

BLUE VALLEY METROPOLITAN DISTRICT

New Water Installation Standard Regulations

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CONTENTS

1. General Statement	
2. Section 1 - Connection Taps and Service Lines	**** Page 1
3. Section 2 - Water Main Extensions	**** Page 2
4. Section 3 - Meter Settings and Cross-Connection	**** Page 5
5. Section 4 – Water Usage Guidelines	**** Page 6
6. Appendix A-Construction of Water Service Lines	**** Page 8
7. Appendix B-Water System Extensions	**** Page 9
8. Standard Drawings	**** Page 11
Typical Trench	
Thrustblock	
Restrained Pipe	
Mainline Gate Valve	
Fire Hydrant Assembly	
Pipe Bollard	
Waterline Insulation	
Service Line	
Vertical Meter	
Horizontal Meter	

General Statement

This document is not intended to be a complete list of every requirement for construction in the District, but is designed as a guide to compliance with requirements for the installation of water main line extensions, service lines, water meters, and backflow devices. This document does not release the owner, builder, contractor, or their agents, from the responsibility to be familiar with the current requirements of BVMD & Grand County building codes, and applicable Federal and State standards.

Inspections by the staff of the BVMD are **required** for any modification of the distribution system, mechanical change to the water supply of any existing structure or modification of the site. Installation of main lines and service lines are restricted to between April 15th. and November 15th. The District does not provide building permit sign off outside of those dates. The restriction dates are subject to modification by District staff depending on weather conditions and project requirements. Exception to the installation dates may be considered on an individual basis by the District.

Inspections require a 48-hour notice to BVMD operations staff for proper scheduling. Inspections are made between the hours of 8am to 4:30pm M-F, excluding holidays. Call (970) 262-0217 to schedule.

Section 1 - Connection Tap and Service Lines

1.1 **General.** All new or replacement water service lines and appurtenances shall conform to the standard requirements of BVMD, including Appendix A of the Standards, and any specific requirements imposed at the time any required permits are issued.

1.2 **Permit.** No tap, connection or service line may be constructed unless specifically authorized by the District. The sign off of a Grand County building permit by the District is authorization by the District and considered the permit for construction. The issuance of a permit for water service by the District and acceptance of such permit and service by the property owner shall grant and confirm an easement to the District to inspect, repair and/or replace any water facility located on such property served, including the water meter.

1.3 **Access.** Application for or receipt of service from the District shall be deemed to give permission by the property owner to allow a representative of the District to enter the premises for the purpose of inspecting and repairing water service lines, water meter facilities, shut off valves and appurtenances, and for water sampling.

1.4 **Construction and Connection.** Construction and connection of all service lines shall be done by contractors holding a valid license as required by Grand County for such work together with adequate insurance and bonds.

1.4.1 **Licenses.** A license issued by the State of Colorado and Grand County in accordance with the Technical Plumbing Code of the State of Colorado shall be acceptable to the District provided that the District shall have the right and option to revoke or restrict the approval of any contractor for cause as provided herein.

1.4.2 **Insurance and Bonding.** The insurance and bond requirements established by the State of Colorado for licenses under the above Plumbing Code are required as a minimum by the District. The District reserves the right to impose higher insurance and bond requirements where in the judgment of the District the liability and insurance exposure to the District or to the public is greater than that required by the State.

1.4.3 **Contractor Revocation.** The District reserves the right to revoke or restrict any approval for a contractor, that in the sole judgment of the District, fails to comply with the requirements of these Rules and Regulations, fails to notify the District for required inspections, fails to pay for and comply with the requirements of permits issued for any construction or in any way fails to provide good quality work and materials or for any unsafe practices or safety violations.

1.4.4 **Responsibility of Contractor.** All service taps, connections and/or service lines shall be constructed by a licensed and bonded contractor; however such work may be performed for him by journeymen or apprentices working under his supervision provided that such licensee shall be fully responsible for all work done under his supervision.

1.4.5 **Other Regulations.** All construction shall comply with Federal, State, County or local regulations regarding excavation, backfill, compaction and restoration of surfacing. All permits, fees and licenses for such construction shall be paid prior to the start of such construction.

1.4.6 **Barricades and Warning Devices.** The contractor shall provide and pay for adequate guards, barricades and /or lights to provide warning to the public as to the hazards presented by the work.

1.4.7 **Restoration of Work Area.** Streets, sidewalks, parkways and other public or private property disturbed in the course of work shall be restored in a manner satisfactory to the District and/or controlling agency.

1.5 **Separate Service Line Required.** A separate and independent service line shall be provided for every building and individual ownership. The Board may, in the exercise of its sole discretion, provide exemption from the above requirement for structures that are part of a mobile home park, condominium or homeowners association, townhome, or accessory unit. There must be a recorded notice of the common service line. The notice shall provide for repair and give notice the District will disconnect the line for any rules violation or failure to pay by any user of the common line. The District will bill the responsible owner, association or party of the common service line for service charges assessed by the District for water usage in total.

1.6 **Service Line Design.** It shall be the sole obligation of the property owner to have the service line designed to provide adequate water service to his structure. Such line shall be designed so as to provide adequate pressure drop and water volume to the structure under maximum demand conditions. Pressure drop should not exceed 10 psi.

1.7 **Unmetered** connections shall not be permitted onto a service line or as part of a service line. Service line connections ahead (upstream) of the meter may be permitted only when required for fire protection, or under temporary or emergency circumstances when

necessary to protect the public health, and only then when authorized by the District.

1.8 **Multiple service lines** may be built in a common trench provided that such service lines are separate and independent and have a separation of at least 12 inches unless otherwise approved by the District. Part of the approval process will consider whether the common trench for the service lines has a good and proper easement for repair, maintenance and/or replacement by each property owner being served.

1.9 **Limited Pressure.** Certain areas of the District may have limited water pressure. Owners within limited pressure zones should have pressure-enhancing devices engineered for the dwelling. The devices may include pumps and individual storage tanks. All cost for engineering, installation and maintenance are the responsibility of the owner.

1.10 **Stub-Out.** In order to reduce future excavation of sensitive areas and when it is determined to be in the best interest of the District and property owner, stub-outs for future service may be required. The stub-outs must be constructed, inspected and tested the same as any other service line. Tap fees may be deferred by the District until service is actually connected to a structure, however inspection fees must be paid prior to the start of construction of any such stub-out.

1.11 **Certificate of Occupancy.** The District may withhold approval for a Grand County Certificate of Occupancy if any rule or regulation is not followed.

1.12 **Variance.** Should the requirements of this section be impractical, the owner may submit a plan to the District for review. If the plan complies with the intent of this section the District may approve the plan. All costs incurred for such plan review shall be at the property owner's expense. Any approved variance shall require as-built plans supplied to the District.

Section 2 - Water Main Extensions

2.1 **General.** The requirements of these Construction Standards, including Appendix B attached, are applicable to the construction of all water main line extensions. All installations must be approved by BVMD and constructed as shown on the approved plan. The regulation shall apply for any proposed water service to more than one single dwelling unit unless the District classifies such extension as a serviceline.

Additions to the BVMD distribution system shall typically follow standards set forth by the American Water Works Association. Updates and revisions may not be shown in this document, but will apply as these standards become recognized.

2.2 **Water Main Line Extensions by the District.** The District has the right to construct all water mains within the District. Developers who desire to construct water mains may do so as provided in Appendix B.

2.3 **Procedure for Water Main Extension by the District.** The District may construct any water main if the Board deems it in the best interest of the District to do so, under such terms and conditions as shall be determined by the Board of Directors.

2.4 **Procedure for Water Main Extension by Developers.** The District has no obligation to extend any water main. In the discretion of the Board, the Board may permit an applicant to construct water mains, at the sole expense of the applicant. The applicant shall enter into a written water main extension agreement with the District.

2.4.1 All applicants desiring to construct a water main within the District shall first make application to the District for approval. This application shall be in writing, and shall contain a legal description of the property to be served by the water main and the information requested in Appendix B. The District may require review of the application by an Engineer selected by the District. The Engineer shall have responsibility to review all proposed extensions of water facilities, to establish good engineering practices and to report to and advise the District as to adequate sizing, proper locations and general design considerations for any proposed extension. The cost of the Engineer's review shall be borne by the applicant.

