Snowmass Water & Sanitation District

RULES AND REGULATIONS

SNOWMASS
WATER & SANITATION
DISTRICT

Adopted by the Board of Directors
Dated November 20, 2013

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Appendices

SECTION I GENERAL REGULATIONS

1.1 **Purpose**. These Rules and Regulations shall provide for the orderly and uniform administration and operation of the water and sewer systems of the Snowmass Water and Sanitation District including additions thereto and will serve a public use and are necessary to promote the health, safety and general welfare of the inhabitants of the District. All customers/users of the District's water and sewer systems are bound by these Rules and Regulations, as a matter of contract for which there is good and valuable consideration.

1.2 **Amendment.** The District, through its Board of Directors, shall retain the power to amend these Rules and Regulations to reflect those changes determined to be necessary or appropriate by the Board. Prior public notice of these amendments shall not be required by the District when exercising its amendment powers pursuant to this Section. The Board shall review these Rules and Regulations yearly.

1.3 **Waivers, Suspension, or Modification of Rules.** The Board or District Manager, acting on instructions of the Board, shall have the sole authority to waive, suspend, or modify these Rules and Regulations. Any such waiver, suspension, or modification must be in writing and authorize the specific action. Such waiver, suspension or modification is an exception to the Rules and Regulations for the specific instance and shall not be construed as continuing for future instances. Waivers, suspensions, or modifications are not deemed amendments of the Rules and Regulations.

1.4 **Rights and Authority.** The Snowmass Water and Sanitation District is a governmental subdivision of the State of Colorado and a corporate body with the powers of a quasi-municipal corporation. These powers are specifically granted for carrying out the objectives and purposes of the District as stated in the respective by-laws. The District reserves the right to temporarily discontinue service to any property, at any time, for any reason deemed necessary or appropriate. The District shall have the right to revoke service to any property for violations of these Rules and Regulations in accordance with the procedures set forth in these Rules and Regulations.

1.5 **Policy.** The Board of Directors of each District hereby declares that the Rules and Regulations hereinafter set forth will serve a public use and are necessary to promote the health, safety, prosperity, security, and general welfare of the inhabitants of the District. All customers/users of the District are bound by these Rules and Regulations as a matter of contract for which there is good and valuable consideration.

1.6 **Violators Fined.** Any person violating any of the provisions of these Rules and Regulations shall become liable to the District for payment of a penalty subject to *Section VII, Enforcement*. If any person causes damage to the District system by misuse, negligence, or other action on his/her part, the District shall hold that person liable for the cost of repair including any study, investigation, or consultant fees incurred. Such costs shall constitute a perpetual lien upon the violator's property as allowed by *C.R.S., 32-1-1001*, as amended, or a perpetual lien upon the property to which the District was providing services at the time of the violation, whichever the District Manager deems appropriate.

1.7 **Authority to Inspect.** Authorized representatives of the District, upon presentation of a work order and identification, shall be permitted to enter upon all properties at all reasonable times for the purpose of inspection, observation, measurement, sampling, testing, and inspection of records of the water or sewer system, in accordance with the provisions of these Rules and Regulations. Failure to permit such inspections, observations, measurements, samplings, testing, and/or inspection of records upon the request, in writing, of the District Manager may result in a finding that permission is being denied to avoid discovery of a violation. Such finding may result in the disconnection of service to the property occupied by the party failing to permit the desired access, or other

remedies as allowed under these regulations, subject to the hearing and appeal procedures set forth in *Section VIII-Hearing and Appeal Procedures*.

1.8 Definitions. The following terms, as used herein, are defined as follows:

1.8.1 **As-built Drawings** shall mean accurate drawings representing the final installed location of water and/or sewer lines which have been installed in accordance with an agreement or understanding with the District, and prepared in compliance with the Technical Specifications and Procedures of the District.

1.8.2 **Back flow Preventer** shall mean a safety device used to prevent contamination of the potable water supply from the reverse flow of water from an irrigation system or other customer activity back into the potable distribution system.

1.8.3 **Bathroom** shall mean any area having a toilet.

1.8.4 **Bathtub** shall mean all permanently fixed tubs having a capacity of less than 60 gallons volume at the overflow.

1.8.5 **Bedroom** shall mean a room for sleeping having not more than three bed spaces including, a room with a convertible bed, hide-a-bed, and a den, family or recreational room. A bedroom having two full size or larger beds, four bed spaces, shall be counted as 1.5 bedrooms.

1.8.6 **Bed Space** shall mean space for one person to sleep.

1.8.7 **Board** shall mean the Board of Directors of the Snowmass Water and Sanitation District.

1.8.8 **Check Valve** shall mean a self-closing device which is designed to permit the flow of fluids in one direction and to close if there is a reversal of flow.

1.8.9 **Commercial Buildings** shall include office buildings, retail sales buildings, multiple use buildings, laundromats, service stations, shops, garages, fire stations, warehouses and similar facilities, but not multi-family residences, agricultural users, industrial customers or institutional classifications.

1.8.10 **Compound Meter** shall mean a meter with two measuring chambers, generally a turbine for high flows and a positive displacement for low flows.

1.8.11 **Connection Permit** shall mean written permission of the Board to connect to a water or sewer line of the District, pursuant to these Rules and Regulations.

1.8.12 **Connecting Trunk Sewer Line** shall be any sewer main or sewer pipeline needed to connect a sewer collection line system to District service facilities.

1.8.13 **Connecting Water Transmission Line** shall be any water main or pipeline needed to connect a water distribution line system to District service facilities.

1.8.14 **Conservation Rate Structure** shall mean a pricing structure billed by the quantity of water delivered and tied to the costs associated with that delivery, designed to provide an accurate price signal to the consumer.

1.8.15 **Contamination** shall mean an impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree, which creates an actual hazard to the public health.

1.8.16 **Cost of Construction** shall mean all costs applicable to the construction of a given new facility, including, without limitation, the hard and soft construction costs, and the costs of surveys, actual construction, preliminary and design engineering, inspection, administrative and legal service, "as-built" drawings, easements acquisition, and all other costs necessary for completion of such new facility. However, cost of construction shall not include any expenses for additions to the water or sewage treatment plants which might be made necessary as a result of the connection of the new facility, or the connecting water transmission or trunk sewer lines.

1.8.17 **Curb Stop** shall mean a shut-off valve between the customer meter and the street service line from the water main.

1.8.18 **Customer Class** shall mean a group of customers (residential, commercial, industrial, wholesale, and so on) defined by similar characteristics or patterns of water usage.

1.8.19 **Customer** shall mean any person or entity authorized to use District facilities under a connection permit and who is supplied with water or sewer service by the District.

1.8.20 **Developer** shall mean the owner of real property within the District requesting new or modified facilities or service from the District.

1.8.21 **Distribution Facilities** shall mean pipes, meters, storage, pumps and other facilities used to distribute water to end users.

1.8.22 **District** shall mean the Snowmass Water and Sanitation District, a special district organized and existing pursuant to the laws of the State of Colorado.

1.8.23 **District Manager** shall be the individual appointed by the Board to act on its behalf in the overall administrative management of the District.

1.8.24 **District Water Service Line** shall mean the tap to the water main, the curb valve and the water line between the tap and curb valve, all of which are the property of the District.

1.8.25 **Effluent** shall mean something that flows out of a wastewater treatment plant, sewer, or industrial outfall, such as wastewater, treated or untreated.

1.8.26 **EQR** shall mean equivalent residential unit; the basic service used to identify the water and wastewater demands relating to an average single family residence consisting of not greater than three bedrooms, two bathrooms and one kitchen or its equivalent.

1.8.27 **Fecal Coliform** shall mean the coliform bacteria group that is present in the intestinal tracts and feces of humans and other warm-blooded animals.

1.8.28 **Fixed Rates** shall mean part of a utility bill that is established by District standards and is not affected by consumption.

1.8.29 **Inspector** shall mean the District Manager and authorized representatives of the District.

1.8.30 **Kitchen** shall mean any area having facilities for cooking or for cooking and dishwashing.

1.8.31 **Leakage Management** shall mean the organized, proactive functions of controlling distribution system leakage to an economic minimum, which may include appropriate combinations of active leakage control (flow analysis, leak detection) and repair, pressure management, and system rehabilitation.

1.8.32 **Leak Survey** shall mean the systematic process of listening and otherwise checking for leaks in a distribution system.

1.8.33 **Low Flow Faucet** shall mean a faucet fixture that meets WaterSense standards which are currently 1.5 gpm or less at 60 psi.

1.8.34 **Low Flow Showerhead** shall mean a showerhead that meets WaterSense standards which are currently 2.0 gpm or less at 60 psi.

1.8.35 **Low Flow Toilet** shall mean a toilet that meets the WaterSense standard which is currently 1.28 gpf.

1.8.36 **Master Meter** shall mean a single meter that measures utility usage for an entire property, or an entire building, which usually includes common areas.

1.8.37 **Meter (water)** shall mean an instrument for measuring and recording water volume.

1.8.38 **Meter Register** shall mean a mechanical device (sometimes used synonymously with the term "Face") that uses a system of gear reductions to integrate the rotation of the moving element of a meter's measuring chamber into numerical units.

1.8.39 **Multi-Family Residential Units** shall mean units in a building or a series of buildings that are connected and which may have common laundry facilities or individual laundry hookups, including apartments, condominiums, townhouses and similar facilities in the same complex with one kitchen per unit.

1.8.40 **Non-Potable Water** shall mean water that doesn't meet drinking water quality standards, is not safe for human consumption or that is of questionable potability.

1.8.41 **Non-Revenue Water** shall mean the volume of unbilled authorized consumption (water for fire fighting, system flushing and similar uses) added to real losses and apparent losses in a distribution system water audit.

1.8.42 **Person** shall mean any individual, firm, company, association, society, corporation or group.

1.8.43 **Potable Water** shall mean water free from impurities in amounts sufficient to cause disease or harmful physiological effects. The bacteriological, chemical or radiological quality shall conform to State of Colorado Drinking Water Regulations.

1.8.44 **Pressure Loss** shall mean the reduction in water pressure due to friction of water against the inner walls of pipe and components.

1.8.45 **Pressure Reducer** shall mean a water system component that reduces the downstream pressure of water, often used in irrigation systems, always used in drip systems.

1.8.46 **Pressure Regulation** shall mean maintaining distribution system water pressure within certain limits.

1.8.47 **Pressure Regulating Valve** shall mean a device, often installed downstream of the customer meter, to reduce high pressures to a set amount. Often required where the existing system pressure exceeds 85 psi or a device installed on input water supply mains or irrigation systems to regulate water pressure in a zone to protect against pressure surges and to control leakage.

1.8.48 **Pressure Zone** shall mean a three dimensional zone in the water distribution system where the pressure is allowed to vary only within certain limits, generally dictated by the elevation of the water tank serving the zone.

1.8.49 **Private Sewer Service Line** shall mean the sewer line from the wye at the sewer main to the premises being served.

1.8.50 **Private Water Service Line** shall mean the water line from the curb valve or the property line, whichever shall be closest to the District main, to the premises being served.

1.8.51 **Raw Water** shall mean untreated water.

1.8.52 **Real Losses** shall mean that in a water distribution system audit, real losses are the physical loss of water from the distribution system prior to reaching the customer. Real losses include leakage from piping and reservoir walls, as well as storage overflows caused by faulty control equipment or operator error. Real losses represent a waste of water and energy resources since they are volumes of water extracted from a source, treated to prevailing standards, but never reaching beneficial use.

1.8.53 **Reduced Pressure Principle Device** shall mean an assembly of two independently operating, approved check valves with an automatically operating differential relief valve between the two check valves, tightly closing 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 District approved testing establishment for back flow prevention assemblies. The device shall operate to maintain the pressure in the zone between the two check valves at a level less than the pressure on the public water supply side of the device. At cessation of normal flow, the pressure between the two check valves shall be 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 2 pounds per square inch or less, the relief valve shall open to the atmosphere. To be approved, these devices must be readily accessible for in-line maintenance and testing and be installed in a location where no part of the device will be submerged.

1.8.54 **Sanitary Sewer** shall mean a sewer which carries sewage, and to which storm, surface and ground waters are not intentionally admitted.

1.8.55 **Service Plan** shall mean the preliminary service plan for organization of the District, prepared by Wright-McLaughlin Engineers, dated December 17, 1965.

1.8.56 **Sewage Collection Line** shall mean any sewer main located in a particular subdivision or other integrated development which collects sewage from the various units therein.

1.8.57 **Sewer Main** shall mean any sewer line owned by the District and installed in a public street or easement.

1.8.58 **Shall** is to be considered as mandatory; may is discretionary.

1.8.59 **Single Family Residential Units** shall include single-family homes, duplexes, individually built mobile homes, mobile homes on a single lot, and mobile homes established as permanent residences have one kitchen. If a single family residential unit has more than one kitchen, then it shall be considered to be a multi-family residential unit.

1.8.60 **Swimming Pool** shall mean any structure, basin, chamber or tank containing an artificial body of water used for swimming, diving or recreational bathing having a depth of 2 feet or more at any point.

1.8.61 **System Development Fee** is a fee to effect a partial reimbursement of capital investment to the District, also known as a tap fee.

1.8.62 **Transient Residential Units** shall include hotels, motels, mobile home parks, dormitories, recreational vehicle parks and similar facilities intended for short term rental and do not include laundry facilities, except those in mobile homes.

1.8.63 **Ultra Low Flush Toilet (ULFT)** shall mean a toilet that flushes with 1.6 gallons or less.

1.8.64 **Undefined Terms** shall mean any other term not herein defined shall be defined as presented in the "Glossary Water and Sewage Control Engineering", A.P.H.A., A.S.C.E. and W.P.C.F., latest edition.

1.8.65 **Unit** shall mean one parcel, lot or unit of real property in single or common ownership.

1.8.66 **Wastewater Effluent** shall mean sewage that has received primary, secondary, or advanced treatment to reduce its pollution or health hazards and is subsequently released from a wastewater facility after treatment.

1.8.67 **Wastewater Treatment Plant** shall mean a facility designed to remove contamination from municipal and industrial wastewater prior to discharge into surface waters.

1.8.68 **Water Audit** shall mean an on-site survey of an irrigation system or other water use setting to measure hardware and management efficiency and generate recommendations to improve its efficiency or for water distribution systems, a thorough examination of the accuracy of water agency records and system control equipment to identify, quantify, and verify water and revenue losses.

1.8.69 **Water Conservation** shall mean activities designed to (1) reduce the demand for water, (2) improve efficiency in use and reduce losses and waste of water, and

(3) improve land management practices to conserve water, as defined by the US Water Resources Council.

1.8.70 **Water Distribution Lines** shall mean a water main located in a particular subdivision or other integrated development which distributes water to the various units therein.

1.8.71 **Water Main** shall mean any water line owned by the District.

1.8.72 **Water Service Connection** shall mean the terminal end of a private water service line at the connection with the District water main.

1.8.73 **Xeriscape** shall mean landscaping design method requiring little or no irrigation or other maintenance that is based on seven principles: proper planning and design; soil analysis and improvement; practical turf areas; appropriate plant selection; efficient irrigation; mulching; and appropriate maintenance.

SECTION II Operation and Maintenance of Water and Sewer Systems

2.1 **Water and Sewer System**. The following general regulations shall apply to the District's potable water and sanitary sewer systems:

2.2 **Responsibilities of District.** Except as otherwise provided by these Rules and Regulations, the District is responsible for the operation and maintenance of the sewer and/or water systems in accordance with these Rules and Regulations.

2.3 **Unauthorized Connection and Fees.** No person shall be allowed to connect onto the sewer or water systems or to enlarge or otherwise change equipment, service, or use of property without prior payment of System Development Fees, approval of a permit for service, and adequate supervision and inspection of the tap by District employees or the District Engineer. Any such connection, enlargement, or change without payment, approval, supervision, and inspection shall be deemed an unauthorized connection.

Any violation of this section shall result in the assessment of an unauthorized connection fee as further described below. The District shall take those steps authorized by these Rules and Regulations and Colorado law regarding the collection of said fees.

Upon the discovery of any unauthorized connection, the then-current System Development Fee and accrued service charge, if any, shall become immediately due and payable, and the property shall be fined $1,000.00 for each unauthorized use or connection. This fine shall be in addition to the District's right to charge for all services used, and to any and all other remedies which the District may have. The District shall send written notice to the customer benefited by such connection stating that an unauthorized connection has been made between the customer's property and the District facilities. The customer shall have 20 days from the date the notice is mailed to pay the then-current System Development Fee and accrued service charges, if any. If not paid within this period, the District shall proceed in accordance with the provisions of *Section 2.7, Revocation of Service*.

2.4 **Inspection Required.** Any customer believed to have changed equipment, service, or use of his property, in violation of this section, shall be notified of such belief by the District, and shall be afforded 20 days from the date upon which the notice is mailed in which to respond to the District's notice. Failure to respond may result in the District discontinuing service to the property.

2.5 **Authority to Inspect.** Authorized representatives of the District, upon presentation of a work order and proper credentials, shall be permitted to enter upon all properties served by the District at all reasonable times for the purpose of inspection, observation, measurement, sampling, testing, inspection of records of the water or sewer system, and repairing of any water or sewer mains or service lines, whether public or private, in accordance with the provisions of these Rules and Regulations. Failure to permit such inspections, observations, measurements, samplings, testing, and/or inspection of records upon the request, in writing, of the District Manager may result in a finding that permission is being denied to avoid discovery of a violation. Such finding may result in the disconnection of service to the property occupied by the party failing to permit the desired access, or other remedies as allowed under these regulations, subject to the hearing and appeal procedures set forth in *Section VIII – Hearing and Appeal Procedures.*

2.6 **Notice of Changes and Redetermination of Fees.** The customer shall notify the District (1) prior to any expansion or addition to the service, (2) prior to any change in the use of the property served by the District, (3) upon any change of ownership of said property and/or, (4) upon any substantial change in water demand or sewage characteristics. Any of the above described changes which, in the opinion of the District, will increase the burden placed on the District's system by the customer shall require a

redetermination of EQR's, System Development Fees and monthly service charges, and a payment by the customer of any additional System Development Fee and monthly service charge resulting from the redetermination. When an expansion or change in use occurs that results in additional fees due, a credit for the existing use shall be given. System Development Fees based on the current rate for the specific use as stated in the original permit shall be credited against the re-determined System Development Fee so that only the unpaid portion of any re-determined System Development fee shall be due. However, if the redetermination results in a conclusion that the System Development fee, if assessed currently, would be in an amount less than the System Development Fee originally paid, the re-determined fee shall not result in a refund to the customer.

If it is discovered, as a result of an inspection, that alterations or additions have been made or the use of the property has changed, the District shall make a determination as to the change in the customer's equipment, service or use of the property in question, and shall re-determine any additional System Development Fees and service charges in accordance with *Appendix A, EQR Schedule,* contained in these Rules and Regulations. In the event the decision of the District is deemed unsatisfactory to the customer, the customer may present a complaint in accordance with *Section VIII, Hearing and Appeal Procedures*, of these Rules and Regulations.

2.7 **Revocation of Service.** Service shall be revocable by the District upon non-payment of any valid fees or charges owed to the District. In the event of non-payment, within 20 days after receipt of notice of the same, the customer shall be then given not less than 20 days advance notice in writing of the revocation. The notice shall set forth:

A. The reason for the revocation;

B. That the customer has the right to contact the District, and the manner in which the District may be contacted for the purpose of resolving the obligations; and

C. That there exists an opportunity for a hearing in accordance with *Section VIII, Hearing and Appeal Procedures,* of these Rules and Regulations.

2.8 **Suspended Service.** When a building is moved or destroyed and/or water and or sewer services are suspended to any property, the original tap authorization shall remain, provided that a written request is made to, and approved by the District Manager prior to cessation of payment of service charges. No refunds or credits shall be given to the customer due to temporary or permanent suspension of service.

When a service line is abandoned permanently, the customer shall valve the water supply off at the main line (corporation stop valve), and plug the sewer service connection at the main. If the customer is not responsive within a reasonable time period as determined by the District Manager, the District will valve the water supply and plug the sewer service line and shall bill the cost to the customer and file a lien on the customer's property. Variances to this requirement may be considered on a case-by-case basis.

2.9 **Unauthorized Use.** No person shall uncover, alter, disturb, make any connection with, make an opening into, or backfill prior to inspection the water or sewer system without a written authorization from the District. Unauthorized uses of or tampering with the District's systems include, but are not limited to, change in customer's equipment, service or use of property, an unauthorized turn-on or turn-off of water service or a water main; burying valve boxes; modifying any water meter; and discharging prohibited sewage even though the same may be performed on a privately owned and maintained service line. All water use must be metered. Any unmetered use is considered to be unauthorized use, unless approved by the District.

2.10 **Customer Responsibility.** Each customer shall be responsible for all costs associated with the maintenance of the water service line from the building to the curb stop or edge of easement or property line, whichever is closer to the main. For sewer, the entire service line from the building to the main line is the property of the customer who is responsible for its maintenance.

2.11 **Repair of Service Line.** Leaks, breaks and general maintenance of the water service line shall be the responsibility of the customer. The customer shall be given notice by first-class mail, that the water service line is defective and in need of repair. Customer shall institute repair or maintenance immediately after receipt of such notice. If satisfactory progress toward repairing the service line has not been completed in a timely manner or the District determines that environmental or property damage is being caused, the District shall shut off the water service until the service line has been repaired. In addition, the District shall have the right to affect the repair, and the costs therefore shall constitute a lien on the property as provided for by *C.R.S., 32-1-1001.*

2.12 **Turn On/Turn Off of Service.** All routine turn on and turn off of water service at a curb stop shall be performed only by District personnel. During emergencies, a customer may turn off the water service at the curb stop valve. The District shall be notified of the turn off and the circumstances at the earliest time. Only District personnel shall turn on the water service.

When initial service is provided and when the turn off/turn on service is performed for a customer requiring maintenance to his service line, a service fee will not be charged. In other circumstances the District shall assess a single turn off/turn on charge in the amount of $50 each time a turn off or turn on is performed.

The District will provide turn on service for a tap for new construction only one time prior to the occupancy of the building served. At the time the water meter is set, metered service charges begin unless the District is requested to perform the turn off. In this event the customer will be charged $50 when service is turned on.

2.13 **Damage to District Property.** No person shall, whether maliciously, willfully, negligently or otherwise, break, damage, destroy, uncover, deface, make any connection without permit, or tamper with any structure, appurtenance or equipment of the water of sewer system, including fire hydrants.

2.14 **Property Damage.** No claim for damage shall be made against the District by reason of any damage to real or personal property resulting from turning on or shutting off of service or a variation in system pressure. No claim shall be made against the District for operational maintenance such as sewer line jetting.

2.15 **Ownership of and Liability for Facilities.** All existing main lines and treatment works connected with and forming an integral part of the water or sewer system are the property of the District, unless a contract with customer provides otherwise. Ownership will remain valid whether the main lines and treatment works were constructed, financed, paid for, or otherwise acquired, by the District or by private parties. Transfer of ownership of main lines shall be in accordance with *Section IV, Line Extension Policies.* The developer is responsible for correction of construction deficiencies for a period of two years from the date of acceptance of the facilities by the District, or July 1st of the year following the second winter after the acceptance of the facilities occurs.

2.15.1 **Liability of District.** The District shall not be liable or responsible for inadequate treatment or interruption of service brought about by circumstances beyond its control.

2.15.2 Conditions of Ownership-Service Lines. The customer's ownership of the service line shall not entitle the customer to make unauthorized uses of the District's systems or to make alterations to the service line and the system once the service line has been connected to a District main line. All uses or changes in use of the service line, any appurtenances thereto, or changes in use of the property served at any time after the initial connection to the District system shall be subject to these Rules and Regulations.

2.15.3 Conditions of Ownership-Lift Stations. A lift station associated with customer service lines shall be the property of the customer(s) served by such lift station. Maintenance of such lift station is the sole responsibility of customer(s) and shall not be the responsibility of the District.

2.15.4 Private Main. "Private Main" is any sewer interceptor, collection line, or main line, or any water distribution line or main line that is connected to the District system but not owned or maintained by the District. Private Mains have not been accepted by the District, generally due to: (1) non-conformance with these Rules and Regulations, the Snowmass Water and Sanitation District Minimum Design and Construction Standards for Water Distribution and Collection Sewer Systems, and/or other approved standards of construction; (2) it is not in the best interest of the District to accept the mains because of special and/or mitigating circumstances; *or* (3) if the title of the mains cannot be transferred free and clear to the District.

2.15.5 Water Meter. Meter sizes for all applications shall be determined by the District. All connections to the District's water system shall include a water meter. All water meters shall have devices for remote reading as well as a Meter Interface Unit (MIU) for automated radio-meter reading. The type of water meter and location of the meter shall be subject to the approval of the District and accessible for maintenance (see *Appendix D – Minimum Design and Construction Standards Water Distribution and Collections Sewer Systems*). The customer shall install the initial meter and the District shall have the right to test, remove, repair, or replace any and all water meters. Any meter not installed in accordance with District specifications shall be immediately replaced upon notification by the District. The customer shall be subject to a fine for illegal tampering of the water system. Each customer is responsible for notifying the District if his water meter is operating defectively. If any meter is suspected to be defective, the District shall diligently pursue repair or replacement of said meter at the District's expense unless the defect is a result of negligence or tampering by the customer. In this case the cost for repair or replacement shall be added to the service charge bill.

During the interim period prior to repair, the following procedure shall be enforced. The customer shall be given notice, by first-class mail, that the District suspects that the water meter is defective. The customer shall be given thirty (30) days in which to respond, which response shall include scheduling with the District an appointment for a meter inspection and replacement. If the customer fails to respond, the customer will be placed on the Base Water unmetered rate, effective with the following billing cycle. (See applicable District's *Appendix B, Rates and Charges Schedule, Base Water unmetered rate).*

The customer shall be given a second notice, by first-class mail, that the District suspects that the water meter is defective. The customer shall be given thirty (30) days in which to respond to the second notice, which response shall include scheduling an appointment for a meter inspection and replacement. If the

customer fails to respond to the second notice, the District may disconnect the water service and charge the customer the base water rate and unmetered sewer rate while the service is disconnected. Service will be restored only upon payment of all fees and repair of the water meter. (See applicable District's *Appendix B, Rates and Charges Schedule).*

2.15.6 **Pressure Reducing Valve.** A pressure-reducing valve (PRV) shall be installed in all service lines upstream of every water meter, ensuring that the water meter and the building plumbing system, including any fire sprinkler system, are protected from fluctuating water main pressures. The pressure setting of the PRV shall not exceed 65 psi without written permission from the District.

2.16 **Water System.** The following general regulations shall apply to the District water system:

2.16.1 **Purpose.** District water system is intended to provide potable water for municipal uses.

2.16.2 **Regulation of Usage.** Whenever there is a shortage of water, system operating failure, system repair or emergency, the Board shall have the power to regulate and curtail water usage.

2.16.3 **Ownership of Water Facilities.** For water, the District generally shall own and be responsible for the maintenance of the water service line up to and including the curb stop valve or the customer's property line or edge of easement, whichever is closer to the water main. The customer shall be responsible for the maintenance of the remaining portion of the service line serving his property. This principle of ownership shall not be changed by the fact that the District may construct, finance, pay for, repair, maintain, or otherwise affect the customer's service line.

2.16.4 **Fire Hydrants**

2.16.4.1 **Purpose.** It is the express policy of the District that fire hydrants are for emergency use only by emergency personnel. No other connections shall be made to District fire hydrants without first obtaining a permit and paying applicable fees to the District. It is unlawful for any person to operate District valves or fire hydrants without prior written authorization by the District. Law enforcement officers, personnel of the District, or personnel of a fire department are authorized to confiscate any hydrant wrench or valve shut-off key found to be used without written District authorization. Any violation shall be considered "Unauthorized Use" and will be subject to all fines and fees therein.

2.16.10.2 **Installation.** Fire Hydrants may be installed on private water service lines subject to the following conditions:

(a) approval of the Board is obtained in writing; and

(b) the District has no obligation for repair and maintenance of the private fire hydrant.

2.16.4.3 **Clearances Around Hydrants.** No landscaping, retaining walls, or buildings may obstruct the access to fire hydrants. Minimum clearances must be maintained around fire hydrants to facilitate their

use. Customers are responsible to maintain a seven-foot (7') clearance on either side (where 2½" connectors are located), four-foot (4') clearance (including landscaping, retaining walls) on back, ten-foot (10') clearance in front (where steamer connection is located), and twenty-five-foot (25') clearance above all fire hydrants. The breakaway collar must be six inches (6") above the finished grade.

2.16.4.4 **Fire Hydrant Meter.** Fire hydrant meters are allowed to be used by special permit. Only District personnel are allowed to install and remove fire hydrant meters unless a written variance is issued. The customer will be subject to a penalty if he attempts to install or remove a fire hydrant meter. The customer is responsible for any damage, including vandalism or freezing, to fire hydrants or fire hydrant meters. The customer is responsible to provide adequate protection when freezing may occur (See District's applicable fees, *Rates and Charges, Appendix B*). Fire hydrant water shall not be used for drinking purposes at anytime without permission of the District. If the water is to be used for lawn irrigation or any use considered posing a hazard, the customer shall provide a backflow device.

2.17 **Sanitary Sewer System**. The following general regulations shall apply to the District sanitary sewer system:

2.17.1 **Purpose.** The District sanitary sewer system is intended to effectuate the treatment and disposal of water contaminated by biodegradable wastes and is not intended for receiving flood waters, surface drainages, industrial process waters or discharge or water from above ground or underground sources unless so contaminated.

2.17.2 **Ownership of Sewer Facilities.** For sewer, the entire service line from the building to the main line is the property of the customer who shall remain responsible for its maintenance. This principle of ownership shall not be changed by the fact that the District may construct, finance, pay for, repair, maintain, or otherwise affect the customer's service line.

2.17.3 **Prohibited Sewer Connections.**

2.17.3.1 **Drains.** No connection of roof drains, exterior foundation drains, areaway drains, garage floor drains, or other sources of surface runoff or groundwater to a private sewer service line, building sewer or storm drain, which in turn is connected directly of indirectly to the District sewer system is permitted.

2.17.3.2 **Discharge Restrictions – General.** Except as hereinafter provided, no person shall discharge, or cause to be discharged, to any interceptor, any waste prohibited by these Rules and Regulations, or any harmful waters or wastes, whether liquid, solid, or gas, capable of causing obstruction to the flow in sewer lines, damage or hazard to structures, equipment or personnel of the sewage works; inhibiting the biological activity in the waste water treatment facilities; otherwise interfering with the proper operation of the sewage works; constituting a hazard through exposure to the District sewer effluent; or causing the District to be in violation of federal, state or local laws.

2.17.3.3 **Discharge Restrictions – Prohibited Wastes.** No person or entity shall discharge or cause to be discharged into the District Sewer System the following wastes:

(a) Water from storm drains, floor drains in garages, roof runoff, drainage collection systems, foundation drains, sumps, surface runoff, sub-surface drainage, or cooling processes.

(b) Any oil, grease, or other similar petroleum product which is not water soluble. Such prohibited wastes shall include diluted wastes of such nature, including but not limited to, water or wastes containing grease, oil, hydrocarbons, fatty acids, soaps, fats, or waxes which exceed 50 mg/1 as determined by solvent (Freon) extraction.

(c) Explosive materials, including but not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides and sulfides. Such limitation shall additionally include any waste capable of raising the Lower Explosive Limit (L.E.L.) of the ambient atmosphere in any sewer to five percent (5%) for any two (2) successive readings or to ten percent (10%) for any single reading on an explosion hazard meter.

(d) Any solid or viscous substance in quantities or sizes capable of causing obstruction to the flow in the sewer lines or other interference with the proper operation or the District Sewer System, such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastic, wood, unground garbage, whole blood, cattle manure, hair and fleshings, entrails, grit, brick, cement, onyx, carbide, and shredded or whole paper products other than tissue, toilet paper, and other products intended for toilet disposal.

(e) Any waste having a temperature higher than one hundred fifty (150°) degrees Fahrenheit (66°Celcius).

(f) Any waste having a Ph value lower than 5.5 or greater than 9.0.

(g) Any toxic substance, or substance requiring pretreatment, as those terms are defined in 40 Code of Federal Regulations §403, as amended from time to time, unless otherwise covered under this Section.

(h) Any radioactive wastes or isotopes.

(i) Any noxious or malodorous substance capable of creating a public nuisance.

(j) Any wastes having a color concentration in excess of thirty (30) color units, based on the Platinum Cobalt Scale.

(k) Any wastes having a flash point lower than one hundred eighty-seven degrees Fahrenheit (187°F) (86°C) as determined by the Tagliabue (Tag.) closed-cup method.

(l) Any waste having a five (5) day Biochemical Oxygen Demand which may contain more than 1,000 parts per million by weight as averaged during any twelve (12) hour period.

(m) Any wastes containing phenolic compounds over 5 mg/1 expressed as phenol.

(n) Any cyanides or compounds capable of liberating hydrogen cyanide in excess of 1 mg/l expressed as hydrogen cyanide from any individual outlet.

(o) Any wastes containing sulfides over 3 mg/l expressed as hydrogen sulfide.

(p) Any wastes containing toxic or poisonous substances having a twenty-four (24) hour proportionate composite sample concentration, at point of discharge, in excess of the following:

1. Total Chromium as Cr 7.5 mg/l
2. Copper as Cu 4.5 mg/l
3. Nickel as Ni 15.0 mg/
4. Cadmium as Cd 1.2 mg/l
5. Zinc as Zn 12.0 mg/l
6. Iron as Fe 15.0 mg/l
7. Lead as Pb 15.0 mg/l
8. Arsenic as As 0.25 mg/l
9. Manganese as Mn 0.25 mg/l
10. Selenium as Se 0.05 mg/l
11. Silver as Ag 0.25 mg/l
12. Mercury as Hg 0.10 mg/l

(q) Any waste that would cause a violation of the District's Discharge Permit. Any person or entity found to be discharging wastes prohibited by this section shall be fined ten thousand dollars ($10,000.00) for each day such prohibited discharge continues and for each subsection violated, along with all other remedies available at law or equity, including damages, attorneys' fees and costs.

2.17.3.4 **Sewer Tap Permit Provisions.** The District Application for Connection Permit allows discharge into the District Sewer System, through a specified sewer tap, of sewage not otherwise restricted or prohibited by these Rules and Regulations. Spot discharges of recreational vehicle wastes, portable toilet wastes, or any other wastes; and discharges of swimming pool water, must be specifically authorized by the Application for Connection Permit or other written permit.

2.17.3.5 **Discharge Restrictions – Special Review.** On written application from a customer, the Board of Directors may, at its discretion, review a request to discharge into the District Sewer System any waste otherwise prohibited under this section. Said written application shall include an analysis of the types, amounts, concentrations, and times of discharge of each prohibited waste, and an analysis of the impact of such discharge on the District Sewer System, including the District's sewer effluent. After consultation with the District Engineer, the Board may allow discharge of the prohibited waste, provided

such discharge does not violate, or cause the District to violate, federal, state, county or local laws.

If approved, the Board may prescribe the times, places, concentrations, total amounts, fees and charges, and any other conditions under which such prohibited waste may be discharged. When necessary in the opinion of the Board, the Customer shall provide, at his or her expense, such pretreatment facilities as may be necessary to treat such prohibited waste prior to discharge to the interceptor. Plans, specifications, and any other pertinent information relating to proposed pretreatment facilities shall be submitted for the approval of the District and of the State Board of Health, and no construction of such facilities shall be commenced until such approval is obtained in writing. Where pretreatment facilities are provided for any prohibited waste, they shall be maintained in continuously efficient operation by the Customer, at his or her own expense. When required by the District, the Customer served by a service line carrying prohibited wastes shall install and maintain, at his or her expense, a suitable control access hole in the service line to facilitate observation, sampling and measurement of the wastes. The access hole shall be installed by the customer and maintained at the customer's expense. In the event that no special access hole has been required, the control access hole shall be considered to be the nearest down-stream access hole in the interceptor to the point at which the service line is connected. No foreign matter which could cause stoppage may be discharged from vehicle wash racks, filling stations, restaurants, or other building sewers as specified by the District shall be connected to any sewer service line unless the discharge first passes through an acceptable grease, sand and oil interceptor. Grease interceptors or sand/oil/gas interceptors of a design set forth in *Appendix D, Minimum Design and Construction Standards, Water Distribution and Collections Sewer Systems*, shall be provided when, in the opinion of the Board, or its designated representative, they are necessary for the proper handling of prohibited waste or liquid waste containing grease in an excessive amount, or any flammable wastes, sand, and other harmful ingredients. However, such interceptors shall not be required for dwelling units, unless such waste is generated by said units. Floor drains for automobile repair, automobile mechanics, tire repair, automobile painting, and automobile lubrication facilities shall be prohibited. The uses set forth in *Section 2.17.3.6* shall require mandatory interceptors. Where installed, the interceptors shall be maintained by the Customer, at his or her expense, in continuously efficient operation at all times. The customer is required to provide testing and pumping records of all pumping activity of grease interceptors to the District whenever the pumping activity occurs.

2.17.3.6 **Mandatory Interceptors.** The following uses shall be subject to special review by the District Engineer and required to install state-of-the-art interceptors.

(a) Food service establishment: Designs for all drainage systems for commercial establishments serving or preparing food shall be subject to review and written approval by the District Engineer. All food service establishment drainage systems shall include a state-of-the-art grease interceptor and shall be constructed in accordance

with the technical specifications as set forth in *Appendix D, Minimum Design and Construction Standards, Water Distribution and Collections Sewer Systems.*

(b) Car wash: Designs for all commercial car wash drainage systems shall be subject to review and written approval by the District Engineer. All commercial car wash drainage systems shall include a state-of-the-art sand/oil/gas interceptor and shall be subject to best management practices as required and approved by the District Engineer.

2.17.3.7 **Manufacturing and Industrial Uses.** Manufacturers and industries are prohibited from using the District sewer system unless they obtain a special permit from the Board, the granting of which is discretionary, said permit defining the conditions, limitations, and restrictions, and the fees and charges determined by the Board to be for the best interest of the District and its inhabitants. Each user which discharges any toxic pollutants which cause an increase in the cost of managing the effluent of the sludge of the District's treatment works shall pay for such increased costs.

2.17.3.8 **Discharge from Swimming Pools.** All swimming pools, hot tubs, whirlpool tubs, bath tubs and the like, having a capacity of 1,000 gallons or greater must be registered with the District by size and location. A permanent sign must be placed in the filter room or location at the drain control with instructions for draining the pool as follows: 'BEFORE DRAINING THIS POOL, CONTACT THE SNOWMASS WATER AND SANITATION DISTRICT AT 923-2056". The District Manager shall arrange a time for draining the pool into the District's sewer system between the hours of 11:00 p.m. and 6:00 a.m. Draining of pools at other times or without approval of the District Manager is prohibited.

2.17.3.9 **Swimming Pool Acid Cleaning.** If acid cleaning is used, the customer is subject to the increased cost of operation and a non-conforming discharge assessment to be determined by the Board.

2.17.4 **Use of Sewer Required.** No sewage disposal system shall be constructed within the District unless it is connected with a District sewer main. Pursuant to *C.R.S. 32-1-1006(a)(I),* the Board can compel a property owner located within the District and within 400 feet of a sanitary sewer line to connect to the District's sanitary sewer system. If the District's sewer line is greater than 400 feet from the unit to be served, the Board may grant specific authorization for an exemption, until such time as District sewer service is available within 400 feet of the unit to be served, and only if the following conditions are met:

(a) Extension to the District's sewer system is impractical or unfeasible; and

(b) A private disposal system is constructed meeting all State Health Department Standards and has been approved by the District Manager and the Pitkin County Sanitarian.

SECTION III SERVICE POLICY

3.1 **Policy.** The District is a Colorado Special District, formed and functioning under the authority of C.R.S. §32-1-1001 et. seq. The District was created for the diversion, treatment, and distribution of water for domestic and other uses, for the collection and treatment of sewage from District Customers, and for the maintenance, repair and replacement of all mains, hydrants, valves, and necessary service facilities. The District shall not be liable or responsible for inadequate, high, or fluctuating water pressure or for interruption of water or sewer service.

3.2 **Liability.** No claim for damage shall be made against the District by reason of the following: breaking of any service or supply line, pipe, cock, or meter by any employee of the District; the unauthorized acts of any employee of the District; failure of the water supply; shutting off or turning on water in the water mains; the making of connections or extensions; damage caused by water running or escaping from open or defective faucets; broken or frozen service pipes or other facilities not owned by the District; damage to water heaters, boilers, or other appliances resulting from shutting water off, or from turning it on, or from inadequate, high, or fluctuating pressures; blockage in the system causing the backup of waste water; damage caused by "smoking" of lines to determine drainage connections to District lines; breakage of water mains and/or sewer interceptors or collectors or water or sewer service lines by District personnel or third parties; interruption of water and/or sewer service and the conditions resulting therefrom where said interruption of service is brought about by request of claimant, interruption of electrical service or by circumstances beyond the District's control; damage caused by sewer pressure jetting or other maintenance actions; or for doing anything to the Water System of the District deemed necessary by the Board of Directors or its agents. The District hereby reserves the right to cut off the water supply or disconnect the sewer service at any time, for any reason deemed appropriate including, but not limited to, any violation of these Rules and Regulations or Board policies as set forth in the District minutes. This paragraph shall not relieve the District from liability for negligence of its employees, if such liability would otherwise have existed.

3.3 **Use of District Water System.** No person shall uncover, make any connection with or opening into, use, alter, or disturb any public water main or appurtenances without first applying for and obtaining a Connection Permit from the District. All installations for water service from the District shall be made in accordance with these Rules and Regulations, the specifications and procedures set forth in *Appendix D, Minimum Design and Construction Standards, Water Distribution and Collections Sewer Systems* and all federal, state, county and local requirements. Every permanent connection to the District Water System must be inspected by a representative of the District before service will be provided. The District shall receive at least 24 hours' notice of such inspections and shall charge the fees established in *Appendix B, Rates and Charges Schedule,* for such inspections. If a connection to the District Water System is covered before inspection, it must be excavated for inspection at the Customer's expense. The District will mail to the owner of the property on which the uninspected connection is located a written request that such connection be excavated for inspection. If the connection is not excavated for inspection within 10 days from the date the request is mailed, the District shall excavate and inspect the new connection, and will invoice the customer for all related costs and expenses.

3.4 **Use of District Sewer System.** No unauthorized person or entity shall uncover, make any connection with or opening into, use, discharge into, alter, or disturb any sewer interceptor or appurtenance without first obtaining a written permit from the District. All installations for sewer service from the District and work upon any portion of the District Sewer System shall be made in accordance with these Rules and Regulations, the specifications and procedures set forth in *Appendix D, Minimum Design and Construction Standards, Water Distribution and Collections Sewer Systems* and all federal, state, county and local requirements. Every permanent connection to the District Sewer System

must be inspected by a representative of the District before service will be provided. The District shall charge the fees set forth in *Appendix B, Rates and Charges Schedule* for such inspections, which shall be performed upon receipt of at least 24 hours' notice to the District. If a permanent connection to the District Sewer System is covered before inspection, it must be excavated for inspection at the Customer's expense. The District will mail to the owner of the property on which the uninspected connection is located a written request that the connection be excavated for inspection. If the connection is not excavated for inspection within ten (10) days after such request is sent, the District will excavate and inspect the connection, and will invoice the customer for all related costs and expenses.

3.5 **Inactive Tap Customers.** Includes all Customers within vacant structures, with idle water or sewer connections, or whose service has been shutoff for nonpayment of service charges or for any other violation of these Rules and Regulations.

At the discretion of the Board of Directors, any Customer who certifies in writing to the Board of Directors that his or her property will be vacant for at least 12 months, or that the District water or sewer connections to the structure will be substantially idle for at least 12 months, may be allowed to pay the Availability of Service/Standby fees set forth under this section and *Appendix B, Rates and Charges Schedule*. This shall not apply to water or sewer service to structures which have not yet received a Certificate of Occupancy or Temporary Certificate of Occupancy.

Any District Customer whose water and/or sewer service has been shutoff by the District for non-payment of service charges or for any other violation of these Rules and Regulations shall be required to pay the Availability of Service/Standby fees set forth under this section during the period that service has been shutoff. In no case, however, shall service that has been shutoff due to violation of the District's Rules and Regulations remain disconnected for more than 12 months.

All District Water and Sewer service to the Inactive Taps qualifying for the Availability of Service/Standby fees under this subsection shall be disconnected, blocked, or turned off. Any such work done by District personnel shall be subject to the fees set forth in *Appendix B, Rates and Charges Schedule*. Any unauthorized reconnection, unblocking, or turning back on of District water or sewer service after it has been disconnected, blocked, or turned off pursuant to this subsection shall constitute an unauthorized use or connection pursuant to *Section 2.3*, *Unauthorized Connection and Fees,* subject to the 1,000.00 fine under that section, and any additional fees or fines described in Section 2.3.

3.6 **Reassessment of System Development Fees.** Should any information disclosed on the application prove at any time to be false, or should the applicant omit any information, the District shall have the right to: reassess the System Development Fee originally charged to the rate current at the time of discovery by the District of the false or omitted information, and/or disconnect the service in question, and/or back-charge the property in question for System Development fees and service fees that may be due and owed, and/or charge any other additional fee or penalty specified in these Rules and Regulations. Any reassessment, penalties, or other additional fees charged, with interest at the maximum legal rate on the entire balance upon and from the date of the original application, shall be due and payable immediately. Should the metered consumption, documented sewage criteria, or approved usage exceed the conditions upon which the original System Development fees were paid, the District reserves the right to reassess the System Development fees originally charged to the rate current at the time of discovery by the District.

3.7 **Sellers and Buyers Responsibilities.** The District assumes no responsibility for agreements between sellers and buyers of property within the District's Service Area. It shall be the responsibility of the buyer to ascertain whether appropriate fees and charges for the type and amount of service received from the District have been paid by the seller. Regardless of ownership, failure of the District to collect fees and charges at the time of the issuance of permits, or any other act or omission of the District, unpaid fees and charges shall constitute a first and perpetual lien on and against the property which lien may be foreclosed as provided by law and these Rules and Regulations.

3.8 **Pre-Paid System Development Fees.** The District does not allow prepaid system development fees. If construction has not commenced within 180 days of payment to the District, at the time that work commences the District shall recalculate applicable system development fees at the time of commencement at the rates in effect at the time of commencement and the applicant shall be obligated to pay any additional fees owned prior to commencement of work.

3.9 **Special Conditions.**

3.9.1 **Fire Sprinkler System.** If a fire protection water sprinkler system is to be used, a plan of the system that has been approved by the Snowmass Wildcat Fire Protection District is to be submitted to the District along with the application. The fire suppression system and domestic water shall utilize a common service line and tap for the building unless otherwise approved by the District. All fire sprinkler systems shall meet National Fire Protection Association (NFPA) requirements and additionally shall meet the requirements of all Town of Snowmass Village, County, and State building and fire protection codes. All fire sprinkler systems shall be protected from fluctuating water main pressures by means of a pressure-reducing valve. Waivers may be granted by District with a written request from the applicant. As dictated by the State of Colorado, all fire sprinkler systems shall be equipped with a backflow prevention device appropriate to the degree of hazard contained therein.

3.9.2 **Raw Water Use Fee**. If the District diverts raw water from a creek or reservoir and delivers it to the customer, the District will charge 25 percent of the District's Tier 1 retail rate (15,000 – 30,000 gallons/EQR) for treated water. This does not include a charge for the use of a water right. If the customer does not have its own water right, the District would add to the Raw Water Use Fee the Raw Water Right Use Fee, described below.

3.9.3 **Raw Water Right Use Fee**. If the District provides the water right that is used for irrigation, the District will charge 10 percent of the District's Tier 1 retail rate (15,000 – 30,000 gallons/EQR) for treated water.

3.9.4 **Conditional Service.** The District reserves the right to issue a notice of conditional service against the property title where a condition(s) exists which is not in compliance with District Rules and Regulations, but water and/or sewer service to the property may continue. The notice will provide that as a condition of receiving service the customer agrees to indemnify and hold the District harmless for any damage resulting from existence of the condition. Examples are connection to private mains not owned or maintained by the District, lack of easements for access and maintenance, and construction not in accordance with District specifications.

3.9.5 **Denial of Service.** The District reserves the exclusive right to deny application for service when, in the opinion of the District, the service applied for would

create an excessive seasonal or other demand on the facilities. Denial may also be based upon an unresolved obligation between the District and the applicant, inadequate documentation of easements for main lines serving the property, or any other reason as determined by the District.

3.9.6 **Revocation of Tap Rights.** The right to connect to the District's system and to receive services, shall be revocable by the District upon non-payment of any fees owed to the District and remaining unpaid for a period of thirty (30) days, whether or not the customer owning the right to connect has actually connected to the District's system. If the right to connect to the District's system is revoked, the customer may reacquire such tap rights by reapplying for service in accordance with *Section 3.10.1, Application for Permit*. The reapplication will be considered only after payment of all fees due and owed the District and the current tap fees charged by the District under these Rules and Regulations.

3.9.7 **Existence of Easements.** An easement, whether recorded or not, and whether the main line is actually within a recorded easement, is deemed to exist if a customer is receiving and accepting service from a service line connected to a main line. The District shall have access upon, across, under, through and over said easement property to affect the installation, alteration, operation, repairs, maintenance and replacement of such service or main line.

3.9.8 **Water and Sewer Main Access Easements.** Landscaping improvements, structures or improvements shall be prohibited within easements that are expressly designated and granted and upon which an access platform has been constructed, and which route is necessary or convenient to serve as the access to District facilities. Examples of such improvements may include but are not limited to trees, berms, bushes, rock walls, other structures and any landscaping or improvements that would inhibit the District's access to and along the access easement.

3.9.9 **Line Locations.** Upon request of a customer, the District will attempt to locate and mark all District water and sewer lines to the best of its ability by using available information. Basic line locations will be made free of charge, but the District shall not be liable to any party for any costs incurred as a result of an inaccurate location.

3.10 **Connection Permit Required**. A connection permit shall be obtained from the District and the required fees paid upon the first to occur of the following:

A. a permit or authorization is issued by the Town of Snowmass Village or Pitkin County authorizing the commencement of construction activities; or

B. any connection is made to the water or sewer mains; or

C. liability for an incremental system development fee exists.

3.10.1 **Application for Permit.** Application for a water or sewer connection permit shall be made to the District on forms furnished by the District, which shall include, without limitation, a copy of the plans and a description of the work to be done, the address of the unit to be served, and the name of the Town of Snowmass Village or Pitkin County licensed plumber to perform the work under the permit, and such other information as may be required by the District Manager. A connection to the system shall be made only by District personnel upon authorized approval of the permit and a receipt indicating payment of all fees.

3.10.2 Term of Permit. Upon issuance, the connection permit shall remain in effect for the same period as the building permit or plumbing permit issued by the Town of Snowmass Village or Pitkin County, for the project for which the connection permit is required, or one year from the date of issuance, whichever is less.

3.10.3 Inspection. Prior to applying to the Town of Snowmass Village or Pitkin County for a Certificate of Occupancy or a Certificate of Completion, the holder of a connection permit shall contact the District and request a water conservation and compliance inspection and the licensed plumber identified in the application for the permit shall certify to the District that the water control flow fixtures and fittings installed comply with the requirements of *Section 5.4.1, New Customers.* The Customer shall request the District to perform a final inspection of the property. During the final inspection, District personnel will inspect the Customer's water meter, backflow prevention device, pressure reducing valve, shut-off valves, sewer clean-out, curb box location and accessibility, and other water or sewer appurtenances required by these Rules and Regulations. The District will also calculate the total number of EQR's for the property and, if necessary, back-charge the property in question for System Development Fees and service fees that may be due and owed in accordance with *Section 3.6*. The District shall charge the Customer a fee for the final inspection, and the amount of the fee is stated in *Appendix B, Rates and Charges Schedule.*

In order to ensure that the Customer requests a final inspection in the time-frame required hereby, at the time a Developer or property owner submits an application for water and/or sewer service to the District, the applicant shall pay a final inspection deposit to the District in the amount stated in *Appendix B, Rates and Charges Schedule*. If the Customer complies with this section by having a final inspection completed prior to the issuance of a temporary or permanent Certificate of Occupancy, then the District shall refund to the Customer the amount of the deposit minus the applicable final inspection fee.

If the Customer fails to request a final inspection as required hereby, then the Customer forfeits the inspection deposit. In addition, if the District determines that a final inspection is due for a property, but one was not timely requested or performed, District personnel shall be entitled to perform the final inspection and to charge the Customer the actual costs therefore. The payment or collection of such actual final inspection costs shall be subject to the terms and conditions of *Appendix B, Rates and Charges Schedule* of these Rules and Regulations.

3.10.4 Revocation of Permit. Any connection permit may be revoked if the installation or use of a water or sewer service is not made in accordance with these Rules and Regulations, and prescribed specification of the District or the District Manager, or any special condition of the permit.

3.10.5 Separate Permit. Not more than one connection to the water or sewer mains shall be allowed under each connection permit.

3.10.6 Other Permits. No connection permit shall be considered to be authority for the making of any cut in a public road or street, or in lieu of a building permit required by the Town of Snowmass Village or Pitkin County, or any permit required by any other regulatory body.

