, and cuts to top of pipe.

5.10 DEVIATION FROM PLANS

No deviations from the approved Plans and these Standards shall be allowed without the District's written approval. Minor changes may be approved by the District Engineer. If major changes are required, the Developer's Engineer shall revise and sign the plans for the District's approval prior to restart of construction or construction of affected work.

If the District is aware of any deviation from the approved Plans and determines that it is not acceptable, the District shall give a written notice to the Developer. The Project will not be accepted unless the deviation is corrected.

5.11 INSPECTION AND TESTING

The District Inspector shall have access to the project site for the purpose of inspections and testing at all times. The Contractor shall provide proper facilities for such access, inspection, and testing.

If any work is covered without approval or consent of the Inspector, it must be uncovered for inspection as required by the Inspector. This requirement shall be specifically applied to all utility crossings of the water distribution system.

Before a pressure test is to be observed by the Inspector, the Contractor shall make whatever preliminary tests to ensure that the material and/or equipment are in accordance with the Plans and these Standards.

Written and/or verbal notices of deficiency shall be given to the Contractor. The Contractor shall correct such deficiencies before final inspection by the District Inspector.

The standard work hours for the District are 8:00 am to 5:00 pm, Monday through Friday. Friday is limited inspection day (no trenching and pipe to be constructed). Work days are defined in WSDOT 1-08.05. Should the Developer elect to work on Saturdays, Sundays, or holidays, he/she shall be responsible for paying overtime charges for the District personnel involved. The Developer shall obtain approval from the District Engineer and sign a form entitled "Construction Inspectors Overtime Compensation Authorization" prior to commencing any overtime work.

5.12 SURFACE WATER QUALITY

The Contractor is required to implement water pollution controls in accordance with ESA regulations as called out on the plans and maintain these until the Project is accepted by the District. The Contractor shall familiarize themselves with the requirements of the DOE,

King County Roads and other regulatory agencies having jurisdiction over such matters.

Water with chlorine residual shall be disposed of through sanitary sewers with sewer agency's approval, containment and aerating or percolation into the ground. Water containing chlorine residual shall not be discharged into any waterway. Water containing chlorine shall not be disposed of into lakes, rivers, streams, creeks or other water where fish or other natural water life could be expected. Contractor shall provide proof of authorization from the local agency before discharge of any water to any storm water facility. Other agents for neutralization may be approved for discharge to containment areas on a case-by-case basis upon request. Water with zero chlorine residual may be achieved by applying Vitamin C or other acceptable agent approved by the District for neutralization and discharge of containment. The disposal of chlorinated water shall be observed by the District Inspector.
Oil, fuel and chemical storage area shall be enclosed with a dike. There shall be no disposal of waste oil or oil products on the project site. The Contractor shall provide a waste oil disposal tank if needed.

5.13 DUST CONTROL

The Contractor shall sprinkle water as necessary to minimize fugitive dust. Sprinkling shall be maintained until the project is accepted. Sprinkling shall be kept to a minimum and not produce runoff from the site. On paved streets, if dust becomes a nuisance when backfilling is completed, the Contractor shall vacuum sweep the portions of streets being used for traffic. Flushing of streets shall not be permitted without prior approval of the local jurisdiction and the District.

5.14 TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL

Temporary soil erosion and sedimentation control measures shall be taken in accordance with the local agency requirements.

5.15 CONSTRUCTION ON EXISTING EASEMENTS

All work on the District's easements shall be performed in accordance with easement provisions. Easements shall be restored equal to or better than the original conditions. The Contractor shall not work on easement areas until specifically authorized by the District Engineer. The District and the Contractor shall coordinate with the property owner(s).

5.16 PRE-CONSTRUCTION PHOTOS FOR DISTRICT PROJECTS
(Not Applicable to a Developer's On-Site Project)

Before commencing any construction work as described in the plans, the Contractor shall provide photographs of pre-existing conditions of the area that will be disturbed during construction operations. Photographs will be obtained as follows:

1. 25-foot interval in easements up station and down station
1. 50-foot interval in easements up station and down station

2. Any other locations as directed by the District Inspector
3. Audio/Video recording is also acceptable
4. Photographs shall be submitted via thumb drive or an FTP/ZIP file.

5.17 PROTECTION OF PROPERTY

Trees, shrubs, fences, and all other properties and surface structures shall be protected during construction, unless their removal is shown in the Plans and approved by the property owner in writing. Any disturbed property shall be restored as nearly as practical to its original condition. Any cutting of tree roots or branches shall be done only if approved by the District or a qualified arborist approved by the District. An approval from the local jurisdictions may be required.

Temporary support, adequate protection, and maintenance of all underground and surface structure, drains, sewers, and other obstructions encountered in the progress of the work shall be provided by the Contractor in accordance with these Standards or applicable regulations, or as directed by the District.

5.18 UNDERGROUND UTILITIES

The Plans show the approximate locations of various existing utilities known to the Design Engineer such as gas lines, water mains, storm drainage, power lines, telephone lines, TV cables, fiber optics, and other obstructions based on information obtained from various sources. This information is not guaranteed to be accurate, and the Contractor is responsible to check for interferences and obstructions by inquiry from the different utilities and by underground exploration before commencing excavation.

The Contractor shall request field locates and notify the owners of underground utilities about the scheduled commencement of excavation through the one-call system 811. If the utility is not included in the one-call number system service, notice shall be provided individually to those owners of underground utilities known to or suspected of having underground utilities within the area of proposed excavation.

Notice shall be made to owners of underground utilities not less than two (2) business days or more than ten (10) business days prior to scheduled date of commencement of excavation.

Test pits, for the purpose of locating underground utilities or structures in advance of the construction, shall be excavated and backfilled by the Contractor. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the applicable agency. The Contractor shall excavate around and under active utilities with special care and shall support and maintain them in service. Where it is necessary to cut, move or reconnect any service lines, arrangements shall be made with the respective utility owners.

The Contractor shall coordinate with utility owners, arrange for the movement or adjustment, either temporary or permanent, and notify the District, in advance, of any conflicts affecting the work schedule, and/or possible cost increase to the District if the project is a District capital improvement project. The Contractor shall be responsible for any damage of utilities or services resulting from his operations and shall hold the District

harmless from any claims resulting from disruption of or damage to same.

5.19 TRENCH EXCAVATION

Trench Excavation and Backfill Operations within State Right-of-Way**:** All excavation and backfill within state right-of-way shall adhere to the WSDOT Standard Specifications.

Trench Excavation and Backfill Operations within County Right-of-Way**:** Excavation within King County right-of-way shall conform first to King County Road Standards, and secondly to standards set forth by the WSDOT.

Trench Excavation and Backfill Operations within City Right-of-Way**:** Excavation within City right-of-way shall conform to the applicable City design and construction standards and specifications.

Trench Excavation in all cases shall comply with WISHA standards.

Before commencement of trenching provide gabions or filter fabric placed in all downhill storm drain catch basins for temporary sediment trap at curb inlets. Plastic sheeting must be available on-site. Cover and secure any stockpiled material at the time of heavy rains or flooding. Employ Best Management Practices (BMPs) for erosion control and maintain measures at all times.

Clearing and grubbing limits may be established by the governing agency or the District for certain areas and the Contractor shall confine his operations within those limits. Debris resulting from the clearing and grubbing shall be disposed of by the Contractor.

Trenches shall be excavated to the line and grade shown in the plans or designated by the District. Where higher strength pipe or special bedding is required because of excess trench width, it shall be furnished.

Unsuitable material below the depth of the bedding shall be removed to the extent approved by the Inspector and replaced with satisfactory materials as determined by the District Engineer. The length of trench excavation in advance of laying pipe shall be kept to a minimum and shall not exceed more than 100 feet without written approval of the District Engineer.

When trenching operations take place in the public right-of-way, the pavement and all other improvements shall be restored as required by the right-of-way permit.

When excavation of rock is encountered, all rock shall be removed to provide a clearance below and on each side of all pipe, valves, and fittings of at least 6 inches for pipe sizes 24 inches or smaller and 9 inches for pipe sizes 30 inches and larger. Material removed shall be replaced with appropriate backfill material, which shall be compacted to 95% standard proctor.

5.20 SHEETING AND SHORING

The Contractor shall provide and install sheeting and shoring as necessary to protect workers, the work and existing utilities and other properties in compliance with OSHA and

WISHA requirements. All sheeting and shoring shall be removed prior to backfilling. Removal of the sheeting and shoring shall be accomplished in such a manner that there will be no damage to the work or to other properties.

5.21 TRENCH DEWATERING

The Contractor shall maintain sufficient pumping equipment on the project site to keep the trench free from standing water. Surface runoff shall not be allowed to flow to the trench. The trench water or other deleterious materials shall not be allowed to enter the pipe at any time. If, at any time, water is found to be entering the new water main, the contractor shall plug the water main and cease working until the trench water is completely pumped out or otherwise controlled, to the satisfaction of the Inspector. Dewatering and its methods shall be the responsibility of the Contractor. Any method used must be in accordance with the specifications and requirements of the DOE and the local jurisdiction, including discharge location and quality. More extensive purity testing measures may be imposed for installations in which facilities have been contaminated by trench water.

5.22 BEDDING PIPE

Bedding material, as specified and required by the District, shall be as specified in Chapter 4.34 of these Standards and WSDOT Standard Specification 9-03.12(3). For the type of pipe (rigid or flexible) to be installed, pipe zone bedding is defined as 6 inches below the pipe and around the pipe, and 12 compacted inches above the pipe. Pipe zone bedding above the pipe shall be placed evenly and carefully in 12-inch lifts before being compacted to a minimum height of 12 inches of bedding material above the pipe. Gravel backfill for pipe zone bedding shall be compacted to 95 percent maximum dry density per ASTM D1557 by approved methods (hand-held tools), so as to provide firm and uniform support for the full length of the pipe, valves, and fittings. Use of native material is not allowed within the pipe zone. Pipe zone bedding shall conform to plan drawings and District Standard Details.

5.23 CONCRETE THRUST BLOCKING

Bends, tees, plugs, and caps, unless otherwise specified, shall be blocked in accordance with the Standard Details. All poured in place blocking shall have a minimum measurement of twelve inches (12") between the pipe and the undisturbed soil. Concrete blocking shall have a minimum of 1/4 square foot bearing against the fitting. The Contractor shall install blocking which is adequate to withstand full test pressure as well as to continuously withstand operating pressure under all conditions of service. All concrete shall be 2,500 psi minimum and mechanically mixed.

Blocking, unless otherwise shown or directed, shall be **formed** and placed so that pipe and fittings will be accessible for repair. Eight-mil polyethylene sheets shall be installed around the fitting and all bolts, nuts, and glands for future dismantling.
In the rare circumstance and event of a shut down where time does not permit the proper setting of the concrete blocking, only upon approval of the District Engineer, ecology blocks shall be installed with concrete poured around the connection point of the fitting

and the blocks. This circumstance is only when sufficient restrained joints for temporary blocking are unavailable for connections.

Installation shall be as shown in the Plans and the Standard Details.

5.24 TRENCH BACKFILL AND COMPACTION

Trench backfill shall be done above the pipe zone bedding. All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, frozen soil, or other unsuitable material. Trench backfill material shall be as specified in Chapter 4.36 of these Standards and 9-03.19 of WSDOT Standard Specifications.

Compaction of the backfill shall, at the minimum, be accomplished by mechanical tamper, by vibrating, by rolling, or by a combination of these methods, as approved by the permitting agency having jurisdiction and the District Engineer. Water settling is not permitted. The Contractor shall provide the services of a testing laboratory acceptable to the District Engineer to perform on-site density tests to show that the specified density has been obtained. The approval of the compaction method and the achievement of the specified density shall, in no way, relieve the Contractor of responsibility for all repairs caused by settlement of the backfill prior to acceptance and during the two-year period after acceptance of the project.

Where the excavated materials has a California Bearing Ratio for compacted and soaked sample of less than seven (7) or, for other reasons, cannot be compacted as specified, the Contractor shall replace the excavated material with approved trench material.

Prior to backfilling, form lumber and debris shall be removed from the trench. Sheeting used by the Contractor shall be removed just ahead of the backfilling. From one foot above the top of the pipe, materials specified in Chapter 4.36 may be used, unless otherwise specified.

Backfill shall not be deposited in the trench in any manner which will damage or disturb the pipe or the initial backfill. Care shall be taken to prevent any damage to the pipe or its protective coating.

After the initial pipe zone bedding is placed, the remaining backfill material shall be placed in successive layers not exceeding 1 foot in loose thickness, and each layer shall be compacted to the density specified. Unless otherwise provided, the work shall meet the following requirements:

5.24.1 Areas Subject to Vehicle Traffic

A. Asphalt pavement restoration shall be either by a patch or overlay method as required and noted on the right-of-way permit. When a patch method is used, the trench limits shall be saw cut prior to the final patch.

B. All finish pavement cuts shall be made by saw cuts. The final saw cuts shall be a minimum of one foot outside the trench width or to undisturbed soil. If the permit requires an overlay, then the Contractor may use a jackhammer for cutting the existing pavement. Grinding may be required.

C. All trenching shall be backfilled in accordance with the Standard Details. All trench backfill materials shall be compacted to ninety-five percent (95%) maximum dry density, as determined by ASTM procedure for Standard Proctor.

When the trench is perpendicular to the traveled lane or any driveways, the full depth shall be backfilled with crushed surfacing top course material. When the trench is parallel, the top 4 feet must be backfilled with crushed surfacing top course material. Controlled Density Fill (CDF) may be required by the permitting agency. Backfill compaction shall be performed in 12 inch lifts. The Contractor shall perform compaction tests in four-foot (4') vertical increments maximum. The test results shall be given to the District for review and approval prior to paving. Tests shall be performed at maximum intervals of 50 feet along the length of the trench.

5.24.2 Areas Not Subject to Vehicle Traffic

The backfill shall be compacted to a minimum of ninety percent (90%) of maximum dry density, as determined by ASTM procedures for Standard Proctor, as described above.

5.25 LAYING WATER MAIN PIPE

Work shall be accomplished in accordance with AWWA C600 and the manufacturer's recommendations.

Depths of pipe shall conform to approved plans. The typical cover depth of pipe is 42 inches (3.5 feet) measured from finished grade to top of pipe as indicated in section 3.12.

The bottom of the trench shall be finished to grade in such a manner that the pipe will have bearing along the entire length of the barrel. Bolts on mechanical pipe and fittings shall be tightened uniformly with a "Torque" wrench which measures the torque for mechanical joints to manufacturer's recommendation but in no case less than measured torque as follows:

2" - 3" pipe sizes 5/8" Bolts	40 - 60 ft-lbs
4" - 24" pipe size 3/4" Bolts	60 - 90 ft-lbs

Except where restrained joint systems are required, mechanical or push-on joints shall be used. Installation of push-on joint pipe shall be in accordance with the manufacturer's instructions.

When it is necessary to deflect pipe from a straight line in either the horizontal or vertical plane, the amount of joint deflection shall not exceed 3-degrees for unrestrained and 1 ½ -degree for restrained joints and no more than 11 inches per 18 feet horizontal distance of pipe. The Contractor shall submit to the District the pipe manufacturer's joint deflection recommendations prior to pipe installation, as a part of the Material Submittals.

Where field conditions require deflection or curves not anticipated on the Plans, the method of achieving deflection shall be subject to District approval for use of fittings vs. deflection.

When rubber-gasketed pipe is installed on a curve, the pipe shall be jointed in a straight alignment and then deflected to the curved alignment. Trenches shall be made wider on curves for this purpose in order to maintain clearance for pipe zone bedding as prescribed by these specifications.

Whenever it becomes necessary to cut a length of pipe, the cut shall be done in conformance with all safety recommendations of the cutting equipment manufacturer. Cutting shall be done in a safe manner without creating damage to the pipe or cement-mortar lining. The cut shall be made by an abrasive pipe saw or an approved pipe cutter. The outside of slip joint pipes shall be beveled and smoothed so that good connections can be made without gasket damage.

All parts of the pipe ends, couplings, fittings and appurtenances shall be cleaned to remove oil, grit, or other foreign matters from the joint. Care shall be taken to keep the joint from contacting the soil.

Connections to the existing system shall be performed as prescribed in Section 3.21 of these specifications.

Installation of PVC and HDPE Pipe - requires continuous tracer wire for underground locates. Tracer wire shall conform to the requirements of Chapter 4.37. The wire shall be wrapped around the length of the pipe and taped to the pipe at regular intervals, not to exceed 10-feet. Splices shall be completed using a waterproof wire connector designed for underground installations; use of electrical tape to complete splices is prohibited.

5.26 CORROSION PROTECTION

Installation of polyethylene encasement shall be in accordance with the latest AWWA Standard C105. All Ductile iron fittings shall be wrapped in polyethylene encasement, except as specifically excluded in the plans or in these Standards.

5.27 INSTALLING GALVANIZED IRON PIPE

Galvanized pipe may be used only under special circumstances or in vaults. The galvanized iron pipe, valves and fittings shall be threaded. Joints shall be made in accordance with IBC plumbing practice. Threads shall be wrapped with Teflon tape or liquid sealant before connecting. Pipe and fittings shall be coated with high gloss safety yellow paint, sealing joints and covering voids in galvanized coating. Coating shall be the same as provided for fire hydrants with primer and like paint materials. Paint must be suitable to adhere to shop coat as well as painted surface.

5.28 FIRE HYDRANT INSTALLATION

Fire hydrants shall be set as shown in the Standard Details and AWWA Standard C600. The hydrant run shall be restrained jointed.

The portion of the hydrants above the ground shall be painted with two coats of high gloss yellow paint. Paint shall be applied by spray or brush to an acceptable appearance.

Ensure the paint will adhere to shop coat and painted surfaces.

All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the curb, subject to the Fire Marshall's discretion. The steamer port shall be pointed toward the street, or where directed, toward the paved vehicle approach area.

Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least 18" but no greater than “24” above the surrounding ground or as directed by the District Engineer. Traffic model hydrants shall be installed such that the breakaway flange shall be installed not less than 4 inches, or more than 8 inches, above finished grade.

When a dry barrel hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing at least one (1) cubic yard of 1 ½” washed rock from the bottom of the trench to at least 6” above the drain-port opening in the hydrant and to a distance of 1 foot around the elbow. Where ground water rises above the drain port or when the hydrant is located within 10 feet horizontally (or the distance required by the applicable regulatory agency) of a sanitary sewer main, the drain port shall be plugged and water pumped from the hydrant where freezing may occur. Hydrants with plugged drain holes shall be specifically identified for District personnel to mark them and map the locations.

When a dry-barrel hydrant with an open drain port is set in clay or other impervious soil, or at the discretion of the District’s representative, a drainage pit 2’×2’×2’ shall be excavated around each hydrant. The drainage pit shall be lined with geotextile material allowing water to exfiltrate and then filled with 1 ½” washed rock around the elbow of the hydrant and to a level of 6” above the drain port. A hydrant pad shall be installed, with minimum dimensions of 5’×5’×6”, or to neat edges between curb and sidewalk. Concrete pad shall be poured at or near the ground line around the hydrant barrel to provide adequate resistance to avoid transmitting shock moment to the lower barrel and inlet connection in the case of vehicle impact. The center of the hydrant shall be at the center of the concrete pad. Prior to pouring concrete, the ground shall be compacted according to the section of Trench Backfill and Compaction in these Standards. Woven wire mesh reinforcing (9 ga.) shall be placed and suspended 2” above the bottom of the slab.

Additional information regarding placement of hydrants can be found in AWWA Manual M17.

When fire hydrants are located in parking lots, hydrant guard posts shall be installed where the
hydrant is not otherwise protected by a concrete curb (or extruded curb per Standard Details) on all sides where vehicles may have access. Guard posts shall be installed according to the minimum dimensions shown in the Standard Details.

Engineer and Contractor shall exercise care in establishing and placing hydrants at specified elevations to avoid adjustments during construction. No extension kits shall be allowed for new construction. Hydrants not installed properly will be removed and re-set to proper grades.

5.29 VALVE INSTALLATION

Prior to installation, valves shall be inspected for approved part numbers/manufacturers;

cleanliness of valve ports especially seating surfaces, handling damage, and cracks. Defective valves shall be rejected.

The valve and valve box shall be set plumb and centered on the valve. Valves 12" and larger shall be supported by a concrete block or "paver" stone on a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve. In no case shall valves be used to bring misaligned pipe into alignment during installation. Pipe and fittings shall be supported in such a manner as to prevent stress on the valve.

Valves shall be installed in closed position. Where valve operating nut is more than 3 feet below finished grade, a valve stem extension conforming to the Standard Details must be installed. Tapping valves shall be water tested prior to tapping water main. Testing the tapping assembly and valve with air prior to performing tap is also acceptable. Valves larger than 12 inches shall be installed with a minimum cover of 4 feet to ensure proper valve operation.

A valve box or vault shall be provided for every valve. Valve box top sections shall be adjusted flush with the finished pavement, finished grade of landscaping and, in those areas to be excavated for future roadway grades, enough adjustment shall be provided in the valve box to allow the top of the box to be adjusted to the required grade.

Backfill around valves shall be carefully compacted in 6-inch lifts for the full depth of the trench with the valve box in place. Provide a minimum of 3' x 3' x 4" asphalt or concrete collar for valves installed in gravel or unpaved areas as indicated in Standard Details, Appendix A.

5.30 COMBINATION AIR AND VACUUM RELEASE VALVE INSTALLATION

Location of the air/vac shown in the plans is approximate. The contractor shall set the air valves at the high points of the water main. The water main profile may need adjustment so that the high point and air/vac is installed in a convenient location with Inspector's approval. Installation shall be as shown in the Standard Details, Appendix A.

5.31 BLOW-OFF ASSEMBLIES

All pipes between the water main and the gate valve shall be polyethylene pipe. All compression fittings shall be brass. Valve marker post shall be installed as directed by the District. Installation shall be by the Contractor as shown on Standard Details in Appendix A

5.32 VALVE MARKER INSTALLATION

Vinyl marker posts shall be set for all valves or valve clusters as directed by the District Engineer, except auxiliary hydrant valves and air vacs. The marker shall be set on a line through the valve or valve cluster at right angles to the center line of the road. The marker shall generally be set at the property line unless the District decides another location is safer or more appropriate. Installation shall be by the Contractor as shown in the Standard Details, Appendix A. at locations designated on the plans. In general, marker posts are required for facilities in easements, along arterial streets and at critical system control

points.

Markers damaged during construction shall be replaced with new markers. The District may also request replacement of additional valve markers on a project. All markers set or reset are to be new; unused previously. Vinyl posts shall be supplied by the District and installed by the Contractor at project expense.

5.33 SERVICE LINES

5.33.1 New Service Installations

Single Non-Residential service lines, only, may be installed under District supervision by Contractors instead of the District as “dig-in” services. Contractor shall be listed on the District’s small works roster or meet the qualifications for registry to the District small works roster before performing the work. Owner/Developer shall obtain necessary right-of-way permit for such installations and submit the required Water Availability application. Contractor shall call for inspection and approval of the tapping process. Single residential services shall be installed by the District through its “dig-in” procedure. Generally, corporation stops are located at ten o’clock or two o’clock positions on the circumference of the pipe. All taps shall be installed with saddles. When more than one tap in an existing pipe is necessary to deliver the required flow, the taps should be staggered around the circumference at least 12 inches apart (not in line). Service line must be pressure tested Per Section 5.38 before placing in service. Corporation stops with IPT threads are not acceptable, unless approved by the District or are used on taps larger than 2-inch. Service installation shall be as shown in the Standard Details, Appendix A.

Tracer wire shall be provided with poly service lines. The tracer wire shall be wrapped around the service line and taped every 3-foot to prevent movement. For installations on ductile iron mains, connect the tracer wire to the corp stop and wrap in tape for protection. Installation on PVC mains requires the service line tracer wire to be spliced with the water main tracer wire; the splice must be waterproof using a wire connector design for underground installations. The end of the tracer wire shall be connected to the meter setter or angle stop and wrapped in tape for protection.

5.33.2 Reconnecting Existing Services

Service connections shall be installed as shown in the approved Plans and Standard Details. Services may be installed in paved areas under sidewalks and curbs by boring and tunneling. Damages to water appurtenances shall be repaired by the Contractor within the work day that damage occurs. Surface restoration shall take place in a timely manner and not more than 48 hours hence. No street damage shall be allowed to remain without adequate warning and traffic control in place. Provide 30" minimum cover on service lines from the corporation to the meter box. Install service at 90 degrees horizontally to the main to intercept the existing meters. A maximum deviation of 3 degrees is allowed. Blow off the service prior to connection to the meter.

Install ball-angle stops, setters (if required) and boxes as shown in the Standard Details or as directed by the District. Setters are required on 2-inch taps.

Existing service connections shall not be transferred to the new main until the new main

has been successfully flushed, disinfected and tested. When transferring services from the existing main to the new main, the Contractor shall take sanitary precautions to protect the potable water supply in the existing, new mains and services.

5.34 PRESSURE REDUCING STATION

Installation shall be as shown in the Standard Details, in approved plans, and in accordance with the manufacturer's recommendations. The pressure reducing valves, strainers, pressure relief, pipe and fittings shall be constructed in accordance with the applicable AWWA and International Plumbing Code requirements. Pressure reducing valves 4" and larger shall be supported by pipe supports. Supports shall be bolted to the vault floor. Do not drive bolts completely through the vault floor.

Pressure relief discharge pipe shall be placed in a location that will not be subject to damage or erosion during discharge of water.

5.35 INDIVIDUAL PRESSURE REDUCING VALVE

When specified or included on the plans, an individual PRV shall be installed on the discharge side of the water meter, and shall be contained inside a separate box. Each PRV shall be installed, as shown in the Standard Details, in accordance with the latest edition of the International Plumbing Code.

5.36 CONNECTION TO EXISTING WATER MAIN

Points of connection to existing water mains shall be exposed prior to trenching of the new mains, and not less than 48 hours prior to the anticipated connection time. Unless specifically provided for elsewhere in these Standards, the Contractor is responsible for giving at least five (5) work days notice to the District. The District shall be responsible for notifying the customers and the Fire District affected by the shut-off. Water main shut-off shall not be scheduled to take place on Fridays, or on the day before a holiday, unless otherwise approved by the District.

In non-residential areas, all effort will be made not to interrupt service to a commercial business during business hours. Contractors shall accommodate temporary water service to businesses should they be out of service during business hours. Temporary water service shall be provided in accordance with requirements of the International Plumbing Code for potable water supply. Residential customers shall not be placed out of service for any period in excessive of 8 hours. Only authorized District representatives shall operate valves in the existing water system.

The Contractor shall ensure that existing fittings are in accordance with the approved plans and that the connection can be made in accordance with the Plans. The Contractor shall immediately notify the District Engineer and the Design Engineer if the connection cannot be made in accordance with the plans so that the connection details may be revised and approved by the District.

Connection to the existing water system shall be done only after the new mains are flushed and have passed pressure and purity tests. All connections to the existing water

system must be approved by the District and in the presence of the District Inspector.

Connections to the existing water system shall be made by cut-in following the Districts Standard Detail in Appendix A. The work shall be conducted at such a time and in such a manner as to minimize the interruption of service. Necessary pipe, fittings, and gate valves shall be assembled at the site ready for installation prior to the shut-off of water in the existing main. Work shall not commence until all materials, equipment, and labor are on-site and ready, and in certain cases, excavation must be completed. Pipe and fittings to be treated by swabbing and spraying shall consist of less than one full stick of pipe. The remainder of the extension shall be disinfected and accepted as a whole, prior to the connection process. Once the water main has been shut off, the work shall be prosecuted vigorously and shall not be halted until the water main is back in service. District inspection shall be provided throughout the connection process and the Developer shall compensate the District for any required overtime to complete the work. Scheduling of the work shall be only as approved by the District.

The interiors of all pipe and fittings, particularly couplings and sleeves, to be used in final cut-in connection shall be swabbed or sprayed with a minimum 12.5% hypochlorite solution before they are installed.

Flushing shall start as soon as repairs or connections are completed and shall be continued until discolored water and air are eliminated. Flushing shall be supervised by the District.

Valves and hydrants shall be operated only by approved District personnel, unless an emergency exists and requires immediate operation of a valve to control water loss and an inspector is not available.

5.37 SCHEDULE OF TESTS

The Contractor shall notify the District Inspector at least 2 work days before a section of water main is ready for inspection and pressure test. The District recommends chlorination of the new main upon first fill to reduce water consumption and flushing excessive chlorinated water. The Inspector shall inspect and observe the hydrostatic test. The Contractor shall contact the District at least 2 work days prior to sterilization and flushing and the Contractor shall be present at the project site when the District Representative takes water samples.

5.38 HYDROSTATIC PRESSURE TESTS

Prior to calling the Inspector for pressure test, the Contractor shall have all equipment set up for operation and shall have successfully performed a pre-test to ensure that the pipe is capable of meeting test conditions. All service lines shall be flushed as indicated in Section 5.36 above before scheduling a pressure test.

Water main, appurtenances and service connections shall be tested in sections of convenient lengths under a hydrostatic pressure of 200 psi to 210 psi for 15 minutes.

Pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished and operated

by the Contractor. The Contractor shall demonstrate the gauge is working properly before the testing begins.

Sections to be tested shall be limited to 1,000 feet.

Thrust blocking shall be in place for an adequate time for concrete to cure before testing and the pipe shall be backfilled sufficiently to prevent movement of the pipe under pressure. In no case shall pressure be applied before 48 hours cure time of thrust blocking. Where permanent blocking is not required, the Contractor shall furnish and install temporary blocking and remove it after testing.

Thrust-blocking shall meet the performance requirements of the details shown in Standard Drawings for specific orientations of the main.

The Contractor shall use a meter cart, with cross connection control, rented from the District to fill new water mains for testing and flushing. New water mains shall be filled and remain under 100 psi to 200 psi pressure for 24 to 48 hours to allow air to escape and the lining of the pipe to absorb water.

The pressure test shall be accomplished by pumping the main up to 200 psi to 210 psi and maintaining the pressure, stopping the pump for 15 minutes, and pumping the main up to the test pressure again. During the test, the section being tested shall be observed to detect any visible leakage.

A clean container shall be used for holding water for pumping up pressure on the main being tested. This makeup water shall be sterilized by the addition of chlorine to a concentration of 50 ppm.

The quantity of water required to restore the pressure shall be accurately determined by pumping through a positive displacement water meter. The meter shall be approved by the District. Essentially no loss will be allowed.

There shall not be an abrupt loss in pressure during the 15-minute test period. Any visible leakage detected shall be corrected by the Contractor regardless of the allowable leakage specified above. Should the tested section fail to meet the pressure test successfully as specified, the Contractor shall locate and repair the defects and then retest the pipeline. There shall be no additional cost to the District for failed tests.

Tests shall be made with the hydrant auxiliary gate valves open and the hydrant valve in the closed position. Once the new line is successfully tested, each valve shall be tested by closing each in turn and relieving the pressure behind it. The mains shall be tested between valves. Insofar as possible, no hydrostatic pressure shall be placed against the opposite side of the valve being tested. This test of the valve will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The Contractor shall verify that the pressure differential across the valve does not exceed the rated working pressure of the valve. Valves shall be operated by the District only.

Defective materials or workmanship discovered as a result of hydrostatic field test shall be replaced by the Contractor. Whenever it is necessary to replace defective material or correct the workmanship, the hydrostatic test shall be repeated to the satisfaction of the District.

5.39 DISINFECTION AND FLUSHING OF WATER MAINS

Before being placed into service, new water mains and repaired portions of existing mains shall be chlorinated and thoroughly flushed followed by a minimum of two bacteriological samples at each sampling point collected consecutively 24 hours apart by CWD staff. Water samples will be submitted to a certified laboratory and confirmation of satisfactory results will be received on a DOH approved form utilized by the certified laboratory. Disinfection of water mains shall be accomplished by the Contractor in accordance with the requirements of the Washington State Department of Health, AWWA Standard C651 and in a manner satisfactory to the District. All filling and flushing shall be done through a hydrant meter cart rented from the District. A chlorination apparatus capable of accurately introducing chlorine solution shall be used for the disinfection process. Refer to Section 5.36 for disinfection of connections and repairs. Flush and sample from the downstream flow. Sampling criteria shall be as follows: First day samples shall reflect flow through a hydrant meter to all end points and arterials. The system should set dormant for 24 hours and second set of samples taken which shall be representative of the water in the pipe; there should be no additional flushing in order to obtain a representative sample of water remaining in the pipe for 24 hours.

It is the owner's responsibility to obtain or perform, and pay for, water main tests prior to acceptance of the extension by the District Board of Commissioners. When District staff time, materials and laboratory costs are accrued for the developer's project, then the developer will pay for the time and materials related to the testing.

5.39.1 Flushing

The section to be disinfected shall be first flushed to remove any solids or contaminated material that may have become lodged in the pipe at maximum flow established by the District Engineer prior to chlorination. Where dry calcium hypochlorite tablets are used for disinfection of the pipe, flushing shall be done after disinfection. If a hydrant is not installed at the end of the water main, the Contractor shall provide a tap large enough to develop a flow velocity of at least 2.5 feet/sec in the water main or adequate flushing facilities such as a blow-off described in these specifications. The flushing period must be approved by the District Engineer.

The source water used for disinfection and pressure testing shall be flushed by District Staff prior to its use to ensure that contaminants or debris are not introduced into the new pipe.

Taps for temporary or permanent release of air, introduction of chlorine or flushing purposes shall be provided by the Contractor as a part of the construction of water mains. Temporary taps shall be plugged after use with threaded brass plugs.

5.39.2 Chlorination (Reference WSDOT 7-09.3(24)

The section to be tested shall be chlorinated so that a free residual of no less than 25 ppm (parts per million) is measured at the end of all main arterials. At a minimum, flush each service line to disinfect those portions allowing the chlorinated water to remain in facilities, blow-offs, hydrant spools, and service lines, etc. for a minimum of 24 hours. The initial chlorine content of the water shall not be less than 25 ppm no more than 100 ppm.

The forms of chlorine that may be used in the disinfection operations are liquid chlorine injection at 12.5%.