2.4.2 Prior to the execution of the water main extension agreement with the District, the District may require the applicant to deposit with the District an amount sufficient to compensate the District for engineering fees, legal fees, and other costs, except direct construction costs, anticipated to be incurred by the District as a result of the application and the construction of the water main.

2.4.3 All water mains shall be constructed according to applicable District, County and State specifications. The District may require all water main extensions to be inspected by an engineer acceptable to the District at the applicant's expense. All inspection fees on water mains required by any governmental agency shall be paid by applicant.

2.4.4 Special structures such as pressure reducing valve vaults, meter vaults, etc., required to ensure proper operation of the extensions, shall be constructed from designs of the Engineer.

2.4.5 The applicant shall be responsible for over sizing water main extensions as required by the District. The cost of such over sizing may be recovered from future applicants benefiting from such over sizing.

2.4.6 Applicants who have completed construction of water mains shall, before the water mains are accepted by the District, deed the water mains and appurtenances to the District, free and clear of all liens and encumbrances, and furnish to the District a warranty for a minimum of one year from the date of acceptance of the water mains by the District. The District may require a deposit or bonding to insure maintenance is performed during the warranty period. Prior to the acceptance of water mains by the District, the applicant shall provide the District with (1) all necessary easements accompanying the water mains, (2) one set each of reproducible as-built drawings, a white copy, and a copy in CAD digital format, a statement of certified cost of the water mains constructed, (4) payment of all fees and cost reimbursements due to the District, and (5) billing information on all new properties within the extension including name, mailing address, property legal address, property street address and unit density.

2.4.7 The District will not provide service to any consumer served by any water main until and unless such main is owned by the District. The District may agree to accept a part of the water main constructed that is substantially complete so that water service may be provided. Any deficiencies or incomplete items must be itemized and the applicant must make adequate arrangements to assure the District that such items will be completed within a reasonable time at no cost to the District.

2.5 **Water Main Sizes.** The size of the water main required to serve any area served by the District shall be determined by the District.

2.6 **Location Main Line Extensions.** Water mains shall be installed in roads or streets which the County, State, and other public agency has accepted for maintenance as a public right-of-way, as well as in easements granted to the District. When facilities must cross land not being subdivided, or where such land is under the applicant's control for the granting of public rights-of-way, each applicant who desires service will, in consultation with, and with approval of the District, plat and grant to the District appropriate right-of-way and easements in which such facilities will be constructed. All "non-applicant owned" easements required to construct and maintain the facilities will be obtained by the applicant and conveyed to the District in the same manner as "applicant-owned" easements.

2.7 **Water Main Extension Rebate.** The District shall, in its sole discretion, determine if and when reimbursement may be made for water main extensions and the terms of any such reimbursement.

2.8 **Conditions and Design Criteria.**

2.8.1 **Criteria.** Design of water lines and facilities providing water service within or on behalf of the District shall meet the minimum requirements as set forth herein; established State and District standards and good engineering practice. Such facilities shall be sized to provide adequate service, including fire flows, to not only the initial area being served, but also for future development that may be served by or an extension of such facilities.

2.8.2 **Review.** It shall be the obligation of the District to review all plans, specifications and related documents to assure that such plans, etc. conform to the approved conceptual plan; establish good engineering practice and are of adequate sizing, proper locations and general design considerations for any proposed extension. The District may engage an Engineer on behalf of the District to review any design.

2.8.3 **Fees.** The District may require a prepayment or deposit on all anticipated costs to the District for the review and the inspection process. All costs associated with the review and inspection process shall be payable by the applicant. Any participation by the District in sharing of costs, over sizing of mains or otherwise shall be addressed in the initial step of the approval process.

2.9 **Approval Process.** The approval and acceptance process for any proposed extension of the District's water facilities shall consist of the following steps:

2.9.1 **Conceptual Plan Review.** The applicant shall submit a report fully setting out the proposed facilities and water service requirements of the proposed extension. Any major change or modification of the concept presented and approved will require secondary review and approval by the Board of Directors, therefore, in the interest of saving time and money this report should be

detailed and complete. The report shall be prepared by a registered professional engineer, licensed by the State of Colorado, and who has experience engineering water systems under similar geography and locations (specifically mountainous developments). Approval by the District of a conceptual plan shall expire one year after the date of review or agreement unless construction has commenced within such period.

2.9.2 Preliminary Plans and Specifications. After agreement of the District and Applicant on the conceptual plan, the Applicant may then proceed with design surveys, detail plans and specifications for the proposed extension. The submittal for review by the District shall be in duplicate so that one copy can be returned to the Applicant's engineer with revision notations marked thereon and one copy retained for the District's records. The plans shall be 24" x 36" size and include design calculations, design basis and hydraulic calculations. The District shall have the option of requiring suitable contour maps, copies of recorded filing plats and/or plan and profile sheets. Any variations from the District's Requirements for Water System Installations or standard drawings must be reviewed at this stage. It is recommended that these plans be submitted for review to the District as work progresses so that any questions or problems can be resolved prior to submitting final plans and specifications.

2.9.3 Final Plans and Specifications. Final plans may be submitted after preliminary approval or instead of preliminary plans. However, skipping the preliminary stage is not recommended as considerable time delays and expense can be incurred in making revisions to such final plans when required by the District.

2.9.3.a Specifications. Plans shall conform to the Standard Forms of Agreement published by the Engineers' Joint Contract Documents Committee and specifically the Standard General Conditions of the Construction Contract; Special Conditions prepared under the guidelines of Guide to the Preparation of Supplementary Conditions; Standard form of Agreement between Owner and Contractor; Change Order form; Certificate of Substantial Completion and other applicable forms. In addition to standard contract forms, the Engineer for the Applicant shall submit detailed Technical Specifications for various construction items to be constructed. Detail design calculations, hydraulic flow analysis and design details shall be submitted or updated.

2.9.3.b Sets. A minimum of six sets of complete plans, 24" x 36" in size, and specifications shall be submitted to the District. Three sets will be returned, two sets are retained by the District and one set may be forwarded to the County Engineering Department. Additional sets may be submitted which the District will also mark with appropriate approval notations and return to the Applicant for his use. The Applicant or his contractor must have one set of the approved Plans and Specification on the construction site at all times.

2.9.3.c Other Jurisdictions. The final plans and specifications shall include copies of all required application forms for review by the State and County Health Departments, County Planning Department and other governmental agencies that have jurisdiction. It shall be the responsibility of the Applicant's engineer to submit plans and obtain approvals from governmental agencies as required for the proposed construction.

2.10 Construction. After all approvals for the proposed construction have been obtained the Applicant may then proceed to employ a contractor. The Contractor is responsible, prior to starting work, to schedule a pre-construction meeting to include at least the Contractor, District staff, and the Applicant. Such meeting requires a 48-hour notice.

2.10.1 Insurance and Bonds. As soon as a contract is awarded, a copy of the required certificates of insurance, performance and payment bonds and an executed copy of the construction contract shall be submitted to the District. Upon approval of these documents the Applicant will be allowed to start construction.

2.10.2 Start Notice. The Applicant or his contractor shall provide a minimum of 48- hours notice to the District of intent to start construction so that an inspector can be available to allow the contractor to start. No work may begin without the presence of the inspector and/or authorized representative of the District.

2.10.3 Inspection. The presence of the inspector and/or District representative shall be for purposes of observing the work being done by the contractor and in no way shall such presence relieve the Applicant, his engineer or his contractor from obligations to provide proper workmanship and materials, as well as undertaking proper safe work conditions and full compliance with all governmental rules and regulations. Cost of the inspections shall be borne by the Applicant. Inspections are required for the installation and repair of all water mains, service lines and water service appurtenances tied to the water distribution system.

2.10.4 Whenever it is necessary to operate valves for main extensions, District staff shall be notified and shall be the only authorized personnel to do so.

2.10.5 **Records.** The Applicant, his engineer and/or his contractor shall be responsible for keeping records of locations of water facilities as constructed and to provide such records to the District for purposes of updating the maps and records of the District.

