



paint brush hills
metropolitan district

RULES AND REGULATIONS

Adopted:

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**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

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ARTICLE 1. TITLE, SCOPE AND GENERAL CONDITIONS

- 1.1 TITLE.** These Rules and Regulations shall be referred to herein as the Rules and Regulations.
- 1.2 PURPOSE.** The purpose of these Rules and Regulations is to provide acceptable standards of design and construction for all improvements connecting to the District's facilities, including water and wastewater systems and facilities. Further, these Rules and Regulations are intended to address policies and procedures relating to the District's parks and recreation facilities.
- 1.3 PUBLIC HEALTH, SAFETY AND WELFARE.** It is hereby declared that the Rules and Regulations hereinafter set forth serve a public interest and are necessary for the protection of the health, safety, prosperity, security and general welfare of the residents and property owners of the District.
- 1.4 SCOPE OF RULES AND REGULATIONS.** These Rules and Regulations shall be treated and considered as new and comprehensive rules and regulations governing the operations and management of the District. Any and all prior rules and regulations of the District shall be deemed specifically superseded hereby. The Board of Directors has determined to adopt these Rules and Regulations in order to assist the District and its operations, engineering, and management staff in implementing the decisions and policies of the Board. It is intended that any person desiring to transact business with the District as an owner or developer of property or a resident within the boundaries of the District shall comply with these Rules and Regulations. It is further intended that the Manager and the management staff shall utilize these Rules and Regulations as a tool for assuring uniform treatment to persons within the District and fair response to issues that confront the District. The Manager shall provide copies of these Rules and Regulations to any person who requests them. Electronic copies shall be provided at no cost. Paper copies shall be provided for at the then-current copy cost or as otherwise determined by the Board. No person shall be entitled to any exemption from the applicability of these Rules and Regulations due to the failure of that person to become familiar with policies and standards of the District contained herein, and in supplements hereto.
- 1.5 APPLICABILITY.** These Rules and Regulations shall apply to the construction, alteration, removal, or repair of District facilities. These Rules and Regulations shall apply to District contracts, customer/owner contracts, owner/developer contracts and private contracts. All work on District water and wastewater systems and parks and recreation amenities and improvements shall comply with these Rules and Regulations, including the applicable Standards and

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Specifications set forth in Appendix B for water and wastewater systems and Appendix C for park and recreation amenities and improvements.

1.6 DISTRICT REPRESENTATION. The District may appoint an engineer, construction inspector, manager or District employee, agent or consultant to act on its behalf with respect to these Rules and Regulations.

1.7 RULES OF CONSTRUCTION. These Rules and Regulations are promulgated pursuant to statute in the exercise of the Board's discretion to provide a tool for management of the District and for the orderly provision of essential services. It is intended that these Rules and Regulations shall be liberally construed to effect the general purposes set forth herein, and that each and every part hereof is separate and distinct from all other parts. No refusal, failure or omission of the Board or its agents to apply or enforce these Rules and Regulations shall be construed as an alteration, waiver or deviation from these Rules and Regulations or from any grant of power, duty or responsibility or any limitation or restriction upon the Board of Directors or the District by virtue of statutes now existing or subsequently amended, or under any contract or agreement existing between the District and any other entity. Nothing contained herein shall be so construed as to prejudice or affect the right of the District to secure the full benefit and protection of any law now in effect or subsequently enacted by the Colorado General Assembly pertaining to the governmental or proprietary affairs of the District. The Board reserves the right to construe any provision of these Rules and Regulations in its sole discretion in order to effectuate lawful purposes of the District and to attempt to ensure orderly and non-discriminatory treatment of all Persons or entities subject to these Rules and Regulations now or in the future. In all circumstances, these Rules and Regulations shall be construed in the broadest sense possible to enable the District to perform its functions in accordance with law.

The Rules and Regulations must be complied with by all persons absent receipt of a proper written waiver approved by the Board. It is the responsibility of each resident, Property Owner and Developer to obtain and read the Rules and Regulations of the District as adopted and enforced by the District. No person shall obtain, by virtue of the Rules and Regulations, any right or cause of action against the District or its management arising as a result of the enforcement or lack of enforcement of the Rules and Regulations by the District.

1.8 CONFLICTS. In case of any conflict between any provision of these Rules and Regulations, the District shall be entitled to resolve such conflict in its own favor at the District's sole discretion, it being the intention of the Board that these Rules and Regulations shall be construed or interpreted by the District in such a manner so as to maximize the ability of the District to govern and manage the District and its facilities.

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- 1.9 GENERAL POLICIES.** The District articulates herein its rules, regulations, and policies for the provision of public services and facilities, and for management and operation of the same. From time to time, the Board of Directors adopts official policies of the District. On occasion, such policies are reflected in official “resolutions” or “policies” of the Board of Directors. Additional exhibits may be added to these Rules and Regulations from time to time either by modification of these Rules and Regulations or by the addition of new exhibits. Additional policies may also be found in the minutes of the District’s Board meetings. To the extent any policy found in minutes of the Board meetings pre-date and conflict with any resolution of the Board, the resolution shall be deemed to supersede the minutes, unless the Board determines otherwise, after such conflict is brought to the attention of the Board. To the extent policies found in the minutes of meetings post-date resolutions of the District and conflict with such resolutions, the policy stated in the minutes shall be binding unless the Board determines otherwise after such conflict is brought to the attention of the Board. The District shall have the right, at all times, to repeal and re-enact resolutions of the Board. A number of informal policies of the District may exist which are known to the Manager and the Board. In any case where a Person has questions about District policies, questions may be directed to the Manager who has the authority to respond, or who may refer such requests to the Board. In all circumstances, the Board retains the authority and responsibility for the policies of the District.
- 1.10 AMENDMENT, MODIFICATION & WAIVERS.** The Board shall retain the power to amend these Rules and Regulations as it deems appropriate. Neither notice of such amendments nor public hearing shall be required to be provided by the District prior to exercising its amendment, modification or waiver powers. The District has the power to revise its Rules and Regulations from time to time either by formal action of the Board or by implication and has the authority to waive the application of its Rules and Regulations to its own activities, or to the activities of others. Supplemental policies of the District may be adopted from time to time in order to assist the Board and its management in managing the affairs of the District. When possible, copies of such policies shall be attached hereto. Additional documents affecting these Rules and Regulations may be added by Board resolution from time to time. The Board, the District Manager acting on instructions of the Board, or the Operations Manager acting on instructions of the Board, shall have the sole authority to waive, suspend or modify these Rules and Regulations. Any Person claiming the benefit of such waiver, suspension or modification shall be required to obtain a written waiver signed by the Manager. Such waiver shall not be deemed an amendment of the Rules and Regulations. No waiver shall be deemed a continuing waiver.
- 1.11 LIABILITY.** The liability of the District and its employees is controlled and limited by the Colorado Governmental Immunity Act, §§ 24-10-101, *et seq.*,

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C.R.S., as amended from time to time. The District assumes no responsibility for contractors constructing facilities for Developers, whether or not the District has consulted with the Developer or inspected any such construction and whether or not such facilities may eventually be conveyed to the District for the maintenance of facilities and for their safety commences only when such facilities are actually conveyed to the District. Consultants to the District, including but not limited to the District's engineer and operations staff, likewise assume no responsibility for the safety or sufficiency of any construction or work conducted by or for a private developer. Where the District contracts with any contractor, the particular obligations of the District to that contractor shall be specified in the contract.

1.12 PROHIBITED ACTIONS. No person, firm or corporation shall construct, alter, repair, interfere with or improve any District facilities, or permit the same, and such acts shall be a violation of these Rules and Regulations.

1.13 EMERGENCY WORK. Contractors hired by the District to perform emergency work (such as repair of pipeline leaks) shall comply with all applicable sections of these Rules and Regulations, including insurance requirements. To ensure that contractors performing emergency work comply with the insurance requirements of these Rules and Regulations, only pre-approved contractors will be allowed to perform emergency work within the District. Contractors performing emergency work shall not be required to obtain a permit prior to performing the work.

1.14 INSURANCE REQUIREMENTS. The contractor shall not commence work pursuant to any permit until it has obtained all insurance required by these Rules and Regulations, nor shall the contractor allow any subcontractor to commence work until all similar insurance required of the subcontractor has been obtained and approved. All contracts with the District, and for work performed by or for the District, shall contain the following clauses:

1.14.1 PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE. The contractor shall carry Comprehensive General Liability and Auto Liability insurance in the amount specified. All subcontractors shall be required to carry Comprehensive General Liability and Automobile Liability insurance in an amount equal to that required of the contractor. All insurance shall name the District as an additional insured. Any insurance requirements set forth herein may be waived or altered by the Manager in its discretion.

The contractor agrees that it will indemnify and hold harmless the District, the District's engineer and all of its consultants, agents and employees from any loss, cost, damage, expense and liability including attorneys' fees, by reason of property damage, personal injury, or both, arising out of or as a result of the contractor's work, or any negligent

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act or negligent failing to act, or on account of the use of improper or defective materials, or on account of any poor workmanship or on account of any act of omission or commission in connection with the performance of work by contractor, its employees, agents and subcontractors. In any and all claims by or against the District, the District's engineer and its consultants, agents and employees, the indemnification obligation of this paragraph shall not be limited by any required policy of insurance.

1.14.2 PROOF OF INSURANCE. Prior to the commencement of any work, the contractor shall furnish to the District certificates of insurance to prove that all required insurance is in force and shall require any subcontractor to submit similar evidence before undertaking work under this contract. Each insurance policy shall contain a clause providing that it shall not be canceled or materially altered without ten (10) days' written notice to the District. The District reserves the right to review the insurance coverage and to deny a permit if, in the District's sole discretion, such coverage is not adequate. Neither acceptance by the District of any insurance supplied by a contractor or subcontractor, nor failure to deny a permit due to inadequacy of insurance, shall relieve the contractor or subcontractors of their obligation to maintain the required insurance in full force during the period of time work is performed under the permit.

1.14.3 COVERAGES. Contractors performing work for or on behalf of the District shall provide the following minimum insurance coverage and limits.

General Liability

General Aggregate	<u>\$2,000,000</u>
Personal & Advertising Injury	<u>\$1,000,000</u>
Each Occurrence	<u>\$1,000,000</u>

In order to ensure that there are no impaired aggregates, a per job aggregate is required.

Such insurance shall include coverage for contractual liability, personal injury and broad form property damage, and shall include all major divisions of coverage and be on a comprehensive basis including, but not limited to:

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- a. premises operations;
- b. personal injury liability without employment exclusion;
- c. blanket contractual;
- d. broad form property damages, including completed operations;
- e. medical payments;
- f. products and completed operations;
- g. independent consultants coverage; and
- h. coverage inclusive of construction means, methods, techniques, sequences, and procedures, employed in the capacity of a construction consultant.

All coverages shall be continuously maintained to cover all liability, claims demands and other obligations assumed by the contractor pursuant to this contract. A claims-made policy may satisfy these insurance requirements provided that the necessary retroactive dates and extended reporting periods are procured by the contractor to maintain such continuous coverage.

Automobile Liability

Comprehensive, owned, hired	<u>\$500,000</u> (Combined Single Limit)
Excess Liability (umbrella form)	<u>\$1,000,000</u>
(Each Occurrence)	<u>\$1,000,000</u> (Aggregate)

Worker's Compensation

Covering all employees of the Contractor involved with the performance of the work or services being performed, with policy amounts and coverage in compliance with the laws of the jurisdiction in which the work or services will be performed.

Fidelity Coverage

Contractors shall secure and maintain a fidelity bond in favor of the District covering the Contractor and its employees and agents who may provide or be responsible for the provision of services where such activities contemplate the responsibility for money or property of the District. Such bond shall protect the District against any

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fraudulent or dishonest act which may result in the loss of money, securities, or other property belonging to or in the possession of the District. Said bond shall be in an amount as determined by the District and from a surety acceptable to the District.

Professional Liability

Professionals, including, but not limited to, engineers, shall provide professional liability insurance.

(Each Occurrence) \$1,000,000

All coverages must include coverage extensions to cover the indemnification obligations contained in any agreement entered into with the District for the work or services to the extent caused by or arising out of bodily injury or property damage.

The District reserves the right to increase the required coverages and limits set forth herein depending on the specific project or requirements of other governmental entities. Further, the District, through its Board or District Manager, may reduce or eliminate the coverages set forth herein depending on the services to be provided.

1.15 EMPLOYMENT ELIGIBILITY. All contractors performing work for or on behalf of the District shall be in compliance at all times with the E-Verify Program (formerly known as the Basic Pilot Program) as defined in § 8-17.5-101, C.R.S. All District-owned contracts shall include the following language, which shall be agreed to by all contractors:

“The Contractor hereby states that it does not knowingly employ or contract with illegal aliens and that the Contractor has participated in or has attempted to participate in the E-Verify Program (formerly known as the Basic Pilot Program) (as defined in §8-17.5-101, C.R.S.) in order to verify that it does not employ any illegal aliens. The Contractor affirmatively makes the following declarations:

A. The Contractor shall not knowingly employ or contract with an illegal alien who will perform work under the public contract for services contemplated herein and will participate in the E-Verify Program or Department Program (as defined in §8-17.5-101, C.R.S.) in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the public contract for services contemplated herein.

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B. The Contractor shall not knowingly enter into a contract with a subcontractor that fails to certify to the Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform the services contemplated herein.

C. The Contractor has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under the public contract for services through participation in either the E-Verify Program or the Department Program.

D. The Contractor is prohibited from using either the E-Verify Program or the Department Program procedures to undertake pre-employment screening of job applicants while this Agreement is being performed.

E. If the Contractor obtains actual knowledge that a subcontractor performing the services under this Agreement knowingly employs or contracts with an illegal alien, the Contractor shall be required to:

i. Notify the subcontractor and the District within three (3) days that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien.

ii. Terminate the subcontract with the subcontractor if within three (3) days of receiving the notice required above the subcontractor does not stop employing or contracting with the illegal alien; except that the Contractor shall not terminate the contract with the subcontractor if during such three (3) days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

F. The Contractor shall comply with any reasonable request by the Department of Labor and Employment made in the course of an investigation that such Department is undertaking pursuant to the authority established in §8-17.5-102, C.R.S.

G. If the Contractor violates a provision of the Agreement pursuant to §8-17.5-102, C.R.S., the District may terminate the Agreement. If the Agreement is so terminated, the

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Contractor shall be liable for actual and consequential damages to the District.”

- 1.15.1 FAILURE TO COMPLY WITH EMPLOYMENT ELIGIBILITY PROVISIONS.** The District may, at any time without recourse, terminate any contractor or contract which does not agree to or does not abide by the terms of the E-Verify Program. Contractors performing work for or on behalf of the District shall require all sub-contractors to abide by the same terms.

End of Article.

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ARTICLE 2. DEFINITIONS AND ABBREVIATIONS

2.1 DEFINITIONS. Whenever the following terms are used in these Rules and Regulations, they will be defined as follows:

- Board of Directors or Board shall mean the governing body of the District.
- Developer shall mean any developer, contractor, builder, property owner, resident, user, customer or party other than the District.
- District shall mean the Paint Brush Hills Metropolitan District.
- District Manager shall mean the person or entity engaged by the District to serve as its manager.
- Fees and Charges shall mean those fees, rates, tolls, penalties and charges assessed by the Board of Directors and set forth in Appendix A of these Rules and Regulations or subsequent resolutions assessing, increasing, decreasing or otherwise changing the fees, rates, tolls, penalties and charges set forth in Appendix A of these Rules and Regulations. Any references in these Rules and Regulations to fees, rates, tolls, penalties or charges, or any combination thereof, which are not otherwise defined as Fees and Charges shall have the same meaning as Fees and Charges.
- Fire Department or Fire Protection District shall mean the Falcon Fire Protection District.
- Inspector shall mean the individual designated by the District at the “Pre-construction Conference” as having day to day oversight authority over construction activities.
- Operations Manager shall mean the person employed by the District to manage the on-site day-to-day activities of the District and otherwise referred to as the Manager of Water and Wastewater Operations.
- Manager shall mean the District Manager and/or the Operations Manager.
- Park and Recreation Policies and Regulations shall mean those policies and regulations set forth in Appendix C of these Rules and Regulations or subsequent resolutions amending, restating and/or superseding the Policies and Regulations.
- Person shall include any Developer and any Property Owner.

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- Property Owner shall include all owners of real property, customers, users, residents, leaseholders and other recipients of District services.
- Rules and Regulations shall mean the body of directions, provisions, and requirements contained herein, describing the method or manner of construction, and the quality of materials furnished, as amended from time to time.
- Schedule of Fees and Charges shall mean the schedule of Fees and Charges set forth in Appendix A of these Rules and Regulations or subsequent resolutions assessing, increasing, decreasing or otherwise changing the fees, rates, tolls, penalties and charges set forth in Appendix A of these Rules and Regulations.
- Standards and Specifications shall mean those standards and specifications set forth in Appendix B of these Rules and Regulations.

2.2 ABBREVIATIONS.

- AASHTO shall mean the American Association of State Highway and Transportation Officials.
- ACI shall mean the American Concrete Institute.
- AISC shall mean the American Institute of Steel Construction.
- ANSI shall mean the American National Standards Institute.
- APWA shall mean the American Public Works Association.
- ARV shall mean an air release vacuum breaker valve.
- ASA shall mean the American Standards Association.
- ASTM shall mean the American Society for Testing and Materials.
- AWG shall mean the American Wire Gauge.
- AWWA shall mean the American Water Works Association.
- BPR shall mean the Bureau of Public Roads.
- CDOT shall mean the Colorado Department of Transportation.

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- CDPHE shall mean the Colorado Department of Public Health and Environment.
- DIP shall mean ductile iron pipe.
- EPA shall mean the United States Environmental Protection Agency.
- FCC shall mean the Federal Communications Commission.
- gpcd shall mean gallons per capita per day.
- gpm shall mean gallons per minute.
- GRC shall mean galvanized rigid conduit.
- IMSA shall mean the International Municipal Signal Association.
- IPCEA shall mean the Insulated Power Cable Engineers Association.
- ITE shall mean the Institute of Transportation Engineers.
- MGD shall mean million gallons per day.
- MSDS shall mean Materials Specifications Data Sheet.
- MUTCD shall mean the Manual of Uniform Traffic Control Devices.
- NEC shall mean the National Electrical Code.
- NEMA shall mean the National Electrical Manufacturers Association.
- NFPA shall mean the National Fire Protection Association.
- PRV shall mean pressure reducing and regulating valve.
- PVC shall mean polyvinyl chloride.
- PVCO shall mean Molecularly Oriented Polyvinyl Chloride.
- psi shall mean pounds per square inch.
- PSIG shall mean pounds per square inch gauge.
- SCADA shall mean Supervisory Control and Data Acquisition System.

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- TCP shall mean Traffic Control Plan.
- UBC shall mean the Uniform Building Code.
- UNCC shall mean the Utility Notification Center of Colorado.
- UPC shall mean the Uniform Plumbing Code.
- UL shall mean Underwriters Laboratories, Inc.
- USDA shall mean the United States Department of Agriculture.

2.3 TERMS. Whenever, in these Rules and Regulations, the words “as ordered”, “as directed”, “as required”, “as permitted”, “as allowed”, or words or phrases of like import are used, it will be understood that the order, direction, requirement, permission, or allowance of the District is intended.

The words “approved”, “reasonable”, “suitable”, “acceptable”, “accepted”, “properly”, “satisfactory”, or words of like effect and import, shall mean approved, reasonable, suitable, acceptable, accepted, properly or satisfactory in the judgment of the District.

Whenever the word “District” is used in these Rules and Regulations, it shall mean the Paint Brush Hills Metropolitan District or its designated representative.

2.4 SPECIFICATIONS BY REFERENCE. All specifications, e.g., ASTM, ACI, etc. made a portion of these Rules and Regulations by reference shall be the latest edition. Throughout these Rules and Regulations, any section referenced shall include all sub-sections of that section. Any portion of these Rules and Regulations may be applicable to any other section.

End of Article.

ARTICLE 3. DESCRIPTION OF THE DISTRICT

- 3.1 PURPOSE OF THE DISTRICT.** The District was organized with the authority to provide certain services and facilities to residents and property owners within the District as well as to users outside the District’s boundaries. The District is a quasi-municipal corporation and political subdivision of the State of Colorado and, as such, exercises certain governmental powers for the benefit of its constituents. Pursuant to its Service Plan, the District has the authority to provide water and wastewater facilities and services. The District has the power to tax properties within its boundaries and to impose fees for services available from or provided by the District. The District derives its power from Colorado law and from its Service Plan. The Service Plan contains general information about the facilities, services, and powers of the District and may be amended from time to time to deal with the evolving needs of the District. The District has the authority to construct facilities and improvements for District services as it deems expedient, in accordance with the authority granted to the District in its Service Plan. The District’s Service Plan is an “enabling document” granting to the District certain powers and authorities. The Service Plan does not impose upon the District any responsibility which it is not required to accept pursuant to state law or which it does not specifically accept by official decision of the Board.
- 3.2 THE GOVERNING BODY.** The District is governed by an elected Board of Directors. The Board consists of five (5) individuals who, as residents or property owners within the District, are qualified to serve as directors. Directors are generally elected to four (4)-year terms at elections held in May of even-numbered years. The Board elects from its membership a president and treasurer and appoints a secretary.
- 3.3 DISTRICT BOARD MEETINGS.** Meetings of the Board of Directors are subject to the “Sunshine Law” of the State of Colorado and are open to the public. From time to time the Board meets in “Executive Session” to receive legal advice or to discuss ongoing contract negotiations, litigation matters or other legally privileged matters. Executive sessions are held in accordance with Colorado law and are closed to the general public. Minutes of meetings are prepared for each meeting and, after approval by the Board, are available for public inspection. The District’s policy is not to tape record its meetings, and it does not attempt to maintain a verbatim transcript of its discussions.
- 3.4 DISTRICT MANAGEMENT.** The District is managed by a professional management company engaged by the Board. The District Manager oversees the on-going administration and operation of the District. All employees and consultants of the District serve at the will of the Board. The District Manager operates within approved guidelines established by the Board and exercises only

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that discretion which is granted by the Board as necessary for day-to-day operations and for implementation of Board decisions and policies.

- 3.5 DISTRICT SERVICES AND FACILITIES.** In general terms, the District attempts to provide water, storm sewer, and wastewater services and improvements within the District. The District is also authorized to provide for the construction, financing, operation and maintenance of streets, street lights, traffic signals, bridges, mosquito control, safety protection and parks and recreation facilities and improvements. The District's Service Plan provides a general description of those facilities. Reference is made to the Service Plan for general descriptions of services and facilities, which may be provided by the District. The District has powers of eminent domain to condemn private properties for public use.
- 3.6 FEES, RATES, TOLLS, PENALTIES AND CHARGES.** The District has the statutory authorization to impose fees, rates, tolls, penalties and charges for services and facilities provided by the District. The failure of a Property Owner or Developer to pay such fees, rates, tolls penalties or charges creates a perpetual lien on the benefitted property and the District has a statutory right to foreclose on that lien. The District exercises such power for the overall benefit of the District and reserves the right to exercise its discretion on a case-by-case basis in determining whether to claim a lien and foreclose it. Development fees, service charges, miscellaneous fees and other applicable fees, rates, tolls, penalties or charges shall be in the amounts stated in the Schedule of Fees and Charges, attached hereto as Appendix A and any fee resolution adopted by the Board of Directors. The Board of Directors may increase or decrease the fees, rates, tolls, penalties or charges set forth in the Schedule of Fees and Charges at any time pursuant to Colorado law by adoption of a resolution setting forth the same which, upon adoption, unless otherwise provided, shall be deemed to have replaced in its entirety the Schedule of Fees and Charges set forth in Appendix A without further action of the Board of Directors to formally amend the Rules and Regulations. Following efforts to collect overdue payments of any fee, rate, toll, penalty or charge assessed by the District under these Rules and Regulations and/or Colorado law, the District may certify any unpaid fees to the County Treasurer for collection in the same manner as those for taxes pursuant to the provisions of §32-1-1101(1)(e), C.R.S. Alternatively, the District may elect to initiate foreclosure proceedings as allowed by § 32-1-1001(1)(j), C.R.S., as amended. The District shall, in each such case, be entitled to assess all legal fees, costs of collection and a foreclosure penalty against the subject property in an amount set forth in the Schedule of Fees and Charges, which penalty shall be payable in full upon assessment and shall be included in the lien then being foreclosed. Payment of said foreclosure penalty and any and all other fees outstanding against the subject property shall be a precondition to the resumption of District services.

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3.6.1 COLLECTION PROCEDURES. The procedures for the collection of any outstanding fee, rate, toll, penalty and charge shall be pursuant to the District's then-current Collections Resolution. In the event the District's Collections Resolution is no longer in effect or is otherwise deemed invalid, the procedures for the collection shall be in accordance with Colorado law.

3.7 DISTRICT FACILITIES. Systems constructed or accepted by the District shall be operated and maintained by the District pursuant to these Rules and Regulations. Systems constructed by a Person or entity other than the District shall be conveyed to the District in accordance with the provisions set forth herein.

3.7.1 CONSTRUCTION STANDARDS. The Developer agrees to design, construct, and complete the improvements to be conveyed to the District in substantial conformance with the Standards and Specifications established and in use by the District, the Colorado Department of Public Health and Environment (CDPHE) and El Paso County, as appropriate, and as approved by the District's Engineer.

3.7.2 DISTRICT ACCEPTANCE OF IMPROVEMENTS. The District shall deliver a letter of acceptance for the improvements to the Developer upon the District's receipt of the following: (1) a certificate from a licensed engineer in the State of Colorado certifying that the improvements substantially meet the Standards and Specifications of the District as contained in these Rules and Regulations, the Service Plan, or as contained in plans which have been approved by the District's Engineer or operator, in writing; (2) a complete set of electronic and 24" by 36" reproducible "as-built" drawings of the improvements which are certified by a professional engineer registered in the State of Colorado showing accurate size and location of all improvements, which drawings shall be in a form and content reasonably acceptable to the District; and (3) requisite property interests for the improvements as set forth in Section 3.7.3.2, below.

3.7.3 CONVEYANCE OF IMPROVEMENTS. The improvements shall not be deemed accepted by the District until all requirements set forth in this Section 3.7.3 have been met to the District's full and complete satisfaction. Until such time, the Developer shall be and shall remain responsible and liable for the improvements in all respects.

3.7.3.1 Bill of Sale. At no cost to the District, the Developer shall convey the improvements to the District by means of a bill of sale in a form acceptable to the District.

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3.7.3.2 Property Interests. All property interests to be acquired by the District shall include a legal description and graphical boundary exhibit, prepared by a professional licensed surveyor or engineer, depicting the proposed interest. Boundary descriptions shall be standalone legal descriptions, and shall not include references to other documents, recorded or unrecorded, rights of way, or other geographically unascertainable features, except that standard references to section lines and other standard survey markers shall be permitted. Boundary drawings shall include intelligible references to surrounding landmarks or other place identifying features.

3.7.3.2.1 Easement. Concurrent with the conveyance of a bill of sale for the improvements, and at no cost to the District, the Developer shall grant to the District a permanent, non-exclusive easement for the property on which or in which the improvements lie. Such easement shall be a minimum of twenty-five feet (25') in width, or two-times the depth of the pipe, whichever is greater, and shall be in a form acceptable to the District.

3.7.3.2.1.1 The Developer shall use its best efforts to obtain the easements required herein from all property owners. If, after use of its best efforts, the Developer is unable to secure the required easements, the Developer may request that the District obtain the required easements in accordance with the provisions of Section 3.7.5 below; however, any and all costs associated with the District's work to obtain such easements, including, but not limited to, any costs associated with a condemnation action, shall be paid by the Developer from the Inclusion Fee, if still applicable, or, alternatively, the Developer shall remit to the District funds sufficient to allow the District to obtain the easements prior to any work commencing. If at any time prior to the District's receipt of the required easements the funds on deposit are depleted, the Manager shall request additional funds from the Developer prior to work resuming. Any remaining funds on deposit with the

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District after the easements have been obtained shall be refunded to the Developer in full.

3.7.3.2.2 Fee Simple Absolute. In lieu of an easement pursuant to Section 3.7.3.2.1, above, and at no cost to the District, the Developer may grant to the District title to the property on which or in which the improvements lie in fee simple absolute by means of a special warranty deed, which grant shall be free and clear of all liens and encumbrances on the property.

3.7.3.2.3 Dedications by Plat. In the event the Developer desires to dedicate an easement or ownership interest to, for, on, over, through or under any tract or parcel to the District by plat, the District shall be a signatory on the plat or shall provide a separate letter of acceptance for the tract or parcel. In no event shall the Developer unilaterally dedicate or transfer an easement or ownership interest to, for, on, over, through or under any tract or parcel to the District by plat.

3.7.3.2.4 Ingress and Egress to Improvements. At no cost to the District, the Developer shall convey any necessary licenses or easements, whichever the District shall require in its sole discretion, to permit ingress and egress by the District and its agents to the area.

3.7.3.2.5 Title Insurance Policy. The Developer agrees to provide the District with a title commitment for the area being conveyed to the District. At the District's election, the Developer shall provide the District, at the Developer's sole cost and expense, a title insurance policy in the District's name and for such amount as the District may deem necessary to insure the District from any defects in title.

3.7.4 WARRANTY PERIOD. At the time the District accepts the improvements from the Developer, the District and the Developer shall schedule an eleven (11) month warranty inspection to review the required repair or replacement of improvements, which inspection shall be at no cost to the District. The District shall prepare a list of action

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items needing resolution, if any. All costs associated with the resolution of the action items identified at the eleven (11) month warranty inspection and documented by the District shall be the Developer's responsibility. The District shall reinspect the action items upon notification of resolution by the Developer and will solely determine if the Developer's resolution is satisfactory.

At the completion of the warranty period and upon resolution of any items identified at the eleven (11) month warranty inspection, the District shall accept as final the improvements. The District shall provide a letter indicating final acceptance of the improvements. Such letter shall not be provided until all items are resolved to the satisfaction of the District.

3.7.5 EASEMENTS. The District shall negotiate the procurement of easements with property owners in good faith. All easement agreements shall be substantially in the form set forth in Appendix H. Unless otherwise determined to be necessary by the District's engineer or operator, all easement areas shall be a minimum of twenty-five feet (25') in width.

3.7.5.1 Initial Discussions with Property Owner. Upon determination that an easement is necessary for public improvements, the District's engineer shall have prepared a legal description and drawing of the proposed easement area. The Manager shall initiate negotiations with the property owner from whom an easement is desired. Such initiation shall be in the form of a letter to the property owner, which letter shall include a copy of an easement agreement, legal description and drawing of the proposed easement area, and shall invite the Property Owner to discuss the conveyance of the easement. Any revisions to the form easement agreement set forth in Appendix H shall be approved by the District's attorney and, if substantive and/or necessary, the Board of Directors.

3.7.5.2 Compensation for Easement. Pursuant to § 32-1-1001(1)(f), C.R.S., it shall be the District's policy that the District shall not pay more than fair market value for real property interests, including easements, necessary to the functions or the operation of the District. In the event a Property Owner disputes the fair market value of the easement area, the Property Owner may obtain an appraisal at the Property Owner's expense. The District shall also be permitted to

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obtain its own appraisal for the easement area at its own expense, but shall not be required to do so. Upon review of the appraisals, the District's Board of Directors, in its sole discretion, shall make a determination as to whether the amounts reflected in the appraisals represent a fair market value acceptable to the District. If such amount is acceptable, then the easement agreement may be finalized. In the event the amount is unacceptable, then the District may elect to abandon its quest for the easement or may proceed with condemnation proceedings for the easement area pursuant to the provisions of Section 3.7.7, below.

3.7.5.3 Finalization of Easement Agreement. Upon successful negotiation of an easement agreement with the Property Owner, the Property Owner shall execute the easement agreement, which signature shall be notarized, and shall deliver the easement agreement to the District. Upon receipt of the fully executed agreement, the District shall tender to the Property Owner the negotiated compensation in immediately available funds. The District shall then record the easement agreement in the real property records of the El Paso County Clerk and Recorder's Office. A copy of the fully executed and recorded easement agreement shall be provided to the Property Owner upon return from the El Paso County Clerk and Recorder's Office.

3.7.6 TEMPORARY CONSTRUCTION EASEMENTS. The District shall negotiate the procurement of temporary construction easements (also known as rights of entry) with Property Owners in good faith. All temporary easement agreements shall be substantially in the form set forth in Appendix I. Unless otherwise determined to be necessary by the District's engineer or operator, all temporary construction easement areas shall be fifty feet (50') in width. The procurement of temporary construction easements shall be conducted in the same manner as established for the procurement of easements, as set forth in Section 3.7.5, above.

3.7.7 CONDEMNATION PROCEDURES. After negotiating in good faith with the Property Owner, in the event negotiations for easements or other property interests have failed, the District may elect to proceed with condemnation proceedings for the desired property interest in accordance with Colorado law.

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3.7.8 GEOGRAPHIC INFORMATION SYSTEM (“GIS”) DATA. In conjunction with the conveyance of all improvements and property interests set forth in this Section 3.7, the Developer shall provide the District with GIS geodatabase files in electronic format for the location of all improvements, specifically including, but not limited to, lines, meters, meter boxes, valves, curb stops, taps, manholes, cleanouts, buildings, ponds, tanks and service lines, as well as GIS layers and data for associated property interests. Data shall be provided in the NAD83 Colorado State Plane South coordinate system. Properly georeferenced AutoCAD .dwg files may serve as an acceptable substitute format in the District’s discretion.

3.8 DISTRICT OWNERSHIP. All improvements constituting any part of the District’s system shall be the sole property of the District, unless otherwise specifically agreed by the District. Notwithstanding that Property Owners shall be entitled to receive service from the District pursuant to these Rules and Regulations, no legal or equitable ownership in District systems or improvements shall be deemed to exist in favor of any person or entity other than the District.

3.9 RIGHT OF ENTRY. The District Manager, Operations Manager, employees of the District or other personnel authorized by the District Manager bearing proper credentials and identification, shall be permitted by all Property Owners within the District to enter upon all properties or appurtenances for the purpose of installation, replacement, repair, maintenance, inspection or observation reasonably necessary in connection with the services and facilities provided by the District. The granting of Right of Entry by the Property Owner is a condition precedent and a condition subsequent to the provision of services by the District. Refusal to permit such access to District personnel in the performance of their duties may result in discontinuation of services to the property in question, or cause additional charges to the Property Owner for increased costs or damages sustained as a result of refusing the Right of Entry.

3.10 RULES CONCERNING DISTRICT SERVICES AND FACILITIES

3.10.1 ENTITLEMENT TO DISTRICT SERVICES. District services will be provided by the District to all Property Owners subject to these Rules and Regulations. No person who fails to pay applicable fees and other related charges, as may be adopted by the Board and as may be updated from time to time, or who fails to provide evidence that appropriate fees have been paid for the benefit of such person or entity shall be entitled to continued service. It shall be incumbent upon the applicant for District services to furnish satisfactory evidence of payment of applicable fees whenever the District requests such evidence. Notwithstanding that a person has paid appropriate fees for

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service, no person shall be entitled to receive continued District services if property taxes or other fees due from such person or entity have become delinquent. District services shall be suspendable or revocable at the District's discretion upon non-payment of any valid fees or charges owing to the District or any other violation of these Rules and Regulations. In the event of non-payment, the Property Owner shall be given not less than five (5) days advance notice in writing of the revocation, such notice to be determined as of the date of mailing.

3.10.1.1 Hearing on Discontinuation of Service. In the event the District enforces its right to suspend or revoke service, the Property Owner may request an informal hearing with the Manager pursuant to the complaint procedures outlined in Section 3.11, below, and such discontinuation of service shall be delayed until the Manager hears and replies to the complaint. If the Property Owner is dissatisfied with the Manager's initial determination, the Property Owner may request a formal hearing as provided for in Section 3.11.3; however, such request for a formal hearing shall not delay immediate discontinuation of service in the District's discretion.

3.10.1.2 Disconnection or Reconnection of Service. Any Property Owner receiving District services may voluntarily discontinue service. Application for disconnection of service shall be made on the form provided in Appendix G. Disconnection of service shall require the termination of water and sewer service to the property by the Manager or its designee, in accordance with the standards of these Rules and Regulations. Disconnected properties will no longer be subject to monthly service charges commencing on the date of issuance of the disconnection permit. Disconnected properties shall become immediately subject to any then-current Availability of Service Fees and shall be liable for a prorated share of such fee for the calendar year. Any Property Owner desiring to resume District services shall apply for a Reconnection of Service utilizing the form in Appendix G. Permits for the disconnection or reconnection of District services shall be subject to fees provided for in the Schedule of Fees and Charges.

3.10.2 EXTENSIONS OF DISTRICT SERVICES. Developers desiring the extension of existing District water and/or sewer line(s) shall be

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required to bear the cost of such extensions to a location specified by the District, which will ensure uninterrupted mainline operations when subsequent line extensions are required. The process of design or extensions is normally simultaneous with platting and land use activities.

3.10.2.1 Design. The Developer shall be responsible for preparing the design of extensions and distribution lines as directed by the District and as needed for extension of service. The District will review and comment or direct any needed changes to the design which must be approved by the District's Engineer prior to becoming eligible to commence construction.

3.10.2.2 Developer Construction. Except as provided in Section 3.10.2.3, below, the Developer shall contract with a contractor acceptable to the District for the completion of such work, subject to the permitting and technical requirements of these Rules and Regulations and Standards and Specifications. Prior to commencing construction, the Developer shall deposit with the District ten percent (10%) of the total estimated cost of the work to cover oversight, inspection, review and unanticipated costs incurred by the District for the work. The Developer shall comply with all provisions of these Rules and Regulations, specifically including, but not limited to, the provisions and requirements set forth in Sections 3.7.3, 3.7.4 and 3.7.8 hereof for the ultimate conveyance of improvements to the District. All requirements set forth in these Rules and Regulations, specifically including, but not limited to, those set forth in Sections 3.7.3, 3.7.4 and 3.7.8 hereof, shall be completed to the District's full satisfaction by no later than one hundred twenty (120) days after the final completion date for the construction of the water and/or sewer line(s). In the event the requirements set forth herein are not completed to the District's full satisfaction within that time period, the District may elect to refuse acceptance of the improvements or impose a penalty on the Developer in an amount sufficient to cover the District's administrative, engineering, management and legal fees associated with the delay, plus 10%.

3.10.2.3 District Construction. In lieu of constructing the water and/or sewer line extension itself, the Developer may request that the District construct the improvements. In such event, at the time of the request, the Developer shall deposit funds with the District in an amount equivalent to the estimated costs of

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the extension, which cost shall include, but not be limited to, engineering, administrative, management, legal, construction and other related costs, plus ten percent (10%), and the District shall perform the work either directly or through contract. If the final cost of the extension exceeds the deposit, the Developer shall pay any deficit to the District within ten (10) business days of the dated date of the written notice from the District of the deficit. In no event shall the Developer be connected to the District's facilities until the deficit is paid in full. In the event the final costs of the extension is less than the deposit, the District shall refund the Developer the excess amount within thirty (30) days of the final payment date for the improvements. In the event the water and/or sewer line extension requires additional facilities, such as wells, pump stations, lift stations or other regional facilities, the District may require that the District construct the improvements pursuant to this provision with costs to be paid by the Developer, as set forth herein.

3.10.2.4 Cost Sharing for Extensions or Oversizing. Where improvements are extended or oversized such that additional future services are further extended, expected from the extension or otherwise benefitted from the oversizing of the improvements, then the initial Developer installing the extension or oversized improvements may request that the District require a reimbursement agreement with future Developers in order to potentially recover partial funding costs from the benefitting parties. The reimbursement agreement will specify the terms and the basis for reimbursement and will not required the District to track funds for any period greater than twenty (20) years from the date of the reimbursement agreement. In order to request a reimbursement, the Developer, at the completion of the initial extension, shall file a statement of verified costs for the improvements with the District which must be reviewed and approved by the District. Reimbursements to the Developer from future Developers are not assignable to others and shall be limited to the Developer who provided the initial deposit for the improvements.

3.10.3 INFRASTRUCTURE CONSTRUCTION AND CONVEYANCE AGREEMENTS. Developers desiring the construction of District improvements for District ownership, operation and maintenance or for ownership by other entities shall be required to enter into an

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infrastructure construction and conveyance agreement with the District outlining the general nature of the expected improvements and setting forth the terms of deposits, off-site improvements, conveyance of the improvements and other matters. The Board shall approve the final agreement. The infrastructure construction and conveyance agreement shall be fully executed prior to the issuance of a Will Serve Letter by the District.

3.10.4 WILL SERVE LETTERS. The El Paso County's land use planning process requires Developers to obtain a written commitment from the District, commonly known as Will Serve Letters, to provide water and sewer services to the property subject to the land use application. The Board shall approve all new Will Serve Letters. Will Serve Letters may contain certain conditions or provisions related to the District's commitment to serve the property based on the level of agreements established with the District. The District will consider a request for service after a meeting with the Developer, receipt and review by the District of the Land Use Plan and any special definition of service needs which may be required by the District. The term Land Use Plan shall refer to any concept plan, preliminary plan, PUD or final plat, depending on the level of County Planning review anticipated. The District Manager may update or revise a Will Serve Letter for any non-substantive changes once it has been originally approved by the Board; provided, however, that any substantive changes to the Will Serve Letter shall be approved by the Board.

3.10.5 DISTRICT SERVICES TO PERSONS OUTSIDE THE DISTRICT BOUNDARIES. Charges for District services to persons outside the District boundaries shall be determined in the sole discretion of the Board of Directors. It is expected that charges for District services for persons owning property or residing outside the District's boundaries shall equal at least the actual cost of District services, plus, at a minimum, the estimated mill levy payments and other fees for which such property would be responsible if it were included in the District. In every case where the District furnishes services to persons owning property or residing outside the District boundaries, the District reserves the right to discontinue service when, in the judgment of the Board of Directors, it is in the best interest of the District to do so, except as may be limited by written agreement.

3.10.6 INCLUSION OR EXCLUSION OF PROPERTY. Owners of property located outside the boundaries of the District may propose inclusion (annexation) of such property into the District. All requests for inclusion of property within the boundaries of the District shall be

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made pursuant to the provisions of §§ 32-1-401, *et seq.*, C.R.S. Persons who own property within the boundaries of the District may seek to have their property excluded from the District. All requests for exclusion of property shall be considered pursuant to the provisions of § 32-1-501, *et seq.*, C.R.S.

3.10.6.1 Inclusion Procedures.

3.10.6.1.1 Petition for Inclusion. An owner of property located outside the boundaries of the District wishing to include property into the District shall submit to the District a petition for inclusion meeting the requirements of §§ 32-1-401, *et seq.*, C.R.S. The owner is referred to in these Rules and Regulations as the “Petitioner”. A Petitioner desiring the District to provide the form of petition for inclusion to him/her shall pay an Application Fee in the amount of Five Hundred Dollars (\$500), which Application Fee shall be non-refundable and shall not be credited toward the Initial Deposit, and the Initial Deposit set forth in the Schedule of Fees and Charges, and more particularly described in Section 3.10.6.1.2 below, to the District at the time of such request. A Petitioner desiring to meet with the District and/or the District’s consultants prior to formal submission of a petition shall pay a pre-inclusion fee to the District in the amount of One Thousand Dollars (\$1,000) to pay for all administrative costs associated with such meeting. Any remaining funds on deposit with the District will either be: (1) returned to the potential Petitioner upon determination not to proceed with an inclusion into the District; or (2) credited toward the Initial Deposit described in Section 3.10.6.1.2 below.

3.10.6.1.2 Inclusion Fee. Concurrent with the submission of a fully executed petition for inclusion, the Petitioner shall remit to the Manager the Initial Deposit in the amount set forth in the Schedule of Fees and Charges to pay for all costs associated with the processing of the inclusion. The Initial Deposit shall be non-refundable under all circumstances. All costs, specifically including, but not limited to, legal, management and engineering costs and fees shall be applied to the Initial Deposit. When the amount of

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the Initial Deposit remaining is Two Thousand Dollars (\$2,000), the Manager shall notify the Petitioner in writing and request that an Incremental Refundable Deposit in the amount set forth in the Schedule of Fees and Charges be remitted to the District. All work on the inclusion shall continue until the Initial Deposit is exhausted. In the event an Incremental Refundable Deposit is not received by the Manager by the time the Initial Deposit is exhausted, the District's consultants, including legal, management and engineering, shall cease all work until an Incremental Refundable Deposit is remitted to the Manager, at which time work shall resume. When the amount of any Incremental Refundable Deposit remaining is Two Thousand Dollars (\$2,000), the Manager shall proceed in the same manner as set forth above for obtaining additional Incremental Refundable Deposits. Upon completion of the inclusion process, which process specifically includes the adjudication of water rights, any unused portions of the Incremental Refundable Deposit shall be refunded to the Petitioner.

3.10.6.1.3 Inclusion Agreement. A Petitioner seeking to include property into the District shall enter into an inclusion agreement with the District setting forth the conditions of inclusion. The inclusion agreement shall comply with the provisions of these Rules and Regulations and shall be substantially in the form provided by the District's legal counsel. Any material deviations from the District's form inclusion agreement shall be approved by the District's Board prior to a public hearing on the petition for inclusion as provided in Section 3.10.6.1.4, below.

3.10.6.1.3.1 Dedication of Water Rights. Concurrent with the execution of the inclusion agreement, the Petitioner shall execute, deliver, grant and convey to the District, a special warranty deed conveying all water and water rights, including, but not limited to, tributary, nontributary, and designated groundwater, surface water, ditches and ditch rights, wells and well rights, reservoirs and reservoir rights, exchange rights, and plans for

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augmentation, whether decreed or undecreed, permitted or unpermitted, vested, perfected, conditional or inchoate, underlying, associated with, used in connection with, or appurtenant to the inclusion property, and, to the extent applicable, adjacent rights-of-way to the District.

3.10.6.1.3.2 Adjudication of Water Rights. If the water rights referenced in Section 3.10.6.1.3.1 above are not otherwise adjudicated at the time of conveyance to the District, the District shall have the exclusive right, but not the obligation, to adjudicate such water rights and otherwise deal with such water rights in the manner deemed most appropriate by the District.

3.10.6.1.3.3 Conveyance of Improvements and Property Interests to District. The Petitioner shall be responsible for the construction and conveyance to the District of all water and/or wastewater lines and related improvements and property interests necessary to serve the inclusion property, as specified in Section 3.7 of these Rules and Regulations.

3.10.6.1.3.4 Development-Specific Requirements. The District may require the Petitioner to complete development-specific improvements or conditions necessary to serve the inclusion property. Such conditions shall be included in the inclusion agreement and shall include the definition of any “off-site” facilities that are required for design and construction.

3.10.6.1.4 Public Hearing on Inclusion. Notice of a public hearing on the petition for inclusion shall be published in accordance with §§ 32-1-401, *et seq.*, C.R.S. No petition for inclusion may be withdrawn after the date of publication without the consent of the Board. The District shall advise the Petitioner of the date, time and location for the public hearing on the petition for inclusion. The public hearing on the petition shall be conducted in accordance with the provisions of §§ 32-1-401, *et seq.*, C.R.S., and the District shall grant or

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deny the petition, in whole or in part, with or without conditions at the public hearing. In its sole discretion, the Board may continue the public hearing.

3.10.6.1.5 Effective Date of Inclusion. After approval by the Board of the inclusion of the property at the public hearing, the District's legal counsel shall process the necessary documents to obtain an order from the El Paso County District Court ordering the inclusion of the property into the District. Upon receipt of a certified order for inclusion, the order shall be recorded in the real property records of the El Paso County Clerk and Recorder's Office and the inclusion of the property shall become effective. All continuing obligations of the Petitioner set forth in the inclusion agreement shall remain in full force and effect until fully satisfied in accordance with the terms thereof. The District's legal counsel shall provide the Petitioner with a copy of the fully executed and recorded order for inclusion for its records.

3.10.6.1.6 Update of District Map. Pursuant to § 32-1-306, C.R.S., when the District's boundaries have been altered by either an inclusion or exclusion, the District is required to file an updated map of the District's boundaries with various Colorado agencies. The Petitioner shall pay all costs associated with updating the District's map for the year in which the inclusion became effective. In the event other inclusions or exclusions became effective in the same year, then each Petitioner shall be responsible for its proportionate share of the costs of the updated map.

3.10.6.2 Exclusion Procedures.

3.10.6.2.1 Petition for Exclusion. An owner of property located inside the boundaries of the District wishing to exclude property into the District shall submit to the District a petition for exclusion meeting the requirements of §§ 32-1-501, *et seq.*, C.R.S. The owner is referred to in these Rules and Regulations as the "Petitioner". A Petitioner desiring the District to provide the form of petition for exclusion to him/her shall pay an Application Fee in the amount of Five Hundred

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Dollars (\$500), which Application Fee shall be non-refundable and shall not be credited toward the Initial Deposit, and the Initial Deposit set forth in the Schedule of Fees and Charges, and more particularly described in Section 3.10.6.2.2 below, to the District at the time of such request. A Petitioner desiring to meet with the District and/or the District's consultants prior to formal submission of a petition shall pay a pre-exclusion fee to the District in the amount of One Thousand Dollars (\$1,000) to pay for all administrative costs associated with such meeting. Any remaining funds on deposit with the District will either be: 1) returned to the potential Petitioner upon determination not to proceed with an inclusion into the District; or 2) credited toward the Initial Deposit described in Section 3.10.6.2.2 below.

3.10.6.2.2 Exclusion Fee. Concurrent with the submission of a fully executed petition for inclusion, and pursuant to and in accordance with the provisions of §32-1-501(1), C.R.S., the Petitioner shall remit to the Manager the Initial Deposit in the amount set forth in the Schedule of Fees and Charges, attached hereto as Appendix A, to pay for all costs associated with the processing of the exclusion. The Initial Deposit shall be non-refundable under all circumstances. All costs, specifically including, but not limited to, legal, management and engineering costs and fees shall be applied to the Initial Deposit. When the amount of the Initial Deposit remaining is Two Thousand Dollars (\$2,000), the Manager shall notify the Petitioner in writing and request that an Incremental Refundable Deposit in the amount set forth in the Schedule of Fees and Charges be remitted to the District. All work on the exclusion shall continue until the Initial Deposit is exhausted. In the event an Incremental Refundable Deposit is not received by the Manager by the time the Initial Deposit is exhausted, the District's consultants, including legal, management and engineering, shall cease all work until an Incremental Refundable Deposit is remitted to the Manager, at which time work shall resume. When the amount of any Incremental Refundable Deposit remaining is Two Thousand Dollars (\$2,000), the Manager shall proceed

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in the same manner as set forth above for obtaining additional Incremental Refundable Deposits. Upon completion of the exclusion process, any unused portions of the Incremental Refundable Deposit shall be refunded to the Petitioner.

3.10.6.2.3 Exclusion Agreement. A Petitioner seeking to exclude property from the District shall enter into an exclusion agreement with the District setting forth the conditions of exclusion. The exclusion agreement shall comply with the provisions of these Rules and Regulations and shall be substantially in the form provided by the District's legal counsel. Any material deviations from the District's form exclusion agreement shall be approved by the District's Board prior to a public hearing on the petition for exclusion as provided in Section 3.10.6.2.4, below.

3.10.6.2.4 Public Hearing on Exclusion. Notice of a public hearing on the petition for exclusion shall be published in accordance with §§ 32-1-501, *et seq.*, C.R.S. No petition for exclusion may be withdrawn after the date of publication without the consent of the Board. The District shall advise the Petitioner of the date, time and location for the public hearing on the petition for exclusion. The public hearing on the petition shall be conducted in accordance with the provisions of §§ 32-1-501, *et seq.*, C.R.S., and the District shall grant or deny the petition, in whole or in part, with or without conditions at the public hearing. In its sole discretion, the Board may continue the public hearing.

3.10.6.2.5 Effective Date of Exclusion. After approval by the Board of the inclusion of the property at the public hearing, the District's legal counsel shall process the necessary documents to obtain an order from the El Paso County District Court ordering the exclusion of the property into the District. Upon receipt of a certified order for exclusion, the order shall be recorded in the real property records of the El Paso County Clerk and Recorder's Office and the exclusion of the property shall become effective. All continuing obligations of the Petitioner set forth in the exclusion agreement shall remain in full force and effect until

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fully satisfied in accordance with the terms thereof. The District's legal counsel shall provide the Petitioner with a copy of the fully executed and recorded order for exclusion for its records.

3.10.6.2.6 Update of District Map. Pursuant to § 32-1-306, C.R.S., when the District's boundaries have been altered by either an inclusion or exclusion, the District is required to file an updated map of the District's boundaries with various Colorado agencies. The Petitioner shall pay all costs associated with updating the District's map for the year in which the exclusion became effective. In the event other inclusions or exclusions became effective in the same year, then each Petitioner shall be responsible for its proportionate share of the costs of the updated map.

3.10.7 TAX-EXEMPT PROPERTIES AND PAYMENTS IN LIEU OF TAXES (PILOT). The District provides water and wastewater facilities and services to all properties within its boundaries. The District has financial obligations to its creditors and residents which it must maintain in order to continue to finance its facilities and, in turn, provide water and wastewater services to the District's Property Owners. As a result, any properties including into the District and/or converting from a taxable status to a non-taxable or tax-exempt status may be required to enter into an agreement with the District whereby the property pays a fee to the District in an amount equal to or greater than the amount they would have paid had they paid taxes. Such agreement may be required in order to receive water and wastewater services from the District.

3.10.8 TAMPERING. No unauthorized person shall alter, disturb, obstruct or interfere with the District's facilities or improvements without first obtaining a written authorization from the District in advance, which written authorization shall be granted by the District in its sole discretion and which may be withheld for any reason deemed reasonable or appropriate by the District in its sole discretion. No person shall maliciously, willfully or negligently, break, damage, destroy, uncover, deface or tamper with any portion of the District's facilities or improvements. Any person who violates the provisions of this Section shall be prosecuted to the full extent provided by law.

3.10.8.1 Notification to Property Owner of Tampering. Upon discovery that a District facility or improvement has been

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altered, disturbed, obstructed or interfered with, the District shall advise the Property Owner by posting a notice on the property and requesting that such alteration, disruption, obstruction or interference be removed, corrected, or remedied within forty-eight (48) hours of posting of the notice, or by such sooner date as specified therein by the District due to the particular circumstances involved. If such alteration, disruption, obstruction or interference is not removed, corrected, or remedied within forty-eight (48) hours (or other specified time period) of the posting of the notice, the District may remove, correct or remedy the alteration, disruption, obstruction or interference, and all costs associated therewith shall be charged to the Property Owner. In the event the alteration, disruption, obstruction or interference is such that it would be unsafe, unreasonable or otherwise inappropriate for the Property Owner to remove, correct or remedy, then no notice will be posted on the property and the District may remove, correct or remedy the situation in its sole discretion, and all costs associated therewith shall be charged to the Property Owner.

3.10.8.2 Penalties for Tampering. Upon discovery that a District facility or improvement has been altered, disturbed, obstructed or interfered with, the District shall impose a penalty upon the property in the amount set forth in the Schedule of Fees and Charges. The penalty shall be imposed regardless of whether the alteration, disruption, obstruction, or interference is cured by the Property Owner within the specified time period set forth in the notice posted on the property. Any administrative costs associated with the tampering and penalties will also be charged.

3.10.8.3 Prosecution for Tampering. Pursuant to § 18-4-506.5, C.R.S, any person who in any manner alters, obstructs or interferes with any meter provided for measuring or registering the quantity of water passing through that meter without the knowledge and prior written consent of the District commits a class 2 misdemeanor. Further, any person who connects any pipe, tube, stockcock, wire, cord, socket, motor or other instrument or contrivance with any main, service pipe or other medium conducting or supplying water to any building without the knowledge and prior written consent of the District commits a class 2 misdemeanor. The District's Board and/or District Manager shall determine

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whether to press charges against the person violating these provisions. Any and all costs associated with pressing charges against the Person or Property Owner responsible shall be charged to the property.

3.10.8.4 Involvement of Law Enforcement. In the event the alteration, obstruction, or interference requires access to a property owner's property, or if the Manager or operator believes the safety of the District's contractors or employees is in jeopardy, the District shall request the El Paso County Sheriff's Office accompany the contractor and/or employee to the property to remedy the alteration, obstruction or interference. Any and all costs associated with pressing charges against the Person or Property Owner responsible shall be charged to the property.

3.10.9 VIOLATIONS. Any person violating any of the provisions of these Rules and Regulations shall become liable to the District for any expense, loss or damage occasioned by reason of such violation, and upon non-payment thereof, shall be assessed a penalty in an amount set forth in the Schedule of Fees and Charges, which penalty shall be a lien upon the violator's property as permitted by § 32-1-1001, C.R.S., as amended, or a lien upon the Property to which the violator was providing services at the time of the violation in question, whichever the Manager deems appropriate. In the event the District determines to revoke or suspend District services to any person or entity for violation of any of the provisions of these Rules or Regulations, the District shall not be liable for any claim for damage resulting therefrom.

3.11 HEARINGS

3.11.1 APPLICABILITY. The hearing and appeal procedures established by this Section shall apply to all complaints concerning the interpretation, application or enforcement of the Rules and Regulations of the District as they now exist or may hereafter be amended. The hearing and appeal procedures established by this Section shall not apply to complaints arising out of the interpretation of the terms of District contracts or complaints which arise with regard to personnel matters which shall be governed exclusively by the District's personnel rules as the same may be amended from time to time.

3.11.2 COMPLAINTS. Complaints concerning the interpretation, application or enforcement of Rules and Regulations of the District must be presented in writing to the Manager or such representative as

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s/he may designate. Upon receipt of a complaint, the Manager or designated representative, after a full and complete review of the allegations contained in the complaint, shall take such action and/or make such determinations as may be warranted and shall notify the complainant of the action or determination by mail within fifteen (15) days after receipt of the complaint. Decisions of the Manager which impact the District financially will not be binding upon the District unless approved by the Board at a special or regular meeting of the Board.

3.11.3 HEARING. In the event the decision of the Manager or his/her representative is unsatisfactory to the complainant, a written request for formal hearing may be submitted to the Manager or such hearing officer as the Manager may appoint within twenty (20) days from the date written notice of the decision was mailed. A deposit in an amount set forth in the Schedule of Fees and Charges shall be made with the District along with the request for the hearing. This amount shall be retained by the District to cover the costs of the hearing until the final decision following such hearing. The amount shall be refunded to the complainant if the Manager renders a final decision in favor of the complainant. Upon receipt of the request, if it be timely and if any and all other prerequisites prescribed by these Rules and Regulations have been met, the Manager or hearing officer shall conduct a hearing at the District's convenience but in any event not later than fifteen (15) days after the submission of the request for formal hearing. The formal hearing shall be conducted in accordance with and subject to all pertinent provisions of these Rules and Regulations. Decisions of the Manager which impact the District financially will not be binding upon the District unless approved by the Board at a regular or special meeting.

3.11.4 RULES. At the hearing, the District Manager or hearing officer shall preside. The complainant and representatives of the District shall be permitted to appear in person, and the complainant may be represented by any person of his/her choice or by legal counsel.

The complainant or his/her representative and the District representatives shall have: the right to present evidence and arguments; the right to confront and cross-examine any person; and the right to oppose any testimony or statement that may be relied upon in support of or in opposition to the matter complained. The District Manager or hearing officer may receive and consider any evidence which has probative value commonly accepted by reasonable and prudent persons in the conduct of their affairs.

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The District Manager or hearing officer shall determine whether clear and convincing grounds exist to alter, amend, defer or cancel the interpretation, application and/or enforcement of the Rules and Regulations that are the subject of the complaint. The decision shall be based upon evidence presented at the hearing. The burden of showing that the required grounds exist to alter, amend, defer or cancel the action shall be borne by the complainant.

- 3.11.5 FINDINGS.** Subsequent to the formal hearing, the District Manager or hearing officer shall make written findings and an order disposing of the matter and shall mail a copy thereto to the complainant not later than fifteen (15) days after the date of the formal hearing.
- 3.11.6 APPEALS.** In the event the complainant disagrees with the findings and order of the District Manager or hearing officer at the formal hearing, the complainant may, within fifteen (15) days from the date of the mailing of the findings and order by the District, file with the District a written request for an appeal thereof to the Board. The request for an appeal shall set forth with specificity the facts or exhibits presented at the formal hearing upon which the complainant relies and shall contain a brief statement of the complainant's reasons for the appeal. In response, the District shall compile a written record of the appeal consisting of: (1) a transcript of the proceedings at the formal hearing; (2) all exhibits or other physical evidence offered and reviewed at the formal hearing; and (3) a copy of the written findings and order. The Board shall consider the complainant's written request and the written record on appeal at the next regularly scheduled meeting held not earlier than ten (10) days after the filing of the complainant's request for appeal. Such consideration shall be limited exclusively to a review of the record on appeal and the complainant's written request for appeal. No further evidence shall be presented by any party to the appeal and there shall be no right to a hearing *de novo* before the Board.
- 3.11.7 BOARD FINDINGS.** The Board shall make written findings and an order concerning the disposition of the appeal presented to it and shall cause notice of the decision to be mailed to the complainant within thirty (30) days after the hearing. The Board will not reverse the decision of the District Manager or hearing officer unless it appears that such decision was contrary to the manifest weight of the evidence made available at the formal hearing.