A. Liquid Chlorine: (WSDOT 7-09.3(24) E) Chlorine shall be applied by solution fed at one end of the section with a service or hydrant at the opposite end open sufficiently to permit a flow through during chlorine application. The chlorine solution shall be fed into the pipeline already mixed by an automatically proportioning applicator to provide a steady application rate no less than 25 ppm chlorine. Hydrants, services and blow-offs along the chlorinated section shall be open during application until the presence of chlorine has definitely been detected in each hydrant and service run. When a chlorine concentration no less than 25 ppm has been established throughout the line, the valves shall be closed and the line left undisturbed for 24 hours.

Granulated hypochlorite designed for pools and hot tubs is not acceptable for use in disinfecting water mains.

The main shall be filled with water at a rate to ensure that the water within the main will flow at a velocity no greater than 1ft/sec. Precautions shall be taken to ensure that air pockets are eliminated. When a chlorine concentration of not less than 25 ppm and not more than 100 ppm has been established throughout the line, the valves shall be closed and the line left undisturbed for 24 hours. If chlorine concentration exceeds 100 ppm the Contractor will immediately effect a reduction in the concentration by properly flushing the main and removing chlorine at the discharge.

Water temperature shall be measured and recorded by the District Inspector. If the water temperature is less than 41 degrees F, the water shall remain in the pipe for at least 48 hours to complete disinfection.

The line shall then be thoroughly flushed and water samples taken. The Contractor shall exercise special care in flushing to avoid damage to surrounding property and to conform to these Standards. The Contractor shall provide an accurate written report of the procedure used to the construction inspector.

5.39.3 Final Flushing and Testing

Following chlorination, chlorinated water shall be flushed from the new water main until the replacement water throughout its length shows residuals equal to background chlorine levels in the system.

After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new main. The Contractor shall schedule the sample collection with the District a minimum of three (3) work days in advance of test. The number of samples from the source and the number of representative sample points required will be determined by the District. Appropriate sample taps shall be furnished by the Contractor. No hose or fire hydrant shall be used in the collection of samples unless directed by District Engineer.

At least one set of samples shall be collected from every 1,200 feet of the new water main, plus one set from the end of the line and at least one set from each branch. All samples shall be tested for total coliform bacteria and for heterotrophic bacteria by the

heterotrophic plate count (HPC) analysis. The maximum allowable coliform content of the flushed sample shall be zero. The maximum allowable HPC population count in all source samples shall be 300/ml. Any source sample that exceeds a count of 300/ml shall be ruled as an indeterminate test and a new set of source and construction samples for analysis shall be required. The maximum allowable HPC population count from any construction sample shall be no greater than twenty (20) counts above the highest source HPC population count.

Before placing the lines into service, a satisfactory report shall be received by the District from the certified laboratory evidencing successful tests on samples collected from representative points in the developer extension.

Should the initial test result in an unsatisfactory bacteriological test, additional chlorination using the procedure as specified above from Section 5.39.2 and shall be repeated by the Contractor until satisfactory results are obtained. The Contractor shall be responsible for disposal of treated water flushed from the mains including de-chlorination as necessary to protect the environment. Chlorinated water shall never be flushed into the storm drain without local agency approval or to a natural body of water. This includes lakes, rivers, streams, storm drainage systems, and any and all other waters where fish or other natural aquatic life can be expected. Chlorinated water may be discharged to an available sanitary sewer system with the appropriate sewer district's approval and where the rate of discharge will not overload the sanitary sewer.

5.40 ADJUST EXISTING STRUCTURE TO GRADE

5.40.1 Vault Cover Adjustment

Existing vault covers affected by a pavement overlay, or adjustment in surface grade, shall be adjusted to grade within three (3) work days after pavement overlay or temporary asphalt placement. Adjustments shall be made as frequently as necessary to keep the system fully accessible for operation. Vault covers in pedestrian areas shall be ductile iron and non-slip. No additional payment beyond the unit quantity in the bid schedule shall be made for multiple efforts required of the contractor for adjustments. Adjustment to final grade prior to placement of asphalt overlay is acceptable to the District when adjustment meets the final grade criteria as specified below.

5.40.2 Valve Box Adjustment in Paved Areas

For street overlay, Contractor shall provide access to all active, critical operating valves at all times and at the direction of the District Engineer. Contractor shall provide access to all valves as directed by the District and critical operating valves shall be identified on the plans or in the field by the District Inspector.

Raising the existing valve box and cover less than 2" for road re-surfacing shall be accomplished by adjusting the existing top section of the valve box or by inserting a valve box paving riser into the existing valve box top section. Paving risers shall not be used on new construction. When paving risers are used, they shall be permanently anchored to the valve box.

Raising the existing valve box cover 2" or more, for new construction and final overlay, shall be accomplished by adjusting the existing top section. Valve boxes shall not be located in curbs, gutters, or wheel paths.

If the valve box base section needs to be extended, the Contractor shall install a 4" diameter cast iron soil pipe, with the bell-end of the soil pipe inserted over the top of the existing valve box base section. The spigot-end of the soil pipe shall be located a minimum of 6" and maximum of 9" below
finished grade. The valve box top section shall be slipped over the soil pipe and adjusted to the final grade. A polyethylene sheet, 8-mil thick, shall be placed between the valve box and soil pipe to prevent metal to metal contact where the sections overlap.

The final box adjustment shall leave the top of the valve box no higher than final grade, and no lower than 0.25" below final grade (zero/-1/4”)
In asphalt concrete pavement overlay areas, excavation of the valve box to be raised shall be accomplished by saw cutting or neat-line jack hammering the pavement a minimum of 12" around the perimeter of the valve box. The final adjustment of working valve boxes shall be made within three (3) calendar days following the final overlay or as directed by the District Engineer for critical operating valves. The final adjustment of non-active valve boxes shall be made within twenty (20) days following the placement of asphalt at the valve. Excavation patches shall be sealed with asphalt sealant following adjustment in final placement of asphalt.

5.40.3 Valve Box Adjustment in Unimproved Areas

Adjustment of valve box covers located in unpaved areas shall be accomplished using a 12" valve box adjusting sleeve inserted into the existing valve box top section. Valve centering rings shall be used as required per the Standard Detail in Appendix A.

Provide a minimum of 3’×3’×4” asphalt or concrete pad at the surface as indicated in the Standard Details for valve installations. Delete collar and follow standard drawing details for facilities situated in landscape areas, such as air vac and blow-off installations.

5.41 ABANDONING FACILITIES

5.41.1 Abandonment of Water Main

Water mains no longer in service shall be removed and disposed of by the Contractor. The water main may be abandoned in-place only with the approval of the District Engineer. Mains abandoned in place shall be shown on record drawings. When water mains are abandoned, the ends of the pipe and fittings shall be plugged with concrete (2500 psi min.) 12” minimum length or fitted with MJ cap.

The District may require the Contractor to fill the abandoned water mains with sand or cement grout to comply with local agency requirements depending on the size, material, and location of the water
main. Mains abandoned in critical roadways or streams may require additional measures to abandon in place.

5.41.2 Abandonment of Services

For service lines with existing saddles and corporation stops, the contractor shall remove the existing saddle and corporation stop and a new saddle with a plug shall be installed. For existing service lines with a direct tap, the contractor shall install a new saddle and plug. The remainder of the service line shall be abandoned in place.

5.41.3 Abandonment of Structures

Abandonment of structures shall be completed only after water facilities have been properly abandoned or removed. Unless specified otherwise, it will be sufficient to remove vault lids and the first section of the vault (12 inches or more) and fill the abandoned vault with pit run gravel or sand.

5.41.4 Abandonment of Fittings or Appurtenant Facilities

The District shall have right of first refusal for salvage of hydrants, fittings, valves, meters or other appurtenant features. Plans may specifically identify salvage items for the Contractor to deliver to the District operations yard. Contractor must contact the District before start of construction for clarification of any item Contractor proposes for salvage.

5.42 LAWN REMOVAL AND REPLACEMENT

Any lawn damaged by the Contractor shall be restored to conditions existing prior to construction. The contractor shall minimize the area of disturbance and restore any disturbed area to as close to the original condition as possible. Established lawn areas shall be sodded or seeded.

5.43 BORING UNDER ROOTS

Boring under the root systems of trees shall be accomplished by excavating a trench or pit on each side of the tree, being careful to avoid root injury, and then hand digging or pushing the pipe through the soil under the tree. The pit walls shall be outside the drip line and root ball of the tree and shall have sufficient depth to lay the pipe at the grade shown on the plan and profile. The Contractor shall employ the services of a qualified arborist at the direction of the District Engineer when conditions warrant extra care. Costs of an arborist's services shall be paid by the project Owner. Contractor shall not cut roots over 2-inches in diameter without an arborist's recommendation for treating the damaged roots.

5.44 BORING AND JACKING (SEE Special Provisions of Project Document)

The Contractor shall verify the vertical and horizontal location of existing utilities. If required to avoid conflicts and maintain minimum clearances, adjustment shall be made to the grade of the casing pipe.

The pipe shall be bored and jacked where indicated. The Contractor shall remove or penetrate all obstructions encountered. If groundwater is found to be a problem during boring operations, the Contractor shall do all that is necessary to control or divert flow sufficiently to protect the excavation, pipe and equipment so that the work is not impaired. Any pipe damaged during the boring and jacking operation shall be repaired by the Contractor in a manner approved by the District Engineer.

Special care shall be taken during the installation of the bored and jacked pipe to ensure that no settlement or caving is caused to the surface above. Any such caving caused by the placement of the pipe shall be the Contractor's responsibility and the Contractor shall repair any area affected as directed by the District Engineer. In the event the District Engineer determines additional soils or geotechnical analysis is required, the project owner shall obtain such services at the owner's expense.

During the jacking operations, particular care shall be exercised to prevent caving ahead of the pipe which will cause voids outside of the pipe. If voids exist, the Contractor shall drill through the wall of the pipe and fill the voids by pumping cement grout. All voids shall be filled to the satisfaction of the District Engineer.

The carrier pipe shall be installed in the casing as shown in the District Standard Details. The Contractor shall support carrier pipe with casing spacers as shown in the Standard Details.

The casing spacers shall conform to Chapter 4 of these Standards. The material shall be resistant to abrasion and sliding wear. There shall be a minimum of two spacers per length of pipe, and the spacing between spacers shall be as shown in the Standard Details.

Boring and receiving pits shall be backfilled with select native material approved by the District Engineer and compacted to 95% maximum dry density as determined by ASTM D-1557. The Contractor shall provide sufficient select backfill material to make up for the rejected material.

All disturbed ground shall be restored to its original condition or better.

5.45 WORKING WITH ASBESTOS CEMENT PIPE

When working with existing asbestos cement pipe (AC) in the ground, the Contractor is required to minimize human exposure to asbestos material below the exposure limit as prescribed in WAC 296-62-07705 State/Federal Guidelines and Certification. The Contractor shall provide laborers who are certified by the Department of Labor and Industries (L&I) in accordance with WAC 296-65-010 and in accordance with the correct class of work.

5.46 ASBESTOS CEMENT WATER MAIN CROSSINGS

Where a new utility line crosses below an existing asbestos cement (AC) water main, the AC water main shall be replaced with DI pipe to 3 feet past each side of the trench as shown on the Standard Detail. Alternatively, where directed by the District Engineer, the trench shall be backfilled with CDF from the bottom of the trench to the bottom of the AC main.

5.47 CONTROLLED DENSITY FILL

Controlled Density Fill (CDF) can be proportioned to be flowable, non-segregating, or excavatable by hand or machine. CDF shall have a maximum compressive strength of 1,500 psi, unless specified
otherwise. Desired flow-ability shall be achieved with a high water/cement ratio to meet the following guidelines:

Low Flow-ability	below 6-inch slump
Normal Flow-ability	6 - 8-inch slump
High Flow-ability	8-inch slump or greater

Level of flow-ability shall be “Normal” or as specified on the plans. CDF shall be placed by any reasonable means into the area to be filled. CDF patching, mixing and placing may be started if weather conditions are favorable, when the temperature is at 34 degrees F and rising. At the time of placement, CDF must have a temperature of at least 40 degrees F. Mixing and placing shall stop when temperature is 38 degrees F or less and falling. Each filling stage shall be as continuous as possible. CDF shall not be placed on frozen ground. *Local agency requirements for CDF material may supersede District and strength characteristics defined in this specification outside the pipe zone.

Trench section to be filled with CDF shall be contained at either end of the trench section by bulkhead or earth fill.

When used to support existing AC pipe, the “flow able” CDF shall be brought up uniformly to the bottom of the AC pipe, as shown on the plans, or as directed by the District Engineer.

The contractor shall provide steel plates to span utility trenches and prevent traffic contact with CDF for at least 24 hours after placement or until CDF is compacted or hardened to prevent rutting by construction equipment or traffic.

If CDF is used for trench backfill on ductile iron, pipe shall be encased in 5/8” minus crushed rock or 1-1/2” WSDOT standard material and services shall be encased in 5/8” minus material with high content of fines. **CDF shall not be placed in the pipe zone.**

5.48 VAULT INSTALLATION

Vaults for water facilities (pressure reducing stations, valves, water service, flow meters, backflow prevention devices, etc.) shall be installed at the locations shown in the plan and as staked. It shall be constructed as shown in the Plans, Standard Details and as directed by the District Engineer.

The excavation shall have minimum one (1) foot clearance between the vault outer surfaces and the earth bank. The Contractor shall use foundation gravel (WSDOT 9-03.12(3) on top of undisturbed soil to support the vault. The vault shall be plumb and watertight. The access cover shall be seated properly to prevent rocking and shall be adjusted to match the finished grade.
The vault floor shall free drain to discharge, or to location shown on the Plans. Gravity

drain pipe shall be a minimum of 3" diameter.

Where knock-outs coincide with pipe location, the voids shall be sealed with concrete or non-shrink grout. Where knockout locations for pipe do not coincide with locations of pipe penetrations into the
vault, the Contractor shall core drill openings for pipe.

Sump pumps shall be installed per the Standard Details, Appendix A. Installation of the sump and drain is required for all vaults. When electrical service is not available within 300 feet, the sump, pump and power cord will be installed for District use with portable generator.

5.49 UTILITY CROSSING

Minimum vertical distance between utility pipes shall be no less than 12 inches. In the event a separation of less than 12 inches is encountered, additional measures may be necessary to ensure system integrity and may be required as evaluated by the District on a case-by-case basis. Coordination of the utilities involved will be the responsibility of the project Owner.

*Note: Neoprene pads are not approved for use as a substitute for distance in separating utilities involving the District's water system.

5.50 CONSTRUCTION REDLINES AND RECORD DRAWINGS

Construction redline drawings refer to the hardcopy paper/bond set of the final approved plans that the Developer/Contractor retains throughout the construction process and contain redline changes of as-built information. The following is required for a complete construction redline set.

WATER MAINS:
Labels on water mains shall include the horizontal length of pipe from center of fitting to center of fitting, pipe diameter and material, class of pipe, joint restraint type and length including starting and ending stations if applicable, size and location of trust blocks, pipe manufacturer and year installed. The depth to the top of pipe shall be recorded at every 50 feet.

VALVES:
Callouts shall Include valve size, type (gate valve, check valve, etc.), joint type (MJ, PO, etc.), and year installed. See example below "FITTINGS".

FITTINGS:
Callout number of fittings, diameter, type of fitting (22.5° bend, 8"x8" Tee, etc.), top of fitting elevation, fitting manufacturer and joint type.
For example:

1-8"x8" TEE (FL)
3-8"x8" GATE VALVES (FLxMJ)
1-CONCRETE BLOCKING
Tyler Union
T/P=200.0'
SERVICES:

Size and location of service shall be shown. Include length of service from main to meter and size and material for saddle, service line, curb stop and setter.

HYDRANTS:
Note the distance from foot valve to hydrant, depth of bury at the hydrant (ex. “5’ bury”), year installed, fire hydrant manufacturer and model and the size of port.

Record top of pipe elevation every 50 linear feet along the water main alignment at and at every fitting.
Cross out any proposed items not constructed or abandoned. Use bold line types for all installed pipes, structures, etc.

TIMING AND PROCESSING
After completion of construction, the Developer/Contractor shall submit the construction redline drawings to the District for review and comment. After the District has concurred that the construction redline drawings reflect the as-built conditions, the District will send a final set of construction redlines to the Design Engineer (engineer on record) and Developer for final as-builts.

Incomplete, inaccurate, illegible, or poor-quality drawings will be rejected and will require resubmittal prior to developing Bill of Sale. All plan sheets must have a “Record Drawing” stamp block.

Chapter 6
Landscape and Water Use

CHAPTER 6
LANDSCAPING AND WATER USE

6.01 GENERAL

The need for greater efficiency in water use has become paramount in our region as rising population increases the demand for water and drought cycles decrease availability. The District encourages water conservation on multiple levels.

The Washington State Legislature passed the Municipal Water Supply – Efficiency Requirements Act of 2003, better known as the Municipal Water Law. One of the obligations is to comply with the Water Use Efficiency Rule (WUER). The WUER is designed to help conserve water for the environment and future generations and requires water suppliers to develop a rate structure that encourages efficient use of water. The District has long recognized the need to encourage efficient water use and first introduced conservation pricing with a tiered rate structure in 1997. The goal of this conservation pricing is to reduce excessive discretionary water use, especially excessive outdoor irrigation, by making water increasingly more expensive as greater amounts are used. A copy of the District's current rate structure is available at www.covingtonwater.com.

6.02 LOCAL JURISDICTIONS

Please refer to the appropriate local jurisdiction's ordinances and code requirements for specification details for landscape installations.

6.03 RECOMMENDATIONS

The following recommendations would be helpful for homeowners and developers in reducing water consumption.

1. Good soil is vital to efficient water conservation in the landscape. A minimum of six (6) inches of quality topsoil consisting of 20 to 25% organics should be applied to turf and landscape areas. Poor soils, which are typical in our area, will greatly benefit from the addition of compost material. In addition to adding nutrients, compost-amended soils will have greater moisture retention capability, which make better use of applied water.

2. Due to its high-water requirement, fine ornamental lawn areas (not including non-irrigated native grasses, pasture lands and other grasses) should be limited to no more than 1,000 square feet for each Lot. Lawns should not be planted in planting strips less than five feet in width.

3. Not less than 95% of the remaining landscape area (non-turf areas) should be planted with low water requiring plants. Plants utilized should be climate-friendly, drought-tolerant varieties, planted in the appropriate location to suit their needs. Plants with similar water use characteristics should be grouped together into hydro zones for more efficient irrigation.
4. In order to reduce irrigation requirements, it is recommended that landscapes be installed in spring or fall, rather than in the heat of summer.

5. Planting beds should be mulched with three (3) inches of mulch and replenished as needed to maintain this level.

6. Lawns should be top dressed with ½ inch of fine screened compost in the spring or fall on a yearly basis.

7. To reduce runoff and ensure adequate recharge of the groundwater supply, homeowners are encouraged to minimize the amount of hard surfaces, such as asphalt and concrete driveways and patios. Permeable surfaces are preferable.

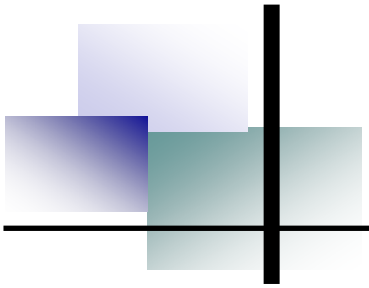
8. Irrigation systems should:

    a. be designed by an Irrigation Association (IA) Certified Designer or a registered Landscape Architect;
    b. include automatic shutoff or override capabilities using rain or soil moisture sensors;
    c. utilize a Smart Controller which reduces water use by monitoring and using information about site conditions (such as soil moisture, rain, wind, slope, soil, plant type, and more), and applying the right amount of water based on those factors;
    d. be professionally programmed;
    e. include a backflow prevention assembly suitable to the District, which must be tested annually by a certified backflow assembly tester, as required by State law. The assembly shall be placed immediately back of the meter.

9. The following water efficient techniques are provided to further aid homeowners/residents:
    a. Water established lawns once a week deeply – soil should be moist six inches down. This will typically take up to a week to dry out. Lawns are considered established after several mowings. New lawns may be watered more often but for shorter durations (less deeply) during the first growing season. Deep watering inhibits thatch build-up.
    b. Water established native, climate-friendly plants only when needed. Once a month deeply will probably suffice, twice a month if it's been particularly hot and dry.
    c. Water in the early morning or in the evening when evaporation is least likely to occur. Do not water in the heat of the day, as up to half the water applied is wasted to evaporation. Do not water on windy or rainy days.
    d. Do not apply water more rapidly than the soil can absorb it. Turn off the sprinkler at the first sign of saturation or runoff to allow the water to soak in. Water again in half an hour if necessary to adequately moisten the root zone.
    e. The use of a shut-off nozzle on water hoses is highly encouraged.

10. The waste of water supplied by the District is discouraged at all times. Waste of water includes, but is not limited to: the continuous application of water to lawns or landscaping with results in puddling or runoff of water; failure to repair leaking water service lines and irrigation systems; application of water to impervious surfaces other than for cleaning purposes; watering in the heat of the day or when it is raining or windy; and all other applications of water which do not result in a beneficial use.

Resource recommendation for irrigation system installations:
The Irrigation Association has developed *Turf and Landscape Irrigation Best Management Practices (BMPs)* that will save and extend our water supply while protecting water quality.
http://www.irrigation.org/gov/default.aspx?pg=BMPs.htm&id=104



Standard Details
Appendix A

INDEX TO STANDARD DETAILS

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	STANDARD DETAILS INDEX

STANDARD SYMBOLS

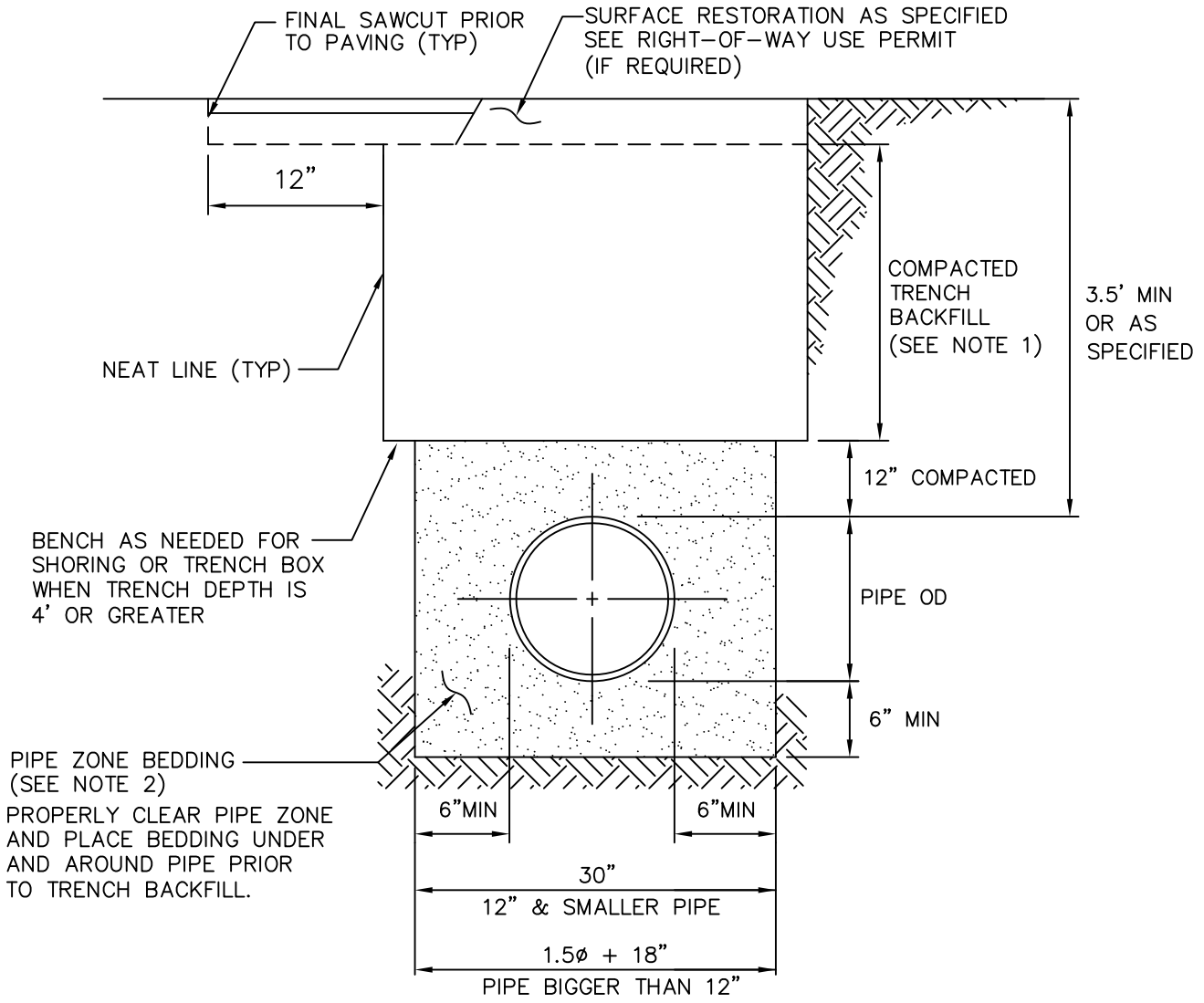
USE ON PLANS EXIST.	USE ON PLANS PROP.	DESCRIPTION	(ABBR)
		CAP/PLUG	
		COUPLING	(CPL)
		REDUCER	(RED)
		THRUST BLOCK	(TB)
		WATER METER	(WM)
		FIRE HYDRANTS:	
		3–NOZZLE	(FH)
		JOINTS:	
		FLANGE/BLIND FL	(FL)
		MECHANICAL	(MJ)
		PUSH–ON/HUB	
		THREAD	(THD)
		VALVES:	
		AIR/VAC	(AIR)
		BLOW–OFF	(BO)
		BUTTERFLY	(BF)
		CHECK	(CK)
		GATE/GENERAL	(WV)
		PLUG VALVE	(PV)
		PRESSURE REDUCING VALVE	(PRV)

50 LF 8" D.I.	WATER MAIN
	WATER SERVICE
W	EX WATER MAIN
	EX WATER SERVICE
	EASEMENT

FITTINGS W/ END CONNECTION

USE ON PLANS EXIST.	USE ON PLANS PROP.	DESCRIPTION
		ADAPTER, FL.xM.J.
		BENDS:
		90 DEGREE BEND, FL.
		45 DEGREE BEND, FL.
		22.5 DEGREE BEND, FL.
		11.25 DEGREE BEND, FL.
		90 DEGREE BEND, M.J.
		45 DEGREE BEND, M.J.
		22.5 DEGREE BEND, M.J.
		11.25 DEGREE BEND, M.J.
		VERTICAL BEND, FL.
		VERTICAL BEND, M.J.
		REDUCERS:
		REDUCER, FL.
		REDUCER, M.J.
		REDUCER, M.J.xFL.
		REDUCER, M.J.xP.E.
		REDUCER, P.E.xM.J./FL.xM.J.
		TEES:
		TAPPING TEE & VALVE, FL.xM.J.
		TEE, FL.
		TEE, M.J.
		TEE, M.J.xFL.
		VALVES:
		BUTTERFLY VALVE, FL.xM.J.
		BUTTERFLY VALVE, M.J.
		GATE VALVE, FL.xM.J.
		GATE VALVE, M.J.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	WATER SYMBOLS	1

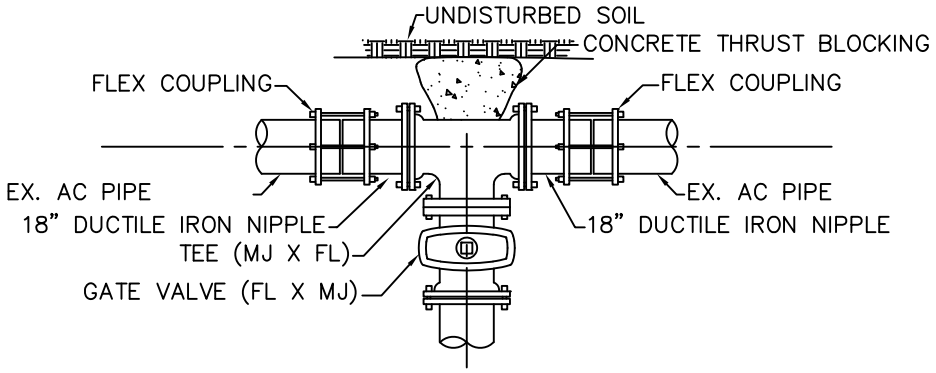


NOTES:

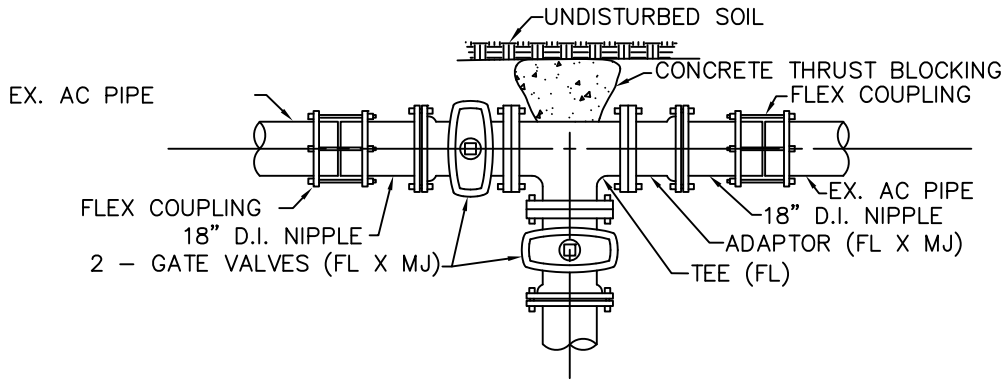
1. TRENCH BACKFILL SHALL BE
   - PAVED AREA: GRANULAR BACKFILL AS APPROVED BY LOCAL AGENCY, OR PER WSDOT* 9-03.12(3), CDF WHEN SPECIFIED, OR APPROVED NATIVE MATERIAL FREE OF ORGANIC MATERIAL COMPACTED TO 95% OF MAXIMUM DENSITY. APPROVED NATIVE MATERIAL WILL GENERALLY MEET WSDOT 9-03.19
   - UNIMPROVED AREA: SELECT GRANULAR MATERIAL WITH MAXIMUM DIMENSION OF 2-1/2" PER WSDOT 9-03.19, COMPACTED TO 90% OF MAXIMUM DENSITY.
2. GRAVEL BACKFILL FOR PIPE ZONE BEDDING SHALL BE SELECT GRANULAR MATERIAL PER WSDOT 9-03.12(3), WITH MAXIMUM DIMENSION OF OF 1-1/4" COMPACTED TO 95% OF MAXIMUM DENSITY BY APPROVED HAND-HELD TOOLS.
3. EXCAVATE FOR THE PIPE BELL TO ENSURE UNIFORM SUPPORT FOR THE PIPE BARREL.
4. TRENCH AND PAVEMENT RESTORATION SHALL BE DONE PER RIGHT-OF-WAY USE PERMIT.

*WSDOT: CURRENT REVISION OF STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

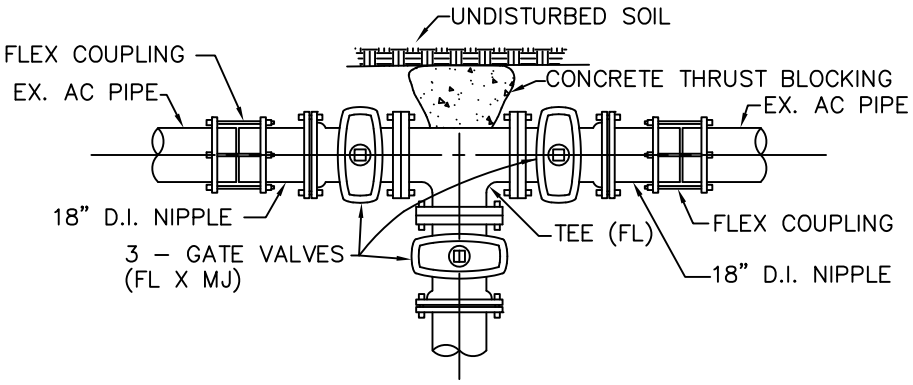
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington WATER DISTRICT	TYPICAL TRENCH DETAIL	2



SINGLE VALVE



TWO VALVES

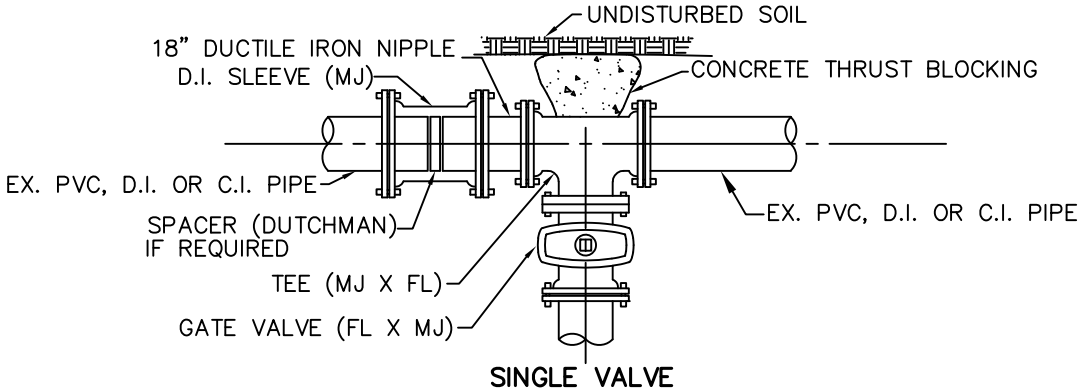


THREE VALVE

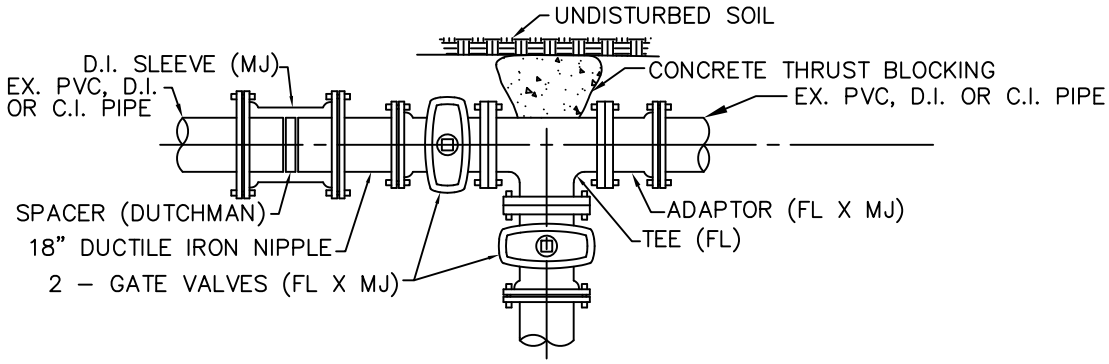
NOTES:

1. PROVIDE CONCRETE SUPPORT BLOCK UNDER EX. PIPES AND FITTINGS BEFORE "CUT–IN" TO EX. WATER MAIN. INSTALL CEDAR WEDGES BETWEEN THE SUPPORT BLOCK AND THE FITTING TO ADJUST ALIGNMENT. BLOCK VALVE AND COUPLING ONLY. POUR THRUST BLOCK BEHIND TEE.
2. CONCRETE SUPPORT BLOCK SHALL BE INSTALLED ON UNDISTURBED TRENCH BOTTOM OR COMPACTED FOUNDATION MATERIAL. VOIDS UNDER PIPES, VALVES, & FITTINGS SHALL BE FILLED WITH CDF. PROVIDE PLASTIC FILM WRAP AROUND PIPES, FITTINGS, AND COUPLINGS TO PREVENT EXPOSURE TO CONCRETE AND BACKFILLING. AVOID ENCASING PIPE OR FITTINGS WITH CONCRETE.
3. ALL CONNECTIONS TO EXISTING MAINS SHALL BE MADE WITH THE PRESENCE OF AN AUTHORIZED CWD REPRESENTATIVE AFTER REQUIRED TESTING.
4. A 3'x3'x4" CONCRETE OR ASPHALT COLLAR IS REQUIRED IF VALVE BOX IS SET IN GRAVEL OR UNPAVED SURFACE.
5. VALVE MARKER POST SHALL BE INSTALLED WHERE DIRECTED BY DISTRICT ENGINEER.
6. ALL FITTINGS SHALL BE SWABBED WITH A MINIMUM 12.5% HYPOCHLORITE SOLUTION.