2.11 **Final Acceptance.** All or any part of the proposed construction that is substantially complete may be conveyed to the District so that water service can be provided. The District will not provide service to any consumer served by any water main until and unless the District owns such main. Conveyance cannot be made unless all requirements below are met.

2.11.1 **Deficiencies.** Any deficiencies or incomplete items in a system to be conveyed to the District must be itemized and the Applicant must make adequate arrangements to assure the District that such items will be completed within a reasonable time at no cost to the District.

2.11.2 **Locations and Easements.** The Applicant shall be responsible for providing accurate surveys of the locations of constructed water lines, hydrants, etc; preparation of descriptions for easements and conveyance of facilities and deeds of easements and facilities. Such descriptions shall be submitted to the District. The form of deed etc. shall be as required by the District.

2.11.3 **Owner List.** The Applicant shall supply a list of all customers to be supplied by the service including name, billing address, lot unit designation, lot improvement status, and meter number (if applicable).

2.11.4 **Payment.** All cost associated with the service to be conveyed must be paid in full or a guarantee of payment acceptable to the District in place.

Section 3 - Meter Settings and Cross-Connection

3.1 **General.** All plumbing systems taking water from the District's potable water supply shall meet the requirements established by the Uniform Plumbing Code as adopted by Grand County, Colorado. In addition all such services must install a water meter and associated equipment. All meters are specified and supplied by the District and are to be installed in accordance with these Standards.

3.2 **Separate Meters.** Each property owner shall have an individual water meter.

3.2.1 The District may grant exceptions to the requirement for separate meters in the case of condominium or similar multiple structures provided that recorded declarations or other legal documents establish a single responsible entity for such common structures with the power to enforce these Standards and the Rules and Regulations including payment of charges levied by the District. In the case of non-payment the District may place a lien against all properties served by any water meter.

3.3 **Installation.** Installation of the water meter is the responsibility of the property owner. The meter location shall be inside the premises in a location that protects it from freezing. The first connection to the service line must be an isolation valve followed by a pressure-reducing valve, the water meter, an approved backflow device, when required, and a second isolation valve. If the service line needs extended to the location of the water meter it shall be done using an isolation valve that remains accessible. The water meter must be installed in the horizontal, upright position, which may require a meter yoke supplied by the District. No connections (tees, wyes, bleeders, spigots etc.) are allowed before the water meter. The District supplies the meter, meter yoke, pressure-reducing valve and remote reading device. The owner supplies all other associated equipment. **All meter installations shall be inspected by District staff prior to certificate of occupancy.**

3.4 **Maintenance.** The water meter is owned and maintained by the District. All other plumbing is the responsibility of the property owner. Should the meter need to be replaced a new meter will be supplied by the District and installed as set forth in 3.3.

3.5 **Meter Pits and Vaults.** The installation of meter pits and vaults require District approval. Meter pits shall be located within or adjacent to the easement or right of way connecting to the District's main and whenever possible out of traffic areas. The District may approve such locations if the owner provides adequate protection for the public and the meter. Meter manholes and vaults shall be designed to carry traffic loads.

3.6 **Meter By-pass.** A by-pass line around the water meter is permitted only when the District determines necessary and when approved must contain a shut off with locking device.

3.7 **Cross-Connection Policy.** The authority to implement and maintain a cross-connection control program is contained in the following legislative actions: (1) CRS Section 25-1-114 and 25-1-114.1. (2) Colorado Primary Drinking Water Regulation Article 12 Control of Hazardous Cross-Connections. (3) Colorado Cross-Connection Control Manual, Colorado Department of Public Health and Environment, latest edition. (4) Code of Federal Regulations Occupational Safety and Health Administration. (5) Colorado Plumbing Code. (6) Uniform Plumbing Code. (7) Uniform Swimming Pool, SPA and Hot Tub Code. (8) Colorado Swimming Pool and Mineral Bath Regulations. (9) Uniform Solar Code. Updates and revisions to the above will apply, as they become recognized standards.

3.7.1 The District will determine the degree of hazard.

3.7.2 No person shall operate an industrial fluids system, auxiliary water supply, or an owner water system that allows for the occurrence of a cross connection to the water utility.

3.7.3 All Costs for the design, installation, maintenance, repair, and testing of backflow prevention assemblies shall be borne by the customer.

3.7.4 The District shall have the right of entry to inspect any and all buildings and premises for cross connections relative to possible hazards, or to verify proper installation, testing, or repair of backflow prevention assemblies.

3.7.5 No person owning, managing, installing or repairing any water system in the District shall fail to comply with any of these rules. The District reserves the right to not provide service to any property that does not conform to this policy.

Section 4 - Water Usage Guidelines and Water Restriction Policies

The Blue Valley Metropolitan District recognizes that it is located in a semi-arid alpine environment. The physical source of the water for the District is a shallow aquifer recharged from the surrounding moderate height mountains. The infrastructure of the District is designed to provide a reasonable level of household use water for all residents at build out of the District. The District is a strong proponent of water conservation to insure the availability of quality water for all users. Weather conditions, extended periods of drought, equipment failures and contamination of the water source may lead to the mandatory restriction of water use by residents of the District.

Standard Water Usage Guidelines. The District encourages all users to practice water conservation. Recommended techniques for inside the home include installation of flow restrictive water fixtures and toilets, using water efficient appliances, using dishwashers and washing machines with full loads only, and regularly checking and fixing water leaks. Water usage outside of the home should recognize the unique character of our alpine environment. Any landscaping should be based on native drought tolerant plants and the use of xeriscape principles is encouraged. Landscaping designs should utilize drip irrigation systems when possible and minimize the use of spray irrigation. A large area of blue grass lawns are STRONGLY discouraged as it is not native and requires large quantities of water to maintain its appearance.

Normal water conservation practices encouraged by the Blue Valley Metropolitan District are:

- Do not use water to spray irrigate between 10 AM and 6 PM. Most of the water used will evaporate and this is an inefficient and wasteful use of water.
- Follow xeriscape principles for all outside landscaping and utilize drip type irrigations systems.
- Use water restrictive fixtures, toilets and appliances whenever possible.
- Frequently check and repair any household water leaks. Toilets are the most common source of water leaks in your home.

WATER RESTRICTIONS

Voluntary water restrictions for outside of the home are in effect from **May 1st through September 30th**.

- Outside usage is not allowed on Mondays and Thursdays.
- Outside usage is not allowed between the hours of 10 AM and 6 PM.
- Hand watering, using either a watering can or a hose with a shut off nozzle is **ALLOWED** at anytime (no restrictions as to days or time).
- Outside usage using drip irrigations systems is not restricted.

The District may impose water restrictions at anytime should they be necessary.

Invoking Restrictions. The District may impose water restrictions due to weather conditions, periods of drought, equipment failures or as result of water contamination. Restrictions may be imposed with the following steps. (1) Recommendations of the District Administrator and District Operator, or employed water operators of the District, or the contracted operator of the District; (2) Approval of the recommendations by a majority of the members of the Board of Directors at a regular or special meeting of the Board. In the event of an emergency, the restrictions may be imposed with the approval of the President of the Board or the acting President of the Board.

MANDATORY – The voluntary water restrictions in effect from May 1st through September 30th are mandatory.

STAGE 1 – The District is experiencing or anticipates potential water shortages.

- No outside water usage is allowed between 10 AM and 6 PM
- Even number addresses – outside water usage is allowed **ONLY** on Sundays and Wednesdays (before 10 AM and after 6 PM).
- Odd number addresses – outside water usage is allowed **ONLY** on Tuesdays and Saturdays (before 10 AM and after 6 PM).
- Hand watering, using either a watering can or a hose with a shut off nozzle is **ALLOWED** at anytime (no restrictions as to days or time).
- Outside usage using drip irrigations systems is not restricted.

STAGE 2 – The District is experiencing a severe water shortage.

- **NO** outside water usage is allowed.

Violations. The District Administrator or the District Operations Manager will issue water violations. The first violation will be a warning reported to the property owner either orally or in writing. Reporting the violation to the property occupant, whether the owner or a tenant, is deemed to be notice to the owners. Each day on which a violation occurs will be a separate violation. Subsequent violations of water restrictions shall carry the following fees which will be billed on the next quarterly water billing.