3.11 Potable Water Service.

3.11.1 Private Water Service Line

3.11.1.1 Connection. Upon payment of the connection permit fees, the District or developer/customer shall install a water service line, including corporation stop and curb valve, extending from the District's main to a point within approximately 10 feet from an individual property line, at which point the curb valve will be located. For commercial or multifamily buildings the curb valve will be located next to the main line. Commencing at the curb valve or the property line, whichever shall first occur from the District main, the remainder of the water service line shall be considered a private water service line to be maintained in accordance with *Section 3.11.1.2, Maintenance.*

3.11.1.2 Maintenance. Each customer shall be responsible for maintaining the entire length of the private water service line. Leaks in a service line shall be repaired by the customer within 72 hours of notification of such condition. If satisfactory progress toward repairing the water service line has not been completed in a timely manner, or the District determines that environmental or property damage is being caused, the District shall shut off the water service until the service line has been repaired. In addition, the District shall have the right to repair the water service line. The District shall invoice the customer for all repair costs and the customer shall immediately pay for the resulting repair costs, which costs shall constitute a perpetual lien against the property until paid.

3.11.1.3 No Line Bleeding. Service Lines shall be installed in a manner that bleeding of water is not necessary to prevent freezing.

3.11.1.4 Disconnections. No water service line connected with the Districts mains shall be disconnected therefrom without the prior written approval of the District Manager, who shall specify the method and time of disconnection.

3.11.2 Conditions of Service. The following items shall apply to all water service connections:

3.11.2.1 Pressure Reducing Valves. Pressure reducing valves shall be furnished, installed and maintained at not greater than 65 psi, by the customer. The pressure reducing valve shall be located at an accessible location approved by the inspector.

3.11.2.2 Water Meters. To provide for an equitable billing system for water consumption and to induce water conservation, any customer or person required to obtain a connection permit shall install an adequate metering point and metering yoke in the water service line, if none presently exists. All meters must be in an approved location so as to allow the District free and non-hazardous access for reading and inspection and so that the entire supply of water to the premises will, at all times, be accurately measured. The size, type and quality of meter used shall be as set forth in the Snowmass Water and Sanitation Design Standards.

3.11.2.3 **Meter Ownership.** Meters read by Snowmass Water and Sanitation District shall be owned by, installed, and maintained at the expense of the customer, except as otherwise provided in these Rules and Regulations.

3.11.2.4 **Meter Specifications.**

(a) **Size and Type.** The Snowmass Water and Sanitation Minimum Design Standards have established specifications for all meters. These meter standards, found in *Appendix D, Minimum Design and Construction Standards, Section 9*, *Connection Permit Requirements*, shall provide for accurate measurement of water flow, excellence of material and minimum line loss under all anticipated conditions of use for each size meter.

(b) **AMR (Automated Meter Reading).** All meters that are read by Snowmass Water and Sanitation District must have an electronic Neptune ProRead AutoDetect register and radio unit Neptune wall mount MIU as specified by the Snowmass Water and Sanitation Minimum Design Standards.

3.11.2.5 **Accessibility Required to Meters.** All meters must be located so as to allow Snowmass Water and Sanitation District unimpeded and non-hazardous access to the meter at reasonable times. Meters must also be located so that the radio frequency signal from the automatic meter reading device can be obtained from a publicly-accessible street or another location conveniently accessible to Snowmass Water and Sanitation District's meter-reading vehicles and equipment. The location of the indoor meter shall be heated to prevent freezing, shall be adjacent to a floor drain and shall not be obstructed. The meter shall be equipped with a remote type automatic meter reading device that will be mounted on the outside of the structure in accordance with the Snowmass Water and Sanitation Design Standards.

3.11.2.6 **Maintain Conformity.** If at any time an existing meter location does not conform to the standards enumerated in this section or the Snowmass Water and Sanitation Design Standards, the installation shall be modified at the customer's expense so that it does conform.

3.11.2.7 **Maintenance of Meter.**

(a) **Ordinary Wear and Tear.** In order to provide for the accurate measurement of water, Snowmass Water and Sanitation District will maintain at its cost, against ordinary wear and tear, all meters it reads for billing purposes, except master meters. Snowmass Water and Sanitation District will repair or replace meters in need of maintenance, testing, or replacement. Upon installation, the replacement meter and the automatic meter reading device will be become the property of the customer of the premises served thereby. The timing of meter replacement and the extent of modifications required to accommodate the installation of a new meter is at the discretion of Snowmass Water and Sanitation District.

(b) Damage Due to Other Cause. The maintenance service described in this section shall be provided only for damage to meters or automatic meter reading devices attributed to normal wear and aging. Damage to meters or automatic meter reading devices caused by actions such as excavation, demolition, landscaping, freezing, hot water, tampering, water hammer, construction, or any cause other than ordinary wear and tear are not included in the maintenance service provided by Snowmass Water and Sanitation District. When a meter has been damaged as a result of any such causes, the customer shall bear the entire expense of removing, repairing, resetting and replacing the meter or AMR device.

3.11.2.8 Customer Responsibility. Regardless of the maintenance service provided by Snowmass Water and Sanitation District under this section, the customer shall be responsible for all damage to personal property resulting from the customer's meter.

3.11.2.9 Inaccurate Meter. If a meter becomes inaccurate, water service may be charged for an estimated consumption based on previous consumption for the period during which it may appear to the District that such inaccuracy may have occurred. The District will require upon request that the customer remove and test a meter and/or if it is suspected that the meter in question has become inaccurate due to tampering, the customer will be required to repair said meter or replace the meter with a new meter approved by the District. The District will not be held responsible for any cost to remove and test a meter that is subsequently found to be accurate. The District may deny service to customers that have not repaired or replaced defective meters or tampered with a meter.

3.11.2.10 Remote Reading Device. If a remote meter reading device has been installed at the premises and a difference in readings occurs between the remote reading device and the water meter installed inside the premises, billing charges shall be derived from the water meter reading. The District may deny service to customers that have not tampered with a meter reading device.

3.11.3 Cross-Connection and Backflow Control. Pursuant to Colorado Revised Statute (CRS) Sections 25-1-114(h) and 25-1-114.1, Colorado Primary Drinking Water Regulations, S.C.C.R. 1003-1 (article 11) and the "Colorado Department of Health Cross Connection Control Manual" the District water system shall have no uncontrolled cross-connection to any pipe, fixture or supply containing water of a quality below the minimum general sanitary standards of drinking water to be supplied to the public, as promulgated by the Colorado Department of Public Health and Environment, Colorado Primary Drinking Water Regulations (CPDWR), Article 12, Control of Hazardous Cross-Connections. No grandfather clause exists. All Rules, Regulations, and Laws apply regardless of the age of the property or the service connection.

3.11.3.1 Definitions:

Colorado Department of Health Cross-Connection Control Manual shall mean a manual that has been published by the State addressing cross-connection control practices, which will be used as a guidance document for the District in implementing a cross-connection control program.

Cross-Connection shall mean any unprotected, actual or potential connection or structural arrangement between the District's or a customer's potable water system and other source or system through which it is possible to introduce into any part of the potable system any substance, other than the intended potable water, with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices and other temporary or permanent devices through which or because of which backflow can or may occur, are considered to be cross-connections. Examples, but not limited to, of cross connections are:

A. Hose –bibs – Vacuum breaker
B. Irrigation lines
C. Fire sprinkler systems
D. Boiler systems
E. Dishwashers
F. Solar homes using potable water as heat source.

Approved Back Flow Prevention Device shall mean a device that has been manufactured in full conformance with the standards established by the American Water Works Association entitled: AWWA C506-78 Standards for Reduced Pressure Principle and Double Check Valve Back Flow Prevention Devices, and have met completely the laboratory and field performance specifications of the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California established by Specifications of Back Flow Prevention Devices - #69-2. Final approval shall be evidenced by a Certificate of Approval issued by an approved testing laboratory certifying full compliance with said AWWA standards and FCCC&HR specifications dated March 1969 or the most current issue.

Double Check Valve Assembly shall mean 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 District-approved testing establishment for back flow prevention devices. To be approved, these devices must be readily accessible for in-line maintenance and testing.

3.11.3.2 **Required Installation.** By law, residential properties are required to have backflow prevention assemblies. Approved backflow prevention assemblies shall also be installed on all commercial, industrial, and mixed usage properties, and fire sprinkler systems to protect the domestic water system from potential cross-connection contamination. All costs for the design, installation, maintenance, repair, and testing of backflow prevention assemblies shall be borne by the customer.

No person shall fail to install and maintain a backflow prevention device approved for the degree of hazard posed by the connection. Such a device shall be installed in all cases, before the first branch line leading off the private water service line, at an accessible location approved by the inspector. Backflow prevention assemblies shall only be installed by a Master Plumber or by a licensed plumber or Cross-Connection Control Technician working directly under the supervision and authority of a

Licensed Master Plumber. Double check type backflow prevention assemblies shall not be permitted on systems containing glycol.

3.11.3.3 **Plan Review.** The District requires that all building plans for new construction or remodels that involve plumbing be submitted to the District for review and approval prior to construction. All building plans must also be submitted to the Town of Snowmass Village Building Department and approved prior to issuance of water service.

3.11.3.4 **Installation of New Devices.** The customer shall inform the District of all backflow prevention devices that are installed on any premise. Approved backflow prevention assemblies that provide containment shall be installed on all new service connections, and shall be located downstream from the meter, prior to any other connection. Upon installation, each device must be inspected and tested by a certified inspector at the expense of the customer. No customer shall fail to inform the District in writing of the results of this inspection and test.

3.11.3.5 **Testing and Inspections.** As required by Colorado State law, no customer at any premise where backflow devices are installed shall fail to have certified inspections and operational tests made at least once per year, and the customer's system shall be open for inspection at all reasonable times to authorized representatives of the District including the certified cross-connection inspector to determine whether cross-connections or other structural sanitary hazards exist. The District will conduct a monitoring program based on the degree of the hazard. In those instances where the District Manager determines that a hazard exists, certified inspections may be required at more frequent intervals. No customer shall fail to repair, overhaul or replace backflow devices at the expense of the customer whenever these devices are found to be defective. The District reserves the right to require the replacement or modification of any backflow prevention assembly that the District's Cross-Connection Technician deems to present a potential hazard to the domestic water system.

Records of such tests, repairs, overhauls and replacements shall be kept by the customer and made available to the District Manager. Test results must be submitted to the District on the District's form and all information on the form must be completed and legible. Testing of devices must be performed by a Backflow Prevention Assembly Tester, with a current and valid certification, recognized by the District. If the residential property does not contain hazards to the public water supply, which hazards include, but are not limited to, home photo labs, solar power systems connected to the potable water system, and auxiliary wells, the District does not require Device Inspection Reports.

3.11.3.6 **Right of Entry.** Upon prior notice and upon presentation of proper identification, the District representative shall have the right of entry to inspect any and all buildings, property and premises for any matters associated with the District's provision of water and/or sewer service. This right of entry shall be a condition of water service in order to protect public health, safety and welfare.

3.11.3.7 **Compliance.** Failure of a property owner to cooperate in the installation, maintenance, testing or inspection of backflow prevention devices after proper notice in writing by the District, pertaining to the installation,

maintenance, testing, repair, relocation, or inspection of a backflow prevention assembly may result in the disconnection of water service. Water service to a property may not be disconnected if the customer installs an approved air gap to separate any hazardous condition from the public water system. If disconnection of a water service is not feasible, the District has the authority to fine property owners an amount not to exceed $500 per day for any or all days the connection is out of compliance.

3.11.3.8 **Existing Cross-Connections.** All cross-connections between the District water system and any secondary water system shall be either eliminated or protected by means of an approved backflow preventer.

3.11.3.9 **Specific System Requirements.**

(a) **Irrigation Systems.** The following guidelines relating to back flow prevention devices for irrigation systems shall apply:

(i) Private Plumbing and/or connections are not allowed before the water meter. The only types of backflow prevention devices approved for use in irrigation systems are atmospheric vacuum breakers, pressure vacuum breaker assemblies and reduced pressure backflow preventer assemblies. No other device or combination of devices will be accepted. A "reduced pressure backflow preventer" does not provide protection if it is under water or other liquid, and therefore shall not be installed underground unless drainage out of the vault is certain and adequate. If installation is to be above ground, a vandal-resistant device shall be selected, and major spillage shall always be allowed in an area where spillage can be seen, but would not be objectionable. The assembly shall be located so that it may be tested periodically. Regarding manufacturer and models of these devices which are approved, SWSD follows the recommendations of the latest adopted edition of the International Plumbing Code.

(ii) A reduced pressure principle back flow preventer or air gap separation shall be required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system. A reduced pressure principle back flow preventer may be installed to serve multiple irrigation circuits in lieu of vacuum breaks on each individual irrigation circuit.

(b) **Fire Systems.** In cases where the domestic water system is used for both drinking and fire fighting purposes, approved back flow prevention devices shall be installed to protect such individual drinking water lines as are not used for fire fighting purposes.

Backflow prevention assemblies installed on fire sprinkler systems must meet the requirements of the local Fire Department and shall be Reduced Pressure Assemblies that provide full containment or isolation when the systems contain

glycol. The reduction of pressure through these devices must be incorporated into the design of the fire sprinkler system.

3.12 Sanitary Sewer Service.

3.12.1 Private Sewer Service Line

3.12.1.1 Connection. Upon payment of the connection permit fees, the District or developer shall provide and install the "wye" and make the tap on the District's sewer main. A cleanout shall be installed within 5 feet of the customers building.

3.12.1.2 Maintenance. Each customer shall be responsible for maintaining the entire length of the private sewer service line. Leaks and breaks in a service line shall be repaired by the customer within seventy-two (72) hours of notification of such condition. If satisfactory progress toward repairing the sewer service line has not been completed in a timely manner, or the District determines that environmental or property damage is being caused, the District shall shut off the water service until the sewer service line has been repaired. In addition, the District shall have the right to affect the repair. The customer shall immediately pay for the resulting repair costs, which costs shall constitute a perpetual lien against the property until paid as provided for by *C.R.S., 32-1-1001*.

3.12.1.3 Disconnections. No sewer service line connected with the District mains shall be disconnected therefrom without the prior written approval of the District Manager, who shall specify the method and time of disconnection.

3.12.2 Prohibited Discharges. Except as hereinafter provided, no person shall discharge, or cause to be discharged, to any interceptor, any waste prohibited by these Rules and Regulations, or any harmful waters or wastes, whether liquid, solid, or gas, capable of causing obstruction to the flow in sewer lines, damage or hazard to structures, equipment or personnel of the sewage works; inhibiting the biological activity in the waste water treatment facilities; otherwise interfering with the proper operation of the sewage works; constituting a hazard through exposure to the District sewer effluent; or causing the District to be in violation of federal, state or local laws. No person shall discharge, or cause to be discharged, any storm water, surface water, groundwater, roof runoff, subsurface drainage, metal sludge, toxic matter, hazardous material, ignitable material, unprocessed industrial wastes to any sanitary sewer.

3.12.3 Pretreatment Facilities. The District has the authority to require all users (in District and out of District) to comply with the Pollutant Discharge Regulations (PDR) and the Industrial Pretreatment Program (IPP), to require compliance with pretreatment standards; to require monitoring and reporting; to issue notices of violation, compliance orders, cease and desist orders, administrative fines, emergency suspensions; and to seek judicial remedies for any uses as allowed under the PDR or IPP. Where necessary, as determined by the District, the customer shall provide, at his expense, such pretreatment facilities as may be necessary to treat special sewage prior to discharge to the sewer main. Such facilities shall be maintained continuously in satisfactory and effective operation by the customer, at his expense.

3.12.4 Pretreatment for Grease Removal. All commercial and industrial users of the District's facilities having a probability of significant grease discharge in their wastewaters shall install grease removal pretreatment systems. All new commercial and industrial customers and commercial and industrial customers whose use changes the EQR value for their particular use, by renovation, remodel or otherwise, shall install grease interceptors. The District shall determine whether a specific user has a probability of having a significant amount of grease in its wastewaters from evaluation of the type of use or proposed use of the customer. The grease trap shall be sized in accordance with the most recent International Plumbing Code (IPC) and installed by the customer, (commercial grease traps shall be a minimum of 500 gallons). Because of the characteristics of the sewage discharge from the grease trap, special consideration should be given to the design of the outfall line in order to prevent freezing. If at a later time the District determines that the sewage contains grease having an adverse effect on the sewer system, the customer will be required to install a larger grease trap within 90 days of official notification. Failure to comply with the provisions of this section may result in the District performing the cleaning of the grease trap with all costs billed to the customer and/or a lien filed on the property and may result in disconnection of water service. Grease dissolving chemicals that have an adverse effect on the District sewer system are prohibited.

3.12.4.1 Approval of Existing Facilities. All existing grease pretreatment facilities in the District on April 1, 1985, which were in compliance with these Rules and Regulations concerning pretreatment for grease removal at the time of their installation and which are in compliance with these Rules and Regulations for maintenance of grease pretreatment facilities on March 11, 1985, are hereby approved. All approved existing grease pretreatment facilities shall, however, be subject to these Rules and Regulations in relation to the maintenance and inspection and upgrading of the facility. All existing nonconforming grease pretreatment facilities shall be immediately removed, replaced or retrofitted, as the case may be, to comply with the design requirements for grease interceptors contained in these Rules and Regulations.

3.12.4.2 Maintenance. No customer shall fail to regularly clean and maintain all grease interceptors, grease traps and pretreatment facilities serving the customer's premises. Accumulated grease and grit shall be removed as solids and disposed of in a manner approved by the Town of Snowmass Village or Pitkin County, as is appropriate. Unless otherwise approved in writing by the District Manager, grease interceptors shall be cleaned at least once a month, and grease traps shall be cleaned at least once a week. No customer shall fail to follow this cleaning schedule. In addition, the District shall have authority to perform such maintenance. The customer shall immediately pay for the District's resulting maintenance and treatment costs. The customer is fully responsible for all treatment and maintenance costs caused directly or indirectly by the failure of the customer to perform regularly scheduled maintenance for grease traps, grease interceptors and pretreatment facilities.

3.12.4.3 Record of Maintenance. No customer shall fail to maintain proof of grease pretreatment facility maintenance. An adequate record shall minimally consist of the date of each cleaning and volume of grease removed or a reliable estimate.

3.12.4.4 **Inspection.** The District shall make periodic inspections of grease pretreatment facilities to insure compliance with these Rules and Regulations. If the grease interceptor, grease trap or pretreatment facility requires maintenance, the District will first send a letter of noncompliance. Two weeks later, if there is no response or the District lacks proof that the problem has been fixed, the District will send a certified letter to the customer of record on the District books, and on the date of sending that letter, a fine of $500 will be added to the District sewer charges to such customer. The District may, if feasible, use this charge to pump out the grease trap, interceptor or pretreatment facility but shall be under no obligation to do so. In addition, the District shall have authority to perform such maintenance. The customer shall immediately pay for the District's resulting maintenance and treatment costs.

3.12.4.5 **Snowmass Center.** The District authorized the installation of a non-complying grease interceptor at the Snowmass Center to service the buildings and uses which existed on the date of installation. Any change to the existing EQR computation of the Snowmass Center which has a probability of significant grease discharge shall require compliance with the provisions of this section.

3.13 **Disturbance of Existing District Facilities**. The owner of any real property upon which a change to the existing grade occurs will be responsible at his sole cost and expense for modifying existing facilities, including, without limitation, water lines, sewer lines, manholes, water gate valve boxes and fire hydrants, as required by the District to the following standards.

3.13.1 **Water Lines.** The ground cover over an existing water line shall be as follows: (Check Design Specs)

Minimum: Eight feet (8').

Maximum: Twelve feet (12').

3.13.2 **Sewer Lines.** The ground cover over an existing sewer line shall be as follows:

Minimum: Five feet (5').

Maximum: Twelve feet (12').

3.13.3 **Manholes.** Grade rings in excess of six inches (6") in height will not be allowed. Precast manhole sections complete with steps shall be added or removed as necessary to change the rim grade. The depth of the manhole shall be a minimum of five feet (5').

3.13.4 **Water Gate Valve Boxes.** Valve box extensions shall match revised elevations.

3.13.5 **Fire Hydrants.** The District may require fire hydrant extensions due to grade changes. Fire hydrant extensions and installation costs shall be paid for by the developer or customer and extensions furnished and installed by the District. If the District requires that a fire hydrant be relocated, all material, design, construction, installation, abandoning of existing tee's and facilities shall be paid for by the developer.

3.13.6 <u>District Costs</u>. Any costs incurred by the District in modifying existing facilities due to the change in the existing grades shall constitute a perpetual lien on and against the affect property until paid.

SECTION IV LINE EXTENSION POLICIES

4.1 **Main Line Extension by the District.** The District may construct any main line if the Board deems it in the best interest of the District to do so. All main line extensions, which are so authorized, shall be bid competitively, when required by state law, and contract awarded under the authority of the Board. The contractor installing the main lines shall be responsible to the Board. The District, through its District Manager and engineer, shall supervise construction activity and coordinate all matters pertaining to the completion of the subject project, including permits, easements, material approvals, site inspection, acceptance, payments to the contractor, and field verify the as-built drawings. As-built data shall be provided in a digital format as per District specifications. Where water mains and/or sewer interceptors or collectors cannot be installed in a street, private drive or common area, and must be installed in easements along adjacent pieces of property, the mains will terminate at point on the line or corner of the property being served which requires the least amount of construction by the District.

4.1.1 **Performance Payment and Warranty Bonds.** Pursuant to *C.R.S., Section 38-26-105 and -106*, as amended, performance, payment and warranty bonds equal to the contract price at a minimum shall be furnished to the District by the contractor on all contracts with the District. All main lines, constructed in compliance with the contract specifications and District acceptance procedures, shall be accepted by the District upon completion of construction, and warranted against any defects in materials and workmanship for a period of two (2) years from the date of acceptance of the facilities by the District, or July 1st of the year following the second winter after the acceptance of the facilities occurs, whichever shall last occur. If required by the Board of Directors such warranty shall be guaranteed by the Developer by a letter of credit or by such other form of security acceptable to the District, in an amount equal to five percent (5%) of the actual costs of construction of the facilities, which letter of credit shall be a term of one (1) month greater than the warranty period. Any cost and expense incurred by the District in obtaining any payment from the issuer of a letter of credit, or from any other security provided for hereunder, shall be considered as additional costs of that phase of the Project and shall be reimbursed to the District by the Developer. Any defective work identified during the warranty period shall be promptly corrected by the contractor, without cost to the District. All daily inspection fees for warranty work required by any governmental authority, including the District, shall be paid by the contractor.

4.1.2 **Acceptance Procedures.** Before the main lines are accepted by the District, the following procedures shall be completed by the contractor or applicant. The contractor or applicant shall certify the main lines and all appurtenances are free and clear of all liens and encumbrances; furnish to the District with a warranty bill-of-sale and warranty bond to cover all maintenance for any defects in materials and workmanship for a period of two (2) years from the date of acceptance of the facilities by the District, or July 1st of the year following the second winter after the acceptance of the facilities occurs, whichever shall last occur; provide the District digital field verified as-built drawings of all facilities constructed, including but not limited to easements, water valve locations, fire hydrant locations, water stub out locations, data on storage tanks, data on pumps, sewer stub out locations, coordinates of manholes, rim and invert elevations; provide inspection and test results; provide digital copy of all computer information available as per District specifications; and provide maintenance, operating, and parts manuals. District personnel shall be present for all pressure tests on water main lines plus any other tests as deemed necessary. All sewer main lines shall be televised and a copy of the televised tape and cut sheets shall be submitted to the District prior to final acceptance.

4.1.3 **Annexed Parcels.** The District may approve, deny or condition any request for inclusion of lands within the District in the sole discretion of the Board. Before approving any annexations (inclusions) to the District, the owner of the land to be annexed shall convey to the District water rights in a sufficient amount and of a priority to adequately serve the land, as determined by the Board. Alternatively, the Board may determine a fee in lieu of conveyance of water rights to the District, which fee shall be determined on a case-by-case basis in the discretion of the District.

4.1.4 **Contract Service.** The District may approve, deny or condition any request for contract water service in the sole discretion of the District's Board. Before approving any contract water service outside of the District, the owner of the land to be served shall convey to the District water rights in a sufficient amount and of a priority to adequately serve the land, as determined by the Board. Alternatively, the Board may determine a fee in lieu of conveyance of water rights to the District, which fee shall be determined on a case-by-case basis in the discretion of the District.

4.2 **Main Line Extensions by Developers.** The District has created its infrastructure in general accordance with the provisions contained in the Service Plan. Further extension of District facilities shall be in general accordance with the Service Plan. Extension of facilities to areas or types of development not contemplated by the Service Plan shall be discretionary, and not mandatory. A developer shall pay the cost of construction for all facility extensions required to serve a development. The applicant shall request intent to provide service from the District and subsequently enter into a written line extension agreement with the District prior to proceeding with any construction.

4.2.1 **Letter of Intent/Ability to Serve.** During the concept design of a development which requires the construction of water or sewer main lines, the developer shall request the District to provide a letter expressing the intent to provide service. The developer's request shall include data on the number and type of residential, commercial or individual facilities, any irrigation systems, and other activities that would have an impact on water or sewer use. The developer's request should also include a detailed compilation of estimated EQR's for the project based on the District's current EQR Schedule and should include any unique water demands not addressed in the EQR Schedule. The request letter shall contain a description of water rights owned by the developer and a plan indicating the proposed development of the site. The District will analyze its ability to provide water and/or sewer service to the site. This analysis will determine the adequacy of existing distribution and/or collection system capability and the need to increase the capacity of any existing lines, equipment, or facilities. The analysis will also determine the need to oversize lines in the development site for anticipated future service needs. The District will provide a formal intent to serve the development site and include any conditions deemed appropriate. This letter of intent to serve should be available to the County Planning Commission and an incorporated town planning committee.

4.2.2 **Application for Approval.** It shall be unlawful for any person to construct a line extension within the jurisdiction of the District without first having made formal application to the District for approval and having complied with these Rules and Regulations and any other requirements set forth by the District. This application shall contain a legal description of the property to be served by the main line, the estimated number of service taps to be served, the type of structures, the use of the property, the easements to be conveyed, the detail construction plans and specifications for that extension, and any other information reasonably required by the District. Within a reasonable time, the District staff and consultants shall

review the easements, plans, and specifications for conformance to District, county, and state specifications; submit the recommended plans, with appropriate documentation to the District for overall review, and recommend construction plan approval. If cost recovery is applicable, a Cost Recovery Agreement must be concluded in accordance with *Section 4.2.12, Cost Recovery*. Two sets of documents marked "Approved" by the District shall be returned to the applicant. The cost of such review for compliance shall be borne by the applicant.

4.2.3 **Line Extension Agreements.** All line extensions for District water and/or sewer service shall require the execution of a Line Extension Agreement in a form approved by the attorney for the District and by the Board, and shall be made under the observation of the District Engineer. Such Agreement shall set forth the respective rights and obligations of the parties regarding the provision of District water and sewer service to the subject property.

Any Line Extension Agreement entered into by and between the District and a property owner following approval of the agreement by the District shall be executed and returned to the District by the property owner along with any required security within forty-five (45) days from receipt of the agreement. If the Line Extension Agreement is not executed and returned to the District by the property owner along with any required security within forty-five (45) days from receipt thereof, the District's prior approval of the agreement shall be null and void and of no further force and effect, and a new request for approval of the agreement shall be required; provided however, that the District may extend said 45-day execution deadline prior to its expiration for an additional thirty (30) days upon good cause shown by the property owner.

A. **Security/Improvements Guaranty.** In order to secure the construction and installation of the water and sewer system improvements for which the owner is responsible, Developer shall furnish the District with a certificate or other evidence, in good and sufficient form approved by the District's attorney, of an irrevocable letter of credit, performance bond, or other security acceptable to the District in its sole discretion, in an amount equal to the estimated costs of said facilities plus 10% contingency.

The estimated costs of the public improvements required to be constructed shall be an estimate prepared by a Colorado-registered professional engineer on behalf of the Developer and accepted by the District. In the event the cost of the improvements exceed the estimated cost, the Developer shall be solely responsible for the actual cost. The purpose of the cost estimate is solely to determine the amount of security and shall be revised every twelve (12) months to reflect the actual costs, and the performance guarantee required by this Agreement shall be adjusted accordingly. No representations are made as to the accuracy of these estimates, and Developer agrees to pay the actual costs of all such public improvements.

B. **Construction Observation.** The Developer shall retain, at his sole expense, a licensed professional engineer for appropriate on-site observation to ensure that all sewer improvements are constructed to the satisfaction of the District. Construction observation fees incurred by the District on water and sewer improvements constructed by a Developer shall be paid by the Developer. Such fees shall include the costs of reasonable review of drawings and specifications, meetings, inspections,

administration and any other time reasonably required of the District Engineer, attorney, manager, or other authorized representative.

The District Manager, or a designated representative, shall see that the work product meets the requirements and intent of the Contract Documents. If substantial cause exists where requirements of the Contract Documents are not being met, work may be suspended upon notice to the Developer and the Contractor by the District Manager.

The District Manager or designated representative shall have free access to the work at all times, and the Contractor shall furnish them with facilities for ascertaining whether the work being performed, or the work which has been completed, is in accordance with the requirements of the Contract.

1. **Construction Checking.** The District Manager will make periodic observations of construction. The purpose of these observations and construction checking is to determine the progress of the work and to see if the work is being performed in accordance with plans and specifications. The District Manager will in no way be responsible for how the work is performed, safety in, on, or about the job site, methods of performance, or timeliness in the performance of the work.

2. **Inspection of Work.** The District Manager may appoint Inspectors to inspect materials used and work done. Inspections may extend to all or any part of the work and to the preparation or manufacture of the materials to be used.

3. **Defective Materials.** The District Manager will have authority to reject defective material, upon notice to the Developer and the Contractor.

    (i) If substandard material not conforming to the requirements of the Contract Documents has been delivered to the project, or has been incorporated in the work, or if work shall have been performed of inferior quality, then such material or work shall be considered as defective and shall be removed and replaced as directed by the District Manager at the expense of the Contractor.

    (ii) All materials shall be subject to examination and testing by the District Manager at any time during manufacture. The District Manager reserves the right to reject defective materials during manufacture or before they have been incorporated into the work.

    (iii) If the Contract Documents, the District Manager's instructions, laws, ordinances or any public authority require any work to be specifically tested or checked, the Contractor shall give the District Manager timely notice of its readiness for inspection and arrange for a date for such inspection. Inspections by the District Manager

shall be promptly made and where practicable at the source of supply. If any work should be covered up without consent of the District Manager it must, if required by the District Manager, be uncovered for examination at the Contractor's expense.

(iv) Re-examination of the questioned work may be ordered by the District Manager and, if so ordered, the work must be uncovered by the Contractor. If such work be found in accordance with the Contract Documents, the District shall pay the cost of re-examination and replacement. If such work be found not in accordance with the Contract Documents, the Contractor shall pay such cost, unless he shall show that the defect in the work was caused by another Contractor; in that event, the Owner shall pay such cost.

4. **Suspension of Work - Climatic Conditions.** The District prohibits construction from November 1st to April 1st of any calendar year. The time window for all line extension contracts or replacement contracts shall be approved by the SWSD. The District Manager may order the Contractor to suspend work that may be damaged or endangered by climatic conditions. When adverse climatic conditions are unusual and extensive, an extension of time may be granted the Contractor by the District Manager.

C. **As-built Drawings, Deposit, Forfeiture.** The Developer shall submit, at the Developer's cost, reproducible As-Built Drawings, prepared and submitted according to the specifications and procedures set forth in *Appendix D, Minimum Design and Construction Standards, Water Distribution and Collections Sewer Systems*, digital video inspection of the interiors of the extended sewer lines along with a written inspection report and a summary of actual costs incurred by the Developer for the line extension project. No line extension project shall be approved, and no extended water mains and/or sewer interceptors or collectors shall be accepted by the District until satisfactory As- Built Drawings/Inspection Video for the project are received by the District and approved by the District Engineer, which review shall be completed within thirty (30) days of submission by the Developer. The District may deny service through any sewer main or sewer line extension until the above requirements have been met and the main line extension has been accepted by the District and approved by the Board. Submitted Inspection Video of sewer lines shall become the property of the District upon acceptance of the extended sewer lines.

At the same time and in addition to the deposit required for the cost of a line extension project, Developer shall deposit with the District the amount set forth in *Appendix B, Rates and Charges Schedule*, to ensure that satisfactory As-Built Drawings and Inspection Video for the project are submitted to and approved by the District. The Board shall determine the amount of the As-Built Drawings deposit based on the District Engineer's estimate of the cost to prepare such drawings for each line extension project. Said Deposit shall not be released back to the

Developer until satisfactory As-Built Drawings and Inspection Video are submitted by the Developer and approved by the District Engineer.

In the event that satisfactory As-Built Drawings and Inspection Video are not received by the District within thirty (30) days of the completion of construction, as required by the above provisions, the District shall mail a written notice to the Developer. The notice shall specify the date, time, and place of a hearing in which the Board will consider forfeiture of the As-Built Drawings/Inspection Video Deposit, and the reasons why forfeiture may be required. The notice shall be mailed not less than ten (10) days before the hearing, to the last known address of the Developer. At the hearing, the Developer shall be allowed to present testimony and other evidence. If, in the opinion of the Board, the Developer's failure to submit acceptable As-Built Drawings/Inspection Video should not be excused, the As-Built Drawings/Inspection Video deposit shall be forfeited as liquidated damages. Such forfeiture of the As-Built Drawings/Inspection Video deposit shall be ordered by formal written resolution of the Board, and said Deposit shall be used to obtain acceptable As-Built Drawings/Inspection Video of the project; provided however, the Developer shall be responsible for the actual cost of the As-Built Drawings/Inspection Video if such costs are greater than the deposit.

D. **Permanent Easement.** The Developer shall cause a survey to be prepared containing an as-built metes and bounds description of the facilities and shall deliver a copy thereof to the District. Upon approval thereof by the District, the Developer shall execute and deliver to the District a permanent easement for the maintenance and repair of said facilities based upon said survey, to the extent that said facilities are not located within easements therefore which have been dedicated for such purposes previously to the District. The easement shall be in a form acceptable to the District's attorney and approved by the Board.

E. **Warranty.** By execution of a Line Extension Agreement with the District, Developer shall warrant any and all facilities for a period of two (2) years from the date of acceptance of the facilities by the District, or July 1st of the year following the second winter after the acceptance of the facilities occurs, whichever shall last occur, and for the satisfactory repair or replacement of any work, material or equipment which becomes defective during this period; providing any failure results directly or indirectly from faulty workmanship or negligence by the Contractor, from faulty manufacturing or from faulty erection or improper handling of materials or equipment furnished or installed by the Contractor.

Specifically, but not by way of limitation, Developer shall warrant that:

1. The title conveyed shall be good and its transfer rightful as shown in *Appendix G, Bill of Sale and Grant of Warranty*;

2. Any and all facilities conveyed shall be free from any security interest or other lien or encumbrance; and

3. Any and all facilities so conveyed shall be free of any defects in materials and workmanship for a period of two (2) years from the date of acceptance of the facilities by the District, or July 1st of

the year following the second winter after the acceptance of the facilities occurs, whichever shall last occur.

F. Guaranty of Warranty.

Upon completion of construction, but prior to the final acceptance thereof by the District, the Developer shall provide to the District an irrevocable letter of credit issued by a state or national banking institution, with offices located within the state of Colorado, or other security acceptable to the District, in a form reasonably acceptable to the District, in an amount equal to 10% of the costs of the construction, as security for performance of the Developer's warranty. Such letter of credit, or other form of security approved by the District in its discretion, shall authorize the District to draw against the same, from time to time, for the purpose of paying the costs of any warranty work in the event the Developer shall default in the performance or payment thereof. Such letter of credit, or other form of security, shall have a term expiring one (1) month after the end of the warranty period. The final release of such letter of credit, or other form of security, shall occur upon the expiration of its term, except as to any claims asserted during the warranty period are then unsatisfied. Any cost and expenses incurred by the District in obtaining any payments from the issuer of a letter of credit, or from any other security provided for hereunder, shall be considered as additional costs and shall be reimbursed to the District by the Developer. Unpaid reimbursable expenses owed by the Developer to the District at the completion of the warranty period pursuant to Section 4.2.6 below may also be funded by the District from the security prior to final release of the security.

4.2.4 Oversizing Main Lines. Based on District estimates of future growth and use of a main line, the applicant shall construct oversized main line extensions as required by the District, at the District's expense for the incremental cost of the oversized line. The District shall recover the cost of oversizing, including reasonable interest, by connection of future service users or future main line extensions.

4.2.5 Special Structures. Special structures that are required to ensure proper operation of line extensions shall be constructed from designs as approved by the District Engineer in consultation with the Developer and the cost of construction shall be the responsibility of the Developer.

4.2.6 Deposits with the District. Prior to the main line extension approval by the District, the applicant shall deposit with the District in an amount determined by the District to be sufficient to compensate the District for engineering fees, legal fees, and other costs anticipated to be incurred by the District as a result of the application and the construction of the main line as determined by the District. All reasonable inspection costs conducted by any governmental agency, including the District, shall be paid by applicant.

4.2.7 Acceptance of Main Lines. When construction of the main line is completed, the applicant shall notify the District and provide one set of District-approved, digital field verified as-built drawings of all facilities constructed, including but not limited to easements, water valve locations, fire hydrant locations, water stub out locations, data on storage tanks, data on pumps, sewer stub out locations, coordinates of manholes, rim and invert elevations; provide inspection and test results; provide digital copy of all computer information available as per District specifications; and provide maintenance, operating, and parts manuals. The

District Engineer or District personnel shall be present for all pressure tests on water main lines plus any other tests as deemed necessary. All sewer main lines shall be televised and a copy of the televised tape and cut sheets shall be submitted to the District prior to final acceptance**.**

The Developer's engineer of record shall certify to the Board that these Rules and Regulations have been complied with and that such facilities have been constructed and installed in accordance with the District's Minimum Design Specifications and in accordance with the applicable provisions of federal, state, county, and local laws. The applicant or Developer's engineer of record will request the District to accept the facilities.

The District will then inspect the main line, equipment, special structures, and easements for conformance to the approved requirements. Applicants who have completed construction and District inspection of main lines shall, before the main lines are accepted by the District, deed the main lines and appurtenances to the District free and clear of all liens and encumbrances, and furnish to the District a letter of credit, or other form of security, that shall have a term expiring one (1) month after the end of the warranty period. Prior to the acceptance of the main lines by the District, the applicant shall provide the District with:

1. The conveyance to the District of the facilities in the Project, by Warranty Bill of Sale, free and clear of all monetary liens and encumbrances; and

2. The conveyance to the District of legally recorded documents of all easements accompanying the main lines; and

3. The delivery to the District of the final survey and control points utilized in installing the facilities and as-built drawings; and

4. The delivery to the District of security for the warranty as described in *Section 4.2.3 (F), Guaranty of Warranty*; and

5. A certification to the District that all costs of construction have been fully paid for the facilities in the Project; and

6. A certification to the District of the total construction cost for the Project, including both hard and soft costs, to allow for the capitalization of the cost by the District in its financial records.

7. The reimbursement to the District of all outstanding costs and expenses incurred by the District relating to the administration of the Project.

Upon completion of all of the forgoing the District Manager will recommend final acceptance to the Board of the District at the next regularly scheduled meeting of the Board or 20 days, whichever shall last occur. Such acceptance, if given, shall constitute dedication by Developer of such facilities to the District. The parties agree that the District is under no obligation to provide water and/or sewer service to Developer until acceptance and dedication. No service taps may be made onto the main line until Construction Acceptance has been granted by the District in writing, or by special written permission with the District.

Upon satisfactory completion of the above requirements, the District shall formally accept the line extension by a motion entered in the minutes of the Board of Directors. The Developer shall, upon the District's acceptance, convey such lines and all appurtenances to the District, free and clear of all liens and

encumbrances, by *Bill of Sale and Grant of Warranty, example found in Appendix G.*

4.2.8 **Locations of Main Line Extensions.** Main lines shall be installed in road or street rights-of-way, as well as in easements granted to the District. Where required main lines must cross land not being subdivided or where such land is under the applicant's control for the granting of public rights-of-way, each applicant who desires service will, in consultation with and with the approval of the District, plat and grant to the District appropriate rights-of-way and easements in which main lines will be constructed.

4.2.9 **Sewer Collection Lines.** Sewer collection lines shall be designed and constructed to provide a means of access by District personnel using existing District equipment and capability for maintenance, flushing, and inspection. Lift stations are not allowed in District sewer collection systems, except by specific written approval by the District.

4.2.10 **Extensions of Water Mains and/or Sewer Interceptors of Collectors to Serve Unplatted Property Inside the District.** Extension of water mains and/or sewer interceptors or collectors to serve property already in the District, but not part of a platted subdivision, shall be financed by the Developer or Customer who constructs the mains. No future service stub outs will be allowed to un-platted areas.

4.2.11 **Extensions of Water Mains and/or Sewer Interceptors or Collectors Outside the District Limits.** No water mains and/or sewer interceptors or collectors shall be extended outside the District limits, except with the purpose of servicing property that is within the District (across islands, or between peninsulas). Exceptions may be granted upon the express consent of the Board of Directors under the terms of a revocable permit. No future service stub outs will be allowed to un-platted areas.

4.2.12 **Cost Recovery.** The District shall not be responsible for installation of any facilities not contemplated in the Service Plan. Any costs thereof shall be borne totally by the developer. The District is not obligated to reimburse any costs or fees to a developer, unless the District has entered into a specific agreement with a developer whereby the District agrees to collect and reimburse same. If the District agrees to collect and reimburse costs and fees, the collection and reimbursement shall be in accordance with the terms and conditions of a specific agreement. It is the general policy of the District not to collect and reimburse system development fees, and the District will only enter into such an agreement in extraordinary circumstances. The cost recovery contract policies and procedures of the District are administered on a case-by-case basis and are not within the purview of these Rules and Regulations, except as may be set forth in *Appendix B – Rates and Charges Schedule*.

4.3 **Facility Relocation Policy.** Relocation of District facilities shall be discretionary and not mandatory. All relocations shall be in accordance with the Service Plan.

4.3.1 **Procedure.** A developer shall provide documentation required by the District Manager concerning the proposed relocation of District facilities.

4.3.2 **Easements.** The District shall require reservation and dedication of easements for the benefit of the District on the final plat where the location of these easements can be predetermined. The District shall further require the granting of any additional easements necessary for installation of its water and sewer

main and related facilities prior to the effective date of a construction contract for the construction of the facilities. Any costs for acquisition of land or easements necessary for the District to serve the proposed project shall be paid by the developer. The developer shall provide the District with an accurate legal description of all easements, in metes and bounds, showing the boundaries and centerline of the easement, prior to the effective date of a contract for District construction of the facilities.

4.3.3 **Deviation from Service Plan.** The District shall not be responsible for installation of any facilities not contemplated in the service plan. Any costs thereof shall be borne totally by the developer as premium charges.

4.3.4 **Design of Facilities.** The District shall cause to be designed and approve the construction all water and sewer mains and related facilities. The design shall be by a professional engineer licensed to practice in the State of Colorado.

SECTION V WATER CONSERVATION

5.1 **Water Use Efficiency Plan.** In 2013 the District Board of Directors is expected to review and approve a Water Use Efficiency Plan that will subsequently be submitted to the Colorado Water Conservation Board for approval. The plan will address the following issues: Note: Section 5.1 will be replaced once the Water Use Efficiency Plan is approved by the CWCB and SWSD Board of Directors.

A. Water efficient fixtures and appliances including toilets, urinals, showerheads, and faucets;

B. Low water use landscapes and efficient irrigation;

C. Water efficient industrial and commercial water using processes;

D. Water reuse systems, both potable and non-potable;

E. Distribution system leak repair;

F. Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water saving demonstration;

G. Water rate structures designed to encourage water use efficiency in a fiscally responsible matter;

H. Regulatory measures, including standards for the use of water use efficiency fixtures and landscapes, and ordinances, codes, or other law designed to encourage water use efficiency; and

I. Incentives to implement water use efficiency techniques to encourage the installation of water use efficiency measures.

A complete copy of the draft Water Use Efficiency Plan may be obtained from the District office upon request.

5.2 **Restriction on Use**. The District shall implement reasonably practicable water conservation measures during those times when surface water supplies are limited or to lessen the possibility of the flows in Snowmass Creek falling below acceptable levels by reason of the District's diversions.

5.2.1 **Procedure.** The Board shall determine that a water shortage exists. Thereupon, the plan hereinafter set forth shall be implemented. The duration of each stage shall be determined by the Board, according to the exigent circumstances of the particular situation.

5.2.2 **Water Shortage.** During the period designated Water Shortage, water supplied by the District shall not be used for:

5.2.2.1 washing of sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas.

5.2.2.2 filling or refilling of swimming pools, hot tubs, spas, or the like.

5.2.2.3 washing of privately owned cars, other motor vehicles, trailers or boats

5.2.2.4 lawn watering and irrigation, except to the extent determined to be permissible by the District.

5.2.2.5 dust control, street or parking lot cleaning.

5.2.2.6 drinking water to restaurant customers, except upon request.

A public awareness program will be initiated for education as to the types of practices which a successful temporary program will require. The District shall distribute printed material emphasizing the need to schedule water use during off-peak hours, as well as suggested lifestyle changes.

5.2.3 **Water Crisis.** Prior to the expiration of a Water Shortage, a period known as a Water Crisis shall be designated by the Board, if entry of such stage is necessary. During a Water Crisis, all restrictions under a Water Shortage shall remain in effect. In addition, the following measures shall also be in effect:

5.2.3.1 Except for fire fighting, there shall be no use of water from a fire hydrant.

5.2.3.2 Watering of any lawn, garden, landscaped area, tree, shrub or other plant shall be prohibited.

5.2.3.3 Restaurants will be required to serve patrons with disposable plates, glasses, knives, forks and spoons and to use such other disposable utensils as is reasonable.

5.2.3.4 There shall be no replenishments of swimming pools, normal or otherwise.

5.2.3.5 No new water service shall be authorized; however, existing authorizations shall be honored.

5.3 **Water Conservation Restrictions**. To insure the proper functioning of the District's water system during periods of peak demand and to promote water conservation in outdoor watering practices, the following water conservation restrictions shall apply daily.

5.3.1 **Restriction Period.** The watering restrictions shall be in effect daily.

5.3.2 **No Use Period.** No watering shall occur between the hours of 10:00 o'clock a.m. and 5:00 o'clock p.m.

5.3.3 **Alternate Day Watering.** At the beginning of each year the District will publish a watering schedule for the watering restriction period that will allow alternate day watering in the north and south zones. The North and South Zones shall be defined and delineated by a line following Owl Creek Road to Brush Creek and up Brush Creek to the Divide. Watering days will alternate between the zones during the watering restriction period.

5.3.4 **Exemption Permit.** An exemption permit shall not be issued to a Customer except during one (1) calendar year. The District Manager shall issue not greater than one (1) exemption to a customer for the purposes of watering of newly installed landscaping, lawns and trees. The customer shall prominently display a copy of the exemption permit in the area to be watered. During the term of the exemption permit the customer will be authorized to water on consecutive days. This shall not entitle the customer to water during the daily "no use period".

5.3.4.1 **Term.** The exemption shall be issued by the District Manager for a period of thirty (30) days.

5.3.4.2 First Extension. The District Manager shall issue a first extension to the exemption permit for an additional period of thirty (30) days upon the expiration of the initial term, if the condition warranting the issuance of an exemption permit is still in existence and the applicable fee has been paid.

5.3.4.3 Second Extension. The District Manager shall issue a first extension to the exemption permit for an additional period of thirty (30) days upon the expiration of the first extension period, if the condition warranting the issuance of an exemption permit it still in existence and the applicable fee has been paid.

5.3.5 Penalties. Any violation of this Section (watering on the wrong day or time) subjects the offender to the following penalties:

First Violation	Written warning
Second Violation	$100 fine
Third Violation	$300 fine
Fourth Violation	$500 fine
Fifth Violation	Disconnect of service

Successive violations are determined per irrigation season, and not from year to year. Upon discovery of a violation, the District shall provide the Customer with written notice of the violation and assessment of a penalty, if applicable, by certified mail, except notice of a first violation will be sent by regular mail. After a notice of a violation has been given, each day of continued violation is a separate offense. Penalties may be imposed by any of the District's employees or consultants, and payment of penalties is due within thirty (30) days of the date of mailing the notice thereof by the District, unless a written appeal is filed with the District within said thirty days. The decision of the Board of Directors on appeals shall be final. Until paid, all penalties imposed hereunder constitute a perpetual lien against the subject property pursuant to *Section 6.5, Liability for Payment*, of the District's Rules and Regulations and C.R.S. §32-1-1001(j), which lien may be foreclosed in the manner provided by law for foreclosure of mechanics liens.

5.3.6 Further Restriction. The District Manager is authorized to implement further water conservation restrictions as are necessary to lessen the need to pump water from Snowmass Creek or to insure the proper functioning of the District's water system, as are deemed appropriate at the discretion of the District Manager. Upon implementation of any such further water conservation restrictions by the District Manager, such restrictions shall be enforceable in accordance with the provisions of *Section VII, Enforcement*.

5.4 Water Conservation Design and Fixtures. It is the policy of the District to minimize the waste of water by requiring the use of low flow plumbing fittings and fixtures. Any conflict between the definition of a low flow fixture in this Section and the definition of such a fixture as set forth in the laws of the State of Colorado concerning low flow plumbing fixtures at *C.R.S. 9-1.3-101m et. seq*. are to be resolved by requiring the minimum water usage.

5.4.1 Indoor Fixture Requirements for New Customers. All new customers who connect to the District's system shall be required to meet the following indoor fixture standards:

a. Single Family Residential and Multi Family Residential customers shall install the following *WaterSense* labeled fixtures:

i. **Lavatory faucets** shall have a maximum flow capacity of 1.5 gallons per minute at 60 pounds per square inch;

ii. **Tank-type toilets** shall have a maximum gallons per flush requirement of 1.28 gallons;

iii. **Shower heads** of a maximum discharge of not greater than 2.0 gallons per minute at 60 pounds per square inch;

b. Multi Family Commercial and Commercial customers shall install indoor fixtures that meet the following criteria:

i. Public Restrooms

1. **Faucets** shall be self-closing and *WaterSense* labeled;

2. **Tank-type toilets** shall be dual-flush, *WaterSense* labeled;

3. **Tankless toilets** shall be dual-flush and equipped with flushometer valves;

4. **Urinals** shall have automatic flushing or constant water demands and shall be *WaterSense* labeled.

ii. Non-Public Restrooms shall install the following *WaterSense* labeled fixtures:

1. **Lavatory faucets** shall have a maximum flow capacity of 1.5 gallons per minute at 60 pounds per square inch;

2. **Tank-type toilets** shall have a maximum gallons per flush requirement of 1.28 gallons;

3. **Shower heads** of a maximum discharge of not greater than 2.0 gallons per minute at 60 pounds per square inch;

5.4.2 **Outdoor Requirements for New Customers.** All new customers who connect to the Districts system shall be required to meet the following outdoor requirements:

a. **Irrigation system controller** will be installed for all properties with landscaped areas. Controllers shall be *WaterSense* labled, Weather-Based controllers.

b. **Soil amendment** shall be added to all landscaped areas to a depth of 2-inches. Soil amendment material can include, but is not limited to manure or compost. Bedded areas may include wood chips or bark. Stones shall be allowed in low water use zones.

5.4.3 **Existing Customers.** All existing customers who are obligated to obtain a connection permit due to alteration or renovation of or addition to existing property, whether or not the installation or relocation of plumbing fixtures is required, shall install:

a. New or replacement fixtures in accordance with the provisions of *Section 5.4.1*;

b. Massage or high-use shower heads shall be removed and replaced, to comply with the provision of *Section 5.4.1.*

c. A pressure reducing valve and a water meter in accordance with the provision of *Section 3.11.2*, Conditions of Service;

d. A backflow prevention device in accordance with the provision of Section *3.11.3, Cross-Connection and Backflow Control*.

SECTION VI RATES AND CHARGES

6.1 **Setting Fees**. The Board may increase or decrease the rates and charges of the District as it deems necessary for the best interests of the District, provided such rates and charges are uniform in each classification. The Board may establish different rates and charges for property classified by type or quantity of use or classification of sewage. The Board shall review the total annual cost of operation and maintenance as well as each user's wastewater contribution percentage on an annual basis and will revise the rates and charges of the District as necessary. See *Appendix B, Rates and Charges*.

6.2 **Billing**. Statements for service fees and base water meter fees shall be calculated quarterly and shall be payable quarterly in advance on the first day of each calendar quarter. Statements for service charges and/or standby fees shall be rendered to Customers at intervals to be established by the District, but not more frequently than monthly or less frequently than quarterly.

6.3 **Payment of Service Charges.** All accounts shall be in the name of the owner of property. Statements for service charges are directed to the owner rather than the occupant unless the owner completes and submits to the District an Authorization for Water & Sewer Charges to be sent in Care of the Tenant or Property Manager form. When a Customer receives service for a number of units which are provided water service through one water meter, the District shall send only one bill to the Customer for water and sewer service for such units. In no event shall the District bill the owners of individual units within a multiple-use area unless service to each unit is metered separately. Charges for such things as late payments, turn-on, and turn-off shall be included in the statements.

6.3.1 **Commencement of Service Fees.** Service fees shall commence on the first day of the calendar quarter following the issuance of a Connection Permit, or upon the first day of the calendar quarter following an actual connection by the Customer to District facilities, whichever shall first occur. At the time the water meter is set, metered service charges begin unless the District is requested to perform the turn-off. In this event the customer will be charged $50 when service is turned on.

6.3.2 **Metered Water Gallonage Fees.** Gallonage fees for water used in excess of the gallonage included in the base water meter fees shall be calculated quarterly and payable in arrears.

6.3.3 **Additional Charges.** Charges for late payment of fees, incremental system development fees, penalties, fines or other unpaid amounts owing to the District shall be added to a customer's quarterly statement.

6.3.4 **Past Due Accounts.** A customer's account shall become past due if not paid in full within fifteen (15) days of the statement date.