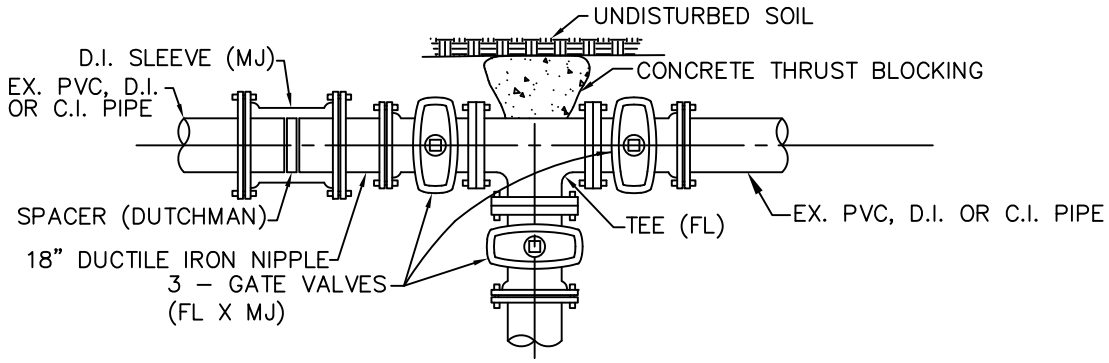
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	CUT–IN FOR AC PIPE	3



SINGLE VALVE



TWO VALVES

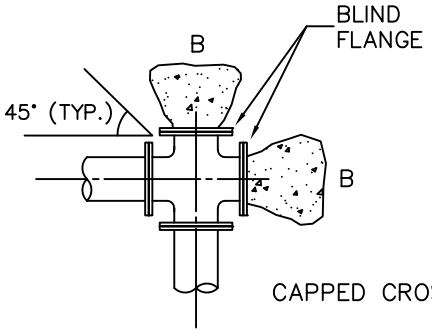


THREE VALVES

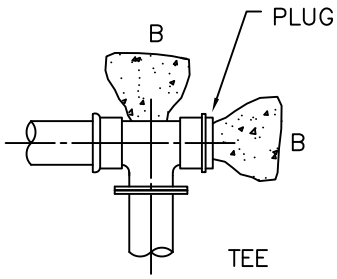
NOTES:

1. PROVIDE CONCRETE SUPPORT BLOCK UNDER EX. C.I. PIPES AND NEW FITTINGS BEFORE "CUT–IN" TO EX. WATER MAIN. INSTALL CEDAR WEDGES BETWEEN THE SUPPORT BLOCK AND THE FITTING TO ADJUST ALIGNMENT. BLOCK VALVES AND COUPLING ONLY. POUR THRUST BLOCK BEHIND TEE.
2. CONCRETE SUPPORT BLOCK SHALL BE INSTALLED USING A PLYWOOD FORM ON UNDISTURBED TRENCH BOTTOM OR COMPACTED FOUNDATION MATERIAL. VOIDS UNDER PIPES, VALVES, & FITTINGS SHALL BE FILLED WITH CDF. PROVIDE PLASTIC FILM WRAP AROUND PIPES, FITTINGS, AND COUPLINGS TO PREVENT EXPOSURE TO CONCRETE AND BACKFILLING. AVOID ENCASING PIPE OR FITTINGS WITH CONCRETE.
3. ALL CONNECTIONS TO EXISTING MAINS SHALL BE MADE WITH THE PRESENCE OF AN AUTHORIZED CWD REPRESENTATIVE AFTER REQUIRED TESTING.
4. A 3'x3'x4" CONCRETE OR ASPHALT COLLAR IS REQUIRED IF VALVE BOX IS SET IN GRAVEL OR UNPAVED SURFACE.
5. VALVE MARKER POST SHALL BE INSTALLED WHERE DIRECTED BY DISTRICT ENGINEER.
6. ALL FITTINGS SHALL BE SWABBED WITH A MINIMUM 12.5% HYPOCHLORITE SOLUTION CONCENTRATION.

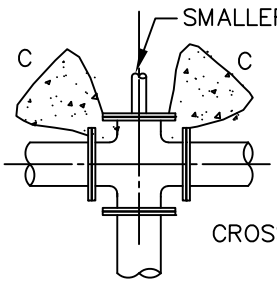
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	CUT–IN FOR CI, DI, OR PVC	4



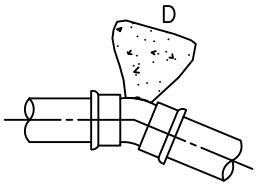
CAPPED CROSS



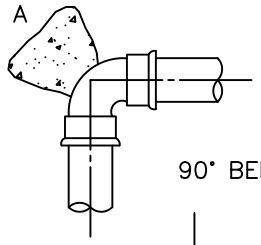
TEE



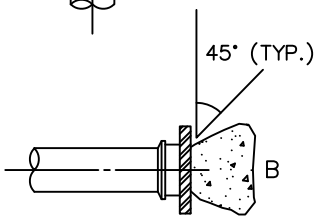
CROSS



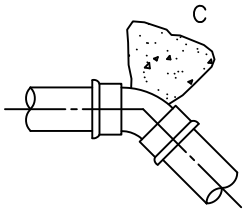
22 1/2° BEND



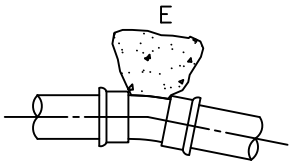
90° BEND



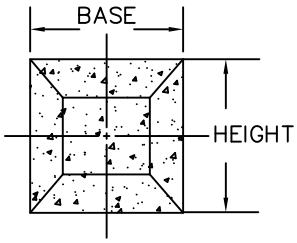
CAP



45° BEND



11 1/4° BEND



THRUST BLOC IS A FORMED PILLAR WITH DIMENSIONS AS SHOWN BELOW AND SIDE ANGLE NOT TO EXCEED 45°.

HORIZONTAL THRUST BLOCKING – TABLE

MIN. BEARING AREA AGAINST UNDISTURBED SOIL

(SQUARE FEET)

PIPE SIZE	DEAD END (CONDITION B)				90° BEND (CONDITION A)				45° BEND (CONDITION C)				22.5° BEND (CONDITION D)				11.25° BEND (CONDITION E)			
	A_2 (FT.2)	B (FT.)	H (FT.)	D (FT.)	A_2 (FT.2)	B (FT.)	H (FT.)	D (FT.)	A_2 (FT.2)	B (FT.)	H (FT.)	D (FT.)	A_2 (FT.2)	B (FT.)	H (FT.)	D (FT.)	A_2 (FT.2)	B (FT.)	H (FT.)	D (FT.)
4"	3.00	2.00	1.50	1.50		2.50	1.50	1.50	2.19	1.75	1.25	1.50	1.25	1.25	1.00	1.50	0.50	1.00	0.50	1.50
6"	6.00	3.00	2.00	1.50	7.88	3.50	2.25	1.50	4.38	2.50	1.75	1.50	2.19	1.75	1.25	1.50	1.25	1.25	1.00	1.50
8"	9.38	3.75	2.50	1.50	13.50	4.50	3.00	2.00	7.88	3.50	2.25	1.50	3.75	2.50	1.50	1.50	2.19	1.75	1.25	1.50
10"	14.25	4.75	3.00	2.00	20.63	5.50	3.75	2.50	11.00	4.00	2.75	2.00	6.00	3.00	2.00	1.50	3.00	2.00	1.50	1.50
12"	20.63	5.50	3.75	2.50	29.25	6.50	4.50	2.75	15.44	4.75	3.25	2.00	7.88	3.50	2.25	1.50	3.75	2.50	1.50	1.50
16"	36.25	7.25	5.00	3.00	50.31	8.75	5.75	3.50	27.63	6.50	4.25	2.50	13.50	4.50	3.00	2.00	7.31	3.25	2.25	1.50

A=AREA B=BASE H=HEIGHT D=DEPTH

RESTRAINED JOINTS ARE REQUIRED WHERE BEARING SOILS OR FILL MATERIAL ARE DETERMINED BY THE ENGINEER / CWD TO BE UNSUITABLE TO PROVIDE ADEQUATE BEARING LOAD, OR SOIL HAS BEEN DISTURBED

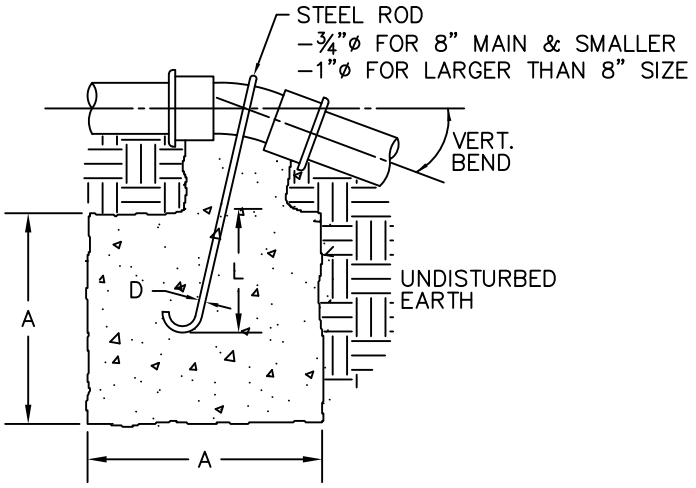
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	HORIZONTAL CONCRETE THRUST BLOCKING	5

NOTES:

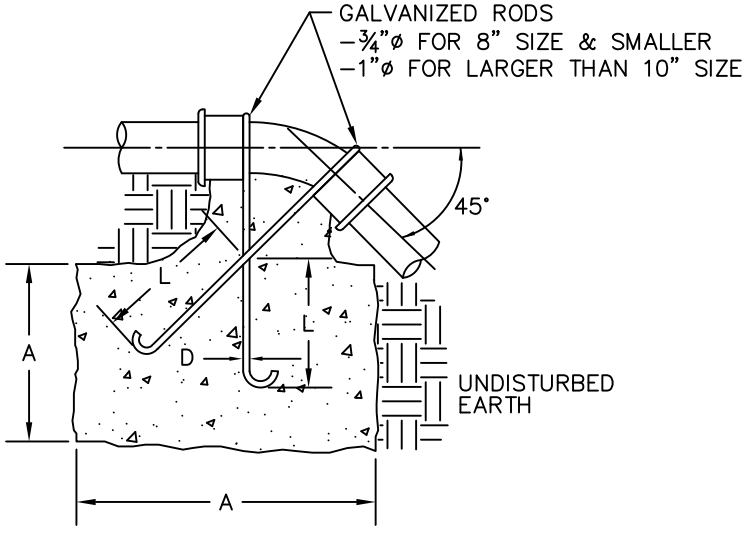
1. BEARING AREA OF CONC. THRUST BLOCKING BASED ON 200 PSI WATER PRESSURE, SOIL BEARING CAPACITY OF 2,000 LBS/FT2 AND 1.5 FACTOR OF SAFTY. THE DESIGN ENGINEER IS TO VERIFY BLOCK SIZING IS ADEQUATE FOR SPECIFIC SITE CONDITIONS
2. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZES, PRESSURES AND SOIL CONDITIONS.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
4. BLOCKING SHALL BEAR AGAINST FITTINGS ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT REMOVING OR DISMANTLING OF JOINT.
5. CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATION PRESSURE UNDER ALL CONDITIONS OF SERVICE.
6. CONCRETE SHALL BE 2500 PSI MIN.
7. INSTALL PLASTIC TYPE SHEETING (MIN. 6 MIL.) AROUND THE FITTING ALL BOLTS, NUTS, AND GLANDS FOR FUTURE DISMANTLING.
8. THRUST BLOCKING FOR PIPE LARGER THAN 16" WILL REQUIRE ENGINEERED DESIGN FOR SPECIFIC CONDITIONS.
9. DIMENSION "A" IN THE VERTICAL THRUST BLOCK DETAIL IS THE DIMENSION FOR ALL SIDES OF BLOCK.

VERTICAL THRUST BLOCKING FOR 11 1/4°, 22 1/2°, 45° BENDS					
PIPE SIZE	V B	CU FT	A	D	L
4"	11 1/4° 22 1/2° 45°	8 16 27	2.00' 2.50' 3.00'	3/4" 3/4" 3/4"	1.5' 2.0' 2.0'
6"	11 1/4° 22 1/2° 45°	16 27 53	2.50' 3.00' 3.75'	3/4" 3/4" 3/4"	2.0' 2.5' 2.5'
8"	11 1/4° 22 1/2° 45°	27 53 91	3.00' 3.75' 4.50'	3/4" 3/4" 3/4"	2.5' 3.0' 3.5'
10"	11 1/4° 22 1/2° 45°	43 77 145	3.50' 4.25' 5.25'	1" 1" 1"	3.0' 3.5' 4.0'
12"	11 1/4° 22 1/2° 45°	53 107 190	3.75' 4.75' 5.75'	1" 1" 1"	3.0' 4.0' 4.5'
16"	11 1/4° 22 1/2° 45°	91 190 343	4.50' 5.75' 7.00'	1 1/8" 1 1/8" 1 1/8"	3.5' 4.5' 4.5'

90° VERTICAL BENDS ARE NOT ALLOWED WITHOUT DISTRICT APROVAL OF ENGINEERED DESIGN SUBMITTAL



VERTICAL BLOCKING FOR 11 1/4° & 22 1/2° BENDS



VERTICAL BLOCKING FOR 45° BENDS

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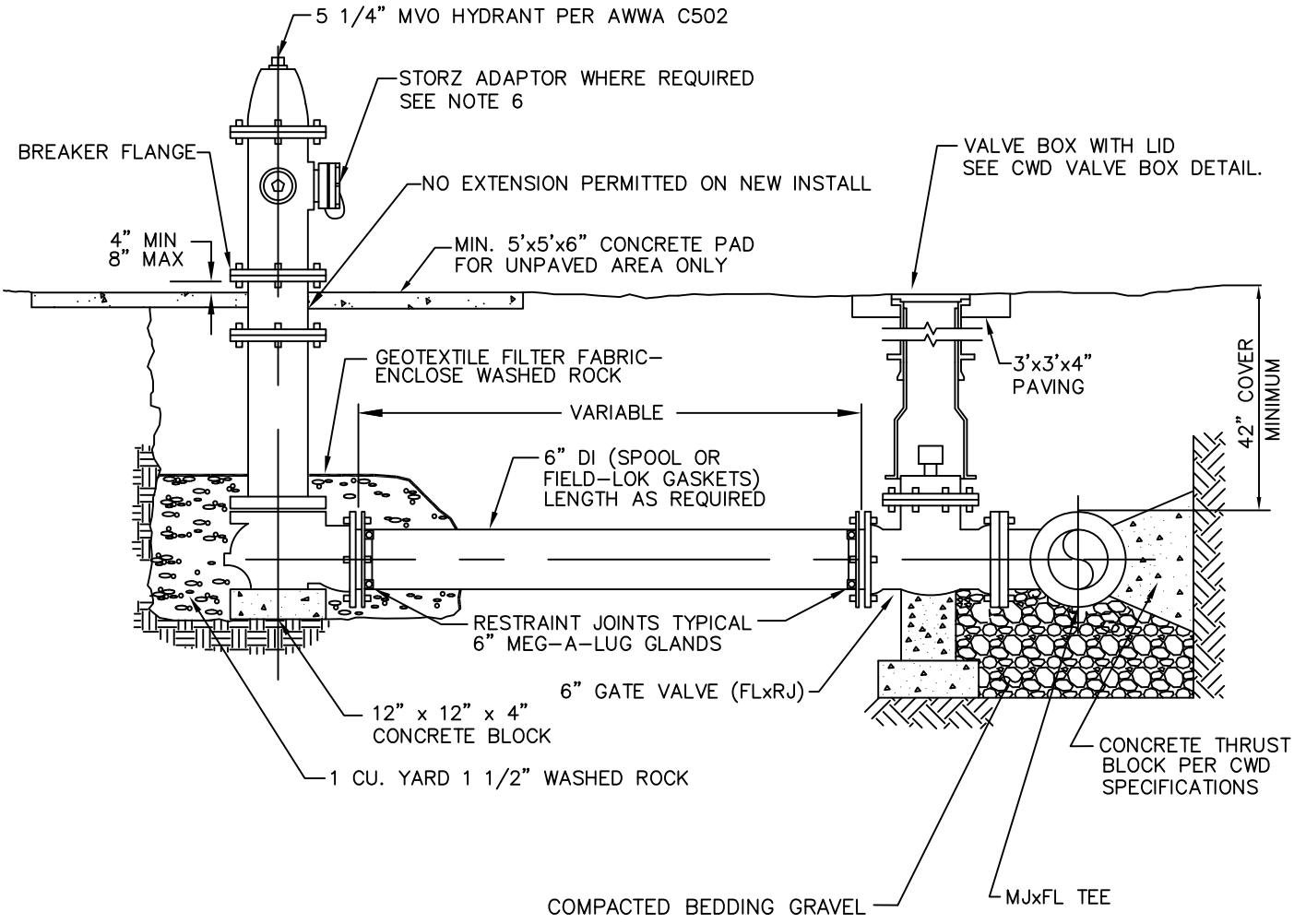
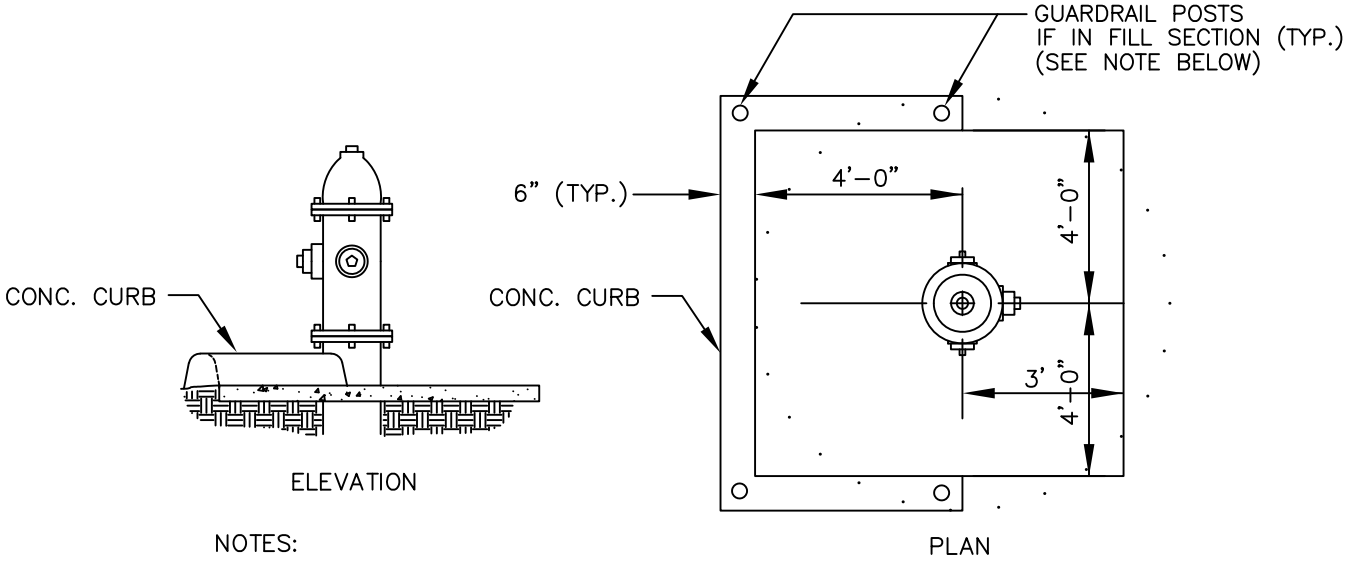


NOTES:

1. PAINT HYDRANT WITH 2 COATS OF SAFETY YELLOW PAINT–SEE APPROVED MATERIALS
2. MEG–A–LUGS OR OTHER APPROVED JOINT RESTRAINT SYSTEM.
3. FIRE HYDRANT SHALL HAVE A STANDARD 4 1/2" NST PUMPER PORT AND TWO 2 1/2" NST SIDE PORTS, ALL OPENING BY TURNING COUNTER CLOCKWISE WITH 1 1/4" OPERATING NUT.
4. WHEN HYDRANT FAILS TO DRAIN (HIGH WATER TABLE), DRAIN HOLE SHALL BE TAPPED AND PLUGGED.
5. FACE STEAMER PORT TOWARD STREET RIGHT–OF–WAY OR AS DIRECTED BY LOCAL DISTRICT FIRE MARSHALL.
6. COORDINATE WITH LOCAL JURISDICTION FIRE MARSHAL REQUIREMENTS ON STORZ SIZE. 5" STORZ ADAPTER IS REQUIRED FOR FIRE DISTRICT #43 (MAPLE VALLEY FIRE) AND FIRE DISTRICT # 37 (COVINGTON FIRE). 4" STORZ ADAPTER IS REQUIRED FOR FIRE DISTRICT # 44 (BLACK DIAMOND FIRE) AS SPECIFIED BY THE APPROPRIATE FIRE MARSHAL
7. PRIOR TO COVINGTON WATER DISTRICT APPROVAL, A SEPARATE, STAMPED FIRE DISTRICT APPROVAL IS REQUIRED.
8. THE DISTRICT SHALL HAVE ADDITIONAL HYDRANTS REQUIRED SEPARATE FROM FIRE DISTRICT APPROVAL.

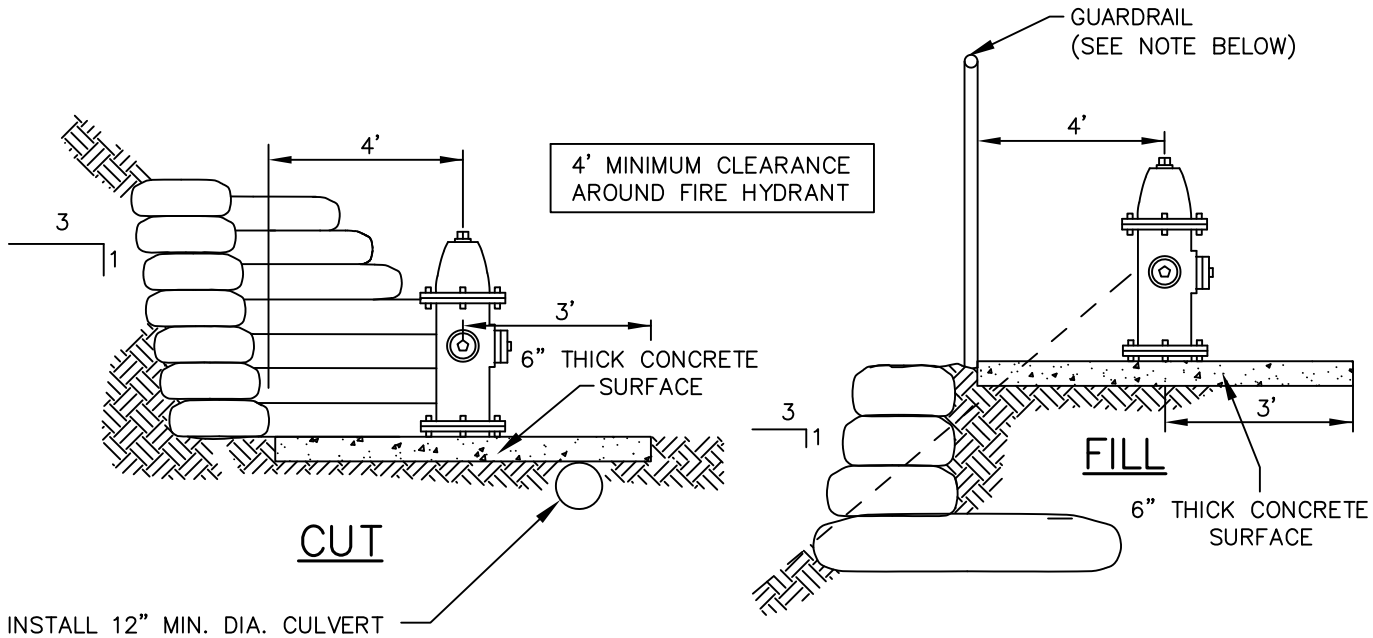
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	FIRE HYDRANT INSTALLATION	7



NOTES:

1. FIRE HYDRANTS SHALL BE PROTECTED BY 6" HIGH CONTINUOUS EXTRUDED CURBING WHERE DIRECTED BY DISTRICT ENGINEER. THE SHAPE OF THE CURBING MAY VARY TO BLEND WITH SURROUNDING LANDSCAPE.

EXTRUDED CURBING DETAIL



NOTES:

1. PEDESTRIAN GUARDRAIL IS REQUIRED AT THE EDGE OF FILL SECTIONS.
2. GUARDRAIL SHALL BE ALUMINUM OR GALVANIZED STEEL 24" HEIGHT.
3. MATERIAL, SIZE, AND LOCATION OF GUARDRAIL SHALL MEET REQUIREMENTS OF OSHA AND LOCAL JURISDICTION.
4. IF REQUIRED BY COVINGTON WATER DISTRICT, ADD BLOCK WALLS.

FIRE HYDRANT LOCATION IN CUT OR FILL SECTIONS

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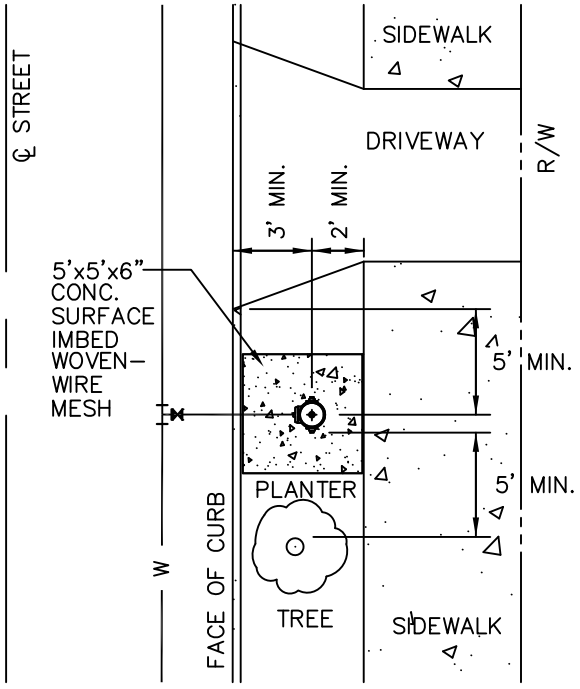
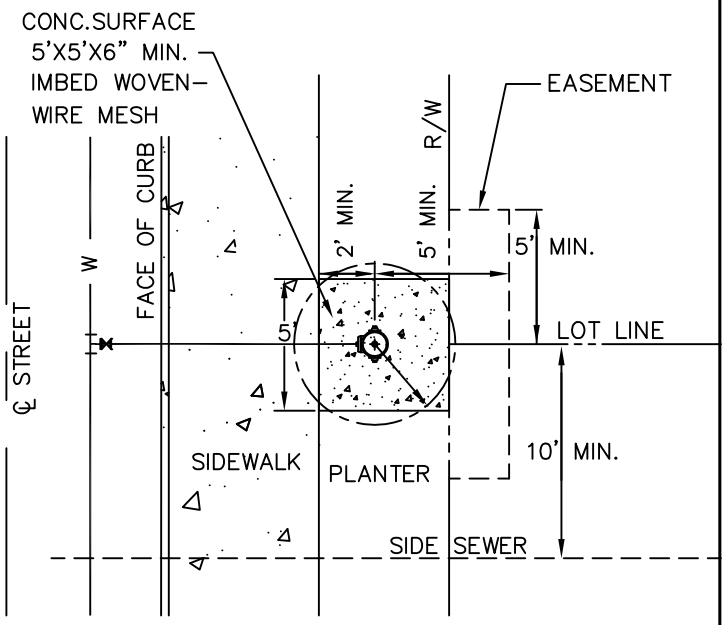
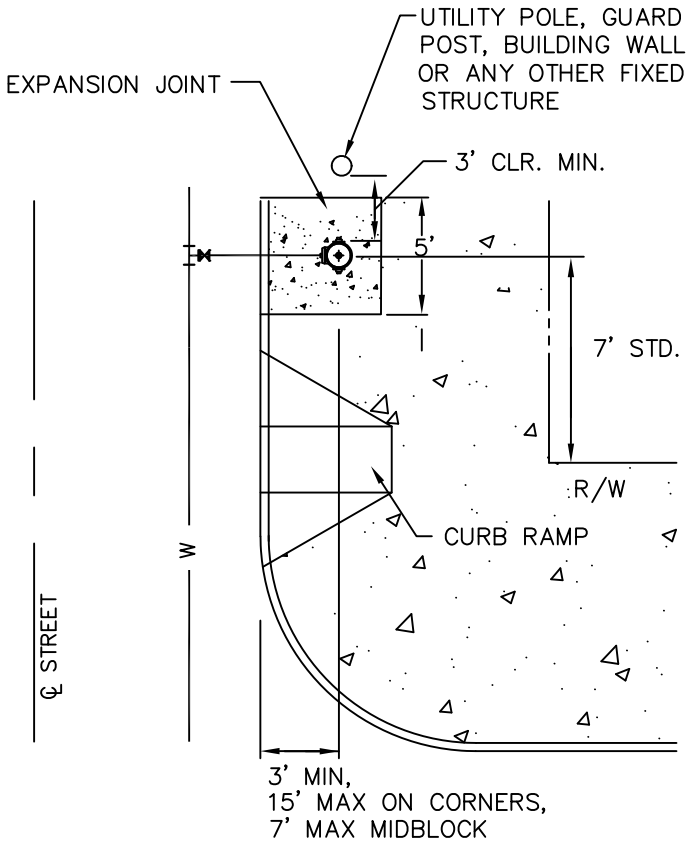


FIRE HYDRANT IN PLANTER



FIRE HYDRANT BEHIND SIDEWALK/MID BLOCK

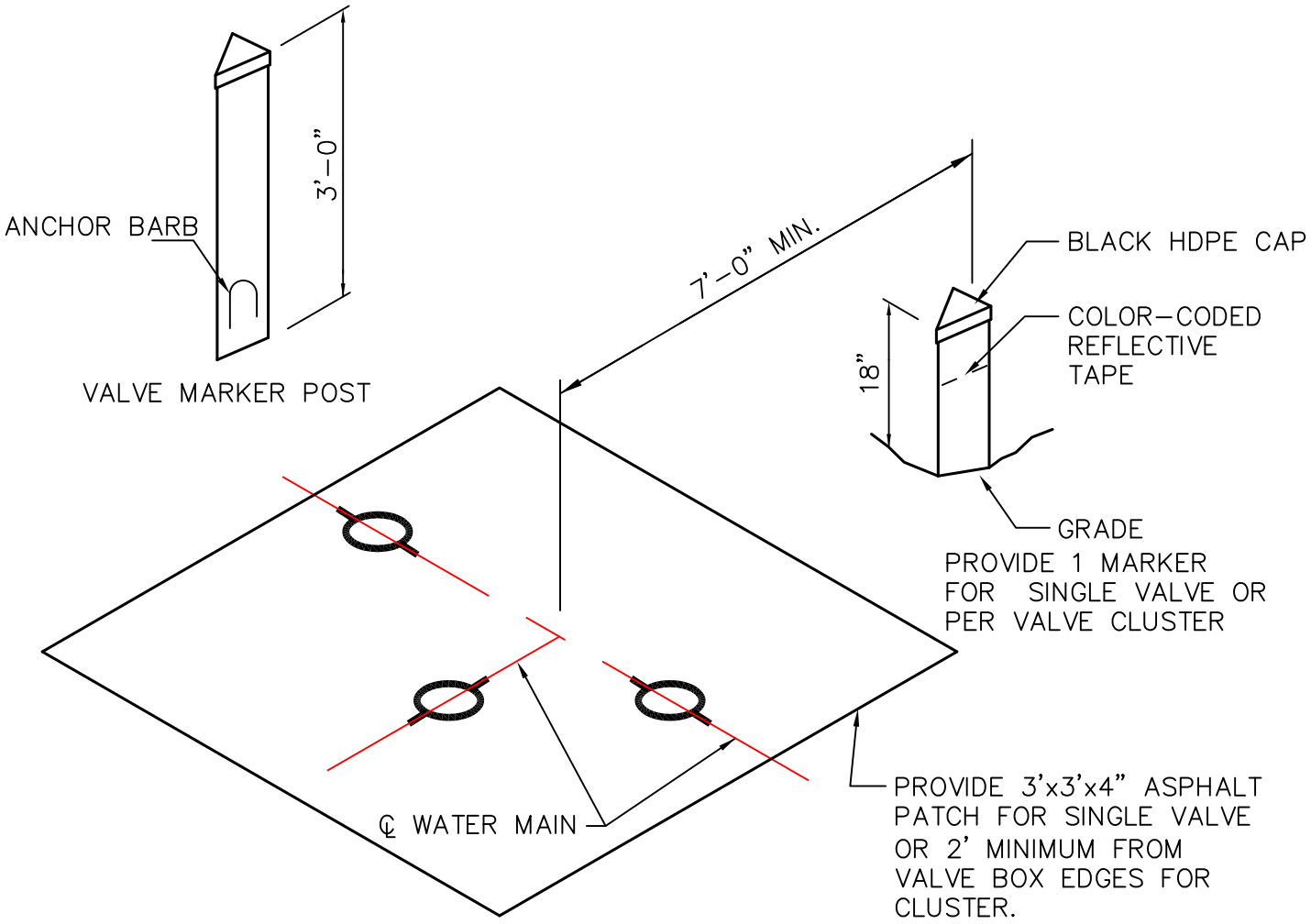


FIRE HYDRANT AT STREET CORNER

NOTES:

1. PROVIDE FLAT SURFACE AT LEAST 4 FEET AROUND FIRE HYDRANT.
2. PROVIDE WATER EASEMENT TO COVER AT LEAST 5 FEET FROM CENTER OF FIRE HYDRANT.
3. MINIMUM DISTANCE FROM THE CENTER OF HYDRANT TO FACE OF CURB SHALL BE 3 FEET.
4. MINIMUM DISTANCE FROM CENTER OF FIRE HYDRANT TO EDGE OF SIDEWALK SHALL BE 2 FEET.
5. MINIMUM DISTANCE FROM CENTER OF FIRE HYDRANT TO EDGE OF DRIVEWAY AT CURB SHALL BE 5 FEET.
6. MINIMUM DISTANCE FROM CENTER OF FIRE HYDRANT TO EDGE OF CURB RAMP SHALL BE 2 FEET.
7. LOCATION OF FIRE HYDRANT TO BE DETERMINED BY LOCAL JURISDICTION AND FIRE MARSHAL AND THESE SPECIFICATIONS.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	FIRE HYDRANT LOCATIONS	9



NOTES:

1. VALVE MARKER POST SHALL BE TRIVIEW MANUFACTURED BY RHINO MARKING AND PROTECTION SYSTEMS, ITEM #TVF36BB. MARKER SHALL INCLUDE TRIGRIP ANCHOR SYSTEM CONSISTING OF ANCHOR BARBS THAT FOLD OUT FROM POST. THE POST SHALL BE SUPPLIED WITHOUT ANY WARNING OR IDENTIFICATION STICKERS.

