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ARTICLE 1

GENERAL

1-1 SCOPE: These Rules and Regulations are promulgated pursuant to the authority granted in Section 32-1-1001(1)(m), C.R.S., as a comprehensive body of regulations governing the operations of the District, and shall supersede and have priority over any and all informal practices or policies of the District, whether in written form or otherwise.

1-2 PURPOSE: The purposes for which this District was organized are, subject to all rights, powers, rules, regulations and policies of the District:

1-2-1 To construct, operate and maintain a domestic water distribution system and to provide a source of potable water within the area of the District as may be economically feasible from dependable and reliable source or sources from time to time;

1-2-2 To construct, operate and maintain a sanitary sewer (sewerage) system to collect, transmit, and treat wastewater within and from the area of the District; and

1-2-3 To construct, operate and maintain cost-efficient wastewater treatment facilities which consistently meet or exceed federal, state and local regulations, and which consistently provide a high level of water quality in the Ten Mile River Basin and downstream.

1-3 SERVICES AND FACILITIES: The services and facilities provided by the District consist of water mains and distribution lines and structures, sewer collection and transmission lines and structures, related equipment and fixtures, and appurtenances thereto, together with services necessary to the proper operation and maintenance thereof rendered to the District under contracts with other governmental entities and private consultants and contractors.

1-4 AREA SERVED: The area served and to be served by the District is the area included within the boundaries of the District as shown on the map thereof currently on file with the Board of County Commissioners of Summit County, Colorado, with the Division of Local Government of the Department of Local Affairs of the State of Colorado. Nothing herein shall be construed to obligate the District to provide service if: a) water is unavailable; b) it would be cost prohibitive to provide the service; c) providing new service would interfere with existing service commitments; or d) providing service would be hazardous or detrimental to the District or its users.

1-5 USAGE, TITLES AND CROSS REFERENCES: All words and phrases shall be construed and understood according to the common and approved usage of the language, but technical words and phrases and such others as may have acquired a particular and appropriate meaning in the law shall be construed and understood according to such particular and appropriate meaning. The title of any heading in these Rules and Regulations shall not be deemed in any way to restrict, qualify, or limit the effect of the
provisions set forth in the section or subsection set forth under each heading. Cross referencing is done for convenience only; the absence of same does not necessarily mean that no other section applies, and the presence of a cross reference note is not necessarily exhaustive.

1-6 **AMENDMENTS; REPEAL; ADDITIONS:** These Rules and Regulations are dated per the attached letter of adoption and effective as of that date. Additions and amendments to and repeals and reenactments of any of the provisions of these Rules and Regulations shall be made by Resolutions of the Board taking such action by specific reference to the Article, Part, Section and Paragraph number hereof. Upon the effective date of any such resolution, the District shall prepare new or reprinted pages incorporating herein the changes so enacted, and such new or reprinted pages shall be *prima facie* evidence of such action until such time as these Rules and Regulations, as subsequently amended, are readopted as a new set of Rules and Regulations.

1-7 **PRIOR OFFENSES; CONTRACTS NOT AFFECTED:** Nothing in these Rules and Regulations shall affect any offense or act committed or done, or any obligation, penalty or forfeiture incurred by any person, or any contract or right established or accruing before the effective date of these Rules and Regulations.

1-8 **SEVERABILITY:** Should any one or more sections or provisions of these Rules and Regulations be judicially determined invalid or unenforceable, such judgment shall not affect, impair or invalidate the remaining provisions of these Rules and Regulations, the intention being that the various sections and provisions hereof are severable.

1-9 **DISTRICT SYSTEM:**

1-9-1 **Ownership.** The District exercises the responsibilities of full ownership of the existing District System and, in the future, shall accept ownership responsibilities for only those additional facilities which have been formally conveyed to and accepted by the District in accordance with Article 6 below.

1-9-2 **Operation and Maintenance.** The District operates, maintains, repairs and replaces the District System. Such services include, without limitation, inspections of private premises upon such advance notice as is reasonable in the circumstances, in addition to periodic, systematic inspection and maintenance of District facilities. (Cross reference: 9A-1 SERVICE LINES)

1-9-3 **Repair Shut-offs.** The District may, without notice and without liability to anyone, suspend service when necessary repairs to the District system require the same.

1-10 **SERVICE OUTSIDE THE DISTRICT:** The District has no obligation whatever to provide any service outside of its legal boundaries, except as provided in any agreement entered into prior to the adoption of this provision. The Board may permit connection to the District System by persons or entities located outside the District's legal boundaries, or lease or contract to provide excess capacity in lines owned by the District, but such
permits, leases or contracts shall be in writing and shall provide for limitation on connections to whatever extent may be necessary to enable the District to meet its primary obligations to provide service to the residents of the District. All such permits, leases or contracts shall be subject to the Rules and Regulations of the District, and shall contain payment terms sufficient for the District to be fully reimbursed for the costs of furnishing service, with an additional amount to be determined by the Board. Permits, leases or contracts, at amounts less than the above minimum, may be made if warranted by economics, but an agreement providing for such lesser amounts shall not extend for more than one year or shall be revocable by the District.

(Cross reference: 5-11 EXTRA-TERRITORIAL SERVICE)

1-11 CONNECTION REQUIRED:

1-11-1 Requirement. Unless exempted by the Board for good cause and in conformity with applicable statutes and regulations, all improvements within the District Boundaries requiring water service or wastewater disposal service may be required to be connected to the District System if District facilities are within 400 feet of the boundary of the parcel of property on which such improvements are located. Such connection shall be made within 60 days after written notice to the Property Owner by the District, and any existing private water system shall be rendered inoperative, and any existing private wastewater disposal system, including but not limited to septic systems, vaults, tanks, grease traps, oil or sand traps or any other holding tank connected to wastewater disposal, shall thereupon be properly emptied, cleaned and filled with pea gravel.

1-11-2 Exemptions. During the construction of any improvements, temporary toilet facilities may be used in accordance with the regulations of the Summit County Health Department or of the Colorado Department of Public Health and Environment (CDPHE), but as soon as such improvement is connected to District facilities, such use shall be abandoned and all evidence of such use properly covered or disposed of. Further, the Board may authorize a private wastewater disposal system upon approval thereof by the Summit County Health Department.

(Cross reference: 9A-6 PRIVATE DISPOSAL SYSTEMS)

1-11-2.1 Where water service to any parcel of land is considered by the District and the owner of said land not to be reasonably available at the time said landowner seeks water service from the District, said parcel of land may be served on a temporary basis with water from a well or wells to be constructed by the landowner at the landowner's expense, subject to the following limitations. Any such plan for an alternate supply of water must be approved by the District in writing which shall provide that, at such time as water is available, the landowner shall, on request by the District: (1) connect all of the property to the District's water system in accordance with these Rules and Regulations; and (2) consent irrevocably to the District's perpetual use of all water in aquifers underlying said parcel of land.
1-12 **DUTY TO REPORT:** Any person (1) who damages or alters any District facility; or (2) who causes or permits any foreign materials to enter the District System; or (3) who causes any obstruction in the flow of water or wastewater in any District facility, and any person who discovers, observes, or has reasonable cause to believe that any of the foregoing has occurred, shall immediately report the same to the District.  
(Cross reference: 3-6-12 Failure to Report; 8-1-16 False Official Statement; Report)

1-13 **NOTICE OF EXCAVATIONS:** Any person who excavates in any area where District Facilities are located shall give written, personal or telephone notice of the date, extent, and duration of such excavation to the District at least three business days before beginning any such work. In addition, notify the Utility Notification Center of Colorado (UNCC) at 1-800-922-1987 to locate existing utilities. Do not begin excavation until utilities have been located. In the event of an emergency excavation notification shall take place to the best ability of the excavator prior to beginning. (Cross reference: 3-6-17 Failure to Give Notice; 9B-1-4 Subsurface Structures; Section 9-1.5-103(3) C.R.S.)

Except in “Emergency Situations” as defined herein, any person who excavates in any area where district facilities are located shall give notice to the district in person, by telephone, or in writing if delivered, of the commencement, extent, and duration of the excavation work, at least two business days prior to the commencement of the work, not including the day of actual notice, and shall, in addition notify the Utility Notification Center of Colorado (UNCC) to locate district facilities, if the exact location of district facilities is not verifiable based upon the district’s records, the district will mark the surface or otherwise indicate the possible location based upon its best estimate of the location of the facilities, any person proceeding to that excavate after having received notice from the district that the district cannot make an accurate location must exercise due caution and care to prevent damaging any underground facility. Such due caution and care includes but is not necessarily limited to “Potholing” to a depth two (2) feet deeper than the maximum depth of the intended excavation to determine whether any underground facilities are present for purposes of this §1-13, “Emergency Situations” include ruptures and sudden leakage of pipelines, explosions, fires, and similar instances where immediate action is necessary to prevent loss of life or significant damage to property, including but not limited to underground facilities, and advance notice of proposed excavation is impracticable under the circumstances. Any person performing emergency excavation shall take such precautions as are reasonable under the circumstances to avoid damage to underground facilities, and shall notify the district of such excavation as soon as possible, and shall comply with all additional notice requirements as provided by law. (Cross Reference: 3-6-17 Failure to Give Notice; 9B-1-4 Subsurface Structures; §9-1.5-102(2), 103(3),(4)(c)(II)(B), and (5), C.R.S.)

1-14 **NO DAMAGES FOR FAILURE TO ENFORCE:** The purpose of these Rules and Regulations is to establish an operating framework for the District and its users and connectors, for the exclusive benefit of the District. Nothing herein shall create any right to damages against the District, its Directors, officers, agents or employees for the District's failure to enforce these Rules and Regulations.
ARTICLE 2

DEFINITIONS

As used in these Rules and Regulations, unless the context clearly indicates otherwise, the words defined below shall have the respective meanings set forth for them:

2-1 **ABANDON**: To discontinue the use of any connection with the District System in such a manner or in such circumstances as to permit the reasonable inference that such connection is no longer needed or desired by the Property Owner, such as the destruction and non-replacement of improvements to which a service line had been connected.

2-2 **ACTUAL COSTS**: All direct and indirect costs attributable to any project or undertaking. Actual costs to the District shall include its engineering, legal, labor, material, equipment, administrative and overhead expenses calculated in accordance with the rates set forth in Appendix A hereto, and all direct payments to third parties, at cost.

2-3 **BOARD or BOARD OF DIRECTORS**: The duly constituted Board of Directors of the District.

2-4 **BOD**: Biochemical Oxygen Demand.

2-5 **CDPHE**: Colorado Department of Public Health and Environment

2-6 **CFR**: Code of Federal Regulations

2-7 **CONTRACTOR**: Any person who performs any work, either for himself or another, on any water or sewer facilities, public or private, within the District, including all subcontractors, agents, employees, officers and other representatives of such person.

2-8 **DISTRICT**: Copper Mountain Consolidated Metropolitan District, Summit County, Colorado, and its manager, authorized employees, agents, officers, directors, insurers, and professional consultants.

2-9 **DISTRICT ENGINEER**: Licensed engineer who has contracted to do engineering work and consultation for the District.
2-10 **DISTRICT SYSTEM:** The Plant, facilities, systems and assets owned or directly controlled by the District. As used herein, the term includes both water and sewer systems unless otherwise specified. Service lines are not part of the District system.

2-11 **EPA:** Environmental Protection Agency.

2-12 **FOREIGN MATERIALS:** Objects or substances not normally and ordinarily transmitted by sanitary sewer facilities.

2-13 **FRONTAGE EXTENSIONS:** Extensions of District owned water and sewer lines to any side of a lot or developer owned property that is adjacent to a street.

2-14 **GROUNDWATER:** Water below the surface of the earth; including underground streams and percolating water.

2-15 **INCLUSION FEE:** A fee charged for adding property to the District by reforming the District's legal boundaries to include the added property.

2-16 **INDUSTRIAL WASTES:** The combination of liquid and water-carried waste discharged from any industrial processes, including the wastewater from pre-treatment facilities and polluted cooling water, as distinct from residential and commercial wastewater. Any waste material, the discharge of which requires a permit under Environmental Protection Agency or Colorado Department of Public Health and Environment Regulations.

2-17 **INSPECTION FEES:** Fees assessed for time expended by the District engineer, inspector or other agent for the inspection and observation of construction of new elements of the District system when the District is not itself contracting for the construction.

2-18 **LICENSED CONTRACTOR:** Any person or commercial entity authorized by the District to perform work and to furnish materials within the District on the basis of a determination by the District's engineer and/or manager that that person's or entity's references and record of prior performance justify such authorization.

2-19 **MAIN:** Any pipe and appurtenant facility of the District system used for carrying water (water main) or wastewater (sewer main).
2-20 **MAIN EXTENSION:** The construction of any main, or the main itself, which is intended to become a part of the District System upon acceptance by the District in accordance with Article 6.

2-21 **MANAGER:** Person employed by the District to act in a managerial capacity.

2-22 **NPDES:** National Pollutant Discharge Elimination System.

2-23 **PERMITTED PREMISES:** The land area and improvements thereto to which sewer service is limited under any particular Tap Permit.

2-24 **PERSON:** Associations, corporations, firms, partnerships and bodies politic and corporate, as well as individuals.

2-25 **POTW:** Publicly-Owned Treatment Works.

2-26 **PRIVATE SEWER SYSTEM:** Any and all lines, facilities and appurtenances for the collection of wastewater discharge from more than one building to a common sewer main or mains that connect to the District System, but have not been accepted for ownership and maintenance by the District and are not part of the District System, including all such lines, facilities and appurtenances upstream from and including the wye or saddle fitting on the District’s main or the wye within a manhole.

2-27 **PRIVATE WATER SYSTEM:** Any and all wells, lines, conduits, facilities, and appurtenances for the distribution of water within the District that have not been accepted for ownership and maintenance by the District and are not part of the District system. Any connection between a private water system and any District water distribution facilities is strictly prohibited.

2-28 **PROPERTY OWNER:** Any person who, solely or with others, owns real property within the District. When property is owned by more than one person, the term includes all owners thereof. As used in these Rules and Regulations, the term shall apply to such person only in connection with his ownership of any specific parcel of real property involved in any specific matter governed by these Rules and Regulations. For purposes of clarity, the masculine singular pronoun is used in these Rules and Regulations to refer to Property Owner. In Article 6 hereof, the owner of Main Extensions and Appurtenant facilities is designated "Grantor."
2-29 **RECORD DRAWINGS:** Representations of installation based on information available from construction observation, measurements, and construction contract requirements. The District does not warrant the accuracy of record drawings in its possession.

2-30 **RULES AND REGULATIONS:** These Rules and Regulations, as amended from time to time by the Board of Directors.

2-31 **SANITARY WASTEWATER:** The combination of liquid and water-carried wastes discharged from toilet and other sanitary plumbing facilities.

2-32 **SERVICE:** The provision of water or sewer service by the District to a property.

2-33 **SERVICE LINES:** Any pipe, system of piping and appurtenances used as a conduit between a connection to the District System and a residential, commercial or industrial improvement. Service Lines are owned by, and are the sole responsibility of, the Property Owner.

2-33-1 **Sewer Service Lines.** Any sewer lines or portions thereof beginning with the point of connection to the district’s sewer main including the wye or saddle fitting, if any, on the District’s Sewer Main, or the wye or other connection within a manhole intended or used to convey wastewater from Permitted Premises to the District Sewer System.

2-33-2 **Water Service Lines.** All pipe, fittings, and appurtenances (excluding BFV and/or PRV), which convey water from the District System to the plumbing of any improvement. The dividing point between the District System and privately-owned service lines is the corporation stop tapped into the Main or, where applicable, the M.J. valve or tapping valve closest to the Main.

2-34 **SEWAGE:** See Section 2-49, Wastewater.

2-35 **SEWER/SEWERAGE SYSTEM:** See Article 2-10, District System. Also may refer in generic sense to any facilities used to transmit wastewater.

2-36 **SFE:** Single Family Equivalent. This term is used to describe the basic unit of measurement for service availability and Tap Fee and Service Fee determination. The method of calculating the SFE rating for residential and commercial units is set forth in Appendix A.
2-37 **SPECIAL SERVICE FEES:** Fees imposed by the District for providing extraordinary water or sewer services for which it is inappropriate to charge the usual residential or commercial tap fees and services charges.

2-38 **SUBSURFACE STRUCTURES:** Any and all pipe, cable, conduits, wires, portions of buildings, drainage facilities and any and all other man-made things of any kind or nature, all or some part or portion of which is located below the surface of the ground.

2-39 **SURFACE WATER:** Water from rain, springs, melting snow, sprinkling systems, lakes, ponds, streams or any other source which lies upon or above the surface of the ground, whether or not in a defined location, course, or channel, and including water on and/or flowing from the roof or any part of any building or structure.

2-40 **SWIMMING POOL DISCHARGE:** Filter backwash effluent from any swimming pool conveyed to the District Sewer System.

2-41 **TAP or SERVICE CONNECTION:** The physical connection to a District main which, together with the Tap Permit for same, effects water or sewer service to any permitted premises, or water for irrigation.

2-42 **TAP FEE:** A fee imposed by the District as a prerequisite for connecting to the District water system or sewer system. This fee is based upon the total availability of services provided by the District, and is not limited to or a reflection of costs incurred in simply making the connection to the District system.

2-43 **TAP OWNER OF RECORD:** The person in whose name the tap is registered in the records of the District.

2-44 **TAP PERMIT:** The written authority to make a Tap for water or sewer service to Permitted Premises from the District System.

2-45 **TECHNICAL STANDARDS AND SPECIFICATIONS:** The provisions of the “Standard Specifications and Details” of these Rules and Regulations, which prescribe the minimum technical standards and related operating rules for the design, installation, construction, and maintenance of all water and sewer facilities, public and private, within the District.

2-46 **TSS:** Total Suspended Solids.
2-47 **TURN-OFF/TURN-ON FEES:** Fees assessed for turning water services on or off.

2-48 **UNAUTHORIZED TAP OR SERVICE CONNECTION:** Any tap, which is made without having obtained a tap permit.

2-49 **USER:** Any person who receives water service from the District or who discharges or causes the discharge of wastewater to the District System.

2-50 **WASTEWATER:** The combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants and institutions, including polluted cooling water.

2-51 **WATER SYSTEM:** All facilities owned by the District and used for collecting, pumping, treating and delivering water.
ARTICLE 3

ENFORCEMENT AND ADMINISTRATION

3-1 DISTRICT AGENTS AND REPRESENTATIVES: The District Manager and any other employee of the District designated by the District Manager and the District's Consulting Engineer shall have full authority to act for and on behalf of the District in any matter affecting the administration or enforcement of these Rules and Regulations.

3-2 RIGHT OF ENTRY FOR INSPECTIONS AND EMERGENCY CORRECTIVE MEASURES: Duly authorized representatives of the District bearing proper credentials and identification shall be permitted to enter upon all property at reasonable times for the purpose of inspecting, observing, measuring, sampling, and testing, or to effect any emergency maintenance, repairs or corrective procedures, in connection with the enforcement and administration of these Rules and Regulations. This does not impose any obligation upon the District to effect any maintenance, repair or correction procedure. To the extent practicable, the District representatives shall give notice to the occupant of any commercial or private residential premises prior to entry. (See Section 18-8-106, C.R.S.).

3-3 SUSPENSION OR TERMINATION OF SERVICE: In addition to and without waiving any other available remedy, the District shall have and may exercise the right to suspend or terminate service to any property where a violation of these Rules and Regulations has occurred.

3-3-1 Suspension/Termination. The District may terminate service immediately and without notice upon revocation of any Tap or Discharge Permit, or suspend service when such suspension is necessary in order to stop or prevent an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or welfare of persons or to the environment, or causes interference or damage to District facilities, or causes the District's Treatment Plant to violate any condition of its National Pollutant Discharge Elimination System (NPDES) permit. In the absence of such emergency circumstances, the District will provide notice and an opportunity to be heard prior to suspension or termination of service.

3-3-2 Notice and Opportunity for Hearing.

3-3-2.1 The District's services are subject to suspension or termination if payment becomes over 30 days delinquent. When any fees or charges imposed under these Rules and Regulations have become
delinquent, or any use being made of private or District water or sewer facilities, are not in conformity with these Rules and Regulations, any permit or approved plans, or any applicable agreement or contract, the District may, at its sole option, mail or deliver to the owner of the property where or as to which the deficiency occurs, at the service address or a known current mailing address for the Property Owner of the affected property, or affix to the main entry door of the affected property, a notice advising the Property Owner and/or anyone acting on his behalf, of the deficiency, and that water or sewer service to the property will be suspended or terminated on account of such deficiency on a date not less than 10 days from the date of the notice (the shut-off date) unless the stated deficiency is sooner cured.

3-3-2.2 Upon written request to the District, the Property Owner receiving such notice has the right to a hearing concerning the deficiency. The request for a hearing shall not delay or postpone the shut-off date. If the Property Owner does not cure the stated deficiency, the District shall forthwith order the service to be suspended or terminated, as appropriate.

3-3-2.3 If the Property Owner makes written request for hearing, the District shall schedule and hold such hearing, at which the Property Owner may be represented by counsel at his expense, to be held before an impartial hearing officer appointed by the Board. The hearing officer shall issue a decision within a reasonable time, and shall state the reasons supporting his decision. If the hearing officer finds that the deficiency does not exist, or has been cured, he shall order services reinstated at once. At the time of his appointment, such hearing officer shall be instructed, in writing, that total impartiality is a condition of the appointment, notwithstanding that his compensation, if any, may be paid by one party to the dispute or the other.

3-3-3 Execution of Order. Any person notified of a suspension or termination of sewer service shall immediately stop or discontinue the discharge of any and all wastewater from the property affected by such order. A suspension or termination of water service shall be executed by turning off the service. The District may take such steps as deemed necessary, including immediate severance or blockage of the connection, in order to enforce the suspension or termination order. (Cross reference: 3-6-15 Violation of Suspension/Termination Order)
3-3-4 Reinstatement of Suspended Service. Any suspension order shall be rescinded by
the District Manager upon a determination that the deficiency forming the basis for
such suspension order has been cured and that no further or other non-conforming
conditions or uses of the District system are evident on the property affected by the
suspension order. The District shall not reinstate service until the person requesting
reinstatement has paid the full amount of any applicable disconnection charge and
the District Manager's reasonable estimate of any applicable Reconnection Charge
imposed under Section 7-12 hereof and any and all other amounts then due to the
District from such person.

3-3-5 Grounds for Termination; Effect. Service shall be terminated and not merely
suspended if (1) the Tap or Discharge Permit therefor is revoked; or (2) the
connection providing such service was not authorized when made; or (3) the service
was suspended at least two times within the preceding five years. Any service
terminated under this Section 3-3 may not be reinstated. The owner of any property
for which service has been terminated may apply for new service for such property
as provided in Article 5.

3-4 CURE OF VIOLATIONS:

3-4-1 Order to Cure. If the District determines that any water or sewer facilities are not in
conformity with these Rules and Regulations or that the terms of any right of way,
easement or other agreement between the District and a Property Owner are being
violated, it may give written notice thereof to the Property Owner at the service
address or any other address for such person known to the District. Such notice shall
specify the non-conformity, direct the Property Owner at his cost and subject to Parts
B and C, Article 9 below to perform specified curative work, and specify the period
of time determined by the District to be reasonably necessary for completion of the
curative work.

3-4-2 District Cure at Owner Cost. If the Property Owner fails within the specified time
following such notice to cure the non-conformity stated therein, the District may, in
addition to and without waiving any other remedy, perform the work and charge the
Property Owner for its actual costs incurred in connection therewith, calculated in
accordance with the rates set forth in Appendix A hereto. Those provisions of
Article 7 applicable to invoicing and collection of fees and charges shall apply to any
charges assessed to the Property Owner under this Section.
(Cross reference: 7-13 CURE CHARGES; 7-15 WITH-HOLDING APPROVALS,
ACCEPTANCES AND PERMITS)
3-5 **APPEALS:** Any orders, directives or decisions of the District relating to the administration or enforcement of these Rules and Regulations may be appealed, in writing, to the Board of Directors, within 10 days of the effective date of the order, directive or decision.

3-6 **PENALTY CHARGES:** For the purposes of defraying the District's costs and expenses incurred in discovering, investigating, curing, and repairing the consequences of violations of applicable requirements, and in order to deter persons from committing such violations, there is hereby imposed upon any person whom the Board finds and determines causes, or attempts to cause, or who permits, solicits, aids or abets any other person to cause or attempt to cause, by act or omission, any of the violations set forth below the following penalty charges:

3-6-1 **Unauthorized Connection.** For any connection made to the District System without a proper Tap Permit therefor: an amount equal to twice the Tap Fee for the size of such connection, as established by Section 7-2 below, in addition to any Tap Fee imposed or paid pursuant to said Section for the connection when made in conformity with these Rules and Regulations.

(Cross reference: 5-1 PERMIT REQUIRED; APPLICATION; 8-1-3 Unauthorized Connection)

3-6-2 **Unauthorized Use or Discharge.** For discharging or otherwise putting wastewater into the District System without proper District authorization therefor, or introducing any foreign materials or wastewater into the District System in violation of any provision of these Rules and Regulations, including Section 5-7-2, other than by the means described in Section 3-6-1 above: $5,000.00.

(Cross reference: 5-7-2 Increased Volume Permits; 8-1-4 Unauthorized Discharge; 8-1-9 Foreign Materials)

3-6-3 **Interceptor Violations.** For bypassing, failure to have, failure to use, or failure to maintain to District standards any grease or sand interceptor: $500.00.

(Cross reference: 9A-3 INTERCEPTORS)

3-6-4 **Interference; Failure to Permit Inspection.** For interfering with the employees or agents of the District in the performance of their duties, or refusing to permit District employees or agents to inspect the premises, despite reasonable advisement of the need and reason for such inspection: $1,000.00.

(Cross reference: 3-2 RIGHT OF ENTRY FOR INSPECTION AND EMERGENCY CORRECTIVE MEASURES; 8-1-12 Interference)
3-6-5 Prohibited Drains. For connecting a prohibited drain to the District System: $500.00.
(Cross reference: 9A-8 CERTAIN DRAINS PROHIBITED)

3-6-6 Tampering. For bypassing, breaking, damaging, destroying, removing, uncovering, altering, defacing, or otherwise tampering with any portion of the District System, obstructing the flow of wastewater in the District System, or obstructing access to District facilities: $5,000.00.
(Cross reference: 5-10-3 Mechanical Controls; 8-1-13 Tampering; 8-1-14 Obstructing Flow; 9A-3 INTERCEPTORS)

3-6-7 Easement Violations. For placing any plant or structure prohibited in accordance with Section 8-1-11 within the boundaries of any District right-of-way or easement: $500.00.
(Cross reference: 8-1-11 Right-of-Way/Easement Violations)

3-6-8 Unauthorized Entry. For opening any manhole or entering any portion of the District System without authorization: $500.00.
(Cross reference: 8-1-8 Unauthorized Entry)

3-6-9 Infiltration. For continuing to permit root infiltration, storm runoff, or groundwater to enter the District System after reasonable notice to cure such condition: $500.00.
(Cross reference: 9A-1-2 Maintenance)

3-6-10 Escape of Water or Wastewater. For permitting wastewater to escape from the District System: $500.00.
(Cross reference: 8-1-5 Escape of Wastewater)

3-6-11 Failure to Report. For failing to report damage to or alteration of any District facility, or any foreign materials or obstruction in the flow of wastewater in any District facility: $500.00.
(Cross reference: 1-12 DUTY TO REPORT)

3-6-12 Failure to Notify of Use Changes. For failure by Property Owner to notify the District of any use change resulting in need for grease or sand interceptor, or Increased Volume Permit: $500.00
(Cross reference: 9A-10 CHANGES IN USE, EQUIPMENT OR SERVICE)

3-6-13 Violation of Stop Work Order. For performing or continuing to perform any work in violation of a Stop Work Order: $500.00.
(Cross reference: 9B-3 STOP WORK ORDERS)
3-6-14 Violation of Suspension/Termination Order. For failure to stop or eliminate the discharge of wastewater from property effected by an Order suspending or terminating service to such property: $2,000.00.
(Cross reference: 3-3-3 Execution of Order)

3-6-15 False Official Statement. For making or filing with the District any statement, report or application which the person making or filing same knows or has reasonable cause to know is false or substantially inaccurate, or omitting any material fact in connection with such statement, report or application when the omission thereof leaves the remainder of the information given misleading or substantially inaccurate: $1,000.00.
(Cross reference: 1-12 DUTY TO REPORT; 5-2-1 Approval Standards; 5-2-3 Revocation; 5-7-2 Increased Volume Permits; 5-10-1 Permit Required; 6-8-1.2 (4) Grantor Requirements; 6-10-1.3 (1) Property Owner Requirements; 8-1-16 False Official Statement; Report; 9A-10 CHANGES IN USE, EQUIPMENT OR SERVICE)

3-6-16 Failure to Use Meter. For failure to use water meter when required to do so: $500.00.
(Cross reference: 8-1-19 Failure to Use Meter; 9A-2 WATER METERS)

3-6-17 Failure to Give Notice. For failure to give notice of excavation in any area where District Facilities are located: $500.00.
(Cross reference: 1-13 NOTICE OF EXCAVATIONS)

3-6-18 Jeopardizing Purity of Water. For failure to use any fluid or other substance in such a manner as to present the possibility that such substance could enter the District Water System: $2,000.00.
(Cross reference: 8-1-18 Jeopardizing Purity of Water)

3-6-19 Unauthorized Connection of Two or More Taps. For joining two or more taps without the express authorization of the District, including but not limited to interconnections and manifolding; an amount equal to twice the Tap Fee for the size of such connection, as established by Section 7-2 below, in addition to any Tap Fee imposed or paid pursuant to said Section for the connection when made in conformity with these Rules and Regulations.
(Cross reference: 5-1 PERMIT REQUIRED; APPLICATION; 5-4 NON-TRANSFERABILITY OF TAP PERMIT OR TAP FEE; 5-5 MULTIPLE USE OF
TAP PROHIBITED; 8-1-20 Unauthorized Joining of Two or More Taps; 9A-1 SERVICE LINES)

3-7 **TAP OWNER OF RECORD RESPONSIBLE:** For the purposes of this Article, it shall be presumed that the Tap Owner of Record for the premises where or upon which a violation of these Rules and Regulations occurred, is the person who caused or permitted the same to occur.

3-8 **SEPARATE VIOLATIONS:** After notice to correct any violation, a separate and distinct violation shall be deemed committed upon each day or portion of thereof that any such violation shall occur or continue. Those provisions of Article 7 applicable to invoicing and collection of fees and charges shall apply to any and all charges imposed under Section 3-6.

3-9 **CIVIL DAMAGES:** In addition to and without waiving any other available remedy, the District may recover civil damages from any person liable under the laws of the United States or the State of Colorado to the District as a result of any violation of these Rules and Regulations or other unlawful act or omission. Such damages shall include the District's actual costs of discovering, investigating, curing, mitigating and repairing the consequences of such violation or other unlawful acts or omissions, calculated according to the rates set forth in Appendix A hereto.

3-10 **INJUNCTIVE RELIEF:** In addition to and without waiving any other available remedy, the District may seek injunctive relief from any act or omission which violates these Rules and Regulations, or which otherwise jeopardizes the property or health of any person, including the District.

3-11 **REMEDIES CUMULATIVE:** The remedies available to the District under these Rules and Regulations and under the laws of the State of Colorado shall be deemed cumulative, and the utilization by the District of any single such remedy or combination thereof shall not preclude the District from utilizing any other remedy or combination thereof.

3-12 **WHEN PROPERTY OWNER LIABLE FOR EXCAVATION AND REPAIR:** If any person reports a backup in a Service Line and attributes same to a blockage or other condition of District Facilities, and the District cannot, by other reasonable means, determine the accuracy of such claim, the District Facilities will be excavated and inspected. Then, if it is determined that the Service Line backup was not caused by a blockage or other condition of the District Facilities, the Property Owner of the property served by such Service Line shall be obligated to the District for the costs of such excavation, inspection and related expenses. If, as a part of such excavation and inspection, the Service Line is repaired, the Property Owner shall reimburse the District for all costs of such repair, in addition to the
excavation and inspection charges, provided that the Property Owner is given prior notice of such repair. Nothing herein shall obligate the District to repair any Service Line.
ARTICLE 4

INCLUSIONS

4-1 REQUIRED SUBMITTALS: Any Property Owner who desires to include his property within the District's boundaries shall submit the following to the District:

4-1-1 Petition. A petition on the form furnished by the District and providing all information required thereby. Property Owner, also called "Petitioner" in the remainder of this Article 4, must sign the petition exactly as his name appears on the instrument by which he took title to the property. The signatures of all petitioners must be acknowledged in the same manner as provided by Colorado law for acknowledgments on instruments conveying real property.

4-1-2 Survey Drawing. A survey drawing showing the property's exact location, its location in relation to the boundaries of the District, and bearing the signature and seal of a professional engineer or land surveyor registered in the State of Colorado.

4-1-3 Vicinity Map. A vicinity map showing the general location and the boundaries of the property in relation to existing streets or other prominent terrain features.

4-1-4 Evidence of Title and Authorization of Signatories. Evidence of title sufficient to assure that the Petitioner has fee title to the property. If a corporation, partnership, or joint venture owns the property, the Petitioner shall furnish such additional information (i.e., partnership agreement, Joint Venture Affidavit as provided by Section 38-30-166, C.R.S., etc.) as may be requested by the District in order to determine that the signatories have been authorized by that entity to execute such documents.

4-1-5 Narrative Description. A written statement setting forth the total acreage of the property to be included, the existing zoning, the proposed zoning, the proposed use, the construction schedule, and the service requirements.

4-2 PROCEDURE: Following submittal and District approval of the submittals required in Section 4-1 above, inclusion proceedings shall be conducted as follows:

4-2-1 Feasibility Study. The District shall perform a feasibility study in order to determine whether and under what conditions the property proposed for inclusion can be served by the District System.
4-2-2 Notice of Public Hearing. At the first regular meeting of the Board following approval of the submittals, the Board shall set the date of the public hearing on the inclusion and order notice thereof to be provided according to law.

4-2-3 Public Hearing. The public hearing and the Board decision made pursuant thereto shall be held in accordance with applicable state law.

4-2-4 Conditions. If the Board Order of Inclusion contains conditions which must be met before it is to become effective, the District will ensure that all such conditions have been met before filing the Board Order of Inclusion with the court and applying for a Court Order of Inclusion.

4-3 CONDITIONS OF INCLUSION: The included property and its owners are subject to the following conditions, together with any and all such additional conditions and requirements as may be imposed by the Board:

4-3-1 Rules and Regulations. With respect to all matters affecting or in any way touching upon the allocation or provision of service to the property, the property and its owners shall be bound by and subject to these Rules and Regulations, as now or hereafter constituted.

4-3-2 Easements and Rights-of-Way. The Property Owner shall, at no cost to the District, grant and convey to the District any and all easements and rights-of-way within the included property required by the District to serve such property. In addition, the Property Owner shall be responsible for and pay all costs and expenses of whatever kind associated with the acquisition and approval of all such easements and rights-of-way, whether located within the included property or outside of it. These expenses may include those associated with condemnation, but this shall not be construed as imposing any obligation whatever upon the District to commence or prosecute any condemnation action.

4-3-3 Design and Construction. Design and construction of System Improvements shall be in accordance with the provisions of Article 6.

4-3-4 Service Not Guaranteed. The allocation of Taps for and the provision of service to the included property shall be governed at all times by these Rules and Regulations. The process of including property within the District does not guarantee service to the included property. The District may be limited in the number of new Taps that may be made to the District Water and Sewer Systems because of the capacity of
those systems and/or the availability of water, and the provisions of service to the included property may further be limited or delayed indefinitely because of the location or capacity limitations of existing facilities. Accordingly, by including its property within the District, the Property Owner shall be deemed to waive any right, claim, or cause of action of any kind which it may assert against the District based upon the inability of the latter to provide service to the included property.

4-3-5 **Enlargement of Structures.** No Property Owner may enlarge, add on to, or extend any portion of his existing improvements receiving service (including buildings, landscape areas, and any other grounds or structures that use District water services) into an area outside the boundaries of the District without including such additional property prior to commencing such enlargement or extension, or obtaining approval for extra-territorial service for such improvements.

4-3-6 **Inclusion Agreement/Conveyance of Water Rights.** Upon District approval of the inclusion, the Property Owner and the District shall enter into an inclusion agreement setting forth the terms and conditions of such inclusion, and containing all provisions relating to the particular circumstances of serving the property. At such time, the Property Owner shall convey to the District, by such documents as the District may reasonably require, all water and water rights associated with, appurtenant to, or used on or in connection with the property, including but not necessarily limited to surface water, alluvial water, and all contributory and not-contributory water underlying the property, to the extent that the District reasonably determines that such water and water rights are needed by the District to serve the included property without jeopardizing the District's ability to serve the property within the existing District boundaries to projected buildout.

4-3-7 **Evidence of Inclusion.** Property Owner shall furnish satisfactory evidence of inclusion whenever such evidence is requested by the District. Satisfactory evidence shall consist of a tax receipt, or certificate in lieu thereof, received from, and signed by, the County Treasurer.
ARTICLE 5

SERVICE APPLICATIONS AND PERMITS

5-1 PERMIT REQUIRED; APPLICATION: No person shall cause or permit any connection to any District facility without first obtaining a Tap Permit therefor as provided in this Article 5. Any person who desires to obtain new service to property, or expand the water and/or sewer service to the property, within the District shall make written application therefor at the office of the District upon such forms as may be prescribed and furnished by the District.

(Cross reference: 3-6-1 Unauthorized Connection; 8-1-3 Unauthorized Connection)

5-2 APPROVAL STANDARDS; REVOCATION:

5-2-1 Approval Standards. Upon a determination that all of the following conditions exist or have been met with respect to the application, the District shall issue its Tap Permit for the service requested:

5-2-1.1 The written application is accurate, complete, and proper as to form.

(Cross reference: 8-1-16 False Official Statement; Report; Appendix (F) APPLICATION FOR PERMIT)

5-2-1.2 The person making application is the record owner of the property or owners agent.

5-2-1.3 All applicable fees imposed by or through the District have been paid at the time of application.

(Cross reference: 7-2 TAP FEES)

5-2-1.4 The property proposed for service is within the legal boundaries of the District.

5-2-1.5 The Main on which the Tap will be made has been accepted by the District and approved for use by all other governmental entities and agencies having jurisdiction.

5-2-1.6 The District system is adequate to serve the proposed Tap.
5-2-1.7 The Tap applied for is available under any current Tap Allocation program.
(Cross reference: 5-9 TAP ALLOCATIONS)

5-2-2 Conformity with District Standards. Notwithstanding any other provision of these Rules and Regulations to the contrary, the District may withhold permits or approvals for service from any facilities, private or public, which do not conform to District Rules and Regulations, including incorporated provisions.

5-2-3 Revocation. The District may revoke any Tap Permit, before or after the Tap is activated, upon a determination that the application therefor contained false or inaccurate information and, but for such misinformation, the application would have been denied when made.
(Cross reference: 3-3-1 Suspension/Termination; 8-1-16 False Official Statement; Report

5-3 EXPIRATION: Obtaining a Tap Permit from the District does not obligate the Property Owner to activate the Tap, but such Permit shall expire and be of no further force or effect if the Tap is not activated within 24 months from the date issued. The Tap Fee is not refundable, but the amount of the Fee so paid will be applied toward applicable fees if the Property Owner re-applies for the Tap, under the then current schedule of Tap Fees.

5-3-1 If, after the 24 month activation period, the tap is not activated but the property owner wishes to continue ownership of the tap; owner will be billed on a monthly basis an amount equal to 25% of the property’s estimated water and sewer service fees. The fees are due and payable until such time as property owner activates the tap or gives up ownership of the tap. Estimated service fees paid are not refundable if tap is not activated. IF estimated service fees are not paid tap fees paid are forfeit.

5-4 NON-TRANSFERABILITY OF TAP PERMIT OR TAP FEE: Each Tap Permit applies only to the premises identified thereon, and is not deemed in any sense to be real or personal property. No Tap Permit or Tap Fee may be transferred from one premises to another without the approval of the District, but a Tap Permit and Tap Fee shall be deemed to follow any transfer or sale of the fee ownership of the Permitted Premises.

5-5 MULTIPLE USE OF TAP PROHIBITED: Not more than one separately described parcel of land shall be served by any single Tap, but this provision shall not be construed to require owners of separate condominium units within any one building or group of buildings in the same condominium development to obtain their own separate Taps if the Tap for the entire building or project is of adequate size and is in the name of the owners' association.
5-6 **INSTALLATION STANDARDS:** The Owner or Developer shall make the Tap at its sole cost, subject to all requirements of Parts B and C of Article 9, and subject further to the following:

5-6-1 **Inspection.** No Tap shall be activated until the service line has been inspected and approved by the District. Property Owner shall notify the District not less than 48 hours before activating the service, and shall set a time for the District's inspection thereof.

(Cross reference: 9B-1-6 Inspections)

5-6-2 **Record Drawing.** The Owner or Developer will make and keep a record drawing on electronic media compatible with the District records showing the location of the Tap and the service line and provide such to the District on acceptance of installation.

(Cross reference: 2-27 RECORD DRAWINGS)

5-7 **TAP SIZING:** The number of Single Family Equivalents associated with the Tap shall be determined in accordance with the procedure set forth in Appendix A hereto. Any increase in the number of SFE of the Tap shall obligate Property Owner to pay an additional Tap Fee to the District for the increase in size, based upon current Tap Fees at the time. No adjustment will be made for a decrease in the size of any Tap.