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- 3.11.8 NOTICES.** A complainant shall be given notice of any hearing before the District Manager, the hearing officer or before the Board by certified mail at least seven (7) calendar days prior to the date of the hearing, unless the complainant requests or agrees to a hearing in less time. When a complainant is represented by an attorney, notice of any action, finding, determination, decision or order affecting the complainant shall also be served upon the attorney.
- 3.12 JOINT SERVICE.** Unless individual services are specifically authorized by the District, water distribution and sewer collection services shall be furnished jointly.
- 3.13 WATER QUALITY SAMPLE REQUESTS.** The District is required to conduct and report on water quality in order to ensure compliance with applicable local, state, and federal water quality laws, in particular regulations promulgated by the CDPHE. Property Owners may request additional water quality sampling. Property Owners shall make such requests on a form to be provided by the District, and shall include all known information as to the nature of the Property Owner's inquiry. The scheduling of such request shall be in the Manager's discretion. The District may charge a water quality sample fee as provided for in the Schedule of Fees and Charges.
- 3.14 ENFORCEMENT AND REMEDIES FOR NONCOMPLIANCE.** Whenever the District determines that any Property Owner has violated or is violating any provision of these Rules and Regulations or a permit issued or approved hereunder, the District may serve upon such Property Owner a verbal or written notice stating the nature of the violation(s). Where directed to do so by the notice, a plan for the satisfactory correction of the violation(s) shall be submitted to the District by the Property Owner, within a time frame as specified in the notice.
- 3.14.1 ADMINISTRATIVE ORDERS.** Whenever the District determines that any Property Owner has violated or is violating any provision of these Rules and Regulations, or any directives, orders, or permits issued or approved hereunder, the District may serve upon such user a written order stating the nature of the violations(s), and requiring that the user correct the violation(s) within a specified period of time; perform such tasks as the District determines are necessary for the user to correct the violations; or perform such tasks and submit such information as is necessary for the District to evaluate the extent of noncompliance or to determine appropriate enforcement actions to be taken.
- 3.14.2 COMPLIANCE ORDERS; COMPLIANCE SCHEDULES.** Whenever the District determines that any Property Owner has violated or is violating any provision of these Rules and Regulations, or any

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directives, orders or permits issued or approved hereunder, the District may serve upon the Property Owner a written order requiring that the Property Owner submit, within a time frame as specified in the notification, a plan (compliance schedule) for the satisfactory correction of such violation(s).

The compliance schedule must represent the shortest schedule by which the Property Owner will provide additional treatment or perform such other tasks as will enable the user to consistently comply with applicable requirements. The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to compliance (e.g., Hiring an engineer, completing preliminary plans for pretreatment systems, completing final plans, executing contracts for major components, commencing construction, completing construction). In no case shall an increment of progress exceed nine (9) months.

Upon approval by the District, the compliance schedule will be issued to the Property Owner as an administrative order which contains the approved schedule milestones and any applicable reporting requirements. Issuance of a compliance schedule by the District does not release the Property Owner of liability for any violations.

Not later than fourteen (14) days following each date in the schedule and the final date for compliance, the Property Owner shall submit a progress report to the District including, at a minimum, information on whether or not the Property Owner complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason(s) for delay, and the steps being taken by the Property Owner to return to the schedule established.

3.14.3 SUSPENSION OF SERVICE. The District may suspend the wastewater treatment service and any permit when such suspension is necessary, in the opinion of the District, in order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or welfare of persons, to the environment, causes pass through or interference or causes the District to violate any condition of its NPDES Permit.

Any Property Owner notified of a suspension of the wastewater treatment service shall immediately stop or eliminate the discharge. In the event of a failure of the Property Owner to comply voluntarily with the suspension order, the District shall take such steps as deemed

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necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the District's system or endangerment to any individuals or the environment. The District shall reinstate the permit and/or the wastewater treatment service upon proof of the elimination of the non-complying discharge. A detailed written statement submitted by the Property Owner describing the causes of the harmful contribution and the measures taken to prevent any future occurrence shall be submitted to the District within fifteen (15) days of the date of occurrence.

3.14.4 PERMIT REVOCATION. Any Property Owner who has violated or is violating any provision of these Rules and Regulations, or any orders or permits issued or approved hereunder, is subject to having his permit revoked. Grounds for permit revocation include, but are not limited to:

- Failure of a Property Owner to factually report the wastewater constituents and characteristics of his discharge.
- Failure of the Property Owner to report significant changes in operations, or wastewater constituents and characteristics.
- Refusal of reasonable access to the Property Owner's premises for the purpose of inspection or monitoring.
- Violation of conditions of the permit.

3.14.5 PENALTIES. Any Property Owner who is found to have violated any provision of these Rules and Regulations, or any orders or permits issued or approved hereunder, shall be subject to a penalty not to exceed, except as noted below, Five Thousand Dollars (\$5,000) for such violation. Each day on which a violation occurs or continues shall be deemed a separate and distinct violation. In the case of violations of monthly or other long-term average discharge limitations, penalties may be assessed for each day in the period covered by the violations.

In addition to the penalties provided herein, the District may recover reasonable attorney's fees, court costs, court reporter's fees, and other expenses of litigation by appropriate suit at law against the Property Owner found to have violated these Rules and Regulations, or the order or permits issued hereunder. Such penalties shall be in addition to any actual damages the District may incur because of such violations.

Where a violation is found to have caused Interference or Upset, the maximum penalty of Five Thousand Dollars (\$5,000) per violation as described above may be increased as necessary to allow the District to

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recover any fines or penalties paid by the District for NPDES Permit violations due to the Interference or Upset.

3.14.6 OTHER REMEDIES AVAILABLE AT LAW OR IN EQUITY.

The Board, or its District Manager, Operations Manager or legal counsel at its direction, shall have all rights and remedies afforded under Colorado law to enforce these Rules and Regulations, including, but not limited to those set forth herein and to pursue all remedies available at law or in equity, all within the sole discretion of the Board.

End of Article.

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ARTICLE 4. CONDITIONS OF THE WORK

4.1 WORKING HOURS. All work completed under these Rules and Regulations shall be performed during regular working hours - 7:30 A.M. to 5:30 P.M., Monday through Friday. Any contractor performing work on behalf of the District shall not perform work outside of regular working hours or on Saturday, Sunday or any District holiday without the prior written consent of the District.

4.2 EMERGENCIES. When, in the opinion of the District, an emergency arises due to work under these Rules and Regulations and immediate action is necessary to protect public or private interests, the District may, with or without notice to any contractor or Developer, perform the required work to mitigate the emergency. The Developer will pay for the cost of such work. The performance of emergency work by the District shall not relieve the Developer of responsibility for damages resulting from the performance of work under these Rules and Regulations.

In the event of an emergency that threatens loss of life or extensive damage to the work or to adjoining property, the District is authorized to take the necessary action to prevent such loss or damage.

4.3 DAILY CLEANUP. At all times during construction, the contractor shall maintain the site, partially finished structures, material stockpiles and other like areas in a reasonable state of order and cleanliness.

4.4 FINAL CLEANUP. Upon completion of the work, the contractor shall remove from the project area all surplus and discarded materials, rubbish and temporary structures and shall leave the project area in a neat and presentable condition. The contractor shall restore all work that has been damaged by his/her operations.

The contractor shall inspect the interior of all manholes, vaults and catch basins within the construction limits for construction materials, dirt, stones or other debris resulting from the activities of the contractor, and shall remove all debris found.

4.5 AUTHORITY OF DISTRICT. The District will have the authority to stop the work whenever it may be deemed necessary by the District. The District will resolve all questions that arise as to the quality and acceptability of materials furnished, work performed, interpretation of the plans and specifications and acceptable fulfillment of the requirements of these Rules and Regulations.

4.6 AUTHORITY AND DUTIES OF INSPECTOR. The District inspector will inspect and accept or reject all work completed and all material furnished. Inspections may extend to any part of the work and to the preparation, fabrication

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or manufacture of the materials. The inspector is not authorized to revoke, alter or waive any requirements of these Rules and Regulations. Notwithstanding the foregoing, the inspector shall be permitted to temporarily modify, change or amend specific elements of the Standards and Specifications in consultation with the District Engineer and/or Manager if certain field conditions dictate such a deviance from the Standards and Specifications as may be in the best interest of the District under those specific circumstances.

The inspector shall not act as foreman or perform other duties for the contractor, nor interfere with the management of the work performed by the contractor. Instructions or advice given by the inspector will not be binding upon the District or release the contractor from fulfilling the terms of these Rules and Regulations.

The presence or absence of the inspector will not relieve the contractor of the responsibility of complying with these Rules and Regulations or the Standards and Specifications.

The inspector and the District's Engineer will at all times have reasonable and safe access to the work and the contractor shall provide proper facilities for such access.

- 4.7 CONTRACTOR'S RESPONSIBILITY FOR WORK.** The contractor shall be responsible for controlling and supervising the work. It shall be the responsibility of the contractor to ensure that all work is constructed in accordance with these Rules and Regulations.
- 4.8 REMOVAL OF UNACCEPTABLE WORK.** Work that does not conform to these Rules and Regulations will be considered unacceptable work. Unacceptable work shall be immediately removed and replaced or otherwise corrected by the contractor at its own expense. If the contractor fails to remove and replace the unacceptable work within a reasonable time, the District may, in its sole discretion, remove and replace the unacceptable work, which removal and reparation shall be charged fully to the contractor.
- 4.9 SCHEDULING OF WORK.** Work shall be accomplished in accordance with a schedule approved by the District. Deviations from the approved schedule shall be made only with written approval of the District.
- 4.10 SAMPLES AND TESTS.** Sampling and testing will be in accordance with standard practices unless methods and procedures are otherwise set forth in these Rules and Regulations.

The contractor shall furnish all samples, tests and reports required by the District to determine compliance of materials with these Rules and Regulations and the Standards and Specifications. The contractor may be required to furnish a written

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statement identifying the origin, composition and process of manufacture of a material.

- 4.11 STORAGE OF MATERIALS.** Materials shall be stored in a manner that insures the preservation of their quality and suitability for the work. Materials shall be stored only in locations approved by the District.
- 4.12 DEFECTIVE MATERIALS.** Materials not in conformance with requirements of these Rules and Regulations or Standards and Specifications will be considered defective and will be rejected. Rejected materials shall be removed from the work site within twenty-four (24) hours.
- 4.13 LOCAL LAWS, ORDINANCES AND CODES.** The contractor shall comply with all current federal, state and local laws, codes and ordinances pertaining to the work being performed. The contractor shall obtain all necessary permits and approvals prior to commencement of the work.
- 4.14 PUBLIC CONVENIENCE AND SAFETY.** The contractor shall erect the appropriate barricades, signs, or other safety measures, provide for adequate drainage around the work, and take other necessary precautions to safeguard the work and the public.
- 4.15 FIRE HYDRANTS.** Fire hydrants shall remain visible from the street and accessible to the Fire Department at all times. No obstructions shall be placed within ten feet (10') in front or sides of a fire hydrant nor three feet (3') in any direction from a fire hydrant.
- 4.16 LOCATION OF EXISTING UTILITIES.** The contractor shall have all underground utilities located by the appropriate utility company prior to commencing work, all in accordance with the Utility Notification Center of Colorado ("UNCC") regulations, §§ 9-1.5-101, *et seq.*, C.R.S., as amended from time to time. The contractor shall avoid unnecessary exposure of underground utilities and shall protect underground utilities from damage due to performance of the work. The contractor shall not hinder or interfere with any person engaged in the protection or operation of underground utilities.

The District will locate existing water underground facilities. The contractor shall request location of District facilities at least seventy-two (72) hours prior to commencing excavation. Excavation shall not begin until the District has located pipelines and other facilities.

- 4.17 PROTECTION AND RESTORATION OF PROPERTY AND SURVEY MONUMENTS.** The contractor shall prevent damage to public or private property adjacent to the work. The contractor at his/her expense shall restore property damaged by the contractor's operations. At least seventy-two (72) hours

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prior to commencing work, the contractor shall give written notice to owners of property that may be affected by the contractor's operations.

The contractor shall protect and preserve existing survey monuments. Monuments disturbed or removed by the contractor shall be referenced and replaced by a professional land surveyor registered in the State of Colorado, at the contractor's expense.

Excessive blasting or overshooting will not be permitted. The District may order discontinuance of any method of blasting which leads to overshooting, is dangerous to the public, or destructive to property or to natural features.

4.18 PROTECTION OF STREAMS, LAKES AND RESERVOIRS. The contractor shall meet all requirements of federal, state and local authorities, including the requirements of El Paso County and the CDPHE. The contractor shall take the necessary precautions to prevent pollution of streams, lakes and reservoirs with fuels, oils, bitumens, calcium chloride or other harmful materials. Contractor operations shall be conducted in a manner that prevents or minimizes the release of silt or other materials to drainages, streams, lakes and reservoirs. An erosion control plan shall be submitted to the District for approval prior to starting work.

4.19 DUST CONTROL. The contractor shall meet all requirements of federal, state and local authorities, including the requirements of El Paso County and the CDPHE. The contractor shall take the necessary steps to control dust arising from operations connected with the work. Sprinkling with water or other approved methods shall be utilized by the contractor to control fugitive dust.

4.20 TRAFFIC CONTROL, BARRICADES AND WARNING SIGNS. A Traffic Control Plan ("TCP") shall be required for all work performed within a road right-of-way. The TCP shall provide safe methods for movement of pedestrians and motorists traveling through the work zone, and a safe work area for all workers engaged in construction activities. The TCP shall show the location, spacing, scheduling and usage of advance warning signs, barricades, pavement markings and other control devices. All control devices shall be installed and maintained in accordance with the MUTCD, as well as any applicable requirements of El Paso County or the Colorado Department of Transportation.

The TCP shall be submitted to the District and El Paso County for review and approval. Work shall not commence prior to District approval of the TCP. The contractor shall provide the District copies of all county approvals prior to commencing work.

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4.20.1 SCALED DRAWING. The TCP shall include a scaled drawing showing the project area and the streets affected by the project. The drawing shall include the following information:

- Location and spacing of properly planned traffic control devices.
- The duration of construction activities.
- The name and phone numbers of the contractor's designated traffic control supervisor.
- Special notes or information pertaining to traffic control operations.

The contractor shall be responsible for furnishing, erecting and maintaining traffic control devices required by the approved TCP, throughout the duration of the contract, including periods of suspension. Work shall be properly barricaded and lighted at all times.

4.20.2 CONDITIONS FOR STREET CUTS. When street cuts are required for water facilities construction, the following conditions shall be met to minimize interference with traffic:

- Street service cuts shall be open only between 7:30 a.m. and 5:00 p.m.
- Two-way traffic shall be maintained at all times around the construction area.
- All required street cut permits and approvals shall be obtained from El Paso County. The contractor shall provide the District copies of all county approvals prior to commencing work.

4.21 USE OF DISTRICT WATER. The contractor may purchase, when available, reasonable amounts of water from the District for construction purposes. Water shall be obtained at points designated by the District. The contractor shall use a meter and backflow prevention device appropriate for the source of water designated by the District. All water obtained from the District's system shall be in accordance with the Schedule of Fees and Charges.

4.22 MAINTENANCE OF DRAINAGE. The contractor shall not prevent or obstruct the flow of water in street gutters or natural drainages, and shall utilize proper methods to maintain the flow of surface water while work is in progress. The contractor shall prevent flow of sediment into storm sewers and natural drainages.

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- 4.23 INTERRUPTION OF SERVICES.** Before starting work, the contractor shall plan and coordinate for the disconnection or interruption of all services including water, sewer, cable television, telephone, gas, and electric power. Disconnections or interruptions shall be made in accordance with the regulations of the utility that controls the supply of the service.

District approval shall be obtained a minimum of seventy-two (72) hours prior to disconnection or interruption of water or sewer service. Forty-eight (48) hours prior to the interruption of service, the contractor shall provide written notice to all Property Owners whose service will be interrupted. No line shall be shut down for more than an eight (8) hour period at one time. Where practical, the contractor shall make his/her best effort to confine all work requiring service interruptions to regular work hours, Monday through Friday. The District may, in its discretion, refuse approval of work requiring service interruptions if such refusal is in the best interests of the District's residents.

- 4.24 EQUIPMENT OPERATED ON STREETS.** Only pneumatic-tired equipment shall be permitted to operate over paved surfaces. The contractor shall be responsible for damage to the street surface resulting from its operation in accordance with the standards and specifications of El Paso County or other governing body of jurisdiction.

- 4.25 MATERIAL SUBMITTALS.** The contractor shall submit detailed information, specifications and drawings for each type of material or equipment proposed for incorporation into the work. The information submitted shall be in sufficient detail to demonstrate compliance with these Rules and Regulations. Materials and equipment shall not be incorporated into the work until approved by the District.

- 4.26 OPERATION OF DISTRICT SYSTEMS.** Only District personnel shall operate District systems. Developers, contractors, private owners and other persons shall not operate District facilities including, but not limited to, valves, fire hydrants, pumps and other system components.

- 4.27 RESTRICTIONS ON EXCAVATIONS FOR SERVICE LINES.** Excavation for installation of service lines to a single structure will not normally be permitted during the period from December 1 through March 31 of each year. The District may adjust the no-excavation period based on actual weather conditions, or otherwise permit exceptions to this provision in its sole discretion. Persons wishing to perform excavation during this period will be required to furnish the District with a bond in an amount set forth in the District's Schedule of Fees and

Charges, as security for repairs which may be required due to damage to the District's existing facilities.

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End of Article.

ARTICLE 5. WATER SUPPLY FACILITIES

- 5.1 APPLICABILITY.** All water main construction within the District and all water service line construction connecting to the District's water mains shall be designed and constructed in accordance with these Rules and Regulations and the Standards and Specifications. The requirements stated herein shall apply to new water system construction and to repairs, upgrades and expansions of existing facilities.
- 5.2 TAPPING EXISTING WATER MAINS.** The District shall perform all water taps or by person or persons approved by the District.
- 5.3 CROSS CONNECTION CONTROL.** All facilities served by the District's water system shall comply with the provisions set forth in Article 9, Cross Connection Control.
- 5.4 WATER CONSERVATION DEVICES.** All facilities served by the District's water system shall utilize water conservation devices as specified in Article 10, Water Conservation Standards.

End of Article.

ARTICLE 6. LIABILITIES FOR IMPROVEMENTS

6.1 LIABILITIES OF PROPERTY OWNER.

6.1.1 WATER SERVICE LINES. The Property Owner shall own and be liable for any and all damage resulting from the freezing, breakage, leak or other failure of any water improvements installed beyond the curb stop, including, but not limited to, meters, and into the residence, building or other structure. In the event that such water improvements between the curb stop and the structure require repairs, replacement or removal, such work shall be the responsibility of the Property Owner and the Property Owner shall bear all costs associated therewith.

6.1.2 SEWER SERVICE LINES. The Property Owner shall own and be responsible for maintaining the entire length of the sewer service line regardless of whether such service line is located on the Property Owner's property or in public right-of-way. Excess infiltration leaks or breaks in the service lines shall be repaired by the Property Owner within seventy-two (72) hours from the time of notification of such condition by the District, or the Property Owner's discovery of such condition. If satisfactory progress toward repairing the leak has not been made by the time specified, the District shall have the authority to repair, or have repaired, the service line and the Developer shall be responsible for all resulting costs. The District shall be entitled to all remedies permitted under these Rules and Regulations to secure the payment of such repair costs.

6.2 WASTEWATER SERVICE LINE BACKUPS. The District will be responsible for wastewater flows and any backups that may occur in sewer main lines. The Property Owner shall remain solely responsible for any back-ups that may occur on service line. The District shall not be responsible for incidental damage, including property damage, as a result of wastewater service line backups. The District recommends that each Property Owner investigate its options with regard to insurance coverage for wastewater backups, which are not typically included in insurance policies absent a separate rider. The Property Owner shall also be responsible for any maintenance, repairs, or replacement of wastewater service lines.

End of Article.

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ARTICLE 7. WASTEWATER USE REGULATIONS

- 7.1 GENERAL PROVISIONS.** Pursuant to its Service Plan, the District may provide wastewater service to its Property Owner. Any Property Owner, the sewage from which directly or indirectly enters the wastewater system of the District from an area within or without the boundaries of the District, shall be subject to the requirements of this Article and shall be bound by these Rules and Regulations as they now exist or may hereafter be amended. Such Rules and Regulations may be enforced against any Property Owner.
- 7.2 WOODMEN HILLS METROPOLITAN DISTRICT.** The District's wastewater treatment is performed through contract with the Woodmen Hills Metropolitan District and its treatment facility. Where the term "District's wastewater treatment plant" is used it shall mean the Woodmen Hills Wastewater Treatment Plant. If a non-residential user connects to the District's system that user may also be subject to certain Rules and Regulations of Woodmen Hills that are related to wastewater treatment.
- 7.3 GENERAL DISCHARGE PROHIBITIONS.** No Property Owner shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation or performance of the District's system. These general prohibitions apply to all such Property Owners using the system whether or not the user is subject to national categorical pretreatment standards or any other national, State, District, or local pretreatment standards or requirements. A Property Owner may not discharge any of the sewage, water, substances, materials or wastes listed in this Article.
- 7.4 GREASE, OIL, AND SAND INTERCEPTORS.** Grease, oil or sand interceptors shall be provided and installed at the sole cost and expense of the Property Owner when, in the opinion of the District, they are necessary for the proper handling of liquid wastes containing greases, oil, etc., in excessive amounts, or any flammable wastes, sand or other harmful ingredient. All interceptors shall be located as to be readily available and accessible for cleaning and inspection. Commercial interceptor installations shall be accessible through a meter or manhole pit, or through an equivalent District approved means of access. Grease, oil or sand interceptors shall be in an accessible location for maintenance and inspection and shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. Interceptors shall be watertight, and, if necessary, as determined by the District, gastight and vented.

Where installed, all grease, oil or sand interceptors shall be maintained by the Property Owner at its sole cost and expense, in continually efficient operation at all times. The District requires a monthly or periodic cleaning and pumping of

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any grease, oil or sand interceptors as directed by the Operations Manager. The District shall make annual inspections of grease, oil or sand interceptors and in the event the Property Owner is in violation of these requirements, the Property Owner shall be liable for payment of a penalty in an amount as set forth in the Schedule of Fees and Charges for the violation of these Rules and Regulations. The cost of the District's inspections shall be assessed as set forth in the Schedule of Fees and Charges and, in addition, shall include all other costs incurred by the District in inspecting the interceptor.

7.5 REQUIREMENTS REGARDING DELETERIOUS WASTES. None of the following described sewage, water, substances, materials or waste shall be discharged into the District's wastewater system:

- Sewage of such a nature and delivered at such a rate as to impair the hydraulic capacity of the District's wastewater system, normal and reasonable wear and usage excepted.
- Sewage of such a quantity, quality, or other nature as to impair the strength or the durability of the sewer structures, equipment or treatment works, either by chemical or by mechanical action.
- Sewage having a flash point lower than 187°F, as determined by the test methods specified in 40 CFR §261.21.
- Any radioactive substance, the discharge of which, does not comply with Article 4.35 of the Colorado Rules and Regulations pertaining to Radiation Control (Volume 6 of the Code of Colorado Regulations, 6 CCR 1007-1, Part 4, *et seq.*).
- Any garbage other than that received directly into the sewer system from domestic and commercial garbage grinders in dwellings, restaurants, hotels, stores, and institutions, by which such garbage has been shredded to such a degree that all particles will be carried freely under flow conditions normally prevailing in public sewers with no particle greater than one-half (1/2) inch in any dimension.
- Any night soil or septic tank pumpage, except by permit in writing from the District at such points and under such conditions as the District may stipulate in each permit.
- Sludge or other material from sewage or industrial waste treatment plants or from water treatment plants, except such sludge or other material, the discharge of which to the District wastewater system shall be governed by the

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provisions of these Rules and Regulations or any connection permit, agreement, or as otherwise authorized by the District.

- Water which has been used for cooling or heat transfer purposes without recirculation, discharged from any system of condensation, air conditioning, refrigeration, or similar use.
- Water accumulated in excavations or accumulated as the result of grading, water taken from the ground by well points, or any other drainage associated with construction.
- Any water or wastes containing grease or oil and other substances that will solidify or become discernibly viscous at temperatures between 32°F and 150°F except by permit in writing from the District at such points and under such conditions as the District may stipulate in each permit.
- Any wastes that contain a corrosive, noxious, or malodorous material or substance which, either singly or by reaction with other wastes, is capable of causing damage to the District's wastewater system or to any part thereof, of creating a public nuisance or hazard, or of preventing entry into the sewers for maintenance and repair.
- Any wastes that contain concentrated dye wastes or other wastes that are either highly colored or could become highly colored by reacting with any other wastes, except by permission of the District.
- Any wastes which are unusual in composition; i.e., contain an extremely large amount of suspended solids or BOD; are high in dissolved solids such as sodium chloride, calcium chloride, or sodium sulfate; contain substances conducive to creating tastes or odors in drinking water supplies; otherwise make such waters unpalatable even after conventional water purification treatment; or are in any other way extremely unusual unless the District determines that such wastes may be admitted to the District wastewater system or shall be modified or treated before being so admitted.
- Any substance which may cause the District's effluent or any other product of the District such as residues, sludges or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case, shall a substance discharged to the wastewater system cause the District to be in non-compliance with sludge use or disposal criteria, guidelines or regulations developed under Article 405 of the Clean Water Act; any criteria, guidelines, or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances

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Control Act, or State criteria applicable to the sludge management method being used.

- Any substance which may cause the District to violate its National Pollutant Discharge Elimination System (NPDES) Permit or the receiving water quality standards.

7.6 PROHIBITED DISCHARGES. None of the following described sewage, water, substances, materials, or wastes shall be discharged into the District's wastewater system or into the sewer system by any Property Owner:

- Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or be injurious in any other way to the District's wastewater system, the sewer system of any other service provider or any of its connectors, or to the operation of the District. At no time shall any reading on an explosion hazard meter, at the point of discharge into the District's wastewater system or at any point in the wastewater systems, or at any monitoring location designated by the District in a wastewater contribution permit, be more than ten percent (10%) of the Lower Explosive Limit (LEL) of the meter. Prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, and sulfides.
- Any solid or viscous material which could cause an obstruction to flow in the sewers or in any way could interfere with the treatment process, including as examples of such materials but without limiting the generality of the foregoing, significant proportions of ashes, wax, paraffin, cinders, sand, mud, straw, shavings, metal, glass, rags, lint, feathers, tars, plastics, wood and sawdust, paunch manure, hair and fleshings, entrails, lime slurries, beer and distillery slops, grain processing wastes, grinding compounds, acetylene generation sludge, chemical residues, acid residues, food processing bulk solids, snow, ice, and all other solid objects, material, refuse, and debris not normally contained in sanitary sewage.
- Any wastewater having a pH less than 6.0 or greater than 9.0 for discharges into the District's wastewater system, or wastewater having any other corrosive property capable of causing damage or hazard to any part of the District's wastewater system, any of its Property Owners, or to personnel.
- Any wastewater having a temperature which will inhibit biological activity at the District's treatment plant, but in no case wastewater containing heat in

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such amounts that the temperature at the introduction into the District's wastewater treatment works exceeds 40°C (104°F).

- Any pollutants, including oxygen demanding pollutants (BOD, etc.) released at a flow rate and/or pollutant concentration which cause Upset. In no case shall a slug load have a flow rate or contain concentrations or qualities of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantities, or flow during normal operation.
- Any water or wastes containing a toxic substance in sufficient quantity, either singly or by interaction with other substances, to injure or interfere with any sewage treatment process, to constitute a hazard to humans or to animals, or to create any hazard or toxic effect in the waters which receive the treated or untreated sewage.
- Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin, each in amounts that will cause interference or Upset.
- Pollutants which result in the presence of toxic gases, vapors, or fumes within the system in a quantity that may cause acute worker health and safety problems.
- Any trucked or hauled pollutants except at discharge points designated by the District.
- Any water or wastes containing pollutant quantities or concentrations exceeding the limitations in these Rules and Regulations, or the limitations in any applicable Categorical Standards.
- Any wastewater discharges to the District's wastewater system, except at locations approved by the District.

7.7 SPECIFIC DISCHARGE LIMITATIONS FOR USERS.

7.7.1 DISTRICT LIMITATIONS. No Property Owner shall discharge into the District's wastewater system or into any sewer system at any time or over any period of time, wastewater containing pollutants that would inhibit, interfere, or otherwise be incompatible with operation of the District's wastewater treatment plant, including interference with the use or disposal of municipal sludge. These pollutants that are prohibited, include, but are not limited to:

- Pollutants which create a fire or explosion hazard.

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- Pollutants which will cause corrosive damage to sewers or the treatment plant; pH must be above 5.0 standard units.
- Solid or viscous pollutants which will cause obstructions of flow in any part of the sewer system or treatment plant.
- Heat in amounts to inhibit biological activity.
- Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.
- Pollutants which result in toxic gases, vapors, or fumes that may cause worker health and safety problems.
- Any trucked or hauled pollutants except at discharge points designated by the District.
- Any pollutant in excess of that listed in the pretreatment standards developed by the EPA for specific SIC codes and as detailed in 40 CFR Parts 400 through 471.

The discharge of dry-cleaning process wastes, including new and used tetrachloroethene (perchloroethylene), still bottom oil, and separator water, is prohibited entirely. Where necessary the District may require that these wastes be physically prevented from discharging into the District's wastewater system.

7.7.2 NATIONAL CATEGORICAL PRETREATMENT STANDARDS. Once promulgated, Categorical Standards for a particular industrial subcategory, if more stringent, shall supersede all conflicting discharge limitations contained in this Article, as they apply to that subcategory.

7.7.3 STATE REQUIREMENTS. State requirements and limitations on discharges shall apply in any case where they are more stringent than federal requirements and limitations or those contained elsewhere in this Article.

7.7.4 DILUTION PROHIBITED. Except where permitted by Categorical Standards, no Property Owner may increase the use of process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to attain compliance with the limitations contained in National Categorical Pretreatment Standards or

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any other specific discharge limitations contained in these Rules and Regulations.

7.8 INSIGNIFICANT DISCHARGES. Notwithstanding the prohibitions and limitations contained in these Rules and Regulations, the District may allow a proposed discharge to the system if the District determines that the quantity and quality of the discharge, both alone and in conjunction with similar discharges which might be affected by this determination, will have no material effect on the District's operations, including the quality of its effluent or sludges. Approval of the District must be received in writing before the discharge may commence, and the discharge must adhere to any terms and conditions of the District's approval. Approval of such a discharge is entirely at the discretion of the District, and shall not constitute approval of any additional or similar discharges. Disapproval of a proposed discharge by the District shall not be subject to the appeal and hearing procedure set forth in these Rules and Regulations.

7.8.1 ACCIDENTAL OR UNUSUAL DISCHARGES. An accidental or unusual discharge is a discharge which may disrupt wastewater system treatment processes or operations, damage wastewater system facilities, cause an NPDES Permit violation at the District's treatment plant or degrade sludge quality excessively, or which differs significantly in quantity or quality from discharges under normal operations.

7.8.2 ACCIDENTAL DISCHARGE PROTECTION. Each Property Owner shall provide protection from accidental or unusual discharges of prohibited materials or other substances regulated by these Rules and Regulations. Infrastructure necessary to prevent accidental discharge of prohibited materials shall be provided and maintained at the Property Owner's own cost and expense.

7.8.3 NOTIFICATION REQUIREMENTS

7.8.3.1 Telephone Notification. In the case of any accidental or unusual discharge, it is the responsibility of the Property Owner to immediately telephone and notify the District. The notification shall include the location of discharge, type of waste, concentration and volume, and corrective actions.

7.8.3.2 Written Notice. In the case of any accidental or unusual discharge, it is the responsibility of the Property Owner to immediately telephone and notify the District. The notification shall include the location of discharge, type of waste, concentration and volume, and corrective actions.

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7.8.3.3 Notice to Employees. In the case of any accidental or unusual discharge, it is the responsibility of the Property Owner to immediately telephone and notify the District. The notification shall include the location of discharge, type of waste, concentration and volume, and corrective actions.

7.9 HAZARDOUS WASTE DISCHARGE NOTIFICATION. Property Owners shall notify the District, the EPA Regional Waste Management Division Director, and CDPHE/state hazardous waste authorities in writing of any discharge into the District's system of any substance which, if otherwise disposed of, would be considered a hazardous waste under 40 CFR Part 261. This notification requirement does not apply to pollutants already being reported under the reporting requirements contained in these Rules and Regulations. The specific information required to be reported and the time frames in which it is to be reported are found at 40 CFR §403.12(p).

7.10 MONITORING DISTRICT FACILITIES. The District may require monitoring facilities to be provided and operated, at the Property Owner's expense, to allow inspection, sampling, and flow measurement of any discharges as necessary to determine compliance with the provisions of these Rules and Regulations. There shall be ample room in or near such sampling manhole or facility to allow accurate sampling and preparation of samples for analysis. The facility, sampling, and measuring equipment shall be maintained at all times in a safe and proper operating condition at the expense of the Property Owner.

The sampling and monitoring facilities shall be provided in accordance with the District's requirements and all applicable local construction standards and specifications. Construction shall be completed within such a time frame as the District shall specify by written notification.

7.11 INFORMATION SUBMITTAL, INSPECTION AND SAMPLING. The District may require any Property Owner to submit information as necessary to determine compliance with the requirements of these Rules and Regulations. The District may inspect the facilities of any Property Owner to ascertain whether the requirements of these Rules and Regulations are being complied with. Persons, Property Owners, and occupants of premises where wastewater is created or discharged shall allow the District or its representatives ready access at all reasonable times to all parts of the premises for the purposes of inspection, sampling, records examination and copying, or in the performance of any of their duties.

The District, CDPHE, and EPA shall have the right to set up on the Property Owner's property such devices as are necessary to conduct sampling, inspection, compliance monitoring and/or metering operations. Where a Property Owner has

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security measures in force which would require proper identification and clearance before entry into the Property Owner's premises, the Property Owner shall make necessary arrangements with security guards so that upon presentation of suitable identification, personnel from the District, CDPHE, and EPA will be permitted to enter, without delay, for the purposes of performing their specific responsibilities.

All records relating to compliance with pretreatment standards and requirements shall be made available to officials of the District, CDPHE, and EPA upon request.

7.12 WASTEWATER TREATMENT. The District shall provide, either directly or through contractual arrangement, wastewater treatment as required to comply with the requirements of these Rules and Regulations and shall achieve compliance with all national categorical pretreatment standards within the time limitations as specified by the federal pretreatment regulations. The District may require facilities to pretreat wastewater to a level acceptable to the District. Such pretreatment shall be provided, operated and maintained at the Property Owner's expense.

7.13 CONFIDENTIAL INFORMATION. Information and data on a Property Owner obtained from reports, questionnaires, permit applications, permits, monitoring programs and inspections shall be available to the public or other governmental agency without restriction unless the Property Owner specifically designates and is able to demonstrate to the satisfaction of the District that the release of such information would divulge sales or marketing data, processes, or methods of production entitled to protection as "Confidential Business Information" of the Property Owner. Wastewater constituents and characteristics will not be recognized as confidential information. It shall be the Property Owner's obligation to stamp each page, which has been demonstrated to the District's satisfaction to contain trade secrets, with the words "Confidential Business Information," "Confidential Information," or "Confidential." A failure by the Property Owner to designate and identify any document in this manner may result in the document losing its protection from disclosure as confidential business information.

Confidential business information shall not be made available for inspection by the public but shall be made available upon request to governmental entities or agencies for uses related to these Rules and Regulations, the District's National Pollutant Discharge Elimination System and Colorado Discharge Pollutant System (NPDES/CDPS) Permit and/or the pretreatment program in accordance with 40 CFR Part 2 and/or 5 CCR 1002-63, Article 63.13. Confidential business information shall not be transmitted to any governmental agency or entity for other uses by the District except upon written request and after a ten (10) day

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notification and right to object is given to the Property Owner. Such notification shall not be required in certain circumstances provided for in 40 CFR Part 2. If after a request for public inspection, a person or entity challenges the determination of any record to protection as confidential business information, the Property Owner shall cooperate, to the fullest extent possible and at user's own expense, with the District in the defense of the determination. At the request of the District the Property Owner shall, at the Property Owner's expense, provide a defense to such challenge.

- 7.14 LEGAL ACTION.** If any Person discharges sewage, industrial wastes or other wastes into the District's wastewater disposal system contrary to the provisions of these Rules and Regulations, or any orders or permits issued hereunder, the District's attorney may commence an action for appropriate legal and/or equitable relief in the El Paso County District Court.

End of Article.

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ARTICLE 8. FIRE DEPARTMENT ACCESS

8.1 GENERAL PROVISIONS. This section covers the requirements for fire department access to structures located in the District. All development within the District shall comply with the requirements of this section, unless otherwise approved by the District. All development shall also comply with the requirements of El Paso County.

8.2 ACCESS REQUIREMENTS.

8.2.1 FIRE HYDRANTS. Location of fire hydrants shall be as set forth in Section 2.4.2.4 of the Specifications.

8.2.2 FIRE ACCESS ROADWAYS. An approved access road for fire department vehicles shall extend to within one hundred fifty feet (150') of every structure, to include all portions of facilities and all portions of the first story of all structures as measured by an approved route around the exterior of the building. Access roads for fire department vehicles shall meet the following requirements:

- Fire access roads shall have a minimum unobstructed width of not less than twenty feet (20'). Minimum width shall be twenty-eight feet (28') if parallel parking is permitted along one side of the fire access, and thirty-six feet (36') if parking is permitted on both sides of the fire access road. Where required by the District, El Paso County, or other authorized fire code official, approved signs or approved notices shall be provided for fire access roads to identify such access roads and prohibit the obstruction thereof. Minimum unobstructed vertical clearance shall be thirteen feet six inches (13'6").
- Roadway surface shall be suitable for all-weather service. Roadways shall be designed and maintained to support the imposed loads of fire apparatus, or as otherwise directed by El Paso County or the District.
- Dead-end roadways longer than one hundred fifty feet (150') shall have an approved turnaround area with a minimum outside radius of forty-five feet (45'), unless otherwise approved by the District or El Paso County.

8.3 MAXIMUM GRADE. Maximum roadway grade shall be ten percent (10%), unless otherwise approved by the District or El Paso County.

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End of Article.

ARTICLE 9. CROSS CONNECTION CONTROL

9.1 CROSS CONNECTION CONTROL CRITERIA.

9.1.1 GENERAL. Cross-connections of any type that may permit a backflow of water from a supply other than that of the District into the District's potable water system, are strictly prohibited. A cross-connection shall mean any temporary or permanent connection to the District's potable water system that is unprotected. Backflow prevention system designs for new construction shall be submitted to the District for approval. The District shall inspect and test all devices that are installed. All systems and applications shall be in strict accordance with the CDPHE Cross-Connection Control Manual and Article 12 of the Colorado Primary Drinking Water Regulations. In the event there is a conflict between the Manual and these specifications, the more stringent requirements shall apply.

9.2 TYPES OF CROSS-CONNECTION CONTROL DEVICES. The design, installation and maintenance of all cross-connection control devices shall be the sole responsibility of the Property Owner. The following standards shall apply to cross-connection control devices:

9.2.1 AIR GAP (AG). An Air Gap is defined as the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other devices and the flood level rim of said vessel. The air-gap shall be at least double the diameter of the supply pipe, measured vertically, above the top of the rim of the vessel; and, in no case, less than two inches (2"). When an air-gap is used at the service connection to prevent the contamination or pollution of the public potable water system, an emergency bypass shall be installed around the air-gap system and an approved reduced pressure principle device shall be installed in the bypass system. All air-gaps shall be permanently constructed with rigid piping. Flexible hose or tubing shall not be acceptable for an air-gap.

9.2.2 DOUBLE CHECK VALVE ASSEMBLY (DCVA). Double check valve assemblies shall consist of an assembly of two independently operating approved check valves with tightly closing shut-off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve. The entire assembly shall meet the design and performance specifications and approval of a recognized and approved testing agency for backflow prevention devices. These devices shall be readily accessible for in-line maintenance and testing.

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- 9.2.3 PRESSURE VACUUM BREAKER WITH INTERNAL CHECK VALVE (PVB).** Pressure vacuum breaker assemblies shall consist of at least one check valve, vacuum relief, inlet and discharge shutoff and properly installed test cocks. The pressure vacuum breaker shall have a vacuum relief valve that is internally loaded, normally by means of a spring. The PVB shall be installed a minimum of twelve inches (12") above the highest outlet or overflow level on the nonpotable system. Vacuum breakers shall not be installed more than five feet (5') above the ground. Adequate room shall be made available for maintenance and testing.
- 9.2.4 ATMOSPHERIC VACUUM BREAKER (AVB).** An atmospheric vacuum breaker is a device that allows air to enter the water line when the line pressure is reduced to a gauge pressure of zero or below. The atmospheric vacuum breaker is designed to prevent back-siphonage only. It is not effective against backflow due to back pressure and shall not be installed where it will be under continuous operating pressure for more than twelve (12) hours in any twenty-four (24) hour period. Poppets of all atmospheric vacuum breakers shall be precision fitted to insure positive closure. An AVB shall be installed downstream of the last shutoff valve and a minimum of six inches (6") above the highest outlet or overflow level on the nonpotable system. Vacuum breakers shall not be installed more than five feet (5') above the ground.
- 9.2.5 REDUCED PRESSURE PRINCIPLE DEVICE (RPPD).** A reduced pressure principle device is an assembly of two (2) independently operating approved check valves with an automatically operating differential relief valves between the two (2) check valves, shut-off valves on either side of the check valves, plus properly located test cocks for the testing of the check and relief valves. The entire assembly shall meet the design and performance specifications and approval of a recognized and approved testing agency for backflow prevention assemblies. The device shall operate to maintain the pressure in the zone between the two (2) check valves at a level less than the pressure on the public water supply side of the device. In case of leakage of either of the check valves the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is two (2) pounds per square inch or less, the relief valve shall open to the atmosphere. These devices must be readily accessible for in-line maintenance and testing and must be installed in a location where no part of the device will be submerged.

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The device shall not be installed where the pressure can be maintained above the device's rated capacity. When the RPPD is located within a structure, it is recommended that a drain pipe be provided under the relief valve port of the device. An approved air gap between the port and the drain is required. All manufacturers' recommendations for the device shall be followed.

9.2.6 HOSE BIBBS. Hose bibbs shall be directional with built in backflow preventer. Hose bibbs will also have a drain down feature built in the unit.

9.3 APPLICATION OF DEVICES. The type and complexity of the cross connection control device shall be determined by the Property Owner's Engineer in accordance with the CDPHE Cross Connection Control Manual. All applications shall be submitted to the District for review and approval. The determination of the type of device required shall be based on the degree of hazard caused to the public from contamination. The applications listed below may be used as a guideline but are not to be construed as the sole determining factor in selecting a device:

9.3.1 RESIDENTIAL IRRIGATION SYSTEMS (3/4" TO 1").

- A single Pressure Vacuum Breaker prior to all valves within a system (including Solenoid valves).
- Atmospheric Vacuum Breakers with single check valves downstream of every valve, including solenoid valves and gate valves for each zone.

9.3.2 COMMERCIAL IRRIGATION SYSTEMS (1 1/2" AND LARGER).

- Systems shall have a Reduced Pressure Principle Device. Solenoid Valves or Gate Valves can be downstream of the RPP.
- In systems with dual water supplies, injection systems for pesticides or fertilizer, or booster pumps, a Reduced Pressure Principle Device shall be required

9.3.3 FIRE PROTECTION SPRINKLERS FOR BUILDINGS.

- On systems that have siamese connections, antifreeze, additives, booster pumps or dual feeds, a Reduced Pressure Principle Device shall be required.

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- Systems that have no other source of connection except for the single main into the structure may use a Double Check Valve Assembly installed.

9.3.4 SWIMMING POOLS. Swimming Pools shall have a Reduced Pressure Principle Device, or an air gap. However, any system, which has a booster pump, or chlorine feed system that is dependent on a booster pump, shall have a Reduced Pressure Principle Device.

9.3.5 STOCK TANKS. Stock Tanks shall have a Reduced Pressure Principle Device on an Air Gap.

9.3.6 SOLAR SYSTEMS. All two-fluid solar systems, whether utilized for space heat or domestic hot water preheat, shall be protected against the possible backflow of substances into the potable water distribution system as follows:

- In the case of a domestic hot water heating application where a primary circulation fluid is used to absorb heat from the solar collectors and is deemed to have an inherent toxicity, the exchange of heat from the circulation fluid to the potable water shall be done by way of an approved double-walled exchanger.
- In the case of a two-fluid space heating application, with or without domestic hot water preheat capabilities, there shall be no connection, direct or indirect, between the primary circulation medium and the potable system. The exchange of heat between the storage medium and potable water shall be accomplished through the use of an approved double-walled exchanger.
- In the case of a single-fluid solar domestic hot water heating system that utilizes draindown design for freeze protection, drain lines from the system shall be extended to an approved, properly trapped and vented receptor with a visible air gap of at least three (3) times the diameter of the drain line with a fixed minimum air gap of two inches (2") above the flood level of the receptor.
- In the case of a solar air heating system that utilizes a fan coil unit to exchange heat from the hot air to preheat water for domestic uses, no backflow preventers will be required at the potable connection. However, if the fan coil unit utilizes drain-down freeze protection, the drain from the exchange coil shall conform to the requirements of the single-fluid drain solar domestic hot water systems.

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9.3.7 BOILERS. Boilers shall have an air gap or Reduced Pressure Principle Device.

9.3.8 HOSPITALS, MORTUARIES AND MEDICAL BUILDINGS. Hospitals, mortuaries and medical buildings shall have a Reduced Pressure Principle Device.

9.3.9 STRUCTURES 40+ FEET HIGH. Structures larger than forty feet (40') in height measured from the water main to the highest fixture within the structure.

- A structure with no internal Booster Station shall have a Double Check Valve Assembly.
- A structure with a Booster Station or storage reservoir shall have a Reduced Pressure Principle Device.

9.3.10 INDUSTRIAL OR COMMERCIAL BUILDINGS. The required cross-connection or back-flow prevention device shall be determined by the District. The type and location of the device shall be shown on the drawings.

9.4 APPROVED CROSS CONNECTION CONTROL DEVICES. The District Engineer shall insure correct models and sizes and approve all Cross Connection Control Devices. The term "Approved Cross Connection Control Device" shall mean a device that has been manufactured in full conformance with AWWA C510 or AWWA C511 and has met the laboratory and field performance specifications of the Foundation for Cross Connection and Hydraulic Research of the University of Southern California.

9.5 TESTING BACKFLOW PREVENTION DEVICES. Backflow prevention devices shall be tested when installed and at the request of the District, no more frequently than annually. Testing shall be performed by a Certified Cross-Connection Control Technician. Testing shall be paid for by the Property Owner. Any and all testing of backflow prevention devices shall be supported by a written report from the Certified Cross-Connection Control Technician. The District shall maintain copies of the reports submitted by Property Owners. If a backflow prevention device is found to be insufficient during testing, the Property Owner shall repair or replace the backflow prevention device of same kind or as approved by the District within thirty (30) days. If a backflow prevention device that has been found to insufficient is not repaired or replaced within thirty (30) days, the District shall cease service to the property until the backflow prevention device is repaired or replaced.

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End of Article.

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ARTICLE 10. WATER CONSERVATION STANDARDS

10.1 APPLICATION. Upon adoption of a resolution by the Board declaring water conservation standards necessary and/or desired, the water conservation standards set forth in this Article shall become effective. The standards set forth in this Article shall not become effective until adoption of a resolution by the Board.

10.2 COMPLIANCE. All improvements within the District shall comply with the following water conservation standards:

- Toilets shall not use more than (1.6) gallons per flush.
- Kitchen and lavatory faucets shall have aerators, laminar flow devices, or other fixtures that restrict flow to a maximum of (2.2) gallons per minute. No in-line flow control washers, orifices or other such fittings are permitted.
- Shower heads shall be constructed so as to limit flow to a maximum of approximately (2.2) gallons per minute. No in-line flow control, washers, orifices, or other such fittings are permitted.
- All residences, parks, median strips, landscaped public areas and landscaping surrounding condominiums, townhomes, apartments, commercial establishments, and developed nonurban areas shall utilize an automatic irrigation system operation.
- Irrigation systems, either manual or automatic, shall only be operated during off-peak energy usage periods (10:00 p.m. through 10:00 a.m.). Usage outside of this period shall be subject to fines as set forth in the Schedule of Fees and Charges. The District will consider written requests for waivers for irrigation outside of this period for the establishment of new vegetation. Written waivers issued by the District shall identify the expiration of the waiver period.

End of Article.

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APPENDIX A

SCHEDULE OF FEES AND CHARGES

Adopted and Approved
July 17, 2014 to become effective August 1, 2014

WATER & SEWER TAP FEE

This fee is a one-time contribution per lot required of new Customers (or existing Customers having change of use) to be used for capital investment in regional facilities and District operations. This fee shall be due at the time of application for service. The Water & Sewer Tap Fee is subject to change at the discretion of the Board. The EQR determination and tap fee for both the water and sewer tap are based on the size of the water tap as set forth below.

Water Tap Size	EQR	Water and Sewer Tap Fee
¾"	1	\$17,103.63*

*As of January 1, 2014. The Water and Sewer Tap Fee shall automatically increase on January 1 of each succeeding year by 5%.

WATER METER SETTING FEE

This fee is intended to cover the cost of the District’s inspection of the physical tap and of the Customer’s Service Line, entering the tap location on the District’s as-built drawing set, time and materials associated with the tapping, a builder’s use of water and other ancillary services needed in connection with the provision of a new tap by the District.

The actual cost of a water meter is included in the water tapping fees. If repeat inspection services are required due to unacceptable installation or improper scheduling, then the District will charge additional re-inspection fees as stated herein per occurrence.

WATER METER SETTING FEE SCHEDULE

<u>Water Line/Meter Size</u>	<u>Fee</u>
¾"	\$500 (includes labor and materials, and builder water use during the course of construction)

All other sizes billed on a time and materials basis at a cost of \$40 per hour for labor and materials billed at cost.

MONTHLY WATER SERVICE CHARGES

<u>Tap Size</u>	<u>Water Base Fee</u>
¾" tap	\$30.00

WATER USAGE FEES:

RESIDENTIAL

<u>USAGE</u> (monthly billing basis)	<u>COST</u> (per gallon)	<u>-OR-</u>	<u>COST</u> (per 1,000 gallons)
0 to 15,000 gallons	\$0.0050		\$5.00
15,001 to 25,000 gallons	\$0.0075		\$7.50
25,001 to 35,000 gallons	\$0.0125		\$12.50
35,001 to 40,000 gallons	\$0.0150		\$15.00
40,001 to 45,000 gallons	\$0.0200		\$20.00
Over 45,000 gallons	\$0.0250		\$25.00

COMMERCIAL

<u>WATER</u>	<u>USAGE</u>	<u>COST</u> (per gallon)	<u>-OR-</u>	<u>COST</u> (per 1,000 gallons)
TIER 1	0 to 1,000,000 gallons	\$0.01		\$10.00
TIER 2	1,000,001 to 1,500,000 gallons	\$0.015		\$15.00
TIER 3	1,500,001 gallons and up	\$0.02		\$20.00

LATE CHARGE \$10.00
Plus 12% annual interest rate

MONTHLY SEWER SERVICE CHARGES

Tap Size Sewer Fee
¾" tap \$17.00

COMMERCIAL USAGE FEES

<u>SEWER</u>	<u>USAGE</u>	<u>COST</u> (per month)
	Small	\$33.85
	Large	\$450.00

UNDERDRAIN FEE \$3.00/per month
(per property)

LATE CHARGE \$10.00
12% annual interest rate

INSPECTION FEES

Service Line / Meter Pit Inspection \$150.00*
Meter Inspection \$150.00*
Other Inspection \$150.00

*If inspection takes place as part of the meter setting process, the inspection fees are not in addition to but included in the Water Meter Setting Fee.

REINSPECTION FEE OR RETURN VISIT FEE \$150.00/ hr
(2 hour minimum)

METER MAINTENANCE SERVICE FEE \$40.00 / hr
(1 hour minimum)

METER COST (replacement) Current cost to District

WATER TURN ON/TURN OFF \$25.00 each on/off
(Customer Requested)
\$50.00 each on/off
(for non-payment)

SEWER SERVICE \$40.00 / hr
(1 hour minimum)

MISCELLANEOUS FEES:

FIRE HYDRANT METER FEES

Meter Assembly Rental Deposit \$ 2,000 per meter
Meter Rental Fee \$ 20.00/day
Monthly Fee \$10.00 / 1,000 gallons

FORMAL INCLUSION HEARING FEE \$ 1,000.00 / application fee
 Plus all costs of publication of notices and engineering and attorneys' fees incurred by District in processing the inclusion

FORECLOSURE FEE Actual cost
 Plus all costs of engineering and attorneys' fees

INCLUSION FEE
 Initial Deposit \$10,000.00 (non-refundable)
 Incremental Refundable Deposits of \$5,000.00

For actual time and expenses incurred over the \$10,000 initial deposit, including but not limited to costs of publication of notices and engineering and attorneys' fees

LIEN FEES
 Demand Letter Fee \$60.00
 Notice of Intent to Lien \$120.00
 Lien Fee \$150.00
 Release of Lien Fee \$150.00

PERMIT FEES:
 Water Stub-In Permit \$100.00
 Line Extension Permit \$250.00
 Disconnection or Reconnection Permit \$600.00

PLAN REVIEW FEES
 Actual Time and expenses incurred by District, and/or \$40/hour for District staff

AVAILABILITY OF SERVICE FEES
 Fee per lot within 100 feet of District water and/or sewer lines 50% of Monthly Water and Sewer Fees

TRANSFER AND CONSOLIDATION FEES
 For transfer or consolidation of ownership of property: per lot \$250.00

TESTING FEES
 Any property owner or customer requesting a contaminant testing shall pay the following applicable fee(s) for each of the requested tests, all of which include applicable pick-up and delivery and administrative fees and costs:

Domestic Water Test: \$165.00
 Standard Nutrient Test: \$168.00
 HPC Test: \$175.00
 Total Coliform Test: \$174.00
 Additional Tests: Based on actual costs

PENALTY FEES / FINES:
Excavation During Non-Excavation Period \$5,000.00 (bond)

December 1 through March 31 of each year. The District may adjust the no-excavation period based on actual weather conditions. The bond is security for repairs which may be required due to damage to the District's existing facilities.

Installation of any non-metered device

\$1,000.00 / occurrence

Installation of any device (i.e., “jumper”) to allow for circumvention of the District’s monitoring or delivery systems shall constitute unauthorized tampering and the use of the District water system shall be subject to a penalty fee. Such fines shall, until paid, constitute a lien upon the subject property, pursuant to § 32-1-1001, C.R.S.

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
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**APPENDIX B
STANDARDS AND SPECIFICATIONS**

STANDARDS AND SPECIFICATIONS

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ARTICLE 1. GENERAL

- 1.1 PURPOSE.** These Standards and Specifications (the “Specifications”) are intended to provide guidance and technical data to any Person with respect to the design and construction of water and wastewater system improvements within the District or to be served by the District. The purpose is to ensure consistency in the design, quality and uniformity of the water and wastewater systems and all appurtenances thereto. These Specifications are an appendix to the District’s Rules and Regulations and are subject to all provisions contained therein. To the extent any provision of these Specifications conflicts with any provision in the Rules and Regulations, the Rules and Regulations shall prevail unless otherwise determined by the Board or District Manager in their sole discretion.
- 1.2 REQUEST FOR DEVIATION FROM SPECIFICATIONS.** These Specifications may be amended, modified or waived pursuant to Section 1.10 of the Rules and Regulations. If a Developer, Property Owner or Person wishes to deviate from any requirement set forth herein or wishes submit a product or method of installation not otherwise addressed by these Specifications, s/he may do so by completing a Request for Deviation Form, attached as Appendix B-2, and submitting it to the District Manager with the required back-up information. It is the goal of the District to review and approve water and wastewater system plans and materials in the light of community values. Value engineering that can be shown to benefit the Developer, the District, current and future users of the District’s system may be considered. Any deviation granted by the District shall be specific to that request only and shall not be considered a change in the Rules and Regulations or these Specifications.
- 1.3 INTERPRETATION OF SPECIFICATIONS.** These Specifications are comprised of criteria for engineering design, procedures and policies, construction and material specifications and standard drawings. The interpretation of any section or the contradiction between sections, when applicable, shall be made by the Board, the District Manager, the District Engineer or the Operations Manager. Requests for interpretation shall be submitted in writing to the District Manager. Any interpretation of the District shall be in its sole discretion and shall be the final determination on the matter.
- 1.4 DEFINITIONS.** In addition to the definitions contained in Article 2 of the Rules and Regulations, the following definitions shall be applicable to these Specifications:
- 1.4.1** Applicant or applicant shall mean any Person constructing water and/or wastewater improvements which will ultimately be owned, operated and/or maintained by the District.
- 1.4.2** Conditional Acceptance shall occur upon written recommendation by the District Engineer, with the concurrence of the Operations Manager, for conditional acceptance of the water and/or wastewater improvements after satisfactory provision to the District of any and all required documentation, including, but not limited to, the granting of any and all easements, payment of all Fees and Charges, submission of as-built drawings, statement of costs, completion of appropriate bills of sale and compliance with any other applicable requirements contained herein.

- 1.4.3** Collection Main or Main shall mean a twelve-inch (12”) or smaller diameter pipe, including any and all appurtenances thereto, receiving wastewater and being a part of the Wastewater System.
- 1.4.4** Consulting Engineer shall mean the Developer’s or Property Owner’s authorized utility design engineer.
- 1.4.5** Distribution Main shall mean a ten-inch (10”) or smaller diameter pipe and appurtenances receiving potable water and conveying it to individual Service Lines.
- 1.4.6** District Engineer shall mean the person or entity engaged by the District to serve as its engineer. In no event shall the Consulting Engineer and the District Engineer be the same person or entity.
- 1.4.7** District’s System or District System shall mean any combination of water and/or wastewater system improvements owned, operated and/or maintained by the District.
- 1.4.8** Extensions shall mean extensions to the District’s Water System or Wastewater System within the District’s Service Area.
- 1.4.9** Final Acceptance shall occur upon written recommendation by the District Engineer, with the concurrence of the Operations Manager, for final acceptance after satisfactory completion of all required documentation, inspections, corrective work and other applicable requirements contained herein.
- 1.4.10** Force Main shall mean a Collection Main under pressure from a pump to transport wastewater.
- 1.4.11** Inspector shall mean the District Engineer or Operations Manager who are duly authorized by the Board to inspect the water and wastewater improvements and to enforce these Specifications.
- 1.4.12** Interceptor Main shall mean a wastewater pipeline larger than twelve-inch (12”) and appurtenances receiving wastewater being a part of the Wastewater System. Interceptor Mains are not allowed to be tapped for individual services.
- 1.4.13** Service Area shall mean all property located within the District’s boundaries and all property outside of the District’s boundaries which receives water and/or wastewater service from the District.
- 1.4.14** Service Lines (Water) shall mean the pipe, line or conduit extending from an individual residence, structure or building receiving services up to and including the connection to the Water Main.
- 1.4.15** Service Line (Wastewater) shall mean the wastewater line extending from the individual residence, structure or building receiving service up to and including the connection to the Wastewater Main.

- 1.4.16 Service Stub (Wastewater) shall mean the Wastewater Service Line from the Wastewater Main to a point inside the property line.
- 1.4.17 Transmission Main shall mean a twelve-inch (12”) or larger diameter pipe and appurtenances receiving potable water and conveying it to Distribution Mains.
- 1.4.18 Underdrain Main shall mean any pipe or line, or portion thereof, owned or to be owned by the District and receiving ground water, runoff water or storm water from individual lots through an underdrain pipe.
- 1.4.19 Water Main or Main shall mean any water pipe or line, or portion thereof, owned or to be owned by the District.
- 1.4.20 Water System shall mean all Mains, together with all appurtenances, materials, equipment and property receiving potable water and conveying it to individual consumers.
- 1.4.21 Wastewater System shall mean all Collection Mains, together with any and all appurtenances thereto, including, but not limited to, necessary manholes, services, taps, pump stations, and associated materials, property and equipment collecting wastewater from individual customers.

1.5 REFERENCE SPECIFICATIONS. The most current version of and/or revisions to the following reference specifications shall be incorporated into these Specifications. The interpretation of any section or the contradiction between sections contained within any of the reference specifications and these Specifications shall be made by the Board, the District Manager, the District Engineer or the Operations Manager. Requests for interpretation shall be submitted in writing to the District Manager. Any interpretation of the District shall be in its sole discretion and shall be the final determination on the matter.

- 1.5.1 State Department of Highways, Division of Highways, State of Colorado. Standard Specifications for Road and Bridge Construction, 1991.
- 1.5.2 Manual of Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Latest Edition and Revisions Thereto.
- 1.5.3 ASTM, American Society for Testing & Materials, 1916 Race St., Philadelphia, PA 19103.
- 1.5.4 AWWA, American Water Works Association, 6666 West Quincy Ave., Denver, CO 80235
- 1.5.5 Site Application Process, The Code of Colorado Regulations 19CR6,6-96.

1.6 CONSTRUCTION MATTERS. In addition to the provisions set forth in the Rules and Regulations, the following requirements shall be applicable to all projects.

1.6.1 Construction Procedure. Following final approval of the plan(s), the applicant may proceed with construction of the improvements. In addition to all construction requirements contained herein, the applicant and the Developer shall comply with the following:

- a. The applicant shall secure and pay for all licenses and permits required for the improvements;
- b. Materials needed to complete the work shall be on hand so that the project may proceed without delay;
- c. Adequate provisions for the notification of customers who may suffer outages must be developed. Outages shall be kept to a minimum; and
- d. Mains and Service Stubs shall be tested to the satisfaction of the Inspector.

1.6.2 Surveying. Line and grade for Mains and appurtenances shall be established by a professional engineer or by a land surveyor licensed to practice in the State of Colorado. All work shall be completed in a professional manner using the same degree of skill and knowledge customarily employed by other professionals performing the same or similar services in the State of Colorado. Correct alignment and grade staked alignment and elevations by the Inspector do not relieve the Design Engineer in any manner from the responsibility for field errors. Sufficient lines must be staked to ensure continual work progress. Under no circumstances shall pipe be installed without line and grade stakes set by the Design Engineer or surveyor and approved by the Inspector.

