UTE93FLU

TYPE OF RECORD: PERMANENT

CATEGORY OF RECORD: CONTRACT

NAME OF AGENCY OR CONTRACTOR: UTE WATER CONSERVANCY DISTRICT

STREET ADDRESS/PARCEL NAME/SUBDIVISION/PROJECT: ESTABLISHMENT OF FIRELINE UPGRADES PER ANNUAL EXPANSION AND DEVELOPMENT, FIRE PROTECTION RULES AND SPECIFICATIONS FOR WATER LINE CONSTRUCTION

CITY DEPARTMENT: PUBLIC WORKS

YEAR: 1993

EXPIRATION DATE: NONE

DESTRUCTION DATE: NONE

UTE WATER CONSERVANCY DISTRICT
560 25 Road, P.O. Box 460
Grand Junction, CO 81502

Office
Telephone: 303-242-7491
FAX: 303-242-9189

Treatment Plant
Telephone: 303-464-5563
FAX: 303-464-5443

ORIGINAL

HAND DELIVERED

August 16, 1993

Jim Shanks
Public Works Director
City of Grand Junction
250 N. 5th Street
Grand Junction, CO 81501

Re: Fire Line Upgrade AGREEMENT

Jim:

Enclosed are two executed copies of the referenced AGREEMENT. My understanding is that the City Council will sign both and return one original for Ute's files. Again, Jim, I want to thank you for your effort and cooperation in this pursuit.

Also enclosed is an additional copy of the "WATER LINE SPECIFICATIONS" (paragraph 6.(a.) and a copy of the Board adopted "FIRE PROTECTION RULES AND REGULATIONS" that meet the performance requirements of paragraph 3.(c) of the AGREEMENT.

Given our previous discussions of the area along Highway 6 & 50 between 24½ and 25½ Roads, I anticipate that Ute will submit the first proposed Project Addendum in the near future. In the meantime, if there are other issues we can pursue in the same joint and cooperative spirit, please let us know.

Sincerely,

Lawrence Aubert, Manager
Ute Water Conservancy District

LA/rlc

Enclosures

ORIGINAL

AGREEMENT

This agreement is entered into as of the 17th day of August 93, 1993, by and between the City of Grand Junction, a Colorado Home Rule City (City), and Ute Water Conservancy District, a Colorado Water Conservancy District (Ute).

Recitals.

A. As a result of City growth through annexation, certain lands are now located both within the corporate limits of the City and within the boundaries of Ute. Said lands within both jurisdictional boundaries shall be referred to herein as the "overlap area".

B. In 1990, the City adopted Ordinance No. 2497 (the Ordinance). Section 31-94 of the Ordinance established certain fire protection standards for all water facilities located within the City. Supportive Ordinance No. 2506 established a time frame for compliance with the facility standards of Section 31-94, and both the standards and time frame are equally applicable to the Ute distribution system within the overlap area.

C. Certain portions of the Ute distribution system in the overlap areas do not meet the standards of Section 31-94 of the Ordinance.

D. In order that both entities may show intergovernmental cooperation in sharing some of the costs associated with the necessary and appropriate upgrading of portions of the Ute distribution system within the overlap areas, they willingly enter into this agreement and endorse the procedures established herein.

E. More information is needed to specifically identify the areas requiring upgrade to meet the provisions of city ordinance standards and time frames, and to provide for financial contributions through the budgetary process.

NOW THEREFORE, the parties agree as follows:

1. Scope:

(a.) The overlap area, as it exists at the time of signing of this agreement is identified on the attached Exhibit as "Overlap Area". Additional annexations by the City may expand this overlap area resulting in the need for additional upgrading of the distribution system. The parties intend that this agreement shall apply to the existing overlap area and to future annexations that are served by distribution systems deficient in the necessary capacity to meet the minimum fireflow requirements of the ordinance. The City agrees to notify Ute of its annexation plans and Ute agrees to identify particular pipelines within the proposed annexation which must be upgraded, if any, and shall supply the City with that information within sixty (60) days following the effective date of the annexation ordinance.

(b.) Vacant and/or undeveloped properties within the existing or expanded overlap area shall be required to comply with all applicable City and Ute regulations at the time of development and are not subject to the cost share provisions of this agreement, except as expressly stated in this agreement or in subsequent project addenda attached hereto.

(c.) Ute shall initially identify, within the existing overlap area, all facilities, pipelines and other structures which are the subject of this upgrade agreement by October 1, 1993. Ute shall submit that information in visual and documentary form by that date.

Ute shall, in addition, prepare a "Master Plan" of looping and extensions to the system within the 201 Area identified on the attached Exhibit as "201". The purpose of this Master Plan is to identify those areas within the Ute system which may be subject to upgrading when or if annexed to the City. Such master plan, with respect to the 201 Area, shall be completed by Ute on or before June 1, 1995.

(d.) The parties agree that the extent of the improvements necessary is too large to be undertaken as a single project and that, therefore, several projects shall be required to accomplish the purposes of this agreement. Each upgrading project to which the terms of this agreement are intended to apply shall be described in a more detailed separate addendum duly executed by the parties which shall be attached to and incorporated in this agreement.

(e.) For the purposes of this agreement, the term "Project" shall refer to a particular area with identified limits described in the addendum(s) attached hereto.

(f.) Ute shall prepare and submit for review each separate project addendum which shall, with sufficient detail: identify the geographic limits of the project; identify the pipelines and facilities within the area which shall be upgraded and subject to cost sharing pursuant to this agreement; the time within which the project shall be completed; set forth any special terms and conditions, if any, relating to the project; and include a schematic drawing less detailed than engineers plans.

(g.) Ute shall be responsible for designing each project, and be solely responsible for constructing each project, but shall seek the City's input, comments and suggestions during the design process. The intent is to cause the work to be performed by contractors retained by Ute unless expressly stated otherwise and agreed to in the project addendum.

(h.) Following final preparation of the addendum by the staffs of the parties of the addendum(s), each addendum shall be submitted to the respective governing boards for adoption and attachment to this agreement.

2. Project Costs.

(a.) Costs associated with preparing a project for bid (including engineering), plus costs associated with project supervision, inspection, testing and general construction administration shall be twelve percent (12%) of the actual bid amount unless expressly stated otherwise and agreed to in the project addendum.

(b.) The actual dollar amount bid and accepted for each project plus the aforementioned twelve percent (12%) or agreed upon administrative overhead shall constitute the project cost. Change orders in excess of $10,000.00 or ten percent (10%) of the bid amount, whichever amount is less, are not part of a project cost unless authorized in writing by both parties.

3. Allocation of Costs:

(a.) The City shall pay one-third (1/3) of the project costs agreed to in 2(b) above. To the extent that the actual costs which are incurred by Ute are less than the amount as determined in 2.(b) above, Ute shall remit one-third (1/3) of the difference to the City.

(b.) The City consents to Ute's proposal to cause the property owners, who Ute deems shall benefit from a project, to bear such costs to the extent of one-third (1/3) of the project costs as follows:

i. Owners of commercial and industrial properties shall be charged on a per acre basis;

ii. Owners of residential properties shall be charged on per dwelling or per lot basis, whichever is greater;

iii. To the extent that property is vacant or if there is otherwise any question, the applicable zoning shall determine whether property fits into (i.) or (ii) above.

(c) Ute shall adopt rules and regulations which establish rates and charges for the payment of the property owners allocations described in the preceding paragraph. Such rules and regulations shall allow each property owner to pay his allocation to Ute monthly, over a ten year period, with interest at a rate no greater than the average interest that Ute is receiving on funds of Ute, and which interest rate shall remain fixed over the ten-year period. The interest rates shall be determined at the time that the first monthly payment is due from said property owner.