2. VALVE MARKER SHALL BE INSTALLED WHERE DIRECTED BY DISTRICT ENGINEER.

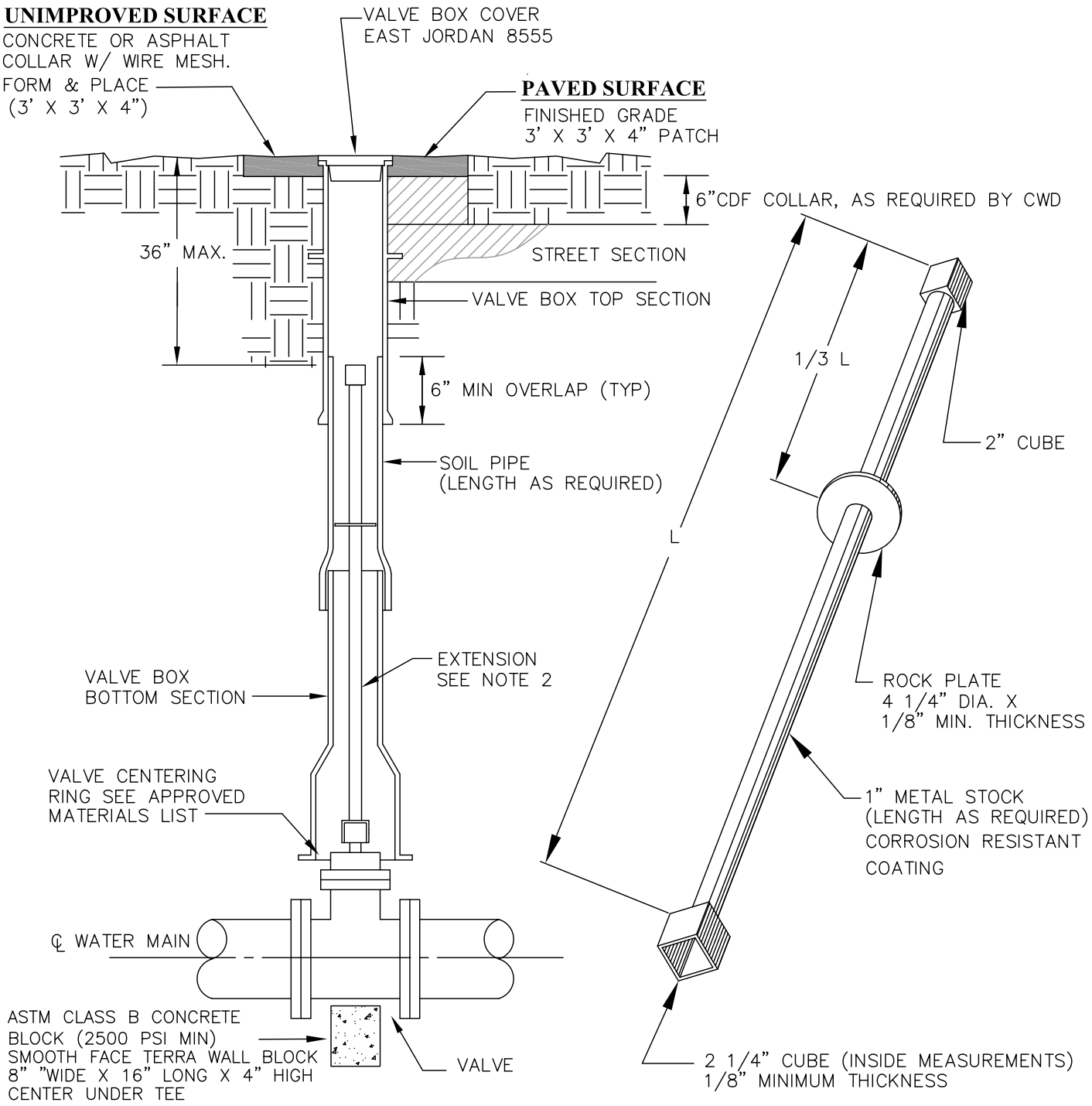
3. VALVE MARKER POST SHALL BE A MINIMUM 36" LONG AND SHALL BE INSTALLED AS DIRECTED BY DISTRICT ENGINEER. THE EXPOSED LENGTH SHALL ALWAYS BE 18", REGARDLESS OF OVERALL LENGTH.

4. THE POST SHALL BE SET TO POINT CORNER AT THE VALVE OR CENTER OF CLUSTER AND SHALL BE SITUATED IN A SAFE AND REASONABLY CONSPICUOUS LOCATION.

5. THE SOILS SUPPORTING POST SHALL BE TIGHTLY COMPACTED AROUND ANCHOR BARBS TO SECURE POST IN THE GROUND.

6. DISTRICT WILL PROVIDE STENCILING AND REFLECTIVE TAPE.

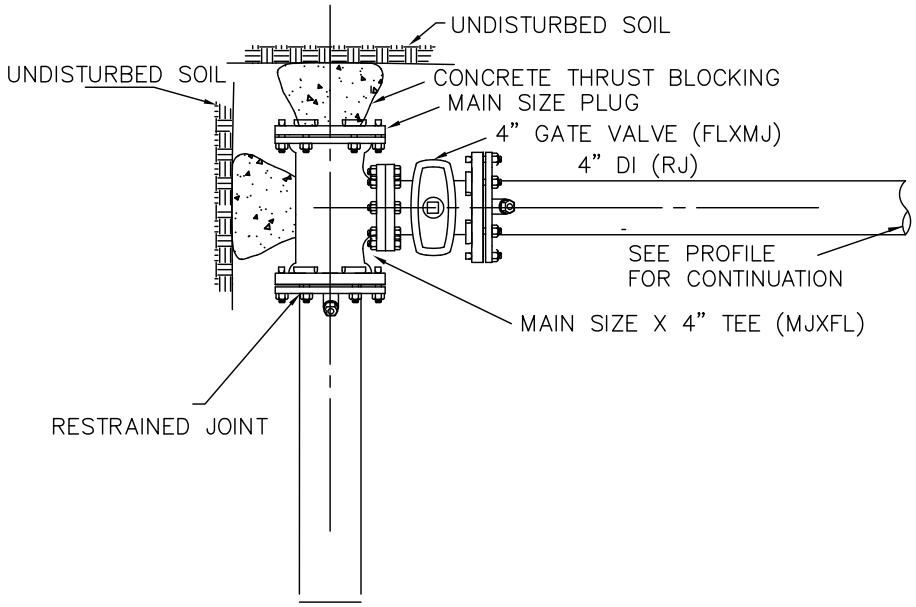
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	VALVE MARKER POST	10



NOTES:

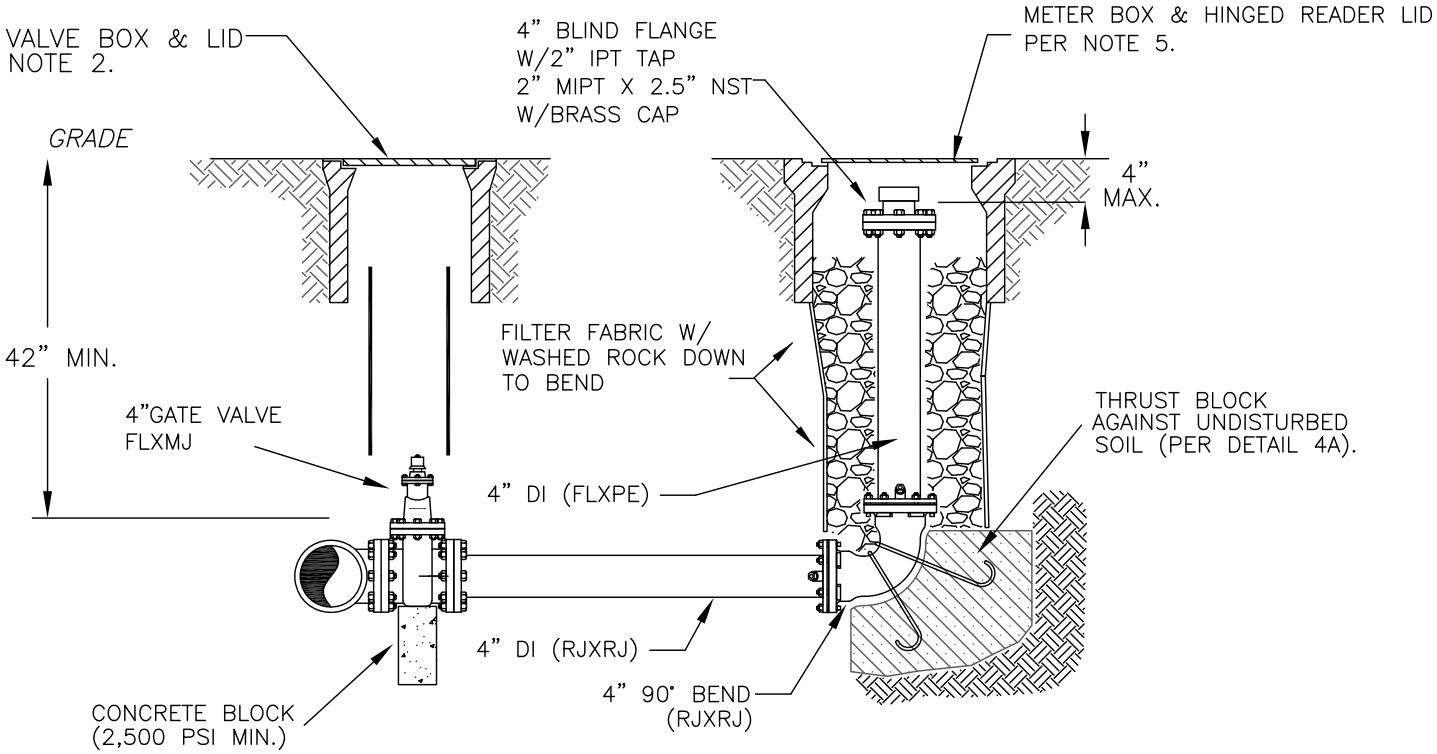
1. EXTENSION IS REQUIRED WHEN THE VALVE NUT IS MORE THAN THREE (3) FEET BELOW FINISHED GRADE (MIN. = 1').
2. ONE EXTENSION, IF REQUIRED, IS TO BE USED PER VALVE.
3. ALL EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF ENAMEL PAINT.
4. VALVE BOX AND LID – H–20 LOADING; MARKED "WATER".
5. USE ASPHALT COLLAR WHEN VALVE BOX IS INSTALLED IN GRAVEL OR TRAVEL ZONE.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	VALVE BOX AND NUT EXTENSION DETAIL	11



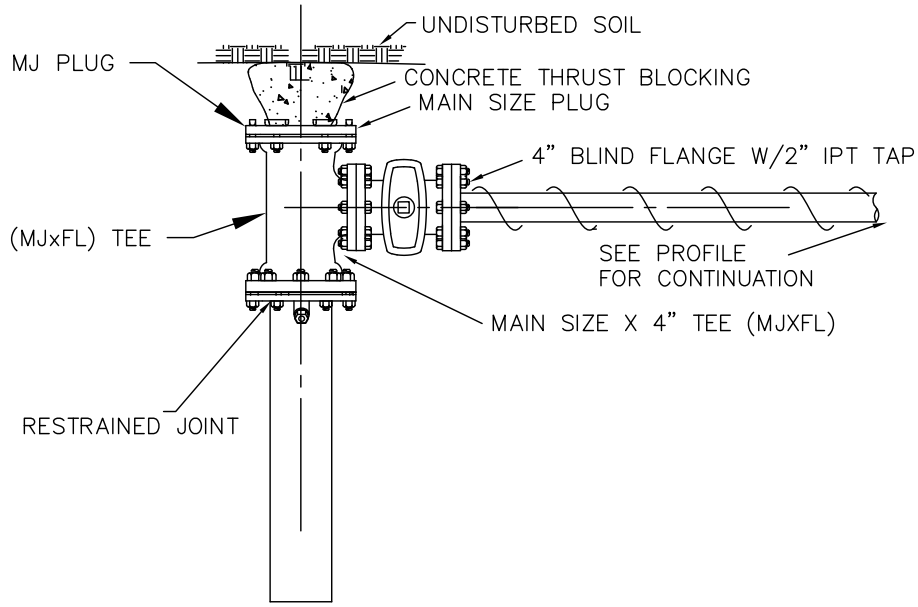
PLAN VIEW
NTS

NOTES:
1. ALL JOINTS SHALL BE RESTRAINED
2. VALVE BOX AND LID PER DETAIL 9
3. PIPE BEDDING AND TRENCH BACKFILL PER DETAIL 5
4. THRUST BLOCK SIZE MAY BE REDUCED BY HALF ON FULLY RESTRAINED DEAD END MAIN.
5. 13X24 BOX AND HINGED READER LID OR HIGH DENSITY POLYETHYLENE (HDPE) BOX AND HEAVY DUTY HDPE LID.



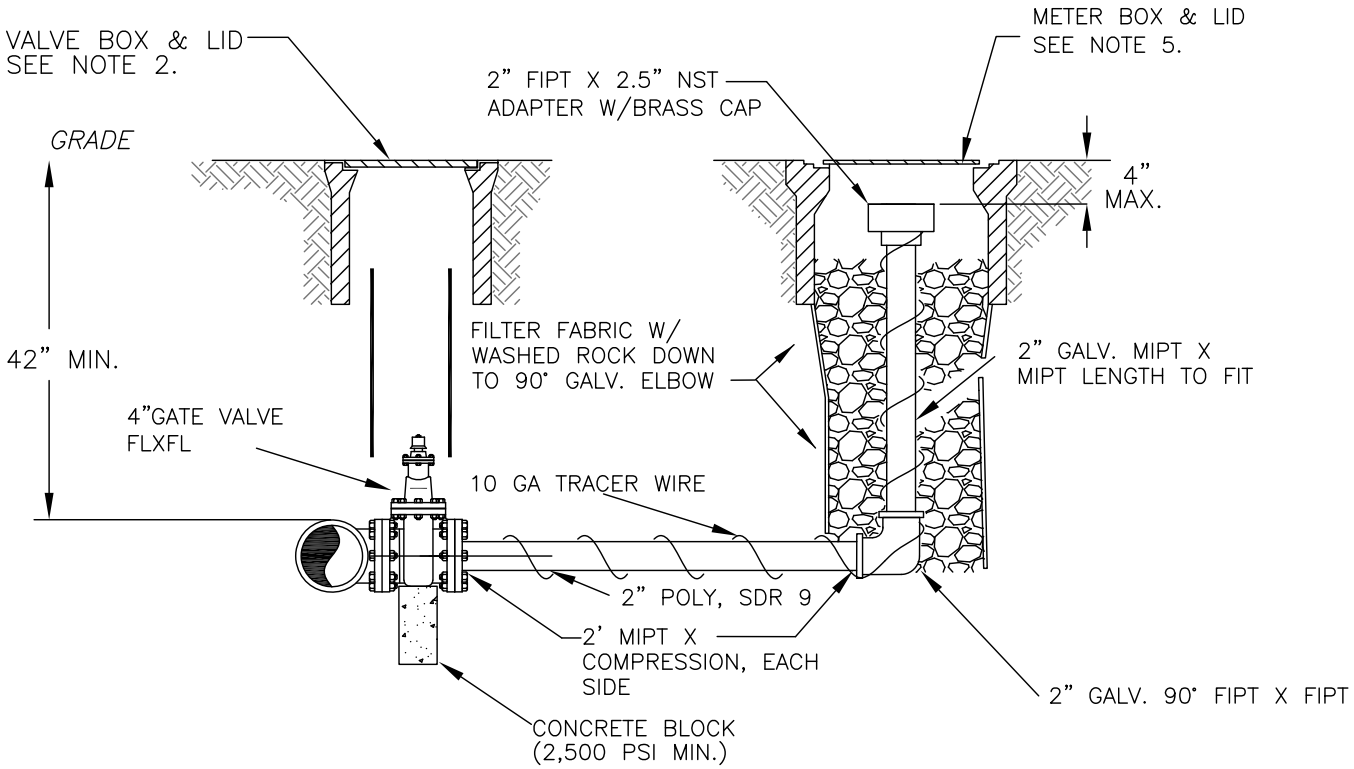
PROFILE VIEW
NTS

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	4" BLOW OFF ASSEMBLY – END OF MAIN	12



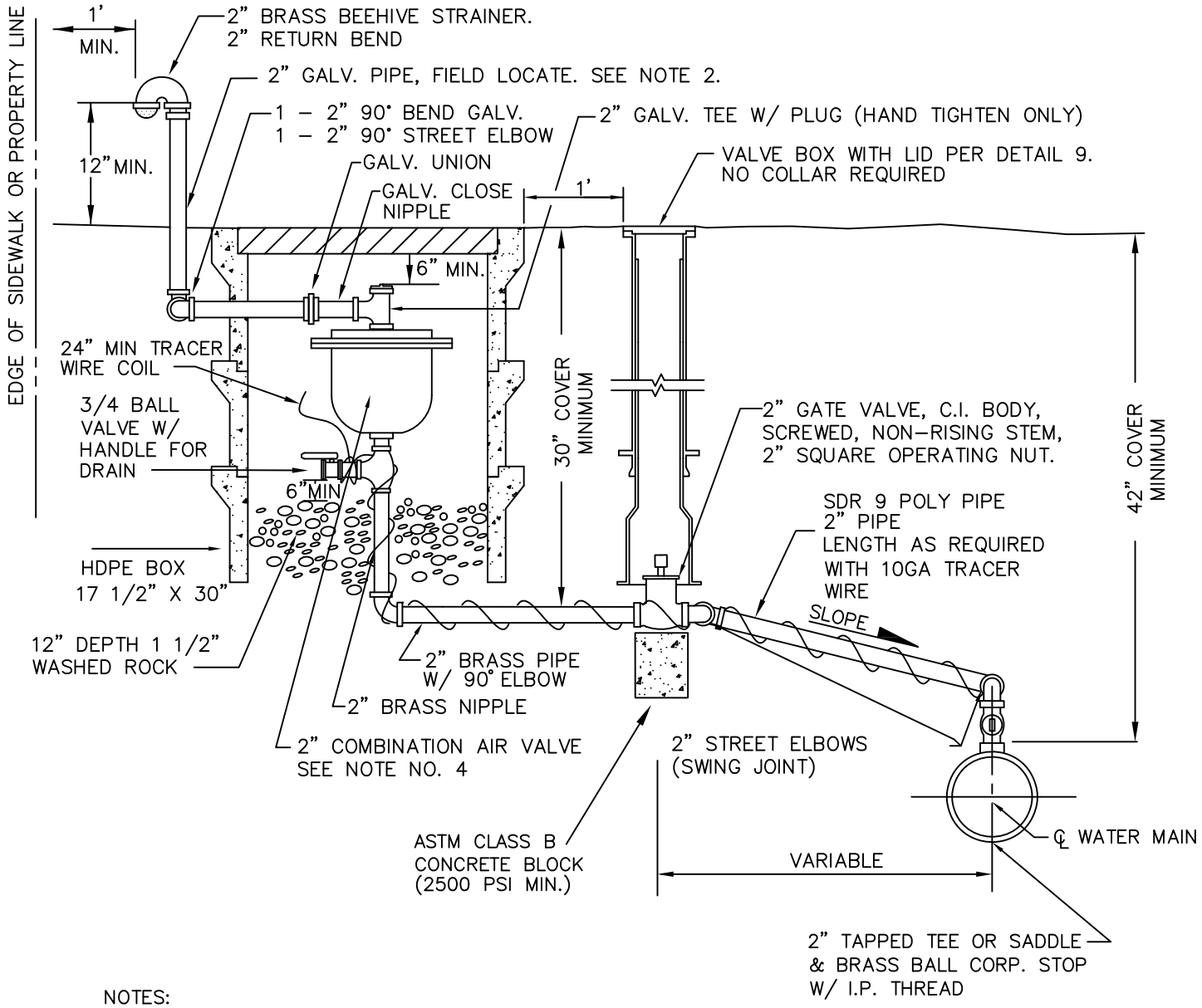
PLAN VIEW
NTS

NOTES:
1. VALVE BOX AND LID PER DETAIL 11
2. PIPE BEDDING AND TRENCH ZONE BACKFILL PER DETAIL 5
3. THRUST BLOCK SIZE MAY BE REDUCED BY HALF WHEN INSTALLED ON FULLY RESTRAINED DEAD END MAIN.
4. MAINTAIN POSITIVE UPWARD SLOPE FROM VALVE TO 90°.
5. 13X24 BOX AND HINGED READER LID OR HIGH DENSITY POLYETHLYENE (HDPE) BOX AND HEAVY DUTY HDPE LID.



PROFILE VIEW
NTS

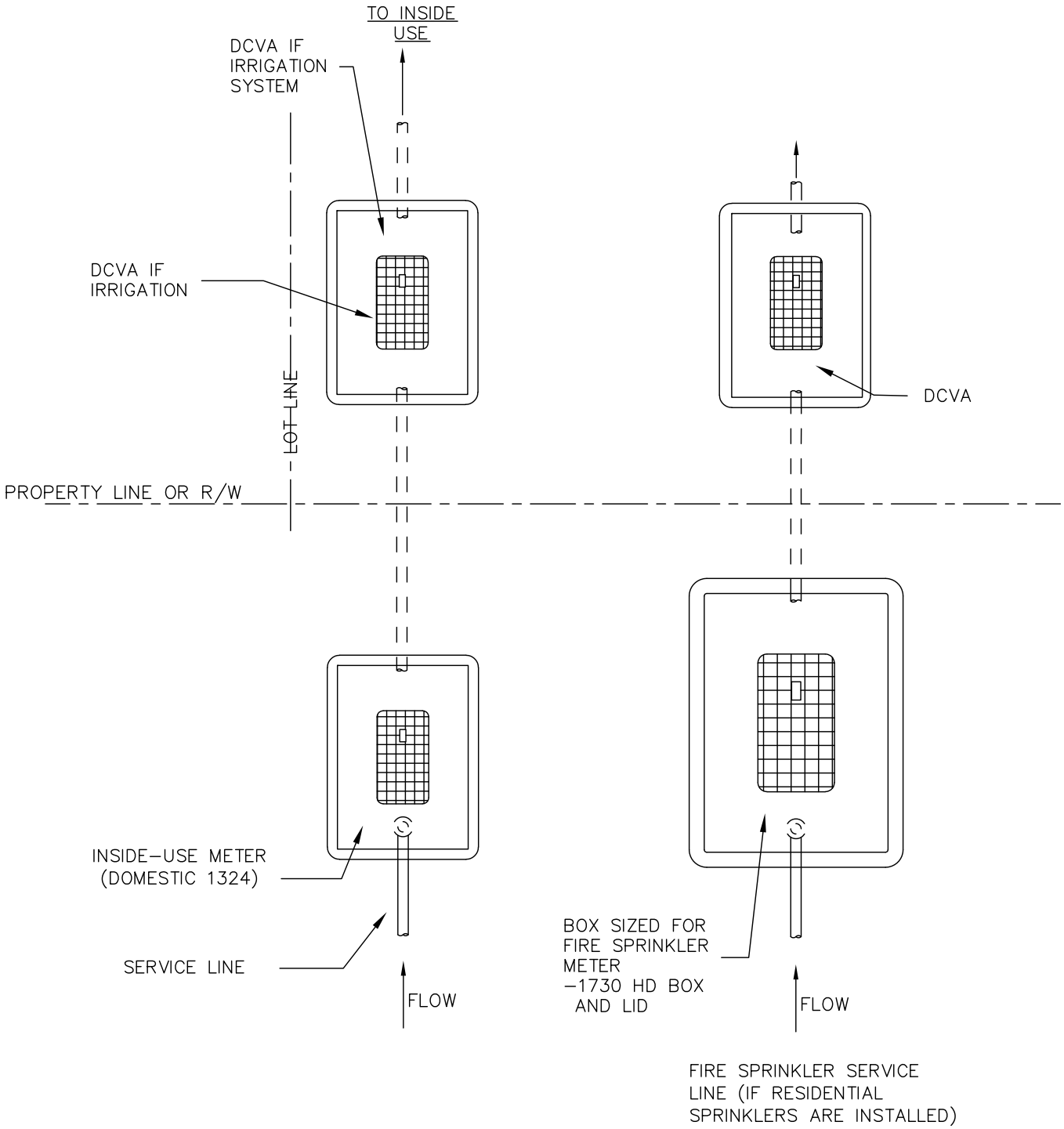
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	2" BLOW OFF ASSEMBLY AT END OF MAIN	13



NOTES:

1. ALL PIPE AND FITTINGS FROM THE MAIN TO THE COMBINATION AIR VALVE SHALL BE BRASS OR POLY PIPE WITH TRACER WIRE AS INDICATED.
2. PAINT RISER WITH 2 COATS OF SAFETY YELLOW. SEE APPROVED MATERIALS LIST.
3. COMBINATION AIR VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT IN LINE. IF HIGH POINT FALLS IN LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF PIPE LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.
4. COMBINATION AIR VALVE ASSEMBLY SHALL BE AS INDICATED ON THE APPROVED MATERIAL LIST OF THESE SPECIFICATIONS.
5. USE BOX SIZED APPROPRIATELY FOR VALVE SIZE WITH TRAFFIC COVER. SEE APPROVED MATERIAL LIST OF THESE SPECIFICATIONS. MSBCF 1730-12
6. INSTALL BOX PERPENDICULAR TO CURB OR EDGE OF PAVEMENT.
7. DESIGN ENGINEER SHALL VERIFY VALVE SIZE APPROPRIATE FOR THE APPLICATION AND SIZE THE BOX ACCORDINGLY.

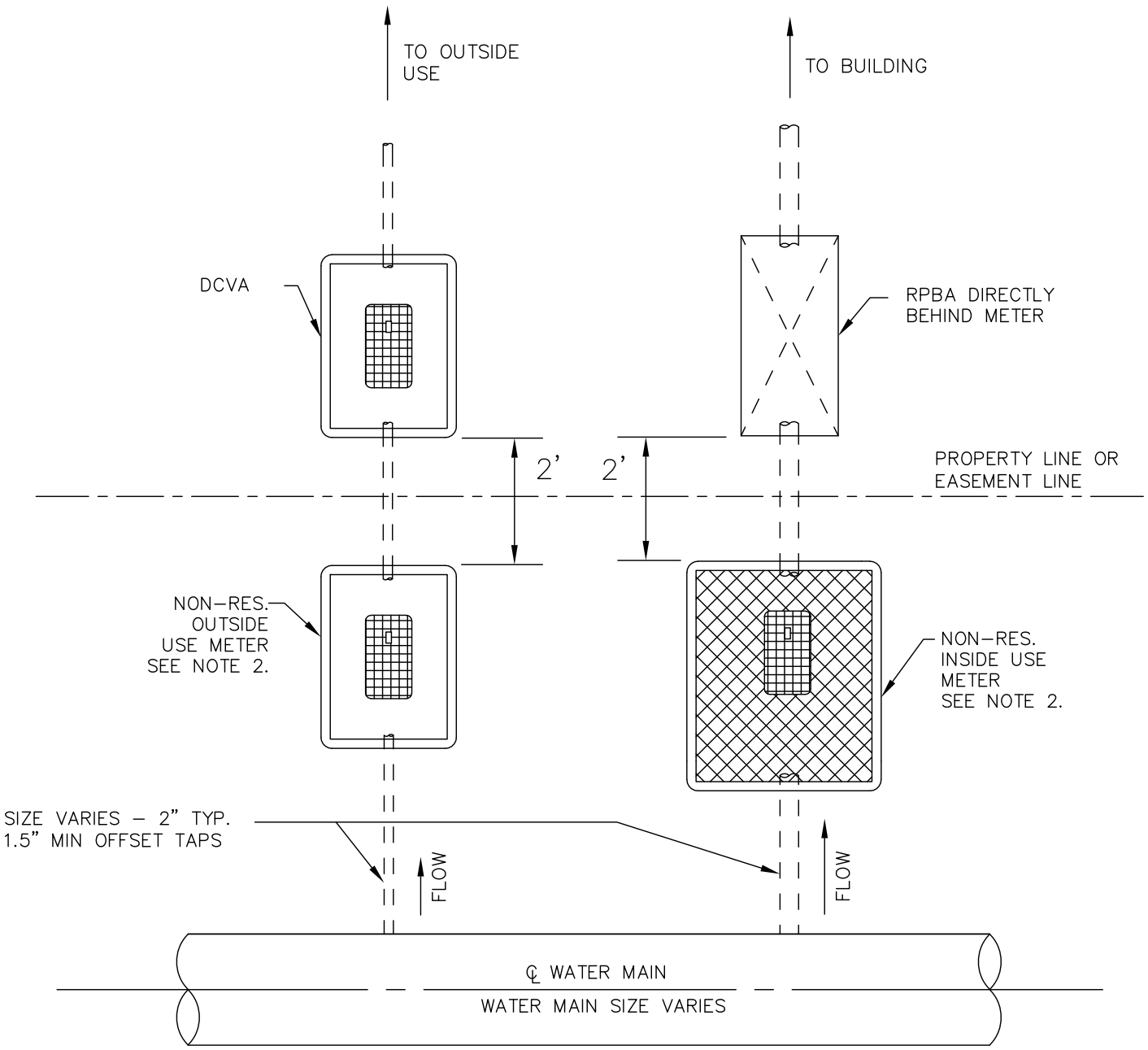
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	2" COMBINATION AIR VALVE ASSEMBLY	14



NOTES:

1. METER SERVICE SHALL BE INSTALLED AS SHOWN ON THIS DETAIL
2. A PRESSURE REDUCING VALVE (PRV) SHALL BE INSTALLED ON INDOOR USE SERVICE WHERE PRESSURE EXCEEDS 80 PSI (AND OUTSIDE USE IF REQUIRED BY UPC).
3. D.O.H. APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA) IS REQUIRED FOR IRRIGATION AND FIRE SERVICE LINE.
4. SEE CWD PREMISE ISOLATION PROGRAM MANUAL

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington Water District	RESIDENTIAL-METER INSTALLATION LAYOUT	15



NOTES:

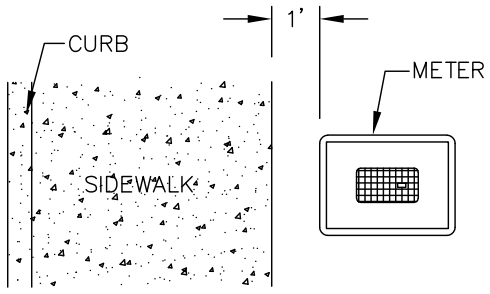
1. SEPARATED SERVICE LINES ARE REQUIRED FOR EACH NON-RESIDENTIAL METER.