6.4 **Nonpayment**. If statements are not paid within forty-five (45) days of the statement date, then the District shall deliver a delinquency notice by depositing the notice in the United States Mail, postage prepaid, addressed to the delinquent customer's address as appears in the records of the District stating a deadline for payment to avoid discontinuance of service. If the statement remains unpaid after the deadline for payment set forth in the delinquency notice, the District shall cause to be posted in a conspicuous place at the service location, a shut off notice informing the customer that service will be shut off if the statement is not fully paid by a period of time stated in the shut off notice, which time period shall be not less than seventy-two (72) hours from the time of posting. If the statement remains unpaid after the shut off payment deadline, then the District shall shut off service to the delinquent customer.

6.4.1 **Turn Off/Turn On Fee – Non-payment.** In each case where turn off of water service is caused by non-payment or late payment of service charges and fees, the turn on service fee non-payment or late payment of service charges and fees, the turn off and turn on service fees will be set forth in *Appendix B, Rates and Charges Schedule*. Payment of all charges and fees are required in full prior to turn on of the water service. All other requests for a turn off or turn on of water service may be granted or denied by the District at the District's sole discretion.

6.4.2 **Continuance of Service Fee.** All rates, fees and charges for service provided by the District shall continue to be paid by the customer even after turn-off of the customer's water or sewer private service line from the District's facilities. A customer may be released from the obligation to pay all rates, fees and charges for service provided by the District, if, and only if, an actual disconnection of the customer's water and sewer private service line from the District facilities occurs, and upon reconnection to the District facilities, the customer shall pay all applicable connection permit fees and system development fees.

6.5 **Liability for Payment**. Until paid, all rates and charges shall constitute a first and perpetual lien on or against the property being served. Any such lien shall be foreclosed in the manner provided by the laws of the State of Colorado, or collected when the unpaid rates and charges are $250.00 or greater. All costs relating to the liens incurred by the District, including, without limitation, attorney's fees and costs of suit, shall be paid by the customer. The District will hold both the occupant and the customer jointly and severally liable for all charged appurtenant to water and sewer service.

6.6 **Cash Deposit**. The District Manager may require any customer or prospective customer to provide a cash deposit to insure payment of current bills, such deposit not to exceed an estimated one (1) quarter usage of the customer.

6.7 **Equivalent Residential Unit Schedule**. All rates, fees and charges for service provided by the District shall be based upon *Appendix A, EQR Schedule*. The charge for a specific service shall be computed by determining the EQR value of the service. A "stub in" of plumbing for a future connection shall be considered a current use for purposes of determining the EQR value of service. However, no single service shall be assigned a value less than 0.5 EQR, except as expressly set forth in the EQR schedule. If no class of user exists for a particular use, then the Board shall determine an EQR value for the particular use.

6.8 **Credit toward EQR Calculation**. Upon the change of an EQR use of a Customer, the Customer shall be given credit for the discontinuance of an EQR use toward the computation of the new EQR determination for the Customer. A credit shall be given only for Customers whose account with the District is current.

6.9 **Unique Rates and Charges.** The following unique rates and charges shall apply:

6.9.1 **Employee Housing.** The system development fee for private rental permanent moderate housing or sale permanent moderate employee housing shall be 50% of the general system development fee, plus the cost of construction to connect the facility with the District system. The service fees shall be determined in accordance with the EQR schedule at the standard rate. In the event that the private rental permanent moderate housing or sale permanent moderate employee housing shall be converted to unrestricted free market private housing, then at the time of conversion, a system development fee in the amount of 50% of the then existing rate shall be paid. A notice of condition of this restriction for the reduced system development fee and the cost upon conversion to

unrestricted free market private housing shall be placed on record encumbering the affected real property.

6.9.2 **Governmental and U.S.C. 501(c)(3) Facilities.** The system development fee shall be 30% of the general system development fee, plus the cost of construction to connect the facility with the District. The service fees shall be determined in accordance with the EQR schedule at the standard rate. In the event that the facility shall be converted to a private facility, then at the time of conversion, a system development fee in the amount of 70% of the then existing rate shall be paid. A facility connected to the District's water or sanitary system prior to December 31, 1986, shall pay a system development fee at the time of conversion in the amount of 75% of the then existing rate. A notice of this condition of the restriction for the reduced system development fee and the cost upon conversion to a private facility shall be placed on record encumbering the affected real property.

6.9.3 **Snowmaking.** A system development fee shall not be paid for snowmaking. No water from the District's potable water system shall be utilized for snowmaking without the prior daily approval of the District Manager or by such District employee as is designated by the District Manager. All requests for snowmaking water shall be made prior to:

(a) 4:00 o'clock p.m. Monday through Friday for approval to make snow on a week day;

(b) 4:00 o'clock p.m. on Friday for approval to make snow during a weekend;

(c) 4:00 o'clock p.m. on the business day immediately prior to a holiday for approval to make snow on the holiday.

Upon approval, snow may be made at locations approved by the District Manager only. Meter readings shall be reported daily to the District on a form approved by the District Manager. Snowmaking is a discretionary use and shall be terminated immediately at the direction of the District Manager or such District employee as is designated by the District Manager.

SECTION VII ENFORCEMENT

7.1 **Class I Violation**. Upon the happening of a Class I violation, the District Manager shall cause a written notice to be mailed or delivered to the customer who has been found to be violating the provisions of these Rules and Regulations. The written notice shall specifically state the manner of the violation and shall reference the appropriate paragraphs of these Rules and Regulations which require the remedial action by the customer.

7.1.1 **Compliance with Notice.** If the customer timely complies with the remedial action required by the notice, then the violation shall be deemed to have been cured.

7.1.2 **Failure to Comply with Notice.** If the customer does not timely comply with the remedial action required by the notice, then the District Manager shall cause the customer's water or sewer service, or both, as the case may be, to be disconnected from the District facilities.

7.1.3 **Reconnection Fee.** Upon disconnection of service, the customer will be required to pay a reconnection fee prior to receiving any further service from the District. The fee shall be the same as that for a connection permit.

7.2 **Class II Violation**. Upon the happening of a Class II violation, the District Manager shall cause a written notice to be mailed or delivered to the customer who has been found to be violating the provisions of these Rules and Regulations. The written notice shall specifically state the manner of the violation and shall reference the appropriate paragraphs of these Rules and Regulations which require the remedial action by the customer.

7.2.1 **Compliance with Notice.** If the customer timely complies with the remedial action required by the notice, then the violation shall be deemed to have been cured.

7.2.2 **Failure to Comply with Notice.** If the customer does not timely comply with the remedial action required by the notice, then the District Manager shall cause the customer's water or sewer service, or both, as the case may be, to be disconnected from the District facilities. In addition, a $50.00 fine for the first violation and a $100.00 fine for each violation thereafter shall be assessed against the customer.

7.2.3 **Reconnection Fee.** Upon disconnection of service, the customer will be required to pay a reconnection fee prior to receiving any further service from the District. The fee shall be the same as that for a connection permit.

7.3 **Applicability of Class of Violation**.

7.3.1 **Class I Violation** shall mean any violation of the provisions of these Rules and Regulations not specifically enumerated hereafter.

7.3.2 **Class II Violation** shall mean any violation of the provisions of these Rules and Regulations contained in Section 5.2.2 and 5.2.3.

SECTION VIII HEARING AND APPEAL PROCEDURES

8.1 **Application.** The hearing and appeal procedures established by this Section VIII shall apply to all complaints concerning the interpretation, application, or enforcement of the Rules and Regulations of the District, and contracts related thereto, as they now exist or may hereafter be amended. The hearing and appeal procedures established by this Section shall not apply to complaints that arise with regard to personnel matters, which shall be governed exclusively by the District's personnel rules, or any other complaint which does not concern the interpretation, application, or enforcement of the Rules and Regulations of the District, or contracts related thereto.

8.2 **Initial Complaint Resolution.** Complaints concerning the interpretation, application, or enforcement of Rules and Regulations of the District must be presented to the District Manager, or his designated representative. Upon receipt of a complaint, the District Manager or his representative shall make a full and complete review of the allegations contained in the complaint, and shall take such action and/or make such determination as may be warranted. The complainant shall be notified of the action or determination by mail within 20 days after receipt of the complaint.

8.3 **Hearing.** In the event the decision of the District Manager or his representative is deemed unsatisfactory by the complainant, a written request for hearing may be submitted to the District Manager within 20 days from the date written notice of the decision was mailed. If receipt of the request is timely and if all other prerequisites prescribed by these Rules and Regulations have been met, the District Manager or an appointed hearing officer shall conduct a hearing at the District's convenience. Every effort will be made to conduct the hearing within 20 days after the receipt of the request. The hearing shall be conducted in accordance with and subject to all pertinent provisions of these Rules and Regulations. In the absence of a timely written request for hearing, the right to the same shall be deemed waived.

8.4 **Conduct of Hearing.** At the hearing, the District Manager or appointed 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 choice, including legal counsel. The complainant or his representatives and the District representatives shall have the right to present evidence and arguments; 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. The District Manager or hearing officer may ask questions of any representative in order to clarify further an issue relevant to the complaint. 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 upon the complainant.

8.5 **Findings.** Subsequent to the hearing, the District Manager or hearing officer shall make written findings and an order disposing of the matter and shall mail the findings and order to the complainant no later than 20 days after the date of the hearing.

8.6 **Appeals to the Board of Directors.** In the event the complainant disagrees with the findings and order of the District Manager or hearing officer, the complainant may, within twenty (20) days from the date of mailing of the findings and order, file with the District a written request for an appeal to the Board. The request for an appeal shall set forth, with specificity, the facts or exhibits presented at the hearing upon which the complainant relies and shall contain a brief statement of the complainant's reasons for the appeal. In

response, the District Manager or hearing officer shall compile a written record of the hearing consisting of:

A. Minutes of the hearing;

B. All exhibits or other physical evidence offered and reviewed at the hearing; and

C. A copy of the written findings and order.

The District Manager or hearing officer may submit additional written comments that further clarify the hearing findings and order in response to the request for appeal. The Board shall consider the complainant's written request for appeal and the written record of the hearing at the next regularly scheduled meeting held not earlier than 10 days after the filing of the complainant's request for appeal. Such consideration shall be limited exclusively to a review of the record of the hearing, any written clarifying comments by the District Manager or hearing officer, and the complainant's written request for appeal. No further evidence shall be presented by any party to the appeal and there shall not be the right to a hearing de novo before the Board of Directors.

8.7 **Board's Findings.** The Board shall make written findings and issue an Order concerning the disposition of the appeal. A notice of the decision shall be sent by mail to the complainant within 20 days after the appeal hearing. The Board of Directors' findings shall be final.

8.8 **Notice.** A complainant shall be given notice of any hearing before the District Manager, the hearing officer, or before the Board, by mail at least 10 days prior to the date of the hearing, unless the complainant requests or agrees to a hearing in less time, or to a waiver of formal notice. Notice is deemed given when placed in regular, postage prepaid U.S. mail.

APPENDICES

Appendix A	EQR Schedule
Appendix B	Rates and Charges Schedule
Appendix C	*Draft* Water Conservation Plan
Appendix D	Minimum Design and Construction Standards, Water Distribution and Collections Sewer Systems
Appendix E	Standard Details
Appendix F	Easement Agreement
Appendix G	Bill of Sale and Grant of Warranty
Appendix H	Snowmass Water and Sanitation District Bylaws

Appendix A
EQR SCHEDULE

Class of User	***EQR Value***

Single-Family Residential unit

For each unit not having more than three bedrooms, two bathrooms and one kitchen:	1.00
- add for each additional bedroom	0.20
- add for each additional bath or one-half bath	0.20
- add for each additional kitchen	0.20
Non-recycling hot tub per 100 gallons – volume greater than 50 gallons	0.10
Swimming Pool per 40,000 gallons of pool volume or fraction – minimum 0.10	1.05

Multi-Family Residential Unit

Single bedroom or studio unit with not more than one kitchen and one bath	0.60
Two bedroom unit with not more than one kitchen and two baths	0.80
- add for each additional bedroom	0.20
- add for each additional bathroom	0.20
- add for each additional kitchen	0.20
- add per fold-out couch or hide-a-bed	0.15

Note: Only one kitchen is permitted in each unit. If a residence has more than one kitchen, then additional 0.5 EQR value shall be assigned in accordance with the values given for multi-family residential units.

Non-recycling hot tub per 100 gallons – volume greater than 50 gallons	0.10
Swimming Pool per 40,000 gallons of pool volume or fraction thereof, however not less than 0.25	1.05
Non-recycling hot tub per 100 gallons – volume greater than 50 gallons	0.10

Transient Residential Unit

Hotels, motels, mobile home parks, dormitories, recreational vehicle parks, short-term rental units in residences, bed and breakfast establishments and similar facilities.

Note: Laundry facilities, central kitchen facilities, and swimming pools, hot tubs and spas are additional. Room counts shall include rooms furnished to employees. Values for recreational vehicle parks include central bath house facility, but not laundry, retail, or restaurant spaces.

Dormitories per each rental bed space	0.10
Manager's unit - classified as a Single-family or Multi-family unit as applicable	--

Class of User	***EQR Value***
Units with kitchen facilities	
-Units having not more than two bed spaces	0.40
-Add per additional two bed spaces	0.15
Units without kitchen facilities	
-Units having not more than two bed spaces	0.25
-Add per additional two bed spaces	0.10
Laundry facilities (see Commercial washing machines)	--
Add for central laundry facilities (per washing machine or available hookup)	1.05

Commercial

Banquet Room per 10 seats	0.20
Conference Center per 10 seats	0.15
-with Banquet Facilities per 10 seats	0.35
Health Spa Facility per 1,000 square feet of locker room area or fraction thereof	3.50
Offices and office buildings per 1,000 square feet of gross occupied space	0.65
Public restrooms not provided in connection with other classification for each restroom having not more than two toilet fixtures	0.50
-for each additional urinal or toilet	0.20
Restaurants and bars including outside seating per 10 seats	0.40
Retail sales area per 1,000 square feet of gross sales and display area	0.35
Non-retail work area per 1,000 square feet	0.20
Swimming Pool per 40,000 gallons of pool volume or fraction thereof, however, not less than 1.00	2.00
Non-recycling hot tub per 100 gallons volume greater than 50 gallons	0.10
Theaters per 25 seats or part thereof	0.60
Service stations	
- per fuel nozzle	0.30
- per each bay / rack where cars can be washed	1.60
Washing machines	
- per available hook up – 18 pounds capacity or less	0.80
- greater than 18 pounds but not greater than 50 pounds	1.60
Processed water discharged shall be evaluated on the metered water inflow per 1,000 gallons per day maximum day	2.50
Grocery Stores per 1,000 square feet or part thereof	0.20
Car Washes:	
a. For each self-service bay/rack with wand and/or foaming brush.	3.15
b. For each automatic car wash bay.	15.6

Commercial or Public Buildings. Non-grocery stores, offices and industrial warehouses,

(having no process water or non-domestic waste loads, and which use the sanitary sewer only for nonsolid waste disposal):

a.	For each toilet or urinal with manual flush mechanism.	0.50
b.	For each toilet or urinal with continuous flow.	1.00
c.	For each lavatory, sink or mop sink.	0.20
d.	For each shower, tub or combination.	0.30
e.	For each washing machine or available hook-up.	0.20
f.	For each other water-using fixture or appliance except as otherwise specified in this table, including drinking fountains which are not continuous flow or decorative fountains which recycle water.	0.30

Schools

Day care centers, public and private day schools including administrative centers, warehouses, buildings for equipment repair and/or storage (such as for buses). Swimming pools, hot tubs, spas and similar facilities are additional. Staff includes teachers, librarians, custodians, and administrative personnel associated with school functions.

With gym and cafeteria per 50 students	2.10
Without gym and cafeteria per 50 students	1.50
Without gym but with cafeteria or with gym but without cafeteria per 50 students	1.85

Church

per 100 seats; rectories or other living areas are additional.	1.00

Swimming Pools

Swimming Pools, Hot Tubs, Spas, Splash Pools

a. Separate buildings which house swimming pools or hot tubs, and which are not covered by any other classification in this fee schedule, shall be evaluated under Commercial Classifications, above, as well as the following:

b. Swimming Pool per 40,000 gallons of pool volume or fraction thereof, however, not less than 1.00 — 2.00

c. Hot tubs and spas, greater than 500 gallons. Per 500 gallons- — 0.20

d. Hot tubs and spas, less than 500 gallons. — 0.00

e. Splash Pools. Special Review

Unclassified Uses. For any water use or water-using structure or appliance not otherwise covered by this schedule, the Board of Directors shall determine the EQR value on a case-by-case basis according to anticipated water use and consumption.

Outside Water Features

Outside water features per 40,000 gallons of volume or fraction thereof, however not less than 0.25	1.05

Modifications and Revisions:

1. The District Board of Directors reserves the right to classify and reclassify establishments and to change EQR rates and values as the needs of the District require.

2. Water or Sewer Usage Review and Recalculation. For purposes of computing and re-computing the number of EQR units attributable to a particular use and the assessment and collection of Tap Fees and service charges in connection therewith, the Board shall have the following authority:

    a. At any time the Board may review actual water usage to determine if such actual usage is greater than that implied by the number of EQR units assessed to the Customer at the time application for water and/or sewer service was accepted. For this purpose, 350 gallons per day (gpd) equals one (1) EQR. If the Board finds greater actual water usage, the Customer shall be assessed a greater number of EQR units to reflect actual usage. Any time the Board decides to evaluate or re-evaluate the appropriate EQR value assessed to a particular Customer, the Customer shall reimburse the District for the actual costs of that review.

    b. Upon any recalculation and increase in the number of EQR units attributable to use pursuant to the terms of this Section, the Customer shall pay additional Tap Fees for each additional EQR unit assessed to his or her use at the rate set forth in this Appendix A prior to the issuance of any necessary permit from the Board or within thirty (30) days of the increased assessment of EQR units, whichever occurs first. The Customer's monthly service fee will henceforth be based upon the revised number of EQR units.

    c. Notwithstanding the general provisions of this Appendix A or the particular provisions of this Section, nothing herein is intended to automatically modify, revise or amend the terms of any prior individualized assessment or agreement memorialized by a writing or reflected in District minutes, motions or resolutions, nor shall it prevent such modification, revision or amendment at the sole discretion of the Board.

Appendix B
2013 Rates and Charges Schedule

Rates and Charges. The following rates, fees and charges for provision of service are as follows:

General Rates and Charges.

System Development Fee per EQR.

Sewer	$14,408.00
Water	$12,008.00

Availability of Service/Standby Fee per EQR per quarter.

Sewer	$42.50
Water	$42.50

Base Sewer Rate	$85.02
Base Water Rate – unmetered	$85.02

Metered Water Service Fee. All new customers obtaining a Certificate of Final Inspection shall be required to pay for metered water service.

Gallons Used	Metered Base Rate	Usage Rate per 1,000 Gallons
0-15,000	**$58.46**	**$0.00**
15,001-30,000		**$2.33**
30,001-60,000		**$3.94**
60,001-100,000		**$4.77**
Greater than 100,000		**$6.48**

Specific Rates and Charges.

Bacteria Lab. The charge for water analysis to comply with the Colorado Department of Health drinking water requirements shall be as follows:

Public/Private Entity- Presence/Absence Test

With PWSID #	$29.00
Without PWSID #	$35.00

Private/Private Entity- LT 2 Test

With PWSID #	$41.00
Without PWSID #	$47.00

All other tests will be performed at a rate of $30.00 per hour.

Bulk Water Loading Facility.	$3.05 per 1,000 gallons of water or fraction thereof,
Conoco & Blue Roofs only.	plus a $50.00 meter service fee.

Connection Permit Fee.	$77.54
Turn-Off/Turn-On Fees	
Turn On Service Fee	$50.00
Turn Off Service Fee	$50.00
Turn-Off/Turn-On Fees for Non-Payment	
Turn On Service Fee	$190.00
Turn Off Service Fee	$190.00
Final Inspection Deposit.	$2,000.00 for Residential; $2,000.00 per EQR, up to maximum of $16,000.00 for Commercial
As-built Drawing/Inspection Video Fee Deposit	$5,000 up to 50 EQR; $100 per EQR over 50
Final Meter Reading	$25.00/each
Backflow Test	$84.00
Returned Check Fee	$25.00 per unpaid returned check

Exemption Permit Fee. The fee for an exemption permit from the District's water conservation restrictions shall be:

First Thirty Days (Initial Term)	No Charge
Second Thirty Days (First Extension)	$50.00
Third Thirty Days (Second Extension)	$100.00

Fire Hydrants.	$3.05 per 1,000 gallons or part thereof, plus a meter installation fee of $50.00; plus a $1,000.00 meter deposit, plus a $50/month meter rental fee (minimum 1 month charge).
Snowmaking.	$3.05 per 1,000 gallons of potable water or part thereof, plus any extraordinary treatment costs.

Note: If it is necessary to pump water from Snowmass Creek in order to provide potable water for snowmaking through District water mains and fire hydrants the customer will also be charged for the proportionate electrical, maintenance and labor costs to operate the Snowmass Creek Pump Station. Water diversions for snowmaking purposes are subject to the CWCB Minimum Stream Flow. Diversions for snowmaking can only take place during the Snowmaking Season – Oct. 15-Dec. 31.

Appendix D
MINIMUM DESIGN AND CONSTRUCTION STANDARDS
WATER DISTRIBUTION AND COLLECTIONS SEWER SYSTEMS

SNOWMASS
WATER & SANITATION
DISTRICT

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Page

SECTION 1 PURPOSE AND INTRODUCTION

These specifications have been adopted by the Snowmass Water and Sanitation District (SWSD) Board of Directors. This design code is intended as an engineering reference manual containing the *minimum standards* for the design and construction of water distribution and sewage collection systems. It is intended to supplement conditions contained in Line Extension Agreements and the SWSD Rules and Regulations as adopted by SWSD Board of Directors and defines the engineering standards that new water and sewer systems must meet prior to acceptance. Developers, contractors and engineers designing or constructing water or wastewater distribution and collection systems that will, if accepted, be a part of or connect to the SWSD distribution and collection system must comply with these specifications and the Rules and Regulations of the SWSD. Any variation from these specifications or the Rules and Regulations of the SWSD shall require prior written approval from the SWSD's Board of Directors or their designated representative. These specifications and design criteria are guidelines. The SWSD does not assume responsibility for the design made by other design professionals and does not relieve them from responsibility for their design. The SWSD will observe and inspect construction for compliance with District requirements.

SECTION 2 ENGINEER AND CONTRACTOR QUALIFICATIONS

All water and sewer lines or structures to be connected to the SWSD system or which are intended to be dedicated to the District upon completion shall be designed by a professional engineer registered in Colorado. The design engineer shall contact the District before commencing the design work to obtain the District standards, regulations, specifications and current as-builts. The general contractor shall furnish evidence of a minimum of $1,000,000 liability insurance coverage. All contractors and subcontractors doing work on projects to be connected to the SWSD system must be licensed to do business in the Town of Snowmass Village.

SECTION 3 DESIGN

SECTION 3.1 DESIGN INFORMATION

All available information regarding other utilities, property lines and physical improvements both existing and proposed within the area of the proposed construction shall be verified by the applicant and shown on the plans. The location and size of all distribution, collector, interceptor, and outfall SWSD mains and service lines shall conform to the current master plan adopted by the District.

3.1.1 PROJECT DESIGN REPORT

A Project Design Report shall be required to be submitted by the applicant to the District, which shall include the following:

- **A.** Name, address, location of project, adjacent street names, legal description of project site, and geographic location of site indicated on a vicinity map.
- **B.** Existing and proposed zoning and land use application.
- **C.** Type and size of development.
- **D.** The average and peak water and wastewater flow expected to be generated by the development including the peak flow impact on the upstream and downstream water system and wastewater collection system.
- **E.** An estimate of future development that is anticipated to impact the proposed development as well as the existing water and wastewater collection system.
- **F.** An engineer's estimate of the cost of design and construction of the proposed water and wastewater collection system.
- **G.** The number of bathrooms, bedrooms, kitchens, the total and type of square footage of all buildings, and the total and type of all plumbing fixtures that will connect to the SWSD system.
- **H.** An estimate of the total number of EQR's for the project, broken down by individual living space and commercial classification; based on the District's EQR schedule.

3.1.2 OFFSITE IMPACTS

The SWSD and the District Engineer shall determine what, if any, impacts or downstream constraints the proposed development may have on the existing District distribution and collection system, and to what extent the applicant must participate in the system improvements or upgrades.

SECTION 3.2 PRE-DESIGN MEETING

Prior to the preparation of preliminary construction drawings, all applicants shall consult with the District to obtain locations of existing District main sewer lines affected by the proposed construction. The size and approximate location of the proposed improvements will be discussed at this time to determine the compatibility with the District's master plan. Approval of the proposed line extensions, subject to design and inspection review by the District engineer and the District's Board of Directors, are required for any of the District's line extensions.

SECTION 3.3 DRAWINGS, STANDARDS AND DESIGN CRITERIA - WATER AND SANITARY SEWER

The water and sanitary sewer lines shall be placed in public roads and streets wherever possible. Where easements over private property are necessary it shall be the responsibility of the applicant to provide the

necessary easements for dedication to SWSD. Water or sewer alone in a trench shall require a minimum of a 20-foot easement. Water and sewer lines parallel to each other shall require a minimum of a 30-foot wide easement. In no case shall the sewer line be located closer than, 10-foot from a water main, 5 feet from a cross pan or gutter, 10 feet from the edge of a right of way or easement boundary or main water line. Wider easements may be required by the District for lines that are deeper than 10 feet. Sewer line alignment shall provide easy access by a tandem axle, 60,000 pound sewer cleaning machine, 35 feet in length. Water and sewer facilities shall be shown as the most prominent features on the water and sewer utility drawings to distinguish them from all other utilities, buildings, roads, and other work.

3.3.1 GENERAL DESIGN CRITERIA See sections 5, 6, 7, 8, 9 and the Standard Details for references.

A. WATER MAINS

1. SIZING -The minimum size water main shall be 8inches diameter. Water main sizes shall be increased, at the cost of the developer, to meet the minimum pressure requirements for fire and peak hour flows. Water mains shall be installed centered within a minimum 20-foot easement. Mains shall extend to the farthest point in the development or area to be served so that future extension of the water system may be accommodated.

All water mains shall be sized for a maximum working pressure of 200 psi, and minimum working pressure of 40 psi, as normal psi range including fire flows. The absolute minimum working pressure at peak hour flows shall be 40 psi.

2. LOOPING - All exterior main feed water supplies to developments shall be looped and the internal water system shall be looped for dependability and to meet the pressure requirements of peak day water usage plus fire flows. Looping and valve locations shall be such that an interruption of service due to a water main break will put no more than 750 feet of main or more than two fire hydrants out of service while maintaining adequate flows and pressure in the remaining portion of the system. All new water line extensions will be looped unless approved the District's engineer.

3. VALVING Main line valves shall be installed on each line at all street intersections, with a maximum in line distance between valves of five hundred feet (500') in commercial and multi-family areas, and six hundred feet (600') in single-family residential areas and 750' in open space areas. Valves shall also be installed on all fire hydrant branches and all distribution main branches off transmission mains. Where connecting to previously installed extensions of the water system with valves already installed, the SWSD may require replacement of older valve installations to provide for "new" conditions. Additional valves may also be required to provide for isolation of the new system from older sections to provide for testing of newly completed lines separate from the existing system.

4. SERVICE LINE TAPS A DIP MJ tee and DIP service line valve shall be installed with a concrete kick block and megalugs provided on each end of the fitting for each service line larger then 2 inches. Only 1 main tap per building is allowed for both domestic and fire protection. Main line tap and service line should be sized accordingly to provide all required water use. All water or sewer lines inside building foundations, underground garages, or other inaccessible places shall be considered service lines not a main line, regardless of size

5. FIRE PROTECTION Fire flows shall be determined in accordance with the ISO (Insurance Services Office) "Guide for Determination of Required Fire Flow", utilizing the standard method of calculation. All flows for commercial, multi-family, and single family residential areas will be met according to the UFC

(Uniform Fire Code), Appendix 3A or as directed by the Snowmass Wildcat Fire Marshal's office. Developer is required to obtain fire protection requirements and approved fire hydrant locations from the Snowmass Wildcat Fire District. A fire hydrant location drawing must be signed and approved by the SWFD prior to acceptance of Final Design drawings by the SWSD.

6. FIRE HYDRANTS shall be installed at each street intersection and at intermediate points for maximum spacing of 350 feet in commercial and multi-family areas and 500 feet in single-family residential areas.

Water mains not designed to carry fire flows shall not have fire hydrants connected to them. Flow testing of the fire hydrants and new lines is to be performed by the contractors with the fire department or other certified fire protection agency present to certify flows prior to final acceptance.

Prior to acceptance, flow testing of the fire hydrants in new developments and systems shall be performed by the contractors with the Snowmass Wildcat Fire Protection District, or other certified fire protection agency, and witnessed by the Snowmass Wildcat Fire Protection District.

SWSD Department personnel and the Snowmass Wildcat Fire Department personnel are the only people authorized to operate fire hydrants on the system.

B. SEWER MAINS

1. DESIGN FLOWS: COLLECTOR SEWERS - New sewer lines shall be designed on the basis of the projected peak flow at ultimate build out. The projected peak flow is calculated by multiplying the estimated average flow in gallons per minute by a peaking factor. A peaking factor of 4.0 shall be used for the peak occupancy season and all design flows. The District recognizes one EQR [equivalent residential unit] as a flow of 350 gallons per day. The minimum acceptable interceptor/collector pipe diameter shall be 8 inches.

2. DESIGN SLOPES - The following are minimum slopes which shall be provided. However, slopes greater than these are desirable and shall be required by the District where deemed practical by the SWSD Engineer.

MINIMUM PIPE SLOPES

SEWER SIZE	%
4"	1.0
6"	0.8
8"	0.4
10"-24"	0.3

3. MANHOLES - Manholes shall be designed to promote smooth, continuous flow between adjacent reaches of sanitary sewer flow. The minimum drop through a manhole shall be 0.1 feet. The intermediate angle of a line entering a manhole shall not be less than 90 degrees of the line exiting the manhole. Cleanouts are not permitted on SWSD main sewer lines 8 inches or larger in diameter.

3.3.2 PRELIMINARY DRAWINGS

TITLE SHEET

The first sheet of the drawings shall be the title sheet and shall include the following information:

A. Location/vicinity map with north and scale indicated.

B. Title sheet should include the project name, legal name of the project area, recording data, (Book No. and Page No. of all plats or easements used), and a description of the information shown thereon.

C. A sheet index with any special instructions.

D. The name, address, and phone number of the design firm and project District along with the date of the design.

E. The title sheet shall provide a space for the District's approval

Electronic drawings shall be submitted to the District in accordance with the review procedures as set forth in section 3. Drawings shall be prepared according to the following general requirements.

A. The drawings shall be drawn on standard 24 inches X 36 inches ("D" size).

B. Each sheet shall bear the Professional Engineer's Seal, signature, and number.

C. All sewer design drawings shall reflect the profiles and shall be oriented and read left to right, with north or west to the left. Profiles shall read from left to right from the downstream to upstream manholes.

D. Soil boring and test investigation information shall be shown on the drawings to achieve effective design, if necessary.

E. Design drawings shall show existing lines, sizes, materials, services, valves, FH's, MH's, proposed line sizes, materials, alignments, connections to existing system, and other existing utilities.

F. Upon completion of the District's review the design engineer shall schedule a meeting with the District to review the preliminary drawing and associated comments.

G. After review of the District comments on the preliminary drawings, the design engineer shall proceed with preparation of Final Design drawings following these standards.

H. If the preliminary design drawings are not acceptable to the District, the SWSD may require the preliminary drawings to be corrected or modified per the review comments and resubmitted for approval prior to preparation of Final Design drawings.

3.3.3 FINAL DESIGN DRAWINGS

TITLE SHEET

The first sheet of the drawings shall be the title sheet and shall include the following information:

A. Location/vicinity map with north and scale indicated, on the SWSD Maps with SWSD Base Map grid.

B. Title sheet should include the project name, legal name of the project area, recording data, (Book No. and Page No. of all plats or easements used), and a description of the information shown thereon.

C. A sheet index with any special instructions.

D. The name, address, and phone number of the design firm and project District along with the date of the design.

E. The title sheet shall provide a space for the District's approval.

3.3.3.1 SITE MAP

A geographic location of the site with location to major arterial streets, a north arrow, and any other landmarks that may be helpful; including but not limited to the following:

a. Lot lines, property lines and dimensions.

b. Existing and proposed contours.

c. Existing water and sewer lines, services, valves, FH's, MH's, proposed

water and sanitary sewer lines including service lines, valves, FH, and manholes with proposed invert and rim elevations.

d. Street names; easement and right of way descriptions and dimensions; location of curbs, sidewalks, and gutters.

e. All existing and proposed utilities verified by each utility.

f. Location of existing or proposed retaining walls, water supply lines or wells, paved areas, building envelopes that include decks, porches and patios, dry wells, storm sewers, and roof and footer drains.

g. 1 inch = 50 scale

3.3.3.2 PLAN for WATER - PLAN AND PROFILE FOR SEWER (SWSD may require a waterline profile)

The plan and profile sheets shall include the following information as is applicable:

Plan View

a. Scale: Horizontal 1 inch = 50 feet. Show scale numerically and graphically.

b. North arrow-north top of page or left.

c. Show outline of water and sewer mains and service lines. Show center-line of water and sewer main with appropriate ties, distance between manholes, bends, valves, fittings, services, FH"s, sewer grades, pipe type and size.

d. Show street and alley center-line, name and number, property lines, lots, blocks, structures, utility lines, fire plugs, curbs, gutters, cross gutters, sidewalks, driveways, paving, property lines, existing and proposed utilities, sewer systems, storm drainage systems, and other improvements existing and proposed within 100 feet of proposed construction.

e. Provide details of recorded easements, right of ways, access roadways, existing as well as those to be granted/dedicated. Include date, book number and page number of recording.

f. Special features such as river crossings shall be detailed.

g. Natural or manmade features which may have an effect on the sanitary wastewater system will be depicted on the drawings, i.e. trees, shrubs, ponds, mailboxes, lights, poles, fences, walls, etc.

h. Manhole rim and invert elevations shall be tied and shown using the SWSD's datum of U.S.G.S. located at the WWTP.

i. Use manhole numbers that conform to the District's master plan numbering system.

j. On each sheet of the plan, show a sufficient number of typical sections to give the relative location of surface and underground improvements with respect to the proposed water and sewer mains. Indicate size, type and other pertinent data for all improvements.

k. Indicate the type, size and Districtship of all existing utilities in easements, streets or rights-of-way in which the sewer lines are to be constructed. Tie all horizontal crossings of utilities and other underground objects to the nearest downstream manhole indicating manhole number. Tie all horizontally parallel utilities and other underground objects to the centerline of the right-of-way or easement.

l. Indicate portions of existing utilities that are "To be abandoned" because of sewer line construction, if any.

m. Plot crowded intersections in enlarged scale and provide details for other than standard structures.

n. If any service stub-outs using in taps or line "wye's" are to be installed for future service connections, they are to be indicated on the plan as well as shown in a table stating the pipe stations and direction of the connection. All taps and "wye's" installed for future service are to be extended and capped five feet inside the property to be served. Two swing ties shall be indicated on Drawings of Record taking ties from the upstream and downstream

manholes. Typically all services shall be stubbed into the property five feet upstream of the most downstream property line of the lot to be serviced.

o. Layout and design based upon SWSD elevation datum and SWSD Horizontal datum and grid system. Grid System is 1,000' N/S and 1,500' E/W on the drawing. Consult the District Engineer for the grid area for the proposed project. The grid and datum's used must match SWSD Base Maps and Asbuilts.

p. Label in detail, all water fittings, tees, bends valves, FH's, services with line size, type, restraint, Thrust Block and Mega-lugs to be installed.

q. Label in Detail manholes with MH number, station, rim, center line or invert in and out.

Sewer (or when required, Water) Profile

a. Scale: horizontal 1 inch=50 feet, vertical 1 inch = 10 feet. Show scale numerically and graphically.

b. Indicate design flow and pipe capacity in cubic feet per second (cfs), flow velocity in feet per second (fps), hydraulic flow lines for pipes 12 inches and greater.

c. Show pipe size, type & schedule, length, and percent of grade including locations and dimensions of casings, borings, tunneling, etc.

d. Manhole rim and in/out invert elevations shall be tied and shown using the District's datum of located at the WWTP.

e. Show any specialized coatings, linings, or treatment of pipe interiors.

f. Show location of manholes, special structures, soil boring, etc.

g. Show crossings or close parallel utilities such as gas, water, electrical, etc.

h. Show existing and proposed surface elevations.

i. Label in Detail manholes with MH number, station, rim, center line or invert in and out. Stationing of new sewer lines to be installed shall start at 0+00 at the lowest MH installed.

3.3.3.3 SPECIFICATIONS AND DETAILS

Design engineer is to use the SWSD water and sewer line material and installation standards and details, attached herein for design and the contractor is to use the SWSD Design Standards for construction. These specifications and details shall be attached as is to the design drawings and used for construction unchanged or altered. If additional specifications or details are required to complete design or construction of special facilities, those specifications and details need to be submitted and approved by the SWSD prior to use or inclusion into the design drawings

Should conflicts between or within the written specifications, details, and the design drawings arise, the conflicts shall be resolved by the District Engineer and District Manager. Design Engineer is responsible to bring such conflicts to the District if a conflict exists.

3.3.3.4 SUPPORTING DATA

When required, a complete set of calculations supporting the design criteria used shall be furnished with the preliminary drawings. The title page of the calculations shall be dated and have the name and number of the professional engineer making the calculations. The calculations shall include projected flows, domestic service demands, EQR assessment, fire demands, design velocity, slope, estimated project cost, maximum population to be served, depth of flow at maximum design flow or other water flow data as requested by the SWSD.

SECTION 3.4 DRAWINGS OF RECORD

After the construction on a project is complete, and once the sewer lines and water lines have been inspected

and approved by the District, and the District's Board of Directors has accepted the facilities to commence the two-year warranty period, the applicant shall revise the approved design drawings to reflect changes and revisions incorporated during the construction. Once the revised drawings have been reviewed by the District for completeness, including documentation that easements and rights-of-way have been acquired and executed, the revised drawings shall be provided to the District within 60 days of final inspection and approval. The drawing set shall be marked Drawings of Record and sets shall be stamped and signed by a Professional Engineer registered in Colorado.

As-Constructed drawings are an accurate scaled representation of appurtenances and infrastructure, as it exists in the field at the time of project completion. Water line infrastructure submitted to the SWSD for final acceptance will have the following:

- **A.** 3 hard copies on standard 24 inches x 36 inches sheet with engineers stamp and signature. (Labeled "As-Constructed")
- **B.** AutoCad file in the most current version.
- **C.** PDF copy of the stamped as-constructed drawings
- **D.** GIS shapefile in District's coordinate system.

The drawing(s) will, along with generally accepted drawing practices and standards, detail as follows:

- **A.** Pipe size, type, joints, valves, and valve type(s), fittings and fitting type(s), curb boxes and location measurements of each. (2 swing tie measurements for each measured in feet. The ties should be from a permanent surface object)
- **B.** Existing water lines and/or abandonment(s) with associated measurements.
- **C.** Fill material and type: Special notation for water if less than 8 feet or greater than 12 feet and for sewer if less than 5 feet or greater than 12 feet.
- **D.** Street names and other significant location data.
- **E.** Special notes or comments. (Pipe encased in concrete, etc.)
- **F.** Drawings must be submitted on SWSD grid and Datum's to be accepted, no exceptions

The following are **not** considered As-Constructed drawings and will not be accepted:

- **A.** Construction plans.
- **B.** Free hand drawings or sketches.
- **C.** Drawing measurements that are based upon water line locates ***after*** installation work is buried.

Designation of all abandonment will be included on as constructed drawings as a watermark and labeled as abandoned with the date of abandonment and pipe material.

The Design Engineer shall certify in writing that the as-builts have been completed in accordance with the plans and specifications approved by the SWSD.

SECTION 3.5 EASEMENTS DESCRIPTIONS AND DRAWINGS

Easement legal descriptions and drawings must be prepared by a Professional Land surveyor, registered in the State of Colorado.

Easement drawings shall be presented in a scale sufficient to show all boundaries, shall bear a professional land surveyor seal and signature, and shall describe the beginning, each line bearing and distance and the total area contained in acres.

SECTION 3.6 APPROVED DRAWINGS

Construction shall not begin until the Contractor has received the approved and signed drawings from the SWSD District Manager. Approved drawings are only authorized for construction for a period of 12 months. If Construction does not start within the 12 month period, the developer must resubmit drawings for review and approval. The Contractor shall have in his possession at all times, one copy of the plans and specifications and one copy of the approved drawings. The developer shall give the SWSD 1 month notice prior to construction. Shorter time frames may result in construction delays due to scheduling inspection.

SECTION 4 PRE-CONSTRUCTION REQUIREMENTS

SECTION 4.1 CONTRACTOR INSURANCE AND BONDING

4.1.1 INSURANCE

Prior to the start of construction, all contractors working on water and sewer lines designed to be dedicated to the SWSD shall provide insurance documents showing the Contractor, District, District, District Engineer, and any other entities as determined by the District as additional insured for the following minimum sums:

$1,000,000 bodily injury for any one person.
$2,000,000 bodily injury for two or more persons.
$1,000,000 property damage for one accident.
$2,000,000 property damage for the term of the project.

4.1.2 BONDING

The contractor shall provide a Performance and Payment Bond for the total contract amount for the period of construction and a 2-year Maintenance Bond for the period immediately following and commencing at the final inspection and approval of the project as defined by the District.

SECTION 4.2 APPROVED DRAWINGS

Construction shall not begin until the District, the District's Engineer, and the Contractor have received the approved drawings. The contractor shall have in his possession at all times on the job site one copy of the plans, specifications, and approved drawings.

SECTION 4.3 CONSTRUCTION PROGRAM

The contractor shall submit to the District Manager and District Engineer a detailed plan for the construction project including but not limited to date, location, method and interval for staking including offsets and length between staking. This program shall show the proper sequence of operations and a time period for each phase of work. Any revisions shall be submitted to the District Manager and District Engineer in a timely manner.

The contractor shall submit this plan to the District at least 1 month prior to the start of construction. The report shall name the superintendent or foreman, who shall be the contact person designated by the contractor to act in all situations on his behalf to mitigate any problems arising on the job.

SECTION 4.4 SANITATION

The contractor shall adhere to the current TOSV/Pitkin County and State of Colorado Health Department sanitation rules and regulations. Unless arrangements are made otherwise, a portable toilet shall be provided by the contractor at each job location.

SECTION 4.5 LINE LOCATIONS

The contractor shall be responsible for obtaining any and all line locations, both main lines and services, from all utilities. Contact the Utility Notification Center of Colorado (UNCC) at 811 or (800) 922-1987 for water and sewer line locates.

SECTION 4.6 POTHOLING UTILITIES

The contractor shall pothole any utility that may be in conflict with the alignment of the water or sewer line prior to commencing construction or at least 2 days or manholes ahead of construction, or as determined by the SWSD Engineer.

SECTION 4.7 PRE-CONSTRUCTION MEETING

A pre-construction meeting shall be organized and coordinated by the applicant at least 1 week prior to commencing construction to acquaint all involved parties, including but not limited to the contractor, the contractor's foreman or superintendent, representatives of other utilities, County or TOSV representatives, District representatives, Project Engineers and District representatives, to familiarize all parties with the scope of the project and their possible participation. No construction shall commence until the pre-construction meeting is held and all parties are notified.

SECTION 4.8 STAKING

The Applicant's Engineer, at the Applicant's expense, shall stake sewer line and grade, and manholes using 25 foot stations for the first 100 feet in and out of manholes and every 50 feet thereafter. Offsets for each station shall be set for checking grade during installation.

Water line bends, valves, FH, connections to the existing system, services, and all other water facilities shall be staked for construction.

SECTION 4.9 WRITTEN NOTICE

The contractor shall provide written notice to the SWSD District Manager and District Engineer (including the starting date, time and location of construction) at least 1 week prior to commencing construction. After construction has started, 48 hours notice must be given to the District Engineer for individual inspections.

SECTION 4.10 PERMITS

Before any work is approved to begin by the District, the contractor must show that he has obtained all licenses and permits for the construction required.

Contractor shall follow all requirements of the TOSV road cut permits or requirements for traffic control and street closures.

SECTION 4.11 PHOTOGRAPHS OR VIDEO RECORDINGS

At least 5 working days prior to construction the Contractor shall provide the District at the Applicant's expense photographs and videos both in electronic format of original conditions prior to the start of construction for all sewer projects.

SECTION 4.12 VALVE OPERATION AND SERVICE INTERRUPTIONS AND SHUTDOWNS

Only District personnel are authorized to operate valves, fire hydrants, and access manholes within the

District. The contractor shall contact the District 970-923-2056 prior to all work on or near the SWSD lines.

Any interruption in service shall be scheduled at least 48 hours in advance with the District. The contractor shall aid the District in notification of all customers affected by the water shutdown.

SECTION 4.13 CONSTRUCTION SCHEDULES

SWSD ordinances prohibit construction from November 1st to April 1st of any calendar year. The time window for all line extension contracts or replacement contracts shall be approved by the SWSD.

All projects that have not started within six months from date of application and survey shall be void and new applications and surveys will be required.

The contractor shall not work during a national holiday and the generally recognized days before and after constituting a holiday weekend. The contractor shall shutdown, have all trenches backfilled, and streets and alleys completely open to vehicular traffic by 3:00 PM the Thursday prior to any holiday weekend.

SECTION 4.14 STAGING AREAS

The contractor shall make arrangements in writing at his expense for securing a staging area, comply with all SWSD, TOSV, and Pitkin County regulations regarding stored materials, equipment, etc., and inform the District in writing of the arrangements for a staging area.

SECTION 4.15 MATERIAL LISTS

The contractor shall submit a list of materials to be used on any project to the District Engineer 28 days prior to the start of construction for his approval.

SECTION 4.16 NOTIFICATION

The construction program and revisions shall be distributed to all property and business Districts that may be affected by the construction at least five days prior to the start of construction. This notification shall state dates, times and location of the construction along with a map showing alternate parking and delivery locations. The map shall also show temporary pedestrian access and walkways, temporary locations for dumpsters, and areas that will be reserved for material storage. The SWSD will notify all it's customers of water service interruptions. The contractor is to inform SWSD 48 hours in advance of any service interruption. Contact the Main SWSD office at 970-923-2056.

SECTION 4.17 CONFINED SPACE PERMITS

If at any time during the construction, the contractor needs to access a previously dedicated District manhole or other confined space, the contractor shall make all entries adhering to all OSHA required confined space regulations. The contractor must notify the SWSD prior to entering any District confined space facilities.

The contractor shall furnish the District with an approved confined space program developed by the contractor's company 30 days prior to commencement of construction.

SECTION 5 EXCAVATION AND BACKFILL FOR BURIED PIPELINES

SECTION 5.1 GENERAL

5.1.1 SCOPE: The work to be performed under this Specification shall include all labor, materials, equipment, plant and services as are necessary for the excavating and backfilling of all pipeline trenches.

The work shall include the excavation of whatever substances are encountered to the depths shown on the Drawings or modified in the field by the Engineer and installation of compacted bedding, backfill and surface restoration as described herein.

Wherever in this Specification a Standard is quoted or used, such as, but not limited to, ASTM, AWWA and ACI, this shall be interpreted to be the latest revision of that Standard.

5.1.2 REFERENCES:

A. American Society for Testing and Materials (ASTM)

1. ASTM C117 – Standard Test for Materials Finer than 75-um (No. 200 Sieve) in Mineral Aggregates by Washing.

2. ASTM C136 – Standard Method for Sieve Analysis of Fine and Coarse Aggregates

3. ASTM D75 – Standard Practice for Sampling Aggregates

4. ASTM D422 – Method for Particle-Size Analysis of Soils

5. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using the 5.5-lb (2.49 kg) Rammer abd 12-in (304.8 mm) Drop

6. ASTM D1556 – Test Method for Density of Soil in Place by the Sand-Cone Method

7. ASTM D2487 – Classification of Soils for Districting Purposes

8. ASTM D2922 – Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

9. ASTM D4253 – Test Methods for Maximum Index Density of Soils Using a Vibratory Table

10. ASTM D4254 – Test Method for Maximum Index Density of Soils and Calculation of Relative Density

11. ASTM D4318 – Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils

B. Occupational Safety and Health Administration

1. The Contractor must conform to the amended Rules and Regulations of Construction Standards for Excavations, CFR 29, Part 1926, Subpart P of Title 29 including appendices of the Occupational Safety and Health Administration, Labor, including revisions thereto.

5.1.3 CONTRACTOR SUBMITTALS: The Contractor shall submit certified gradation test data verifying that the material and gradation of imported materials meet the requirements of this Section.

Particle size analysis of soils and aggregates shall be determined in accordance with ASTM D422.

5.1.4 QUALITY ASSURANCE:

A. All soils testing will be done by a testing laboratory of the District's choice at the Contractor's expense.

B. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with ASTM D698. Where granular, cohesionless material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D4253 and D4254. Field density tests will be performed in accordance with ASTM D1556, ASTM D2922, or by other means acceptable to the Engineer.

5.1.5 GENERAL REQUIREMENTS: All excavation shall be made by open cut. Permission may be granted to tunnel under driveways, crosswalks, curbing, walkways and utility installations, but such tunnels shall not exceed 10 feet in length.

The length of trench permitted to be open at any one time may be limited when, in the opinion of the Engineer, such limitation is necessary for protection of the work or the convenience of the public.

When excavations are through lawns, cultivated fields, pastureland, or areas having grass cover, the Contractor must stockpile separately all topsoil, which shall be replaced on top of the backfilling in the trench. All surfaces that have grass shall be reseeded by the Contractor. All lawns and other grass-covered areas, not excavated, on which excavated material is placed, shall be protected.

It is the general intent that the Contractor leave the work area in a similar and equal condition as it was preceding the Contract work.

5.1.6 PROTECTION OF EXISTING FACILITIES:

A. General: Existing power lines, telephone lines, 6-inch and greater diameter trees, six feet or more from the pipe centerline, shrubbery, fences, water mains, gas mains, sewers, cables, conduits, ditches, embankments and other structures in the vicinity of the work not authorized to be removed, shall be supported and protected from injury by the Contractor during the construction and until completion of the work affecting them. The Contractor shall be liable for all damages done to such existing facilities and structures, as herein provided and he shall save the District from any liability or expense for injuries, damages, or repairs to such facilities.

The Contractor shall notify the District or Owners of the existing utilities, whether aboveground or underground, 48 hours prior to proceeding with trench excavation whenever such trenching operations are within ten feet of the possible location of any existing utility. The notification shall also include a request for field staking any such underground facility that may be in the area of influence by the construction.

Should any such utility be damaged in the trenching operations, the Contractor shall immediately notify the Owner of such utility and, unless authorized in writing by the Owner of utility, the Contractor shall not attempt to make repairs except to prevent further damage to property. Duplicate copies of any written authorization given to the Contractor to make repairs shall be filed with the Engineer and shall be so worded as to save the District from any responsibility whatsoever relative to the sufficiency of the repairs.

If during construction any underground utility conduit, including sewers, water mains, gas mains and drainage structures, or any aboveground utility facilities are required to be relocated, the Contractor shall notify the utility owner well in advance of his approach to such utility so that arrangements with the District or Owners of the affected utility can be completed without delay to the work.

SECTION 5.2 PRODUCTS

5.2.1 GENERAL: All backfill material shall be approved before use. The backfill material shall be free from rubbish, large stones, clods, roots, brush, debris, frozen lumps of earth, or other objectionable material, and shall be moistened as required.

The Contractor is responsible for the stability of slopes during construction. Excavation and fill operations shall be coordinated with water control and stabilization measures to prevent unstable conditions.

A. Water shall be clean and free from harmful substances. The amount of water used in compaction shall be sufficient to obtain the percent of compaction required.

B. Topsoil is defined as the existing material nominally within a 6-inch depth beneath the existing ground surface. The Engineer shall verify the suitability of this material as topsoil prior to stockpiling.

5.2.2 PIPELINE BEDDING AND BACKFILL:

A. Trench Zones: For the purposes of this Specification, the terms "Bedding Zone," "Pipe Zone" and "Backfill Zone" shall refer to the trench zones as identified following:

1. Bedding zone. The Bedding Zone shall consist of all material placed below the pipe invert or, when permitted, the native materials graded and prepared for direct placement of the pipe.

2. Pipe zone. The Pipe Zone shall consist of all material placed above the pipe invert to an elevation 12-inches above the top of the pipe.

3. Backfill zone. The Backfill Zone shall consist of all material above the Pipe Zone.

B. Material: All bedding and backfill material shall have the approval of the Engineer. All bedding and backfill material shall be free of frozen material, organic material and debris. The materials to be used in the Bedding and Pipe zones shall be "road base" as described below. The materials to be used in the Backfill zone shall be "backfill material" as described below. All materials may be subject to gradation tests and compaction tests prior to approval of the use of that material. The test results shall be submitted to the Engineer for approval and verified as to their accuracy. The cost of these tests shall be borne by the Contractor.

1. Roadbase bedding material or roadbase backfill. This material shall be Class 6 aggregate base course as specified by the State of Colorado Department of Highways; and shall meet the following gradation:

Sieve Size	Total Percent Passing by Weight
¾-inch	100
No. 4	30 - 65
No. 8	20 - 55
No. 200	3 - 12

2. Select material. Select material shall not be permitted unless authorized by the Engineer. This material shall consist of suitable material screened from the excavated earth having no rocks or stones greater in size than 2 inches for DIP or RCP and ¾-inch for all other pipe.

5. Trench stabilization material. The backfill material shall be 12-inch uniformly-graded,

crushed rock concrete aggregate. If larger material is needed, it must be approved by the Engineer prior to placement.