4. Payment to Ute by the City:

Within five (5) days of the award of each contract, Ute shall send a notice to the City which establishes the first date that work shall commence on a project agreed upon by the parties and the amount of the contract. The City shall cause its check for payment of the amount agreed to herein to be mailed to Ute within ten (10) days following receipt of said notice.

5. Accounting:

Ute shall keep detailed and accurate records of all project costs, in accordance with generally accepted accounting principles applicable to local governments in Colorado, incurred for a project and all funds deposited in or disbursed from the project account for each project. The City shall have access to and the right to inspect such records during business hours at any reasonable time at the Ute office in Grand Junction, Colorado. Within sixty (60)days after completion of a project, Ute shall provide to the City at no cost a full accounting of each project.

6. Responsibility for and Ownership of Project(s):

(a.) Ute shall cause the construction of the project(s) in accordance with this agreement, attached addenda, good engineering practices, the attached "Waterline Specifications" and all other applicable standards, requirements, regulations and permit procedures. To the extent that the attached "Waterline Specifications" do not apply, the standard Ute specifications shall. To the extent that the design of a project can incorporate

any amendments or changes to the standards, it shall do so. However, after a bid is awarded, the parties agree that if the City amends or changes the Ordinance, the Waterline Specifications, or any other standards relating to that project or to any previously approved or constructed project, and such amendments or changes require additional upgrades or modifications to be made to that project or to any previously approved or constructed project, the City shall bear all costs of such additional upgrades or modifications.

(b.) All lines and other facilities constructed pursuant to this agreement shall be owned, operated and maintained solely by Ute. The City shall have no interest as an owner or otherwise in such lines and facilities, and shall have no right or obligation to operate and maintain such lines and facilities.

7. Cooperation:

(a.) Ute and the City agree to fully and freely cooperate with one another in identifying project areas, in assessing the needs for upgrading pipelines in identified project areas, in designing the projects, in working with property owners in the project areas to explain the project costs and benefits, and in all other respects.

(b.) If funding should become available to help pay for some or all of the costs of a project or projects, in the form of grants, low-interest loans, or otherwise, the parties agree to cooperate to pursue and attempt to obtain such funding.

(c.) Ute and the City agree to execute such additional documents and take such additional actions as may be necessary to fulfill the purposes of this Agreement.

8. Rules and Regulations:

(a.) Nothing in this agreement is intended to limit or prevent the City's exercising its applicable regulatory powers, or Ute from changing or adjusting its tap fees, or water rates. Neither does this agreement attempt to address or limit Ute's exercise of its statutory responsibilities and authority upon which water and facilities are made available to the public.

9. Arbitration/Validity:

(a.) Any controversy or claim arising out of or related to this Agreement, or the breach thereof, shall be settled by arbitration, and judgement upon the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. If arbitration becomes necessary, such arbitration shall

be conducted by a panel of three (3) arbitrators. Each party shall select one arbitrator and those two arbitrators shall select a third. Such arbitration shall be conducted under the Commercial Arbitration Rules of the American Arbitration Association. Unless the arbitrators deem it more equitable to divide the costs and fees of the arbitration between the parties, the arbitrators, in their award, shall assess all fees and costs of or relating to the arbitration proceeding, including the arbitrators' fees and the reasonable attorneys' fees of the prevailing party, against the losing party.

(b.) In the event that a court of competent jurisdiction finds that all or a portion of this agreement is invalid, such as Ute's charges to property owners, the parties agree that such partial invalidity shall not affect or invalidate the remaining terms and provisions of this agreement.

10. Authority:

Each party warrants and represents to the other that such party has taken all actions necessary to make this Agreement a valid obligation binding upon the party, and that all requirements of any applicable charter, ordinance, statute, or constitutional provision regarding the approval and execution of this Agreement have been met.

11. Term and Termination:

This agreement shall take effect on the date set forth first above, and shall continue for a period of five (5) years, and thereafter until written notice of termination is given by one party to the other party. Such notice shall set forth the effective date of the termination of this agreement, which date shall not be less than six (6) months after the date the notice of termination is given. In addition, if any project for which an addendum has been executed by the parties has not been completed as of the date of termination, the terms of this agreement shall continue to apply to such project(s) until it is completed.

12. Notice:

All notices and other communications required or permitted to be given hereunder shall be in writing and shall be personally delivered with receipt taken therefore, or sent by certified mail, postage prepaid and return receipt requested, directed to the party intended at the address set forth below, or at such other addresses as may be designated by notice given to the other party in the manner set forth above, and shall be effective upon receipt:

TO DISTRICT: Manager, Ute Water Conservancy District
P.O. Box 460
Grand Junction, CO 81502
TO CITY: City Manager
City of Grand Junction
250 N. 5th Street
Grand Junction, CO 81501-2668

13. Binding Effect:

All provisions of this Agreement shall apply to and bind the parties hereto, their agents, successors and assigns.

14. Complete Agreement:

This Agreement supersedes any and all prior agreements, written and oral, between the parties and constitutes the complete and entire agreement of the parties.

15. Headings for Convenience Only:

The paragraph headings are for convenience only and the substantive portions hereof control without regard to the headings.

16. Modifications:

This Agreement shall be modified by writing only, which writing must be executed by the parties hereto in order to be effective.

17. Controlling Law:

This Agreement shall be governed under and construed pursuant to the laws of the State of Colorado.

18. Waiver:

Failure of either party to enforce any provision of this Agreement shall not act as a waiver to prevent enforcement of the same provisions at some later time.

19. Jointly Drafted:

This Agreement was produced as a result of negotiations between parties and should not be construed against either party as the drafter of this Agreement.

20. Effective Date:

The effective date of this Agreement shall be the later of the date this Agreement is approved by the Board of Directors of Ute or by the City Council of the City.

IN WITNESS WHEREOF, the parties have entered into and approved this Agreement as of the dates set forth below.

Approved this 11th day of August, 1993, by the Board of Directors of Ute Water Conservancy District.

President of the Board

ATTEST:

Secretary

(Seal)

Approved this 17th day of August, 1993, by the City Council of the City of Grand Junction, Colorado.

President of the Council

ORIGINAL

FIRE PROTECTION RULES AND REGULATIONS

These Fire Protection Rules and Regulations are adopted by the Ute Water Conservancy District ("District") pursuant to its authority under the Water Conservancy Act, Sections 37-45-101 et seq., C.R.S., and other applicable statutes and other authority.

THE BOARD OF DIRECTORS OF THE DISTRICT FINDS AND DETERMINES AS FOLLOWS:

A. The District provides water service in the Grand Valley area of Mesa County, Colorado. When the District was established in 1956, its boundaries did not include any portion of the City of Grand Junction ("City"). However, in the years since 1956, the City has annexed territory within the boundaries of the District, creating "overlap areas" which lie within both the District and the City. The overlap areas will continue to grow as the City annexes more territory within the District.

B. The District's water is used not only for domestic purposes, but also for fire protection purposes.

C. In 1990, the City adopted Ordinance No. 2497 (the "Ordinance"). Section 31-94 of the Ordinance established certain fire protection standards for all water facilities located within the City. A subsequent City ordinance (Ordinance No. 2506) established a time frame for compliance with the facility standards of Section 31-94 of the Ordinance. Both the standards of the Ordinance and the time frame of the subsequent ordinance are applicable to the District's distribution system in the overlap areas.