(Cross reference: 7-2 TAP FEES)

5-8 **VOLUNTARY DISCONNECTION/ABANDONMENT:** Any Property Owner desiring to have water or sewer service permanently disconnected shall notify the District a minimum of 48 hours in advance of the date of disconnection. Property Owner shall, at his sole cost, uncover the Service Line at the location determined by the District and install a plug. If a water or sewer tap is abandoned, the District shall cause a plug to be installed, thereby effecting a permanent disconnection. Disconnection of service by this means shall not be deemed completed until the District has inspected and approved the plug. All work done pursuant to this Section shall be at the Property Owner's sole cost, subject to the provisions of Part B, Article 9 below. From and after the effective date of disconnection, the District shall not assess any service charges for the property so disconnected, but this shall not relieve the property from liability for taxes, or limit the District's right to levy taxes against the property. Any reinstatement of a service disconnected pursuant to this Section shall be treated as an application for new service, and no credit shall be allowed for any Tap Fee previously paid.
5-9 **TAP ALLOCATIONS:** The issuance of taps may be restricted from time to time due to limited availability. During any period of such restrictions, taps shall be allocated and sold within the District on a first come, first served basis.

5-10 **SWIMMING POOL USE:**

5-10-1 **General Conditions.** The District may impose such reasonable restrictions as to frequency, times, volume and rate of swimming pool discharge as may be appropriate to reduce the risk of surcharge or other potential problems in the District System which may result from the entry of Swimming Pool Discharge into the District System.

(Cross reference: 3-6-2 Unauthorized Use or Discharge)

5-10-2 **Mechanical Controls.** The District may further require Property Owner, at his sole cost and subject to the provisions of Part B of Article 9 below, to install such equipment as the District may reasonably prescribe. Such equipment shall not be modified, altered, removed or bypassed without the express written consent of the District.

(Cross reference: 3-7-7 Tampering)

5-11 **EXTRA-TERRITORIAL SERVICE:** Provided that services outside the District shall in no way cause any limitation of the availability of services within the District, nothing in these Rules and Regulations shall prohibit the District from providing services outside its legal boundaries under such terms and conditions as the Board may determine, subject to the limitations set forth in Section 1-10 and this Section. All tap and service fee charges for extra-territorial services will be assessed with an additional 25% charge above current fees charged within the District. Any such service shall be rendered only by written permit, lease or contract approved by the Board, and no oral statement and no course of dealing or action on the part of the District shall create an express or implied contract or obligation for such service. No written permit, lease or contract, however, or the services rendered pursuant thereto, shall be construed to impose upon the District any obligation to provide other service outside of its legal boundaries, nor shall the existence of such contract or the services rendered in connection therewith constitute an offer by the District to serve outside of its boundaries generally. A person, entity, association, corporation, municipality or quasi-municipal corporation whose sewer system or line connects with or discharges into the District System or any facility owned or operated by the District, and the situs of which is located outside the legal boundaries of the District, shall be referred to as an Outside Connector.

(Cross reference: 1-10 SERVICE OUTSIDE THE DISTRICT)
5-12 **NO JOINING OF TAPS:** Each Tap is a separate permit for use, and no user may or shall allow any Taps to be joined, interconnected or manifolded together.

5-13 **INDUSTRIAL USERS:** Industrial users, as defined in the Code of Federal Regulations, are required to supply information and to submit to various inspections, testing and monitoring, as well as all other applicable federal, state and local rules and regulations pertaining to the discharge, transmission and treatment of wastewater.

5-14 **SILVER RECLAIM:** Any photo lab, photo processing facility, or other person, business, or entity doing silver reclaim shall comply with EPA rules and regulations pertaining to the silver reclaim process. This applies to those entities doing silver reclaim as part of their "in-house" operation, as well as to all others.
ARTICLE 6
MAIN EXTENSIONS AND OTHER SYSTEMS IMPROVEMENTS

6-1 APPROVAL REQUIRED; IMPROVEMENTS AGREEMENT: No person shall commence any construction to extend a Main or install any appurtenant facility within the jurisdiction of the District without the prior written approval of the District, following formal application therefor, upon compliance with these Rules and Regulations. If required by the District, any person desiring to extend a District Main or install any appurtenant facility shall enter into a written Improvements Agreement with the District setting forth any or all terms and conditions applicable to such extension or installation. For purposes of this Article 6, all Main Extensions and appurtenant facilities of whatever kind or nature shall be collectively referred to as System Improvements.
(Cross reference: Appendix (D) MEMORANDUM OF UNDERSTANDING-FORM FOR IMPROVEMENTS AGREEMENT)

6-2 LOCATION: System Improvements shall be installed only in rights-of-way or easements deeded to the District, or in platted easements or roads or streets which a city, county, State Highway Department, or other public agency has approved as a public right-of-way.

6-3 DEEDED RIGHTS-OF-WAY AND EASEMENTS: Deeded rights-of-way or easements necessary to cover System Improvements not located in public rights-of-way shall be granted at no cost to the District upon such terms as the District may reasonably require before construction of any such System Improvements begins. Minimum Width Easement shall be 20 feet for single system (water or sewer) and 30 feet for double system (Water and sewer). The following minimum requirements shall be in effect in connection with all such grants:

6-3-1 Legal Description. The District shall be provided a legal description of all right-of-way or easement parcels to be granted by any single conveyance instrument, consisting of a printed legal description, certified by a land surveyor registered in the State of Colorado, and an accurate survey drawing of each parcel, including north arrow and scale, tying each parcel to a survey land corner or corner of a platted parcel of land.

6-3-2 Evidence of Title. The District shall be provided suitable evidence of title, consisting of a title insurance policy or commitment, an attorney title opinion, a subdivision certificate, or a written ownership and encumbrance report, dated within 30 days before the date of submission to the District. Evidence of title must show all current mortgages and deeds of trust, liens, and other encumbrances against the property.
6-3-3 **Subordination Agreement or Partial Release.** The District may require a properly executed and acknowledged subordination agreement or partial release, at the Board's discretion, for any easement or right-of-way parcel to exempt the same from the lien of any mortgage or deed of trust. If so required, the District will not accept the System Improvements for maintenance until it receives all required subordinations or partial releases, whichever is required. The District reserves the right to require additional or supplemental evidence of title when the subordination agreement or partial release is tendered to the District for recording.

6-4 **RIGHT OF WAY ACQUISITION COSTS:** The person desiring to construct System Improvements ("Developer") shall be responsible for and pay all costs and expenses associated with the acquisition and approval of all easements and rights-of-way necessitated thereby. These expenses include, but are not necessarily limited to, the District's actual costs, and may include those associated with condemnation. This Section shall not be construed as imposing any obligation whatever upon the District to commence or prosecute any condemnation action.

6-5 **DESIGN AND CONSTRUCTION:** The Developer shall be solely responsible for all costs and expenses of design, construction, and installation of all System Improvements, including without limitation frontage extensions, reasonably required by the District. All such work shall be in conformity with and subject to the District's Master Plan and to these Rules and Regulations, and in particular, to the Technical Specifications as set forth in Article 9, Part C below.

6-5-1 **Design Procedure.** The following steps will be followed in the design of any System Improvements project:

**6-5-1.1** The Developer shall, as far in advance as possible, inform the District, in writing, of the type of System Improvements (water, sewer, or both), the estimated capacity requirements, the geographical location, and the desired completion date.

**6-5-1.2** Within 21 days after the District's receipt of the written information required in Section 6-5-1.1 above, the District shall schedule a first project meeting with the Developer, at which time all available information and data will be shared and discussed, general project design alternatives (alignment options, etc.) will be identified to the extent possible, a project timeline will be established, and a scope of work for
design and construction supervision will be submitted by the Developer.

6-5-1.3 As soon as practicable after the first project meeting, the District will meet with its Consulting Engineer to review the scope of work, and make any appropriate modifications thereto, which changes shall be submitted to the Developer for approval. All costs and expenses incurred by the District in the process of establishing and finalizing the scope of work shall be borne by the Developer. Upon agreement as to the scope of work, the District shall issue requests for priced proposals to each engineering firm appearing on the District's list of pre-qualified engineers, containing the scope of work as approved by the District and the Developer, and shall select the lowest responsive proposal. A proposal shall be considered responsive if it does not vary the terms of the scope of work in any way. The selected engineer shall be designated Project Engineer.

6-5-1.4 The Project Engineer will complete preliminary design of the project in accordance with the project timelines, showing the general alignment and configuration of the facilities, with preliminary project specifications. When said preliminary design is approved by the District, the same shall be provided to the Developer. Should the Developer, within 10 days of the receipt of the preliminary design, express objection or concern about the preliminary design, a meeting will be held with the District, the Developer, and the Project Engineer. At such meeting, all constructive comments and specific alternatives will be considered, and any appropriate adjustments to the preliminary design made and set forth in writing.

6-5-1.5 When the preliminary design is agreed upon, or 10 days have passed without objection by the Developer, the Project Engineer shall proceed with final design of the project, which shall include the Project Engineer's estimate of the project construction costs including construction inspection fees and costs, and shall submit the same to the District in accordance with the project timelines. When the District has approved the final design, the same shall be provided to the Developer.
Should the Developer, within 10 days of the receipt of the final design, express objection or concern about the final design, a meeting will be held with the District, the Developer and the Project Engineer. At such meeting, all constructive comments and specific alternatives will be considered, and any appropriate adjustments to the final design made and set forth in writing.

6-5-1.6 The District will use its best efforts to respond promptly to contacts by the Developer, and to shorten the overall timetable for the Project to the extent practicable.

6-5-2 Developer May Elect to Perform Construction. The Developer shall have the option whether to perform the work itself in accordance with the final design, or may have the District perform the work. Should the District perform the work, the same shall be done through a contractor selected by competitive bid. In either case, the Project Engineer shall generally monitor and oversee construction as to conformity with the approved specifications and design at owner or developers sole expense.

6-5-3 Limitations of Construction. Construction of water distribution and sewer collection system improvements shall be limited to the District construction season. The District construction season is the time period from April 16th to November 15th. Construction of system improvements beyond the construction season shall be strictly prohibited unless District approval is obtained. For District approval of construction beyond the construction season, the Developer shall demonstrate to the satisfaction of the District that if construction of system improvements is limited to the above defined construction season that the Developer will suffer undue financial hardship and/or loss. The District shall not accept system improvements that are constructed beyond the District construction season without District approval.

If approved by the District, construction of system improvements beyond the construction season shall require continuous special inspections at no additional cost to the District. The Developer shall reimburse the District for actual costs related to continuous special inspections. In addition, the District shall strictly enforce cold weather construction procedures.

6-6 PLAN REVIEW AND APPROVAL: If the District is not constructing the System Improvements, no construction of any System Improvements shall begin unless and until the plans and design therefor have been reviewed by the construction contractor, together with
the Project Engineer, and until the District has issued written notice that construction may begin.  
(Cross reference: 7-3 PLAN REVIEW FEES).

6-7 CONSTRUCTION OBSERVATION: The District shall be notified at least 48 hours before construction is commenced, and at any and all other times specified by the District, for inspection or testing.  
(Cross reference: 7-4 INSPECTION FEES; 9B-1-6 Inspections)

6-8 CONDITIONAL ACCEPTANCE: The following applies when the District is not performing the construction of the System Improvements:

6-8-1 Standards. Upon completion of construction, a request shall be submitted to the District for a preliminary inspection and conditional acceptance of the System Improvements.  
Cross reference: Appendix (D) MEMORANDUM OF UNDERSTANDING.

The System Improvements will qualify for Conditional Acceptance by the District when all of the following conditions have been met:

6-8-1.1 District Review. The District has determined that the System Improvements have been constructed and connected to District facilities in conformity with these Rules and Regulations, approved plans, construction notes and specifications, has passed all necessary tests, and has been approved for use by all other governmental entities and agencies having jurisdiction.

6-8-1.2 Grantor Requirements. Grantor has tendered and the District has approved the following:

(1) Record drawings of the utility extension plan, photographically reduced to 1” = 50’ scale and provided on electronic media compatible with the District standards.

(2) Key map pages consistent in form and content with current District requirements as to key maps showing the location of all component parts of the System Improvements, or other arrangements approved in writing by the District have been made for the preparation thereof;
(3) A 12-month maintenance bond, or other security approved by the District, in an amount equal to 10% of the costs of constructing the System Improvements, or such greater amount as may be reasonably determined by the District on account of special circumstances of the particular System Improvements, or any portion thereof;

(4) A duly executed written statement that all suppliers of labor and materials have been fully paid, with lien waivers attached;

(Cross reference: 8-1-16 False Official Statement; Report)

(5) A duly executed written assignment of all manufacturer's warranties on materials, if applicable;

(6) All subordination agreements and partial releases required pursuant to Section 6-3-3 above; and

(7) Payment of all sums then due to the District in connection with the System Improvements.

6-8-2 Approval; Tap Permits. The District shall evaluate the request for conditional acceptance, and give written notice to the Grantor of its action, stating any special conditions attached to the Conditional Acceptance, or the reasons for denial of the request, if applicable. No Taps or Service Connections to the System Improvements will be permitted, nor will the District accept applications for such Taps, until the District has conditionally accepted the System Improvements as herein provided.

6-8-3 Effective Date. Conditional Acceptance shall be effective as of the date the District executes the Conditional Acceptance appearing on the District-approved Conveyance & Acceptance form. As of such date, the System Improvements shall be deemed operational, and any person may apply to the District for Tap Permits. The District's acceptance of the System Improvements, whether conditional or final, does not, however, guarantee that Taps will be available. Availability of Taps is governed at all times by the provisions of Article 5, and such availability is determined in accordance therewith at the time proper application for service is made.

6-9 MAINTENANCE AND REPAIR: If the District is responsible for the construction of the System Improvements, the District shall assume repair and maintenance responsibility for the System Improvements, and shall have the right to enforce any and all contractor warranties and obligations, commencing immediately upon the completion of construction. When the District has not constructed the System Improvements, until Final Acceptance of
the System Improvements, Grantor shall be solely responsible for all routine maintenance and for correction of any and all defects in the System Improvements, as set forth below:

6-9-1 Routine Maintenance. Grantor shall, at his sole cost, protect the System Improvements and perform all routine maintenance thereon so as to keep it in good repair and operating condition. Such obligations shall include the repair or replacement of any part or parts thereof damaged as a result of street construction, paving, other utility installation or vehicular traffic. In addition, Grantor shall, at his sole cost, correct any soil subsidence or erosion which the District determines occurred in connection with or as a result of construction of the System Improvements.

6-9-2 Cure of Defects. Grantor shall, at his sole cost and subject to Parts B and C of Article 9, correct, repair or replace any part or parts of the System Improvements which the District reasonably determines were not constructed in conformity with these Rules and Regulations, approved plans, construction notes or specifications, or which the District determines to be defective, of poor or unworkman like quality, or otherwise not in conformity with any applicable warranty. Cure of defects by Grantor shall be administered and enforced under the rules set forth in Sections 7-13 and 9B-4.

6-10 ACCEPTANCE FOR MAINTENANCE (FINAL ACCEPTANCE): The following applies when the District has not constructed the System Improvements:

6-10-1 Standards. Prior the expiration of one year from the date of Conditional Acceptance (or any longer period of time reasonably determined by the District on account of the particular circumstances) of the System Improvements or any portion thereof, Grantor may request the District to perform a final inspection and accept the System Improvements for maintenance. Upon such request, the District shall inspect the System Improvements and shall accept the same for maintenance when all of the following conditions are met:

6-10-1.1 District Review. The District determines that the System Improvements have been constructed and connected to District facilities in conformity with these Rules and Regulations, approved plans, construction notes and specifications, has passed all necessary tests, and has been approved for use by all other governmental entities and agencies having jurisdiction.
6-10-1.2 Maintenance and Repair. Grantor has fully performed all maintenance and repair obligations imposed upon it by Section 6-9 above during the period of conditional acceptance.

6-10-1.3 Property Owner Requirements. Grantor has tendered and the District has approved all of the following:

(1) A verified statement of Actual Cost of the System Improvements, itemized as the District may require;  
(Cross reference: 8-1-16 False Official Statement; Report)

(2) Any and all easements, bills of sale, or other conveyance instruments necessary to vest title to all component parts of the System Improvements in the District with warranties of title as provided in Section 6-10-2;

(3) All drawings, maps and construction notes pertaining to any changes in the System Improvements made during the period of Conditional Acceptance;

(4) Payment of all sums due to the District from Grantor on account of the System Improvements;

(5) Lien waivers in form acceptable to the District by all independent contractors or others entitled to mechanics liens, including materialman's liens against facilities and properties included in the System Improvements.

6-10-2 Effective Date. The District's final acceptance of the System Improvements for maintenance shall be effective as of the date the District executes the Final Acceptance appearing on the District-approved Conveyance & Acceptance form. As of such date, all of Grantor's right, title and interest in and to the constructed System Improvements, including all mains, pipelines, valves, manholes, pumps, and related parts and materials which comprise the constructed System Improvements, shall immediately pass to and vest in the District, free and clear of all liens and encumbrances, if required under Section 6-3-3 above, and Grantor shall warrant and defend the conveyance of such System Improvements to the District, its successors and assigns against all and every person or persons whomsoever. As of the date of Final Acceptance, the District shall operate and maintain the System Improvements at its expense. Nothing contained herein, however, shall be construed to relieve
Grantor from his warranty obligations set forth in Section 9B-1-5 below. Notwithstanding Final Acceptance, Grantor and connecting Property Owner, their successors and assigns, shall remain responsible for all service lines and private sewer facilities.

6-11 **DISTRICT SYSTEM IMPROVEMENTS:** Notwithstanding any of the foregoing, the District reserves the right to extend Mains and make other System Improvements in situations which it determines may be in the best interests of the District and its constituents, upon such terms and conditions as the District may reasonably determine.
ARTICLE 7

FEES AND CHARGES

7-1  GENERAL:

7-1-1  Purposes. The purpose of the fees and charges provided in this Article is to provide for the payment of all actual costs of operating, maintaining, repairing, replacing, and expanding the District System, such costs including without limitation a reasonable contingency fund. All such fees and charges are based upon the cost of providing the service for which such fees and charges are made and have been determined by the Board of Directors to be necessary for the recovery of all such costs.

7-1-2  Liability. The fees and charges provided below are hereby imposed and assessed by the District for the purposes set forth in Section 7-1-1 and as more specifically set forth below. Such fees and charges are the personal, joint and several obligation of the owners of the property for which the applicable service is furnished, but the full amount of any such fees and charges shall also be a perpetual lien against any such property, as provided by Section 32-1-1001(1)(j), C.R.S. The District assumes no responsibility for any agreement made between Property Owners and tenants, regardless of how made and regardless of whether the District has notice thereof. Notwithstanding the foregoing, any Plan Review, Inspection, or Disconnection/Reconnection Fee shall also be the personal obligation of any person who orders or requests the District to perform such work, even though such person may have acted in a representative capacity when doing so.

7-2  TAP FEES: For the purpose of enabling the District to defray all costs incurred in making service available through a Tap or service connection to the District System and to provide for capital expansions of the District System, there is hereby imposed a Tap Fee in the amounts set forth in Appendix A hereto.

7-2-1  Tap Fees are due at the time application for a Tap Permit is made and Building Permit is requested from Summit County Building Department.

7-3  INSPECTION FEES: Whenever any provision of these Rules and Regulations requires or provides for an inspection by the District, the person liable therefor shall reimburse the actual costs incurred by the District for such inspection, calculated in accordance with the rates set forth in Appendix A hereto. The District shall make inspections as required or
All inspection fees must be paid in full before the District will provide County Building Certificate of Occupancy approval.

(Cross reference: 7-17 WITHHOLDING APPROVALS, ACCEPTANCES AND PERMITS)

7-4 **INCLUSION FEES:** Any person who petitions for inclusion of his property into the District pursuant to Section 32-1-401(1), C.R.S. and Article 4 above shall pay the fees and charges as set forth in Appendix A hereto, as well as actual costs incurred by the District in processing the Petition for Inclusion, calculated in accordance with the rates set forth in Appendix A hereto, payable regardless whether the property is actually included.

7-5 **SPECIAL SERVICES FEES:** A Special Service Fee is assessed for any other special water or sewer services provided pursuant to any agreements between Property Owners and the District. The amount of the Special Service Fees shall be determined in accordance with the schedule set forth in Appendix A hereto.

7-6 **TURN-OFF AND TURN-ON FEES:** A Turn-Off and Turn-On Fee will be assessed per service each time a Property Owner requests the District to turn water or sewer service off or on because of vacations, vacancy for rental, etc. Turn-Off and Turn-On Fees will also be charged if the District discontinues or resumes services as a result of the Property Owner's tardiness in payment of District charges. Only District personnel may turn services off or on. Property owners who turn off or turn on their service connection(s) will be assessed a penalty for doing so. Turn-off and turn-on fees are set forth in Appendix A hereto.

7-7 **WASTEWATER SERVICE CHARGES:** Monthly Wastewater Service Charges are billed on a monthly basis. The amount of the Wastewater Service Charge is determined in accordance with the schedule set forth in Appendix A hereto.

7-8 **WATER SERVICE CHARGES:** Monthly Water Service charges are billed on a monthly basis. The amount of the Water Service Charge is determined in accordance with the schedule set forth in Appendix A.

7-8-1 The Board will periodically establish a meter rate for the two billing classes contained in Appendix A. Billing charges will be calculated on the basis of the amount of water used and the appropriate rate. Metered rate charges are due and payable quarterly as a part of that months’ bill.

7-9 **DISCONNECTION/RECONNECTION CHARGES:** Whenever any Sewer Service is physically disconnected or reconnected by the District for any reason, the Property Owner or
any other person liable therefor shall reimburse the actual costs incurred by the District for such work, calculated in accordance with the rates set forth in Appendix A hereto.

7-10 **CURE CHARGES:** Whenever the District cures any defect, deficiency, nonconformity or violation as provided in these Rules and Regulations, any person who is responsible under these Rules and Regulations to cure such condition, or whose act or omission resulted in the necessity for the curative action, shall be liable and obligated to reimburse the actual costs incurred by the District for such undertaking, calculated in accordance with the rates set forth in Appendix A hereto. (Cross reference: 3-4 CURE OF VIOLATIONS; 9B-4 CURE OF DEFECTS)

7-11 **CIVIL FINES PASS THROUGH:** Any person who, by act or omission, causes the District to incur any fine or penalty assessment imposed by state, federal or other governmental authorities shall be fully liable to the District for the total amount of the fine so assessed.

7-12 **DELINQUENCY CHARGES; COLLECTION COSTS; LIEN:** Full payment of any and all fees or charges imposed or assessed by the District is due upon presentation of the District's invoice, unless these Rules and Regulations provide otherwise for notice or payment of any specific charge. The invoice shall be conclusively deemed presented to any person if personally served upon such person, or if mailed postage prepaid by first class mail addressed to such person in care of the Property Owner, at the service address or any other address for such person known to the District. Any amount so invoiced or otherwise due and payable will become delinquent 30 days thereafter, and the full amount of any delinquent balance shall thereafter bear interest at the maximum rate permitted by law. Any person liable for such fees and charges shall also be obligated to pay any and all costs of collection, including reasonable attorney fees and court costs, actually incurred by the District. Additionally, the district may assess a separate delinquency charge to the maximum extent permitted by law. Until paid, all rates, tolls, fees, charges, interest, penalties, and costs of collection shall constitute a perpetual lien on or against the property served. (Cross Reference: §29-1-1101 and 1102, C.R.S.)

7-13 **MISCELLANEOUS COSTS AND EXPENSES:** All costs and expenses of service incident to the installation and connection of water and/or sewer service shall be charged to the Property Owner. The Property Owner shall indemnify the District for any loss or damage that may directly or indirectly be occasioned by the installation of facilities and/or the provision of water and/or sewer services.

7-14 **WITHHOLDING APPROVALS, ACCEPTANCES AND PERMITS:** Notwithstanding any provision of these Rules and Regulations to the contrary, the District may withhold
permits, approvals, acceptances, or other authorizations from any person until all sums then due to the District from such person are paid in full.

7-15 **LIABILITY FOR PAYMENT:** The Tap Owner of Record and any tenants of the property are deemed equally liable for the rates, fees, and/or charges billed by the District for providing water and/or sewer services to the property. The District assumes no responsibility hereby for any agreement made between Tap Owners of Record and their tenants regardless of how made or whether the District has been notified of such agreement.

7-16 **REVOCATION OF SERVICE:** Service shall be revocable by the District upon non-payment of valid fees, or upon failure to comply with these Rules and Regulations. If the District has decided to disconnect sewer service, a written disconnection notice shall be posted on the property, announcing the District's intent to disconnect or block sewer service after 72 hours.

7-17 **VARIANCE FEE:** Whenever a variance from any provision of these Rules and Regulations is granted by the Board of Directors, a fee shall be assessed to defray the District's costs in processing such variance. Such fee, the amount of which shall be determined in accordance with the schedule set forth in the Appendix A hereto, shall be paid at the time a variance is granted.

7-18 **MISCELLANEOUS COSTS AND EXPENSES:** All costs and expenses of service incident to the installation and connection of water and sewer service shall be the responsibility of the Property Owner. The Property Owner shall indemnify the District for any loss or damage that may directly or indirectly be occasioned by the installation of facilities and/or the provision of water or sewer services. Further, all costs and expenses incident to any request, petition or application to the District, and not otherwise addressed in these Rules and Regulations, shall be reimbursed to the District by the person making the request, petition, or application, upon receipt of the District's invoice.
ARTICLE 8

PROHIBITIONS

8-1  **GENERAL:** It shall be unlawful for any person to cause or to attempt to cause, or to permit, solicit, aid or abet any other person to cause or attempt to cause, by act or omission, any of the following:

8-1-1  **Failure to comply with Rules and Regulations.** Failure or refusal to comply with any requirement imposed in these Rules and Regulations.

8-1-2  **Groundwater; Surface Water.** Any groundwater or surface water to enter the District System.
   (Cross reference: 3-6-10 Infiltration; 9A-8 CERTAIN DRAINS PROHIBITED)

8-1-3  **Unauthorized Connection.** Make any connection to any District facility without all District Permits required therefor by these Rules and Regulations.
   (Cross reference: 3-6-1 Unauthorized Connection; Article 5 SERVICE APPLICATIONS AND PERMITS)

8-1-4  **Unauthorized Discharge.** Discharge into the District System without a permit or in violation of the terms of any Permit provided by these Rules and Regulations. This prohibition applies, without limitation, to the discharge of wastewater from recreational vehicles, trailers or any other mobile source.
   (Cross reference: 3-6-2 Unauthorized Use or Discharge)

8-1-5  **Escape of Wastewater.** The escape of any wastewater from the District Sewer System.
   (Cross reference: 3-6-11 Escape of Water or Wastewater)

8-1-6  **Waste of Water.** The waste of any water through failure to make prompt repairs to faulty plumbing, through excessive lawn sprinkling, or otherwise.

8-1-7  **Sale of Water.** The sale or exchange for value of water obtained through the District System.

8-1-8  **Unauthorized Entry.** Opening of or entry into any District facility without District authorization.
   (Cross reference: 3-6-9 Unauthorized Entry)
8-1-9 Foreign Materials. The entry of any foreign materials into any water or sewer facility, public or private.  
(Cross reference: 3-6-2 Unauthorized Use or Discharge)

8-1-10 Discharge Through Taps Only. The entry of any wastewater into the District Sewer System except through a Tap or Service Connection duly authorized by the District for the uses actually made thereof. This provision shall specifically include, without limitation, discharging any wastewater into the District System through manholes.  
(Cross reference: 3-6-1 Unauthorized Connection; 3-6-2 Unauthorized Use or Discharge; 3-6-3 Interceptor Violations; 3-6-9 Unauthorized Entry)

8-1-11 Right of Way/Easement Violations. Constructing, installing, or placing any structures or improvements of any kind, surface or subsurface, temporary or permanent, or planting any tree or woody plant of any kind within the boundaries of any District Right of Way or Easement in violation of the terms or conditions of such Right of Way or Easement, without express written authorization from the District.  
(Cross reference: 3-6-8 Easement Violations)

8-1-12 Interference. Any interference with employees or agents of the District in the performance of their duties.  
(Cross reference: 3-6-5 Interference; Failure to Permit Inspection)

8-1-13 Tampering. Bypassing, breaking, damaging, destroying, removing, uncovering, altering, defacing, or otherwise tampering with any portion of the District System.  
(Cross reference: 3-6-7 Tampering)

8-1-14 Obstructing Flow. Any act that obstructs or is reasonably likely to obstruct the flow of water or wastewater in the District System.  
(Cross reference: 3-6-7 Tampering)

8-1-15 Violation of Termination/Suspension Order. The entry of any wastewater into the District System in violation of a Suspension or Termination Order.  
(Cross reference: 3-3-3 Execution of Order; 3-6-15 Violation of Suspension/Termination Order)

8-1-16 False Official Statement; Report. The making or filing with the District of any statement, report or application which he knows or has reasonable cause to know is false or substantially inaccurate, or the omission of any material fact in connection
with such statement, report or application when the omission leaves the remainder of
the information given misleading or substantially inaccurate.
(Cross reference:  1-12 DUTY TO REPORT; 3-6-16 False Official Statement; 5-2-1
Approval Standards; 5-2-3 Revocation; 5-7-2 Increased Volume Permits; 5-10-1
Permit Required; 6-8-1.2 (4) Grantor Requirements; 6-10-1.3 (1) Property Owner
Requirements; 9A-10 CHANGES IN USE, EQUIPMENT OR SERVICE)

8-1-17 Unauthorized Taking. The taking or using of any water from the District System
without having made the payments prescribed in these Rules and Regulations.

8-1-18 Jeopardizing Purity of Water. The use of any fluid or other substance in such a
manner as to present the possibility that such substance could enter the District Water
System. This prohibition includes, but is not limited to, the use of poisons, insecti-
cides, pest control products, or lawn and plant food products in conjunction with a
lawn sprinkling system in such a manner that such fluids could possibly back-flow
into and through the service line and enter the District Water System. Insofar as this
Section is applicable to lawn sprinkling systems, its requirements shall be deemed to
have been satisfied by the use of backflow prevention devices approved by the
Colorado Department of Health, as such approval may change from time to time, in
good operating condition.
(Cross reference:  3-6-19 Jeopardizing Purity of Water)

8-1-19 Failure to Use Meter. The failure of any person required to use a meter to do so,
whether by tampering with the meter in some manner, or otherwise.
(Cross reference:  3-6-17 Failure to Use Meter)

8-1-20 Unauthorized Joining of Two or More Taps. The joining of any two or more taps,
allowing a joint use or manifolding of taps to any District Facility or Service Line
connected to any District Facility, without the express authorization therefor by the
District.
(Cross reference:  3-6-20 Unauthorized Connection of Two or More Taps); 5-1
PERMIT REQUIRED; APPLICATION; 5-4 NON-TRANSFERABILITY OF TAP
PERMIT OR TAP FEE; 5-5 MULTIPLE USE OF TAP PROHIBITED; 9A-1 SER-
VICE LINES)

8-1-21 Water or Other Discharge from Underground Storage Tank (UST) Remediation
Projects. The discharge to the District System of any groundwater or other fluid or
substance produced or brought to the surface by or in connection with any
groundwater cleanup project at or from a leaking UST site, unless a Permit is first
requested and approved by the District.
(Cross reference: 3-6-2 Unauthorized Use or Discharge; 3-6-10 Infiltration; 3-6-19 Jeopardizing Purity of Water)

8-1-22 **Swimming Pools.** Discharge into the District system of: (a) any swimming pool water through the pool drain, and (b) any pool filter backwash effluent, except as expressly permitted under these Rules and Regulations.
(Cross reference: 3-6-4 Swimming Pool Discharge Violations; 5-10 SWIMMING POOL PERMIT; 9A-4-1 Permit Required)

8-1-23 **Cross-Connection Control.** The backflow of non-potable water, other liquids or foreign materials into the District System, or the installation of any device which has an effect on inter-connection and cross-connection control without first obtaining District approval thereof.
(Cross Reference: Appendix (B) CROSS CONNECTION CONTROL REGULATIONS)

8-2 **SEPARATE VIOLATIONS:** For the purposes of this Article 8, a separate and distinct violation shall be deemed committed upon each day or portion thereof that any such violation shall occur or continue.

8-3 **CRIMINAL STATUTES:** The following sections of the Colorado Revised Statutes are potentially applicable. Any suspected violation may be reported to the Summit County Sheriff and prosecuted in State Courts:

- 18-4-401 Theft
- 18-4-501 Criminal Mischief (Damages or destruction of property)
- 18-4-503
- and 504 Trespass
- 18-5-505
- and 506 Tampering ( Interruption of Service; unauthorized connection)
- 18-8-102 Obstructing Government Operation
- 18-8-106 Refusing Inspection
- 18-8-111 False Reporting
- 18-8-113 Impersonating Public Servant
- 18-8-114 Abuse of Public Records

8-4 **PROHIBITED DISCHARGES:** No person shall cause to be discharged to the sewer system or wastewater treatment facilities any prohibited discharges as defined herein, except where suitable treatment has been provided in accordance with the provisions of these Rules and Regulations, and local, state and federal regulations.
Specific Prohibitions. No person shall cause to be discharged, either directly or indirectly, any substance as follows:

8-4-1.1 Any liquids, solids, or gases which, by reason of their nature or quantity, are or may be sufficient, either alone or by interaction with other substances, to cause fire or explosion or be injurious in any other way to the Publicly-Owned Treatment Works (POTW) or to the operation of the POTW. At no time shall 2 successive readings on any explosion hazard meter, at the point of discharge into the system (or at any point in the system) be more than 5%, nor any single reading over 10% of the Lower Explosive Limit (LEL) of the meter. Prohibited materials include, but are not limited to: gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides and sulfides, and any other substances which the POTW, the State, or EPA has notified the user is a fire hazard or a hazard to the system.

8-4-1.2 Solid or viscous substances which may cause obstruction to the flow in a sewer, or other interference with the operation of the wastewater treatment facilities, such as, but not limited to: grease, garbage with particles greater than ½" in any dimension, animal guts or tissues, paunch manure, bones, hair, hides or fleshings, entrails, whole blood, feathers, ashes, cinders, sand, spent lime, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, wood, plastics, gas, tar, asphalt residues, residues from refining or processing of fuel or lubricating oil, mud or glass, grinding or polishing wastes, and other like or similar materials.

8-4-1.3 Any wastewater having a pH less than 5.0 or more than 9.0, or wastewater having any other corrosive property capable of causing damage or hazard to structures, equipment, and/or personnel of the POTW.

8-4-1.4 Any wastewater containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect
in the receiving waters of the POTW, to contaminate the sludge of any POTW systems, or to exceed the limitation set forth in a Categorical Pretreatment Standard. A toxic pollutant shall include, but not be limited to, any pollutant identified pursuant to the Federal Water Pollution Control Act, 33 U.S.C. 1251, Section 307(a), as amended from time to time, or state law or regulation.

8-4-1.5 Any noxious or malodorous liquids, gases or solids which, either singly or by interaction with other wastes, are sufficient to prevent entry into the sewers for maintenance and repair.

8-4-1.6 Any substance which may cause the POTW's effluent or any other product of the POTW, such as residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance discharged to the POTW cause the POTW to be in non-compliance with the sludge use or disposal criteria, guidelines, or regulations affecting sludge use or disposal.

8-4-1.7 Any substance which will cause the POTW to violate its NPDES permit or the receiving water quality standards.

8-4-1.8 Any wastewater with objectionable color not removable in the treatment process, including, but not limited to, dye wastes and vegetable tanning solutions.

8-4-1.9 Any pollutants, including oxygen-demanding pollutants (BOD, etc.) which a user knows or has reason to know will cause interference to the POTW. In no case shall a slug load have a flow rate or contain concentrations or quantities of pollutants that exceed for any time period longer than 15 minutes more than 5 times the average 24-hour concentration, quantities or flow during normal operation.

8-4-1.10 Any wastewater containing any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the District in compliance with applicable State Rules and Regulations Pertaining to Radiological Control, published by the Department of Health, State of Colorado.
8-4-1.11 Any wastewater which causes a hazard to human life or creates a public nuisance and is not contained in the wastewater system.

8-4-1.12 Any wastewater having a temperature which will cause the temperature of the influent to the wastewater treatment plant to exceed 104 ° F. and/or inhibit the biological activity in the POTW.

8-4-1.13 Any water or waste which contains grease or oil or any other substances that will solidify or become discernibly viscous at temperatures between 32° F. (0° C.) and 150° F. (65.5° C.).

8-4-1.14 Any water or waste containing free, floating or insoluble oil.

8-4-1.15 Wastes from septic tank pumpage or vaults except at locations permitted in writing by the District.

8-4-1.16 Waters containing garbage that has not been ground or comminuted to such a degree that all particles will be carried freely in suspension under conditions normally prevailing in public sewers. Solid particles shall be no more than ½" in any dimension.

8-4-1.17 Unusual concentrations of dissolved solids.

8-4-1.18 Any wastewater containing BOD, total solids, or suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the wastewater treatment plant; provided, however, that a user may be permitted by specific, written agreement with the POTW, which agreement to discharge such BOD or TSS may provide for special charges, surcharges, payments or provisions for treating and testing equipment.

8-4-1.19 Ammonia nitrogen, phosphorus or phosphate containing compounds (excluding cleaning compounds), or substances readily converted thereto, in amounts that would cause the POTW to fail to comply with its NPDES permit.
8-4-1.20 Any materials which would present a health risk to plant personnel, or cause the need for unusual protective equipment or precautions under normal work conditions.

8-4-1.21 Any material or substance not specifically mentioned in this Section which in itself is corrosive, irritating or noxious to human beings and animals, or which by interaction with other water or waste in the public sewer system could produce undesirable effects or create any other condition deleterious to structures, treatment processes, and quantity of the receiving stream.

8-4-1.22 Any material or substance which would interfere with the treatment process.

8-5 **FEDERAL AND STATE PRETREATMENT STANDARDS:** No person shall cause to be discharged, either directly or indirectly, any substance in violation of any Industrial Pretreatment Program adopted by the district.
ARTICLE 9

USER REQUIREMENTS

PART A: SERVICES

9A-1 SERVICE LINES:

9A-1 Construction. Separate and independent service lines shall be designed, installed and constructed by the Property Owner at his sole cost and expense for every improvement requiring water or sewer service. Such service lines and any other sewer facilities located on the property shall be designed and constructed in accordance with applicable rules, regulations, standards and building codes.
(Cross reference: 5-5 MULTIPLE USE OF TAP PROHIBITED)

9A-1-1 Sewer. Sewer service line for multi-family units, commercial establishments or industrial users shall discharge directly into a manhole at the sewer main. Sewer service line for single family residence shall be connected directly to the sewer main with a standard “wye” connection or may discharge directly into a nearby manhole where appropriate.

9A-1-2 Maintenance.

9A-1-2.1 Sewer. The Property Owner shall be responsible for maintaining, repairing and replacing the entire length of his sewer service line. He shall ensure that no root infiltration, surface water, or groundwater enters the District System through his service line or lines. The District may effect the repair or otherwise cure any such condition, and may charge the Property Owner the costs thereof as provided in Section 3-4, but the District is not obligated to effect any repairs or curative work on Property Owner's service line.
(Cross reference: 3-7-10 Infiltration; 8-1-2 Groundwater; Surface Water)
(1) Control Manholes Required: When required by the District, any Industrial User shall install and maintain at its sole expense a District-approved control manhole in the service line to facilitate observation, sampling and measurement of the wastewater flows.

9A-1 Water. Each Property Owner shall be responsible for leaks or breaks in Water Service Lines up to and including the tube nut which threads onto the curb stop. Leaks or breaks must be repaired at the Property Owner's expense, within a reasonable period of time after notification of such condition by the District. The decision of what constitutes a reasonable time period during which to effect repairs shall be within the sole discretion of the District. If satisfactory progress toward repairing said leak or break has not been completed within such time period, the District shall have the right to effect the repair and collect such costs as may be incurred from the Property Owner. The District shall place a lien on the property if such costs are not paid. The District will only repair leaks or breaks occurring between the corporation stop and the curb stop.

9A-2 WATER METERS: All users of District water shall be required to have meters installed to measure the flow of water through the tap. The Property Owner shall, at his sole expense, purchase and install a meter as specified by the District. After the District has approved the initial water meter installation and the property owner has paid all related expenses, the District may accept the meter. After acceptance of the meter by the District, and the expiration of any warranty coverage on the meter, the District shall then be responsible for maintenance, repairs, testing and replacement of the meter. Each meter shall be placed under the direction of the District, and shall have isolation valves on each side (meters larger than 1” only); and a back-flow preventer as specified in Part C of this Article 9 for water services identified by the District. All meters shall be so located as to be inspected easily at any time by District officials.

9A-2-1 Meter Property of District. Once installed, the meter shall be deemed the property of the District, and may not be removed or interfered with except upon prior approval by the District.

9A-2-2 One Building Per Meter. No more than one building shall be served by one meter. A "building" for this purpose is a structurally independent improve-
ment with plumbing facilities installed. No manifolding or looping of two or more meters is permitted.  
(Cross reference: 3-6-20 Unauthorized Connection of Two or More Taps)

9A-2-3 **Cross Connection Control.** Each property owner shall comply with the CDPHE Cross Connection Manual. All fire protection systems must utilize a reduced pressure principle back-flow prevention device.  
(Cross reference: Appendix (B) CROSS CONNECTION CONTROL REGULATIONS)

9A-2-4 **Irrigation System Metering** Any property owner who uses domestic water for irrigation purposes is encouraged to segregate the irrigation use such that a separate meter can be installed by the property owner to meter this use. The District provides a separate Irrigation Charge for this purpose. Any water metered for irrigation must first pass through and be metered by the Building Master Meter before it is metered by the Irrigation Meter. The irrigation meter remains the property of and the responsibility of the property owner.