6. Backfill material. Backfill material shall consist of material shall free from rubbish, large stones, clods, roots, brush, debris, frozen lumps of earth, or other objectionable material, and shall be moistened as required.

Backfill material within the Town of Snowmass Village shall consist of “road base” to final grade.

No boulders over 6 inches in any dimension shall be allowed in the top 12 inches of the trench. All boulders shall be carefully placed so that no damage will be done to the pipeline. No backfill material shall have boulders larger than 24 inches in any dimension. Boulders larger than 8 inches in any dimension shall be carefully lowered into the trench until the backfill is 4 feet over the top of the pipe.

SECTION 5.3 EXECUTION

5.3.1 PREPARATION:

A. Ground Surface Preparation: Prior to excavating, complete all clearing and grubbing and demolition operations.

B. Topsoil: In natural areas where excavation will occur, strip all topsoil, or in the absence of topsoil, strip the top surface material and store separately from other excavated materials.

C. Concrete Walks, Roadways, Parking Areas, and Road Crossings: Cut existing pavement full depth to a true line before excavation.

D. The Contractor is to field-verify by excavation the location of all utility crossings, service connections, and connections to existing lines before proceeding with trenching operations.

5.3.2 TRENCH EXCAVATION:

A. TRENCH WIDTH: The minimum clear trench width measured at the top of the pipe barrel shall be not less than the outside pipe diameter, plus 16-inches.

For all pipe, the maximum clear trench width measured at a point 12-inches above the top of the pipe barrel shall be not greater than the trench width shown on the following table.

MAXIMUM TRENCH WIDTH TABLE

Pipe Diameter (inches)	Maximum Trench (inches)
4	24
6	26
8	28
10	30
12	33
14	35
15	36
16	37

If the above-stated maximum trench widths are exceeded, either through accident or otherwise, and if the Engineer determines that the combined dead and live loads will exceed the design loadings on the

pipe, the Contractor shall either cradle the pipe in concrete, or use a pipe of a stronger class, as required by the Engineer.

B. TRENCH WALLS: The Contractor may slope or bench the trench sidewalks. Such sloping or benching shall terminate at a depth not lower than one foot above the top of the pipe barrel, and from that point down, the trench wall shall be vertical. The trenching operation, including the spoil bank and sloping of the trench sidewalls shall be confined to the width of the permanent and temporary rights-of-way, if any.

C. TRENCH DEPTH: The trenches shall be excavated to such depths that the pipeline can be laid at the elevation of the grade lines shown on the Drawings, or at depths or covers specified on the Drawings.

1. Ductile-Iron Pipe. The trench shall be excavated to the depth required to install the pipe on firm, undisturbed, soil, with the approval of the Engineer, the Contractor may over excavate the trench and the trench bottom brought to the pipe invert with road base.

   For areas where large stones or rock excavation are required, so that hand-shaping of the trench is impractical, the trench shall be over excavated and the trench bottom brought to the pipe invert with road base.

2. All Other Pipe Materials. The pipe trench shall be excavated below the bottom of the pipe and backfilled with the road base.

D. TRENCH PREPARATION: The trench shall be excavated only so far in advance of pipe laying as permitted by the Engineer. All trenches shall be drained so that pipe laying may take place in de-watered conditions.

Bell holes in the trench bottom shall be provided at each joint to permit the jointing to be made properly and to prevent the pipe from bearing on the bells.

After excavation, the trench bottom shall be uniformly graded and hand-shaped so that the pipe barrel (exclusive of the joint) will have uniform and continuous bearing on firm, undisturbed trench bottom (when permitted), or thoroughly compacted road base, throughout the length of the pipe. The trench grade shall permit the pipe spigot to be accurately centered in the preceding laid pipe joint, without lifting the pipe above the grade and without exceeding the permissible joint deflection.

If unstable foundation is encountered, the Contractor shall excavate the unstable material and backfill the over excavation with 12-inch uniformly-graded, crushed rock concrete aggregate. If larger material is needed, it must be approved by the Engineer prior to placement.

5.3.3 SHORING:

A. As needed, all trench sidewalls shall be properly protected to meet Federal, State and local laws in regard to safe working conditions.

5.3.4 WATER CONTROL AND DEWATERING: For all excavation, the Contractor shall provide suitable equipment to de-water, and he shall keep the excavation de-watered so that pipeline construction and backfill operations can be carried on under de-watered conditions.

5.3.5 STORAGE OF EXCAVATED MATERIALS:

A. Generally excavated material will be stockpiled near the immediate construction area so as not to interfere with other work.

B. In natural areas, place excavated materials close to the excavation and in as confined a configuration as possible. Where adjacent slopes are too steep to stockpile, transport materials to

special stockpile locations in nearby areas.

5.3.6 TRENCH BACKFILL:
A. General: Unless accurate results cannot be obtained, the compaction requirements shall conform to maximum dry density according to ASTM D698, Moisture-Density Relations of Soils (Standard Proctor). When the ASTM D698 test is not applicable, the percentage compaction requirements shall conform to ASTM D2049 Test for Relative Density of Cohesionless Soils.

When required by the Engineer the Contractor shall excavate backfilled trenches for purposes to perform compaction tests at locations and depths required by the Engineer. The Contractor shall be responsible to reinstall and compact the test excavations at no additional cost to the District.

B. Bedding Zone Installation: Bedding material shall consist of the material on which the pipe is placed. Bedding material shall be placed to the required elevation of the pipe invert six inches thick. Compaction equipment shall be used to thoroughly compact the bedding material to a minimum of 95 percent maximum dry density, or to 70 percent relative density. The moisture content of the material shall be within 2 percent of optimum. See Standard Detail W08.

C. Pipe Zone Installation: After the specified bedding material has been placed and approved, the same backfill material shall be installed to an elevation of 12-inches above the top of the pipe. This backfill shall be placed and compacted in distinct, separate lifts not to exceed 6-inches of loose depth; except that the first loose lift shall not be higher than the pipe centerline Compaction shall meet the requirements of “Bedding Zone Installation,”.

D. Backfill Zone Installation: All backfill above the pipe zone shall be carefully placed and compacted. Compaction shall be by mechanical tamping in 8-inch maximum loose lifts using mechanical or hand tampers, weighing not less than 20 pounds, or vibratory rollers. All other means must be approved in writing by the Engineer. All backfill shall be compacted to 95% of maximum laboratory dry density or 70 percent relative density. The material shall be within 2.0 percent of optimum moisture content.

5.3.7 OVEREXCAVATION OF UNSUITABLE MATERIAL: In areas where unsuitable or unstable material is encountered, the Contractor shall over-excavate the unsuitable material and backfill and compact with material approved by the Engineer. Over-excavation and replacement of unsuitable material will be done only upon authorization by the District.

5.3.8 RESTORATION:
A. Streets and Roadways: Any pavements disturbed during construction shall be repaired in accordance with the requirements of the municipality.

B. Concrete Structure, Walks and Curbs: Restore all existing concrete structures to conditions equal to or exceeding existing structures and according to the requirements of the governing municipality.

C. Landscape Restoration: Finish all slopes in accordance with the lines, cross-sections, and slope rounding shown. Grade to produce a well-drained surface.

D. Restoration of permanent improvements within District Easements: The District is not responsible for restoration of any permanent improvements that are located within the District’s Easements. Such improvements could consist of but are not limited to sidewalks, asphalt, landscaping, etc.

5.3.9 CLEANUP: Prior to final inspection and acceptance, remove all trash and excess materials and leave area in a neat, satisfactory condition.

5.3.10 MAINTENANCE OF BACKFILL: All backfill shall be maintained in a satisfactory condition

and all places showing signs of settlement shall be filled and maintained during the life of the Contract and for a period of two years following the date of final acceptance of all work performed under the Contract. When the Contractor discovers or is notified by the Engineer or the District that any backfill is not in compliance with the provision of this Contract, the Contractor shall correct such conditions at once. Any utilities and road surfacing damaged by such settlement shall be repaired by the Contractor to the satisfaction of the District and Engineer. In addition, the Contractor shall be responsible for the cost to the District of all claims for damages filed with the Court, actions brought against the said District for, and on account of, such damage.

- END OF SECTION -

SECTION 6 INSTALLATION OF BURIED WATER PIPELINES

SECTION 6.1 GENERAL

6.1.1 SCOPE: The work of this section includes providing and installing buried ductile iron, PVC, and fitting for water service. All materials shall be new. All material used shall be manufactured and supplied according to the latest revised standards of the American Water Works Association, the American National Standards Institute, and the American Society for Testing and Materials, or as mentioned hereinafter. Miscellaneous valves and fittings shall be as called out on the Drawings.

6.1.2 REFERENCES:

A. American Society for Testing and Materials (ASTM)

B. American National Standards Institute (ANSI)

C. American Water Works Association (AWWA)

D. Federal Specifications (FS)

6.1.3 CONTRACTOR SUBMITTALS: Contractor shall submit all cut sheets for proposed materials to be constructed in conjunction with the District's water system.

6.1.4 PRODUCT HANDLING:

A. Pipe, fittings, valves, hydrants, and all other accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage to them. Under no circumstances shall any materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. Skidding which damages protective coatings will not be permitted.

In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench to prevent moving more than once.

All pipe and fittings shall be so handled that the coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, the repair shall be by the Contractor at his expense in a manner satisfactory to the Engineer. Any pipe with damage beyond repair must be completely removed and discarded.

B. Do not store materials directly on the ground.

SECTION 6.2 PRODUCTS

6.2.1 DUCTILE-IRON PIPE, FITTINGS, AND APPURTENANCES: Unless approved by the District the pipe shall be ductile-iron pipe, conforming to ANSI A21.51/AWWA C151, Class 52 thickness. The interior of each length of pipe shall have a cement-mortar lining, conforming to the requirements set forth in ANSI A21.4, of standard thickness. The exterior of the pipe shall be coated with standard bituminous coating approximately one mil thick.

Unless otherwise specified the pipe joint shall be the "push-on" type, made in accordance with ANSI A21.11, and the gaskets shall be standard for buried water service and as provided by the pipe manufacturer.

The fittings shall be ductile-iron conforming to the requirements set forth in ANSI A21.10/AWWA C110 or ANSI 21.53/AWWA C153. Ductile-iron fittings 12-inch size and smaller shall be Class 250, and

fittings larger than 12 inches shall be Class 150. The interior of the fittings shall be cement-mortar lined, as is required for the pipe with a 1 mil bituminous exterior coating. The fittings shall have mechanical joints in accordance with ANSI A21.11. The gaskets for the joints shall be suitable for potable water service.

A. Conductivity Connections: Pipeline conductivity is not allowed.

B. Tracer Wire: Provide copper tracer wire 12 gauge or larger, insulated and stranded copper on all water mains, services and fire hydrants. All splices shall be watertight and underground. Tape wire to pipe and outside of valve boxes.

C. Polyethylene Encasement: When required, the ductile-iron pipeline and fittings shall be encased in polyethylene film in accordance with the following requirements of ANSI A21.5/AWWA C105. See Standard Detail W01.

1. Polyethylene: The polyethylene film shall be manufactured of virgin polyethylene material conforming to the requirements of ASTM D-1248. The raw materials shall be Type 1, Class A (natural) or C (Black), Grade E-1 with flow rate of 0.4 maximum and dielectric strength of 10^{15} ohm-cm^3 minimum.

2. Polyethylene Film: The finished polyethylene film shall have a minimum nominal thickness of 0.008-inch (8 mil), and the minus tolerance on thickness shall not exceed 10 percent of the nominal thickness. The film shall have a minimum tensile strength of 1200 psi with an elongation of 300 percent minimum. The dielectric strength shall be 800 volts/mil thickness minimum.

3. Tube Size or Sheet Width: The tube size of sheet width for each pipe diameter shall be as listed in the following table: Nominal Minimum Width (In.)

Nominal	Maximum Width (In.)	
Pipe Diameter (In.)	Flat Tube	Sheet
4	16	32
6	20	40
8	24	48
10	27	54
12	30	60
14	34	68
16	37	74

D. Thrust Restraint: Where designated on the Drawings or where existing conditions do not permit the use of concrete thrust blocks, fitting restraints shall be made with tie rods and pipe clamps or special fitting bolts. Tie rod restraint systems shall have a minimum of 2 bolts or rods per joint or clamp. Minimum tie bolt sizes are as follows: See Standard Details W02 and W03.

Pipe Size	Bolt Diameter
4" - 8"	5/8”
10" - 14"	3/4”
16"	1"

The tie bolts shall be fabricated from “Cor-Ten” steel or equal according to the requirements of ASTM A242 with a minimum yield stress of 46,000 psi. Retainer clamps shall be equal to “socket clamp,” Figure 595, as manufactured by ITT-Grinnell.

D. Mechanical Joint Retainer Glands: On all fittings, bends, tees, and other appurtenances that require a mechanical joint retainer gland, a Mega-Lug MJ ring is required to be used. Mega-Lug shall

be cast from 60-40-12 ductile iron and shall have bolt circles, bolt holes, and dimensions which will permit the glands to be used with standard mechanical joint bells and standard length bolts, as per ANSI A21.11 and AWWA C111. All special tools recommended by the manufacturer shall be used during installation and shall be supplied to the District. Retainer glands shall be as manufactured by EBAA Iron, Inc.

E. Restrained Joint Pipe: Restrained joint pipe shall be ductile iron manufactured in accordance with the requirements of ANSI A21.51/AWWA C151. Push-on joints for such pipe shall be in accordance with ANSI A21.11/AWWA C111. Pipe shall be Griffin Snap Lok or equal. Unless otherwise shown on the Drawings the pipe shall be Class 52 thickness.

Restrained joint fittings shall be ductile iron in accordance with applicable requirements of ANSI 21.10/AWWA C110 with the exception of the manufacturer's proprietary design dimensions. Push-on joints for such fittings shall be as specified above for the pipe. Fittings shall be provided by the pipe manufacturer.

Cement mortar lining and bituminous outside coatings for pipe and fittings shall be as specified above for ductile iron pipe.

Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly. Any special assembly tools recommended by the manufacturer will be supplied to the District.

6.2.3 GATE VALVES AND BOXES: Where designated on the drawings, gate valves for buried pipelines two inches and larger shall be iron-body, resilient seat, parallel-seal conforming to AWWA C509 for buried service, open CCW, non-rising stem, 2-inch operating nut, for a working pressure of 250 psi. See Standard Detail W06.

The joints for valves connected to the ductile-iron pipe shall be mechanical joints in accordance with ANSI A21.11. All gaskets shall be for standard water service. Snowmass Water and Sanitation District employees are the only people authorized to operate valves on the water distribution system. (Note: The service line starts after the corporation valve and is the responsibility of the property District and is not part of the water distribution system). It is unlawful for any persons other than SWSD personnel to operate any SWSD water system appurtenances.

At intersections, all gate valves shall be installed within three feet of a tee, cross, or bend and all connections shall have Mega-Lug on the fittings. All mechanical joint fittings including those with tie rods will have Mega-Lug fittings and concrete thrust blocks.

Valve boxes shall be Cast Iron with screw-type adjustment, 5¼ inches shaft for pipe burial of 8 feet minimum and the cover shall have the word WATER cast in metal. The top of the valve boxes shall be set 1.75 inches below final grade asphalt surface with a 1 inch removable solid ring.

Valve Boxes shall be three-piece Tyler Pipe cast iron or pre-approved valve boxes, to accommodate 4 inches through 16 inches valves. Shaft size shall be 5.25 inches, screw type 6850 Series- 668-S and/or 6865 Series-F. Complete extension shall be 62-82 inches. Bases shall be 20 ½ inches wide, Tyler model 160 or pre-approved equal. Parts for these *must be* interchangeable for the different valve boxes. Lids shall be flat shallow or ribbed and are to be marked with WATER. Two operating keys or wrenches shall be provided.

For valves that are on lines greater than 9 feet in depth, extension rods with a rod centering ring and set screw are required to bring valve nut within 5 feet of final grade. In addition, for valves over 9 feet deep, solid pipe is required instead of sectional valve boxes, these will incorporate valve box tops with standard water lids.

At the completion of all tests, the contractor, in the company of the engineer shall inspect to ascertain that the valve boxes are plumb, the valve-operating nuts are centered in the valve boxes and that the

key will fit over the entire operating nut and insure all valve boxes are clean of obstacles preventing operation. Otherwise the installation will not be accepted.

6.2.5 FIRE HYDRANTS: The fire hydrants shall be the Mountain Spec Kennedy Guardian Model, or Mueller Centurian with traffic flange having bronze fittings, bronze to bronze seating with O-rings, and other optional materials of bronze. Fire Hydrants provided shall be for minimum 8.5-feet of bury with 2.5 feet to the breakaway flange. See Standard Detail W05.

Valve: 5.25-inch
Inlet: 6-inch with mechanical joint
Trench Depth: 8 feet minimum cover
Operating Nut: 1.5" Pentagon or as required by Fire Department
Open: CCW
Nozzles: 2 – 2.5-inch, 1 – 4.5-inch pumper nozzle
Threads: National Standard
Working Pressure: 150 psi

All nozzle caps shall have nut identical to operating nut. Hydrant shall be provided with indicating arrow for opening direction.

Two operating wrenches, two valve seat wrenches, one collision repair kit, and one set of tools required for repair of hydrant shall be provided.

6.2.6 COUPLINGS: The pipe couplings shown on the Drawings to be used when connecting new pipes or pipes into existing buried pipelines with varying outside diameters shall be with solid sleeves with Mega-Lugs and transition gaskets. Couplings shall have an interior coating of an epoxy suitable for use with potable water. Exterior coating shall be equivalent to the attached new pipeline.

Coupling bolts shall be high strength, low alloy steel meeting the requirements of ASTM A325, Type 3.

6.2.7 AIR RELEASE/VACUUM VALVES: If required by the Drawings, the Contractor shall install combination air release/vacuum valves. The valves shall be contained within a precast concrete manhole section as detailed. Valves shall be “Val-Matic” Model 201.C for 1/2-inch inlet size Model 202.C for 1-inch and 2-inch inlet size, combination air release valves as manufactured by Val-Matic Corporation. ARV shall be installed in the top of main line with a 4 inches tee turned vertical to allow the air to pool for discharge by the ARV. Orifice discharge size on the ARV shall be per the manufacturer’s recommendations. See Standard Detail W07.

6.2.8 WATER SERVICES: Materials for water service connections shall be new and the best available. In the absence of detail information the requirements of AWWA C800 shall be followed. See Standard Detail W04.

A. Corporation Stops: All corporation stops for copper pipe shall be similar and equal to B-25008, threaded inlet, compression coupling outlet, as manufactured by Mueller Company.

B. Copper Pipe: The copper pipe for all service connections shall conform to the requirements set forth in ASTM B-88, or its latest revision, and shall be Type K, soft annealed.

C. Curb Valve and Box: The curb valve shall be equivalent to Mueller B-25209 ball type, compression connection on both sides, without drain. The curb stop valve box shall be similar and equal to #10336 as manufactured by Mueller Company, and shall be complete with #89981 and stationary rod.

D. Service Saddles: The service saddles shall be a bronze service clamp, ‘O’ ring gasket, epoxy coated, stainless steel double straps and IPS thread.

E. Tracer Wire: Provide copper tracer wire 12 gauge or larger, insulated and stranded copper on all services. All splices shall be watertight and underground. Tape wire to pipe and outside of valve boxes.

6.2.9 INSULATION: Insulation where shown on drawings shall be Type SM rigid blue closed cell foam or Type HI-40 as manufactured by the DOW Chemical Corporation or approved equal. See Standard Detail W11.

6.2.10 CASING PIPE: Where casing pipe is bored and jacked as located on the drawings it shall be full or split casing of smooth, uncoated welded steel pipe with not less that ¼" thick walls and free of obstructions. The interior diameter of the casing pipe shall not vary more than 1 inch from the inside diameter specified. Joints shall be made by butt-welding the pipe sections before jacking in to final location. See Standard Detail W15.

6.2.11 CASING SPACERS: Casing spacers shall be of the projection type, non-metallic spacers constructed of preformed sections of high density polyethylene or an approved equal. The spacers shall be of a sufficient number of projections to adequately support the carrier throughout the installation process and in service. Each casing spacer shall be capable of providing support for the carrier pipe in service at a maximum spacing of 10 feet. Calculations shall be provided showing that the casing spacer will support the service load at the recommended spacing, including a factor of safety of two. See Standard Detail W14.

Carrier pipe joints shall be installed with self-restraining casing spacers at each joint. Restraining casing spacers at joints shall provide axial thrust restraint to prevent pipe joint separation during and after installation and during removal. They shall also provide dielectric insulation between carrier pipe and the casing and facilitate installation of the carrier pipe by allowing the carrier pipe to be placed without undue stresses.

Spacers shall be Cascade Manufacturing T304 Stainless Steel (14 Ga.) minimum, Model CCS-ER and CCS-JR (joint restraint) or approved equal.

6.2.12 URECON INSULATED PIPE: URECON Pipe and Insulated Jacket & fittings shall be DIP pipe Class 52. The insulation is to be Urecon "U.I.P."® void free insulation process, with a suitable outer jacket. Polymer coated, form fitting insulation kits shall be used to insulate elbows, tees and other fittings, according to the manufacturer's recommendations. The U.I.P. insulation shall be rigid polyurethane foam, factory applied. The insulation shall be a 2-inch void free polyurethane foam (ASTM D1622) with a compressive strength of 19 to 23 lbs/sq-in (ASTM D 1621) and have a closed cell content of 90% minimum. DIP pipe and insulation shall be wrapped in an outer jacket of 22 gauge Aluminum Spiwrap.

Heat tracer wire shall be provided with the insulated DIP pipe that is continuous for the length of the insulated pipe. Heat tracer wire will be capped at both ends before pipe enters the ground for its burial run.

6.2.13 FLEXIBLE PIPE JOINTS: All pipes entering buildings, passing through concrete walls, bridge abutments, or other structures shall have an Ebaa Iron Flex-Tend joint installed within 3-feet of the wall. The flex-tend joint shall be the same size as the main line piping, double ball, mechanical joint by mechanical joint. The mechanical joint connects with the buried dip on one end and the other end connects with the wall spool installed in the wall of the structure. For bridge abutment penetrations the pipe connects to the plain end section of Urecon pipe with a Mega-Lug. Flex-Tend shall be a single ball model for 8-inch expansion from Ebaa Iron or approved equal for bridges. Flex-Tend shall be a double ball model for 8-inch expansion from Ebaa Iron or approved equal for entrances into buildings and other structural walls.

SECTION 6.3 EXECUTION

6.3.1 INSTALLATION OF DUCTILE-IRON PIPELINES: Except as specified herein or unless specifically authorized by the Engineer, all installation of pipe shall conform to the recommendations contained in "A Guide for Installation of Ductile-Iron Pipe," published by the Ductile Iron Pipe Research Association (DIPRA). A copy shall be available at the job site.

A. Pipe Laying: Pipe shall be laid with bell ends facing in the direction of laying, unless directed otherwise by the Engineer. Pipe shall be laid on the bedding with support over the full length of the pipe barrel. Pipe joint deflections shall not exceed the amount shown in the following table. The manufacturer's recommendation for deflection will be the guiding document if different from table below.

DUCTILE-IRON PIPE HORIZONTAL & VERTICAL DEFLECTION			
Size of Pipe	Bend in One Joint	Deflection in One 18-Foot Length	Approx. Radius of Curve Produced by Succession of 18-Foot Joints
4"	4°	15"	250'
6"	4°	15"	250'
8"	4°	15"	250'
10"	4°	15"	250'
12"	4°	15"	250'
14"	2°	7.5"	510'
16"	2°	7.5"	510'

The information in the columns referring to the deflection and the approximate radii shall be adjusted for pipe lengths different than 18-foot lengths. To lay pipelines on curved alignment with shorter radius if called for on the Drawing, the Contractor will be required to use shorter pipe lengths.

Vertical deflections shall not exceed any of the above values.

When pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or by other means approved by the Engineer.

The cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or cement lining so as to leave a smooth end at right angles to the axis of the pipe. The flame cutting of pipe by means of an oxyacetylene torch will not be allowed. The pipe end shall be beveled and free of sharp edges that could damage the gasket during installation.

B. Jointing of Mechanical Joints: The last 8 inches of the pipe spigot and the inside of the bell of the mechanical joint shall be thoroughly cleaned to remove oil, grit, tar (other than standard coating), and other foreign matter from the joint, and then painted with a manufacturer supplied lubricant or soap solution made by dissolving one-half cup of granulated soap in one gallon of water. The cast-iron gland shall then be slipped on the spigot end of the pipe with the lip extension of the gland toward the spigot end. The gasket shall be painted with the lubricant or soap solution and placed on the spigot end of the pipe to be laid, with the thick edge toward the gland.

The entire section of the pipe being laid shall be pushed forward to seat in the spigot end of the bell of the pipe in place. The gasket shall then be pressed into place within the bell, being careful to have the gasket evenly located around the entire joint. The iron gland shall be moved along the pipe into position for bolting, all of the bolts inserted, and the nuts screwed up tightly with fingers. All nuts shall then be tightened with a torque wrench. The torque for various sizes of bolts shall be as follows:

Size (Inches)	Range of Torque (ft-lbs)
5/8	45 – 60
3/4	75 – 90
1	100 – 120
1-1/4	120 - 150

Nuts spaced 180 degrees apart shall be tightened alternately in order to produce an equal pressure on all parts of the gland.

C. Jointing of Push-On Joints: In jointing the pipe, the exterior 4 inches of the pipe at the spigot end and the inside of the adjoining bell and particularly the groove for the gasket shall be thoroughly cleaned to remove oil, grit, tar (other than standard coating), and other foreign matter. The proper gasket supplied with the pipe shall be placed in the bell as described by the pipe manufacturer so it will spring into its proper place inside the pipe bell. A thin film of the pipe manufacturer's joint lubricant shall be applied to the gasket over its entire exposed surface. The spigot end of the pipe shall then be wiped clean and inserted into the bell to contact the gasket. Then the pipe shall be forced all the way into the bell by crowbar, or by jack and choker slings. The location of the gasket shall be checked with a gauge or tool designed for that purpose to assure that the gasket is in the proper position.

D. Installation of Polyethylene Encasement: The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material, but is not intended to be a completely air and watertight enclosure. Overlaps shall be secured by the use of 2-inch wide, 10 mil thick, polyethylene pressure sensitive tape. See Standard Detail W01.

Any of the three different methods for the installation of polyethylene encasement on pipe are acceptable as described in AWWA C105. Methods A and B are for use with polyethylene tubes and Method C is for use with polyethylene sheets.

All fittings shall be covered in the same manner as the pipe. Where appurtenances are odd-shaped, they shall be covered with flat sheet, wrapped with seams doubled over, and taped. Branch services and other extensions shall be provided for with an X-shaped cut in the film, and then the ends taped in place. At connections with unwrapped pipe or service pipes, the polyethylene shall extend 3 feet onto the unwrapped pipe and securely taped in place. Repair any damage encasement prior to backfill using polyethylene sheet and adhesive tape to secure all edges of the repair sheet.

E. Conductivity Connections: The conductivity connection for joints shall NOT be installed.

F. Installation of Special Restrained Joints: Restrained-joint pipe and ductile-iron retainer glands shall be installed according to manufacturer's recommendations. Torque wrenches and any recommended special tools shall be used during installation. Any special tools shall be supplied to the District.

G. Line Location Tape: Tape shall be installed 2-foot above water line. The tape shall be colored polyethylene with a metalized core.

6.3.2 INSTALLATION OF CASING PIPE: Placement of casing pipe shall be made at locations and grades shown on the drawings. It is extremely important that casing pipe be placed at the grades shown to avoid conflicts utilities or other pipelines or structures. Casing pipe shall be installed with a positive grade so that it will drain.

6.3.3 INSTALLATION IN CASING PIPE: Install water pipeline carrier pipe inside a casing pipe in accordance with details on the detail drawings. The carrier pipe shall be supported along its entire length using casing spacers in accordance with the manufacturer recommendation so that pipe bells remain clear of the casing pipe. It is the Contractors responsibility to determine if the specified

minimum clearance between the outside bell diameter of the carried pipe and the inside diameter of the casing pipe is adequate for proper installation of the carrier pipe. The casing spacers shall be plastic or polymer and have a low coefficient of friction to allow the installation of the carrier pipe without binding. The casing spacers shall have a sufficient number of projections so that the pipe is properly supported should twisting occur. Casing spacers shall be fastened tightly to the carrier pipe and grip the carrier pipe to eliminate slipping during installation. The casing spacers shall provide a minimum safety factor of 2 to support the service load. The spacers shall be ISO 9002 certified for strength and quality. See Standard Detail W15.

Carrier pipe shall be jointed outside the casing and moved into place by placing a brace across the bell furthest from the casing and moving the pipe with a jack behind the brace or winch and cable from the opposite end of the casing pipe. Pulling the pipe through the casing from the leading bell shall not be permitted. As each length of pipe enters into the casing, a new length shall be laid adjacent, jointed and moved into place in the same manner. The pipe bells shall not be permitted to contact the casing pipe.

After the carrier pipe is entirely in place, the ends of the casing pipe shall be sealed with a rubber end seal. The end seal shall form a continuous seal around and be clamped to the casing pipe and the carrier pipe so that surrounding material does not enter the pipe casing.

6.3.5 INSTALLATION OF VALVES AND BOXES: Valves shall be installed where shown on the Drawings or as directed by the Engineer in the field and shall be set with the operator nut plumb. Valve boxes shall have the interior cleaned of all foreign matter before installation. Valves shall be operated to open and closed positions to insure that all parts are in working condition before installation. Installation and jointing procedures shall be similar to the attached piping installation. See Standard Detail W06.

Unless otherwise noted, a valve box shall be provided for every valve. The box shall not transmit shock or stress to the valve or operator and shall be centered and plumbed over the operating nut of the valve, with the box cover 1.75 inches below the surface of the finished grade. A 1 inch steel riser ring shall be installed in valve box. The adjustable valve box shall permit at least 3 inches of adjustment either direction when in place.

Valves over 9 feet in depth shall have valve nut extensions to within 5 feet of final grade and the valve boxes shall be solid steel pipe.

6.3.6 INSTALLATION OF FIRE HYDRANTS: Fire hydrants and auxiliary gate valves shall be installed at the locations shown on the Drawings or as directed by the Engineer in the field. Concrete thrust blocks shall be installed at the hydrant and at the line branch tee. The hydrant shall be set on a base as shown on the detail and a gravel drain provided. Fire hydrants shall be set plumb at the finished grade line, unless otherwise instructed by the Engineer. See Standard Detail W05.

No part of the fire hydrant assembly shall protrude over the edge of sidewalks. Unless in the opinion of the Engineer it is not practical to do so, the pumper nozzle (which shall be facing the street) shall be 12 inches behind the edge of the sidewalk. The hydrant shall be set with the traffic flange from 6 inches above finished grade. Each hydrant shall be operated to opened and closed positions prior to installation.

6.3.7 SEWER CROSSINGS: Whenever any sewer line is crossed such that they are above and less than 18 inches apart from the water line, the sewer line shall be installed with one full 20 foot stick of Class 150 PVC (AWWA C900) with solid sleeves and transition gaskets. The C900 shall be centered over the water line. The waterline shall also be centered under the sewer line. When a sewer line is below the waterline and is less than 18 inches apart, the water line and sewer line shall be centered over each other so that the joints are as far as possible apart; the sewer line does not have to be in C900 for this situation. See Standard Detail W13.

6.3.8 INSTALLATION OF THRUST RESTRAINT: The movement of fittings shall be restrained by use of concrete thrust blocks or steel clamp and tie bolt assemblies. The thrust blocks shall be poured between undisturbed solid ground and the fitting to be anchored; the area of bearing on the undisturbed trench wall shall be that shown on the thrust block detail or directed by the Engineer. The concrete shall be so placed that the pipe or fitting joints will be accessible for repair. Thrust blocks or other thrust restraint where thrust blocks cannot be used shall be required at all the fittings unless otherwise shown on the drawings. A bond breaker shall be placed over the fitting before placing concrete. See Standard Details W03 & W04.

Thrust restraint clamps and tie bolts shall be assembled using clamps on each side of pipe bells with tie rods extending full pipe length for the dimensions shown on the detail drawings each direction from the restrained fitting. Clamp shall be installed tight enough to prevent twisting around the pipe. Two tie bolts per clamp with washer at clamp shall be located on side of pipe. Tighten tie bolt nut to hand-tight with 12-inch wrench (approximately 50-100 foot-pounds torque). Threaded tie rod ends shall extend two full threads past nut in final position.

6.3.10 FLUSHING, TESTING, AND DISINFECTING:

A. Pipeline Flushing: The Contractor shall flush the pipelines as the work progresses by a means in accordance with good practice to insure that sand, rocks or other foreign material are not left in any of the pipelines. If possible, the flushing shall be made through an open pipe end; otherwise, use of a fire hydrant may be acceptable, but only on approval of the Engineer.

B. Pressure Test: After each section of pipeline has been laid and partially backfilled (except for the joints or when the Engineer directs the trench to be backfilled for reasons of public safety, or if the Contractor elects to backfill prior to testing, as permitted), the pipe shall be slowly filled with water and tested. All pipe shall be tested at a pressure of 150 psi or 1.5 times the static pressure of the system at the lowest point in each section, whichever is greater. Each section shall be tested separately, but outside transmission mains may be tested in convenient lengths. The duration of each pressure test shall be at least two continuous hours. All water used in testing the pipelines shall be taken from a potable water supply.

Each section of pipeline being tested shall be slowly filled with water and all air removed. The specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The Contractor shall furnish all necessary labor, equipment and connection corporation stops to the pipeline to perform the test.

All exposed pipes, fittings, valves, hydrants, and joints will be carefully examined during the test. Any cracked or defective pipe, fittings, valves or hydrants discovered during the pressure test shall be removed and replaced by the Contractor with sound material. The test shall be repeated until it is satisfactory to the Engineer.

C. Leakage Test: A leakage test shall be conducted after the pressure test has been completed unless the pressure test indicates that there are no leaks. The Contractor shall furnish the pump, pipe, connections, meters, and all other necessary apparatus, and shall furnish all necessary assistance to conduct the test. The duration of each leakage test shall be two hours, and, during the test, the main shall be subjected to a hydrostatic pressure of 150 psi or 1.5 times the static pressure of the system at the lowest point in each section, whichever is greater.

No pipeline installation will be acceptable until the leakage is less than the amount computed by the following formula:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = Allowable leakage (gallons per hour)
S = Tested length of pipe (feet)
D = Nominal diameter of pipe (inches)
P = Average test pressure during the test (psi)

Should any test of pipe laid disclose leakage greater than that specified above, the Contractor shall, at their own expense, locate and repair the points of leakage until the leakage is within the specified allowance.

The pipe may be subjected to hydrostatic pressure, inspected, and tested for leakage at any convenient time after the trench has been partially backfilled, except at the joints, or backfilled as permitted by the Engineer. Where any section is provided with concrete thrust blocks, the pressure test shall not be made until at least two days have elapsed after the concrete was installed. The Engineer shall be notified at least 48 hours before the pipe is to be tested so that he may be present during the test.

D. DISINFECTION. The following procedure shall apply to all main extensions within the District service area. Pipe extensions shall be chlorinated in accordance with AWWA C600 and C651 *Standard for Disinfecting Water Mains. The intended high chlorine with any method of chlorination is to be 25 mg/l.*

Before filling the pipe with water, the pipe shall be clean and fr*ee of* debris to the satisfaction of the District.

Disinfecting by chlorination of the pipe shall be performed prior to acceptance by the District. The chlorinating agent and method of application shall be in accordance with AWWA C651. The Contractor shall provide material for disinfecting of water mains.

If the tablet method of chlorination is used, during construction, calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main at 500 foot intervals. The quantity of granules shall be as shown in the table below.

This method may be used only if the pipes and appurtenances have been kept cleaned and dry during construction. This method is **not to be used** on solvent welded plastic or on screwed joint steel pipe because of the danger of fire or explosion from the reaction of the joint compound with the calcium hypochlorite.

1.0 METHOD. Placing of calcium hypochlorite tablets. During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe. Also, one tablet shall be placed in each hydrant, hydrant branch, and other appurtenance. The number of 5-g tablets required for each pipe section shall be $0.0012\ d^2\ L$ rounded to the next higher integer, where *d* is the inside pipe diameter, in inches, and *L* is the length of the pipe section, in feet. Table 2 shows the number of tablets required for commonly used sizes of pipe. The tablets shall be attached by a food-grade adhesive. There shall be adhesive only on the broadside of the tablet attached to the surface of the pipe. Attach tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section to indicate that the pipe has been installed with the tablets at the top.

Table 1 Ounces of calcium hypochlorite granules to be placed at beginning of main and at each 500-ft interval.

Pipe Diameter *(d)*	Calcium Hypochlorite Granules
in.	*oz.*
4	1.7
6	3.8
8	6.7
10	10.5
12	15.1
14 and larger	D^2 x 15.1

Where D is the inside pipe diameter in feet $D = {}^{d}/_{12}$

Table 2 Number of 5-g calcium hypochlorite tablets required for dose of 25mg/L*

	Length of Pipe Section, *ft*
Pipe Diameter	20
in.	Number of 5-g Calcium Hypochlorite Tablets
4	1
6	1
8	2
10	3
12	4
16	7

*Based on 3.25-g available chlorine per tablet; any portion of tablet rounded to the next higher integer.

2.0 TESTING. After the pipe is filled with water and chlorine, and unless approved otherwise by the District, the chlorinated water shall be held in contact with the pipe for 24 hours. At the end of the 24 hour period, the water in the pipeline shall be tested by the District to ensure a residual chlorine content of not less than 25 mg/l. The pipeline shall then be tested by the District thoroughly flushed to remove the heavily chlorinated water and/or debris. Care shall be taken in flushing the pipeline to prevent property damage and danger to the public. Discharge of highly coordinated water shall not be released to any stream or watercourse. Samples of water will be collected for bacteriological examination and residual chlorine content testing before the pipeline is put into service. Testing of residual chlorine and bacteriological sampling and testing will be done by the District.

No main which has been disinfected and flushed shall stand stagnant for more than 15 days without being re-flushed and a new disinfecting test performed, passed and approved by the District.

3.0 DISCHARGING CHLORINATED WATER. After the applicable retention period, heavily

chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or to prevent corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main fittings, valves, and branches until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the distribution system or that is acceptable for domestic use. The environment to which the chlorinated water is to be discharged shall be inspected. If there is any possibility that the chlorinated discharge will cause damage to the environment, a neutralizing chemical shall be applied to the water to be wasted to thoroughly neutralize the residual chlorine. Where necessary, federal, state, local, or provincial regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water. The chlorinated water shall not be discharged to the District's sewer collection system.

4.0 DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS. The following procedures apply primarily when existing mains are wholly or partially dewatered. After the appropriate procedures have been completed, the existing main may be returned to service prior to the completion of bacteriological testing in order to minimize the time customers are without water. Leaks or breaks that are repaired with clamping devices while the mains remain full of pressurized water may present little danger of contamination and therefore may not require disinfection.

1.0 *Trench treatment*. When an existing main is opened, either by accident or by design, the excavation will likely be wet and may be badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from this pollution. Tablets have the advantage in this situation, because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

2.0 *Swabbing with hypochlorite solution*. The interior of pipe and fittings (particularly couplings and sleeves) used in making the repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before they are installed.

3.0 *Flushing*. Thorough flushing is the most practical means of removing contamination introduced during repairs. If valve and hydrant locations permit, flushing toward the work location from both directions is recommended. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.

4.0 *Slug chlorination*. Where practical, in addition to the procedures previously described, the section of the main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in previous section. The dose may be increased to as much as 300 mg/L and the contact time reduced to as little as 15 min. After chlorination, flushing shall be resumed and continued until discolored water is eliminated and the chlorine concentration in the water exiting the main is no higher than the prevailing water in the distribution system or that which is acceptable for domestic use.

5.0 Bacteriological Tests. After final flushing and before the new water main is connected to the distribution system, 2 consecutive sets of acceptable samples, taken at least 24 hr apart, shall be collected from the new main. (NOTE: The pipe, the water loaded into the pipe, and any debris exert a chlorine demand that can interfere with disinfection.) At least one set of samples shall be collected from every 1,200 ft of the new water main, plus one set from the end of the line and at least one set from each branch. Samples shall be tested for bacteriological (chemical and physical) quality in accordance with *Standard Methods for the Examination of Water and Wastewater*; and shall show the absence of coliform organisms; and, if required, the presence of a chlorine residual. Turbidity, pH, and a standard heterotrophic

plate count (HPC) test may be required at the option of the purchaser because new material does not typically contain coliforms but does typically contain HPC bacteria.

1. *Special conditions*. If trench water has entered the new main during construction or if, in the opinion of the Engineer, excessive quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately 200 ft, and the location shall be identified. Samples shall be taken of water that has stood in the new main for at least 16 hr after final flushing has been completed.

2. *Sampling procedure*. Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate, as required by *Standard Methods for the Examination of Water and Wastewater*. No hose or fire hydrant shall be used in the collection of samples. (NOTE: For pipe repairs, if no other sampling port is available, well-flushed fire hydrants may be used with the understanding that they do not represent optimum sampling conditions.) There should be no water in the trench up to the connection for sampling. The sampling pipe must be dedicated and clean and disinfected and flushed prior to sampling. A corporation cock may be installed in the main with a copper-tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

3. *Sample results.* If sample results from the lab indicate a measured HPC greater than 500 colony-forming units (cfu) per mL, flushing should be resumed and another coliform and HPC set of samples should be taken until no coliforms are present and the HPC is less than 500 cfu/mL.

4. *Record of compliance*. The record of compliance shall be the bacteriological test results certifying that the water sampled from the new water main is free of coliform bacteria contamination and is equal to or better than the bacteriologic water quality in the distribution system.

6.0 REDISINFECTION. If the initial disinfection fails to produce satisfactory bacteriological results or if other water quality is affected, the new main may be reflushed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated by the continuous-feed or slug method until satisfactory results are obtained—that being two consecutive sets of acceptable samples taken 24 hr apart.

NOTE: High velocities in the existing system, resulting from flushing the new main, may disturb sediment that has accumulated in the existing mains. When check samples are taken, it is advisable to sample water entering the new main to determine the source of turbidity.

D. Disinfecting: All water piping installed under this Contract shall be disinfected in accordance with AWWA C601 after all construction work has been completed. Chlorine shall be added to the water at the necessary locations in the amount to form a 25 ppm free chlorine residual. The chlorine solution shall be left in the pipelines for not less than 24 hours, during which time all valves and fire hydrants shall be operated in order to disinfect the appurtenances. After that length of time, the chlorine residual of the solution at any place in the system shall not be less than 10 ppm. As required, the Contractor shall make all necessary taps for inserting the chlorine solution in the pipeline and venting and draining pipelines using approved corporation stops. After the disinfection has been completed and approved, the corporation stops shall be closed, left in place, and sealed with a cap. All chlorination work must be done under the supervision of the Engineer.

After approval of the disinfection operations, the Contractor shall flush the new system until the chlorine residual is less than 1.0 ppm and a clear water test made. After flushing a bacteriological test is to be performed and must be passed by the local health authority to insure adequate disinfection prior to the line being placed into service and approved.

6.3.11 CONNECTIONS TO THE EXISTING SYSTEM: The existing system must at all times remain under the control of the District. The Contractor shall operate no valves or hydrants on the system without permission of the District.

All points at which the existing water systems are to be disconnected and connected to the new mains are shown on the Drawings. Connections to the existing system shall be completed after new pipeline, valves, thrust blocks and other appurtenances are installed and tested. Connections shall be done in accordance with the details given for each point of disconnection or reconnections. At each point of connecting new pipes to existing pipes, the Contractor shall expose the existing pipe and locate a good sound point at which to cut the existing pipe off square. The contractor shall then provide and install a transition coupling which has been designed and manufactured explicitly for the purpose of joining together the two types and sizes of pipe which he must connect.

The Contractor shall take precautions as necessary to minimize interruption of all utility services and will be responsible for restoration of service.

Unless otherwise specified, at any time that a customer on the existing system will be deprived of a supply of water, the Contractor shall advise such customer at least 24 hours in advance when the supply will be discontinued and when the supply will again be available. Service shall not be disrupted for more than a four hour period.

6.3.12 INSTALLATION OF WATER SERVICES: The water services shall be installed at locations in accordance with the Drawings. All pipe shall be copper unless designated otherwise on the drawings.

Curb valve boxes shall be located within roadway if possible. Curb valve boxes shall be set plumb, centered over the valve stem. Where required by the Drawings, the bricks supporting the curb box must be solid units set on undisturbed soil. Dielectric couplings shall be used between services of varying materials. All corporation stops require the installation of service saddles.

All bedding, pipe zone backfill, compaction, polyethylene sheathing and other details of the water pipeline construction shall be returned to original condition after service connections are completed.

6.3.13 ABANDONMENT OF SYSTEM APPURTENANCES

1. Abandoned main lines are to be left in place, and plugged at both ends of abandonment unless otherwise specified. All valves are to be closed and valve boxes pulled off within 2' of grade & filled with dirt/concrete.

2. Fire Hydrants and associated valves shall be removed; the tee shall be capped and or plugged with proper appurtenances.

3. Service lines shall be abandoned at their source prior to or during the tapping of a new service. Abandonment will include turning off the corporation valve and cutting the old service above the compression nut or capping the tee at the source. This shall be inspected by SWSD Staff before burying the work.

4. Tee's need to be capped and or plugged with proper appurtenances.

5. Branch Valves need to be removed and the line shall be properly capped or plugged at the tee.

A SWSD representative shall inspect all abandoned appurtenances.

- END OF SECTION -

SECTION 7 INSTALLATION OF BURIED SANITARY SEWER PIPELINES

SECTION 7.1 GENERAL

7.1.1 SCOPE: The work of this section includes providing and installing Polyvinyl Chloride (PVC) pipe, and fittings for sanitary sewer service. All materials shall be new. All material used shall be manufactured and supplied according to the latest revised standards of the American Water Works Association, the American National Standards Institute, and the American Society for Testing and Materials, or as mentioned hereinafter. Miscellaneous valves and fittings shall be as called out on the Drawings.

7.1.2 REFERENCES:

A. American Society for Testing and Materials (ASTM)
B. American National Standards Institute (ANSI)
C. American Water Works Association (AWWA)
D. Federal Specifications (FS)

7.1.3 CONTRACTOR SUBMITTALS: Contractor shall submit all cut sheets for proposed materials to be constructed in conjunction with the District's sanitary sewer system.

7.1.4 PRODUCT HANDLING:

A. Pipe, fittings, and all other accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage to them. Under no circumstances shall any materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. Skidding which damages protective coatings will not be permitted.

In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench to prevent moving more than once.

All pipe and fittings shall be so handled that the coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, the repair shall be by the Contractor at his expense in a manner satisfactory to the Engineer. Any pipe damaged beyond repair must removed entirely and discarded.

B. All pipes will be field inspected at the job site and checked for conformance to these specifications. Pipe and fittings will be checked for out-of-round or damaged joints, interior and exterior surface damage, gasket damage and the other requirements listed herein. Any pipeline or appurtenant material found defective will be rejected. Any material rejected at the job site shall be marked "Rejected," and the Contractor shall remove it immediately from the job site.

The Contractor shall provide results of tests required by the various standard specifications listed herein.

The Contractor shall provide the Engineer with 1 copy of the standard specifications covering the manufacture and testing procedures of the pipelines and other materials. The submittal shall be made prior to delivery of the materials.

C. Do not store materials directly on the ground.

SECTION 7.2 PRODUCTS

7.2.1 PIPELINE MATERIALS:

A. General: The Contractor shall install the pipeline material according to the requirements below by pipeline size or as designated on the Drawings. The Contractor shall furnish pipeline materials meeting applicable requirements of this Specification.

1. Polyvinyl Chloride Pipe (PVC), 18 inch or less.

The internal diameter of the pipe shall not be less than the diameter shown on the drawings.

B. Polyvinyl Chloride Pipe: The 4 to 15-inch diameter pipe shall be type PSM polyvinyl chloride pipe (PVC) and shall be suitable for gravity sewer service. The pipe material shall be made of PVC plastic having a cell classification of 12454-B or 12364-C or 12454-C or 13364-B (with a minimum tensile modules of 500,000 psi) as defined in ASTM D1784. All PVC pipe and fitting shall meet or exceed all of the material requirements of ASTM D3034 and thickness requirements of SDR-26 (4-inch to 15-inch diameter).

The 18 to 27-inch diameter pipe shall be polyvinyl chloride suitable for gravity sewer service with the PVC having a cell classification of 12454-C as defined by ASTM D1784. The pipe shall conform to the requirement of ASTM F679 (latest revision) with dimensions, pipe stiffness, and minimum wall thickness, T-1, designated in Table 1.

Provisions must be made for contraction and expansion at each joint with a rubber ring and integral thickened bell as part of each joint. Gaskets shall conform to ASTM F477. Pipe shall be supplied in laying lengths of 19 ½ to 20 feet. All pipe and fittings shall be assembled with a non-toxic lubricant. Each length of pipe and all fittings shall have marked on the exterior the following:

1. 4-inch to 15-inch
   a. Manufacturer's Name or Trademark
   b. Nominal Pipe Size
   c. PVC Cell Classification (e.g. 12454-B)
   d. Legend - Type PSM SDR-26 Sewer Pipe
   e. ASTM-D3034

2. Service lines
   a. Manufacturer's Name or Trademark
   b. Nominal Pipe Size
   c. PVC Cell Classification (e.g. 12454-C)
   d. Pipe Stiffness Classification: PS 46 PVC Sewer Pipe
   e. ASTM F679, AWWA C-905: SDR - 26 Class 200 or C900

All fittings to be used with the PVC pipe shall be those manufactured by the manufacturer of the pipe. Each special fitting shall be a completely manufactured unit with either bells or spigots on each connection that are an exact duplication of the bells and spigots on the pipeline. Fittings with any other type of connections will not be accepted.

C. Class 200 Polyvinyl Chloride Pipe: The pipe shall be Class 200 polyvinyl chloride (PVC) pipe meeting the requirements of AWWA C900, DR 26 for PVC pipe with cast-iron pipe equivalent O.D.

Provision shall be made for the contraction and expansion of each joint with an integral rubber ring and integral thickened bell as part of each joint. Pipe shall be supplied inlaying lengths of 20 feet. All pipe and fittings shall be assembled with a non-toxic lubricant. Each length of pipe and all fittings shall have marked on the exterior the following:

Class and size
Pressure rating
Name and Trademark of Manufacturer

D. Ductile-Iron Pipe: Ductile-iron pipe (DIP) shall be Class 52 in accordance with ANSI A21.51 and shall have a forty mil nominal (0.040 inch) lining of polyethylene. The lining shall be a blend of high-density polyethylene powders complying with ASTM D1248 compounded with an inert filler and carbon black. The pipe shall be preheated in a furnace to an adequate temperature to provide uniform fusing of the polyethylene powders and proper bonding to the ductile-iron pipe. See Section 02510 Installation of Buried Water Pipelines for information on fittings, gaskets, and restrained pipe.

Ductile iron pipe shall be used only with prior approval of the District. Ductile iron pipe may be required in certain circumstances, such as under roads or rivers. Buried Ductile iron pipe which may be subject to corrosive soil action shall be protected by a seamless polyethylene tube. All openings shall be taped water tight using an appropriate tape.

E. Restrained Joint PVC Pipe: Restrained joint PVC pipe shall be Class 200 polyvinyl chloride (PVC) pipe meeting the requirements of AWWA C900, DR 14 for PVC pipe with cast-iron pipe equivalent O.D.

The restrained joint PVC pipe shall be Certa-Lok C-900/RJ PVC restrained joint pipe from CertainTeed Corporation, or approved equal.

Provision shall be made for the contraction and expansion of each joint with an integral rubber ring and integral thickened bell as part of each joint. Pipe shall be supplied in laying lengths of 20 feet. All pipe and fittings shall be assembled with a non-toxic lubricant. Each length of pipe and all fittings shall have marked on the exterior the following:

Class and size
Pressure rating
Name and Trademark of Manufacturer

7.2.2 CONCRETE: Concrete for manhole bases, securing clean-out access castings, and other similar items shall have a 28-day compressive strength of not less than 3,000 psi. All reinforcement required shall be standard deformed reinforcement conforming to the requirements set forth in ASTM A615, Grade 60.

7.2.3 MISCELLANEOUS:

A. Plugs: Plugs shall be specifically manufactured for the pipelines in which they are to be installed. The plug shall be constructed of a material approved by the Engineer and shall provide a permanent water-tight installation without permanently sealing the joint.

B. Couplings: Couplings shall be used only where shown on the drawings or where approved in writing by the Engineer. The Contractor shall provide a description of and exact location of any couplings used. All couplings shall be solid sleeve type PVC couplings of the same specification and material as the new main line.

Flexible couplings will normally not be acceptable and only to be used with SWSD written approval. If used without approval, contractor will be required to remove and replace coupling with approved type and material. If approved, they shall consist of a rubber gasket or boot, stainless steel shear ring, and 300 series stainless steel tightening bands. The coupling shall conform to requirements of ASTM C425 or approved equal.

C. Fittings: Fittings shall be of the same material and to the same requirements, including coatings and linings, as the pipeline in which they are installed.

The fittings shall be standard manufactured form with the same type of joint as the pipe.

D. Grout: Grout shall be a non-shrink type with aluminum filings; grouts with iron filings are not acceptable. Grout shall be “Five Star Grout,” “Embeco Grout” or equal. The Contractor may substitute a 2-component, 100% solids epoxy resin (Sikadur Hi-Mod LV) for the specified grout.