D. Certain portions of the District's distribution system in the overlap areas do not meet the standards of Section 31-94 of the Ordinance.

E. The District has entered into an Agreement with the City, dated _____, 1993 (the "Agreement"), pursuant to which the District and the City agreed to share the costs of upgrading the District's facilities in the overlap areas to meet the requirements of the Ordinance.

F. The Agreement requires the District to adopt rules and regulations which establish rates and charges for property owners who directly benefit from the upgrading of facilities for fire protection purposes.

G. These Regulations establish the policies, rules, regulations, rates, and charges for fire protection service in the District, including but not limited to the rates and charges the District is required to establish under the Agreement.

H. These Rules and Regulations are being adopted after holding public hearings on the matters set forth herein, and after litigation and negotiation with the City about these matters. The District recognizes that there are competing considerations that it must balance in adopting regulations regarding fire protection upgrades. One consideration is that most areas of the District within the City are served by facilities that meet the fire protection requirements of the Ordinance. Persons in those areas have, either directly or indirectly, paid for the facilities that provide fire protection water, and so should not have to pay substantial additional amounts to upgrade facilities in non-complying areas. Another consideration, however, is that the fire protection upgrades are mandated by recent changes to the City's ordinances, and the upgrades have not been requested by the persons who will benefit from the upgrades. Yet another consideration is the longstanding District policy of making new development, including improvements to the District's system which benefit a defined group of users, pay its own way. The regulations set forth herein balance all of these considerations in a fair and equitable manner. Accordingly, the Board of Directors of the District find and determine that the following Rules and Regulations are reasonable, and provide equitable rates and charges for like classes of service within the District.

NOW, THEREFORE, the District hereby adopts the following Fire Protection Rules and Regulations:

1. Provision of Fire Protection Water. The policy of the District is to allow the water in its distribution system to be available for and used for fire protection purposes.

2. Classes of Service. The following classes of fire protection service are hereby established:

a. Class 1: Class 1 fire protection water service shall consist of all District customers who live outside of the City.

b. Class 2: Class 2 fire protection water service shall consist of all District customers who (i) live inside the City and (ii) who are served by District facilities that meet the fire protection requirements of the Ordinance.

c. Class 3: Class 3 fire protection water service shall consist of all District customers who (i) live inside the City and (ii) who are served by District facilities that do not meet the fire protection requirements of the Ordinance.

2. Rates and Charges for Class 1 Service. The following rates and charges are established for Class 1 fire protection water service:

a. There will be no extra charge to a Class 1 District customer for fire protection water service. The District's regular domestic water rates, as they may be adjusted from time to time, shall be deemed to cover both domestic water service and fire protection service for Class 1 District customers.

3. Rates and Charges for Class 2 Service. The following rates and charges are established for Class 2 fire protection water service:

a. There will be no extra charge to a Class 2 District customer for fire protection water service. The District's regular domestic water rates, as they may be adjusted from time to time, shall be deemed to cover both domestic water service and fire protection service for Class 2 District customers.

4. Rates and Charges for Class 3 Service. The following rates and charges are established for Class 3 fire protection water service:

a. There will be no extra charge to a Class 3 District customer for fire protection water service unless and until the District's facilities which provide water service to that customer are upgraded to meet the requirements of the Ordinance. The District's regular domestic water rates shall be deemed to cover both domestic water service and fire protection service for a Class 3 District customer until the facilities which serve such customer are upgraded.

b. Upon completion of the upgrades to the facilities which provide water service to a Class 3 District customer, that customer shall pay rates and charges for fire protection water service, which rates and charges will consist of payment of the customer's pro rata allocation

of one-third of the costs for upgrading the facilities. Such rates and charges shall be calculated as follows:

1. The District shall determine the identity of the customers who will be benefitted by a "project', as that term is defined in the Agreement.

2. The cost of the project (the "project cost") shall be determined after the project is completed. The project cost shall be determined pursuant to and consistent with the provisions of Paragraph 2 of the Agreement.

3. The pro rata allocation of one-third of the project cost shall be determined for each customer who will be benefitted by the project, in accordance with Paragraph 3 of the Agreement. The allocation of a customer owning commercial or industrial property within the area of the project will be based upon the number of acres owned by the customer. The allocation of a customer owning residential property within the area of the project shall be based upon the number of lots or parcels owned by the customer, or the number of dwelling units owned by the customer, whichever is greater. To the extent that property is vacant or if there is otherwise a question as to whether property is commercial, industrial, or residential, the zoning of the property shall control the classification of the property.

4. The District shall give each customer written notice of the amount of his pro rata allocation of the project cost, which pro rata share shall be a charge to the customer for receiving water for fire protection water service. The notice shall be sent to the customer's address as contained in the records of the District. The notice shall give the customer the option to pay the charge for receiving fire protection water service in one of the following ways:

   (i) The customer can pay the entire amount of the charge in one lump sum.

   (ii) The customer can pay the charge in monthly installments over a ten year period. The charge shall be amortized over ten years, with an interest

rate factor equal to the average interest that the District was receiving on funds of the District as of the date of the notice. The interest rate shall remain fixed over the ten year period.

(iii) The customer can pay a portion of the charge in a lump sum, and can pay the balance of the charge in monthly installments in the manner provided in Section 4.b.4(ii), above.

5. The customer shall elect one of the payment options set forth above within twenty days from the date of the notice from the District, by giving notice in writing to the District of the option chosen. If the customer elects to pay all of the charge in a lump sum, it will be due and payable within ninety days from the date of the notice from the District. If the customer elects to pay all of the charge in monthly installments, the first installment will be included on the first regular billing statement sent to the customer after the election is made, and subsequent installments will be included on each monthly billing statement thereafter during the ten year payment period. If the customer elects to pay a portion of the charge in a lump sum and the remainder in monthly installments, the lump sum amount will be included on the first regular billing statement sent to the customer after the election is made, the first installment shall be included on the second regular billing statement sent to the customer after the election is made, and subsequent installments will be included on each monthly billing statement thereafter during the ten year payment period. All installments and other charges will be in addition to the regular charges for domestic water service that will appear on each monthly billing statement. If the customer fails to make a written election within the time set forth in this paragraph, the customer will be deemed to have elected to pay the entire charge in installments.

6. If a customer elects to pay all or a portion of the fire protection water service charge in installments, the customer may change that election at any time by paying the remaining principal balance of the charge and accrued interest to the District.

7. If a customer elects to pay all or a portion of the fire protection water service charge in installments, the District will record a notice in the records of Mesa County, indicating the amount of the charge being paid in installments, the amount of each installment, the period over which the installments will be paid, the property address and/or legal description of the customer's property, and any other information the District desires to include in the notice. If requested by the District, the customer shall sign the notice.

8. After a customer has paid the entire amount of the fire protection water service charge, the customer shall thereafter be considered a Class 2 District customer.

c. If a customer fails to pay the applicable fire protection water service charge in the manner set forth in the preceding paragraph, the District shall be entitled to exercise any and all remedies for non-payment that it has under any other rules or regulations of the District for non-payment of water service charges.

ADOPTED BY BOARD OF DIRECTORS OF UTE WATER CONSERVANCY DISTRICT AT REGULAR BOARD OF DIRECTORS' MEETING ON AUGUST 11, 1993.

ORIGINAL

UTE WATER CONSERVANCY DISTRICT

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INDEX OF STANDARD SPECIFICATIONS
FOR WATER LINE CONSTRUCTION

WATER LINE SPECIFICATIONS

DEFINITIONS:

A.A.S.H.T.O.: The American Association of State Highway and Transportation Officials.