2. SEE CWD METER DETAILS FOR CONFIGURATIONS OF METERS AND SERVICE LINES.
   A. IRRIGATION/OUTSIDE-USE METER SIZE 1" & SMALLER: CWD STD. METER DETAIL.
   B. IRRIGATION/OUTSIDE-USE METER SIZE 1½" & 2": CWD NON-RES. METER DETAIL.
   C. NON-RES. INSIDE-USE METER SIZE 2": CWD NON-RES. METER DETAIL.

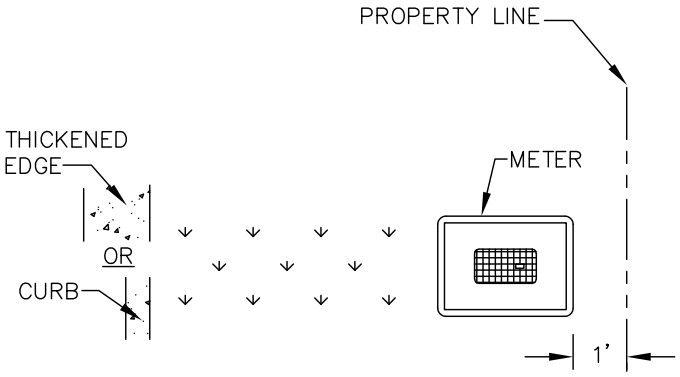
3. INSTALLATIONS OF NON-RESIDENTIAL OUTSIDE USE AND IRRIGATION METERS SHALL BE APPROVED BY DISTRICT ENGINEER.

4. 1.5" CHECK WITH DISTRICT ENGINEER ONLY

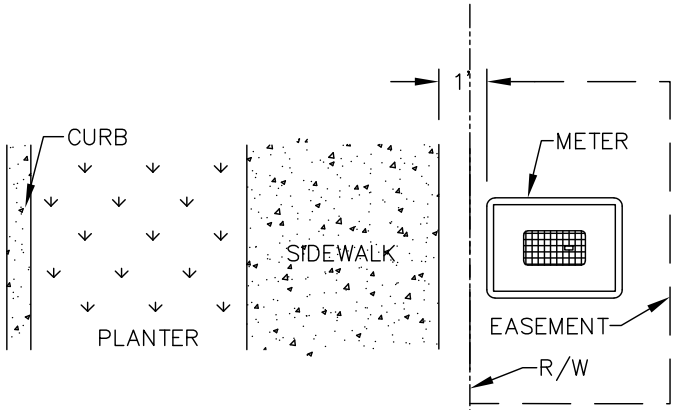
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington WATER DISTRICT	NON-RESIDENTIAL METER INSTALLATION LAYOUT	16



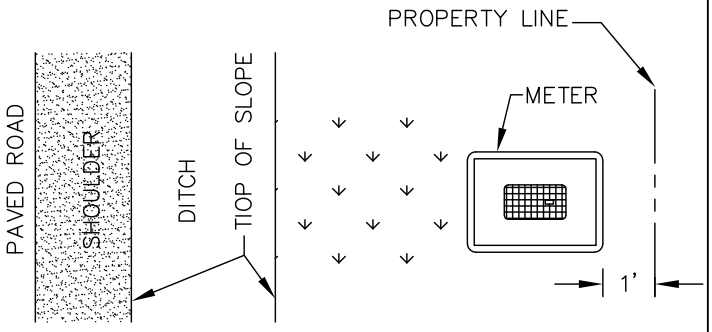
CURB AND SIDEWALK



CURB OR THICKENED EDGE



PLANTER STRIP



DITCH

AN EASEMENT IS REQUIRED TO PLACE WATER BOX OUTSIDE RIGHT-OF WAY

NOTES:

1. METER BOX SHALL BE INSTALLED PERPENDICULAR TO THE SIDEWALK, EASEMENT OR STREET; MATCHING GRADE AND SLOPE OF THE SIDEWALK, ASPHALT, SHOULDER, OR CURB TO AVOID STORM WATER GETTING INTO THE METER BOX.
2. SIDEWALKS BEHIND PLANTER STRIP – 1' BEHIND EDGE OF SIDEWALK UNLESS APPROVED BY CWD.
3. CURB, ROLLED CURB OR THICKENED EDGE WITH NO SIDEWALK – 1' FROM PROPERTY LINE.
4. SHOULDERS – 1' FROM PROPERTY LINE.
5. SPECIAL CIRCUMSTANCES – AS DIRECTED BY DISTRICT ENGINEER.
6. METER BOX TO BE ADJACENT TO LOT LINE OR APPROVED BY CWD FOR LARGE LOTS
7. SERVICE LINE SHALL BE PERPENDICULAR TO THE WATER MAIN STRAIGHT/LEVEL AS POSSIBLE AND LOCATED TO AVOID CONFLICTS WITH OTHER UTILITIES.
8. METER BOX SHALL NOT BE LOCATED IN DRIVEWAY UNLESS APRROVED BY DISTRICT ENGINEER AND LOCAL. JURISDICTION. USE TRAFFIC RATED BOX AND LID IN VEHICULAR TRAVEL AREA OR WITHIN 1' FROM DRIVEWAY WITHOUT SIDEWALK.
9. WHEN SERVICE LINE CROSSES A NEW OR EXISTING SIDEWALK A 4" PVC CASING SHALL BE REQUIRED.
10. FOR AREAS OF CUT OR FILL, BLOCK WALL SHALL BE REQUIRED.

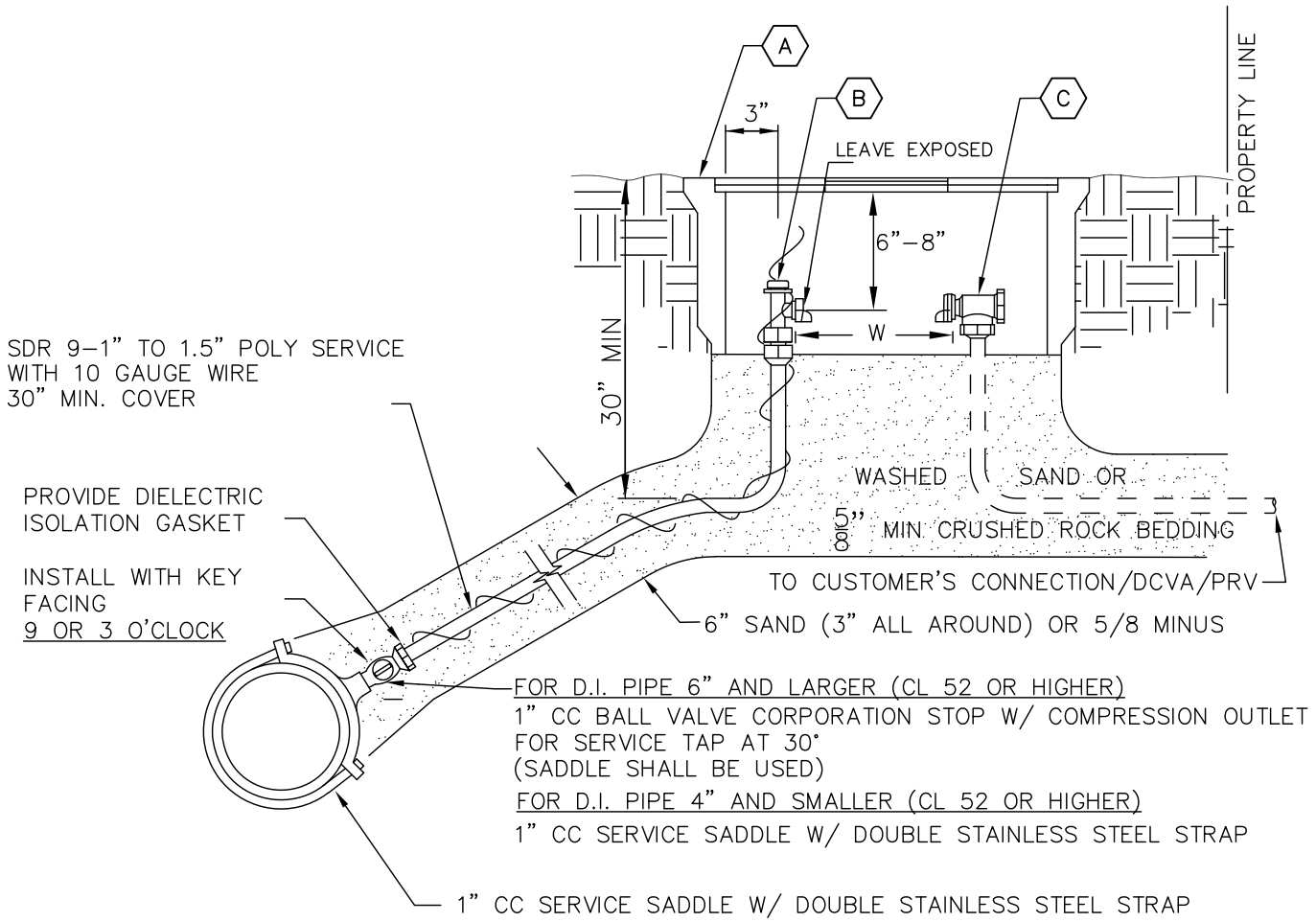
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	METER BOX LOCATIONS	17

(A) METER BOX (2) WITH LID:
1. BOX AND HINGED READER LID OR
2. HIGH DENSITY POLYETHYLENE (HDPE) BOX AND HEAVY DUTY HDPE LID, SIZE 1324.

(B) LOCKING ANGLE BALL METER VALVE STOP, 1" COMPRESSION BY 5/8".

(C) ANGLE CHECK ON METER OUTLET (2) (SUPPLIED BY CWD)

REFERENCE APROVED MATERIALS LIST FOR APPRORIATE BOX LID AND SIZE FOR APPLICATION



NOTES:

1. FOR SINGLE SERVICE, CONNECT SERVICE DIRECTLY TO LOCKING ANGLE BALL VALVE STOP WITH 1" COMPRESSION INLET.
2. DEVELOPER SHALL MAKE APPLICATION FOR METER WITH CWD. WATER METER TO BE PURCHASED FROM CWD.
3. METER BOX SHALL BE INSTALLED FLUSH WITH FINAL GRADE (TOP OF SIDEWALK, LANDSCAPE, ASPHALT, SHOULDER, OR CURB) AND MUST BE SIZED TO ALLOW FOR MIN. CLEARANCE REQUIREMENTS.
4. 1" SERVICE LINE SHALL NOT EXCEED 50' UNLESS APPROVED BY DISTRICT ENGINEER.
5. PRESSURES OVER 80 PSI REQUIRE PRV DOWNSTREAM OF METER.
6. ADAPTORS FOR METER SETTER SHALL BE PROVIDED BY OWNER PRIOR TO METER INSTALLATION.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	5/8"x3/4", 3/4", & 1" STANDARD METERS EXISTING SERVICE REPLACEMENT	18

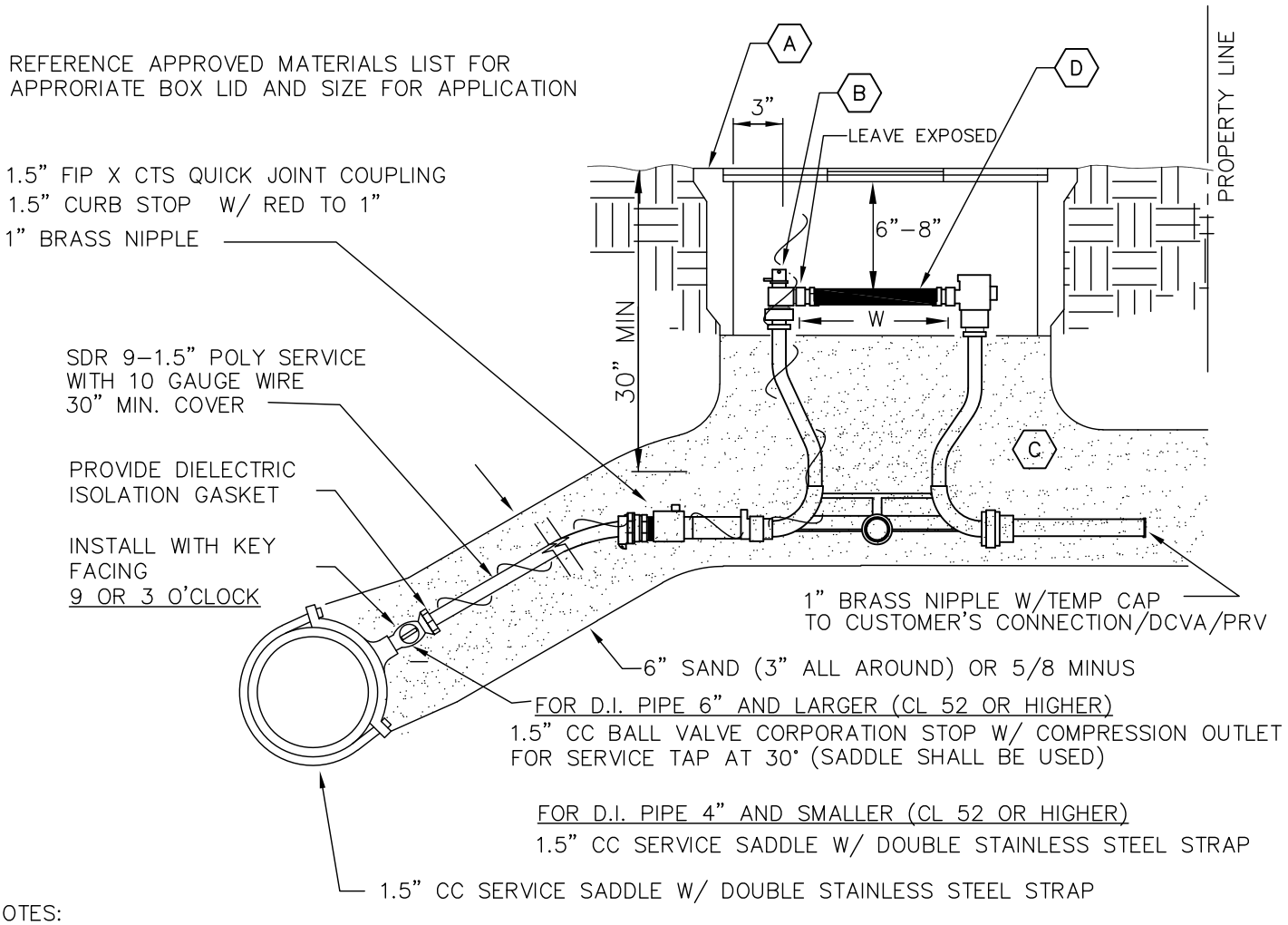
(A) METER BOX (2) WITH LID:
1. BOX AND HINGED READER LID OR
2. HIGH DENSITY POLYETHYLENE (HDPE) BOX AND HEAVY DUTY HDPE LID, SIZE 1324.

(B) 1" METER SETTER W/LOCKING ANGLE BALL METER VALVE STOP ANGLE CHECK ON METER, OUTLET W/ADAPTERS FOR 5/8"x3/4", 3/4", 1" METERS

(C) WASHED SAND OR 5/8" MIN CRUSHED ROCK BEDDING

(D) PVC SPACER PIPE W/HOLE IN SPACER

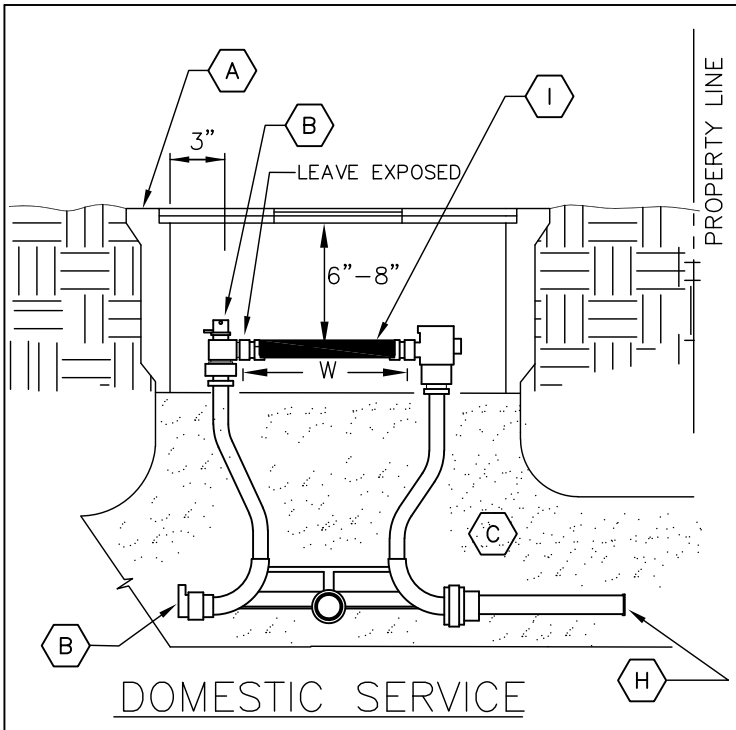
REFERENCE APPROVED MATERIALS LIST FOR APPRORIATE BOX LID AND SIZE FOR APPLICATION



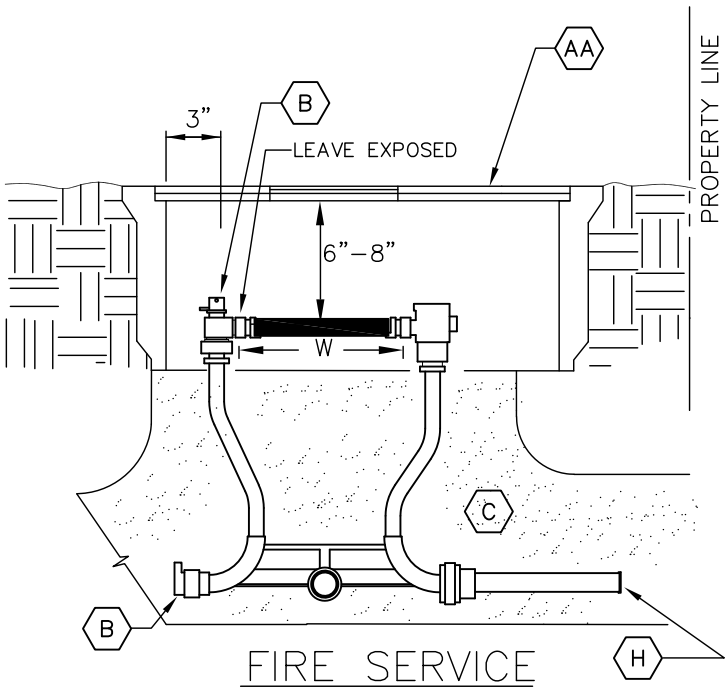
NOTES:

1. FOR SINGLE SERVICE, CONNECT SERVICE DIRECTLY TO LOCKING ANGLE BALL VALVE STOP WITH 1" COMPRESSION INLET.
2. DEVELOPER SHALL MAKE APPLICATION FOR METER WITH CWD. WATER METER TO BE PURCHASED FROM CWD.
3. METER BOX SHALL BE INSTALLED FLUSH WITH FINAL GRADE (TOP OF SIDEWALK, LANDSCAPE, ASPHALT, LANDSCAPING, SHOULDER, OR CURB) AND MUST BE SIZED TO ALLOW FOR MIN. CLEARANCE REQUIREMENTS.
4. NO SERVICE LINE SHALL NOT EXCEED 50' UNLESS APPROVED BY DISTRICT ENGINEER.
5. PRESSURES OVER 80 PSI REQUIRES PRV DOWNSTREAM OF METER
6. ADAPTORS AND GASKETS FOR METER SETTER SHALL BE PROVIDED BY OWNER BEFORE METER INSTALLATION.
7. PRIOR TO TWO YEAR MAINTENANCE BOND RELEASE, OWNER SHALL RESTORE METER BOX COMPONENTS WHEN DIRECTED BY THE DISTRICT.

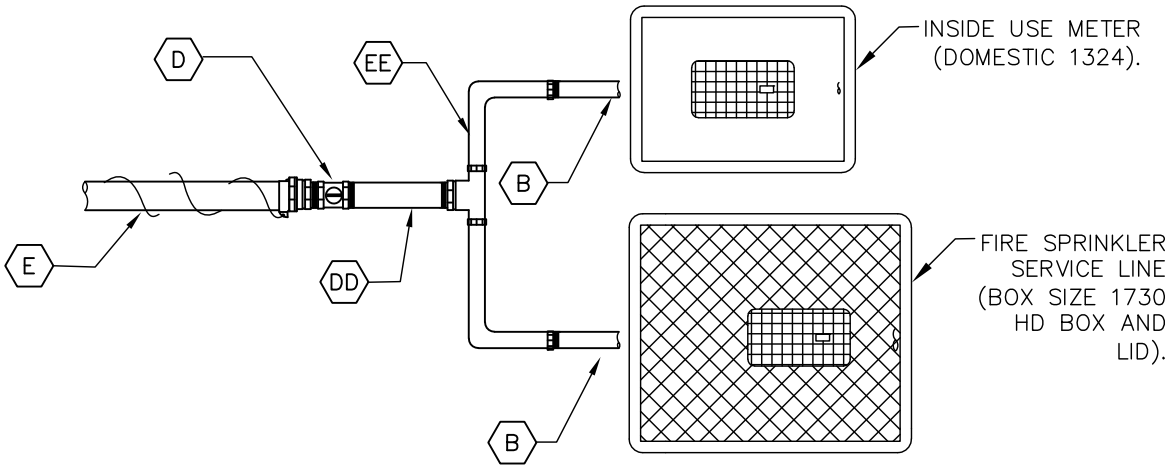
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	5/8"x3/4", 3/4", & 1" STANDARD METERS	19

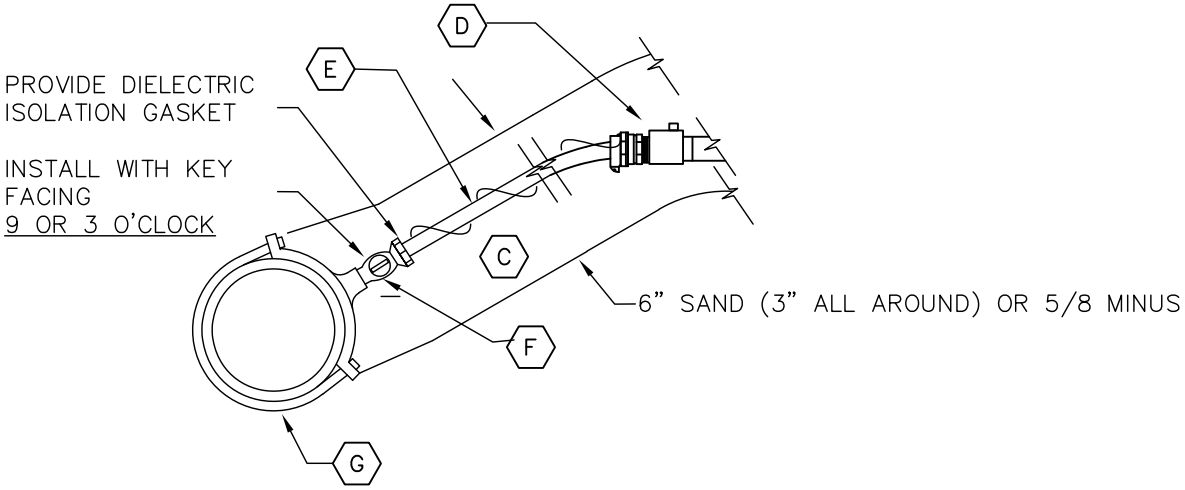


DOMESTIC SERVICE



FIRE SERVICE





LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	5/8"x3/4", 3/4", & 1" STANDARD DOUBLE METER	20A

(A) METER BOX (2) WITH LID:(DOMESTIC SERVICE)
1. BOX AND HINGED READER LID OR
2. HIGH DENSITY POLYETHYLENE (HDPE) BOX AND HEAVY DUTY HDPE LID, SIZE 1324.

(AA) METER BOX (2) WITH LID:(FIRE SPRINKLER SERVICE)
1. BOX AND HINGED READER LID OR
2. HIGH DENSITY POLYETHYLENE (HDPE) BOX AND HEAVY DUTY HDPE LID, SIZE 1730.

(B) 1" METER SETTER W/LOCKING ANGLE BALL METER VALVE STOP ANGLE CHECK ON METER, OUTLET W/ADAPTERS FOR 5/8"x3/4", 3/4", 1" METERS

(C) WASHED SAND OR $\frac{5}{8}$" MIN CRUSHED ROCK BEDDING

(D) 1.5" FIP X CTS QUICK JOINT COUPLING
1.5" CURB STOP W/ RED TO 1"
1" BRASS NIPPLE

(DD) 1.5" BRASS NIPPLE

(EE) U-BRANCH:
1-$\frac{1}{2}$" MIPT INLET X 1" MIPT OUTLET X 22" WIDE

(E) SDR 9-1.5" POLY SERVICE WITH 10 GAUGE WIRE 30" MIN. COVER

(F) FOR D.I. PIPE 6" AND LARGER (CL 52 OR HIGHER)
1.5" CC BALL VALVE CORPORATION STOP W/ COMPRESSION OUTLET FOR SERVICE TAP AT 30° (SADDLE SHALL BE USED)

FOR D.I. PIPE 4" AND SMALLER (CL 52 OR HIGHER)
1.5" CC SERVICE SADDLE W/ DOUBLE STAINLESS STEEL STRAP

(G) 1.5" CC SERVICE SADDLE W/ DOUBLE STAINLESS STEEL STRAP

(H) 1" BRASS NIPPLE W/TEMP PVC CAP TO CUSTOMER'S CONNECTION/DCVA/PRV

(I) PVC SPACER PIPE W/HOLE IN SPACER

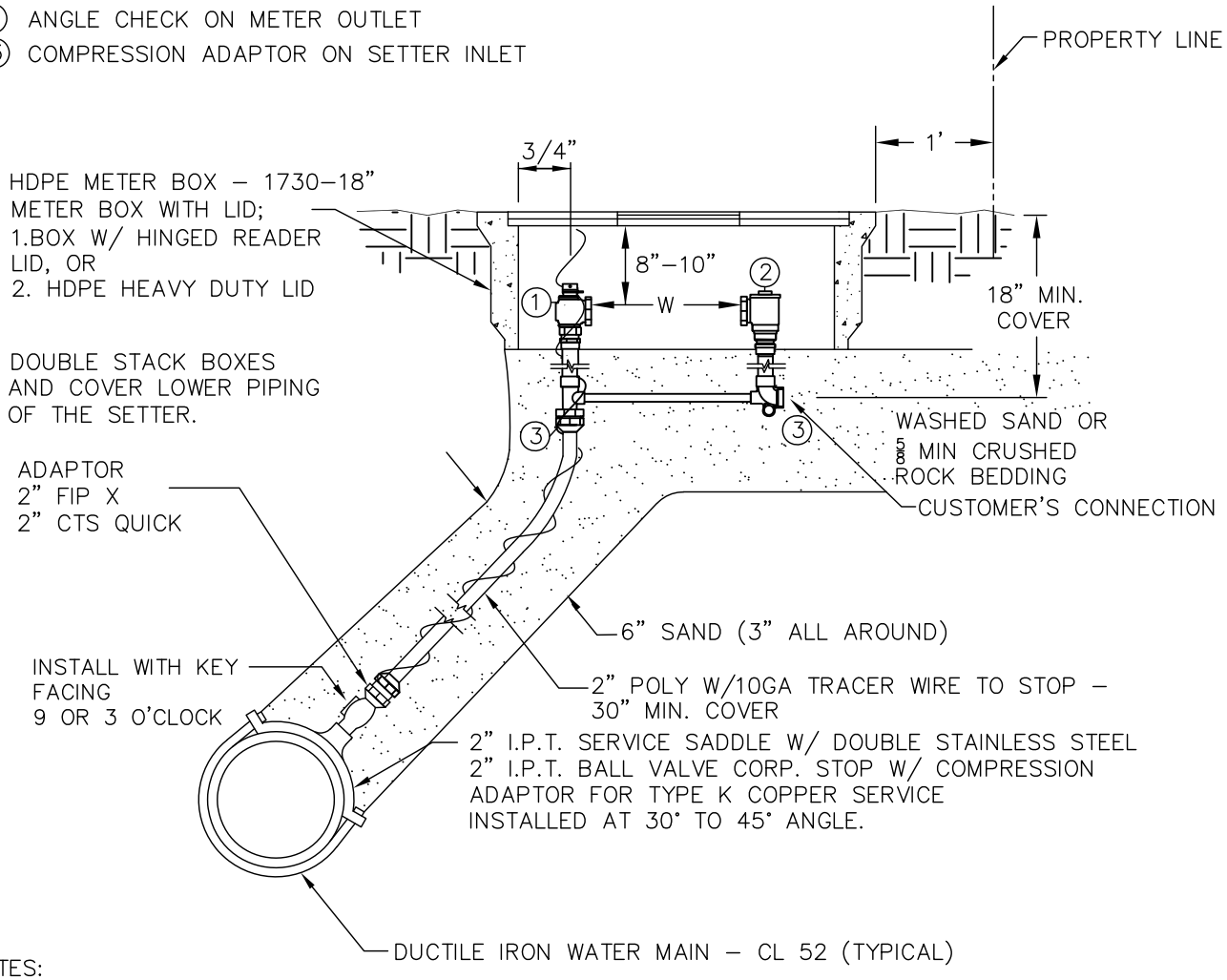
NOTES:

1. FOR SINGLE SERVICE, CONNECT SERVICE DIRECTLY TO LOCKING ANGLE BALL VALVE STOP WITH 1" COMPRESSION INLET.
2. DEVELOPER SHALL MAKE APPLICATION FOR METER WITH CWD. WATER METER TO BE PURCHASED FROM CWD.
3. METER BOX SHALL BE INSTALLED FLUSH WITH FINAL GRADE (TOP OF SIDEWALK, LANDSCAPE, ASPHALT, LANDSCAPING, SHOULDER, OR CURB) AND MUST BE SIZED TO ALLOW FOR MIN. CLEARANCE REQUIREMENTS.
4. NO SERVICE LINE SHALL NOT EXCEED 50' UNLESS APPROVED BY DISTRICT ENGINEER.
5. PRESSURES OVER 80 PSI REQUIRES PRV DOWNSTREAM OF METER
6. REFERENCE APPROVED MATERIALS LIST FOR APPROPRIATE BOX LID AND SIZE FOR APPLICATION
7. ADAPTORS AND GASKETS FOR METER SETTER SHALL BE PROVIDED BY OWNER BEFORE METER INSTALLATION
8. PRIOR TO TWO YEAR MAINTENANCE BOND RELEASE, OWNER SHALL RESTORE METER BOX COMPONENTS WHEN DIRECTED BY THE DISTRICT.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington Water District	5/8"x3/4", 3/4", & 1" STANDARD DOUBLE METER	20B

12" COPPER SETTER EQUIPPED AS FOLLOWS:

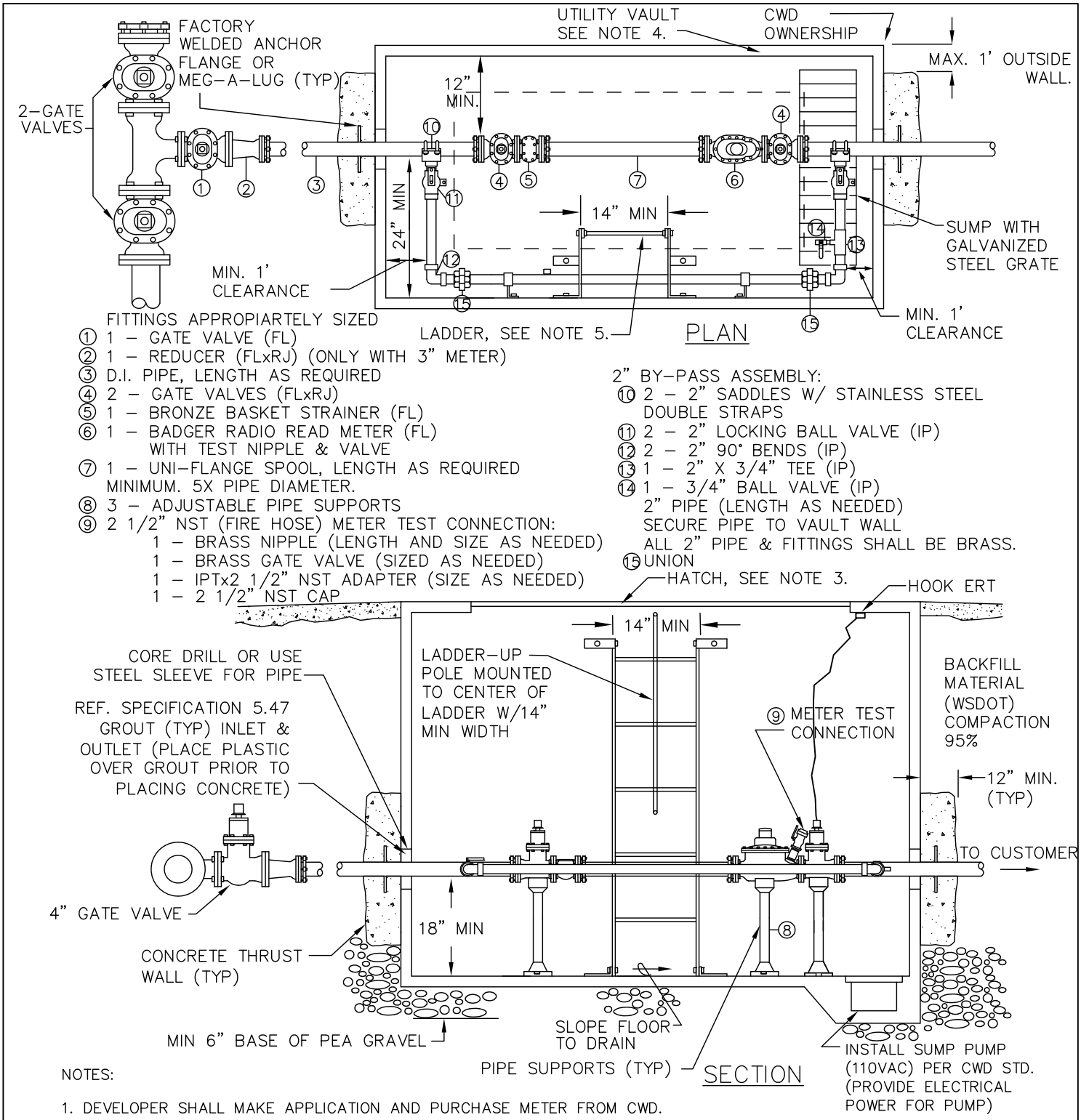
① PADLOCK WINGS ON BALL VALVE
② ANGLE CHECK ON METER OUTLET
③ COMPRESSION ADAPTOR ON SETTER INLET