9A-3 **INTERCEPTORS (OIL, GREASE AND SAND TRAPS):** Grease trap interceptors are required for all facilities used and operated regularly for the sale of prepared food, including, but not necessarily limited to, restaurants, cafes, fast food outlets, pizza outlets, delicatessens, sandwich shops and any and all other kinds and types of food vending establishments in which any food preparation (including heating or defrosting in or by means of any kind of oven or heating device) takes place on the premises, whether or not such facilities are located in a separate building or structure, or occupy space in a building or structure that is occupied by other businesses, as well as schools, churches, boarding houses with communal kitchen facilities, nursing homes, and day care centers which have kitchens and engage in the preparation of food. All garbage disposal discharges must go through the grease trap. It is the obligation of the Property Owner to notify the District of any use of the premises that includes the preparation of foods. This Section does not apply to residential homes. Oil, sand or sediment trap interceptors are required for all gas stations, commercial garages and car wash facilities. Property Owner will be required to submit a Certificate of Maintenance to the District each time the interceptor is cleaned. The certificate will need to indicate the quantity of oil, grease and sediment collected and removed at the time of cleaning. Based on historical records and certificates received by the District, the cleaning interval may be adjusted so as not to allow the interceptor to be more than 80 percent full at the time of cleaning.  
(Cross reference: 9A-10 CHANGES IN USE, EQUIPMENT OR SERVICE; 9C INTERCEPTOR DESIGN AND INSTALLATION STANDARDS)
9A-3-1 Location. All oil, grease or sand interceptors required to be installed by these Rules and Regulations shall be located outside the building served on private property, and shall be so installed and connected as to be at all times easily accessible for inspection and cleaning. Oil, grease or sand interceptors shall not be closer than 3 feet to any building or property line.

9A-3-2 Installation and Maintenance. Property Owner shall install interceptors in accordance with the provisions of Part C of this Article 9 at his sole cost, and at all times use, maintain, clean and ensure the effective operation of any and all interceptors. If the Property Owner fails to meet these requirements, the District may effect the necessary cleaning, maintenance or repairs, and may charge the Property Owner the cost thereof.
(Cross reference: 3-6-3 Interceptor Violations)

9A-3-3 Inspection. The District may go upon the Property Owner's property to inspect any such interceptor from time to time as it deems necessary, and the Property Owner shall be liable for the Inspection Fees as provided by Section 7-4 above.

9A-4 SWIMMING POOLS:

9A-4-1 No person shall discharge or permit to be discharged any Swimming Pool Discharge into the District System except in conformity with conditions of these rules and regulations.
(5-10-2 General Conditions; 5-10-3 Mechanical Controls)

9A-4-2 Inspections. The District may inspect any facilities designed or utilized to permit Swimming Pool Discharge to enter the District System, and Property Owner shall be responsible for payment of the Inspection Fees as provided by Section 7-4 above.

9A-5 CAR WASH HOLDING TANKS: Car wash operations may be required to install holding tanks sized to reduce peak flow to the sewer system. In any event, such holding tanks shall not have less than 10,000 gallon capacity. When holding tanks are determined by the District to be necessary, they shall utilize a pump to discharge water from the holding tank to the sewer system. The maximum flow rate of the pump for the installed condition shall not exceed the rate of flow approved by the District.

9A-6 PRIVATE DISPOSAL SYSTEMS: Any person permitted to own and operate a private wastewater disposal system shall be responsible to operate, clean, maintain, and dispose of
waste materials from such system in accordance with the terms of any permit therefore. In no event shall waste materials or effluent from such system be discharged into the District System. 
(Cross reference: 1-11-2 Exemptions)

9A-7 LIFT STATIONS: If the elevation of any improvement is too low to permit gravity flow of wastewater to the District System, such wastewater shall be lifted and discharged to the District System by a facility conforming to District requirements. If the improvement is a single family residence, the lift station shall be a private facility, and shall be owned, operated and maintained by Property Owner at his sole cost and expense. If a lift station is required for multi-family or commercial use, it shall, upon inspection and acceptance by the District, be a public facility, owned and operated by the District as part of the District System.

9A-8 CERTAIN DRAINS PROHIBITED: No drain may be connected to the District System which would or could permit groundwater or surface water to enter the District System. This prohibition applies to basement drains, and any and all groundwater and surface water drainage structures or systems, or other clearwater connections, without limitation. Sump pumps shall not be connected to or permitted to discharge into the District System.
(Cross reference: 3-6-6 Prohibited Drains)

9A-9 CESSPOOLS AND SEPTIC TANKS: No connection to a District Main will be permitted if the service line extends through or from a cesspool or septic tank.

9A-10 CHANGES IN USE, EQUIPMENT OR SERVICE: Property Owner shall notify the District at any time the use being made of his property changes in such a way that any grease or sand interceptor will or may be required under Section 9A-3, or a For a change in building use to a higher use, i.e., from warehouse to office, or for any expansion in square footage, Tap Fees shall be paid for such proposed use according to the Tap Fee schedule then in effect, with an amount subtracted as a credit for the previously paid fees. The amount subtracted shall be adjusted so that it reflects the current fee schedule. For a change in use to lower use, i.e., office to warehouse, no adjustment will be made.
(Cross reference: 8-1-16 False Official Statement; Report; 3-6-13 Failure to Notify of Use Changes)

9A-11 HYDRANT USE: Fire Hydrants are owned and maintained by the Copper Mountain Metropolitan District. Each Hydrant is provided for emergency use or training use by the Fire Department. No other use is allowed. Water required for construction (dust control, compaction, cleaning, etc.) is available from a designated District fill station only. No exceptions. Construction water user will be required to pay fees and charges established by the District. (Cross reference: Appendix A Fees and Charges)
Violators will be subject to District penalty charges and actual costs to collect. 
(Cross-reference: 3-6 Penalty Charges)

9A-12 **SPECIAL SERVICES:** The District may enter into special contracts for special purchase of water or sewer service if it is in the District's best interest to do so.

9A-13 **CONSTRUCTION CONSULTANTS:** The District may enter into contracts with one or more consultants in connection with construction projects in which the District has an interest. Such consultants may be individuals or companies in any profession or trade that, at the discretion of the Board, is deemed capable of providing needed testing, information, pre-construction work, or other assistance, including, but not limited to, design engineering, soils engineering, hydrological engineering, surveying and construction staking, and project supervision. Contracts with such consultants shall be subject to the provisions of Section 9B-1-9, and all subsections thereunder, pertaining to insurance coverage. For purposes of Section 9B-1-9 and its subsections, the term "Contractor" shall include any and all construction consultants as herein defined. 
(Cross reference: 9B-1-9 Insurance)
ARTICLE 9

USER REQUIREMENTS

PART B: CONSTRUCTION STANDARDS

9B-1 GENERAL CONSTRUCTION STANDARDS: All excavations and other work on Main Extensions, Taps, or other District facilities shall be performed in conformity with and are subject to the requirements and conditions set forth below. The term Contractor as used in this Part B applies also to the Property Owner.

9B-1-1 Compliance. Contractor shall comply with all District, State and Federal Rules, Regulations, Standards and Specifications.

9B-1-2 Safety. It shall be Contractor's responsibility to determine, initiate, maintain and supervise all measures necessary to protect the public during construction.

9B-1-3 Permits. The Contractor shall be solely responsible for determining and obtaining any and all permits required for the work from other governmental entities or agencies having jurisdiction, and shall perform the work in accordance with any and all applicable ordinances, regulations, laws and orders of, or permits issued by, such entities or agencies.

9B-1-4 Subsurface Structures. The District shall make available to the Contractor record drawings showing the location of its facilities in the vicinity of the work, and otherwise comply with all applicable laws and regulations pertaining to the location of the District's underground facilities. The Contractor shall be finally and solely responsible for determining the existence and location of all other subsurface structures in such area, and shall indemnify and hold the District harmless against any and all claims for damages to any such structures.

9B-1-5 Warranty. All materials and workmanship furnished by the Contractor shall be warranted for a period of one year, and shall conform to the provisions of Part C of this Article 9 and to all plans and designs approved by the District, and shall be free from all defects due to faulty or non-conforming materials or workmanship.
9B-1-6 Inspections. No inspection or testing will be performed by the District on weekends or holidays, or before 8:00 a.m. or after 5:00 p.m., without the express agreement of the District secured in advance. Whenever an inspection or testing is required by any specific provision of these Rules and Regulations or by the terms of any permit or plan approval, the Contractor shall give the District such notice as is required and shall not cover or otherwise obscure the work to be inspected until the inspection has been made. If required by the District, the Contractor shall uncover or otherwise make such work accessible for inspection when ordered to do so by the District. The inspections, testing and reviews performed by the District are for the sole and exclusive benefit of the District. No liability shall attach to the District by reason of any inspections, testing, or reviews required or authorized by these Rules and Regulations, or by reason of the issuance of any approval or permit for any work subject to this Section.

9B-1-7 Independent Investigation. Contractor shall thoroughly examine the work site to ascertain for himself all soil, geological, groundwater and other conditions to be encountered which might affect the work being undertaken. The Contractor shall enter into such work relying on his own investigation and information, and not on any statements or representations, if any, that have been made by the District.

9B-1-8 Indemnification. By undertaking any work subject to this Section, Contractor agrees to indemnify and hold harmless the District and the Property Owner on whose property the work performed from any and all liability, claims, and demands, on account of injury, loss, or damage, including without limitation claims arising from bodily injury, personal injury, sickness, disease, death, property loss or damage, or any other loss of any kind whatsoever, which arise out of or are in any manner connected with any work subject to this Section if such injury, loss, or damage is caused in whole or in part by, or is claimed to be caused in whole or in part by, the act, omission, error, professional error, mistake, negligence, or other fault or Contractor, or which arise out of any Worker's Compensation claim of any employee of the Contractor. Contractor shall investigate, handle, respond to any and all claims, and to provide defense for the District and such Property Owner at the sole expense of Contractor. The Contractor also shall bear all other costs and expenses related thereto, including court costs and attorney fees, whether or not any such liability, claims, or demands alleged are groundless, false, or fraudulent.
9B-1-9 Insurance. Contractor shall not commence work on District facilities until insurance as provided hereunder has been obtained and certificates evidencing the same have been issued by the respective insurance companies to the District. Such insurance companies must have a rating of A plus 2A or better in Best's Insurance Service.
(Cross reference: 9A-12 CONSTRUCTION CONSULTANTS)

9B-1-9.1 Scope of Coverage. Contractor shall procure and maintain, at its own cost, a policy or policies of insurance sufficient to insure against all liability claims, demands, and other obligations assumed by Contractor pursuant to 9B-1-8. The Contractor shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to 9B-1-8 by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

9B-1-9.2 Types of Coverage. Contractor shall procure and maintain, and shall cause all subcontractors of the Contractor to procure and maintain, the minimum insurance coverages listed below. Such coverages shall be procured and maintained with forms and insurers acceptable to the District. All coverages shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by Contractor pursuant to 9B-1-8. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

(1) Performance Bond in a form approved by the District.

(2) Worker's Compensation insurance to cover obligations imposed by applicable laws for any employee engaged in the performance of work under this contract, and Employers' Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS ($500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS ($500,000) disease - policy limit, and FIVE HUNDRED THOUSAND DOLLARS ($500,000) disease - each employee. All Contractors shall request their Worker's Compensation carrier to provide the District with a Certificate
of Insurance naming the District as a holder of a Certificate of Insurance.

(3) General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS ($1,000,000) each occurrence and ONE MILLION DOLLARS ($1,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products, and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards. The policy shall contain a severability of interests provision.

(4) Comprehensive Automobile Liability insurance with minimum combined single limits for bodily injury and property damage of not less than ONE MILLION DOLLARS ($1,000,000) each occurrence and ONE MILLION DOLLARS ($1,000,000) aggregate with respect to each of Contractor's owned, hired or non-owned vehicles assigned to or used in performance of the services. The policy shall contain a severability of interests provision.

(5) Professional Liability insurance with minimum limits of THREE HUNDRED THOUSAND ($300,000) each claim and SIX HUNDRED THOUSAND DOLLARS ($600,000) aggregate.

9B-1-9.3 Miscellaneous. The policy required by Paragraphs (3) and (4) above shall be endorsed to include the District and its officers and employees as additional insureds. Every policy required above shall be primary insurance, and any insurance carried by the District shall be excess and not contributory insurance to that provided by Contractor. No additional insured endorsement to the policy required by Paragraph (2) above shall contain any exclusion for bodily injury or property damage arising from completed operations. Contractor shall be solely responsible for any deductible losses under any policy required above.
9B-1-9.4 Enforcement. Failure on the part of Contractor to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute cause for issuance of a Stop Work Order under 9B-3. In addition, without waiving any other available remedy, the District may procure or renew any such policy or any extended reporting period thereto, and may pay any and all premiums in connection therewith, and all monies so paid by the District shall be charged to and paid by Contractor under Section 7-13.

9B-1-9.5 Governmental Immunity. The District relies on, and does not waive or intend to waive the monetary limitations (presently $150,000 per person and $600,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, Section 24-10-101 et seq., 10 C.R.S., as now or hereafter constituted, or otherwise available to the District.

9B-1-10 Record Drawings. Upon completion of the work, Contractor shall submit to the District Record Drawings on electronic media compatible with the District records and certified compaction test results relating to such work.

9B-2 REQUIRED SUBMITTALS: No Contractor shall begin any excavation or any other work on any Main Extension, Tap, or other District facilities until he has obtained the prior approval of the District therefor, and has submitted, in addition to any other materials required elsewhere herein, the following, approved as to form by the District:

(Cross Reference: Section 01340 of CMCMD Technical Specifications)

9B-2-1 Written Agreement. A written agreement duly signed by Contractor (1) acknowledging his consent to be bound by the provisions of Section 9B-1; (2) warranting that the work will conform to such provisions and will be free from defects due to faulty or nonconforming materials and workmanship; (3) agreeing to indemnify the District as provided in Section 9B-1-8, and (4) agreeing to pay any and all applicable fees and charges provided by these Rules and Regulations in connection with the work.

9B-2-2 Insurance Certificates. Certificates prepared by Contractor's insurance agent in a form satisfactory to the District evidencing that policies providing the required coverages, conditions, and minimum limits are in full force and
effect. The certificate shall identify the work being performed and shall provide that the coverages afforded under the policies shall not be cancelled, terminated or materially changed until at least 30 days' prior written notice has been given to the District. The District reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

9B-2-3 Plumbing Permit. A true copy of a current plumbing permit issued by the Summit County Building Department, containing a description of the work to be performed and authorization therefor, and drawings approved by Summit County.

9B-2-4 Fees. The full amount of all fees payable in advance, or any required costs deposits, or both.

9B-3 STOP WORK ORDERS:

9B-3-1 Order. The District may revoke any approval for work and issue a Stop Work Order upon a determination that the Contractor has violated or has failed to meet any condition of the approval, any provision of this Part B, or any other standard, specification, or rule imposed by the District. A Stop Work Order may be issued orally or in writing by the District Manager or District Engineer, and shall take effect immediately upon the issuance thereof, and remain in full force and effect until rescinded in writing by the District.

9B-3-2 Effect. It is unlawful for any person to do any work in violation of the terms of any Stop Work Order issued pursuant to this Section except such as may be permitted by the District in order to render the construction site safe and secure.

(Cross reference: 3-6-14 Violation of Stop Work Order)

9B-4 CURE OF DEFECTS:

9B-4-1 Order to Cure. If the District determines that any part of the work was not performed in conformity with these Rules and Regulations or approved plans, or is defective, of poor or unworkmanlike quality, or otherwise not in conformity with any applicable warranty, it may give written notice thereof to the Contractor. Such notice shall specify the non-conformity, direct the Contractor at his cost and subject to this Part B to perform specified curative work, and specify the period of time determined by the District reasonably necessary for completion of the curative work.
9B-4-2 District Cure. If the Contractor fails within the time stated following such notice to cure the nonconformity specified therein, the District, in addition to and without waiving any of its other remedies, may perform the work and charge the Contractor for its actual costs incurred in connection therewith, calculated in accordance with the rates set forth in the Appendix hereto. The provisions of Article 7 applicable to invoicing and collection of fees and charges shall apply to any charges assessed to Contractor under this Section.

(Cross reference: 7-13 CURE CHARGES; 7-17 WITHHOLDING APPROVALS AND PERMITS)

9B-5 FEES: Contractor will pay the District all fees imposed and assessed by the District for permits, reviews, inspections, tests, approvals, and any other undertakings performed by the District or its professional consultants in connection with the administration and enforcement of these Rules and Regulations, as provided by Article 7.

9B-6 RELOCATION OF DISTRICT FACILITIES: It is the policy of the District to work in cooperation with state and local governmental entities when needed public construction projects require the relocation, adjustment or rebuilding of District facilities. It is the purpose of this Section to set forth the terms and conditions applicable to such relocation, adjustment or rebuilding.

9B-6-1 General Construction Provisions Applicable. All provisions of these Rules and Regulations applicable to Contractors and Property Owners also apply to the activities of any governmental entity in effecting any relocation, adjustment, rebuilding or other work on District facilities which lie in the public way. For purposes of this Section 9B-6 and its subsections, the term "Public Entity" is used to designate the governmental unit requesting relocation, adjustment or rebuilding of District facilities.

9B-6-2 Public Entity to Bear Costs. The public entity shall bear all costs, direct and indirect, of the relocation, adjustment or rebuilding of District facilities.

9B-6-3 Notice of Need For Relocation. The public entity shall notify the District immediately when it has taken under consideration any construction project which will or may require the relocation or adjustment of District facilities. Such notice shall be in writing and shall contain or include the following:

9B-6-3.1 A description of the proposed construction project;
9B-6-3.2 An explanation of the necessity of the project which will or may cause the need for relocation of District facilities;

9B-6-3.3 A listing of any and all alternatives that have been considered by the public entity that would avoid the need for relocation or adjustment of District facilities, and, for each such alternative that has been rejected, a statement of the reason for its being rejected;

9B-6-3.4 All reasons that have been considered by the public entity in reaching the determination that the District facilities need to be or may need to be relocated or adjusted;

9B-6-3.5 Drawing or drawings showing all design alternatives under consideration for the project and demonstrating the way in which each proposed design impacts District facilities, and a narrative description of such expected impact, including, but not necessarily limited to, vertical or horizontal distances that the District line or other facility would have to be moved and the nature of any other adjustment, relocation or rebuilding of District facilities that will or may be entailed.

9B-6-3.6 The date upon which the proposed construction is planned to commence;

9B-6-3.7 A recitation of pertinent financial information, including verification that funds have been properly budgeted and appropriated for the project, the projected costs, whether any other agency or source will participate in the funding, and anticipated disbursement procedures and schedules.

9B-6-4 Meeting With District Engineers. As soon as practicable after the issuance of the notice, engineering representatives of the public entity shall meet with the District engineer or his designee to discuss the project, coordinate the needs of the District and the public entity, and review any alternatives to make certain that all options have been fully considered.

9B-6-5 Preliminary Approval. The District Board of Directors will give preliminary approval to the requested relocation, adjustment, or rebuilding of District facilities as provided in this Section, if the Board of Directors, with the
advice of its consulting engineers and counsel, makes a determination or finding that the following conditions are met:

9B-6-5.1 All requirements of these Rules and Regulations, including but not limited to the provisions of this Section, have been complied with by the public entity;

9B-6-5.2 The Board finds that the construction project causing the request for such relocation, adjustment or rebuilding is necessary;

9B-6-5.3 The Board determines that the public entity has the authority to undertake the project;

9B-6-5.4 The Board finds that the manner in which the project has been planned and implemented has not been arbitrary, capricious, unreasonable or discriminatory against the District;

9B-6-5.5 The Board finds that suitable arrangements have been made to pay the costs of the relocation, adjustment or rebuilding of District facilities; and

9B-6-5.6 The Board finds that no justifiable reason exists in fact or in law for withholding approval.

9B-6-6 Coordinated Construction Schedule. Upon preliminary approval by the District Board, the District's Engineers will meet with the engineering representatives of the public entities to develop a coordinated construction schedule which shall thereafter be adhered to by all parties unless altered by mutual consent.

9B-6-7 Construction Drawings Required. As soon as available, a set of construction plans for the proposed project showing the locations of the District facilities to be relocated, adjusted, or rebuilt shall be provided to the District.

9B-6-8 District Will Elect Whether to Perform Relocation. The District, in its sole discretion, may choose to perform the work itself. If so, the public entity shall pay the cost of such work in accordance with a payment schedule or plan to be agreed upon between the District and the public entity. If the District does not make such election, any relocation, adjustment or rebuilding
performed by the public entity shall be conducted in accordance with these Rules and Regulations in all particulars, and be in accordance with plans approved by the District. Such work shall be accomplished without impairing or interrupting the District's ability to provide service to its constituents. The public entity shall warrant all work against any and all defects and workmanship or materials for a period of 2 years.

9B-6-9 District to be Reimbursed for All Direct and Indirect Costs. Any and all costs incurred by the District as a reasonable consequence of the public entity's request for services to be provided by the District in connection with any relocation, adjustment or rebuilding of District facilities under this Section, whether deemed direct or indirect, shall be reimbursed to the public entity. All charges for plan reviews and inspections shall be paid in advance in accordance with the applicable provisions of these Rules and Regulations. (Cross reference: 7-3 PLAN REVIEW FEES; 7-4 INSPECTION FEES)
ARTICLE 9

USER REQUIREMENTS

PART C: INTERCEPTOR DESIGN AND INSTALLATION STANDARDS

9C-1 **GENERAL:** All work for design and installation of grease, sand or other type interceptors shall be performed in conformity with and are subject to the requirements and conditions set forth in Part B of Article 9.

9C-2 **ENGINEERING REVIEW** Three sets of plans and specifications, including complete mechanical and plumbing sections with interceptor detail and calculations shall be submitted to the District for review prior to construction. Interceptor designs must meet the criteria set forth in the following paragraphs and in accordance with the appropriate sections in the District’s Rules and Regulations.

9C-3 **DESIGN STANDARDS** All designs shall conform to the Uniform Plumbing Code. It is the Contractor’s and/or Customer’s responsibility to determine the adequate size of the interceptor.

1) The minimum size of the interceptor shall be determined by the maximum flow or expected maximum flow to the interceptor.

2) Where actual flow is unknown, expected flow can be determined by fixture-unit values from the Uniform Plumbing Code, or Plumbing and Drainage Institute. Fixture-unit values are then converted to GPM discharge rates on the basis of one fixture-unit equaling 7.5 GPM discharge from the fixture. Table 9C-3-1-1 gives sample fixture-unit values and equivalent discharge flow.

Where applicable, flow may be on the maximum number of meals served at peak periods of the day. Volume, in gallons, of the interceptors shall be 2½ times the number of meals served.

3) The flow to the interceptors shall not exceed 2½ times the certified gallons per minute flow rating of the given interceptor.

4) If flow to the interceptor is continuous, upsize the interceptor by 50%.

5) Any grease interceptor installed with the inlet more than four 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 1½ times greater than the rated capacity.

6) Interceptors shall discharge to a storage tank.
7) Provide cleanouts and backwater valve for each installation.

8) Each interceptor shall be provided with an approved flow control or restricting device installed in a readily accessible and visible location in the inlet of each interceptor.

9) Flow control devices shall be designed such that the flow 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.

10) Each flow control fitting shall be provided with an air intake/vent.

Table 9C-3-1-1

<table>
<thead>
<tr>
<th>Fixture/Equipment Drain Outlet Size (Inches)</th>
<th>Fixture-Unit Value</th>
<th>Discharge GPM Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1¼</td>
<td>1</td>
<td>7.5</td>
</tr>
<tr>
<td>1½</td>
<td>2</td>
<td>15.0</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>22.5</td>
</tr>
<tr>
<td>2½</td>
<td>4</td>
<td>30.0</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>37.5</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>45.0</td>
</tr>
</tbody>
</table>

9C-4 INSTALLATION Interceptors can be located inside or outside the building on private property. All drains from the kitchen, food preparation, dish washing, and other similar type areas shall be connected to the appropriate interceptor. Garbage grinders not connected to the grease interceptors shall not be used for disposal of grease. All drains from automotive servicing areas will be connected to oil and sand interceptors.

1) It is not advisable to have a long horizontal run of piping, which is below the static water level in the interceptor. All piping below this level will be filled with water and grease modules and the grease will solidify, plugging the pipe. If a low inlet is used, provide adequate clean flushing water.

2) When using high inlets, note that gases from the interceptor may pass back through the drain opening. An additional trap should be considered under the sink.

3) Where installations are set in a pit, provide grating or other removable cover for access.
4) Vent installation - all flow control devices shall be connected to vent stack or vent not lower than the flow level of the highest drain serviced, or terminated in a return bend at the same elevation outside the building. Intake air/vent shall terminate with elbow turned down.
APPENDIX A
APPENDIX A – RULES AND REGULATIONS
FEES AND CHARGES

COPPER MOUNTAIN CONSOLIDATED AND METROPOLITAN DISTRICT

1. TAP FEES
   1 SFE Water         $5000.00
   1 SFE Sewer         $5000.00

   The total tap fee for a project or structure increases proportionally to the number of SFE present. Exhibit 1, attached hereto, provides a listing of all classes of SFE and their resulting SFE values.

2. INSPECTION FEES
   PLAN REVIEW
   BY DISTRICT PERSONNEL   $40.00 PER HR
   BY DISTRICT ENGINEER    AT BILLED RATE

   CONSTRUCTION INSPECTION
   BY DISTRICT PERSONNEL   $40.00 PER HR
   BY DISTRICT ENGINEER    AT BILLED RATE

   ANY OTHER REQUESTED INSPECTION
   OR CONSULTATION
   BY DISTRICT PERSONNEL   $40.00 PER HOUR
   BY DISTRICT ENGINEER    AT BILLED RATE

3. INCLUSION FEES      actual cost
                       recovery

4. SERVICE CHARGES
   WATER PER MONTH      $24.00/SFE
   SEWER PER MONTH      $24.00/SFE
   WATER DOMESTIC OVER AVERAGE $4.00/1000 GAL
   WATER IRRIGATION     $2.00/1000 GAL

   Water charges for domestic over average and irrigation are computed and billed quarterly along with that months service fee bill.

5. CHARGES FOR CONSTRUCTION WATER
TEMPORARY ACCOUNT SETUP FEE $24.00/YEAR
CONSTRUCTION WATER $2.00/1000 GAL

Charges for construction water are computed and billed monthly. Initial bill will include District setup fee for temporary account. Payment in full for all construction water charges is due by the end of the year.

6. Variance Fees $150.00 plus actual costs

District Backcharges: In matters indicating actual cost recovery, or in matters other than those listed above, or in connection with unusual circumstances requiring extensive District involvement, the District will charge all of its actual costs to the property owner. (Reference Definitions 2-2 Actual Costs).
## EXHIBIT 1
### SINGLE FAMILY EQUIVALENT UNIT RATING

<table>
<thead>
<tr>
<th>USE</th>
<th>SFE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APARTMENTS, TOWNHOMES, AND CONDOMINIUMS</strong></td>
<td></td>
</tr>
<tr>
<td>each bedroom including lofts</td>
<td>0.2</td>
</tr>
<tr>
<td>each bathroom or portion of</td>
<td>0.2</td>
</tr>
<tr>
<td>each kitchen</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>HOTEL OR OVERNIGHT RENTAL UNITS</strong></td>
<td></td>
</tr>
<tr>
<td>per bed space</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>RESTAURANTS, BARS, LOUNGES, DELIS, CAFETERIAS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>AND</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CONVENTION SPACE</strong></td>
<td></td>
</tr>
<tr>
<td>first 500 square feet</td>
<td>1</td>
</tr>
<tr>
<td>each square foot over 500</td>
<td>0.002</td>
</tr>
<tr>
<td>each square foot of deck seating</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>MICROBREWERY ESTABLISHMENTS</strong></td>
<td></td>
</tr>
<tr>
<td>(Reference attached Note 1)</td>
<td></td>
</tr>
<tr>
<td><strong>LAUNDRY FACILITIES</strong></td>
<td></td>
</tr>
<tr>
<td>self service public machines per machine</td>
<td>1.3</td>
</tr>
<tr>
<td>commercial per machine</td>
<td>8</td>
</tr>
<tr>
<td><strong>OFFICE AREAS, each square foot</strong></td>
<td>0.0008</td>
</tr>
<tr>
<td><strong>RETAIL AREAS, each square foot</strong></td>
<td>0.0005</td>
</tr>
<tr>
<td><strong>AUTOMOBILE SERVICE STATIONS</strong></td>
<td></td>
</tr>
<tr>
<td>each hose island</td>
<td>1.5</td>
</tr>
<tr>
<td>car wash, per bay</td>
<td>1</td>
</tr>
<tr>
<td><strong>FIRE STATIONS, MAINTENANCE BUILDINGS, WAREHOUSES</strong></td>
<td>0.00015</td>
</tr>
<tr>
<td>per square foot</td>
<td></td>
</tr>
<tr>
<td><strong>CHURCHES, per square foot</strong></td>
<td>0.002</td>
</tr>
<tr>
<td><strong>HEALTH CLUBS, SPAS, FITNESS CENTERS</strong></td>
<td>0.0015</td>
</tr>
<tr>
<td>per square foot</td>
<td></td>
</tr>
<tr>
<td><strong>SWIMMING POOLS</strong></td>
<td></td>
</tr>
<tr>
<td>commercial per 1000 gallons</td>
<td>0.035</td>
</tr>
<tr>
<td>residential per 1000 gallons</td>
<td>0.025</td>
</tr>
<tr>
<td>Jacuzzi, hot tub commercial</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>DAY CARE CENTERS per child capacity</strong></td>
<td>0.01</td>
</tr>
</tbody>
</table>
1. Microbrewery Establishments: To determine initial tap fee charges, the SFE unit rating will be estimated based on District review of plans. Actual flows, BOD and TSS concentrations will be determined by the District based on field monitoring and testing of discharges at a control manhole provided by the property owner. The District will adjust the SFE unit rating based on evaluation of the actual discharge flows, BOD and TSS concentrations.
APPENDIX B – RULES AND REGULATIONS
CROSS CONNECTION CONTROL REGULATIONS

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT

This document is adopted by Copper Mountain Consolidated Metropolitan District to promote and sustain the high quality of drinking water furnished to the District’s water customers; to protect the District’s public potable water supply system from the possibility of contamination or pollution by backflow, back siphonage or back pressure; to promote the elimination or control of existing cross connections, actual or potential; and to provide for the maintenance of a continuing program or cross-connection program.

A. The authority to implement and maintain a cross-connection control program is contained in the following legislative actions:


5. Copper Mountain Consolidated Metropolitan District Cross-Connection Control Resolution.

6. Regional Building Code

7. Colorado Plumbing Code


B. Reference manuals adopted for guidelines on cross-connection Control:


6. Definitions of terms used in this regulation are those contained in "Colorado Department of Public Health and Environment Cross-Connection Manual" available for review at the District Office.

C. General Requirements:

1. Building plans submitted to the Copper Mountain Consolidated Metropolitan District will be reviewed and approved prior to issuance of a Summit County building permit. Building plans must show:
   a. Water service size, type, and location
   b. Meter size and location
   c. Backflow prevention assembly size, type, and location
   d. Fire sprinkling system(s) service line, size and type of backflow prevention device

2. Backflow prevention devices are to be installed in an accessible location to facilitate maintenance, testing and repair.

3. All backflow assemblies shall be installed immediately downstream of the water meter.

4. Before installing the backflow prevention assembly, pipelines should be thoroughly flushed to remove foreign material.

5. In no case will it be permissible to have connections or tees between the meter and service line backflow prevention assembly.
6. In no case is it permissible to connect the relief valve discharge on reduced pressure assemblies into a sump, sewer, drainage ditch, etc.

7. Backflow prevention valves are not to be used as the inlet or outlet valve of the water meter. Backflow preventer test cocks should never be used as supply connections and should be plugged except when being tested.

8. In order to ensure that backflow prevention assemblies continue to operate satisfactorily, it will be necessary that they be tested at the time of installation and on an annual basis thereafter. Such test will be conducted in accordance with FCCC and HR performance standards and field test procedures as directed by the Colorado Department of Public Health and Environment. Test results to be provided to the District. (Cross reference: F -1 Testing and Maintenance)

9. Final inspections on new or retrofit installations will be performed only after the backflow assembly has been tested. The test results, plumbing permit, and test permit number will be supplied at the time an inspection is scheduled or to the inspector on the job site. Inspection may be scheduled by phone 48 hours prior to the time requested. Access arrangements shall be made by the technician. (Cross reference: F -1 Testing and Maintenance)

10. Copper Mountain Consolidated Metropolitan District shall inspect all installations.

11. All cost for design, installation, maintenance, repair and testing are to be borne by the customer.

12. No grandfather clause exists. All laws and regulations apply regardless of the age of the facility.

13. All glycol (ethylene or propylene), or antifreeze systems shall have an approved Reduced Pressure Zone assembly (RPBP) for containment.

14. Dry fire systems shall have an approved Reduced Pressure Backflow Preventers (RPBP) installed upstream of the air pressure valve.

15. Single-family residence with a fire sprinkler system and domestic water combined shall have a RPBP when no chemicals are used.

16. All fire sprinkler systems shall conform to the following sections of the National Fire Protection Association Standard 13 and 25.
D. Standards for Backflow Prevention Assemblies:

1. Any backflow prevention assembly required herein shall be of a model and size approved by Copper Mountain Consolidated Metropolitan District. The term “Approved Backflow Prevention Assembly” shall mean an assembly that has been manufactured in full conformance with the standards established by the latest version of the Colorado Department of Public Health and Environment Cross-Connection Control Manual and the Copper Mountain Consolidated Metropolitan District.

Final approval shall be evidenced by a “Certificate of Approval” issued by an approved testing laboratory certifying full compliance with Colorado Department of Public Health and Environment standards and FCCC & HR Specification. The following testing laboratory is qualified to test and certify backflow prevention devices:

Foundation For Cross-Connection Control and Hydraulic Research
University of Southern California
OHE 430-D University Park-MC 1453
Los Angeles, California 90089-1453

2. Only approved backflow prevention assemblies shall be used. See latest Colorado Department of Public Health and Environment “Cross-Connection Control Manual” available for reference the District Office. See Chapter 4 for selection criteria.

3. Backflow preventers currently installed which are not approved shall be replaced with an approved assembly within three (3) years of adoption of this regulation unless the backflow preventer fails an annual operational test. If the device fails any such test, it shall be replaced within 48 hours with an approved device.

4. Backflow devices used on fire lines shall have outside stem & yoke valves (O.S & Y. valves) and be listed by the National Fire Protection Association.

E. Installation:

1. Backflow prevention assemblies shall be installed in accordance with drawings and standards contained in the Colorado Department of Public Health and Environment manual of Cross-Connection Control.

2. Backflow prevention assemblies installations shall be inspected and approved for use by Copper Mountain Consolidated Metropolitan District. Inspections can be scheduled by calling (970) 968-2390 at least 48 hours in advance of the desired inspection time.
3. All backflow assemblies shall be installed in the horizontal position. Vertical installation shall be acceptable when approved by ASSE or USC FCCC & HR specifications. Variance may be granted by review from the Copper Mountain Consolidated Metropolitan District.

4. A pressure vacuum breaker shall only be used where the assembly is never subjected to backpressure and installed a minimum of 12 inches above the highest piping or outlet downstream of the device in a manner to preclude backpressure.

5. An atmospheric vacuum breaker shall be used only where the assembly is:
   a. Never subjected to more than 12 hours continuous pressure
   b. Installed as an isolation assembly
   c. Installed with the air inlet in a level position and a minimum of six (6) inches above the highest piping or outlet it is protecting

6. No valves shall be permitted downstream of the device.

7. The single check valve is not considered to be a backflow prevention device.

8. Reduced pressure backflow preventers will be installed above ground. The unit should be placed at least twelve (12) inches above the finish grade to allow clearance for repair work. A concrete slab at finish grade is recommended. Proper drainage should be provided for the relief valve and may be piped away from the location, provided it is readily visible from above grade and the relief valve is separated from the drain line by a minimum of double the diameter of the supply line. Vault installations are strictly prohibited. Freezing is a major problem in this area. Precautions should be taken to protect above ground installations.

9. Reduced pressure zone backflow preventer may be installed in a basement provided the assembly is equipped with an adequate drain with an effective opening of twice the diameter of the assembly.

F. Testing and Maintenance:

1. It will be the duty of the customer/user at any premises where the backflow prevention assemblies are installed to have certified inspections and operational test made of the assemblies at least once per year. In those specific instances where Copper Mountain Consolidated Metropolitan District deems the hazard to be great enough, they will require certified inspections at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by a certified technician approved by the Colorado Department of Public
Health and Environment District Manager or Water Distribution and Wastewater Collection Systems Certification Council. An inspection of the assembly may be performed at any time complying with Section 7.0 of the Colorado Department of Public Health and Environment Cross-Connection Control Manual.

2. As necessary, the device(s) shall be repaired at the expense of the customer/user whenever the device(s) are found to be defective. Records or copies of all such test, repairs, or replacements shall be kept with a copy sent to:

Copper Mountain Consolidated Metropolitan District  
513 Copper Road  
P.O. Box 3002  
Copper Mountain, CO 80443

3. The technician who will perform the test shall call Copper Mountain Consolidated Metropolitan District for a test permit number which must appear on all forms.

4. Existing assemblies shall be tagged or sealed by the technician performing the test at the completion of the test.

5. All testing gauges shall be checked yearly for accuracy, or more often in the event of questionable readings, and be kept in good operating condition.

6. Copper Mountain Consolidated Metropolitan District retains the right to test or otherwise check the installation and operation of any containment assembly at any time to assure proper operation.

G. Right Of Entry:

1. A representative of Copper Mountain Consolidated Metropolitan District will carry credentials of his/her office. By previously arranged appointment and upon presentation of proper credentials, the Copper Mountain Consolidated Metropolitan District representative shall have the right of entry to inspect any and all buildings and premises for cross-connections relative to possible hazards. This right of entry shall be a condition of water service in order to protect the health, safety and welfare of the people throughout the Copper Mountain Consolidated Metropolitan Districts distribution system. Where building security is required, the backflow assembly(s) should be located in an area not subject to security. Questions regarding proper credentials should be directed to the Copper Mountain Consolidated Metropolitan District.
H. Violations:

1. Failure of the Customer to cooperate in the installation, maintenance, testing or inspection of backflow prevention assemblies required by this resolution shall be grounds for the discontinuance of water service to the premises or the requirement for an air-gap separation from the public potable water system.

2. Service of water to any premises may be discontinued by Copper Mountain Consolidated Metropolitan District if unprotected Cross-Connections exist on the premises. When any defect is found in an installed backflow prevention assembly, or if backflow prevention assembly has been removed or bypassed, the service may be discontinued. Service shall not be restored until such conditions or defects are corrected.

3. Discontinuance of service may be summary, immediate, and without written notice whenever, in the judgment of Copper Mountain Consolidated Metropolitan District, such action is necessary to protect the public potable water supply or the distribution system.

I. Implementation:

1. Within or before the time periods listed below, each type of customer shall notify Copper Mountain Consolidated Metropolitan District of their compliance with this regulation:

<table>
<thead>
<tr>
<th>Customer Category</th>
<th>Compliance Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>All new construction</td>
<td>As constructed</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>Within 12 months</td>
</tr>
<tr>
<td>Residential incorporating the following:</td>
<td></td>
</tr>
<tr>
<td>Fire sprinklers</td>
<td>Within 18 months</td>
</tr>
</tbody>
</table>
Notification shall include type, brand, serial number and location of the appropriate assembly, together with the date of installation and test results.

Adopted this_________ day of ________________, 2001

Copper Mountain Consolidated Metropolitan District

By________________________________________

Attest:

________________________________________
Pursuant to S32-4-408(2), Colorado revised Statutes, the undersigned Petitioners being the only fee simple owners of the within described real property, petition the Board of Directors of the Copper Mountain Consolidated Metropolitan District to have such real property included within the boundaries of the Copper Mountain Consolidated Metropolitan District.

A description of the property to be included in the Copper Mountain Consolidated Metropolitan District is as follows:

The undersigned Petitioners assent to the inclusion of the above-described real property in the District and pray that the Petition be granted and the Board of Directors enter an Order that the above-described real estate be included within the boundaries of Copper Mountain Consolidated Metropolitan District.
Petitioners further pray that the Board of Directors of the Copper Mountain Consolidated Metropolitan District take such action as is necessary to see that said land is included within the boundaries of the District.

Respectfully submitted,

Date: ________________.

________________________
Signature

________________________
Address

Date: ________________.

________________________
Signature

________________________
Address

STATE OF COLORADO

) SS

SUMMIT COUNTY

Subscribed and sworn to before me this ________ day of __________, 20__, by

Witness my hand and official seal.
My Commission expires: ____________________________.

________________________
Notary Public

________________________
Address

STATE OF

) SS

COUNTY OF

Subscribed and Sworn to before me this ________ day of __________, 20__, by _____

Witness my hand and official seal.
My Commission expires:

________________________
Notary Public

________________________
Address
APPENDIX D
POLICIES AND PROCEDURES

MEMORANDUM OF UNDERSTANDING

PART I. GENERAL PROVISIONS

A. Purpose: This memorandum shall be known as the Policies and Procedures Memorandum of Understanding and shall serve to establish the Policies and Procedures that Developers and Contractors need to follow when constructing new facilities within Copper Mountain Consolidated Metropolitan District (District) boundaries. The Policies and Procedures discussed herein are in addition to the District’s Rules and Regulations (latest edition), and the District’s Standard Specifications and Details.

B. Scope: The Policies and Procedures outlined in this memorandum include:

1. Design Procedures: The steps that need to be followed in the design and approval of any system improvements prior to construction.

2. Construction Standards: The general compliance, safety, warranty, inspection, submittal, meetings and several other Policies and Procedures that must be followed during construction.