A.S.T.M.: American Society for Testing Materials

A.W.W.A.: American Water Works Association

Applicant: Any person, association, corporation, entity or government agency desiring water service for premises or properties under their control, and having had plans appropriately approved for such services; often a subdivider or developer.

City: The City of Grand Junction, Colorado.

Contractor: In the context of these Standards, a contractor employed by Ute or by an applicant for system expansions.

Distribution System: Mains of twelve-inch (12") and smaller diameter, together with all appurtenant and necessary valves, fire hydrants, taps, meters, service pipes, and associated materials, property, and equipment receiving potable water from transmission mains and distributing it to individual customers.

Inspector: The authorized representative of Ute, assigned to make any or all necessary inspections of materials furnished or work performed by the Contractor.

Ute: Ute Water Conservancy District, the water purveyor authorized to supply potable water throughout the distribution system.

Service Line: All pipe, fittings, and appurtenances for conveying water from distribution mains to the potable water meter.

Tap: Physical connection to a distribution main which, together with appropriate approval, effects water service to individual consumers.

Transmission Main: Fourteen-inch (14") or larger diameter pipe carrying potable water from the treatment facilities and storage tanks to delivery points feeding the distribution system.

UTE WATER CONSERVANCY DISTRICT
STANDARD SPECIFICATIONS FOR CONSTRUCTION OF WATER LINES
****

I GENERAL

100.1 **DESCRIPTION:** These specifications include material specifications and construction requirements for underground potable water systems installed in the public right of ways and in other areas under the jurisdiction of the Ute Water Conservancy District (Ute) within the corporate limits of the City of Grand Junction (City) and elsewhere, as directed.

100.2 **SPECIFICATION MODIFICATIONS:** Portions of these specifications may be modified or deleted by appropriate items in the Special Conditions or notes on the contract drawings. All modifications and deletions shall be approved by Ute.

100.3 **REVISIONS OF STANDARDS:** When reference is made to a Standard Specification (ASTM, AWWA, AASHTO, etc.), the specifications referred to shall be understood to mean the latest revision of said specification as amended at the time of the Notice to Bidders.

100.4 **PROGRESS AND SEQUENCING SCHEDULES:** The Contractor's estimated progress schedule shall be in written form and shall include the sequencing and estimated start and completion dates for all elements of the work. These elements shall include work to be performed by utility companies to accomplish the necessary utility relocations and adjustments.

When, during the progress of the project, significant adjustments to the estimated progress schedule become necessary, the Contractor shall promptly submit pertinent revisions to Ute to assist in planning required coordination.

The estimated progress schedule outlined above will be discussed at the pre-construction conference.

All new development and subdivisions shall have streets and roadways cut to subgrade and property pins and radius pins installed before installing water lines.

100.5 **PUBLIC SAFETY AND TRAFFIC ACCESS:** The Contractor's operations shall cause no unnecessary inconvenience.

The safety and access rights of the public shall be considered at all times.

Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time. If backfill has been completed to such an extent that safe access may be provided, and the street opened to local traffic, the Contractor shall immediately clear the street and driveways and provide and maintain access.

The Contractor shall cooperate with the various parties involved in the delivery of mail and the collection and removal of trash and garbage to maintain existing schedules for these services.

100.6 **BARRICADES AND WARNING SIGNS:** All signs, barricades, flagmen, lights, and other devices necessary for the protection of work and safety of the public shall be the Contractor's responsibility and in compliance with the Manual on Uniform Traffic Control Devices (MUTCD).

100.7 **LOCATION AND PROTECTION OF UTILITIES:** The locations of existing utilities shown on the construction drawings are approximate only. The Contractor shall be responsible for the exact location and protection of all utilities encountered.

In the event of a break in an existing water main, gas main, sewer or underground cable, the Contractor shall immediately notify the owner of the utility interrupted and shall lend all possible assistance in restoring services.

100.8 **INTERRUPTION OF WATER SERVICE:** The Contractor shall not discontinue water service to any occupied structure without notifying Ute at least 24 hours in advance. The occupant of all structures to which water service is temporarily discontinued shall be notified by the Contractor not less than twenty-four (24) hours before the water is shut off. Water service shall not be discontinued for more than two (2) consecutive hours without special written permission from Ute.

100.9 **REMOVAL OF PLANTINGS:** Where trees, hedges, shrubs, or other ornamental planting within the construction limits are not designated to be protected or saved, the Contractor shall notify the owner of the property fronting the plantings in question not less than ten (10) days prior to removing the plantings.

This notification shall include allowing the property owner the option to transplant the plantings fronting his property onto his property instead of having the Contractor remove them. The Contractor shall bid the project based on assuming responsibility for removing all plants. This requirement is intended as a positive public relations action. This work is considered as incidental to and included in the unit price bid for "Unclassified Excavation".

100.10 **MUD AND EARTH TRACKING ON PUBLIC STREETS:** The Contractor shall conduct his operations so as to not have equipment tracking excessive amounts of mud and earth onto the adjacent public streets. Upon notification, the Contractor may be required to clean up from public streets mud and/or earth tracked by his equipment or that of material suppliers to the project. This authority will be exercised only where the amount of tracked mud and/or earth is considered "excessive" as determined by Ute and/or City.

100.11 **LOCATION OF WATERLINE INSTALLATIONS:** All water lines shall be installed on the north and east sides of the road right-of-way. Any change from the above locations shall require approval of Ute.

II MATERIALS

101.1 **GENERAL:** This section covers pipe and other materials to be used in the construction of potable water systems. All materials used shall be new and in conformance with the applicable standards.

101.2 **CONTRACTOR REQUIREMENTS:** All materials to be furnished by the Contractor shall conform to the requirements of these specifications. The type, size and strength class of pipe, fittings and other materials shall be as shown on the plans or otherwise specified in the Contract Documents.

101.3 **UTE FURNISHED MATERIALS:** When Ute furnishes materials that are to be incorporated into the work by the Contractor, provisions will be made in the Special Conditions as to the responsibilities of Ute and the Contractor regarding delivery, unloading and storage of the materials.

101.4 **INSPECTION AND TESTING:** All pipe shall be tested in conformance with the applicable standards. Testing may be witnessed by Ute's representative, or by an approved independent testing laboratory. Upon request of Ute, the Contractor shall provide a copy of certified test

reports indicating that material does conform to the specifications.

101.5 **HANDLING:** All materials shall be handled with equipment and methods adequate to prevent shock or damage. Under no circumstances shall materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. If any part of the coating or lining is damaged, the Contractor shall repair or replace the material at his expense as directed by Ute. All pipe and appurtenances shall be handled in accordance with the appropriate AWWA and ASTM standards.

101.6 **STORAGE:** The Contractor will be held responsible for the safe storage and protection of all pipe and other materials delivered to the work site. The interiors of all pipe and fittings shall be kept free from dirt and foreign matter at all times. Gaskets for pipe joints shall be stored in a cool location out of direct sunlight.

Any material that has been damaged shall be repaired or replaced at the contractor's expense.

101.7 **PIPE AND FITTINGS FOR WATER MAINS AND SERVICE CONNECTIONS:**

101.7a **DUCTILE IRON PIPE:** Ductile iron pipe shall conform to AWWA C-151, thickness-class to be determined in accordance with AWWA C-150. Ductile iron pipe shall be cement lined per AWWA C-104.