Grout used for sealing service connections shall be a 2-component, waterproof epoxy grout specifically manufactured for this application. The grout shall adhere to any of the dissimilar materials.

E. Sealants: Sealants used on manholes or pipe connections shall be equal to SIKAFLEX-la, a one component polyurethane base, elastomeric sealant. When required due to moisture or immersion, provide SIKAFLEX 429 primer for application onto the substrate according to manufacturer’s recommendation.

7.2.4 SEWER SERVICE LINES: Sewer service lines, including joints and plugs, shall be constructed of materials AWWA C-900, Class 200 DR 14. Sewer service lines shall connect to the sewer main at either a tee or full body wye, unless specifically permitted by the Engineer, then the Contractor will be allowed to use saddles.

Saddles shall be manufactured of the same materials as the sewer pipeline or of PVC. Saddles shall provide for a right-angle entry into the sewer main. The saddle shall be contoured to fit the sewer main pipe and shall be permanently attached thereto with an epoxy glue or stainless steel bands. Saddles shall be specifically constructed to connect the service line to the main line without modification of either. All services shall have tracer wire installed per detail.

All service branches installed for future connection shall be marked at the property line with a 2- inch steel pipe, 6 feet long, buried 3 feet and encased with concrete. Paint exposed pipe green.

7.2.5 CASING PIPE: Where casing pipe is bored and jacked as located on the drawings it shall be full or split casing of smooth, uncoated welded steel pipe with not less that ¼” thick walls and free of obstructions. The interior diameter of the casing pipe shall not vary more than 1 inch from the inside diameter specified. Joints shall be made by butt-welding the pipe sections before jacking in to final location. See Standard Detail W15.

7.2.6 CASING SPACERS: Casing spacers shall be of the projection type, non-metallic spacers constructed of preformed sections of high density polyethylene or an approved equal. The spacers shall be of a sufficient number of projections to adequately support the carrier throughout the installation process and in service. Each casing spacer shall be capable of providing support for the carrier pipe in service at a maximum spacing of 10 feet. Calculations shall be provided showing that the casing spacer will support the service load at the recommended spacing, including a factor of safety of two (2). Carrier pipe joints shall be installed with self-restraining casing spacers at each joint. See Standard Detail W14.

Restraining casing spacers at joints shall provide axial thrust restraint to prevent pipe joint separation during and after installation and during removal. They shall also provide dielectric insulation between carrier pipe and the casing and facilitate installation of the carrier pipe by allowing the carrier pipe to be placed without undue stresses.

Spacers shall be Cascade Manufacturing T304 Stainless Steel (14 Ga.) minimum, Model CCS-ER and CCS-RJ (restrained joint) or approved equal.

7.2.7 URECON INSULATED PIPE: URECON Pipe and Insulated Jacket & fittings shall be C-900 CL 200 PVC. The insulation is to be Urecon “U.I.P.”® void free insulation process, with a suitable outer jacket. Polymer coated, form fitting insulation kits shall be used to insulate elbows, tees and other fittings, according to the manufacturer’s recommendations. The U.I.P. insulation shall be rigid polyurethane foam, factory applied. The insulation shall be a 2- inch void free polyurethane foam

(ASTM D1622) with a compressive strength of 19 to 23 lbs/sq-in (ASTM D 1621) and has a closed cell content of 90% minimum. DIP pipe and insulation shall be wrapped in an outer jacket of 22 gauge Aluminum Spiwrap.

Heat tracer wire shall be provided with the insulated DIP pipe that is continuous for the length of the insulated pipe. Heat tracer wire will be capped at both ends before pipe enters the ground for its burial run.

7.2.8 FLEXIBLE PIPE JOINTS: All pipes entering buildings, passing through concrete walls, bridge abutments, or other structures shall have a Flex Tend joint installed within 3-feet of the wall. The Flex-Tend joint shall be the same size as the main line piping, Double Ball, Mechanical joint by Mechanical Joint. The mechanical joint connects with the buried DIP on one end and the other end connects with the wall spool installed in the wall of the structure. For Bridge abutment penetrations the pipe connects to a Plain End section of URECON pipe with a Mega-Lug. Flex Tend shall be a Single Ball Model for 8-inch expansion from EBAA Iron or approved equal for Bridges. Flex-Tend shall be a Double Ball Model for 8-inch expansion from EBAA Iron or approved equal for entrances into buildings and other structural walls.

SECTION 7.3 EXECUTION

7.3.1 A. GENERAL INSTALLATION REQUIREMENTS: Each pipe length and fitting interior, interior surface of bells, and exterior surface of spigots shall be cleaned of all foreign material before placing it in the trench and shall be kept clean all times thereafter. Each item must also be examined for cracks and other defects before installation.

Pipe shall be cut, only whenever necessary, to conform to location of manholes or connections. All cuts shall be straight, true, and at right angles to the axis of the pipe unless otherwise noted or directed by the Engineer. The cutting process shall leave a smooth end without damaging the pipe. 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 subject to the Engineer's approval.

Pipe laying shall proceed upgrade with the spigot ends of pipe pointing in the direction of the flow, unless otherwise approved by the Engineer. Each pipe length shall be laid true to line and grade in such manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets to the flow line. Pipe shall be laid in a de-watered trench and shall not be used for draining water from the trench.

Whenever the pipe is left unattended or pipe laying is not in progress, temporary plugs shall be installed at all openings. Temporary plugs shall be watertight and of such design as to prevent debris and animals from entering the pipe. All temporary plugs shall be subject to approval of the Engineer.

The Contractor shall obtain from each pipe manufacturer complete installation instructions. The Contractor shall provide the Engineer with 1 copy of those instructions and shall have additional copies at the site of the work. The Contractor shall install the materials in accordance with the manufacturer's recommendations. If there is a conflict between the Contract Documents and the manufacturer's instructions, the Contractor shall obtain resolution from the Engineer before proceeding with the work.

Maximum depth of sewer mains is to be 12-feet and minimum depth is to be 5-feet unless otherwise approved in writing by the SWSD Engineer.

A District approved copy of the project plans, drawings and specifications shall be kept on the job site at all times during construction. If either the contractor or the District Engineer, as work progresses, finds any discrepancies between the plans, drawings, and specifications and the physical conditions, the discovering party shall inform the other party immediately in writing. Any work done after such discovery will be done at the contractor's expense. Any deviations from the approved plans and

additional compensation to the contractor shall be authorized in writing by the District Engineer along with copies to the District and the District. The drawings shall show the existing utilities to the best of knowledge, based on the best current information, and are schematic in nature. Final staking may not reflect the changes due to existing utilities. These conditions do not constitute design changes and are not extras.

Piping shall be laid to the lines and grades indicated on the approved drawings. The pipe shall be laid with straight and true alignment. No lateral or vertical deflection will be allowed. Lateral displacement of the pipe shall be prevented during bedding operations. Pipe shall not be laid in water, or under unsuitable weather or trench conditions.

All pipe laid in the District shall be laid with a properly calibrated self leveling laser. The contractor shall be responsible for having both a laser and target to lay the pipe, and a transit with rod set up on each and every section of pipe to be laid so the SWSD Engineer can periodically check grade and alignment. No batter boards or string lines will be allowed.

B. VIDEO INSPECTION

The contractor shall be required to video all sewer mains proposed for replacement and/or relocation prior to commencement of construction to locate and record all sewer service taps, including 1 MH upstream from the upper most MH from the proposed project and 1 MH below the lowest MH from the proposed project prior to construction. The camera can be sent through the line with the assistance of a high pressure sewer jet machine with the water turned on to de-water the sewer line so as to be able to see each tap that may be in a low area. A copy of the log record and electronic video shall be provided to the District prior to starting the work on each section of line to be replaced.

All new sewer lines to be accepted by the District for ownership and maintenance shall be televised by the Contractor. A copy of the log record, report and electronic video shall be provided to the District upon completion of the work on each section of new line installed. The lines shall be videoed when the District has been notified by the contractor that all work on the main sewer line installation is complete. The main sewer line shall be re-videoed before the expiration of the contractors two year maintenance bond. The contractor shall bear all costs incurred in correcting deficiencies found during the video inspection, including the cost of additional video inspection required to verify correction of noted deficiencies.

C. LINE LOCATOR TAPE:

Tape shall be installed 2-feet foot above all sewer lines. The tape shall be colored polyethylene with a metalized core.

7.3.2 INSTALLATION OF PVC PLASTIC PIPE:

A. Pipe Laying: No deflection in the joints shall be allowed. All pipe shall be fully supported by the full length of pipe barrel without support by the bell mounding.

B. Jointing the Pipe: The outside of the spigot and the inside of the bell shall be thoroughly wiped clean. Set the rubber ring in the bell with the marked edge facing toward the end of the bell. Lubricate the spigot end using a thin film of the manufacturer-supplied lubricant. Push the pipe spigot into the bell. Position the completed joint so that the mark on the pipe end is in line with the end of the bell.
Bevel the end of the pipe with a beveling tool after the pipe is field cut. Place a clearly visible position mark at the correct distance from the end of the field-cut pipe.

C. Connection of PVC Pipe to Concrete Manhole Base: The PVC pipe shall be connected to the manhole base by a Kor-N-Seal boot or approved equal inserted and held in place by an internal expanding clamp as detailed on the Drawings. See Standard Detail S01.

D. Service Lines Sub outs: Stub-outs for future service connection must have prior approval by the District Manager and shall be 4 or 6 inches in diameter. An full body "wye" shall be used for all

future service line stub-outs unless approved otherwise by the District Engineer. Stub-outs shall be installed at the stations indicated on the approved plans for future service connections. Addition or deletion of stub-outs during construction must be approved by the District Engineer. Stub-outs shall be positioned 45 degrees above the horizontal and connected to the service line stub using a 45 degree vertical bend. Stub-outs shall be brought to the surface using the same material and shall terminate at least one foot above the surface. Marker posts in other areas shall terminate within one foot of the ground surface and have a cast iron top. All stub-outs shall be accurately located on the record drawings by "swing ties" to both the upstream and downstream manholes. All stub-outs reserved to future use shall be plugged with a removable, gasketed water tight plug. All fittings and pipe used for future services shall be C-900 CL 200 PVC. The contractor shall hand tamp the bedding and backfill under every "wye" branch after installation.

Sanitary sewer service lines shall be located downstream from or below grade of as well as a minimum of 10 feet horizontal distance from any water lines and a minimum of three feet from any manhole or structure. The service connection must be observed by the District Engineer and documented on the plans kept in the field. Service charges shall begin once the stub-out has been connected to the building sewer service line.

The contractor shall be responsible for locating existing services including videoing the system, and connecting the services to the new main sewer line. The connection shall be made with a full body "wye". In special circumstances the District Engineer may approve the use of a "Tee" saddle w/ rubber gasket approved by the District, drilling the main with a 4-1/2 inch hole saw, and securing the saddle with two stainless steel clamps. Since the service lines will vary in size and material, the contractor shall have on hand a variety and range of all C-900 CL 200 fittings and pipe required to reconnect the services in a timely manner. The contractor shall hand tamp the bedding and backfill under every "Tee" branch after installation.

E. Insulation: All pipelines in roadways where snow will be removed or there is a likelihood of deep frost penetration shall have a minimum cover of 5 feet measured from the top of the pipe. Pipe lines in other areas shall have a minimum cover of 5 feet. All pipelines with insufficient cover, (less then 5-foot), shall be insulated in a box on top of and on both sides with 2 inch blue board insulation. Two inches of insulation shall be required for every two foot of inadequate cover. The acceptable thickness of insulation shall be bedded in pea gravel a minimum of 2 inches top and each side, and the bottom uniformly supported to prevent breakage. 2 inches of pea gravel shall be hand placed over the top of the insulation. All seams shall be securely taped with duct tape or equivalent. Under no circumstances shall there be less than four feet of cover over any pipeline. See Standard Detail W11.

F. Abandoning Sewer Mains: The contractor shall be responsible for abandoning the existing sewer main as the new line is installed or after the new system is installed. The contractor shall clean and remove debris in the system to be abandoned, plug both ends of old sewer main, remove the top, rings, cover, and 7 feet of any manhole material, including the base if necessary, fill the manholes from the invert to 24 inches from finish grade with compacted flow fill to 95% density, compact the remaining 24 inches with Class 6 road base to 95% density, complete the surface restoration as required, and deliver any reclaimed materials to the District as directed.

7.3.3 PROTECTION OF TREATED WATER PIPELINES: Whenever any sewer line is crossed such that they are above and less than 18 inches apart from the water line, the sewer line shall be installed with one full 20 foot stick of Class 150 PVC (AWWA C900) with solid sleeves and transition gaskets. The C900 shall be centered over the water line. The waterline shall also be centered under the sewer line. When a sewer line is below the waterline and is less than 18 inches apart, the water line and sewer line shall be centered over each other so that the joints are as far as possible apart; the sewer line does not have to be in C900 for this situation. See Standard Detail W13.

7.3.4 FLUSHING AND TESTING SEWER PIPELINES:

A. Pipeline Flushing: The Contractor shall flush the pipelines, as the work progresses to insure

that earth, sand, rocks or other foreign materials are removed from the interior of the pipeline.

B. Alignment and Grade: Sewer pipelines will be inspected by video to determine whether any displacement of the pipe has occurred after the trench has been bedded to final grade. Video inspection will include a report narrating the results of the video inspection. The video inspection shall be in electronic format and is the responsibility of the Contractor.

C. Leakage: Air tests for water tightness shall be made by the Contractor in the presence of the Engineer. The Contractor will use equipment specifically designed for air testing sewers. The air test shall be made when the sewer is clean and lateral services properly plugged. The line shall be plugged at each manhole with pneumatic balls and low pressure air may be introduced through either end. At least two (2) minutes shall be allowed for the air temperature to stabilize, then the internal pressure shall be allowed to drop to the test pressure of 5 psig. At this point the internal line pressure is monitored. The line pressure shall not drop more than 0.5 psig or to 4.5 psig in less time than specified in the table or the pipe fails the test and shall be repaired and retested. The Contractor is responsible for locating the leaks, repairing them, and re-testing the line.

Minimum Duration For Air Test Pressure Drop

Pipe (in)	Time (min)
6	4.0
8	5.0
10	6.5
12	7.5
15	9.5

7.3.5 SEWER SERVICE PIPELINES: When new sewer service pipelines or reconnection of existing services are to be installed as a portion of the Contract, these pipelines are to be installed in accordance with the details set forth on the Drawings and with appropriate installation requirements of this Specification.

The general location of the service lines is shown on the Drawings. Actual locations of these pipelines are to be determined in the field by the Engineer prior to main pipeline construction. It shall be the Contractor's responsibility to notify the Engineer prior to constructing each main pipeline so that the Engineer may have adequate time to determine the final location of each service tee or wye fitting to be installed in the main pipeline. Failure of the Contractor to properly notify the Engineer as noted above will result in the Contractor's removal of any portion of the main pipeline which is necessary to install the fittings in their proper location as determined by the Engineer.

The Contractor will be allowed to install a service saddle to new sewer pipelines only at those locations approved in writing by the Engineer.

Service line saddle connections shall be attached to the main line with an epoxy bonding agent. The bonding agent shall be applied to a clean, dry surface. The connection shall remain dry until the bonding material has set, depending upon environmental conditions. Backfill around the connection shall not be attempted until the material has hardened and been accepted by the District. The Contractor shall repair any damage to the main pipeline lining after the connecting PVC saddle has been bonded to the pipe. The lining shall be repaired with materials furnished by the manufacturer of the main pipeline.

The Contractor shall connect new service pipelines to fitting or saddle with the same material as the existing. Flexible couplings shall be used only to connect dissimilar piping materials or reconnecting

existing services.

7.3.5.1 CLEANOUTS
All service lines shall have a minimum of 1 cleanout, and then one cleanout per one hundred feet of pipeline length or at bends whichever occurs first. A cleanout consisting of a vertical 90˚ tee the diameter of the service line shall be provided at the property line between the building being served and the main line. The upper 24 inches of the vertical riser shall be installed in a ductile iron valve box marked “Sewer” installed at final grade (see Standard Detail S08).

7.3.6 GREASE INTERCEPTORS

7.3.6.1 GENERAL. Because of the impact of grease on the District's lines and treatment plant, grease interceptors are required on establishments preparing or serving food. See Standard Detail S10 for a typical grease interceptor.

All grease interceptors shall be new and the interceptor and its installation shall be in conformance with the latest edition of the Uniform Plumbing Code except as modified herein.

7.3.6.2 REQUIREMENTS FOR GREASE INTERCEPTORS. An approved type grease interceptor complying with the provisions of this section shall be installed in the waste line leading from sinks, drains and other fixtures or equipment in the following establishments: Restaurants, cafes, lunch counters, cafeterias, bars and clubs; hotels, hospitals, factory or school kitchens, or other establishments where grease may be introduced into the drainage or sewage system. Grease interceptors are to be pumped as often as needed. A letter will be sent January 1 of each year requiring a record of pumping, or be subject to the fines described in Appendix A. A grease interceptor is not required for individual dwelling units or for any private living quarters.

7.3.6.3 SPECIFICATIONS AND PROCEDURES FOR GREASE INTERCEPTORS.

A. Plans shall be submitted to and approval obtained from the District prior to the installation of any grease interceptor in any establishment set forth in Subsection 6.2.

B. No grease interceptor shall be installed which has an approved rate of flow of more than 55 gallons per minute, except when specially approved by the District.

C. No grease interceptor shall be installed which has an approved rate of flow of less than 20 gallons per minute.

D. Each plumbing fixture or piece of equipment connected to a grease interceptor shall be provided with an approved type flow control or restricting device installed in a readily accessible and visible location in the tail piece or drain outlet of each such fixture. Flow control devices shall be so designed that the total flow through such device or devices shall at no time be greater than the rated capacity of the interceptor. No flow control device having adjustable or removable parts shall be approved.

E. Each grease interceptor required by this section shall have an approved rate of flow which is not less than that given in the District's EQR schedule for the total number and size of fixtures connected thereto or discharging thereunto. The total capacity in gallons from fixtures discharging into any interceptor shall not exceed 2.5 times the flow rate of the subject interceptor.

Any grease interceptor installed or located in such a manner that the inlet is more than 4 feet lower in elevation than the outlet of any fixture discharging into such interceptor, shall have

an approved rate of flow which is not less than 50 percent greater than that given in the District's EQR schedule.

F. No more than 4 separate fixtures shall be connected to or discharged into any 1 grease interceptor.

G. For the purpose of this section, the term "fixture" shall mean and include each plumbing fixture, appliance, apparatus or other equipment required to be connected to or discharged into a grease interceptor by any provision of this section.

H. Each grease interceptor shall be vented as required by the Uniform Plumbing Code and each fixture discharging into a grease interceptor shall be individually trapped and vented in an approved manner, expect that an approved type grease interceptor may be used as a fixture trap for a single fixture when the horizontal distance between the fixture outlet and the grease interceptor does not exceed 4 feet and the vertical tail pipe or drain does not exceed 2 feet.

I. Each grease interceptor shall be installed and connected so that it shall be at all times easily accessible for inspection, cleaning and removal of the intercepted grease.

J. Interceptors shall be maintained in efficient operating conditions by periodic removal of the accumulated grease. No such collected grease shall be introduced into any drainage piping, public or private sewer and it shall be disposed of in an environmentally safe manner.

K. Each grease interceptor shall be constructed of durable material satisfactory to the District and shall have a full size, gas tight cover which can be easily and readily removed.

L. No water jacketed grease interceptor shall be approved or installed.

M. Each grease interceptor shall have an approved water seal of not less than 2 inches in depth or the diameter of its outlet, whichever is greater.

N. No grease interceptor required by this section shall be installed until the type and model of each size thereof has been approved by the District.

O. The District may require such tests as may be necessary to determine the grease collecting efficiency of the various types and kinds of grease interceptors to establish the rate of flow or other rating thereof. Such test requirements may be revised or modified from time to time as may be deemed necessary by the District. A design shall be provided to the District’s Engineer for approval.

P. No grease interceptor shall be installed which does not comply in all respects with a type or model of each size approved and accepted by the District. Whenever it shall come to the attention of the District that any grease interceptor does not so comply, the District shall immediately suspend or revoke such approval.

- END OF SECTION -

SECTION 8 MANHOLES

SECTION 8.1 GENERAL

8.1.1 SCOPE: The work of this section consists of furnishing, installing and testing cast-in-place bases with reinforcement, precast concrete risers, frames, covers, and installation materials, and appurtenances.

8.1.2 REFERENCES:

A. American Society for Testing and Materials (ASTM)

8.1.3 CONTRACTOR SUBMITTALS: Contractor shall submit furnish manufacturer's literature on manholes, joint material, frame and cover, and steps.

SECTION 8.2 PRODUCTS

8.2.1 GENERAL: Manholes shall be constructed of pre-cast concrete riser sections, in accordance with the details shown on the Drawings. The concrete sections shall conform to ASTM C478. The top section required for change of diameter shall be eccentric cone or flat slab if permitted by the Engineer. See Standard Details S01, S02, S03 and S04.

To bring the manhole cover to the correct elevation, the adjustment section of each manhole shall be pre-cast concrete. These rings shall not be less than 6 inches wide and furnished in heights to allow for 1-inch adjustment. Maximum adjustment height shall not exceed 12 inches.

Stub outs for future planned connections shall be provided at manholes when shown on the Drawings. Stubs shall be sealed with a removable watertight plug.

Gaskets for connecting PVC pipe to manhole sections shall be specifically manufactured for that purpose. The gasket shall be provided by the pipe manufacturer.

8.2.2 JOINTS: Precast manhole joints shall be made watertight with Ram-Nek material or equal. Diameter of gasket shall be as recommended by the manufacturer.

8.2.3 FRAME AND COVER: The frames and solid covers shall be standard heavy duty Denver Heavy or equivalent and the frame shall be 8 inches high. The covers shall be designed for use in high traffic areas and have an external notch for lifting.

Where required by the District Engineer the contractor shall furnish bolt down frames, bolt down covers, and gasketed lids watertight, as manufactured by D and L Supply (Number E1926 or equal). Aluminum covers are not allowed.

Cover shall have the word "SEWER" clearly cast on its surface.

8.2.4 MANHOLE STEPS: Manhole steps shall be M.A. Industries PS2-PF 6 polymer polypropylene plastic with 1/2 inch grade 60 reinforced steps or approved equal. Manhole steps shall be every one foot and must line up vertically from the bottom section to the cone. Manhole steps shall not be used to lift manhole sections. Maximum Distance from top of lid to first MH step is 18-inches.

8.2.5 GROUT: Grout shall be non-shrink type with aluminum filings; grout with iron filings are not

acceptable. Grout shall be "Five Star Grout," "Embeco Grout" or equal.

8.2.6 CONCRETE: Concrete for cast-in-place manhole bases shall have a 28-day compressive strength of not less than 3,000 psi. The maximum water content shall be 0.5 pounds of water per pound of cement. Entrained and entrapped air shall be between 4 and 9 percent. All reinforcement shall be standard deformed reinforcement conforming to the requirements set forth in ASTM, A615, Grade 60.

SECTION 8.3 EXECUTION

8.3.1 GENERAL: Manholes shall be constructed to conform to the details shown on the Drawings. The invert channels shall be smooth and semi-circular in shape, conforming to the inside of the incoming and outgoing sewer pipelines. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be made gradually and evenly. Where differences in invert elevations exist, sloped flow channels shall be formed so the sewage does not undergo a vertical drop. The invert channels may be formed directly in the concrete of the manhole base. The floor of the manhole outside of the channel shall be smooth and shall slope toward the channels at not less than 1 inch per foot and not more than 2 inches per foot. The manhole covers shall be set with their tops at the ground line, compacted backfill shall be placed around the exposed section as shown on the Drawings. The site shall be graded so that drainage is away from the manhole.

Each joint of the precast manhole barrel shall have at least one continuous gasket placed on the lower ledge before the barrel immediately above is lowered into place.

Maximum distance to first step is18 inches from top of MH ring.

Manholes shall be constructed of precast concrete bases and rings, designed for H-20 traffic loading as shown on the drawings. Four foot inside diameter manholes may be used with 15 inches or smaller pipe and have a minimum wall thickness of 5 inches. Five foot inside diameter manholes must be used for pipe 18 inches or larger and have a minimum wall thickness of 6 inches. Six foot diameter manholes may be required by the District Engineer where applicable. All manhole sections shall incorporate a vertical keyed joint. Manholes shall be coated on the outside with two coats of coal tar paint. The paint shall be Koppers "Bitumastic Super Service Black," Porter "Tarmastic 103," Tnemec "450 Heavy Tnemeco," or approved equal. The inside of the manholes shall be completely sealed with two coats of RHOPLEX AC 630 two part emulsion. The top section shall be a precast concrete eccentric cone with 24 inch opening. Manhole bases shall be precast with integrally cast-in water stop boot. The top of the base section shall be at least 12 inches above the top of the pipe. All other connections to the manhole base shall be made by coring and using a Kor-N-Seal boot or approved equal inserted and held in place by an internal expanding clamp. All openings shall be completely grouted full using a non-shrink grout. Manhole steps shall be M.A. Industries PS-2 PF steps or approved equal. In no case shall the top step be greater than 18 inches from the top of the manhole.

Concrete grade rings shall be precast of the same material as the manhole barrel sections and may be used in frost free areas. Aluminum or cast grade rings must be used in paved areas and in any area where there is a possibility of frozen ground. Regular and beveled plastic grade rings using manufacturers approved mastic can be substituted with the SWSD Engineer’s approval.

Poured in place manhole bases shall not normally be alllowed and when required shall have prior approval by the District Engineer. Only precast manhole bases are approved for use in the SWSD. Poured in place manhole bases must be pre-approved by the District Engineer, and will only be approved in unusual and special instances.

Drop manholes shall not normally be installed and when required must be approved by the District Engineer. See Standard Detail S02.

The distance between manholes shall not be greater than 400 feet for sewers 18 inches in diameter or less. On lines with steep grades, the District Engineer may require manholes at less than 400 foot increments. Spacing may be increased to 500 feet for sewers 21 to 30 inches in diameter. Manholes shall be installed at the end of each line, at all grade changes, size changes or change in alignment. Manholes shall be used at all collector/interceptor sewer intersections. No manholes shall be placed on road shoulders, in narrow ditches or in water courses. All pipes entering a manhole or other structure shall have a flexible joint (Kor-N-Seal).

Manholes shall not be placed where the resulting connection collection lines will have an angle of less than 90 degrees. An additional manhole must be installed so that the resulting angles for each manhole will be greater than 90 degrees.

Precast concrete sections shall be handled carefully and shall not be bumped or dropped. Hooks shall be delivered and installed. All cracked or otherwise defective or substandard units will be marked, rejected and removed from the construction site. Circular precast sections shall be sealed at the joints with an approved rubberneck sealer installed prior to assembly.

Private service taps are not allowed into manholes except at the discretion of the District Engineer.

Only eccentric cone sections will be used.

Precast manhole bases shall be placed on level compacted subgrade (95% modified proctor density) to the grade and alignment shown on the construction drawings. The contractor must place at least 8 inches of 1-1/2 screened rock under the base for leveling and stability. All manholes must be level. Holes for field connections shall be carefully cored or drilled. In no case shall holes be made in manholes with pneumatic hammers or similar devices. After installation of the pipe through the Kor-N-Seal the pipe shall be grouted, filling the annular space between the boot and the pipe with an approved non-shrink grout. Lifting ring holes must be fully grouted with a non-shrinking grout.

Inverts in all manholes shall be formed such that no turbulent flow is allowed. Engineered bases may be required on steep slopes. Inverts shall be designed with at least two tenths of a foot drop through the manhole. Three and four way manholes shall be designed so that inverts with lesser flows shall enter the manhole at an elevation higher than the invert with greatest flow. This elevation shall be approved by the District Engineer. Pre-poured inverts in pre-cast bases shall be smooth and clean. At the direction of the District engineer, additional work may be required on the inverts. The area around the boot and pipe will be grouted with an approved non-shrink grout. Inverts shall be carefully poured and troweled into the shape of the pipes through the manhole. The inverts shall be constructed of 4,000 PSI concrete using Portland type II cement. Side branches shall be connected on as large a radius curve as practicable. All inverts shall be troweled to a smooth clean surface. All manhole bases shall be precast with 6 inches minimum space between the invert of the PVC sanitary sewer pipe and the top of the floor, and reinforced with GR 60 #4 rebar 12 inches each way.

Benches shall be designed so that a good working platform is formed. The troughs shall be formed deep enough to contain the expected wastewater velocity and flow. The troughs shall be designed to accept a video camera 24 inches long and 6 inches in diameter. Unless approved differently by the District Engineer, the troughs should be designed to have vertical walls the same width or wider than the inside pipe diameter.

In frost free areas precast concrete grade rings may be installed between the top of the cone and the manhole frame if necessary. The rings shall be sealed with two parallel strips of approved joint mastic between each layer. No more than 18 inches of grade rings will be allowed. If the manhole must be adjusted more than 18 inches, the eccentric cone shall be removed and the appropriate barrel section added. However, if the tongue and groove of the sections do not match, the entire manhole must be rebuilt. The lid frame shall be sealed to the grade rings with two parallel strips of rubberneck. Metal and plastic grade rings must be used in paved areas and in any area where there is a possibility of frozen ground.

Non traveled areas: manhole cover shall be 4 to 8 inches above finished grade.
Non paved traveled areas: manhole cover shall be 2 to 4 inches below finished grade.
Paved areas: manhole covers shall be 1/2 inch below grade with at least 4 inches of metal manhole riser rings added to cast frame. Additional metal grade rings may be required at the discretion of the District or the District's engineer.

All work performed by the contractor in a SWSD confined space shall be performed according to OSHA permit required confined space regulations.

All new holes required in existing manholes to facilitate installation of additional pipes or replacement of existing pipes shall be core drilled in the manhole wall and base to facilitate a smooth invert transition. A Kor-N-Seal boot shall be installed by the contractor. Holes shall not be made by hammering or jack hammering. All possible areas of leakage shall be grouted with a non-shrink grout. All such connections shall be observed by District personnel or the District Engineer. When required the contractor shall be responsible for installing a new manhole on the existing sewer line. The sewer main must be kept in operation and the sewage bypass pumped if required. The contractor shall uncover the existing main, the District Engineer shall determine the elevation of the invert to be used for the next grade and alignment, the contractor shall cut out the line in a clean manner and the manhole shall be installed according to these specifications and the approved drawings.

Normally a new manhole shall be required when tying into the existing sewer system. In some cases the District Engineer shall instruct the contractor to tie into an existing manhole. Where there is not a line coming into the manhole, the manhole shall be core drilled, a flexible joint manhole coupling with rubber boot, KOR-N-SEAL or approved equal installed. The bench shall be grouted with a non shrink grout to divert the flow into the downstream pipe with a smooth transition that does not create turbulence.

If one pipe is to be abandoned, a plug of two thicknesses of grouted brick and a 6 inches solid plug of non shrink grout shall be installed in the pipe. Existing invert and trough shall be filled with an approved non-shrink grout and benches formed to match existing.

8.3.2 GROUTING: Any opening between manhole walls and pipe made by the Contractor, and lifting holes or as designated elsewhere, shall be closed watertight with grout. The opening shall be of sufficient size to accommodate the pipe, "O"-rings, and grout. The grout shall extend no less than the full width of the manhole barrel. Use grout to make a watertight seal in and around existing pipes which are removed from service.

Channels that have been cut into existing concrete bases shall be smoothed to the specified contour with grout.

8.3.3 TESTING MANHOLES: During the construction of the manholes, the Contractor shall insure that no earth, sand, rocks or other foreign material exists on the joint surfaces during assembly of the sections. The Engineer shall check each manhole to determine whether the manhole fulfills the requirements of the Drawings and Specifications. The Visual Examination and Vacuum Test are required.

A. Visual Examination: The Engineer shall visually check each manhole, both exterior and interior, for flaws, cracks, holes, or other inadequacies which might affect the operation or watertight integrity of the manhole. Should any inadequacies be found, the Contractor shall make any repairs deemed necessary by the Engineer.

B. Vacuum Testing: All pipes entering and exiting the manhole shall be temporarily plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into the manhole.

The test head shall be placed at the top of the manhole and the seal inflated in accordance with the

manufacturer's recommendations.

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

The manhole will be declared unacceptable if the time to drop from 10-inches of mercury to 9-inches of mercury is less than the time shown in the following table:

Manhole Depth (feet)	**Test Time (seconds)**		
	4 ft. Diameter	**5 ft. Diameter**	**6 ft. Diameter**
10 ft. or less	60	75	90
>10 ft. but < 15 ft.	75	90	105
>15 ft. but < 25 ft.	90	105	120

The minimum test time shall be one minute. If the manhole fails the initial tests, the manhole shall be repaired and re-tested until a satisfactory test is obtained.

8.3.4 EXISTING SANITARY MANHOLES ABANDONED IN PLACE: Existing manholes to be abandoned in place shall be backfilled with squeegee material, grout plugs of abandoned inflow and outflow pipes are not required. The lid and grade rings of the manhole shall be removed and disposed of.

- END OF SECTION -

SECTION 9 CONNECTION PERMIT REQUIREMENTS

As stated by the Rules and Regulations dated October 2013, the following items are specified by the District for final inspections approval. All new, relocated, or replaced service lines are required to use the following guidelines.

THESE ITEMS SHALL BE INSPECTED BY DISTRICT PERSONNEL WHEN INSTALLATION IS COMPLETE & BEFORE THE BUILDING IS OCCUPIED.

Section 9.1 SERVICE LINE SPECIFICATIONS

9.1.1 SEWER SERVICE LINE

C-900 Class 150 or SDR 26 water pipe must be used from the tap into the structure. At least 5 feet of cover over line is required, with at least 6 inches of road base compacted under the line and 6 inches of road base compacted on top of the line. District personnel shall perform a line inspection, prior to backfill. A clean out is required every 100 feet along the service line, if it is over 100-feet in length.

9.1.2 WATER SERVICE LINE

Use only Soft K-type copper line with compression fittings. A minimum of 8 feet of cover over line is required, with at least 6 inches of road base compacted under the line and 6 inches of road base compacted in top of the line. The line inspection shall be performed by District personnel prior to backfill. The line must be pressure tested to 150 PSI or 1.5 times the static pressure in the system at the site for 1 hour. Pressure tests are to be completed by a contractor or plumber with District personnel present.

Section 9.2 PLUMBING MATERIALS SPECIFICATIONS

Customers who are obligated to obtain a connection permit from the TOSV due to an alteration, renovation of, or an addition to an existing property, whether or not the installation, addition, or relocation of any plumbing fixtures is required for the proposed, are required by the Rules and Regulations to have or install all plumbing items, as listed below.

9.2.1 WATER METERS

Residential Meters are required to be a Neptune T-10 size 5/8 inch to 2 inch Meter, with ProRead AutoDetect register. Radio unit must be Neptune wall mount “MIU”, wire from register to wall unit must be 3-wire. Readout located outside on the side of the house closest to the driveway. Meter Remote wiring must have water proof connections.

Commercial Meters and meters larger than 2 inches are required to be a Neptune TruFlo Compound meter with ProRead AutoDetect with Remote Readout similar to Residential meters above.

9.2.2 PRESSURE REDUCING VALVE

Watts 25AUB-Z3 with strainer or equal. PRV must be set at no greater than 50 PSI.

9.2.3 BACKFLOW PREVENTION VALVE

Hersey brand, model FRP-II or Febco brand, model 825Y or 860Y for 3/4 inch to 2 inch lines, Hersey brand, model 6CM for 2.5 inches to 10 inches lines.

9.2.4 PLUMBING

See Standard Details W18 & W19 for installation schematic.

STANDARDS FOR FIXTURES, METER, PRV and BACKFLOW INSTALLATION

- All potable and irrigation water services shall be metered.
- Installation of water meters and remotes and maintaining access to them will be the responsibility of the property District. All meters installed will meet the standards as specified by the SWSD.
- All meters, PRV's, and backflow devices shall be installed in the mechanical room, which is required to have a floor drain. The device must be installed in the horizontal position, 12 to 30 inches above the floor and 12 inches away from the wall.
- All meters will be set as close as possible to the point where the service enters the premises.
- Meters shall be protected from freezing.
- All meters will be installed horizontally no more than 36 inches above the floor or work surface with a minimum clearance of 12 inches above the meter.
- The meter shall have a remote reader installed near the front of the home or driveway, at a minimum height of 48 inches above grade and a maximum height of 80 inches or as determined by Water Department personnel.
- Meters 2 inches and larger will be Neptune single register compound meters with bronze flanges using brass nuts and bolts or stainless steel nuts and bolts.
- The meter will be the same size as the domestic service line. A 3/4 inch meter is the smallest meter allowed.
- Toilets are to be 3.5-gallon maximum flush type.
- All faucets are to have aerators in the spigots (water saver type) with a flow capacity of 2.5 gallons per minute.
- Shower heads are to have water savers in them and deliver no greater than 2.5 GPM at 50 PSI.

- END OF SECTION -

SNOWMASS WATER AND SANITATION DISTRICT
CHLORINATION/ BACTERIOLOGICAL
HYDROSTATIC AND LEAKAGE PERFORMANCE SUMMARY

Location/Name of Project:_____
Contractor:_____

PRESSURE AND LEAKAGE TEST

Pipe Material:_____ Pipe Length:_____ft.
PSI Test At:_____ For:_____hrs.
Leakage:_____gal/hr (per 1,000 feet of pipe)
Test Pass/Fail:_____
Test Taken By:_____ Date/Time:_____

DISINFECTION OF WATER LINES

Chlorination Method Used:_____
Chlorine Contact Time:_____ Chlorine Rate:_____mg/l
Flushing Time:_____ Chlorine Residual:_____mg/l
Test Taken By:_____ Date/Time:_____

BACTERIOLOGICAL TEST

Sample Location:_____
Colorado State Test Number:_____
Bacterial Results:_____ Pass/Fail:_____
Taken By (Contractor):_____ Date/Time:_____
SWSD/Engineer Representative:_____
State Laboratory Utilized:_____
Test Certification Received:_____ Date/Time:_____

PROCEDURE:
TEST PRESSURE = 1.5 x WORKING PRESSURE (MIN. 150 PSI)
TEST DURATION = 2 HOURS
ALLOWABLE PRESSURE LOSS = 5 PSI

Allowable Leakage in Gallons per Hour per 1000 ft of DIP

Test Pressure PSI	Pipe Size (inches) 6	8	10	12	14	16	18
150	0.50	0.66	0.83	0.99	1.16	1.32	1.49
175	0.54	0.72	0.89	1.07	1.25	1.43	1.61
200	0.57	0.76	0.96	1.15	1.34	1.53	1.72
225	0.61	0.81	1.01	1.22	1.42	1.62	1.82
250	0.64	0.85	1.07	1.28	1.50	1.71	1.92
275	0.67	0.90	1.12	1.34	1.57	1.79	2.02
300	0.70	0.94	1.17	1.40	1.64	1.87	2.11

Snowmass Water & Sanitation District

Sanitary Sewer Manhole Leakage Test

Project: ____________ Date: ____________

Developer: ____________ Location: ____________

Contractor: ____________ ____________

Vacuum Test Method

Manhole Designation:	______	**Results (circle one)**		**Pass**	**Fail**
Manhole Diameter:	ft.	Allowable Loss:	1 inch HG		
Time Started:	______	Test Vacumm Start:	______ in Hg		
Time Complete:	______	Test Vacumm Finish:	______ in Hg		
Test Duration:	______	Vacumm Loss:	______ in Hg		

Vacuum Test Method

Manhole Designation:	______	**Results (circle one)**		**Pass**	**Fail**
Manhole Diameter:	ft.	Allowable Loss:	1 inch HG		
Time Started:	______	Test Vacumm Start:	______ in Hg		
Time Complete:	______	Test Vacumm Finish:	______ in Hg		
Test Duration:	______	Vacumm Loss:	______ in Hg		

Vacuum Test Method

Manhole Designation:	______	**Results (circle one)**		**Pass**	**Fail**
Manhole Diameter:	ft.	Allowable Loss:	1 inch HG		
Time Started:	______	Test Vacumm Start:	______ in Hg		
Time Complete:	______	Test Vacumm Finish:	______ in Hg		
Test Duration:	______	Vacumm Loss:	______ in Hg		

Vacuum Test Method

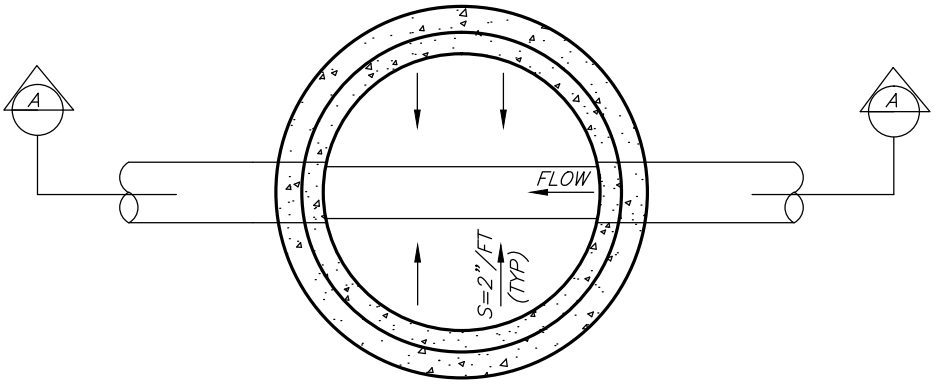
Manhole Designation:	______	**Results (circle one)**		**Pass**	**Fail**
Manhole Diameter:	ft.	Allowable Loss:	1 inch HG		
Time Started:	______	Test Vacumm Start:	______ in Hg		
Time Complete:	______	Test Vacumm Finish:	______ in Hg		
Test Duration:	______	Vacumm Loss:	______ in Hg		

Vacuum Test Method

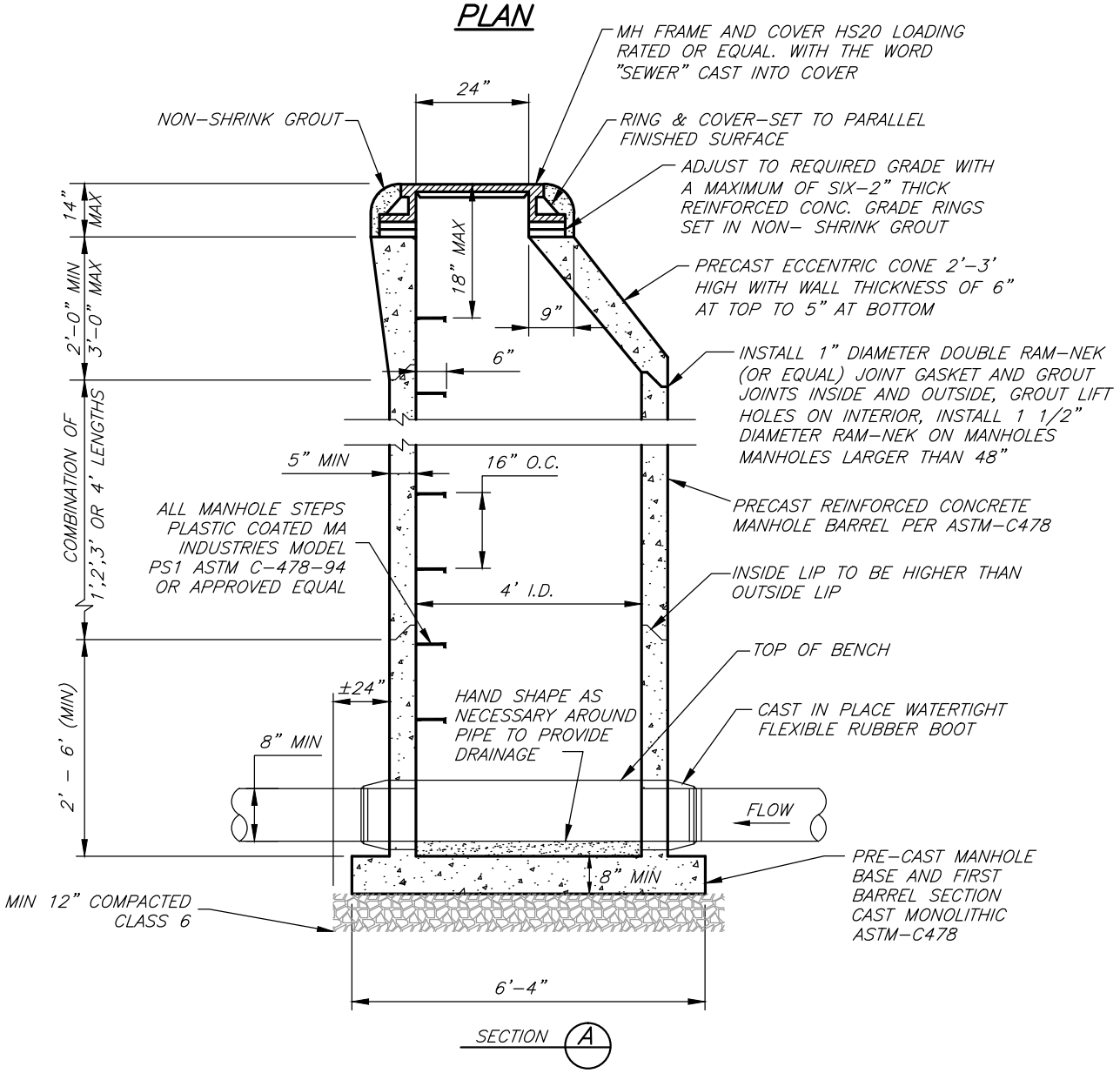
Criteria:	Time (sec)	Criteria
4 Ft MH		
0 - 10 Ft	60	Test starts at 10 inch HG
10 - 15 Ft	75	Allowable loss is 1 inch HG
15 - 20 Ft	90	

Comments: ____________

Owner/Engineer: ____________ **Contractor:** ____________



PLAN



STANDARD MANHOLE

GENERAL NOTES:

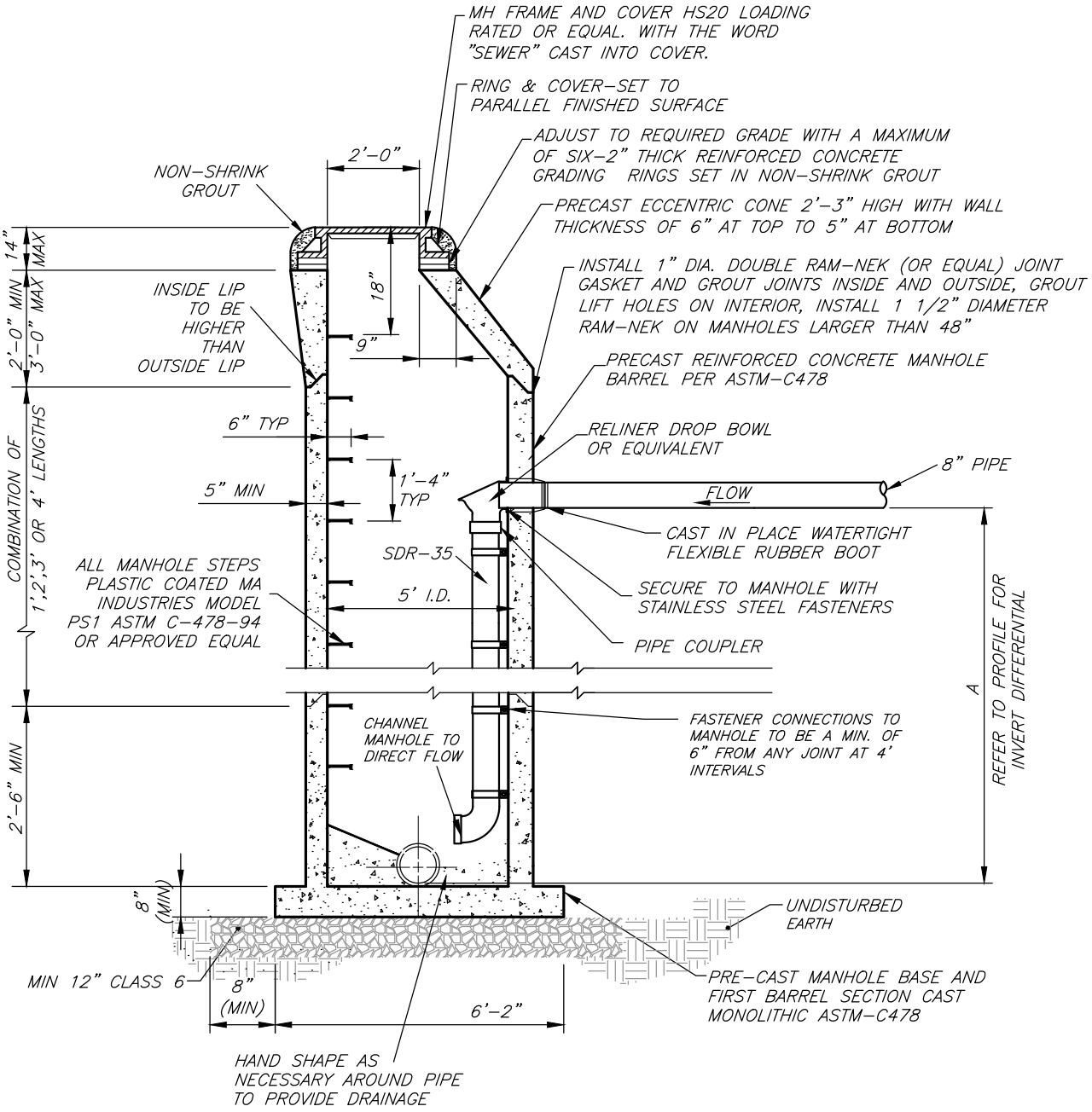
1. ALL CONCRETE WORK SHALL COMPLY WITH LATEST CI–318 SPECIFICATIONS
2. USE 5' I.D. WHEN PIPE SIZE 15"– 24".
3. SET ECCENTRIC MANHOLE RIM SECTION SO THAT THE RIM IS AWAY FROM THE EDGE OF ASPHALT AS MUCH AS POSSIBLE.

DETAIL "S01"

Prepared By: SGM SNOWMASS WATER & SAN. DISTRICT Date: 10/03/13 By: FBLACKWELDER

File: I:\2013\2013–321 SNOWMASS W&SD\001 MISCELLANEOUS ENGINEERING SERVICES\09 RULES AND REGULATIONS\DETAILS\DWG\S01–STDMH–DA

NOTE: DROP LINE TO BE ORIENTED OPPOSITE MH RUNGS WITHIN MH.

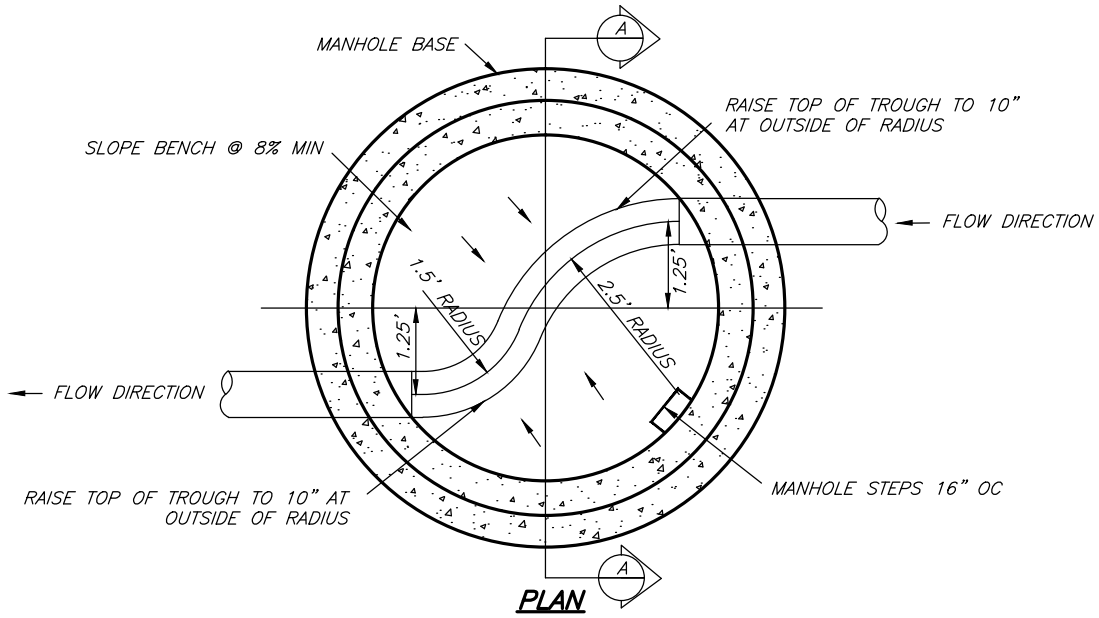


DROP MANHOLE

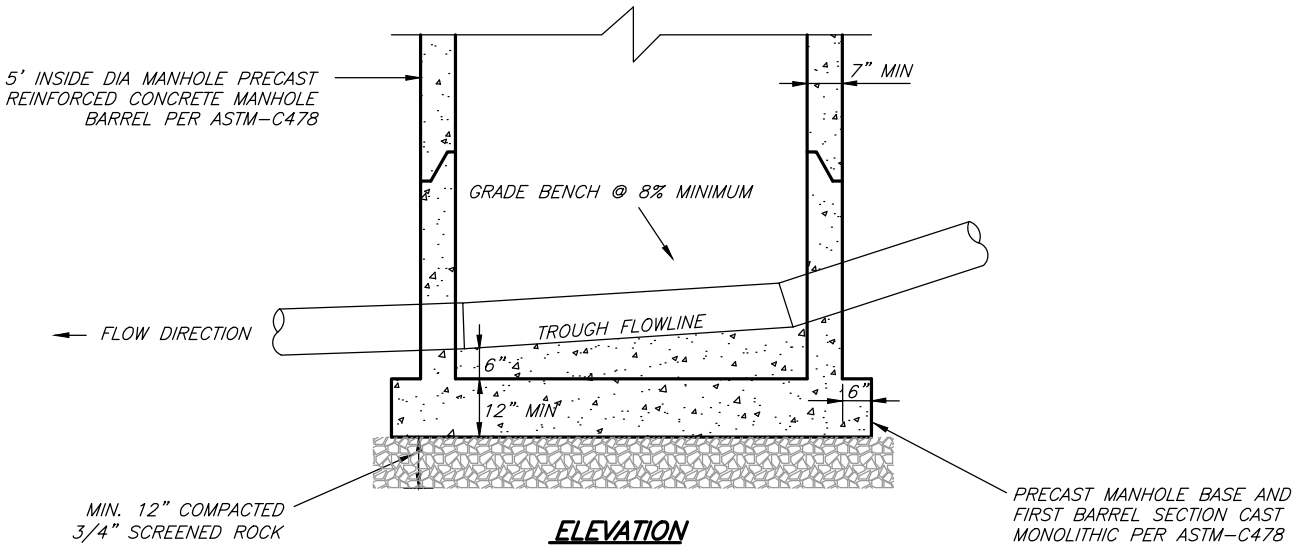
GENERAL NOTES:

1. ALL CONCRETE WORK SHALL COMPLY WITH LATEST CI–318 SPECIFICATIONS
2. A DROP MANHOLE IS REQUIRED WHEN THE "A" DIMENSION SHOWN ABOVE EXCEEDS 18"
3. SET ECCENTRIC MANHOLE RIM SECTION SO THAT THE RIM IS AWAY FROM THE EDGE OF ASPHALT AS MUCH AS POSSIBLE.