1.6.2.1 When a District Main is to be installed outside of the public street right-of-way, within an easement or right-of-way dedicated for utility Main installations, the limits of the easement or right-of-way shall be marked with permanent monuments placed by a licensed surveyor and the pipeline route shall be marked with buried pipeline markers when required. The Owner/Developer shall be responsible to provide restoration and landscaping adequate to prevent erosion caused by surface runoff. Landscaping and restoration construction shall be designed in such a manner that minimum future maintenance will be required. A landscaping and restoration design plan shall be submitted with the plan for approval and will be subject to the same guarantee, as described in these Specifications.

1.6.3 Placing Survey Lines.

1.6.3.1 Hubs and stakes shall be set on an offset line to mark the location of the centerline of the Main. Centerline hubs and stakes may be used in addition to the offset hubs and stakes; however, they may not be set in place of the offset hubs and stakes. Notations on field stakes shall match approved plan and profile sheets.

1.6.3.2 Survey points shall be set a maximum distance of twenty-five feet (25') apart. All appurtenances and manholes shall be staked for location and grade. Points of curvature, points of tangency of curves, and points on the curve shall be staked. Property corner stakes or monuments shall be placed prior to construction and shall include all changes in direction and not exceed 100 feet between on-line stakes. This will include all permanent easements as well as interior property lines. All stakes shall be flagged to increase their visibility. Survey staking may be modified with the agreement of the design engineer, Developer and the District.

1.6.4 Inspection.

1.6.4.1 New installation, replacement or relocation of existing facilities or any other work involving the District's System shall be inspected and approved by an Inspector.

1.6.4.2 After receipt of plans approved by the District and prior to commencing construction, the Developer shall provide at least forty-eight (48) business hours notice to the District's Inspector at (719) 495-8188. No construction shall commence sooner than forty-eight (48) hours after receipt of approved plans, nor shall construction begin prior to arrival by the District Inspector at the project site. Any and all overtime work conducted before or after regular business hours or on District holidays shall be at the expense of the Developer and shall include all overtime pay for the Inspector and must be coordinated with and approved by the Inspector at least forty-eight (48) hours in advance.

1.6.4.3 All materials used shall be subject to the inspection and approval of the Inspector at all times. The Inspector has the right to perform any testing deemed necessary to ensure compliance of the materials with these Specifications. No materials shall be used before being inspected or approved by the Inspector. Failure or neglect on the part of the Inspector to condemn or reject inferior materials or work shall not be construed to imply their acceptance should their inferiority become evident at any time prior to completion of a twenty-four (24) month warranty period. Materials rejected by the Inspector shall be immediately removed from the project site.

1.6.5 Abandonments and Material Recovery. The District owns all existing parts of the Water System and the Wastewater System and any removed pipe, equipment or other materials shall be the property of the District. If and when materials and/or equipment must be removed from the existing system, the Inspector will determine if the District wishes to maintain ownership. Generally, pipe materials are not maintained. However, valves, fittings, special equipment, manhole rings and covers will often be reclaimed by the District. If and when so directed by the Inspector, such items removed shall be delivered to the designated location directed by the Inspector or designee. If the Inspector elects not to claim any removed items, they may become the property of the Developer who must remove the items from the site.

1.6.6 Reuse of Installed Materials. Certain installed materials may be reused if examined and otherwise approved by the Inspector in advance. In general:

- a. Used sewer pipe and manholes may not be re-installed and/or re-used.
- b. Water pipe that has been installed and used cannot generally be re-used except in unusual circumstances and only by permission of the Inspector. If and when water pipe is allowed to be re-used, the Inspector must review and approve each piece of pipe prior to re-installation. Gaskets must be replaced with new gaskets.
- c. The reuse of any fitting, hydrant and/or valve must be examined and approved by the Inspector. All gaskets must be replaced with new gaskets.
- d. The reuse of any sewer ring and/or cover must be examined and approved by the Inspector. Any and all Ramnek or sealants must be removed and re-applied with new material.

End of Article.

ARTICLE 2. WATER SYSTEM DESIGN STANDARDS

2.1 GENERAL

2.1.1 Deviation from Standards. These design standards shall be adhered to for all Water Main facilities to be installed within the Service Area insofar as practical. If any deviation from these standards is desired, the Developer shall complete a Request for Deviation Form, attached as Appendix B-1, and submit it to the District Manager with the required back-up information.

2.1.2 Easements. All public Water Mains and appurtenances not installed in public rights-of-way shall be installed in easements, in accordance with the Rules and Regulations. The minimum width of an easement shall be twenty-five feet (25') or no less than two (2) times the depth of the line. The Water Main shall not be closer than five feet (5') to the edge of the easement. Depending on depth, size and nature of the particular water facilities, a wider easement may be required. Any and all easements shall be conveyed to the District pursuant to the Rules and Regulations.

2.1.3 Colorado Department of Public Health and Environment Regulations. It is not intended that any regulations promulgated by the CDPHE pertaining to public water systems be annulled by these design standards. In the event of a conflict between the standards set forth in these Specifications and those promulgated by the CDPHE, those promulgated by the CDPHE shall prevail.

2.2 HYDRAULICS

2.2.1 Sizing of Water Mains. All Water Mains shall be sized in accordance with the following:

- a. Flow velocity shall not exceed two feet (2') per second on a peak demand day.
- b. Flow velocity shall not exceed five feet (5') per second on a peak demand day during fire flow conditions. Fire flow requirements shall be determined by the Falcon Fire Protection District and submitted to the District in writing.
- c. Minimum design pressure shall be thirty-five (35) PSI, maximum design pressure shall be one hundred twenty (120) PSI for all flow and static conditions.
- d. Minimum diameter of Water Mains is eight inches (8") wherever fire hydrants are connected. Smaller lines may be accepted only where no fire hydrants are located upon approval by the District Engineer.

2.2.2 Sizing of Services. Service lines, taps and meters shall be sized in accordance with AWWA manual (M22), *Sizing Water Service Lines and Meters*. The standard size for single family residence is one inch (1") Polyethylene line with a five eights of an inch (5/8") meter and meter setting. One inch (1") HDPE is comparable to a three

quarter inch (3/4") copper service line, although only HDPE service lines will be used.

2.3 WATER MAINS

2.3.1 Locations.

2.3.1.1 Water Mains shall generally be installed ten feet (10') east of center line in north-south streets and ten feet (10') north of center line in east-west streets. The foregoing shall be adhered to insofar as practical on curved streets. Where curbed medians are proposed, the Water Main shall be under the pavement, no closer than five feet (5') to edge of concrete curb and/or gutter.

2.3.1.2 Any request for deviation from the above shall be noted in the design request submittal to the District Engineer, including where Water Mains are proposed to be installed in easements.

2.3.1.3 Water Mains shall be designed for a minimum of five feet six inches (5'6") and a maximum of six feet six inches (6'6") of cover, except where another utility causes a conflict, in which case the Water Main shall be lowered as necessary. For water distribution lines, lowerings of two feet (2') or less shall be accomplished by deflection if possible. Lowerings in excess of two feet (2') shall require a formal lowering with fittings.

2.3.2 Material. All Water Mains twelve inches (12") and smaller in diameter shall be either C-900 PVC, DR18, DR14, or ductile iron pipe. Lines between fourteen inches (14") and twenty-four (24) inches shall be either C-905 PVC, DR25, DR18 or ductile iron pipe as approved by the District Engineer. Material for pipelines in excess of twenty-four inches (24") in diameter must be approved by the District Engineer and noted on the approved plans.

2.3.3 Corrosion Protection. Whenever metal pipe is proposed, the pipe shall be double bonded, poly wrapped, and cathodically protected. The drawing notes must include the required anode sizing and spacing. Where PVC pipe is used with Ductile Iron Fittings, those fittings must be individually wrapped and cathodically protected.

2.3.4 Profile. All existing and/or proposed utilities shall be included in the profile view, which also shows the proposed finished surface above the Water Main and elevations and station of all fittings shall be noted. Elevation of the pipe flow line shall be noted.

2.3.5 Looping. Dead-end mains are generally discouraged. Looping shall be designed both in the project proposed and provision be made for looping as the mains are extended for adjacent projects.

2.4 VALVES

2.4.1 Location.

2.4.1.1 Valves shall be placed at locations so as to least disrupt service should it be necessary to close a valve.

2.4.1.2 In general, five hundred feet (500') shall be the maximum spacing on Distribution Mains. However, in distribution areas, valves should be clustered at intersections and block lengths should be taken into account. Depending on line size, and nature of land use, valve spacing on transmission lines may vary from one thousand feet (1000') up to twenty-five hundred feet (2500'). "Pup" sections from fittings to valves shall be thirty inches (30") long at a minimum. All crosses shall have four (4) valves and all tees shall have three (3) valves.

2.4.1.3 A valve shall always be provided where a Main will be extended in the future to facilitate connecting to the existing Main without disrupting service. There shall be a twenty foot (20') stub past the valve to facilitate ease of connection.

2.4.1.4 Additional valves may be required at major stream or roadway crossings to isolate the crossing.

2.4.1.5 Wherever a Water Main is installed in an easement, a valve may be required at each right-of-way line that intersects the Water Main.

2.4.2 Appurtenances.

2.4.2.1 Blow-off Valves. Blow-off valves shall be provided at all dead ends that do not have a fire hydrant at the end of the Main.

2.4.2.2 Air Release Valves. Air release valves in manholes shall be provided at all high points along transmission lines where services aren't present.

2.4.2.3 Pressure Reducing and Regulating Valves. Pressure reducing and regulating valves in concrete vaults shall be provided as necessary to control the pressure within the allowable range.

2.4.2.4 Fire Hydrants. The location of fire hydrants shall be as approved by the controlling fire protection agency. Fire Authority signature is required on water plans. A fire hydrant may serve as a blow-off valve on a dead end main if said main is 8 inches or greater

2.4.3 Separation from Pollution Sources. In general, Water Mains shall be designed to have ten feet (10') horizontal separation from possible sources of pollution. When the horizontal separation is not achievable, then the Water Main shall be designed so that the bottom of the Water Main is two feet (2') above the top of any sewer pipe. When two feet (2') of vertical separation cannot be achieved then the Water Main will be constructed in twenty feet (20') sections of ductile iron with no joints on the

sewer pipe. The twenty feet (20') section shall be centered above the sewer pipe with ten feet (10') to each joint. When separation cannot be achieved, casing may be used upon written request to the District Engineer for consideration. The foregoing separation provision applies to fire hydrants as well as to Water Mains.

2.4.4 Casing. Where required by a highway authority or private utility, casing pipe for the Water Main shall be installed for the crossing as directed by the highway authority or private utility. Valves may be required near on each side of the casing.

2.4.5 Fire Lines. Private fire lines and fire sprinkler system connections shall be provided with backflow preventers and check valves to preclude reverse flow into the distribution system which could cause contamination of the system.

Fire lines and fire sprinkler systems containing antifreeze (propylene glycol) must be equipped with an approved Reduced-Pressure Zone (RPZ) valve for Cross-Connection-Control (CCC).

2.4.6 Water Main Crossings

2.4.6.1 Asbestos Cement Water Main. In general, any new excavation under an existing asbestos cement Water Main, the asbestos cement Main in question will be replaced with the same size, poly wrapped, class 52 DIP or PVC pipe coupled at each end with a Romac coupling or equal. The new replacement line will be installed from undisturbed bank to undisturbed bank and properly compacted. The same size valves will be installed on both ends, at the District's discretion. The Developer responsible for the excavation will supply all labor and materials and shall be properly trained in handling, cutting and responsible for the proper disposal of the asbestos cement pipe being replaced in accordance with all State and Federal regulations.

2.4.6.2 Irrigation Ditch Crossings. In general, any excavation through an existing irrigation ditch will require written permission from the ditch owner. Clay dams, cut-off walls and/or other designs may be required to assure against leaking or "piping" within the ditch bank.

2.4.6.3 Final Inspection. The District shall inspect the crossing before backfilling. The Developer shall provide the District with a written warranty of no less than two (2) years from the date of Conditional Acceptance for work performed in accordance with these Rules and Regulations.

End of Article.

ARTICLE 3. WATER SYSTEM INSTALLATION STANDARDS

3.1 GENERAL CONSTRUCTION

3.1.1 Start of Construction. Developers shall not begin construction of public mains without an approved plan and a pre-construction meeting. Construction of water services or extension shall not proceed without obtaining approval of the Operations Manager. Backfilling of water services shall not be initiated until the installation has been inspected and approved by the Inspector.

3.1.2 Protection of Existing Underground Facilities. It shall be the responsibility of the Developer to verify the existence and location of all underground facilities along the route of work. The omission or the inclusion of facility locations on the plans is not to be considered as the nonexistence of or a definite location of existing underground facilities. Whenever, in the opinion of the District, it is necessary to explore and excavate to determine the location of underground utilities and structures that may interfere with construction, the Developer shall make the exploration and excavations for such purpose.

The Developer will take the necessary precautions to protect existing facilities from damage due to his/her/her operations. All damage to the facilities will be repaired at the Developer's expense, and all claims for disruption will be settled by the Developer at his/her/her expense.

3.1.3 Detours—Traffic Control. Traffic control, signing, detours, and utilization of existing streets require approval by the controlling right-of-way authority. Developers must obtain adequate permitting and approvals from the controlling agency.

3.2 EXCAVATION

3.2.1 Safety. The disturbed area due to construction shall be confined within the construction limits as required in the specifications or as shown on the plan. The length of trench to be opened at one time may be limited when, in the opinion of the Inspector, such limitation is necessary. The amount of open or unfilled trench shall not exceed five hundred linear feet (500'), unless ordered by the Inspector. Failure to comply with this requirement shall be cause for shut down of the entire project until such backfilling is accomplished.

The sides of the trench shall be sloped or braced and trench drained so that workmen can work safely and efficiently. All work must be done in a dry trench and no water will be permitted to discharge down the pipe previously laid. The discharge from groundwater pumps shall be laid to the approved natural drainage channel(s) or storm sewer. All OSHA regulations pertaining to trenching must be followed.

In all cases where the Water Main alignment is located so that space and access is very limited with respect to the safety and welfare of adjoining buildings, such as

property lines between houses, the Developer shall discontinue open trench excavation and shall jack and/or auger a liner pipe in place for an adequate length to safeguard against settlement and damage to these adjacent structures. All jacking methods and materials shall be approved by the District Engineer and inspected and approved by Inspector. Sheeting and bracing as later described may be approved by the Inspector as an alternative.

Pits of adequate size to accommodate necessary equipment shall be excavated, braced and drained so that workmen can work safely and efficiently.

3.2.2 Construction Stakes. All work shall be constructed in accordance with lines and grades shown on the approved drawings and as established by the District Engineer. These lines and grades may be modified by the Consulting Engineer only after approval by the Operations Manager and/or District Engineer.

The Developer shall give the Consulting Engineer sufficient notice of his/her need for the establishment of line and grade so that the Consulting Engineer may have time to provide the same. The Consulting Engineer shall set all vault and manhole rim stakes at the finished street grade elevation. After lines and grades for any part of the work has been given by the Consulting Engineer, the Developer will be held responsible for the proper execution of the work to such lines and grades and all stakes or other marks given shall be protected and preserved by him/her until s/he is authorized by the Inspector to remove them. The Developer shall, at his/her own expense, correct any mistakes that may be caused by their unauthorized disturbance or removal. The Inspector may require that work be suspended at any time when, for any reason, such marks cannot be properly followed.

Line and grade stakes shall be set for each fitting and grade point shown on the drawings and at intervals necessary to maintain the pipe slope when so indicated on the drawings.

The method and equipment used to establish and check line and grade of the pipe shall be approved by the Inspector prior to the start of work.

3.2.3 Trench Width. The trench width at the top of the excavation may vary depending upon the depth of the trench and the nature of material encountered. However, the maximum allowable width of trench is defined in the attached detailed drawings.

For trench widths greater than specified above, the Developer may propose alternate strength of pipe to depth of cover relationships other than those specified. Such proposals must be submitted to the District Engineer for approval in writing and with pertinent pipe strength and soil weight data at least fourteen (14) days prior to the desired construction date. The trench bottom shall be brought to grade to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes.

3.2.4 Over-excavation. Care must be taken to avoid over-excavation. Should any over-excavation exceeding two inches (2") be encountered, the material added shall be moistened and compacted to the satisfaction of the Inspector, or granular material placed with hand tools.

If, when dry, the bottom at subgrade is soft and in the opinion of the Inspector cannot support the pipe, a further depth shall be excavated as directed by the Inspector and refilled to pipe bedding grade as required under the above paragraphs, or other approved methods shall be adopted to assure a firm foundation for the pipe. The class or type of material which is to be used for refilling up to pipe grade shall be foundation material consisting of squeegee or bedding material as defined herein. In the case of rock excavation the excavation shall be carried to a minimum depth of six inches (6") below grade and this material will be removed and the trench backfilled with granular material to give a suitable sub-grade.

All excavated material shall be piled within the construction limits or in a location obtained by the Developer in a manner that will not endanger the work and that will avoid obstructing sidewalks, driveways, and fire hydrants. Gutters shall be kept clear or other satisfactory provisions made for street drainage at all times.

3.2.5 Blasting. Blasting will be permitted for portions of the work which may be expedited thereby, provided that a written permit is given by the municipal authority having jurisdiction. The Inspector shall have the right to limit the use of explosives or to order the discontinuance of any blasting methods which, in his/her opinion, endanger any part of any public or private property tile safety of inhabitants of the area, or the traveling public.

The Developer shall enlist the services of a professional explosives engineer. In addition to other insurance requirements, the Developer shall provide the District with sufficient blasting insurance as may be directed by the District.

All blasting shall be in accordance with Colorado law. In addition to other insurance requirements, the Developer shall provide the District with sufficient blasting liability insurance as may be directed by the District.

Blasting shall be performed in such a manner that no damage will result to any building, structure, pipe line, or facility on or off the site of the work, or above or below ground line. Any damage caused as a result of blasting shall be repaired to the satisfaction of the Property Owner and the District at the Developer's expense.

3.2.6 Sheeting and Bracing. The Developer, to confine his/her work within the construction limits and to prevent the disturbing or settlement of adjacent road surfaces, foundations, structures, utility lines or railroad tracks, shall furnish and place all sheeting and bracing necessary for safe conditions, and to prevent damage and delay to the work. The Developer shall be responsible for the strength and sufficiency of all sheeting and bracing in accordance with applicable OSHA standards.

Any damage to the work or to adjacent structures or property caused by settlement water or earth pressures, slides, cave-ins, or other reasons due to failure or lack of sheeting and bracing or improper bracing, or through negligence, or fault of the Developer in any manner shall be repaired by the Developer at his/her expense without delay.

If, in the opinion of the Inspector, the sheeting and bracing at any point is deemed to be inadequate or improperly constructed, s/he may require additional sheeting and bracing be placed at the Developer's expense. This shall not be construed to relieve the Developer of sole responsibility of job site supervision.

Bracing shall be so arranged as to provide ample working space so as not to interfere with the work, and so as not place any strain on the structures being constructed, until such structures are, in the opinion of the Inspector, of sufficient strength to withstand such strain. No sheeting and bracing shall be removed until the construction has proceeded far enough to provide ample strength for its safe removal.

Sheeting or bracing may be left in place in the trench at the discretion of the Developer. Any sheeting or bracing left in place shall lay cut off approximately ten feet (10') from the surface and the cutoff portion removed, unless the Inspector gives permission to leave it in place.

3.2.7 Pipe Bedding and Laying. It is expected that the trench excavation will provide suitable bedding and backfill material. Wet, soft or frozen material, asphalt and concrete chunks, cinder ashes, refuse, vegetable or organic material, boulders, rocks, or other deleterious substances shall not be used for bedding or backfill.

If the excavated material is not suitable for bedding or backfill as determined by the Inspector, suitable material shall be hauled in and utilized, and the rejected material hauled away and properly disposed.

If native material is not suitable for bedding, six inches (6") of squeegee sand shall be placed on the trench bottom for support under the pipe and compacted. Bell holes shall be dug deep enough to provide a minimum of two inches (2") of clearance between the bell and bedding material. All pipe shall be installed in such a manner as to ensure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade and the joint is made, the bedding material (squeegee sand) shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

"Tamping" is herein defined as the act of placing approved bedding material under the haunches of pipe, paying particular attention to voids, bell holes, and sling holes. The purpose of Tamping is to ensure uniform support for the pipe.

- a. **Pipes.** Unless select bedding material is required, all pipelines shall be bedded by hand, from the bottom of the trench to the centerline of the pipe with sand, gravel or other approved material placed in layers of three inches (3") and

compacted. Bedding material shall be deposited in the trench for its full width on each side of the pipe, fittings and appurtenances simultaneously.

The pipe shall be bedded by approved mechanical methods from the centerline of the pipe, fittings and appurtenances to a depth of twelve inches (12'') above the top of the pipe. Special care shall be used in placing this portion of bedding so as to avoid disturbing the pipe.

PVC pipe shall be installed in accordance with ASTM D2321 and the manufacturer's recommendations unless otherwise specified herein.

DIP pipe shall be installed in accordance with AWWA C600 and the manufacturer's recommendations unless otherwise specified herein.

The trench shall be backfilled by approved mechanical methods from twelve inches (12'') above the pipe to the grade shown on the plans or specified herein.

- b. **Structures.** Backfill and fill within three feet (3') adjacent to all structures and for full height of the walls shall be selected non-swelling material. It shall be relatively impervious, well-graded, and free from stones larger than three inches (3''). Material may be job excavated, but selectivity will be required. No backfilling will be allowed in freezing weather except by permission of the District. No additional backfill will be allowed over any frozen material already in the trench.

3.2.7.1 Select Bedding Material. When indicated on the plans or drawings or when, in the opinion of the Inspector, select bedding material is required, preparation and installation shall be as follows:

- a. **Installation of Bedding and Pipe.** After completion of the trench excavation and proper preparation of the foundation, six inches (6'') of bedding material shall be placed on the trench bottom for support under the pipe and compacted. Bell holes shall be dug deep enough to provide a minimum of two inches (2'') of clearance between the bell and bedding material.

All pipe shall be installed in such a manner as to ensure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade, and the joint is made, the bedding material shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

If approved by the District, fines from the trench wall and soil pile may be used to provide uniform support for the pipe. No rock or stone larger than allowed by the sieve analysis, or any other detrimental substance, shall be placed closer to the pipe than six inches (6''). The District reserves the right to require the use of select bedding material at any time.

For ductile iron and polyvinyl chloride pipe, the limits of bedding shall be from six inches (6") below the bottom of the pipe to twelve inches (12") above the top of the pipe.

1. **Bedding Material:** The bedding material shall be a clean squeegee sand free of corrosive properties and shall conform to the following gradation limits when tested by means of laboratory sieves:

Squeegee Sand

Sieve Size	Total Percent Passing by Weight
3/8 Inch	100
No. 200	0 – 5

2. **Foundation Material:** Foundation material shall be uniformly graded washed rock conforming to the following sieve analysis. A minimum of twelve inches (12") of foundation material shall be placed below the pipe to the trench bottom.

Foundation Material

Sieve Size	Total Percent Passing by Weight
2 Inch	95 – 100
1/2 Inch	10 – 30
#4	0 – 5

3. **Flowable Fill:** At the District’s option, utility trench backfill meeting the requirements in the table below may be used in lieu of native backfilling in any excavation regardless of width or depth. Concrete slurry type full depth backfill will not be allowed within the public right-of-way. Compaction and testing of utility trench backfill will not be required if material meeting the following specification is used:

Flowable Fill

Ingredient	lbs./cubic yard
Cement	42 (0.47 sack)
Water	325 (43 gallons or as needed)
Course Aggregate (Size # 57)	1700
Sand (ASTM C-33)	1845

3.2.8 Laying of Pipe. Proper implements, tools, and facilities satisfactory to the Inspector shall be provided and used by the Developer for the safe and convenient execution of the work.

Pipe materials shall be unloaded and distributed on the job in a manner approved by the Inspector. In no case shall materials be in the right-of-way or dumped from the truck.

Before lowering and while suspended, the pipe shall be inspected for defects to detect any cracks. Any defective, damaged, or unsound pipe shall be rejected and removed from the job site.

All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench, and it shall be kept clean by approved means, as determined by the Inspector, during and after laying. All openings along the line of Water Main shall be securely closed as directed, and in the suspension of work at any time, suitable plugs shall be placed to prevent earth or other substances from entering the pipe.

Pipes shall be laid to a true line and at uniform rates of grade between grade points as shown on the plans. Fine grading, to the bottom of the trench, shall proceed ahead of the pipe laying, and should any over excavation exceeding two inches (2") be encountered, the material added shall be granular bedding or foundation material shall be added at the expense of the Developer to the satisfaction of the Inspector.

Bell holes shall be provided for the pipe bells. The pipe shall be supported along its bottom as required by these Specifications and throughout its length except for the minimum distance necessary at the bell holes. Bell holes shall be adequate to make the joint, but no larger than necessary so that maximum support will be provided for the pipe. The remainder of the pipe shall be surrounded as required by the appropriate bedding shovel placed and hand tamped, to fill completely all spaces under and adjacent to the pipe.

No pipe shall be laid in water or when trench conditions are unsuitable for such work.

When connecting to existing Water Mains, the Developer shall take every precaution necessary to prevent dirt or debris from entering the existing lines. The Inspector may stop work if adequate protection is not being provided from groundwater, or other debris which might enter the pipeline.

When the design of a waterline indicates laying the pipeline on a radius it may be accomplished in only one of two ways:

1. With smaller diameter PVC pipe, the line can actually be laid along a radius using the natural bending properties of the pipe, as long as the radius conforms to the Manufacturer's recommendations.

2. When laying DIP, the deflection in any bell/spigot cannot exceed the deflections allowed herein.

MJ straight couplings may be used by the Developer to lay a pipeline to a certain radius using the deflections allowed herein.

Bend fittings should be used only where shown on the drawings or as approved by the Inspector.

High Deflection PVC Couplings are not allowed.

3.2.9 Length of Pipe. The length of pipes for curvilinear Water Mains shall be determined by the radius using joint deflection not exceeding the manufacturer's recommendations. (See also "Laying of Pipe").

3.2.10 Fittings. Fittings shall be installed where shown on the plans. Pipes shall be cut as necessary to install fittings at the proper locations. Fittings shall be provided with restraint and/or thrust blocking as necessary per these Specifications. Fittings shall be supported by a minimum of six inches (6") of granular bedding extending to the spring-line of the pipe, and a minimum of eighteen inches (18") from the centerline of each fitting. Blocking is not permitted.

3.2.11 Service Connections. No Service Lines shall be installed until front property corners have been located. Service Lines for each property shall be ten feet (10') uphill of the lower property pin or where otherwise shown on the approved drawings.

Length of Service Line from the Main to the residence, building or structure will be limited as follows:

Line Size	Distance from the Main
1"	125'
1-1/2"	175'

Lengths greater than one hundred and seventy-five feet (175') will require an engineer's design for sizing. The design must be submitted in writing to the District Engineer for approval.

All service connections to Mains shall be made in the top one-half (1/2) of the pipe. Tapping of Mains for service connections shall only be accomplished with the use of an approved tapping machine and tapping saddle: Romac 202 BS Tap saddle, or equal.

3.3 BACKFILL AND COMPACTION

3.3.1 No backfilling will be allowed until the pipe installed conforms to the specified requirements.

- 3.3.2** Accepted on-site bedding or granular material shall be deposited in the trench simultaneously on both sides of the pipe for the full width of the trench to a height of six inches (6") above the right-of-way of the pipe. Accepted on-site bedding or granular material shall be shovel placed and hand tamped to fill completely all spaces under and adjacent to the pipe.
- 3.3.3** All backfill shall be compacted to a minimum of ninety-five percent (95%) of standard proctor density at optimum moisture, ASTM D-1557, by tamping or other means approved by the Inspector. If the controlling Right-of-way authority requires a greater compaction requirement, the requirement of the controlling Right-of-way authority shall control. Tests shall be conducted on compacted materials as directed by the Inspector and/or right-of-way authority. Jetting, puddling or ponding will not be used except where approved by the District. Sufficient cover over the pipeline will be hand tamped to prevent flotation of the pipe.
- 3.3.4** Backfill for Water Main trenches shall be suitable earth free from rocks over three inches (3") in diameter, large roots, and excessive sod or other vegetation.
- 3.3.5** Backfilling and compacting shall be done as thoroughly as possible so as to prevent after settlement. Depositing of the backfill shall be done so the impact of falling material will not injure the pipe or structures. Grading over and around all parts of the work shall be done as directed by the Inspector.
- 3.3.6** Backfilling shall be done in lifts of uniform layers not to exceed the depth shown in the compaction chart and each lift shall be completely compacted over the full width of the excavated area. Compacting shall continue until the specified relative compaction has been attained. (Three feet (3') of material over the top of the pipe shall be required before a vibratory or sheepsfoot roller is operated over the pipe).

COMPACTION CHART

<u>Compaction Type</u>	<u>Maximum Loose Soil Lift Height (ft.)</u>	
	<u>Sands</u>	<u>Plastic Soil</u>
Vibratory Roller (Vibro-Plus CK-10) or equal	4.0	Not allowed
Sheepsfoot (150 PSI Minimum)	Not allowed	2.0
Vibratory Sheepsfoot (Essick Vf-54T) or equal	4.0	2.0
Button Head Pneumatic	0.5	0.5
Plate Temper	1.0	1.0
Plate Vibrator	1.0	Not allowed

- 3.3.7** Succeeding layers of backfill may contain coarse materials, but shall be free from large pieces of rock, frozen material, concrete, roots, stumps, tin cans, rubbish, and other similar articles whose presence in the backfill, in the opinion of the Inspector, would cause settlement of the trench or damage to the pipe. No stone larger than three inches (3") in diameter shall be placed within three feet (3') of the pipe.
- 3.3.8** Wherever select material exists in place in the upper four feet (4') of the finished grade of the paved or traveled portions of the street or roadway, is removed by the trench excavation, the Developer shall replace said material (or material of equal quality) as backfill in the upper four feet (4') of the finished grade. Where select material does not exist in place as described above, the material available from other excavations on the project may be used.
- 3.3.9** Special compaction shall be done around all valve boxes and vaults, manholes, curb boxes, water services, other structures, and utilities by the use of pneumatic tampers, plate tampers, or plate vibrators with lifts not to exceed that shown in the compaction chart.
- 3.3.10** Water service trenches must be compacted in the same manner as Water Main trenches. All excavation in trenches shall be backfilled to the original ground surface or to such grades as specified or shown in the plans. Backfill shall begin as soon as practical after the pipe has been placed and shall thereafter be carried on as rapidly as the protection of the balance of the work shall permit.
- 3.3.11** Compaction tests at the expense of the Developer shall be conducted by an independent testing laboratory to a depth not greater than two feet (2') above the pipe. One test shall be conducted for each run or every four hundred feet (400'), whichever is greater, or as required by the controlling authority. Copies of each compaction test report will be given to the Inspector and the District prior to approval.

3.4 VALVE INSTALLATION

- 3.4.1 Valves.** Valves shall be handled in such a manner as to prevent any injury or damage. All joints shall be thoroughly cleaned before installation.

Valves shall be located at the points on the Mains as indicated on standard drawings, unless specified otherwise by the District Engineer.

Valves shall be set and joined to the pipe in the same manner as laying and joining mechanical joint pipe.

Valves shall be set in such a manner that the valve stems are plumb. Valves shall be supported by a minimum of six inches (6") of granular bedding extending to the spring-line of the pipe, and a minimum of eighteen inches (18") from the centerline of each fitting. Blocking is not permitted.

- 3.4.2 Valve Boxes.** A valve box shall be provided for every valve. It shall not transmit shock or stress to the valve, and shall be centered and plumb over the operating nut of the valve, with the top of the box set to the required elevation. It will be the responsibility of the Developer or his/her contractor, to ensure that valve boxes are plumb and brought to the proper elevation.

Paving of any street requires that all existing valve boxes be located and prepared for final raising to finish street surfaces as shown on the standard drawings. Prior to paving, a final inspection is required. Inspections should be requested twenty-four (24) hours in advance.

3.5 FIRE HYDRANT INSTALLATION

- 3.5.1 Installation.** All hydrants shall be staked for location and grade. Final location and grade shall be in accordance with the approved drawings. All hydrants shall stand plumb and be installed as indicated on standard drawing. Each hydrant shall be connected to the Main by a six inch (6") branch line. An independent six inch (6") gate valve shall be installed on each fire hydrant branch. No Service Line connections shall be installed between the fire hydrant and the fire hydrant control valve.

- 3.5.2 Anchorage.** The bowl of each hydrant shall be well braced against the un-excavated earth at the end of the trench with a concrete thrust block. The bottom of the hydrant bowl and the hydrant valve shall be supported with an eighteen inch (18") by eighteen inch (18") by four inch (4") pre-cast concrete blocking slabs. Anchor tees shall be used on all new installations, and stainless steel tapping saddles with valves shall be used to install hydrants on existing installations.

Whenever a fire hydrant is installed at the termination point of a Main extension (such as in a cul-de-sac), tie rods and concrete reverse anchors will be required for both the fire hydrant valve (which in this case is also a line valve on the Main) and the fire hydrant lateral or branch line connected to the fire hydrant. See Standard Drawing No. W-2. Additional concrete anchors may be required at the direction on the Inspector.

If bends are needed to bring a hydrant to a desired horizontal or vertical position, special concrete reverse anchors, anchor pipe, and/or all-thread tie-back rods (or a combination of all of these) along with a riser may be required. In any case, a riser may be required that is no longer than two feet (2'). It will be the Developer's responsibility to set the safety flange at the proper grade.

The Hydrant Valve will be fitted with a "Mega Lug" or "One Bolt" fitting. Reverse anchors and all-thread will no longer be used, except in such cases as the Inspector deems necessary.

- 3.5.3 Drainage.** Wherever a hydrant is set, drainage shall be provided at the base of the hydrant by placing rock from the bottom of the trench to at least twelve inches (12")

above the barrel flange of the hydrant, and to a minimum distance of twelve inches (12") around the elbow.

The minimum distance from the bottom of the trench to the bottom of the hydrant elbow shall be six inches (6"). The minimum amount of rock placed shall be one third (1/3) of a cubic yard, and shall be a well graded gravel cobble or crushed rock free of dirt. The rock shall be surrounded on all sides by a permeable Mirafi fabric to prevent the migration of soil into the drain rock area.

3.5.4 Hydrant Protection in Corrosive Soils. All ductile iron branch lines and hydrants shall be protected. All pipe, rods, and fittings, from finished ground level on the hydrant barrel up to and including the tee, shall be encased in poly wrap. The type of polyethylene and manner in which it is to be installed shall conform to these Specifications. Bedding material shall be as specified in these specifications. All fire hydrants shall be cathodically protected with a seventeen (17) pound anode.

3.6 BLOW-OFF INSTALLATION

3.6.1 All dead ends on new Mains shall be closed with cast iron plugs or caps. Such dead ends shall be equipped with suitable concrete anchors and blow-off facilities.

3.6.2 The Developer shall furnish, install or remove temporary blow-offs at locations shown on the drawings or designated by the District. See Standard Drawing Nos. W-18 and W-19. The Developer shall install permanent blow-offs where indicated on the drawings. A permanent blow-off is defined as one which will be left in place at the completion of all proposed installations. See Standard Drawing Nos. W-18 and W-19.

3.7 AIR RELEASE VALVE INSTALLATION

3.7.1 Combination air relief-vacuum breaker valves shall be installed at all high points on twelve inch (12") and larger Water Mains. The valves shall be installed in forty-eight inch (48") diameter concrete manholes with manhole rings and covers as shown in the standard drawings. The valves shall be tapped into the top of the Water Main with a one inch (1") tap. The pipe stem between the Water Main and the air release valve shall contain a gate valve to isolate the air release valve for maintenance purposes. Pipe and fittings shall be threaded galvanized iron, standard weight; gate valve shall be bronze and have hand wheel.

3.8 PRESSURE REDUCING AND REGULATING VALVE INSTALLATION

3.8.1 Pressure reducing and regulating valves shall be installed where directed by the District Engineer. The valve, piping, and appurtenances shall be installed in reinforced concrete vaults with access cover in the roof. The access cover shall be set to proposed final surface elevation and shall be adjusted for paving if necessary. All piping shall be supported within the vault to permit removal of components for servicing.

3.9 DISINFECTION

- 3.9.1** Pipe extensions shall be chlorinated in accordance with AWWA Standard C651, “Disinfecting Water Mains”, prior to being put into service. The chlorination of the finished pipeline shall be done prior to installation of any service taps. Before filling the pipe with water, the pipe shall be clean and free of debris to the satisfaction of the Inspector. Disinfection by chlorination of the pipe shall be performed prior to the District’s acceptance. The chlorinating agent, and method of application, shall be approved by the District Engineer in accordance with AWWA Standard C651. The Developer shall provide material for disinfection of Water Mains. Granular calcium hypochlorite must be used for disinfection.
- 3.9.2** After the calcium hypochlorite has been placed in the pipeline by the Developer, disinfection must be completed within ten (10) calendar days. Should disinfection not be completed within this period, the District will void this method of chlorination and require that the Main be disinfected by mobile gas chlorinator, or slug method, at the expense of the Developer.
- 3.9.3** After the pipe is filled with water and chlorine at less than one foot/second, and unless approved otherwise by the Inspector, the chlorinated water shall be held in contact with the pipe for twenty-four (24) hours. At the end of the twenty-four (24) hour period, the water in the pipeline shall be tested by the Inspector to ensure a residual chlorine content of not less than fifty (50) mg/l. The pipeline shall then be thoroughly flushed to remove the heavily chlorinated water. Care shall be taken in flushing the pipeline to prevent property damage and danger to the public. Samples of water shall be collected for bacteriological examination and residual chlorine content testing before the pipe is put into service. Testing of bacteriological evaluation and sampling shall be performed by a District employee.
- 3.9.4** A new Main will be released for the tapping of services when disinfection has been completed, bacteriological testing has been done, it is acceptable to the Water Operations Manager, and the main has been flushed and charged.

3.10 HYDROSTATIC TESTING

- 3.10.1 General.** No hydrostatic tests shall be made on any portion of the pipeline until field placed concrete has had adequate curing time.

The Inspector shall be notified twenty-four (24) hours in advance of testing. All testing shall be made in the presence of the Inspector.

Only the following methods are acceptable for supplying potable water for hydrostatic testing:

- a. Water may be taken from a nearby pressurized water source which has been previously chlorinated, tested and accepted, such as a fire hydrant.

- b. Water may be delivered to the site in a chlorinated water tank having a minimum capacity of three hundred (300) gallons. The water tank shall be used exclusively for the transportation of potable water.
- c. Any previously tested, chlorinated and accepted Water Main which is pressurized and is to serve the new Main extension may be tapped on the pressurized side of the closed valve.

In any event, the method of supplying water as well as the source of water for hydrostatic testing shall be as approved by the Inspector. Use of barrels, sanitary or otherwise, to supply water for hydrostatic testing is strictly prohibited.

All Water Mains shall be hydrostatically tested in the field to a minimum pressure of: one hundred fifty (150) PSI (DR18 pipe up to 12" diameter and DR25 pipe from 14" to 48" in diameter); or two hundred (200) PSI (DR14 pipe up to 12" diameter and DR21 pipe from 14" to 48" in diameter), for no less than 2 hours.

3.10.2 Procedure. The pipeline shall be properly backfilled and shall be in a state of readiness for testing. All bulkheads, pumps, taps and appurtenances necessary to fill the pipeline and maintain the required pressure shall be in place. The pipeline shall be filled with water and the test pressure shall be applied to the pipeline by means of a continuously operating pump equipped with a bypass valve for regulating pressure. When filling the pipeline, it shall be filled at a rate which will not cause any surges nor will it exceed the rate at which the air can be released.

All air in the line shall be properly purged. Fire hydrants are preferred for purging air in lines. Where blow-offs or hydrants are not available or are not effective in purging air from the line, the Inspector shall require a tap (at the Developer's expense) to purge the line. The location and size of tap shall be at the Inspector's discretion.

Upon achieving test pressure, the pressurizing pump shall be turned off and disconnected from the pipeline.

While the test pressure is maintained, an examination shall be made of the pipeline in general, and any leaks shall be repaired. Any pipe or fitting found to be faulty shall be removed and replaced. No leakage is allowed through the bonnet of the line valve. Any valve leaking through the bonnet shall be repaired in place or removed and replaced. Cutting and replacing pavement, excavating and backfilling may all be necessary parts of locating and repairing leaks discovered by pressure testing of pipe.

Tests shall be conducted with fire hydrant valves open and the hydrants shut off.

After all visible leaks have been stopped, the full test pressure shall be maintained for two (2) continuous hours.

3.10.3 Allowable Leakage. At completion of the test, the pipeline shall be returned to exactly two hundred (200) psi internal pressure and the amount of water metered into the pipeline. At the discretion of the Inspector, a leakage test is not required for water pipe sections less than twelve inches (12”) or less than two hundred feet (200’) in length. The method of metering shall be a volumetric measurement taken from a tank no greater than fifty-five (55) gallons. Under no conditions shall an excess of five (5) psi be lost during the two (2) hour test. Allowable leakage (that amount used to re-fill the pipeline) in gallons per hour per one thousand feet (1,000’) of pipe, for each section between line valves for mechanical joint or push-on joint pipe shall not exceed the following rates:

Avg. Test Pressure	Pipe Size – Inches (Gallons)						
	4	6	8	12	16	20	24
PSI							
250	0.47	0.71	0.95	1.42	1.90	2.37	2.85
225	0.45	0.68	0.90	1.35	1.80	2.25	2.70
200	0.43	0.64	0.85	1.28	1.70	2.12	2.55
175	0.40	0.59	0.80	1.19	1.59	1.98	2.38
150	0.37	0.55	0.74	1.10	1.47	1.84	2.21

If testing indicates a leakage rate in excess of the rates above, the pipeline will not be accepted. The pipeline shall be repaired, re-chlorinated, and re-tested as described in this section until all test requirements are met.

3.11 WATER METER INSTALLATION

3.11.1 General. The acceptable location for five eighths of one inch (5/8”) through one inch (1”) water meter pits shall be limited to an area between two feet (2’) and five feet (5’) inside the right-of-way, unless otherwise approved. Locations for one and one half inch (1 1/2”) or larger water meters shall be approved by the District prior to installation of the water meter loop. Water meter locations selected shall provide adequate protection against freezing.

3.11.2 Water Meter Pit Installations.

3.11.2.1 The location of the meter pit for five-eighths of one inch (5/8”) and one inch (1”) water meters will be located within the right-of-way. If a problem arises on the location, the decision will be determined by the District.

3.11.2.2 The only pit acceptable to the District for five-eighths of one inch (5/8”) and one inch (1”) is a PVC pit, or equal, twenty-four inch (24”) inside diameter by approximately thirty-six inches (36”) in height, with a frost proof cover. See

Standard Drawing No. W-35. Regulators or sprinkling system devices are not acceptable in the twenty-four (24") inch pit.

3.11.2.3 The meter loop in the pit must be with a copper setter with an inlet valve only; FORD Series V-82. The copper setter will be installed so that the loop is seventeen inches (17") below the top of the meter pit lid. See Standard Drawing No. W35.

3.11.2.4 The location of the meter pit for one and one-half inch (1-1/2") or larger water meters shall be approved in the field by the Inspector.

3.11.2.5 Meter pits for water meters one and one-half inch (1-1/2") or larger must be enough to accommodate meter, meter bypass, all valve and piping. See Standard Drawing No. W-38. All pits housing a meter one and one-half inch (1-1/2") or larger will have a twelve inch (12") wide metal ladder installed in the pit. Wooden ladders will not be accepted.

3.11.2.6 Meter pits must have an approved ring and cover of sufficient size (twenty-five and one-half inches (25 1/2") minimum) opening for installation and removal of the meter.

3.11.2.7 Meter loop (one and one-half inch (1-1/2") and two inch (2")) must set on the floor of pit, not on riser. The maximum depth of the meter pit shall be five feet six inches (5'6"). The minimum depth of the pit shall be four feet six inches (4'6"). See Standard Drawing No. W-38.

3.11.2.8 Water meter loops one and one-half inch (1-1/2") and larger must have both inlet and outlet valves.

3.11.2.9 Water meters one and one-half inch (1-1/2") and larger may be required to have a bypass around the meter of sufficient size to supply the property while the meter is being serviced. This requirement shall be at the discretion and direction of the District. Contact the District prior to construction of meter loops of this size. See Standard Drawing No. W-38.

3.11.2.10 When a bypass is allowed with a meter installation, the pressure regulator valve shall not be bypassed.

3.11.2.11 Plastic pipe between the Water Main and the curb stop shall be one inch (1") Crestline CE Blue HDPE, SDR 9, two hundred (200) PSI with stainless steel stiffeners.

3.11.3 Combined Domestic and Fire Line Water Meters.

3.2.7.1 Only meters approved by the National Board of Fire Underwriters shall be installed in water lines providing both domestic and fire demands. Requests to install a fire line and/or meter in a water line are handled in the same manner as a water line extension.

- 3.11.3.2** Unless otherwise approved by the District, combined domestic and fire line meters must be installed in a pit large enough to accommodate the meter, meter bypass, and all valves and piping, all in accordance with standard drawings and accompanying general notes.
- 3.11.3.3** The location of the meter pit must be approved by the District in advance of construction.
- 3.11.3.4** Meter pits must have an approved aluminum frame and aluminum locking lid of sufficient size (twenty-five and one-half inches (25-1/2") minimum) opening for installation and removal of the meter.
- 3.11.3.5** Water meter loops for combined domestic and fire line water meters must have both inlet and outlet valves.

End of Article.

ARTICLE 4. WATER SYSTEM MATERIALS STANDARDS

4.1 GENERAL

- 4.1.1** All materials incorporated into the construction of the Water System shall be new and of first class quality. Used, damaged, sunburned or imperfect materials will not be permitted and shall be removed from the job site by the Developer when so directed by the Operations Manager, District Engineer or Inspector.
- 4.1.2** The Developer shall be responsible for storing material at the job site in a manner to prevent damage or contamination of the material. Security is the Developer's responsibility. The District is not responsible for loss of material from the job site.

4.2 PIPE

4.2.1 Polyvinyl Chloride (PVC) Pipe.

- 4.2.1.1** PVC may be used for water lines up to twenty-four inches (24") in diameter.
- 4.2.1.2** For pipe with a diameter of twelve inches (12") or less in diameter, the pipe shall meet the requirements of AWWA Standard C900 and shall be either DR 18 or DR 14 as shown on the drawings.
- 4.2.1.3** For pipe with a diameter greater than twelve inches (12") and up to twenty-four inches (24"), pipe shall meet the requirements of AWWA Standard C905 and shall be either DR 25 or DR 18 as shown on the drawings.

4.2.2 Ductile Iron Pipe.

- 4.2.2.1** DIP may be used for water line up to thirty inches (30").
- 4.2.2.2** DIP shall meet the requirements of AWWA Standard C151.
- 4.2.2.3** Pipe class shall be a minimum of CI 350 for all sizes, unless otherwise specified on the approved drawings.
- 4.2.2.4** Joints shall be "push-on single gasket" type meeting requirements of AWWA Standard C111.
- 4.2.2.5** Cement mortar lining shall be provided meeting the requirements of AWWA Standard C104.
- 4.2.2.6** If not delineated on the approved plans, all ductile iron pipe shall have cathodic protection using double No. 6 wire bonding with seventeen pound (17 lb.) anodes every four hundred feet (400') and nine pound (9 lb.) anodes on each fitting.

4.3 FITTINGS

4.3.1 Fittings for all pipe shall be cement mortar lined ductile meeting the requirements of AWWA Standards C104 and C110 and C153 for short body ductile iron and shall have nine pound (9 lb.) anodes on each fitting. PVC Fittings are not allowed.

4.4 VALVES

4.4.1 Twelve Inch (12") Diameter and Smaller.

4.4.1.1 Twelve inch (12") valves and smaller shall be gate valves meeting the requirements of AWWA Standard C509 "Resilient Seated Gate Valves, 3 through 12" NPS, also epoxy should be on the outside of the valve for water systems."

4.4.1.2 Stem shall be non-rising with a two inch (2") operating nut and o-ring seal.

4.4.1.3 End connections shall conform to AWWA Standard C111.

4.4.1.4 Only valves from the following manufacturers will be permitted:

- Waterous (series 2500)
- New style Mueller

4.4.1.5 All valves shall be installed with a cast iron valve box of the three (3) piece type to the finished grade. Tyler Slip Type six inch (6") cast iron valve box assembly series 6855, or equal.

4.4.1.6 Valves shall open clockwise (Open Right) on potable water lines and open counterclockwise (Open Left) on raw water lines.

4.4.1.7 If the dimension from final grade to the operating nut exceeds five feet (5'), a valve extension shall be installed.

4.4.2 Fourteen Inch (14") Diameter and Larger. Fourteen inch (14") valves and larger shall be butterfly valves meeting the requirements of AWWA Standard C504-10, "Rubber-Seated Butterfly Valves."

4.5 FIRE HYDRANTS

4.5.1 General. All fire hydrants shall be designed and manufactured in strict compliance with AWWA Standard C502 for Dry-barrel Fire Hydrants. All references made in this specification are to the above standard unless otherwise noted.

4.5.2 Acceptable Brands. The following brands are acceptable:

- American AVK Series 2700 (Modern)
- Mueller Super Centurion 250

4.5.3 Size of Hydrant. Hydrants shall have a Main valve opening size of five and one quarter inches (5-1/4") and shall have a five and a half foot (5-1/2') bury depth unless otherwise approved by the District Engineer.

4.5.4 Type of Hydrant. All hydrants shall be the traffic model type. Hydrants shall be the three-way type with one (1) pumper nozzle and two (2) hose nozzles, all located on the same horizontal plane.

4.5.5 Inlet Connection. Hydrant base shall be provided with a mechanical joint inlet to accommodate six inch (6") diameter ductile iron pipe, all in accordance with AWWA Standard C-111, "Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings". Incorporated into the base shall be two (2) lugs for rodding or strapping of pipe.

4.5.6 Main Valve Assembly. Main valve of the hydrant shall be five and one quarter inch (5-1/4") diameter compression type which closes with water pressure.

Gasket for valve shall be a replaceable type fabricated of a resilient material, with a threaded bottom plate or nut, complete with seal to prevent leakage of the hydrant.

The valve assembly shall include one (1) or more drain valves which work automatically with the Main valve and drain the barrel when the Main valve is in the closed position.

All parts of the Main valve assembly shall be so designed that removal of the assembly from the barrel is accomplished without excavation.

4.5.7 Operating Shaft Nut. The operating nut shall be a 7/8"x7/8" tapered square in shape. See Standard Drawing No. W-3. Bushings in the bonnet shall be constructed so that it will prevent the operating nut from traveling during opening or closing operation. Also, the bushing shall house a gasket or seal to prevent moisture or foreign material from entering the lubricant reservoir.

The hydrant shall open by turning the operating nut to the right in a clockwise direction and shall have an a right-of-way on top of the bonnet to designate the direction of opening.

4.5.8 Pumper Nozzle and Cap. The pumper nozzle shall be four and one half inch (4-1/2") nominal diameter with four (4) threads per inch. Threads shall be right hand. See Standard Drawing No. W-3.

Nozzle caps shall be furnished with a synthetic rubber gasket installed in a retaining groove and the dimensions and shape of the nozzle cap nut shall be the same as the operating shaft nut described in these Specifications.

Nozzle caps shall be furnished with security chains with one end of each securely attached to the upper barrel section of the hydrant.

All nozzle caps shall be removed by turning counterclockwise.

- 4.5.9 Hose Nozzles and Caps.** The two (2) hose nozzles shall be two and one half inch (2-1/2") nominal diameter with seven and one half (7-1/2) threads per inch. Threads shall be right hand. See Standard Drawing No. W-3. Each hose nozzle shall include a nozzle cap with nut and security chain, and shall be removed by turning counterclockwise as described in Sections 4.5.7 and 4.5.8, above.
- 4.5.10 Color.** The upper exposed section of the hydrant above ground shall be painted Rustoleum 659 yellow or equal. The buried portion of the hydrant shall be given a bituminous coating in accordance with Section 10-8.1 of AWWA Standard CI 10.
- 4.5.11 Location.** Where possible, fire hydrants shall be located in the northeast quadrant of the intersection. See Standard Drawing No. W-1 for typical installation. The location of all fire hydrants shall have the written approval of the Falcon Fire Protection District.

4.6 PRESSURE REDUCING AND REGULATING VALVES

- 4.6.1** Pressure reducing and regulating valves shall be of a type capable of maintaining pre-adjusted downstream pressures, varying rates of flow and upstream pressure without causing water hammer. Valves shall be piston type, not spring operated, with flanged end connection, and shall be installed in concrete valve vaults of sufficient size to provide adequate maintenance and operation. Valves shall have gate valves and pressure gauges on both upstream and downstream sides and shall have bypasses with smaller pressure reducing and regulating valves to handle minimum flows as determined by the District Engineer. All gate valves in the vaults shall be capable of being operated from above ground by use of two inch (2") square valve keys. Cla-Val or equal are acceptable.

4.7 AIR RELEASE VALVES

- 4.7.1** Valves shall be combination air release and vacuum valves. These shall be installed at each high point on all twelve inch (12") and larger water Mains and at all other locations as directed by the District Engineer. Air release and vacuum breaker valves shall be located in pre-cast concrete manholes in accordance with the standard drawings and shall automatically release air from the lines when the lines are being filled with water, and shall admit air into the lines when water is being withdrawn in excess of the inflow.
- 4.7.2** Valves shall be iron body, with bronze trim. Floats shall be stainless steel. One inch (1") valves shall be installed. Oil the stem between the pipe and release valve or as shown in the standard drawing.
- 4.7.3** Pipe and fittings used in the release valve system shall be galvanized steel, standard weight, and connections shall be threaded. Gate valves shall be bronze, threaded and shall have hand wheels.

- 4.7.4 Acceptable manufacturers are Apco, Crispin, and Clow.
- 4.7.5 Four inch (4") vents are required for ARVs less than two inches (2"), and six inch (6") vents are required for two inch (2") ARVs.

4.8 THRUST BLOCKS

- 4.8.1 Concrete thrust blocks, in addition to rods and clamps and/or restrained fittings, shall be installed at all tees, plugs, bends, and fire hydrants in accordance with the standard drawings. Where thrust blocks are used in conjunction with eight (8) millimeter hick polyethylene as a bond breaker, care shall be taken not to block weephole outlets, cover bolts, nuts, clamps, or other fittings or to make them inaccessible. Size of thrust block, type of concrete, and dimensions shall be in accordance with the details in standard drawings. Concrete shall be three thousand (3,000) PSI strength at twenty-eight (28) days.

4.9 PRE-CAST CONCRETE VAULTS AND MANHOLES

- 4.9.1 All butterfly valve and ARV manholes, pressure reducing valve vaults, meter vaults, and other vaults shall be pre-cast or poured-in-place concrete. Design of manholes and vaults shall be for H-20 traffic loading and shall include aluminum rungs, cast iron rings and covers of a pattern approved by the District Engineer, with the word "WATER" cast thereon, and shall be in accordance with the details in standard drawings.

4.10 SERVICES

- 4.10.1 **General.** Hydrostatic testing, approved bacteriological testing, and conditional acceptance of the Water Mains must be made prior to the installation of any water taps.

Water service line locations shall be shown on the utility plans submitted to the District, and shall be located ten feet (10') up from the downhill lot line. Service Lines shall be installed in a continuous straight line. Service Lines shall be as close to ninety degrees from main line as possible. Tap saddles will be required. Service lines in driveways are not permitted. Tap saddles shall be Romac 202 BS or Equal. HDPE service lines shall be installed horizontally in a "snake-like" configuration to allow for both expansion and contraction of the line in the trench.

- 4.10.2 **Services Lines.**

- 4.10.2.1 All residential Service Lines shall consist of a corporation stop at the Main, continuous plastic pipe to a curb stop at the property line, and continuous plastic pipe up through the slab or floor of the structure in compliance with the latest building code. Meter pits are permitted on residential services. Residential Service Lines shall be a minimum of one inch (1") diameter. Plastic pipe will be Crestline CE Blue HDPE pipe DR9, two hundred (200) PSI with stainless steel stiffeners. One inch (1") HDPE is comparable to a three quarter inch (3/4") copper service line, although only HDPE service lines will be used.

- 4.10.2.2** HDPE service lines shall be the same size from the corporation stop to the curb stop. Then, if necessary, the size of the service line may be increased or reduced only after the curb stop to the meter by one size. HDPE service lines shall be installed horizontally in a “snake-like” laying configuration to allow for both expansion/contraction movement of the pipe in the trench. The HDPE service line shall consist of one (1) piece of continuous pipe from the corporation stop to the curb stop, no fittings or connections are allowed. The curb stop may not be placed under concrete or paved driveway areas. If the service line needs to be extended to accommodate moving the curb stop out of a concrete or paved area, only butt fusion may be used on HDPE pipe to extend the service line pipe to the new location of the curb stop.
- 4.10.2.3** Tracer wire, as specified herein, shall be extended from the Main to the foundation of the residence, building or structure. Tracer wire shall be extended up the curb stop box pursuant to Section 4.10.2.11 of these Specifications.
- 4.10.2.4** Service Lines shall have meter pits at the property line and shall consist of a corporation stop at the Main, plastic pipe to a curb stop and plastic pipe to a point outside the foundation of the structure in compliance with the latest building code.
- 4.10.2.5** The meter fitting and water meter are part of the service. Service Lines larger than two inches (2”) shall be ductile iron or polyvinyl chloride and shall have a gate valve at the Water Main.
- 4.10.2.6** No portion of the building electrical system and/or ground may be attached to the service line or internal plumbing such that current may be induced into or from the piping system.
- 4.10.2.7** Meter vaults shall be concrete and shall have Aluminum covers and rings. Meter shall sit in center of vault with same size gaskets with five eighths of one inch (5/8”) x two inch (2”) stainless steel bolts and nuts. All lines shall have a minimum of five and one-half feet (5-1/2’) of cover, and shall be bedded and backfilled in accordance with these specifications. Water Service lines shall be a minimum of one inch (1”) in diameter.
- 4.10.2.8** No flares will be allowed on one and one-half inch (1-1/2”) to two inch (2”) installations. Ford pack joint fittings are permitted.
- 4.10.2.9** Meter pits shall have MS 2024308 meter cans. Standard will be twenty-four inches (24”). However, thirty-six inches (36”) and forty-eight inches (48”) are acceptable when the situation permits and when approved by the District. Meter domes shall be twenty inches (20”) standard aluminum with inner lid, cast iron top with a two inch (2”) hole in center. All meters in pits one and one-half inches (1 ½”) and larger shall be placed twelve inches (12”) from the bottom of the inner lid in the setter for frost protection.

4.10.2.10 All water and sewer service locations shall be clearly stamped in the curb with an “S” for sewer and a “W” for water.

4.10.2.11 All curb stop boxes shall have a one and one-half inch (1-1/2”) Schd. 40 PVC pipe telescoped inside with a bell end to fit over the top of the curb stop valve. Tracer wire shall be extended up the inside of curb stop box but outside the one and one-half inch (1-1/2”) Schd. 40 PVC pipe.

4.10.3 Corporation Stops and Curb Stops (or Valves). Corporation stops and curb stops shall meet the requirements of AWWA Standard C800. Curb stops shall include a curb box installed at the right-of-way line.

Corporation stops shall be Ford FB-1001 or Macdonald 4701B.

Curb Stops shall be:

<u>Ford</u>	<u>Macdonald</u>
B46-333 – 3/4”	MCD 6100-33 3/4”
B46-444 – 1”	MCD 6100-33 1”
B46-666 – 1-1/2”	MCD 6100-33 1-1/2”
B46-777 – 2”	MCD 6100-33 2”

For lines larger than two inches (2”), curb stop valves shall be resilient-seated and epoxy-coated inside and out.

4.10.4 Meters.

4.10.2.1 General.

- a. All water supplied by the District to a property must be metered. The only exceptions are fire lines.
- b. All water meters shall be initially installed and furnished by the District at the expense of the Developer. At no cost, the District will provide to the Property Owner a replacement meter and/or radio transmitter as deemed necessary by District.
- c. Water meters will be serviced and maintained by the District.
- d. One and one-quarter inch (1-1/4”) meters are not permitted.

4.10.4.2 Meters up to one and one-half inch (1-1/2”).

- a. Shall be Badger Brass Recordall® Disc Series Meters
- b. Shall be furnished with District’s AMR system.
- c. Shall be calibrated and furnished to indicate gallons.

4.10.4.3 Meters Two Inch (2”) and larger.

- a. Shall be compound meters in cast iron housing with a disc meter to record small flows and a turbine to record large flows.
- b. Shall be calibrated and furnished to indicate gallons.

4.10.5 Backflow Preventers. All backflow prevention devices and installations will be pursuant to Standard Drawing No. W-35 and these Rules and Regulations.

End of Article.

ARTICLE 5. WASTEWATER SYSTEM DESIGN STANDARDS

5.1 Quality of the Collection System. The purpose of these Specifications is to ensure that only proven high quality materials are installed using first-class workmanship. Determination of the best materials and construction methods are based upon lowest life cycle costs. Sizing and layout of the system are parts of the total consideration of design, operation and maintenance of a Wastewater System that yields optimum quality service at the lowest total cost to the Property Owner.

5.2 Sizing of Collection Mains. All Mains shall be sized large enough to provide for sanitary sewer service for the entire basin area requesting service and shall meet the requirements contained herein. The District reserves the right to size Mains to provide service for projected future needs.

No Collection Main shall be less than eight inches (8") in diameter with the exception of small service areas where six inch (6") sewer lines may be used with the written approval of the District. No service line shall be less than four inches (4") in diameter. All sewer lines shall be sized to flow at seventy-five percent (75%) of the end area of the pipe or less during peak wet weather flow periods.