3. Conditional and Final Acceptance: The steps that need to be taken after construction to transfer responsibility and ownership of the system improvements to the District.

4. Developer/Contractor Checklist: A checklist for the entire process from design, construction, and acceptance.


The scope of this memorandum does not include the Policies and Procedures for Inclusions. Inclusions are specifically covered in Article 4 of the Rules and Regulations. It is assumed that all system improvements pertaining to the Policies and Procedures in this memorandum are to be constructed on property that has already been legally included into the District.
PART II. DEFINITIONS

A. Conditional Acceptance: When construction of the system improvement is complete and ready for operation, and all submittals, bonds, and evidence of compliance have been approved by the District. The date with the warranty period begins.

B. Contractor: Any person, group, corporation, or other entity who performs any work either for himself or another, on any new or existing water or sewer facilities, public or private, within the District, including all subcontractors, agents, employees, officers and other representatives of such person.

C. Developer: Any person, group, corporation, or other entity, developing or proposing to develop land for the purpose of sale or disposal of land within the District.

D. District: Copper Mountain Consolidated Metropolitan District, Summit County, Colorado, and its board of directors, manager, authorized employees, agents, offices, insurers, and professional consultants.

E. District Engineer: Licensed engineer who has contracted to do engineering work and consultation for the District.

F. Final Acceptance: Conveyance of all water and sewer improvements from the Developer/Contractor/Grantor to the District upon satisfactory completion of the one year warranty period.

G. District System: Plants, facilities, systems and assets owned and directly controlled by the District as used herein, the term includes both water and sewer systems unless otherwise specified. Service lines are not part of the District system.

H. Grantor: The entity financially responsible for the installation facilities together with any entity or persons holding encumbrances on the property.

I. Improvements Agreement: The written agreement between the District and Developer/Contractor covering the work to be performed.

J. Policies and Procedures: This document

K. Rules and Regulations: Procedures, rules, regulations and policies promulgated by the District, including periodic updates.

L. Standard Specifications and Details: The minimum technical standards and details and related operating rules for design, installation, construction and maintenance of all water and sewer facilities within the District.
M. System Improvements: The total construction of the work to be provided under the Improvements Agreement.

PART III. SYSTEM IMPROVEMENTS

A. Approval Required; Improvements Agreement: No person shall commence any construction to improve the District’s system without prior written approval of the District, following formal application and upon compliance with the District Rules and Regulations, these Policies and Procedures, and the Standard Specifications and Details. Any person desiring to make improvements to the District’s System shall enter into a written Improvements Agreement with the District setting forth any or all terms and conditions applicable to such improvements.

B. Location: System improvements shall be installed only in rights-of-way or easements deeded to the District, or in platted easements or roads or streets which have been approved by the County or State, or other public agency as a public right-of-way. Rights-of-Way or easements not on public rights-of-way shall be granted to the District by the property owner at no cost. The property owner shall be responsible for and pay all costs and expenses of whatever kind associated with the acquisition and approval of all easements and rights-of-way necessary for the system improvements. These expenses may include those associated with condemnation, but this shall not be construed as imposing any obligation whatever upon the District to commence or prosecute any condemnation action.

C. Design and Construction: The Developer shall be solely responsible for all costs and expenses of design, construction, and installation of all system improvements, including fees paid to the District for plan review, and construction observations, inspections, supervision.

D. Design Review and Construction Supervision: The District will be responsible for and will perform all design review and construction supervision for system improvements. Design review and construction supervision will be by either District employees, or by District Engineer.

E. Design Procedure: The following steps will be followed in the design of any system improvements project.

1. The Developer shall, as far in advance as possible, inform the District in writing with a Letter of Intent, of the type of system improvements project (water, sewer, or both), the estimated capacity requirements, the geographical location, and the desired completion date.

2. Within 21 days after the District’s receipt of the written information required above, the District shall schedule a preliminary project meeting with the Developer, at which time all available information and data will be shared and
discussed, general project design alternatives (alignment options, etc.) will be identified to the extent possible, a project timeline will be established, and a scope of work for design review and construction supervision will be submitted by the Developer.

3. As soon as practicable after the preliminary project meeting, the District will meet with its District Engineer to review the scope of work, and make any appropriate modifications thereto, which changes shall be submitted to the Developer for approval. All costs and expenses incurred by the District in the process of establishing and finalizing the scope of work shall be borne by the Developer.

4. The Developer will complete preliminary design of the project in accordance with the project timelines, showing the general alignment and configuration of the facilities, with preliminary project specifications for District approval. Two copies of the preliminary design plans and specifications are required for District review. Should the District, within 30 days of the receipt of the preliminary design, express objection or concern about the preliminary design, a meeting will be held with the District, the Developer, and the District Engineer. At such meeting, all constructive comments and specific alternatives will be considered, and any appropriate adjustments to the preliminary design made and set forth in writing.

5. When the preliminary design is agreed upon, the Developer shall proceed with final design of the project, which shall include an estimate of the project construction costs, and shall submit the same to the District in accordance with the project timelines for approval. Two copies of the final design plans and specifications are required for District review. Should the District, within 30 days of the receipt of the final design, express objection or concern about the final design, a meeting will be held with the District, the Developer and the District Engineer. At such meeting, all constructive comments and specific alternatives will be considered, and any appropriate adjustments to the final design made and set forth in writing.

6. The District will use its best efforts to respond promptly to contacts by the Developer, and to shorten the overall time table for the Project to the extent practicable.

7. Final plans shall be prepared by and signed by a Professional Engineer licensed in the State of Colorado.

8. Final plans should not be submitted for work that will not be commenced within six months of the approval date. If construction of the improvements does not begin within six months of the approval date, or if construction is halted for more than six months, then plans must be resubmitted for review and approval.
F. Plan Review and Approval: No construction of any system improvements shall begin unless and until the plans and design have been reviewed and approved by the District, and until the District has issued written notice that construction may begin, and a preconstruction conference is held.

G. Letter of Credit: A letter of credit in an amount equal to the estimated cost of construction will be due to the District from the Developer before any system improvements construction commences. If collateral to guarantee performance of construction and installation of the system improvements has been submitted to Summit County and approved as part of the County’s Land Development requirements, then evidence of such collateral shall be submitted to the District.

H. Plan Review Fees: Whenever any provision of these Policies and Procedures requires a review of plans and design by the District, the Developer shall pay a fee per hour for review when the same are submitted for review. Plans or any portion thereof requiring revision are subject to a subsequent fee when resubmitted. See Article 7 and Appendix A of the Rules and Regulations for the Rates and Charges Schedule.

I. Construction/Inspection/Supervision Fees: Construction/Inspection/Supervision fees shall be paid upon District approval of construction plans submitted for review. See Article 7 and Appendix A of the Rules and Regulations for the Rates and Charges Schedule.

PART IV. CONSTRUCTION STANDARDS

A. General Construction Standards: All excavations and other work on new or existing main extensions, taps, or other District facilities shall be performed in conformity with and are subject to the requirements and conditions set forth below. The term Contractor as used herein applies also to the Property Owner.


2. Safety: It shall be Contractor’s responsibility to determine, initiate, maintain and supervise all measures necessary to protect the public during construction.

3. Permits: The Contractor shall be solely responsible for determining and obtaining any and all permits required for the work from other governmental entities or agencies having jurisdiction, and shall perform the work in accordance with any and all applicable ordinances, regulations, laws and orders of, or permits issued by, such entities or agencies.
4. Subsurface Structures: The District shall make available to the Contractor record drawings showing the location of its facilities in the vicinity of the work, and otherwise comply with all applicable laws and regulations pertaining to the location of the District’s underground facilities. The Contractor shall be finally and solely responsible for determining the existence and location of all other subsurface structures in such area, and shall indemnify and hold the District harmless against any and all claims for damages to any such structures.

5. Warranty: All materials and workmanship furnished by the Contractor shall be warranted for a period of one year, and shall conform to the provisions of this section and to all plans and designs approved by the District, and shall be free from all defects due to faulty or non-conforming materials of workmanship.

6. Inspections: No inspection or testing will be performed by the District on weekends or holidays, or before 8:00 a.m. or after 4:30 p.m., without the express agreement of the District secured in advance. Whenever an inspection or testing is required by any specific provision of these Policies and Procedures or by the terms of any permit or plan approval, the Contractor shall give the District such notice as is required and shall not cover or otherwise obscure the work to be inspected until the inspection has been made. If required by the District, the Contractor shall uncover or otherwise make such work accessible for inspection when ordered to do so by the District. The inspections, testing and reviews performed by the District are for the sole and exclusive benefit of the District. No liability shall attach to the District by reason of any inspections, testing, or reviews required or authorized by these Policies and Procedures, or by reason of the issuance of any approval or permit for any work subject to this Section.

7. Independent Investigation: Contractor shall thoroughly examine the work site to ascertain for himself all soil, geological, groundwater and other conditions to be encountered which might affect the work being undertaken. The Contractor shall enter into such work relying on his own investigation and information, and not on any statements or representations, if any, that have been made by the District.

8. Indemnification: By undertaking any work subject to this Section, Contractor agrees to indemnify and hold harmless the District and the Property Owner on whose property the work performed from any and all liability, claims, and demands, on account of injury, loss, or damage, including without limitation claims arising from bodily injury, personal injury, sickness, disease, death, property loss or damage, or any other loss of any kind whatsoever, which arise out of or are in any manner connected with any work subject to this Section if such injury, loss, or damage is caused in whole or in part by, or is claimed to be caused in whole or in part by, the act, omission, error, professional error, mistake, negligence, or other fault of Contractor, or which arise out of any Worker’s Compensation claim of any employee of the Contractor. Contractor shall investigate, handle, respond to any and all claims, and to provide defense for the
District and such Property Owner at the sole expense of Contractor. The Contractor also shall bear all other costs and expenses related thereto, including court costs and attorney fees, whether or not any such liability, claims, or demands alleged are groundless, false, or fraudulent.

9. Insurance: All insurance certificates required of the contractor by the Developer/Property Owner shall also list the District as additionally insured. No work shall commence on the system improvements until the District has been provided with Certificates of Insurance naming the District as a holder of a Certificate of Insurance.

B. Required Submittals: No Contractor shall begin any excavation or any other work on any new or existing main extension, tap, or other District facilities until he has obtained the prior approval of the District therefor, and has submitted, in addition to any other materials required elsewhere herein, the following, approved as to form by the District:

1. Written Improvements Agreement: A written improvements agreement duly signed by Contractor (1) acknowledging his consent to be bound by the provisions of Section A above; (2) warranting that the work will conform to such provisions and will be free from defects due to faulty or nonconforming materials and workmanship; (3) agreeing to indemnify the District as provided above; and (4) agreeing to pay any and all applicable fees and charges in connection with the work.

2. Fees: The full amount of all fees payable in advance, or any required costs deposits, or both.

3. Letter of Credit: A letter of credit in an amount equal to the estimated costs of construction, or evidence of such collateral if submitted to the County.

C. Preconstruction Meeting: A preconstruction meeting will be held within ___ days of the Notice to Proceed with Construction. The Contractor will submit for District approval:

(1) A construction schedule
(2) A submittal schedule
(3) Certificates of compliance
(4) Progress meeting schedule
(5) Inspection schedule
(6) Pre-installation meeting schedule

D. Construction Progress Meetings: Depending on the scope of the system improvements, the District may require weekly construction progress meetings.

E. Stop Work Orders: The District may revoke any approval for work and issue a Stop Work Order upon a determination that the Contractor has violated or has failed to meet any condition of the approval, any provision of these Policies and Procedures, or any
other standard, specification, or rule imposed by the District. A Stop Work Order may be issued orally or in writing by the District Manager or District Engineer, and shall take effect immediately upon the issuance thereof, and remain in full force and effect until rescinded in writing by the District.

1. Effect: It is unlawful for any person to do any work in violation of the terms of any Stop Work Order issued pursuant to this Section except such as may be permitted by the District in order to render the construction site safe and secure.

F. Cure of Defects:

1. Order to Cure: If the District determines that any part of the work was not performed in conformity with these Policies and Procedures or approved plans, or is defective, of poor or unworkmanlike quality, or otherwise not in conformity with any applicable warranty, it may give written notice thereof to the Contractor. Such notice shall specify the non-conformity, direct the Contractor at his cost to perform specified curative work, and specify the period of time determined by the District reasonably necessary for completion of the curative work.

2. District Cure: If the Contractor fails within the time stated following such notice to cure the non-conformity specified therein, the District, in addition to and without waiving any of its other remedies, may perform the work and charge the Contractor for its actual costs incurred in connection therewith.

G. Fees: Contractor will pay the District all fees imposed and assessed by the District for permits, reviews, inspections, tests, approvals, and any other undertakings performed by the District or its professional consultants in connection with the administration and enforcement of these Policies and Procedures.

PART V. CONDITIONAL AND FINAL ACCEPTANCE

A. Conditional Acceptance

1. Standards. Upon completion of construction, a request shall be submitted to the District for a preliminary inspection and Conditional Acceptance of the system improvements. The system improvements will qualify for Conditional Acceptance by the District when all of the following conditions have been met:
   a. District Review: The District has determined that the system improvements have been constructed and connected to District facilities in conformity with these Policies and Procedures, the Standard Specifications and Details, approved plans, construction notes and specifications, has passed all necessary tests, and has been approved for use by all other governmental entities and agencies having jurisdiction.
   b. Grantor Requirements: Grantor has tendered and the District has approved the following:
(1) Record drawings of the system improvements on reproducible vellum and with a disk copy in the latest version of AutoCAD, and certified compaction test results;
(2) Key map pages consistent in form and content with current District requirements as to key maps showing the location of all component parts of the system improvements, or other arrangements approved in writing by the District have been made for the preparation thereof;
(3) A 12-month maintenance bond, or other security approved by the District, in an amount equal to 25% of the costs of constructing the system improvements, or such greater amount as may be reasonably determined by the District on account of special circumstances of the particular system improvements, or any portion thereof;
(4) A duly executed written statement that all suppliers of labor and materials have been fully paid, with lien waivers attached;
(5) A duly executed written assignment of all manufacturer’s warranties on materials, if applicable;
(6) Payment of all sums then due to the District in connection with the system improvements;
(7) Operation and Maintenance Manuals, if applicable.

2. Approval; Tap Permits: The District shall evaluate the request for Conditional Acceptance, and give written notice to the Grantor of its action, stating any special conditions attached to the Conditional Acceptance, or the reasons for denial of the request, if applicable. No taps or service connections to the system improvements will be permitted, nor will the District accept applications for such taps, until the District has conditionally accepted the system improvements as herein provided.

3. Effective Date: Conditional Acceptance shall be effective as of the date the District executes the Conditional Acceptance form. As of such date, the system improvements shall be deemed operational, and any such person may apply to the District for tap permits. The District’s acceptance of the system improvements, whether conditional or final, does not, however, guarantee that taps will be available. Availability of taps is governed at all times by the provisions of Article 5 of the District Rules and Regulations and such availability is determined in accordance therewith at the time proper application for service is made.

B. Maintenance and Repair: Until Final Acceptance of the system improvements, Grantor shall be solely responsible for all routine maintenance and for correction of any and all defects in the system improvements, as set forth below:

1. Routine Maintenance: Grantor shall, at his sole cost, protect the system improvements and perform all routine maintenance thereon so as to keep it in good repair and operating condition. Such obligations shall include the repair or
replacement of any part or parts thereof damaged as a result of street construction, paving, other utility installation or vehicular traffic. In addition, Grantor shall, at his sole cost, correct any soil subsidence or erosion which the District determines occurred in connection with or as a result of construction of the system improvements.

2. Cure of Defects: Grantor shall, at his sole cost correct, repair or replace any part or parts of the system improvements which the District reasonably determines were not constructed in conformity with these Policies and Procedures, approved plans, construction notes or specifications, or which the District determines to be defective, of poor or unworkmanlike quality, or otherwise not in conformity with any applicable warranty.

C. Acceptance for Maintenance (Final Acceptance)

1. Standards: Prior the expiration of one year from the date of Conditional Acceptance (or any longer period of time reasonably determined by the District on account of the particular circumstances) of the system improvements or any portion thereof, Grantor may request the District to perform a final inspection and accept the system improvements for maintenance. Upon such request, the District shall inspect the system improvements and shall accept the same for maintenance when all of the following conditions are met:
   a. District Review: The District determines that the system improvements have been constructed and connected to District facilities in conformity with these Policies and Procedures, approved plans, construction notes, specifications and details, has passed all necessary tests, and has been approved for use by all other governmental entities and agencies having jurisdiction.
   b. Maintenance and Repair: Grantor has fully performed all maintenance and repair obligations imposed upon it during the period of Conditional Acceptance.
   c. Property Owner Requirements: Grantor has tendered and the District has approved all of the following:
      (1) A verified statement of actual cost of the system improvements, itemized as the District may require;
      (2) Any and all easements, bills of sale, or other conveyance instruments necessary to vest title to all component parts of the system improvements in the District with warranties of title;
      (3) All drawings, maps and construction notes pertaining to any changes in the system improvements made during the period of Conditional Acceptance;
      (4) Payment of all sums due to the District from Grantor on account of the system improvements;
      (5) Lien waivers in form acceptable to the District by all independent Contractors or others entitled to mechanics liens, including material
man’s liens against facilities and properties including in the system improvements.

2. Effective Date: The District’s Final Acceptance of the system improvements for maintenance shall be effective as of the date the District executes the Final Acceptance form. As of such date, all of Grantor’s right, title and interest in and to the constructed system improvements, including all mains, pipelines, valves, manholes, pumps, and related parts and materials which comprise the constructed system improvements, shall immediately pass to and vest in the District, free and clear of all liens and encumbrances, and Grantor shall warrant and defend the conveyance of such system improvements to the District, its successors and assigns against all and every person or persons whomsoever.

As of the date of Final Acceptance, the District shall operate and maintain the system improvements at its expense. Nothing contained herein, however, shall be construed to relieve Grantor from his warranty obligations. Notwithstanding Final Acceptance, Grantor and connecting Property Owner, their successors and assigns, shall remain responsible for all service lines and private water and sewer facilities.

PART VI. OVERSIZING; REIMBURSEMENT

A. These Policies and Procedures may require property owners to design, construct and install system improvements necessary to serve their property at their sole cost and expense. Under certain circumstances, when these Policies and Procedures require such improvements to be designed and constructed with a capacity in excess of that needed solely to serve their property, it may be fair and equitable for the property owner to recover a portion of the costs of such improvements. The standards and procedures for the consideration, administration and enforcement of reimbursement plans are set forth in Article 6-12 of the Rules and Regulations.
PART VII

DEVELOPER/CONTRACTOR LETTER OF INTENT
PROPOSED SYSTEM IMPROVEMENTS
COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT

Date: ________________________________

Developer/Contractor
Name: ____________________________________
Address: ____________________________________
__________________________________________

Phone: ____________________________________
Facsimile: _________________________________

Project Name: _____________________________
Location/Address: _________________________
__________________________________________

Description of Proposed Improvements: ____________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

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## PART VIII

### DEVELOPER/CONTRACTOR CHECKLIST

**PROPOSED SYSTEM IMPROVEMENTS**

**COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT**

### PROPOSED PROJECT SCHEDULE

<table>
<thead>
<tr>
<th>MILESTONE</th>
<th>TIME</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit Letter of Intent to District</td>
<td>At Earliest Date Possible</td>
<td>Project description, estimated capacity, location, completion date</td>
</tr>
<tr>
<td>Preliminary Project Meeting with District</td>
<td>21 days after Letter of Intent received by District</td>
<td>Discuss design alternatives, project timeline, scope of work</td>
</tr>
<tr>
<td>Submit Preliminary Design (50%) Plans and Specs to District</td>
<td>—</td>
<td>Two (2) copies required</td>
</tr>
<tr>
<td>Preliminary Design Review meeting with District and District Engineer</td>
<td>Up to 30 days after Preliminary Design received by District</td>
<td>Summarize review comments into memo and make revisions to design as required</td>
</tr>
<tr>
<td>Submit Final Design Plans and Specs to District</td>
<td>—</td>
<td>Two (2) copies required. Include project construction costs estimate &amp; project timeline</td>
</tr>
<tr>
<td>Final Design Review meeting with District and District Engineer</td>
<td>Up to 30 days after Final Design received by District</td>
<td>Summarize review comments into memo and incorporate modifications as required</td>
</tr>
<tr>
<td>Right-of-Way/Easements</td>
<td></td>
<td>Grant all R-O-W’s and easements to District</td>
</tr>
<tr>
<td>Execute Improvements Agreement between District and Developer/Contractor/Grantor</td>
<td></td>
<td>Set forth all terms and conditions of improvements. Include 4 sets of construction drawings and specifications</td>
</tr>
<tr>
<td>Notice of Agreement</td>
<td></td>
<td>Submit required collateral (Letter of Credit), and fees</td>
</tr>
<tr>
<td>Notice to Proceed with Construction</td>
<td></td>
<td>District issues written notice that construction may begin</td>
</tr>
<tr>
<td>MILESTONE</td>
<td>TIME</td>
<td>REQUIREMENTS</td>
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<td>--------------------------------------------------------------------------</td>
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<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Permits</td>
<td></td>
<td>Road cuts, State dewatering, flood plain, 404 and others as required</td>
</tr>
<tr>
<td>Pre-construction meeting with District, and District’s resident project</td>
<td>Within a specified number of days after the Notice to</td>
<td>Construction schedule, submittal</td>
</tr>
<tr>
<td>representative</td>
<td>Proceed with Construction</td>
<td>schedule, certificates of compliance, progress meetings, inspection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>schedule, pre-installation meetings, coordination</td>
</tr>
<tr>
<td>Construction inspections and testing required by District</td>
<td></td>
<td>See Standard Specifications and Details</td>
</tr>
<tr>
<td>Request Conditional Acceptance Inspection</td>
<td></td>
<td>Send a written request to District for inspection and Conditional Acceptance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of Improvements</td>
</tr>
<tr>
<td>Record Drawings</td>
<td></td>
<td>Submit Two Copies</td>
</tr>
<tr>
<td>Maintenance Bond or other Security required</td>
<td></td>
<td>Submit Two Copies</td>
</tr>
<tr>
<td>Warranties</td>
<td></td>
<td>Submit Two Copies</td>
</tr>
<tr>
<td>Statement of Labor and Materials fully paid, lien waivers</td>
<td></td>
<td>Submit Two Copies</td>
</tr>
<tr>
<td>Effective date of Conditional Acceptance</td>
<td></td>
<td>Date District executes the Conditional Acceptance Form</td>
</tr>
<tr>
<td>Maintenance and Repair</td>
<td>One year period (or longer) beginning with date of</td>
<td>Assume all repair and maintenance</td>
</tr>
<tr>
<td></td>
<td>Conditional Acceptance</td>
<td>responsibility for the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>improvements</td>
</tr>
<tr>
<td>Request Final Acceptance Inspection</td>
<td>Prior to expiration of one year (or longer) from date of</td>
<td>Send written request to District for Final Acceptance Inspection</td>
</tr>
<tr>
<td></td>
<td>Conditional Acceptance</td>
<td></td>
</tr>
<tr>
<td>Record drawings with changes made during the period of Conditional</td>
<td></td>
<td>Submit Two Copies</td>
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<tr>
<td>Acceptance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MILESTONE</td>
<td>TIME</td>
<td>REQUIREMENTS</td>
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<tr>
<td>------------------------------------------------</td>
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<td>--------------------------------------------</td>
</tr>
<tr>
<td>Payment of all sums</td>
<td></td>
<td>Submit Two Copies</td>
</tr>
<tr>
<td>Lien Waivers</td>
<td></td>
<td>Submit Two Copies</td>
</tr>
<tr>
<td>Effective Date of Final Acceptance</td>
<td></td>
<td>Date District executes Final Acceptance Form</td>
</tr>
</tbody>
</table>
PART IX

IMPROVEMENTS AGREEMENT

(The Agreement will be retyped prior to Execution)

This Agreement is dated as of the __ day of _____________ in the year 20__ by and between
the Copper Mountain Consolidated Metropolitan District (hereinafter called District) acting
through the Board of Directors and ______________________ (hereinafter called
Developer/Contractor/Grantor).

District and Developer/Contractor/Grantor, in consideration of the mutual covenants hereinafter
set forth, agree as follows:

PART 1 SYSTEM IMPROVEMENTS

Developer/Contractor/Grantor shall complete all System Improvements at his sole expense as
specified. The System Improvements are generally described as follows:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Four sets of District approved construction drawings and specifications are attached for use by
the District during construction.

PART 2 PROJECT TIME

Construction and installation of the System Improvements will be ready for Conditional
Acceptance by ____________ (Date) or (within so many days)

PART 3 PROJECT COSTS

The Developer/Contractor/Grantor agrees to provide security or collateral sufficient in the
judgement of the District to make reasonable provision for completion of the System
Improvements in the form of (insert one of the following):

A. An irrevocable letter of credit from ______________________ Bank in the amount of
   $ ______________________

B. A performance bond issued by ______________________ as corporate surety
   in the amount of $ ______________________
C. A cash escrow in the amount of $____________________ to be held by ______________________, an escrow agent

D. Or evidence of such security or collateral as submitted to Summit County as part of the County’s Land Development requirements

PART 4

The undersigned Owner/Contractor/Developer agrees: 1) that the proposed System Improvements will be made in accordance with the District’s Policies and Procedures, Rules and Regulations, and Standard Specifications and Details, and will be free from defects due to faulty or nonconforming materials and workmanship, 2) to indemnify the District as provided in the Policies and Procedures and 3) to pay any and all applicable fees and charges in connection with the work.

This Agreement will be effective on ________________, 20__

Copper Mountain Consolidated Metropolitan District  Developer/Contractor/Grantor

By__________________________  By__________________________

(Corporate Seal)  (Corporate Seal)

Attest__________________________  Attest__________________________

Address for giving notices  Address for giving notices

P.O. Box 3002
154 Wheeler Place
Copper Mountain, CO 80443
PART X

NOTICE OF AGREEMENT

(PROJECT NAME)

TO: ___________________________ (Developer/Contractor/Grantor)

You are hereby notified that the Improvements Agreement for the above referenced project has been executed. A copy of which is attached.

You are required under the terms of the District’s Policies and Procedures to furnish the required Letter of Credit in the amount of ___________________________ Dollars, ($________), or other form of collateral for this amount, the estimated cost of construction for approval before the District will issue a written Notice to Proceed with Construction.

Dated this (day) day of (Month), 20(yr).

Copper Mountain Consolidated Metropolitan District
By: ____________________________
Title: ____________________________
NOTICE TO PROCEED WITH CONSTRUCTION

(PROJECT NAME)

TO: ____________________________________________ (Developer/Contractor/Grantor)

You are hereby notified that construction of the above referenced project may begin.

A preconstruction meeting is required within ________ days of this Notice.

Dated this (day) day of (Month), 20(yr).

Copper Mountain Consolidated Metropolitan District
By: _________________________________
Title: ________________________________
PART XII

CONDITIONAL ACCEPTANCE FORM

(PROJECT NAME)

TO: ___________________________ (Developer/Contractor/Grantor)

The system improvements constructed under the Improvements Agreement for the above referenced project has been inspected by authorized representatives of the District, and the District Engineer and are hereby declared approved for Conditional Acceptance on (Month) (Day), 20(yr).

As of this date, the system improvements are deemed operational, and in conformity with the District’s Policies and Procedures, Rules and Regulations, and Standard Specifications and Details.

The Developer/Contractor/Grantor shall be solely responsible for all routine maintenance and for correction of any and all defects in the system improvements until (Month) (Day), 20(yr), dependent on Final Acceptance of the system improvements.

Rothberg, Tamburini & Winsor, Inc.
By: ___________________________

Date: __________________________

Developer/Contractor/Grantor accepts the above Conditional Acceptance.

____________________________________ (Developer/Contractor/Grantor)
By: __________________________

Date: __________________________

Copper Mountain Consolidated Metropolitan District
By: __________________________

Date: __________________________
PART XIII

FINAL ACCEPTANCE FORM

(PROJECT NAME)

TO: _________________________________ (Developer/Contractor/Grantor)

The system improvements constructed under the Improvements Agreement for the above referenced project have been inspected by authorized representatives of the District, and District Engineer, and are hereby declared approved for Final Acceptance on (Month) (Day), 20(yr).

As of this date all of the Developer/Contractor/Grantor’s right, title and interest in and to the constructed system improvements shall immediately pass to and vest in the District, free and clear of all liens and encumbrances, and Developer/Contractor/Grantor shall warrant and defend the conveyance of such system improvements to the District, its successors and assigns against all and every person or persons whomsoever.

As of this date, the District shall operate and maintain the system improvements at its expense.

Rothberg, Tamburini & Winsor, Inc.
By: _________________________________
Date: _________________________________

Developer/Contractor/Grantor accepts the above Final Acceptance

____________________________________ (Developer/Contractor/Grantor)
By: _________________________________
Date: _________________________________

The Copper Mountain Consolidated Metropolitan District accepts the above final Acceptance

Copper Mountain Consolidated Metropolitan District
By: _________________________________
Date: _________________________________
APPENDIX E – RULES AND REGULATIONS
OIL, GREASE AND/OR SAND INTERCEPTOR MAINTENANCE PROCEDURE

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT

1.1 INTERCEPTOR INSTALLATION CRITERIA

Grease trap interceptors are required for all facilities used and operated regularly for the sale of prepared food, including but not limited to restaurants, cafes, fast food outlets, pizza outlets, delicatessens, sandwich shops, and any and all other kinds and types of food vending establishments in which any food preparation (including heating or defrosting in or by means of any kind of oven or heating device) takes place on the premises, whether or not such facilities are located in a separate building or structure or occupy space in a building or structure that is occupied by other businesses, as well as schools, churches, boarding houses with communal kitchen facilities, nursing homes, and day care centers which have kitchens and engage in the preparation of food. In addition, meat-cutting facilities and others capable of discharging significant amounts of grease into the District sanitary sewer collection system shall be required to install grease interceptors. The exception shall be those facilities granted a variance by the District. Grease interceptor shall not be required for private residences or dwelling.

1.2 INTERCEPTOR SIZING CRITERIA

All property owners discharging to the District wastewater treatment plant shall comply with the District procedure for interceptor sizing criteria (See Article 9C of the Rules and Regulations).

1.3 INSPECTION OF INTERCEPTORS

Property owners within the District shall establish an inspection program for the interceptor. The District will develop a mechanism to inventory all interceptors in its service area and document the inspections and maintenance of these interceptors. Once the interceptors in the service area are identified, the interceptor will be classified into two (2) categories:

- **Problem or Significant Interceptors**
  The facilities connected to these interceptors contribute significant amount of animal/vegetable oil, grease and/or sand to the sewer system. These interceptors will need to be inspected at a frequency of every three (3) to six (6) months.

- **Non-significant Interceptors**
  The facilities connected to these interceptors do not contribute significant amount of animal/vegetable oil, grease and/or sand to the sewer system. These interceptors will be inspected at a frequency of every six (6) to twelve (12) months.
1.4 INTERCEPTORS PUMPING SCHEDULES
Initially, all Users connected to interceptors will be required to pump out their interceptors quarterly or every three (3) months. Inspection of the interceptors by the District and/or review of “Certificates of Maintenance” received by the District will determine if this frequency needs to be increased to control the amounts of oil, grease and/or sand entering the sewer system or if the pumping frequency can be decreased.

1.5 BIOLOGICAL TREATMENT
Biological treatment shall not be a substitute for the pumping of grease type interceptors at the frequency determined by the District.

1.6 EXISTING SOURCES NOT CONNECTED TO INTERCEPTORS
Existing sources not connected to interceptors and which contribute significant amounts will be identified through inspection of the collection systems by the District. Once these sources are identified, they will be required to implement Best Management Practices (BMPs) to keep oil, grease and/or sand out of the sanitary collection system. Examples of BMPs include:

1) Scrape food from plates into a garbage can
2) Pre-wash plates by spraying them off with cold water over a small mesh catch basin positioned over a drain. This catch basin should be cleaned into a garbage can as needed
3) Pour all liquid oil and grease from pots and pans into a waste grease bucket stored at the pot-washing sink. Heavy solid buildup of oil and grease on pots and pans should be scraped off into a waste grease bucket
4) Other kitchen practices identified by the District and/or facility, which will decrease the point source discharging of oil and grease.

If the BMPs are not successful at the facility and the facility continues to contribute significant amounts of oil, grease and/or sand to the sewer, as documented by field inspections, then the facility will be required to install an adequately sized interceptor.
Interceptor Inspection Form

Business ____________________________________________________________

Address ____________________________________________________________

Interceptor Location ________________________________________________

Contact Person ___________________________ Phone ______________________

District Map I.D. # ___________________________ Date Built ________________

Interceptor Capacity (Gallons) ___________________ Number of Pits ________

Use of enzymes? Y N Interceptor Pump Interval ________________

Pump/Interval Company ________________________________________________

<table>
<thead>
<tr>
<th>Inspection Date</th>
<th>Depth of Oil, Grease and/or Sand (Inches)</th>
<th>Comments and Evaluation</th>
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Problem Interceptor? Y N

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</table>

Problem Interceptor? Y N
**Interceptor Line Evaluation**

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<tr>
<th>Status: □ Good</th>
<th>□ Fair</th>
<th>□ Poor</th>
<th>□ Critical</th>
</tr>
</thead>
</table>

Manhole #________ to Manhole #______ Footage________________________

Address________________________________________________________

Pipe Type_________ Number of Interceptors on Collection Line_______

Date “Rootcut”________________________
Date TV’d _________________________
Roots at __________________________
Backups __________________________
Other _____________________________
Comments __________________________

_________________________________________________________________

_________________________________________________________________

<table>
<thead>
<tr>
<th>Status: □ Good</th>
<th>□ Fair</th>
<th>□ Poor</th>
<th>□ Critical</th>
</tr>
</thead>
</table>

Manhole #________ to Manhole #______ Footage________________________

Address________________________________________________________

Pipe Type_________ Number of Interceptors on Collection Line_______

Date “Rootcut”________________________
Date TV’d _________________________
Roots at __________________________
Backups __________________________
Other _____________________________
Comments __________________________

_________________________________________________________________

_________________________________________________________________
Interceptor Correction Notice

Business____________________________________ Date________________

Address__________________________________________________________

Dear Business Owner,

The District works hard to maintain the collection system and keep the sewers clean and free of oil, grease and sand obstructions. Obstructions in the sewer can be a nuisance to your daily operations because of foul odors and backed up drains at your facility. The obstruction can also be hazardous to the collection system workers. You can assist the District in achieving the goal of no stoppages in the collection system caused by oil, grease and sand. An overflowing, non-maintained or defective interceptor is a health hazard and can cause significant damage to the collection system. **Interceptor maintenance is the business owner responsibility.**

A recent inspection of the grease interceptor servicing your business documented one or more of the following deficiencies:

- Pump out interceptor
- Repair broken pipes (broken at ______________________)
- Missing cleanout cover needs replacement
- Other

We appreciate your prompt attention to this matter. If we can be of further assistance, please call __________ at ____________.

Inspector Name________________________
Signature______________________________
APPENDIX F—RULES AND REGULATIONS
APPLICATION FOR Permit
(Nontransferable)
Copper Mountain Consolidated Metropolitan District
Copper Mountain, Colorado 80443 (303) 968-2390

1. The undersigned applicant requests the authority to tap the water and sewer lines of the Copper Mountain Consolidated Metropolitan District for a lot located at Lot # and Block #, Subdivision , which is within the boundaries of the District. The undersigned certifies that the applicant has read the rules and regulations including the memo of understanding, the standard specifications and details, the contract and this application.

2. With this application, applicant deposits $750.00, $50.00 of which is a nonrefundable processing fee. After application is approved by the Board of Directors, there will be an additional $250.00 retained for backflow device and inspection fees. If the Contractor and/or if the District’s Final Inspection is not passed prior to the building being occupied, a penalty of $250.00 will be assessed and withheld from the deposit. Any refund due will be made only if there has been compliance with all of the rules and regulations of the District, this application and the contract. If construction is not commenced within after the date of approval by the Board of Directors, this permit shall expire and applicant must reapply and have a permit approved before construction can commence. Neither this application nor the permit granted hereunder shall be transferable. The deposit made with this application is not a part of the tap fee.

3. Upon the approval of this application, applicant further agrees:
   a. Obtain approval of building plans from the Architectural Control Committee.
   b. Pay the tap fee in effect at the time of this application. Effective , anyone who prepays or pays a water and sewer tap fee must complete construction on that lot and have a final inspection completed by the District within 12 months. The 12 month period commences on the day the tap fees are prepaid. If the construction is not completed and final inspection by the District is not made within the 12 month period, the lot will be subject to any increase in tap fees that takes effect prior to the time that final inspection is made. If a tap has not been made within the 12 month period, no tap will be allowed until any applicable increase in tap fees has been paid. Any tap fees prepaid prior to , will not be affected by this policy.
   c. After tapping, pay the current water and sewer monthly use fees.
   d. Notify the District of the proposed date of occupancy at least ten (10) days prior to occupying the dwelling.

4. I (we) understand that water will not be turned on until installation and testing is complete and fully complies with the Copper Mountain Consolidated Metropolitan District Rules and Regulations. The Copper Mountain Consolidated Metropolitan District is not responsible for any cost of installation, operation, or maintenance of any private water or sewer mains.

5. A meter reading will be taken by the District as of occupancy date and the District will continue to read the meter and provide the occupant this reading on the monthly bill.

6. The District has penalty rates to discourage excessive water use.

7. Complete copies of District Rules and Regulations are available for my (our) use at the District office, and I (we) are responsible for compliance with these Rules and Regulations as well as payment of any costs arising from noncompliance.

8. The balance of the deposit will be returned if violations of provisions of this application and District Rules and Regulations do not occur.

9. This is a special District, taxpayer owned, and as such, the bills follow the property rather than the person. As the owner, I (we) understand that if I (we) lease this property to someone, the District will bill the tenant as a matter of courtesy to me (us), however, if the tenant does not pay, then I (we) as the owner of the property am responsible for payment of any outstanding bills.

10. The Rules and Regulations of the District and the proposed construction contract are incorporated herein and made a part hereof.

Dated this day of , 20__.

Name of Prime Contractor
Name of Owner

Address
Address

Telephone
Telephone

Signature
Signature

PERMIT

Approved this day of , 20__.

Copper Mountain Consolidated Metropolitan District
by .

For secretary

TAP FEES

Water $

Sewer $

Tap Fee Total $

Permit Fee of $ Plus deposit = $ .

This permit form is effective the 1st day of January, 20__ and supersedes all previous Application for Permit Forms issued by this District.
# TECHNICAL SPECIFICATIONS

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SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1     GENERAL

1.1   SECTION INCLUDES

A. Submittal of all Shop Drawings and Product Data as required by the CMCMD (District) for all materials and products to be installed

B. Submit Shop Drawings and Product Data referenced in Construction Documents approved by the District for construction

C. Submittals will not be approved for Construction Documents which have not been approved by the District

1.2   RELATED SECTIONS

A. Section 01400—Quality Control

B. Section 01570—Traffic Regulation

C. Section 01610—Materials

D. Section 01720—Project Record Documents

E. Section 02200—Earthwork

F. Section 02500—Paving and Surfacing

G. Section 02607—Manholes and Covers

H. Section 02667—Site Water Lines

I. Section 02675—Disinfection of Water Distribution Systems

J. Section 02732—Site Sanitary Sewerage System

K. Section 02936—Seeding

L. Section 03001—Concrete

M. Section 03600—Grout

N. Section 07160—Bituminous Dampproofing
O. Section 15430—Plumbing Specialties

1.3 SUBMITTALS

A. General
   1. All submittals must be complete and included as a set to the District

B. Shop Drawings—Drawings shall be presented in a clear and thorough manner:
   1. Details shall be identified by reference to sheet and detail or schedule shown on Construction Drawings
   2. Scale and Measurements: Make Drawings accurate to a scale with sufficient detail to show the kind, size, arrangement and function of component materials and devices
   3. Minimum sheet size: 8 1/2" by 11"

C. Product Data—Preparation:
   1. Clearly mark each copy to identify pertinent materials or products submitted for review
   2. Show performance characteristics and capacities where applicable
   3. Show dimensions and clearances required
   4. Show wiring or piping diagrams and controls
   5. Show external connections, anchorages, and supports required

D. Manufacturer's standard schematic drawings and diagrams:
   1. Modify Drawings and diagrams to delete information which is not applicable to the Work and to the Construction Documents
   2. Supplement standard information to provide information specifically applicable to the Work and to the Construction Documents

E. Certificate of Compliance:
   1. Provided by manufacturer or supplier in lieu of detailed submittal data required
   2. Certifies that product data or item identified in certificate is in total compliance with District requirements
   3. Specifically identifies project name, manufacturer, supplier, contact name and contact phone number
   4. States that there is no deviation from District requirements

1.4 DEVELOPER/CONTRACTOR RESPONSIBILITIES

A. Review Shop Drawings and Product Data prior to submission for accuracy and completeness

B. Determine and verify:
   1. Field measurements
   2. Field construction criteria
3. Catalog numbers and similar data
4. Conformance with specifications

C. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted

D. Verify that each item and the submittal for it conform in all respects with specified requirements of the Work and of the Construction Documents

E. Notify the District in writing, at time of submission, of any deviations in the submittals from requirements of the Construction Documents

1.5 SUBMISSION REQUIREMENTS

A. Make submittals promptly to facilitate review by the District prior to installation

B. Consecutively number all submittals. Assign a unique number for Shop Drawings, Product Data and other information required for individual specification sections. Each section may have more than one submittal number

C. Number of submittals required:
   1. Shop Drawings and Product Data: Submit two copies which will be filed for reference when approved by the District

D. Accompany each submittal with a letter of transmittal showing all information required for identification and checking. Submittals shall contain:
   1. Submittal number
   2. The date of submission and the dates of any previous submissions
   3. The Project title and number
   4. Construction Project Identification
   5. The names of:
      a. Developer/Contractor
      b. Supplier
      c. Manufacturer
   6. Identification of the product, with the specification section number
   7. Field dimensions, clearly identified as such
   8. Relation to adjacent or critical features of the Work or materials
   9. Applicable standards, such as ASTM or Federal Specification numbers
   10. Identification of deviations from Construction Documents
   11. Identification of revisions on resubmittals

E. Submittal log:
   1. Maintain an accurate submittal log for the duration of the Work showing current status of all submittals at all times
   2. Make the submittal log available to the District for review upon request
F. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received:
   1. Partial submittals may be rejected as not complying with the provisions of the Construction Documents

G. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery

H. In scheduling, allow a minimum of 14 calendar days for review by the District following receipt of the submittal

1.6 DISTRICT DUTIES

A. Review submittals with reasonable promptness and notify Developer/Contractor of discrepancies:
   1. District's review shall not extend to construction methods, sequences, and safety techniques. No information regarding these items will be reviewed whether or not included in submittals
   2. Maintain file of submittals for District use

B. Review Drawings and Product Data submitted only for general conformity with the Construction Documents

C. Consider and review only those deviations from the Construction Documents clearly identified as such in the submittals

1.7 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the District and resubmit until approved

B. Transmit each resubmittal under new letter of transmittal. Use number of original submittal followed directly by a capital letter corresponding to the number of times a submittal is resubmitted (i.e., 1, 1A, 1B, etc.)