JOINTS: Unless otherwise specified in the Construction Plans or Special Conditions, ductile iron pipe joints shall be mechanical or push on joints conforming to AWWA C-111. Gaskets shall be of neoprene or other synthetic rubber material. All push on type joints shall be electrically connected with wedges or cadweld connectors and No. 14 copper wire.

FITTINGS: Fittings for ductile iron pipe and 6" diameter or larger PVC pipe shall be in accordance with AWWA C-110 and shall have a pressure rating of not less than that specified for the pipe. Fittings shall be ductile iron or cast iron and shall be cement lined per AWWA C-104.

101.7b **POLYETHYLENE ENCASEMENT:** Prior to backfilling, all iron pipe fittings and other metal surfaces shall be wrapped with polyethylene encasement material conforming to AWWA C-105.

101.7c **POLYVINYL CHLORIDE PIPE:(PVC)** Polyvinyl chloride plastic water pipe and fittings, 6" diameter or larger, shall conform to AWWA C-900 or C-905. Unless otherwise specified, the minimum thickness class of PVC 6" diameter or larger pipe shall conform to DR18, Class 150.

PVC plastic pipe for lines 2", 3" or 4" in diameter shall conform to ASTM D-1784. Unless otherwise specified, the minimum thickness class of PVC 2", 3" or 4" diameter shall conform to SDR 21 (Class 200), and shall be joined with SOLVENT WELD bushings, collars, couplings, tees and bend fittings equal in diameter and pressure classification to the pipe.

101.7d **COPPER SERVICE PIPE:** Copper tube for water service lines shall be Type K, soft temper for underground service conforming to ASTM B-88 and B-251. The pipe shall be marked with the manufacturer's name or trademark and a mark indicating the type of pipe. The outside diameter of the pipe and minimum weight per foot shall not be less than that listed in ASTM B-251, Table II.

101.8 **APPURTENANCES FOR WATER DISTRIBUTION:**

101.8a **FIRE HYDRANTS:** Fire hydrants shall be the dry bowl type and shall conform to requirements of AWWA C-502. The standard hydrant shall have a six-inch connection, a 5 1/4 - inch main valve opening, two (2) 2 1/2 - inch hose nozzles and one (1) 4-1/2 - inch pumper nozzle. The hydrant barrel shall be marked with a circumferential rib to denote the intended ground line. The centers of the hose nozzles and pumper nozzle shall be at least 14 inches above the ground line mark.

Hydrants shall be of the "traffic" or "breakaway" design, having easily replaceable breaking devices for the gradeline flange and operating stem that prevents damage to the barrel sections upon impact.

The operating nut and nozzle cap wrench nuts shall be 1 - 3/8 - inch pentagon, measured from point to opposite flat side at the base. The height of the nut shall not be less than one inch.

The nozzle caps shall be removed and the operating nut opened by turning to the left (counter-clockwise). Nozzle caps shall be securely chained to the upper barrel section.

The 2-1/2 - inch hose nozzles shall be National Standard

fire hose thread.

The pumper nozzle shall be a Mueller 4-512 or equal with the following requirements:

1. Outside diameter of male thread is 5.282 inches.
2. Diameter of root male thread is 4.932 inches.
3. Number of threads per inch is 4.
4. Pitch diameter is 5.12 inches.

PAINTING: Fire hydrants shall be painted with Dupont #7744D. "Ward La France Yellow", Alkyd enamel or an approved substitute. Color coding may be required based on feed line pressure.

101.8b **GATE VALVES:** The minimum requirements for all gate valves shall conform to the standards of AWWA C-500.

All gate valves shall open left (counter-clockwise), be double disc, cast iron body, fully bronze mounted with non-rising stem and parallel seats. The stem and all wearing surface shall be bronze or other approved non-corrosive material. Contact surfaces shall be machine finished and all wearing surfaces shall be easily renewable. Nonferrous bushings shall be of substantial thickness, tightly fitted and pressed into machined seats. Solid wedge valves are not acceptable.

END CONNECTIONS: End connections of gate valves shall consist of mechanical or push-on (rubber-gasket) joints conforming to AWWA C-111 or flanged ends in accordance with ANSI B-16.1.

WRENCH NUTS: Wrench nuts shall be made of cast iron and shall be 1-5/16 -inches square at the top, 2 inches square at the base and 1-3/4 -inches high.

101.8c **TAPPING VALVES:** Tapping valves shall be furnished with flanged inlet end connections having a machined projection on the flanges to mate with a machined recess on the outlet flanges of the tapping sleeves. The outlet ends shall conform in dimensions to the AWWA Standards for hub or mechanical joint conditions, except that the outside of the hub shall have a large flange for attaching a drilling machine. The seat opening of the valves shall be larger than normal size to permit full diameter cuts. Tapping sleeves shall be of the same manufacture as the tapping valve.

101.8d **BUTTERFLY VALVES:** When specifically required, butterfly valves shall conform to AWWA C-504 specifications. The Contractor shall submit for approval by Ute, drawings

and literature showing the type, class, principal dimensions and materials used for all parts of the valves and operator.

101.8e **VALVE BOXES:** A cast iron valve box and lid shall be provided for each underground valve. Valve boxes shall be 5-1/4 -inch diameter, slip type sized for the type of valve and depth of bury. The lid shall have the word "WATER" permanently cast on the top.

101.8f **AIR VALVES:** Air valves shall be of the type, class and size specified. A separate isolation valve of the same size and pressure rating as the air valve shall be installed between the water main and the air valve. Each air valve shall be housed in a vault made of reinforced concrete pipe or manhole riser section. The vault shall be covered with a precast concrete lid and cast iron manhole ring and perforated cover. The total area of perforations in the manhole cover shall be as detailed on the plans or specified by Ute.

101.8g **TEES AND BEND FITTINGS:** All tees off 6 inch and larger lines will be cast or ductile iron MJ x MJ x FL with an FL x MJ valve bolted directly to the tee. If size 2 inch, 3 inch or 4 inch line is installed off this tee, use I.P. tapped companion flange, stainless steel nipple (4 inch minimum length) and I.P. threaded gate valve. Cast or ductile iron bends will be used on lines 6 inch and larger when pipe alignment change is 11¼ degrees or greater. All cast or ductile iron bends or tees will be kicked with concrete thrust blocks.

101.8h **ELECTRICAL TRACING WIRE:** Electrical tracing wire shall be size No. 10, solid copper, insulated wire as manufactured by Triangle P.W.C., Inc., or an approved equal.

101.8i **CORPORATION STOPS AND TAPPING SADDLES:** Corporation stops shall be made of brass and shall be the same size as the service line (3/4 inch and 1 inch only). The outlet of the stop shall be a flair end for use with type K flared copper service tubing.

Where a tapping saddle is required, the inlet threads of the corporation stop shall be standard iron pipe threads.

101.8j **METER VALVES:** When contractor-installed, meter valves shall be made of brass and shall be the same size as the service line.

All meter valves shall be provided with an approved

locking device and meter coupling attached.

Unless specified otherwise, meter pits, yokes and meters will be installed by Ute.

101.9 **CONCRETE AND MORTAR:** All concrete used in construction of manholes, inlet boxes, vaults, concrete encasement, thrust blocks, etc., shall be Colorado Division of Highways "Class B". Unless otherwise specified, all concrete shall be made with Type II Portland Cement.

Cement mortar used in construction of manholes, inlets, vaults, etc., shall be mixed at a ratio of one part Portland Cement to three parts sand. The amount of water used in the mortar shall be the minimum amount required for workability of the mix. Mortar shall be made with Type II Portland Cement unless otherwise specified.