5.3 Layout of the Collection System.

5.3.1 Width Requirements for Collection Main Installations. All Collection Mains shall be installed in dedicated public rights-of-way. When the District determines it is not possible or feasible for an installation to be made in a dedicated public right-of-way, the installation shall be made in an easement. The conditions under which such an exception will be allowed will be determined for each individual case, and only rights-of-way and easements which conform to the requirements of the District will be accepted. The minimum width right-of-way or easement which will be accepted by the District is twenty-five feet (25'). Depending on the size and depth of the Collection Main, additional width may be required.

5.3.2 Dedicated Streets. Pipe alignment shall be parallel to property lines. Normal practice is to lay the pipe on the center line of the street. In any case, pipe alignment shall always be within an established roadway, between the limits of the curb and gutter. Installation of curvilinear pipelines in sizes eight inches (8") through eighteen inches (18") is acceptable and necessary to obtain the standard location of Collection Mains. Curvilinear sewers must be designed and constructed using a uniform slope between manholes and shall have a center line radius of one hundred feet (100') or greater. The necessary curvature shall be attained by deflection at joints not to exceed the manufacturer's recommendations or three degree (3°) preformed joints or couplings. Field bending of pipe shall not be permitted.

When streets and subdivisions fall in hillside overlay zones or areas with unique characteristics as identified by the Developer and the District, the Developer and his/her engineer shall meet with the District to address concerns of pipeline materials, pipe alignment, pipeline access, landscape restoration and surface monumentation.

5.3.3 Easements. All Collection Mains and appurtenances thereto not otherwise installed in public rights-of-way shall be installed in easements granted to the District in the District’s form and subject to the District’s approval and acceptance in accordance with the Rules and Regulations. The minimum width of an easement shall be twenty-five feet (25’) or no less than two (2) times the depth of the line, whichever is greater. The Collection Main to the edge of the easement shall not be closer than five feet (5’) or the depth of the line, whichever is greater. Depending on depth, size, and nature of the Collection Main and appurtenances thereto, a wider easement may be necessary.

5.3.4 Service Lines. Service Lines shall be a minimum of four inches (4”) in diameter and shall be placed in a joint trench with the water service pursuant to the Standard Drawing No. W-34.

5.4 Manholes. Manholes shall be installed at the end of each line, at all pipeline intersections, changes in grade, changes in size, alignment (except curvilinear sewers) and at distances of not greater than four hundred feet (400’). Manholes must also be located to allow unassisted access by District maintenance vehicles. Lines and manholes located in areas where access (in the opinion of the District) is not possible, will be reviewed on a case by case basis.

5.4.1 Manhole Sizes. The inside diameter (“I.D.”) of the manhole shall not be less than the following:

The inside diameter (I.D.) of the manhole shall not be less than the following:

<u>PIPE SIZE (In.)</u>	<u>MANHOLE DEPTH (Ft.)</u>	<u>MANHOLE SIZE (I.D.)</u>
8” and 10”	0’ to 12’	48” (where no more than 2 lines)
8” and 10”	0’ to 12’	60” (where 3 lines)
12” to 18”	13’ to 19’	60”
24” and larger	20’ to 25’	72”

5.4.2 Changing Pipe Size. When Collection Mains are changed in size at a manhole with no intersecting Collection Mains, the manhole invert shall be designed with a one tenth of one foot (0.1’) drop through the manhole.

5.4.3 Intersections. Pipelines deflecting twenty degrees (20°) or more shall have one tenth of one foot (0.1’) drop in the invert through the manhole. Changes in direction at intersections shall not be greater than ninety degrees (90°). Ninety-degree (90°) manholes are generally discouraged and should only be implemented when no other options are available. The slope through the manholes shall not be less than the most restrictive slope of the pipe in or out of the manhole. Intersecting pipelines at manholes with greater than one (1) pipe size difference shall be designed to match right-of-way elevations. Pipelines passing straight through manholes without changes in grade or alignment shall be laid through the manhole.

5.4.4 Manhole Channels. The flow channel shall be made to conform its slope and shape to that of the Collection Main and, wherever possible, shall use the lower one-half (1/2) of the Collection Main of the invert of the open channel. The completed channel shall be U-shaped, coming up as high as the top of the largest pipe. At intersections with other Collection Mains, channels shall be formed with a curve to minimize turbulence.

5.4.5 Manhole Rings and Covers. Manhole rings and covers shall conform to the attached detail sheets for ring and cover designs. All manholes located outside of dedicated street or alley rights-of-way will be designed and constructed with a locking type cover and the ring bolted to the concrete cone. Depending on the manhole location the District may require “self sealing” and/or bolt down lids. Grade adjustment rings between the ring and cover and the concrete cone cap shall not exceed eight inches (8”).

5.4.6 Drop Manholes. Internal drop manholes with a minimum of five feet (5’) diameter will be permitted only in special conditions where District approval has been granted. External drop manholes shall not be used.

5.5 Minimum Sewer Depth. In general, Collection Mains should be designed deep enough to drain basements and to prevent freezing. No Collection Mains shall be less than five and one-half feet (5 1/2’) deep measured from the top of the pipe. Sewer Lines less than five and one-half feet (5 1/2’) and greater than fourteen feet (14’) shall be given special consideration and reviewed by the District on a case by case basis concerning pipe material and bedding requirements.

5.6 Slopes. All Collection Mains shall be designed to transport sewage flows at mean velocities of two feet (2’) per second at seventy-five percent (75%) of the pipe end area based on a roughness coefficient of thirteen one-thousandths (.013).

The slope between manholes shall be uniform and the greatest slope physically possible. Slopes of one percent (1%) or greater are preferred due to practical constructability and construction tolerances.

Slopes less than one percent (1%) will require special bedding and compaction methods. In no case shall the slope be less than the following for Collection Mains and Service Lines:

8”	0.50%
10”	0.35%
12”	0.29%
15”	0.23%
18”	0.17%
24”	0.13%
30”	0.11%
36”	0.10%

5.7 Construction Tolerances. Vertical construction tolerances for pipe installation shall be one tenth of a foot (0.10’) per one hundred feet (100’) of pipe or per manhole run, whichever

horizontal distance is greater, and so that no reduction of required flow rate below ultimate peak flow results and so that the pipe slope does not fall below the minimum slope for the size of pipe used.

In circumstances where it may not be feasible or practical to place pipe at the minimum slope, the Developer may increase the pipe size to the nearest pipe size that will provide an equal flow quantity at an acceptable slope or have continuous on site surveying for the setting of each joint of pipe. This option must be approved by the District prior to the start of construction. Horizontal construction tolerances shall be up to one foot (1'), left or right, from the design centerline of the pipe.

5.8 High Velocity Protection. In the case of Collection Mains where the slopes are such that over fifteen percent (15%) grades are attained, special provisions shall be made to prevent displacement by erosion and shock. Such high velocity protection shall be shown on the detail drawings and approved by the District Manager.

5.9 Relation to Water Mains. Collection Mains shall be located a minimum of ten feet (10') horizontally from existing or proposed Water Mains, and the Collection Main shall be a minimum of eighteen inches (18") clear distance vertically below the Water Main. If this clear distance is not feasible, the crossing must be designed and constructed so as to protect the Water Main. Such crossings shall meet CDPHE requirements and shall be approved by the District. Minimum protection shall consist of the installation of an impervious and structural sewer as follows:

5.9.1 One length of pipe at least eighteen feet (18') long centered over or under the Water Main. Joints between the existing Collection Main and the new Collection Main shall be made with a manufactured adapter approved by the District and made specifically for such joining.

5.9.2 Existing concrete or vitrified clay pipe shall be protected with a full reinforced concrete encasement. Encasement shall be at least six inches (6") thick and extend a distance of ten feet (10') on either side of the Water Main.

5.9.3 Deviations from the eighteen inch (18") and ten foot (10') standards require specific District approval of the crossing. If an approved waiver includes less than a one foot (1') vertical separation, an annular space shall be provided between the two (2) pipelines. To create the annular space, a biodegradable cardboard or soft foam rubber shall be used as a spacer of length equal to or greater than the larger pipe diameter of the two (2) pipe crossings. No crossing shall be made where the vertical clear separation is less than six inches (6").

5.9.4 In all cases, suitable backfill or other structural protection shall be provided to preclude settling or failure of the higher pipe. Depending on pipe material, pier supports may be used.

5.10 Stub-outs from Manholes. Stub-outs from manholes shall not be allowed except for lines which will be extended in the future. Designs to complete the manhole run shall be submitted for review to ensure proper grade and alignment of future construction. Future extension of

stub-outs shall be of like material using the same grade and alignment as designed. No service connections will be permitted on stub-outs.

- 5.11 Inverted Siphons.** Inverted siphons shall have not less than two (2) barrels of ductile iron pipe with a minimum pipe size of six inches (6") and shall be provided with necessary appurtenances for flushing and maintenance. Sufficient head shall be provided and pipe sizes selected to provide velocities of at least three feet (3') per second for average flow. The inlet and outlets shall be arranged so that the normal flow can be diverted to either barrel for cleaning and maintenance
- 5.12 Stream and Drainage Channel Crossings.** All stream and drainage channel crossings shall be ductile iron pipe encased in reinforced concrete. Crossings of proposed channel bottoms shall be supported by reinforced concrete caissons drilled a minimum of five feet (5') into impervious soil or twenty feet (20'), whichever is less. In the absence of impervious soils, caissons shall extend twenty feet (20') below the invert of the Collection Main. A fifteen foot (15') splash pan consisting of eighteen inch (18") to twenty-four inch (24") grouted rip-rap shall be placed downstream tapering from six feet (6') deep at the crossing to three feet (3') deep at the end to prevent erosion. All stream and channel crossings shall be reviewed and approved by the District Engineer.
- 5.13 Crossings Under Railways and Highways.** Crossings under railways and highways will consist of pipe laid inside steel pipe conduits, which are jacked or placed by an approved method underneath the track or roadway. The steel conduit pipe shall be placed horizontally through the ground at substantially the grade of the Collection main, with due allowance for the bells of the carrier pipe. As the pipe is moved along, the earth shall be excavated from the face and removed so that it will not be necessary to force the pipe through solid ground. The conduit shall be of the sizes shown on the plans. In any case, the conduit diameter shall be a minimum of twelve inches (12") larger than the carrier pipe. After the conduit has been completed, the carrier pipe shall be placed inside and blocked in exact position and grade with approved insulating skids. Each end of the conduit shall then be plugged tight around the ductile iron or steel carrier pipe and the conduit pipe.
- 5.14 Aerial Crossings.** All aerial crossings shall be constructed as shown on the detail sheets. Each aerial crossing shall be reviewed, modified and approved by the District depending on its location, size and clearances.
- 5.15 Metering Manholes.** Metering pits for the purpose of metering Wastewater flows shall be prepared and submitted to the District Engineer for his/her review and approval. All metering pits shall include, but not necessarily be limited to, the following:
- 5.15.1** The Parshall Flume shall be installed as per the flume's manufacturer's recommendations with the following criteria and standard detail as minimum guidelines to ensure the proper functioning of the flume:
- 5.15.1.1** Upstream pipe sections equal to a minimum of twenty-five (25) pipe diameters, shall have a slope not less than that required by these Specifications without bends, drops or flow junctions to ensure subcritical flow.

5.15.1.2 The downstream pipe sections shall have slope greater than the upstream pipe to ensure supercritical flow.

5.15.1.3 The flume itself shall be grouted into the block-out at zero percent (0.0%) slope as shown on the standard detail.

5.15.1.4 The flume shall be made of corrosion resistant materials and supplied with a manufacturer's rate curve. Shop drawings shall be submitted to the District Engineer for review and approval prior to installation.

5.15.2 Concrete vault or minimum six feet (6') ID manhole.

5.15.3 Flow measurement, totalizing and recording devices.

5.15.4 The metering pit shall have a suitable and safe means of access.

5.15.5 Flow Level Sensor and Transmitter, if required. The flow sensor shall be of a non-intrusive type and shop drawings for the level sensor and transmitter shall be submitted to the District Engineer for review and approval prior to installation.

5.15.6 Manhole Ventilation. The District Engineer may require that the control manhole be vented if it is determined that it is needed to protect the monitoring equipment and ensure proper function of said equipment.

5.16 Pumping Facilities. Pumping facilities may be allowed on mains in the Wastewater System only where specifically authorized by the District. The District may prohibit the installation of pumping facilities where, in its opinion, such installations would be injurious to the operation, or future operation of the Wastewater System. All proposed pumping facilities shall be considered as a special feature and will be dealt with on an individual case basis. All proposed pumping stations and Force Mains shall be approved by the State of Colorado.

A basis for design for all wastewater pumping stations shall have the following features:

5.16.1 Wastewater pumping stations shall not be subject to damage by flooding. A suitable superstructure, located off the right-of-way of streets and alleys shall be provided and be readily accessible.

5.16.2 Wastewater pump stations shall be of the dry well type.

5.16.3 Wet and dry wells, including their superstructure, shall be completely separated.

5.16.4 At least two (2) pumps must be provided. If only two (2) pumps are provided, they shall have the same capacity. Each shall be able to handle flows in excess of the expected maximum flow.

5.16.5 Adequate ventilation shall be provided for all pump stations to mechanically ventilate the dry well. Wet well vents shall be provided. There shall be no interconnection between the dry well and the wet well ventilating systems.

- 5.16.6 Liquid level controllers shall be located as not to be affected by flows entering the station. In small stations with duplicate units, provisions shall be made to alternate the pumps in use.
 - 5.16.7 Pumping stations shall be equipped with suitable devices for measuring, recording, and totalizing sewage flow and power consumption.
 - 5.16.8 Power supply shall be available from at least two (2) independent generating sources, or emergency power equipment shall be provided. Automatic starting of emergency power equipment shall be provided.
 - 5.16.9 Alarm systems shall be provided for all pumping stations. The alarm shall activate in cases of pump station malfunction.
 - 5.16.10 On-site retention for all wastewater pumping stations shall be provided. The size and capacity of on-site retention will be determined by pump station size, distance from wastewater treatment plant, and location of pump station site, etc.
- 5.17 **Force Mains.** All proposed pumping stations and Force Mains shall be approved by the State of Colorado. Force Mains and all their appurtenances shall be designed and tested to conform to potable water line criteria and the following minimum requirements:
- 5.17.1 **Velocity.** A design average flow velocity of at least two feet (2') per second shall be maintained.
 - 5.17.2 **Air Relief Valves.** An automatic air relief valve shall be placed at high points in the Collection Main to prevent air locking.
 - 5.17.3 **Termination.** The Collection Main should enter the gravity Wastewater System at a point not more than two feet (2') above the flow line of the receiving manhole.
 - 5.17.4 **Design Pressure.** The Collection Main and fittings, including reaction blocking, shall be designed to withstand normal pressure and pressure surges (water hammer).
 - 5.17.5 **Design Friction Losses.** Friction losses through Collection Mains shall be based on the Hazen-Williams formula or other acceptable method. When initially installed, Collection Mains will have a significantly higher "c" factor. The higher "c" factor should be considered.
 - 5.17.6 **Separation from Water Mains.** The separation from Water Mains shall be the same as gravity Wastewater Sewer Lines.
 - 5.17.7 **Identification.** Where Collection Mains are constructed of material which might cause the Collection Main to be confused with potable Water Mains, the Collection Main shall be appropriately identified.

5.18 Underdrain System. All underdrains shall be sized large enough to provide service for the entire basin area requesting service. The District reserves the right to size underdrains to provide service for projected future needs. All underdrains shall meet the following requirements:

5.18.1 No Underdrain Main shall be less than six inches (6”) in diameter. Underdrains shall be installed a minimum of twelve inches (12”) below the Collection Main and offset a minimum of twelve inches (12”) from the Collection Main.

5.18.2 The Property Owner is responsible for the repair and maintenance of the underdrain service line from the residence, building or structure to the Underdrain Main. If and when the District accepts Underdrain Main for ownership, operation and maintenance, such acceptance shall only be for the Underdrain Main and shall not be for any underdrain service lines from the Underdrain Main to the residence, building or structure. The responsibility to operate and maintain the underdrain service line shall remain the responsibility of the Property Owner.

5.18.3 The Developer shall make the necessary excavations and barricade all excavations in accordance with the barricading instructions set forth in the MUTCD and/or the El Paso County Standards for barricades. The Developer shall make the necessary repairs and contact the District for inspection.

End of Article.

ARTICLE 6. WASTEWATER SYSTEM EXCAVATION AND SITE STANDARDS

- 6.1 Earthwork Defined.** Earthwork shall include all clearing, grubbing, grading, excavation, fill, backfill, excess excavation, bedding material, on-site material and surface restoration as may be required to complete the work.
- 6.2 Traffic Control.** Traffic control, signing, detours and utilization of existing streets require approval by the controlling right-of-way authority. Developers must obtain adequate permitting and approvals from the controlling right-of-way authority.
- 6.3 Caution in Excavation.** The Developer shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground utilities and structures, both known and unknown, may be determined and shall be held responsible for the repair of such structures when broken or otherwise damaged because of carelessness on his/her part.

The District cannot guarantee the accuracy of underground utilities and structures as shown on plans and will not be responsible for any damage that may occur during construction.

Whenever it is necessary to explore and excavate to determine the location of underground utilities and structures that may interfere with construction, the Developer shall make the explorations and excavations for such purposes.

- 6.4 Excavation to Line and Grade.** All excavations shall be made to the lines and grades as established by the approved drawings and these Specifications. Pipe trenches shall be excavated to the depth required to provide a uniform and continuous bearing and support for the pipe on solid undisturbed ground at every point between bell holes. Bell holes shall be provided at each pipe joint to permit the joint to be made properly. Any part of the bottom of the trench excavated below the specified grade shall be corrected with approved material and thoroughly compacted as directed by the District. The finished grade of the trench shall be prepared accurately by means of hand tools. Deviation from line and grade may be allowed when approved by the Inspector in accordance with these Specifications.
- 6.5 Trenching and Excavation Operations.** The trench shall be excavated in a manner that will allow the pipe to be installed to the alignment and depth required. The trench shall be excavated only so far in advance of the pipe laying as is necessary to expedite the work.
- 6.5.1 Trench Width.** All existing asphalt or concrete surfacing shall be cut vertically in a straight line and removed from the job site prior to starting the trench excavation. This material shall not be used in any fill or backfill.

The trench shall be excavated so that a minimum clearance of six inches (6") shall be maintained on each side of the pipe for proper placement and densification of the bedding or backfill material. Ledge rock, boulders and large stones shall be removed to provide a clearance of at least six inches (6") below and on each side of all pipe and fittings. The specified minimum clearances are the minimum clear distances that will be permitted between any part of the pipe and appurtenances being installed and any part, projection, or point of such rock, boulder or stone.

The maximum bottom of trench width, measured at the top of the pipe, shall be the outside diameter plus forty inches (40") regardless of the type of pipe, type of soil, depth of excavation or the method of densifying the bedding and backfill.

Trenches may be of such extra width, when required, to permit necessary supports, sheeting or bracing and handling of specials.

- 6.5.2 Trench Support.** The trench shall be adequately supported and the safety of workers provided for, as required by the most recent standards adopted by the O.S.H.A. Standards Board. Sheeting and shoring shall be utilized where required to prevent any excessive widening or sloughing of the trench, which may be detrimental to human safety, to the pipe and appurtenances being installed, to existing utilities, to existing structures or to any other existing facility or item. Trench support is the sole responsibility of the Developer. The Inspector's presence in no way implies approval of trench support methods being utilized.
- 6.5.3 Excavated Material.** Excavated material shall not be placed closer than two feet (2') from the top edge of the trench. Heavy equipment should not be used or placed near the sides of the trench unless the trench is adequately braced. All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing traffic. Hydrants under pressure, valve lid covers, valve boxes or other utility controls shall be left unobstructed and accessible until the work is completed.
- 6.5.4 Excavation for Structures.** Except as otherwise dictated by construction conditions, the excavation shall be of such dimensions as to allow for the proper installation and removal of concrete forms or precast structures, and to permit the construction of the necessary pipe connections. Care shall be taken to ensure that the excavation does not extend below established grades. If excavation is made below such grades, the resulting excess shall be filled in with approved material deposited in horizontal layers not more than six inches (6") in thickness after being compacted, as directed by the District.
- 6.5.5 Excavation in Poor Soil.** If the bottom of the excavation at subgrade is found to be soft or unstable or to include ashes, cinders, refuse, vegetable or other organic material, or large pieces or fragments of inorganic material that, in the opinion of the Inspector, cannot satisfactorily support the pipe or structure, the Developer shall further excavate and remove such unsuitable material to the width and depth specified by the Inspector.
- 6.5.6 Protection of Existing Structures and Utilities.** Adequate protection, temporary support and maintenance of all underground and surface structures, utilities and other obstructions encountered in the progress of the work shall be furnished by the Developer at his/her expense and under the direction of the District. Any structures, utilities or obstructions disturbed or damaged shall be restored or replaced by the Developer upon completion of the project.

6.6 Blasting. In general, blasting will be allowed in order to expedite the work if a permit by the local authority having jurisdiction is granted and a copy presented to the District. All explosives and appurtenances shall be transported, handled, stored and used in accordance with the laws of the local, state and federal governments, as applicable.

All blasting shall be controlled so as not to damage any existing structure or facility. The protection of life and property and all liability for blasting shall be placed solely on the Person or Persons conducting the blasting operation. The hours of blasting shall be fixed by the Inspector in accordance with the permit of the local authority.

Owners or occupants of nearby structures or facilities, within a minimum distance of five hundred feet (500') must be notified in writing by the Developer at least seventy-two (72) hours in advance of blasting. The notice shall state the date, the time of blasting and who is responsible for the blasting. The District shall be notified a minimum of forty-eight (48) hours in advance of any blasting.

Blasting shall be controlled to avoid making any excavation unduly large or irregular and so as not to shatter the rock on the bottom or sides of any excavation or surface upon or against which concrete is to be placed. If, in the opinion of the District, blasting is liable to damage rock foundations or supports, concrete, other utilities or structures, all blasting shall be terminated and excavation shall be continued by jack-hammering, barring, wedging or other methods.

6.7 Dewatering. All pipe trenches or structure excavation shall be kept free from water during pipe laying and other related work. The method of dewatering shall provide for a completely dry foundation at the final lines and grades of the excavation.

Dewatering may require a construction dewatering permit from the CDPHE.

Dewatering shall be accomplished by the use of well points, sump pumps, rock or gravel drains placed below subgrade foundations or subsurface pipe drains. All water shall be disposed of in a suitable manner without being a menace to public health or causing public inconvenience. The dewatering operation shall continue until such time as it is safe to allow the water table to rise in the excavations. Pipe trenches shall contain enough backfill to prevent pipe flotation. When pipe is installed in a casing or tunnel longer than thirty (30) pipe diameters, the pipe inside and casing or tunnel shall be secured so flotation does not occur when the pipe is empty.

Water shall not be allowed to rise until any concrete has set and the forms have been removed. Water shall not be allowed to rise unequally against unsupported structural walls.

6.8 Pipe Bedding. It is expected that the trench excavation will provide suitable bedding and backfill material. Wet, soft or frozen material, asphalt and concrete chunks, cinder ashes, refuse, vegetable or organic material, boulders, rocks, or other deleterious substances shall not be used for bedding or backfill.

If the excavated material is not suitable for bedding or backfill as determined by the Inspector, suitable material shall be hauled in and utilized, and the rejected material hauled away and disposed of.

If native material is not suitable for bedding, six inches (6") of squeegee sand shall be placed on the trench bottom for support under the pipe and compacted. Bell holes shall be dug deep enough to provide a minimum of two inches (2") of clearance between bell and bedding material. All pipe shall be installed in such a manner as to ensure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade and the joint is made, bedding material (squeegee sand) shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

"Tamping" is herein defined as the act of placing approved bedding material under the haunches of pipe, paying particular attention to voids, bell holes and sling holes. The purpose of Tamping is to ensure uniform support for the pipe.

6.8.1 Pipes. Unless select bedding material is required, all pipelines shall be bedded by hand, from the bottom of the trench to the centerline of the pipe with sand, gravel or other approved material placed in layers of three inches (3") and compacted. Bedding material shall be deposited in the trench for its full width on each side of the pipe, fittings and appurtenances simultaneously.

The pipe shall be bedded by approved mechanical methods from the centerline of the pipe, fittings and appurtenances to a depth of twelve inches (12") above the top of the pipe. Special care shall be used in placing this portion of bedding so as to avoid disturbing the pipe.

PVC pipe shall be installed in accordance with ASTM D2321 and the manufacturer's recommendations unless otherwise specified herein.

DIP pipe shall be installed in accordance with AWWA C600 and the manufacturer's recommendations unless otherwise specified herein.

The trench shall be backfilled by approved mechanical methods from twelve inches (12") above the pipe to the grade shown on the plans or specified herein.

6.8.2 Structures. Backfill and fill within three feet (3') adjacent to all structures and for full height of the walls shall be selected non-swelling material. It shall be relatively impervious, well-graded, and free from stones larger than three inches (3"). Material may be job excavated, but selectivity will be required. No backfilling will be allowed in freezing weather except by permission of the District. No additional backfill will be allowed over any frozen material already in the trench.

6.9 Select Bedding Material. When indicated on the plans or drawings or when, in the opinion of the Inspector, select bedding material is required, preparation and installation shall be as follows:

6.9.1 Installation of Bedding and Pipe. After completion of the trench excavation and proper preparation of the foundation, six inches (6") of bedding material shall be placed on the trench bottom for support under the pipe and compacted. Bell holes

shall be dug deep enough to provide a minimum of two inches (2") of clearance between the bell and bedding material.

All pipe shall be installed in such a manner as to ensure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade, and the joint is made, the bedding material shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

If approved by the District, fines from the trench wall and soil pile may be used to provide uniform support for the pipe. No rock or stone larger than allowed by the sieve analysis, or any other detrimental substance, shall be placed closer to the pipe than six inches (6"). The District reserves the right to require the use of select bedding material at any time.

For ductile iron and polyvinyl chloride pipe, the limits of bedding shall be from six inches (6") below the bottom of the pipe to twelve inches (12") above the top of the pipe.

6.9.2 Bedding Material. The bedding material shall be a clean squeegee sand free of corrosive properties and shall conform to the following gradation limits when tested by means of laboratory sieves:

6.9.2.1 Squeegee Sand.

Sieve Size	Total Percent Passing by Weight
3/8 Inch	100
No. 200	0 – 5

6.9.2.2 Foundation Material. Foundation material shall be uniformly graded washed rock conforming to the sieve analysis below. A minimum of twelve inches (12") of foundation material shall be placed below the pipe to the trench bottom.

Sieve Size	Total Percent Passing by Weight
2 Inch	95 – 100
1/2 Inch	10 – 30
#4	0 – 5

6.9.2.3 Flowable Fill. At the District's option, utility trench backfill meeting the requirements in the table below may be used in lieu of native backfilling in any excavation regardless of width or depth. Concrete slurry type full depth backfill will not be allowed within the public right-of-way. Compaction and testing of utility trench backfill will not be required if material meeting the following specification is used

Ingredient	lbs./cubic yard
Cement	42 (0.47 sack)
Water	325 (43 gallons or as needed)
Course Aggregate (Size # 57)	1700
Sand (ASTM C-33)	1845

If approved by the District, fines from the trench wall and soil pile may be used to provide uniform support for the pipe. No rock or stone larger than that allowed by the sieve analysis, or any other detrimental substance, shall be placed closer to the pipe than six inches (6"). The District reserves the right to require the use of select bedding material at any time.

6.10 Backfill and Compaction. No section of Collection Main, Collection Main appurtenance or Collection Main structure shall be backfilled until the Inspector has examined and approved that section of the installation. Backfill is defined as the material placed from twelve inches (12") above the pipe to grade. All backfill and compaction within the public right-of-way shall be in conformance with the excavation permit required by El Paso County or other entity which is the owner of the right-of-way (the "controlling authority").

Satisfactory compaction reports shall be submitted to the controlling authority prior to the completion of the project. The controlling authority shall specify the exact number and locations of tests required. Railroad, airport and other private or special situations will require investigation and research to determine exact requirements and regulations.

All water required for backfill and compaction operations can be furnished from a designated fire hydrant near the project. The Developer will be charged in accordance with the current cost for construction water. However, the Developer will be responsible for furnishing all required personnel, valving, hose and other equipment needed to deliver the water to the desired location on the project. The District will designate the fire hydrant to be used and must be notified when water is required.

6.11 Cleanup. Upon completion of the work, all rubbish, unused materials, concrete forms and other like materials shall be removed from the job site. All excess excavation shall be disposed of as specified and the areas shall be left in a state of order and cleanliness.

6.12 Surface Restoration and Maintenance.

6.12.1 Surfaced Areas. The Developer shall obtain the necessary permits and remove pavement and road surfaces as part of the trench excavation. As a minimum, cuts in a public right-of-way shall be required to be restored per the conditions of the excavation permit issued by the District Engineer or the controlling authority. The Developer shall restore all pavement, sidewalks, curbing, gutters or other surface structures removed or disturbed as part of the work to a condition meeting the

standards of the governing authority, and shall furnish all incidental labor and materials.

6.12.2 Un-surfaced Areas. All surface areas cuts shall be restored to a condition equal to that prior to construction.

6.12.3 Damaged Surfaces and Property. If any pavement, street, shrubbery, sod, rock, fences, poles or other property and surface structures have been damaged, removed or disturbed by the Developer, whether deliberately or through failure to carry out the requirements of the controlling agency or the specific directions of the District, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced or repaired, to the original condition, at the expense of the Developer.

End of Article.

ARTICLE 7. WASTEWATER SYSTEM PIPE LAYING STANDARDS

7.1 Handling of Materials. Pipe and fittings shall be loaded and unloaded by lifting so as to avoid shock or damage. Under no circumstances shall such material be dropped. If, however, any part of the coating or lining is damaged, the replacement or repair of the damaged pipe shall be done to the satisfaction of the District. Any pipe or fittings that are not acceptable to the District shall be removed from the job site immediately. All pipe handling equipment and pipe handling methods shall be approved by the District in conjunction with the methods and equipment recommended by the manufacturer.

7.2 Inspection and Preparation of Pipe and Fittings. Before placing pipe in the trench, each pipe or fitting shall be thoroughly cleaned of all foreign material, kept clean at all times thereafter, and carefully examined for cracks and other defects before installation. Bell ends and spigot ends are to be examined with particular care. Defective pipe or fittings shall be laid aside for inspection by the Inspector who will prescribe corrective repairs or rejection.

All lumps, blisters and excess coatings shall be removed from the bell-and-spigot end of each pipe and fitting, and the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean, dry and free from oil and grease before the pipe or fitting is installed. Dirt and any other material must be removed from the barrel of the pipe before installation.

7.3 Cutting and Fitting of Pipe. Pipe shall be cut, whenever necessary, to conform to location of fittings, line or grade. All cuts shall be straight and true, and in a workmanlike manner so as to leave a smooth end without damaging the pipe or its cement lining. All burrs shall be removed from the ends of cut pipe, and the end lightly rasped or filed. All tools used in cutting pipe shall be approved by the District.

7.3.1 Pipe Joint Lubrication. Joint lubricant shall be supplied by the pipe manufacturer, and approved by the District. Joint lubricant shall be non-toxic and water soluble.

7.3.2 Pipe Alignment and Grade. In laying pipe, the intent is to lay to set line and grade. Fittings and manholes shall be installed at staked locations and elevations.

When laying pipe on curves, the intent is to lay to the staked alignment. The pipe shall be kept in alignment by placing all deflecting joints or bends on the curve. Short lengths shall be used as necessary to accomplish the curvature without exceeding individual deflections specified. The maximum deflection at any joint shall not exceed one-half (1/2) of the manufacturer's recommendation.

The engineer may use eleven and one-fourth degree (11.25°) bends on a case by case basis as approved by the District. These bends shall be shown on the design plans and staked in the field. At no time shall eleven and one-fourth degree (11.25°) bends be used to reduce the radius below the minimum of one hundred feet (100').

Any changes in alignment and grade must be authorized by the Inspector and shall be approved by the District. Pipe shall be laid upgrade with the bell ends facing in the direction of laying, unless directed otherwise by the District. Where pipe is to be

installed on a grade of ten percent (10%) or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe upgrade

7.3.3 Temporary Bulkheads. Whenever the pipe is left unattended, temporary plugs shall be installed at all openings to isolate existing pipelines from new construction until accepted by the District. Temporary plugs shall be of such design as to prevent water, debris, children and animals from entering the pipe. All temporary plugs shall be provided by the Developer and approved by the Inspector.

7.3.4 Frost. No pipe or appurtenant structure shall be installed upon a foundation into which frost has penetrated or at any time when the Inspector deems there is danger of ice formation or frost penetration at the bottom of the excavation. No pipe or appurtenant structure shall be installed unless backfilling can be completed before the formation of ice and frost.

7.3.5 Lowering of Material Into Trench. Proper implements, tools and facilities satisfactory to the District shall be provided and used by the Developer for the safe and convenient performance of the work. All pipe, fittings and manholes shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to Wastewater Main materials and their protective coatings and linings. Under no circumstances shall Wastewater Main materials be dropped or dumped into the trench.

If damage occurs to any pipe, fitting, manhole or Wastewater Main accessories in handling, the damage shall be immediately brought to the attention of the Inspector. The Inspector shall prescribe corrective repairs or rejection of the damaged items.

7.4 Laying of Pipe. All pipe laying methods shall conform to the manufacturer's recommendations for laying pipe. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into it, the Inspector may require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size shall be placed over each end and left there until the connection is to be made to the adjacent pipe.

As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and the pipe forced home with a slow steady pressure without jerky or jolting movements and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space. No wooden blocking shall be left at any point under the pipeline.

No pipe shall be laid when, in the opinion of the District, trench conditions are unsuitable.

7.5 Ductile Iron Pipe.

7.5.1 Push-on Joint. Immediately before two (2) lengths of ductile iron pipe, the inside of the bell, and the outside of the spigot end, and the rubber gasket shall be thoroughly

cleaned to remove oil, grit, excess coating and other foreign mater. The rubber shall be flexed inward and inserted in the gasket recess of the bell socket. Since different manufactured brands of pipe require different types of gaskets, the Developer shall exercise caution to ensure that the correct type of gasket is used.

A thin film of approved gasket lubricant shall be applied to either the inside face of the gasket, or the spigot end of the pipe, or both.

The spigot end of the pipe shall be placed in the bell end with care to prevent the joint from contacting the ground. Pipe furnished without a depth mark on the spigot end shall be marked before assembly to assure insertion to fill depth of the joint. The pipe shall be kept in straight alignment and the joint shall be completed by pushing the pipe home with a slow, steady pressure without jerky or jolting movements by using a forked took or jack-type tool or other device approved by the District Engineer. If pipe is pushed home with a backhoe bucket, a wooden shield must be placed between the backhoe bucket and the end of the pipe. The spigot end of field cut pipe lengths shall be filed or ground to resemble the spigot end of such pipe as manufactured.

<u>Bolt Size</u>	<u>Ft. Lbs.</u>
5/8"	40-60
3/4"	75-90
1"	85-100
1-1/4"	105-120

Nuts spaced one hundred and eighty degrees (180°) apart shall be tightened alternately in order to produce equal pressure on all parts of the gland.

7.6 Polyvinyl Chloride Pipe. Upon completion of joining push-on joint pipe, an inspection shall be made to assure that the gasket is correctly aligned in the gasket recess of the bell socket and not twisted or turned.

When laying pipe on curves, the intent is to lay to the staked alignment. The pipe shall be kept in alignment by placing all deflecting joints or bends on the curve. Short lengths shall be used as necessary to accomplish the curvature without exceeding individual deflections specified. The maximum deflection at any joint shall not exceed one-half (1/2) of the manufacturer's recommendation.

7.6.1 Elastomeric Gasket Joint. Immediately before joining two (2) lengths of-PVC pipe, the inside of the bell or coupling, the outside of the spigot and the elastomeric gasket shall be thoroughly cleaned to remove all foreign material.

Lubrication of the joint and rubber gasket shall be done in accordance with the pipe manufacturer's specifications.

Care shall be taken so that only the correct elastomeric gasket, compatible with tile annular groove of the bell, is used. Insertion of the elastomeric gasket in the annular

groove of the bell or coupling must be in accordance with the manufacturer's recommendations. Pipe that is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint.

The spigot and bell or coupling shall be aligned and pushed until the reference line of the spigot is flush with the end of the bell or coupling. Pushing shall be done in a smooth, steady motion. Upon completion of joining the pipe, an inspection shall be made to assure that the gasket is correctly aligned in the gasket recess of the bell socket and not twisted or turned.

7.6.2 Pipe Storage. Pipe stored outside and exposed to sunlight for more than thirty (30) days shall be covered with an opaque material such as canvas. Clear plastic sheets shall not be used to cover pipe. Air circulation shall be provided under the covering.

7.6.3 Handling of Pipe in Cold Weather. PVC pipe has reduced flexibility and impact resistance as temperatures approach and drop below freezing. Extra care should be used in handling and installing PVC pipe during cold weather.

7.7 Manholes. Manholes shall be precast and shall be constructed in accordance with these Specifications. Precast manholes shall be made watertight after installation or construction by use of approved methods. All dimensions, locations and elevations shall be coordinated by the Developer and Developer and meet the requirements of the District.

All manholes shall be constructed to meet H.S. 20-44 traffic loading conditions and 300 P.S.F. surcharge load.

The District may require installation of a precast manhole base when weather or field conditions warrant.

The base shall be placed on compacted or undisturbed earth. A reducing ring or cone shall be set on an eight inch (8") adjustment ring.

All joints, manhole rings and cones shall be made watertight by installation of Ram-Nek, or equal material in the joint.

Barrels shall be wrapped with RU116 - RUBR-NEK External Joint Wrap (or equivalent) and coated.

The manhole ring shall be set on the cone on a full bed of Ram-Nek.

7.8 Bridging and Encasement of Pipe. Under certain conditions, when the Wastewater Main is to be installed over or under an existing or proposed utility or structure, the District may require bridging or encasement of the proposed wastewater pipe.

If, in the opinion of the District Engineer, there exists the possibility of settlement of the pipe being installed over an existing utility or structure, then bridging of the pipe shall become necessary. This condition shall also apply to other underground utilities or structures being

installed over existing Wastewater Mains. The District Engineer shall determine the size and location of the concrete bridging.

Under certain conditions, the District may require complete encasement of Wastewater Mains with concrete. The District Engineer shall determine the size, length and location of these encasements.

7.9 Encasement of Sleeve Pipe. Wherever it is necessary to provide an encasement or sleeve for the Wastewater Main, the Wastewater Main shall not be inserted into the encasement or sleeve pipe without providing insulating skids for each joint of the Wastewater Main. Insulating skids shall be of a type such as the “P.S.I. custom pull on (Model C)” or equivalent. Encasement pipes shall be protected both inside and out with corrosion resistant materials having a bituminous base. Encasement or sleeve pipe size, length, type and sidewall thickness will be determined by the District.

7.10 Corrosion Protection Systems. The determination of the corrosiveness of the soil which a Wastewater Main passes through and the need for protection will be made and determined by the District. If metal pipe is required to be used, it must be protected against corrosion. All required corrosion protection shall be provided by the Developer and the material shall be made up of all or part of the following:

7.10.1 Polyethylene Encasement Material. The pipe, fittings, and appurtenances shall be wrapped in polyethylene, in accordance with Standard Drawing No. W-6. Polyethylene material shall conform with Standard Drawing No. W-6.

7.10.2 Coatings. Metal pipe and other appurtenances may require protective corrosion resistant coating. The following are approved for exterior use only:

- Roskote A-51 Mastic
- American Blackline Product #101 – Non-Fibrous Roof Coat
- Asphaltic Base Roofing Tar

Coatings must be of a consistency that is applicable by brush and cannot contain asbestos fiber. In all cases the Developer must provide the Inspector an MSDS on the product to be used prior to application.

7.10.3 Bonding Joints. All pipelines that require protection will be bonded at every joint and/or coupling. Bonding shall be accomplished by thermo-welding straps or wire across each joint or coupling. The Developer shall furnish all material required for bonding.

7.10.4 Anodes. Installation of seventeen pound (17 lb) magnesium anodes may be required for additional protection to the pipeline. All anodes shall be furnished and installed by the Developer in conformance with these Specifications.

7.10.5 Test Stations. Required electrolysis test stations will be provided and it shall be the Developer’s responsibility to install the test station.

7.10.6 Dissimilar Materials. Cathodic protection and insulation shall be installed as required by the District. Particular care shall be taken to insulate between dissimilar materials.

7.10.7 Insulating Joints. Whenever it is necessary to join pipe of dissimilar metal, or when designated by the District, a method of insulating against the passage of electrical current, approved by the District Engineer, shall be provided. Special care shall be exercised during the installation of these joints to prevent electrical conductivity across the joints.

7.10.8 Polyethylene Encasement Material. Whenever designated by the District, the metallic pipe and all appurtenances shall be wrapped in polyethylene. The polyethylene encasement shall prevent contact between the pipe and bedding material, but is not intended to be a completely air-tight and water-tight enclosure.

Prolonged exposure to sunlight will eventually deteriorate polyethylene film. Exposure to sunlight shall be kept to a minimum.

The polyethylene shall have a minimum thickness of eight (8) millimeters and conform to the Materials Specification in MS-13 from AWWA C105.

A two inch (2") wide, ten (10) millimeters thickness polyethylene pressure-sensitive tape shall be used to close seams, secure to pipe or hold overlaps.

Damage to polyethylene wrapped pipe in the trench prior to and during backfill shall be repaired to the satisfaction of the District.

7.10.9 Insulating from Concrete. Areas of metal pipe and appurtenances which are to be in contact with concrete bridging blocks or encasement shall be protected against corrosion prior to installing concrete. The following types of protection systems are acceptable:

- Application of a cold-applied coating;
- Application of a cold-applied primer and corrosion resistant pipe wrap with a minimum fifty percent (50%) overlap similar to the primer and pipe wrap manufactured by the Protecto Wrap Company.

7.10.10 Other proposed protection systems may be accepted following review and approval of the District and the District Engineer.

7.10.11 Other proposed protection systems may be accepted following review and approval of the District and the District Engineer.

7.11 Cleaning. Prior to acceptance of each section of Collection Main (from manhole to manhole), the Developer shall, at Developer's expense, jet rod and/or vac each section. Larger Collection Mains shall be cleaned by other appropriate methods approved by the Inspector. All dirt and

debris shall be prevented from entering the active Wastewater System by means of watertight plugs or other methods approved by the Inspector.

7.12 Compaction Tests. Compaction tests at the expense of the Developer shall be conducted by an independent testing laboratory and pursuant to Article 5 of these Specifications. One test shall be conducted for each manhole run or every four hundred feet (400’), whichever is greater, or as otherwise required by El Paso County or the controlling authority. Copies of each compaction test report will be given to the Inspector prior to approval.

7.13 Infiltration and Exfiltration Tests. Infiltration and exfiltration tests conducted by and at the expense of the Developer shall be performed on 100% of the project.

The allowable infiltration or exfiltration rate shall not exceed one hundred (100) gallons per inch of diameter, per mile of pipe, per day to include manholes.

7.13.1 Air Tests. The Developer shall perform these tests with suitable equipment specifically designed for air testing sewers. A suitable gauge shall be used for readings not to exceed fifteen (15) PSI maximum reading. The gauge shall be located at the surface.

The air test shall be made while the Sewer Line and manholes are clean. The pipe, or section of pipe to be tested, may be wetted before the air test. The line shall be plugged at each manhole with pneumatic balls. Low pressure air shall be introduced into the plugged line until the internal air pressure reaches four (4) PSIG greater than the average back pressure of any ground water pressure that may submerge the pipe. At least two (2) minutes shall be allowed for the air temperature to stabilize before readings are taken and the tuning started.

The portion of Collection Main (including stubs) being tested shall pass if it does not lose air at a rate to cause the pressure to drop from three and six-tenths (3.6) to three (3.0) PSIG (greater than the average back pressure of ground water that may submerge the pipe) in less time than listed below:

PIPE DIAMETER (Inches)	MINIMUM ALLOWABLE TIME (Minutes & Seconds) 3.6 – 3.0 PSIG Pressure
4	0-50
6	1-10
8	1-40
10	2-00
12	2-20
15	3-00
18	3-40
21	4-10
24	4-50

If the installation fails this test, the testing equipment shall be used to determine the location of the pipe leak. All service plugs shall be secured in place to prevent displacement during testing operations.

If results of these tests are not satisfactory, the Developer, at his/her expense, will make the necessary repairs or pipe replacement until the Inspector is satisfied that the leakage requirements are being met.

- 7.14 Deflection Test.** Flexible conduits shall be tested by the Inspector. Representative samples will be tested to ensure initial deflection does not exceed five percent (5%) of the inside diameter of the pipe. Failure of representative sections to pass the deflection limits will result in additional sections being tested at the discretion of the Inspector.

If the results of this test are not satisfactory, the Developer at his/her expense, will make the necessary repairs or pipe replacement until the Inspector is satisfied that the deflection requirements are being met.

- 7.15 Closed Circuit Television (T.V. or CCTV) Inspection.** The Developer is responsible for providing a closed circuit television inspection of the installation of the Collection Main and any appurtenances thereto at the completion of construction and prior to District acceptance. The Inspector shall inspect, by closed circuit television, all new Collection Mains for deficiencies prior to any service connections being made.

The Inspector may require that the Developer add water to the pipeline prior to the T.V. inspection to help identify deficiencies. All deficiencies identified during the T.V. inspection shall be promptly corrected by the Developer in accordance with these Specifications.

A CD-ROM of the CCTV inspection shall be made available to the District upon completion.

- 7.16 Vacuum Testing for Concrete Wastewater Manholes.** All manholes shall be vacuum tested with District staff present prior to the CCTV inspection.

7.16.1 All lift holes and any pipes entering the manhole are to be plugged and sealed. A vacuum will be drawn and the vacuum drop over a specified time period is used to determine the acceptability of the manhole. See Sections 7.16.4 and 7.16.5, below.

7.16.2 The values recorded are applicable only to the manhole being tested at the time of testing and the recorded information shall be reported on a vacuum testing result form.

7.16.3 Preparation of the Manhole.

7.16.3.1 Care shall be taken to affect a seal between the vacuum base and the manhole rim. Pipe plugs shall be secured to prevent movement while the vacuum is drawn.

7.16.3.2 All pipes entering the manhole shall be temporally plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into the manhole.

7.16.4 Typical Field Test Procedure.

7.16.4.1 The test head gauge shall be placed at the top of the manhole or in accordance with the manufacturer's recommendations.

7.16.4.2 A vacuum of ten inches (10") of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop to nine inches (9") of mercury.

7.16.4.3 The manhole shall pass if the time for the vacuum reading to drop from ten inches (10") of mercury to nine inches (9") of mercury meets or exceeds the values indicated in the table below.

7.16.4.4 If the manhole fails the initial test, necessary repairs shall be made by a submitted approved method to the Inspector. The manhole shall then be retested until a satisfactory test is obtained.

7.16.5 The minimum test time for all manholes is sixty (60) seconds. Greater lengths of time shall be at the discretion of the Inspector.

7.17 Manhole Rim Elevations. All manholes constructed shall have rim elevations set at final street, trail or sidewalk grades, except in non-traffic areas where the rims shall be set at six inches (6") above the existing ground. Following the construction of curb and gutter in new streets or completion of manholes in streets with existing curb and gutter, the Engineer will measure and certify all manhole rim elevations for proper grade, at no time shall the total of grade adjustment rings exceed eight inches (8"). Any manhole rims that do not meet the following policy for manhole adjustment will be promptly adjusted, except where State and Federal jurisdiction supersedes.

7.17.1 Responsibility. The applicant requesting approval for extension of Collection Mains shall be responsible for ensuring wastewater manholes are adjusted to final paving grade and are cleaned of dirt and construction debris. The applicant shall also ensure:

- That such work is completed within the time periods noted below.
- That all work is completed in compliance with these Specifications and all District requirements.
- That such work has been inspected by the District.
- That such work will be free of mechanics liens, judgment liens or other valid and enforceable liens.

7.17.2 Required Adjustments. Manhole adjustments and cleaning must be completed within sixty (60) days following placement of paving. If street paving is not completed or manholes are not adjusted within one (1) year of the Conditional Acceptance date, the District may extend the warranty period for one (1) additional year during which manhole adjustments must be completed as indicated above.

7.17.3 Location of Manholes to be Adjusted. The District will attempt to provide surface location of manholes requiring adjustment within two (2) working days of request for location.

7.17.4 Opening and Entry Permit and Inspection. The person or corporation performing the adjustment work must request access to any manhole from the District at least two (2) working days prior to beginning work and must notify the Inspector when the work is ready for inspection. The Inspector will perform the inspection within two (2) working days of the request for inspection and will provide the permittee a notice of acceptance or rejection of the work. Correction of rejected terms must be completed within the time frame noted by the Inspector.

7.17.5 Failure to Perform Adjustments. Failure of the applicant to adjust the manholes in accordance with the requirements set forth herein will result in the District exercising any combination of the following rights:

- Withholding approval of additional connection permits within the project area;
- Extension of the warranty period until adjustments are completed; and/or
- Performing the necessary manhole adjustments and cleaning work by contract or with District personnel and billing the expense plus administration, legal, overhead and other applicable expenses to the applicant.

7.18 Service Line Inspection. Service stubs and sewer lines shall not be backfilled until approval is given by the Inspector. Any deficiencies noted by the Inspector shall be corrected by the Developer prior to calling for a re-inspection. The Developer will be notified in writing by the Inspector of all deficiencies requiring correction.

End of Article.

ARTICLE 8. WASTEWATER SERVICE STANDARDS

- 8.1 Wastewater Taps.** No wastewater taps shall be made unless property corners are clearly marked so measurements of taps can be made at the time of tapping. All four-inch (4") wastewater Service Lines must be connected to a Collection Main and are not allowed to tie into manholes. Services larger than four inches (4") must be reviewed and approved by the District's Engineer.
- 8.2 Excavations.** Excavation of the tapping hole is the responsibility of the Developer.
- 8.3 Abandoning Existing Connections.** Where an existing Wastewater Service Line is to be abandoned, the Property Owner shall be responsible for any and all expenses. The Developer shall expose the connection to be abandoned two feet (2') inside the property line unless otherwise specified by the District. Services found to be unacceptable shall be capped at the Collection Main. The District shall inspect the work prior to backfilling of the excavation. If a service stub-out is over five (5) years old, the District may elect to have it removed or abandoned in place at the expense of the Property Owner.
- 8.4 Individual Service Pumps.** Where conditions require the external installation of individual pumps to service a residence, building or structure, the Developer shall submit to the District a set of shop drawings detailing the installation, which shall include:
- 8.4.1** A site map showing the location of all the facilities to be installed, including the location of the tap to the Collection Main; and
 - 8.4.2** Equipment to be installed, including the number and type of pumps, controls, alarms and valves.
- 8.5 Wastewater Service Line Ditches.** Wastewater Service Line ditches must enter lots as close to ninety degrees (90°) to the street as is practical and not at an extreme angle unless otherwise approved.
- 8.6 Inline Wye.** Wastewater Service Lines shall be constructed with an approved Wastewater Service Inline Wye.
- 8.7 Installation Method.** All Wastewater Service Lines shall be installed using the same methods as the Collection Main.
- 8.8 Slope.** Wastewater Service Lines shall be installed at the following minimum slopes:
- | | |
|-----------------|------------------------|
| 4" PVC | 2.08% or 1/4" per foot |
| 4" Ductile Iron | 1.04% or 1/8" per foot |
| 6" Pipe | 1.04% or 1/8" per foot |
- 8.9 Alignment.** Changes in alignment for Service Lines shall be accomplished with preformed bends not to exceed forty-five degrees (45°). When changes in direction exceed forty-five degrees (45°), a two foot (2') section of pipe shall separate the fittings necessary to make the

needed change of direction. All services shall be extended ten feet (10') inside the property line or easement line and be marked with a two by four (2x4) post.

- 8.10 Cleanouts.** All Wastewater Service Lines shall have a cleanout every one hundred feet (100'). All cleanouts shall be constructed with standard fittings and have a screw cap located at the ground or paving surface.

Cleanouts must be five feet (5') away from the foundation and must be located directly above the Service Line. Double cleanouts are necessary if spacing between cleanouts exceeds one hundred feet (100'). Maximum spacing for double cleanouts is two hundred feet (200').

- 8.11 Connecting Clamps.** All Wastewater Service Line connecting clamps shall have the "UPC" designation and be made for the pipeline materials used.

8.12 Repair and Replacement of Existing Service Lines.

- 8.12.1 Responsibility.** The Property Owner is responsible for the repair and maintenance of the Wastewater Service Line from the resident, building or structure to the Collection Main.

The Property Owner or Developer shall make the necessary excavations and barricade all excavations in accordance with the barricading instructions of the District, make the necessary repairs and contact the District for inspection at (719) 495-8188.

8.12.2 Surface Restoration and Maintenance.

- 8.12.2.1 Surfaced Areas.** The Developer shall obtain the necessary permits and remove pavement and road surfaces as part of the trench excavation. At a minimum, cuts in a public right-of-way shall be required to be restored per the conditions of the excavation permit issued by the controlling authority.

The Developer shall restore all pavement, sidewalks, curbing, gutters or other surface structures removed or disturbed as part of the work to a condition meeting the standards of the governing authority and shall furnish all incidental labor and materials.

- 8.12.2.2 Unsurfaced Areas.** All surface cuts shall be restored to a condition equal to that prior to construction.

- 8.12.2.3 Damaged Surfaces and Property.** If any pavement, street, shrubbery, sod, rock, fences, poles or other property and surface structures have been damaged, removed or disturbed by the Developer, whether deliberately or through failure to carry out the requirements of the controlling agency or the specific directions of the District, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced or repaired, to the original condition, at the expense of the Developer.

End of Article.

ARTICLE 9. WASTEWATER SYSTEM MATERIALS STANDARDS

9.1 Polyvinyl Chloride (PVC) Pipe Elastomeric Gasket Joint – 4 inch Through 24 inch Diameter.

9.1.1 General. All polyvinyl pipe shall be manufactured in accordance with ASTM Standard D3034, “Polyvinyl Chloride (PVC) Sewer Pipe and Fittings”, and ASTM Standard F679 “Polyvinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings” with the additional requirements or exceptions set forth herein.

9.1.2 Size of Pipe. These Specifications shall apply to polyvinyl chloride pipe in four inch (4”), six inch (6”), eight inch (8”), ten inch (10”), twelve inch (12”), fifteen inch (15”) and eighteen inch (18”) nominal diameters. Pipes larger than eighteen inch (18”) diameter shall be reviewed and approved on a case by case basis by the District.

9.1.3 Joint Type. Pipe joints shall be made using an integral bell with an elastomeric gasket push-on type joint or using machined couplings of a sleeve type with rubber ring gaskets and machined pipe ends to form a push-on type joint.

9.1.4 Class and Type. All sizes of pipe shall be SDR35 or PS 46.

9.1.5 Pipe Length. Each length of pipe shall be a standard laying length of twelve and one-half feet (12.5’).

9.1.6 PVC materials shall be made from class I2364C, 12454C or 12454B virgin compounds as defined in ASTM F679 or A.S.T.M. D3034.

9.1.7 Elastomeric gaskets shall conform to ASTM D32 or ASTM F477.

9.2 Ductile Iron Pipe.

9.2.1 General. All ductile iron pipe shall be manufactured in accordance with AWWA Standard C151, “Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Line Molds, for Water or Other Liquids,” with the additional requirements or exceptions set forth herein.

9.2.2 Size of Pipe. These Specifications shall cover ductile iron pipe in four inch (4”), six inch (6”), eight inch (8”), twelve inch (12”), sixteen inch (16”), twenty inch (20”), twenty-four inch (24”), thirty inch (30”) and thirty-six inch (36”) nominal diameters.

9.2.3 Joint Type. “Push-on Single Gasket” type conforming with applicable requirements of AWWA Standard C111 “Rubber-Gasket Joints for Cast-Iron and Ductile-Iron Pressure Pipe and Fittings.”

9.2.4 Class and Type. Pipe furnished under these Specifications shall conform to the following pressure classes as shown in AWWA Standard C-150, at a minimum:

Size	Pressure Class (PSI)	Equivalent Thickness (In.)
4" Diameter	Class 350	0.25
6" Diameter	Class 350	0.25
8" Diameter	Class 350	0.25
12" Diameter	Class 350	0.28
26" Diameter	Class 330	0.34
20" Diameter	Class 300	0.36
24" Diameter	Class 250	0.37
30" Diameter	Class 200	0.38
36" Diameter	Class 200	0.42

Higher pressure class pipe will be required when the District determines that excessive dead-load or other conditions warrant increased wall thickness.

9.2.5 Pipe Length. Pipe furnished under these Specifications shall have normal laying lengths of either eighteen feet (18') or twenty feet (20').

9.2.6 Material Strength. Iron used in the manufacture of pipe furnished under these Specifications shall have 60/42/10 physicals.

9.2.7 Cement Mortar Lining. Pipe furnished under these Specifications shall have standard thickness cement mortar linings in accordance with AWWA Standard C 104/A21/4, "Cement-Mortar Lining for Ductile-Iron and Gray-Iron Pipe and Fittings for Water."

9.3 Polyethylene Encasement Material.

9.3.1 General. A polyethylene encasement material shall be manufactured in accordance with AWWA Standard C105, "Polyethylene Encasement for Gray and Ductile Case Iron Piping for Water and Other Liquids," with the additional requirements or exceptions set forth herein.

9.3.2 Materials. The raw material used to manufacture polyethylene film shall be Type 1, Class A Grade E-I, in accordance with A.S.T.M. Standard Designation D-1248.

9.3.3 Physicals. The polyethylene film shall meet the following test requirements:

Tensile Strength	1200 PSI minimum
Elongation	300% minimum
Dielectric Strength	800 V/Mil Thickness minimum
Thickness 0.008" (Nominal with minus tolerance. Not exceeding ten percent (10%) of nominal.)	(8) mils minimum

Melt Index

0.4 maximum

9.4 Concrete.

9.4.1 Materials. All cement used shall be Portland Cement acceptable under the “Standard Specifications and Tests for Portland Cement,” ASTM Designation C-150 of the ASTM and conform to the latest A.C.I. 318 building code requirements. Cement used shall be Type II.

9.4.2 Aggregates. All the fine and coarse aggregates shall meet soundness requirements, deleterious substance limits and grading limits as set forth in the latest edition of “Standard Specifications for Concrete Aggregates,” A.S.T.M. Designation C-33. The limits for deleterious substances and physical property requirements of the coarse aggregates shall be selected for the applicable class designation from those listed under severe weathering regions, Table 3, A.S.T.M. Designation C-33. The maximum size aggregate that is practical for the structure design and placing conditions shall be used in the concrete.

9.4.3 Water. The water used in all concrete shall be free from objectionable quantities of silt, organic matter, alkali, salts and other impurities.

9.4.4 Admixtures. An air-entraining agent shall be used in all concrete. The agent used shall conform to “Standard Specification for Air-Entraining Admixtures for Concrete,” A.S.T.M. Designation C-260. The amount of air-entraining agent shall be such as will affect the entrainment of five percent (5%) plus or minus one percent (+ or – 1%) of volume of the concrete.

A water reducing admixture (WRA) may be used unless otherwise noted by the District. The admixture shall conform to ASTM Designation C-494 for Type A, or Type D chemical admixture, shall contain no calcium Chloride and shall be compatible with the cement being used.

9.4.5 The Developer shall be responsible for any difficulties arising or damages occurring as a result of the selection and use of any admixture such as a delay or difficulty in concrete placing or damage to concrete during form removal.

9.4.6 Concrete Quality.

9.4.6.1 All cast-in-place concrete shall have a minimum twenty-eight (28) day compressive strength of three thousand (3,000) PSI. and maximum slump of four inches (4”).

9.4.6.2 All pre-cast concrete shall have a minimum compressive strength of four thousand (4,000) PSI.

9.4.6.3 Unless otherwise directed, the concrete shall be consolidated with suitable mechanical vibrators operating within the concrete. Vibrators shall be so

manipulated as to work the concrete thoroughly around the reinforcement and imbedded fixtures and into corners and angles of the forms. The vibration at any point shall be sufficient to accomplish consolidation, but not prolonged to the point where segregation occurs.

9.4.6.4 Testing. When determined necessary by the District, field control tests consisting of aggregate gradation tests, slump tests, air content tests, and making compression test cylinders, shall be performed by qualified personnel in the presence of the Inspector.

9.5 Concrete Reinforcement.

9.5.1 General. Reinforcements shall be accurately formed and shall be free from loose rust, scale and contaminants which reduce bond.

Unless otherwise shown on the drawings or specified herein, all requirements shall conform to the latest A.C.I. Standard 318 and the Uniform Plumbing Code.

Reinforcements shall be accurately positioned on supports, spacers, hangers or other reinforcements and shall be secured in place with wire ties or suitable clips.

9.5.2 Material. All deformed reinforcing bars shall conform to A.S.T.M. Standard A-615, minimum grade 60.

9.6 Precast Reinforced Concrete Manhole Sections.

9.6.1 General. All precast reinforced manhole sections shall be manufactured in accordance with A.S.T.M. Standard C478, "Precast Reinforced Concrete Manhole Sections", with the additional requirements or exceptions set forth herein.

9.6.2 Size. These Specifications shall cover precast reinforced manhole sections in four foot (4'), five foot (5') and six foot (6') nominal inside diameters.

9.6.3 Joint Type. Manhole joints shall be made using male and female ends so that when assembled they make a continuous and uniform manhole.

9.6.4 Joint Sealant. Manhole joints shall be watertight and tilled with Resilient "O" rings per ASTM C923, "Ram-Neck" or equal.