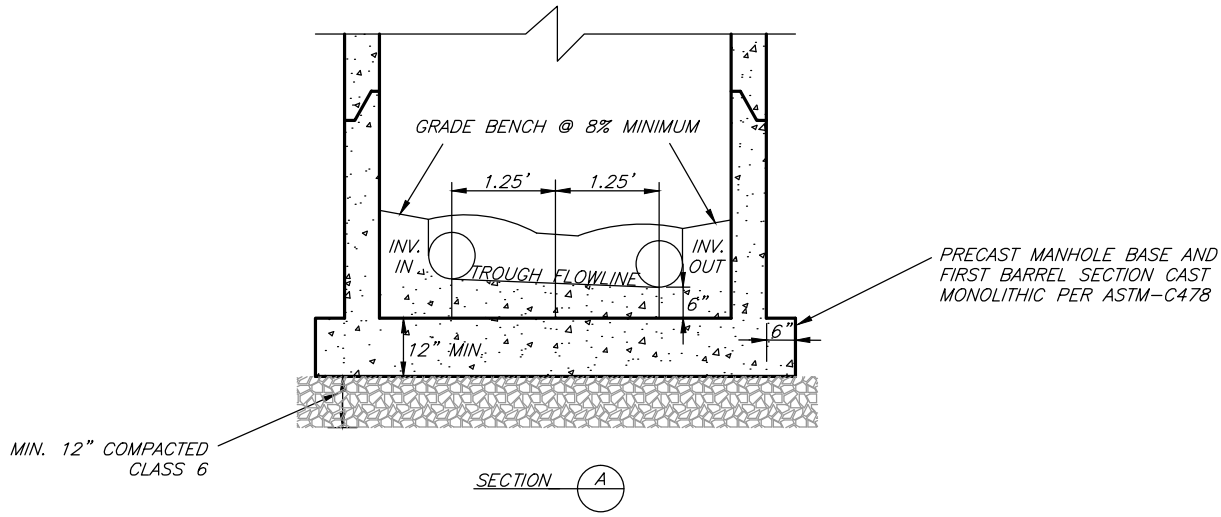
DETAIL "S02"



PLAN



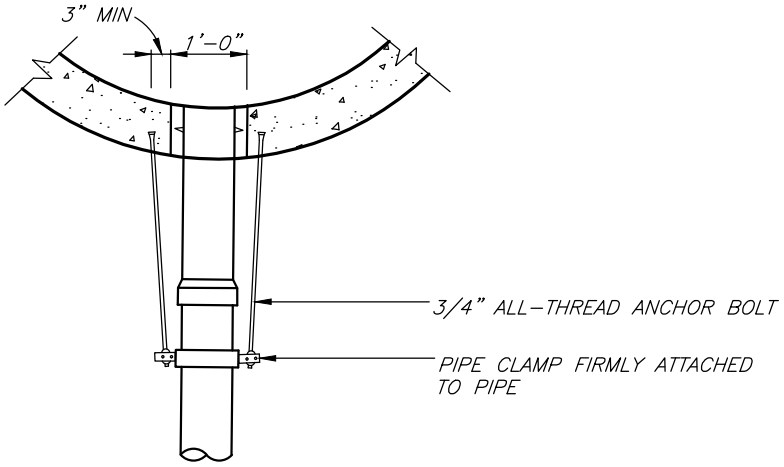
ELEVATION



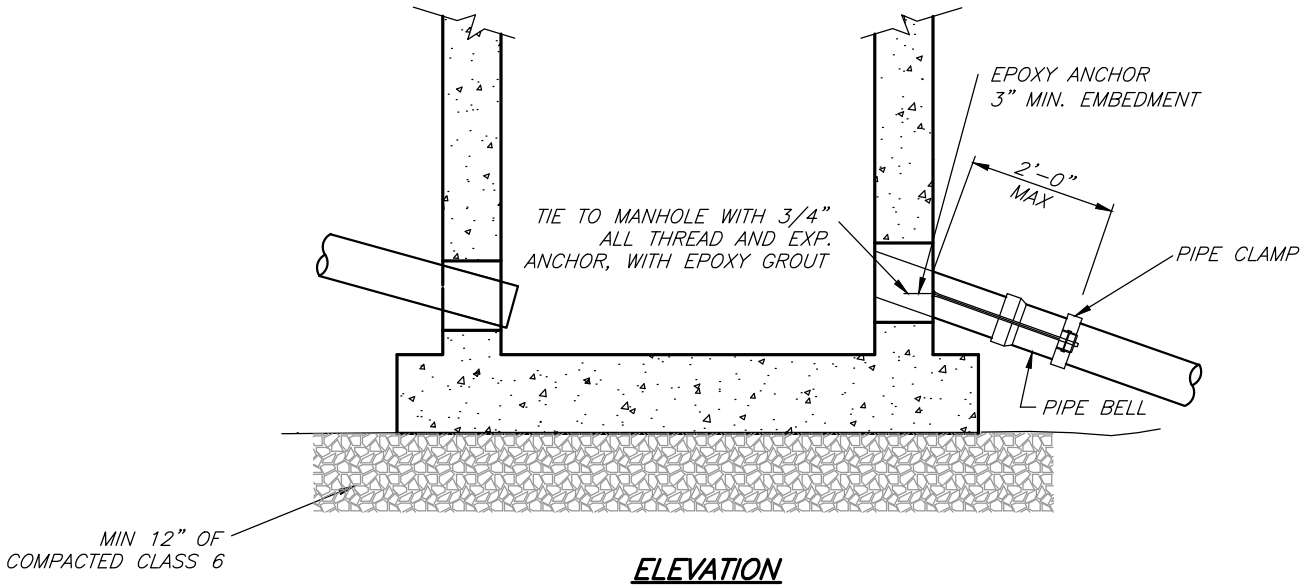
ENERGY DISSIPATOR MANHOLE

NOTE: SET ECCENTRIC MANHOLE RIM SECTION SO THAT THE RIM IS AWAY FROM THE EDGE OF ASPHALT AS MUCH AS POSSIBLE.

DETAIL "S03"



TOP VIEW



ELEVATION

ANCHOR MANHOLE

NOTE: ANCHOR MANHOLES ARE REQUIRED WHERE PIPE SLOPE EXCEEDS 20% EXITING THE MANHOLE ONLY

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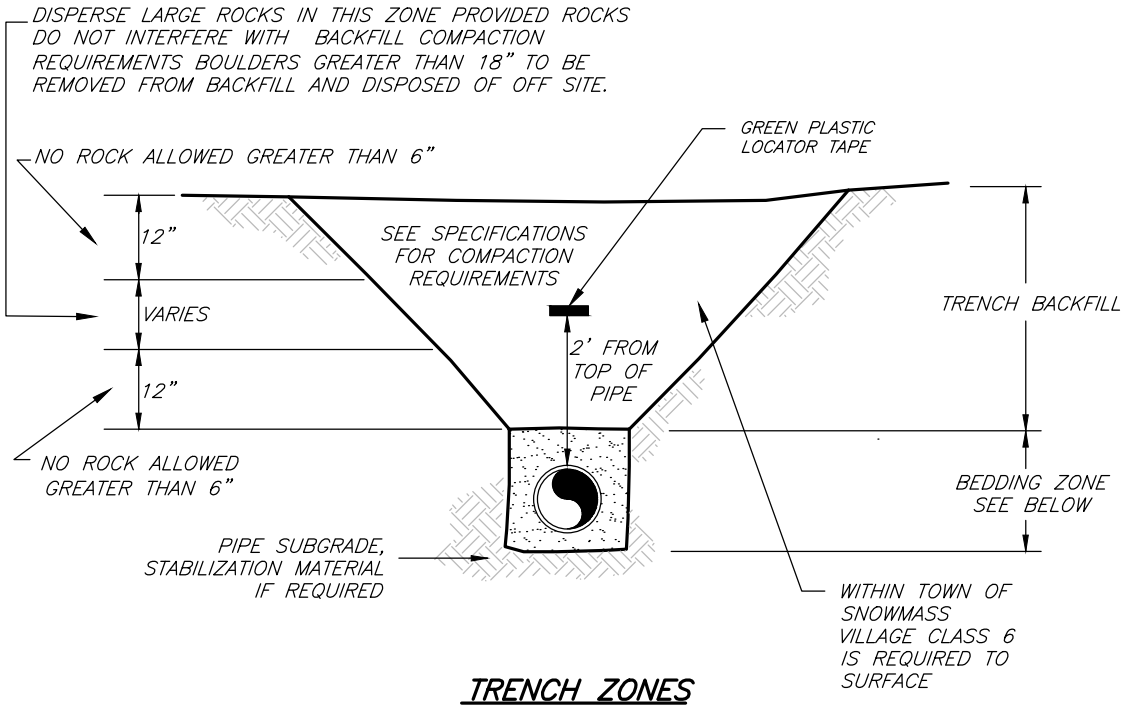
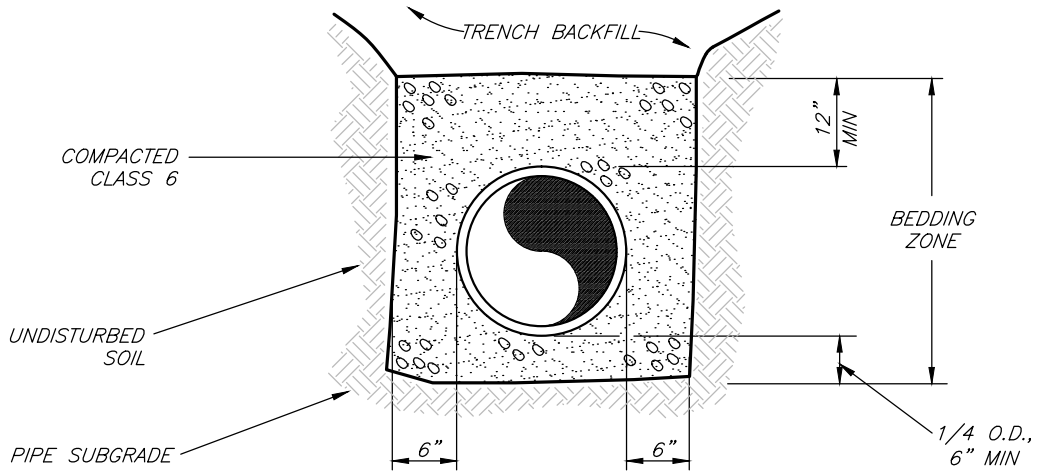
DETAIL "S04"

Prepared By: SGM SNOWMASS WATER & SAN. DISTRICT Date: 10/03/13 By: FBLACKWELDER



TRENCH ZONES



PIPE BEDDING ZONE

SEWER PIPE BEDDING

NOTE: 3/4 SCREENED ROCK IN WET AREAS IN PLACE OF CLASS 6 ONLY APPROVED AS NEEDED

DETAIL "S05"

Prepared By: SGM | SNOWMASS WATER & SAN. DISTRICT | Date: 10/03/13 By: FBLACKWELDER

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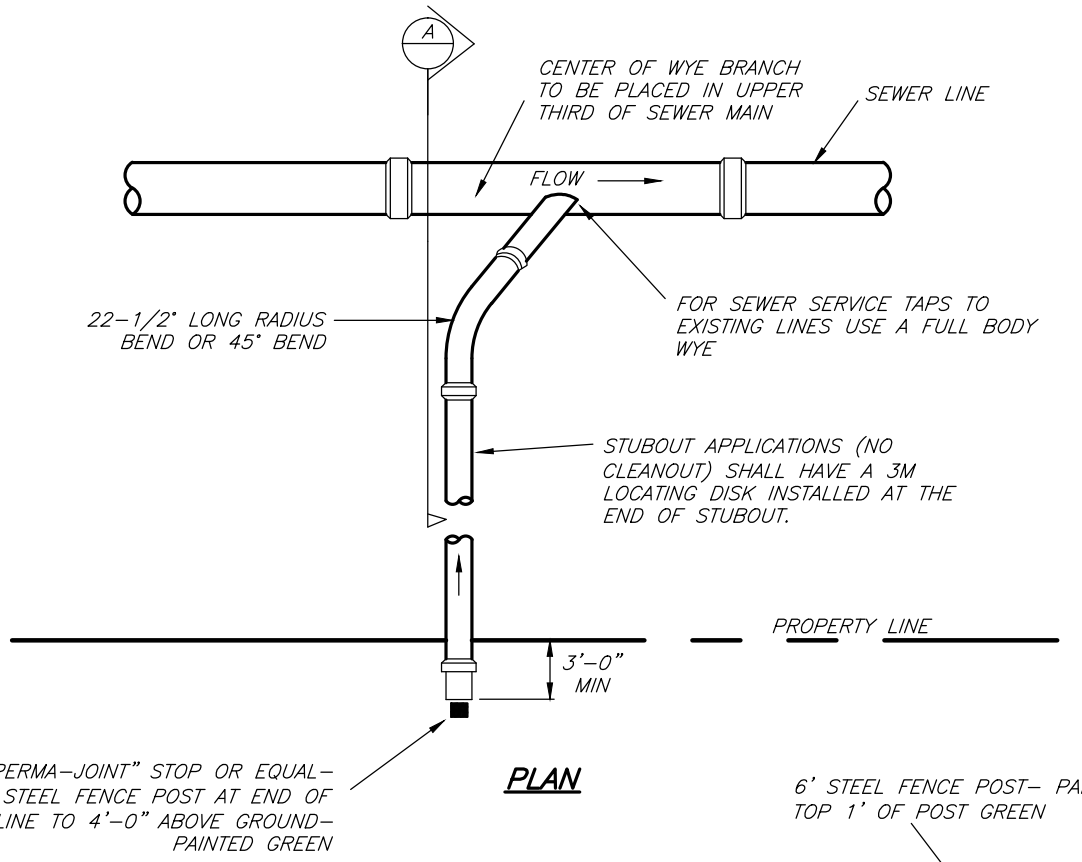
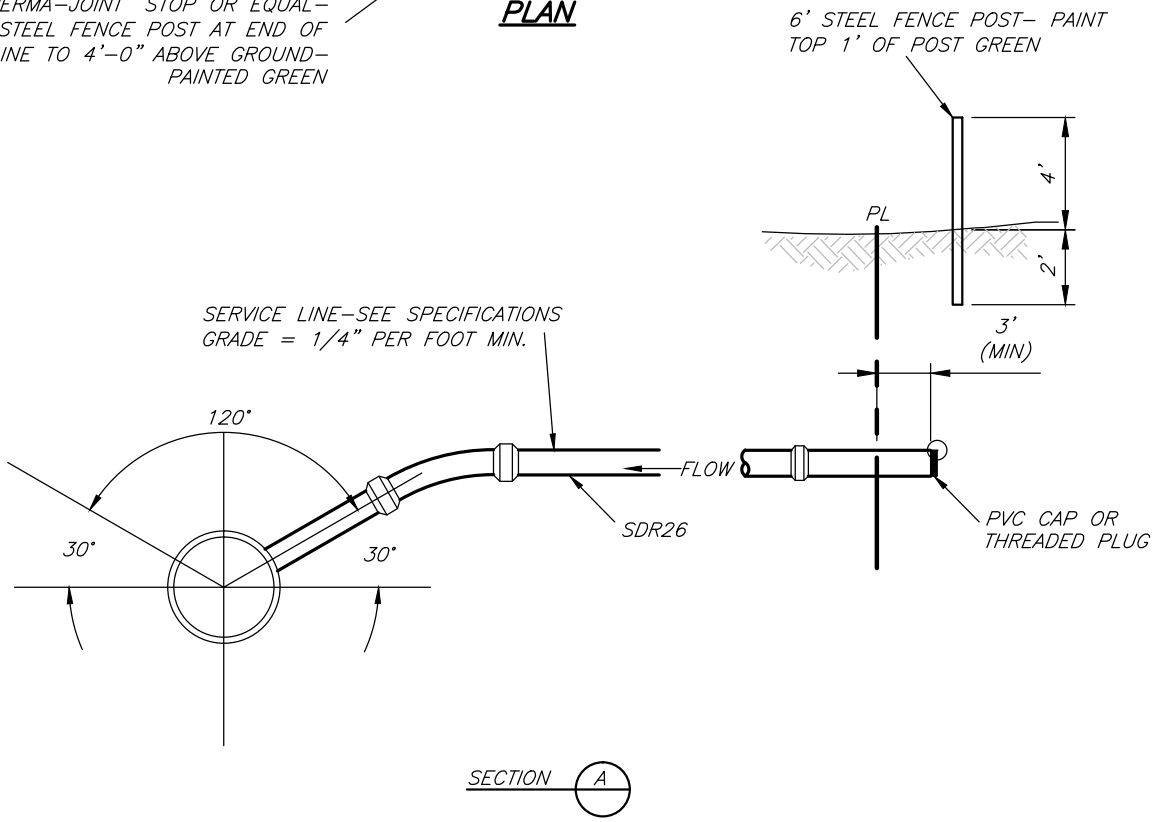


PLAN



SEWER SERVICE CONNECTION

NOTES:

1. MINIMUM SEPARATION BETWEEN TAPS SHALL BE 18"
2. BACKFILL UNDER WYE TO BE CLASS 6 AGGREGATE BASE COURSE. 95% COMPACTION DENSITY PER ASTM D-698.

DETAIL "S06"

Prepared By: SGM | SNOWMASS WATER & SAN. DISTRICT | Date: 10/03/13 By: FBLACKWELDER

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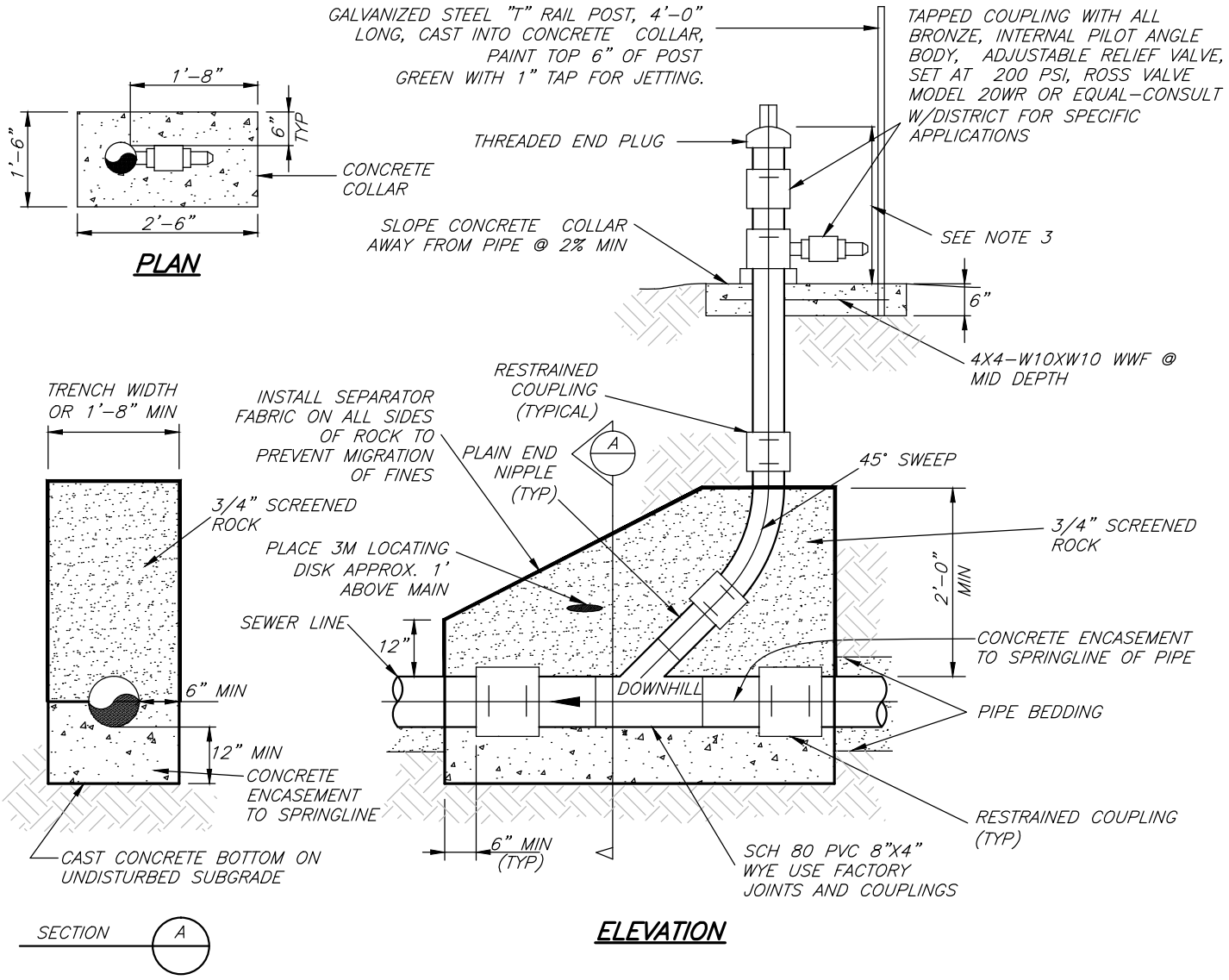
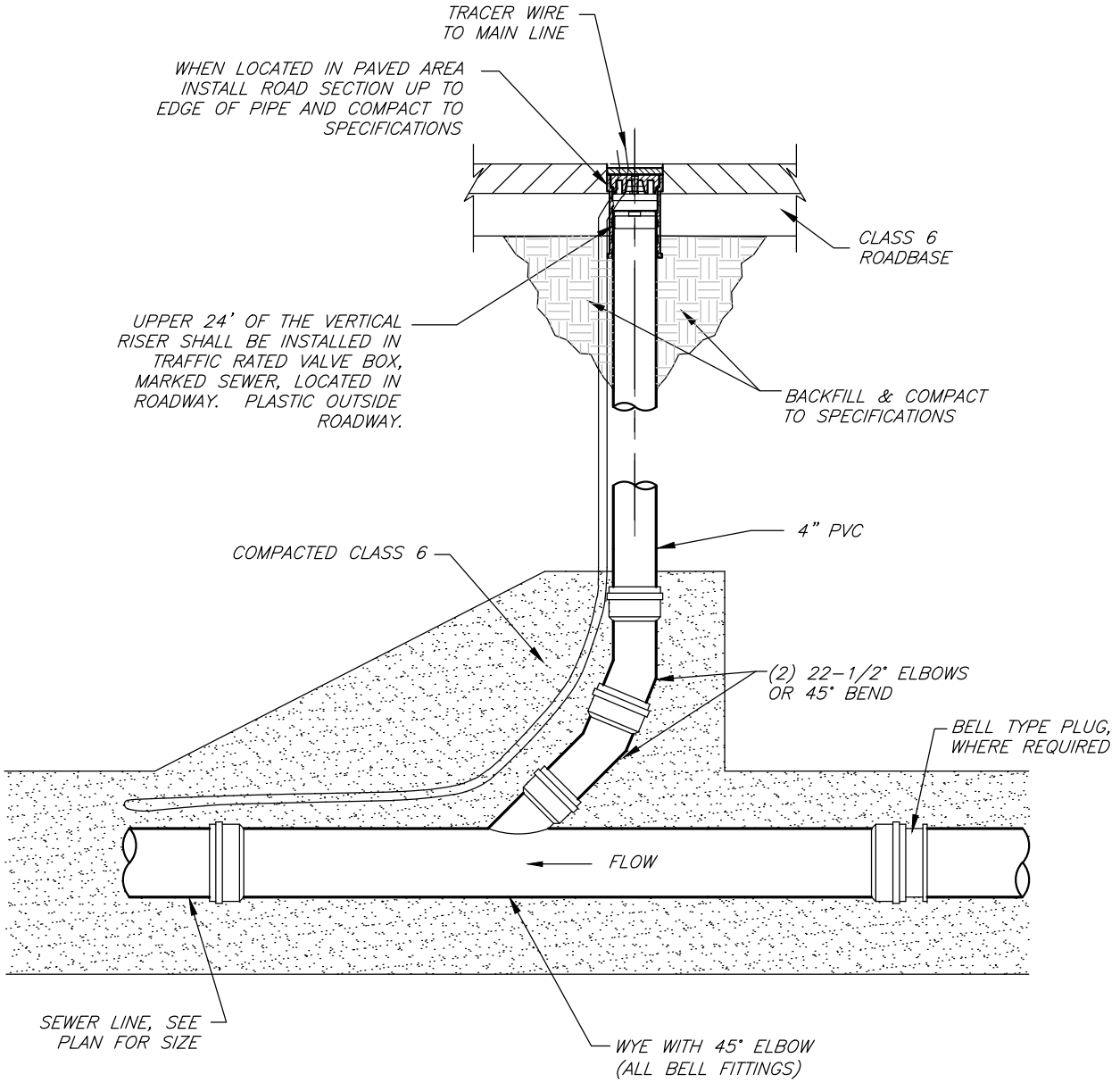


PRESSURE CLEAN-OUT

NOTES:

1. ENTIRE WYE SECTION AND ADJACENT COUPLINGS TO BE ENCASED IN CONCRETE
2. ENTIRE PRESSURE CLEANOUT SHALL BE PRESSURE RATED AT 200 PSIG MINIMUM
3. MAINTAIN MINIMUM HEIGHT REQUIRED FOR REMOVAL OF END PLUG FITTING ONLY
4. PRESSURE CLEANOUTS ARE REQUIRED AT THE BOTTOM OF MOST LOCATIONS WHERE PRESSURES MAY EXCEED BURSTING PRESSURE OF THE PIPE
5. FOR SKIWAY APPLICATIONS WHERE MANHOLE AND RINGS ARE USED TO COVER CLEANOUT, 3M LOCATING DISK SHALL ALSO BE INSTALLED 1' TO 2' BELOW MANHOLE RING AND COVER.

DETAIL "S07"



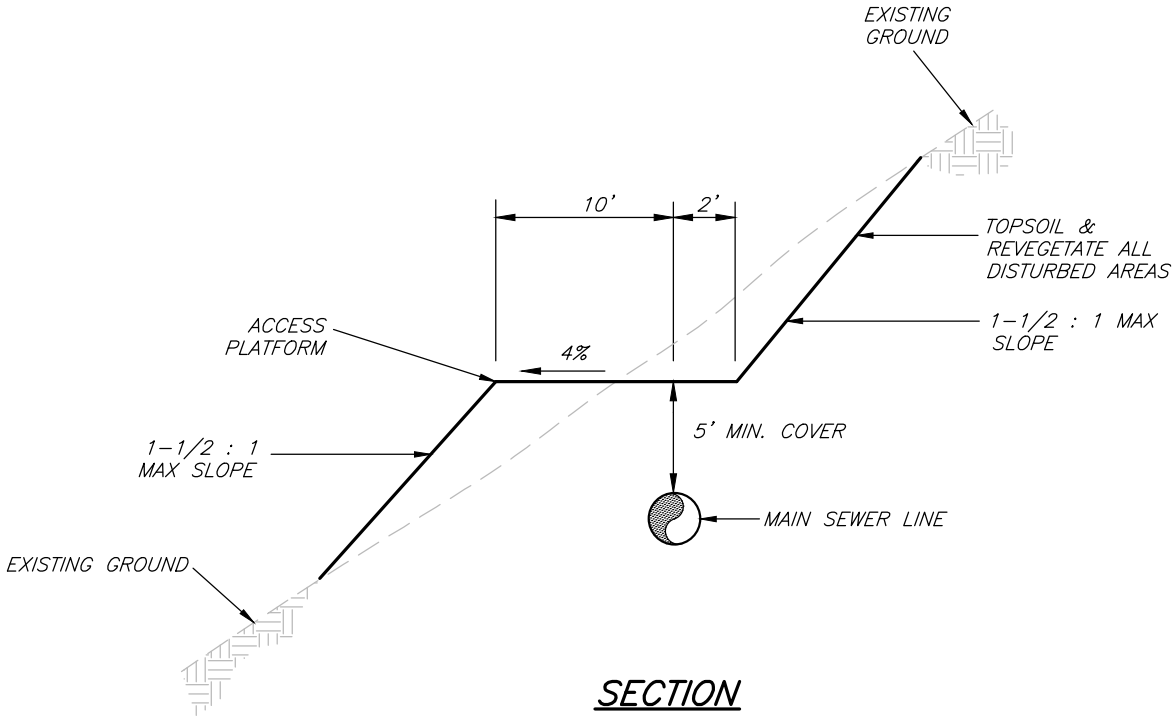
SEWER CLEAN-OUT

NOTES:

1. FOR SKIWAY APPLICATIONS WHERE MANHOLE AND RINGS ARE USED TO COVER CLEANOUT, 3M LOCATING DISK SHALL ALSO BE INSTALLED 1' TO 2' BELOW MANHOLE.
2. MUST BE TRAFFIC RATED IF INSTALLED IN TRAFFIC AREAS.

DETAIL "S08"

CONSTRUCT HAMMERHEAD OR 90°SIDEARM TURN-AROUND AT THE END OF ALL DEAD END SEWER LINES.



SECTION

SEWER MAINTENANCE ACCESS

NOTES:

1. THE CONTRACTOR SHALL GRADE ALL OFFROAD SEWER LINE TRENCHES TO PROVIDE ACCESS PLATFORM.
2. ACCESS PLATFORMS SHALL BE GRADED TO MATCH ROAD GRADES TO PROVIDE VEHICULAR ACCESS AT ALL ROAD AND PLATFORM ACCESS INTERSECTIONS. MAXIMUM GRADE FOR BACKLOT ACCESS SHALL BE 7%.

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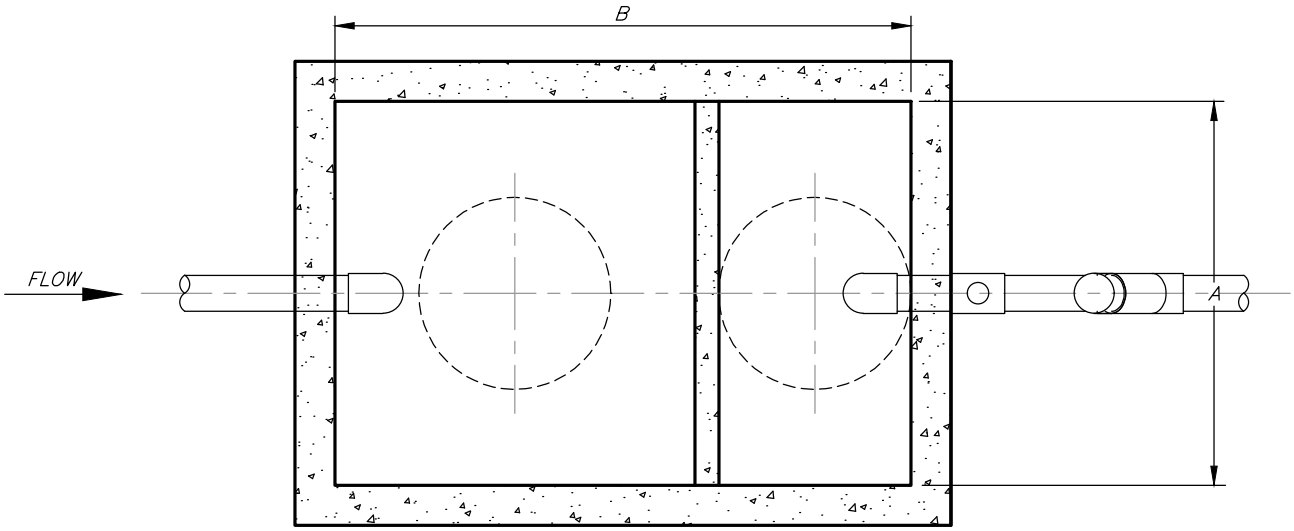
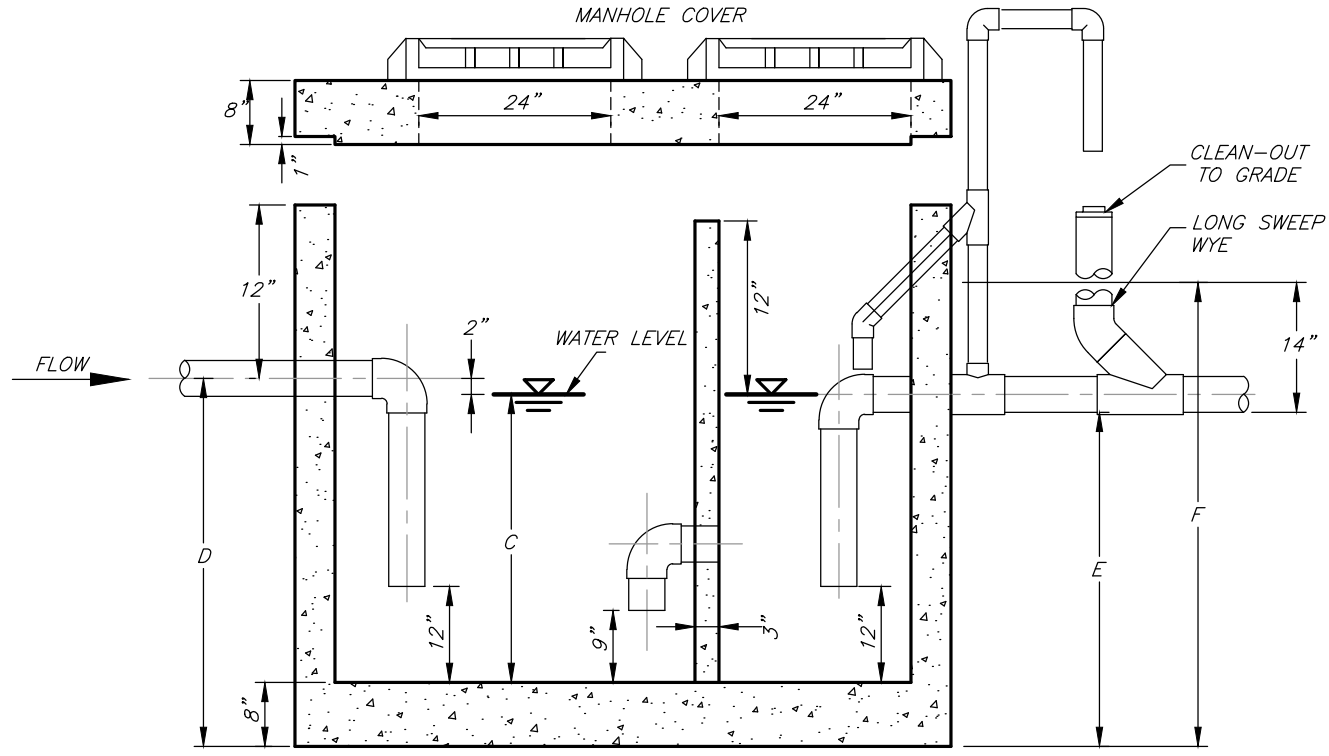
DETAIL "S09"

Prepared By: SGM SNOWMASS WATER & SAN. DISTRICT Date: 10/03/13 By: FBLACKWELDER



PLAN



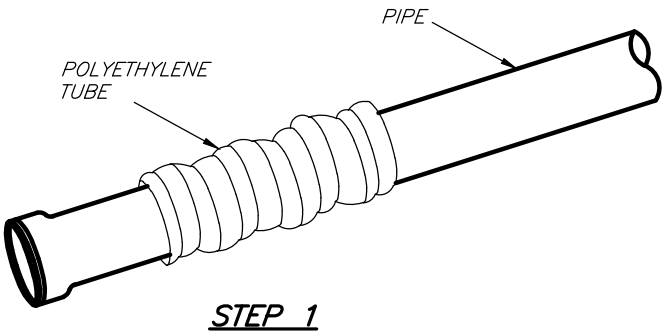
SECTION

1) SECONDARY COMPARTMENT TO HAVE VOLUME ⅓ OF TOTAL CAPACITY
2) ALL PIPE AND FITTINGS TO BE SCHEDULE 40 PVC, 4" MINIMUM DIAMETER
3) ALL CONCRETE TO INCLUDE FIBERMESH REINFORCEMENT
4) COVERS TO BE REINFORCED LONGITUDINALLY WITH #6 REBAR ON 6" CENTERS, #4 REBAR ON 6" CENTERS WIDTHWISE AND #8 REBAR DIAGONALLY AROUND ACCESS HOLES
5) CLEAN OUT SHALL CONFORM TO STANDARD SEWER CLEAN-OUT DETAIL "24" OF THE SWSD RULES AND REGULATIONS
6) MANHOLE RING AND COVER SHALL CONFORM TO SECTION XI (SANITARY SEWERLINES) OF THE SWSD RULES AND REGULATIONS
7) A SHOP DRAWING DEPICTING ACTUAL DIMENSIONS, PENETRATION LOCATIONS AND REINFORCEMENT SIZE SHALL BE SUBMITTED TO THE DISTRICT FOR APPROVAL.
8) NO BOLT DOWN COVERS ARE ALLOWED WITHOUT THE PRIOR AUTHORIZATION OF THE DISTRICT
9) ALL CONCRETE WALL PENETRATIONS TO BE FILLED WITH NON SHRINK GROUT SUBSEQUENT TO PIPE INSTALLATION
10) THE TOTAL CAPACITY SHALL ACCOMMODATE A 30 MINUTE DETENTION TIME AT PEAK HOUR FLOW.
11) CAPACITY IS ALSO DETERMINED BY FREQUENCY OF CLEANING.
12) FLOW SHALL BE DETERMINED BY A PROFESSIONAL ENGINEER.

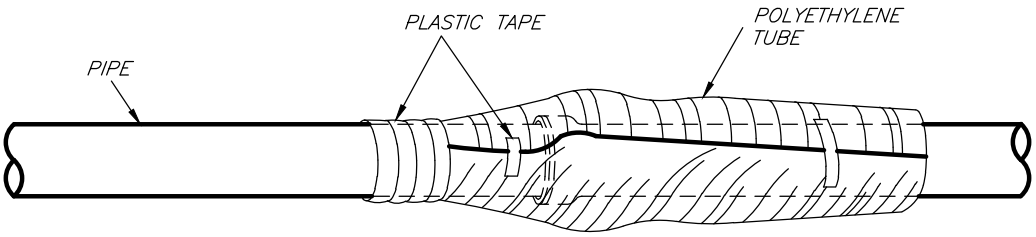
WATER CAPACITY APPROXIMATE GALLONS	GREASE CAPACITY APPROXIMATE CUBIC FEET	DIMENSIONS TWO COMPARTMENT TANK, INCHES						
		A	B	C	D	E	F	G
320	17	48	72	22	32	30	44	24
500	32	48	72	36	46	44	58	24
780	47	48	96	40	40	48	62	20
1060	74	72	102	34	34	42	56	30
1250	87	80	112	35	45	48	57	36
2000	142	80	128	46	56	54	68	42

GREASE INTERCEPTOR

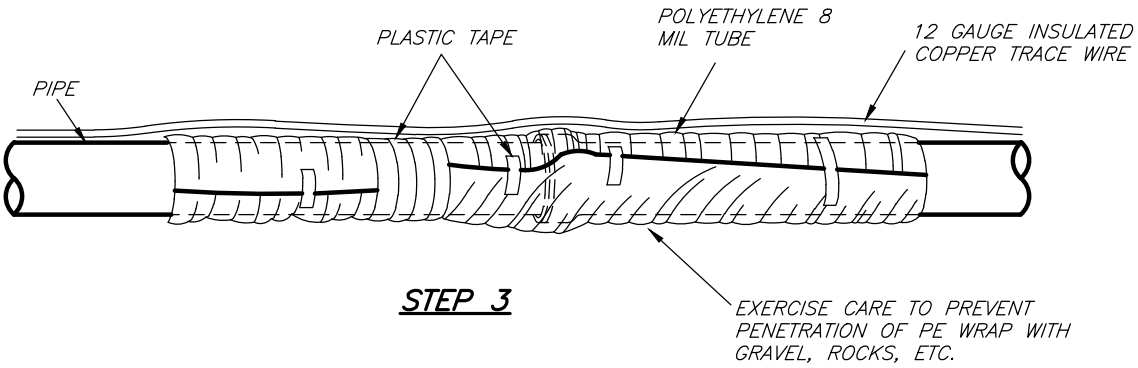
DETAIL "S10"



STEP 1



STEP 2



STEP 3

POLYETHYLENE WRAP

FIELD INSTALLATION – POLYETHYLENE WRAP

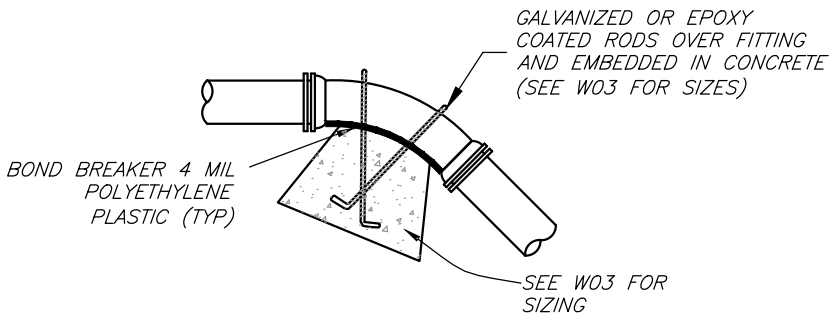
WHERE SPECIFICALLY REQUIRED FOR SOIL APPLICATIONS

STEP 1 – PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO PLACE

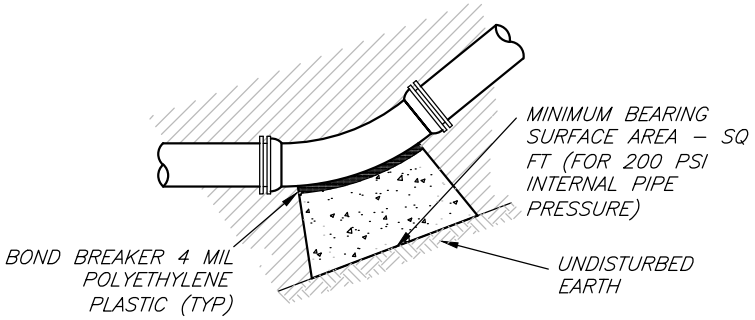
STEP 2 – PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

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.

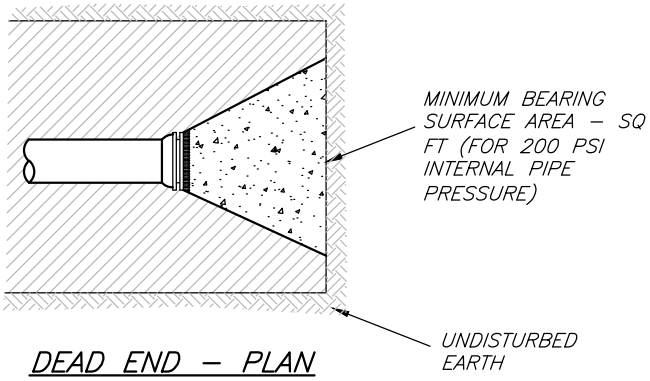
DETAIL "W01"



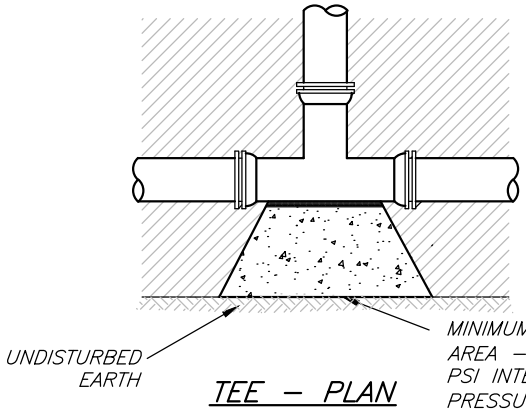
VERTICAL THRUST BLOCK – SECTION



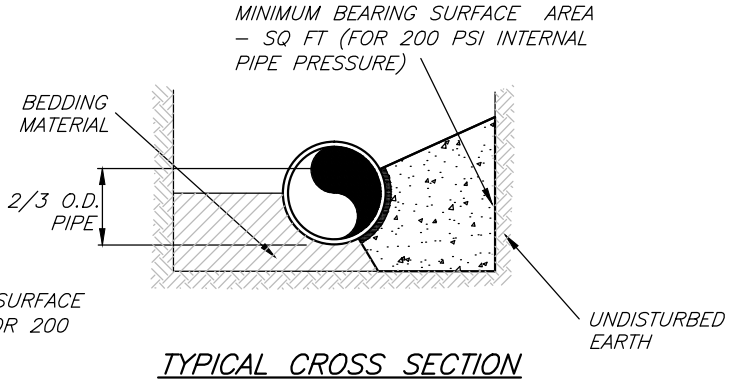
BENDS – PLAN



DEAD END – PLAN



TEE – PLAN



TYPICAL CROSS SECTION

MINIMUM BEARING SURFACE (SF) FOR 200 PSI AND LESS

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11-1/4°	22-1/2°	45°	90°	
6"	1.3	2.5	5.0	9.0	6.4
8"	1.3	2.5	5.0	9.0	6.4
10"	1.9	3.8	7.4	13.7	9.7
12"	2.7	5.4	10.5	19.3	13.7
16"	4.7	9.3	9.1	33.6	23.8
20"	7.2	14.3	28.0	51.8	36.6

MINIMUM BEARING SURFACE (SF) FOR 250 PSI AND LESS

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11-1/4°	22-1/2°	45°	90°	
6"	1.6	3.1	6.2	11.4	8.0
8"	1.6	3.1	6.2	11.4	8.0
10"	2.4	4.7	9.25	17.1	12.0
12"	3.4	6.7	13.1	24.2	17.1
16"	5.8	11.6	22.7	42.0	29.7
20"	9.0	17.9	35.0	64.8	45.8

CONCRETE THRUST BLOCKS

NOTES:

1. FOR 200 PSI INTERNAL PRESSURE, INCLUDING WATER HAMMER
2. MEGALUG RESTRAINTS MAY BE USED IN CONJUNCTION WITH THRUST BLOCKS WITH PRIOR APPROVAL FROM THE DISTRICT
3. MINIMUM AREA REQUIRED WILL BE THAT OF AN 8-INCH MAIN
4. ALL THRUST BLOCKS SHALL BE FORMED. THE MINIMUM THICKNESS FORM MATERIAL SHALL BE 3/8" PLYWOOD
5. BEARING AREA BASED ON SOIL BEARING PRESSURE OF 2000 LB/SF
6. CONCRETE SHALL HAVE A 28 DAY COMPRESSION STRENGTH OF 3000 PSI

DETAIL "W02"

VOLUME OF THRUST BLOCK IN CUBIC YARDS (VERTICAL DOWNWARD BENDS)

FITTING SIZE (IN)	V_1				
	45° BEND (CY)	22 1/2° BEND (CY)	11 1/4° BEND (CY)	ROD SIZE	EMBEDMENT (FT)
6	2.0	1.1	0.5	#6	2.5
8	2.0	1.1	0.5	#6	2.5
10	3.1	1.7	0.9	#6	2.5
12	4.4	2.4	1.2	#6	2.5
14	6.1	3.3	1.7	#8	3.0
16	7.9	4.3	2.2	#8	3.0

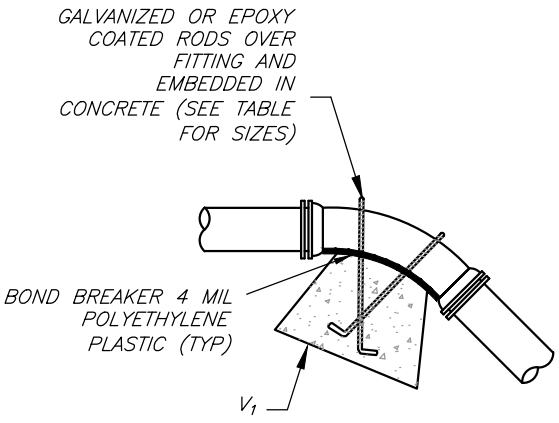
VERTICAL DOWNWARD BENDS:

1. VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS, REQUIRE SPECIAL BLOCKING DETAILS. SEE DRAWINGS FOR VOLUMES SHOWN TO LEFT OF HEAVY BOLD LINE IN TABLE.

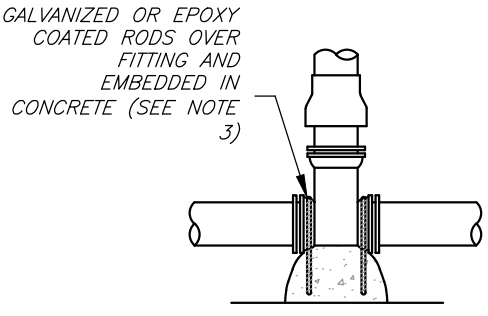
2. THRUST BLOCK VOLUMES (IN TABLE) FOR VERTICAL DOWNWARD BENDS HAVING UPWARD RESULTANT THRUSTS ARE BASED ON TEST PRESSURE OF 150 PSI, THE WEIGHT OF CONCRETE = 4050 LBS/CUBIC YARD, AND A SAFETY FACTOR OF 1.5. TO COMPUTE VOLUMES FOR DIFFERENT TEST PRESSURES AND CONCRETE WEIGHTS, USE THE FOLLOWING EQUATION:

VOLUME = (TEST PRESSURE / 150) X (4050 / CONCRETE WEIGHT) X (TABLE VALUE)

3. VOLUME OF THRUST BLOCK IN CUBIC YARDS FOR VALVES SHALL BE THE SAME VOLUME USED FOR 11 1/4 BENDS.

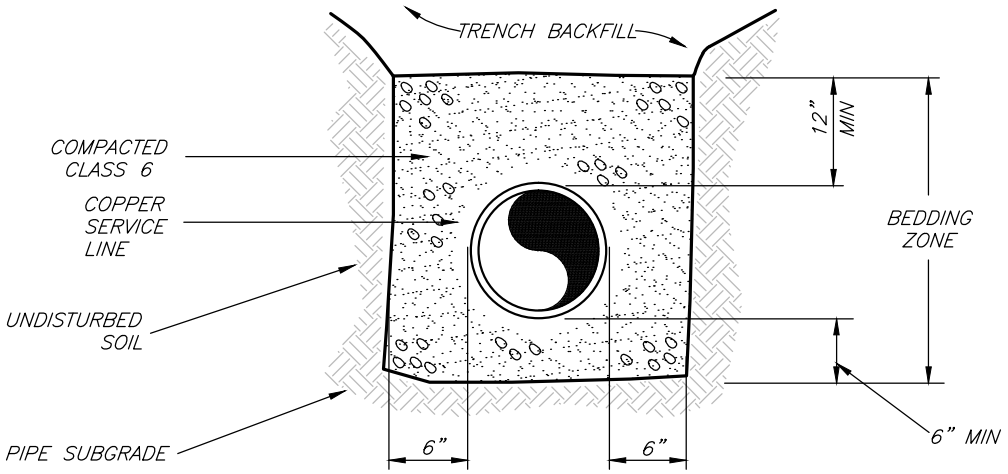


VERTICAL DOWNWARD BEND

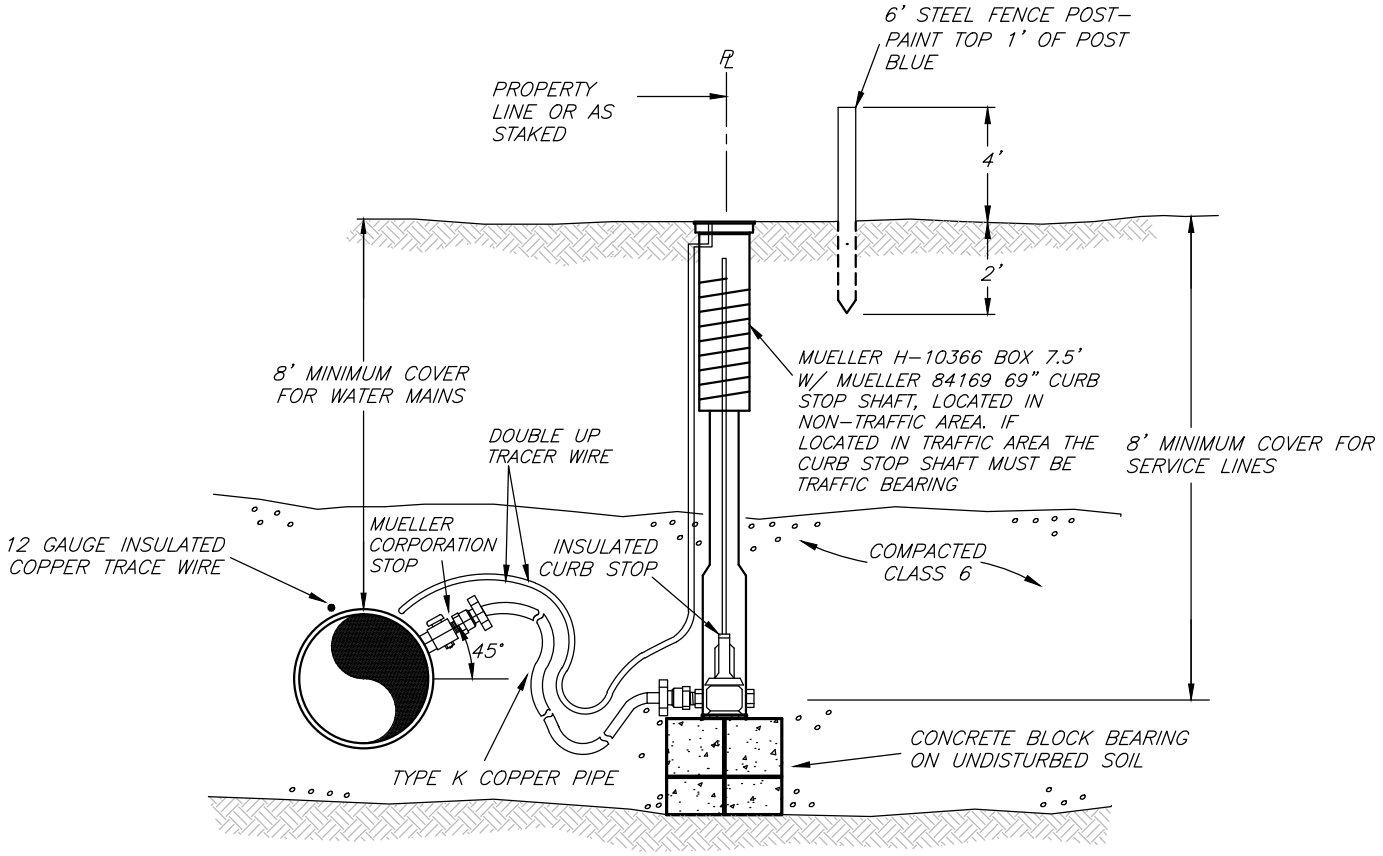


VALVE

DETAIL "W03"



SERVICE STUB-OUT BEDDING



ELEVATION

WATER SERVICE STUB OUT

GENERAL NOTES

1. CURB STOP TO BE LOCATED WITHIN THE PROPERTY LINE OR AT THE EDGE OF EASEMENT-WHICHEVER IS CLOSER TO THE MAIN.
2. CURBSTOP - ALL FITTINGS SHALL BE COMPRESSION FITTINGS.
3. CURBSTOP - MANUFACTURER REFERENCE MUELLER B25204 OR APPROVED EQUAL.
4. CURB BOX AND LID MUST BE TRAFFIC RATED NOT THE CUR'BSTOP SHAFT. SHAFT MUST NOT BE IN CONTACT WITH CURB BOX.