101.10 **BOLTS:**

1. All M.J. and Flange Bolts shall be Cor-Blue bolts or approved equal.

2. All packing box bolts on gate valves or butterfly valves shall be stainless steel or approved equal.

III SURFACE REMOVALS, EXCAVATION, BACKFILLING, AND RESTORATION OF GROUNDS

102.1 **DESCRIPTION:** This section covers surface removals, excavation, backfilling, compaction, disposal of surplus material, restoration of disturbed surfaces, and all other work required for the safe and proper construction of potable water systems.

102.2 **SURVEY LINE AND GRADE:** Unless otherwise specified, a Registered Engineer or a Registered Land Surveyor registered in the State of Colorado or someone under their supervision will set line and grade control hubs or pavement markings at a maximum spacing of one hundred (100) feet. A greater interval may be used in conjunction with the use of a laser instrument for maintaining line and grade.

102.3 **SURFACE REMOVALS AND TOPSOIL PRESERVATION:** The Contractor shall remove surface materials and obstructions only to the widths necessary for excavation of the trench. All trees, shrubbery, fences, and other plantings and structures not designated for removal shall be protected or, if moved, restored to their original condition after construction is complete.

Removal of concrete curbs, gutters, sidewalks, driveways, and asphalt pavement shall be along existing joints or neatly cut lines. All vegetation, concrete, asphalt, and other refuse removed from the construction limits shall be separated from suitable topsoil and backfill material, and hauled to a disposal site secured by the Contractor.

Where the trench is in an unpaved area, clean topsoil suitable for final grading shall be stripped, stockpiled separately in approved locations, and restored to the surface after the trench is backfilled.

102.4 **BRACING AND SHEETING OF TRENCHES:** When necessary or required, trenches shall be properly braced, sheeted or otherwise supported to provide safe working conditions and protection of the work and adjacent property.

Bracing and sheeting shall conform to the recommendations in the Occupational Safety and Health Adminstration Standards for Construction (OSHA). A sand box or trench shield may be used in lieu of sheeting and bracing as permitted by OSHA. Unless otherwise approved, all trench support materials shall be removed in a manner that will prevent caving of the sides and movement or other damage to the pipe.

102.5 **TRENCHES WITH SLOPING SIDES:** Where working conditions and right of way permit (as determined by Ute), trenches may be excavated with sloping sides with the following limitations:

(1) In traveled streets, alleys or narrow easements, only vertical trenches with proper bracing will be allowed.

(2) Where trenches with sloping sides are permitted, the slopes shall not extend below a point 12 inches above the top of pipe. The trench shall be excavated with the vertical sides below this point with widths not exceeding those specified on the Standard Detail Sheets.

102.6 **EXCAVATION BELOW GRADE:** Where the excavation is carried beyond or below the lines and grades shown on the plans or staked, the Contractor shall, at his own expense, refill all such excavated space with suitable material.

102.7 **UNSTABLE TRENCH BOTTOM:** Where the excavation is found to consist of muck, organic matter or any other material that Ute determines to be unsuitable for supporting the pipe, an additional depth shall be excavated as directed

by Ute and replaced with an approved granular stabilization material except where wet conditions cause saturation or pumping of pitrun aggregates. Ute shall determine suitability of materials to be used.

102.8 **BEDDING AND SHAPING TRENCH BOTTOM:** Unless otherwise specified in the Special Conditions, all trenches shall be excavated to at least four (4) inches below the pipe grade and brought back to grade with approved bedding material. The bedding material shall be hand shaped and graded until the trench bottom is uniform and free from rocks, bumps, and depressions. A coupling or bell hole shall be dug at each pipe joint with sufficient length, width and depth to permit assembly of the joint and provide a minimum clearance of two (2) inches between the coupling and the trench bottom.

102.9 **ROCK EXCAVATION:** Rock excavation shall consist of the removal of boulders or concrete measuring one-half (1/2) cubic yard or more, hard shale, sandstone or other bed rock which, in the opinion of Ute, requires for its removal the continuous use of pneumatic tools or drilling and blasting.

Before payment for "Rock Excavation" is approved, the Contractor will be required to demonstrate that the material cannot be removed by hand pick or by power operated excavator or shovel. No payment will be made for "Rock Excavation" unless authorized by Ute in writing prior to the work being done.

All work with explosives shall conform to Federal and State Laws, and OSHA rules and regulations. Any damage caused by blasting shall be repaired by the Contractor at his expense.

102.10 **STOCKPILING EXCAVATED MATERIAL:** Excavated material shall be piled in locations that will not endanger the work, create traffic hazards or obstruct sidewalks and driveways. Fire hydrants, valve boxes, manholes and other utility access points shall be left unobstructed until the work is complete. Gutters and other water courses shall not be obstructed unless other satisfactory provisions are made for runoff and street drainage.

All surplus material and excavated material unsuitable for backfilling shall be removed from the site and disposed of in areas secured by the Contractor.

102.11 **DEWATERING TRENCHES:** Trenches shall be kept free of water during pipe laying operations by draining, pumping

or other approved methods. The water level shall be maintained at least six (6) inches below the trench bottom throughout the placement of bedding, pipe laying, joining and backfilling operations. The dewatering shall be carried out so that it does not destroy or weaken the strength of the soil under or along side the trench. Under no circumstances shall trench water be discharged into sanitary sewers. The method of disposal of trench water shall be approved by Ute.

102.12 **BACKFILLING PIPE AND STRUCTURES:** Unless otherwise specified or approved by Ute, all backfill material shall be placed with moisture-density control in accordance with the typical trench detail shown on the Standard Detail Sheets. All approved backfill material shall be adjusted to within three (3) percent of the optimum moisture content prior to its placement in the trench. Jetting or water soaking trenches to achieve compaction of the backfill will not be permitted except when the backfill consists of gravel or other granular material having less than 20 percent by weight passing a No. 200 sieve.

During initial backfilling, the Contractor shall take all necessary precautions to prevent movement or distortion of the pipe or structure being backfilled. Pipe haunching material shall be placed and compacted in even lifts on both sides of the pipe to six (6) inches above the top of the pipe. Above the bedding and haunching material, earth backfill material shall be placed full width in uniform layers not more than twelve (12) inches thick. Each layer shall be compacted to the required density with approved mechanical or hand tamping equipment.

All backfill shall be frequently tested to insure that the required density is being attained. The minimum requirements for compaction testing shall be as follows:

For every 400 lineal feet of trench and each branch or section of trench less than 400 feet in length, at least one compaction test shall be performed for each two foot vertical lift of backfill material placed. The first test shall be taken approximately two feet above the top of pipe and the last test shall be at the pavement subgrade or 6 inches below the ground surface in unpaved areas. Compaction tests shall be taken at random locations along the trench and wherever poor compaction is suspected. If any portion of the backfill placed fails to meet the minimum density specified, the area shall be defined by additional tests if necessary and the material in the designated area shall be removed and

replaced to the required density at the Contractor's expense.

All compaction testing shall be performed by a qualified representative or an independent soil testing laboratory. The cost of testing to be borne by the Contractor. It shall be the Contractor's responsibility to make necessary excavations in order to accommodate compaction tests at all locations designated.

A summary report of all compaction test results shall be submitted to Ute. The test results are required as a basis of acceptance of facilities. (See Section 107.)