NOTES:

1. DEVELOPER SHALL MAKE APPLICATION AND PURCHASE METER FROM CWD.
2. COPPER SETTER SHALL BE SET LEVEL AND CENTERED IN THE METER BOX.
3. METER BOX SHALL BE INSTALLED FLUSH WI/ FINAL GRADE AND MUST BE SIZED TO ALLOW FOR MINIMUM CLEARANCE REQUIREMENTS.
4. INSTALL 2" IDLER IN METER SETTER TO SECURE ALIGNMENT DURING CONSTRUCTION.
5. POSITIVE DISPLACEMENT METERS ARE TO BE INSTALLED UNLESS OTHERWISE DIRECTED BY DISTRICT ENGINEER.
6. ALL BOXES SHOULD BE HDPE 1730–1B AND HDPE HEAVY DUTY LID W/HINGED READER
7. SEE BACKFLOW ASSEMBLY WITH RPBA
8. PRESSURES OVER 80 PSI REQUIRES PRV DOWNSTREAM OF METER
9. ADAPTORS AND GASKETS FOR METER SETTER SHALL BE PROVIDED BY OWNER BEFORE METER INSTALLATION.
10. PRIOR TO TWO YEAR MAINTENANCE BOND RELEASE, OWNER SHALL RESTORE METER BOX COMPONENTS WHEN DIRECTED BY THE DISTRICT.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	2" AND SMALLER NON–RESIDENTIAL METERS	21



FITTINGS APPROPIARTELY SIZED

① 1 – GATE VALVE (FL)
② 1 – REDUCER (FLxRJ) (ONLY WITH 3" METER)
③ D.I. PIPE, LENGTH AS REQUIRED
④ 2 – GATE VALVES (FLxRJ)
⑤ 1 – BRONZE BASKET STRAINER (FL)
⑥ 1 – BADGER RADIO READ METER (FL) WITH TEST NIPPLE & VALVE
⑦ 1 – UNI-FLANGE SPOOL, LENGTH AS REQUIRED MINIMUM. 5X PIPE DIAMETER.
⑧ 3 – ADJUSTABLE PIPE SUPPORTS
⑨ 2 1/2" NST (FIRE HOSE) METER TEST CONNECTION:
1 – BRASS NIPPLE (LENGTH AND SIZE AS NEEDED)
1 – BRASS GATE VALVE (SIZED AS NEEDED)
1 – IPTx2 1/2" NST ADAPTER (SIZE AS NEEDED)
1 – 2 1/2" NST CAP

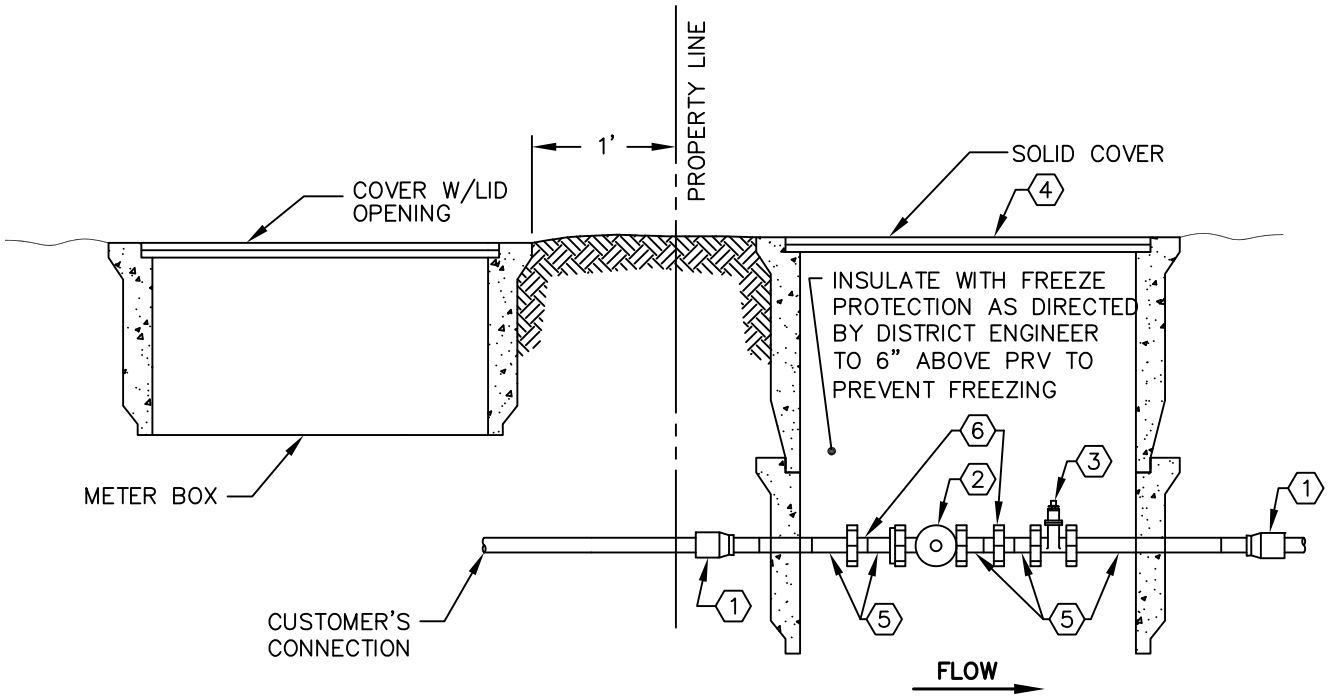
2" BY-PASS ASSEMBLY:

⑩ 2 – 2" SADDLES W/ STAINLESS STEEL DOUBLE STRAPS
⑪ 2 – 2" LOCKING BALL VALVE (IP)
⑫ 2 – 2" 90° BENDS (IP)
⑬ 1 – 2" X 3/4" TEE (IP)
⑭ 1 – 3/4" BALL VALVE (IP)
2" PIPE (LENGTH AS NEEDED) SECURE PIPE TO VAULT WALL
ALL 2" PIPE & FITTINGS SHALL BE BRASS.
⑮ UNION

NOTES:

1. DEVELOPER SHALL MAKE APPLICATION AND PURCHASE METER FROM CWD.
2. INSTALLATION OF METERS LARGER THAN 2" AND ALL COMPOUND METERS SHALL BE DESIGNED BY ENGINEER, APPROVED BY CWD AND INSTALLED BY CONTRACTOR.
3. ENCLOSED HYDRAULICALLY ASSISTED ALUMINUM DOUBLE DOORS, SELF DRAINING WITH H-20 VEHICLE RATING & LOCKING HASP.
4. INSIDE DIMENSIONS OF VAULT VARY DEPENDING ON PIPE SIZE. DESIGN ENGINEER MUST SPECIFY VAULT SIZE CONSISTENT WITH THE MINIMUM DIMENSIONS SHOWN IN THE DETAILS.
5. LADDER SHALL BE EQUIPPED WITH POLE AND BOLTED TO SIDE & BOTTOM OF VAULT AND RUNGS TO BE EXTENDED 2" BEYOND EDGE OF OPENING.
6. VAULT AND METER MAINTENANCE, CALIBRATION IS THE RESPONSIBILITY OF THE CWD

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington Water District	2" COMPOUND METER & LARGER METER INSTALLATION	22



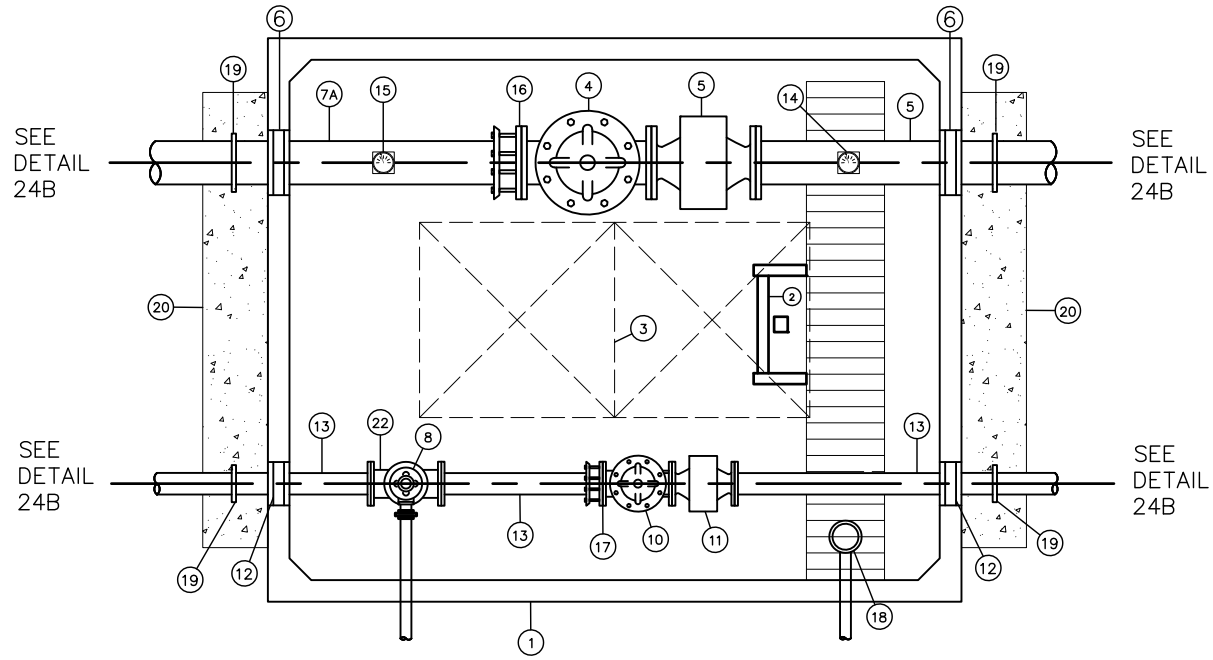
SEE APPENDIX C FOR APPROVED MATERIALS LIST

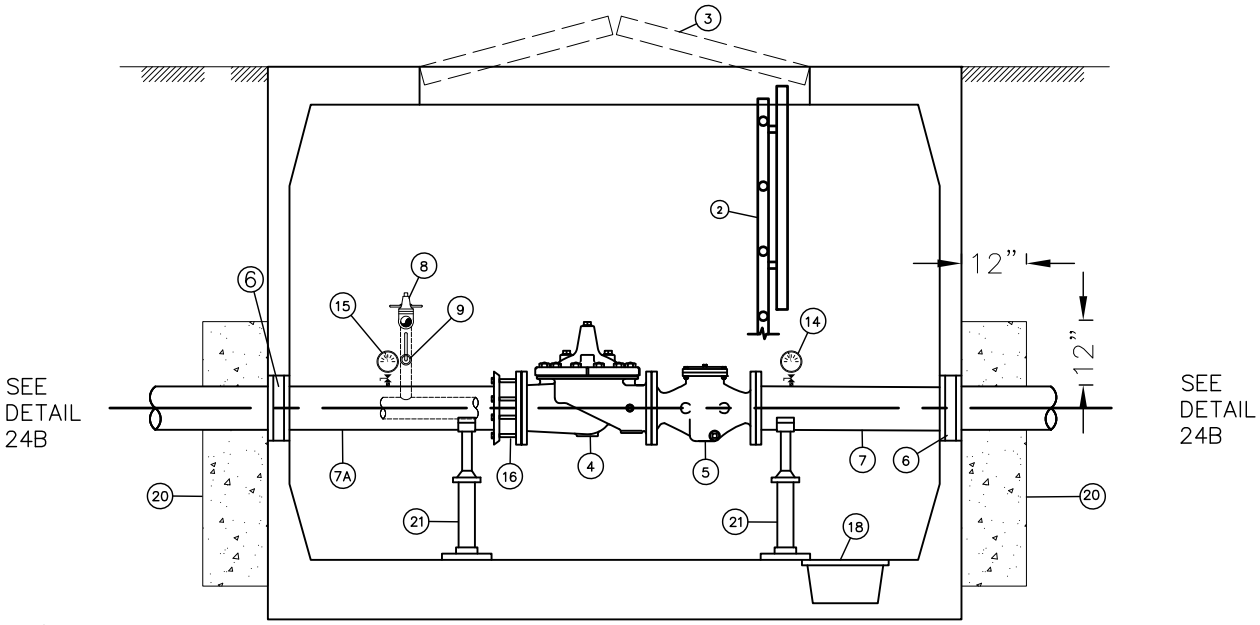
1. COMPRESSION COUPLING.
2. PRESSURE REDUCING VALVE – 3/4" WITH UNION COUPLING ON THE INLET; INSTALL SIDEWAYS TO ALLOW ACCESS TO ADJUSTING SCREW.
3. BRASS BALL VALVE W/ HANDLE
4. METER BOXES – 1 W/SOLID COVER ~ 1 W/LID OPENING
   TRAFFIC STEEL BOX AND LID IF IN VEHICULAR TRAVEL AREA (COORDINATE WITH CWD INSPECTOR AND APPENDIX C FOR MATERIAL SELECTION)
5. BRASS PIPE, LENGTH AS NEEDED
6. BRASS UNION

NOTES:

1. THE PRESSURE REDUCING VALVE (PRV) SHALL BE LOCATED NEAR THE METER BOX ON THE CUSTOMER'S PROPERTY "DOWNSTREAM" OF THE METER BOX.
2. IT IS THE PROPERTY OWNER'S RESPONSIBILITY TO INSTALL, OPERATE, AND MAINTAIN THE PRV AND BOXES.
3. CONTRACTOR TO VERIFY PLUMBING REQUIREMENTS WITH LOCAL BUILDING OFFICIALS.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	2" & SMALLER PRESSURE REDUCING VALVE (PRV)	23





MATERIALS LIST

ITEM	QTY	DESCRIPTION
1	1	PRECAST 8'x10' (INTERIOR) CONCRETE VAULT BY OLDCASTLE PRECAST OR APPROVED EQUAL
2	1	GALVANIZED 16" LADDER WITH LADDER SAFETY POST (BILCO MODEL LU-2 OR APPROVED EQUAL)
3	1	EAST JORDAN DOUBLE DUCTILE IRON 6'x3' HATCH RATED FOR H-20 LOADING WITH SLIP RESISTANT TREATMENT AND LOCKING HASP
4	1	8" CLA-VAL 90-01 PRESSURE REDUCING VALVE W/TEST COCKS AND CLA-VAL X144D INSERTION METER
5	1	8" CLA-VA X43H STRAINER W/1-1/4" BRONZE BALL VALVE
6	2	LINK SEAL ASSEMBLY FOR 8" PIPE
7	1	8" FLxPE SPOOL DI PIPE
7A	1	8" PE SPOOL DI PIPE
8	1	2" CLA-VAL 50G-01KC PRESSURE RELIEF VALVE (THREADED, ANGLE PATTERN)
9	1	2" LOCKING BALL VALVE (THREADED)
10	1	4" CLA-VAL 90-01 PRESSURE REDUCING VALVE W/TEST COCKS, CRDL BYPASS AND CLA-VAL X144D INSERTION METER
11	1	4" CLA-VAL X43 STRAINER W/ 1-1/4" BRONZE BALL VALVE
12	2	LINK SEAL ASSEMBLY FOR 4" PIPE
13	3	4" FLxPE SPOOL DI PIPIE
14	1	8" UPSTREAM PRESSURE TRANSMITTER (SIEMENS SITRANS P320 OR APPROVED EQUAL)
15	1	8" DOWNSTREAM PRESSURE TRANSMITTER (SIEMENS...)
16	1	8" DISMANTLING JOINT
17	1	4" DISMANTLING JOINT
18	1	SUMP PUMP ASSEMBLY (PER CWD STD. DTL 24, SHEET C3.6) AND METAL GRATE ABOVE
19	4	LOCKING MJ GLAND (MEGALUG OR ROMAC)
20	1	CONCRETE BLOCK (MIN. 2500 PSI)
21	4	ADJUSTABLE SADDLE STYLE PIPE SUPPORTS
22	1	4"x4" TEE (FL)
23	1	4" BLIND FLANGE WITH 2" IPT TAP
	1	FLOOD SWITCH (SEE ELECTRICAL PLANS)
	1	OPERATOR-IN-TROUBLE PUSH BUTTON (SEE ELECTRICAL PLANS)
	1	ACCESS HATCH INTRUSION SWITCH (SEE ELECTRICAL PLANS)

LAST REVISED AS/FT 12/23

APPROVED BY

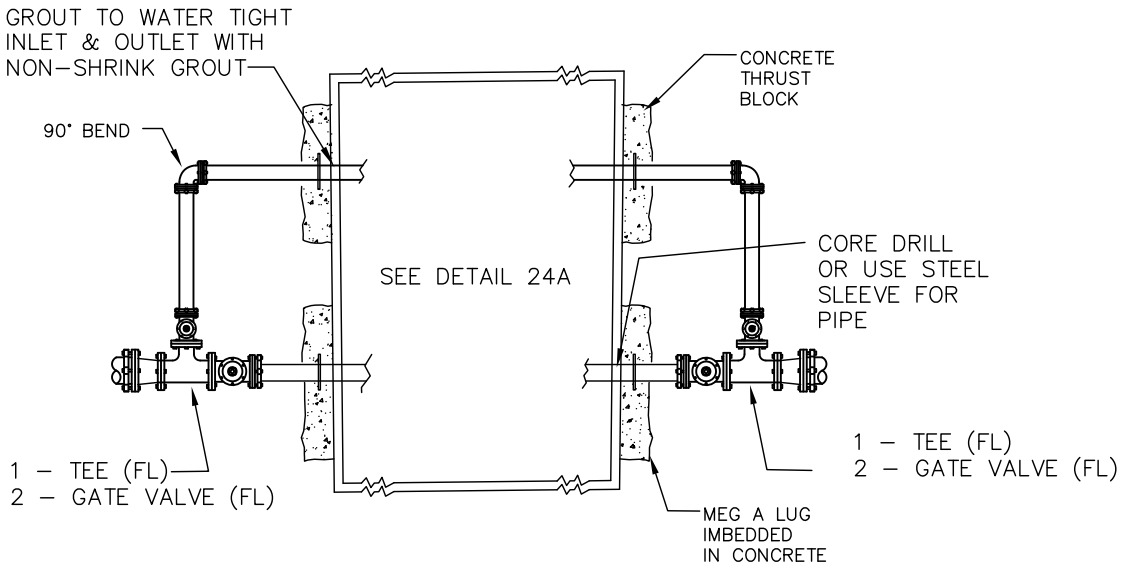
01/24

STEVE LEE-DISTRICT ENGINEER

Covington Water District

PRESSURE REDUCING VALVE (PRV)

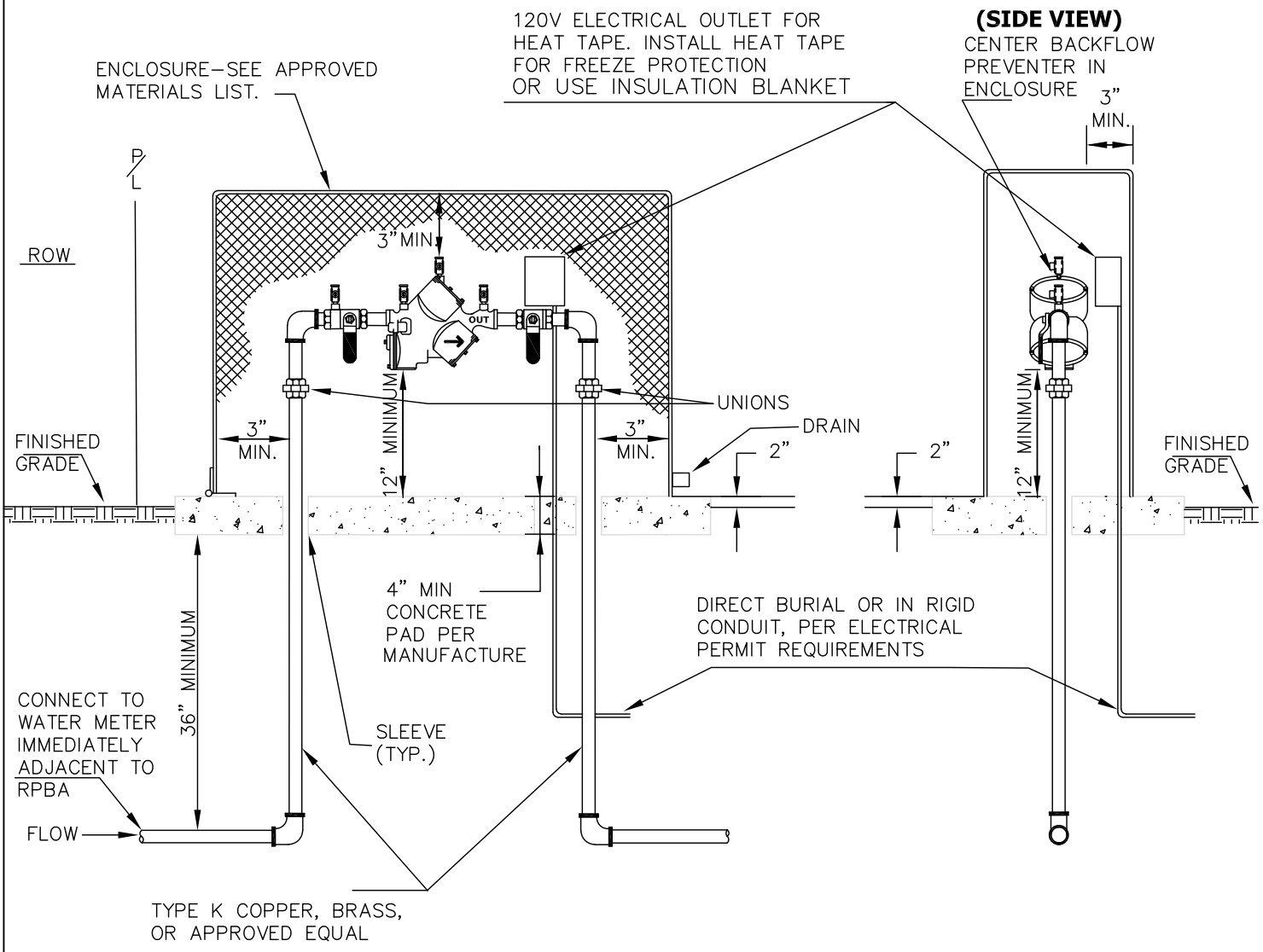
24A



NOTES:

1. THE DESIGN ENGINEER MUST SUBMIT A SPECIFIC DESIGN BASED ON THE TYPICAL LAYOUT FOR EACH INSTALLATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION AND SUBMITTALS FOR ALL MATERIALS.
2. THE REQUIRED PRESSURE REDUCING STATION CAPACITY AND SIZE SHALL BE DETERMINED BY CWD.
3. THE DESIGN ENGINEER TO NOTE FLOW DIRECTION AND PRESSURE SETTING ON THE PLANS.
4. INSIDE DIMENSIONS OF VAULT VARY DEPENDING ON PIPE SIZE. THE DESIGN ENGINEER MUST SPECIFY VAULT SIZE CONSISTENT WITH THE MINIMUM DIMENSIONS SHOWN IN THE DETAILS.
5. THE BYPASS PRV, PIPING, AND FITTINGS MAY BE LARGER THAN 2" AS APROVED BY THE DISTRICT ENGINEER.
6. ABOVE–GROUND SCADA CABINET W/TEMP AND VOLTAGE TRASMITTERS AND SCADA INTEGRATION TO BE COORDINATED WITH DISTRICT.
7. GALVANIZED LADDER TO BE SECURED TO VAULT AT TOP AND BOTTOM.
8. ALL PRVs SHALL HAVE OPENING/CLOSING SPEED CONTROL, EPOXY COATED BODY AND VALVE POSITION INDICATION.
9. PILOT CONTROLS SHALL BE ON SIDE OF PRV FACING INTERIOR OF VAULT TO PROVIDE EASY ACCESS.
10. ALL CLA--VAL PRVs AND PRESSURE RELIEF VALVES SHALL BE EQUIPPED W/STAINLESS STEEL TRIM (SEAT, STEM A COVER BEARING).
11. SEAL ALL PIPE PENETRATIONS THROUGH VAULT W/ LINK SEAL MODULAR SEALS.
12. PRESSURE RELIEF DISCHARGE DOWNSPOUT SHALL DIRECT WATER TOWARDS CENTER OF INLET GRATE.
13. HATCH AND LADDER PER DETAIL ON THIS SHEET.
14. PROVIDE LADDER-- UP EXTENSION, BILCO MODEL LU--2, OR APPROVED EQUAL.
15. MINIMUM 2' OF LEVEL, UNOBSTRUCTED AREA AROUND HATCHES.
16. PROVIDE CAST OR FIELD CORE DRILLED HOLES THROUGH VAULT WALLS FOR PIPE PENETRATIONS (NO KNOCK--OUTS).
17. DI PIPING TO BE CLASS 52.
18. ALL LADDER PARTS TO BE GALVANIZED CONFORMING TO ASTM A 123.
19. LOCATE PRESSURE RELIEF DRAIN OUTSIDE PEDESTRIAN AND TRAFFIC AREAS.
20. LADDER--UP ATTACHMENT REQUIRED ON ALL VAULT LADDERS. BILCO MODEL LU--2, OR APPROVED EQUAL

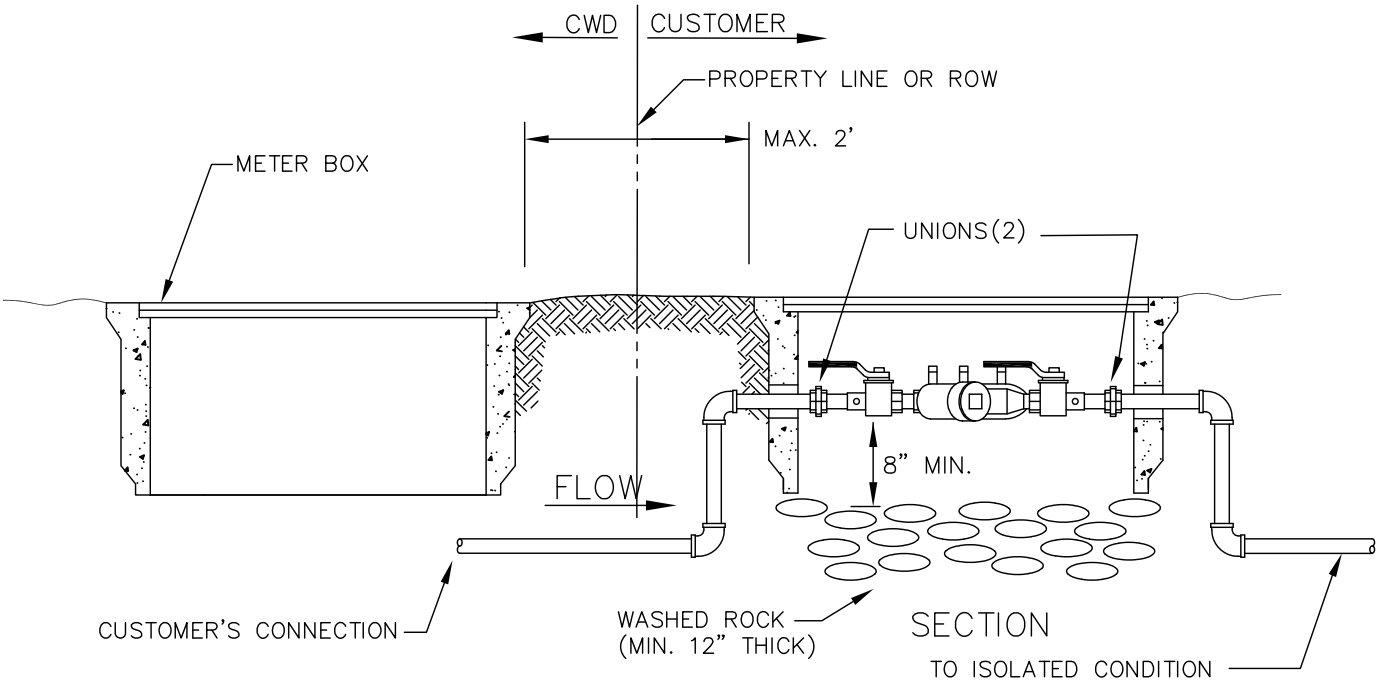
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	PRESSURE REDUCING VALVE (PRV)	24B

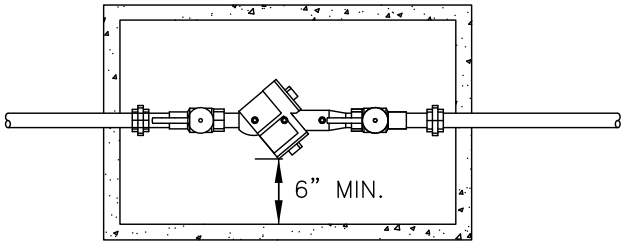


NOTES

1. PROVIDE DISTRICT APPROVED SUPPORT AND OUTSIDE ENCLOSURES FOR ASSEMBLIES LARGER THAN 2" DIAMETER.
2. OWNER SHALL FURNISH, INSTALL, TEST AND MAINTAIN THE RPBA AND ALL PIPING AND APPURTENANCES SHOWN ON THIS PLAN. THE RPBA SHALL BE ACCESSIBLE TO THE DISTRICT AT ALL TIMES.
3. THE ASSEMBLY MUST BE PROTECTED FROM FREEZING, OTHER SEVERE WEATHER, AND FROM ACCIDENTAL DAMAGE. (ALSO LOCATED IMMEDIATELY BACK OF METER)
4. DRAIN SHALL BE SIZED IN ACCORDANCE WITH AWWA CROSS CONNECTION CONTROL MANUAL 6–8.
5. RPBA MUST BE ON WASHINGTON STATE DOH APPROVED LIST, MUST BE TESTED UPON INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, INSTALLED PER MANUFACTURER SPECS TO RETAIN WARRANTIES, AND MUST BE TESTED ANNUALLY THEREAFTER. SUCCESSFUL TEST RESULT MUST BE REPORTED ANNUALLY TO THE DISTRICT.
6. RPBA MUST BE TESTED IF MOVED OR REPAIRED.
7. FACILITY IS OWNED AND MAINTAINED BY PROPERTY OWNER FOLLOWING CONSTRUCTION.
8. NOTE DISTRICT'S PREMISE ISOLATION PROGRAM REQUIREMENTS. (MANUAL ONLINE)
9. NO CONNECTIONS SHALL BE MADE BEFORE BACKFLOW PREMISE ISOLATION.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)	25



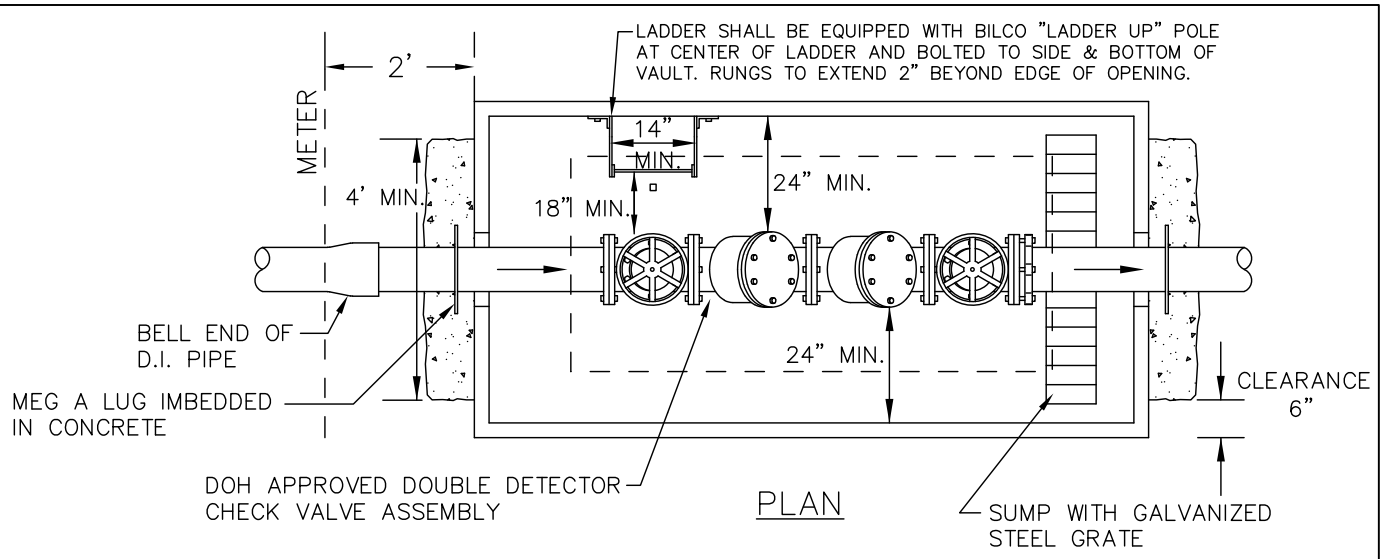


PLAN

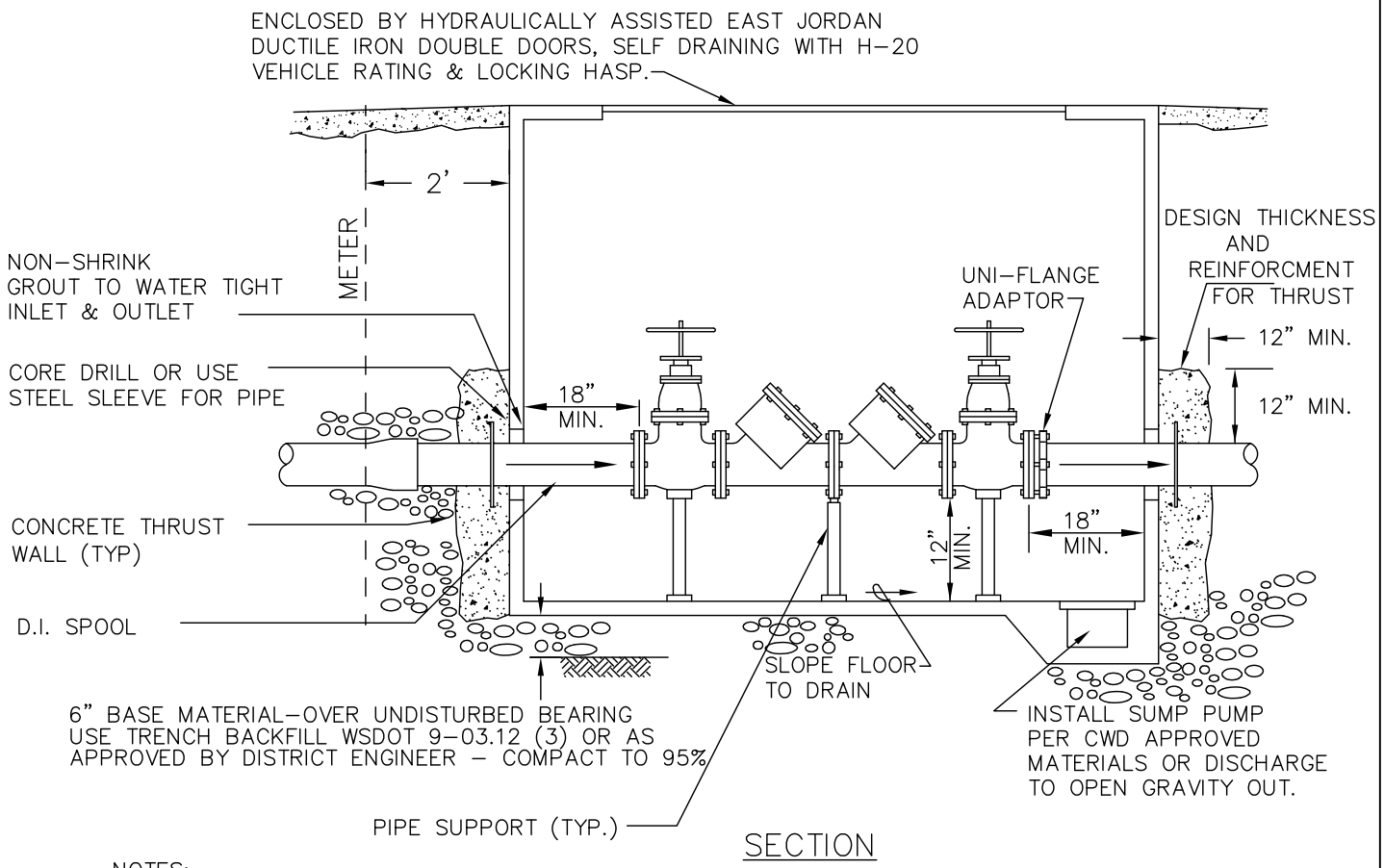
NOTES:

1. THE BACKFLOW ASSEMBLY BOX/ENCLOSURE WILL BE SET AT THE SAME GRADE AS THE METER BOX UNLESS OTHERWISE APPROVED BY DISTRICT PERSONNEL.
2. ADDITIONAL ROOM MAY BE REQUIRED FOR TESTING & MAINTENANCE.
3. WHEN TEST COCKS ARE FACING SIDEWAYS THERE MUST BE A MIN. OF 6" CLEARANCE BETWEEN THEM AND SIDE OF BOX.
4. FOR INSTALLATIONS EXPOSED TO FREEZING, PROTECTION MAY BE REQUIRED.
5. TEST COCKS MUST BE PLUGGED.
6. IF BOX/INCLOSURE IS SUBJECT TO FLOODING A DAY LIGHT DRAIN IS REQUIRED.
7. DCVA MUST BE ON WASHINGTON STATE DOH APPROVED LIST, MUST BE TESTED UPON INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, AND MUST BE TESTED ANNUALLY THEREAFTER.
8. DCVA MUST BE TESTED IF MOVED OR REPAIRED.
9. FOR VEHICULAR TRAVEL AREA, USE TRAFFIC STEEL BOX AND LID. COORDINATE WITH CWD INSPECTOR FOR MATERIAL SELECTION.
10. NOTE DISTRICT'S PREMISE ISOLATION PROGRAM REQUIRED. (MANUAL SEP.)
11. NO CONNECTIONS TO BE MADE BEFORE BACKFLOW PREMISE ISOLATION PRIOR TO TESTING.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	2" & SMALLER DOUBLE CHECK VALVE ASSEMBLY (DCVA)	26



PLAN

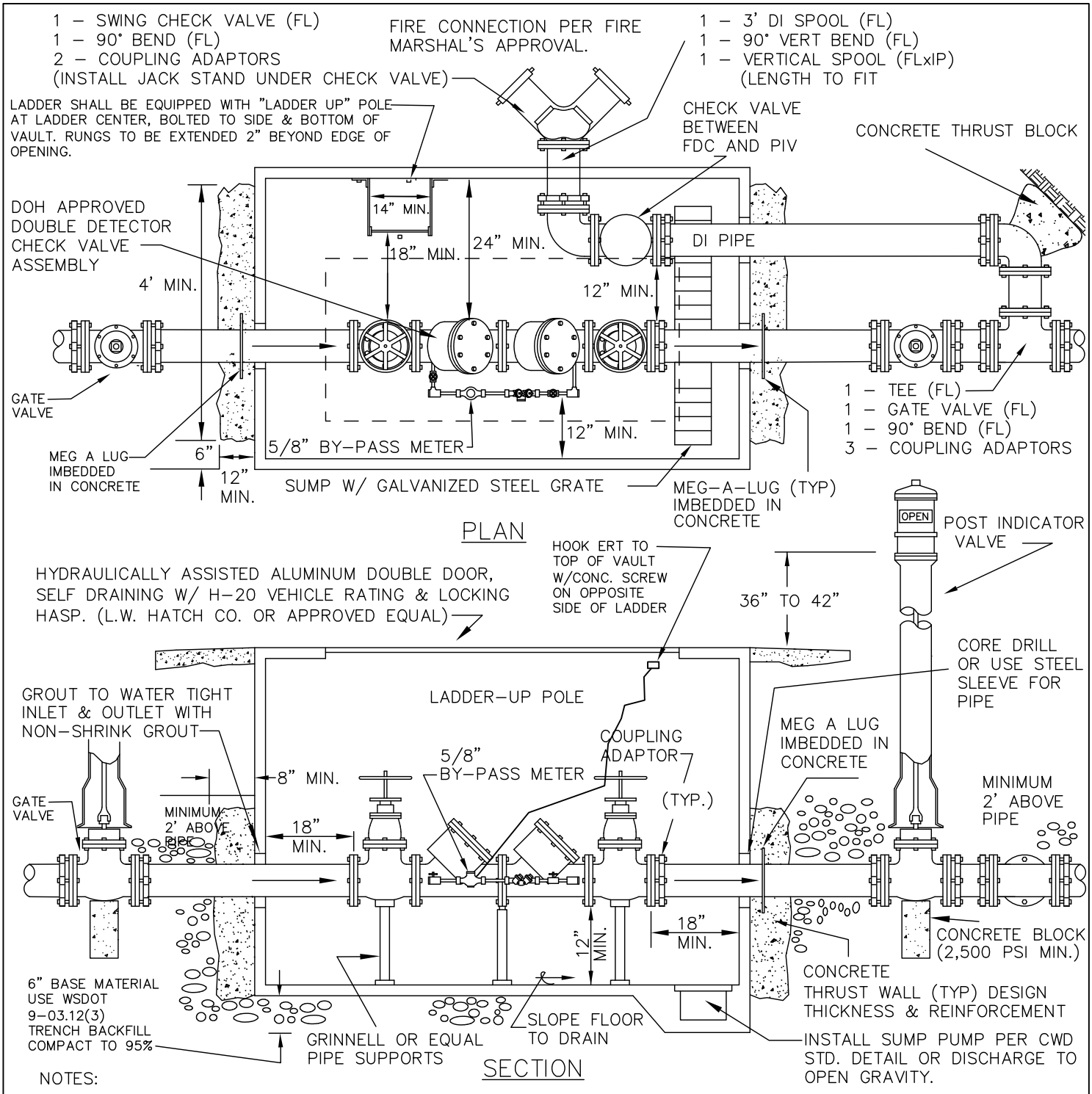


SECTION

NOTES:

1. COVER SHALL NOT EXTEND MORE THAN 6" ABOVE GRADE WHEN VAULT IS NOT IN TRAFFIC AREA.
2. VAULT SHALL NOT BE INSTALLED IN TRAFFIC AREA UNLESS APPROVED BY THE DISTRICT ENGINEER. SLOPE PAVEMENT AWAY FROM COVER.
3. VAULT SHALL BE OF ADEQUATE HEIGHT TO PROVIDE MIN. 6" CLEARANCE TO O,S&Y VALVE WHEN VALVE IS FULLY OPEN.
4. VAULTS SHALL BE AS SPECIFIED IN APPROVED MATERIALS-APPENDIX C AND SHALL BE STRUCTURALLY DESIGNED FOR THE PROPOSED INSTALLATION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING THE VAULT SIZE CONSISTENT WITH THE MINIMUM DIMENSIONS SHOWN IN THE DETAILS.

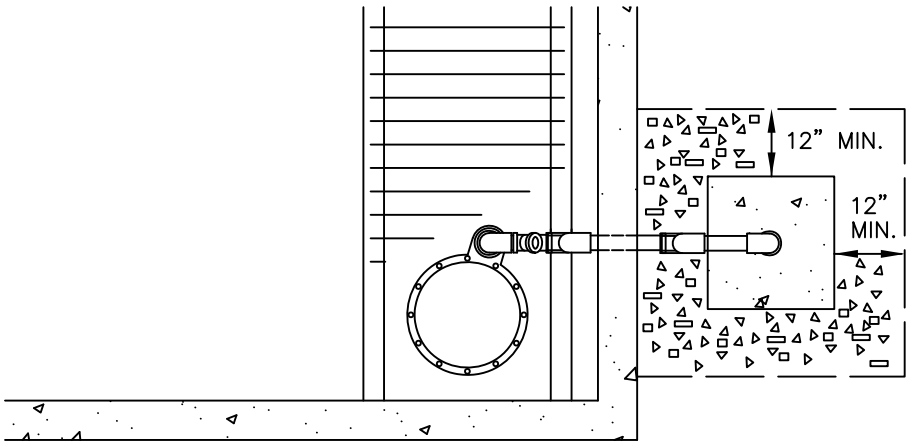
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington Water District	3" & LARGER DOUBLE CHECK VALVE ASSEMBLY (DCVA) & VAULT	27



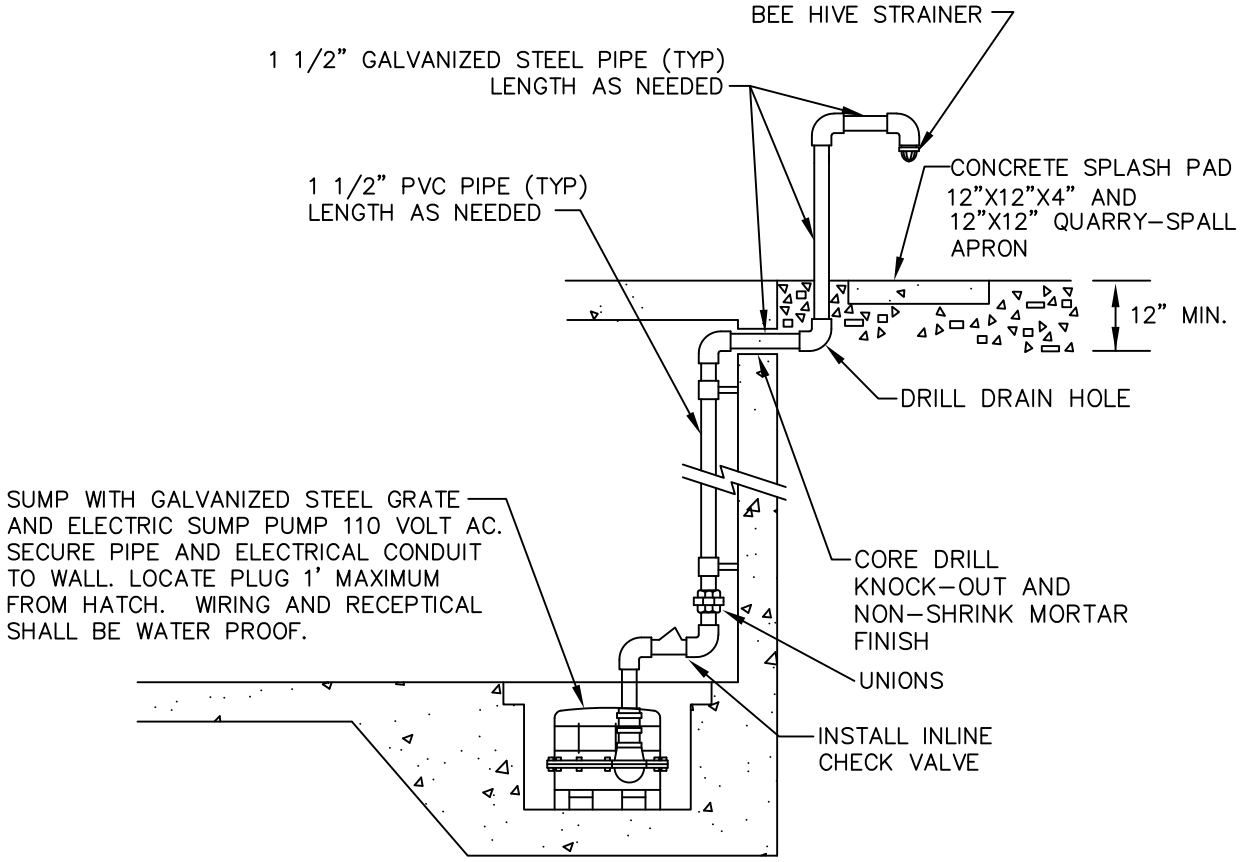
NOTES:

1. COVER SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE WHEN VAULT IS NOT IN TRAFFIC AREA.
2. VAULT SHALL NOT BE INSTALLED IN TRAFFIC AREA UNLESS APPROVED BY THE DISTRICT ENGINEER. SLOPE PAVEMENT AWAY FROM COVER.
3. VAULT SHALL BE OF ADEQUATE HEIGHT TO PROVIDE MIN. 6" CLEARANCE TO O,S&Y VALVE WHEN VALVE IS FULLY OPEN.
4. INSTALL ALARM SYSTEM AS REQUIRED BY FIRE DISTRICT.
5. 5/8" BY–PASS METER SHALL BE PURCHASED FROM CWD.
6. VAULTS SHALL BE AS SPECIFIED IN APPROVED MATERIALS–APPENDIX C AND SHALL BE STRUCTURALLY DESIGNED FOR THE PROPOSED INSTALLATION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING THE VAULT SIZE CONSISTENT WITH THE MINIMUM DIMENSIONS SHOWN IN THE DETAILS.
8. OWNER RESPONSIBLE FOR VAULT MAINTENANCE.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	DCVA DOUBLE CHECK VALVE ASSEMBLY & VAULT W/FDC	28



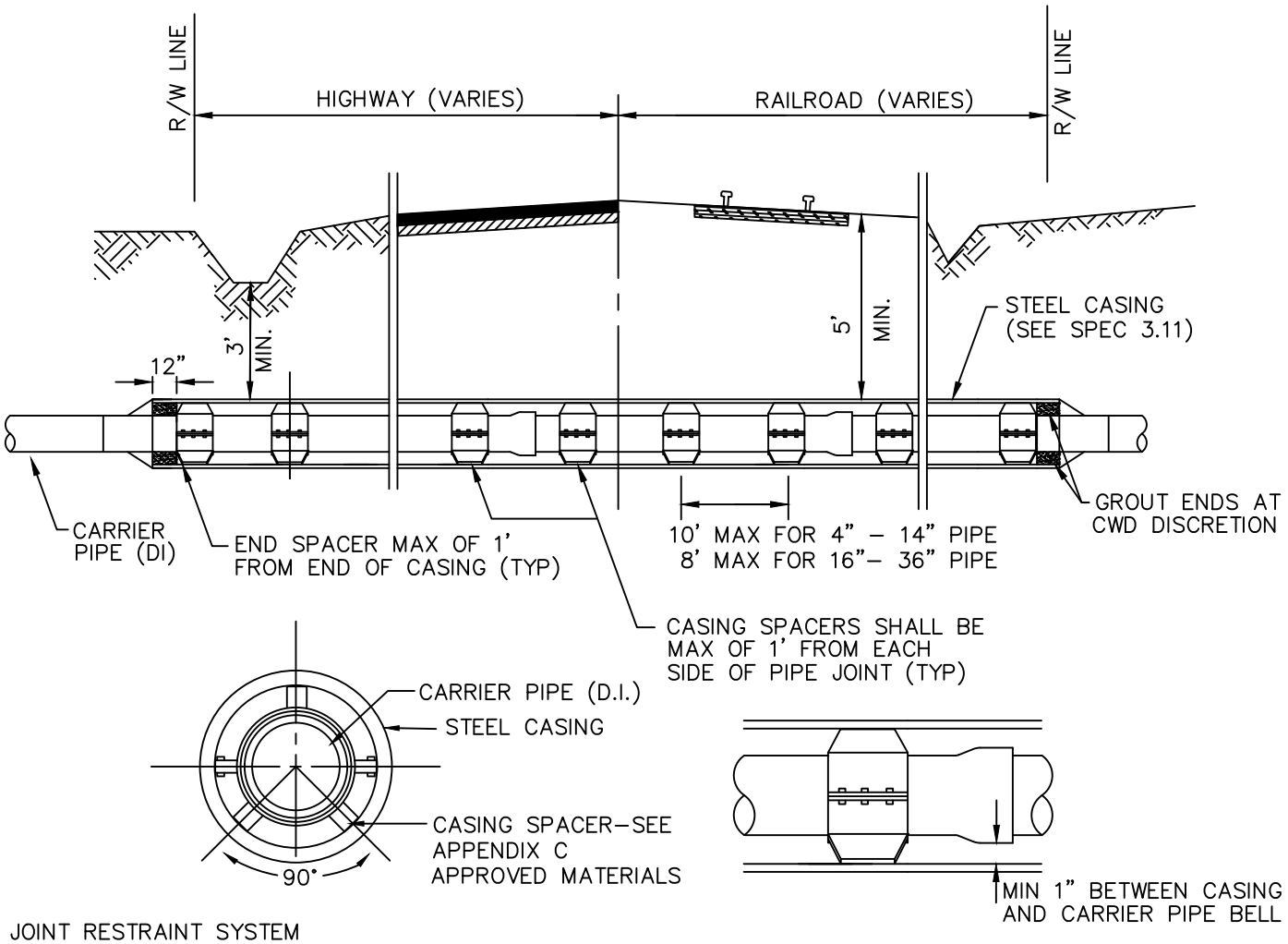
PLAN



PROFILE

PROVIDE SUMP AND PIPE WITH RECEPTACLE POWER CORD WHEN POWER IS UNAVAILABLE TO VAULT. SEE SPECIFICATION FOR "AVAILABLE" POWER DETERMINATION.
(POWER SHALL BE PROVIDED FOR PRIVATE INSTALLATIONS)

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE-DISTRICT ENGINEER	Covington Water District	SUMP PUMP INSTALLATION	29



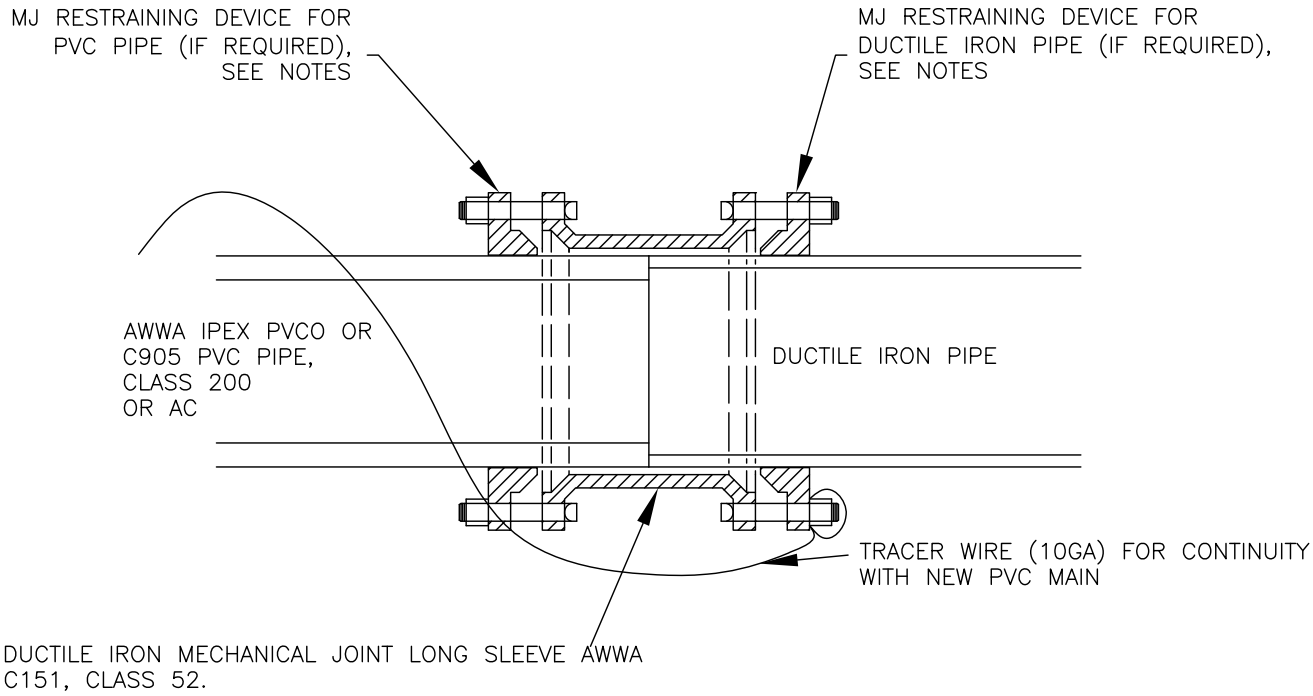
JOINT RESTRAINT SYSTEM FOR CARRIER PIPE TO BE APPROVED BY DISTRICT ENGINEER

MINIMUM CASING SIZE AND THICKNESS					
PIPE SIZE	4"	6"	8"	10–14"	16–18"
STEEL CASING SIZE	14"	16"	18"	24"	30"
WALL THICKNESS	CONFIRM SIZE & THICKNESS ACCORDING TO DESIGN LOADING				

NOTES:

1. CASING SIZE AND MINIMUM THICKNESS OF CASING SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING THE THICKNESS CONSISTENT WITH INSTALLATION OPERATION.
2. RUBBER END SEALS WITH STAINLESS STEEL BANDS PREFERRED AT EACH END.
3. MINIMUM COVER OVER CASING SHALL BE 3' OR AS SPECIFIED.
4. CASING PIPE SPECIFIED FOR HIGHWAYS OR RAILROAD CROSSINGS SHALL BE COMPLETED IN ACCORDANCE WITH REGULATIONS OF APPLICABLE FEDERAL, STATE, LOCAL JURISDICTION AND RAILROAD COMPANY.
5. THIS IS A TYPICAL PIPE CASING DETAIL. ANY MODIFICATIONS SHALL BE APPROVED BY DISTRICT ENGINEER.
6. CONSULT WITH PIPE MANUFACTURER TO ASSURE PROPER SUPPORT OF PIPE.
7. MINIMUM SEPARATION BETWEEN TOP OF CASING AND BOTTOM OF ANY STRUCTURAL FOOTING SHALL BE 18 INCHES

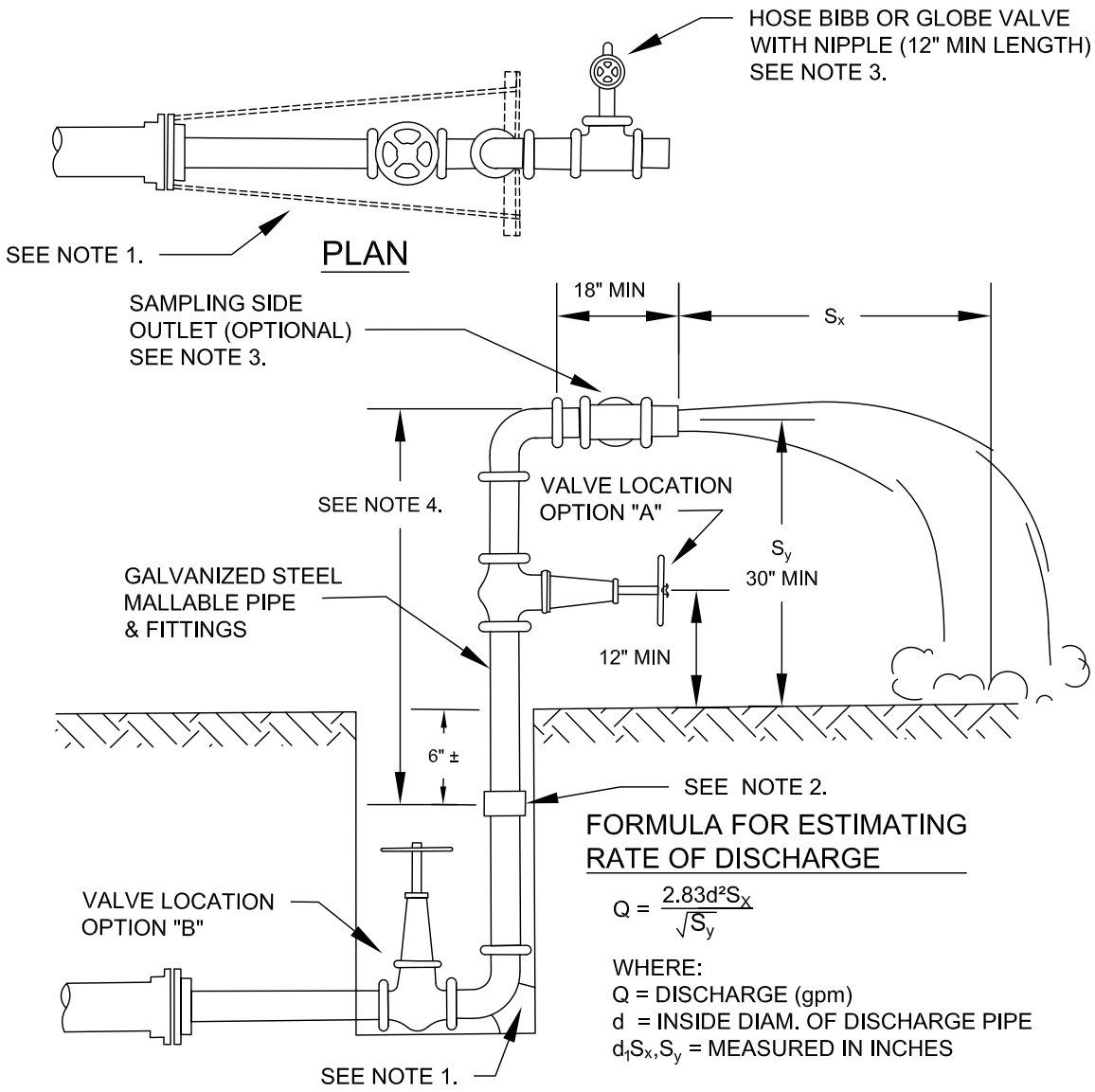
LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington WATER DISTRICT	PIPE CASING



NOTES:

1. THIS DETAIL SHALL BE USED AT ALL TRANSITIONS BETWEEN PVC OR AC PIPE AND DUCTILE IRON PIPE.
2. TRANSITIONS SHALL BE LOCATED OUTSIDE OF RESTRAINED AREAS, UNLESS APPROVED BY CWD.
3. TRANSITIONS LOCATED WITHIN RESTRAINED AREAS SHALL BE RESTRAINED. RESTRAINING DEVICE FOR THE PVC PIPE SIDE AND RESTRAINING DEVICE FOR THE DUCTILE IRON PIPE SIDE SHALL BE AS DESCRIBED IN SECTION 4.08 OF CWD STANDARDS.
4. RESTRAINING DEVICES NOT REQUIRED IF TRANSITION IS NOT IN A RESTRAINED AREA.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	TRANSITION SLEEVE	31



NOTES:

1. PROVIDE TEMPORARY THRUST RESTRAINT SYSTEM (CONC. THRUST BLOCK, WOOD OR STEEL BLOCKING) SUFFICIENT TO WITHSTAND PRESSURE TEST

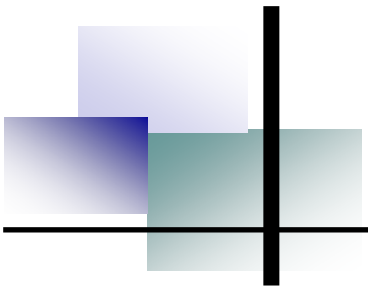
2. IF ASSEMBLY PLACED IN HAZARDOUS LOCATION, PROVIDE COUPLING AND PLUG FOR REMOVAL OF STANDPIPE OUTSIDE TIMES OF TESTING. VALVE LOCATION "B" SHALL BE USED WITH TEMPORARY VALVE BOX AND SQUARE NUT OPERATOR.

3. IF HOSE IS REQUIRED FOR FLOW DISPOSAL, A SAMPLING SIDE OUTLET SHALL BE INSTALLED

4. THIS STANDPIPE CONFIGURATION SHALL BE USED ON PERMANENT BLOWOFF ASSEMBLIES DURING THE DISINFECTION AND TESTING PROCEDURE.

5. SIZING OF TEMPORARY BLOWOFF ASSEMBLY PIPING SHALL MEET THE SAME CRITERIA AS THAT FOR PERMANENT BLOWOFF ASSEMBLY.

LAST REVISED AS/FT 12/23 APPROVED BY 01/24 STEVE LEE–DISTRICT ENGINEER	Covington Water District	TEMPORARY BLOWOFF ASSEMBLY (3" SIZE)	32



Sample Title Sheet

Appendix B

COVINGTON WATER DISTRICT
WATER SYSTEM EXTENSION PLAN
PROJECT TITLE
SECTION 29, TOWNSHIP 22 N., RANGE 06 E., W.M.
CWD PROJECT NO. DE ####-##
(PRESSURE ZONE ###)
CONSTRUCTION START DATE

SURVEY
STATE NAME OF FIRM THAT COMPLETED SURVEY AND PROJECT-SPECIFIC SURVEY NOTES.

BENCHMARK
VERTICAL DATUM

NAVD 88

SITE BENCHMARKS

xxxxxxxxxxxxxxxxxxxx

(ESTABLISHED BY WSRN GPS NETWORK OBSERVATION)

HORIZONTAL DATUM

NAD 83(2011)

BASIS OF BEARINGS

xxxxxxxxxxxxxxxxxxx

INSTRUMENTATION

xxxxxxxxxxxxxxxxxxx

WATER LINE NOTE

xxxxxxxxxxxxxxxxx

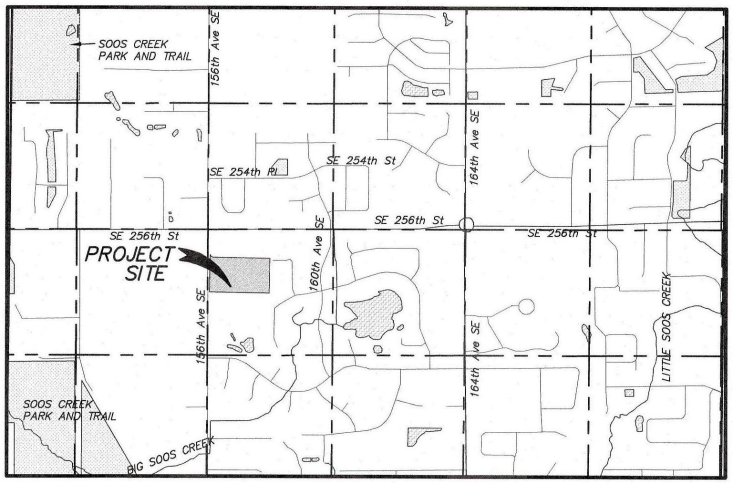
UTILITIES/SERVICES:
WATER:
COVINGTON WATER DISTRICT
18631 S.E. 300TH PLACE
COVINGTON, WA 98042
(253) 631-0565

SEWER:
SOOS CREEK WATER AND SEWER DISTRICT
14616 S.E. 192ND STREET
RENTON, WA 98058-1039
(253) 630-9900

POWER/GAS:
PUGET SOUND ENERGY
8001 SOUTH 212TH STREET
KENT, WA 98032
(253) 395-7065

PHONE:
CENTURY LINK
23315 66TH AVENUE SOUTH
KENT, WA 98032
(253) 372-5388

FIRE:
PUGET SOUND REGIONAL FIRE AUTHORITY
24611 116TH AVE. SE
KENT, WA 98030
(253) 856-4300
http://pugetsoundfire.org/



VICINITY MAP:

1" = 1000'

IN
CITY OF COVINGTON
KING COUNTY, WASHINGTON

INDEX OF SHEETS:

DEVELOPER
DEVELOPER'S NAME
DEVELOPER'S ADDRESS
PHONE: (###) ###-####
CONTACT: NAME
EMAIL: EMAIL ADDRESS

ENGINEER
FIRM NAME
FIRM ADDRESS
PHONE: (###) ###-####
CONTACT: ENGINEER OF RECORD
EMAIL: EMAIL ADDRESS

LOCATION	USE	SIZE	FIXTURE COUNT, FLOW
BUILDING A	INSIDE	1.5 INCH	# FIXTURE UNITES = # GPM
BUILDING A	OUTSIDE	1-INCH	N / A
BUILDING B	INSIDE	2-INCH	# FIXTURE UNITES = # GPM
BUILDING B	FIRE	5/8-INCH	N / A
BUILDING C	INSIDE	3-INCH	# FIXTURE UNITES = # GPM
BUILDING C	OUTSIDE	1.5-INCH	N / A

811 Know what's **below.** **Call** before you dig.

CALL TWO BUSINESS DAYS
BEFORE YOU DIG
1-800-424-5555

NOTE:
THESE PLANS ARE IN ACCORDANCE WITH CWD STANDARDS AND SPECIFICATIONS DATED JANUARY 2024

UTILITY CONFLICT NOTE:
CAUTION
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 1-800-424-5555 AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT CWD ENGINEER DEPT. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

COVINGTON WATER DISTRICT
AS-BUILT NOTES:
1. ALL CONSTRUCTION INFORMATION SHOWN BOLD ON THESE DOCUMENTS PROVIDED BY CONTRACTOR AND APPROVED BY COVINGTON WATER DISTRICT.
2. ALL EASEMENTS SHOWN ON THESE DOCUMENTS ARE GRANTED TO COVINGTON WATER DISTRICT.
4.
6.
Auditor's Recording Number _____ Recording Date

COVINGTON WATER DISTRICT
THESE DOCUMENTS HAVE BEEN REVIEWED FOR CONFORMANCE TO DISTRICT DESIGN AND CONSTRUCTION STANDARDS AND ARE HEREBY APPROVED FOR CONSTRUCTION
District Engineer _____ Date _____

P.E. STAMP

REVISIONS	DATE	BY

DESIGN FIRM NAME AND LOGO

PROJECT NO.: CIP 2023-18
DESIGNED BY: F.TABLADA
DRAWN BY: F.TABLADA
CHECKED BY: SLEE
APPROVED BY: SLEE

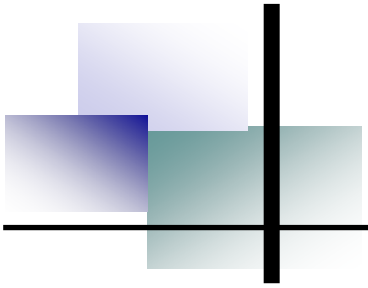
PROJECT TITLE

TITLE SHEET

(PRESSURE ###)

SHEET W1 #

CWD PROJECT NO.: DE ####-##



Approved Materials List

Appendix C

APPENDIX C
APPROVED MATERIALS LIST

The following manufacturers have been approved for use on water works construction. Where specific manufacturers are listed, no other manufacturer may be used without prior approval by the District.