C. Shop Drawings and Product Data:
   1. Revise initial drawings or data and resubmit as specified for the initial submittal
   2. Indicate any changes which have been made other than those requested by the District

D. Transmit, unreviewed, to Developer/Contractor all copies of submittals received directly from suppliers, manufacturers and subcontractors
1.8 PRODUCTS
Not Used

1.9 EXECUTION
Not Used

END OF SECTION
PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Quality assurance and control of installation
   B. Inspection and testing laboratory services and qualifications
   C. Laboratory duties and limitations of authority of testing laboratory
   D. Developer/Contractor responsibilities
   E. Field testing
   F. Testing and services schedule

1.2 RELATED SECTIONS
   A. Section 01610—Materials
   B. Section 01340—Shop Drawings, Product Data, and Samples
   C. Section 01720—Project Record Documents

1.3 REFERENCES
   A. Conform to District and reference standards by date of issue current on date of Construction Documents
   B. Obtain copies of standards when required by the District or the Construction Documents
   C. Where specified District and reference standards conflict with Construction Documents, request clarification from the District before proceeding

1.4 SUBMITTALS
   A. Submit under provisions of Section 01340.
   B. Provide copies of written reports for materials, products or tests as scheduled at the end of this section. Reference each report by respective section number.
C. Laboratory Qualifications—Provide statement of qualifications from testing firm and testing firm personnel for review and acceptance by the District.

D. Field Personnel Qualifications—Provide statement of qualifications for review and acceptance by the District for the following:
   1. ACI certification.
   2. Independent special inspector and testing as specified, or as required by the District.

E. Laboratory Test Reports—Provide written reports of each test and inspection to District. Each report shall include:
   1. Date issued
   2. Project title and number
   3. Testing laboratory name, address and telephone number
   4. Name and signature of laboratory inspector
   5. Date and time of sampling or inspection
   6. Record of temperature and weather conditions
   7. Date of test
   8. Identification of product and specification section
   9. Location of sample or test in the Project
   10. Type of inspection or test
   11. Results of tests and compliance with Construction Documents
   12. Interpretation of test results when requested by District

F. Field Test Reports: Provide reports detailing results of the tests. Indicate compliance or non-compliance with Construction Documents. Identify corrective action for materials and equipment which fails to pass field tests.

1.5 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality

B. Comply fully with manufacturer's instructions, including each step in sequence

C. Should manufacturer's instructions conflict with District standards or Construction Documents, request clarification from the District before proceeding

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship

E. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement
F. Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities: Conditions of the Construction Documents

G. Certification of products: Respective sections of specifications

H. Testing, adjusting and balancing of equipment: Respective specification sections

I. Laboratory tests required and standards for testing: Respective specification sections

1.6 INSPECTION AND TESTING LABORATORY SERVICES

A. Developer/Contractor shall employ and pay for the services of an independent testing laboratory to perform all specified services and testing related to the design of mixes, materials and products for the District's review of proposed materials and products before, during and after incorporation in the Work and to retest materials and products which fail original test

B. Employment of the laboratory shall in no way relieve Developer/Contractor's obligations to perform the Work of the Construction Documents

C. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the District.

1.7 QUALIFICATION OF LABORATORY

A. Perform all tests to determine compliance with Contract Document by an independent commercial testing firm acceptable to the District.

B. Testing firm’s laboratory: Staffed with experienced technicians, properly equipped and fully qualified to perform tests in accordance with specified standards

C. Meet basic requirements of ASTM E 329, “Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection” as applicable

D. Authorized to operate in the State in which the Project is located

E. Testing Equipment:
   1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
      a. National Institute of Standards and Technology
      b. Approved values of natural physical constants
1.8 LABORATORY DUTIES

A. Cooperate with the District and Developer/Contractor; provide qualified personnel after due notice

B. Perform specified inspections, sampling, and testing of materials and methods of construction:
   1. Comply with specified standards
   2. Ascertain compliance of materials with requirements of Contract Documents

C. Promptly notify the District and Developer/Contractor of observed irregularities or deficiencies of work or products

1.9 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:
   1. Release, revoke, alter or enlarge on requirements of Construction Documents
   2. Approve or accept any portion of the Work
   3. District employed laboratory shall not perform any duties of the Developer/Contractor

1.10 DEVELOPER/CONTRACTOR’S RESPONSIBILITIES

A. Cooperate with laboratory personnel and provide access to Work

B. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other material mixes which require control by the testing laboratory

D. Furnish copies of product test reports as required

E. Furnish incidental labor and facilities:
   1. To provide access to Work to be tested
   2. To obtain and handle samples at the project site or at the source of the product to be tested
   3. To facilitate inspections and tests
   4. For storage and curing of test samples

F. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested:
   1. Notify the District and independent firm 24 hours prior to expected time for operations requiring services to allow for scheduling of tests and laboratory assignment of personnel
2. Make arrangements with independent firm and pay for additional samples and tests required for Developer/Contractor's use

1.11 FIELD TESTING

A. Developer/Contractor shall pay all costs associated with field testing of materials and products as required in respective specification sections

B. Provide all required materials, labor, equipment, water, and power required for testing

C. Perform all tests in presence of the District and provide one copy of field test results to the District same day of tests

D. Repair with no additional compensation all materials and products which fail during testing

1.12 TESTING AND SERVICES SCHEDULE

A. Testing laboratory services shall be provided for, but shall not be limited to, the following:

<table>
<thead>
<tr>
<th>Specification Section</th>
<th>Type of Material, Equipment or System</th>
</tr>
</thead>
<tbody>
<tr>
<td>02200</td>
<td>Earthwork</td>
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<tr>
<td>02500</td>
<td>Paving and Surfacing</td>
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<tr>
<td>02675</td>
<td>Disinfection of Water Distribution Systems</td>
</tr>
<tr>
<td>03001</td>
<td>Concrete</td>
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</tbody>
</table>

1.13 FIELD TESTING

A. Field testing shall be provided for, but shall not be limited to, the following:

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<td>Site Water Lines</td>
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<td>02675</td>
<td>Disinfection of Water Distribution Systems</td>
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<tr>
<td>02732</td>
<td>Site Sanitary Sewerage System</td>
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<tr>
<td>03001</td>
<td>Concrete</td>
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</table>
PART 2       PRODUCTS

Not Used

PART 3       EXECUTION

Not Used

END OF SECTION
PART 1 GENERAL

1.1 SECTION INCLUDES
   A. General Requirements
   B. Regulatory Requirements
   C. Construction Parking Control
   D. Flagmen
   E. Flares and Lights
   F. Haul Routes
   G. Roadway Usage Between Operations
   H. Traffic Signs and Signals
   I. Removal

1.2 RELATED SECTIONS
   A. Section 01340—Shop Drawings, Product Data, and Samples

1.3 GENERAL REQUIREMENTS
   A. Unless otherwise authorized, keep at least one lane of traffic open at all times
   B. When work is not in progress, keep all traffic lanes open
   C. All traffic lanes shall be open during hours of darkness, weekends, and holidays

1.4 REGULATORY REQUIREMENTS
   A. Conformance: “Manual on Uniform Traffic Control Devices,” U.S. Department of Transportation, Colorado Department of Transportation, or applicable statutory requirements of authority having jurisdiction
   B. Operations on or about traffic areas and provisions for regulating traffic will be subject to the regulation of governmental agencies having jurisdiction over the affected areas
1.5 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and District's operations

B. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas

C. Prevent parking on or adjacent to access roads or in non-designated areas

1.6 FLAGMEN

A. Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes

1.7 FLARES AND LIGHTS

A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic

1.8 HAUL ROUTES

A. Consult with authority having jurisdiction in establishing public thoroughfares to be used for haul routes and site access

B. Confine construction traffic to designated haul routes

C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic

1.9 ROADWAY USAGE BETWEEN OPERATIONS

A. At all times when work is not actually in progress, make open, passable, and maintain to traffic such portions of the Project and temporary roadways or portions thereof as may be agreed upon between Contractor and District and all other authorities or parties having jurisdiction over properties involved

1.10 TRAFFIC SIGNS AND SIGNALS

A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic

B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations
C. Relocate as Work progresses, to maintain effective traffic control
D. Protect all roadways by effective barricades on which are placed warning signs
E. Provide barricades and warning signs for open trenches, other excavations and obstructions
F. Illuminate by means of warning lights all barricades and obstructions form sunset to sunrise

1.11 REMOVAL
A. Remove equipment and devices when no longer required
B. Repair damage caused by installation
C. Remove post settings to a depth of 2 feet

PART 2 Products

Not Used

PART 3 Execution

Not Used

END OF SECTION
SECTION 01610

MATERIALS

PART 1  GENERAL

1.1  SECTION INCLUDES

A. General Requirements
B. Quality Assurance
C. Qualifications
D. Delivery, Storage, and Handling
E. Warranty
F. Materials
G. Fabrication and Manufacture
H. Examination
I. Installation
J. Adjusting and Cleaning

1.2  RELATED SECTIONS

A. Section 01340—Shop Drawings, Product Data and Samples
B. Section 01400—Quality Control

1.3  GENERAL REQUIREMENTS

A. The section applies to all materials provided for the Construction Project
B. The requirements of detailed specifications take precedence over this section in the event of an apparent conflict
C. Provide all new materials and equipment, except as specified or required by testing
D. Except for materials as specifically indicated or specified, materials removed from the existing systems shall not be used in the completed work
E. Do not use any material or equipment for any purpose other than that for which it is
designed or specified

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified with number
of years of documented experience as indicated within the section

B. Installer: Materials installed and placed in service by or under the guidance of qualified
personnel having the knowledge and experience necessary for proper results. Where
Developer/Contractor's or Subcontractor's employees are not properly qualified, such
personnel shall be field representative of the material supplier

1.5 QUALITY ASSURANCE

A. Observation of performance tests by District:
   1. If subsequent visits by District Engineer are required because of incomplete tests,
      retesting or subsequent tests, Developer/Contractor shall reimburse District for all
costs

1.6 DELIVERY, STORAGE, AND HANDLING

A. Arrange deliveries of products in accord with construction schedules, coordinate to avoid
   conflict with work and conditions at the site:
   1. Deliver products in undamaged condition, in manufacturer's original container or
      packaging, with identifying labels intact and legible
   2. Immediately on delivery, inspect shipments to assure compliance with
      requirements of approved Construction Documents and submittals and that
      products are properly protected and undamaged

B. Provide equipment and personnel to handle products by methods to prevent soiling or
damage to products or packaging

C. Preparation for shipment:
   1. Package materials and equipment to facilitate handling and protect against
damage during transit handling or storage
   2. Tag or mark each item per the delivery schedule of the Shop Drawings
   3. Include complete packing lists and bills of material with each shipment

D. Storage and protection:
   1. Store immediately upon delivery
   2. Store products in accord with manufacturer's instructions, with seals and labels
      intact and legible
   3. Store fabricated products above the ground on blocking or skids to prevent soiling
      or staining
4. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation
5. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter
6. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions and free from damage or deterioration.
7. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed

1.7 WARRANTY

A. Warranty all materials and equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, leakage, breakage or other failure for a period of one year from the date of acceptance by the District

B. District reserves the right to require an extended warranty period for specific materials and equipment prior to acceptance by the District

PART 2 PRODUCTS

2.1 MATERIALS

A. Suitable for the service conditions

2.2 FABRICATION AND MANUFACTURE

A. Design, fabricate, and assemble in accordance with the best modern manufacturing and shop practices

B. Manufacture parts to standard sizes and gages

C. Two or more items of the same type shall be identical by the same manufacturer and interchangeable

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine material for signs of pitting, rust decay, or other deleterious effects of storage. Do not install any materials showing such effects. Replace damaged materials with identical new materials
3.2 INSTALLATION

A. Handle, install, connect, clean, condition, and adjust products in strict accord with manufacturer's instructions and in conformity with specified requirements

3.3 ADJUSTMENT AND CLEANING

A. Perform all required adjustment tests, operation checks and other startup activities required

END OF SECTION
SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Maintenance of record documents. Throughout progress of Work, maintain an accurate record of changes to the Construction Documents, and, upon completion of Work, transfer recorded changes to set of Record Documents

1.2  RELATED SECTIONS

A. Individual sections of Technical Specifications

1.3  SUBMITTALS

A. Comply with pertinent provisions under Section 01340

1.4  QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on Developer/Contractor's staff

B. Accuracy of records:
   1. Thoroughly coordinate changes within Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.
   2. Accuracy of records shall be such that future search for items shown in the Construction Documents may rely reasonably on information obtained from approved Project Record Documents

1.5  DELIVERY, STORAGE, AND HANDLING

A. Maintain job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the final Project Record Documents

B. In the event of loss of recorded data, use means necessary to again secure the data for District's acceptance:
   1. Such means shall include, if necessary in the opinion of the District, removal and replacement of concealing materials
   2. In such case, provide replacement to the standards originally required by the Construction Documents
PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of final Project Record Documents is to provide factual information regarding all aspects of Work, both concealed and visible, to enable future modification of Work to proceed without lengthy and expensive site measurement, investigation, and examination

B. Acceptance of recorded data prior to transfer:
   1. Following receipt of blueline copies for Final Record Documents, and prior to start of transfer of recorded data thereto, secure District's acceptance of all recorded data
   2. Make required revisions

C. Transfer of data to Drawings:
   1. Carefully transfer change data shown on job set of Record Drawings to the corresponding bluelines, coordinating the changes as required
   2. Clearly indicate at each affected detail and other Drawing, a full description of changes made during construction, and the actual location of items to be located
   3. Call attention to each entry by drawing a “cloud” around the area or areas affected
   4. Make changes neatly, consistently, and with the proper media to assure longevity and legibility

D. Transfer of data to other Documents:
   1. Any changes made to the Documents other than Drawings must be submitted to the District electronically. Only those Sections affected by changes are required to be resubmitted
   2. If Documents other than Drawings have been kept clean during progress of Work, and if entries thereon have been orderly and acceptable to the District, the job set of those Documents other than Drawings will be approved as final Record Documents
   3. If any such Document is not acceptable to the District, secure a new copy of Construction Documents and carefully transfer the changed data to the new copy for acceptance by the District

E. Review and submittal:
   1. Submit completed set of Project Record Documents to the District as described above and under provisions of Section 01340
   2. Participate in review meetings as required.
   3. Make required changes and promptly deliver final Project Record Documents to the District
3.2  CHANGES SUBSEQUENT TO ACCEPTANCE

A. Contractor has no responsibility for recording changes in Work subsequent to Final Completion, except for changes resulting from Warranty work

END OF SECTION
PART 1  GENERAL

1.1  DESCRIPTION

A.  Clearing, grubbing and site preparation
B.  Removal and disposal of debris
C.  Handling, storage, transportation, and disposal of excavated material
D.  Sheeting, shoring, bracing and protection work
E.  Pumping and dewatering as required or necessary
F.  Backfilling
G.  Pipe embedment
H.  Construction of fills and embankments
I.  Trench Stabilization
J.  Final grading
K.  Slope Stabilization
L.  Erosion Control
M.  Appurtenant work

1.2  RELATED SECTIONS

A.  Section 01340—Shop Drawings, Product Data and Samples
B.  Section 01400—Quality control
C.  Section 02667—Site Water Lines
D.  Section 02936—Seeding
E.  Section 03001—Concrete
1.3 REFERENCES

A. ASTM C33—Concrete Aggregates
B. ASTM C136—Sieve Analysis of Fine and Coarse Aggregates
C. ASTM D1241—Material for Soil Aggregate Subbase, Base and Surface Courses
D. ASTM D698—Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))
E. ASTM D4253—Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
F. ASTM D4254—Test Methods for Minimum Index Density and Unit Weights of Soils and Calculation of Relative Density
G. ASTM D6938—Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.4 SUBMITTALS

A. Submit under provisions of Section 01340
B. Product Data: Submit on all products or materials supplied herein
C. Test Reports: Indicate supplier, sieve analysis, optimum moisture content and density in accord and with ASTM D698, or ASTM D4253 and ASTM D4254 where appropriate for crushed rock or gravel pipe embedment and material for fills and embankment

1.5 REGULATORY REQUIREMENTS

A. Comply with all requirements of the Rules and Regulations for Copper Mountain Consolidated Metro District
B. Comply with all requirements of the “Erosion and Sediment Control During Construction” manual as established in the Summit County Engineering Division Storm Water Pollution Prevention Plan and Erosion Control Plan SWP and ECP Permit Application related to site grading and excavation work
C. Comply with all requirements established in the Colorado State Construction Dewatering Permit, including settling and treatment of dewatering flows, as required to prevent contamination of adjacent rivers, creeks, and drainage ways
D. Comply with all requirements of the Rules and Regulations for Copper Mountain Consolidated Metro District regarding operations in operating permit area and regarding removal and disposal of trees from excavation areas
1.6 ENVIRONMENTAL REQUIREMENTS

A. Protect adjacent structures and surrounding areas from damage during excavation, filling, and backfilling

B. Protect Work from erosion or other similar types of damage until the project has been completed

C. Do not backfill or construct fills during freezing weather. Backfill or construct fills only when temperature is 35 degrees F and rising

D. Do not use frozen materials, snow, or ice in any backfill or fill area

E. Do not backfill or construct fill on frozen surfaces

F. Protect excavated material from becoming frozen

G. Do not remove trees from outside excavation or fill areas unless authorized by the governing District; protect from permanent damage by construction activities

H. Provide temporary bridges for roadways, walkways, driveways, etc.

PART 2 PRODUCTS

2.1 MATERIALS

A. Classification of Excavated Materials:
   1. None
   2. Remove and handle excavated materials regardless of its type, character, composition, condition, or depth at no additional cost to District
   3. Remove and handle excavated materials regardless of means, methods and techniques required, at no additional cost to District

B. Fills and Embankments:
   1. To the max extent practical use excess earth from excavation for fills and embankments
   2. Obtain additional material from borrow areas as necessary
   3. Fill and embankment material acceptable to Engineer and/or a professionally licensed Geotechnical Engineer
   4. No rocks or stones larger than 4 inches in greatest dimension in upper 12 inches of fill or embankment and free from brush, stumps, logs, roots, debris and organic and other deleterious materials
   5. Where allowed, distribute rocks and stones through the fill to not interfere with compaction
   6. Crushed rock or gravel: Graded 1-1/2 inch to No. 4, ASTM C33, free of dust, clay or trash
C. Topsoil:
1. Native material removed and stockpiled before excavation
2. Free from trash, debris, surface vegetation more than 6 inch high

D. Pipe Embedment and Trench Stabilization: Graded gravel
1. Rock 3/4 inch minus for PVC, DIP and Trench Stabilization

<table>
<thead>
<tr>
<th>Sieve Size (Inch)</th>
<th>Percent Passing By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
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<tr>
<td>3/4</td>
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<td>20-55</td>
</tr>
<tr>
<td>3/8</td>
<td>0-15</td>
</tr>
<tr>
<td>#4</td>
<td>0-5</td>
</tr>
</tbody>
</table>

2. Rock 1 1/2 inch minus for DIP and Trench Stabilization

<table>
<thead>
<tr>
<th>Sieve Size (inch)</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
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<tr>
<td>2</td>
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<tr>
<td>1 1/2</td>
<td>90-100</td>
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<tr>
<td>1</td>
<td>20-55</td>
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<tr>
<td>3/4</td>
<td>0-15</td>
</tr>
<tr>
<td>3/8</td>
<td>0-5</td>
</tr>
</tbody>
</table>

3. Washed 3/8 inch pea gravel for PVC only
4. Rock for trench stabilization: As determined by professionally licensed Geotechnical Engineer
E. Compacted Trench Backfill:
1. Job excavated material finely divided, free of unacceptable debris, organic material, and stones larger than 6 inch in greatest dimension if well separated and arranged so as not to interfere with backfill compaction without masses of moist, stiff clay, or other deleterious material as determined by the District
2. Graded gravel: As specified for pipe embedment

F. Trench Cover:
1. Free of brush, debris and roots more than 1" in diameter
2. May contain rubble and detritus from rock excavation, stones and boulders if well separated and arranged so as not to interfere with backfill settlement
3. No stones larger than 4 inch in greatest dimension in upper 12 inches for trench cover

G. Compacted Structural Backfill:
1. Earth only, free of wood, grass, roots, broken concrete, stones, trash, or debris of any kind or uniformly graded borrow material acceptable to the District
2. Moisture content uniformly distributed and such that max density of compacted soil will be obtained

H. Flowable Backfill—Regular or quick set:
1. Maximum desired 28-day strength: 60 psi
2. Batch plant mix design based on cubic yards

<table>
<thead>
<tr>
<th>Component</th>
<th>Regular Flowable Fill</th>
<th>Quick Set Flowable Fill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement (Type II)</td>
<td>50 lbs.</td>
<td>47 lbs.</td>
</tr>
<tr>
<td>Fly Ash (Class F)</td>
<td>-0 lbs.</td>
<td>250 lbs.</td>
</tr>
<tr>
<td>Sand</td>
<td>1845 lbs.</td>
<td>1600 lbs.</td>
</tr>
<tr>
<td>Rock/Limestone (3/4&quot; - #4)</td>
<td>1700 lbs.</td>
<td>1755 lbs.</td>
</tr>
<tr>
<td>Water</td>
<td>325 lbs.</td>
<td>341 lbs.</td>
</tr>
<tr>
<td>Accelerator (Pozz. 20)</td>
<td>-0 lbs.</td>
<td>23-1/2 ozs.</td>
</tr>
<tr>
<td>AEA (MB-VR)</td>
<td>-0 ozs.</td>
<td>45 ozs.</td>
</tr>
</tbody>
</table>

2.2 ACCESSORIES

A. Straw bales used for erosion control barriers: Wire or string wound and less than one year old. Do not use bales in an advanced state of deterioration regardless of age

B. Stakes for erosion control bales: No. 4 reinforcing steel or 2-inch x 2-inch wood stakes
C. Erosion Control Fabric: Straw or coconut fiber combination blanket for temporary protection of sloped areas; 3/8 inch maximum thickness:
   1. “S 150” as manufactured by North American Green
   2. “S2” as manufactured by Terra Tech
   3. “ExcelsiorMat 1” as manufactured by RoLanka International, Inc.
   4. Or approved equal

D. Silt Fence Fabric: Woven polypropylene
   1. Mirafi 100X for “Envirofence” installations as manufactured by TC Mirafi
   2. Or approved equal

PART 3 EXECUTION

3.1 EXAMINATION

A. Field verify the location of all underground utilities, pipelines and structures prior to excavation

3.2 PERFORMANCE - GENERAL

A. Perform Work in a safe and proper manner with appropriate precautions against hazard

B. Provide adequate working space and clearances for Work performed within excavations and for installation and removal of concrete forms

C. Do not undercut excavation faces for extended footings

D. Clean subgrades of loose material before concrete is placed thereon

E. Except as otherwise authorized, indicated, or specified, replace all material excavated below the bottom of concrete walls, footings, slabs on grade and foundations with concrete placed at the same time and monolithic with the concrete above

F. Except where exterior surfaces are to be dampproofed concrete structures that do not have footings that extend beyond the outside face of exterior walls may be placed directly against excavation faces without outer forms
3.3 PREPARATION

A. Clear site of roots, brush, and other objectionable material and debris where occupied by permanent construction

B. Clean and strip subgrade for fills and embankments of surface vegetation, sod, tree stumps and organic topsoil

C. Remove waste materials from site and dispose

D. Clean, as necessary, for access, stringing of pipeline materials and construction of pipelines and appurtenant structures within road right-of-ways

E. Remove debris, all trees, underbrush, stumps, roots and other combustible materials from site daily and dispose of off-site; on-site burning is not permitted

F. Do not use open burning

3.4 PRESERVATION OF TREES

A. Do not remove trees outside fill or excavated areas, except as authorized by the governing District, Agency or property owner

B. Protect trees left standing from permanent damage by construction operation

C. Trim standing trees as directed by the governing District

3.5 TOPSOIL

A. Remove and stockpile available topsoil to surface to a minimum depth of 4 inches all fills, embankments and other areas where the original topsoil will be covered or damaged

B. Import additional clean topsoil material to surface fill embankments, berms, and other areas with 4 inches of topsoil cover where original topsoil will be covered or damaged

C. At the completion of other Work in each area, place and grade topsoil to maintain gradient as required by the District

3.6 DEWATERING

A. Provide and maintain adequate dewatering equipment to remove and dispose of surface and groundwater entering excavations, trenches, and other parts of the Work
B. Keep each excavation dry during subgrade preparation and continually thereafter until the structure to be built or the pipe to be installed is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.

C. Dewater excavations which extend to or below groundwater by lowering and keeping the groundwater level beneath such excavation at least 12 inches below the bottom of the excavation.

D. Divert surface water or otherwise prevent it from entering excavated areas or trenches to the extent practical without damaging adjacent property.

E. Maintain all drainage pipes, keep clean and free of sediment during construction and final cleanup.

3.7 SHEETING, SHORING AND BRACING

A. Provide proper and substantial sheeting, shoring, and bracing, as required, to prevent caving or sliding, to protect workmen and the Work, and to protect existing structures and facilities.

B. Design and build sheeting, shoring, and bracing to withstand all loads that might be caused by earth movement or pressure, and to be rigid, maintaining shape and position under all circumstances.

C. Do not pull trench sheeting before backfilling unless pipe strength is sufficient to carry trench loads based on trench width to the back of sheeting.

D. Do not brace sheeting left in place against the pipe. Support brace sheeting in a manner that precludes concentrated loads or horizontal thrusts on pipe.

E. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment is completed.

F. When the District orders sheeting to remain permanently in place, payment will be negotiated on a per 100 square foot basis for sheeting left in place.

3.8 TRENCH STABILIZATION

A. Thoroughly compact and consolidate subgrades for concrete structures, precast structures, and utility trench bottoms so they remain firm, dense and intact during required construction activities.

B. Remove all mud and muck during excavation.
C. Reinforce subgrades with crushed rock or gravel if they become mucky during construction activities

D. Finished elevation of stabilized subgrades are to be at or below subgrade elevations indicated on drawings

E. Allow no more than 1/2 inch depth of mud or muck to remain on trench bottoms when pipe bedding material is placed thereon

3.9 CRUSHED ROCK OR GRAVEL FILLS

A. Place on suitably prepared subgrade and compact

B. Compact by vibration

C. Where covered with concrete, grade gravel to required subgrade and cover with polyethylene film

3.10 ROADWAY EXCAVATION AND SUBGRADE PREPARATION

A. Excavate for roadways, drives and parking area per the lines, grades cross sections and dimensions indicated on Drawings or as required by the District

B. Excavate unsuitable material from the subgrade

C. After shaping, roll subgrade and compact to 95 percent of max density within 2 percent (+/-) optimum moisture content, ASTM D698, to a minimum depth of 6 inch

D. Reshape and wet as required

E. Remove soft or otherwise unsuitable material, and replace with suitable material

3.11 FILLS AND EMBANKMENTS

A. Level and roll subgrade so surface materials will be compacted and bond with the first layer of fill or embankment

B. Maximum uncompacted thickness of layer shall be field verified: Successfully demonstrate proposed method of placement to achieve specified compaction density. Continue to place and compact material in horizontal layers as demonstrated

C. Spread and level material deposited in piles and windrows before compacting

D. Thoroughly compact each layer by rolling or other means acceptable to the District to 95 percent of max density within 2 percent (+/-) optimum moisture content, ASTM D698
E. Alter compaction methods if material fails to meet specified density at no additional cost to the District

F. Where a trench passes through a fill or embankment, place and compact fill or embankment to 12 inch above the top of the pipe before excavating the trench

G. Add water and harrow, disc, blade, or otherwise work each layer to obtain the uniform moisture content and adequate compaction

H. For water containing embankments, use cutoff walls, concrete encasement or sand/clay mixture in lieu of ground or embedment for pipes passing through the embankment, acceptable to the District

3.12 FILLS AND EMBANKMENTS OVER STRUCTURES

A. Use methods which will not damage or overload structure

B. Use rubber tired vehicles to extent practicable

C. Do not use equipment with a loaded weight greater than 14,000 pounds

D. Operate equipment to prevent impact loads on structure

E. Distribute equipment loads with planks or a layer of earth or gravel 12 inch minimum, 18 inch max, thick

F. Do not pile earth or gravel more than 3 feet deep

G. Take special care to prevent damaging or disturbing roofing membrane, the drains, or granular fill material

3.13 BORROW AREA

A. Obtain material required to complete fills and embankments from areas indicated on the drawings or as directed by the District

B. The location, size, shape, depth, drainage, and surfacing of borrow pits shall be acceptable to the District

C. Make borrow pits regular in shape with graded and surfaced side and bottom slopes when completed

D. Cut side slopes not steeper than 1:1 and uniform for the entire length of any 1 side

E. Final grade disturbed areas of borrow to uniform slope

F. Use material free of debris and deleterious material
3.14 BLASTING

A. Comply with all laws, regulations, ordinances relative to the handling, storage and use of explosives and the protection of life and property

B. Confine all materials lifted by blasting to limits of excavation or trench area

C. Repair any damage caused by blasting

D. Separate rock which cannot be handled and compacted as earth for other excavated matter; do not mix with backfill or embankment materials

3.15 TRENCH EXCAVATION

A. Establish alignment and grade or elevation from offset stakes

B. Excavate trenches so pipes can be laid straight at uniform grade without dips or bumps, between the terminal elevations indicated on the drawings

C. Comply with pipe specification sections regarding vertical and horizontal alignment and max joint deflection

D. Where grades or elevations are not fixed on the drawings, excavate trenches to provide a minimum depth of backfill cover over the top of pipe:
   1. 9 feet for water piping and water service lines
   2. 6 feet for sewer piping unless otherwise approved by the District
   3. Increase depth as required at vertical curves and for clearance beneath existing pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades

E. Measure pipe cover depth vertically from top of pipe to finished ground or surface elevation

F. Do not open more trench in advance of pipe laying than is necessary to expedite the Work; not more than the shorter of 200 feet or 1 block length

G. Except where tunneling is indicated on the Drawings, specified, or permitted by the District, excavate trenches by open cut from the surface

H. Limiting trench widths:
   1. Excavate to a width which will provide adequate working space and pipe clearances for proper pipe installation, jointing, embedment
   2. If needed to reduce earth loads to prevent sliding, cut banks back on slopes which extend not lower than 1 foot above the top of the pipe
   3. Stipulated minimum clearances are minimum clear distances, not minimum average distances
4. Limiting trench widths and permissible clearances from 12 inches above top of pipe to trench bottom for installed pressure and non-pressure piping:

<table>
<thead>
<tr>
<th>Pipe Size (inch)</th>
<th>Minimum Trench Width</th>
<th>Maximum Trench Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1’ - 6”</td>
<td>2’ - 6”</td>
</tr>
<tr>
<td>6</td>
<td>1’ - 6”</td>
<td>2’ - 6”</td>
</tr>
<tr>
<td>8</td>
<td>1’ - 8”</td>
<td>2’ - 8”</td>
</tr>
<tr>
<td>10</td>
<td>2’ - 0”</td>
<td>3’ - 0”</td>
</tr>
<tr>
<td>12</td>
<td>2’ - 0”</td>
<td>3’ - 0”</td>
</tr>
</tbody>
</table>

I. If the width of the lower portion of the trench exceeds the max permitted, provide pipe of adequate strength, special pipe embedment, or arch concrete encasement as required by loading conditions and as determined by the District

J. Mechanical excavation:
   1. Do not use where its operation would damage buildings, culverts, or other existing property, structures, or utilities above or below ground; hand excavate only in such areas
   2. Use mechanical equipment of a type, design, and construction and operated so that:
      a. Rough trench bottom elevation can be controlled
      b. Uniform trench widths and vertical sidewalls are obtained from 1 foot above the top of the installed pipe to the bottom of the trench
      c. Trench alignment is such that pipe is accurately laid to specified alignment and is centered in the trench with adequate clearance between pipe and trench sidewalls
   3. Do not undercut trench sidewalls
   4. Recompact trench bottom disturbed by bucket teeth prior to placement of embedment material

K. Except as otherwise required, excavate trenches below the underside of pipes as indicated in the drawings to provide for installation of granular embedment pipe foundation material

L. Where in earth, trench bottoms for 6 inches and smaller pipe may be excavated below pipe subgrade and granular embedment provided or the trench may be graded to provide uniform and continuous support (between bell holes or end joints) of the installed pipe, Contractor's option

M. Whenever so directed by the District, excavate to such depth below a grade as the District directs and bring the trench bottom to grade with such material as directed by the District

N. Provide concrete, or other foundations made necessary by unstable soil as directed by the District
O. Excavate to provide adequate clearance for tools and methods of pipe installation

P. Do not allow any of bells or couplings to contact the trench bottom, walls, or granular embedment when pipe is joined

Q. Cuts in surface construction:
   1. No larger than necessary to provide adequate working space
   2. Cut a clean groove not less than 1-1/2 inch deep along each side of trench or around perimeter of excavation area
   3. Remove pavement and base pavement to provide shoulder not less than 6 feet wide between cut edge and top edge of trench
   4. Do not undercut trenches, resulting in bottom trench width greater than top widths
   5. Make pavement cuts to and between straight or accurately marked curved lines parallel to trench centerline or limits of excavation
   6. Remove pavement for connections to existing lines or structures only to the extent required for the installation, as determined by the District
   7. Where the trench parallels the length of a concrete walk which is all or partially over the trench, remove and replace the entire walk
   8. Where the trench crosses the drives, walks, curbs, or other surface construction, remove and replace the surface construction between saw cuts as specified for pavement

3.16 PIPE EMBEDMENT

A. Embed pipes above and below the bottom of pipe as indicated in the Drawings and as specified

B. Spread and surface grade granular embedment to provide continuous and uniform support beneath pipe at all points between pipe joints

C. After grading, aligning, and placing pipe in final position, and shoring home, deposit and compact sufficient embedment under and around each side of the pipe and to hold the pipe in proper position and alignment during subsequent operations

D. Place and compact embedment material uniformly and simultaneously on both sides of pipe to prevent lateral displacement

E. Compacted embedment:
   1. Compact to 95 percent max density as determined by ASTM D698
   2. Compact to 70 percent relative density ASTM D4253/D4254
   3. Crushed rock or graded gravel. Vibrate embedment above the bottom of pipe with mechanical probe type vibrator
3.17 TRENCH BACKFILL

A. Compacted backfill:
   1. For full depth of trench above embedment
   2. Beneath pavements, surfacing, driveways, curbs, gutters, walks or other surface construction or structures
   3. In street or highway shoulders
   4. In established sodded areas
   5. Beneath fills and embankments

B. Where the trench for 1 pipe passes beneath the trench of another pipe, compact the backfill for the lower trench to the bottom of the upper trench

C. Maximum uncompacted thickness of layers and method of placement shall be field verified: Successfully demonstrate to the District proposed method of placement to achieve specified compaction density. Continue to place and compact material in horizontal layers as demonstrated

D. Use methods and equipment appropriate to the material to be compacted to prevent transmission of damaging shocks to pipe

E. Compact to 95 percent of max density within 2 percent (+/-) optimum moisture content per ASTM D698 or to an equivalent percent relative density per ASTM D4253/D4254 when appropriate

F. Graded gravel:
   1. Deposit in uniform layers of 12 inch max uncompacted thickness
   2. Compact with suitable vibrating roller or platform vibrator to not less than 70 percent relative density per ASTM D4253/D4254

G. Uncompacted backfill:
   1. Compaction of backfill above pipe embedment in locations other than those specified, is required only to prevent future settlement
   2. May be placed by any method acceptable to the District which will not impose excessive concentrated or unbalanced loads, shock, or impact on, and will not result in displacement of installed pipe
   3. Do not drop compact masses of stiff clay or other consolidated material more than 5 feet into trench unless cushioned by 2 feet minimum of loose backfill above pipe embedment

H. Finish the top portion of backfill with at least 4 inch of topsoil corresponding to, or better than, that underlying adjoining sodded areas

3.18 STRUCTURAL BACKFILL
A. Maximum uncompacted thickness of layers and method of placement shall be field verified: Successfully demonstrate to the District proposed method of placement to achieve specified compaction density. Continue to place and compact material in horizontal layers as demonstrated

B. Compact with mechanical, platform-type tampers

C. Minimum density of 95 percent within 2 percent (+/-) optimum moisture content as determined by ASTM D698

D. Use roller for compaction if necessary to prevent damage to structure and desired density can be obtained

E. Compaction by inundation by water not permitted

F. If trench passes through a structure backfill, compact backfill to an elevation of 12 inches above top of pipe before trenching

G. Do not deposit or compact tamped or otherwise mechanically compacted backfill in water

H. Take particular care to compact backfill which will be beneath slabs, pipes, drives, roads, parking areas, curb, gutters or other surface construction

3.19 DRAINAGE MAINTENANCE

A. Do not backfill trenches across roadways, drives, walks or other trafficways adjacent to drainage ditches or water courses prior to backfilling the trench on the upstream side of the trafficway to prevent impounding water after pipe is laid

B. Backfill so that water does not accumulate in unfilled or partially filled trenches

C. Remove materials deposited in roadway ditches or other water courses crossed by the trench line immediately after backfilling is completed and restore ditches and water courses to original section, grade, and contours

D. Do not obstruct surface drainage any longer than necessary

E. Provide and maintain temporary bridges and other structures across unfilled trenches as required to maintain traffic
3.20 PROTECTION OF TRENCH BACKFILL

A. Where trenches are constructed in ditches or other water courses, protect backfill from erosion

B. Install ditch checks where the ditch grade exceeds 1 percent:
   1. Minimum depth: 2 feet below the original ditch or water course bottom for the full bottom width
   2. Minimum width: 18 inches into the side slopes
   3. Minimum thickness: 12 inches

3.21 DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. Use excess excavated materials in fills and embankments as indicated on the drawings to the extent needed

B. Dispose of suitable excess excavated materials at locations on the site directed by the District

C. Remove unused suitable material from the site and dispose of it

D. Remove debris, junk, broken concrete, broken asphalt, rock, stones, stumps, logs, roots, and other unsuitable material from the site and dispose of it

E. Except as otherwise permitted, dispose of excess excavated materials away from the site of the Work or as directed by the District

F. Distribute excess earth from excavations located in unimproved property directly over the pipe trench and within the pipeline right-of-way to a max depth of 6 inch above the original ground surface elevation at and across the trench and sloping uniformly each way:
   1. Carefully finish material thus wasted with a drag, blade machine, or other suitable tool to a smooth, uniform surface without obstructing drainage at any point
   2. Do not waste excess excavated material in the above manner where the trench lines crosses or is within a railroad, public road, or highway right-of-way

3.22 FINAL GRADING

A. After completion of all other outside Work and after backfilling is completed and settled, bring to grade at the indicated elevations, slopes, contours and all areas adjacent to the site to be graded

B. Graders and other power equipment may be used for final grading and slope dressing if the result is uniform and equivalent to hand work
C. Grade all surfaces for effective drainage
D. Provide a 2 percent minimum slope except as otherwise required
E. Grade surface to maintain minimum gradient where indicated or required by the District

3.23 SLOPE STABILIZATION

A. Seed disturbed areas under provisions of Section 02936.
B. Cover seeded slopes with erosion control fabric where grade is 3H to 1V or greater and where indicated on the Drawings.
C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 6 inch overlap minimum of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
D. Secure outside edges and overlaps at 48 inch intervals with 4-inch to 6-inch U-shaped type pins or wooden stakes depending on ground condition.
E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.
G. Maintain integrity of erosion control fabric until seed germination. If seed is washed out before germination, fertilize, reseed and restore affected areas.