9.7 24-Inch Diameter Manhole Ring and Cover.

9.7.1 General. All twenty-four inch (24") manhole ring and covers shall be manufactured to meet H-20 traffic load conditions and have a minimum inside ring clearance of twenty-two and one-eighths inches (22-1/8").

9.7.2 Material. All rings and covers shall be cast iron, manufactured in accordance to A.S.T.M. Designation A48, Class 30, or better.

- 9.7.3 The manhole lid shall be drilled with a one-half inch (1/2") hole, six inches (6") off center to the right of the word SEWER.
- 9.7.4 Depending on the location of the manhole the District will require "self-sealing" lids or "self-sealing" bolt down lids. Deater Foundry 1257B or equal.
- 9.7.5 **Manufacturer.** All manhole assemblies shall be stamped with the name and model identification of the approved manufacturer. The following are approved for installation within the Collection System:

<u>Manufacturer</u>	<u>Model No.</u>
D&L Supply Co.	A-1041
Deater Foundry, Inc.	1257

9.8 Steel Pipe Fabrication.

- 9.8.1 **General.** All steel pipe, fittings and specials shall be fabricated in accordance with A.W-W.A. Standard C200, "Steel Water Pipe 6-Inches (6") and Larger," AWWA M-11 Steel Pipe Manual and the requirements as indicated on the drawings.

The District's requirements for nominal diameter of fabricated steel pipe shall be as follows:

- 4-inch through 12-inch - I.D. (Inside Diameter)
- 14-inch through 30-inch - O.D. (Outside Diameter)
- 32-inch and larger - I.D. (Inside Diameter)

Complete shop drawings shall be submitted to the District for approval prior to any fabrication.

- 9.8.2 **Material.** All material used shall be acceptable under the "Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates of Structural Quality," A.S.T.M. Designation A283, Grade C or D. Mill pipe shall meet ASTM A53 or A139.

Steel pipe, fittings and specials shall be fabricated to the sizes, dimensions and shapes as indicated on the drawings. Specified pipe shall be to the nominal inside or outside diameter of the pipe as indicated above. All pipe shall have a wall thickness of at least one-half inch (1/2").

- 9.8.3 **Protective Coatings.** All steel pipe, fittings and specials shall be prepared, primed, lined, coated, painted or wrapped as indicated on the drawings.

End of Article.

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

**APPENDIX B-1
STANDARD DRAWINGS**

STANDARD DRAWINGS

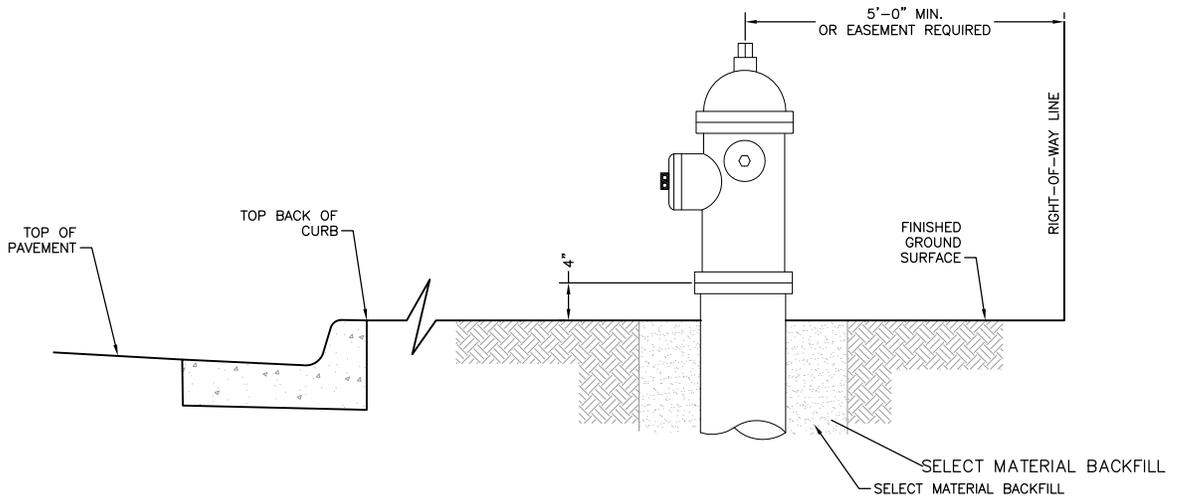
INDEX OF DRAWINGS

WATER

<u>No.</u>	<u>Title</u>
W-1	Fire Hydrant Locations
W-2	Fire Hydrant Installation
W-3	Fire Hydrant Specifications
W-4	Valve Installation and Location
W-5	Valve Box Installation
W-6	Polyethylene Wrap
W-7	Bonding Joint & Anode Installation
W-8	Insulator Installation
W-9	Tracer Wire Installation Details
W-10	Thrust Block Data
W-11	Thrust Blocks Required for Taps
W-12	Typical Trench Cross Section
W-13	Maximum Pipeline Deflection Data
W-14	Pipe Cutting
W-15	Reverse Anchor Detail
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W-17	Pipe Bridging Detail
W-18	Temporary and Permanent Blow Off Assemblies for 6" and 8" Mains
W-19	Temporary and Permanent Blow Off Assemblies for 12" and Larger
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W-21	Pipe Tapping Detail
W-22	Cul-de-Sac Blow Off Detail
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W-24	Applications for Mechanical Joint Restraints
W-25	Restrained M.J. Pipe Length Data
W-26	Pressure Relief Station
W-27	8" Size Pressure Regulator Station
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W-37	Irrigation Service 3/4" and 1" Meter Installation
W-38	1 1/2" and 2" Irrigation Meter Installation
W-39	Utility Service Locations

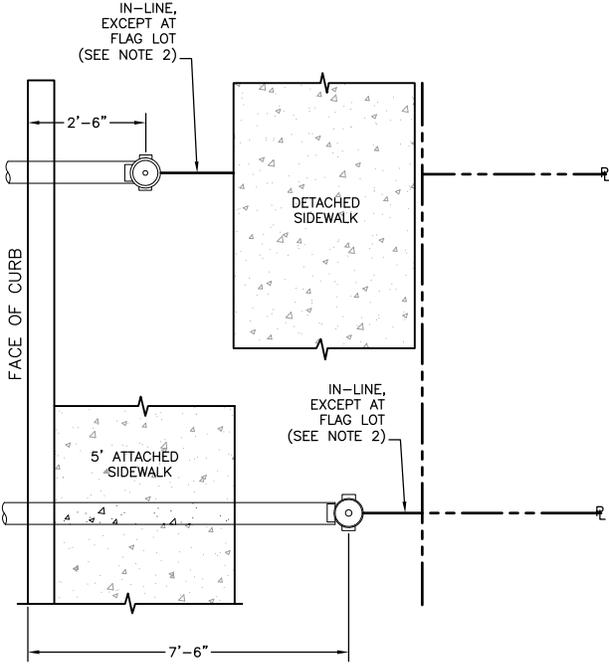
WASTEWATER

<u>No.</u>	<u>Title</u>
WW-1	Pipe Bedding
WW-2	Typical Trench Cross Section
WW-3	Precast Manhole
WW-4	Sanitary Sewer Manhole
WW-5	Manhole Ring and Cover Adjustment
WW-6	Sanitary Sewer Main Clean-out
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WW-8	Typical Utility Locations
WW-9	Pipe Bridging Detail
WW-10	Shallow Sanitary Sewer Line Protection/Encasement
WW-11	Pipe Cutting
WW-12	Polyethylene Pipe Wrap
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WW-14	Maximum Pipeline Deflection Data
WW-15	Grease Interceptor
WW-16	Sand / Oil Interceptor
WW-17	Grease Separator = 250 lbs.
WW-18	Grease Separator = 500 lbs.
WW-19	Kor-N-Seal Boot Detail
WW-20	Utility Service Locations

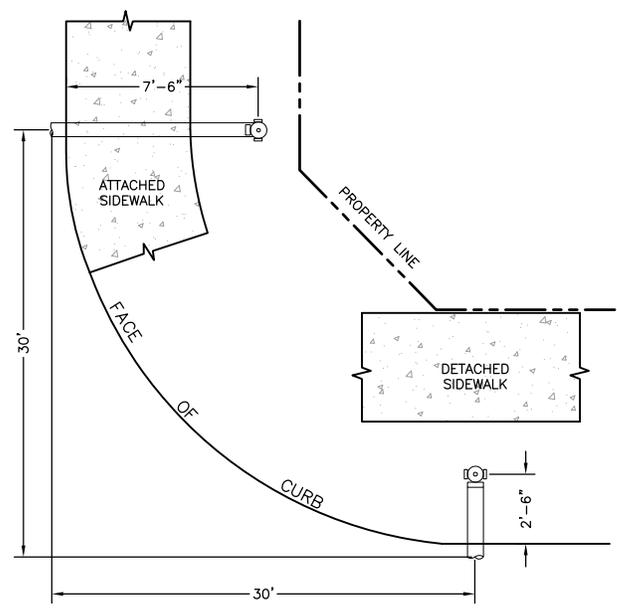


GENERAL NOTES:

1. HYDRANT NOZZLE SHALL BE POSITIONED AT RIGHT ANGLES TO THE CURB. IF NO CURB OR SIDEWALK EXISTS, NOZZLE SHALL BE PLACED AT RIGHT ANGLES TO STREET OR ALLEY.
2. HYDRANTS INSTALLED AT FLAG LOT LINES SHALL BE OFFSET 3' FROM THE LOT LINE (AWAY FROM STEM).
3. HYDRANTS WILL BE PLACED A MINIMUM OF 5.0 FT. FROM ANY UTILITY OR DRAINAGE STRUCTURE.
4. EASEMENTS MUST BE PROVIDED FOR ANY PUBLIC HYDRANT WHICH IS CLOSER THAN 5.0 FT. TO THE RIGHT-OF-WAY LINE.
5. ANY HYDRANTS BEING INSTALLED WITH CONDITIONS OTHER THAN THOSE MENTIONED AND/OR DETAILED BELOW WILL BE REQUIRE SIGNED APPROVAL FROM THE DISTRICT AND THE FIRE DEPARTMENT.



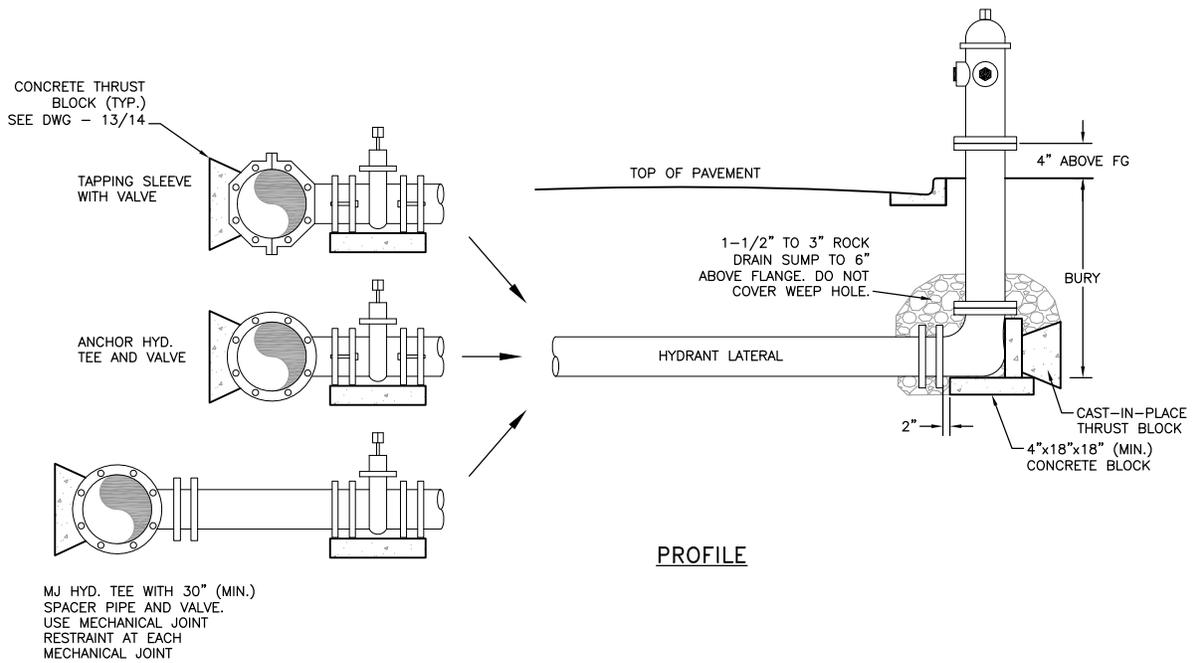
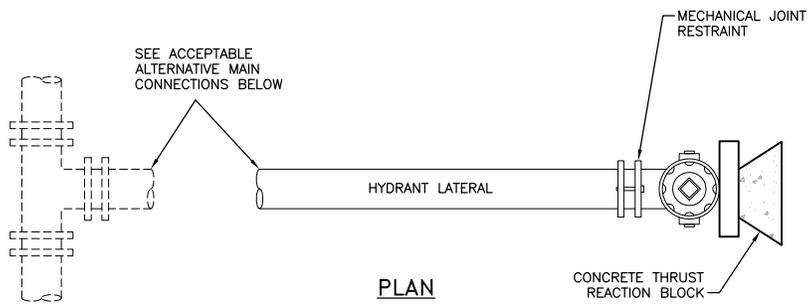
LOT LINE LOCATIONS



CORNER LOCATIONS

FIRE HYDRANT LOCATIONS

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FIRE HYDRANT INSTALLATION

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 Date: JAN 2011
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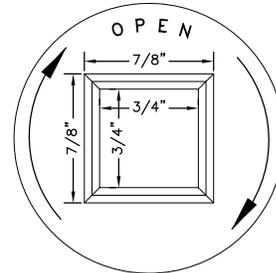
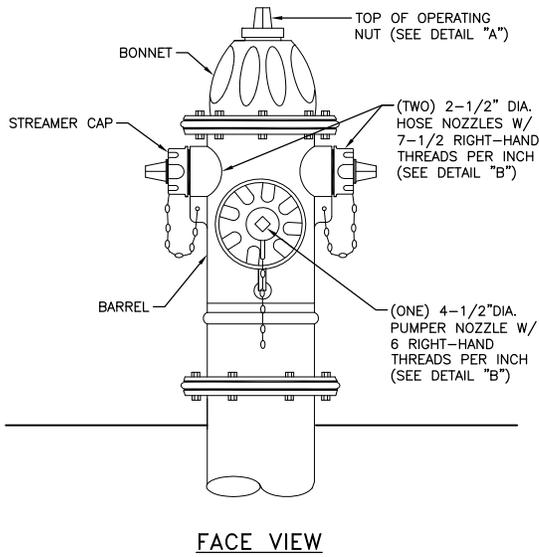
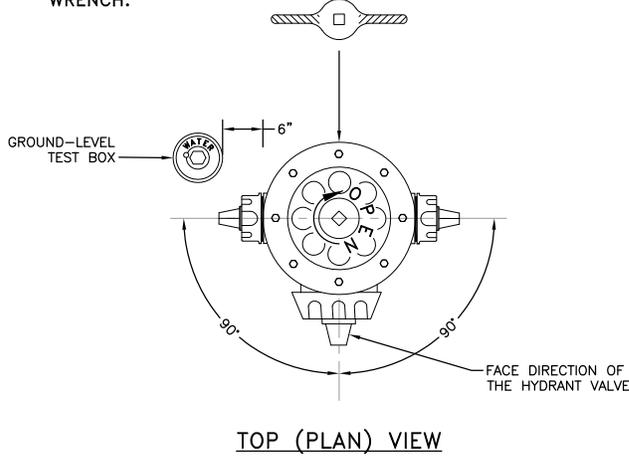
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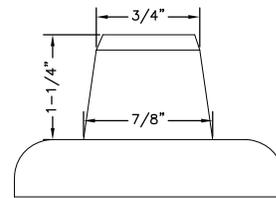
WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-2

TAPERED SQUARE NUT, USE ONLY DEFINITE PURPOSE HYDRANT WRENCH THAT EXACTLY FITS THE NUT. DO NOT USE A GENERIC HYDRANT WRENCH WITH ADJUSTABLE CORNER BOLT. DO NOT USE A CRESCENT WRENCH OR PIPE WRENCH.

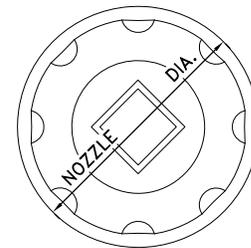


FACE (PLAN) VIEW

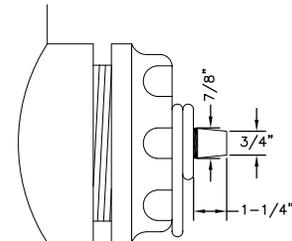


PROFILE

DETAIL "A" - OPERATING NUT



FACE VIEW



PROFILE

DETAIL "B" - NOZZLE DETAIL

FIRE HYDRANT SPECIFICATIONS

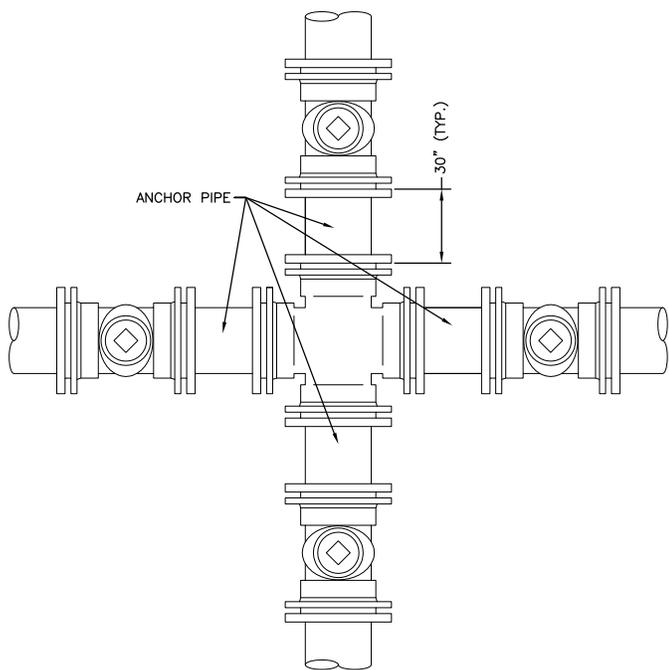
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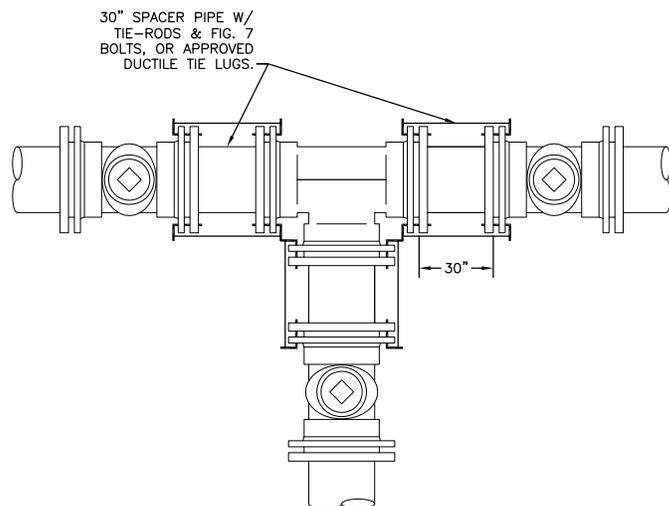
paint brush hills
metropolitan district

WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

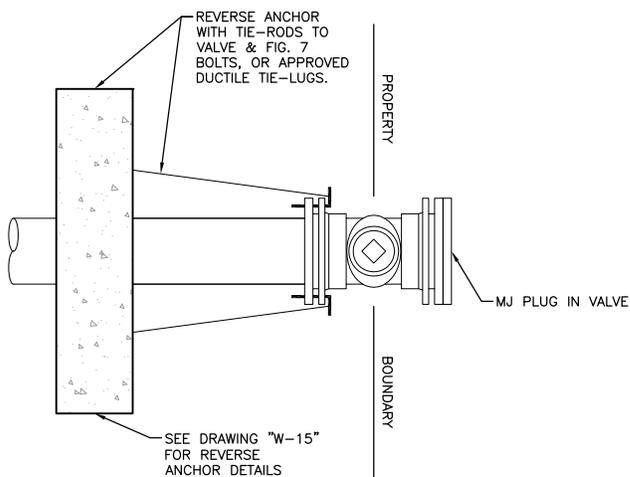
W-3



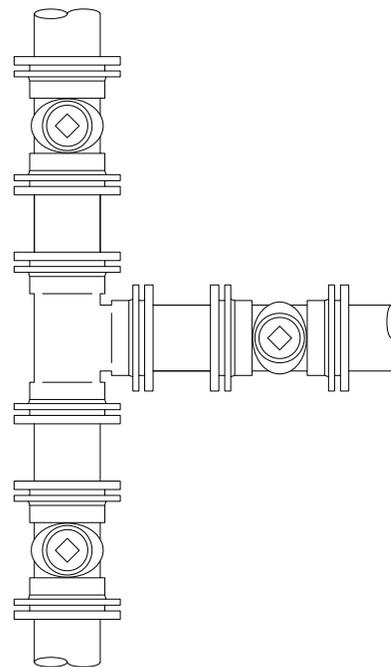
**CROSS OR TEE W/
ANCHOR PIPES**



**CROSS OR TEE W/
SPACER PIPE & TIE-RODS**



**AT END OF LINE USE
REVERSE ANCHOR WITH
TIE BACK RODS**



WITH MJ ANCHOR TEE

GENERAL NOTES:

1. ON ANY VALVE INSTALLATION NEAR A FITTING, THE VALVE SHALL BE ANCHORED BY RODS, REVERSE ANCHOR, AND MECHANICAL JOINT RESTRAINTS. 3/4" ALL-THREAD RODS SHALL BE USED WITH FIG. 7 BOLTS OR APPROVED DUCTILE TIE-LUGS FOR DEAD-END VALVES AND/OR PLUGS. ALL METALLIC COMPONENTS SHALL BE WRAPPED IN POLYETHYLENE TUBING.
2. ANCHOR PIPE OR FOSTER COUPLINGS MAY BE SUBSTITUTED FOR SPACER PIPE AND RODS.
3. THE CONCRETE REVERSE ANCHORS USED SHALL BE SIZED AS INDICATED ON DRAWING "W-15".
4. SEE DRAWINGS "W-24" AND "W-25" FOR APPLICATION OF MECHANICAL JOINT RESTRAINTS.
5. SEE DRAWING "W-5" FOR VALVE BOX INSTALLATION.

VALVE INSTALLATION & LOCATION

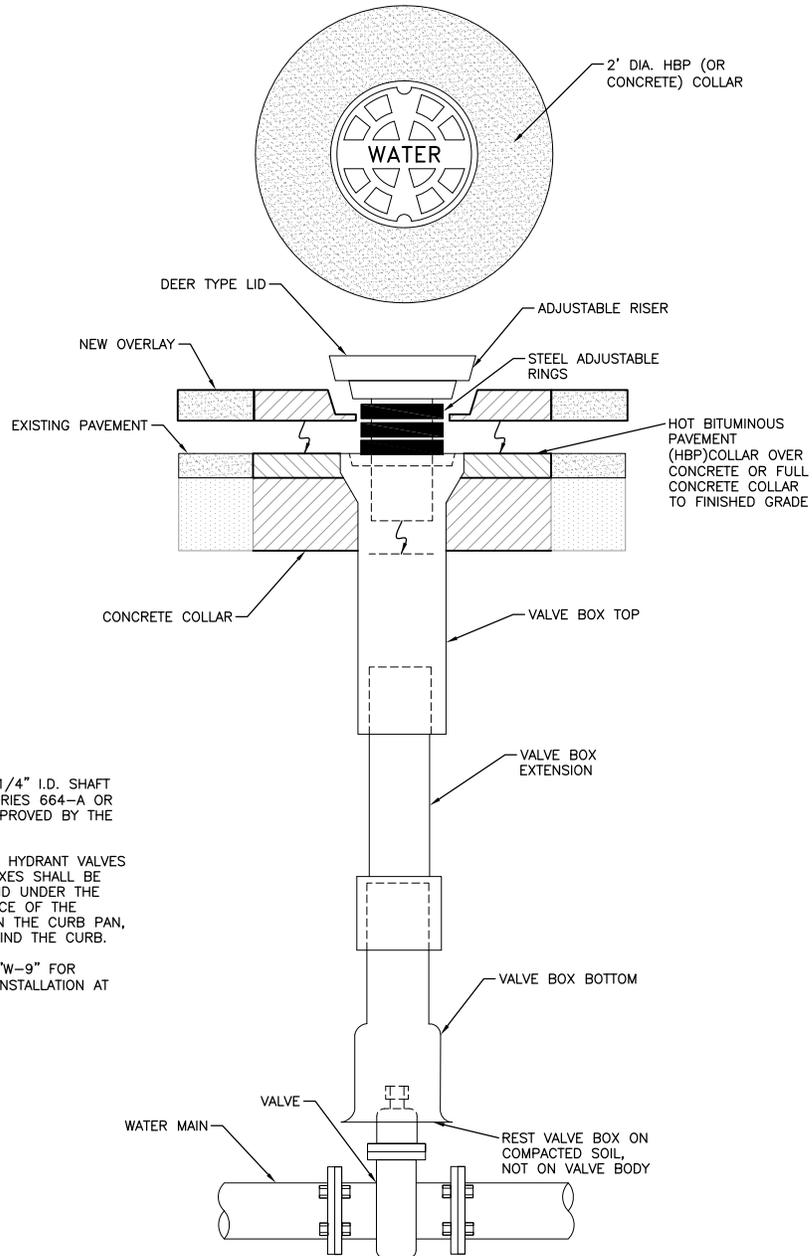
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Revised:
Revised:
Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-4



NOTES:

1. SLIP-TYPE 5-1/4" I.D. SHAFT TYLER PIPE SERIES 664-A OR EQUIVALENT APPROVED BY THE DISTRICT.
2. MAIN AND FIRE HYDRANT VALVES AND VALVE BOXES SHALL BE LOCATED IN AND UNDER THE DRIVING SURFACE OF THE STREET, NOT IN THE CURB PAN, CURB, OR BEHIND THE CURB.
3. SEE DRAWING "W-9" FOR TRACER WIRE INSTALLATION AT VALVE BOXES.

VALVE BOX INSTALLATION

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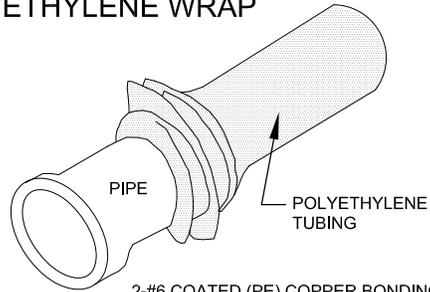
WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-5

FIELD INSTALLATION OF POLYETHYLENE WRAP

STEP 1:

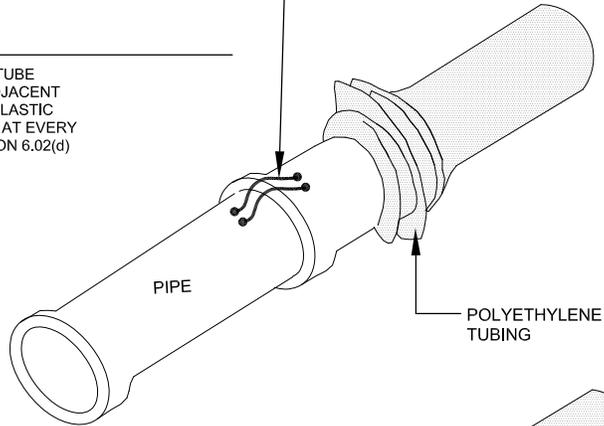
PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO TRENCH.



2-#6 COATED (PE) COPPER BONDING WIRE THERMOWELDED TO PIPE, BOTH ENDS, OR BONDING STRAP THERMO WELDED TO PIPE. NO COMMON WELDS ALLOWED

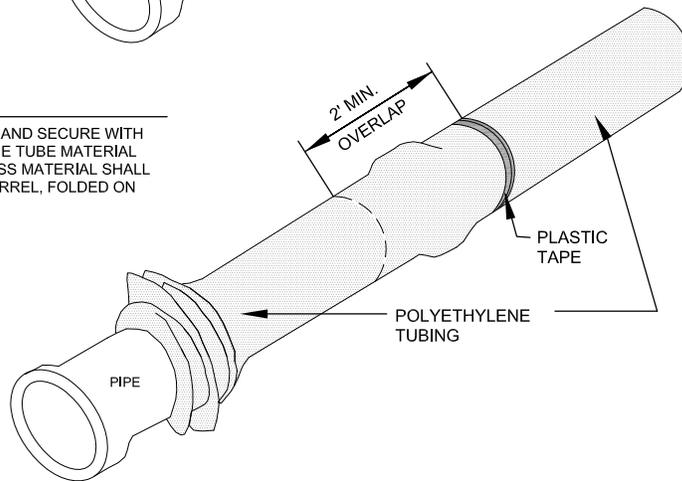
STEP 2:

PULL TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO END AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE. INSTALL BONDING STRAP OR WIRE AT EVERY JOINT OF PIPE PRIOR TO WRAPPING AS PER SECTION 6.02(d) OF THE STANDARD SPECIFICATIONS.



STEP 3:

OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF PIPE AND TAPED IN PLACE.



POLYETHYLENE WRAP

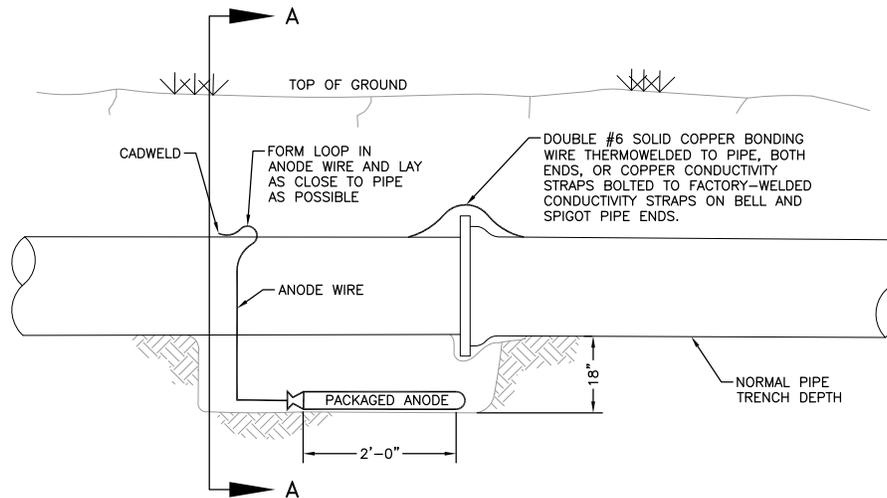
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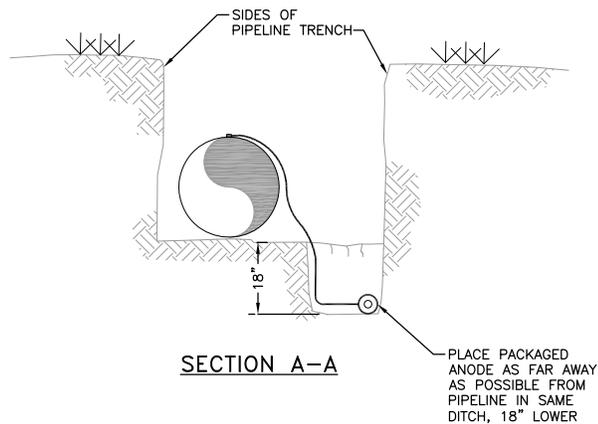


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-6



ELEVATION



NOTES:

1. CADWELD CONNECTION TO BE PRIMED AND COATED CAREFULLY. PACKAGED ANODE SHOULD BE COVERED WITH FINE SOIL CONTAINING NO ROCKS OR DIRT CLUMPS, TAMPED.
2. WHEN ANODES ARE REQUIRED WITH METAL FITTINGS AND APPURTENANCES TOGETHER WITH PVC PIPE INSTALLATION, THE ANODES SHALL BE PLACED AND ATTACHED TO THE METAL IN SAME MANNER AS SHOWN ON THIS DRAWING. 9LB. ANODES CAN BE USED ON METAL FITTINGS 12" AND LESS IN DIAMETER AND 17LB. ANODES FOR METAL FITTINGS GREATER THAN 12" DIAMETER WHEN USING PVC PIPE.
3. PACKAGED ANODE TO BE WETTED AND COVERED WITH SOIL PRIOR TO BACKFILLING.

BONDING JOINT & ANODE INSTALLATION

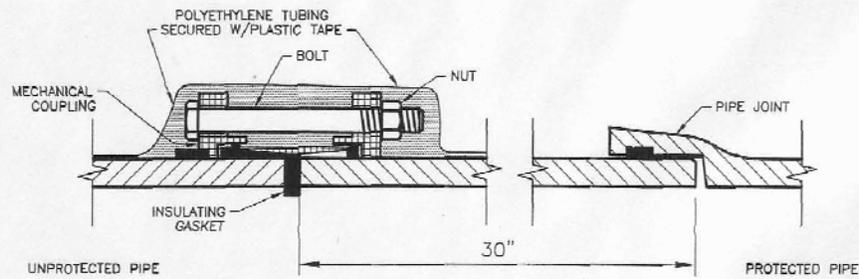
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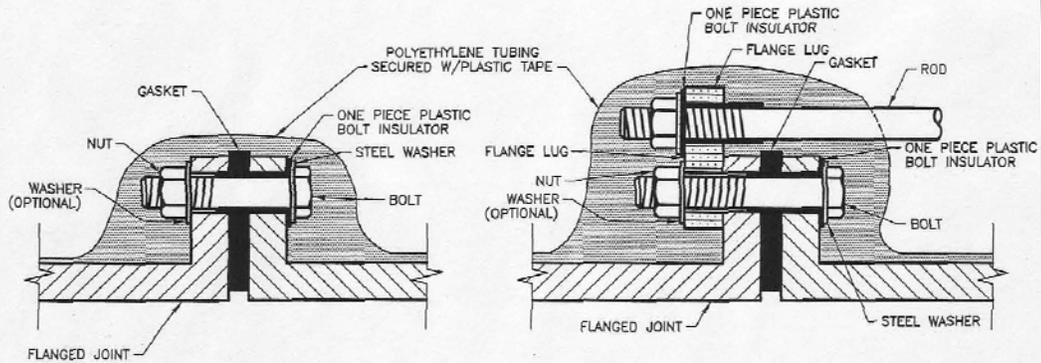


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-7



INSULATED MECHANICAL COUPLING



INSULATED FLANGE JOINT

INSULATED TIE BACK ROD

NOTE:
TEST WIRES TO BE USED WHEN REQUIRED.

INSULATOR INSTALLATION

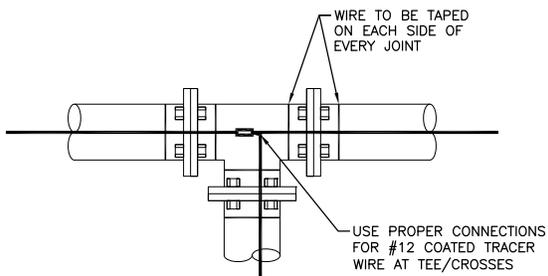
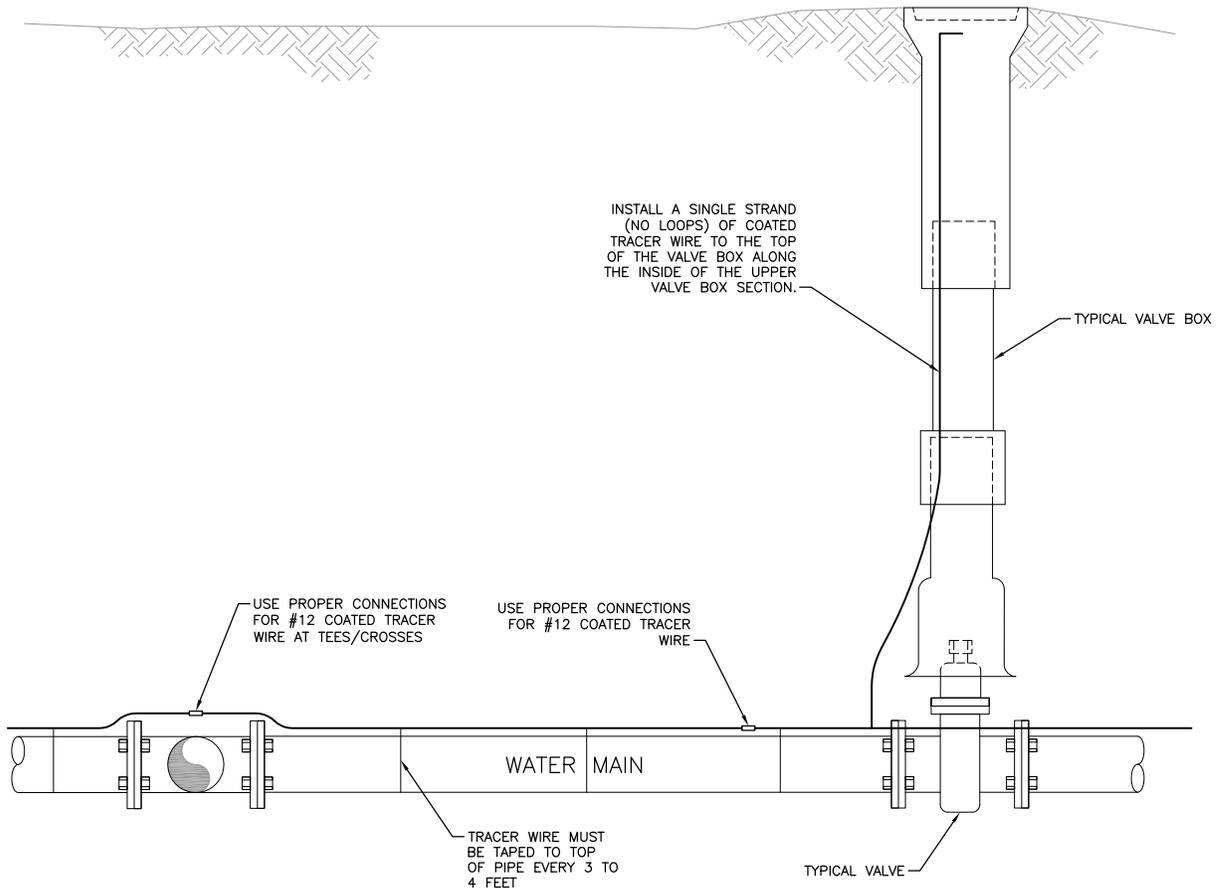
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Scale: N.T.S.

Revised:
Revised:
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paint brush hills
metropolitan district

WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-8



TRACER WIRE INSTALLATION DETAILS

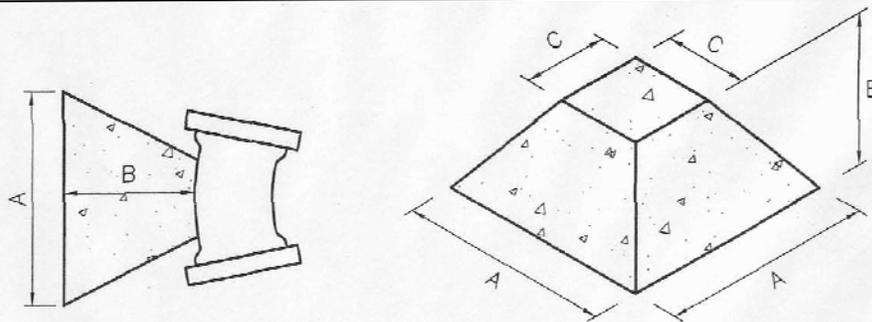
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 Revised:
 Revised:



WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-9



NOTE: USE THE FOLLOWING VALUES FOR 'C'

PIPE SIZE =	C =
12" & UNDER	1'-6"
16" TO 24"	2'-0"
30" TO 36"	3'-0"

A, B & C WILL BE GIVEN IN EACH INSTANCE

VOL. (yds)	A	B if C=1'-6"	B if C=2'-0"	B if C=3'-0"
1/8	2'-6"	0'-10"	1/8	1/8
1/4	2'-8"	1'-7"	1/8	1/8
1/2	3'-2"	2'-5"	2'-0"	1/8
3/4	4'-0"	2'-6"	2'-2"	1/8
1	4'-4"	3'-0"	2'-7"	2'-0"
1 1/4	4'-10"	3'-1"	2'-9"	2'-2"
1 1/2	5'-3"	3'-3"	2'-11"	2'-4"
1 3/4	5'-7"	3'-5"	3'-1"	2'-6"
2	5'-10"	3'-7"	3'-3"	2'-8"
2 1/4	6'-3"	3'-8"	3'-4"	2'-9"
2 1/2	6'-4"	3'-11"	3'-7"	3'-0"
2 3/4	6'-9"	3'-11"	3'-7"	3'-0"
3	6'-10"	4'-1"	3'-9"	3'-2"
3 1/4	7'-3"	4'-1"	3'-9"	3'-2"
3 1/2	7'-4"	4'-3"	3'-11"	3'-4"
3 3/4	7'-7"	4'-4"	4'-0"	3'-5"
4	7'-11"		4'-0"	3'-5"
4 1/4	8'-1"		4'-0"	3'-6"
4 1/2	8'-4"		4'-0"	3'-6"
4 3/4	8'-6"		4'-1"	3'-7"

VOL. (yds)	A	B if C=1'-6"	B if C=2'-0"	B if C=3'-0"
5	8'-8"		4'-2"	3'-8"
5 1/4	8'-11"		4'-2"	3'-8"
5 1/2	9'-1"		4'-3"	3'-9"
5 3/4	9'-3"		4'-4"	3'-10"
6	9'-4"		4'-5"	3'-11"
6 1/4	9'-6"		4'-6"	4'-0"
6 1/2	9'-8"		4'-6"	4'-0"
6 3/4	9'-11"		4'-6"	4'-0"
7	10'-2"		4'-6"	4'-0"
7 1/4	10'-3"		4'-7"	4'-1"
7 1/2	10'-4"		4'-8"	4'-2"
7 3/4	10'-5"		4'-9"	4'-3"
8	10'-6"		4'-10"	4'-4"
8 1/4	10'-8"		4'-10"	4'-4"
8 1/2	10'-9"		4'-11"	4'-5"
8 3/4	10'-11"		4'-11"	4'-5"
9	11'-1"		4'-11"	4'-5"
9 1/4	11'-2"		5'-0"	4'-6"
9 1/2	11'-4"		5'-0"	4'-6"
9 3/4	11'-6"		5'-0"	4'-6"
10	11'-8"		5'-0"	4'-6"

ALL WATER MAINS GREATER THAN 12 - INCHES IN DIAMETER SHALL HAVE THRUST BLOCK DESIGNED & SHOWN ON THE CONSTRUCTION DOCUMENTS.

SEE VOLUMES ABOVE FOR A, B & C DIM.

FITTING	4"	6"	8"	12"
TEE	1/8 yd.	1/2 yd.	3/4 yd.	2 yd.
90° BEND	1/8 yd.	3/4 yd.	1 1/4 yd.	3 yd.
45° BEND	1/8 yd.	1/2 yd.	3/4 yd.	1 1/2 yd.
22-1/2° BEND	1/8 yd.	1/8 yd.	1/4 yd.	3/4 yd.
11-1/4° BEND	1/8 yd.	1/8 yd.	1/8 yd.	1/4 yd.

THRUST BLOCK DATA

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:

paint brush hills
metropolitan district

WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-10

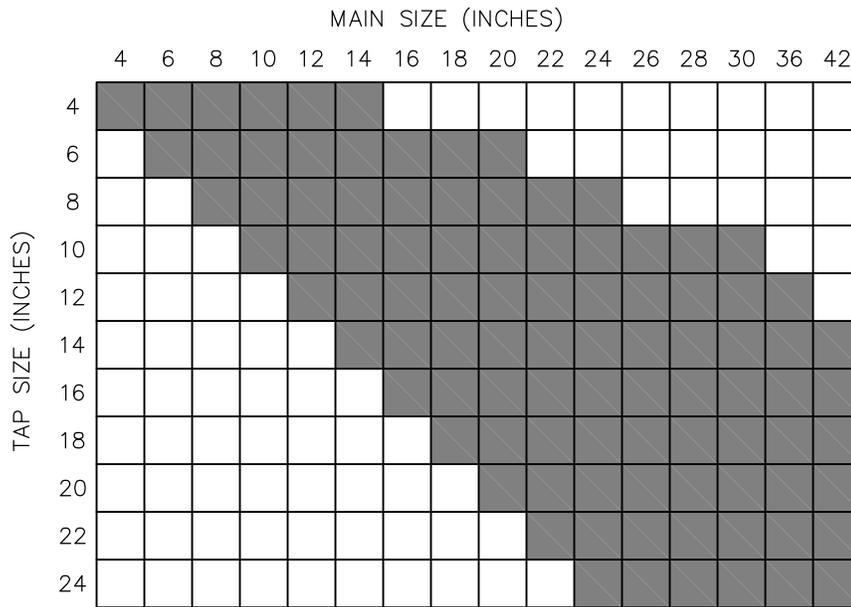
CONCRETE THRUST BLOCKS

WATER MAIN AND TAP SIZE COMBINATIONS WHICH REQUIRE A
CONCRETE THRUST REACTION BLOCK BEHIND THE MAIN AT THE
TAPPING SLEEVE OR SADDLE.

ALL WATER MAINS



INDICATES CONCRETE THRUST BLOCK REQUIRED



ANY THRUST REACTION BLOCK REQUIREMENTS FOR WATER MAIN AND
TAP SIZE COMBINATIONS OTHER THAN THOSE SHOWN ABOVE WILL
REQUIRE SPECIAL DESIGN APPROVAL BY THE DISTRICT.

THRUST BLOCKS REQUIRED FOR TAPS

Drawn: GGM

Date: JAN 2011

Scale: N.T.S.

Revised:

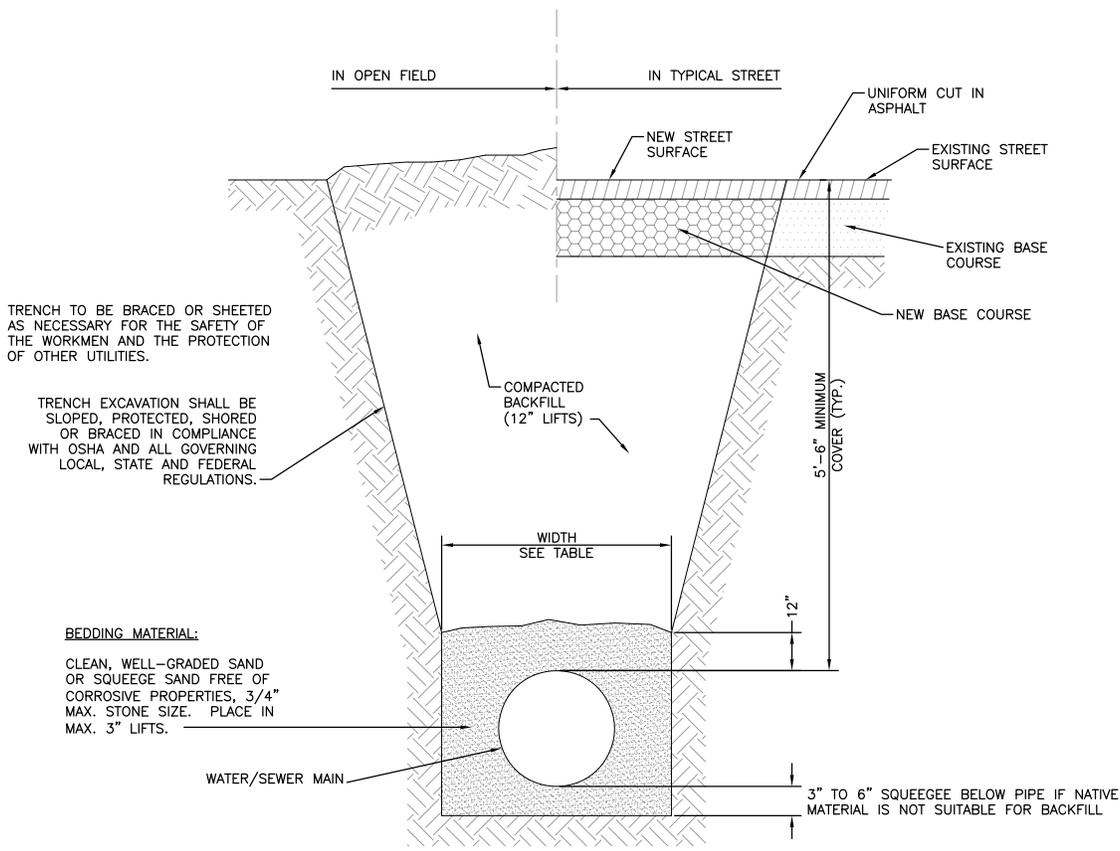
Revised:

Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-11

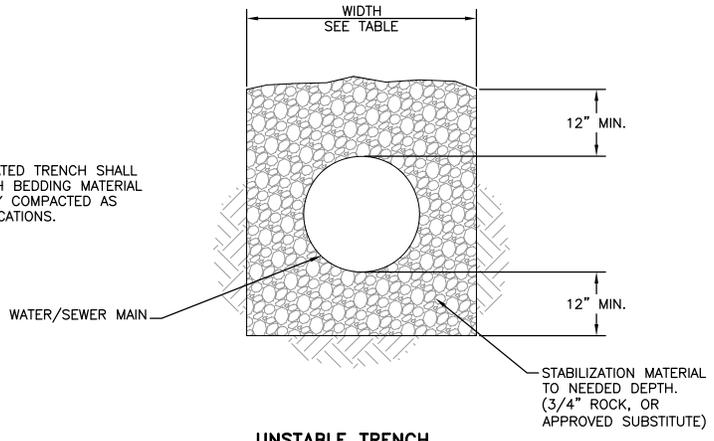


TYPICAL TRENCH SECTION
SCALE: N.T.S.

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	2'-2"	3'-0"
6"	2'-2"	3'-0"
8"	2'-2"	3'-0"
10"	2'-4"	3'-0"
12"	2'-6"	3'-6"
18"	2'-10"	3'-9"
24"	3'-2"	4'-3"

BEDDING MATERIAL:
CLEAN, WELL-GRADED SAND OR SQUEEGE SAND FREE OF CORROSIVE PROPERTIES, 3/4" MAX. STONE SIZE. PLACE IN MAX. 3" LIFTS.

NOTE:
AN OVER-EXCAVATED TRENCH SHALL BE REFILLED WITH BEDDING MATERIAL AND THOROUGHLY COMPACTED AS PER THE SPECIFICATIONS.



UNSTABLE TRENCH BEDDING DETAIL
SCALE: N.T.S.

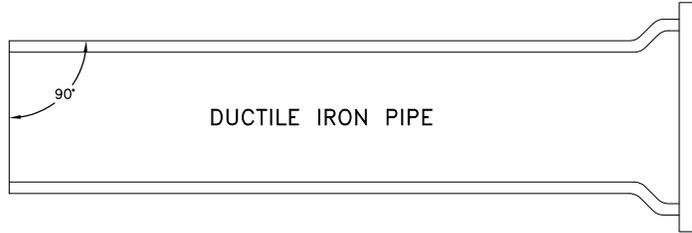
TYPICAL TRENCH CROSS-SECTION

MAXIMUM DEFLECTION
PER SLIP JOINT OF D.I.P.

PIPE DIAMETER			MFRS. DEFL.	DESIGN DEFLECTION (80% MAX.)			APPROX. RADIUS FOR DEFLECTING CURVES WITHOUT BENDS	
I.D. (IN)	O.D. (IN)	O.D. (FT)		MAX. DEFL. DIST.		20'L	18'L	
				(1)	(2)			
4"	4.80"	.400'	5'00"00"	4'00"00"	16"	15"	286'	258'
6"	6.90"	.575'	5'00"00"	4'00"00"	16"	15"	286'	258'
8"	9.05"	.754'	5'00"00"	4'00"00"	16"	15"	286'	258'
10"	11.10"	.925'	5'00"00"	4'00"00"	16"	15"	286'	258'
12"	13.20"	1.100'	5'00"00"	4'00"00"	16"	15"	286'	258'
14"	15.30"	1.275'	3'00"00"	2'24"00"	10"	9"	477'	430'
16"	17.40"	1.450'	3'00"00"	2'24"00"	10"	9"	477'	430'
18"	19.50"	1.625'	3'00"00"	2'24"00"	10"	9"	477'	430'
20"	21.60"	1.800'	3'00"00"	2'24"00"	10"	9"	477'	430'
24"	25.80"	2.150'	3'00"00"	2'24"00"	10"	9"	477'	430'
30"	32.00"	2.666'	2'30"00"	2'00"00"	8"	7"	573'	516'
36"	38.30"	3.192'	2'00"00"	1'36"00"	6"	6"	716'	645'
42"	44.50"	3.708'	2'00"00"	1'36"00"	6"	6"	716'	645'

- (1) 20'L = NORMAL 20-FOOT JOINT LAYING LENGTH
(2) = NORMAL 18-FOOT JOINT LAYING LENGTH

MAXIMUM PIPELINE DEFLECTION DATA



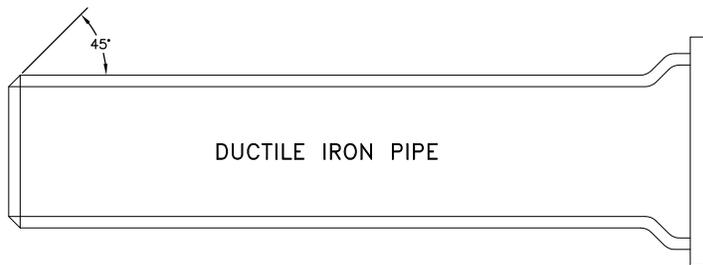
MECHANICAL JOINT CONNECTION

PIPE MUST BE CUT AT RIGHT ANGLES TO LONGITUDINAL CENTERLINE IN ALL CASES.

PIPE ENDS SHALL BE FREE OF BURRS.

MORTAR LINING SHALL BE FLUSH WITH PIPE END.

GOUGES CUT IN PIPE ENDS SHALL NOT BE ALLOWED.



SLIP JOINT CONNECTION

PIPE CUT IN STRAIGHT LINE AND BEVELED AT 45° ANGLE ON END.

GENERAL NOTES:

1. ALL PIPE CUTTING EQUIPMENT AND PIPE CUTS MUST BE APPROVED BY THE WATER AND SANITATION DISTRICT INSPECTOR.
2. ALL PIPE ENDS TO BE USED IN INSTALLATION SHALL BE DRESSED SMOOTH TO THE SATISFACTION OF THE INSPECTOR PRIOR TO INSTALLATION.
3. AT THE REQUEST OF THE CONTRACTOR MAKING THE INSTALLATION, THE DISTRICT WILL MAKE PIPE CUTS, PROVIDING THE CURRENT FEE PER CUT IS PAID AND 24-HOUR NOTICE IS GIVEN (THE CURRENT FEE IS SUBJECT TO CHANGE.)
4. ALL DIP DELIVERED TO JOB SITE MUST BE NEW MATERIAL.

PIPE CUTTING

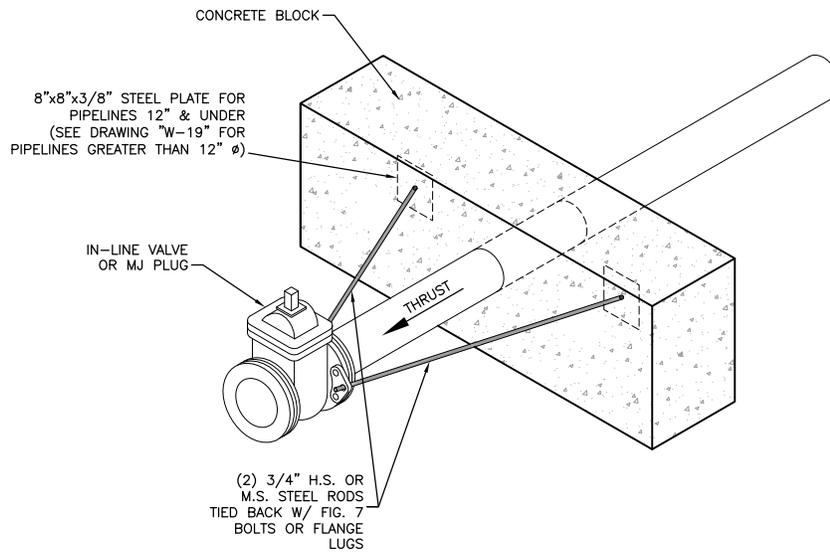
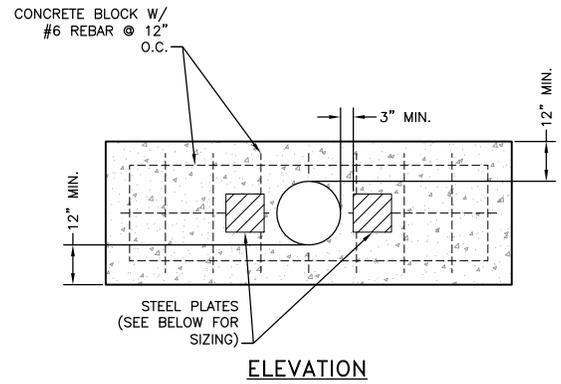
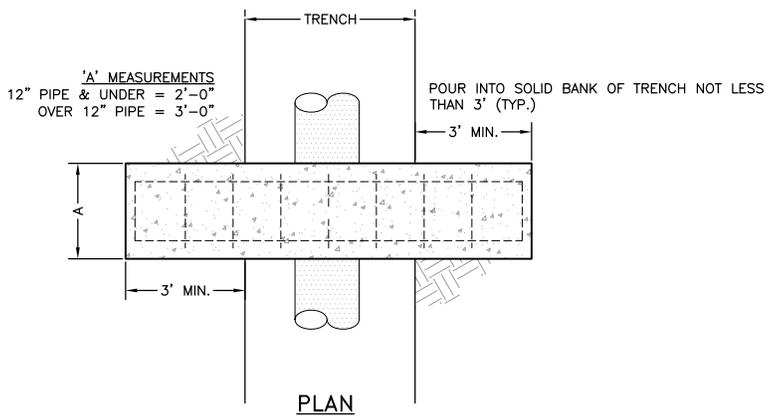
Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-14



NOTES:

1. ALL METALLIC COMPONENTS TO BE ENCASED IN CONCRETE OR WRAPPED IN POLYETHYLENE TUBING.
2. MAX. ROD LENGTH = 12'
3. MIN. ROD LENGTH = 4'

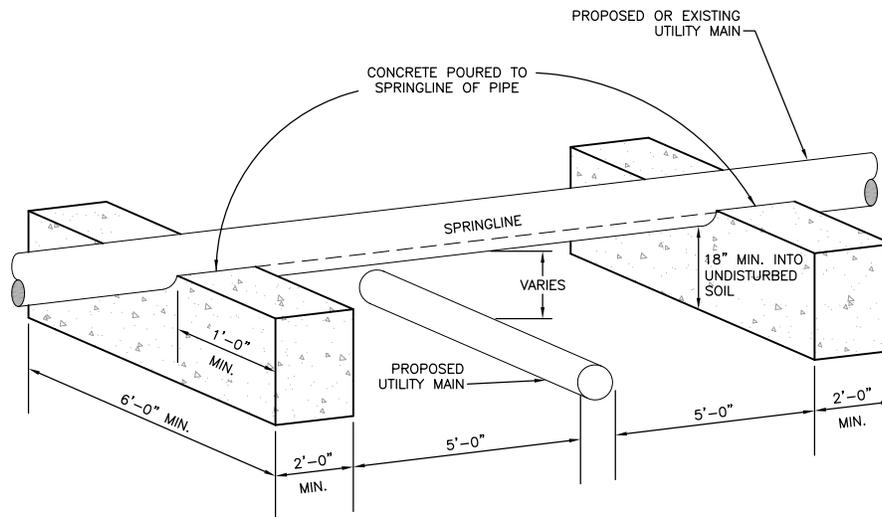
REVERSE ANCHOR DETAIL

Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:



WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-15



NOTES:

1. CONCRETE BLOCKS TO BE REINFORCED WITH #6 REBAR SET ON 12" CENTERS.
2. NO JOINTS OF UTILITY MAIN SHALL BE ALLOWED BETWEEN CONCRETE BRIDGING BLOCKS.

PIPE BRIDGING DETAIL

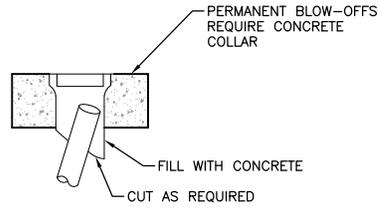
Drawn: GGM
 Date: JAN 2011
 Scale: N.T.S.