- 2nd violation - \$100 fee.
- 3rd violation - \$500 fee
- 4th violation - \$1,000 fee
- 5th violation – shut off of water service.

Violation notices which subject the property owner to a fee shall be in writing. The District will mail the notice by US Mail and post the violation notice on the property to inform the property owner of the violation. Any owner receiving a violation may by written notice to the District Administrator within 10 days after receipt of the violation request a hearing before the Board of Directors to contest the violation. The hearing will be held at the next meeting of the Board.

Appendix A - Construction of Water Service Lines

A.1 General. All installations (new, replacement and repair work) must be approved by the District and constructed as shown on the approved plan. Additions to the BVMD distribution system shall typically follow standards set forth by the American Water Works Association. Updates and revisions may not be shown in this document, but will apply as these standards become recognized. District personnel are not responsible for contractor work site safety compliance or enforcement of applicable safety regulations and standards. Orders given by District staff relating to quality of materials and workmanship shall be obeyed at once by the Contractor.

A.2 All materials must be new, undamaged and of the highest quality meeting the AWWA standards. **All services** shall be appropriately sized ($\frac{3}{4}$ " minimum), type K soft copper or HDPE SDR9 Copper Tubing Size for services $\frac{3}{4}$ " and 1". For services larger than 1" an appropriate AWWA standard material must be approved by the District.

A.3 Service Taps shall be separated by at least 18" and no closer than 24" to the end of pipe sections or appurtenances. Taps shall be made using two strap saddles of brass or bronze body and stainless steel, bronze, or brass straps, with AWWA thread and an O-ring gasket. The tap location shall be at a point no less than 5 feet inside the property lines extended. Such property lines are defined as the lot or building envelope lines extended perpendicular to the water main easement to a point on the water main. This is to provide that no service line for one property will pass in front of another property or open space.

A.4 Corporation stops must be brass or bronze in the same size as the copper service line, be AWWA standard inlet thread and compression type outlet.

A.5 Curb stops shall be brass or bronze body in the same size as the copper service line, standard T-head operator and 90 degree rotation with compression type outlets.

A.6 The service line shall run perpendicular from the tap to the curb stop. Service taps serving lots on curves or cul-de-sacs shall be perpendicular from the main for 5 feet then radial perpendicular to the curb stop. The curb stop should be located near the property line and be accessible at all times.

A.7 Curb boxes shall be an arch pattern box with 1" upper section and 2-hole Erie pattern lid or equivalent for up to 1" services. All boxes require an extended rod and must be properly supported to prevent settling on the valve. Curb boxes must be set to final grade and if located in a driveway the use of a "monument box" is required to protect the lid from damage.

A.8 Service lines shall be one continuous piece from corporation to curb stop and from curb stop to first valve. **Couplings** in the service lines are not allowed unless necessary due to the length of service line in which case the coupling must be brass or cast bronze body with compression type outlets, located downstream from the curb stop and no closer than 15' from a building structure or foundation.

A.9 Service lines shall be buried a minimum of 9' from top of pipe to finished grade. When 9' is not possible, 2" thick closed cell insulation ("blue board") may be approved by the District. When approved, insulation shall be 2" thick for every missing foot of cover. Insulation must be placed on top of bedding material and be a minimum of 2 feet wide. At no time shall the cover be less than 7 feet. Even though a service line is insulated and provided with the specified cover, the property owner remains responsible to maintain the service line and preventing the line from freezing.

A.10 Trenches must conform to the most recent standards adopted by OSHA. Trench alignment and grade excavation shall be from off set stakes established from the approved drawings. Trenches shall be kept free from water during pipe laying and remain that way until safety and product quality are no longer compromised. Spoil material unsuitable for backfill must be disposed of off-site. Backfilling must meet the requirements of the appropriate agencies. For general public safety considerations the service line installation and backfill shall be in a timely manner (i.e. the same day).

A.11 Bedding material shall be $\frac{3}{4}$ " minus or $\frac{3}{8}$ " minus clean rock. Bedding must consist of a minimum of 6" under and 12" above the pipe. Bedding must be installed evenly and free of voids to provide full support of the pipe over its entire length.

A.12 Sewer lines. Water lines shall be located a minimum of 10' horizontally from existing or proposed sewer lines. Shall a sewer main or service cross above or within 2' beneath the water lines, BVMD shall be notified for approval of such crossing. **No soldered connections** shall be allowed underground.

A.13 Service Lines exceeding 1" are to be disinfected in accordance with AWWA C-600 and will require a full pipe diameter flush prior to acceptance.

A.14 Service lines will be inspected to guard against leaks at all connections either visually or through a pressure test.

Inspection of a service line by BVMD personnel is MANDATORY prior to acceptance by the District. All connections, bedding, insulation and related work must be approved prior to backfill. Inspections require a 48-hour notice to BVMD operations staff for proper scheduling. Inspections are made between the hours of 8am to 4:30pm M-F, excluding holidays. Call (970) 262-0217 to schedule.

APPENDIX B - WATER SYSTEM EXTENSIONS

B.1 General. No person, firm or entity shall construct any extension or addition of the District's water facilities without having prior formal approval of the District for such construction. AWWA C100, C600, and C500 series are the compliance standard adopted by BVMD. District personnel are not responsible for contractor work site safety compliance or enforcement of applicable safety regulations and standards. Orders given by District staff relating to quality of materials and workmanship shall be obeyed at once by the Contractor.

B.2 CL 52, push-on-joint, cement lined DIP, & C900 DR18 pipe are the accepted materials for water main and large (>2") service feeder lines. >2" service lines shall also conform to service line standards. All DIP pipe joints must be copper strapped or cad welded for electrical conductivity. Where cad welding is the method chosen a minimum 4 gauge single strand copper wire must be used and any exposed metal must have a cold tar covering. All C900 pipe shall include 12 gauge single strand insulated wire with waterproof splices. **Minimum depth of bury shall be 9 feet** to top of pipe at finished grade.

B.3 Trenches must conform to the most recent standards adopted by OSHA. Trench alignment and grade excavation shall be from off set stakes established from the approved drawings. Trenches shall be kept free from water during pipe laying and remain that way until safety and product quality are no longer compromised. Spoil material unsuitable for backfill must be disposed of off-site. Backfilling must meet the requirements of the appropriate agencies.

B.5. Bedding material shall be 3/4" minus or 3/8" minus clean rock. Bedding must consist of a minimum of 6" under and 12" above the pipe. Bedding must be installed evenly and free of voids to provide full support of the pipe over its entire length.

B.6 Thrust Restraint- Appurtenances must be properly braced by concrete thrust blocks and supported with mega-lugs and/or threaded rod and nut assemblies. All concrete must have an 8-mil minimum polyethylene plastic sheet separating it from pipe and nut and bolt assemblies.

B.7 Hydrant installations shall conform to AWWA C502, and have a minimum 6" feeder line. Dry barrel, Mueller Super Centurion models, mountain bury (9'), mountain spec (42" from finished grade to center line of steamer connection) shall be the type accepted by the District. Hydrants are not to be fabricated on site with additional stem extensions and couplings. Hydrants shall have one breakaway flange and stem coupling located 3" above finished grade. Any repair parts shall be original equipment manufacturer only, **no after market parts allowed.**

B.8 Valves shall conform to AWWA C509 for resilient seat, non-rising stems Mueller gate valves, and shall **open-left.**

B.9 Valve Boxes shall be set plumb and true, centered over the 2" operating nut and installations must be supported to keep from settling. Valve boxes must not be above and no more than 6" below finished grade. For installations in asphalt or concrete the top of lid assembly must be 1/2" below finished grade.

B.10` Service Taps shall be separated by at least 18" and no closer than 24" to the end of pipe sections or appurtenances. Taps shall be made using two strap saddles of brass or bronze body with stainless steel, bronze, or brass straps, have AWWA thread and an O-ring gasket.