Domestic pipe and fitting materials are required when reasonably available. Domestic shall mean manufactured in the United States or Canada. See Section 4.01 for general material requirements.

Approved materials do not require full cut-sheet submittals. State the manufacturer, product name, size and fitting type when applicable, in a summary letter for District approval. See Section 5.02 for complete submittal requirements.

1) PIPE, FITTINGS, PIPE RESTRAINTS, CASING

DUCTILE IRON PIPE

American Cast Iron Pipe Company
U.S. Pipe & Foundry Company
McWane Cast Iron Pipe Company

POLYVINYL CHLORIDE PIPE (PVCO C909 REQUIRED)

Diamond Plastics
JM Eagle Blue Brut
JM Eagle Ultra Blue PVCO C909
PW Eagle
Vinyltech
IPEX Bionax
Westlake

DUCTILE IRON FITTINGS

American Cast Iron Pipe Co.
U.S. Pipe & Foundry Co.
Tyler Pipe/Union Foundry
McWane Ductile

GALVANIZED IRON PIPE & FITTINGS

Christy's (pipe wrap tape)
Matco-Norca (fittings)
Siam fittings co. (fittings)

JOINT RESTRAINT SYSTEMS

American Cast Iron Pipe Company (Fast-Grip Gasket for 16" and smaller DI produced by ACIPCO)
EBBA Iron (Mega-Lug Series 1100, 1100S, 1100SDB, 1500, 1600, 2000PV, 2000SV, 2200, 2800; Series 2100 Megaflange)
Ford Meter Box Company (Uni-Flange Series 1390, 1400, 1500)
McWane (Sure Stop 350 for 16" and smaller DI produced by Pacific States)
Romac Industries (RomaGrip, PVC-RomaGrip, RFCA, Style 611 Pipe Restraint System)
US Pipe (Field Lok 350 for 16" and smaller DI produced by US Pipe)

COUPLINGS

Romac
Smith-Blair (Rockwell)
Dresser HYMAX

CASING

Pacific States Pipe Company
Reference detail for casing sizes.

CASING SPACERS

CALPICO Company unless otherwise approved by the district.

TAPPING SLEEVE

Romac Industries
JCM
US Pipe

TRACER WIRE

Copperhead Industries, LLC (#10 AWG HS-CCS)
Pro-Line Safety Products Company (Pro-Trace HF-CCS PE30)
Regency Wire

2) SYSTEM VALVES

GATE VALVES, RESILIENT SEATED

American AVK Co. (Series 25, 45)
Clow Valve Co. (Models 2638, 2639, 2640)
Kennedy Valve Co. (Models KS-FW, KS-RW)
M&H Valve Co. (Styles 4067)
Mueller Water Products Inc. (Series 2361, Series 2362)

GATE VALVES, SIDE-MOUNT ACTUATOR VALVES

Kennedy Valve Co.
M&H Valve Co.
Mueller Water Products, Inc.
American AVK Co.
East Jordan

CHECK VALVES

APCO Valves (Series 6000 CP, 6000CLW, 6000CLS)
Kennedy Valve Company (Series 1106A, 1106LW, 1106AS, 106A, 106LW, 106AS)
M&H Valve Company (Styles 59-02, 159, 259-02)
Mueller Water Products Inc. (Series 2602, 8001)
Val-Matic (Series 7800)

AIR AND VACUUM RELEASE VALVES

Val-Matic (Model 202C.2) ***Preferred product***
APCO (Series 145C)
Crispin (Model No. UL-20)
Paint: Apply Metal Primer and Parker Comex Alkaline Enamel # A30 Safety Yellow Gloss

VALVE BOXES (H-20 Loading Top, Bottom, and Lid)

Olympic Foundry Inc
East Jordan Iron Works, Inc.
Tyler Pipe (soil pipe)
East Jordan 8555 (valve box lid)

VALVE MARKER POST

"Triview" manufactured by Rhino Markings & Protection Systems – TVF 36BB
(District Supplied – Contractor Installed)

VALVE STEM EXTENSION

Olympic Foundry Inc.

3) HYDRANTS AND ATTACHMENTS (ADAPTERS, BLIND CAPS)

FIRE HYDRANTS

East Jordan Watermaster
M&H AWWA C502 Model 929 Traffic Model;
Mueller Super Centurion
American AVK 2780 Nostalgic
Kennedy K81D

FIRE HYDRANT ATTACHMENTS

Harrington Permanent Hydrant Adapter
American AVK Storz nozzles and Adapters
4" STORZ Adapter x 4.5"F (Fire District 44)
5" STORZ Adapter x 4.5"F (Fire Districts #37 & #43)

FIRE HYDRANT PAINT

Sherwin Williams Hi Gloss Safety Yellow Industrial Enamel
Parker Comex Alkaline Enamel # A30 Safety Yellow Gloss (May be allowed only with prior District Approval)

FIRE HYDRANT LOCK

McGard

4) SERVICE FITTINGS, SERVICE PIPE, SADDLES, ANGLE BALL METER VALVE STOP, CORP, SLEEVE, ETC.

SERVICE SADDLES

Romac (202S, 202NS, 305)
Ford (Styles FS202, FC202)
Smith-Blair (317 Style)

CORPORATION BALL STOPS

1" or 1.5" size:

Ford
Mueller
A.Y McDonald MFG. CO.

2" size, IPT Ball Valve Corp w/ compression Adapter for Blow Off and Air/Vac Assemblies:

Ford 2" Inlet, 2" Outlet 2" MIP, FB500-7
Mueller 300 Ball Corp B-2996 Inlet AWWA taper, "cc" threat, MIP Outlet

COPPER SERVICE LINE

CERRO brand or equal. Type K Heavy wall, soft temper.
Reading, Howell Metals.

HDPE SERVICE LINES

SDR9, 200 psi minimum
Municipex Crosslinked Polyethylene (PEXa)

ANGLE BALL METER VALVES, LOCKING

For inside, outside, and irrigation meters:

1" Service line to 5/8"x3/4" meter or ¾" meter, (¾" FIPT inlet by 5/8"):

Ford
Mueller
A.Y. McDonald MFG. CO.

1" Service line to 1" meter:

Ford, Mueller, or equal.

BRASS WATER SERVICE FITTINGS AND VALVES

Ford
Mueller
AY McDonald MFG. Co.
MATCO-NORCA
Merit Brass
Lee Brass

SERVICE COUPLINGS

Shall be compression. Gripper Joints are not allowed.
A.Y. McDonald MFG. CO.
Ford
Mueller

METER SETTERS (12-inch height and High Bypass Option (add HB to part number)

1.5" & 2" Domestic Non-Residential:

Ford
Mueller
A.Y, McDonald MFG. CO.

METER ADAPTOR

1.5" & 2" Domestic Non-Residential:

Ford
A.Y. McDonald MFG. CO.
Mueller

5) METERS, METER BOXES & LIDS, BOXES FOR BLOW-OFFS AND AIR/VAC ASSEMBLIES

METERS

Badger Meter Inc., "Radio Read" purchased through the District.

METER BOXES

Old Castle – Carson – 1324-12 BCF

Approved for:

- Residential and Irrigation, 5/8"x3/4" or ¾" meter
- 1" Residential Meter

In non-traffic areas only.

Old Castle – Carson – 1730-12 BCF

Approved for:

- Blow-Off Assembly
- 1", 1-½", and 2" Domestic or Irrigation meter
- Air/Vac Assembly

In non-traffic areas only.

METER BOX LIDS

NDS 13x24 #121CDMCIF
NDS 17x30 #123CDMCIF

Raven 13x24 #N1324BLKWAT-R
Raven 17x30 #N1730BLKWAT-R

DFW 13x24 #DFW1324C-12-1C-LID
DFW 17x30 #DFW1730C-12-1C-LID

6) CROSS CONNECTION CONTROL DEVICES (DDCVA, RPBA, DCVA)

REDUCED PRESSURE BACKFLOW ASSEMBLIES (RPBA)

As approved on the most current Department of Health list for cross connection devices.

RPBA ENCLOSURE

"Hot Box"

DOUBLE CHECK VALVE ASSEMBLIES

As approved on the most current Department of Health list for cross connection devices.

7) OTHER EQUIPMENT, VAULTS, PRVS

PRV STATION

Reference the separate material section of these standards for the approved manufacturers of the individual components.

INDIVIDUAL PRESSURE REDUCING VALVES (Residential, 2" and Smaller)

Wilkins #600
WATTS #U5B.

INDIVIDUAL PRESSURE REDUCING VALVES (Non-residential)

Wilkins #600

VAULTS

Utility Vault Co. (Oldcastle Precast)
GP Granite Vaults

VAULT LADDER

"Bilco" Ladder-up

VAULT HATCH DOOR

East Jordan

VAULT EQUIPMENT SUPPORTS

Standon model S92 saddle support or S89

APPROVED PRODUCTS COMMITTEE

Introduction

Through previous investigation, testing and usage by the District, certain types, brands and models of some products and materials have established a satisfactory record for certain services. These products have been tabulated by manufacturer's names and identifying numbers on Approved Products Lists (APL). Construction-related APLs have been assembled into the District's "Approved Products List". The Approved Products List should not be interpreted as being pre-approved lists of products necessarily meeting the requirements for a given construction project and products included in the lists shall not be substituted unless they are approved by the District Engineer. Contractors electing to use products from the APLs shall submit a list of products and the corresponding APL number, together with the approvals for their use.

Products in use by the District are subject to ongoing consideration and evaluation by the Approved Products Committee. When changes, deletions or additions become necessary and are approved by the District Engineer, the product list will be revised and included in updates to the Approved Products List.

Questions concerning the District's Approved Products List may be addressed to the Approved Products Committee Chairperson at 18631 SE 300th Place, Covington, WA or call (253)867-0918.

Covington Water District Approved Product Approval Process

A. Product and equipment manufacturers shall submit a written request for consideration to the District Approved Products Committee chairperson. This request shall comprise a complete submittal, in a single package, and include the following:
   - Product description, technical specifications and catalog information.
   - All applicable product standards (AWWA, ASTM, ANSI, NFPA and others) and related manufacturer's certifications.
   - Test results showing compliance with applicable standards, including independent laboratory test results, if necessary.
   - Manufacturer's installation procedures for the particular product.
   - Product availability, delivery time and manufacturer's location.
   - Maintenance requirements, special equipment and procedures and recommended maintenance schedules.
   - Product references (municipal or public users) shall include user’s name, address and telephone number, product application and number of years in use, and name and telephone number of a contact person having knowledge of the particular usage.

     Material safety data sheet (MSDS), if applicable.
   - Recent product revisions or improvements.
   - Explanation of how the product benefits the District in terms of prolonged service life, reduced maintenance, reduced life-cycle cost and other relevant aspects.

B. If the submittal is acceptable, the chairperson shall submit it for consideration to the committee. Products may be requested for testing or field evaluation.

C. Following review of the submittals the committee may request a presentation by the manufacturer at a regularly scheduled committee meeting to demonstrate the product or provide additional information.

D. A database listing all testing locations, time of test and results shall be compiled and periodically updated. From this information, the Approved Products Committee will recommend approval or disapproval of the products.
E. A majority vote by the committee is required to accept any new product. The District will advise the applicant of the Approved Committee's decision regarding the product.
F. The newly accepted product will be added to the appropriate Approved Products List (APL).
G. Problems regarding accepted products shall be submitted to the Standards committee for review. Such review may lead to a recommendation to rescind approval. The District shall inform the product manufacturer of the reasons for removal from the APL.

Product and Purchase Specification Review

All purchase specifications and each APL will be reviewed at least every five (5) years. Products will be under constant evaluation as they are used in the water system.

Standard Forms
Appendix D

Use of Standard Forms

The Standard Forms included in Appendix D are marked "Sample" in order to communicate the form expected to be completed for various contract management functions. Actual forms completed and submitted shall be the most current form obtained from the District which may show additional information or changes over time.

Steve Lee
Engineering Manager

Index To Forms

Certificate of Substantial Completion

Project:	Owner: Covington Water District	Owner's Contract No.:
Contract Description:		
Contractor:		Date of Contract:

This Tentative Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents:

☐ The following specified portions:

Date of Substantial Completion:

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer, and found to be Substantially Complete (WSDOT 1-01.3).

A definitive list of corrective items, or "punchlist", shall be provided to the Contractor as needed. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Warranty periods **shall not commence** until the Completion Date has been established and the project is accepted by the owner, by Resolution.

Originated by Project Engineer — Date

Executed by District Engineer — Date

Accepted by Contractor — Date

COVINGTON WATER DISTRICT
18631 SE 300th Place
Covington, WA 98042
Phone: (253) 631-0565

CHLORINE INJECTION BOX RENTAL APPLICATION / AGREEMENT – FOR DISTRICT PROJECTS

CONTRACTOR:_____ DATES RESERVED:_____

OFFICE/MAILING ADDRESS:_____

_____

CONTACT PERSON:_____ TELEPHONE:_____

LOCATION OF SERVICE:_____

DEPOSIT RECEIVED (Staff Initial):_____ CHECK NUMBER:_____ DATE RECEIVED:_____

METER #:_____ START READ:_____ END READ :_____

ACTUAL DATE EQUIPMENT ISSUED:_____ ACTUAL DATE EQUIPMENT RETURNED:_____

DAMAGE? (Yes/No):_____ NATURE OF DAMAGE: _____

AGREEMENT

Contractor agrees to pay the District the following:

1) A $5,000.00 damage/security deposit for the Chlorine Injection Box, and
2) The amount indicated above is payable in full prior to equipment issuance.

Upon return of the equipment, and in the absence of any damage based upon an inspection conducted by and to the satisfaction of the District, the deposit will be returned to Contractor. If damage is noted upon the District's inspection, any refund will be processed for the difference between the deposit and the actual cost of repair. The processing time for a refund is approximately 3 weeks following the date of final repair.

Contractor understands and agrees that the District is not responsible for water quality after it leaves the District hydrant. Contractor agrees to indemnify, defend and hold harmless the District for any injuries, damages or water quality problems that may occur after water leaves the hydrant.

Contractor further agrees to protect the equipment and the service where the equipment connects against damage and to assume full financial responsibility for the repairs made necessary by such damage.

In the event suit or other action is commenced to enforce any provision of this Agreement, Contractor agrees that jurisdiction and venue for any such action shall be in King County Superior Court or King County District Court, Renton Division.

The person signing this Agreement on behalf of Contractor represents and warrants that he/she has full and complete authority to enter into this Agreement and that he/she has been fully authorized to execute this Agreement on behalf of Contractor.

_____ _____
CONTRACTOR COVINGTON WATER DISTRICT

DATE_____ DATE_____

Deposit Returned:_____ Date:_____
Contractor

No. 288A 09/10

COVINGTON WATER DISTRICT
18631 SE 300th Place
Covington, WA 98042
Phone: (253) 631-0565

CHLORINE INJECTION BOX RENTAL APPLICATION / AGREEMENT – FOR PRIVATE DEVELOPMENT

DEVELOPER:_____ DATES RESERVED:_____

OFFICE/MAILING ADDRESS:_____

_____

CONTACT PERSON:_____ TELEPHONE:_____

LOCATION OF SERVICE:_____

DEPOSIT:_____ RECEIPT:_____

METER #:_____ START READ:_____ END READ :_____

ACTUAL DATE EQUIPMENT ISSUED:_____ ACTUAL DATE EQUIPMENT RETURNED:_____

DAMAGE? (Yes/No):_____ NATURE OF DAMAGE:_____

AGREEMENT

Developer agrees to pay the District the following:

1) A $5,000.00 damage/security deposit for the Chlorine Injection Box, and
2) A daily fixed charge of $100.00 for the total number of days the equipment is reserved, and
3) The amounts indicated above are payable in full prior to equipment issuance.

In addition to the damage/security deposit and the daily fixed charge for use of the equipment, a charge shall be assessed for the volume of water used in accordance with the District's current water rate as set forth in Rate Table I. The consumption charge will be applied to the Developer's System Extension Agreement (SEA) account.

Upon return of the equipment and in the absence of any damage based upon an inspection conducted by and to the satisfaction of the District, the District will process a deposit refund to the Developer (allow for a processing time of approximately 3 weeks).

Developer understands and agrees that charges relating to the use of this equipment and water is subject to the same collection and lien procedures as other District rates and charges as provided in RCW 57.08.081.

Developer understands and agrees that the District is not responsible for water quality after it leaves the District hydrant. Developer agrees to indemnify, defend and hold harmless the District for any injuries, damages or water quality problems that may occur after water leaves the hydrant.

Developer further agrees to protect the equipment and the service where the equipment connects against damage and to assume full financial responsibility for the repairs made necessary by such damage.

In the event of failure to pay the billings and charges due under this Agreement, Developer agrees to pay all costs of collection, including reasonable attorneys' fees and costs. If signing as a corporate official, the undersigned agrees to be personally liable for the billings and charges.

In the event suit or other action is commenced to enforce any provision of this Agreement, Developer agrees that jurisdiction and venue for any such action shall be in King County Superior Court or King County District Court, Renton Division.

The person signing this Agreement on behalf of Developer represents and warrants that he/she has full and complete authority to enter into this Agreement and that he/she has been fully authorized to execute this Agreement on behalf of Developer.

_____ _____

DEVELOPER COVINGTON WATER DISTRICT

DATE_____ DATE_____

No. 288 09/10

Covington Water District

CONFINED SPACE ENTRY PERMIT

Front Page

ADMINSTRATIVE		
Work Order #:		
Site #	Space Description:	Location of Space:
Purpose of Entry: Duration of Authorized Entry:		
Potential/Probable Hazard Exposure: ❑ Falls ❑ Toxic Atmosphere ❑ Low Oxygen ❑ Engulfment ❑ Electrical Shock ❑ Traffic		

PERSONNEL	**Currently trained in Confined Entry Procedure and use of appropriate equipment?**	
Entry Supervisor:	No	
Attendant(s):	YES	NO
	No	
Authorized Entrant(s):	YES	NO
	No	
	No	
	No	

REQUIRED HAZARD CONTROL MEASURES	
❑ Secure Area (Post & Flag)	❑ Communications Equipment
❑ Standby Safety Personnel	❑ Fire Extinguishers
❑ Line(s) Broken-Capped-Blanked	❑ Full Body Harness w/"D" Ring
❑ Lock Out/De-energize/Tag Out	❑ Gas Detector (Sniffer)
❑ Purge-Flush & Vent	❑ Tripod / Winch
❑ Mechanical Fresh Air Ventilator	❑ Davit / Winch
❑ Protective Clothing	❑ Burning & Welding Permit
❑ Lighting	❑ Personal Protective Equipment
❑ Respirator (Air Purifying)	❑ Traffic Control Plan # _____
❑ Other – Describe	

COMMUNICATIONS PLAN
Emergency Exit Signal:

EMERGENCY / RESCUE PLAN
ENTRY RESCUE by King County Zone 3 Technical Rescue team only. Call 9-1-1 .
Non-entry rescue approved where practical. Do not enter the confined space. Call 9-1-1 to start their response for follow-up medical assistance and assessment. Remove entrant(s) with retrieval system only if there is no danger to the entrant or the attendant. Provide First Aid or CPR as required until emergency responders arrive.

ATMOSHPERIC MONITORING

Gas Detector ID#:	Calibration Date:

Substance	Permissible Entry Level (WAC 296-841-20025, Table 3)	Monitoring Results								
		Pre Entry	**15 min**	**30 min**	**45 min**	**1 hr**	**1 hr 15 min**	**1 hr 30 min**	**1 hr 45 min**	**2 hr**
Oxygen	19.5% to 23.5%									
Hydrogen Sulfide	$TWA_{(8)}$ – 10 ppm STEL – 15 ppm (15 min.)									
Carbon Monoxide	$TWA_{(8)}$ – 35pm STEL – 200 ppm (5 min.)									
Explosive Gases	Less than 10%									

SPECIAL CONDITIONS

APPROVAL

All conditions for safe entry and operations have been satisfied. Entry Approved.	Entry Supervisor Signature:	Date / Time:
	Attendant Signature:	Date / Time:
Date and Time Issued:		

PERMIT LOG

Entrant	Time IN	Time OUT	Time IN	Time OUT	Time IN	Time OUT	Time IN	Time OUT

CONFINED ENTRY COMPLETION

Operations complete – Personnel clear of space – Area secure	Attendant Signature:	Date/Time:
	Entry Supervisor Signature:	Date/Time:

AFTER RECORDING, PLEASE RETURN TO:

District Engineer
Covington Water District
18631 S.E. 300th Place
Covington, WA 98042

Document Title: Easement for Water Pipeline

Grantor(s): _____

Grantee: COVINGTON WATER DISTRICT

Abbreviated Legal Description: _____

(Complete legal description on Exhibit A)

Assessor's Property Tax
Parcel/Account Number(s): _____

Reference Number(s) of
Documents Assigned
or Released: N/A

EASEMENT FOR WATER PIPELINE

The undersigned, _____ ("Grantor"), for and in consideration of good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, hereby grants and conveys to Covington Water District, a Washington municipal corporation in King County, Washington ("Grantee"), and its successors and assigns, a permanent easement for a water pipeline and appurtenances thereto ("Easement") as follows:

1. Nature and Location of Easement. Grantor owns that certain real property legally described in ***Exhibit "A"***, attached hereto and incorporated herein by this reference ("Real Property"). The Easement granted by Grantor herein shall be a permanent easement for the benefit of Grantee over, upon, across, through and under a portion of the Real Property, such Easement being legally described on ***Exhibit "B"*** and depicted on ***Exhibit "C"***, attached hereto and incorporated herein by this reference, for the purposes of installing, laying, constructing, maintaining, inspecting, repairing, removing, replacing, renewing, using and operating water lines, together with all facilities, connectors and appurtenances ("Water Lines"), including the right of ingress and egress with all necessary vehicles and equipment for said purposes.

2. Right of Entry. Grantee shall have the right, without notice and without prior institution of any suit or proceeding at law or equity, at all times as may be necessary to enter upon the Real Property to install, lay, construct, maintain, inspect, repair, remove, replace, renew, use and operate the Water Lines for the purposes of serving the Real Property and other properties with utility service. Grantee agrees to restore the Real Property as nearly as reasonably possible to its condition prior to any material disturbance from construction, operation, maintenance, repair, or replacement of the Water Lines.

3. Encroachment/Construction Activity. Grantor shall not undertake, authorize, permit or consent to any construction or excavation including, without limitation, digging, tunneling, or other forms of construction activity on or near the Easement which might in any fashion unearth, undermine, or damage the Water Lines or endanger the lateral or other support of the Water Lines without Grantee's prior written approval. Grantor further agrees that no structure or obstruction including, without limitation, fences and rockeries shall be erected over, upon or within the Easement, and no trees, bushes or other shrubbery shall be planted or maintained within the Easement, provided Grantor shall have full use of the surface of the Real Property within the Easement, so long as such use does not interfere with the Easement or the Water Lines.

4. Future Change of Grade. If, in the future, the surface grade of the Real Property is changed by the Grantor, the then owner of the property agrees to pay the District the cost of relocating the Water Lines so that the amount of earth covering the same (the depth thereof) meets the District's then minimum standards and specifications.

5. Binding Effect/ Warranty of Title. The Easement and the covenants, terms, and conditions contained herein are intended to and shall run with the Real Property and shall be binding upon Grantor and Grantee, and their respective successors, heirs and assigns. Grantor warrants that Grantor has good title to the Real Property and warrants the Grantee title to and quiet enjoyment of the Easement.

6. Indemnity. By accepting and recording this Easement, Grantee agrees to indemnify and hold harmless Grantor from any and all claims for injuries or damages suffered by any person or property which may be caused by the Grantee's exercise of the rights granted herein; provided, that Grantee shall not be responsible to Grantor for any injuries or damages suffered by any person or property caused by acts or omissions of Grantor or its agents.

7. Attorneys' Fees. If either party brings any suit or other proceeding arising out of or in connection with this Easement, the prevailing party (as determined by the court or other authority before which such suit or proceeding is commenced) shall, in addition to such other relief as may be awarded, be entitled to recover reasonable attorneys' fees and costs.

8. Recording. Upon its execution, the Easement shall be recorded with the Department of Records and Elections, King County, Washington.

Dated this _____day of _____, 20XX.

GRANTOR:

_____

_____

GRANTEE:

COVINGTON WATER DISTRICT

By: _____

Its: _____

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

INDIVIDUAL

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in the instrument.

DATED: _____

_____

NAME: _____
(Print Name)

Notary Public in and for the State of Washington
Commission Expires: _____

If the legal owner of the Real Property is not an individual, please complete the following signature verification information:

Signature Verification – Representative Capacity

I hereby certify that I am the authorized signatory for the legal owner of the Real Property. Attached herewith is verification of my authority to sign on behalf of the:

( ) Corporation
( ) Limited Liability Company
( ) Joint Venture
( ) Partnership
( ) Other – Specify: _____

_____
Signature

_____
Signature

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

REPRESENTATIVE

I certify that I know or have satisfactory evidence that _____ is the person(s) who appeared before me, and said person acknowledged that he/she/they signed this instrument, and acknowledged it as the _____ of _____ _____ to be the free and voluntary act of such entity for the uses and purposes mentioned in the instrument.

DATED: _____

_____

NAME: _____
(Print Name)
Notary Public in and for the State of Washington
Commission Expires: _____

STATE OF WASHINGTON)
) ss
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she/they signed this instrument, on oath stated that he/she/they was authorized to execute the instrument, and acknowledged it as the _____ of Covington Water District to be the free and voluntary act of such entity for the uses and purposes mentioned in the instrument.

DATED: _____

_____

NAME: _____
(Print Name)

Notary Public in and for the State of Washington
Commission Expires: _____

No. 323 Rev. 07/12

EXHIBIT A

LEGAL DESCRIPTION
OF REAL PROPERTY

EXHIBIT B

LEGAL DESCRIPTION
OF EASEMENT AREA

EXHIBIT C

DEPICTION OF EASEMENT AREA

18631 SE 300th Place
Covington, WA 98042
Phone: (253) 631-0565

For Office Use Only

Account Number: _____

METER #: _____ HYDRANT #: _____

DATE RENTED: _____ DATE RETURNED: _____

START READ: _____ END READ: _____

DEPOSIT: _____ RECEIPT: _____

HYDRANT METER RENTAL APPLICATION / AGREEMENT

Customer Information

COMPANY NAME: _____CONTACT PERSON: _____

OFFICE/MAILING ADDRESS: _____

TELEPHONE: _____ EMAIL: _____

PROJECT NAME & LOCATION OF SERVICE: _____

PURPOSE: _____

I, the Renter, agree to pay the District the following:

1) $150.00 deposit for fill ups at CWD per day or $2,500.00 deposit for the use of a backflow cart. Upon return of the meter, the District will apply the deposit towards payment of the water bill.
2) The daily fixed charge of $57.80 or the weekly fixed charge of $106.00, plus the usage of water at current cubic foot rates. Charges are payable upon receipt of the bill and will be considered delinquent nine (9) days after the due date.

I understand that the use of this meter and water is subject to the same collection and lien procedures under the law that regulates the water districts as provided in RCW 57.08.080.

I understand that the District is not responsible for water quality after it leaves the District hydrant and I agree to hold the District harmless for any water quality problems that may occur after the hydrant.

I further agree to protect the meter and the service where meter connects against damage and assume financial responsibility for the repairs made by such damage.

In the event of failure to pay the billings in the time specified above, the below signed agrees to pay all costs of collection, including reasonable attorney fees and costs. If signing as a corporate official, the below signed agrees to be personally liable for the billing.

In the event legal or other action is commenced to enforce any provision of this agreement, I agree that jurisdiction and venue may be had and laid in King County Superior Court or King County District Court, Kent Division.

Failure to use the District's hydrant meter cart for temporary connection to the water system is considered water theft and subject to a fine established by District Administrative Code 4.24.060.

WATER IS NOT TO BE TAKEN OUT OF THE DISTRICT SERVICE BOUNDARIES

_____ RENTER

_____ COVINGTON WATER DISTRICT

To: _____

Company: _____

Street Address: _____

City/State/Zip: _____

NOTICE OF AWARD

(Project Name)

Covington Water District has considered the BID submitted by you for the above-described WORK in response to its Call for Bids dated _____.

You are hereby notified that your BID has been accepted for items in the amount of _____($ __), **not including** Washington State Sales Tax.

Under separate enclosure, _____will provide **five (5)** contracts for signature on the above-referenced project. Since _____was the low bidder for this project, we are asking that you execute the contracts per the Contract Specifications.

Once the documents are executed on behalf of_____, return this letter and the documents to the District with the Bond as specified in the instructions to Bidders.

If you fail to execute said Agreement and to furnish said Bond within TEN (10) days from the date of this Notice, the District will be entitled to consider all your rights arising out of the District's acceptance of your BID as abandoned. The District will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the District.

Dated this _____ day of_____.

OWNER: Covington Water District, Covington, Washington

BY: _____

TITLE: Steve Lee, PE, Engineering Manager

ACCEPTANCE OF NOTICE

RECEIPT OF THE ABOVE NOTICE OF AWARD IS HEREBY ACKNOWLEDGED

By:_____(Contractor) this the _____ day of _____, 20__.

By: _____

Title: _____

NOTICE TO PROCEED

TO: Contractor Name
Address

DATE:
PROJECT:

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 20__ on or before _____, and you are to complete the WORK within ____ consecutive working days thereafter.

The date of completion of all work is therefore _____.

OWNER: Covington Water District

BY: _____
TITLE: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

CONTRACTOR:_____
DATE:_____
BY:_____
TITLE:_____
EMPLOYER IDENTIFICATION NUMBER:_____

18631 S.E. 300th Place
Covington, Washington 98042

OVERTIME AUTHORIZATION FORM

DISTRICT PERSONNEL APPROVAL FOR OVERTIME WORK ON PROJECTS

Developer/Contractor Instructions:

If the Developer needs the District to authorize overtime as reasonably necessary, the completed form must be signed and returned to the District before the work needs to occur. This authorization will be kept on file for the duration of project unless revoked by Developer / Contractor in writing. All charges for overtime inspection will be applied to the Developers Accounts Receivable Account.

Please note: All overtime hours must be **pre approved** by the employee's District Manager **prior to** any overtime hours being worked (except in cases of emergency), based on the employment policies of the Covington Water District Employee Handbook.

Project Name:_____

CWD Project No.:_____

Developer:_____

Contractor:_____

Description of Work:_____

_____

☐ This is a one-time request.
Date of Work:_____ Work Hours: _____

☐ This authorization is valid throughout this project.

The Project Owner or authorized representative of the referenced project hereby acknowledges this request for District staff work beyond regular work hours and understands charges will be applied by the District based on rates outlined in the District's Rate Table II which are subject to change annually. 2015 overtime rates for Engineering staff time range between $95-$115 per hour, depending on whether the inspection is performed by an Engineering Technician or an Engineer. For exact hourly rates please inquire.

Signature: _____ Date: _____

Print Name: _____ Phone: _____

STOP WORK NOTICE

COVINGTON WATER DISTRICT

Project Name: _____{DEVELOPMENT}_____ Date: _____

CWD I.D.: _____{SID #}_____

Defective Work Deficient Skilled Labor Material Defects

Faulty Performance Method Work Will Not Meet Specifications

District Inspector has identified one or more of the above conditions exists and hereby orders the Contractor to stop work on the following improvements until the cause for the order has been eliminated:

Condition Warranting Stop Work Order: _____

_____

_____

REQUIRED CORRECTIVE ACTION(S): _____

_____

_____

If any work is covered, contrary to the direction of the Engineer or Inspector, it must, if required by the Inspector or Engineer, be uncovered for observation and/or replaced at the Contractor's Expense.

Promptly after STOP WORK NOTICE is Issued, Contractor shall correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer, remove it from the project and replace it with Work or Material that is not defective. Contractor shall pay all claims, costs, losses, and damages.

Covington Water District Inspector Date