Revised:
 Revised:
 Revised:

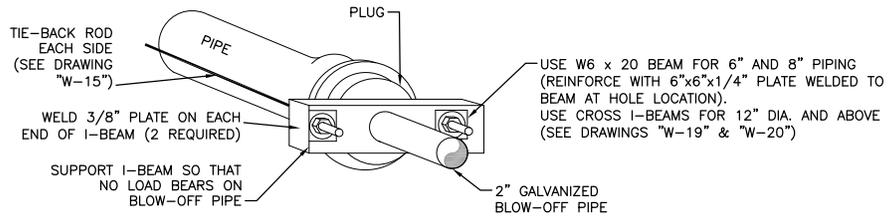
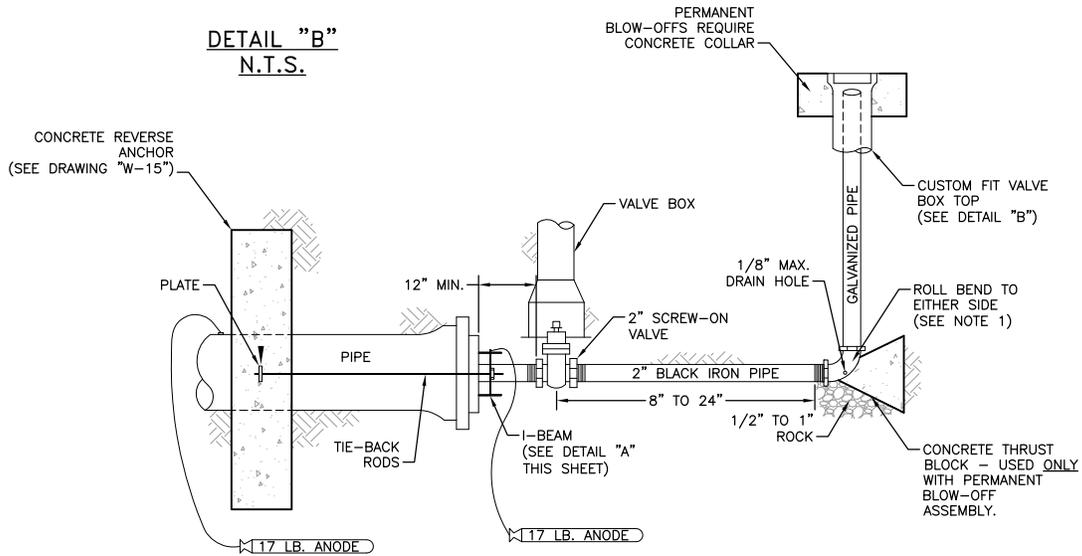


WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-17



DETAIL "B"
N.T.S.



DETAIL "A"
N.T.S.

NOTES:

1. IF APPROPRIATE LOCATION FOR DISCHARGED WATER CANNOT BE REACHED BY ROLLING THE BEND, ADDITIONAL BENDS MAY BE REQUIRED BY THE INSPECTOR.
2. COAT TIE RODS, BEAM AND BLACK IRON PIPE WITH EPOXY POLYAMIDE COATING, 10 MILS MIN.
3. ENTIRE BLOW OFF ASSEMBLY MUST BE FULLY SUPPORTED, CONCRETE STEPPING STONES MAY BE REQUIRED.
4. PIPE DOPE APPROVED FOR USE IN POTABLE WATER SYSTEMS MUST BE USED ON ALL THREADED JOINTS.

TEMP & PERMANENT BLOW-OFF ASSEMBLIES FOR 6" & 8" MAINS

Drawn: GGM	Revised:	 WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	W-18
Date: JAN 2011	Revised:		
Scale: N.T.S.	Revised:		

BLOW-OFF ASSEMBLY SIZING

MAIN PIPE DIA. (IN.)	STATIC PEASURE RANGE (P.S.I.)	DIMENSIONS FROM DRAWING NUMBER A 2-5				
		"A" (IN)	"B" (IN)	"C" (W-SHAPE)	"D" ROD SIZE (IN)	"E" BLOW-OFF PIPE SIZE(IN)
12	<100	36	10	W10 x 15	5/8	2
	101-150	36	10 1/4	W10 x 19	3/4	2
	151-200	36	10 1/8	W10 x 22	7/8	2
	201-250	36	10 1/8	W10 x 22	1	2
16	<100	40	12 1/4	W12 x 26	7/8	4
	101-150	40	12 1/4	W12 x 26	1	4
	151-200	40	12 1/4	W12 x 26	1 1/8	4
	201-250	40	12 1/2	W12 x 35	1 1/4	4
18	<100	42	12 1/4	W12 x 26	1	4
	101-150	42	12 1/2	W12 x 35	1 1/4	4
	151-200	42	12	W12 x 40	1 3/8	4
	201-250	42	12	W12 x 45	1 1/2	4
20	<100	44	12 1/4	W12 x 26	1	4
	101-150	44	12 1/2	W12 x 35	1 1/4	4
	151-200	44	12	W12 x 40	1 3/8	4
	201-250	44	12	W12 x 45	1 1/2	4
24	<100	48	12 1/2	W12 x 35	1 1/4	6
	101-150	48	12	W12 x 40	1 1/2	6
	151-200	48	12	W12 x 53	1 1/4*	6
	201-250	48	12	W12 x 53	1 1/8*	6
30	<100	54	12 1/4	W12 x 50	1 1/8*	6
	101-150	54	12 1/4	W12 x 58	1 3/8*	6
	151-200	54	12 1/8	W12 x 65	1 1/2*	6
	201-250	54	12 1/4	W12 x 72	1 5/8*	6
36	<100	60	12 1/4	W12 x 58	1 1/4*	8
	101-150	60	12 1/4	W12 x 72	1 1/2*	8
	151-200	60	12 3/4	W12 x 96	1 3/4*	8

NOTES:

1. ALL W-SHAPES FABRICATED FROM A36 STEEL.
2. ALL RODS SHALL BE MIN. GRADE A307 EXCEPT WHERE NOTED AS *. THESE SHALL BE MINIMUM STRENGTH EQUAL TO ASTM A325 RODS.
3. A 50% SURGE FACTOR HAS BEEN INCLUDED IN DESIGN.
4. FOR SIZES AND PRESSURES GREATER THAN THOSE SHOWN, SPECIAL DESIGN IS REQUIRED, APPROVED BY THE DISTRICT.

BLOW-OFF ASSEMBLY DIMENSION DATA FOR MAINS 12" +

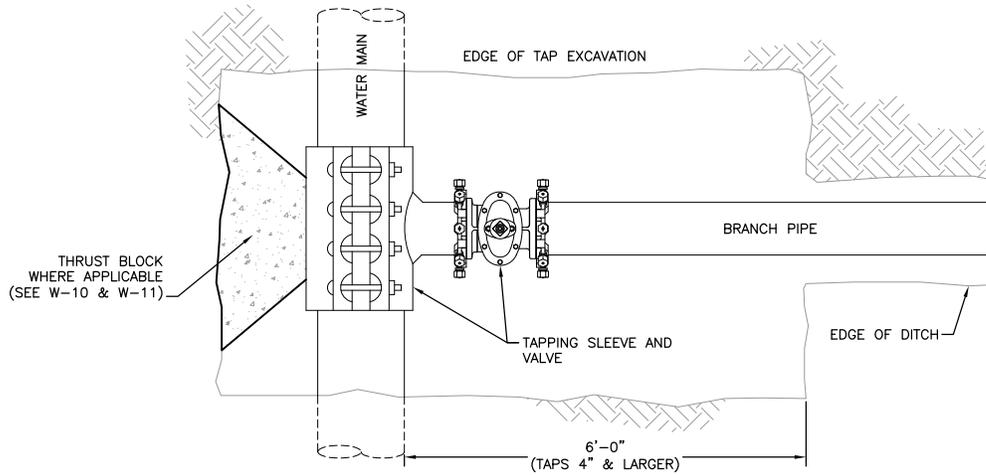
Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:

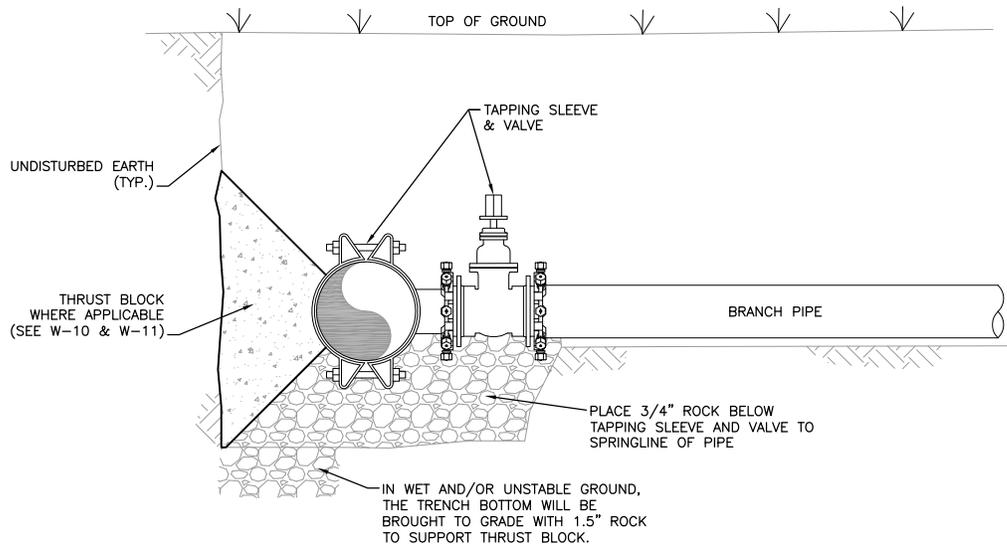


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-20



PLAN VIEW
N.T.S.



PROFILE VIEW
N.T.S.

PIPE TAPPING DETAIL

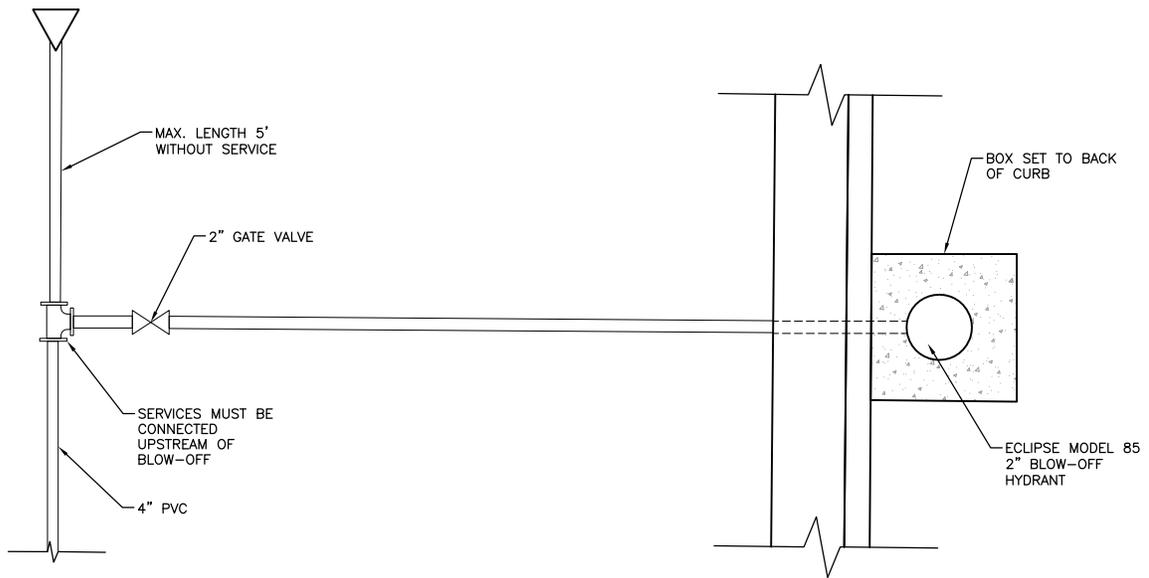
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Date: JAN 2011
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Revised:
Revised:
Revised:

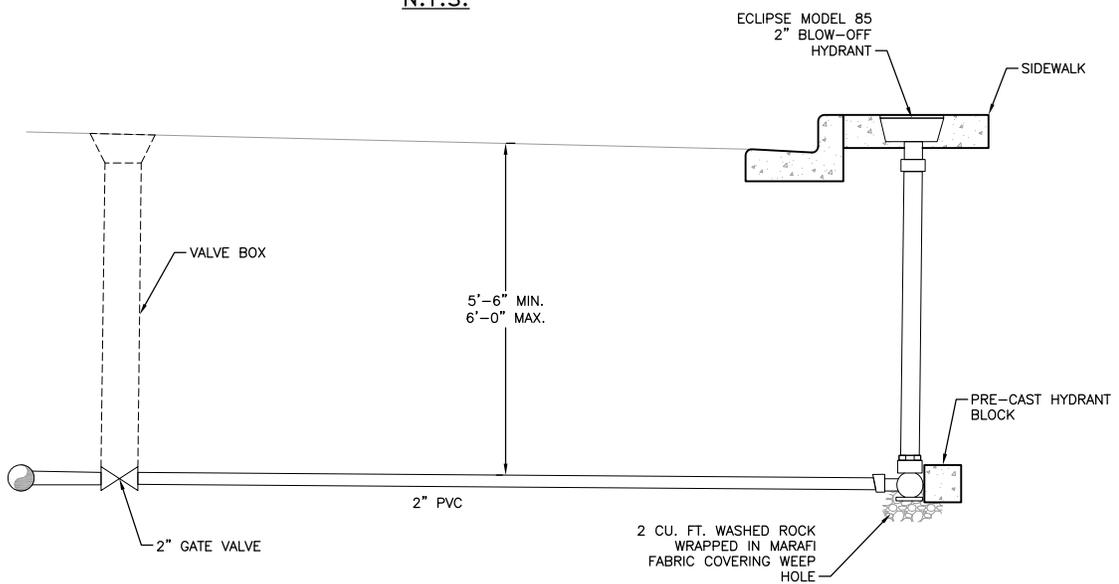


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-21



PLAN VIEW
N.T.S.



PROFILE VIEW
N.T.S.

CUL-DE-SAC BLOW-OFF DETAIL

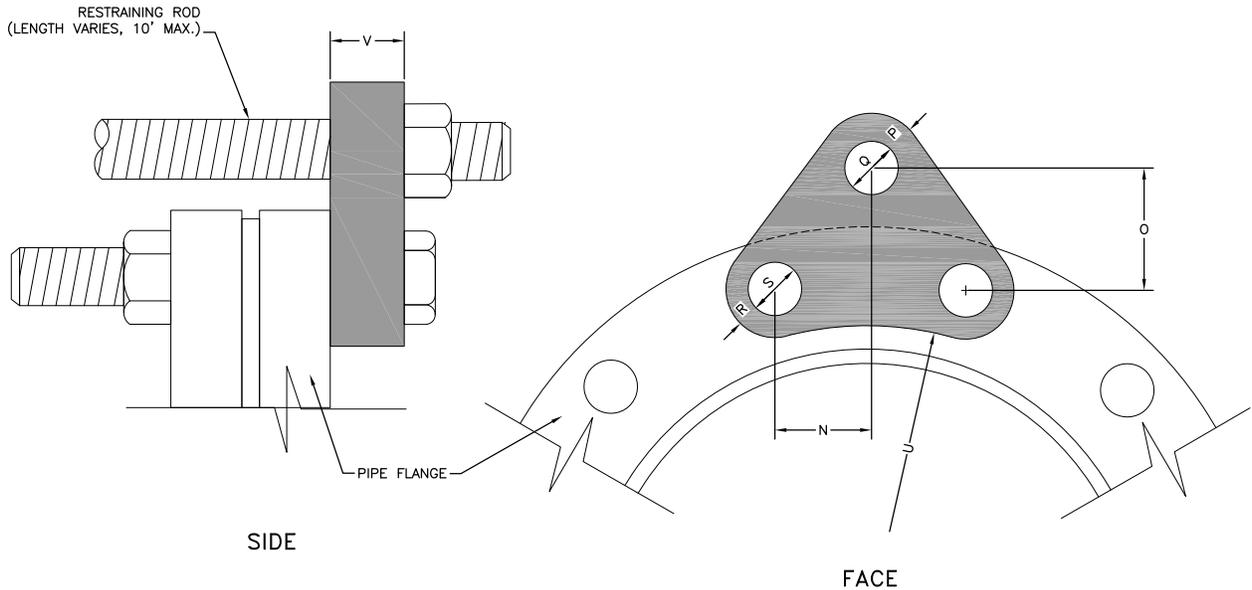
Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:

 paint brush hills
metropolitan district

WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-22



PIPE DIA. (IN.)	PRESS. CLASS (PSI)	"N" (IN.)	"O" (IN.)	H.S. ROD			M.S. ROD			"R" (IN.)	"S" (IN.)	"U" (IN.)	"V" (IN.)	NO REQ'D (EA)
				"P" (IN.)	"Q" (IN.)	ROD DIA. (IN.)	"P" (IN.)	"Q" (IN.)	ROD DIA. (IN.)					
6	150	1-15/16	2-1/4	1	7/8	3/4	1	7/8	3/4	7/8	7/8	3-3/4	3/4	2
	300	1-3/8	2-3/4	1	1	7/8	1	1	7/8	7/8	7/8	4-7/16	1	
8	150	2-1/4	2-3/4	1	7/8	3/4	1	7/8	3/4	1	7/8	4-7/8	3/4	2
	300	1-11/16	2-7/8	1	1	7/8	1	1	7/8	1	1	5-1/2	1	
12	150	2-3/16	2-3/4	1-1/4	1-1/8	1	1-1/4	1-1/8	1	1-1/8	1	7-1/4	7/8	2
	300	1-3/4	3-3/4	1-3/8	1-1/4	1-1/2	1-3/8	1-3/8	1-1/4	1-1/4	1-1/8	7-5/8	1-1/4	
16	150	2-1/16	2-3/4	1-1/2	1-3/8	1-1/4	1-1/2	1-3/8	1-1/4	1-1/4	1-1/8	9-3/8	1-1/8	3
	300	1-3/4	4-1/4	1-1/2	1-1/2	1-3/8	1-1/2	1-1/2	1-3/8	1-1/2	1-3/8	9-7/8	1-1/2	
18	150	2-1/4	2-1/2		1-1/8	1		1-1/8	1		1-1/8	10	1-1/8	4
	300	1-7/8	3-3/4	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-3/8	10-3/16	2	
20	150	2-5/8	1-15/16		1-1/8	1		1-1/8	1		1-1/4	11-1/8	1-1/4	4
	300	2	3-1/16	1-3/8	1-9/16	1-1/2	1-3/8	1-9/16	1-1/2	1-3/8	1-3/8	10-1/2	2-1/2	
24	150	2-5/16	2-5/8		1-1/8	1		1-1/8	1		1-3/8	13-1/4	1-1/4	6
	300	2-5/16	3-1/8	1-1/2	1-9/16	1-1/2	1-1/2	1-9/16	1-1/2	1-1/2	1-5/8	12-1/2	2-1/4	

NOTES:

1. M.S. MEANS MILD STEEL ROD, ASTM STANDARD DESIGNATION A-36. NUTS SHALL BE ASTM STANDARD DESIGNATION A-307
2. H.S. MEANS HIGH STRENGTH STEEL ROD, ASTM STANDARD DESIGNATION A-193 GRADE B-7. NUTS SHALL BE ASTM STANDARD DESIGNATION A-193 GRADE 2-H.

FLANGE - LUG DETAIL

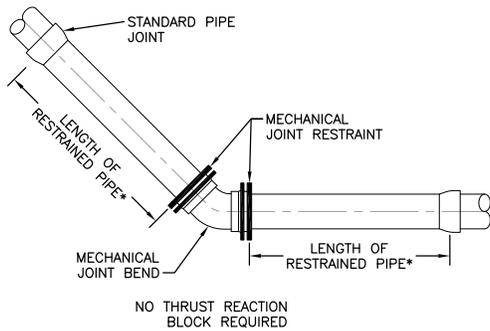
Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:

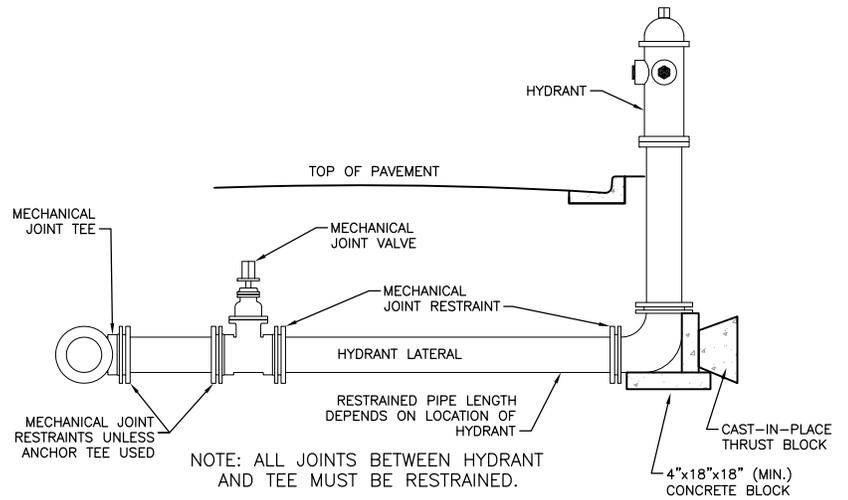


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

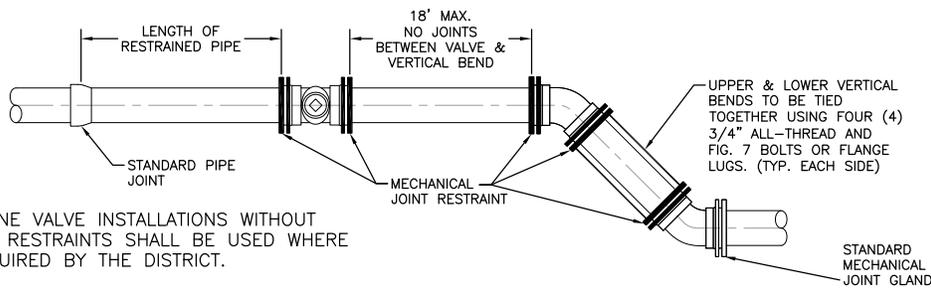
W-23



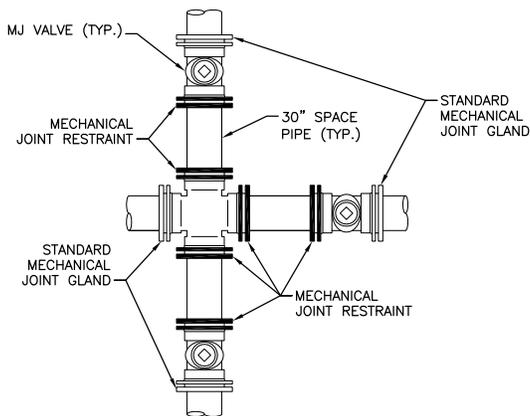
INSTALLATION FOR BENDS



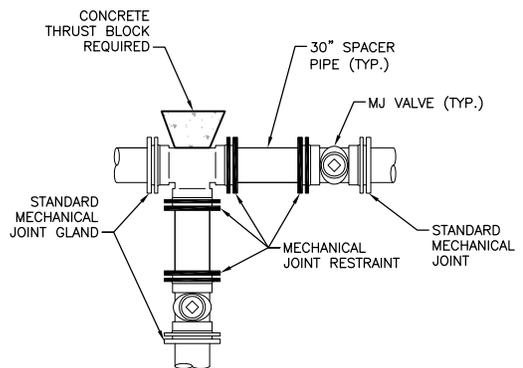
INSTALLATION FOR BENDS



INSTALLATION FOR LINE VALVE & LOWERING



CROSS INSTALLATION



TEE INSTALLATION

NOTES:

1. MECHANICAL JOINTS SHALL BE APPROVED ACCORDING TO MATERIAL SPECIFICATION FOR DIP AND PVC PIPE.
2. LENGTH OF PIPE REQUIRING JOINT RESTRAINT SHALL BE DETERMINED FROM CHART ON DRAWING W-25.
3. RESTRAINED JOINT PVC PIPE SHALL NOT BE USED FOR LOWERINGS.

APPLICATIONS FOR MECHANICAL JOINT RESTRAINTS

Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

RESTRAINED M.J. PIPE LENGTH (FT)

6-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	12	18	24
45° BEND	5	8	10
22-1/2° BEND	2	4	5
11-1/4° BEND	1	2	2

16-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	29	43	58
45° BEND	12	18	24
22-1/2° BEND	6	9	12
11-1/4° BEND	3	4	6

8-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	16	24	32
45° BEND	7	10	13
22-1/2° BEND	3	5	6
11-1/4° BEND	2	2	3

18-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	32	48	64
45° BEND	14	20	27
22-1/2° BEND	7	10	13
11-1/4° BEND	3	5	7

12-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	23	34	45
45° BEND	9	14	19
22-1/2° BEND	5	7	9
11-1/4° BEND	2	3	4

20-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	35	52	70
45° BEND	15	22	29
22-1/2° BEND	7	10	14
11-1/4° BEND	3	5	7

24-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR PLUG	41	61	81
45° BEND	17	25	34
22-1/2° BEND	8	12	16
11-1/4° BEND	4	6	8

NOTES:

1. PRESSURES GREATER THAN 200 PSI REQUIRE SPECIAL DESIGN APPROVED BY THE DISTRICT.
2. LENGTH IS BASED ON MINIMUM 5'-0" OF GROUND COVER AND SOIL COMPACTED ACCORDING TO SECTION 5.15 OF THESE SPECIFICATIONS.
3. APPROVED METHODS OF RESTRAINED PIPE BEYOND INITIAL FITTING SHALL BE:
 - A. FOR DUCTILE IRON PIPE, 1100 SERIES MEGALUG BY EBAA IRON OR EQUAL ON MECHANICAL JOINT PIPE OR DOUBLE 1100 SERIES MEGALUG BY EBAA IRON OR EQUAL ON PUSH ON JOINT PIPE.
 - B. FOR PVC PIPE, SERIES 1500 OR SERIES 2800 RESTRAINTS BY EBAA IRON OR EQUAL.

RESTRAINED MJ PIPE LENGTH DATA

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

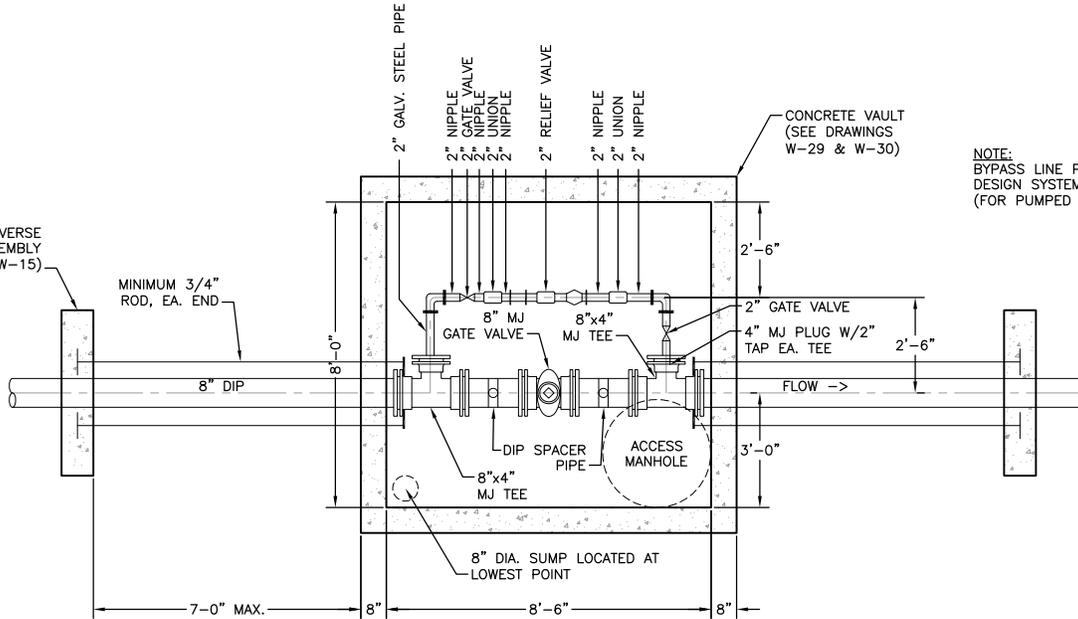
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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

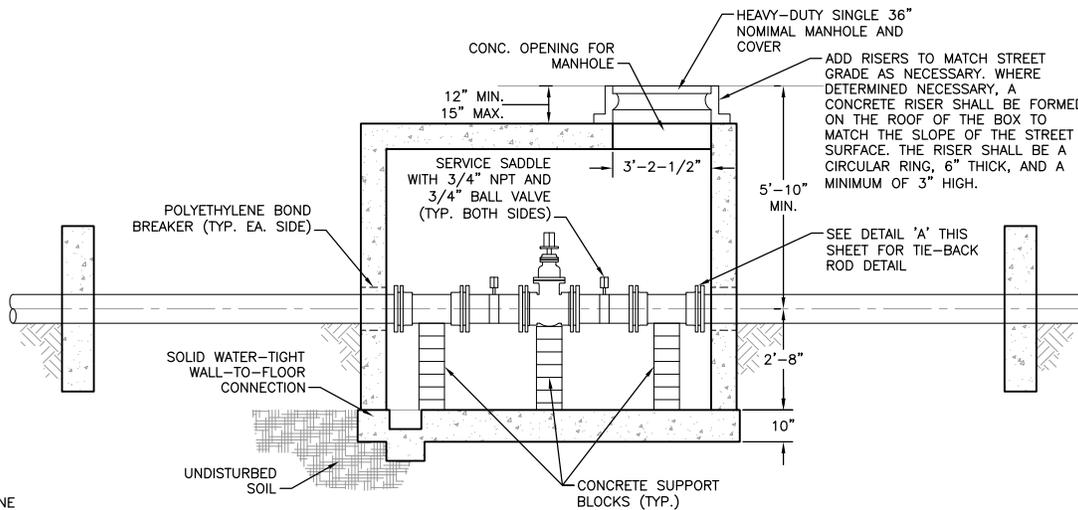
W-25

TYPICAL REVERSE ANCHOR ASSEMBLY (SEE DWG. W-15)



NOTE:
BYPASS LINE PER PLANNING AND DESIGN SYSTEM ANALYSIS. (FOR PUMPED SYSTEMS)

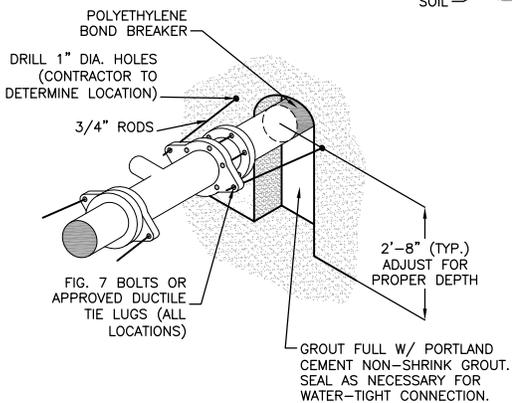
PLAN VIEW
N.T.S.



PROFILE VIEW
N.T.S.

NOTES:

1. MECHANICAL JOINT RESTRAINTS MAY BE USED INSTEAD OF TIE-RODS BETWEEN TEES AND VALVES.
2. CONTRACTOR SHALL DETERMINE DIMENSIONS OF ALL 2-INCH SIZE MATERIAL FOR PROPER INSTALLATION.
3. CONCRETE VAULTS SHALL MEET ALL CRITERIA AS OUTLINED ON STANDARD DRAWINGS W-29 & W-30.



DETAIL 'A' - PIPE ARCH

PRESSURE RELIEF STATION

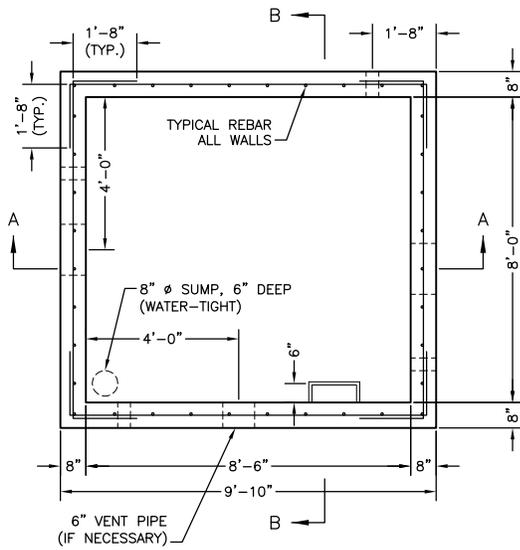
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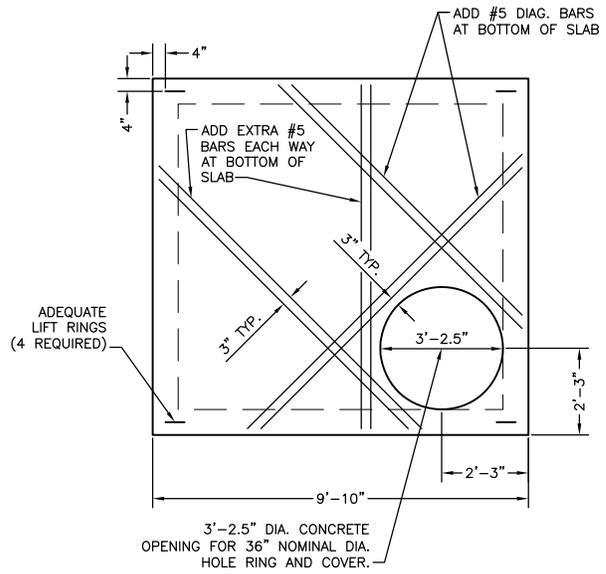


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

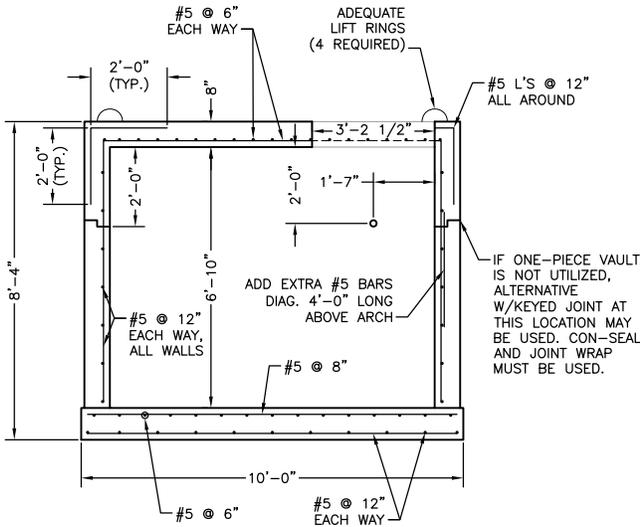
W-26



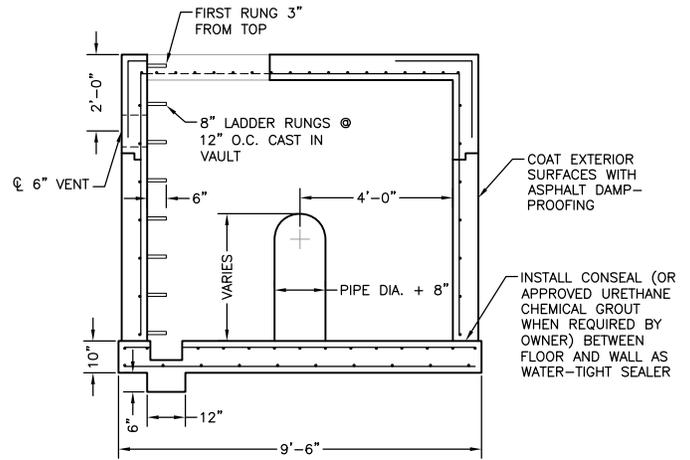
PLAN VIEW
N.T.S.



ROOF PLAN
N.T.S.



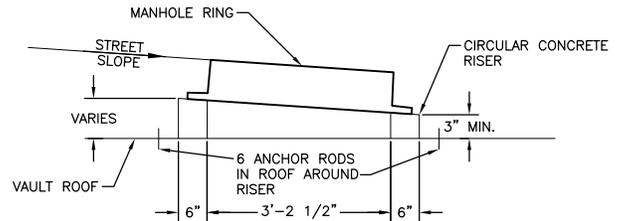
SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

NOTES:

1. ALL CONCRETE WORK SHALL COMPLY WITH DISTRICT STANDARD SPECIFICATIONS AND LATEST A.C.I.-318 CODE.
2. MINIMUM CONCRETE CLEARANCES FOR REBAR:
 - 3" WHERE POURED AGAINST EARTH
 - 2" WHERE FORMED AND THEN EXPOSED TO GROUND OR WEATHER FOR #6 OR LARGER. 1.5" FOR #5 AND SMALLER.
 - 1" WHERE EXPOSED TO INTERIOR SURFACES
3. ALL VAULTS SHALL BE CONSTRUCTED TO MEET HS20-44 TRAFFIC LOADING CONDITIONS AND 300 PSF SURCHARGE LOAD.



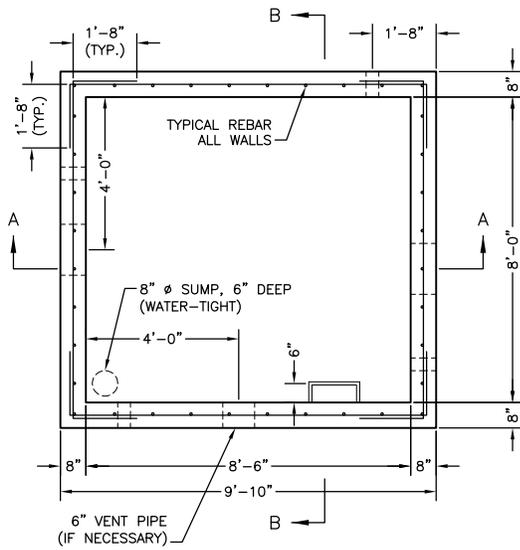
DETAIL A
CONCRETE RISER FOR MANHOLE
N.T.S.

STAND. CONC. VAULT FOR VALVE INSTALLATION (PRECAST)

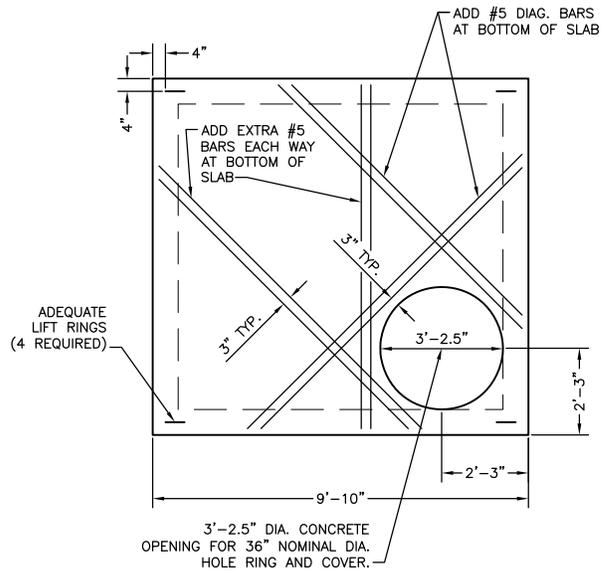
Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:



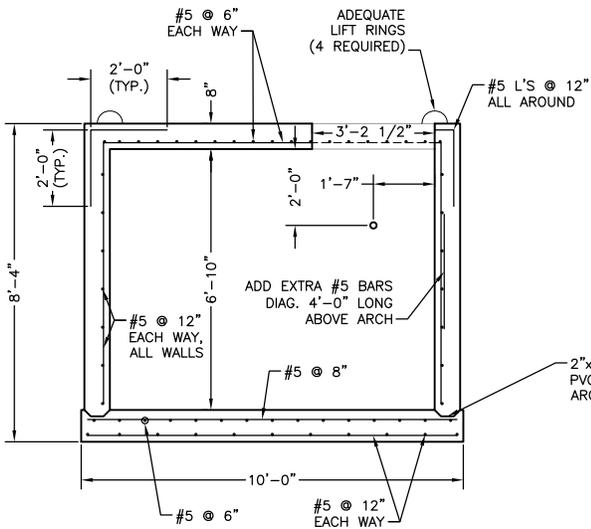
WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS



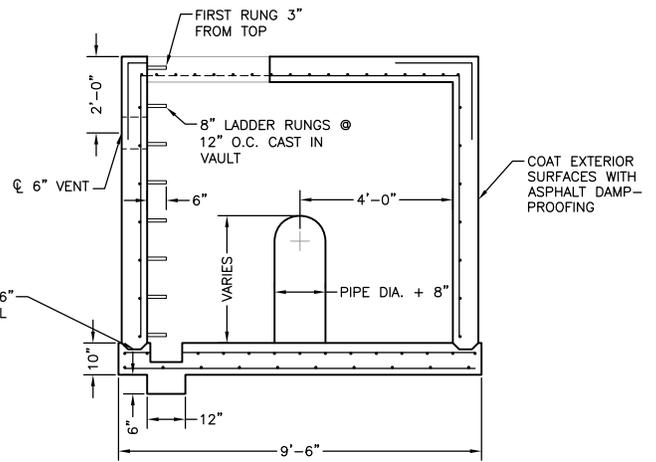
PLAN VIEW
N.T.S.



ROOF PLAN
N.T.S.



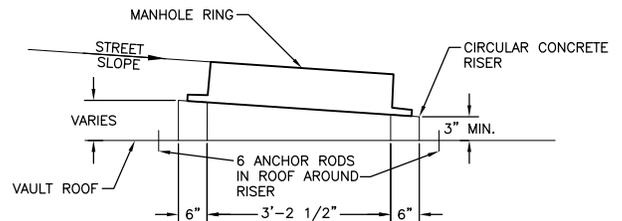
SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

NOTES:

1. ALL CONCRETE WORK SHALL COMPLY WITH DISTRICT STANDARD SPECIFICATIONS AND LATEST A.C.I.-318 CODE.
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 - 3" WHERE POURED AGAINST EARTH
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 - 1" WHERE EXPOSED TO INTERIOR SURFACES
3. ALL VAULTS SHALL BE CONSTRUCTED TO MEET HS20-44 TRAFFIC LOADING CONDITIONS AND 300 PSF SURCHARGE LOAD.



DETAIL A
CONCRETE RISER FOR MANHOLE
N.T.S.

STAND. CONC. VAULT FOR VALVE INSTALLATION (CAST-IN-PLACE)

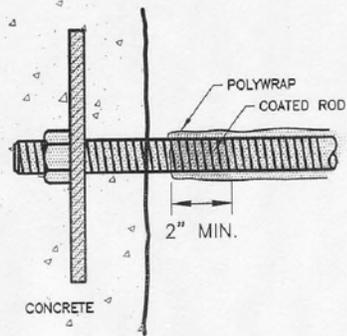
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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

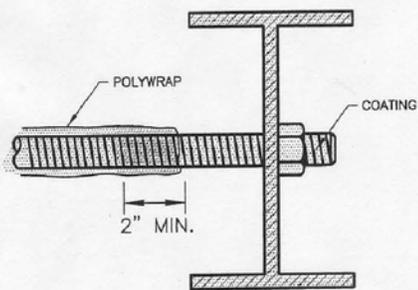
W-30



NO SCALE

METAL IN CONCRETE:

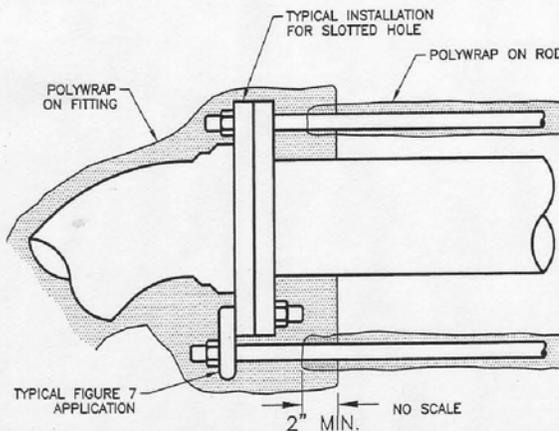
1. COAT METAL PARTS WHERE IN CONTACT WITH CONCRETE, EXTENDING COATING SEVERAL INCHES BEYOND THE CONCRETE.
2. POLYWRAP THE ROD, OVERLAPPING THE POLYWRAP AND THE COATING A MINIMUM OF 2".
3. SECURE POLYWRAP TO THE ROD USING 2" WIDE, 10-MIL POLYETHYLENE PRESSURE-SENSITIVE TAPE.



NO SCALE

ROD THROUGH I-BEAM:

1. COAT ENTIRE I-BEAM.
2. COAT NUT AND ROD, EXTENDING COATING SEVERAL INCHES BEYOND THE BEAM.
3. POLYWRAP THE ROD, OVERLAPPING THE COATING A MINIMUM OF 2".
4. SECURE POLYWRAP WITH TAPE.



NO SCALE

RODS IN MJ FITTING:

1. POLYWRAP THE ROD AND SECURE WITH TAPE.
2. POLYWRAP THE FITTING, OVERLAPPING THE POLYWRAP ON THE ROD A MINIMUM OF 2" AND SECURE WITH TAPE.

PROTECTING TIE-RODS

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

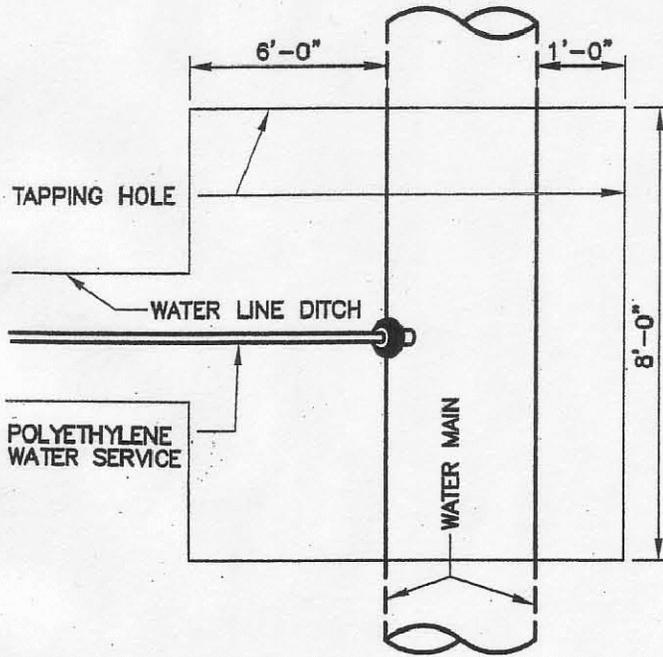
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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

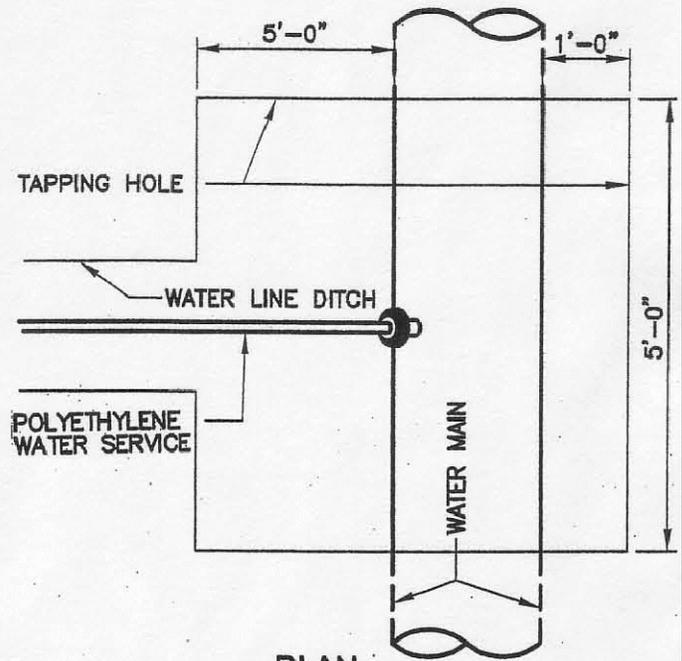
W-31

SERVICE TAPS 1-1/2" & 2" TAPPING SADDLE

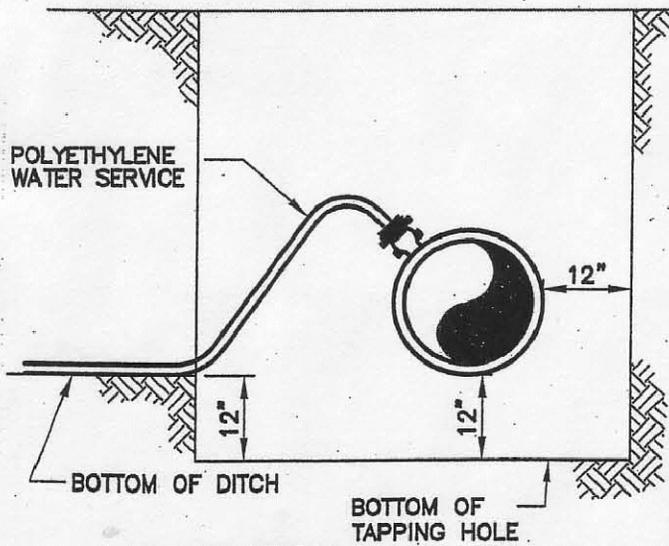


PLAN

SERVICE TAPS 3/4" & 1" CORPORATION ONLY



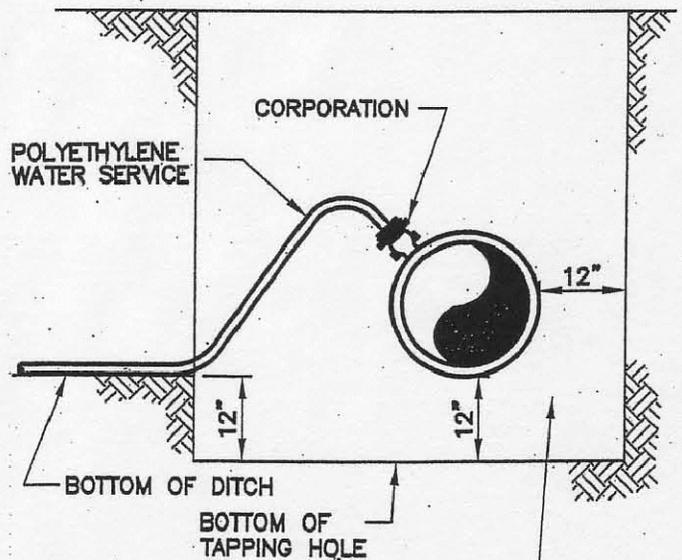
PLAN



ELEVATION

NOTE:

DIRECT TAPS TO THE WATER MAIN SHALL BE MADE ONLY WHEN APPROVED BY THE DISTRICT. ALL TAPS SHALL USE TAPPING SADDLES, TAPPING SADDLES SHALL HAVE TWO BRASS BANDS AND A BRASS CORPORATION CONNECTION.



ELEVATION

ALLOW 12" CLEARANCE SURROUNDING MAIN FOR TAPPING MACHINE

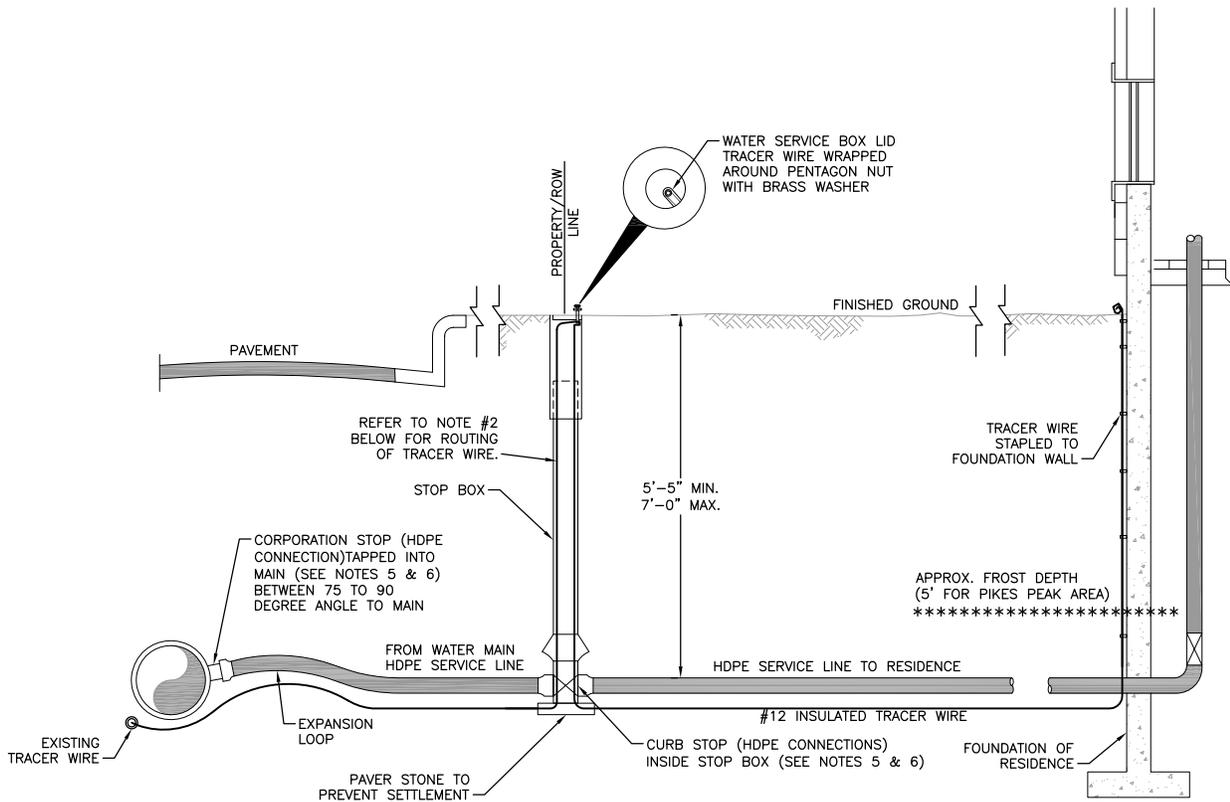
TAPPING DETAIL - 3/4" THRU 2"

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

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Revised:
Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS



WATER SERVICE LINE NOTES:

1. NO. 12 INSULATED TRACER WIRE SHALL BE PLACED ALONG SERVICE LINE AND SHALL BE A CONTINUOUS (WITHOUT SPLICES) LENGTH.
2. WHEN A NEW PLASTIC SERVICE IS CONNECTED TO A PVC MAIN, THE SERVICE LINE TRACER WIRE SHALL BE CONNECTED TO THE MAIN'S TRACER WIRE WITH A SPLIT-BOLT CONNECTOR. THE TRACER WIRE IS THEN TAPED ALONG THE SERVICE LINE IN AT LEAST 3 LOCATIONS NOT TO EXCEED 10'. ALL CURB STOP BOXES SHALL HAVE A 1-1/2" DIAMETER SCHD 40 PVC PIPE TELESCOPED INSIDE WITH A BELL END TO FIT OVER THE TOP OF THE CURB STOP VALVE. TRACER WIRE SHALL BE EXTENDED UP THE INSIDE OF CURB STOP BOX BUT OUTSIDE THE 1-1/2" SCHD 40 PVC PIPE. TRACER WIRE SHALL BE WRAPPED AROUND CURB STOP BOLT UNDER A BRASS WASHER. THE WIRE WILL THEN BE ROUTED BACK DOWN INSIDE THE CURB BOX AND OUTSIDE THE SCHD 40 PVC, AND TAPED AGAIN TO THE SERVICE LINE UNTIL IT REACHES THE POINT WHERE THE SERVICE LINE ENTERS THE BUILDING. AT THIS POINT, THE TRACER WIRE WILL BE STAPLED TO THE FOUNDATION WALL THEN TURNED BACK TO FORM A ONE INCH LONG HOOK AND WRAPPED WITH 4" FILLER TAPE AND THEN 3/4" ELECTRICAL TAPE FOR PROTECTION AT THE SURFACE.
3. TO ASSIST IN PE PIPE LOCATING, A 9LB. ANODE SHOULD BE CONNECTED TO THE END OF THE TRACER WIRE AND THE WATER MAIN TRACER WIRE EVERY 1000 FEET ALONG THE LENGTH OF THE WATER MAIN. THE NEW ANODE WILL BE ATTACHED TO THE WATER SERVICE/WATER MAIN TRACER WIRE WITH A SPLIT-BOLT CONNECTOR. THE CONNECTOR IS TO BE WRAPPED FIRST WITH A 4" FILLER TAPE AND THEN 3/4" ELECTRICAL TAPE FOR PROTECTION AGAINST CORROSION.
4. THE APPROPRIATE CLEARANCES BETWEEN ANODES AND STEEL PIPES OR OTHER STRUCTURES MUST BE MAINTAINED PER WATER LINE EXTENSION & SERVICE STANDARDS.
5. BRASS FITTINGS, CORP. STOP AND CURB STOP SHALL BE WRAPPED WITH WAX TAP FOR PROTECTION PER THE WATER LINE EXTENSION & SERVICE STANDARDS.
6. STIFFENERS SHALL BE INSTALLED WITHIN THE HDPE SERVICE LINE AT THE CONNECTION POINTS OF THE FITTINGS.

TYPICAL INSTALLATION FOR SERVICE LINE & STOP BOX

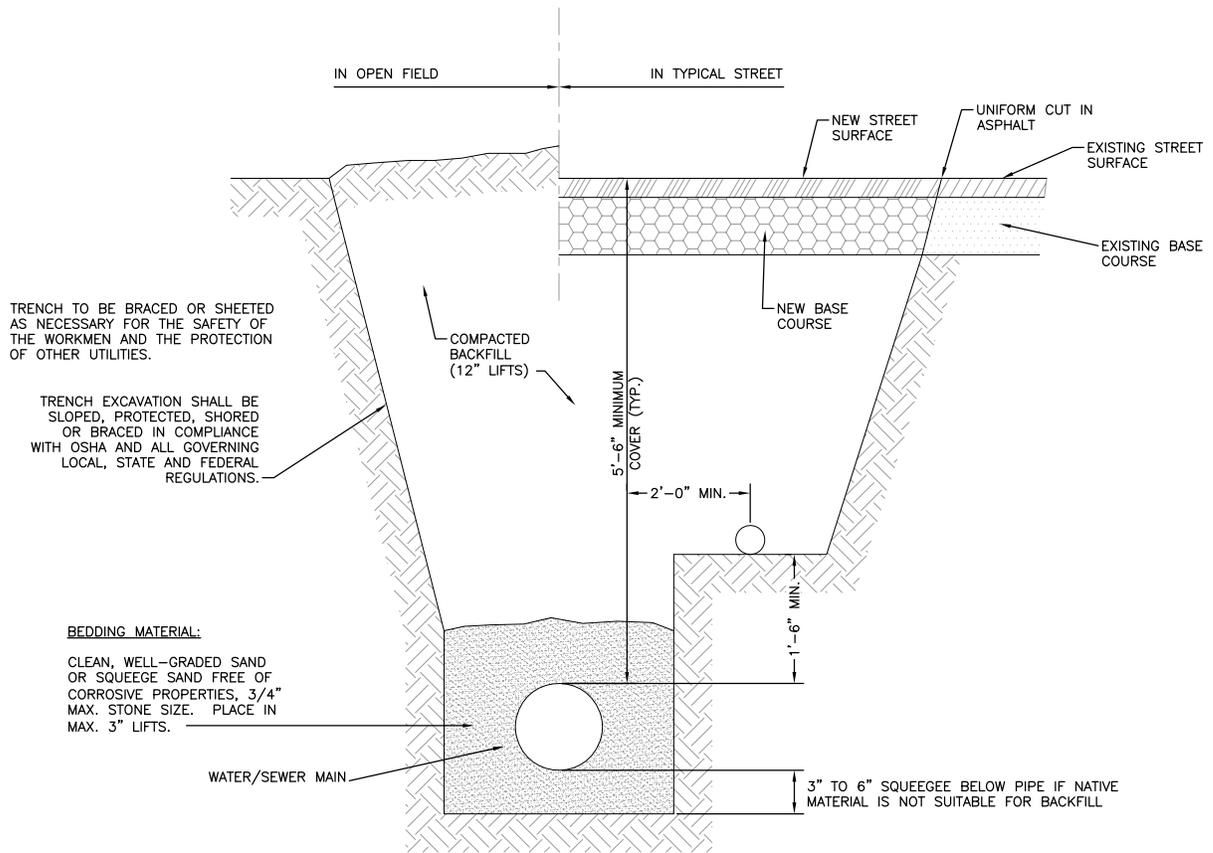
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Scale: N.T.S.