B.11 Sewer Lines. Water lines shall be located a minimum of 10' horizontally from existing or proposed sewer mains or service. Wherever a sewer main or service cross above or within 2' beneath the

water lines, BVMD shall be notified for approval of such crossing.

B.12 Disinfection of new water mains should be met by using calcium hypochlorite crystals added during the pipe installation in the trench.

B.13 Line Testing. All testing must be carried out with a District representative present.

B.13.1 Line must be filled slowly with water to dissolve chlorine crystals while removing air at the same time.

B.13.2 Line is to remain static for a minimum of 24 hours (48 hours recommended), after which representative free residual chlorine samples will be drawn by district personnel with a minimum of 25 mg/l present to pass. After disinfection has passed super-chlorinated water shall be removed in a safe manner.

B.13.3 A hydrostatic test will then be performed for a minimum of 2 hours at 150 psi or 1.5 times the working line pressure whichever is greater.

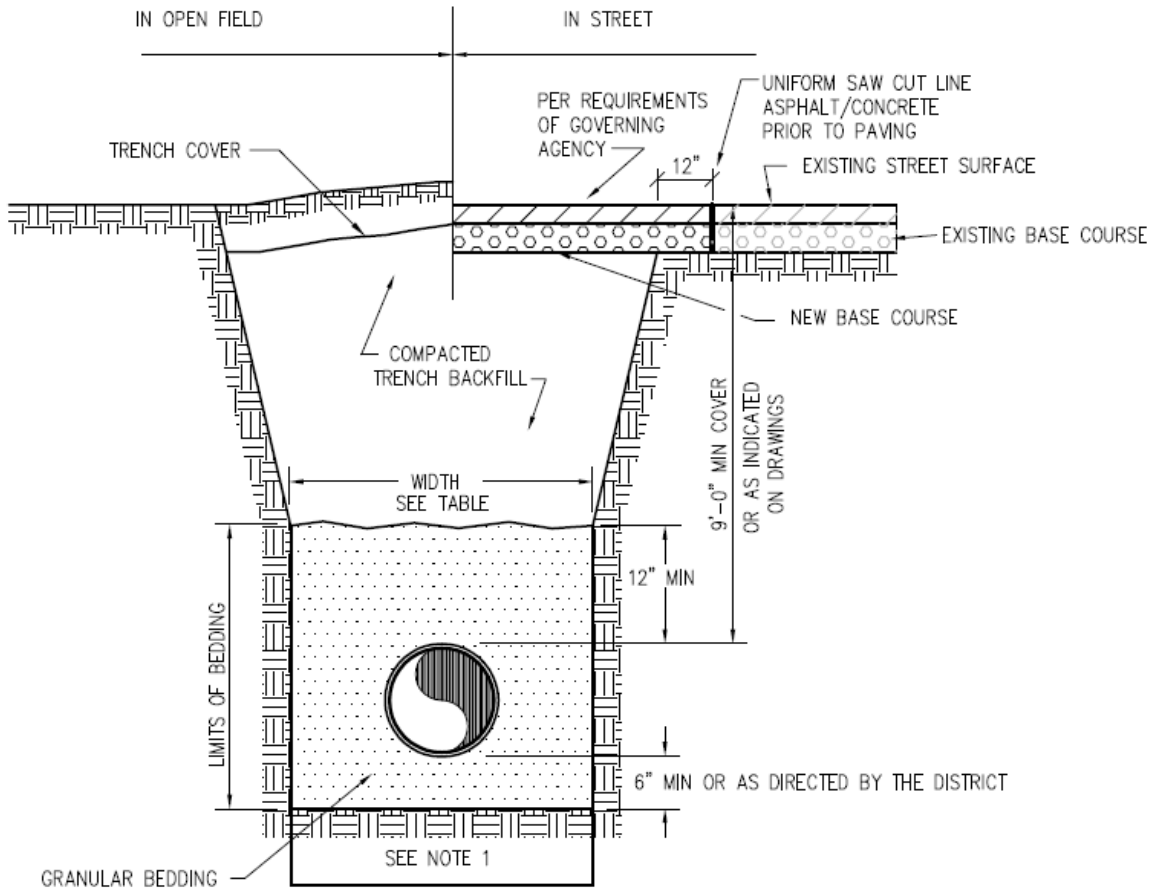
B.13.4 Following a successful hydrostatic test the line must be flushed at maximum velocity from hydrants.

B.13.5 A bacteriological test and electrical conductivity test may be required at the District's discretion.

BLUE VALLEY METROPOLITAIN DISTRICT

STANDARD DRAWINGS

Effective January 31, 2017
Updated December 11, 2017



PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-6"	2'-6"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
10"	2'-0"	3'-0"
12"	2'-0"	3'-0"
16"	2'-6"	3'-6"
18"	2'-6"	3'-6"

NOTE:

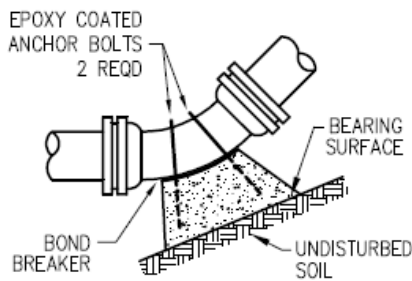
1. IF UNSTABLE MATERIALS OR UNACCEPTABLE CONDITIONS ARE FOUND IN TRENCH BOTTOM, OVEREXCAVATE AS DIRECTED BY THE DISTRICT.
2. MINIMUM COVER TO BE BELOW FINAL GRADE.

NO.	DWN	DATE	REVISION



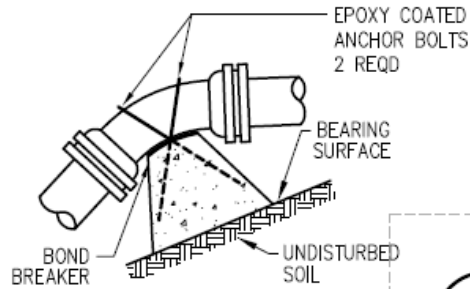
**TYPICAL TRENCH SECTION
DETAIL**

Approved:	SHT: W-1
Date: 04-2005	Scale: NTS
	DWN: RTW

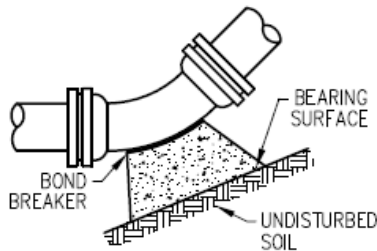
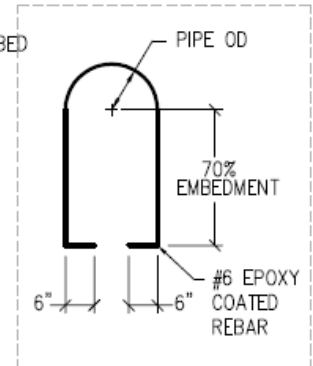


UPWARD BEND

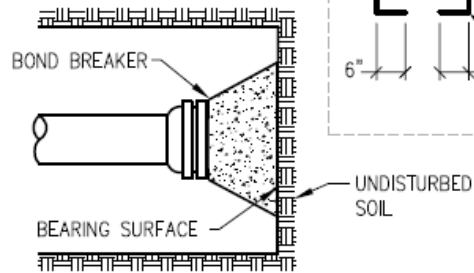
THRUST BLOCK SHALL NOT INTERFERE W/ MECHANICAL JOINT BOLT OPERATION



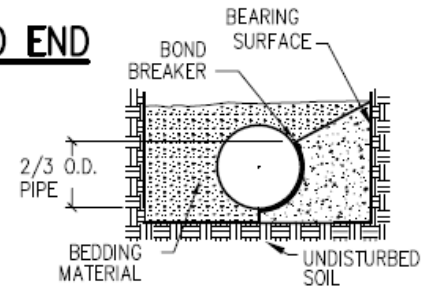
DOWNWARD BEND



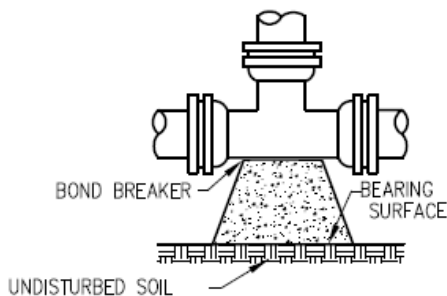
11 1/4', 22 1/2', 45' AND 90' BENDS



DEAD END



TYPICAL CROSS SECTION



TEE

NOTES:

1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM SQUARE FEET.
2. BASED ON SOIL BEARING CAPACITY OF 2,500 lb/s.f.
3. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS 100 PSI WATER HAMMER
4. ALL FITTINGS TO BE CONCRETE THRUST BLOCKED AND TO HAVE RESTRAINED JOINTS PER LENGTH OF RESTRAINED PIPE DETAIL.
5. POLYETHYLENE WRAP ALL FITTINGS PRIOR TO PLACING CONCRETE FOR THRUST BLOCKS.