3.24 STRAW BAILE EROSION CONTROL BARRIERS

A. Place straw bale erosion control barriers where required by the Permit and where directed by the District.
B. Field locate straw bales along slopes, next to water courses and downstream of disturbed areas to prevent surface runoff from eroding areas disturbed by Contractor during construction, to minimize the transport of suspended solids downstream or into adjacent streams, canals or ditches and to protect newly seeded areas.
C. Install each bale with wire binding oriented around the bale rather than on top of the bale. Stake each bale twice with reinforcing steel or wood stakes deep enough into the ground to securely anchor the bale.
D. Maintain and replace bales as required for an effective erosion control barrier until satisfactory uniform plant growth is established as defined herein.
3.25 STORMWATER MANAGEMENT PLAN

A. Submit General Permit Application to CDPHE for stormwater discharges associated with construction activity and comply with all conditions of the permit

B. Obtain form for permit application from CDPHE

C. Submit two copies of Stormwater Management Plan for review by the District

3.26 SETTLEMENT

A. Warranty for settlement of all fills, embankments, and backfills is stipulated in the General Conditions from final completion of Contract under which Work is performed

B. Repair or replace within 30 days after notice from the District

3.27 FIELD QUALITY CONTROL

A. Provide under provisions of Section 01400

B. Coordinate and pay for all tests to determine compliance of in-place and backfill materials and compaction in accordance with the specifications

C. Fills and Embankment:
   1. Two moisture-density relationship tests, ASTM D698, on each type of fill material
   2. One in-place compaction test for each 1000 sf and at every 1.5 feet of vertical lift of material placed or as directed by the District

D. Pipe Embedment and Backfill:
   1. Two initial gradation tests for each type of material plus 1 additional test for 500 cubic yards of each material
   2. Two moisture-density relationship tests, ASTM D698, or 2 relative density tests, ASTM D4253/D4254, as appropriate for each type of embedment on backfill material proposed, except granular embedment material
   3. One in-place compaction test every 200 lineal feet of trench in the compacted embedment zone and at every 1.5 feet of vertical lift of backfill materials, ASTM D6938 or as directed by the District
   4. One in-place compaction test near top of trench for trench depth of 2 feet or less, ASTM D6938
   5. Five (5) additional in-place compaction tests at the discretion of the District, ASTM D6938

END OF SECTION
PART 1  GENERAL

1.1  SECTION INCLUDES

A. Aggregate base and asphaltic concrete for roads and parking areas

1.2  RELATED SECTIONS

A. Section 01340—Shop Drawings, Product Data and Samples
B. Section 01400—Quality Control
C. Section 01570—Traffic Regulation
D. Section 02200—Earthwork

1.3  REFERENCES

A. ASTM C29—Bulk Density (“Unit Weight”) and Voids in Aggregate
B. ASTM C88—Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
C. ASTM C117—Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
D. ASTM C128—Density, Relative Density (Specific Gravity), and Adsorption of Fine Aggregate
E. ASTM C136—Sieve Analysis of Fine and Coarse Aggregates
F. ASTM C131—Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
G. ASTM D4—Bitumen Content
H. ASTM D5—Penetration of Bituminous Materials
I. ASTM D70—Density of Semi-Solid Bituminous Materials
J. ASTM D93—Flash Point by Density-Martens Closed Tester
K. ASTM D113—Ductility of Bituminous Materials
L. ASTM D1188—Bulk Specific Gravity of Compacted Bituminous Mixtures Using Coated Samples

M. ASTM D1241—Materials for Soil-Aggregate Subbase, Base, and Surface Courses

N. ASTM D2041—Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

O. ASTM D2172—Quantitative Extraction of Bitumen from Bituminous Paving Mixtures

P. ASTM D2419—Sand Equivalent Value of Soils and Fine Aggregate

Q. ASTM D946—Penetration-Graded Asphalt Cement for Use in Pavement Construction

R. ASTM D692—Course Aggregate for Bituminous Paving Mixtures

S. ASTM D1073—Fine Aggregate for Bituminous Paving Mixtures

T. ASTM D2026—Cutback Asphalt (Slow-Curing Type)

U. ASTM D2170—Kinematic Viscosity of Asphalts (Bitumens)

V. ASTM D2489—Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures

W. ASTM D4215—Cold-Mixed, Cold-Laid Bituminous Paving Mixtures


Y. CDOT—Standard Specifications for Road and Bridge Construction

Z. AI MS2—Mix Design Method for Asphalt Concrete and Other Hot Mix Types -The Asphaltic Institute (AI)

1.4 SUBMITTALS

A. Submit under provisions of Section 01340

B. Samples: Provide samples of materials for laboratory testing and job-mix design

C. Test Reports—Submit laboratory reports for following materials tests:
   1. Coarse and fine aggregate from each material source and each required grading:
      a. Sieve analysis: ASTM C136 (AASHTO T27)
      b. Unit weight of slag: ASTM C29 (AASHTO T19)
      c. Soundness: ASTM C88 (AASHTO T104) for surface course aggregates only
      d. Sand equivalent: ASTM D2419 (AASHTO T176)
e. Abrasion of coarse aggregate: ASTM C131 (AASHTO T96), for surface course aggregates only

2. Asphalt cement for each penetration grade:
   a. Penetration: ASTM D5 (AASHTO T49)
   b. Viscosity (Kinematic): ASTM D2170
   c. Flash Point: ASTM D93 (AASHTO T48)
   d. Ductility: ASTM D113 (AASHTO T51)
   e. Solubility: ASTM D4 (AASHTO T44)
   f. Specific gravity: ASTM D70 (AASHTO T166)

3. Job-mix design mixtures for each material or grade:
   a. Bulk specific gravity for fine aggregate: ASTM C128 (AASHTO T84)

4. Uncompacted asphalt concrete mix: Maximum specific gravity ASTM D2041 (AASHTO T209)

5. Compacted asphalt concrete mix:
   a. Bulk density: ASTM D1188 (AASHTO T166)
   b. Marshall stability and flow: ASTM D6927

6. Density and void analysis:
   a. Provide each series of asphaltic concrete mixture test specimens, in accordance with MS2
   b. Use Marshall method of mix design unless otherwise directed or acceptable to the District

7. Sampling and testing of asphaltic concrete mixtures for quality control during paving operations:
   a. Uncompacted asphaltic concrete mix:
      1) Asphalt cement content: ASTM D2172 (AASHTO T164)
      2) Penetration of recovered asphaltic cement: ASTM D5 (AASHTO T49)
      3) Ductility of recovered asphaltic cement: ASTM D113 (AASHTO T51)
   b. Compacted asphaltic concrete mix:
      1) Bulk density: ASTM D1188 (AASHTO T166)
      2) Marshall stability and flow: ASTM D6927
   c. Perform at least one test for each day's paving

1.5 ENVIRONMENTAL REQUIREMENTS

A. In general, work specified within this section will be performed during the year from April to September unless otherwise authorized by the District in writing.

B. Do not apply when underlying surface is muddy, frozen or wet
C. Comply with CDOT Table 401-3 on placement temperatures for asphaltic concrete

D. Do not place by hand or motor grader asphaltic concrete courses when temperature is below 60 degrees F and falling

E. Do not apply pavement marking paint within 8 hours of fog or rain or when below 40 degrees F

F. Maintain vehicular and pedestrian traffic during paving operations

G. Provide flagmen, barricades, warning signs, and warning lights for movement of traffic and safety and to cause the least interruption of work in accordance with Section 01570

PART 2 PRODUCTS

2.1 MATERIALS

A. Aggregate base:
   1. Sound, angular crushed stone, crushed gravel, or crushed slag, and sand, stone, or slag screenings: ASTM D1241, Type I
   2. Gradation: Class B

B. Tack coat: Emulsified asphalt, CSS-1 or CSS-1h

C. Asphaltic cement: ASTM D946, grade determined by design mix

D. Aggregate for asphaltic concrete—General:
   1. Sound, angular crushed stone, crushed gravel, or crushed slag: ASTM D692
   2. Sand, stone, or slag screening: ASTM D1073
   3. Provide aggregate in gradations for various courses to comply with state highway standards, C or CX, Colorado Department of Transportation, ASTM C136
   4. Percent wear: ASTM C131, less than 45 for aggregates retained in #10 sieve

E. Base course aggregates for asphaltic concrete:
   1. Uncrushed gravel may be used in mixture if it meets design criteria specified
   2. Provide uniform quality combined aggregates with a minimum sand equivalent value:
      a. 35 for light and medium traffic areas
      b. 40 for heavy traffic areas

F. Surface course aggregates for asphaltic concrete:
   1. Provide natural sand, unless sand prepared from stone, slag, or gravel or combinations are required to suit local conditions.
2. Provide uniform quality combined aggregate with a minimum sand equivalent value:
   a. 40 for light and medium traffic areas
   b. 50 for heavy traffic areas

G. Pavement marking paint: Conforming to Federal Standard—FS TT-P-115, Type I-Alkyd

H. Chip and seal coat aggregate:
   1. Sound, angular crushed stone or gravel
   2. Percent wear: ASTM C131, less than 40
   3. Minimum of 90 percent of aggregate retained in #4 sieve, one fractured face
   4. Retained bituminous film: AASHTO T182, 95 percent minimum
   5. Graded in accordance with ASTM C136 within the following limits:

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<thead>
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<th>Sieve Size</th>
<th>Percent Passing</th>
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<tr>
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<td>0-04</td>
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<tr>
<td>No. 200</td>
<td>0-02</td>
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</tbody>
</table>

2.2 MIXES

A. Determine design mix based upon aggregates furnished:
   1. Test mix by independent laboratory at Contractor’s expense
   2. Grade dependent on temperature during placement
   3. Indicate maximum allowable moisture content of aggregates
   4. Acceptable to the District

PART 3 EXECUTION

3.1 PREPARATION

A. Aggregate base course:
   1. Check subgrade for conformity with elevations and section immediately before placing aggregate base material
   2. Place aggregate base material in compacted layers not more than 6 inches thick, unless continuing tests indicate the required results are being obtained with thicker layers
   3. In no case will more than 12 inches of compacted base be placed in one lift
   4. Spread, shape, and compact all aggregate base material deposited on the subgrade during the same day
   5. Compact aggregate base course material to not less than 95 percent of maximum density: ASTM D698
6. Test density of compacted aggregate base course: ASTM D6938
7. Conduct 1 test for each 2500 square yards of in-place material, but in no case not
   less than 1 for each layer

B. Loose and foreign material:
   1. Remove loose and foreign material from compacted subbase surface immediately
      before application of paving

C. Tack coat:
   1. Dilute material with equal parts of water and apply to contact surfaces of
      previously constructed asphaltic concrete or Portland cement concrete and
      surfaces
   2. Apply at rate of 0.05 to 0.15 gallons per square yard of surface
   3. Apply tack coat by brush to contact surfaces of curbs, gutters, manholes, and
      other structures projecting into or abutting asphaltic concrete pavement
   4. Allow surfaces to dry until material is at condition of tackiness to receive
      pavement
   5. Where asphaltic concrete will adhere to surface, tack coat may be eliminated by
      the District

D. Chip and seal coat:
   1. Apply aggregate at rate of 16-20 pounds per square yard
   2. Apply asphaltic emulsion at rate of 0.35-0.50 gallons per square yard
   3. Allow surfaces to dry until material is at condition to receive traffic

3.2 RING/FRAME ADJUSTMENTS

A. Set manhole ring/frames of subsurface structures to final grade as a of this work, include
   existing ring/frames and new ring/frames furnished under other work of project

B. Placing ring/frames:
   1. Surround ring/frames set to elevation with a ring of compacted asphaltic concrete
      base prior to paving
   2. Place asphaltic concrete mixture up to 1 inch below top of ring/frame, slope to
      grade, and compact by hand tamping

C. Adjust frames to proper position to meet paving

D. If permanent covers are not in place, provide temporary covers over openings until
   completion of rolling operations

E. Set ring/frames to grade, flush with surface of adjacent pavement
3.3 PREPARING THE MIXTURE

A. Comply with ASTM D4215 for material storage, control, and mixing and for plant equipment and operation

B. Stockpile:
   1. Keep each component of the various sized combined aggregates in separate stockpiles
   2. Maintain stockpiles so that separate aggregate sizes will not be intermixed and to prevent segregation

C. Heating:
   1. Heat the asphaltic cement at the mixing plant to viscosity at which it can be uniformly distributed throughout mixture
   2. Use lowest possible temperature to suite temperature viscosity characteristics of asphalt
   3. Do not exceed 350 degrees F

D. Aggregate:
   1. Heat-dry aggregates to moisture content of not more than maximum allowable percentage for design mix
   2. Deliver to mixer at recommended temperature to suite penetration grade and viscosity characteristics of asphaltic cement, ambient temperature, and workability of mixture
   3. Accurately weigh or measure dry aggregates and weigh or meter asphaltic cement to comply with job-mix formula requirements

E. Mix aggregate and asphalt cement to achieve 90-95 percent coated particles for base mixtures and 85-90 percent coated particles for surface mixture, per ASTM D2489

F. Transporting:
   1. From mixing site in trucks having tight, clean compartments
   2. Coat hauling compartments with lime-water mixture to prevent sticking
   3. Elevate and drain compartment of excess solution before loading mix
   4. Provide covers over asphaltic concrete mixture to protect from weather and to prevent loss of heat
   5. During periods of cold weather or for long distance deliveries, provide insulation around entire truck bed surfaces

3.4 EQUIPMENT

A. Bituminous Pavers: Self-propelled, spreads without tearing surfaces, and controls pavement edges to true lines without use of stationary forms
B. Rolling Equipment:
1. Pneumatic-tired roller
2. Two or three-wheeled steel roller

C. Hand Tools: Provide rakes, lutes, shovels, tampers, smoothing irons, pavement cutters, portable heaters, and other miscellaneous small tools

3.5 PLACING THE MIX

A. Place asphaltic concrete mixture on prepared surface, spread and strike-off using paving machine

B. Complete placement over full width of section on each day's run

C. Minimum temperature of 225 degrees F at time of placement

D. Inaccessible and small areas may be placed by hand

E. Conform to the grade, cross section, finish thickness, and density indicated

F. Paver placing:
1. Unless otherwise directed, being placing along centerline of areas in crowned section and at high side on one-way slope and in direction of traffic flow
2. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips
3. Complete base courses before placing surface courses
4. Place mixture in continuous operation as practicable

G. Hand placing:
1. Spread, tamp, and finish mixing using hand tools in areas where machine spreading is not possible as acceptable to the District
2. Place mixture at a rate that will insure handling and compaction before mixture becomes cooler than acceptable working temperature

H. Joints:
1. Construct transverse joint at right angles to centerline when operations are suspended long enough for mixture to chill
2. Construct joints to have same texture, density, and smoothness as adjacent sections of asphalt concrete course
3. Clean contact surfaces free of sand, dirt, or other objectionable material and apply tack coat
4. Offset transverse joints in succeeding courses not less than 24 inches
5. Cut back edge of previously placed course to expose an even, vertical surface for full course thickness
6. Offset longitudinal joints in succeeding courses not less than 6 inches
7. When the edges of longitudinal joints are irregular, honeycombed or inadequately compacted, cut back unsatisfactory sections to expose an even, vertical surface for full course thickness
8. Wearing course constructed in even number of strips; place 1 longitudinal joint on centerline of road
9. Wearing course constructed in odd number of strips; place the centerline of 1 strip on centerline of road

I. Curbs: Finish surface high adjacent to curb so when compacted surface is slightly higher than edge of curb and flashing

3.6 COMPACTING THE MIX

A. Provide rollers to obtain the required pavement density
B. Begin rolling operations when the mixture will bear weight of roller without excess displacement
C. Do not permit heavy equipment, including rollers to stand on finished surface before it has thoroughly cooled or set
D. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers
E. Start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. Roll to slightly different lengths on alternate roller runs
F. Do not roll centers of sections first under any circumstances
G. Breakdown rolling:
   1. Accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and outside edge
   2. Operate rollers as close as possible to paver without causing pavement displacement
   3. Check crown, grade, and smoothness after breakdown rolling
   4. Repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling
H. Second rolling:
   1. Follow breakdown rolling as soon as possible, while mixture is hot and in condition for compaction
   2. Continue second rolling until mixture has been thoroughly compacted
I. Finish rolling:
   1. Perform finish rolling while mixture is still warm enough for removal of roller marks
   2. Continue rolling until roller marks are eliminated and course has attained specified density

3.7 PAVEMENT REPAIR AND SEALING

A. Patching:
   1. Remove and replace defective areas
   2. Cut-out and fill with fresh, hot asphaltic concrete
   3. Compact by rolling to specified surface density and smoothness
   4. Remove deficient areas for full depth of course
   5. Cut sides perpendicular and parallel to direction of traffic with edges vertical
   6. Apply tack coat to exposed surfaces before placing new asphaltic concrete mixture

B. Chip and seal all paving and patching upon project completion

3.8 MARKING ASPHALTIC CONCRETE PAVEMENT

A. Remove dirt, sand, gravel and oil

B. Allow asphaltic concrete to cure before painting

C. Apply paint with pressurized, self-contained paint machine

D. Apply in straight line 2-6 inches wide

E. Lay out markings with guide lines, templates and forms

F. Apply at 1 gallon per 105 (+5) square foot

G. Provide qualified technician for supervision

3.9 FIELD QUALITY CONTROL

A. Test in-place for density, thickness, and surface smoothness

B. Final surfaces of uniform texture, conforming to required grades and cross sections

C. Take not less than 4 inch diameter pavement specimens for each completed course from locations as directed by the District

D. Repair holes from test specimens as specified for patching defective work
E. Minimum acceptable density of in-place course materials is 94—96 percent of the recorded laboratory specimen density

F. Thickness—Variations from drawings:
   1. Base course: 1/2 inch ±
   2. Surface course: 1/2 inch ±

G. Surface smoothness:
   1. Test using a 10 foot straight edge applied parallel to direction of drainage
   2. 1/4 inch per foot from nearest point of contact
   3. Do not permit pockets or depressions where water may pool

3.10 CLEANING

A. After completion of paving operations, clean surfaces of excess or spilled asphalt materials to the satisfaction of the District

3.11 PROTECTION OF FINISHED WORK

A. After final rolling, do not permit vehicular traffic on asphaltic concrete pavement until it has cooled and hardened and in no case sooner than 6 hours

B. Provide barricades and warning devices as required to protect pavement and the general public in accordance with Section 01570

C. Cover openings of structure in the area of paving until permanent coverings are placed

END OF SECTION
SECTION 02607
MANHOLES AND COVERS

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Precast concrete manhole sections with tongue and groove joints, transition, ring, cover, and accessories

1.2 RELATED SECTIONS
   A. Section 01340—Shop Drawings, Product Data and Samples
   B. Section 01400—Quality Control
   C. Section 02200—Earthwork
   D. Section 03001—Concrete
   E. Section 03600—Grout
   F. Section 07160—Bituminous Dampproofing

1.3 REFERENCES
   A. ASTM A48—Gray Iron Castings
   B. ASTM A185—Steel Welded Wire Reinforcement, Plain, for Concrete
   C. ASTM A615—Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   D. ASTM C33—Concrete Aggregates
   E. ASTM C150—Portland Cement
   F. ASTM C478—Precast Reinforced Concrete Manhole Sections
   G. ASTM C913—Precast Concrete Water and Wastewater Structures
   H. ASTM D2240—Rubber Property—Durometer Hardness
1.4 SUBMITTALS

A. Submit under provisions of Section 01340

B. Shop Drawings: Indicate manhole locations, rim elevations, piping, sizes, orientations, and elevations of penetrations

C. Product Data: Provide manhole covers, steps, component construction, features, configuration, and dimensions.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum 5 years experience

1.6 ENVIRONMENTAL REQUIREMENTS

A. Product suitable for use with wastewater or surface runoff

B. Water temperature: Range 5 degrees C to 20 degrees C

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete—Section 03001 except as modified herein:
   1. Minimum compressive strength: 3500 psi at 28 days
   2. Cement: ASTM C150, Portland Cement, Type II
   3. Aggregates: ASTM C33, free of deleterious substances

B. Precast sections:
   1. Specifications: ASTM C478
   2. Minimum wall thickness: 5 inch
   4. Grade rings as required
   5. Precast base and first barrel section cast monolithically

C. Performed plastic gaskets:
   1. Diameter: 1-1/2 inch for 48 inch manhole; 2 inch for 60 inch manholes and larger
2. Acceptable Manufacturers:
   c. “Ram-Nek” is not acceptable
   d. Or approved equal

D. Pipe penetration seals for precast sections:
   1. Neoprene rubber pipe penetration gaskets, #40 durometer A, ASTM D2240 and adjustable stainless steel pipe clamps, “A-Lok” or approved equal

E. Manhole steps: Steel bar, 1/2 inch Grade 60, drop-front type with polypropylene coating applied by manufacturer, Type MA Industries Inc. “PS2-PFS” or approved equal

F. Manhole rings and covers:
   1. Cast iron, heavy duty traffic type, ASTM A48, Class 30B. Grind bearing surfaces to ensure flat, true surfaces
   2. Covers to seat at all points on ring
   3. Lettered “SEWER” or “WATER” in 2 inch high flush letters as required
   4. Neenah R1798, for water applications or approved equal
   5. Neenah R1706 for sewer applications or approved equal

G. Manhole height adjustment: Use HDPE adjusting rings as manufactured by Ladtech, Inc or approved equal

H. Rock Subbase: 1 1/2 inch minus well-graded gravel. Comply with provisions for pipe embedment in Section 02200

I. Water: Clean and free of deleterious substances

J. Grout: Provide under provisions of Section 03600

2.2 FABRICATION

A. Manhole section:
   1. Minimum manhole inside diam: 48 inch and 60 inch where indicated
   2. Provide eccentric cones for all manholes except where indicated otherwise
   3. Cones: Same or greater reinforcement and wall thickness as manhole section
   4. Manhole steps: 12 inch on center, vertical alignment above largest open area or bench
   5. Joints: Keylock type with double mastic gaskets, each joint to set equally and tightly
   6. Manhole opening: Minimum 24 inch clear
   7. Drop structure: As indicated by standard detail
PART 3  EXECUTION

3.1  EXAMINATION
   A. Verify items provided by other section of Work are properly sized and located
   B. Verify that built-in items are in proper location, ready for roughing into Work
   C. Verify excavation for manholes is correct

3.2  PREPARATION
   A. Excavation and Backfill: Refer to Section 02200 for requirements
   B. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections
   C. Rock Subbase: Remove water, excavate, and place 1-1/2 inch rock 6 inch minimum depth, vibrate for compaction

3.3  PLACING MANHOLE SECTIONS
   A. Place manhole sections plumb and level, trim to correct elevations
   B. Clean ends of sections and place double mastic gasket
   C. Fill outside of joint completely with non-shrink grout and trowel smooth
   D. Cure non-shrink grout using approved methods outlined in Section 03600
   E. Set cover rings and covers with slight tip to match cross slope of paved or finished surfaces
   F. Completed manholes shall be rigid and watertight
   G. Coordinate with other Sections of Work to provide correct size, shape, and location

3.4  PREFORMED GASKETS
   A. Remove and replace manhole sections which have chipped or cracked joints
   B. Thoroughly clean section joints
   C. Install gasket in conformance with manufacturer's instructions
   D. Only use primer furnished by gasket manufacturer
3.5 MANHOLE INVERTS
   A. Place concrete in bottom of manhole and form smooth transition. Trowel smooth and
      brush for non-skid finish. Slope bench 1 inch per foot for drainage to invert
   B. Invert shape to conform to radius of pipe it connects
   C. Remove all rough sections or sharp edges which tend to obstruct flow or cause material
      to snag
   D. Construct in conformance with standard details
   E. Remove all excess grout or concrete from invert

3.6 DROP ASSEMBLIES
   A. Construct as shown per District standard details

3.7 FLEXIBLE JOINTS
   A. Provide joint in rigid sewer pipe less than 2 feet from manhole
   B. Where last joint to manhole is more than 2 feet away, place concrete cradle under pipe
      from within 2 feet of MH to last joint

3.8 PIPE STUBOUTS FOR PRESENT AND FUTURE SERVICE CONNECTIONS
   A. Install service stubouts where shown on Drawings
   B. Place stubouts in base of manhole and form smooth invert
   C. Maximum length: 12 inch outside manhole wall
   D. Place watertight plastic gasket plug in all stubouts
   E. Brace plug against blow-off
   F. Match pipe crown of service connection with pipe crown of outlet pipe

3.9 PERMANENT PLUGS
   A. Thoroughly clean contact surfaces of pipes to be abandoned or cut off
   B. Pipes 18 inch diam and less: Place 18 inch deep concrete plug
C. Pipes greater than 18 inch diam: Plugs can be cast-in-place concrete with outside face plastered with non-shrink grout

D. Plugs: Watertight and capable of withstanding all pressures

3.10 TEMPORARY PLUGS

A. Install 1/2 inch plywood plugs in joint

B. Make water tight as required by the District

C. Backfill against plug

3.11 MANHOLE RINGS AND COVERS

A. Place rings in bed of non-shrink grout on top of manholes

B. Ensure no infiltration will enter manhole at this location

C. Carry non-shrink grout over flange of ring

D. Set top of ring flush with all surfaces subject to foot and vehicular traffic or as required by local jurisdiction

E. Set top of ring 6 inches above surfaces in open, untraveled areas

F. Use precast grade rings for height adjustment

3.12 MANHOLES OVER EXISTING SEWERS

A. Construct manhole base and install manhole sections as described herein

B. Maintain flow at all times

C. Prior approval of proposed method for maintaining flow must be obtained from the District

D. Break out crown of existing pipe and make invert

E. Cover the edges of the broken pipe with mortar and trowel smooth to the new invert

F. Provide cover over invert so debris does not enter existing pipe lines
3.13 CONNECTION TO EXISTING MANHOLES

A. Maintain flow at all times

B. Prior approval of proposed method for maintaining flow must be obtained from the District

C. Concrete core into existing manhole and reform invert to provide smooth flow transition

D. Cover area around new pipe with non-shrink grout and or waterstop gasket to ensure a watertight structure

E. Make connection during low flow periods

3.14 EXTERIOR DAMPPROOFING

A. Dampproof all exterior surfaces of manholes after installation under provisions of Section 07160

B. Apply exterior bituthane wrap, “Ice and Shield” as manufactured by Grace or approved equal.

3.15 FIELD TESTING

A. Test all manholes:
   1. Vacuum test:
      a. Plug all inlets and outlets in such a manner as to prevent displacement of plugs
      b. Install and operate vacuum tester head assembly in accordance with equipment specifications and manufacturer instructions
      c. Attach the vacuum pump assembly to the proper connection on the test head assembly. Make sure the vacuum inlet/outlet valve is in the closed position
      d. Inflate the sealing element to twice the test pressure to be used. Do not over inflate
      e. Start the vacuum pump assembly engine and allow preset RPM to stabilize
      f. Open the inlet/outlet ball valve and evacuate the manhole to 5”Hg. (mercury)
      g. Close vacuum inlet/outlet ball valve, disconnect vacuum pump, and monitor vacuum. Record time for vacuum to drop to 3”Hg
h. Acceptance for 5 ft diameter manhole is when the time to drop from 5"Hg to 4"Hg meets or exceeds requirements as defined below:

Maximum Allowable Vacuum Drop

<table>
<thead>
<tr>
<th>Manhole Depth</th>
<th>Diameter In Feet</th>
<th>Time to Drop 1 inch Mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rim to Invert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 ft. or less</td>
<td>5</td>
<td>150 seconds</td>
</tr>
<tr>
<td>10 ft. to 15 ft.</td>
<td>5</td>
<td>180 seconds</td>
</tr>
<tr>
<td>15 ft. to 25 ft.</td>
<td>5</td>
<td>210 seconds</td>
</tr>
</tbody>
</table>

i. Adjust time to drop from 5"Hg to 4"Hg for other manhole diameters as follows:

1) 4 foot diameter MH: Subtract 30 seconds
2) 6 feet diameter MH: Add 30 seconds

j. Repair all manholes that fail leakage test and retest until manhole passes test at no additional cost

k. If joint mastic or gasket is displaced during vacuum test, disassemble manhole and replace seal

B. Test all manholes immediately after assembly and before backfilling. Remove standing water in excavation which may affect test accuracy

C. Conduct final test after backfilling

D. Perform all testing in presence of the District

END OF SECTION
SECTION 02667
SITE WATER LINES

PART 1   GENERAL

1.1 SECTION INCLUDES

A. Pipe and fittings for site water distribution system
B. Valves and fire hydrants

1.2 RELATED SECTIONS

A. Section 01340—Shop Drawings, Product Data and Samples
B. Section 01400—Quality Control
C. Section 01610—Materials
D. Section 01720—Project Record Documents
E. Section 02200—Earthwork
F. Section 02607—Manholes and Covers
G. Section 02675—Disinfection of Water Distribution Systems
H. Section 15430—Plumbing Specialties

1.3 REFERENCES

A. ASME B16.18—Cast Copper Alloy Solder Joint Pressure Fittings
B. ASME B16.22—Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
C. ANSI B31.9—Building Service Piping
D. AWS A5.8—Brazing Filler Metal
E. AWWA C104—Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
F. AWWA C110—Ductile-Iron and Gray-Iron Fittings, 3 Inch through 48 Inch, for Water and Other Liquids
G. AWWA C111—Rubber-Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe and Fittings

H. AWWA C115—Flanged Ductile-Iron Pipe with Threaded Flanges

I. AWWA C150—Thickness Design of Ductile-Iron Pipe

J. AWWA C151—Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids

K. AWWA C153—Ductile-Iron Compact Fittings, 3 Inch through 12 Inch, for Water and Other Liquids

L. AWWA C500—Gate Valves, 3 through 48 in NPS, for Water and Sewage Systems

M. AWWA C502—Dry Barrel Fire Hydrants

N. AWWA C504—Rubber Seated Butterfly Valves

O. AWWA C508—Swing-Check Valves for Waterworks Service, 2 in through 24 in NPS

P. AWWA C509—Resilient Seated Gate Valves 3 in through 12 in NPS, for Water and Sewage Systems

Q. AWWA C550—Protective Interior Coatings for Valves and Hydrants

R. AWWA C600—Installation of Ductile-Iron Water Mains and Appurtenances

S. ASTM B88—Seamless Copper Water Tube

T. NSF 61—Drinking Water System Components - Health Effects

U. UL 246—Hydrants for Fire - Protection Service

1.4 SYSTEM DESCRIPTION

A. Provide piping complete with all fittings, jointing materials, supports, anchors, joint restraint system and necessary appurtenances for watertight, fully operational water distribution lines

1.5 SUBMITTALS

A. Submit under provisions of Section 01340

B. Shop Drawings: Provide piping layout fabrication and assembly drawings with fitting dimensions. Provide sufficient information to verify compliance with specifications
C. Product Data: Provide data on pipe materials, pipe fittings, joint restraint system, valves and accessories. Provide manufacturer's catalog information with dimensions, material and assembled weight. Indicate pressure ratings for pipe, valves and hydrants

D. Manufacturer's Certificate: Certify that pipe products meet or exceed specified requirements

E. Test Reports: Submit reports of field pressure tests and disinfection

1.6 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01720

B. Accurately record actual locations of piping mains, valves, connections, and top of pipe elevations

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with Copper Mountain Consolidated Metro District Standards and specifications as specified herein

B. Manufacturer's name and pressure rating marked on piping, valves and hydrants

1.8 REGULATORY REQUIREMENTS

A. Conform to all municipal codes and ordinances, laws and regulations of the State to prevent cross-connections by providing backflow prevention devices where required

B. In case of apparent conflict, State and local requirements govern over these Specifications

C. In absence of State and local regulations, Uniform Plumbing Code applies

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01610

B. Deliver and store valves and accessories in shipping containers with labeling in place in accordance with AWWA C500

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation
D. Seal valve ends to prevent entry of foreign materials into valve body

E. During loading, transporting and unloading, exercise care to prevent damage to material:
   1. Use nylon slings only
   2. Do not drop pipe or fittings
   3. Do not roll or skid against pipe already on ground
   4. Repair any damage done to coating or lining
   5. Handle per manufacturer’s recommendations
   6. Store rubber gaskets in cool dark location
   7. Store all material on wood pallets or timbers

F. Adequately tag or otherwise mark all piping and fittings as to size

PART 2  PRODUCTS

2.1 MANUFACTURERS - DUCTILE IRON PIPE AND FITTINGS

A. Griffin Pipe Products Company

B. U.S. Pipe

C. Tyler Pipe/Utilities Division

D. Or approved equal

2.2 DUCTILE IRON PIPE

A. ANSI A21.51/AWWA C151—As listed below except as otherwise specified or indicated on Drawings:
   1. Where fitted with push-on joints, mechanical joints or mechanical joints with joint restraint device or restrained joints: Special Thickness Class 52, 4–12 inches
   2. Where fitted with flanged or restrained joints: Special Thickness Class 53

B. Fittings:
   1. Flanged Joint: Ductile iron, ANSI A21.10/AWWA C110
      a. 12 inch and below: 250 psi rating
   2. Mechanical Joint: Ductile iron, ANSI A 21.53/AWWA C153
      a. 12 inch and below: Pressure class 350
      b. Compact fitting

C. Joints:
   1. Mechanical joints:
2. Push-on joints: ANSI A21.11/AWWA C111, except gaskets shall be neoprene or other synthetic rubber. Natural rubber is not acceptable:
   a. Lubricant: Heavy vegetable soap solution suitable for potable water contact
   b. Pressure rated 350 psi
3. Restrained push-on lock joints:
   a. 24 inch and below: U.S. Pipe “Field-Lok”, or approved equal
4. Threaded connections: ANSI B1.20.3 NPT, Boss or tapping saddle at all tapped connections
5. Mechanical couplings: Smith Blair “411” or approved equal
6. Flanged coupling adapters:
   a. 12 inch and under: Smith Blair “Type 912 (Old style) or approved equal
   b. Working pressure: 250 psi
7. Mechanical joint with restraint device:
   a. Multiple wedging action or 360 degrees serration lock engagement type
   b. Twist off nuts used to insure proper actuating of the restraining device or nuts and bolts torqued to requirements of manufacturer
   c. Working pressure rated at same pressure as pipe
   d. EBAA Iron Sales, Inc., MEGA LUG 1100 Series at MJ fittings
8. Push-on joint with restraint device:
   a. Multiple wedging action or 360 degrees serration lock engagement type restraint ring with bell ring and tie bolts
   b. Twist off nuts used to insure proper actuating of the restraining device or nuts and bolts torqued to requirements of manufacturer
   c. Working pressure rated at same pressure as pipe
   d. EBAA Iron Sales, Inc., MEGA LUG 1100 Series with Bell Restraint Harness or Uni-Flange Corporation, 1390 Series
9. Joint accessories:
   a. Electrical conductivity bonding: No. 4 copper wire
   b. Wire to pipe welding (field): CAD WELD
   c. Pipe welded protective caps: Royston “Handy Cap 2”, or approved equal

2.3 GATE VALVES - 3 INCHES THROUGH 12 INCHES

   A. Manufacturers:
   1. Mueller Company - Model Series 2360
   2. No Substitutions

   B. AWWA C509, Iron body, bronze trim, two O-ring stem seals, non-rising stem with square nut, single wedge, resilient seat, mechanical joint ends, extension stem, and extension valve box, max working pressure of 250 psi

   C. Rotation: Counter clockwise to open with the word "OPEN" and an arrow indicating the direction to open cast on valve body or operating nut
2.4 BALL VALVES - UP TO 2 INCHES

A. Manufacturers:
   1. Nibco Model T-590-Y
   2. Or approved equal

B. Bronze body, bronze ball, TFE seats and stem seals, operating with handle, NPT inlet end, NPT outlet

2.5 HYDRANT

A. Manufacturers:
   1. Mueller Company - Super Centurion 250 Model A-423
   2. No substitutions

B. Hydrant: AWWA C502, UL 246, dry barrel type, inside dimension of 7 inches minimum, with minimum 5 inches diameter valve seat opening; minimum net water area of barrel not less than 190 percent of valve opening; 6 inch bell or mechanical joint inlet connection with accessories, gland bolts, and gaskets, max working pressure of 250 psi

C. Hydrant Extensions: Fabricate in multiples of 6 inches with rod and coupling to increase barrel length

D. Hose and Steamer Connection: Match sizes with District Fire Department, two hose nozzles and one pumper nozzle

E. Finish: Primer and two coats of enamel to color required by District Fire Department

2.6 AIR AND VACUUM RELIEF VALVES - 3 INCHES AND SMALLER

A. APCO 2 inch valve, Series 145C, as manufactured by Valve and Primer Corporation or approved equal

B. Combination, single body, integral type, air release and vacuum relief valves, max working pressure of 250 psi

2.7 DOMESTIC, COMMERCIAL AND IRRIGATION METERS

A. Manufacturer:
   1. Metron-Farnier, LLC
      a. Domestic
      b. i. For 1 inch and under: “Spectrum MP-4” water meters
b. Commercial 1 inch to 2 inch “Spectrum MP-3” water meters
c. Commercial 3 “Spectrum MP-5” water meters

2. Register: Metron-Farnier OER Encoder
3. Transmitter: Transparent Technologies “M2 AMR System”

2.8 BEDDING MATERIALS

A. Bedding: As specified in Section 02200

2.9 ACCESSORIES

A. Provide two operating keys for buried valves

B. Valve boxes for all buried valves, depth as required for valve
   1. Cast iron extension sleeve type with boxes and covers
   2. Minimum diameter: 5 inch
   3. Minimum thickness: 3/16 inch
   4. Box, cover, and base coated by dipping in asphalt varnish
   5. An appropriate word designating the valve service on the cover
   6. Series 6850 and 6860 as manufactured by Tyler Union or approved equal

C. Concrete for thrust blocks: Concrete type specified in Section 03001

D. Corporation stops with flared connections and Valves: 3/4” to 2”, , ” Mueller “300 Ball”, A.Y. McDonald Mfg. Co. “Series 4701B”or approved equal

E. Curb Stops with flared connections: 3/4” to 2”, Mueller “300 Ball”, A.Y. McDonald Mfg. Co “Series 6104” or approved equal

F. Curb stop box:
   1. 2-inch and smaller: McDonald “5601L” or approved equal
   2. 4 1/2”, Tyler Series 6850, or approved equal

G. Service saddles: Ductile iron with double stainless steel strap and rubber sealing gasket, max working pressure of 250 psi, Mueller “DR2S”, Romac Industries, Inc. “Style 202N”, or approved equal

H. Tapping sleeves and valves (Use and location as approved by the District):
   1. Tapping Sleeves: Stainless steel body with SST type 304 bolts, as manufactured by Mueller, no substitutions
   2. Tapping valve: Resilient seated gate valve, model “T-2360” as manufactured by Mueller, no substitutions

I. Water Service Marker Post: 8 foot long pressure treated 4 x 4 with exposed length of 4 x 4 spray painted blue
2.10 CORROSION CONTROL

A. Shop paint all ferrous metal surfaces of valves and accessories, both interior and exterior for corrosion protection.

B. Manufacturer's standard paint will be acceptable if it is functionally equivalent and compatible with specified field coatings

C. Exterior coal tar or coal tar epoxy coating for all exterior, all buried ductile iron or steel surfaces: Manufacturer's Standard, 20 mils minimum

D. Ductile-iron Pipe and Fittings Shop lining: Cement-lined, AWWA C104/C205

PART 3 EXECUTION

3.1 EXAMINATION

A. Carefully examine pipe and fittings for cracks, damage to linings, and other defects prior to installation

B. Remove all defective pipe from site and replace

C. Examine areas for weak or structural defects or deviations beyond allowable tolerances for piping clearances that adversely affect excavation and quality of Work

D. Start installation only when conditions are satisfactory

3.2 PREPARATION

A. Ream pipe and tube ends and remove burrs

B. Remove scale and dirt, on inside and outside, before assembly

C. Prepare pipe connections to equipment with flanges or unions

D. Thoroughly inspect and clean interior of fire hydrants. Open and close hydrant to insure parts are in working order, the valves seat properly and the drain valve operates

E. Check packing gland and gland nut of fire hydrant for proper installation

F. Cut and bevel ends of metallic pipe

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 02200 for work of this Section. Do not disturb trench bottom during excavation. Hand trim excavation for accurate placement of pipe to elevations indicated
B. Place bedding material at trench bottom, level fill materials in one continuous layer, of approximately 12 inches

C. Consolidate or compact to 95 percent in accordance with Section 02200

3.4 INSTALLATION - PIPE

A. Install as specified or in accordance with the manufacturer's instructions

B. Cutting Pipe:
   1. Cut pipe to measurement taken at the site, not from the drawings
   2. Cut pipe neatly without damage to pipe or cement lining
   3. Cut smooth, straight, and at right angles to pipe axis
   4. Dress and bevel end of cut pipe to remove roughness and sharp corners
   5. Cut ductile iron pipe with saw or abrasive wheel

C. Provide an isolation or shutoff valve and union at the water connections to each fixture and unit of equipment, whether shown on the drawings or not

D. Maintain separation of water main from storm or sewer lines in accordance with the Colorado Department of Public Health and Environment: 10 feet minimum

E. Group piping with other site piping work whenever practical

F. Install pipe to lines and grades shown on the Drawings to within tolerance of 3 inches. Adjust to maintain minimum depth of bury and maintain minimum grade for drainage and also allow for all air to be released at high points

G. Install ductile iron piping and fittings to AWWA C600

H. Route pipe in straight line

I. Install pipe to allow for expansion and contraction without stressing pipe or joints

J. Install access fittings to permit disinfection of water system performed under Section 02675 subject to approval by the District

K. Slope water pipe and position drain at low points
L. Provide full support of pipe barrel over its entire length

M. Place and tamp bedding under haunches of pipe up to spring line in previously dug bell holes

N. Protect from lateral displacement by placing embedment evenly on both sides of pipe

O. Do not lay pipe in water. Maintain groundwater level a minimum of 12 inches below pipe to be installed. Do not lay pipe under unsuitable weather or trench conditions

P. Lay pipe with bell ends facing the direction of laying except when Engineer authorizes reverse laying

Q. Form and place concrete for thrust blocks at each elbow or change of direction of pipe main

R. Establish elevations of buried piping to ensure not less than 9.0 feet of cover

S. Backfill trench in accordance with Section 02200

T. Install water main marker strip in trench above all water mains

U. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system

### 3.5 INSTALLATION - VALVES AND HYDRANTS

A. Install valves, hydrants, and accessories in accordance with the manufacturer's instructions

B. Set valves on solid bearing

C. Center and plumb valve box over valve. Set box cover flush with finished grade. Evenly fill around box and thoroughly compact on all sides