DETAIL "W04"

Prepared By: SGM | SNOWMASS WATER & SAN. DISTRICT | Date: 10/03/13 By: FBLACKWELDER

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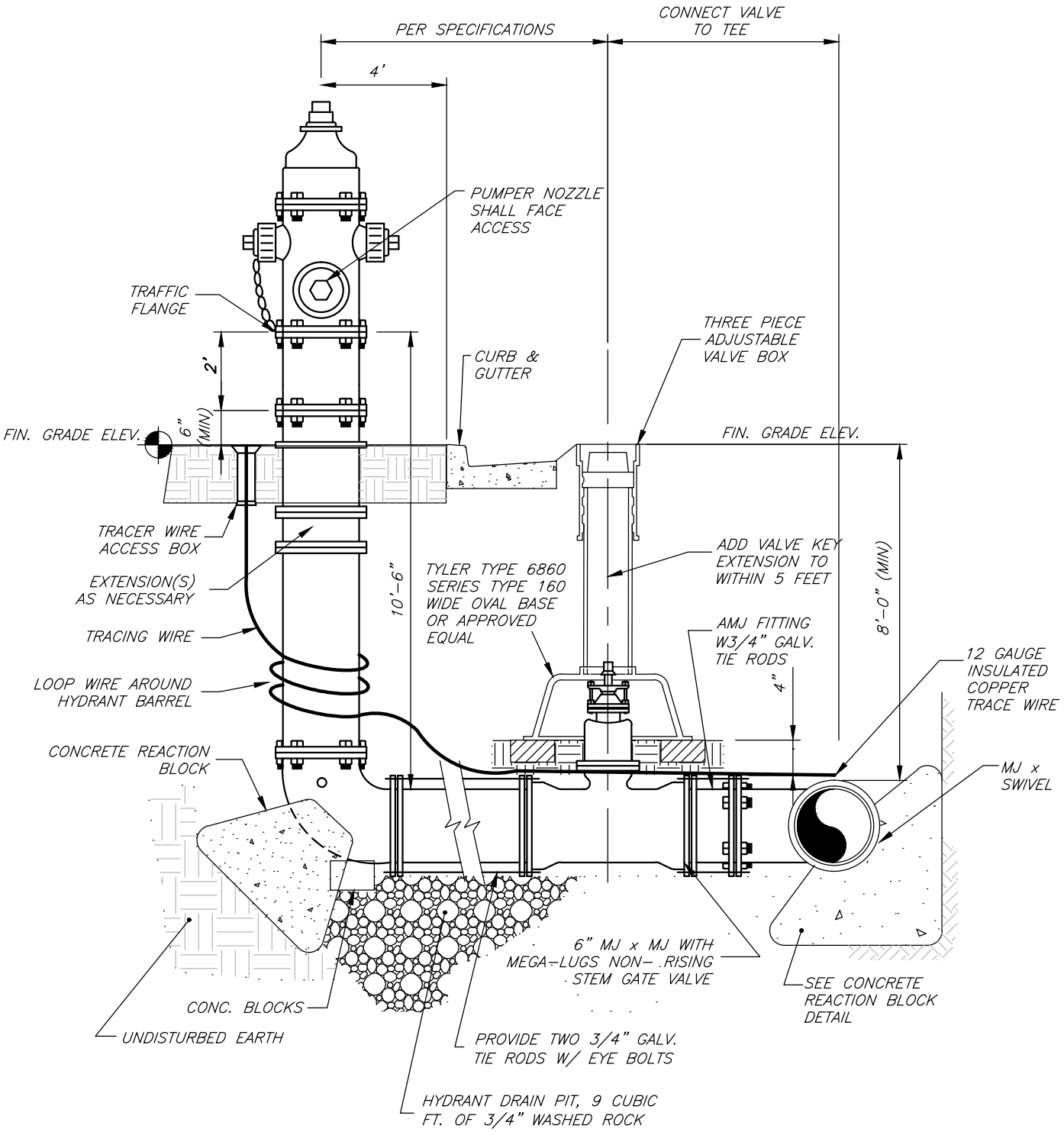


FIRE HYDRANT ASSEMBLY INSTALLATION DETAIL

NOTES:

1) ALL JOINTS FROM MAIN TO HYDRANT SHALL BE RESTRAINED MECHANICAL JOINTS.

2) HYDRANT, VALVE AND FITTINGS TO BE 250 P.S.I. RATED.

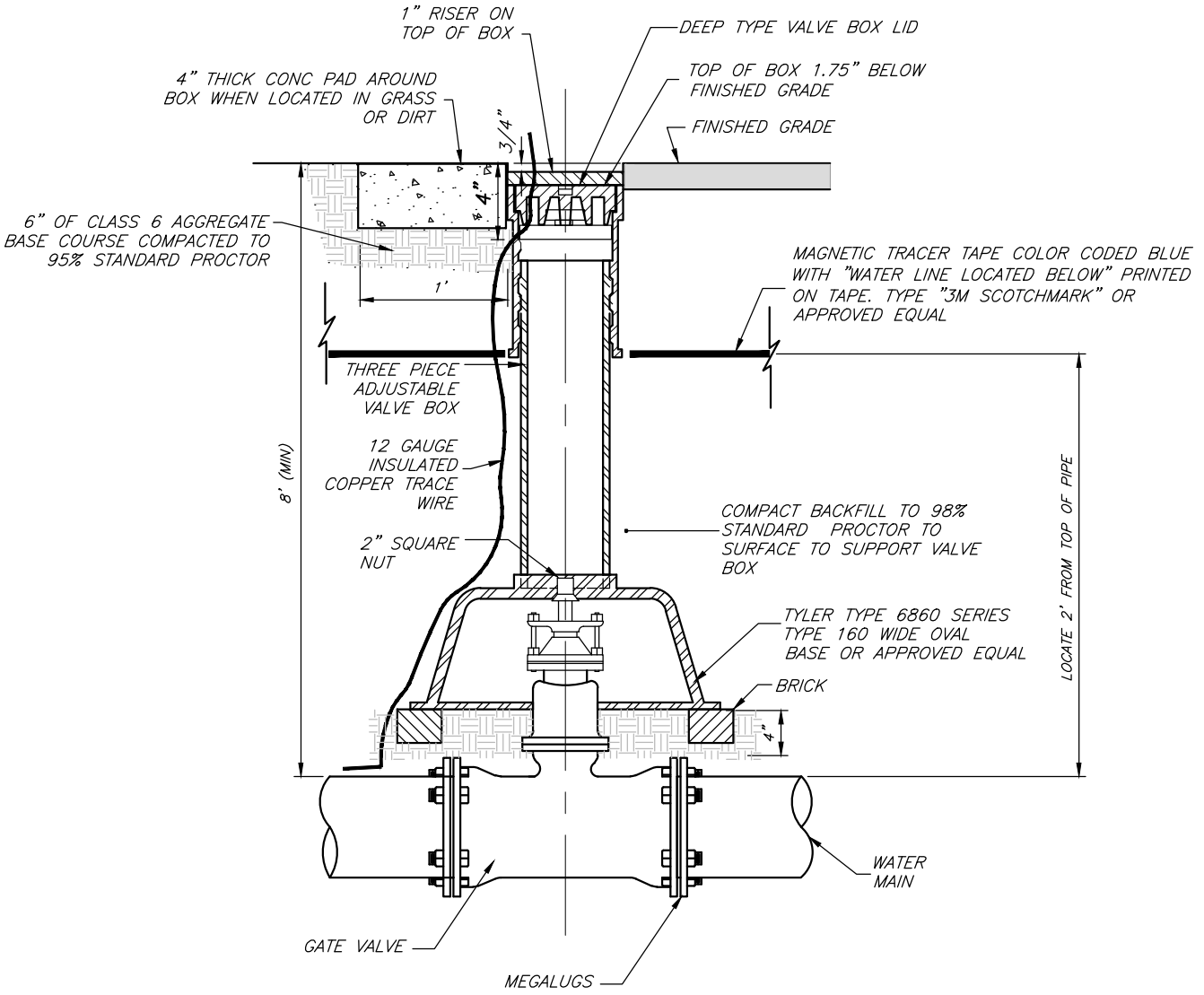
3) POLYETHYLENE WRAP SHALL COVER D.I.P. ASSEMBLY FROM HYDRANT BASE TO WATER MAIN. DO NOT BLOCK WEEP HOLE.

4) ALL HYDRANT LEAD PIPING TO BE 6" CLASS 250 D.I.P. UNLESS OTHERWISE NOTED

5) CENTERLINE OF HYDRANT TO BE 4'-0" FROM BACK OF CURB UNLESS OTHERWISE NOTED.

6) INSTALL VALVE STEM EXTENSION AS NEEDED TO INSURE THE DISTANCE FROM VALVE BOX LID TO TOP OF NUT SHALL NOT EXCEED 5'-0"

DETAIL "W05"



TYPICAL GATE VALVE

NOTES:

1. ALL VALVES ADJACENT TO FITTING SHALL BE MJ. IN LINE VALVES TO BE MJ x MJ. DESIGN LOCATIONS OF VALVES ARE OUTSIDE OF CONCRETE, CURB/GUTTER AND VALLEY PANS.

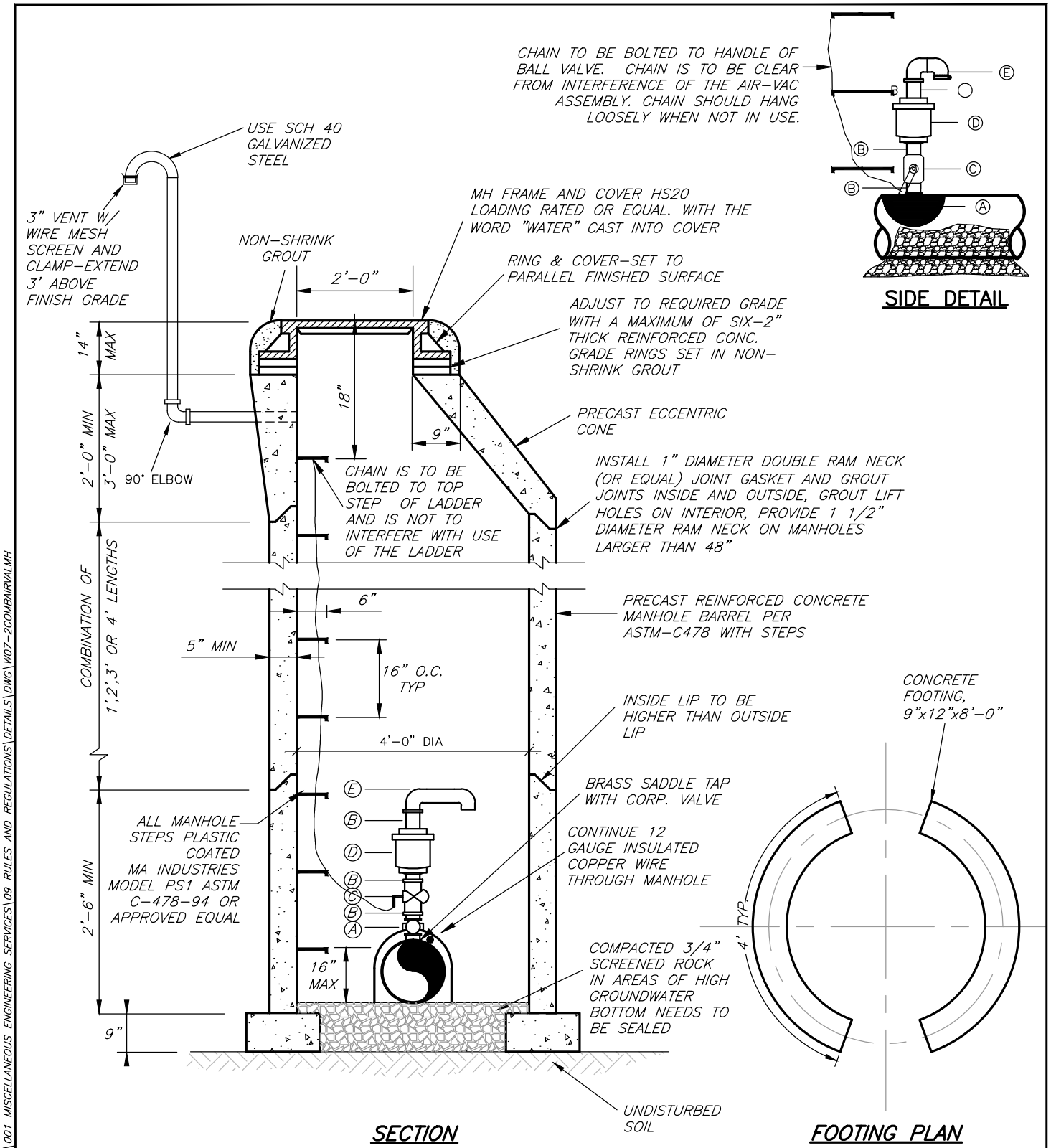
2. INSTALLED VALVES WHICH CONFLICT WITH CONCRETE AREAS SHALL BE RELOCATED AT THE CONTRACTOR'S EXPENSE.

3. THIS DETAIL DOES NOT APPLY TO HYDRANT ASSEMBLY VALVES.

4. INSTALL VALVE STEM EXTENSION AS NEEDED TO INSURE THE DISTANCE FROM VALVE BOX LID TO TOP OF NUT SHALL NOT EXCEED 5'–0"

5. THE TRACER WIRE SHALL BE EXTENDED TO THE SURFACE AT ALL VALVES AND FIRE HYDRANTS. THE WIRE SHALL BE EXTENDED TOWARDS THE GROUND ON THE OUTSIDE OF THE VALVE BOX UNTIL THE WIRE IS WITHIN FOUR INCHES (4") OF THE TOP OF THE LID, AT WHICH POINT IT SHALL BE BROUGHT BACK INSIDE THE BOX AND SECURELY FASTENED. SUFFICIENT SLACK IN THE OUTSIDE OF THE WIRE SHALL BE PROVIDED TO COMPENSATE FOR ANY FUTURE ADJUSTMENT TO THE VALVE BOX.

6. ADD SOLID PIPE FOR VALVE BOX OVER 9 FEET



2" COMBINATION AIR VALVE & MANHOLE

LEGEND

- Ⓐ 2" CORPORATION TAPERED THREADS INLET
- Ⓑ 2" X 4" THREADED BRASS NIPPLE
- Ⓒ 2" THREADED BALL VALVE
- Ⓓ 2" THREADED INLET APCO 144 AIR AND VACUUM RELEASE VALVE
- Ⓔ 2" X 90° PLASTIC ELBOW

GENERAL NOTES

1. ALL CONCRETE WORK SHALL COMPLY WITH LATEST ACI-318 SPECIFICATIONS
2. AIR VALVE ASSEMBLY LARGER THAN 2" SIZE SHALL BE SPECIALLY DESIGNED AND MEET WATER DEPARTMENT REQUIREMENTS

DETAIL "W07"

Prepared By: SGM | SNOWMASS WATER & SAN. DISTRICT | Date: 10/03/13 By: FBLACKWELDER

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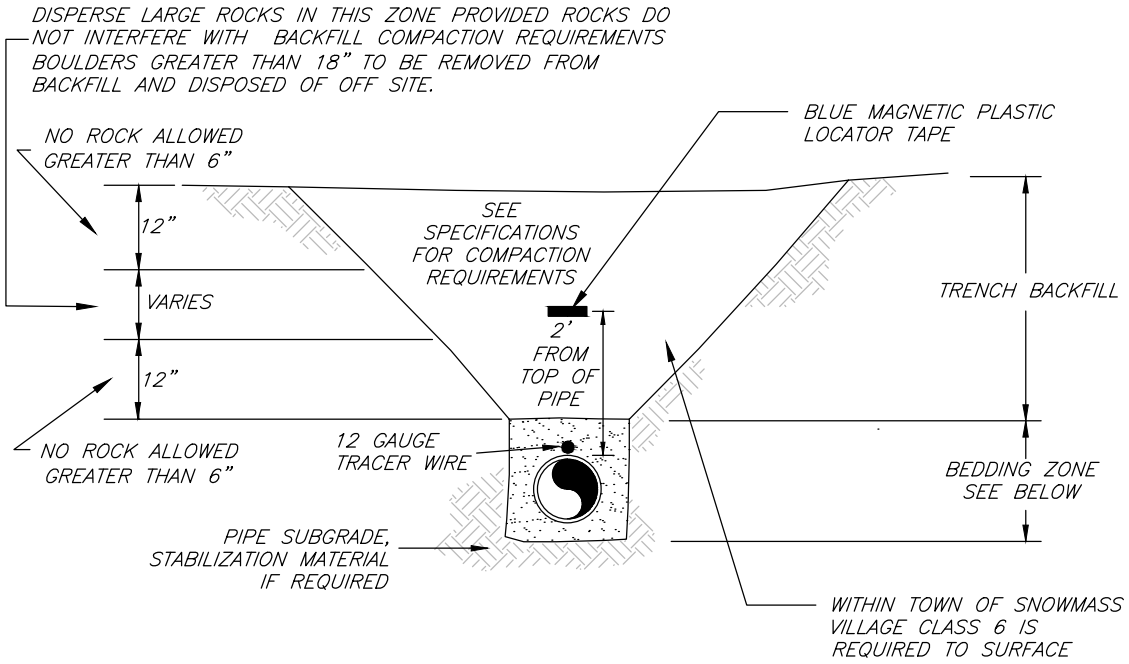
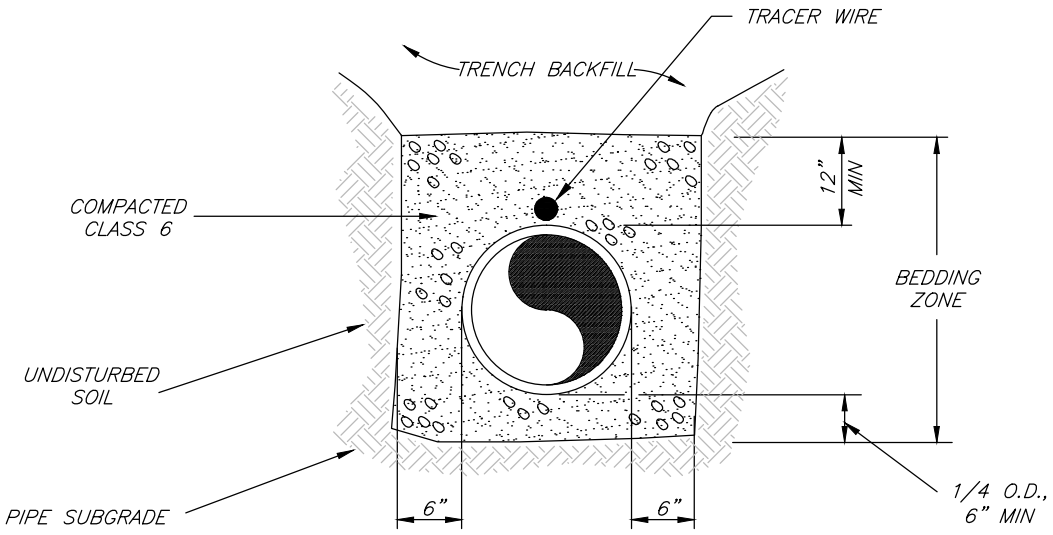


TRENCH ZONES



PIPE BEDDING ZONE

NOTE: 3/4 SCREENED ROCK IN WET AREAS IN PLACE OF CLASS 6 ONLY APPROVED AS NEEDED

WATER PIPE BEDDING

DETAIL "W08"

Prepared By: SGM | SNOWMASS WATER & SAN. DISTRICT | Date: 10/03/13 By: FBLACKWELDER

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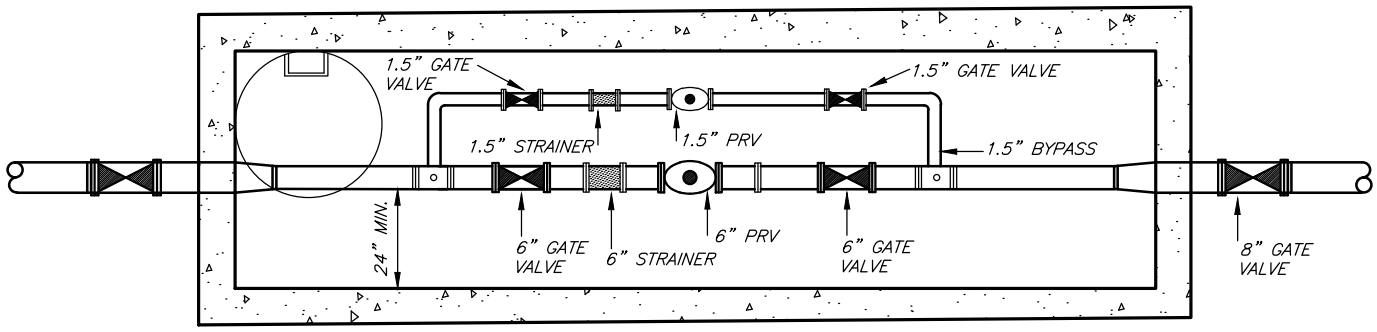
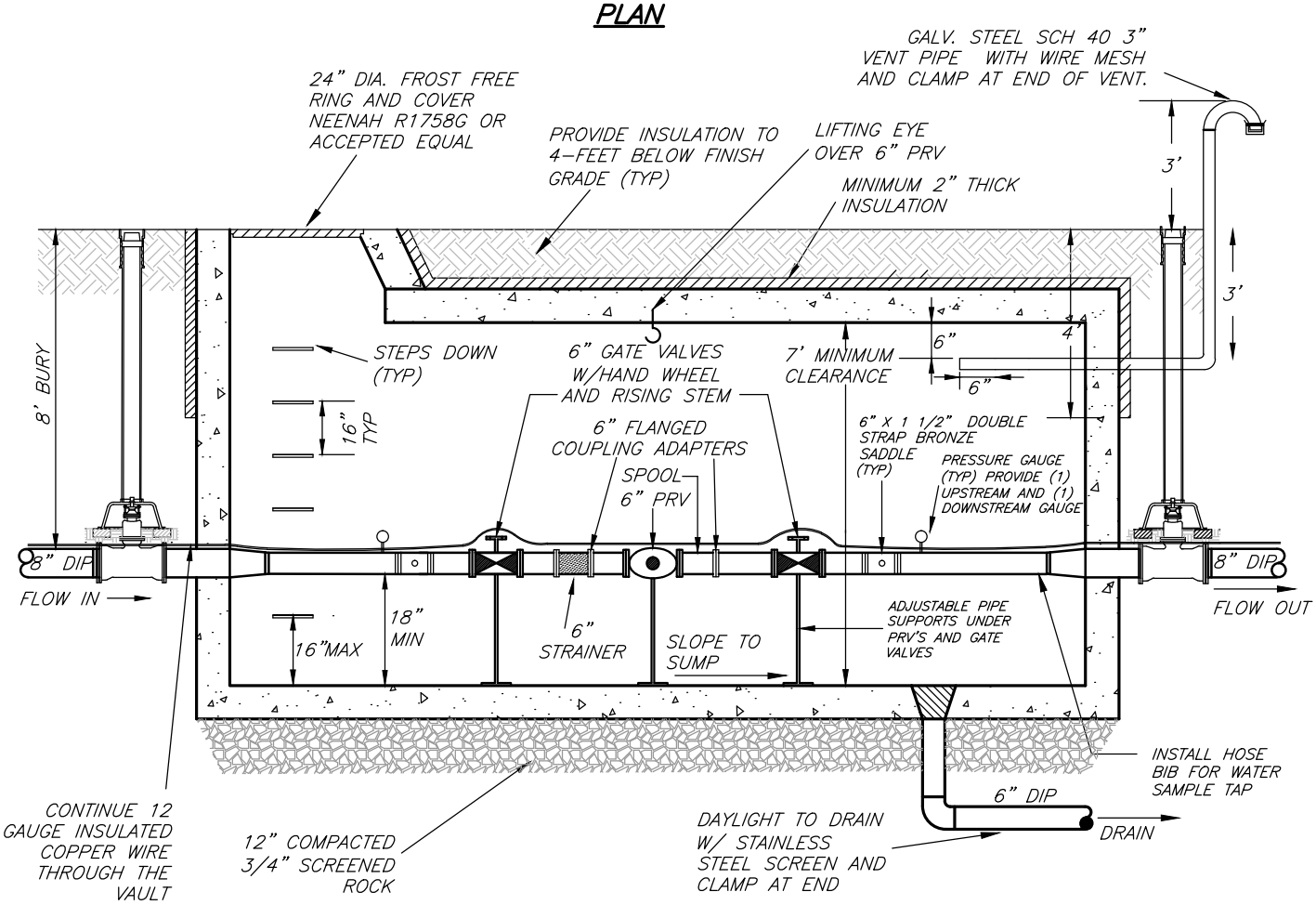


PLAN



ELEVATION

MAIN LINE PRV VAULT

NOTES

1. VAULT SHALL BE POURED IN PLACE CONCRETE AND CAPABLE OF WITHSTANDING HS 20-44 TRAFFIC LOADING CONDITIONS
2. WHERE PIPES PENETRATE WALLS, USE LINK SEAL OR FILL ANNULAR SPACE W/ NON-SHRINK GROUT
3. COAT ALL EXTERIOR VAULT SURFACES WITH BITUMINOUS DAMPROOFING
4. ALL 1 1/2" PIPE SHALL BE BRASS W/ALL OTHER PIPE AND FITTINGS BEING FLANGED DUCTILE IRON
5. ALL TIE-RODS SHALL BE 3/4" ALL-THREAD OR MEGA-LUGS ON EXTERIOR CONNECTIONS
6. CONTRACTOR SHALL SUBMIT VAULT PIPING SCHEMATIC W/ VAULT DIMENSIONS PRIOR TO ORDERING
7. IT SHALL BE THE OWNER'S RESPONSIBILITY TO VERIFY ALL PRV SIZING AND PRESSURE SETTINGS SIZES OF PRV'S SHOWN IS FOR ILLUSTRATION PURPOSES ONLY
8. THE DISTRICT SHALL APPROVE FINAL SIZING OF ALL PRV'S AND VALVES
9. PIPE MATERIAL TO BE OR RESTRAINED JOINT OR FLANGED PIPE.
10. INCLUDE A BYPASS PRV IN PIPING.
11. PROVIDE 120 VOLT POWER TO VAULT

DETAIL "W09"

Prepared By: SGM

SNOWMASS WATER & SAN. DISTRICT

Date: 10/03/13 By: FBLACKWELDER

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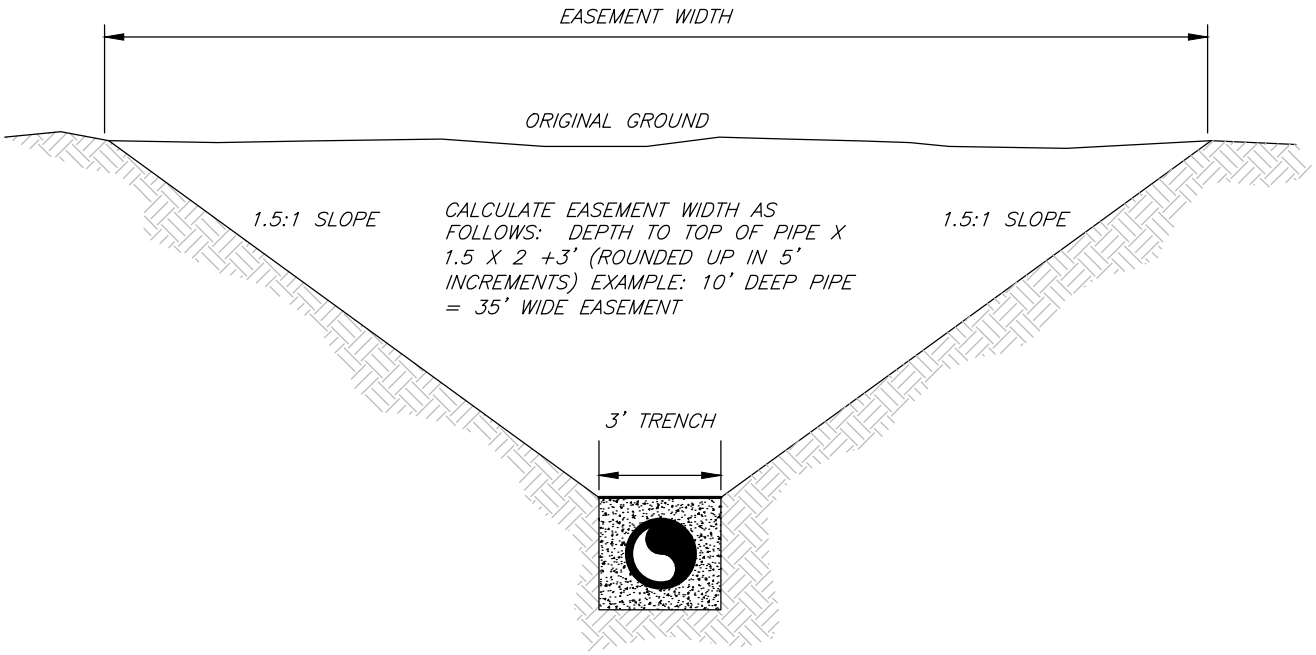


MINIMUM EASEMENT WIDTH

EASEMENT WIDTH

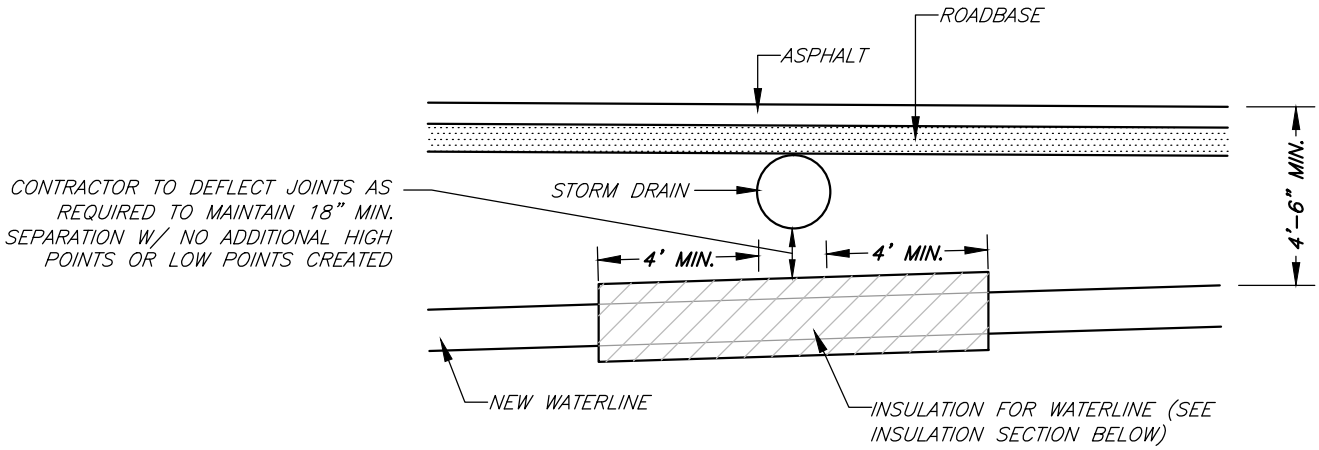
GENERAL NOTES:

1. MINIMUM EASEMENT WIDTH OF 20 FEET FOR 1 LINE
2. MINIMUM EASEMENT WIDTH OF 30 FEET FOR 2 LINES
3. NO PERMANENT IMPROVEMENTS SHALL BE INSTALLED WITHIN EASEMENT AREA SUCH AS LANDSCAPING, CONCRETE, ETC.

File: I:\2013\2013-321 SNOWMASS W&SD\001 MISCELLANEOUS ENGINEERING SERVICES\09 RULES AND REGULATIONS\DETAILS\DWG\W10-EASEWIDTH

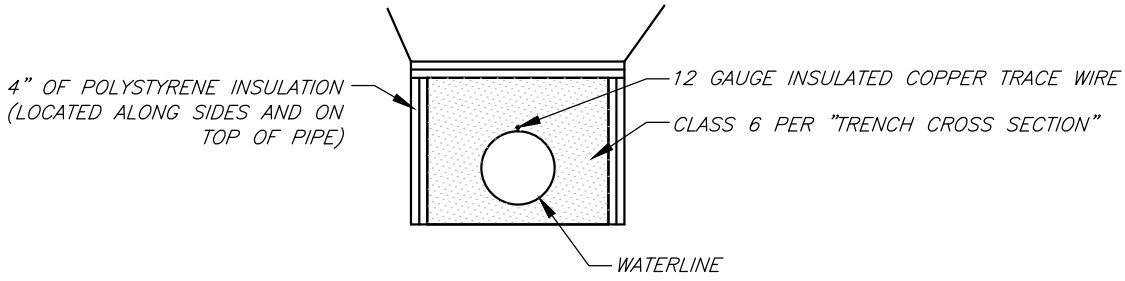
DETAIL "W10"

Prepared By: SGM | SNOWMASS WATER & SAN. DISTRICT | Date: 10/03/13 By: FBLACKWELDER



ELEVATION WATERLINE/CULVERT CROSSING

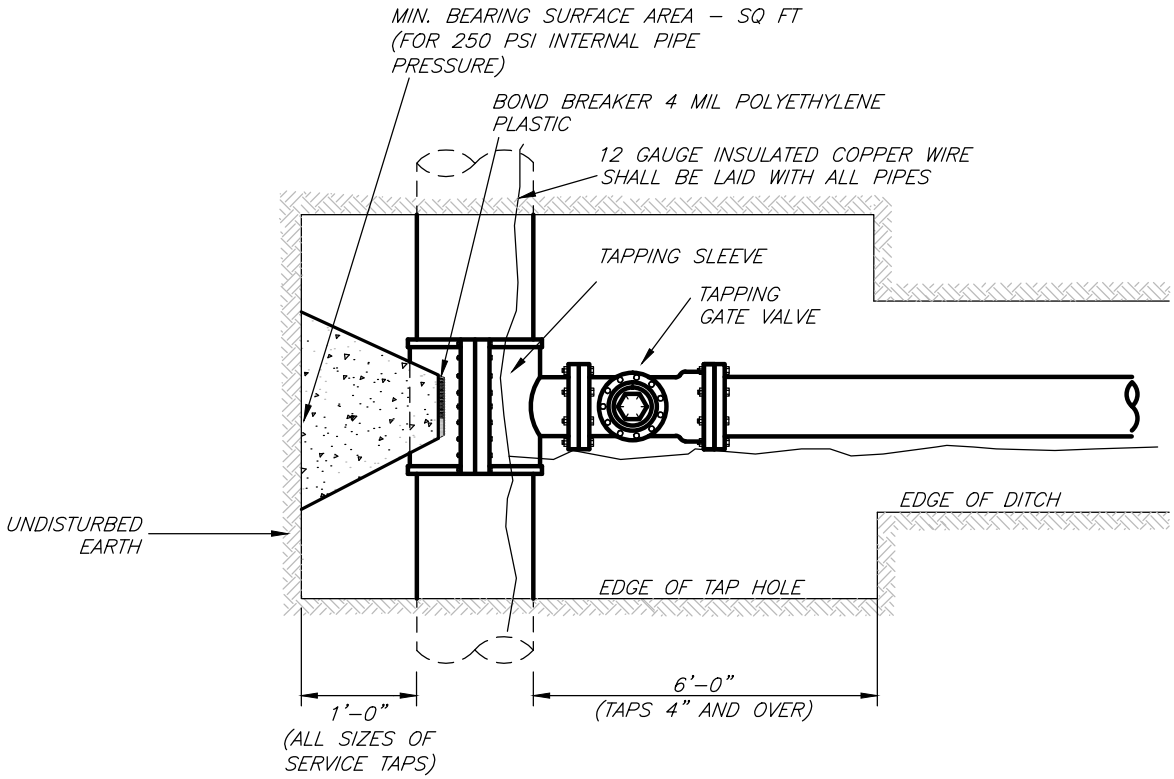
NO SCALE



INSULATION SECTION

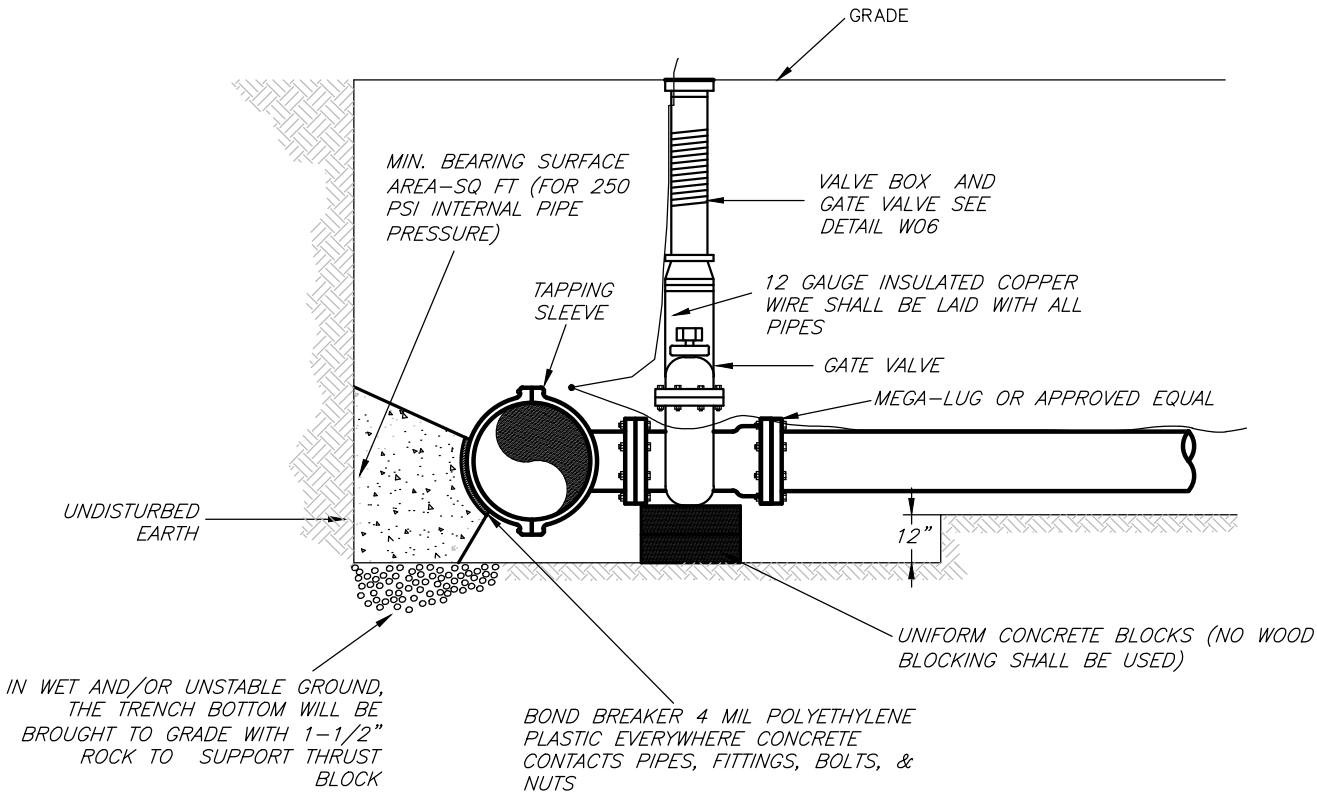
NO SCALE

INSULATION DETAIL



PLAN

12 GAUGE INSULATED COPPER WIRE SHALL BE LAID WITH ALL PIPES



ELEVATION

TAPPING DETAIL

DETAIL "W12"

Prepared By: SGM

SNOWMASS WATER & SAN. DISTRICT

Date: 10/03/13 By: FBLACKWELDER

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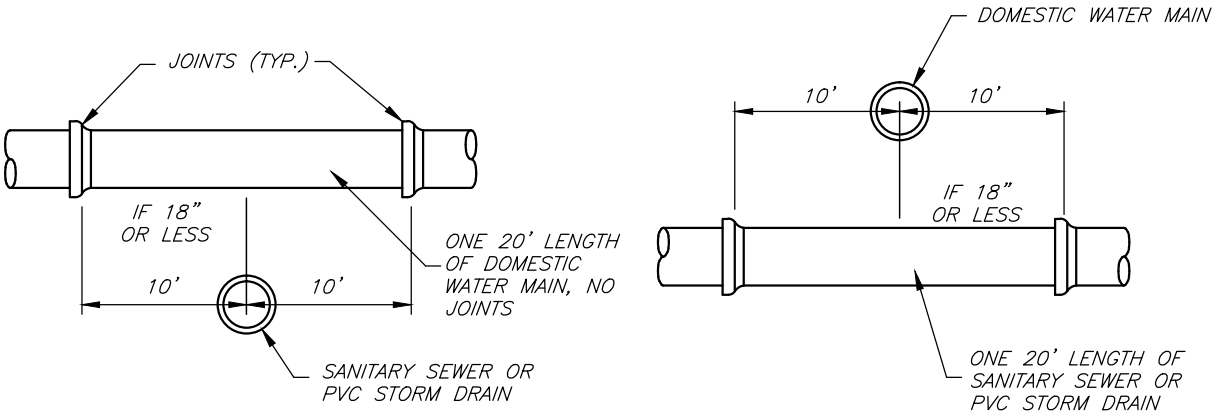
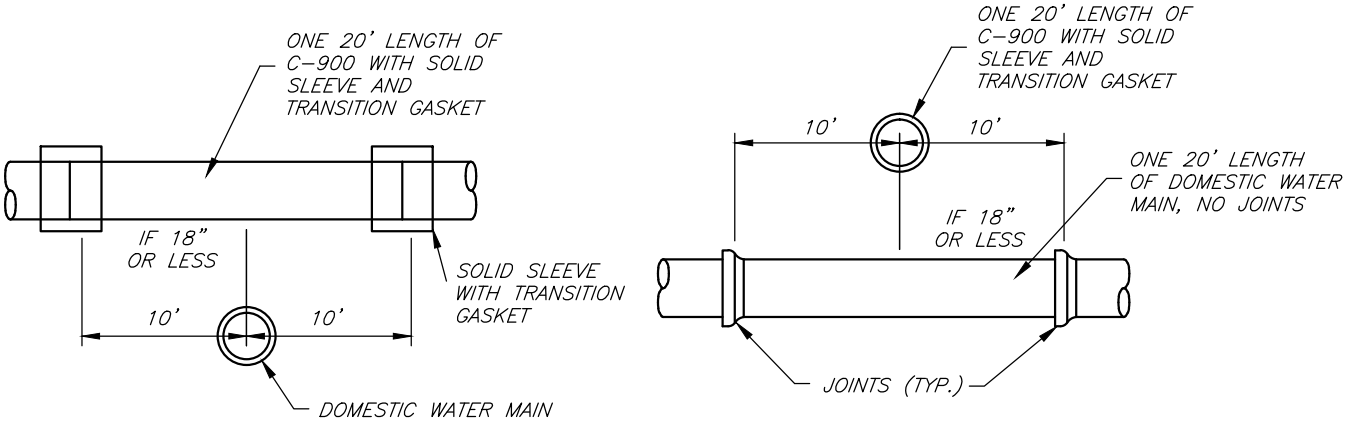
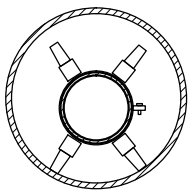


WATER MAIN ABOVE

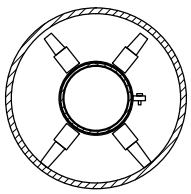


WATER MAIN BELOW

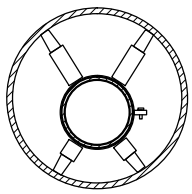
WATER/SEWER CROSSING



STANDARD

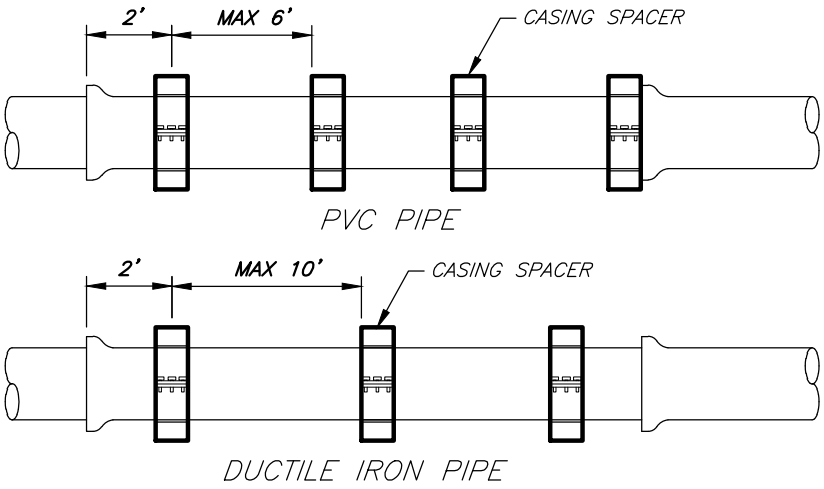


CENTERED

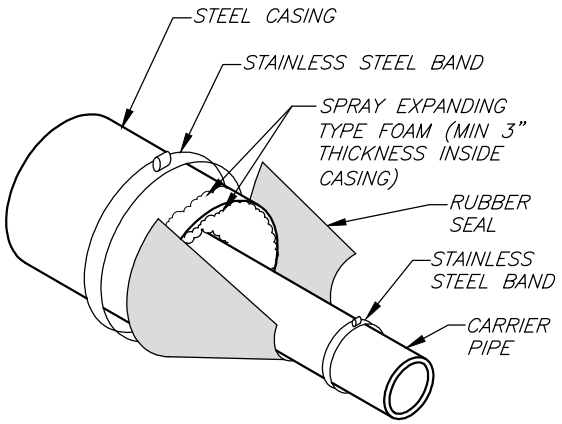


RESTRAINED

BASIC POSITIONS



PLACEMENT OF SPACERS ON CARRIER PIPE



END SEAL

PIPE CASING DETAIL

NTS

NOTES:

GENERAL: ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF THE CASING SUBSEQUENT SPACERS SHALL BE PLACED AT 10' INTERVALS WITHIN THE CASING.

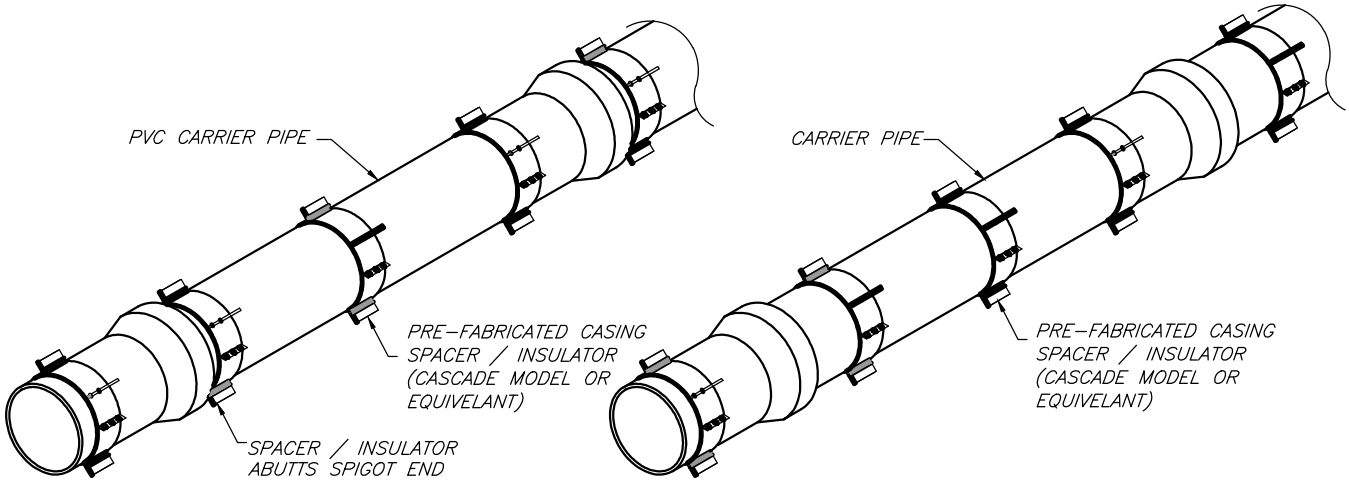
PVC CARRIER: ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL. WHEN THE JOINT IS COMPLETE, THE SPACER SHALL BE IN CONTACT WITH THE BELL OF THE JOINT SO THAT THE SPACER PUSHES THE JOINT AND RELIEVES COMPRESSION WITHIN THE JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' INTERVALS.

1. CARRIER PIPE SHALL BE INSERTED WITHIN CASING BY USE OF MODEL CCS STAINLESS STEEL CASING SPACERS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO. OF YORKVILLE, IL OR APPROVED EQUAL BY DISTRICT ENGINEER.

2. ALL PIPE JOINTS LOCATED WITHIN THE CASING AND THE FIRST JOINT EITHER SIDE OF CASING SHALL BE RESTRAINED BY USING SNAP LOCK TYPE GASKETS MANUFACTURED BY US PIPE OR APPROVED EQUAL BY DISTRICT ENGINEER. ALL RESTRAINED PIPE IS TO BE TYPE TYTON-JOINT AS MANUFACTURED BY US PIPE OR APPROVED EQUAL BY DISTRICT ENGINEER. ALL RESTRAINED PIPE IS TO BE INSTALLED USING THE RESTRAINED POSITION OF CARRIER INSTALLATION.

3. CONTRACTOR TO INSTALL PER SPECIFICATIONS SUPPLIED BY CASCADE WATERWORKS MANUFACTURING COMPANY OR APPROVED EQUAL BY DISTRICT ENGINEER.