Concrete structures shall not be backfilled until the concrete and mortar therein has attained a minimum compressive strength of 2000 psi and can sufficiently support the loads imposed by the backfill. Select backfill shall be placed simultaneously on all sides of the structure in layers approximately twelve (12) inches thick. Each layer shall be compacted to not less than ninety-five (95) percent of the maximum dry density determined in accordance with AASHTO T-99.

102.13 **GRANULAR STABILIZATION, BEDDING AND HAUNCHING MATERIALS:** When granular materials are required for stabilization of poor subgrade soils, bedding of pipe and structures, and haunching around pipe it shall meet the following gradation requirements.

PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES

Sieve Size	Pipe Bedding & Haunching Material	Granular Stabilization Material (Screened or Crushed Rock)	Pit Run Aggregate
8 inch	---	---	100
2 inch	---	100	---
1 inch	100	---	---
No. 200	20 Max.	20 Max.	20 Max.

102.14 **EARTH BACKFILL MATERIAL:** Under normal conditions, native material shall be used for bedding, haunching and backfilling. Earth backfill material shall consist of approved materials developed from project excavations or imported from another source. To be suitable for backfill, earth or earth and rock material shall be free from muck, frozen lumps, chunks of concrete, ashes, trash, vegetation and other debris. All

excavated materials which, in the opinion of Ute, are unsuitable for use in the backfill shall be removed from the site and disposed of by the Contractor at his expense. The maximum size of rock or clod allowed in the various backfill zones shall be as follows:

Zone of Backfill	Maximum size of rock or clod in backfill measured in greatest dimension
Trench backfill from a horizonal plane 6" above top of pipe to ground surface or subgrade of road base course	8"
Within 6" of the exterior surface of any pipe or structure	1 1/2"

Backfill material consisting of earth and rock shall contain a sufficient amount of earth to completely fill all voids between the rocks.

102.15 **RESTORATION OF GROUNDS:** The cleanup and restoration of grounds shall be a continuous process from the beginning of construction to final completion of the work. The Contractor shall keep the work site free from accumulation of debris and waste material caused by his operation.

Immediately after the pipeline is backfilled, the area shall be cleaned and restored to the original grade and condition. All fences, utilities, culverts, ditches, structures, grassed areas and plantings shall be replaced and restored to a condition equal to or better than that at the beginning of construction.

102.16 **RESTORATION OF PAVED SURFACES:** Immediately after any section of a completed pipeline has been tested and approved by Ute, the Contractor shall replace all paved surfaces removed or damaged by his operation. All pavement replacement shall be in accordance with the typical trench detail shown on the standard detail sheets, and in accordance with any permit requirements imposed by the City, County or State.

Unless otherwise approved, all asphalt pavement removed shall be replaced with hot mixed bituminous pavement and all road base shall be Colorado Division of Highways, Class 6, Aggregate Base Course. Paved surfaces shall be restored to their original line and grade and finished to match adjacent undisturbed surfaces.

All curbs, gutters, sidewalks, gutter pans, driveways and other concrete street hardware within the right of way shall be replaced by a licensed Cement Contractor with a permit issued by the office of the City Engineer. All concrete shall be Colorado Division of Highways, Class B.

IV INSTALLATION

103. **INSTALLATION OF PIPE AND APPURTENANCES:** All pipe, valves, hydrants, manholes and other pipeline appurtenances shall be installed and tested in accordance with the construction plans and specifications, applicable AWWA, ASTM or AASHTO Standards and Manufacturer's instructions. When installation instructions or procedures differ, the Ute inspector will determine which will take precedence over the others.

103.1 **PIPE LAYING:** Pipe shall be laid on the alignment shown on the plans or staked. Unless otherwise specified or approved, all pipelines shall be laid to a minimum depth of forty-eight (48) inches measured from the subgrade, but no less than 54" from the finished grade.

The inside of the pipe and jointing surfaces shall be kept clean and free from mud, dirt, gravel, ground water, and other foreign material. When pipe laying is not in progress, the open ends of the pipeline shall be kept closed with watertight plugs.

Long radius horizontal or vertical curves may be laid with standard pipe by deflections at the joints of rigid pipe or by deflecting the entire length of flexible pipe. Maximum deflections at pipe joints shall be per the Manufacturer's recommendations or applicable AWWA Standard.

103.2 **INSTALLATION OF TRACING WIRE:** All nonmetallic pipe shall be buried with a continuous electrical tracing wire to enable future location of the pipe. Tracing wire shall be taped to the top of the pipe at 20-foot intervals to prevent dislocation of the wire during backfilling. At all fire hydrants, valves and other locations shown on the plans, the tracing wire shall be extended to the ground surface for easy access. In paved areas, the tracing wire shall be brought upon the inside of the valve box and securely fastened to the inside wall within 4 inches from the top of the lid.

103.3 **POLYETHYLENE ENCASEMENT:** Prior to backfilling, all cast iron and ductile iron pipe, fittings, valves and other

metal pipe and appurtenances shall be wrapped with polyethylene encasement material. Installation of the polyethylene tube shall be in accordance with one of the methods described in AWWA C-105.

103.4 **CONCRETE BLOCKING:** Concrete support or thrust blocks shall be poured at all pipe bends, tees, caps, valves, hydrants and other locations shown on the plans. The size and location of blocking shall be as shown on the plans or in accordance with the Standard Waterline Detail Sheet. Thrust blocks shall be poured on firm, stable foundation material and all bearing surfaces shall be against undisturbed earth.

Concrete for support and thrust blocks shall be made with Type II Portland Cement and shall reach a minimum compressive strength of 3000 psi in 28 days.

Reinforcing steel and bolts used to anchor valves, fittings, etc., to thrust blocks when required shall meet tensile requirements of ASTM Grade 40. All anchorage steel not embedded in concrete shall be coated with coal tar or other approved coating material.

103.5 **INSTALLATION OF VALVES AND VALVE BOXES:** Each valve shall be installed in a vertical position with a suitable support block as shown on the Standard Water Line Detail Sheet. An adjustable slip type valve box shall be set into position during backfilling operations. The lower section of the valve box shall be supported with brick or block so that it does not rest directly upon the body of the valve or upon the water main. The upper section of the unit shall be placed in proper alignment and adjusted so that its top will be at final grade upon completion of surfacing. The completed valve box shall be vertically centered over the valve operating nut and each valve shall be tested for proper access and operation.

103.6 **INSTALLATION OF FIRE HYDRANTS:** Hydrants shall be installed at the locations shown on the plans. They shall be plumb and set so that the center of the pumper nozzle is no less than fourteen (14) inches above finished grade. A minimum of 1/4 cubic yard of washed 3/4 inch gravel shall be placed around the base of the hydrant to insure proper drainage of the hydrant after use. Blocking of the hydrant shall consist of pouring a solid concrete base of not less than 1/4 cubic yard extending from the hydrant base to the undisturbed soil on the bottom and sides of the trench. Weep holes which drain the hydrant shall not be covered with concrete.

103.7 **INSTALLATION OF WATER SERVICE PIPE:** Water service pipe shall be laid not less than ten (10) feet horizontally from the building sewer drain. Where this separation is not possible, the service line shall be at least eighteen (18) inches above the top of the sewer drain line and with a minimum cover of forty-eight (48) inches.

When providing domestic services 3/4 inch or 1 inch size from previously existing distribution lines, each water service line shall be connected to the water main through a double strap brass tapping saddle and IP threaded corporation stop. The main shall be tapped at the spring line of the pipe, and the stop must be turned so that the T-handle will be on top.