D. Extend stem to within 6 inches of final grade. Provide spacers to center stem in valve box

E. Set hydrants plumb and locate pumper nozzle perpendicular to roadway

F. Set hydrants to grade, with nozzles at least 18 inches above ground

G. Locate control valve 6 to 8 feet away from hydrant
H. Provide a drainage pit with 1/2 inches washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening. Do not connect drain opening to any sewer

I. Pipe exhaust of air release valves to suitable disposal point

3.6 INSTALLATION – WATER SERVICES

A. Install as specified herein for installation of pipe, and in accordance with standard details

B. Establish elevations of buried water services to ensure not less than 9.0 feet of cover

C. Mark location of each water service corporation stop or isolation valve with 4 x 4. Set 4 x 4 to expose a minimum of 4 feet

3.7 JOINTS

A. Connect piping in accordance with manufacturer’s instructions

B. Install joint conductor for electrical continuity per manufacturer’s instructions: CAD WELD

C. Determine maximum length of pipe that can be used without exceeding allowable deflection at joint, coupling, or fitting

D. Maximum deflection at mechanical couplings per manufacturer instructions

E. Maximum deflection at a joint: Per manufacturer instructions, but not more than 3-1/2 inches except where approved by District

3.8 CONCRETE ENCASEMENT

A. Provide as required by standard Drawings

B. Suitably support and block pipe and anchor against flotation

3.9 CONNECTION TO EXISTING PIPELINES

A. Make connections between new and existing piping with suitable fittings

B. Schedule connection to minimize inconvenience to the District and customers and as authorized by the District

C. Provide facilities for adequate dewatering, dechlorination and disposal of water from dewatered line and excavations without damage to adjacent property
D. Potable water lines:
   1. Take special care to prevent contamination
   2. Do not permit trench water, mud, or other contaminating substances in lines
   3. Thoroughly clean the interior of pipe, fittings and valves and swab with or dip into a 200 mg/l chlorine solution

3.10 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM
A. Flush and disinfect system in accordance with Section 02675

3.11 PROTECTIVE COATING
A. Field coating and touch up of exposed metal surfaces not protected by tape wrap or for surfaces previously coated by manufacturer:
   1. Coat all steel clamp rods, bolts, and other metal accessories used in tapping saddles, anchorages, follower rings and bolts or joint harnesses subject to submergence, buried, or in vaults and not concrete encased, including pipe fittings and bolts in polyethylene tube encasement
   2. Apply 1 coat of coal tar epoxy paint to clean, dry primed metal surfaces. Apply coat and let dry before wrapping in polyethylene encasement
   3. Surface prep and apply touch up coating to all damaged surfaces before wrapping in polyethylene encasement or as directed by the District

3.12 ERECTION TOLERANCES
A. Establish invert elevations, slopes for drainage to 1/4 inch per foot, two percent minimum but never less than 1/8 per inch per foot. Maintain minimum gradients for drainage
B. Slope exposed water piping and install to drain at low points

3.13 FIELD QUALITY CONTROL
A. Field inspection and testing will be performed under provisions of Section 01400
B. Test each line at the Contractor's expense in the presence and to the satisfaction of the District
C. Provide all necessary pumping equipment, piping connections, pressure gauges with maximum of 5 psi increments, and other required equipment, facilities, and materials
D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to the District
E. Wet Tap Test: Test at wet tap location, air test pressure at 180 psi for 15 minutes
F. Hydrostatic Test Conditions: At lowest point in the line or section under test

<table>
<thead>
<tr>
<th>Service</th>
<th>Test Pressure</th>
<th>Test Medium</th>
<th>Pipe System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Supply</td>
<td>250 psi</td>
<td>water</td>
<td>water distribution</td>
</tr>
<tr>
<td></td>
<td>or 1.5 X Working Pressure</td>
<td></td>
<td>and transmission</td>
</tr>
</tbody>
</table>

G. Procedure:
1. Disconnect all fixture devices and other accessories which may be damaged by the specified test pressure
2. Plug or cap ends as required
3. Bleed system to eliminate all air from system
4. No testing before concrete thrust blocks have adequate curing time to reach design strength, 7 days minimum
5. Notify District 48 hours prior to testing
6. Test for 2 hours with no more than 5 psi loss in pressure
7. Structure test so as to test all intermediate valves in tested section, test all line valves by pressurizing upstream to test pressure and relieving downstream pressure, valves must maintain test pressure in each valved pipe line segment, maximum 1000 feet
8. Leakage is the quantity of water added to a test section to maintain test pressure ± 5 psi:
   a. \[ L = \frac{S \times D \times (P)^{0.5}}{133,200} \]
      L = allowable leakage, in gallons per hour
      S = length of pipe tested, in feet
      D = nominal diameter of the pipe, in inches
      P = avg. test pressure during the test, in psi (gauge)
   a. All visible leaks shall be stopped to the satisfaction of the District
   b. All water used for pressure testing must be potable and delivered in acceptable containers
9. All joints located in visible interior or exterior locations shall be watertight and free of leaks
10. Length of pipe in visible interior or exterior locations shall not be included in calculation of allowable leakage quantity
11. Immediately locate and replace all pipe fittings, valves, pipe joints, and other materials found to be defective with new and acceptable material

H. District will only provide water for initial filling and testing of pipeline

I. Contractor will provide water for additional testing. If water is purchased from the District, cost of water is at the standard bulk rate

J. Flush all lines thoroughly before disinfection in accordance with Section 02675
K. When testing against a closed valve connected to an existing potable water system, complete flushing and passing disinfection tests per Section 02675 prior to conducting hydrostatic pressure test

3.14 CLEANING AND DRAINING

A. The inside of all pipe, valves, and fittings shall be smooth, clean, and free from blisters, loose mill scale, sand, and dirt when connected

B. Wire brush, if necessary, wipe clean and keep joint contact surfaces clean until connection is complete

END OF SECTION
SECTION 02675

DISINFECTION OF WATER DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Disinfection of potable water distribution lines
   B. Dechlorination of chlorinated discharge from distribution lines after disinfection
   C. Testing and reporting results

1.2 RELATED SECTIONS
   A. Section 01340—Shop Drawings, Product Data and Samples
   B. Section 01400—Quality Control
   C. Section 01720—Project Record Documents
   D. Section 02667—Site Water Lines

1.3 REFERENCES
   A. ANSI/AWWA B300—Standard for Hypochlorites
   B. ANSI/AWWA C651—Standard for Disinfecting Water Mains
   C. NSF 60—Drinking Water Treatment Chemicals - Health Effects
   D. NSF 61—Drinking Water System Components - Health Effects

1.4 SUBMITTALS
   A. Test Reports: Indicate results comparative to specified requirements
   B. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements
   C. Disinfection method and disposal plan for highly chlorinated water
1.5 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01720

B. Disinfection report; record:
   1. Type and form of disinfectant used
   2. Date and time of disinfectant injection start and time of completion
   3. Test locations
   4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested
   5. Date and time of flushing start and completion
   6. Disinfectant residual after flushing in ppm for each outlet tested

C. Bacteriological report; record:
   1. Date issued, project name, and testing laboratory name, address, and telephone number
   2. Time and date of water sample collection
   3. Name of person collecting samples
   4. Test locations
   5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested
   6. Coliform bacteria test results for each outlet tested
   7. Certification that water conforms, or fails to conform, to bacterial standards of Colorado Department of Public Health and Environment
   8. Bacteriologist's signature and authority

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ANSI/AWWA C651

1.7 QUALIFICATIONS

A. Testing Laboratory: Laboratory specializing in testing potable water systems, certified by the State of Colorado

1.8 REGULATORY REQUIREMENTS

A. Conform to local code or state regulation for performing the work of this Section

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

A. Chemicals: ANSI/AWWA B300, Hypochlorite.
PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that piping system has been cleaned, free of debris and inspected to the satisfaction of the District before filling the pipe with water.

B. Perform scheduling and disinfection activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

C. Complete disinfection before pressure (hydrostatic) testing.

3.2 DISINFECTION AND PRESSURE TESTING

A. Provide and attach required equipment to perform the work of this Section.

B. Prior to starting work, verify system is complete, flushed and clean for proper sanitary conditions.

C. Attach chlorine tablets to the inside top of pipe with an approved adhesive certified to NSF Standard 61 such as Permatres RTV Clear silicon adhesive sealant, or approved equal, prior to pipe installation in the trench.

D. Dosage shall be calculated for a 100 mg/l residual. For calculating the weight of chlorine required see Table 1 below:

Table 1. Minimum number of hypochlorite tablets of 7 strength (5 available chlorine) for a dose of 100 mg/l

<table>
<thead>
<tr>
<th>Length of Pipe Section (Feet)</th>
<th>Pipe Diameter (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>13 or less</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
</tr>
</tbody>
</table>

E.
F. Bleed water from outlets to ensure distribution and test for disinfectant residual

G. Maintain disinfectant in system for 24 hours

H. If final disinfectant residual tests less than 25 mg/l, repeat treatment

I. Flush, circulate and clean until residual equal to that of incoming water or 0.5 mg/l is achieved; use municipal domestic water provided by the District

J. Take samples no sooner than 24 hours after flushing, from outlets and from water entry, and analyze

K. Replace permanent system devices removed for disinfection

L. One sample per 1000 feet of pipe, one sample per pipe line branch, and one sample of source water. Contractor to provide sampling corps and piping as required to obtain samples

M. Failing bacteriological test:
   1. Contractor to flush pipeline and resample
   2. If second test fails, Contractor to rechlorinate line by continuous feed, per AWWA C651, Section 5. Pipeline to be refushed and retested

N. Dispose of highly chlorinated test water by dechlorination or other methods in a safe manner and in conformance with the District and National Discharge Elimination System Permit. Submit proposed disposal plan to District for review and approval

O. Pressure test system under provisions of Section 02667. Repair leaks and retest for disinfection

3.3 QUALITY CONTROL

A. Pay all costs for bacteriological tests and analysis of treated water except where indicated otherwise

B. Meter water usage and pay all costs for all retesting in accordance with current District rates

END OF SECTION
SECTION 02732
SITE SANITARY SEWERAGE SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Sanitary sewerage piping, fittings, accessories and bedding
   B. Connection of building sanitary system to District collection system
   C. Cleanout access, and accessories

1.2 RELATED SECTIONS
   A. Section 01340—Shop Drawings, Product Data and Samples
   B. Section 01400—Quality Control
   C. Section 01720—Project Record Documents
   D. Section 02200—Earthwork
   E. Section 02607—Manholes and Covers
   F. Section 03001—Concrete
   G. Section 03600—Grout

1.3 REFERENCES
   A. ASTM D698—Laboratory Compaction Characteristics of Soil Using Standard Effort
      (12,400 ft-lbf/ft^3 (600 kN-m/m^3)
   B. ASTM D1784—Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated
      Poly(Vinyl Chloride) (CPVC) Compounds
   C. ASTM D2321—Underground Installation of Thermoplastic Pipe for Sewers and Other
      Gravity-Flow Applications
   D. ASTM D3034—Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
      ASTM D3212—Joints for Drain and Sewer Plastic Pipes Using Flexible
      Elastomeric Seals
E. ASTM D6938—In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

F. ASTM F477—Elastomeric Seals (Gaskets) for Joining Plastic Pipe

G. ASTM F679—Polyvinyl Chloride (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings

1.4 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations

1.5 SUBMITTALS

A. Submit under provisions of Section 01340

B. Product Data: Provide data indicating pipe, pipe accessories, and standard dimensions

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements

1.6 PROJECT RECORD DOCUMENTS

A. Submit documents under provisions of Section 01720

B. Accurately record location of pipe, pipe fittings, connections, cleanouts, invert elevations and coordinates at each pipe run entrance and exit including all manholes. Horizontal and vertical as-built elevations are required for all pipe joints. Vertical tolerance: ½ inch; horizontal tolerance: 6 inch

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities

1.7 REGULATORY REQUIREMENTS

A. Conform to Copper Mountain Consolidated Metro District Rules and Regulations for materials and installation of the Work of this section

1.8 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated
1.9 COORDINATION

A. Coordinate the Work with termination of sanitary sewer connection outside building, connection to District sewer utility service with the Copper Mountain Consolidated Metro District

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. J-M Manufacturing Company Inc.

B. Certainteed Corporation

C. Or approved equal

2.2 MATERIALS

A. Sanitary sewer pipe and fittings, large diameter PVC:
   1. 18 through 48 inch, ASTM F679, T-1 Wall, SDR 35
   2. Cell classification: ASTM D1784
      a. Pipe: 12364
      b. Fittings: 12454
   3. Pipe length: 14 or 20 feet standard manufactured length for construction

B. Sanitary sewer pipe and fittings:
   1. 4 through 15 inch, ASTM D3034, SDR35/SDR26, as specified on Drawings
   2. Cell classification: ASTM D1784, 12454
   3. Pipe length: 14 or 20 feet standard manufactured length for construction

C. Site drainage pipe and fittings:
   1. 6 through 15 inch, ASTM D3034, SDR 26
   2. Cell classification: ASTM D1784, 12454
   3. Pipe length: 14 to 20 feet standard manufactured length for construction

D. Joints:
   1. Integral bell, ball-and-spigot rubber gasketed joint, ASTM D3212 and F477
   2. Internally cast bell with one sealing ring
   3. Designed to hold pipe in alignment, provide flexibility, separate the ends of pipe lengths, resist applied earth pressures, and provide fluid tightness
   4. Rubber rings: ASTM D3212 and F477
2.3 CLEANOUTS
   A. Lid and Frame—Cast iron construction, hinged lid:
      1. Lid Design: Open checkerboard grill
      2. Nominal Lid and Frame Size: 26 inches

2.4 BEDDING MATERIALS
   A. Bedding: Provide bedding as specified in Section 02200

2.5 ACCESSORIES
   A. Sewer Service Marker Post: 8 foot long pressure treated 4 x 4 with exposed length of 4 x 4 spray painted green
   B. Rebar: #4 rebar from end of service to 1 foot below finished grade

2.6 SOURCE QUALITY CONTROL
   A. Identification Marks: Clearly and permanently marked at not greater than 5 foot intervals with pipe diameter, PVC cell classification, manufacturer, plant, shift, ASTM, SDR (SCHD)
   B. Testing per ASTM D3034:
      1. Test products not manufactured in the U.S. at an acceptable laboratory in the U.S.

PART 3 EXECUTION

3.1 EXAMINATION
   A. Examine pipe and fittings and do not use individual sections containing cracks, dents, abrasions, and other defects. Remove defective material from the site
   B. Mark rejected pipe and remove from the site
   C. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings

3.2 PREPARATION
   A. Hand trim excavations to required elevations. Correct over excavation with coarse aggregate
   B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction
   C. Cutting:
1. Cut and bevel ends in accordance with manufacturer's standard instructions
2. Machine cut ends smooth and square to proper dimensions
3. Do not cut with a cold chisel, iron pipe cutter, or any other method that may fracture the pipe or leave ragged, uneven edges
4. Remove burrs and wipe off all dust and dirt from jointing surfaces

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 02200 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated
B. Place minimum of 4 inches of bedding material at trench bottom, level and consolidate materials in accordance with Section 02200

3.4 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Seal joints watertight
B. Inspect pipe and accessories for defects before lowering into trench. Replace all defective, damaged or unsound pipe
C. Remove all dirt and foreign material from the inside of pipe before laying
D. Check bedding for firmness and uniformity of surface immediately before laying each section of pipe
E. Carefully lower pipe, fittings, valves, and accessories into the trench with derricks, ropes, and other suitable equipment to prevent damage
F. Do not dump or drop pipe or accessories into trench
G. Lay pipe to slope gradients noted on drawings:
   1. Closely joint to form a smooth flow line
H. Provide full support of pipe barrel over its entire length
I. Place and tamp bedding under haunches of pipe up to spring line in previously dug bell holes
J. Install bedding at sides and over top of pipe to minimum compacted thickness of 12 inches compacted to 95 percent
K. Utilize implements, tools, and facilities per manufacturer instructions

L. Keep pipe clean during and after laying

M. Close all open ends with watertight expandable type sewer plugs or test plugs

N. Remove and relay any pipe which has floated

O. Do not lay pipe when:
   1. There is water in the trench
   2. Trench conditions are unsuitable
   3. Weather conditions are unsuitable

P. Use acceptable adaptors at manhole and structure connections to provide a watertight seal and flexibility; provide a short length of pipe outside each connection

Q. Refer to Section 02200 for trenching requirements. Do not displace or damage pipe when compacting

R. Refer to Section 02607 for manhole requirements

S. Connect to building sanitary sewer outlet and District sewer system

3.5 INSTALLATION – SEWER SERVICES

A. Install as specified herein for installation of pipe and in accordance with standard details

B. Securely cap end of each sewer service air-tight

C. Mark location of end of each sewer service with #4 rebar and 4 x 4. Set 4 x 4 to expose a minimum of 4 feet

3.6 JOINTING

A. Assemble in accordance with the manufacturer's instructions

B. Wipe clean pipe ends, gasket and gasket groove before inserting gasket

C. Apply lubricant furnished by the pipe manufacturer to the gasket and the outside of the spigot end

D. Utilize assembly tool per manufacturer instructions to center the sleeve over the spigot end

E. Insert the spigot end to the reference mark
F. Check gasket location after assembly with a suitable gage:
   1. Gasket locations to be the distance from the sleeve and recommended by the
coupling manufacturer for their full circumference
   2. If not within the required limits, disassemble and reassemble the joint

3.7 FITTINGS
A. Install utilizing standard methods
B. Lower into trench with rope, cable, chain, or other means to prevent damage
C. Attach rope, cable or chain around the exterior
D. Do not attach rope, cable, or chain through the interior
E. Carefully connect to pipe or other facility
F. Check joint to insure a sound and proper joint

3.8 INSTALLATION - CLEANOUTS
A. Form bottom of excavation clean and smooth to correct elevation
B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe
   end sections
C. Establish elevations and pipe inverts for inlets and outlets as indicated
D. Mount lid and frame level in grout, secured to top cone section to elevation indicated

3.9 FIELD QUALITY CONTROL
A. Field inspection and testing will be performed under provisions of Section 01400
B. Request inspection prior to and immediately after placing bedding
C. Compaction testing will be performed in accordance with ANSI/ASTM D698, ASTM
   D6938
D. If tests indicate Work does not meet specified requirements, remove Work, replace and
   retest at no cost to the District
E. Air test:
1. Perform an air test on each reach of sewer or drain pipe between manholes:
   a. Test the first reach prior to installing any of the remaining pipe
   b. Provide all necessary piping between the reach to be tested together with all required materials and equipment
   c. Methods used, scheduling, and duration of tests shall be acceptable to Engineer
   d. Low pressure air testing 100 percent of system:
      1) Submit complete information to Engineer for review describing the proposed test method of water exfiltration testing manholes before beginning air testing
      2) Preparation for tests: Flush and clean the sewer line prior to testing in order to wet the pipe surfaces and produce more consistent results. Plug and brace all openings in the main sewer line and the upper connections. Check all pipe plugs with a soap solution to detect any air leakage. If leaks are found, release the air pressure, eliminate the leaks and start the test procedure over again
      3) Procedure of test: Add air until the internal pressure of the sewer line is raised to approximately 4.0 psi gage at which time the flow of air shall be reduced and the pressure maintained between 3.5 and 4.5 psi gage for a sufficient time to allow the air temperature to come to equilibrium with the temperature of the pipe
      4) After the temperature has stabilized, permit the pressure to drop to 3.5 psi gage in excess of the ground water pressure above the top of the sewer, at which time a stop watch or a sweep second hand watch shall be used to determine the time lapse required for the air pressure to drop to 3.0 psi gage
      5) The time elapsed shall not be less than the following:

<table>
<thead>
<tr>
<th>Pipe size (Inches)</th>
<th>Time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 through 15</td>
<td>2.67 x length of pipe in ft.</td>
</tr>
<tr>
<td>18 through 24</td>
<td>6.84 x length of pipe in ft.</td>
</tr>
</tbody>
</table>

6) Brace all plugs sufficiently to prevent blowouts and vent the pipeline completely before attempting to remove the plugs
7) Provide pressurizing equipment with a relief valve set at 5 psi to avoid over pressurizing and damaging an otherwise acceptable line
8) Conduct exfiltration tests on each manhole, leakage as per exfiltration allowable leakage for manhole

E. Smoke tests to detect leaks if exfiltration or air tests fail to meet specified limits
f. Manholes and pipe lines shall not have any visible leaks or damp spots

g. Repair and retest lines that fail tests until satisfactory results are obtained

F. Lamp Test:
   1. Each section between manholes will be lamped by the District
   2. Contractor shall furnish suitable assistants to help the District
   3. A minimum of 95 percent of a true circle will be required in the lamp tests to indicate a properly constructed sewer line
   4. Repair any sections not passing the lamp test

G. Infiltration Test:
   1. At any time prior to expiration of the correction period, infiltration exceeds 50 gallons per inch of nominal diameter per mile per day, locate the leaks and make repairs
   2. If results of infiltration test are not acceptable, perform TV inspection of the reach in question at the discretion of the District

H. Pipe Deflection test:
   1. If results of lamp test are not acceptable, perform pipe deflection test at the discretion of the District
   2. No sooner than 30 days after placement and compaction of backfill, but prior to placement of permanent surface materials, clean and mandrel each line to detect obstructions (deflections, joint offsets, lateral pipe intrusions, etc.)
   3. Use a rigid mandrel with diameter of at least 95 percent of the pipe's specified average inside diameter and a length of the mandrel circular portion at least equal to the nominal pipe diameter
   4. Maximum allowable deflection is 5 percent of the base internal diameter
   5. Pull the mandrel through the pipe by hand
   6. Relay or replace all pipe exceeding the 5 percent deflection at no additional cost to the District
   7. Retest repaired sections
   8. Maximum allowable deflection at end of one year correction period, 7-1/2 percent of the base internal diameter tested in the same manner. Uncover and repair sections exceeding the allowable deflection

END OF SECTION
SECTION 02732
SITE SANITARY SEWERAGE SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sanitary sewerage piping, fittings, accessories and bedding
B. Connection of building sanitary system to District collection system
C. Cleanout access, and accessories

1.2 RELATED SECTIONS

A. Section 01340—Shop Drawings, Product Data and Samples
B. Section 01400—Quality Control
C. Section 01720—Project Record Documents
D. Section 02200—Earthwork
E. Section 02607—Manholes and Covers
F. Section 03001—Concrete
G. Section 03600—Grout

1.3 REFERENCES

A. ASTM D698—Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))
B. ASTM D1784—Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
C. ASTM D2321—Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
D. ASTM D3034—Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
   ASTM D3212—Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
E. ASTM D6938—In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

F. ASTM F477—Elastomeric Seals (Gaskets) for Joining Plastic Pipe

G. ASTM F679—Polyvinyl Chloride (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings

1.4 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations

1.5 SUBMITTALS

A. Submit under provisions of Section 01340

B. Product Data: Provide data indicating pipe, pipe accessories, and standard dimensions

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements

1.6 PROJECT RECORD DOCUMENTS

A. Submit documents under provisions of Section 01720

B. Accurately record location of pipe, pipe fittings, connections, cleanouts, invert elevations and coordinates at each pipe run entrance and exit including all manholes. Horizontal and vertical as-built elevations are required for all pipe joints. Vertical tolerance: ½ inch; horizontal tolerance: 6 inch

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities

1.7 REGULATORY REQUIREMENTS

A. Conform to Copper Mountain Consolidated Metro District Rules and Regulations for materials and installation of the Work of this section

1.8 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated
1.9 COORDINATION

A. Coordinate the Work with termination of sanitary sewer connection outside building, connection to District sewer utility service with the Copper Mountain Consolidated Metro District

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. J-M Manufacturing Company Inc.

B. Certainteed Corporation

C. Or approved equal

2.2 MATERIALS

A. Sanitary sewer pipe and fittings, large diameter PVC:
   1. 18 through 48 inch, ASTM F679, T-1 Wall, SDR 35
   2. Cell classification: ASTM D1784
      a. Pipe: 12364
      b. Fittings: 12454
   3. Pipe length: 14 or 20 feet standard manufactured length for construction

B. Sanitary sewer pipe and fittings:
   1. 4 through 15 inch, ASTM D3034, SDR35/SDR26, as specified on Drawings
   2. Cell classification: ASTM D1784, 12454
   3. Pipe length: 14 or 20 feet standard manufactured length for construction

C. Site drainage pipe and fittings:
   1. 6 through 15 inch, ASTM D3034, SDR 26
   2. Cell classification: ASTM D1784, 12454
   3. Pipe length: 14 to 20 feet standard manufactured length for construction

D. Joints:
   1. Integral bell, ball-and-spigot rubber gasketed joint, ASTM D3212 and F477
   2. Internally cast bell with one sealing ring
   3. Designed to hold pipe in alignment, provide flexibility, separate the ends of pipe lengths, resist applied earth pressures, and provide fluid tightness
   4. Rubber rings: ASTM D3212 and F477
2.3 CLEANOUTS

A. Lid and Frame—Cast iron construction, hinged lid:
   1. Lid Design: Open checkerboard grill
   2. Nominal Lid and Frame Size: 26 inches

2.4 BEDDING MATERIALS

A. Bedding: Provide bedding as specified in Section 02200

2.5 ACCESSORIES

A. Sewer Service Marker Post: 8 foot long pressure treated 4 x 4 with exposed length of 4 x 4 spray painted green

B. Rebar: #4 rebar from end of service to 1 foot below finished grade

2.6 SOURCE QUALITY CONTROL

A. Identification Marks: Clearly and permanently marked at not greater than 5 foot intervals with pipe diameter, PVC cell classification, manufacturer, plant, shift, ASTM, SDR (SCHD)

B. Testing per ASTM D3034:
   1. Test products not manufactured in the U.S. at an acceptable laboratory in the U.S.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine pipe and fittings and do not use individual sections containing cracks, dents, abrasions, and other defects. Remove defective material from the site

B. Mark rejected pipe and remove from the site

C. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with coarse aggregate

B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction

C. Cutting:
1. Cut and bevel ends in accordance with manufacturer's standard instructions
2. Machine cut ends smooth and square to proper dimensions
3. Do not cut with a cold chisel, iron pipe cutter, or any other method that may fracture the pipe or leave ragged, uneven edges
4. Remove burrs and wipe off all dust and dirt from jointing surfaces

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 02200 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated

B. Place minimum of 4 inches of bedding material at trench bottom, level and consolidate materials in accordance with Section 02200

3.4 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Seal joints watertight

B. Inspect pipe and accessories for defects before lowering into trench. Replace all defective, damaged or unsound pipe

C. Remove all dirt and foreign material from the inside of pipe before laying

D. Check bedding for firmness and uniformity of surface immediately before laying each section of pipe

E. Carefully lower pipe, fittings, valves, and accessories into the trench with derricks, ropes, and other suitable equipment to prevent damage

F. Do not dump or drop pipe or accessories into trench

G. Lay pipe to slope gradients noted on drawings:
   1. Closely joint to form a smooth flow line

H. Provide full support of pipe barrel over its entire length

I. Place and tamp bedding under haunches of pipe up to spring line in previously dug bell holes

J. Install bedding at sides and over top of pipe to minimum compacted thickness of 12 inches compacted to 95 percent
K. Utilize implements, tools, and facilities per manufacturer instructions

L. Keep pipe clean during and after laying

M. Close all open ends with watertight expandable type sewer plugs or test plugs

N. Remove and relay any pipe which has floated

O. Do not lay pipe when:
   1. There is water in the trench
   2. Trench conditions are unsuitable
   3. Weather conditions are unsuitable

P. Use acceptable adaptors at manhole and structure connections to provide a watertight seal and flexibility; provide a short length of pipe outside each connection

Q. Refer to Section 02200 for trenching requirements. Do not displace or damage pipe when compacting

R. Refer to Section 02607 for manhole requirements

S. Connect to building sanitary sewer outlet and District sewer system

3.5 INSTALLATION – SEWER SERVICES

A. Install as specified herein for installation of pipe and in accordance with standard details

B. Securely cap end of each sewer service air-tight

C. Mark location of end of each sewer service with #4 rebar and 4 x 4. Set 4 x 4 to expose a minimum of 4 feet

3.6 JOINTING

A. Assemble in accordance with the manufacturer's instructions

B. Wipe clean pipe ends, gasket and gasket groove before inserting gasket

C. Apply lubricant furnished by the pipe manufacturer to the gasket and the outside of the spigot end

D. Utilize assembly tool per manufacturer instructions to center the sleeve over the spigot end

E. Insert the spigot end to the reference mark
F. Check gasket location after assembly with a suitable gage:
   1. Gasket locations to be the distance from the sleeve and recommended by the coupling manufacturer for their full circumference
   2. If not within the required limits, disassemble and reassemble the joint

3.7 FITTINGS
A. Install utilizing standard methods
B. Lower into trench with rope, cable, chain, or other means to prevent damage
C. Attach rope, cable or chain around the exterior
D. Do not attach rope, cable, or chain through the interior
E. Carefully connect to pipe or other facility
F. Check joint to insure a sound and proper joint

3.8 INSTALLATION - CLEANOUTS
A. Form bottom of excavation clean and smooth to correct elevation
B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections
C. Establish elevations and pipe inverts for inlets and outlets as indicated
D. Mount lid and frame level in grout, secured to top cone section to elevation indicated

3.9 FIELD QUALITY CONTROL
A. Field inspection and testing will be performed under provisions of Section 01400
B. Request inspection prior to and immediately after placing bedding
C. Compaction testing will be performed in accordance with ANSI/ASTM D698, ASTM D6938
D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to the District
E. Air test:

1. Perform an air test on each reach of sewer or drain pipe between manholes:
   a. Test the first reach prior to installing any of the remaining pipe
   b. Provide all necessary piping between the reach to be tested together with all required materials and equipment
   c. Methods used, scheduling, and duration of tests shall be acceptable to Engineer
   d. Low pressure air testing 100 percent of system:
      1) Submit complete information to Engineer for review describing the proposed test method of water exfiltration testing manholes before beginning air testing
      2) Preparation for tests: Flush and clean the sewer line prior to testing in order to wet the pipe surfaces and produce more consistent results. Plug and brace all openings in the main sewer line and the upper connections. Check all pipe plugs with a soap solution to detect any air leakage. If leaks are found, release the air pressure, eliminate the leaks and start the test procedure over again
      3) Procedure of test: Add air until the internal pressure of the sewer line is raised to approximately 4.0 psi gage at which time the flow of air shall be reduced and the pressure maintained between 3.5 and 4.5 psi gage for a sufficient time to allow the air temperature to come to equilibrium with the temperature of the pipe
      4) After the temperature has stabilized, permit the pressure to drop to 3.5 psi gage in excess of the ground water pressure above the top of the sewer, at which time a stop watch or a sweep second hand watch shall be used to determine the time lapse required for the air pressure to drop to 3.0 psi gage
      5) The time elapsed shall not be less than the following:

<table>
<thead>
<tr>
<th>Pipe size (Inches)</th>
<th>Time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 through 15</td>
<td>2.67 x length of pipe in ft.</td>
</tr>
<tr>
<td>18 through 24</td>
<td>6.84 x length of pipe in ft.</td>
</tr>
</tbody>
</table>

6) Brace all plugs sufficiently to prevent blowouts and vent the pipeline completely before attempting to remove the plugs
7) Provide pressurizing equipment with a relief valve set at 5 psi to avoid over pressurizing and damaging an otherwise acceptable line
8) Conduct exfiltration tests on each manhole, leakage as per exfiltration allowable leakage for manhole

e. Conduct smoke tests to detect leaks if exfiltration or air tests fail to meet specified limits
f. Manholes and pipe lines shall not have any visible leaks or damp spots

g. Repair and retest lines that fail tests until satisfactory results are obtained

F. Lamp Test:
1. Each section between manholes will be lamped by the District
2. Contractor shall furnish suitable assistants to help the District
3. A minimum of 95 percent of a true circle will be required in the lamp tests to indicate a properly constructed sewer line
4. Repair any sections not passing the lamp test

G. Infiltration Test:
1. At any time prior to expiration of the correction period, infiltration exceeds 50 gallons per inch of nominal diameter per mile per day, locate the leaks and make repairs
2. If results of infiltration test are not acceptable, perform TV inspection of the reach in question at the discretion of the District

H. Pipe Deflection test:
1. If results of lamp test are not acceptable, perform pipe deflection test at the discretion of the District
2. No sooner than 30 days after placement and compaction of backfill, but prior to placement of permanent surface materials, clean and mandrel each line to detect obstructions (deflections, joint offsets, lateral pipe intrusions, etc.)
3. Use a rigid mandrel with diameter of at least 95 percent of the pipe's specified average inside diameter and a length of the mandrel circular portion at least equal to the nominal pipe diameter
4. Maximum allowable deflection is 5 percent of the base internal diameter
5. Pull the mandrel through the pipe by hand
6. Relay or replace all pipe exceeding the 5 percent deflection at no additional cost to the District
7. Retest repaired sections
8. Maximum allowable deflection at end of one year correction period, 7-1/2 percent of the base internal diameter tested in the same manner. Uncover and repair sections exceeding the allowable deflection

END OF SECTION
SECTION 02936
SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Soil preparation
B. Seeding, mulching and fertilizer
C. Erosion control barriers
D. Seed protection and slope stabilization
E. Maintenance

1.2 RELATED SECTIONS
A. Section 01340—Shop Drawings, Product Data and Samples
B. Section 02200—Earthwork

1.3 REFERENCES
A. FS O-F-241—Fertilizers, Mixed, Commercial
B. American Association of Nurserymen—Standardized Plant Names

1.4 DEFINITIONS

1.5 SUBMITTALS
A. Submit under provisions of Section 01340
B. Product Data: Live Seed analyses for grass mixtures not more than 9 months old including percent of live seed, germination, all crop seeds in excess of 1 percent, inerts and weeds
1.6 QUALITY ASSURANCE

A. Provide seed mixture in tagged containers showing percentage of each seed species in the mix, year of production, net weight, date of packaging, and location of packaging

B. Provide a certificate of the PLS test of the grass seed intended for the project

C. Provide a copy of the analysis of the mulch to the District prior to application

D. Provide certification from suppliers that laboratory and field testing of hydro mulch product meets all of the requirements pertaining to wood cellulose fiber mulch

1.7 QUALIFICATIONS

A. Applicator—Company specializing in performing work of this section:
   1. Experienced with type, elevation, topography and scale of work specified
   2. Adequate equipment and personnel to perform work

1.8 REGULATORY REQUIREMENTS

A. Comply with codes and ordinances of local regulatory agencies for fertilizer and herbicide composition and regulations of State of Colorado

B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01610

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not prepare or seed frozen soils

B. Do not water saturated soils

C. Perform seeding and planting only after preceding work establishing final ground surface is completed

D. Do not mulch over seeded areas when wind exceeds 15 mph

E. Conduct minimum of two (2) soil tests to confirm fertilizer type and application rates
1.11 MAINTENANCE SERVICE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition

B. Manage irrigation applications to insure proper seed germination and growth of the grass

1.12 WARRANTY

A. All plant material and work accomplished under this section shall be guaranteed to provide a uniform stand of grass acceptable to the District at the end of a one (1) year time period from the completion of the Seeding and Erosion Control work

PART 2 PRODUCTS

2.1 SEED SUPPLIERS

A. Suppliers:
   1. Arkansas Valley Seed Company
   2. Or approved substitution

2.2 RECLAMATION MIXTURE

A. Mountain Mix—Adapted to higher elevations, mountain pasture and meadows as well as soil stabilization for ski slopes and construction sites:
   1. Cereal Rye: 20%
   2. Perennial Rye: 20%
   3. Kentucky Bluegrass: 19%
   4. Mountain Brome: 15%
   5. Orchardgrass: 15%
   6. Timothy: 10%
   7. Manchar Smooth Brome: 10%
   8. Alsike Clover: 1%

B. Dryland Pasture Mix—Elevations of 3,000 to 10,000 feet, drought tolerant grasses. For areas not receiving regular irrigation:

   1. Lincoln Smooth Brome: 20%
   2. Oahe Intermediate Wheat grass: 20%
   3. Dahurian Wildrye: 15%
   4. Paiute Orchardgrass: 15%
   5. Tetraploid Perennial Ryegrass: 10%
   6. Hycrest Crested Wheatgrass: 10%
   7. Revenue Slender Wheatgrass: 10%

   b. Broadcast: 20 to 25 lbs/acre

   a. Drilled: 15 to 20 lbs/acre

   Seeding Rate:
a. Drilled: 15 to 20 lbs/acre
b. Broadcast: 20 to 25 lbs/acre

C. Compensate for percentage of purity and germination by furnishing sufficient additional seed to equal the specified pure live seed product. The formula for determining the quantity of pure live seed (PLS) shall be:

\[
\text{Pounds of Seed (Bulk) X Purity X Germination} = \\
\text{Pounds of Pure Live Seed (PLS)}
\]

2.3 SOIL ADDITIVES (FERTILIZER)

A. Mycorrhizal Inoculum:
   1. Arbuscular Micorrhizal Inculum, AM 120 as supplied by Reforestation Technologies International (800-784-4769) or approved equal

2.4 MULCH

A. Where required by the Contract Documents, Provide mulching material consisting of weed free grass hay. Hay in a state of advanced decomposition will not be approved

B. Do not use hay that is musty, moldy, decayed, caked or of otherwise low quality. At least 75% of the mulch by weight shall be ten (10) inches or more in length

2.5 HYDRO MULCH

A. Provide wood cellulose fiber for hydro mulching without any substance or factor which might inhibit germination or growth of grass seed

B. Dye the fiber an appropriate color to allow metering of its application

C. Wood cellulose fibers: Evenly dispersed and suspended when agitated in water and form a blotter-like ground cover when sprayed uniformly on the surface of the soil, readily absorbs water and allows infiltration to the underlying soil

D. Weight specifications from suppliers, and for all applications: Refer only to air dry weight of the fiber, a standard equivalent to ten (10%) percent moisture content

E. Supply mulch material in packages having a gross weight not in excess of one-hundred (100) pounds, and marked by the manufacturer to show the air dry weight content

F. Provide Mat-Blend mulch as manufactured by Mat Inc. or approved equal

2.6 TOPSOIL
A. Select onsite topsoil: Earth material of loose friable loam reasonably free of admixtures of subsoil, refuse stumps, roots, rocks, brush, weeds or other material which can be detrimental to the proper development of site revegetation

2.7 ACCESSORIES

A. Provide erosion control barriers in accordance with Section 02200

B. Straw bales used for erosion control barriers: Wire or string wound and less than one year old. Do not use bales in an advanced state of deterioration regardless of age

C. Stakes for erosion control bales: No. 4 reinforcing steel or 2-inch x 2-inch wood stakes

D. Erosion Control Fabric: Provide in accordance with Section 02200

E. Silt Fence: Provide in accordance with Section 02200

F. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass

PART 3 EXECUTION

3.1 GENERAL

A. Seed all areas disturbed by construction

B. Pattern for seeding and mulching, and fertilization as required by field conditions. In no case shall revegetation occur within 30 days of the application of a chemical weed control substance

3.2 SOIL PREPARATION

A. Harrow and scarify soil to a depth of 4 inches by mechanical and hand methods in order to establish a uniform and acceptable seed bed surface. Areas that have been eroded or rutted to a degree will require the placement of topsoil, graded and compacted to a uniform and acceptable seed bed surface

B. Uniformly place and spread topsoil removed during grubbing. Provide minimum thickness of 2-inches above the surrounding finished grade. Key topsoil to the underlying and surrounding material by the use of harrows, rollers or other equipment suitable for the purpose
C. Apply water to the topsoil for compaction purposes in a fine spray by nozzles in such a manner that it will not wash or erode the newly placed soil

D. Exercise care during soil preparation on all embankments so as not to disturb established ground cover. Areas disturbed during the soil preparation will be fertilized, seeded and mulched at the discretion of the District in accordance with these documents

3.3 FERTILIZATION

A. Application Rates: 60 pounds per acre or 1.4 pounds per square foot

B. Apply to all disturbed soil reclamation areas

C. Application Methods:
   1. Broadcast and till: Evenly distribute across seedbed after seed application. Cover exposed seed and inoculum by hand raking and/or application of an organic top dressing. Do not leave inoculum exposed to sunlight for more than four hours
   2. Seed drilling: Incorporate into soil at a depth range at or below the seed. Apply either as soil is tilled for final time prior to smoothing seedbed or immediately before drilling of seed commences. Do not leave inoculum exposed to sunlight for more than four hours
   3. Hydroseeding: Apply in a first pass with seed. A second pass with hydromulch to cover exposed seed and inoculum is recommended

D. Do not proceed with fertilization in adverse weather and unsuitable ground conditions. Examples of these respective conditions may be wind, precipitation, frozen and untillable ground or conditions detrimental to the effectiveness of the application

E. Apply fertilizer in a manner to assure uniform distribution

F. In cases where work progress is stopped due to the above conditions, fertilization will begin again, when appropriate conditions exist. The application will begin again with a reasonable overlapping of the previously applied area

3.4 SEEDING

A. All seeding shall be installed by the drilling method

B. Do not proceed with seeding in adverse weather and unsuitable ground conditions. Examples of these respective conditions may be wind, precipitation, frozen or untillable ground or conditions detrimental to the effectiveness of the application. All seeding shall be performed between April 1st and October 1st, of the calendar year of construction.
3.5 DRILLING

A. Accomplish seeding by means of an approved power drawn drill, followed by drag chains. The grass drill should be equipped with a satisfactory feeding mechanism, agitation, and double disk furrow openers. Equip drills with depth bands set to maintain a planting depth of approximately 1/2 inch and shall be set to space rows not more than 7 inches apart.