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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-33

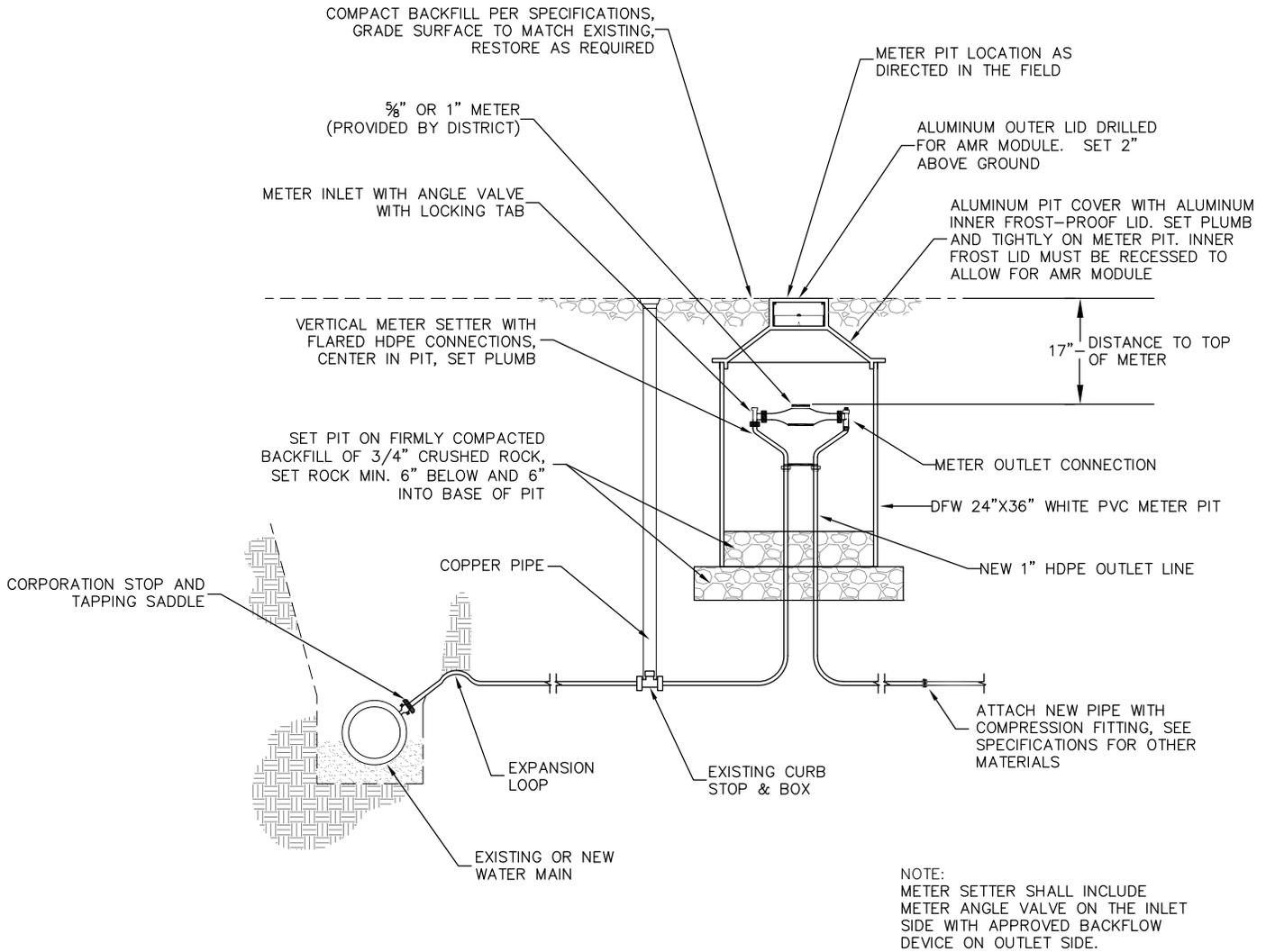


NOTES:

1. SPECIFIC CASE-BY-CASE APPROVAL BY THE DISTRICT SHALL BE REQUIRED PRIOR TO INSTALLATION OF WATER AND SEWER SERVICES IN A COMMON TRENCH.
2. USE OF COMMON TRENCH FOR WATER AND SEWER SERVICES SHALL NOT BE PERMITTED IN PUBLIC RIGHT-OF-WAY OR BETWEEN THE WATER CORPORATION STOP AND CURB STOP.
3. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND ANY OTHER APPLICABLE CODE OR REGULATION.

TYP. SERVICE LINE TRENCH – COMMON DITCH FOR WATER/SEWER

Drawn: GGM	Revised:	 WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	W-34
Date: JAN 2011	Revised:		
Scale: N.T.S.	Revised:		



METER PIT SETUP
N.T.S.

METER PIT FOR 5/8" THROUGH 1" METERS

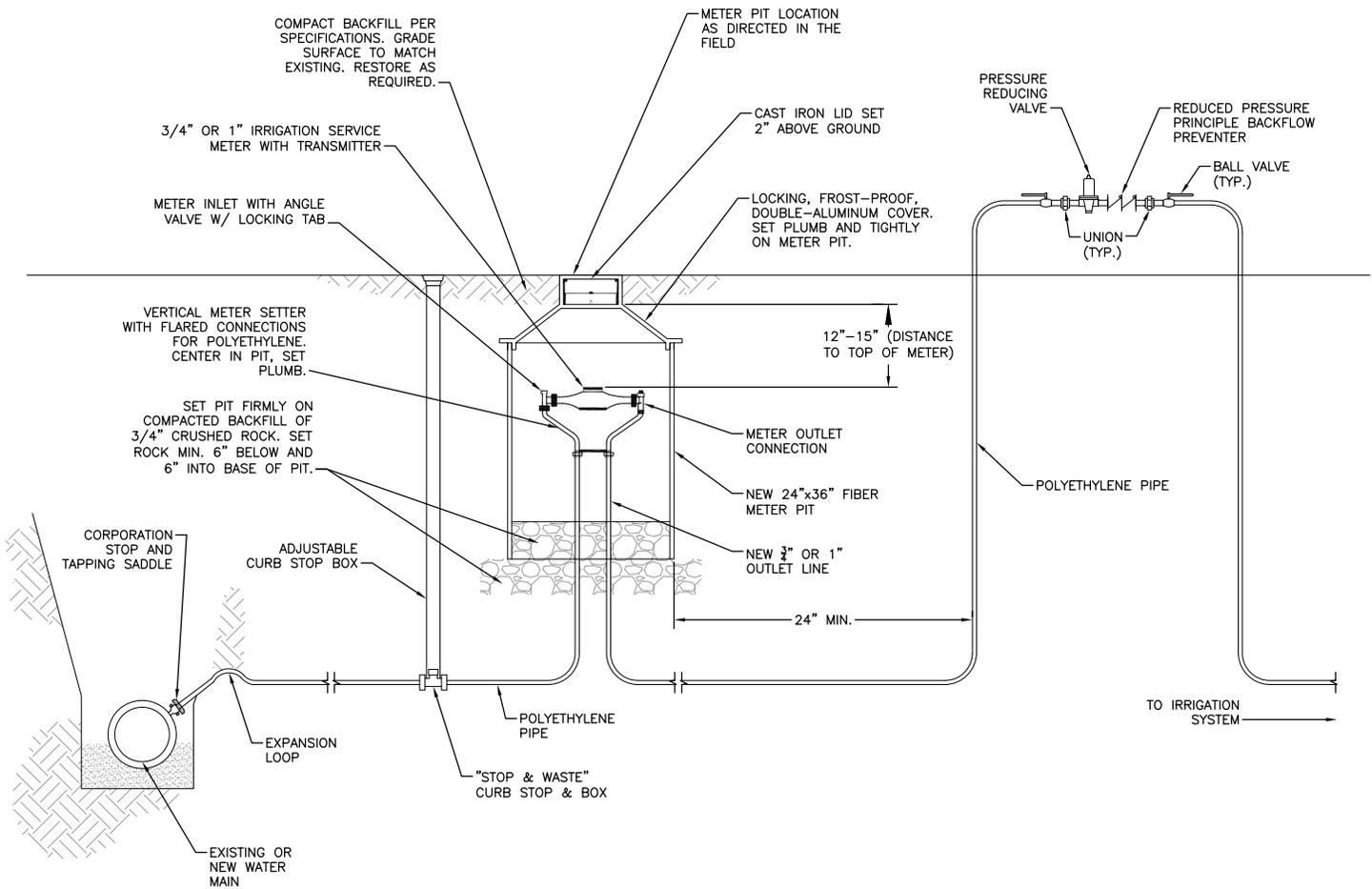
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Date: JAN 2011
Scale: N.T.S.

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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-35



METER PIT SETUP
N.T.S.

IRRIGATION SERVICE 3/4" & 1" METER INSTALLATION

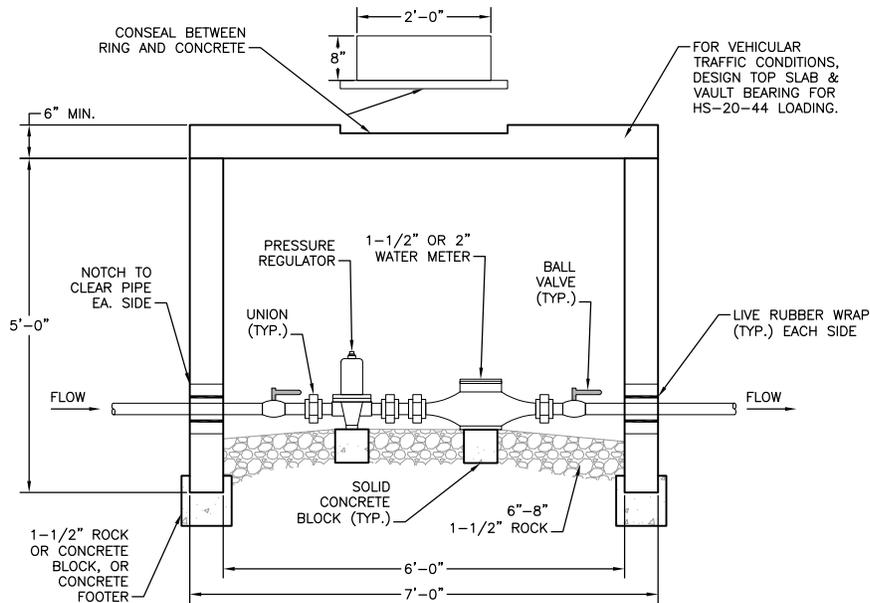
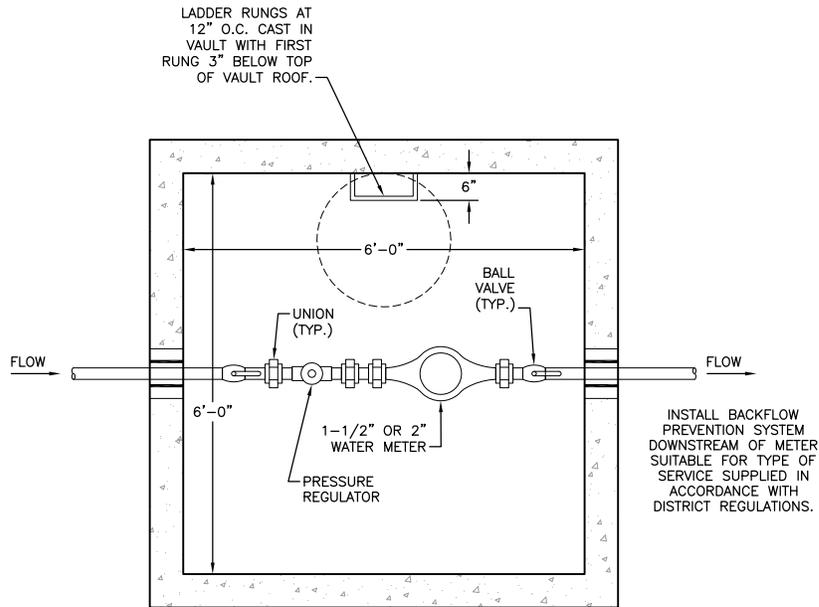
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 Date: JAN 2011
 Scale: N.T.S.

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WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-37



1-1/2" & 2" IRRIGATION METER INSTALLATION

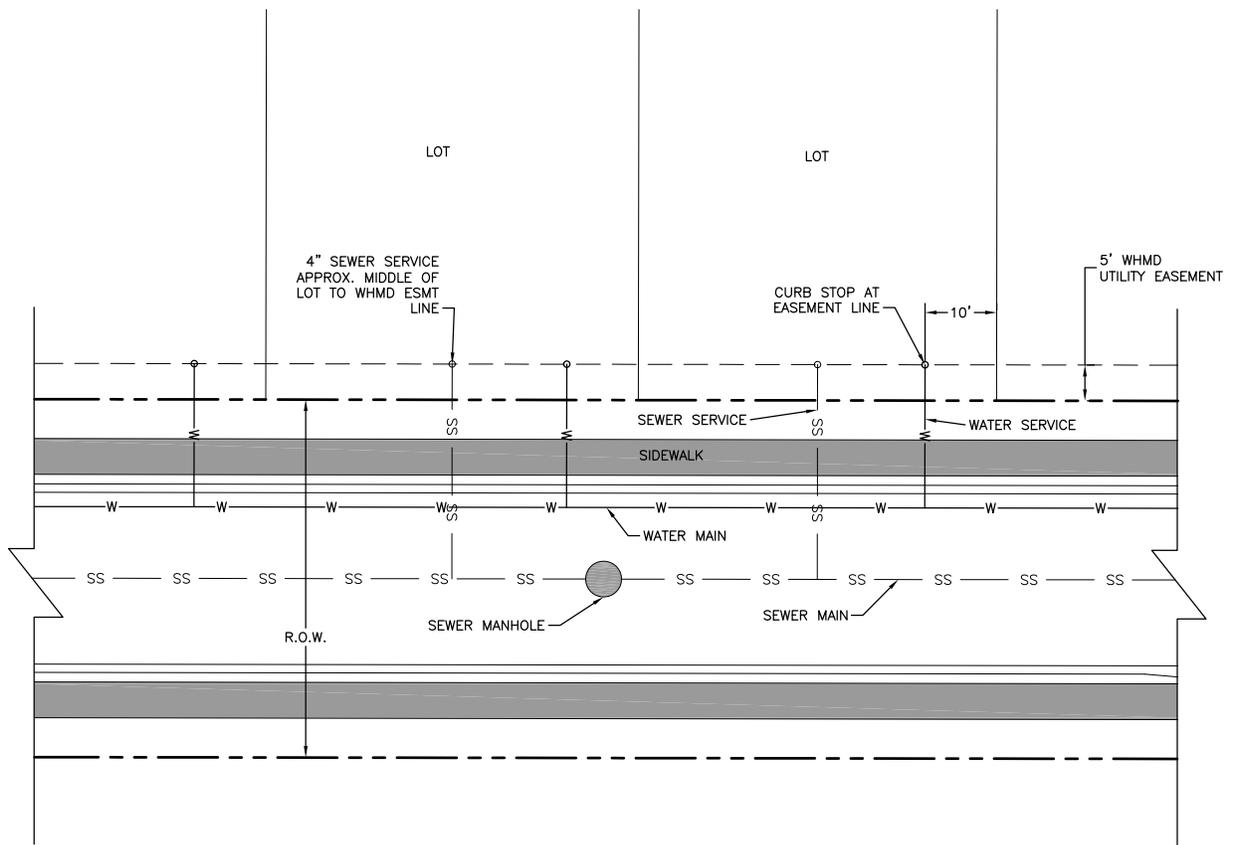
Drawn: GGM
Date: JAN 2011
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Revised:

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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

W-38



NOTES:

1. WATER SERVICE TO BE 10' FROM "DOWNSTREAM" PROPERTY LINE AND EXTENDED TO WHMD UTILITY EASEMENT LINE.
2. SEWER SERVICE TO BE PLACED APPROXIMATELY IN THE MIDDLE OF THE LOT AND EXTENDED TO WHMD UTILITY EASEMENT LINE.
3. SERVICES SHALL BE MARKED WITH 2"x4" POST AT TERMINATION POINT FOR LOCATION DURING CONNECTION TO RESIDENCE. POSTS SHALL BE SPRAY-PAINTED BLUE FOR WATER AND GREEN FOR SEWER.

UTILITY SERVICE LOCATIONS

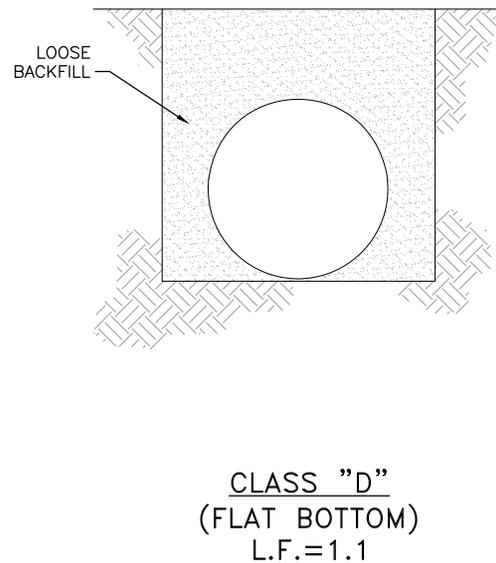
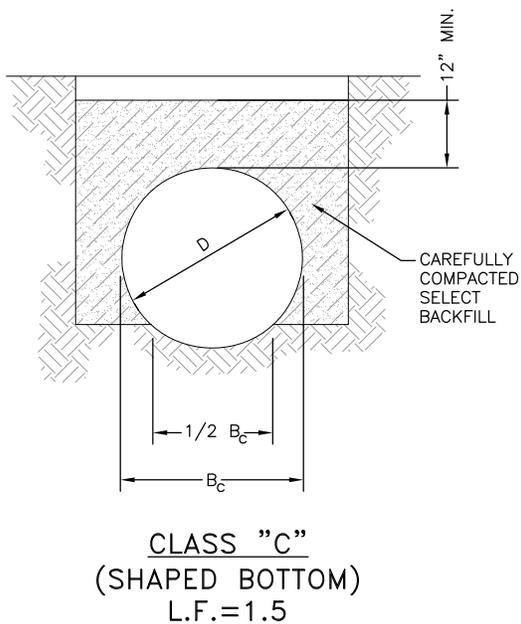
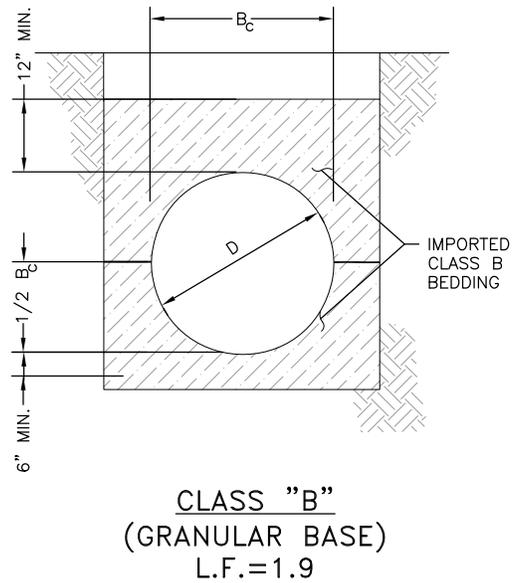
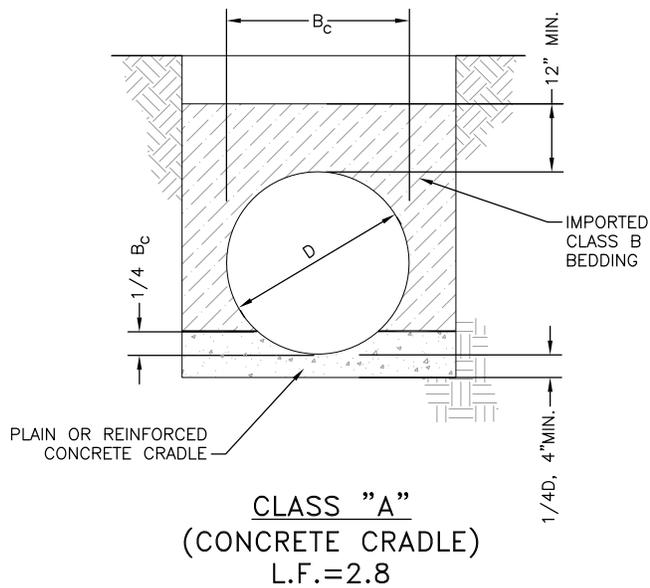
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WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-39



NOTES:

1. FOR ROCK OR OTHER INCOMPRESSIBLE MATERIALS, THE TRENCH SHALL BE OVEREXCAVATED A MINIMUM OF 6" AND REFILLED WITH GRANULAR BEDDING MATERIAL AS DEFINED BY CLASS "B" BEDDING.
2. L.F. = LOADFACTOR
3. CLASS "D" BEDDING WILL NOT BE ACCEPTABLE UNDER ANY CONDITION.
4. MINIMUM DENSITY FOR CAREFULLY COMPACTED SELECT BACKFILL SHALL BE 95% OF STD. PROCTOR DENSITY OR AS SPECIFIED FOR THE TRENCH BACKFILL WHICHEVER IS GREATER.

PIPE BEDDING

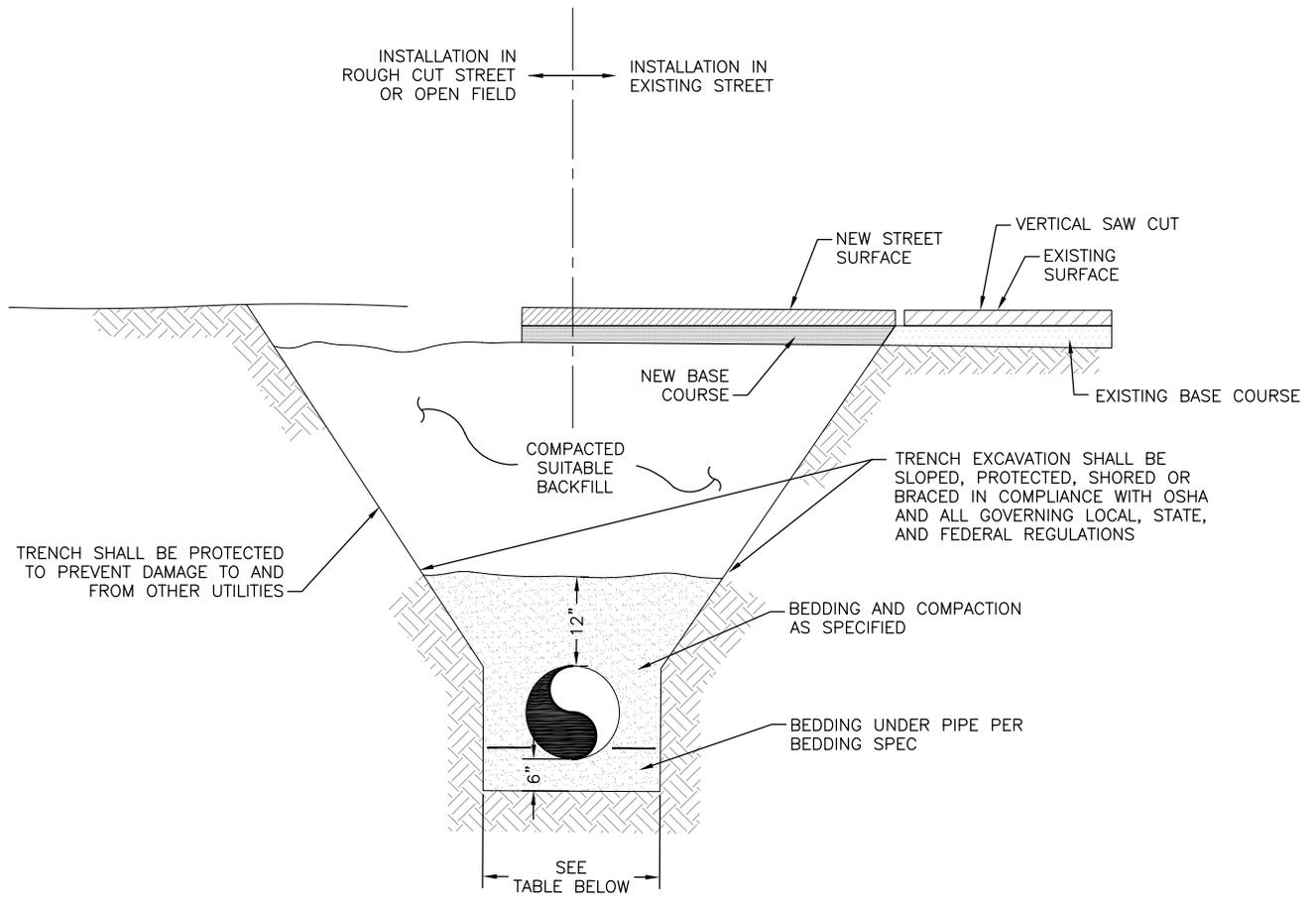
Drawn: GGM
Date: JAN 2011
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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-1



BOTTOM OF TRENCH WIDTH		
PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-5"	3'-9"
6"	1'-7"	3'-11"
8"	1'-9"	4'-1"
12"	2'-1"	4'-5"
15"	2'-6"	4'-9"
18"	2'-10"	5'-2"
24"	3'-2"	5'-6"

ALL PIPE EMBEDMENT SHALL BE IMPORTED CLASS B BEDDING UNLESS OTHERWISE DIRECTED.

AN OVER EXCAVATED TRENCH SHALL BE REFILLED AND THOROUGHLY COMPACTED UNDER THE DIRECTION OF THE DISTRICT.

UNDER NO CIRCUMSTANCES WILL PIPE BE LAID IN A PROPOSED FILL AREA PRIOR TO IT BEING COMPLETELY FILLED. THE FILL WILL BE PLACED FIRST TO PROPOSED GRADE AND COMPACTED AS REQUIRED. A TRENCH THEN WILL BE EXCAVATED AND THE PIPE INSTALLED IN THE USUAL MANNER.

TYPICAL TRENCH CROSS SECTION

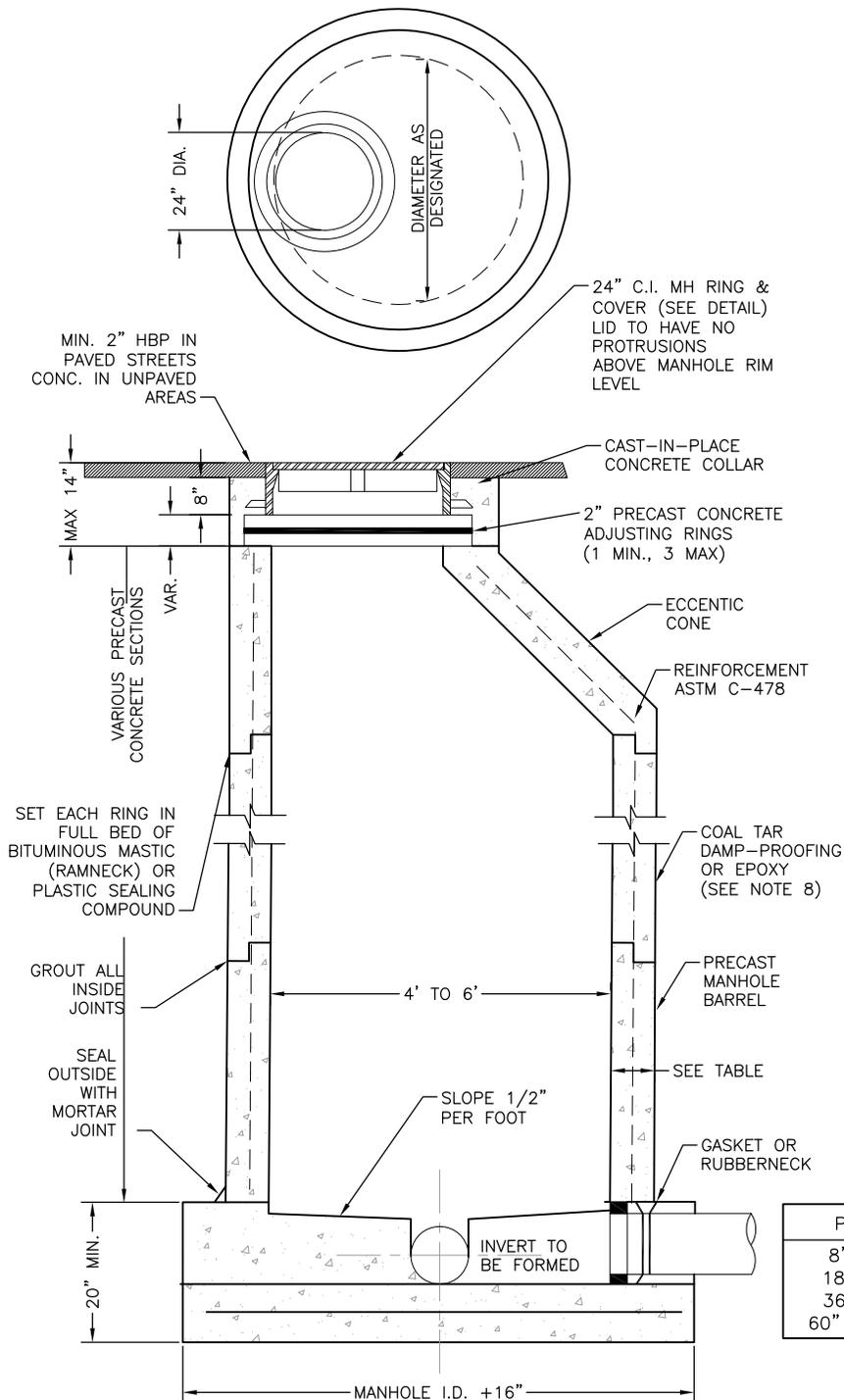
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Date: JAN 2011
Scale: N.T.S.

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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

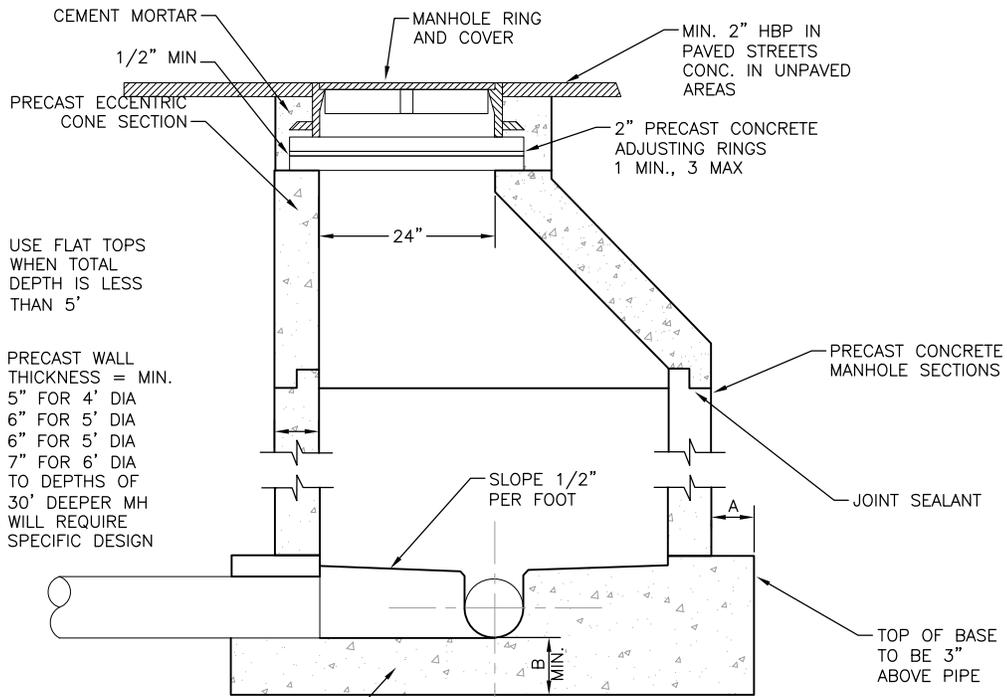
WW-2



1. MANHOLE BARREL MINIMUM DIAMETER SHALL CONFORM TO TABLE.
2. SHAPING FOR SMOOTH MANHOLE INVERTS MUST BE DONE BY FORMING/SHAPING CONCRETE BASE.
3. PRECAST SECTIONS TO CONFORM TO ASTM C-478.
4. STUB-OUTS SHALL EXTEND A MINIMUM OF 6" PAST MANHOLE O.D. AND BE SATISFACTORILY PLUGGED.
5. CONCRETE MANHOLES MAY BE POURED IN PLACE ONLY WITH PRIOR DESIGN AND INSPECTION APPROVAL.
6. ALL MORTAR GROUT SHALL BE MIXED WITH THE TYPE V CEMENT.
7. APPLY COAL TAR EPOXY DAMP-PROOFING TO ALL EXTERIOR CONCRETE SURFACES.
8. CENTER REINF. IN BASE POUR BELOW PIPE O.D. AT FL.
9. ALL EXTERIOR JOINTS SHALL RECEIVE BUTYL RUBBER JOINT WRAP. REFER TO SPECIFICATIONS.

PIPE I.D.	MANHOLE I.D.	WALL
8" TO 15"	4'-0"	5"
18" TO 30"	5'-0"	6"
36" TO 54"	6'-0"	7"
60" & LARGER	SPECIAL DESIGN	

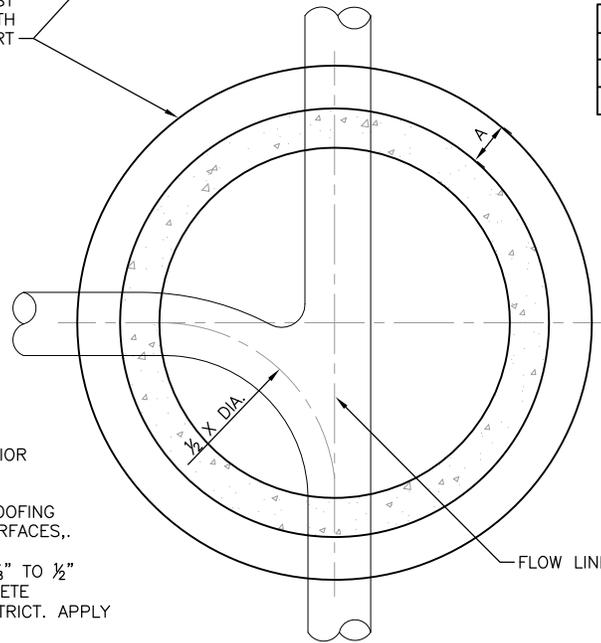
PRECAST MANHOLE



SEE WW-3 FOR OTHER DETAILS

BASE MAY BE PRECAST CONCRETE WITH CAST-IN-PLACE INVERT

M.H. DEPTH	DIMENSION	
	A	B
0' TO 30'	6"	8"
OVER 30'	12"	12"



WATERPROOFING REQUIREMENTS

1. APPLY CEMENT GROUT LAYER (3/8" TO 1/2" THICK) TO ALL INTERIOR JOINTS ABOVE FLOW CHANNEL.
2. APPLY COAL TAR EPOXY DAMPROOFING TO ALL EXTERIOR CONCRETE SURFACES..
3. APPLY CEMENT GROUT LAYER (3/8" TO 1/2" THICK) TO ALL EXTERIOR CONCRETE SURFACES, AS DIRECTED BY DISTRICT. APPLY PRIOR TO DAMPPROOFING.

SANITARY SEWER MANHOLE

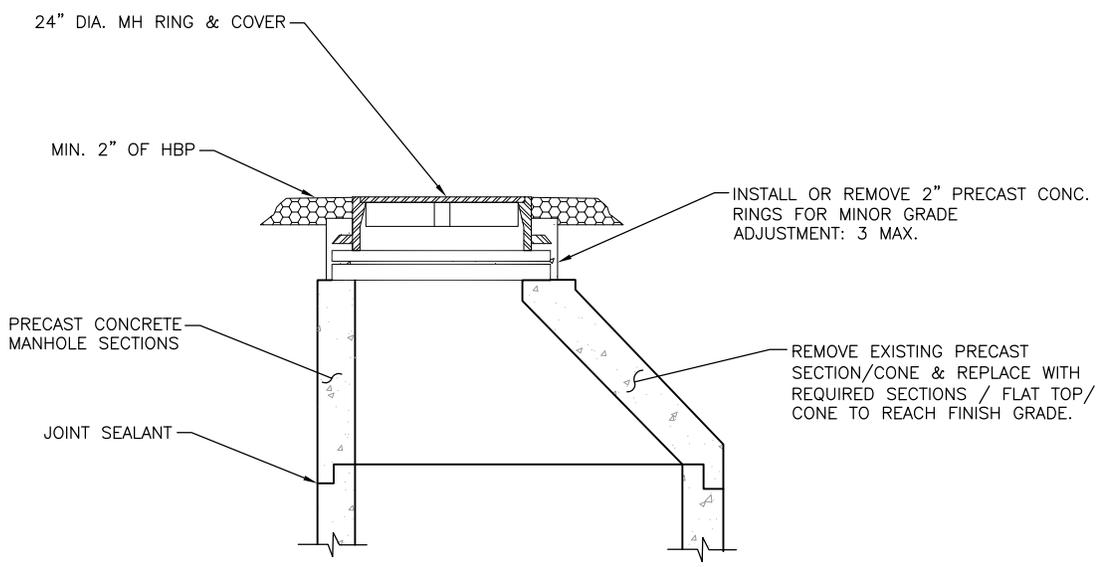
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Scale: N.T.S.

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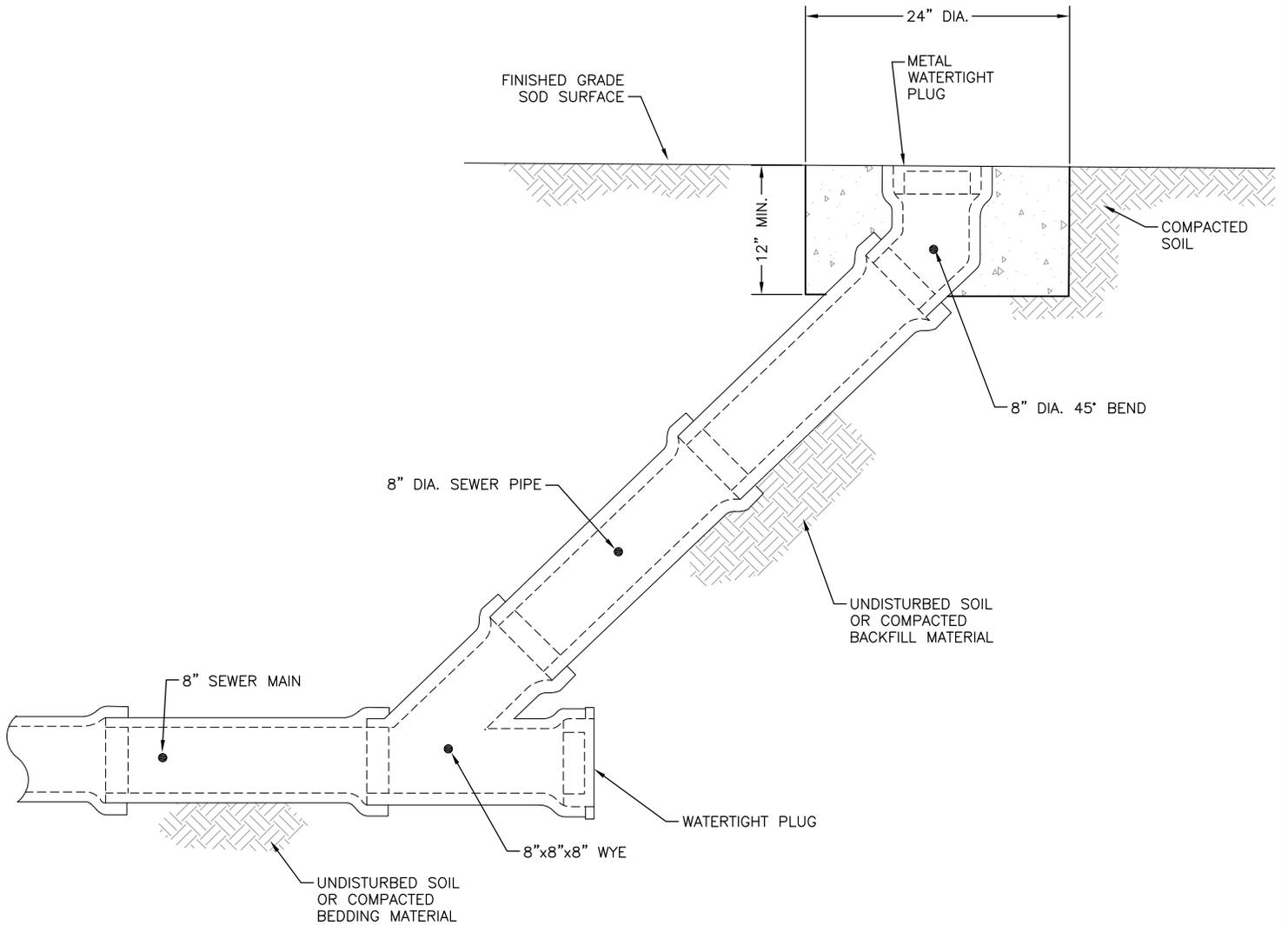
WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-4



MANHOLE RING AND COVER ADJUSTMENT

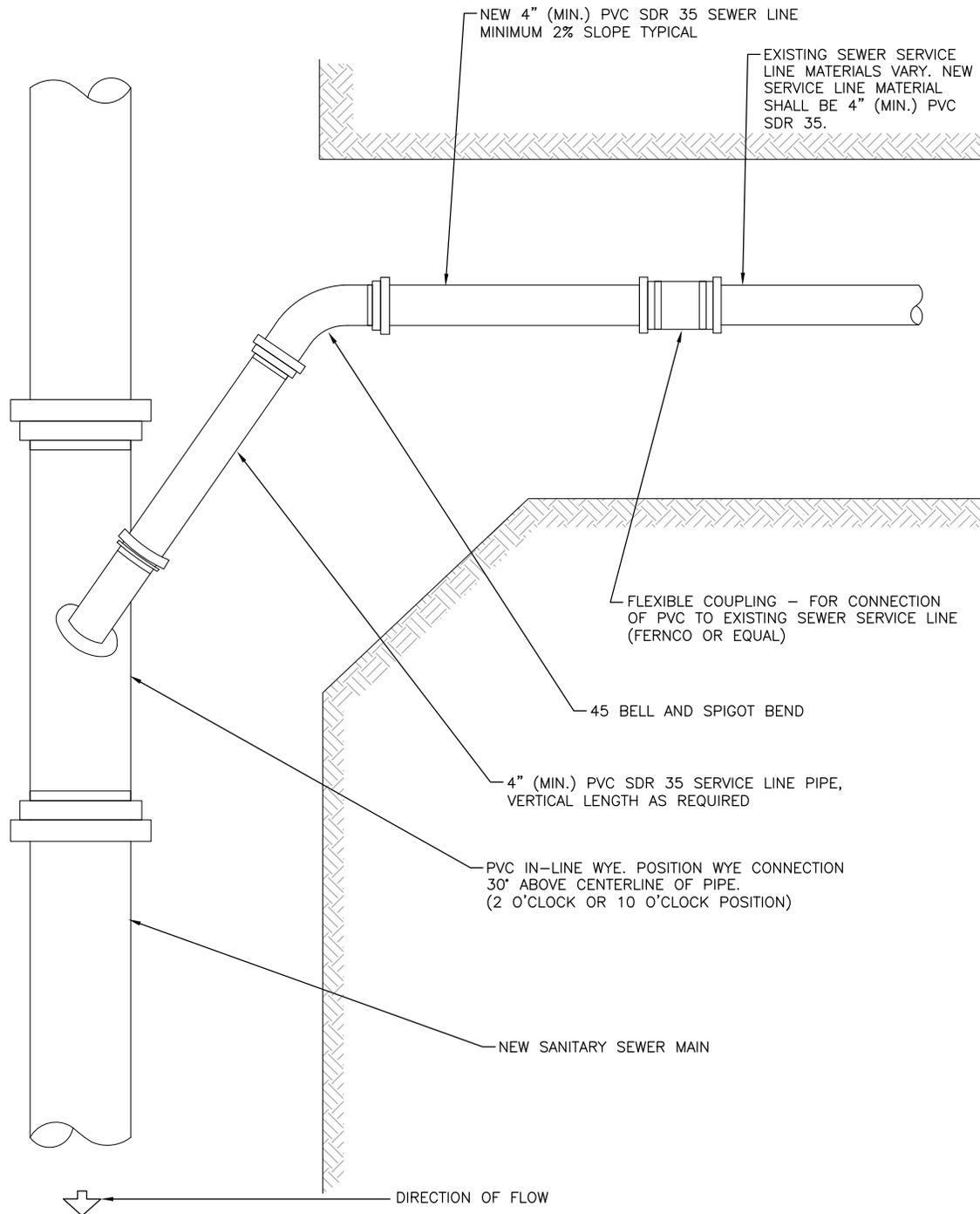
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Date: JAN 2011	Revised:			
Scale: N.T.S.	Revised:			



SANITARY SEWER MAIN CLEAN-OUT

Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:

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Revised:	Revised:



SANITARY SEWER SERVICE CONNECTION

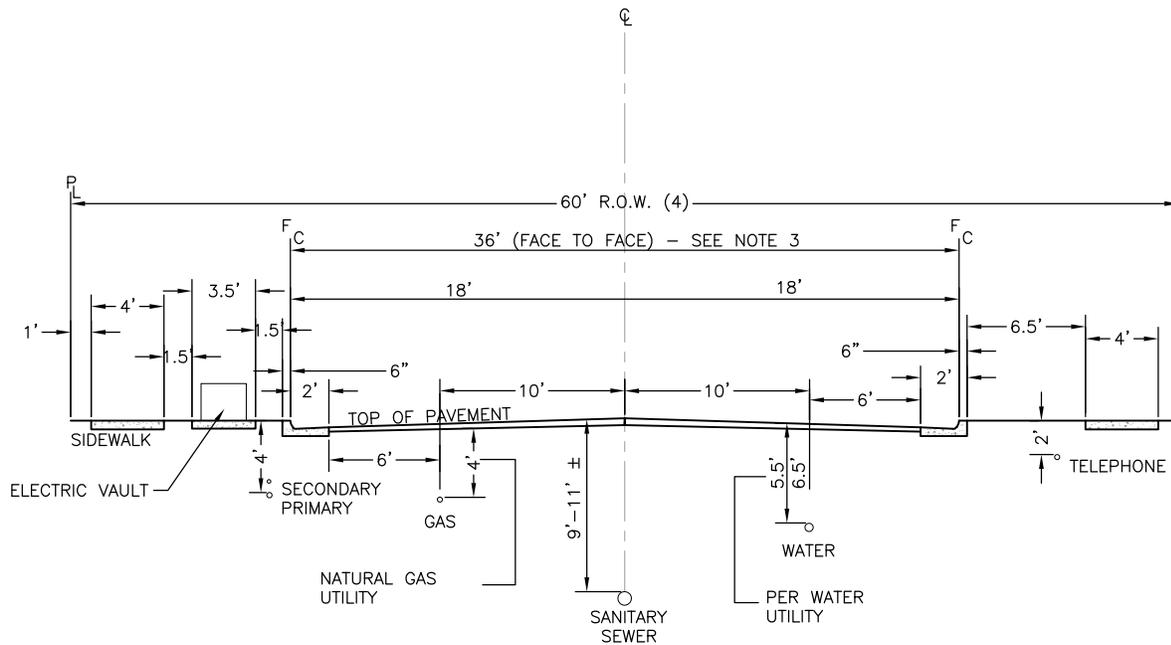
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WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-7



**TYPICAL CROSS SECTION
UTILITIES LOCATION**

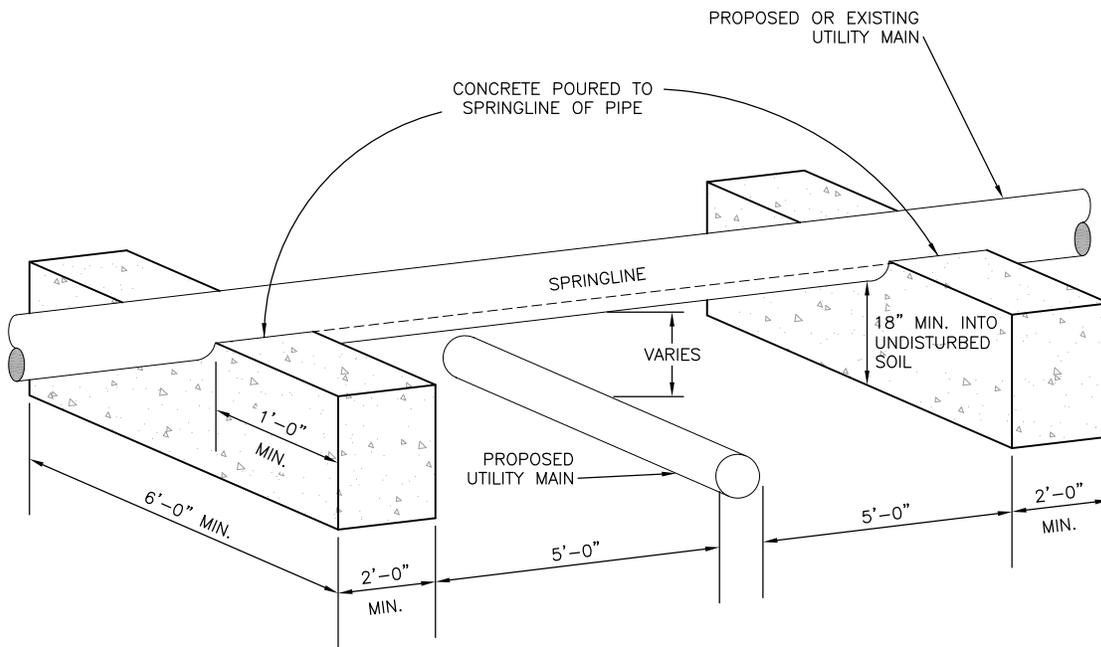
GENERAL NOTES

1. STORM SEWERS SHALL MAINTAIN A 10' CLEAR SEPARATION FROM WATER.
2. ELECTRIC CONDUITS SHALL BE ON THE OPPOSITE SIDE OF THE STREET FROM WATER.
3. FOR 40' WIDE STREET SECTIONS, MAINTAIN WATER 10 FEET FROM SANITARY SEWER AT STREET CENTERLINE.
4. FOR 50' WIDE RIGHT-OF-WAY (ROW), A 5-FOOT WIDE SIDEWALK AND UTILITY EASEMENTS ARE REQUIRED ADJACENT TO THE STREET ROW. FIVE (5) FOOT WIDE ATTACHED SIDEWALK IS USED WITH ELECTRIC UTILITIES BEHIND WALK IN EASEMENT.

TYPICAL UTILITY LOCATIONS

Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:

Revised:
Revised:
Revised:

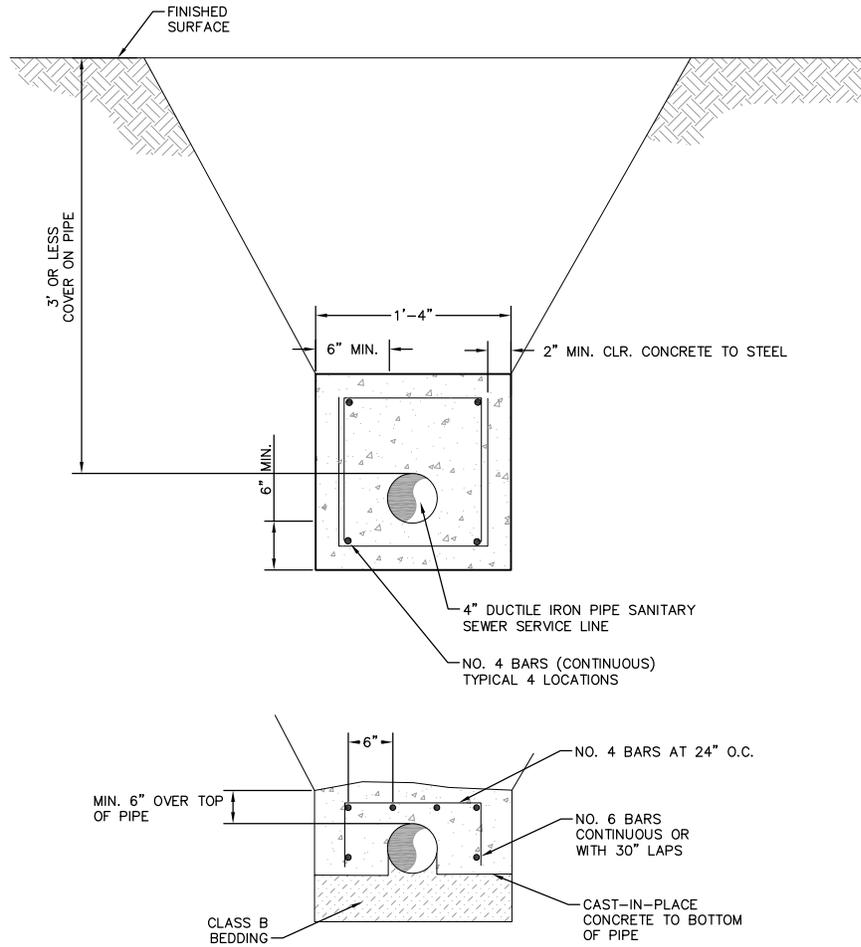


NOTES:

1. CONCRETE BLOCKS TO BE REINFORCED WITH #6 REBAR SET ON 12" CENTERS.
2. NO JOINTS OF UTILITY MAIN SHALL BE ALLOWED BETWEEN CONCRETE BRIDGING BLOCKS.

PIPE BRIDGING DETAIL

Drawn: GGM	Revised:	 WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	WW-9
Date: JAN 2011	Revised:		
Scale: N.T.S.	Revised:		



REINFORCED CONCRETE PIPE CAP

NOTES:

1. DUCTILE IRON PIPE WITHOUT CONCRETE ENCASEMENT MAY BE PERMITTED BY THE DISTRICT IF FINAL PIPE COVER IS MORE THAN 3 FEET.
2. CONCRETE ENCASEMENT PER THIS DRAWING IS REQUIRED WITH DUCTILE IRON PIPE WHERE FINAL PIPE COVER IS 3 FEET OR LESS.
3. IF THE CONCRETE ENCASEMENT IS REQUIRED ON A SANITARY SEWER SERVICE LINE, THE PROPERTY OWNER/CUSTOMER IS COMPLETELY RESPONSIBLE FOR OPERATION, MAINTENANCE AND REPLACEMENT OF ANY SEWER SERVICE LINE FROM THE DISTRICT'S SEWER MAIN TO THE STRUCTURE SERVED.
4. THE DISTRICT MAY ACCEPT CONCRETE CAP FOR PIPE PROTECTION IN SPECIAL CONDITIONS.

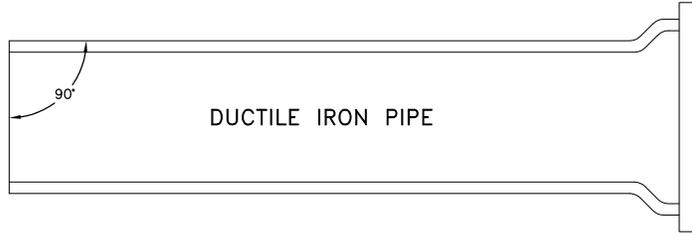
SHALLOW SANITARY SEWER LINE PROTECTION/ENCASEMENT

Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-10



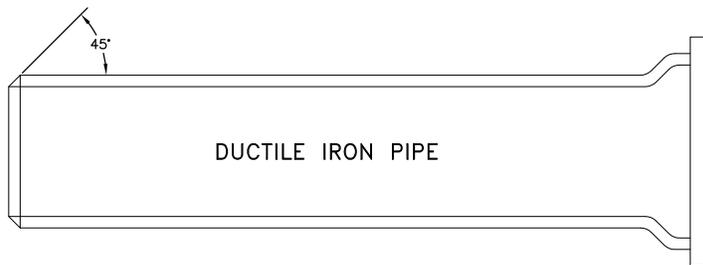
MECHANICAL JOINT CONNECTION

PIPE MUST BE CUT AT RIGHT ANGLES TO LONGITUDINAL CENTERLINE IN ALL CASES.

PIPE ENDS SHALL BE FREE OF BURRS.

MORTAR LINING SHALL BE FLUSH WITH PIPE END.

GOUGES CUT IN PIPE ENDS SHALL NOT BE ALLOWED.



SLIP JOINT CONNECTION

PIPE CUT IN STRAIGHT LINE AND BEVELED AT 45° ANGLE ON END.

GENERAL NOTES:

1. ALL PIPE CUTTING EQUIPMENT AND PIPE CUTS MUST BE APPROVED BY THE WATER AND SANITATION DISTRICT INSPECTOR.
2. ALL PIPE ENDS TO BE USED IN INSTALLATION SHALL BE DRESSED SMOOTH TO THE SATISFACTION OF THE INSPECTOR PRIOR TO INSTALLATION.
3. AT THE REQUEST OF THE CONTRACTOR MAKING THE INSTALLATION, THE DISTRICT WILL MAKE PIPE CUTS, PROVIDING THE CURRENT FEE PER CUT IS PAID AND 24-HOUR NOTICE IS GIVEN (THE CURRENT FEE IS SUBJECT TO CHANGE.)
4. ALL DIP DELIVERED TO JOB SITE MUST BE NEW MATERIAL.

PIPE CUTTING

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:



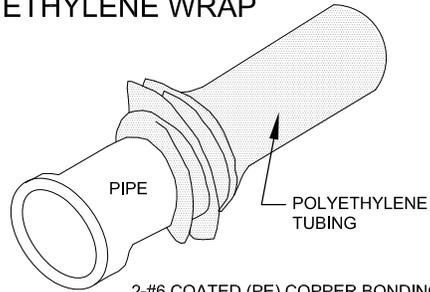
WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-11

FIELD INSTALLATION OF POLYETHYLENE WRAP

STEP 1:

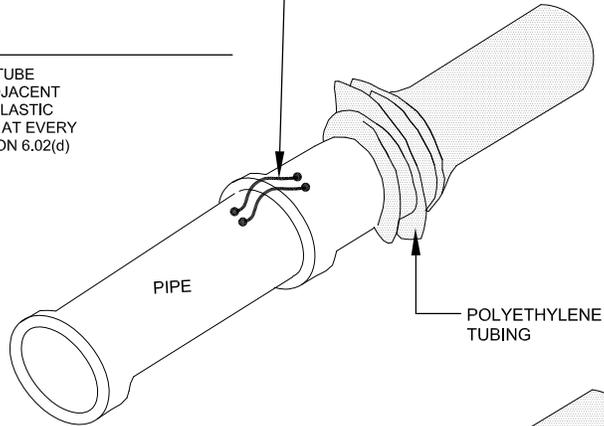
PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO TRENCH.



2-#6 COATED (PE) COPPER BONDING WIRE THERMOWELDED TO PIPE, BOTH ENDS, OR BONDING STRAP THERMO WELDED TO PIPE. NO COMMON WELDS ALLOWED

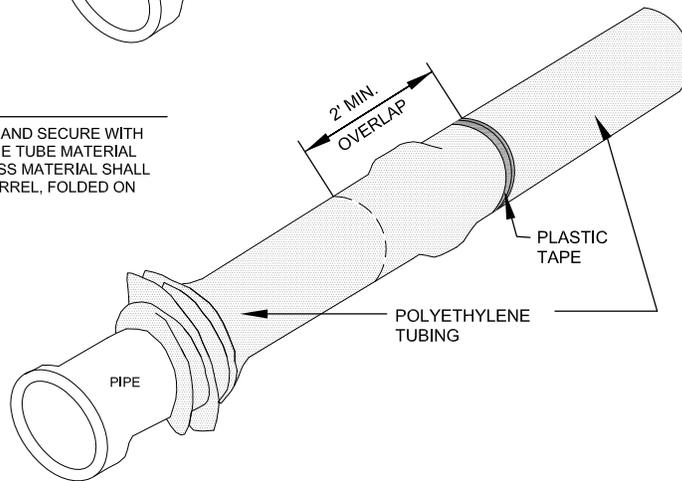
STEP 2:

PULL TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO END AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE. INSTALL BONDING STRAP OR WIRE AT EVERY JOINT OF PIPE PRIOR TO WRAPPING AS PER SECTION 6.02(d) OF THE STANDARD SPECIFICATIONS.



STEP 3:

OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF PIPE AND TAPED IN PLACE.



POLYETHYLENE PIPE WRAP

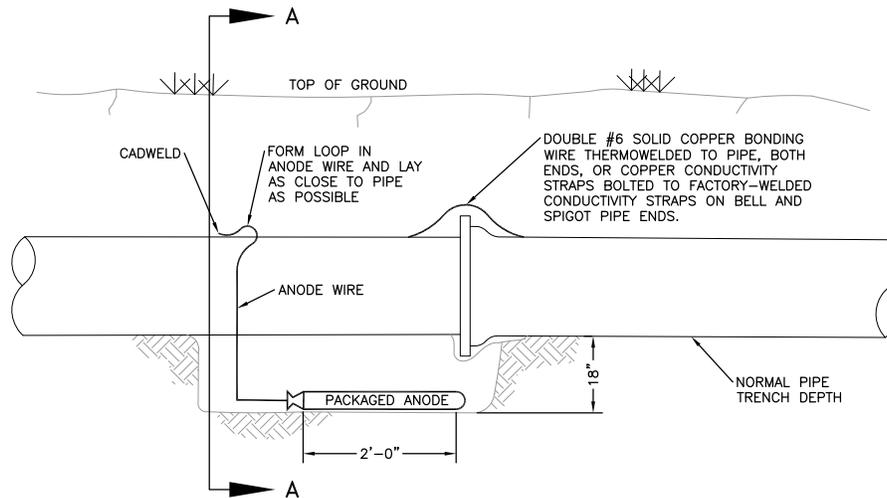
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Date: JAN 2011
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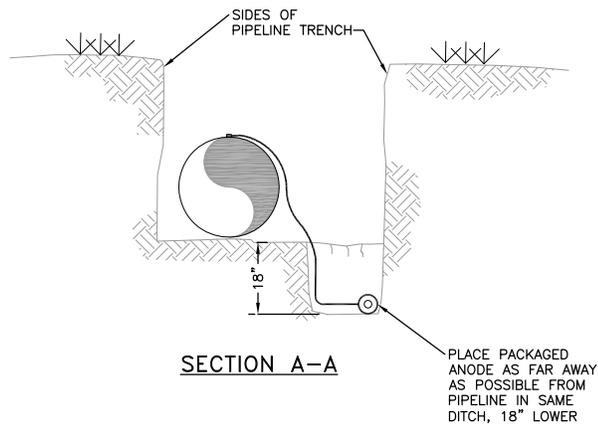


WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-12



ELEVATION



SECTION A-A

NOTES:

1. CADWELD CONNECTION TO BE PRIMED AND COATED CAREFULLY. PACKAGED ANODE SHOULD BE COVERED WITH FINE SOIL CONTAINING NO ROCKS OR DIRT CLUMPS, TAMPED.
2. WHEN ANODES ARE REQUIRED WITH METAL FITTINGS AND APPURTENANCES TOGETHER WITH PVC PIPE INSTALLATION, THE ANODES SHALL BE PLACED AND ATTACHED TO THE METAL IN SAME MANNER AS SHOWN ON THIS DRAWING. 9LB. ANODES CAN BE USED ON METAL FITTINGS 12" AND LESS IN DIAMETER AND 17LB. ANODES FOR METAL FITTINGS GREATER THAN 12" DIAMETER WHEN USING PVC PIPE.
3. PACKAGED ANODE TO BE WETTED AND COVERED WITH SOIL PRIOR TO BACKFILLING.