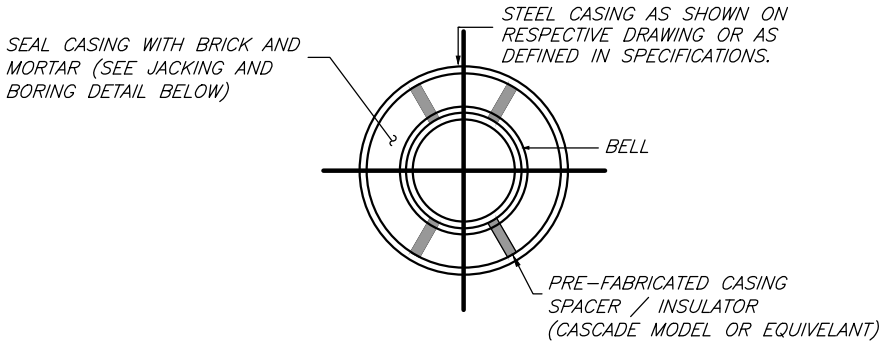
DETAIL "W14"



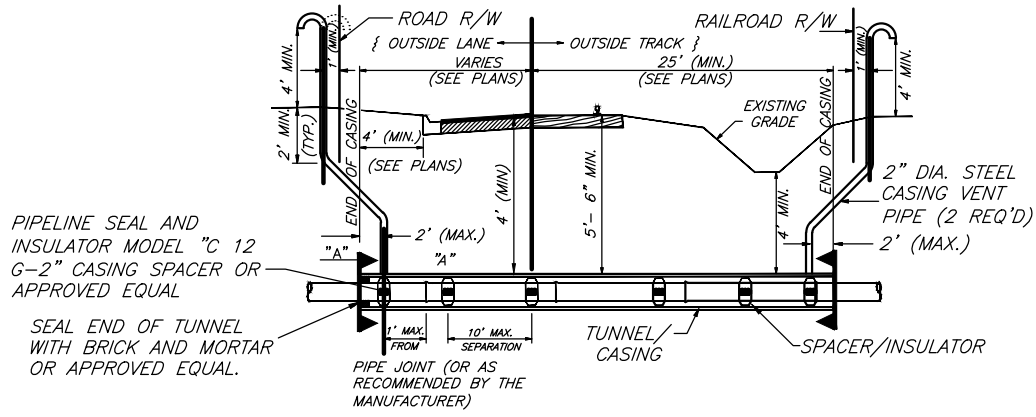
GENERAL NOTES
1. ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF THE CASING. SUBSEQUENT SPACERS SHALL BE PLACED AT 10' ENTRVALS WITHIN CASING
2. PVC CARRIER: ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL WHEN THE JOINT IS COMPLETE, THE SPACER SHALL BE IN CONTACT WITH THE BELL OF THE JOINT SO THAT THE SPACER PUSHES THE JOINT AND RELIEVES COMPRESSION WITHIN THE JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' INTERVALS

RECOMMENDED PLACEMENT ON PVC PIPE

RECOMMENDED PLACEMENT ON OTHER PIPE



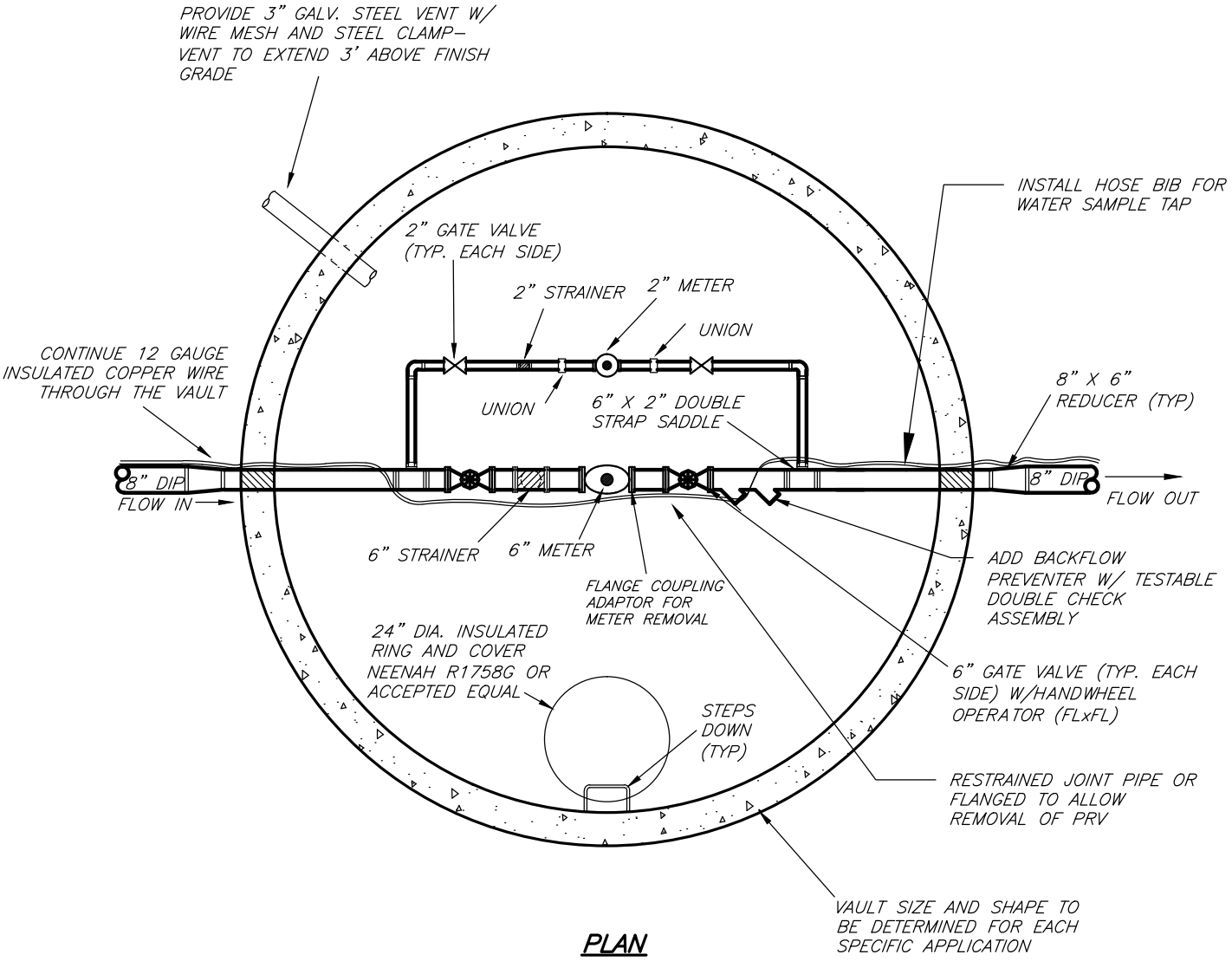
SECTION "A"



JACK AND BORE DETAILS FOR CROSSINGS
N.T.S.

NOTES
1. WATER MAIN TO BE RESTRAINED THROUGH TUNNEL / CASING.
2. PIPELINE SHALL BE PROMINENTLY MARKED AT RAILROAD RIGHT-OF-WAY BY SIGNS WORDED, "HIGH PRESSURE MAIN BURIED BELOW".
3. VENT PIPES SHALL BE FITTED WITH SCREENED DOWN-TURNED ELBOWS.
4. VENT PIPES SHALL BE INSTALLED ONLY IF TUNNEL / CASING IS NOT FILLED.

DETAIL "W15"



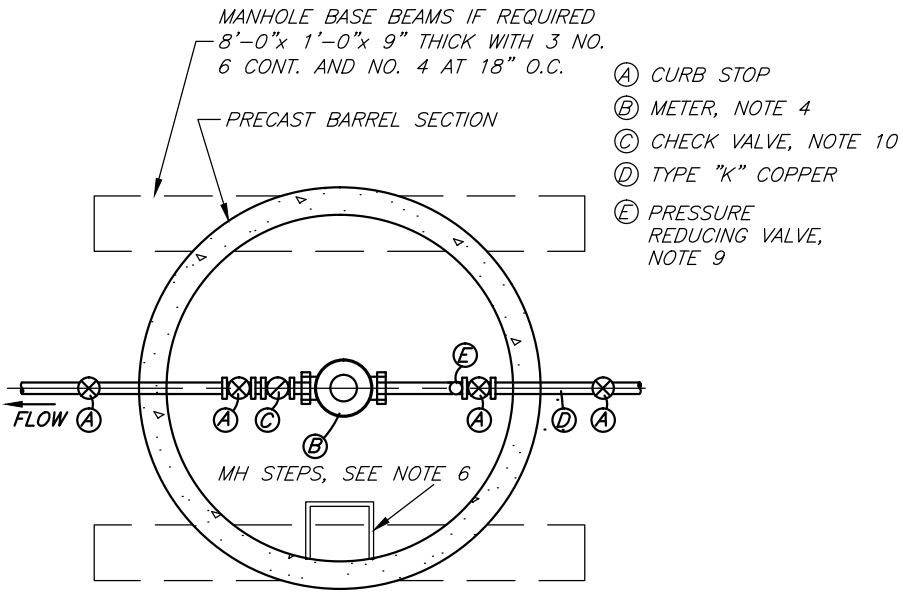
PLAN

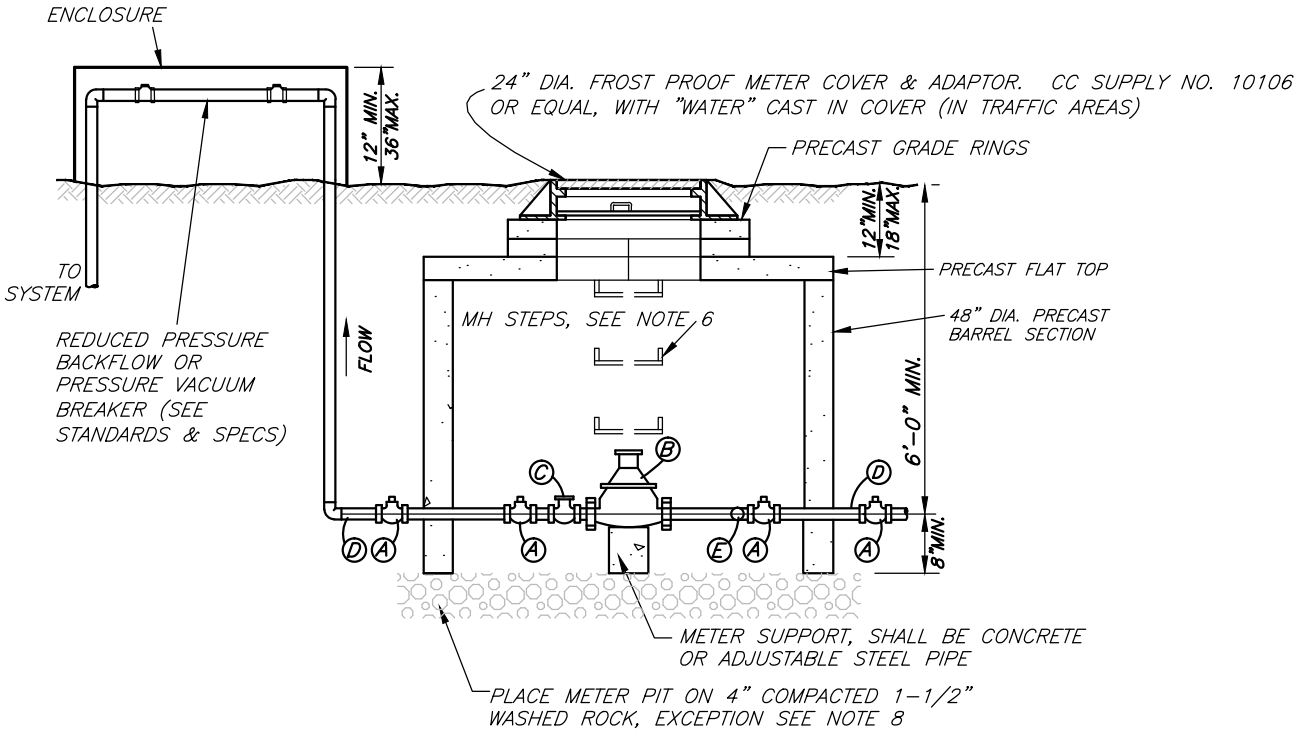
MAINLINE WATER METER

NOTES

1. VAULT SHALL BE PRECAST CONCRETE AND CAPABLE OF WITHSTANDING HS 20–44 TRAFFIC LOADING CONDITIONS
2. WHERE PIPES PENETRATE WALLS, USE LINK SEAL OR FILL ANNULAR SPACE W/ NON–SHRINK GROUT
3. COAT ALL EXTERIOR VAULT SURFACES WITH BITUMINOUS DAMPROOFING
4. ALL 2" PIPE SHALL BE BRASS W/ALL OTHER PIPE AND FITTINGS BEING FLANGED DUCTILE IRON
5. ALL TIE–RODS SHALL BE 3/4" ALL–THREAD OR MEGA–LUGS ON EXTERIOR CONNECTIONS
6. CONTRACTOR SHALL SUBMIT VAULT PIPING SCHEMATIC W/ VAULT DIMENSIONS TO DISTRICT PRIOR TO ORDERING MATERIALS OR EQUIPMENT
7. PIPE MATERIAL TO BE FLANGED OR RESTRAINED JOINT PIPE.

DETAIL "W16"





IRRIGATION METER PIT DETAIL

GENERAL NOTES

1. MANHOLE BASE BEAMS SHALL BE REQUIRED FOR INSTALLATIONS IN DRIVEWAYS OR PARKING AREAS
2. A 48" DIA. MANHOLE PIT WILL ACCOMODATE 1-1/2" & 2" SPLIT CASE METERS.
3. JOINTS INSIDE METER VAULT SHALL BE EITHER THREADED OR SOLDERED WITH 95/5% TIN/ANTIMONY SOLDER.
4. METER SHALL BE A NEPTUNE T-10 WITH PROREAD ECODER PIT REGISTER WITH A RF STYLE REMOTE. METERS SHALL BE FLANGES WITH BRASS COMPANION FLANGES.
5. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE DISTANCE OF FIVE FEET BEYOND THE METER PIT ON THE OUTLET SIDE.
6. MANHOLE STEPS SHALL BE PLACED ON THE OPPOSITE SIDE OF BYPASS AT 16" O.C., STEPS TO BE NEENAH R-1982-W OR EQUAL.
7. IF SURFACE IS NOT TO FINAL GRADE AT THE TIME OF INSTALLATION OF METER, OWNER MUST RAISE OR LOWER PIT WHEN SURFACE IS GRADED.
8. IN AREAS OF GROUND WATER, CAST IN PLACE 6" THICK CONCRETE BASE, 6'-0" DIA, WITH NO. 4 BARS AT 12" O.C. EA. WAY. INSTALL 4" PVC DRAIN TO DAYLIGHT. PLACE BASE ON UNDISTURBED GROUND OR 1-1/2" COMPACTED WASHED ROCK FOR STABILIZATION.
9. PRESSURE REDUCING VALVE-WATTS U-5-B
10. CHECK VALVE-FORD H SERIES (TESTABLE).

DETAIL "W17"

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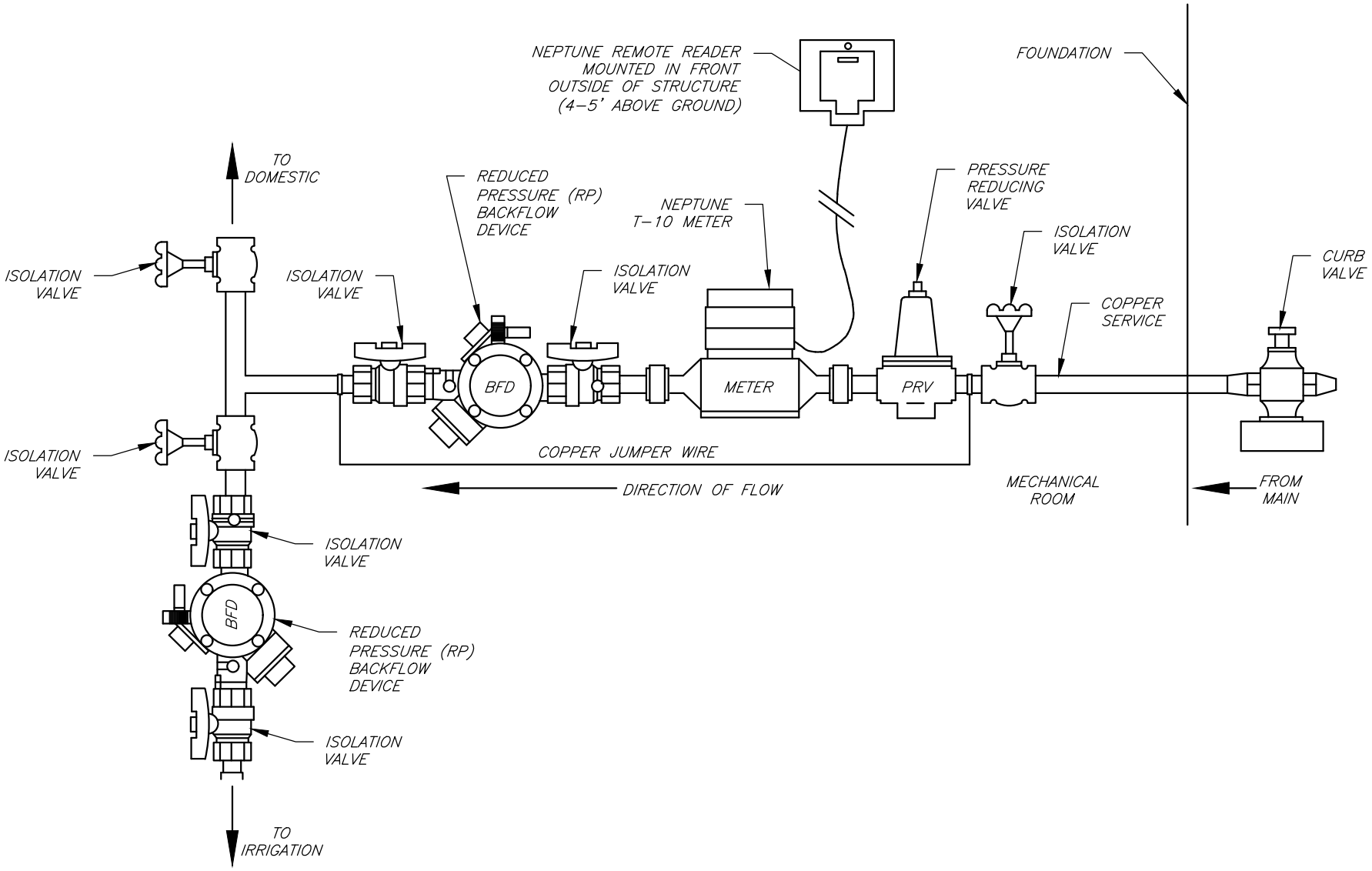
Prepared By: SGM

SNOWMASS WATER & SAN. DISTRICT

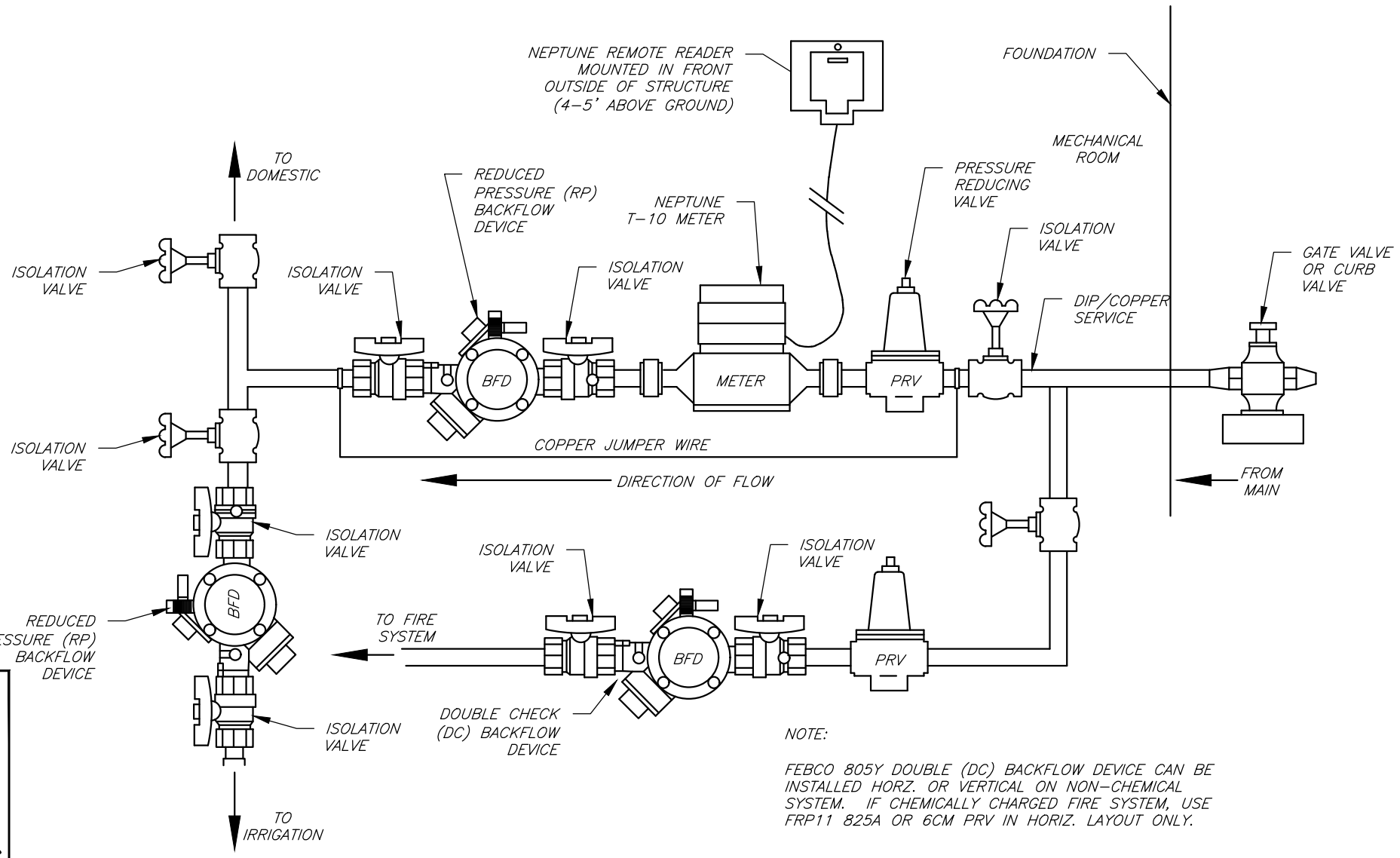
Date: 10/03/13 By: FBLACKWELDER

RESIDENTIAL WITHOUT FIRE SYSTEM



DETAIL "W18"

RESIDENTIAL/COMMERCIAL WITH FIRE SYSTEM



NOTE:

FEBCO 805Y DOUBLE (DC) BACKFLOW DEVICE CAN BE INSTALLED HORZ. OR VERTICAL ON NON-CHEMICAL SYSTEM. IF CHEMICALLY CHARGED FIRE SYSTEM, USE FRP11 825A OR 6CM PRV IN HORIZ. LAYOUT ONLY.

Prepared By: SGM

SNOWMASS WATER & SAN. DISTRICT

DETAIL "W19"

Date: 10/03/13 By: FBLACKWELDER

After Recording, Return To:
Mark E. Hamilton, Esq.
Holland & Hart LLP
600 E. Main St., Suite 104
Aspen, CO 81611

EASEMENT AGREEMENT
(Snowmass Water and Sanitation District)

This Easement Agreement (the "Agreement") is made and is effective this ____ day of _____, 20__, by and between SNOWMASS WATER AND SANITATION DISTRICT, a Colorado special district ("SWSD"), and _____("Property Owner"), [OR INSERT NAMES OF OFF-SITE OWNER(S)].

WITNESSETH:

1. Grant of Easement. Property Owner is the owner of that certain real property located in the Town of Snowmass Village, Colorado, more particularly described on Exhibit A attached hereto (the "Property"). Property Owner hereby conveys, assigns, transfers and grants to the SWSD, free and clear of all encumbrances, a permanent, non-exclusive easement for installation, maintenance, alteration, repair, replacement and operation of underground pipelines, underground pumping equipment and other underground facilities, and above ground appurtenances thereto used for and in connection with the potable water and sanitary sewer systems owned and operated by the SWSD ("Easement"), upon, over, under and across that portion of the Property more particularly described on Exhibit B attached hereto (the "Easement Area"), and warrants title to the same, subject only to any exceptions accepted by SWSD as listed on Exhibit C.

2. Access to Easement. The SWSD shall also have a non-exclusive right of ingress and egress to and from the Property, for equipment, vehicles, and persons over and across the Property to and from the Easement Area and established public roadways, as reasonably necessary to access the Easement Area, provided that the SWSD shall use public streets to the extent possible.

3. Use of Property. Property Owner's use of the Property shall not unreasonably hinder, conflict, or interfere with SWSD's rights in the Easement herein granted. Property Owner (and Property Owner's heirs, executors, administrators, personal representatives, successors, successors-in-interest, and assigns) shall not bore, drill, tunnel or undertake any digging or excavation on or under the Easement or impair the lateral or subjacent support of the Easement. Any existing improvements or landscaping within the Easement Area (other than potable water or sanitary sewer system components owned by SWSD), shall be at the risk of the Property Owner, and in the event that any such improvements or landscaping are damaged or destroyed in the course of SWSD's proper exercise of its rights pursuant to this Easement Agreement, any damages or repairs to the same shall be at the expense of the Property Owner, and SWSD shall have no liability therefore. No additional improvements, including any buildings, structures, retaining walls, fences, lakes, ponds, drainage ditches, exaction, streets,

driveways, sidewalks, pipelines, natural gas or oil lines, electric lines, telephone lines, cable lines or other utilities of any kind, whether above ground or underground, or other improvements of any kind (each, an "Improvement"), nor any additional landscaping, including any trees, shrubs, bushes, plantings (excluding shallow root crops), or other vegetation (other than naturally growing grasses or shallow root shrubbery or plants) (collectively "Landscaping") shall be placed over or across the Easement, nor change the contour or grade of, or add or remove dirt from, the Easement, without, in each case, first obtaining the prior written consent of SWSD, which consent will not be unreasonably withheld, provided that each of the following are satisfied: (i) the safety and integrity of the SWSD's water and sewer system and related equipment and lines are not impaired by the applicable Landscaping or Improvement, (ii) the applicable Landscaping or Improvement does not unreasonably diminish the utility or usefulness of the Easement to SWSD, and (iii) the applicable Landscaping or Improvement does not materially impair the ability of or increase the cost to SWSD to undertake any of the activities described or allowed in this Agreement, or the SWSD and the Property Owner enter into a separate written agreement whereby Property Owner assumes liability for the Improvement and/or Landscaping, including any additional expenses that SWSD may incur due to the same. In the event items (i) through (iii) above have not been satisfied, as reasonably determined by SWSD, then SWSD may withhold its consent at its sole discretion. SWSD's consent to any Landscaping or Improvement shall not constitute any agreement, representation, or warranty by SWSD about the safety, condition, or sufficiency of any such Landscaping or Improvement or compliance with laws and regulations for any such Landscaping or Improvement, and such risks, which shall remain solely with the Property Owner. In the event that SWSD consents to the replanting of any Landscaping, or installation of any Improvements, that may have been disturbed, damaged or destroyed by SWSD's exercise of its rights hereunder, such replanting or installation shall not interfere with the maintenance or integrity of SWSD's water and sewer system and shall be at Property Owner's sole cost and expense. SWSD shall have the right, but not the obligation, to notify and require Property Owner, at Property Owner's cost, to immediately remove any such unauthorized Improvement or Landscaping from the Easement, and if Property Owner fails to remove such unauthorized Improvement or Landscaping within thirty (30) days after receipt of SWSD's notice, then SWSD shall have the right to remove them at Property Owner's cost.

4. Abandonment of Easement. Non-use shall not constitute abandonment of the easement and other rights granted herein, shall have no effect on their validity, and shall not be grounds for termination of the Agreement. However, if the Easement is no longer useful to SWSD for the purposes stated herein, as determined by SWSD in its sole discretion, SWSD may execute and record a termination of this Agreement. SWSD may, but shall have no obligation to, remove SWSD's water and sewer lines from the Easement Area in connection with such termination. If SWSD decides to remove said lines, SWSD agrees that within a reasonable time following the completion of removal, SWSD shall grade the Easement back to the ground level and contour as existed immediately prior to such removal, and SWSD shall comply with all federal, state, or local laws applicable to abandonment of the lines.

5. Insurance. SWSD shall be required to obtain and keep in full force and effect at all times during the term of this Agreement, and to pay the costs and premiums of, broad form general commercial liability insurance with respect to the use and operation of a potable water

and/or sewer system within the Easement Area, with limits of not less than $1,000,000.00 combined single limit of liability.

6. Damages Limitation. Any damages awarded to either party under this Agreement shall be limited to only the actual damages directly incurred by such party and neither party shall be liable for consequential, incidental, punitive, exemplary or indirect damages in tort or in contract, or under any legal theory, and all such damages are hereby excluded and waived by the parties hereto with respect to this Agreement and/or the exercise of rights hereunder.

7. Mechanic's Liens. Nothing contained herein shall authorize a party or person or entity acting through, with or on behalf of SWSD to subject the Easement or the Property or any portion thereof to mechanic's liens. If any such lien shall be filed against the Easement or the Property by anyone performing work for SWSD, SWSD shall cause such lien to be discharged or otherwise released from record.

8. Notices. Any notice, demand, or document which either party is required or may desire to give, deliver or make to the other party shall be in writing and may be personally delivered or given by facsimile transmission or given by United States certified mail, return receipt requested, addressed as follows:

To Property Owner(s): Name
Address
Snowmass Village, CO 81615
Attn:
Facsimile:

To SWSD: SNOWMASS WATER AND SANITATION DISTRICT
P.O. Box 5700
Snowmass Village, Colorado 81615
Attn: District Manager
Facsimile:

Any notice, demand or document delivered or made by United States mail shall be deemed to have been received on the earlier of the date actually received or the third business day after the same is deposited in the United States mail as certified matter, addressed as above provided, with postage prepaid. Notice by facsimile transmission shall be deemed given upon receipt of a confirmation by sender.

9. Miscellaneous.

a. Notice of Default, Right to Cure. In the event of any default under the provisions of this Agreement, the non-defaulting party shall, prior to the exercise of any right or remedy, give the party alleged to be in default written notice of such default together with right for a period of ten days after receipt of such notice to cure said default. If a default is not cured within the time provided or any extension thereof (which right to cure period shall not under any circumstances exceed in the aggregate twenty days), the non-defaulting party shall then and thereafter be free to pursue any right or remedy allowed by this Agreement or otherwise by law.

b. Remedies. Each party shall have the right and power to bring suit in its own name for any legal or equitable relief due to lack of compliance with any provisions of this Agreement. If any court proceedings are instituted in connection with the rights of enforcement and remedies provided in the Agreement, the prevailing party shall be entitled to reimbursement of its costs and expenses, including reasonable attorneys' fees, in connection therewith.

c. Waiver. Failure of any party hereto to insist upon the strict performance of any provision of this Agreement shall not be construed as a waiver for the future of any such provision.

d. Amendments in Writing. This Agreement may not be amended, nor may any rights hereunder be waived, except by an instrument in writing executed by the parties hereto and duly recorded in the real estate records of Pitkin County, Colorado (the "Pitkin County Records").

e. Colorado Law. The interpretation, enforcement or any other matters relative to this Agreement shall be construed and determined in accordance with the laws of the State of Colorado.

f. Run With the Land. All the provisions of this Agreement, including the benefits and burdens created thereby, shall run with the Property. This Agreement is made subject to any existing easements, reservations, restrictions or rights of way.

g. Correction Documents. In the event any clerical or other errors are found in this Agreement or any legal descriptions or other exhibits hereto, or in the event any exhibit shall be missing, the parties agree to promptly execute, acknowledge, initial and/or deliver as necessary and documentation in order to correct the erroneous document, description, exhibit or to provide any missing exhibit.

h. Binding Effect. All provisions of this Agreement inure to the benefit of and are binding upon the parties hereto, their heirs, successors, assigns and personal representatives.

i. Prior Easement.

j. Governmental Immunity Act. Notwithstanding anything to the contrary herein, SWSD shall not be deemed to have waived in any manner the rights, obligations, and protections afforded or imposed on SWSD by law including the Colorado Governmental Immunity Act or the Colorado Constitution.

k. The acceptance of this Agreement by SWSD in no way obligates the SWSD to install any underground pipelines, underground pumping equipment or other underground or above-ground facilities within the Easement Area.

IN WITNESS WHEREOF, the parties have signed this Agreement the day and year first written above.

SWSD:

SNOWMASS WATER AND SANITATION DISTRICT

By: _____
Signature
Print Name:
Title: District Manager

STATE OF COLORADO)
) ss.
COUNTY OF PITKIN)

The foregoing Easement Agreement was acknowledged before me on _____, 20__ by Kit Hamby as District Manager of the Snowmass Water and Sanitation District.

WITNESS MY HAND AND OFFICIAL SEAL.
My commission expires:

_____
Notary Public

[Signatures Continue on Next Page]

PROPERTY OWNER:
Company/Property Owner: _____

By: _____
Signature
Print Name:
Title:

STATE OF COLORADO)
) ss.
COUNTY OF PITKIN)

The foregoing Easement Agreement was acknowledged before me on October __, 2009 by Dwayne Romero as President for Base Village Owner, LLC.

WITNESS MY HAND AND OFFICIAL SEAL.
My commission expires:

_____
Notary Public

[INSERT LENDER SUBORDINATION IF APPLICABLE]

Exhibit A
(Property)

[ADJUST DEPENDING UPON OWNERSHIP OF VARIOUS PORTIONS OF PROPERTY FOR EACH SPECIFIC EASEMENT GRANTED OR PORTION OF OFFSITE PROPERTY AFFECTED]

Exhibit B
(Easement Area)

Exhibit C

Title Exceptions
(if any)

BILL OF SALE AND GRANT OF WARRANTY

KNOW ALL PERSONS BY THESE PRESENTS, that [Developer], whose address is _____ ("Grantor"), do hereby sell, set over, transfer, assign and convey unto the Snowmass Water and Sanitation District, a Colorado Special District, the address of which is 177 Clubhouse Drive, P.O. Box 5700, Snowmass Village, Colorado 81621 (the "District"), with warranty as described below, all of Grantor's right, title and interest in and to the following property, goods and chattels, to wit:

> All of the water and wastewater infrastructure ("Facilities") constructed by Grantor, excluding service lines as defined in the District's Rules and Regulations, which infrastructure is more particularly described on the plans described as_____ and prepared by _____([insert date and plan data as completely as possible]), as approved by SGM, the District's consulting engineer, by letter dated _____, and subject to any conditions contained therein, which infrastructure was constructed by Grantor for the purpose of providing water and wastewater service to Grantor's property commonly known as _____ [insert subdivision name] more particularly described on **Exhibit A**, attached hereto and incorporated herein by reference [attach legal description of property to be served];

TO HAVE AND TO HOLD the same, together with all and singular the appurtenances and privileges thereunto belonging or otherwise appertaining.

GRANTOR HEREBY WARRANTS any and all Facilities conveyed herein for a period of two years from the date of acceptance of the Facilities by the District, which Facilities were accepted by the District on _____ [insert date]. Grantor specifically warrants that:

(i) The title to the Facilities conveyed to the District is good and its transfer rightful;
(ii) Grantor has the right, ability and authority to transfer title to the Facilities;
(iii) Any and all Facilities conveyed are free from any security interest, lien or any other encumbrance; and
(iv) Any and all Facilities so conveyed shall be free of any defects in materials or workmanship for a period of two years, as stated above.

This warranty expires on _____, 201___.

IN WITNESS WHEREOF, the Grantor has executed and delivered this Bill of Sale and Grant of Warranty, effective this __ day of _____, 201___.

_____
Developer

STATE OF COLORADO)
) ss.
COUNTY OF_____)

ACKNOWLEDGED, subscribed, and sworn to before me this ___ day of _____, 201__, by persons satisfactorily identified to me as _____.

WITNESS my hand and official seal.

_____
Notary Public

My Commission expires:_____

SNOWMASS WATER AND SANITATION DISTRICT BYLAWS

1.1 **Legal Status.** The Snowmass Water and Sanitation District is a quasi-municipal corporation and political subdivision of the State of Colorado and is organized pursuant to Title 32 of the statutes of the State of Colorado. By statutory definition, it is a special district which provides treated water for domestic and other purposes and provides sanitation service for domestic and other public and private purposes.

1.2 **Directors**. The property, business and affairs of the District shall be managed by the Board which shall be elected and otherwise chosen pursuant to, and shall exercise the powers granted by the laws of the State of Colorado, particularly the Colorado Special District Act, as heretofore and hereafter mentioned. All powers, privileges and duties vested in, or imposed upon the Snowmass Water and Sanitation District (hereinafter referred to as "District") by law shall be exercised and performed by and through the Board of Directors (hereinafter referred to as "Board"), whether set forth specifically or impliedly in these bylaws.

1.2.1 Director Qualifications and Terms. The qualifications and term of each Director shall be determined by applicable statutory provisions with elections held in even numbered years. At the expense of the District, each Director shall furnish a faithful performance surety bond. The bond may be a blanket surety bond.

1.2.2 Oath of Office. Each member of the Board, before assuming the responsibilities of his office, shall take and subscribe to the oath of office as required by state statute.

1.3 **Offices.** The administrative offices of the District shall be at 177 Clubhouse Drive, Snowmass Village, Colorado, unless otherwise designated by the Board. The Board, by resolution, may from time to time, designate, locate and relocate its administrative and Board meeting locations as, in its judgment, are necessary to conduct the business of the District.

1.4 **Meetings.** The Board shall meet regularly on the third Wednesday of each month at 8:30 o'clock a.m. in the Administrative Offices of the District, 177 Clubhouse Drive, Snowmass Village, Colorado.

1.4.1 Meetings to be Public. All meetings of the Board, other than executive sessions, shall be open to the public. Upon the affirmative vote of two-thirds of the quorum then present, the Board may hold an executive session only at any regular or special meeting and solely for the purpose of considering any of the following matters, (except that no formal action by way of adoption of any resolution, rule, regulation or policy position shall occur in executive session):

a. the consideration of the purchase, sale, lease, etc. of real and personal property and related matters;

b. conferences with legal counsel for the purposes of receiving legal advice on a specific legal question;

c. matters required to be kept confidential by federal or state law;

d. details of security arrangements or investigations;

e. determining positions relative to matters that may be subject to negotiations, developing strategy for negotiations, and instructing negotiators;

f. personnel matters [except if the employee who is the subject of the session has requested an open meeting] and;
g. consideration of documents protected by mandatory nondisclosure provisions of the Colorado Open Records Act;

1.4.2 Notice of Meetings. Permanent posting of the time and place of such regular meetings shall be posted in at least three public places within the District and in the office of the Clerk and Recorder of Pitkin County. Such permanent postings shall remain posted until a change in the date, time or place of such regular meetings. Individual postings of each meeting, including specific agenda information, where possible, shall be posted at least 24 hours in advance of each meeting at a place to be designated by the Board at its first meeting in January of each year. These bylaws shall constitute formal notice to Board members of such of regular meetings, and no other formal notice shall be required to be given to the Board members other than the permanent and temporary postings as required by law.

1.4.3 Special Meetings. Special meetings of the Board may be called upon three days advance notice, which advance notice shall be posted in three places within the District and at the offices of the Clerk and Recorder of Pitkin County and delivered to each Director. In addition, a notice of such special meeting must be posted twenty four hours in advance at the place annually designated pursuant to paragraph 7.4.2, above.

1.5 **Agenda**. The District Manager shall prepare an agenda for each meeting and provide a copy of the agenda to each member of the Board prior to the meeting and shall post a copy of the agenda at the District's offices.

1.6 **Robert's Rules of Order**. So far as is practical, Robert's Rules of Order shall be followed for matters coming before the Board; provided, however, that no action, formal or informal, shall be set aside due to any irregularity or noncompliance with Roberts Rules of Order. The Chairperson shall make all rulings with respect to procedural issues, and shall have a vote on each issue coming before the Board.

1.7 **Quorum.** All official business of the Board shall be transacted at a regular or special meeting at which a quorum (i.e., three) of the Directors shall be present, except as provided in Section 1.8. Directors must be physically present for purposes of determining whether a quorum is present.

1.8 **Voting Requirements and Procedures.**

1.8.1 Voting Requirements. Any action of the Board shall require the affirmative vote of a majority of the Directors present and voting. When special or emergency circumstances materially affecting the affairs of the District or the health, welfare, and safety of District residents and property owners so dictate, then those Directors available at the time may undertake whatever emergency action is considered necessary and may so instruct the District's employees. Ratification of the action so taken shall be entered on the minutes at the next meeting of the Board.

1.8.2 Motions, Resolutions, or Orders. Actions of the Board necessary for the governing and management of the affairs of the District, for the execution of the powers vested in the District, and for carrying into effect the provisions of Article 1 of Title 32, C.R.S., as amended, shall be taken by the passage of motions, resolutions, or orders, as may be appropriate. All such formal action shall require the majority vote of the quorum present. Votes on all motions, resolutions, and orders shall be taken by the Chairman stating "All in favor, say Aye" and "All opposed, say No" or other similar language which shall indicate the manner of responding to the question, at the discretion of the Chairman.

Roll call votes may be taken at the request of any director, or at the direction of the Chairman.

1.9 Officers, District Manager and Personnel.

1.9.1 Officers. The officers of the District shall include a President, Vice President, Secretary and Treasurer. The Board shall elect one of its members as:

a. Chairman of the Board of Directors and President of the District

b. Vice Chairman of the Board of Directors and Vice President of the District

The Secretary and Treasurer may be members of the Board. The President and Secretary may not be the same person.

1.9.1.1 Election of Officers. The Board of Directors shall elect from its membership a president who shall also serve as chairman of the board, a vice president, a secretary, and such assistant secretaries and assistant treasurers, who shall be the officers of the Board of Directors and of the District, as the Board may determine. The Board may elect a secretary who is not a member of the Board. The officers shall be elected by a majority of the Directors voting at the meeting in accordance with the voting procedures set forth in Section 1.8. The election of the officers shall be conducted at the first regular meeting of the Board following the regular biennial elections. Each officer so elected shall serve at the pleasure of the Board or for a term of two years, which term shall expire upon the election of the officer's successor or upon the officer's reelection to that office. Voting for the election of officers may be conducted by secret ballot at the discretion of the Board. The regular election of such officers shall be biennially at the first regular meeting of the Board following the biennial election of the Directors in such year. A special election to fill any vacancies in such offices may be held by the Directors at any regular or special meeting. Any officer elected to fill a vacancy shall serve until the next election of officers. In the event of absence or inability of any officer to act, the Board may delegate the powers or duties of such officer to any other office, Director or person whom it may select.

1.9.1.2 Vacancies. Any vacancy occurring in any office shall be filled for the unexpired term in the same manner as is provided for the election of full-term officers. Vacancies on the Board shall occur as set forth by state statute, including the failure of a director to attend three consecutive meetings without such additional absences being excused by the Board due to illness or injury. Any vacancy of the Board shall be filled by appointment by the remaining Directors as prescribed by statute, with or without advertisements of the vacancy at the discretion of the Board.

1.9.1.3 President and Chairman. The president shall be the chairman of the Board, shall preside at all meetings, and shall be the chief executive officer of the District. The president shall sign all contracts, deeds, notes, warrants and other instruments on behalf of the District, and discharge such other duties as may be required or authorized.

1.9.1.4 Vice President. The vice president shall perform the duties of president and chairman in the absence of the president.

1.9.1.5 Additional Duties. The officers of the Board shall perform such other duties and functions as may from time to time be required by the Board, by the bylaws or rules and regulations of the District, or by special

exigencies, which may later be ratified by the Board; provided, however, that no director shall be employed by the District in any capacity.

1.9.1.6 Directors' Fees. Board members shall be entitled to the maximum amount of compensation provided by state statute for each meeting attended, not to exceed the annual maximum established by applicable statute.

1.9.1.7 Disclosure of Conflict of Interest. Any Director who is present at a meeting at which is discussed any matter in which that Director has, directly or indirectly, a private pecuniary or property interest shall disclose such interest to the Board. Unless such Director has given prior advance written notice to the Colorado Secretary of State and to the Board, in accordance with all statutory requirements, such Director shall refrain from advocating for or against the matter and shall disqualify himself/herself from voting on such matter. The Board may adopt a separate policy specifically regarding ethical standards and practices for Board members.

1.9.2 Authority of District Manager. The Board hereby delegates to the District Manager all authority necessary and proper for the District Manager to operate the District on a day-to-day basis. The Board shall not actively participate in the day-to-day operations of the District, but shall act in a capacity as a Board of Directors of a corporation, and the District Manager shall act in a capacity of the President of a corporation. The Board may appoint and hire a District Manager to serve for such term and upon such conditions, including salary, as the Board may establish pursuant to contract. The Manager shall have general supervision over the administration of the affairs, employees and business of the District and shall be charged with the hiring and discharging of non-contract employees. The Manager shall perform those duties as may be assigned by the Board. Job performance will be evaluated by the Board on a periodic basis.

1.9.3 Selection and Tenure of Consultants. The selection of outside consultants including engineers, architects, accountants, special consultants and attorneys shall be made by the Board and shall be based upon the relative qualifications and capabilities of the applicants and shall not be based on political services or affiliations. Agents and consultants shall serve at the pleasure of the Board. Contracts for professional services may be entered into on such terms and conditions as determined by the Board.

1.9.4 Personnel Policies. Annually at the time of the preparation of the budget for the succeeding fiscal year, the Board shall review, and revise where necessary, the personnel policies of the District. A complete edition of the personnel policies of the District shall be provided to each employee upon commencement of employment, and a revised copy, following any revisions, shall be made available to all employees after adoption.

1.9.5 Ethics. The Board and District employees are subject to and shall comply with the provisions of the Statutes of the State of Colorado concerning disclosure of conflicts of interest (C.R.S. 18-8-308) and standards of conduct (C.R.S. 24-18-101 et. seq.), as they presently exist and may hereafter be amended.

1.10 Financial Administration.

1.10.1 Financial Matters. All District bank accounts and investments shall be maintained in the name of the District and shall be authorized investments of a governmental entity in accordance with the laws of the State of Colorado.

1.10.1.1 One Signature Checks. All checks shall require the signature of a Director or the District Manager if the amount of the check is less than $1,000.00.

1.10.1.2 Two Signature Checks. All checks in an amount greater than or equal to $1,000.00 shall require the signature of two Directors or the signature of a Director and the District Manager. The District Manager is not authorized to sign warrants or District checks payable to him/her without such warrant or check countersigned by a member of the Board of Directors.

1.10.1.3 Transfer of Funds. The District Manager is authorized to transfer funds within Alpine Bank-Snowmass Village, Bank of Colorado and US Bank to various accounts held in the banks on the District Manager's direction without the necessity of approval of the Board of Directors in advance irrespective of the amount of the transfer.

1.10.1.4 Investments.

1.10.2 Fiscal Year. The fiscal year of the District shall commence on January 1 and end on December 31 of each year.

1.10.3 Budget. On or before October 15 of each year, the Board's designated District Manager shall prepare and submit to the Board a proposed budget for the ensuing fiscal year. Such proposed budget shall set forth the aggregate figures of the budget in such manner as to show the balanced relations between the total proposed expenditures and the total anticipated income or other means of financing the proposed budget for the ensuing fiscal year, as contrasted with the corresponding figures for the last completed fiscal year and the current fiscal year. It shall be supported by explanatory schedules or statements classifying the expenditures contained therein by services, subjects and funds. The anticipated income of the District shall be classified according to the nature of receipts.

1.10.4 Notice of Budget. Upon receipt of such proposed budget, the Board shall cause to be published a notice that the proposed budget is open for inspection by the public at the business office; that the Board will consider the adoption of the proposed budget on a certain date; and that any interested elector may inspect the proposed budget and file or register any objections thereto at any time up to and through the public hearing.

1.10.5 Adoption of Budget. On the day set for consideration of such proposed budget, the Board shall review the proposed budget and thereafter revise, alter, increase or decrease the items as it deems necessary in view of the needs of the District and the probable income of the District. The Board shall thereafter formally adopt the budget setting forth the expenditures to be made in the ensuing fiscal year. The Board shall provide for sufficient revenues to finance budget expenditures.

1.10.6 Filing of Budget. Within 30 days of adoption of the budget, the Board shall cause a certified copy of such budget to be filed with the Division of Local Government in the Department of Local Affairs.

1.10.7 Appropriating Resolution. At a meeting held no later than December 31 each year, the Board shall enact a resolution making appropriations for the ensuing fiscal year. The amounts appropriated shall not exceed the amounts established in the adopted budget.

1.10.8 No Contract to Exceed Appropriation; Contract Authorization.

a. The Board shall have no authority to enter into any contract, or otherwise bind or obligate the District to any liability for payment of money for any purposes, for which provision is not made in an appropriation resolution, including any legally authorized amendment thereto, in excess of the amount of such appropriation for that fiscal year. Any contract, verbal or written, contrary to the terms of this sub-section shall be void ab initio, and no District funds shall be expended in payment of such contracts, except as provided in the following subsection.

b. The Board shall approve all contractual obligations of the District. However, the Board may delegate general purchasing authority for routine supplies and expenditures to its employees or officers.

1.10.9 Contingencies. In cases of emergency caused by a natural disaster, public enemy, or some contingency which could not reasonably have been foreseen at the time of the adoption of the budget, the Board may authorize the expenditure of funds in excess of the budget by resolution duly adopted by a two-thirds vote of the entire membership of the Board, as provided by state statute.

1.10.10 Annual Audit. The Board shall cause an annual audit to be made of all financial affairs of the District through December 31st of the prior fiscal year. A copy of the audit report shall be maintained in the District office as a public record for public inspection at all reasonable times. The treasurer shall forward a copy of the audit report to the State Auditor pursuant to statutory requirements, within thirty days following receipt of the audit.

1.11 Director Indemnity. A Director shall be entitled to the following assurance from the District:

1.11.1 Indemnity. To the extent authorized by law, the District shall indemnify and hold a Director harmless from and against any action, suit or proceeding arising by reason of the fact that a Director is, or at the time of the alleged incident which is the basis of such action, suit or proceeding was, a Director of the District.

1.11.2 Condition of Indemnity. A Director wishing to obtain the benefit of Section 1.11.1, shall provide the District Manager written notice of commencement of any action, suit or proceeding involving the Director in a timely manner to allow the District to defend such action, suit or proceeding.

1.11.3 Limitation of Indemnity. The provisions of Section 1.11.1 are intended to be a supplement to the provisions contained in the Colorado Governmental Immunity Act. Section 1.11.1 shall only become effective in the event the provisions of the Governmental Immunity Act do not apply because of a limitation due to the type of action, suit or proceeding; provided that:

a. the Director if considered to be a Public Employee otherwise would be entitled to obtain the benefits of the Governmental Immunity Act; and

b. such action, suit or proceeding did not arise because of willful misfeasance, malfeasance, bad faith, gross negligence or reckless disregard of duty by the Director; and

c. the Director timely complies with all the duties and responsibilities of a Public Employee set forth in the Governmental Immunity Act.

i. Procedure. The District shall determine the method and procedure to carry out its obligation to a Director set forth in Section 1.11.1, including without limitation the appointment of

legal counsel and the terms of settlement of any action, suit or proceeding against the Director.

1.12 Bidding and Contracting Procedures. Except in cases in which the District will receive aid from a government agency, a notice shall be published for bids on all construction contracts for work or material, or both, involving an expense of $25,000.00 or more. The District may reject any and all bids. If it appears that the District can perform the work or secure material for less than the lowest bid, it may proceed to do so. If possible, at least three quotes shall be obtained for work or material, or both, involving an expense less than $25,000.00. The purchase of equipment, apparatus, and vehicles shall be exempt from these bidding and contracting procedures provided, however, that the Board may adopt specific policies with respect to the purchase of such equipment, apparatus, and vehicles.

1.12.1 Bid Notice. A Notice or Invitation to bid shall be published in a newspaper of general circulation within the District boundaries pursuant to state statute. The Notice will request sealed proposals for the construction to be done, or for the materials needed. The specifics of the contract will be stated; where and when the plans and specifications may be examined; and the time and place the sealed proposals will be opened and publicly read.

1.12.2 Rejection and Award of Bids. The Board retains the right at all times, in its sole discretion, to reject any or all proposals; determine the proposal and subcontractors that will serve the best interests of the District; and determine the proposal and subcontractors which are most responsible to perform the work.

1.12.3 Bid Bond. Bids must be accompanied by an acceptable bidder's bond, or a certified check payable to the District, in an amount equal to 5% of the bid. If within the time designated in the Notice of Award, the Contract is not executed, and, if required, Payment and Performance Bonds and Certificates of Insurance are not provided, the District shall keep the bid bond as liquidated damages, and assess such other damages as the District may determine.

1.12.4 Bonds. Payment and Performance Bonds are required for all construction contracts over $50,000.00; and shall be discretionary with the Board for contracts which are under that amount.

1.12.5 Retainage. Ten percent of all pay estimates shall be withheld during the construction until 50% of the contract work has been performed; thereafter, no additional sums shall be withheld if satisfactory progress is being made. For any exceeding $80,000.00, the contractor may deposit acceptable securities in lieu of such retained amounts in accordance with law. (Section 24-91-103, C.R.S.)

1.13 Powers of the Board of Directors. Without restricting the general powers conferred by law, it is hereby expressly declared that the Board shall have the following power and duties:

1.13.1 To determine and designate, except as otherwise provided by law or these bylaws, who shall be authorized to make purchases, negotiate for the purchase of real estate, negotiate leases, and sign receipts, endorsements, checks, releases and other documents.

1.13.2 To create standing or special committees and to delegate such power and authority thereto as the Board deems necessary and proper for the performance of such committee's functions and obligations, consistent with statutory powers.

1.14 **Modification of Bylaws.** These Bylaws may be altered, amended or repealed at any regular meeting or at any special meeting of the Board called for that purpose after an initial presentation of the proposal at a prior regular meeting of the Board.

1.15 **Severability.** If any provision of these Bylaws or the application thereof is held invalid, such invalidity shall not affect the provisions or applications of these Bylaws which can be given effect without the invalid provision or application. To this end, the provisions of these