SIZE OF PIPE	B E N D S				TEE OR DEAD END
	11 1/4'	22 1/2'	45'	90'	
4"	1.00	1.00	1.00	NA	1.50
6"	1.00	1.25	2.25	NA	3.00
8"	1.00	2.00	4.00	NA	5.25
10"	1.80	3.50	6.50	13.00	8.75
12"	2.00	4.25	8.25	NA	11.00
16"	5.00	6.50	12.50	23.00	16.50
20"	3.50	10.00	19.50	35.50	25.00

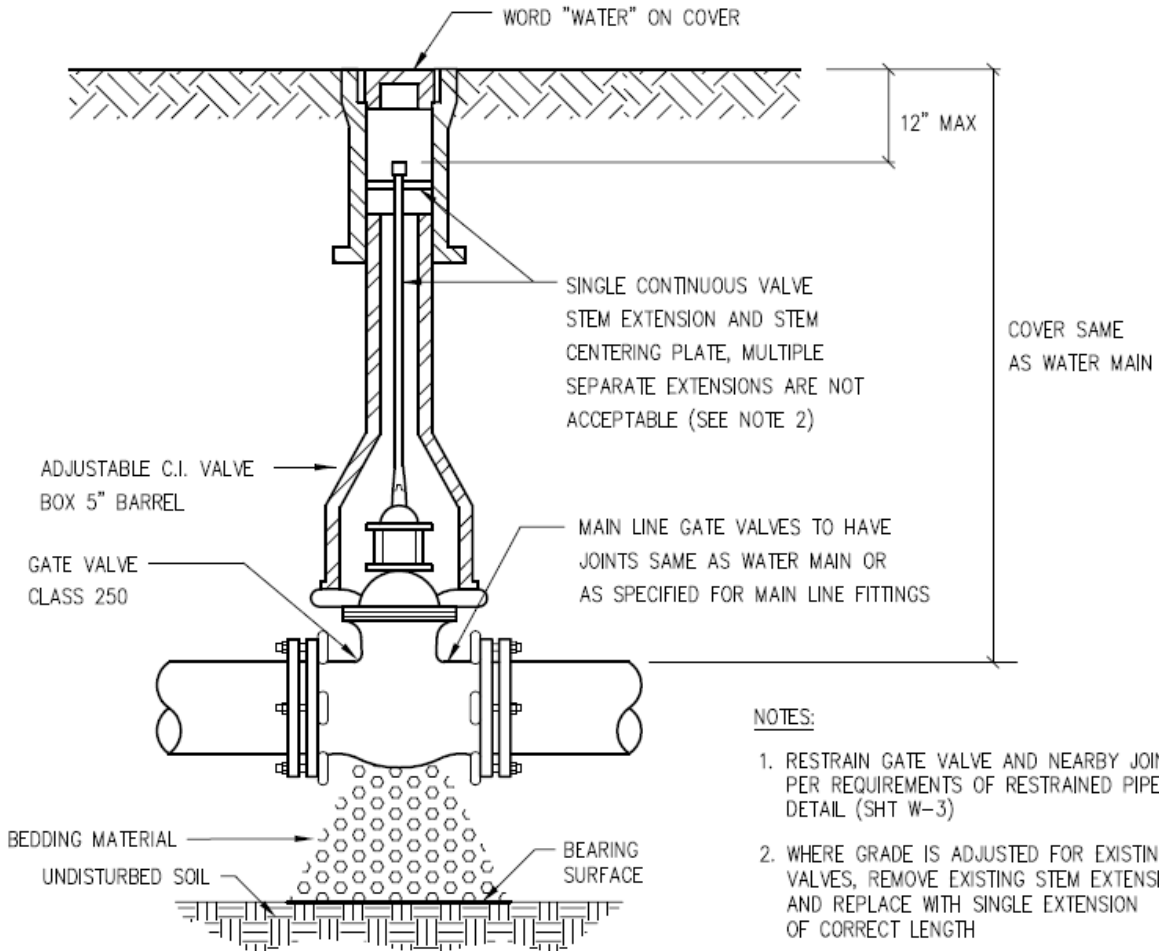
MINIMUM BEARING SURFACE AREA

NO.	DWN	DATE	REVISION



TYPICAL CONCRETE THRUSTBLOCK BEARING SURFACES AND INSTALLATION DETAIL

Approved:	SHT: W-2
Date: 04-2005	Scale: NTS DWN: RTW



NOTES:

1. RESTRAIN GATE VALVE AND NEARBY JOINTS PER REQUIREMENTS OF RESTRAINED PIPE DETAIL (SHT W-3)
2. WHERE GRADE IS ADJUSTED FOR EXISTING VALVES, REMOVE EXISTING STEM EXTENSION AND REPLACE WITH SINGLE EXTENSION OF CORRECT LENGTH