When providing domestic services, 3/4 inch or 1 inch size from new distribution lines, each water service line shall be connected to the water main through a brass corporation stop threaded into a tap collar, or tap tee.

Domestic services larger than 1 inch shall connect to the main through a gate valve, 2" minimum or equal in size to the service line.

Service lines shall be installed to the meter pit location shown on the plans or designated by Ute. Wherever physical conditions permit, the meter pit location shall be on the property side but immediately adjacent to the right-of-way line. However, meter pits shall not be placed under concrete curb, gutter, or sidewalk.

103.8 **SERVICE STUBOUTS:** The service line shall extend to the meter pit location shown on the plans or designated by Ute, and shall include a second corp stop (3/4 inch or 1 inch) at this location. Service lines larger than 1 inch will be capped or plugged at this location. A 2"x4"x4' wooden post shall be buried vertically above the end of the service line and shall extend 6" above the ground surface. The top shall be painted blue.

103.9 **SYSTEM-PROTECTION DEVICES:** Ute shall have and retain sole discretionary judgement with respect to any contamination risk to the distribution system which may result from certain service connections. Appropriate backflow prevention devices shall be required on any connection to the system which utilizes irrigation systems, fire protection sprinkler systems or presents the possibility of backflow or siphonage. Backflow prevention will be at the total expense of the customer,

will be installed on the customer's side of the meter, and will be subject to testing and inspection by Ute.

103.10 **CONNECTIONS TO EXISTING MAINS:** New water lines shall not be placed in service until the new lines have been tested and disinfected by the contractor and inspected by Ute.

Where the connection of the new work to old requires interruption of service, Ute and the Contractor shall mutually agree upon a date and time for connections which will allow ample time to assemble labor and materials. The Contractor shall notify all water users affected in accordance with Section 100.8 of these specifications.

V TESTING

104. **TESTING PIPELINES:** All pressure and leakage testing shall be performed by the Contractor under direct supervision of Ute or an approved independent laboratory.

104.1 **TESTING PRESSURE PIPELINES:** Water mains shall be tested for pressure and leakage in accordance with these specifications and AWWA Standard C-603, Section 4.

The Contractor shall furnish all labor, equipment, tools, water and other incidental items required to conduct the tests. Test results will not be considered valid without the presence of Ute or its representative throughout the test.

No pressure testing shall be performed until all thrust blocks have been placed and cured for at least seven (7) days, and the pipeline backfilled adequately to prevent any movement or lifting of the pipe. Pavement or other permanent surface shall not be placed until all pressure and leakage tests are satisfactorily completed.

104.2 **TEST PRESSURE:** Unless otherwise specified, the test pressure for all pipes shall be double the operating pressure at the lowest elevation of the test section or the class designation of the pipe plus fifty (50) psi, whichever is less, except that the minimum test pressure for water distribution lines shall be one hundred and fifty (150) psi.

104.3 **FILLING:** The pipeline shall be filled with potable water at least twenty-four (24) hours before being subjected to the hydrostatic pressure test. Each

section of pipeline shall be filled slowly and all air expelled by means of taps at points of highest elevation.

104.4 **PROCEDURE:** The pressure and leakage tests may be performed simultaneously or separately. The total time for the combined pressure and leakage tests shall be a minimum of two (2) hours for each section of pipeline. (between valves). If separate tests are made, the pressure test shall be made first. The duration of the pressure test shall be a minimum of one (1) hour and the duration of the leakage test shall be a minimum of four (4) hours. The pressure of the leakage test may be reduced to one hundred and fifty percent (150%) of the maximum working pressure that will occur on that portion of the line.

The specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to Ute. No pipe installation will be accepted if the leakage for the section of line being tested is more than the rate calculated using the following formula.

$$L = \frac{ND \sqrt{P}}{7400}$$ where

L = Allowable leakage in gallons per hour

N = Number of joints in length pipeline tested

D = Nominal diameter of pipe in inches

P = Average test pressure in psi gauge

Leakage is defined as the quantity of water to be supplied to the section of pipeline being tested, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

VI DISINFECTION

105. **DISINFECTION OF WATER LINES:** After completion of pressure and leakage testing and prior to being placed into service, all new water mains and repaired portions of or extensions of existing mains shall be chlorinated by the Contractor in accordance with AWWA Standard C-651.

105.1 **INITIAL FLUSHING:** Sections of pipe to be disinfected

shall first be flushed to remove any solids or contaminated material that may have entered the pipe. If no hydrant is installed at the end of the main, then a proper size tap shall be installed in order to flush the line.

105.2 **FORM OF APPLIED CHLORINE:** Chlorine shall be applied by one of the methods described in AWWA C-651, subject to approval by Ute.

105.3 **POINT OF APPLICATION:** The prepared point of application of the chlorinating agent is at the beginning of the pipeline extension including any valved section of it, through a corporation stop inserted in the pipe. The water injector for delivering the chlorine-bearing water into the pipe should be supplied from a tap made on the pressure side of the valve controlling the flow into the pipeline extension. Alternate points of application may be used when approved or directed by Ute.

105.4 **PREVENTING REVERSE FLOW:** Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used if desired.

105.5 **RETENTION PERIOD:** Superchlorinated water shall be retained in the pipe at least twenty-four (24) hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least twenty-five (25) mg/l.

105.6 **CHLORINATING VALVES AND HYDRANTS:** In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

105.7 **FINAL FLUSHING AND TESTING:** Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its length shows upon test a chlorine residual not in excess of that carried in the system.

VII RELATIONSHIPS BETWEEN WATER LINES AND SANITARY SEWERS

106. **RELATIONSHIP BETWEEN WATER LINES AND SANITARY SEWERS:** The physical relationship between water lines and sanitary sewers shall conform to requirements of the Colorado State Department of Health.

The minimum horizontal spacing between sewer lines and

water lines shall be ten (10) feet measured center line to center line.

Where sewer lines and water mains cross, the sewer pipe shall be a minimum of eighteen (18) inches clear distance vertically below the water main. If this clear distance is not feasible, the crossing must be designated and constructed so as to protect the water main. Minimum protection shall consist of the installation of an impervious and structural sewer.

a. When Sewer Crosses **OVER** Water

One length of ductile iron pipe at least 18 feet long shall be centered over the water main. Joints between the sewer pipe and the special pipe shall be encased in a concrete collar at least 6 inches either side of the joint.

b. When Sewer Crosses **UNDER** Water With Less Than 18" Separation

Installed as in "a." above or regular sewer pipe with reinforced concrete encasement. Encasement shall be at least 6 inches thick outside the diameter of the pipe and shall extend a distance at least 10 feet either side of the water main.

In all cases, suitable backfill or other structural protection shall be provided to preclude settling and/or failure of the higher pipe.

VIII INSPECTION

107. **FINAL INSPECTION AND ACCEPTANCE:** The acceptance of all pipelines by Ute will be based on the following:

1. Submittal of satisfactory results of required test (such as pressure test, leakage tests, disinfection tests, compaction tests, etc.) certified by an Engineer or an approved independent laboratory.

2. Passing a final inspection of the work by Ute.

3. Submittal of "As-Built" construction drawings on 24" x 36" reproducible mylar or other suitable material, when requested. Sepia paper and vellum are not acceptable. All "As-Built" drawings shall be certified by a licensed Professional Engineer.

4. Restoration of all non-public surface disturbance.

5. Restoration of all surface disturbance within the public right-of-way to the satisfaction of the City, County or State.

6. Contractor shall warranty the construction project for a period of one year from the date of acceptance against defects in material and workmanship.