B. If inspections indicate that strips wider than the specified space between the rows planted have been left or other areas skipped, the District will require immediate resowing of seed in such areas at the Contractor’s expense. The seeding mixture shown in the Materials Section applies at a pure live seed rate per acre.

3.6 HAND SEEDING (AS APPROVED BY THE DISTRICT FOR AREAS INACCESSIBLE FOR DRILLING)

A. In certain areas where access is limited, seeding may be accomplished by hand broadcasting seed over the area. Special care shall be taken to assure the proper seeding rate is used on these areas. After broadcasting of the seed has been accomplished, the seed shall be raked into the soil to a depth of 1/4” to 3/4” and rolled. The seeding mixture shown in the Materials Section applies at twice the pure live seed (PSL) rate per acre.

3.7 MULCHING

A. Mulch and or hydro mulch will be applied to areas seeded. All other areas are to be mulched by mechanical or hand methods depending on the accessibility of equipment. All new seeded areas, except areas to be hydro mulched, shall be mulched and crimped within 24 hours after seeding. Areas not mulched and crimped within 24 hours after seeding will be reseeded in accordance with the specified seed mix at the Contractor’s expense prior to mulching and crimping.

B. Hydro mulch is required for all areas with a slope equal to or greater than 4:1.

C. Apply a uniform layer of straw mulch to newly seeded areas at the rate of 2 tons per acre, crimped with a crimper or other approved methods, or a uniform slurry mixture of cellulose fiber mulch if seeded hydraulically.

D. Do not hydraulic mulch in the presence of free surface water. Apply wood cellulose fiber mulch at the rate of 1,800 pounds per acre.

3.8 AREAS TO BE RESEEDED

A. Reseed all areas that are damaged or disturbed by the Contractor’s activities and construction staging area according to these Specifications.
3.9 MAINTENANCE

A. Fertilize the seeded areas once a uniform stand of grass has been established

B. Maintain seeded areas until there is an acceptable uniform plant growth. Reseed areas that are not producing a uniform plant growth within five (5) weeks following seeding. Acceptable uniform plant growth shall be defined as that time when the scattered bare spots, not greater than 1 square foot in area, do not exceed three (3%) of the seeded area

C. Areas that are seeded late in the fall planting season which are not producing acceptable uniform plant growth, as described above, shall be reseeded during the following spring planting season. If such a condition exists, and the Contractor has diligently, in the opinion of the District, pursued the performance of his work, the District at his option, may extend the contract completion date and reduce contract retainage. Retainage may be reduced to less than five (5%) percent of the total contract amount, but shall be at least two (2) times the estimated cost of obtaining the required growth in the indicated areas, plus areas which are susceptible to damage by winter kill, washout or other causes

3.10 STRAW BALE EROSION CONTROL BARRIERS AND SILT FENCE

A. Install straw bale erosion control barriers and silt fence in accordance with Section 02200

3.11 SEED PROTECTION AND SLOPE STABILIZATION

A. Cover seeded slopes with erosion control fabric in accordance with Section 02200

END OF SECTION
SECTION 03001

CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cast-in-place concrete, concrete encasement
B. Reinforcing steel
C. Forms
D. Concrete accessories

1.2 RELATED SECTIONS

A. Section 01340—Shop Drawings, Product Data and Samples
B. Section 01400—Quality Control
C. Section 02607—Manholes and Covers
D. Section 02667—Site Water Lines
E. Section 03600—Grout

1.3 REFERENCES

A. ACI 214—Recommended Practice for Evaluation of Strength Test Results of Concrete
B. ACI 301—Specifications for Structural Concrete
C. ACI 304—Measuring, Mixing, Transporting and Placing Concrete
D. ACI 305.1—Standard Specification for Hot Weather Concreting
E. ACI 305R—Guide to Hot Weather Concreting
F. ACI 306.1—Standard Specification for Cold Weather Concreting
G. ACI 306R—Guide to Cold Weather Concreting
H. ACI 308—Standard Practice for Curing Concrete
I. ACI 318—Building Code Requirements for Structural Concrete
J. ACI 347—Guide to Formwork for Concrete
K. ASTM A82—Steel Wire, Plain, for Concrete Reinforcement
L. ASTM A615—Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
M. ASTM A185—Steel Welded Wire Reinforcement, Plain, for Concrete
N. ASTM C31—Making and Curing Concrete Test Specimens in the Field
O. ASTM C39—Compressive Strength of Cylindrical Concrete Specimens
P. ASTM C143—Slump of Hydraulic Cement Concrete
Q. ASTM C33—Concrete Aggregates
R. ASTM C94—Ready-Mixed Concrete
S. ASTM C150—Portland Cement
T. ASTM C171—Sheet Materials for Curing Concrete
U. ASTM C260—Air-Entraining Admixtures for Concrete
V. ASTM C309—Liquid Membrane-Forming Compounds for Curing Concrete
W. ASTM C494—Chemical Admixtures for Concrete
X. ASTM C618—Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use in Concrete
Y. ASTM D1751—Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
Z. ASTM D2103—Polyethylene Film and Sheeting
AA. CRSI—Concrete Reinforcing Steel Institute - Manual of Standard Practice
BB. CRSI PRB—Placing Reinforcing Bars

CC. FED PS1—Construction and Industrial Plywood

1.4 PERFORMANCE TOLERANCES

A. Confirm to ACI 301 and ACI 347, as modified herein. In case of conflict, ACI 347 governs over ACI 301

1.5 SUBMITTALS

A. Submit under provisions of Section 01340

B. Shop Drawings: Reinforcing bar lists, fabrication and placement drawings

C. Product Data—Provide sufficient information on mix design and products specified to verify compliance with specifications:
   1. Existing data on proposed design mixes, certified and complete

1.6 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301

B. Acquire cement and aggregate from same source for all work

1.7 DELIVERY, STORAGE, AND HANDLING

A. Reinforcing steel: Store on supports which will keep it from contact with the ground and cover

B. Rubber and plastic materials: Store in a cool place, do not expose to direct sunlight

C. Prepare a delivery ticket for each load of ready-mixed concrete

D. Truck operator shall hand ticket to Engineer at the time of delivery with ticket to show:
   1. Quantity delivered
   2. Actual quantity of each material in batch
   3. Outdoor temp in the shade
   4. Time at which cement was added
   5. Numerical sequence of the delivery
   6. Quantity of water that can be added in the field based on mix design

PART 2 PRODUCTS

2.1 FORMS
A. Plywood: FED PS1, waterproof resin-bonded, exterior type Douglas Fir; face adjacent to concrete Grade B or better

B. Lumber: Straight, uniform width and thickness: and free from knots, offsets, holes, dents, and other surface defects

C. Chamfer strips: Clear, white pine, surface against concrete planed

D. Form coating: L & M Construction Chemicals Inc. "Debond", Dayton Superior “Clean Strip J1EF”, Nox-Crete “Nox-Crete Form Coating EB”, or approved equal

E. Form ties: Removable end, permanently embedded body types with waterstops not requiring auxiliary spreaders, with cones on outer ends, embedded portion 1 inch minimum back from concrete face. If not provided with threaded ends, constructed for breaking off ends without damage to concrete. Burke Company “Burke Penta-Tie System” or approved equal.

2.2 REINFORCING STEEL

A. Bars: ASTM A615, Grade 60

B. Welded wire fabric: ASTM A185 or A497

C. Bar supports: PS 7; CRSI Class B or E, fabricated from galvanized wire having PVC coated legs

2.3 CONCRETE

A. Cement: ASTM C150, Type II

B. Fly ash: ASTM C618, Class F or Class F, except loss on ignition not more than 5%

C. Fine aggregate: Clean, natural sand, ASTM C33; no manufactured or artificial sand

D. Coarse aggregate: Crushed rock, natural gravel, or other inert granular material, ASTM C33 except clay and shale particles no more than 1%

E. Water: Clean and free of deleterious substances

F. Admixtures:
   1. Air entraining agent: ASTM C260; Master Builders (BASF) “MB-VR”, Sika Chemical “AEA”, or approved equal

2.4 ACCESSORIES

A. Polyethylene film: ASTM C171, ASTM D2103 6 mil
B. Expansion Joint Filler: ASTM D1751, asphalt impregnated fiber board glass fiber, 1/2 inch thickness unless indicated otherwise

C. Waterstop: Metal, 14 Ga, not galvanized or coated, 8 inches minimum

D. Vapor barrier: Polyethylene coated reinforced paper, BSK “Sisalkraft 822” or approved equal

2.5 MIX

A. Design concrete mix within the limits specified

B. Comply with ASTM C94

C. Maximum Aggregate Size: 1 inch

D. Water Content: No more than 35 gal per cu yd or the equivalent cement weight if fly ash is added

E. Slump: 4 inch maximum:
   1. As low as possible consistent with proper handling and thorough compaction

F. Volumetric Air Content: 6% ± 1% after placement:
   1. Air may be omitted from interior slabs to be trowel finished

G. Strength: Compressive strength as determined by ASTM C39: 3000 psi minimum at 28 days

H. Consistency: Uniform slump, suitable for the placement conditions with aggregate floating uniformly throughout the concrete mass, flowing sluggishly when vibrated or spaded

I. Adjust mix as required to meet specifications and specific job conditions as directed by the District

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify requirements for concrete cover over reinforcement

B. Verify that anchors, seats, plates, reinforcement and other items to be encased into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete

3.2 FORMS
A. Design to produce hardened concrete to the shape, lines, and dimensions indicated on the drawings

B. Conform to ACI 347 as modified herein

C. Surfaces exposed to view:
   1. Prefabricated plywood panel forms, job-built plywood forms, or forms lined with plywood or fiberboard
   2. Laid out in a regular and uniform pattern with long dimensions vertical and joints aligned
   3. Produce finished surfaces free from offsets, ridges, waves, and concave or convex areas
   4. Maximum deviation from a true plane: 1/8 inch within 6 feet

D. Plywood or lined forms are not required for surface normally submerged or not normally exposed to view

E. Other type of forms may be used for surfaces not restricted to plywood or lined forms as backing for form lining

F. Provide forms above all extended footings; flat segmental forms, 2 foot maximum width, may be used for curved surfaces 25 feet minimum diameter

G. Provide polyethylene film to protect concrete from water loss when placing concrete against gravel or crushed rock not containing 25 percent minimum material passing a No. 4 sieve, lap joint 4 inches

H. When placing concrete against rock, remove all loose pieces of rock and clean exposed surface with high pressure hose

I. Provide substantial forms sufficiently tight to prevent leakage of concrete

J. Brace or tie forms to maintain desired position, shape, and alignment during and after concrete placement

K. Size and space wailers, studs, internal ties and other form supports so proper working stresses are not exceeded

L. Where the top of a wall will be exposed to weathering, stop form on at least 1 side at true line and grade

M. Locations to be finished to a specified elevation, slope, or contour, bring form to true line and grade and provide a wooden guide strip at the proper location in the forms for finishing the top surface with a screed or template

N. Install form ties on exposed surfaces in uniformly spaced vertical and horizontal rows
O. Provide chamfer strips to bevel salient edges and corners. Do not provide for top edges of walls and slabs to be tooled or for edges to be buried.

P. Do not remove or disturb until concrete has attained sufficient strength to safely support all dead and live loads.

Q. Maintain forms in place for a minimum of 40 hours or for length of curing time in accordance with ACI 306.1/306R when temperature is 45 degrees F and below.

R. Remove forms carefully to prevent surface gouging, corner or edge breakage and other damage.

3.3 REINFORCING STEEL

A. Accurately position reinforcing steel on supports, spacers, hangers, or other reinforcing steel.

B. Secure with wire ties or suitable clips.

C. Where reinforcement is placed in 2 layers, place bars in upper layer directly above bars in lower layer.

3.4 EMBEDMENTS

A. Accurately position and securely anchor in forms, anchor bolts, steel shapes, sleeves, masonry anchorages, and other materials to be embedded in concrete.

B. Anchor bolts:
   1. Unless installed in pipe sleeves, provide sufficient threads on anchor bolts to permit a nut on the concrete side of the form or template.
   2. Install a second nut on the other side of the form or template.
   3. Adjust the nuts to hold the bolt rigidly in the proper position.

C. Clean embedments before installation.

D. Clean concrete spatter and other foreign substances from surfaces not in contact with concrete.

3.5 PLACING CONCRETE

A. Place concrete in accordance with ACI 304.

B. Notify the District not less than 24 hrs in advance of the times and places at which contractor intends to place concrete.

C. Predetermine limits at each pour and place all concrete within limits of pour in one continuous operation.
D. Rigidly secure forms, reinforcing steel, embedment, and anchor bolts in proper position

E. Remove all mud, water, ice, snow, frozen material, and debris from space to be occupied by concrete

F. Clean surfaces encrusted with dried concrete from previous concrete operations

G. Convey to the point of final deposit by methods which will prevent separation or loss of ingredients

H. Place concrete in final position without being moved laterally more than 5 feet

I. Place concrete in approximately horizontal layers of proper depth for proper compaction, not more than 2 feet

J. Place subsequent layer while the preceding layer is still plastic

K. Fill form at a rate not less than 2 feet per hour

L. Top finish concrete when thoroughly settled

M. Remove all laitance, debris, and surplus water from the tops of the forms by screeding, scraping or other effective means

N. Overfill the forms for walls whose tops will be exposed to the weather and screed off the excess after the concrete has settled

O. Provide vertical construction joints as required to comply with these requirements

3.6 COMPACTION

A. Thoroughly compact concrete during and immediately after placement

B. Work concrete around all reinforcements and embedments and into the corners of the forms

C. Use mechanical vibrators which will maintain 9,000 cycles per minutes when immersed in the concrete, 1 1/2 hp motor minimum

3.7 COLD WEATHER CONCRETING

A. Conform to ACI 306R, except as modified herein
B. Minimum concrete temp at the time of mixing:

<table>
<thead>
<tr>
<th>Outdoor Temp at Placement (in shade)</th>
<th>Concrete Temp at Mixing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 30 degrees F</td>
<td>70 degrees F</td>
</tr>
<tr>
<td>Between 30 degrees F and 45 degrees F</td>
<td>60 degrees F</td>
</tr>
<tr>
<td>Above 45 degrees F</td>
<td>45 degrees F</td>
</tr>
</tbody>
</table>

C. Do not place heated concrete which is warmer than 80 degrees F

D. If freezing temp are expected during curing, maintain the concrete temp at or above 50 degrees F for 5 days or 70 degrees F for 3 days with forms in place

E. Do not allow concrete to cool suddenly

3.8 HOT WEATHER CONCRETING

A. Conform to ACI 305R, except as modified herein

B. At air temp of 90 degrees F and above keep concrete as cool as possible during placement and curing

C. Do not allow concrete temperature to exceed 70 degrees F at placement

D. Prevent plastic shrinkage cracking due to rapid evaporation of moisture

E. Do not place concrete when the actual or anticipated evaporation rate equals or exceeds 0.2 lbs per sq ft per hr as determined from ACI 305.1, Fig 2.1.4

3.9 WATERTIGHT JOINTS

A. Provide watertight joints with metal waterstops at walls and bottom slabs of valve vaults where below finished grade and in contact with backfill or subgrade material on the opposite side

B. Install continuous metal waterstops through the length of the construction joint which are clean and free of coatings to insure a strong bond with concrete

C. Provide lap junctions between adjacent sections a minimum of 5 inches. Securely bolt or weld together

D. Maintain in proper position until surrounding concrete is deposited and compacted
3.10 CONSTRUCTION JOINTS

A. As indicated on the drawings or designated by the District

3.11 FINISHING UNFORMED SURFACES

A. Float finish buried or permanently submerged concrete not forming an integral of a structure except as required to attain surface elevations, contours and freedom from laitance

B. Screed and initial float finish followed by additional floating, and troweling as required, all other surfaces

C. Screeding:
   1. Screed concrete surfaces to the proper elevation and contours with all aggregates completely embedded in mortar
   2. Surface free of irregularities of height or depth more than 1/4 inch measured from a 10 foot straightedge

D. Broom finish:
   1. Broom finish exterior slabs and manhole benches
   2. Broom after second floating and at right angles to normal traffic

3.12 CURING AND PROTECTION

A. Protect concrete from moisture loss at relatively constant temperature for at least 7 days after placement except that the time period for curing by saturation for concrete being protected from low temp shall be 1 day less than the duration of low temp protection

B. Cure concrete by methods which will keep concrete surfaces adequately wet during curing, in accordance with ACI 308

C. Water curing:
   1. Begin water saturation as quickly as possible after initial set
   2. Regulate water application to provide complete surface coverage with a minimum of runoff
   3. Interrupt the application of water to walls for grout cleaning only over the area being cleaned at the time and do not permit the surface to become dry during such an interruption

D. Membrane curing:
   1. Membrane curing compound may be used in lieu of water curing on concrete which will not be covered later with mortar or concrete
   2. Spray apply membrane curing compound at not more than:
      a. General use: 300 sf per gal recommended
3. Cover unformed surfaces within 30 minutes of final finishing
4. If forms are removed before the end of the curing period, immediately apply curing compound to the formed surface before they dry out
5. Protect curing compound against abrasion during the curing period

E. Film curing:
1. Polyethylene sheeting may be used in lieu of water curing on concrete which will be covered or hidden from view
2. Begin film curing as quickly after initial set of the concrete as possible
3. Completely cover the surfaces with polyethylene sheeting
4. Overlap the sheeting edges for sealing and anchorage
5. Seal joints between sheets
6. Promptly repair tears, holes, and other damage
7. Anchor covering continuously at edges and on the surfaces as required to prevent billowing

3.13 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements
B. Repair or replacement of defective concrete will be determined by the District
C. Repair defects in formed concrete surfaces within 24 hours of removing forms
D. Replace defective concrete within 48 hrs
E. Cut out and remove to sound concrete honeycombed or otherwise defective concrete
F. Cut edges square to avoid feathering
G. Comply with Chapter 9, ACI 301
H. Perform repair work so as not to interfere with thorough curing of adjacent concrete
I. Adequately cure repair work

3.14 FINISHING FORMED SURFACES

A. Remove fins and other surface projections from all formed surfaces except exterior surfaces that will be in contact with earth backfill and are not specified to be dampproofed
B. Use a power grinder, if necessary, to remove projections and provide a flush surface
C. Remove fins and fill tie hole on surfaces exposed to view:
   1. Clean, dry and fill tie holes with epoxy grout
   2. Finish flush to match the texture of adjacent concrete

D. Grout cleaning under provisions of Chapter 10, ACI 301
   1. Grout clean surfaces exposed to view to produce a smooth uniform surface free of marks, voids, surface glaze and cement dust
   2. Use nonshrink grout mix with bonding agent. Dampen surface and apply with cork or rubber float

3.15 FIELD QUALITY CONTROL

A. Perform all field and compressive strength tests to determine compliance of concrete materials in accordance with the specifications except as indicated otherwise under provisions of Section 01400

B. Field Control Test:
   1. Tests by ACI certified technician
   2. Make tests in presence of the District
   3. Provide all equipment, supplies, and the services of one or more employees, as required
   4. The test frequencies specified are minimum. Additional tests may be performed as required by the job conditions

C. Slump: Test a sample from each truck load in accordance with ASTM C143 if requested by the District and when making test cylinders

D. Air Content: Test a sample from each truck load if requested by the District and when making test cylinders

E. Compression Tests:
   1. Make one set of 4 cylinders each day when up to 25 cu yds have been placed or as required by the District
   2. Make one additional set of 4 cylinders for each additional 25 cu yds or each major pour placed in one day or as required by the District
   3. Test two cylinders in each set at 28 days
      The other two cylinders to be used as directed by the District at any time
   4. The District will evaluate in accordance with ACI 214 and 318
   5. Make, cure, store, and deliver cylinders in accordance with ASTM C31
   6. Test in accordance with ASTM C39
7. Mark or tag each set of test cylinders with the date and time of day the cylinders were made, the location in the work where the concrete represented by the cylinders was placed, the delivery truck or batch number, the air content, and the slump

F. Storage Facilities for Concrete Test Cylinders:
   1. Including water necessary, a specially prepared box with high-low thermometer and thermostatically controlled heating devices in accordance with ASTM C31

G. Failure of Test Cylinder Results:
   1. Upon failure of 28-day test cylinder results, the District may require the Contractor, at his expense, to obtain and test at least three 4-inch diameter cored samples from area in question
   2. Concrete will be considered adequate if average of three core tests is at least 85 percent of, and if no single core is less than 75 percent of, the specified 28-day strength
   3. In the event an area is found to be structurally unsound, the District may order removal and replacement of concrete as required. The cost of the core tests and removal and replacement of defective concrete shall be borne by the Contractor
   4. Fill all core holes as specified for repairing defective concrete

END OF SECTION
SECTION 03600

GROUT

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Patching cavities in concrete
B. Other grouting specified or indicated on drawings

1.2  RELATED SECTIONS

A. Section 02607—Manholes and Covers
B. Section 02667—Site Water Lines
C. Section 03001—Concrete

1.3  REFERENCES

B. ASTM C157—Length Change of Hardened Hydraulic-Cement Mortar and Concrete
C. ASTM C191—Time of Setting of Hydraulic Cement by Vicat Needle

1.4  SUBMITTALS

A. Submit under provisions of Section 01340
B. Product Data: Provide manufacturer’s catalog sheet for material indicating test data and physical properties

1.5  QUALITY ASSURANCE

A. Conform to applicable industry standard, Corps of Engineers, Specification CRD-C 621 - Specification for non-shrink grout

PART 2  PRODUCTS

2.1  MANUFACTURERS

A. Non-Shrink, Non-Metallic Grout
   1. Master Builders - Masterflow 928
2. L & M Inc. - Crystex
3. Sika - SikaGrout 212
4. Or approved equal

B. Epoxy/Grout Adhesive
1. Master Builders – Concreive 1380
2. Sika - Sikadur 32 Hi-Mod
3. Or approved equal

C. Latex Bonding Agent
1. MR Meadows - Intralok Bonding Agent
2. Or approved equal

2.2 MATERIALS

A. Non-Shrink, Non-Metallic Grout: Factory premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 4000 psi in one day and 8000 psi in 7 days

B. Epoxy Grout—Three Component Epoxy Resin System:
1. Two liquid epoxy components
2. One inert aggregate filtered component
3. Each component furnished in separate package for mixing at job site

C. Water: Clean and free from deleterious substances

D. Latex Bonding Agent: Acrylic liquid compound readily mixable as an admixture to grout

PART 3 EXECUTION

3.1 PREPARATION

A. Non-Shrink, Non-Metallic Grout:
1. Clean concrete surface to receive grout
2. Saturate concrete with water for 24 hrs prior to grouting and remove excess water just prior to placing grout
3. Cold weather conditions:
   a. Warm concrete, substrate and base plate to 40 deg F, or above; store grout in warm area
   b. Follow manufacturer's recommendations for cold weather application
4. Hot weather conditions:
   a. Use cold mixing water and cool base plate if possible; store grout in cool area
   b. Follow manufacturer's recommendations for hot weather application
5. Apply to clean, sound surface
6. Apply latex bonding agent to hardened concrete surfaces as indicated or as directed by the District
B. Epoxy Grout: Apply only to clean, dry, sound surface

3.2 APPLICATION

A. Non-Shrink, Non-Metallic Grout:
   1. Mix in a mechanical mixer with latex bonding agent
   2. Use no more water than necessary to produce flowable grout
   3. Provide expansion joints on long pours
   4. Provide air vents where necessary to eliminate air pockets
   5. Place in accordance with manufacturer's instructions
   6. Completely fill all spaces and cavities below the top of baseplates
   7. Provide forms where baseplates and bedplates do not confine grout
   8. Where exposed to view finish grout edges smooth
   9. Except where a slope is indicated on the drawings, finish edges flush at the baseplate, bedplate, member or piece of equipment
   10. Protect against rapid moisture loss by immediately covering with wet rags and polyethylene sheets or curing compound
   11. Wet cure grout for 7 days, minimum
   12. Maintain the temperature at a minimum of 40 deg F until grout reaches 3000 psi
   13. After placement of grout, eliminate excessive external vibration

B. Epoxy Grout:
   1. Mix and place in accordance with manufacturer's instructions
   2. Completely fill all cavities and spaces around dowels and anchors without voids
   3. Obtain manufacturer's field technical assistance as required to insure proper placement

3.3 SCHEDULE

A. Non-Shrink, Non-Metallic Grout: General Use
   1. Manhole rings
   2. Manhole lift holes and joints
   3. Where indicated by standard details

B. Epoxy Grout:
   1. Grouting of dowels and anchor bolts into existing concrete
   2. Where indicated by standard details

END OF SECTION
SECTION 07160

BITUMINOUS DAMPPROOFING

PART 1  GENERAL

1.1  SECTION INCLUDES

A.  Bituminous type dampproofing of precast concrete manholes

1.2  RELATED SECTIONS

A.  Section 01340—Shop Drawings, Product Data and Samplers
B.  Section 02607—Manholes and Covers
C.  Section 03001—Concrete

1.3  SUBMITTALS

A.  Submit under provisions of Section 01340
B.  Product Data: Provide data, certificates, and material safety data sheets on dampproofing product. Label submittal with type and intended use
C.  Manufacturer’s Instructions: Indicate special surface preparation procedure, substitute conditions requiring special attention

PART 2  PRODUCTS

2.1  MANUFACTURERS

A.  Semi-Mastic Dampproofing
   1.  Sonneborn - Hydrocide 700B
   2.  W.R. Meadows - Sealmastic Type 2
   3.  Or approved equal

PART 3  EXECUTION

3.1  EXAMINATION

A.  Verify that surface substrate conditions are ready to receive work as instructed by the product manufacturer
B.  Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
C. Test shop applied primer for compatibility with subsequent cover materials.

D. Do not proceed with surface preparation or coating application until conditions are suitable.

3.2 PREPARATION

A. Apply dampproofing to clean, dry surfaces:
   1. Remove dirt, dust, sand, grit, mud, oil, grease, and other foreign matter
   2. Protect surfaces not to be coated from contamination, discoloration or other damage with drop cloths or other suitable methods

B. Do not add any adulterants or unauthorized thinners

C. Thoroughly mix each time paint withdrawn from container

D. Keep containers closed tightly except while paint is withdrawn

E. Thinning only permitted to obtain recommended coverage at lower application temperatures

3.3 APPLICATION - GENERAL

A. Apply products in accordance with manufacturer's recommendations

B. Do not apply initial coating until moisture content of surface is within moisture limitations of coating manufacturer

C. Apply paint with suitable brushes, rollers, or spraying equipment:
   1. Rate of application shall not exceed that as recommended by paint manufacturer for the surface involved
   2. Keep brushes, rollers, and spraying equipment clean, dry, free from contaminants and suitable for the finish required

D. Comply with recommendation of product manufacturer for drying time between succeeding coats

E. Finish coats shall be smooth, free of brush marks, streaks, laps or pile up of paint, and skipped or missed areas

F. Make edges of coating adjoining other materials or colors clean and sharp with no overlapping

G. Do not permit coating to get on top of concrete walls or on exposed wall surfaces above specified limits

H. Do not use Benzol or other volatile toxic solvents for thinning coating
I. Provide adequate forced ventilation when applying coating in enclosed spaces to:
   1. Remove all vapors from solvents as rapidly as produced
   2. Insure that workers are adequately protected

J. Inspection:
   1. Do not apply additional coats until completed coat has been inspected by the Engineer
   2. Only inspected coats of paint will be considered in determining number of coats applied

3.4 APPLICATION - DAMPPROOFING

A. Apply in two coats with high pile rollers, brush or air spray equipment recommended by manufacturer

B. Do not use benzol or other volatile toxic solvents for thinning coating

C. Application Rate—15-18 square feet per gallon (1/8 inch total thickness):
   1. Application rate may vary with manufacturer

D. Apply only when surface of concrete is clean, dry and when temperatures are 40 degrees F and rising

E. Apply in a continuous, unbroken film, free of pinholes

F. Do not apply when temperatures less than 35 degrees F are anticipated.

G. Do not apply in rain or when rain is threatening.

H. Backfill in accordance with manufacturer's recommendations.

3.5 SCHEDULE

A. Semi-Mastic Dampproofing—Buried Surfaces:
   1. All exterior wall surfaces of precast manholes in contact with earth or backfill below finished grade. Include exterior surfaces of sump.

END OF SECTION
SECTION 15430
PLUMBING SPECIALTIES

PART 1GENERAL

1.1SECTION INCLUDES
A. Backflow preventers for domestic, commercial, fire and irrigation systems

1.2RELATED SECTIONS
A. Section 02667—Site Water Lines
B. Section 03001—Concrete

1.3REFERENCES
A. ANSI/ASME B1.20.1—Pipe Threads, General Purpose (Inch)
B. ANSI/ASME B16.1—Cast Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250
C. ANSI/ASSE 1013—Backflow Preventers, Reduced Pressure Principle
D. ASTM A536—Ductile Iron Castings
E. ASTM B584—Copper Alloy Sand Castings for General Applications

1.4SUBMITTALS
A. Submit under provisions of Section 01340
B. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes
C. Produce Data: Provide component sizes, rough-in requirements, service sizes, connections to other equipment and piping and finishes
D. Manufacturer's Installation Instructions: Indicate assembly and support requirements

1.5PROJECT RECORD DOCUMENTS
A. Submit under provisions of Section 01720
B. Record actual locations of equipment, cleanouts and backflow preventers

1.6REGULATORY REQUIREMENTS
A. Conform to applicable code for installation of backflow prevention device

B. Provide certificate of compliance from authority having jurisdiction indicating approval of installation and testing of backflow prevention device

1.7 QUALITY ASSURANCE

A. Comply with District Cross-Connection Control requirements

B. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions

B. Accept specialties on site in original factory packaging. Inspect for damage

PART 2 PRODUCTS

2.1 BACKFLOW PREVENTERS

A. Manufacturers:
   1. Zurn/Wilkins
   2. Febco
   3. Or approved equal

B. Materials:
   1. 2-inches and smaller:
      a. Cast bronze, ASTM B584 body with stainless steel internal parts and springs
      b. Two independently operated spring-loaded center guided check valves
      c. Diaphragm type differential pressure relief valve located between check valves
      d. Third check valve which opens under back pressure in case of diaphragm failure
      e. Non-threaded vent outlet
      f. All assembled with two shutoff full port resilient seated ball valves and four resilient seated ball valve test cocks
   2. 4-inches to 6-inches:
      a. Fusion bonded epoxy coated cast iron, ASTM A536 Grade 4 body with bronze and stainless steel internal parts and stainless steel springs
      b. Two independently operated spring-loaded center guided check valves
      c. Diaphragm type differential pressure relief valve located between check valves
      d. Third check valve which opens under back pressure in case of diaphragm failure
e. Non-threaded vent outlet  
f. Assembled with two shutoff non rising stem gate valves, and four full port resilient seated ball valve test cocks

C. Maximum working pressure: 175 psi

D. Hydrostatic test pressure: 350 psi

E. End connections:
   1. 2-inches and smaller:
      a. Threaded ANSI/ASME B1.20.1
   2. 4 -inches to 6-inches:
      a. Flanged ANSI/ASME B16.1, Class 125 cast iron
      b. Raised or plain faced

2.2 ACCESSORIES

A. Reduced Pressure Principle Backflow Preventers:
   1. 2-inches and smaller: Interior installation accessories include air gap adapter and integral battery monitor switch

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions and in an area not subject to flooding

B. Pipe relief from backflow preventer to nearest drain

C. Coordinate with plumbing piping work to achieve acceptable operating system

END OF SECTION
CMCMD Standard Details
**STANDARD DETAILS**  
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**COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT**

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PLASTIC MANHOLE STEPS IN VERTICAL LINE OVER SHELF

MIXING NON-SHRINK GROUT

ADJUST TO REQUIRED GRADE WITH A MINIMUM OF TWO AND A MAXIMUM OF FOUR 2" THICK REINFORCED CONCRETE GRADE RINGS OR HOPE GRADE RINGS.

PRECAST REINFORCED ECCENTRIC MH CONE

PRIME JOINT SURFACES AND INSTALL JOINT GASKET, GROUT ALL INSIDE JOINTS AND LIFT HOLES.

PRECAST REINFORCED CONCRETE MANHOLE BARREL WITH 1 COAT COAL TAR AND BITUTHANE WRAP

HAND SHAPE SHELF AS NECESSARY AROUND PIPE TO PROVIDE DRAINAGE

PIPE PENETRATION GASKET PLACED IN CORE TO ACCEPT PIPE

PRE-CAST MANHOLE BASE AND FIRST BARREL SECTION MONOLITHIC WITH GROUTED SHELF

3/4" ROCK SUBBASE, VIBRATED FOR COMPACTON, EXTEND 1" BEYOND EDGE OF BASE

NOTE:
IN AREAS OF HIGH GROUND WATER, GROUT ALL OUTSIDE JOINTS.

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<th>MH ID.</th>
<th>R &amp; C</th>
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<tr>
<td>&lt;18&quot;</td>
<td>4'-0&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>18&quot;-24&quot;</td>
<td>5'-0&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>&gt;24&quot;</td>
<td>6'-0&quot;</td>
<td>30′,36&quot; W/24&quot; INNER COVER</td>
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</table>

TYPICAL MANHOLE DETAIL

Approved: SHT: SS-1
Date: 09-24-93 Scale: NTS DWN: RTW

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
Adjust to required grade with a min of two and a max of four 2" thick reinforced concrete grade rings or hope grade rings.

Prime joint surfaces and install joint gasket, grout all inside joints and lift holes.

Hand shape bench as necessary around pipe to provide drainage.

Pre-cast reinforced conc manhole barrel and cone with 1 coat coal tar and bituthane wrap.

Pre-cast manhole base and first barrel section monolithic with grouted bench.

1. Reference typical manhole detail for inside diameters of manhole, diameter of ring and cover, and typical dimensions.

2. In areas subject to high ground water, grout all outside joints.
THROUGH PIPE

INTERMEDIATE ANGLE

SHARP ANGLE

NOTES:
1. DETAILS SHOWN ARE TYP. ONLY FOR INSTALLATIONS WITH A MAXIMUM OF UP TO 18" INCH DIFFERENCE IN INVERTS (INSIDE DROP)
2. PROVIDE A MINIMUM DROP OF 0.1 FEET FROM INLET INVERT TO OUTLET.
3. VERTICALLY ALIGN AND CENTER MH STEPS OVER LARGEST BENCH.

INTERMEDIATE ANGLE

OPPOSED LATERALS

TYPICAL DEFLECTION DETAILS FOR MANHOLES

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
SEWER CROSSING UNDER

SEWER CROSSING OVER

NOTES:
1. FOR GREATER THAN 2' SEPARATION, "SEWER CROSSING UNDER" PROTECTION NOT REQUIRED AS APPROVED BY DISTRICT.
2. FOR JOINTS WITHIN 10' FEET OF WATERLINE, "SEWER CROSSING OVER", CONCRETE ENCASE JOINTS.
NOTE:

1. IF UNSTABLE MATERIALS ARE FOUND IN TRENCH BOTTOM, OVEREXCAVATE PER SECTION 02200.

2. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND THE PROTECTION OF OTHER UTILITIES.

3. MINIMUM COVER TO BE BELOW FINAL GRADE.
11 1/4°, 22 1/2°, 45° AND 90° BENDS

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

MINIMUM BEARING SURFACE AREA
<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>4&quot;</th>
<th>6&quot;</th>
<th>8&quot;</th>
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<th>12&quot;</th>
<th>16&quot;</th>
<th>18&quot;</th>
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<tr>
<td>D</td>
<td>L</td>
<td>G</td>
<td>D</td>
<td>L</td>
<td>G</td>
<td>D</td>
<td>L</td>
</tr>
<tr>
<td>TEE</td>
<td>3/4&quot;</td>
<td>10.0'</td>
<td>M.S.</td>
<td>3/4&quot;</td>
<td>14.0'</td>
<td>M.S.</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>PLUG OR VALVE</td>
<td>3/4&quot;</td>
<td>35.0'</td>
<td>M.S.</td>
<td>3/4&quot;</td>
<td>50.0'</td>
<td>M.S.</td>
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<tr>
<td>90° BEND</td>
<td>3/4&quot;</td>
<td>10.0'</td>
<td>M.S.</td>
<td>3/4&quot;</td>
<td>14.0'</td>
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<td>3/4&quot;</td>
<td>2.0'</td>
<td>M.S.</td>
<td>3/4&quot;</td>
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<td>1.0'</td>
<td>M.S.</td>
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**NOTES:**

1. LENGTHS OF PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. D=DIAMETER, L=LENGTH, G=GRADE, NO.=NUMBER OF RODS M.S.=MILD STEEL, H.S.=HIGH STRENGTH
3. MINIMUM 9.0' GROUND COVER REQUIRED.
4. BASED ON 150 PSI INTERNAL PRESSURE PLUS 100 PSI WATER HAMMER, POLYWRAP DIP.
7. NUTS SHALL BE A.S.T.M. STANDARD DESIGNATION A–563 GRADE A OR B HEXAGON HEAVY SERIES.
8. LENGTH REFERS TO THE MINIMUM AMOUNT OF PIPE WHICH MUST BE TIED TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS. PIPE MUST BE TIED AT JOINTS.
#4 BAR (TYP)

TOP VIEW

WORD "WATER" ON COVER

18" SQUARE X 6"
THICK CONCRETE COLLAR WHEN NOT IN PAVEMENT

#4 BAR (TYP)

PROVIDE VALVE STEM EXTENSION AND STEM CENTERING PLATE WITHIN 18" OF SURFACE

ADJUSTABLE C.I. VALVE BOX 5" BARREL

GATE VALVE CLASS 250

2" COMPRESSION MATERIAL TO PREVENT ROADWAY SHOCK FROM BEING TRANSMITTED TO VALVE

MAIN LINE GATE VALVES TO HAVE JOINTS SAME AS WATER MAIN OR AS SPECIFIED FOR MAIN LINE FITTINGS

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
NOTES:

1. HYDRANT VALVES AND FITTINGS TO BE 250 PSI RATING
2. ALL HYDRANT ASSEMBLY VALVES AND FITTINGS TO BE MECHANICAL JOINTS
3. HYDRANT LEAD LINE 6" DIP, CLASS 50
4. POLYETHYLENE ENCASE ALL PIPES, FITTINGS & FIRE HYDRANT TO GRADE.
5. ENSURE HYDRANT BOTTOM DRAIN HOLE IS CLEAR AND DRAINS FREELY.
6. ALL RODDING SHALL BE PRIMED AND PLOYKEN TAPE WRAPPED OR COAL TAR COATED.
7. CONSTRUCT AUXILIARY GATE VALVE BOX IDENTICAL TO MAIN LINE GATE VALVE DETAIL.
NOTES:
1. PROVIDE BOLLARDS AS DIRECTED BY DISTRICT.
2. DISTRICT WILL FIELD VERIFY ACTUAL NUMBER AND LOCATION OF BOLLARDS REQUIRED
3. PRIME AND FINISH (ALKYD ENAMEL) BOLLARDS TO COLOR REQUIRED BY DISTRICT FIRE DEPARTMENT

PLAN

REFLECTING TAPE 3" WIDE
6" DIA SCH 80 STL PIPE
GRIND SMOOTH, FILL W/ CONCRETE
FINISH GRADE
CONCRETE ENCASEMENT

DETAIL

TYPICAL PIPE BOLLARD ASSEMBLY INSTALLATION DETAIL

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
null
NOTES:

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

2. PROPERTY OWNER'S RESPONSIBILITY FOR LEAK REPAIR SHALL BE UP TO AND INCLUDING THE TUBE NUT WHICH THREADS ONTO THE CURB STOP. PROPERTY OWNER'S RESPONSIBILITY FOR REPAIRS OTHER THAN LEAKS EXTENDS TO THE CORPORATION STOP.

NOTES:
1. PROVIDE INSULATION BOARD WHERE CLEARANCE IS LESS THAN 8 FEET

TYPICAL WATERLINE INSULATION DETAIL

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
TRENCH SEAL TO BE 6" LAYER OF CLAY (TYPE CL OR CH) OR 4" OF TRENCH EXCAVATED SOIL OVER 2" OF BENTONITE. EXTEND TRENCH SEAL (AND RIPRAP WHERE INDICATED) TO TOP OF BANK AND MIN OF 2' BEYOND DISTURBED TRENCH WIDTH EACH SIDE.

NOTE:
1. PROVIDE TRENCH SEAL, 1 1/2" WASHED ROCK LAYER AND TYPE M RIPRAP.
1. INSTALLATION SHOWN IS FOR METERS 1" AND SMALLER

2. REDUCED PRESSURE BACKFLOW PREVENTER (RPBP) IS REQUIRED FOR EACH WATER SERVICE

3. INSTALL IRRIGATION METER DOWNSTREAM OF MAIN METER FOR METERING IRRIGATION USE

4. METER INSTALLATIONS IN CRAWL SPACE SHALL NOT BE ALLOWED
NOTES

1. INSTALLATION SHOWN IS FOR METERS 1" AND SMALLER

2. REDUCED PRESSURE BACKFLOW PREVENTER (RPBP) IS REQUIRED FOR EACH WATER SERVICE

3. METER INSTALLATIONS IN CRAWL SPACE SHALL NOT BE ALLOWED
NOTES

1. INSTALLATION SHOWN IS FOR METERS LARGER THAN 1"

2. REDUCED PRESSURE BACKFLOW PREVENTER (RPBP) IS REQUIRED FOR EACH WATER SERVICE

3. INSTALL IRRIGATION METER DOWNSTREAM OF MAIN METER FOR METERING IRRIGATION USE (SEE SHT W-16)

4. METER INSTALLATIONS IN CRAWL SPACE SHALL NOT BE ALLOWED