BONDING JOINT & ANODE INSTALLATION

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

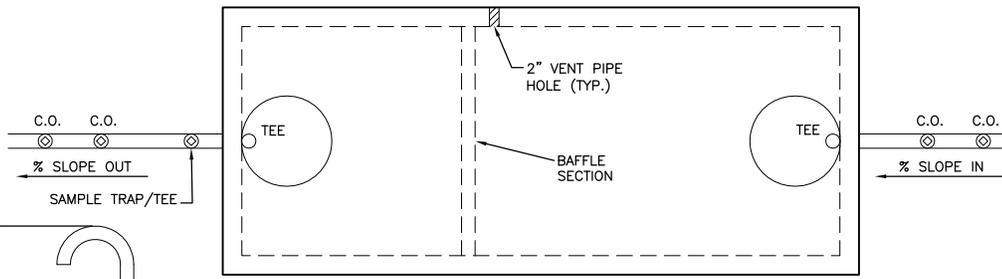
WW-13

MAXIMUM DEFLECTION
PER SLIP JOINT OF D.I.P.

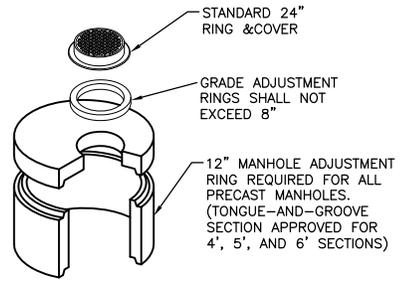
PIPE DIAMETER			MFRS. DEFL.	DESIGN DEFLECTION (80% MAX.)			APPROX. RADIUS FOR DEFLECTING CURVES WITHOUT BENDS	
I.D. (IN)	O.D. (IN)	O.D. (FT)		MAX. DEFL. DIST.		20'L	18'L	
				(1)	(2)			
4"	4.80"	.400'	5'00"00"	4'00"00"	16"	15"	286'	258'
6"	6.90"	.575'	5'00"00"	4'00"00"	16"	15"	286'	258'
8"	9.05"	.754'	5'00"00"	4'00"00"	16"	15"	286'	258'
10"	11.10"	.925'	5'00"00"	4'00"00"	16"	15"	286'	258'
12"	13.20"	1.100'	5'00"00"	4'00"00"	16"	15"	286'	258'
14"	15.30"	1.275'	3'00"00"	2'24"00"	10"	9"	477'	430'
16"	17.40"	1.450'	3'00"00"	2'24"00"	10"	9"	477'	430'
18"	19.50"	1.625'	3'00"00"	2'24"00"	10"	9"	477'	430'
20"	21.60"	1.800'	3'00"00"	2'24"00"	10"	9"	477'	430'
24"	25.80"	2.150'	3'00"00"	2'24"00"	10"	9"	477'	430'
30"	32.00"	2.666'	2'30"00"	2'00"00"	8"	7"	573'	516'
36"	38.30"	3.192'	2'00"00"	1'36"00"	6"	6"	716'	645'
42"	44.50"	3.708'	2'00"00"	1'36"00"	6"	6"	716'	645'

- (1) 20'L = NORMAL 20-FOOT JOINT LAYING LENGTH
(2) = NORMAL 18-FOOT JOINT LAYING LENGTH

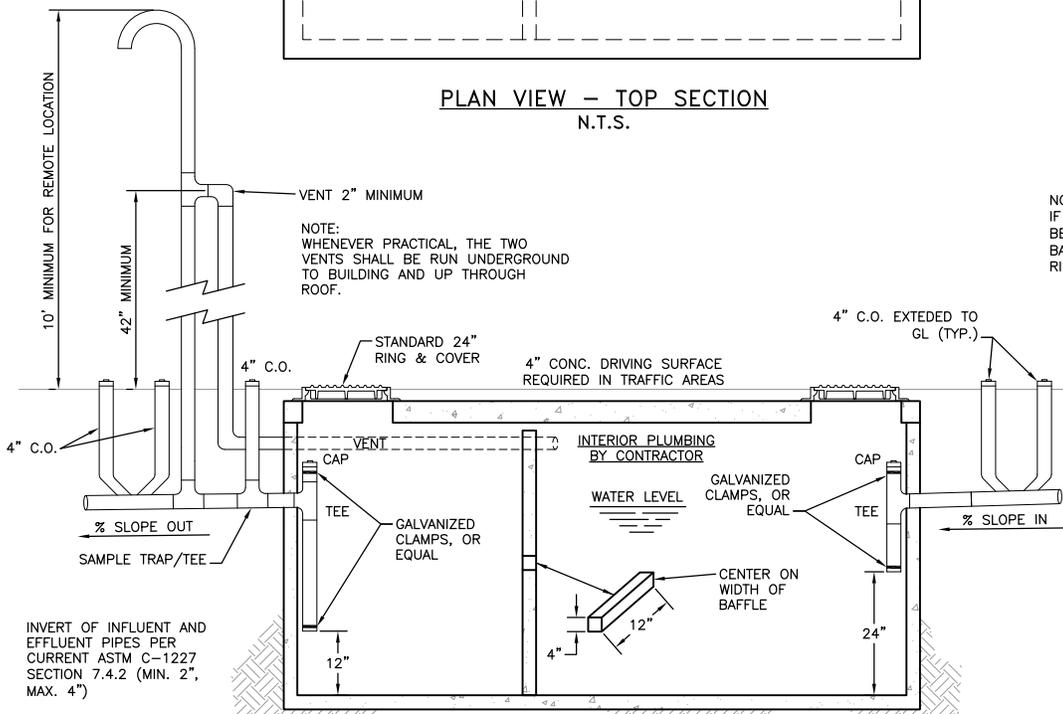
MAXIMUM PIPELINE DEFLECTION DATA



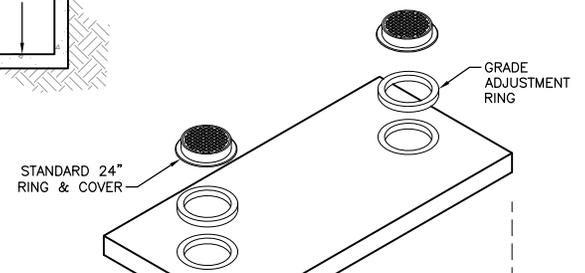
PLAN VIEW - TOP SECTION
N.T.S.



NOTE:
IF TOP OF GREASE INTERCEPTOR IS MORE THAN 8" BELOW FINISHED GRADE, 4" DIAMETER MANHOLE BARREL SECTION(S) WILL BE REQUIRED TO BRING RING AND COVER TO GRADE.



SECTION
N.T.S.



ISOMETRIC
N.T.S.

TYPICAL GREASE INTERCEPTORS

SIZE (GAL.)	USE	LENGTH	WIDTH	HEIGHT
800	NON-TRAFFIC	96"	48"	73"
1000	NON-TRAFFIC	102"	58"	73"
1000	TRAFFIC	96"	72"	87.5"
1500	NON-TRAFFIC	126"	68"	73"
1500	TRAFFIC	162"	84"	65"
2250	NON-TRAFFIC	144"	78"	79"
2500	TRAFFIC	162"	84"	103"
3500	TRAFFIC	162"	84"	103"
5000	TRAFFIC	162"	84"	147"

APPROX. SIZE OF GREASE INTERCEPTORS
CHECK WITH MANUFACTURER FOR CORRECT DIMENSIONS AND INVERTS

NOTES:

1. TO BE READ IN CONJUNCTION WITH DISTRICT WASTEWATER SPECIFICATIONS AND INTERNATIONAL PLUMBING CODE.
2. SPECIFIC SIZE APPLICATION OF THE GREASE INTERCEPTOR TO BE DETERMINED BY DISTRICT.

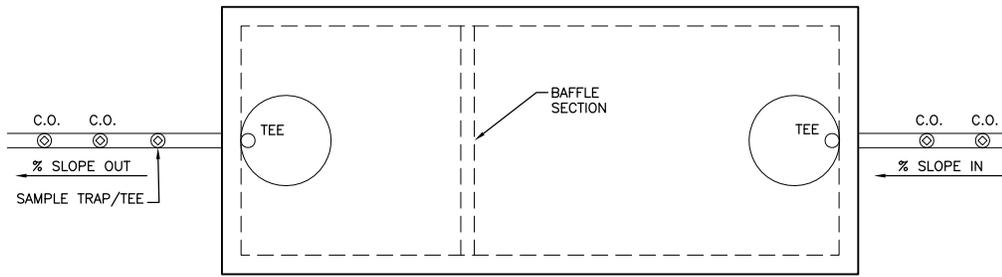
GREASE INTERCEPTOR

Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

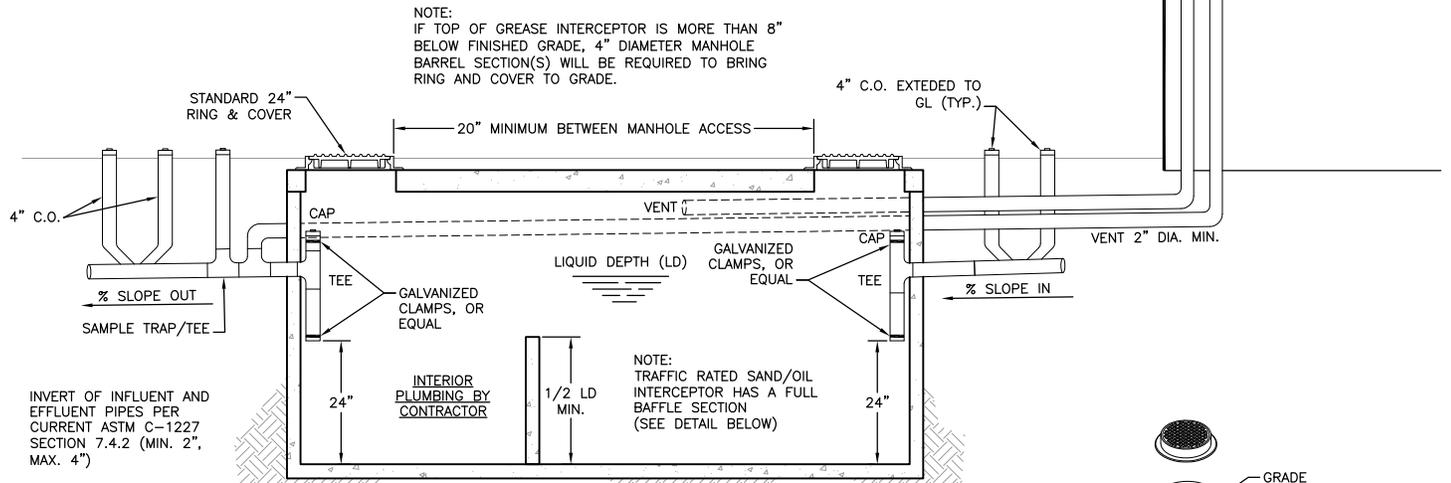
Revised:
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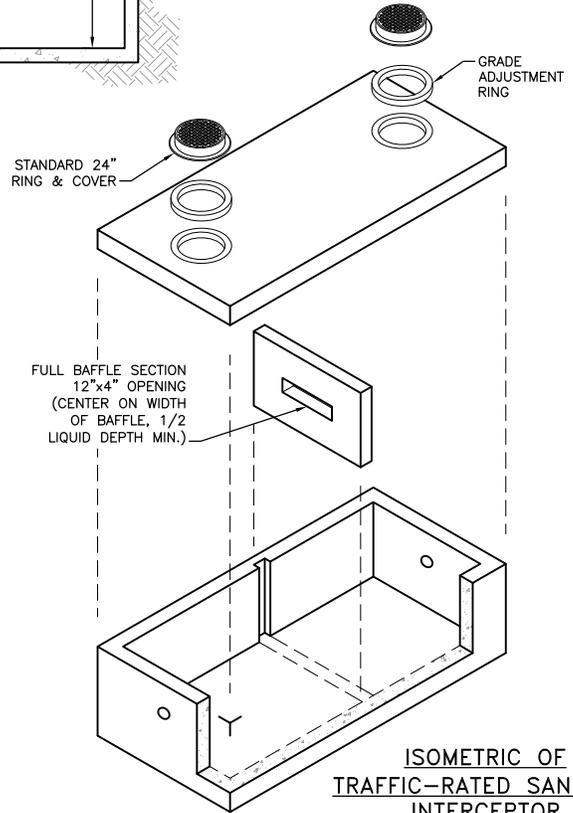
WW-15



PLAN VIEW - TOP SECTION
N.T.S.



SECTION
N.T.S.



ISOMETRIC OF
TRAFFIC-RATED SAND/OIL
INTERCEPTOR
N.T.S.

NOTE:
IF TOP OF GREASE INTERCEPTOR IS MORE THAN 8"
BELOW FINISHED GRADE, 4" DIAMETER MANHOLE
BARREL SECTION(S) WILL BE REQUIRED TO BRING
RING AND COVER TO GRADE.

INVERT OF INFLUENT AND
EFFLUENT PIPES PER
CURRENT ASTM C-1227
SECTION 7.4.2 (MIN. 2",
MAX. 4")

INTERIOR
PLUMBING BY
CONTRACTOR

NOTE:
TRAFFIC RATED SAND/OIL
INTERCEPTOR HAS A FULL
BAFFLE SECTION
(SEE DETAIL BELOW)

TYPICAL SAND/OIL INTERCEPTORS

SIZE (GAL.)	USE	LENGTH	WIDTH	HEIGHT
500	TRAFFIC	72" OD x 74" (ID=60")		
1000	NON-TRAFFIC	102"	58"	77"
1000	TRAFFIC	96"	72"	86"
1500	NON-TRAFFIC	126"	68"	77"
1500	TRAFFIC	162"	84"	64"
2250	NON-TRAFFIC	144"	78"	82"
2500	TRAFFIC	162"	84"	102"

APPROX. SIZE OF SAND/OIL INTERCEPTORS
CHECK WITH MANUFACTURER FOR CORRECT DIMENSIONS AND INVERTS

NOTES:

1. TO BE READ IN CONJUNCTION WITH DISTRICT WASTEWATER SPECIFICATIONS AND INTERNATIONAL PLUMBING CODE.
2. SPECIFIC SIZE APPLICATION OF THE GREASE INTERCEPTOR TO BE DETERMINED BY DISTRICT.
3. INTERIOR PIPING TO BE STRAPPED AT BOTTOM WITH GALVANIZED CLAMPS, UNISTRUT, OR EQUAL.
4. VENTS SHALL BE CONSTRUCTED ON THE OUTSIDE OF THE TANK.

SAND/OIL INTERCEPTOR

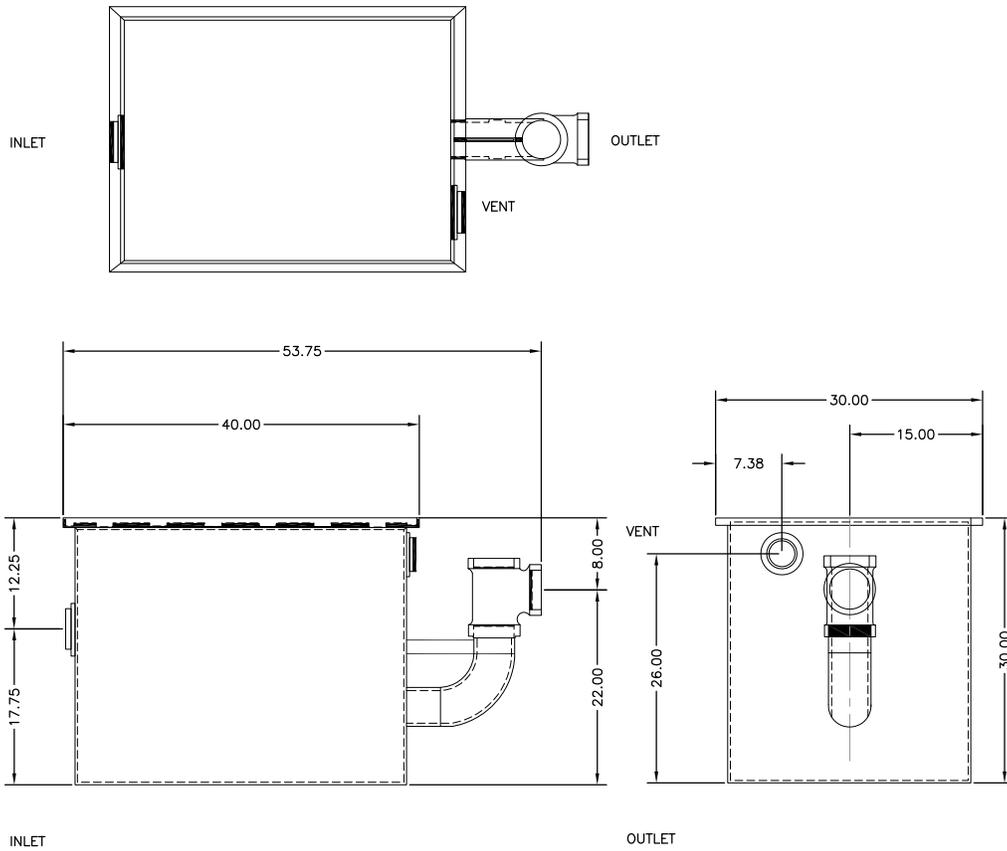
Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-16



SPECIFICATIONS:

ALL WELDED 1/4" STEEL SEPARATOR, 85 GALLON STATIC CAPACITY, 4.00" TAPPED INLET/OUTLET WITH 3.00" TAPPED INTERNAL VENT CONNECTION, 250 LBS GREASY SLUDGE CAPACITY, VISIBLE DOUBLE-WALL OUTSIDE TRAP SEAL, SEPARATOR PLATE AND REMOVEABLE FILTER SCREEN, REMOVEABLE 3/8" NONSKID DIAMOND TREADPLATE COVERS FOR FLUSH WITH FLOOR INSTALLATION SUITABLE FOR PEDESTRIAN TRAFFIC SECURED WITH STAINLESS FLAT HEAD SCREWS, HEAVY DUTY LEAK-PROOF GASKET, OPEX SHOP COAT COATING INSIDE AND BITUMINOUS COATING OUTSIDE. ROCKFORD MODEL GIS-50 OR APPROVED EQUIVALENT.

GREASE SEPARATOR = 250 LBS

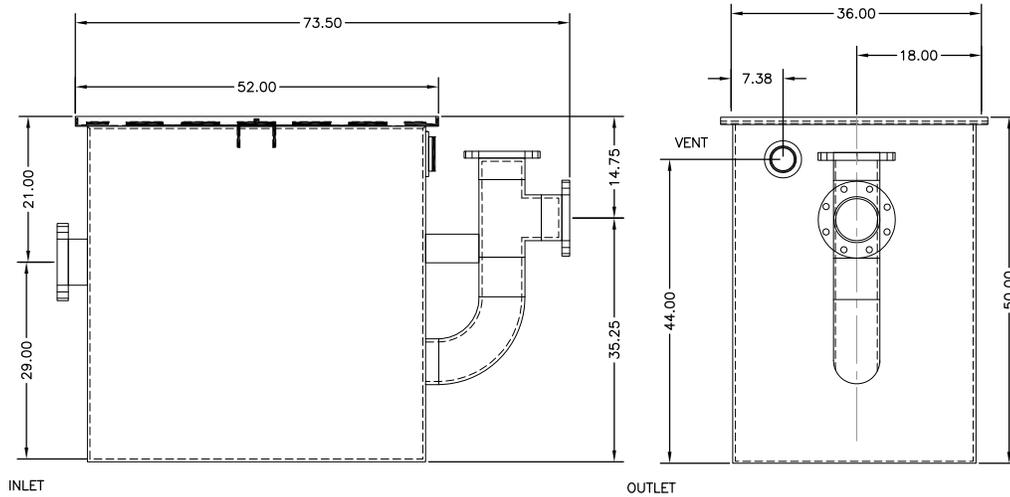
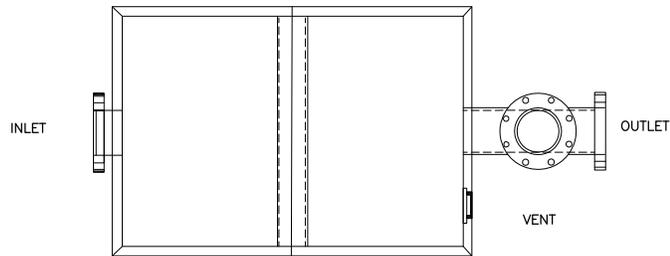
Drawn: GGM
Date: JAN 2011
Scale: N.T.S.

Revised:
Revised:
Revised:



WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-17



SPECIFICATIONS:

ALL WELDED 1/4" STEEL SEPARATOR, 225 GALLON STATIC CAPACITY,
 6.00" COMPANION FLANGE INLET/OUTLET WITH 3.00" TAPPED INTERNAL VENT CONNECTION,
 500 LBS GREASY SLUDGE CAPACITY, VISIBLE DOUBLE-WALL OUTSIDE TRAP SEAL, SEPARATOR
 PLATE AND REMOVEABLE FILTER SCREEN, REMOVEABLE 3/5" NONSKID DIAMOND TREADPLATE COVERS FOR
 FLUSH WITH FLOOR INSTALLATION SUITABLE FOR PEDESTRIAN TRAFFIC SECURED WITH STAINLESS FLAT
 HEAD SCREWS, HEAVY DUTY LEAK-PROOF GASKET, OPEX SHOP COAT COATING INSIDE AND BITUMINOUS COATING
 OUTSIDE. ROCKFORD MODEL GIS-70 OR APPROVED EQUIVALENT.

GREASE SEPARATOR = 500 LBS

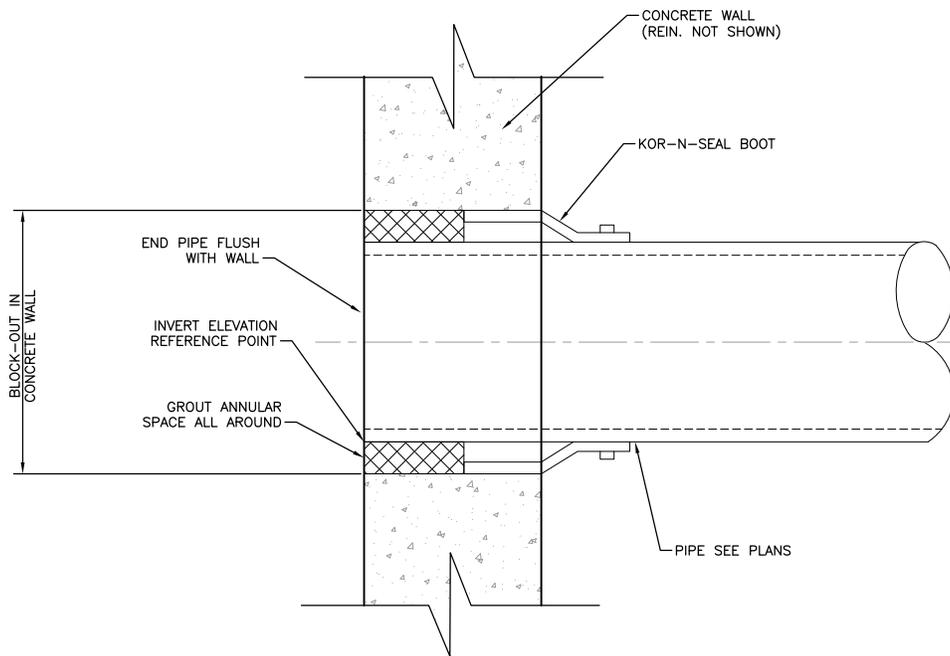
Drawn: GGM
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 Scale: N.T.S.

Revised:
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WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

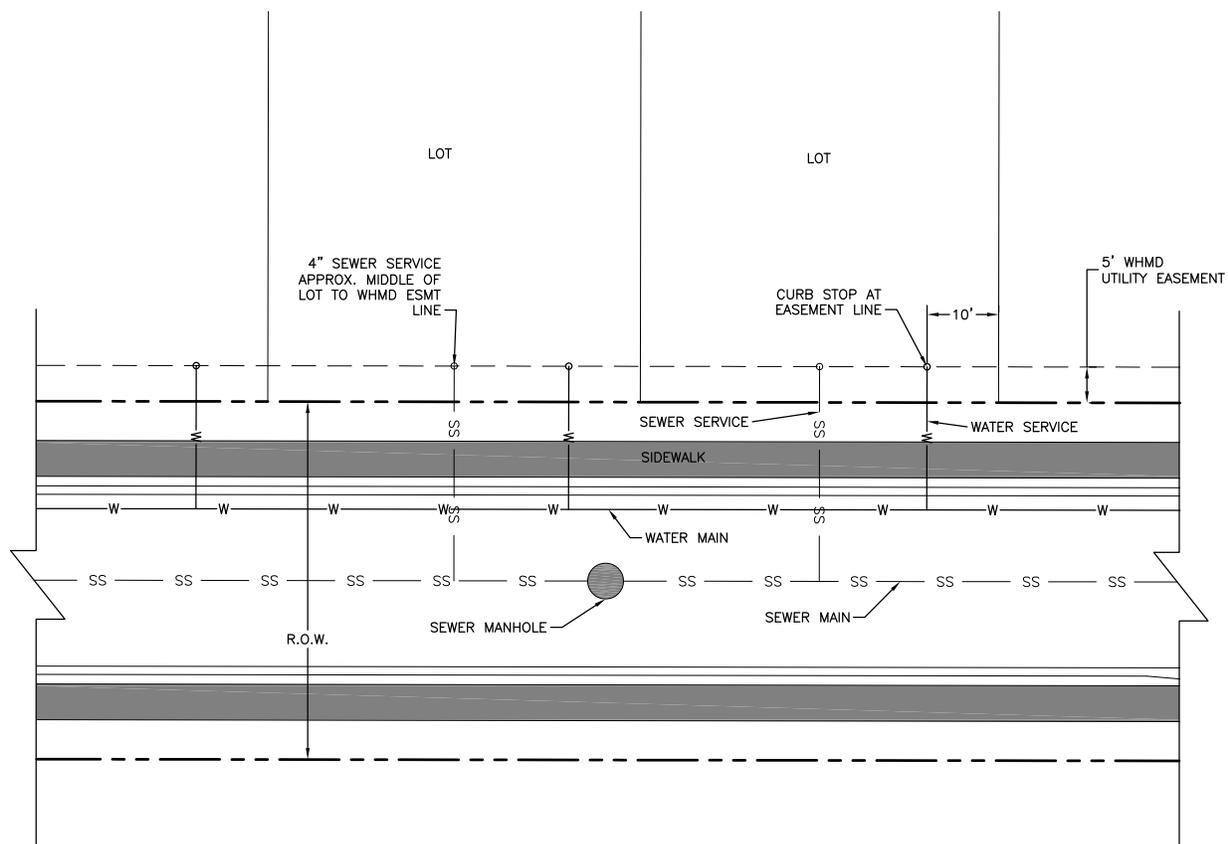
WW-18



KOR-N-SEAL BOOT DETAIL

Drawn: GGM	Revised:
Date: JAN 2011	Revised:
Scale: N.T.S.	Revised:

Revised:
Revised:
Revised:



NOTES:

1. WATER SERVICE TO BE 10' FROM "DOWNSTREAM" PROPERTY LINE AND EXTENDED TO WHMD UTILITY EASEMENT LINE.
2. SEWER SERVICE TO BE PLACED APPROXIMATELY IN THE MIDDLE OF THE LOT AND EXTENDED TO WHMD UTILITY EASEMENT LINE.
3. SERVICES SHALL BE MARKED WITH 2"x4" POST AT TERMINATION POINT FOR LOCATION DURING CONNECTION TO RESIDENCE. POSTS SHALL BE SPRAY-PAINTED BLUE FOR WATER AND GREEN FOR SEWER.

UTILITY SERVICE LOCATIONS

Drawn: GGM
 Date: JAN 2011
 Scale: N.T.S.

Revised:
 Revised:
 Revised:



WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

WW-20

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

**APPENDIX B-2
REQUEST FOR DEVIATION FORM**

REQUEST FOR DEVIATION

WATER AND WASTEWATER SYSTEM STANDARDS & SPECIFICATIONS

PRODUCT NAME:

PRODUCT DESCRIPTION:

DISTRIBUTOR'S NAME:

DISTRIBUTOR'S ADDRESS:

DISTRIBUTOR'S PHONE NUMBER:

MANUFACTURER'S NAME:

MANUFACTURER'S ADDRESS:

MANUFACTURER'S PHONE NUMBER:

- * Give current standard that this product complies with (ASTM, AWWA, etc.)
- * Attach any product information that the manufacturer wishes considered.
- * Attach list of current users of this product that we can contact.
- * Review of this product by the District does not guarantee its acceptance or use in the Water or Wastewater System. A test section or project maybe required prior to general acceptance or use.

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

APPENDIX C

PARK AND RECREATION POLICIES AND REGULATIONS

PARK AND RECREATION POLICIES AND REGULATIONS

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ARTICLE 1. GENERAL

- 1.1 PURPOSE.** These Park and Recreation Policies and Regulations (the “Policies”) are necessary for the administration, protection and maintenance of public property under the District’s control, management or supervision, regarding, *inter alia*, the following matters: (i) the preservation of property, grounds and structures; (ii) restriction or limitation of the use of such public property as to time, manner or permitted activities; (iii) prohibition of activities or conduct on public property which may be reasonably expected to substantially interfere with the use and enjoyment of such places by others or which may constitute a general nuisance; (iv) necessary sanitation, health and safety measures; (v) camping, picnicking, assemblages and other individual or group usages including the time, place and manner in which such activities may be permitted; (vi) use of all vehicles as to place, time and manner of use; and (vii) control and limitation on fires. These Policies are an appendix to the District’s Rules and Regulations and are subject to all provisions contained therein. To the extent any provision of these Policies conflicts with any provision in the Rules and Regulations, the Rules and Regulations shall prevail unless otherwise determined by the Board or District Manager in their sole discretion.
- 1.2 DEFINITIONS.** In addition to the definitions contained in Article 2 of the Rules and Regulations, the following definitions shall be applicable to these Policies:
- 1.2.1** District Property shall mean any real property owned, operated and/or maintained by the District.
- 1.2.2** District Resident(s) shall mean a person(s) residing within the legal boundaries of the District.
- 1.2.3** Person shall mean any individual, including, but not limited to, a District Resident, Property Owner, Developer, or other individual visiting or using the Recreation Amenities who does not live within or own property within the boundaries of the District.
- 1.2.4** Recreation Amenities shall mean any park, landscaping area or other amenity owned, operated and/or maintained by the District for public use and enjoyment. For purposes of these Policies, the rules, policies and procedures applying to Recreation Amenities shall also apply to any District Property.
- 1.2.5** User shall mean any Person entitled to use the Recreation Amenities.
- 1.3 LOST ARTICLES.** The District is not responsible for any lost or stolen articles or for accidents on District Property. All personal articles should be locked or secured as appropriate to avoid loss to the owner. There will be a collection spot for all lost articles designated in the District’s Office. All lost articles which are not claimed shall be donated to a non-profit collection agency on a monthly basis as determined by the Board or District Manager in their sole discretion.

End of Article.

ARTICLE 2. ACCESS TO AND USE OF RECREATION AMENITIES

- 2.1 PERSONS ENTITLED TO USE OF RECREATION AMENITIES.** The District's Recreation Amenities are open to the public for its use and enjoyment. All District Residents and Property Owners of property within the legal boundaries of the District, or otherwise served by the District through extraterritorial arrangement, shall be entitled to use the Recreation Amenities as permitted in these Policies. Persons who are not District Residents and Property Owners are also permitted to use the Recreation Amenities, subject to any and all fees, rates, tolls, penalties and charges imposed by the District, as may be amended from time to time, as reflected on the Schedule of Fees and Charges set forth in Appendix A of the Rules and Regulations.
- 2.2 USE OF RECREATION AMENITIES FOR COMMERCIAL PURPOSES.** The Recreation Amenities will not be permitted for commercial activities or other private business enterprise.
- 2.3 HOURS OF OPERATION.** The Recreation Amenities shall be open from 5:00 a.m. to 9:00 p.m. Use of the Recreation Amenities outside of these hours shall be considered a violation of these Policies and any Persons on District Property outside of these hours will be considered to be trespassing and will be subject to criminal prosecution.

End of Article.

ARTICLE 3. GENERAL RULES

3.1 PROHIBITED AND UNLAWFUL CONDUCT. It shall be unlawful for any Person:

- 3.1.1** To enter, use, or occupy any public areas during the time such areas, or any portions thereof, are closed to entry, use or occupancy, including seasonal closures, unless approved in writing by the Board or the District Manager.
- 3.1.2** To enter, use or occupy any District Property between the hours of 9:00 p.m. and 5:00 a.m., unless authorized by a written permit or approved in writing by the Board or the District Manager.
- 3.1.3** To remove, destroy, vandalize, deface or damage any building, structure, facility, sign, equipment, fences, gates or locks located on or regulating access to District Property.
- 3.1.4** To construct, place or maintain any kind of road, trail, structure, sign, fence, marker, enclosure, communication equipment or other improvement on, over, through or under any District Property without written approval from the Board or the District Manager.
- 3.1.5** To deposit or leave any refuse, trash, litter, household or construction debris, or commercial garbage or trash, except by depositing such trash, refuse, litter and debris in refuse receptacles specifically designed for such purpose.
- 3.1.6** To install landscaping improvements extending onto District Property including, but not limited to, irrigation, landscape materials, shrub and tree planting, gardening, landscape related structures and retaining walls.
- 3.1.7** To skateboard or rollerblade on District Property except on designated sidewalks and roadways.
- 3.1.8** To solicit, picket, protest or distribute literature without prior approval of the Board or the District Manager and the securing of any required permits.
- 3.1.9** To tamper with, remove or vandalize any life safety equipment on District Property (i.e. fire extinguishers, smoke detectors, fire alarms, lifeguard equipment, etc.).
- 3.1.10** To loiter or block ingress and/or egress to or from District Property.
- 3.1.11** To amplify sound by any means within any District Property without written approval of the Board or the District Manager.
- 3.1.12** To wear apparel commonly recognized as gang-related.
- 3.1.13** To engage in any activity that unreasonably endangers the health, safety and welfare of any Person, animal or property.
- 3.1.14** To engage in disorderly conduct (as defined in § 18-9-106(1), C.R.S.) within District Property.

- 3.1.15** To build, start or light any fire at any location, of any nature, except within properly approved and designated areas (i.e. park grills, etc.), or to leave any fire unattended, or to fail to comply with any fire bans.
- 3.1.16** To install any structure including, but not limited to, tents, booths, stands, awnings, tree houses, rope swings, inflatable amusements and canopies, except as may otherwise be approved by the Board or the District Manager, with the exception that temporary awnings and/or umbrellas for shade are permitted as long as such temporary structures do not exceed twenty-five (25) square feet, are not left unattended and are removed when the visitor leaves.
- 3.1.17** To place or post signs of any type on District Property without prior approval by the Board or the District Manager.
- 3.1.18** To stick or place any handbill, poster, placard, sticker or painted or printed matter upon any District Property, including, but not limited to, any fence, power or light pole, telephone pole or other District structure.
- 3.1.19** To golf or hit golf balls onto or within any District Property.
- 3.1.20** To camp within any District Property.
- 3.1.21** To swim, wade or operate any boat or other flotation device in waters within any District Property.
- 3.1.22** To possess or use any glass bottle or container on District Property.
- 3.1.23** To use any District Property for any private enterprise or to sell or offer for sale any tangible or intangible goods or services on District Property without prior approval by the Board or the District Manager and the securing of any required permits.
- 3.1.24** To hold any public meeting, gathering or other scheduled event, public or private, which the sponsor reasonably anticipates will be attended by fifteen (15) or more persons without prior written approval by the Board or the District Manager, and the securing of any required permits.
- 3.1.25** To interfere or attempt to interfere with any authorized law enforcement, security or District personnel, or to give false or misleading information with the intent to mislead said persons in the performance of their duties.

3.2 DRUGS AND ALCOHOL ON DISTRICT PROPERTY. It shall be unlawful for any Person:

- 3.2.1** To sell, possess or consume any illegal drugs or controlled substances prohibited under any section of the Colorado Revised Statutes on District Property.
- 3.2.2** To sell, serve, dispense or consume any alcoholic beverage or possess an open container of any alcoholic beverage on District Property.

- 3.2.3 To sell or consume any tobacco product of any kind on District Property.
- 3.2.4 To sell, possess, use or display marijuana and/or marijuana related products on District Property.

3.3 FIREARMS, WEAPONS, FIREWORKS, ETC. It shall be unlawful for any Person:

- 3.3.1 To knowingly possess an unconcealed firearm of any description, or a concealed firearm of any description, unless authorized to do so pursuant to § 18-12-214, C.R.S., or any rifle, spring-gun, bow and arrow, crossbow, sling, paintball gun, air soft gun, blowgun or any other weapon potentially inimical to wildlife or dangerous to human safety, or any instrument that can be loaded with and fire blank cartridges, or any trapping device.
- 3.3.2 To discharge explosives or fireworks or operate or launch model rockets or other devices which use an explosive charge.

3.4 VEHICLES. It shall be unlawful for any Person:

- 3.4.1 To park any motor vehicles, trailers, or campers on District Property, except in designated parking lots.
- 3.4.2 To park any motor vehicles, trailers, or campers on District Property between the hours of 9:00 p.m. and 5:00 a.m.
- 3.4.3 To park a semi or commercial truck within any District Property or any parking lots within any District Property without written approval of the Board or District Manager.
- 3.4.4 To operate any motorized vehicle within any District Property, except on public roads or within public parking areas. Emergency, maintenance and patrol vehicles are specifically excluded.

3.5 PLANTS AND ANIMALS. It shall be unlawful for any Person:

- 3.5.1 To allow domestic pets to harm, kill, chase or otherwise harass any wild animal, bird, fish, reptile or amphibian within any District Property.
- 3.5.2 To leave any domestic pet unattended within any District Property.
- 3.5.3 To leave on any District Property, except in designated trash receptacles, or in any waters within such property, the fecal matter of any animal that one owns, possesses or keeps.
- 3.5.4 To relocate or release animals, fish, birds or insects onto any District Property without written approval of the Board or District Manager.
- 3.5.5 To hunt, shoot, kill, injure, trap or maim any animal while on District Property.

- 3.5.6** To permit any livestock to graze, or remain to graze, on District Property.
- 3.5.7** To install landscaping improvements extending onto District Property, including, but not limited to, irrigation, landscape materials, shrub and tree planting, gardening, landscape related structures and retaining walls.
- 3.5.8** To knowingly mar, mutilate, deface, disfigure, remove or injure beyond normal use any rocks, trees, shrubbery, flowers, wildflowers or other features of the natural environment.

End of Article.

ARTICLE 4. ENFORCEMENT OF POLICIES

4.1 DISORDERLY OR OFFENSIVE CONDUCT. The Board, the District Manager, or their authorized representatives, may request that a Person cease conduct that is:

4.1.1 In violation of the District's Rules and Regulations, these Policies or other policies promulgated by the District from time to time.

4.1.2 Interferes with or is abusive toward any District representative in the normal operation of the Recreation Amenities or District Property.

4.1.3 Interferes with any Person's use or enjoyment of the Recreation Amenities or is abusive to any such Person.

4.1.4 Criminal, tortuous, intimidating or threatening, or any behavior that might result in bodily harm or property damage.

4.2 AUTHORIZED ACTIONS. In the event that the offending party fails to cease such conduct after being requested and warned to do so, the Board, the District Manager, or their authorized representatives, is authorized to use all reasonable means s/he deems necessary to stop such conduct, including, but not limited to, having the offending party removed from the Recreation Amenities and/or suspending the offending party's Recreation Amenities privileges. Any such suspension may be appealed to the Board at the next regular District meeting. Any person refusing removal from the Recreation Amenities or attempting to enter or remain on the premises of the Recreation Amenities after their privileges have been revoked may be subject to arrest and prosecution for criminal trespass under Colorado law.

4.3 VIOLATION OF POLICIES.

4.3.1 District Manager Disciplinary Measures. If anyone is found abusing the Recreation Amenities or disobeying the Policies, disciplinary measures will be administered by the District Manager as follows without the necessity of any action of the Board:

First offense: Verbal warning

Second offense: Restricted from the Recreation Amenities for two (2) weeks

Third offense: Restricted from the Recreation Amenities for one (1) month

Fourth offense: Restricted from the Recreation Amenities for one (1) year

The Board shall be notified of all disciplinary measures by the District Manager and shall, in its discretion, have the ability to impose other disciplinary measures as it deems appropriate at any point in time, which may include revocation of Recreation Amenities privileges for a Person(s). Any violations and disciplinary measures taken will be recorded in writing and kept on file by the District Manager.

4.3.2 Law Enforcement Measures. Offending parties may also be subject to other penalties and sanctions under Colorado law, including, but not limited to, prosecution under § 18-9-117, C.R.S. All violations may be reported to local law authorities as deemed necessary by the Board or the District Manager. Additional fines, suspensions

and other punitive measures may be imposed for violations resulting in law enforcement involvement.

4.4 PENALTIES.

4.4.1 CRIMINAL PENALTIES. Pursuant to § 18-9-117 (3)(a) and (b), C.R.S., any violation of these Policies or the Rules and Regulations is unlawful and violators shall be subject to criminal penalties enforceable by authorized law enforcement officers.

4.4.2 CIVIL PENALTIES. A violation of any of these Policies or the Rules and Regulations is subject to any and all civil remedies available to the District under Title 32, C.R.S., or other applicable laws. The District may impose any penalties, charges, costs and fees for any violations, which shall be reflected on the Schedule of Fees and Charges set forth in the Rules and Regulations.

End of Article.

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

APPENDIX D

**WATER & SEWER HOOK-UP/AVAILABILITY OF SERVICE PERMIT
APPLICATION**



9830 Liberty Grove Drive, Falcon, Colorado 80831

District Office (719) 495-8188 | District Manager (303) 987-0835 | www.pbhmd.com

WATER AND SEWER HOOK-UP APPLICATION FORM

This application is a request to connect to the Paint Brush Hills Metropolitan District ("District") water and sewer system. All connections must be made in accordance with the District's Rules and Regulations, as may be amended from time to time. Failure to comply with the District's Rules and Regulations is subject to penalties and fines.

All fees are subject to the District's current fee schedule.

Property Owner Information

Name:		Phone:
Unit:		Lot #:
Platted Street:		
Mailing Address:		
City:	State:	Zip Code:

Applicant Information

Name:		Phone:
Address:		
City:	State:	Zip Code:

Building Description

Number of Bedrooms:	Bathrooms:	Square Footage:
Excavating Contractor: _____		
<small>(Must post Certificate of Insurance for \$1,000,000 Liability with underground hazard rider and in accordance with District rules and regulations)</small>		

Commercial Toilet

Company Delivered From:	Date Delivered:
-------------------------	-----------------

No construction shall begin without a commercial toilet onsite.

Paint Brush Hills Metropolitan District Requirements

The following materials will be provided by the District at the Applicant's or Owner's expense. The Applicant or Owner shall pay all applicable fees for materials upon submittal of this Application and prior to the commencement of construction.

Initial ALL:

- _____ Water Meter
- _____ Meter Box
- _____ Pressure Reducing Valve (PRV)
- _____ MXU-M Radio Touch Pad button
- _____ If the home is lower than the street: you MUST install a sewer pump & backflow preventer.
- _____ All permit fees & sewer & water hook-up fees shall be paid at the time of application & before construction begins.

The following requirements are applicable for all water and sewer connections. **Initial ALL:**

- _____ Applicant/Owner is responsible for excavation arrangements and costs.
- _____ Applicant/Owner will install water and sewer service lines to the District's system. All improvements from the tap are the property and the responsibility of the property owner.
- _____ Water and sewer lines must be at least ten (10) feet apart both horizontally and vertically.
- _____ Upon connection, all service charges are due and owing at the then-current rate. The connection to the District system is perpetual.
- _____ **All improvements SHALL BE inspected by the District BEFORE being buried. If inspection is not made by the District, appropriate fines will be assessed.**
- _____ **Check here if you would like to sign up for automatic payments for service charges.**

The undersigned Applicant/Owner hereby agree to abide by all of the rules and regulations of the District, as amended from time to time without notice.

District Operations Manager Signature Date Owner Signature Date

Applicant Signature Date

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

APPENDIX E

STUB-IN PERMIT APPLICATION



9830 Liberty Grove Drive, Falcon, Colorado 80831

District Office (719) 495-8188 | District Manager (303) 987-0835 | www.pbhmd.com

APPLICATION FOR STUB IN PERMIT

Property owners desiring the extension of District water or sewer lines shall be required to bear the cost of such extensions to a location specified by the District, which will ensure uninterrupted mainline operations when subsequent line extensions are required.

All fees are subject to the District's current fee schedule.

APPLICANT INFORMATION

APPLICANT

Print Name: _____

Company Name: _____

Contact Phone Number: _____

The undersigned hereby makes application for service from the Paint Brush Hills Metropolitan District ("District") at the herein named premises. The undersigned will assume all expenses of the tap, pipe, and other appurtenances in accordance with the schedule of rates and charges as adopted by the District. Water use and supply are subject at all times to the Rules and Regulations established by the District.

Applicants Signature: _____ Date: _____

SERVICE ADDRESS

Lot Number: _____ Account Number: _____

Street Name: _____ Parcel Number: _____

OWNER

If applicant is not owner, please submit Owner's Authorization Letter.

Print Name: _____ Billing Address: _____

Phone Number: _____ City State Zip _____

PROJECT INFORMATION

Residential: Commercial:

Main Size: 8" 10" 12" 15" Other

Main Length: _____

Main Location _____



9830 Liberty Grove Drive, Falcon, Colorado 80831

District Office (719) 495-8188 | District Manager (303) 987-0835 | www.pbhmd.com

FUTURE SERVICE INSTALLATION

Building Lots to be served: _____

Comments: _____

Design (Site) Plan Required

Plan Submitted

Work to be performed by: _____

Approved Contractor: _____

Engineer Approval: _____

Operations Manager Inspection

Operations Manager Approval
Signature

DISTRICT USE ONLY			
Application Received By (Employee Name):			
Payment: Check #	Credit Card Confirmation #	Customer Account #	Work Order #

<p>Operator:</p> <p>Water System:</p> <p style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </p>	<p>Date:</p> <p>Photos:</p> <p>Tap: <input type="checkbox"/></p> <p>Sewer : <input type="checkbox"/></p> <p>Water: <input type="checkbox"/></p> <p>Tracer Wire Installed: <input type="checkbox"/></p> <p>GIS/GPS Taps & Curb Stops: <input type="checkbox"/></p> <p>Water Main Size: _____</p>
--	---

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

APPENDIX F

LINE EXTENSION PERMIT APPLICATION



9830 Liberty Grove Drive, Falcon, Colorado 80831

District Office (719) 495-8188 | District Manager (303) 987-0835 | www.pbhmd.com

APPLICATION FOR LINE EXTENSION FORM

Property owners desiring the extension of District water or sewer lines shall be required to bear the cost of such extensions to a location specified by the District, which will ensure uninterrupted mainline operations when subsequent line extensions are required.

All fees are subject to the District's current fee schedule.

APPLICANT INFORMATION

APPLICANT

Print Name: _____

Company Name: _____

Contact Phone Number: _____

The undersigned hereby makes application for service from the Paint Brush Hills Metropolitan District ("District") at the herein named premises. The undersigned will assume all expenses of the tap, pipe, and other appurtenances in accordance with the schedule of rates and charges as adopted by the District. Water use and supply are subject at all times to the Rules and Regulations established by the District.

Applicants Signature: _____ Date: _____

SERVICE ADDRESS

Lot Number: _____ Account Number: _____

Street Name: _____ Parcel Number: _____

OWNER

If applicant is not owner, please submit Owner's Authorization Letter.

Print Name: _____ Billing Address: _____

Phone Number: _____ City State Zip _____

PROJECT INFORMATION

Residential:

Commercial:

Main Size: 8" 10" 12" 15" Other

Main Length: _____

Main Location _____



9830 Liberty Grove Drive, Falcon, Colorado 80831

District Office (719) 495-8188 | District Manager (303) 987-0835 | www.pbhmd.com

FUTURE SERVICE INSTALLATION

Building Lots to be served: _____

Comments: _____

Design (Site) Plan Required

Plan Submitted

Work to be performed by: _____

Approved Contractor: _____

Engineer Approval: _____

Operations Manager Inspection

Operations Manager Approval
Signature

DISTRICT USE ONLY			
Application Received By (Employee Name):			
Payment: Check #	Credit Card Confirmation #	Customer Account #	Work Order #

Operator:	Date:
Water System: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Photos: Tap: <input type="checkbox"/> Sewer : <input type="checkbox"/> Water: <input type="checkbox"/> Tracer Wire Installed: <input type="checkbox"/> GIS/GPS Taps & Curb Stops: <input type="checkbox"/> Water Main Size: _____

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

APPENDIX G

APPLICATION FOR DISCONNECTION OR RECONNECTION OF SERVICE



9830 Liberty Grove Drive, Falcon, Colorado 80831
District Office (719) 495-8188 | District Manager (303) 987-0835 | www.pbhmd.com

APPLICATION FOR DISCONNECTION or RE-CONNECTION OF SERVICE FORM

This application is a request to disconnect or re-connect services from the Paint Brush Hills Metropolitan District ("District") water and sewer system.

DISCONNECT [] or RECONNECT []

Customers may voluntarily discontinue service upon disconnection of water and/or sewer service in accordance with the District Rules and Regulations. Customers will be required to pay all applicable fees and costs associated with the actual disconnection. The current fee to disconnect or re-connect services is \$600 for either service.

Disconnection of service will require termination of the water and sewer service lines to the subject property by District Staff or a District approved contractor in accordance with construction standards established by the District and set forth herein.

Disconnection will have occurred upon inspection and approval of the actual disconnection by the Operations Manager or District's Engineer. A Disconnection Permit will be issued upon the District's approval of the physical disconnection.

Disconnected properties will not be subject to monthly service charges commencing on the date of issuance of the Disconnection Permit; however, the disconnected properties will become immediately subject to the District's then-current Availability of Service Fees, if any, and shall pay a pro-rated Availability of Service Fee for the remainder of that calendar year in accordance with the due dates established for other Availability of Service Fee customers.

An Application for Connection will be required in the event the property owner requests reconnection to the system, at which time all applicable connection fees will be due. Tap Fees, once paid in full for a subject property will remain in good standing regardless of the status of connection to the system.

All fees are subject to the District's current fee schedule.

PROPERTY OWNER INFORMATION

NAME: PHONE:
UNIT: LOT #:
PLATTED STREET:
MAILING ADDRESS: CITY: STATE: ZIP CODE:

APPLICANT INFORMATION

NAME: PHONE:
MAILING ADDRESS: CITY: STATE: ZIP CODE:
APPLICANT SIGNATURE: DATE:

Table with 4 columns: Application Received By (Employee Name), Payment: Check #, Credit Card Confirmation #, Customer Account #, Work Order #. Includes 'DISTRICT USE ONLY' header.

DISCONNECTION or RE-CONNECTION OF SERVICES PERMIT

CUSTOMER NAME:		PHONE:	
UNIT:		Lot #:	
PLATTED STREET:			
MAILING ADDRESS:			
CITY:		STATE:	ZIP CODE:
OPERATIONS MANAGER INSPECTION <input type="checkbox"/>			
<hr/> Operations Manager Approval		<hr/> Date	
Operator:		Date:	
Water System: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Photos: Tap: <input type="checkbox"/> Sewer : <input type="checkbox"/> Water: <input type="checkbox"/> Tracer Wire Installed: <input type="checkbox"/> GIS/GPS Taps & Curb Stops: <input type="checkbox"/> Water Main Size: _____	

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

**APPENDIX H
FORM EASEMENT AGREEMENT**

UTILITY EASEMENT AGREEMENT
Paint Brush Hills Metropolitan District

(_____)

For and in consideration of the sum of _____ Dollars (\$____.00) and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, _____, whose address is _____ (the "Grantor"), hereby grants, bargains, sells and conveys to the PAINT BRUSH HILLS METROPOLITAN DISTRICT, a quasi-municipal corporation and political subdivision of the State of Colorado, whose address is c/o Special District Management Services, Inc., 141 Union Boulevard, Suite 150, Lakewood, Colorado 80228 (the "District"), its successors and permitted assigns, a non-exclusive easement (the "Easement") to construct, install, reconstruct, operate, use, maintain, repair, replace and/or remove certain water and sanitary sewer improvements and appurtenances thereto (the "Improvements"), in, to, through, over, under and across certain parcels of real property located in El Paso County, Colorado, as more particularly described and shown in **Exhibit A**, attached hereto and incorporated herein by this reference (the "Premises"). Such Easement is granted by the Grantor and is accepted by the District pursuant to the following terms and conditions:

1. The District, its agents, successors and permitted assigns, shall have and exercise the right of ingress and egress in, to, through, over, under and across the Premises for any purpose necessary for the construction, installation, reconstruction, operation, use, maintenance, repair, replacement and/or removal of the Improvements.

2. The Grantor, its successors and assigns, shall not construct or place any structure or building, street light, power pole, yard light, mailbox or sign, whether temporary or permanent, or plant any shrub, tree, woody plant, nursery stock, garden or other landscaping design feature on any part of the Premises, except with the prior written consent of the District. Any structure or building, street light, power pole, yard light, mailbox or sign, whether temporary or permanent, or any shrub, tree, woody plant, nursery stock, garden or other landscaping design feature of any kind situated on the Premises as of the date of this Easement or thereafter, except where the District has consented thereto, may be removed by and at the sole expense of the District in the District's exercise of its rights hereunder, without liability to the District therefor. Any structure or building, street, sidewalk, street light, power pole, yard light, mailbox or sign, whether temporary or permanent, or any shrub, tree, woody plant, nursery stock, garden or other landscaping design feature of any kind placed on the Premises by Grantor, its successors and assigns, subsequent to the date hereof without the District's consent may be removed by the District at the expense of Grantor, its successors or assigns, without liability to the District.

3. The District shall have the right to enter upon the Premises and to survey, construct, install, reconstruct, operate, use, maintain, repair, replace and remove the Improvements, and to remove objects interfering therewith, including but not limited to those items placed on the

Premises under paragraph 2 hereof. In addition, the District shall have the right to use so much of the adjoining premises of the Grantor, its successors or assigns, during surveying, construction, reconstruction, use, maintenance, repair, replacement and/or removal of the Improvements as may be reasonably required; provided, however, that such activities shall not interfere unreasonably with Grantor's, its successors' or assigns' use and enjoyment of such adjoining premises. The District and its permitted assignees and licensees shall repair any damage caused to any adjoining premises and the improvements thereon, and shall be liable for any injury to person or damage to property, to the extent arising out of the District's, its permitted assignee's or licensee's use of the Easement.

4. The District shall have and exercise the right of subjacent and lateral support to whatever extent is necessary for the operation and maintenance of the Improvements. It is specifically agreed between and among the parties that, except as provided in this Easement, the Grantor, its successors and assigns, shall not take any action which would impair the lateral or subjacent support for the Improvements. The Grantor, its successors and assigns, shall have and exercise the right of subjacent and lateral support to whatever extent is necessary for the operation and maintenance of any improvements on property adjoining the Premises. It is specifically agreed by and between the Grantor and the District that, except as provided in this Easement, the District shall not take any action which would impair the lateral or subjacent support for such improvements. This paragraph is not intended to prohibit the development of the private property located adjacent to the Premises.

5. It is expressly acknowledged and agreed that the District shall have the right and authority to assign the Easement to any appropriate local governmental entity or to any public utility provider, including but not limited to all rights to use, and all obligations associated with, the Easement as are granted to and assumed by the District herein, subject to such assignee assuming the obligations set forth herein. The District shall have the right and authority to grant temporary construction easements to any appropriate local governmental entity or public utility provider for purposes of construction, reconstruction, operation, use, maintenance, repair, replacement and/or removal of the Improvements, subject to all of the terms and conditions of this Easement.

6. The District agrees that at such time and in the event that the Improvements or Easement described herein are abandoned by the District and any permitted assignee, the Easement will terminate automatically and the real property interest represented by the Easement will revert to the Grantor, its heirs, successors and/or assigns.

7. The Grantor covenants and agrees with the District that the Grantor has full power and lawful authority to grant, bargain, sell and convey the Easement and that the Premises are free and clear from all former and other grants, bargains, sales, liens, taxes, assessments, encumbrances and restrictions of whatever kind or nature, except matters of record. The Grantor further promises and agrees to warrant and forever defend the District in the exercise of the District's rights hereunder against any defect in the Grantor's title to the Premises and the Grantor's right to make the grant herein described, except matters of record.

8. Each and every one of the benefits and burdens of this Easement shall inure to and be binding upon the respective legal representatives, administrators, successors and permitted assigns of the Grantor and the District.

9. The Grantor, its successors and assigns, reserve the right to grant further easement interests in the Premises to other grantees so long as such interests and uses are not inconsistent with, or unreasonably interfere with, the use of the Premises and benefits of this Easement by the District, its successors and permitted assigns, as described herein.

10. The rights and responsibilities set forth in this Easement are intended to be covenants on the Premises and are to run with the land.

11. This Easement shall be recorded in the real property records of El Paso County.

12. This Easement may be executed in several counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

[Remainder of page intentionally left blank].

FORM EASEMENT AGREEMENT; SUBJECT TO NEGOTIATION AND REVISION

IN WITNESS WHEREOF, the parties have executed this Easement this ____ day of _____ 20__.

GRANTOR:

STATE OF COLORADO)
) ss.
COUNTY OF EL PASO)

Subscribed and sworn to before me on this ____ day of _____ 20__, by _____.

[SEAL]

Notary Public

My commission expires _____

FORM EASEMENT AGREEMENT; SUBJECT TO NEGOTIATION AND REVISION

DISTRICT:
PAINT BRUSH HILLS METROPOLITAN DISTRICT

President

STATE OF COLORADO)
) *ss.*
COUNTY OF EL PASO)

Subscribed and sworn to before me on this ____ day of _____ 20__, by
_____ as President of the Paint Brush Hills Metropolitan District, a
quasi-municipal corporation and political subdivision of the State of Colorado.

[SEAL]

Notary Public

My commission expires _____

FORM EASEMENT AGREEMENT; SUBJECT TO NEGOTIATION AND REVISION

EXHIBIT A

The Premises

FORM EASEMENT AGREEMENT; SUBJECT TO NEGOTIATION AND REVISION

**PAINT BRUSH HILLS METROPOLITAN DISTRICT
RULES AND REGULATIONS**

APPENDIX I

FORM TEMPORARY CONSTRUCTION EASEMENT

TEMPORARY CONSTRUCTION EASEMENT/RIGHT OF ENTRY
Paint Brush Hills Metropolitan District

(_____)

_____ (the "Grantor") hereby grants permission to the PAINT BRUSH HILLS METROPOLITAN DISTRICT, a quasi-municipal corporation and political subdivision of the State of Colorado (the "Temporary Occupant"), to enter upon the property as shown on **Exhibit A**, attached hereto and incorporated herein (the "Property") for the purpose of constructing and installing various public improvements, including, but not limited to, water and sanitary sewer facilities and improvements, and all of the activities associated therewith, subject to all the terms and conditions set forth in this Right of Entry. Such Right of Entry shall not be deemed a possessory right, but shall be merely a non-exclusive right of temporary access to the Property.

1. As consideration for this authority, the Temporary Occupant shall pay the Grantor the sum of Ten Dollars (\$10.00), due upon execution of this Right of Entry agreement.

2. The term of this Right of Entry shall commence on _____, 20____, and shall terminate at 11:59 P.M. on _____, 20____, unless otherwise extended by mutual agreement of the parties hereto.

3. During the term of this Right of Entry agreement, the Temporary Occupant agrees to maintain the Property in an orderly condition. The Temporary Occupant shall not block, hinder or obstruct any signs, improvements or facilities existing on the Property, or installed or constructed by others during the term hereof. Upon the expiration of this Right of Entry, the Temporary Occupant shall restore the Property to the condition which existed prior to entry of the Temporary Occupant, or to such lesser condition as may be approved by the Grantor, in writing, and shall repair any damage resulting from entry on the Property in connection with this Right of Entry agreement.

4. The Temporary Occupant, at its sole cost and expense, shall comply with all federal, state, local and police requirements, regulations, ordinances and laws respecting the Property and the activities of the Temporary Occupant, conducted thereon, shall be solely responsible for any fines, fees or costs relating to the same, and shall not interfere with other parties entering the Property on behalf of the Grantor.

5. This Right of Entry agreement may be executed in several counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

6. Nothing herein shall be construed as a waiver of the rights and privileges of the Temporary Occupant pursuant to the Colorado Governmental Immunity Act, §§ 24-10-101, *et seq.*, C.R.S., as amended from time to time.

7. This Right of Entry agreement shall be recorded in the offices of the County Clerk and Recorder for the County of El Paso, Colorado.

[Remainder of page intentionally left blank].

IN WITNESS WHEREOF, the parties have executed this Right of Entry to be effective as of the ____ day of _____, 20__.

GRANTOR:

STATE OF COLORADO)
) *ss.*
COUNTY OF EL PASO)

Subscribed and sworn to before me on this ____ day of _____, 20__,
by _____, as _____ of
_____.

[SEAL]

Notary Public

My commission expires _____

DISTRICT:
PAINT BRUSH HILLS METROPOLITAN DISTRICT

President

STATE OF COLORADO)
) *ss.*
COUNTY OF EL PASO)

Subscribed and sworn to before me on this _____ day of _____, 20__, by
_____ as President of the Paint Brush Hills Metropolitan District, a
quasi-municipal corporation and political subdivision of the State of Colorado.

[SEAL]

Notary Public

My commission expires _____

EXHIBIT A

The Property