1	RTW	10/17/03	STEM EXTENSION
NO.	DWN	DATE	REVISION

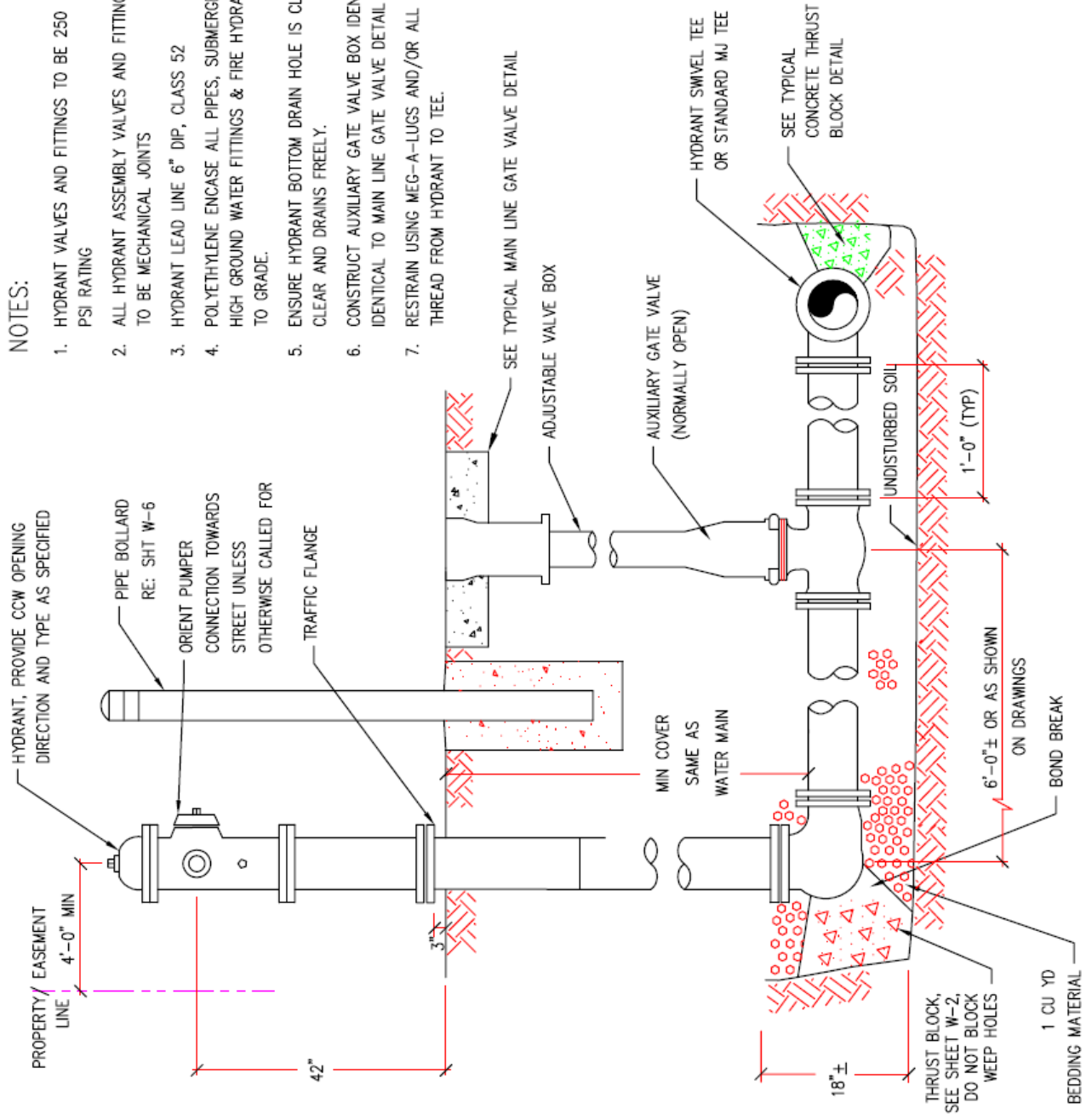


**TYPICAL
MAIN LINE
GATE VALVE DETAIL**

Approved:	SHT: W-4
Date: 04-2005	Scale: NTS
	DWN: RTW

NOTES:

1. HYDRANT VALVES AND FITTINGS TO BE 250 PSI RATING
2. ALL HYDRANT ASSEMBLY VALVES AND FITTINGS TO BE MECHANICAL JOINTS
3. HYDRANT LEAD LINE 6" DIP, CLASS 52
4. POLYETHYLENE ENCASE ALL PIPES, SUBMERGED IN HIGH GROUND WATER FITTINGS & FIRE HYDRANT TO GRADE.
5. ENSURE HYDRANT BOTTOM DRAIN HOLE IS CLEAR AND DRAINS FREELY.
6. CONSTRUCT AUXILIARY GATE VALVE BOX IDENTICAL TO MAIN LINE GATE VALVE DETAIL
7. RESTRAIN USING MEG-A-LUGS AND/OR ALL THREAD FROM HYDRANT TO TEE.

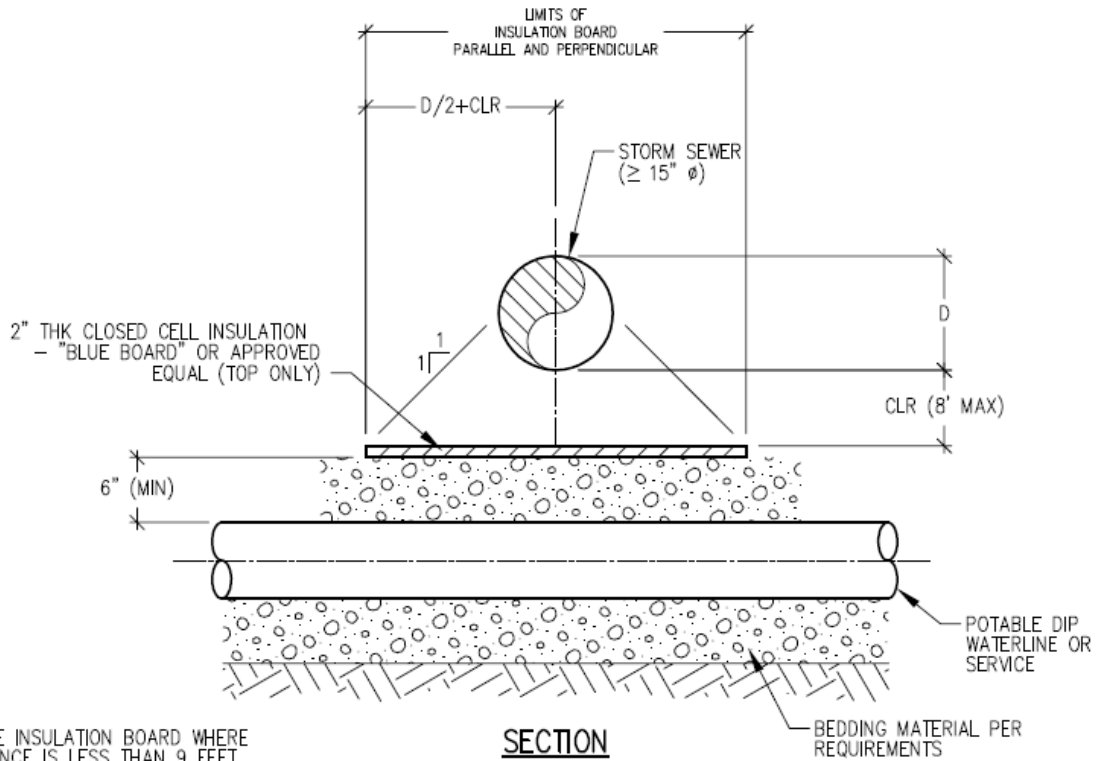
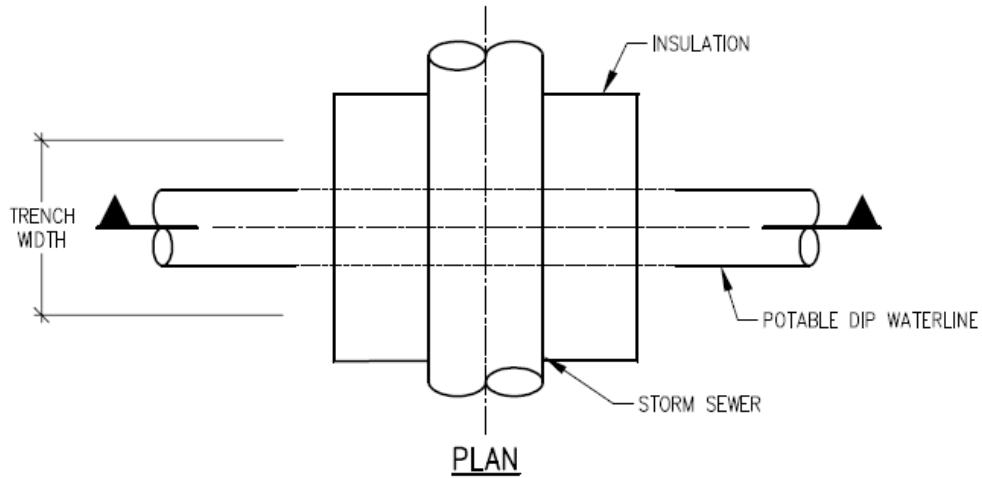


NO.	DWN	DATE	REVISION



**TYPICAL
FIRE HYDRANT ASSEMBLY
INSTALLATION DETAIL**

Approved:	SHT: W-5
Date: 04-2005	Scale: NTS DWN: RTW



NOTES:

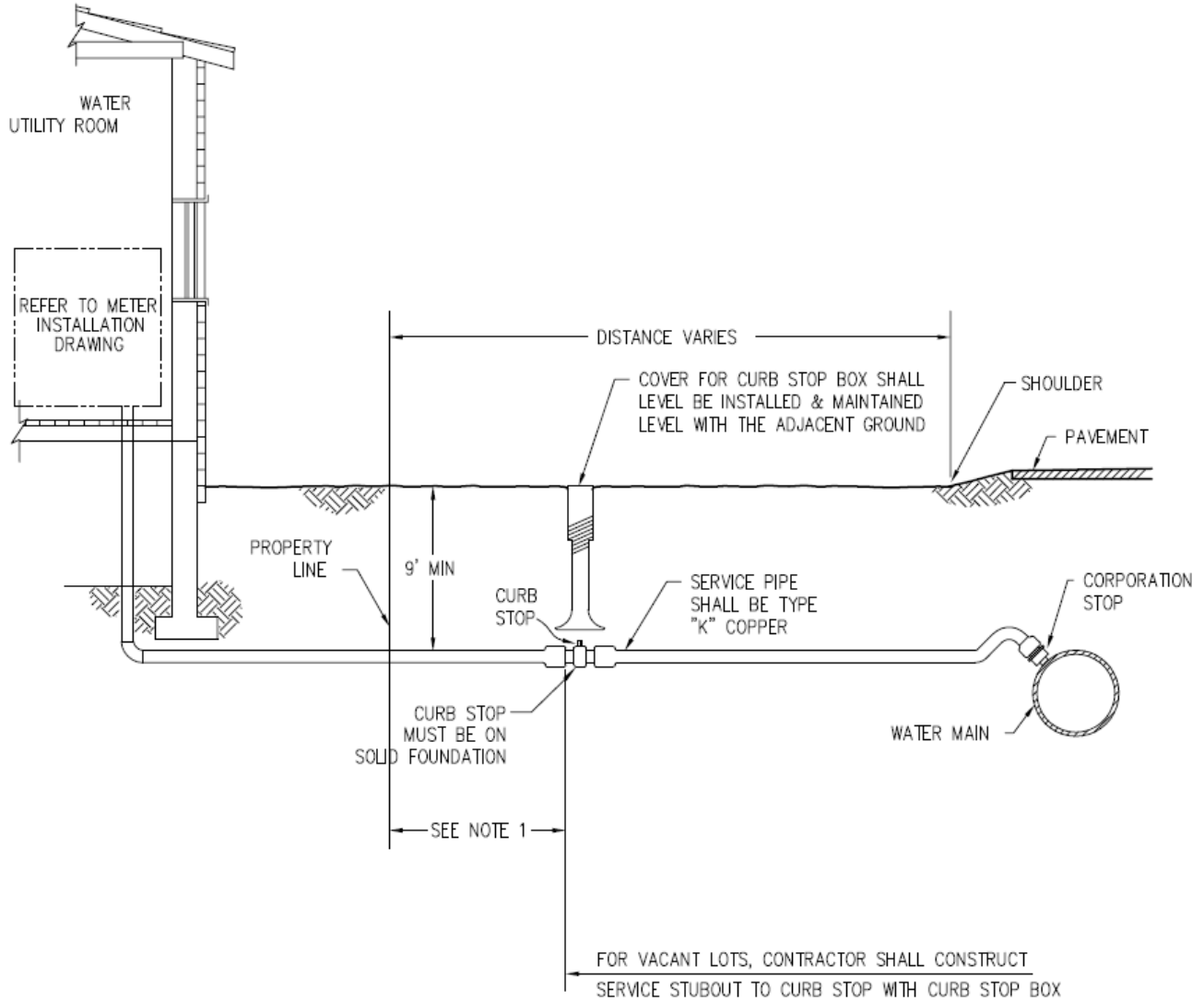
1. PROVIDE INSULATION BOARD WHERE CLEARANCE IS LESS THAN 9 FEET
2. 2" CLOSED CELL PER MISSING FOOT OF COVER
3. 7' MINIMUM COVER REQUIRED

NO.	DWN	DATE	REVISION




TYPICAL WATERLINE INSULATION DETAIL

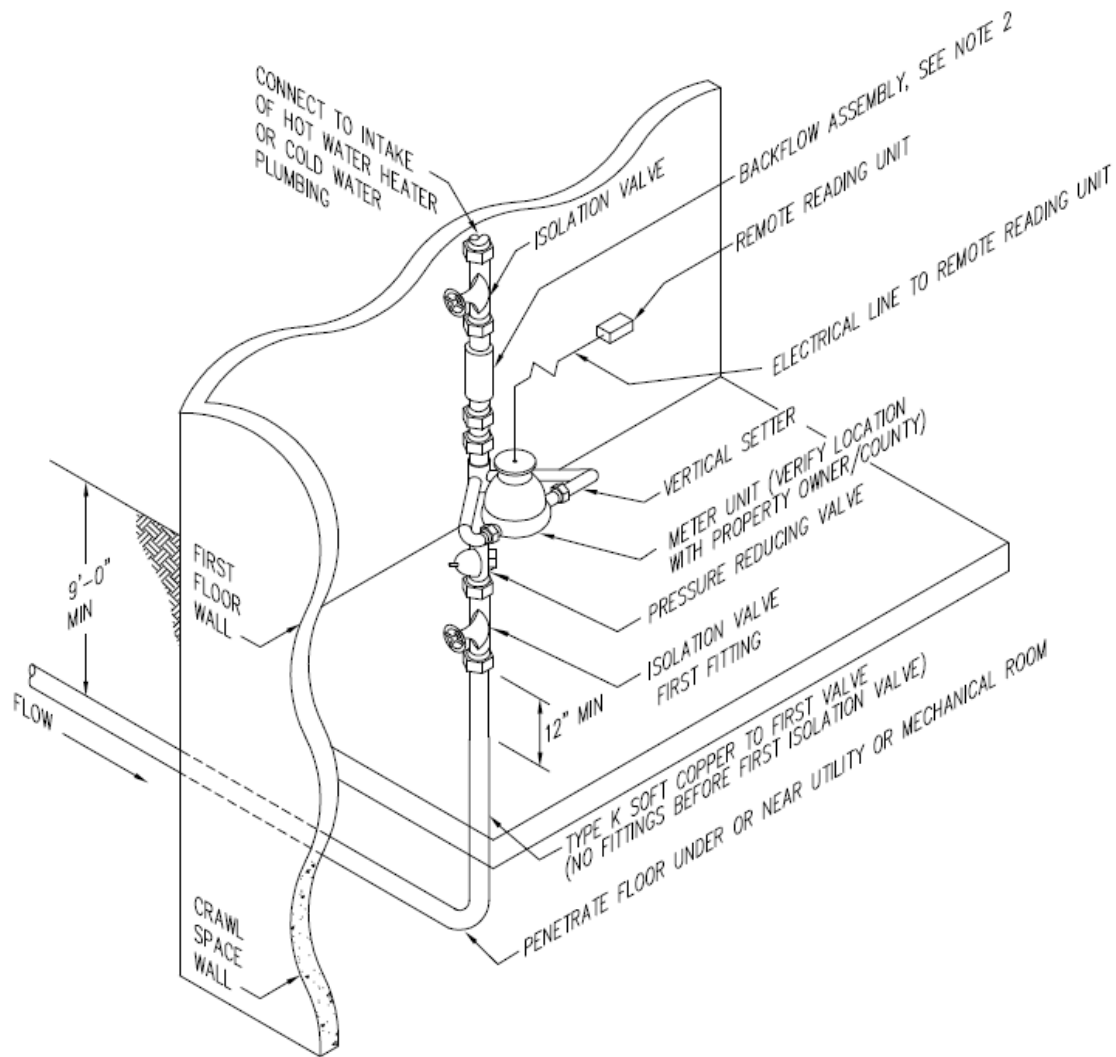
Approved:	SHT: W-07
Date: 04-2005	Scale: NTS
	DWN: RTW



NOTES:

1. PLACEMENT OF CURB STOP SHALL BE A MAXIMUM OF 5 FEET OUTSIDE THE PROPERTY LINE INSIDE STREET RIGHT OF WAY AND MAXIMUM OF 2 FEET WITHIN THE PROPERTY LINE OUTSIDE STREET RIGHT OF WAY.

				<p>TYPICAL SMALL DIAMETER SERVICE LINE DETAIL</p>		
				Approved:		SHT: W-8
				Date: 04-2005	Scale: NTS	DWN: RTW
NO.	DWN	DATE	REVISION			
<p>BLUE VALLEY METROPOLITAN DISTRICT</p>				<p>PO Box 492 Kremmling, CO 80459</p>		



NOTES

1. INSTALLATION SHOWN IS FOR METERS 1" AND SMALLER
2. PREVENTERS (RPBP) ARE REQUIRED ONLY FOR WATER SERVICES IDENTIFIED BY DISTRICT

NO.	DWN	DATE	REVISION



**TYPICAL
VERTICAL METER
SETTING DETAIL**

Approved:	SHT: W-9
Date: 04-2005	Scale: NTS DWN: RTW

